

August 2016

State Innovation Models (SIM) Initiative Evaluation

Model Test Year Two Annual Report

Submitted to

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RTI Project Number: 0212790.007

Deliverable Number: 35-2

Contract Number:
HHSM-500-2010-00021i

Task Order Number:
HHSM-500-T0007



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CMS Contract No. HHSM-500-2010-00021i

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This project was funded by the Centers for Medicare & Medicaid Services under contract no. HHSM-500-2010-00021i. The statements contained in this report are solely those of the authors and do not necessarily reflect the views or policies of the Centers for Medicare & Medicaid Services. RTI assumes responsibility for the accuracy and completeness of the information contained in this report.

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Executive Summary

The State Innovation Models (SIM) Initiative within the Center for Medicare and Medicaid Innovation (the Innovation Center) is testing the ability of state governments to accelerate statewide health care system transformation from encounter-based service delivery to care coordination, and from volume-based to value-based payment. The underlying belief is that more coordinated and accountable care is better care and leads to smarter spending and healthier people. Through the SIM Initiative, the Innovation Center recognizes the unique role states can play—as regulators, legislators, conveners, and both suppliers and purchasers of health care services—and calls on states to use a wide array of policy levers, engage a broad range of stakeholders, and build on existing efforts to bring about or accelerate health care system transformation.

In the first round of SIM Initiative funding, which began April 1, 2013, the Innovation Center awarded Model Testing cooperative agreements to six states—Arkansas, Maine, Massachusetts, Minnesota, Oregon, and Vermont. These awardees are testing statewide health care innovation plans designed to accelerate system transformation. These plans include implementation and expansion of innovative, multi-payer health care delivery system and payment models; strategies to develop or enhance services required to enable or improve the effectiveness of the models, such as health information technology (health IT) and data analytic investment, workforce development, consumer engagement activities, and integration with public health programs; and policy levers to promote adoption of the models and enabling strategies.

RTI International, The Urban Institute, National Academy for State Health Policy, Truven Health Analytics, and The Henne Group are conducting an evaluation of the SIM Initiative for the Innovation Center. This is the second annual report of the 5-year Round 1 SIM Initiative evaluation contract.

Federal Evaluation

The federal evaluation includes both state-specific and cross-state analyses of the SIM Initiative. Each state's evaluation consists of: (1) a process analysis of implementation and progress, (2) one or more quantitative impact analyses of discrete populations and models, and (3) a statewide impact analysis using claims data for Medicaid, commercial, and Medicare populations. In this report, we present our findings from the second of three planned site visits for the process analysis; a baseline survey of primary care physicians conducted to gauge the engagement of these providers in a range of care coordination and management activities; and statewide trends in core care coordination, quality, utilization, and expenditure measures using claims data. At the time of this writing, we had claims data for Medicaid beneficiaries only for a partial baseline period, which varied by state. For the commercially insured and Medicare

populations we had data for the full baseline (October 2010 through September 2013) and the first three quarters of the test period (October 2013 through June 2014).¹

For the cross-state analyses, we present a synthesis of four major implementation topics: (1) payment reform, (2) health IT and data infrastructure, (3) workforce development, and (4) population health integration. In each synthesis, we present the major strategies and policy levers states are using to address these areas under their SIM award, along with progress to date, challenges encountered, and lessons learned. We also summarize key findings from the statewide quantitative analyses on: (1) populations reached, (2) payer and provider participation, (3) care coordination, (4) quality of care, (5) utilization, and (6) expenditures. Data on populations reached and payer and provider participation are reported by states to the Innovation Center; data on the latter four measures are derived from claims data.

Implementation

The overarching goal shared by the six SIM Initiative Round 1 Test states is to shift the state's health system from encounter-based service delivery to coordinated care, and from volume-based to value-based payment mechanisms. The premise underlying these efforts is that better coordinated and more accountable health care leads to higher quality care at lower total cost, and ultimately to improved population health.

Test states are focusing their SIM activities on models that emphasize: (1) primary care practice transformation through patient-centered, coordinated care; and (2) integration of primary care with other health and social services, including behavioral health services and long-term services and supports (LTSS). The Test states are using payment reforms to promote delivery system transformation and a variety of enabling strategies to facilitate and sustain their envisioned health system transformations. The enabling strategies include practice transformation facilitation, workforce development, health IT investment and data analytic capacity building, and stakeholder engagement (including consumer education). In addition, Test states are considering the interplay between their innovation models and statewide population health improvement goals.

Despite variation across the Test states, the SIM Initiative has made notable progress in accelerating health care transformation among the Round 1 Test states. States have leveraged multi-payer efforts to implement payment and delivery system reforms, engaged wide swaths of the provider community in SIM-related activities, and used a range of policy levers to effect change.

¹ The full test period for the Round 1 Test states is October 2013 through September 2016. However, for Massachusetts the start of the test period lagged that of the other five Test states by 3 months; and Massachusetts, Minnesota, and Vermont have all received no-cost extensions to their SIM awards.

Key findings from the cross-state implementation analysis include:

- **Payment reform.** The Round 1 Test states are using a range of payment reforms to move their health care systems from fee-for-service to value-based care. The six Test states have faced common challenges garnering provider and other stakeholder buy-in for reforms and promoting multi-payer participation—especially in the context of multiple, ongoing payment and delivery system reforms happening as part of, or complementary to, the SIM Initiative. Advanced payment strategies are still in development in many states.
- **Health IT and data infrastructure.** Delivery system transformation requires timely, accurate, and usable data at the provider, system, and state policymaker levels. Round 1 Test state activity in this area reflects a multi-level approach—including addressing confidentiality in the transfer of information from provider to provider; pushing out key clinical data in a timely and usable way; creating actionable provider and systems reports, preferably in a format that aligns with other payers; and developing credible data analytics to inform state quality improvement and payment reform initiatives. Key challenges include access to and sharing of behavioral health and substance use data; alignment with provider needs, resources, and workflow; and ensuring states and stakeholders have confidence in the data being used.
- **Workforce development.** SIM-funded efforts are helping to lay the groundwork and infrastructure necessary for the development and success of new professional roles around care coordination. While individual practices must engage in the hard work of transformation to achieve improved patient care, state SIM Initiatives are providing the structure, incentives, tools, and training necessary to help practices be successful in their transformation efforts.
- **Population health.** All six Test states had pre-existing population health efforts to build on, but many of the specific activities in relation to their SIM funding are freshly under way. The evolving work provides continued opportunity for interagency collaboration, as well as for consideration of how the work encompassed in the SIM Initiatives can engage with national and state efforts—especially those that link delivery system reform and population health.

Payer and provider participation

Payer participation varies markedly by state. Medicaid is the only participating payer in three Round 1 Test states' SIM Initiatives (Massachusetts, Minnesota, and Maine) and is one of several participating payers in the other three states. The Test states have had varying levels of success in engaging commercial firms in their SIM Initiatives. No Round 1 Test state has implemented delivery system or payment reform models in Medicare under the SIM Initiative at this time.

Given the emphasis on strengthening primary care in many of the states' SIM initiatives, a substantial percentage of the primary care physicians in each Test state is participating in one

or more innovation models. However, the percentage of total providers, including specialists, is unknown. How many of the participating providers are receiving all or part of their reimbursements through value-based alternative payment models is also unknown.

Provider engagement

In the survey of primary care physicians conducted in fall 2014, we found that engagement in selected care coordination and care management–related strategies before implementation of the SIM Initiative was already quite high in the Round 1 Test states. We found that large proportions of practices assign patients to specific providers or teams, transmit referral information to specialists and other providers, use electronic health records and other health IT systems to document medical/progress notes, prescribe medications, and monitor quality-of-care performance at the patient group and practice level. However, the findings also suggest that considerable room for improvement exists in other care coordination and care management strategies—including reminding patients to schedule needed preventive services, following up with patients after referrals, creating links with behavioral health care providers, and monitoring costs and utilization.

Populations reached

Despite many gaps in the data on populations reached by the SIM Initiative, most states have clearly used the funds to substantially increase the populations reached by innovative delivery system and payment models. If we consider the populations reached by SIM Initiative together with those reached by other public and private delivery system and payment reform initiatives pre-dating the SIM Initiative, three Test states (Minnesota, Oregon, and Vermont) may be halfway toward the target reach of 80 percent of the state’s population. However, a lot of effort is needed to bring these states the rest of the way and the other three Round 1 Test states up to the levels already reached by Minnesota, Oregon, and Vermont.

Impact on outcomes

It is too early to determine whether the SIM Initiative has changed provider behavior or improved care coordination, care quality, and population health, while reducing utilization of expensive services and total health care costs. The data are not yet available to support such analyses. However, we found evidence suggesting that many of the models pre-dating the SIM Initiative, and on which the states built their SIM Initiatives, were having a small but significant impact on these outcomes in the early test period. We need additional data to determine whether the SIM Initiative accelerated these trends.

1. Introduction

1.1 Background on the State Innovation Models Initiative

The State Innovation Models (SIM) Initiative within the Center for Medicare and Medicaid Innovation (the Innovation Center) is testing the ability of state governments to accelerate statewide health care system transformation from encounter-based service delivery to care coordination, and from volume-based to value-based payment. The underlying belief is that more coordinated and accountable care is better care and leads to smarter spending and healthier people. Through the SIM Initiative, the Innovation Center recognizes the unique role states can play—as regulators, legislators, conveners, and both suppliers and purchasers of health care services—and calls on states to use a wide array of policy levers, engage a broad range of stakeholders, and build on existing efforts to bring about or accelerate health care system transformation.

In the first round of SIM Initiative funding, which began April 1, 2013, the Innovation Center awarded Model Testing cooperative agreements to six states—Arkansas, Maine, Massachusetts, Minnesota, Oregon, and Vermont. These awardees are testing statewide health care innovation plans designed to accelerate system transformation. These plans include implementation and expansion of innovative, multi-payer health care delivery system and payment models; strategies to develop or enhance services required to enable or improve the effectiveness of the models, such as health information technology (health IT) and data analytic investment, workforce development, consumer engagement activities, and integration with public health programs; and policy levers to promote adoption of the models and enabling strategies.

The Innovation Center contracted with the team of RTI International, The Urban Institute, National Academy for State Health Policy, Truven Health Analytics, and The Henne Group to conduct an independent evaluation of the SIM Initiative. The evaluation contract includes annual reporting to the Innovation Center on the Round 1 Test states' implementation activities and interim findings. These reports provide updates on the status of the states' initiatives, descriptions of any changes planned or under way, challenges faced, and lessons learned. The reports also describe trends in key care coordination, quality of care, utilization, expenditures, and population health outcomes over time, both by state and across all six Round 1 Test states.

1.2 Overview of the Federal Evaluation

The primary goal of the federal evaluation of the SIM Initiative is to determine whether state government is a successful convener of health care reform—that is, whether new payment and service delivery models produce superior results when implemented in the context of a SIM

plan. To determine the success of the models, enabling strategies, and policy levers used by the different state awardees, the RTI team worked with the Innovation Center's evaluation and SIM program teams to identify a series of research questions for the federal SIM Initiative evaluation. These questions fall under one of the following 10 topic areas:

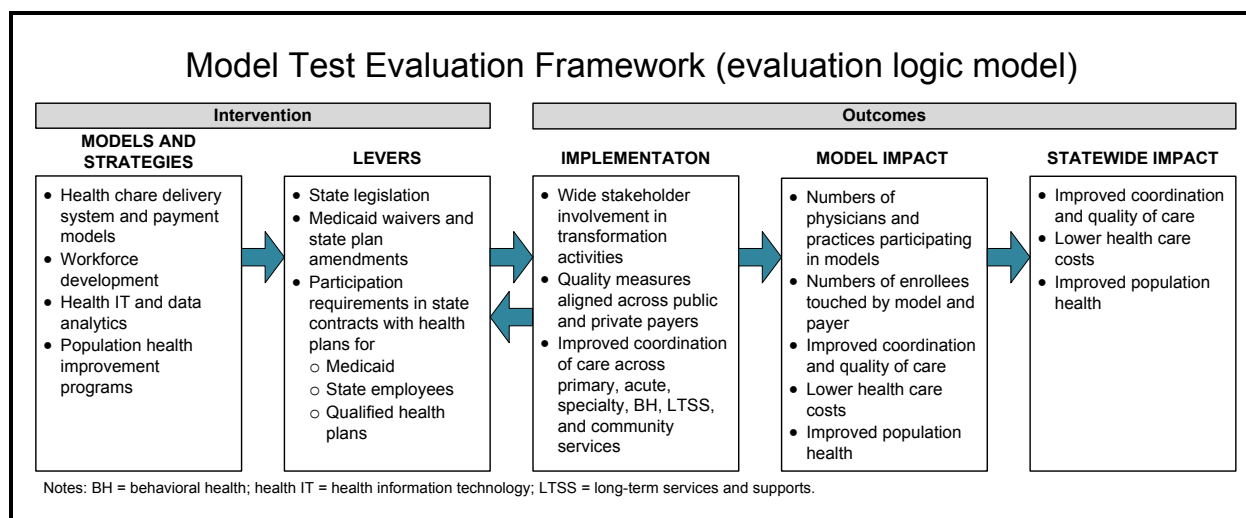
- Implementation and operations
- Policy and regulatory levers
- Provider response
- Care coordination
- Quality of care
- Expenditures and utilization
- Population health and health risk
- Workforce development
- Health IT/health information exchange (HIE)
- Assessment of the Innovation Center technical assistance.

We are conducting both state-specific and cross-state analyses, customizing our overarching evaluation design to capture each state's unique features while using standardized metrics, data collection instruments, and statistical techniques as much as possible. *Figure 1-1* depicts our evaluation framework for the state-specific analyses. Each state's SIM Initiative intervention consists of one or more health care delivery and payment reform models (column 1); strategies to enable the operation of these models, such as health IT and data analytics investment and workforce development; and plans for integrating population health activities (also column 1); and policy levers to allow or facilitate the spread of these models and strategies throughout the state (column 2).

Each state's evaluation then consists of a process analysis of implementation and progress (column 3), one or more model-specific impact analyses (column 4), and a statewide impact analysis (column 5), as described briefly below.

- **Process analysis of program implementation and progress:** We are conducting extensive process analyses of program implementation and progress, including of the following enabling strategies: practice transformation facilitation, population health programs, health IT investment, quality measurement alignment, data analytics and infrastructure capacity-building, and workforce development. We are obtaining data for these analyses from three waves of site visit interviews with key informants and provider and consumer focus groups, supplemented by monthly evaluation calls with state staff and review and analysis of state documents and web sites.

Figure 1-1 Model Test state-specific evaluation framework



- **Quantitative analysis of discrete populations and models:** We are completing rigorous quantitative outcome analyses of discrete delivery system and payment models among specific provider practices and patient populations. We are obtaining data for these analyses from state-reported core metrics on provider participation and populations reached, and Medicaid and commercial claims files. Where possible, we identify within-state comparison groups and compute program impacts using difference-in-differences multivariate regression (DD) methods.
- **Aggregate quantitative impact analyses:** Not all innovation models and enabling strategies promoted with SIM Initiative awards require enrollment or registration of providers or patients—thus precluding analysis of participating versus non-participating practices and populations. Furthermore, a goal of the SIM Initiative is to have 80 percent of health care in a state provided through innovative, value-based delivery models by the end of the test period. For both reasons, we are also conducting statewide aggregate impact analyses on core health care coordination, quality, utilization, and expenditures using claims data for Medicaid, Medicare, and commercially insured populations; and population health measures using data from the Behavioral Risk Factor Surveillance System (BRFSS). For these analyses, we have identified a comparison group for each Test state comprising populations in three non-Test states, and are computing program impacts using DD methods.

In addition to the state-specific analyses, we are conducting cross-state process and impact analyses. For the latter analyses, we look for and report on trends across states with similar models or model features, both within and across target populations. State-specific findings are grouped by model, salient model features, and features of the health care system and population. Information from the process analyses is used to explain trends in the quantitative impact analyses.

1.3 Overview of the Annual Report

This is the second annual report of the SIM Initiative evaluation contract. In this report, we integrate findings—from stakeholder interviews, consumer and provider focus groups, and a primary care physician survey—into a case study of progress made, challenges encountered, and lessons learned by states in implementing their SIM Initiative activities over the past year (April 2014 through March 2015). These findings are organized into the following seven components of their SIM Initiative plans: (1) delivery system and payment reform, (2) behavioral health integration, (3) quality measurement and reporting, (4) health IT and data infrastructure, (5) workforce development, (6) population health, and (7) stakeholder engagement.

We also provide preliminary analyses from the statewide impact evaluation—including measures of care coordination, quality of care, utilization, and expenditures for Medicaid, commercially insured, and Medicare populations in each state. Although all states target the Medicaid population for some or all SIM models and strategies, not all states are intervening to the same degree in care for the commercially insured and Medicare populations during the 3-year SIM test period. Nevertheless, consistent with the broad vision of the SIM Initiative and the potential for spillover effects, we present statewide data for all three major payer populations.

For the Medicaid population, we present baseline estimates of all measures for 2010 through either 2012 or the latest year for which we have complete data. For Medicare beneficiaries and the commercially insured, we present baseline estimates of care coordination and quality of care measures for 2010 through 2013, and of utilization and expenditure measures for fourth quarter 2010 through second quarter 2014. We also present estimates of the SIM Initiative impact on these outcomes using a DD approach, as noted, but we only have data for the first two to three quarters of the test period for the commercially insured and Medicare populations. We expect to see little, if any, SIM Initiative impact in these very early test period data.

Chapter 2 provides a brief overview of the data and methods for conducting the site visit interviews, focus groups, and survey of primary care physicians; identifying comparison groups; and analyzing claims data. The technical appendixes provide additional details on our approach. **Chapter 3** provides a cross-state synthesis of the Test states' experience with payment reform, health IT and data infrastructure, workforce development, and population health activities under the SIM Initiative; baseline measures of care coordination and quality for the three payer populations; and the utilization and expenditure impact measures for Medicare beneficiaries and the commercially insured represented in the MarketScan database. We report full results for each of the six Round 1 Test states in **Chapters 4** through **9**, respectively.

2. Methods

We collected and analyzed a wide range of qualitative and quantitative data on the SIM Initiative in the second year of the federal SIM Initiative evaluation. These sources include information obtained during monthly evaluation calls with each Test state; a review of relevant documents; a site visit during which we conducted interviews with key informants and provider and consumer focus groups; a survey of primary care physicians (the provider survey); and analyses of Medicaid, Medicare, and MarketScan claims databases.

Table 2-1 summarizes the data sources we use to address each topic area of the federal evaluation. This report does not provide data from the webinar feedback survey, which was only conducted and reported in Year 1; or the consumer survey, which was fielded November 2014 through August 2015 and the results of which will be provided in the third annual report; or the BRFSS analyses, the results of which will be included in the third through fifth annual reports. In the remainder of this section, we describe our methods for each of the other data sources.

Table 2-1. Evaluation topic area and methods

Topic area	Monthly calls & document review	Key informant interviews	Provider & consumer focus groups	Webinar feedback survey	Provider & consumer surveys	Claims data analysis	BRFSS data analysis
Implementation	√	√	—	—	—	—	—
Policy levers	√	√	—	—	—	—	—
Provider response	√	√	√	—	√	√	—
Care coordination	√	√	√	—	√	√	—
Quality of care	√	√	√	—	√	√	—
Utilization/expenditures	—	—	—	—	—	√	—
Population health	√	√	—	—	—	—	√
Workforce	√	√	—	—	—	—	—
Health IT/HIE	√	√	√	—	√	—	—
CMS TA assessment	—	√	—	√	—	—	—

Notes: BRFSS = Behavioral Risk Factor Surveillance System; CMS = Centers for Medicare & Medicaid Services; health IT = health information technology; HIE = health information exchange; TA = technical assistance

2.1 State Evaluation Calls

We began monthly federal evaluation–specific calls with each Round 1 Test state in April 2014. The RTI evaluation team for the state, the state’s SIM Initiative team, and the state’s Innovation Center project officer typically attend the calls. Their purpose is to review interim evaluation findings with the states (as available); discuss any outstanding RTI evaluation data or other needs; and review and discuss state implementation and self-evaluation updates.

We also use these meetings to gather more in-depth information on select topics of interest for the evaluation. For each topic, we prepare a list of cross-state and state-specific questions—including the status of related policy levers and implementation successes, challenges, and lessons learned. We first review relevant state documents for answers to our questions. When we do not find answers to these questions in the document or needed clarification, we devote part of our monthly evaluation calls with the states to gathering the information needed. We send the questions to the state ahead of the call and ask states to have a knowledgeable state official available to answer the questions during the call.

The information gathered during the evaluation calls supplements information gathered from other sources for the state-specific case studies in Chapters 4 through 9. In addition, in Chapter 3 of this annual report, we provide an in-depth cross-state synthesis on four of these topics: (1) payment reform, (2) health IT and data infrastructure, (3) workforce development, and (4) population health.

2.2 Document Review

We used states' quarterly and annual reports, operational plan updates, and other state documents to obtain updated information on their implementation progress in Year 2. To supplement these documents, we collected relevant news articles on states' SIM Initiative activities and related initiatives, and we searched reform-oriented web sites that states maintain.

In addition, we obtained numbers of providers and payers participating in the Test states' different innovation models from reports the states submit to the Innovation Center in conjunction with their quarterly reports. We provide each states' reported figures in both the cross-state and state-specific chapters.

2.3 Site Visit Interviews

Between February and April 2015, we conducted 146 interviews with key informants in the Round 1 Test states during the second set of site visits conducted under the federal evaluation. In the interviews, we focused on implementation successes, challenges, and lessons learned; significant administrative or program changes that had occurred since the first set of site visits in first quarter 2014; and early effects of the SIM Initiative on health care delivery system transformation. The discussions were organized around the same seven components of the states' SIM Initiative plans as used to structure the findings described in this report: (1) delivery system and payment reform, (2) behavioral health integration, (3) quality measurement and reporting, (4) health IT and data infrastructure, (5) workforce development, (6) population health activities, and (7) stakeholder engagement.

The key informants we interviewed included the state's core SIM Initiative team, other state officials, commercial payers, providers and provider association representatives, consumer

representatives, and health infrastructure personnel. We conducted 22 to 27 interviews per state. With the greater emphasis on implementation experiences, we conducted fewer interviews with state officials in this round compared to the first round (52 versus 73) and more interviews with providers involved in the innovation models, the states' subgrantees, and consumer advocacy groups.

All interviews were conducted by at least two evaluation team members. The interview leader used discussion guides to structure each interview session, and designated note takers recorded the feedback from each session. The interviews were interactive; each participant was encouraged to share feedback most relevant to his/her particular SIM Initiative role. *Appendix A* provides additional information on the site visit methods.

2.4 Focus Groups

To collect information on consumers' and providers' experiences with the system changes resulting from SIM Initiative activities, we conducted provider and consumer focus groups during the site visits. Focus groups were held in 2 to 3 different locations in each Round 1 Test state. We conducted 24 provider focus groups and 24 consumer focus groups in all—3 to 5 provider focus groups and 4 consumer focus groups per state. From 3 to 11 providers participated in each provider focus group, and from 4 to 11 consumers participated in each consumer focus group—for a total of 172 providers and 198 consumers.

We recruited focus group participants from provider and consumer populations most likely to be impacted by the delivery system models tested under the SIM Initiative. Most providers recruited were primary care physicians participating in primary care medical homes (PCMHs) or accountable care organizations (ACOs). However, some focus groups also included other primary care providers, such as nurse practitioners and physician assistants; and some included other types of providers participating in selected SIM interventions. For example, provider focus groups in Arkansas included one with orthopedic surgeons and one with obstetrician/gynecologists impacted by the episode-of-care payment, and two focus groups in Oregon were with long-term services and supports (LTSS) providers.

In all states, we conducted consumer focus groups with Medicaid beneficiaries. In most states, these beneficiaries were attributed to innovation models being tested under the SIM Initiative. In Arkansas, two focus groups were conducted with Medicaid expansion beneficiaries enrolled in qualified health plans (known as Private Option plans); in Oregon, two groups were conducted with LTSS users. In Massachusetts and Oregon, we also conducted two consumer focus groups with state employees.

Focus group facilitators used discussion guides to structure the discussions. *Appendix A* provides additional information on the focus group methods.

2.5 Provider Survey

In late summer and early fall, we used a web-based platform to conduct a provider survey. The goal of the survey was to describe self-reported engagement in a range of care coordination and management activities among primary care physicians practicing in Test states. Although the Test states differ in the specific interventions supported under the SIM Initiative, all Test states have a common focus on strengthening primary care and increasing care coordination and management.

To maximize the number of responses, we based the survey on a census of providers offering at least some primary care to patients residing in the Test states. The source of provider contact information varied by state. We purchased contact information from the boards of licensure in Maine and Oregon; received a combined list of providers participating in Arkansas Medicaid and licensed in Arkansas from the Arkansas Foundation for Medical Care; and received physician lists from Massachusetts and Vermont state SIM officials and a list of primary care practice sites registered with the Minnesota Department of Health from Minnesota state SIM officials.

The instrument used for the provider survey focuses on strategies that physicians engaging in PCMHs, ACOs, or related models would likely apply to their practices. We adapted selected questions from the third round of the National Study of Physician Organizations and used standard Likert scale response categories (ranging from Always to Never on a 5-point scale) for many of the questions. Because low response rates for provider surveys is a well-known challenge, we limited the survey to take about 22 minutes to complete. RTI survey methodologists reviewed the instrument extensively. Following these reviews, four RTI physician researchers field-tested the instruments and provided comments on the wording and length. To allow cross-state analyses, we incorporated only minimal variation in the instrument for the different Test states.

We recruited potential provider respondents via an invitation letter mailed in a regular business-size envelope, and followed up with nonrespondents at least once, and in some states twice, using different methods to test for the best response/cost combination. The letter of invitation included a secure uniform resource locator (URL) and participant identification code. A letter of support from CMS staff, or in some states from a state official, was also enclosed. We offered no financial incentive for survey participation.

We mailed initial participation invitations to potential respondents on a state-by-state basis during the second and third weeks of July 2014. We closed the surveys on October 29, 2014. The absolute number of responses in each state ranged from 65 practices in Minnesota, to just under 100 physicians in the less populous states of Maine and Vermont, to 288 physicians in Oregon. Among the surveys sent, the percentage of respondents who screened out ranged from a low of less than 1 percent in Minnesota (six practices) to a high of 10 percent (112 physicians) in

Vermont. The final response rate (computed using definition #2 of the American Association for Public Opinion Research [AAPOR]) ranged from a low of 4.7 percent in Massachusetts to a high of 9.6 percent in Vermont. **Table 2-2** summarizes the response results.

Table 2-2. SIM Initiative evaluation provider survey responses, Round 1 Test states

	Arkansas	Maine	Massachusetts	Minnesota	Oregon	Vermont
Sample size	3,595	1,638	4,941	737	5,525	1,112
Screened out	88	96	45	6	130	112
Completes	182	96	231	65	288	96
AAPOR response rate #2	5.2%	6.2%	4.7%	8.9%	5.3%	9.6%

AAPOR = American Association for Public Opinion Research.

NOTES: Response rate #2 is calculated as follows: Numerator = Percent of respondents that completed the survey in full or met a threshold considered adequate for partial completion. Denominator = Sample size minus number of people who screened out.

Given the low response rates, the provider survey results must be interpreted with caution, because they are not necessarily representative of providers or practices statewide. In all states, some respondents shared an address with usually one but no more than four other respondents (except in Minnesota, where each respondent represented many providers). Thus, some clustering of responses by physical address existed for all states. As noted above, for Minnesota, we used a list of primary care practices registered with the Minnesota Department of Health, some of which had multiple practice locations. For this reason, respondents to the survey in Minnesota likely included organization-level managers rather than specific physicians. Appendix A provides additional details on the provider survey methods.

2.6 Claims Data Analysis

To estimate the impact of the SIM Initiative on the quality and costs of health care, we are conducting analyses of a range of claims-based measures. In this report, we present the results of statewide trends for Medicaid, commercially insured, and Medicare populations, as well as statewide impact analyses for the commercially insured and Medicare beneficiaries. Results of statewide impact analyses for Medicaid beneficiaries and state-based impact analyses of specific models on target populations will be provided in future annual reports.

In most Round 1 Test states, innovation models are implemented first in Medicaid and certain commercial populations. No Round 1 Test state specifically planned to implement delivery system or payment reform models in Medicare under the SIM Initiative. In fact, it was not until well into the SIM test period (April 2015) that CMS invited states to submit ideas on including Medicare into a state-based reform framework. Nevertheless, patients with *different types of insurance* often receive care from the same providers and health systems. This creates a potential for spillover effects on care received by commercially insured individuals and Medicare

beneficiaries.² Furthermore, many of the enabling strategies (e.g., health IT investment, workforce development) implemented under the SIM Initiative are available to all providers statewide, and thus can potentially enhance the impact of other federal, state, and private sector initiatives within the state. The SIM Initiative was intended to spread and support all health care reform in the Test states. Therefore, to capture these effects, we report claims-based outcomes not only for Medicaid beneficiaries and the commercially insured, but also for Medicare beneficiaries.

Below we provide a brief summary of the populations, data sources, and methods we used for these analyses. *Appendixes B* and *C* provide more detailed specifications of our approach.

2.6.1 Populations

In this report, we present outcome data for Medicaid beneficiaries, the commercially insured individuals in the MarketScan database, and Medicare beneficiaries. Future reports will also include outcomes for commercially insured populations in state all-payer claims databases. Because of incomplete data for certain individuals in the different databases, we had to drop some individuals from the analyses. The data sources and population exclusions from each major payer database are described below.

Medicaid. We used data from the 2010 and 2011 Medicaid Analytic eXtract (MAX) and 2012 Alpha-MAX files available through the CMS Chronic Conditions Data Warehouse (CCW) to calculate outcomes for the Medicaid population in most Test states and comparison groups. The MAX and Alpha-MAX files include a person summary file with all enrollment information and four files with the claims experience for each beneficiary (including inpatient, physician and other services, long-term care, and pharmacy claims). Availability of MAX and Alpha-MAX data files varies by state and year. *Appendix Table C-2* shows the files used for this analysis.

Because MAX and Alpha-MAX data are not available for Maine, we obtained MaineCare data from the state's data vendor, Molina Medicaid Solutions. We used MaineCare data from fourth quarter 2010 through 2013. The data contain demographic and enrollment information, including a monthly indicator of enrollment. The data also include medical and pharmaceutical claims information for all facility and professional services, both inpatient and outpatient.

MAX and Alpha-MAX data are also not available for Massachusetts. We applied for Medicaid claims from Massachusetts but had not received the data in time for this report;

² For a description of potential spillover effects and a summary of evidence of these effects from previous delivery system and payment changes, see <https://www.cms.gov/Research-Statistics-Data-and-Systems/Statistics-Trends-and-Reports/ReportsTrustFunds/downloads/spillovereffects.pdf>.

therefore, we present no analyses of the MassHealth population. In addition, no MAX/Alpha-MAX data were available for Colorado, which is a comparison state for Minnesota and Oregon; and the quality of the Alpha-MAX data for Kentucky, a comparison state for Arkansas, was inadequate. Thus, in this report, comparison groups for Arkansas, Minnesota, and Oregon include only two (instead of three) comparison states.

For each Test state (except Massachusetts) and comparison group, we include all Medicaid enrollees eligible for full benefits; we excluded Medicaid beneficiaries eligible for only a restricted set of benefits, such as family planning program enrollees and undocumented immigrants. We report annual results for the overall population and by eligibility category—infants, children, nondisabled adults, and blind/disabled. Because Medicaid claims present only a partial picture of health care use among Medicare-Medicaid enrollees, we report care coordination, quality of care, and utilization measures for nondually eligible Medicaid enrollees only (referred to as Medicaid-only enrollees³). We do, however, report total Medicaid payments separately for Medicare-Medicaid and Medicaid-only enrollees. In future reports, we will report combined Medicare and Medicaid payments for Medicare-Medicaid beneficiaries.

MarketScan. To represent the commercially insured in this report, we use commercial claims from Truven Health’s MarketScan Research Databases®. These data overrepresent the self-insured market and may not include data for one or more major commercial payers participating in a state’s SIM Initiative. This could result in a finding of no impact among the commercially insured when one truly exists. Nevertheless, MarketScan is the largest and most complete source of timely commercial claims data in the United States, and importantly, it includes comparable claims in a uniform format for both Test and comparison states. In future reports, we will compare the Test state MarketScan estimates with those from the state’s all-payer claims data bases where available, to validate the findings for the commercially insured.

In this report, we use MarketScan data for first quarter 2010 through second quarter 2014 to calculate outcomes. The MarketScan commercial claims are a convenience sample constructed from data contributed by 279 employers and 26 health plans, representing more than 345 unique carriers. Enrollees are covered under plan types that include fee-for-service (FFS), fully and partially capitated plans, and various other plan models (including preferred provider organizations). The MarketScan data do not contain the same benefit design for everyone included in the sample; in particular, drug claims and mental health/substance abuse claims are not submitted or covered for everyone in the sample.

For the care coordination, quality of care, and utilization outcomes, the target commercial population was all individuals in the MarketScan database identified as enrolled in an included

³ Some of the enrollees we refer to as “Medicaid-only” may have some private insurance coverage during the year, either concurrently with their Medicaid coverage or during months they are not enrolled in Medicaid.

commercial plan at any point during the given analysis quarter or year. Because capitated plans may not have complete expenditure data in the MarketScan database, we restrict the sample for expenditure outcomes to commercially insured individuals identified as enrolled at any point during the year in an FFS plan and having no capitated payments in the database.

Approximately 10 percent of the sample was excluded because of capitation payments. We report descriptive results for the overall population and by age group for the MarketScan sample—infant (0–1 year of age), child (2–18 years), and adult (over 18 years). For each year, we used age as of last enrollment month to define an individual’s age group.

Medicare. We used Medicare claims and enrollment data for first quarter 2010 through second quarter 2014 from the CCW. The data include: (1) denominator information that indicates number of beneficiaries alive and enrolled in Medicare during the period; (2) enrollment information that indicates number of days beneficiaries were enrolled in Medicare during the period; and (3) the claims experience for each beneficiary (including inpatient, hospital outpatient, physician, skilled nursing facility, home health agency, hospice, and durable medical equipment claims).

Because Medicare Advantage (i.e., managed care) enrollees may not have complete utilization and expenditure data, we excluded beneficiaries with any months of enrollment in Medicare managed care. We restrict the Medicare sample to beneficiaries who were alive at the beginning of the year, had at least 1 month of both Part A and Part B enrollment, had no months of Part A only or Part B only, and had no months of Medicare managed care enrollment. We report descriptive results for the overall Medicare population and by whether the beneficiaries were Medicare-Medicaid enrollees (who have different health care needs and utilization patterns than Medicare-only beneficiaries). Beneficiaries were designated as Medicare-Medicaid–eligible for the year if they were enrolled in Medicaid for at least 1 month during the year.

2.6.2 Comparison groups

For the statewide impact evaluation, we are using a pre-post comparison group design. In this design, the comparison group provides an estimate of what would have happened in the Test state in the absence of the intervention. The difference in changes from the pretest period to the test period between the Test state and its comparison group provides an estimate of the impact of the SIM Initiative. To the extent possible, we chose comparison groups to be similar to the Test states on all relevant dimensions (e.g., demographic, socioeconomic, political, regulatory, and health and health systems) except for the policy change being tested.

For each Test state, we used a two-stage procedure to identify comparison groups: (1) we identified up to three states that resembled the Test state on key characteristics; and (2) for each payer database (Medicaid, MarketScan, and Medicare), we weighted individuals within the comparison states so the population characteristics of the comparison states were similar to those

in the Test state. For the weights, we computed propensity scores from logistic regression of the probability of residing in the Test state.

Table 2-3 provides the final comparison group states used for the analyses. **Appendix B** provides details of the procedures we used to select the comparison states and compute the person-level weights.

Table 2-3. Comparison states selected for each SIM Test state

	Arkansas	Maine	Massachusetts	Minnesota	Oregon	Vermont
1	Kentucky	New Hampshire	Connecticut	Colorado	Colorado	New Hampshire
2	Alabama	Rhode Island	New Hampshire	Iowa	Washington	Iowa
3	Oklahoma	Connecticut	Rhode Island	Washington	Michigan	Connecticut

Note: SIM = State Innovation Models

2.6.3 Measures

In this report, we use the claims databases to examine four domains of performance: (1) care coordination, (2) quality of care, (3) expenditures, and (4) health care utilization. Because most care coordination and quality-of-care measures require more than one quarter of data, we present these measures on an annual, instead of quarterly, basis. Furthermore, we do not yet have a full year of data for the test period in any of the payer databases. Therefore, we report only baseline care coordination and quality-of-care estimates. We report utilization and expenditure estimates on a quarterly basis. For the commercially insured and Medicare populations, we: (1) report estimates for the first two quarters of the test period in Massachusetts and the first three quarters of the test period in the other five Test states and (2) present statewide DD impact estimates for these early test period quarters. **Table 2-4** lists the measures used for each of these domains, the payer populations and subpopulations for which they are estimated, whether they are presented in descriptive tables of annual average rates or graphs of quarterly rates, and whether DD impact estimates are provided for them. **Appendix C** provides additional details on how we calculated each of the measures.

Care coordination. One of the objectives of the SIM Initiative is to address the shortcomings of historically fragmented delivery systems in the Test states through better care coordination. Whether the state implements a medical or health home, accountable care organization, episode-of-care payment, or another model, the innovation models are expected to include features that improve care coordination for patients. In this report, we investigate the baseline levels and trends in six claims-based measures we will use in future reports to track changes in care coordination over the SIM test period. These measures are shown in Table 2-4. We expect better or improved care coordination in the Test states to produce higher rates of primary care visits at least initially, as well as higher rates of follow-up visits and appropriate medication management.

Table 2-4. Claims-based measures, source data, populations and time periods reported for descriptive analyses, and whether difference-in-differences analyses are reported

Measures	Databases	Populations groups for descriptive analysis	Type of descriptive measure	Difference in Differences
Care Coordination				
Number of visits to a primary care provider (per 100 covered persons)	Medicaid ¹	All non-Medicare & by eligibility category	Annual	No
	MarketScan	All & by age group	Annual	No
	Medicare	All & by Medicaid status	Annual	No
Number of visits to a specialty provider (per 100 covered persons)	Medicaid ¹	All non-Medicare & by eligibility category	Annual	No
	MarketScan	All & by age group	Annual	No
	Medicare	All & by Medicaid status	Annual	No
Percentage of acute inpatient hospital admissions with a follow-up visit within 14 days	Medicaid	All non-Medicare & by eligibility category	Annual	No
	MarketScan	All & by age group	Annual	No
	Medicare	All & by Medicaid status	Annual	No
Percentage of mental illness-related acute inpatient hospital admissions with a mental health follow-up visit within 7 and 30 days	Medicaid	All non-Medicare & by eligibility category	Annual	No
	MarketScan	All & by age group	Annual	No
	Medicare	All & by Medicaid status	Annual	No
Percentage of patients age 5–64 years with persistent asthma who were appropriately prescribed medication during the year	Medicaid	All non-Medicare meeting criteria	Annual	No
	MarketScan	All meeting criteria	Annual	No
Percentage of patients age 18 years and older diagnosed with a new episode of major depression and treated with antidepressant medication who remained on medication treatment at least 12 weeks and 6 months	Medicaid	All non-Medicare meeting criteria	Annual	No
	MarketScan	All meeting criteria	Annual	No
Quality of Care				
Rate (per 1,000 covered persons of hospitalizations based on ambulatory care sensitive conditions defined by AHRQ's Prevention Quality Indicators (PQIs) overall PQI composite acute PQI composite chronic PQI composite	Medicaid ²	All non-Medicare meeting criteria	Annual	No
	MarketScan	All meeting criteria	Annual	No
	Medicare	All meeting criteria	Annual	No

(continued)

Table 2-4. Claims-based measures, source data, populations and time periods reported for descriptive analyses, and whether difference-in-differences analyses are reported (continued)

Measures	Databases	Populations groups for descriptive analysis	Type of descriptive measure	Difference in Differences
Percentage of patients age 1 year and older (18 years and older for Medicare beneficiaries) seen for a visit between October 1 and March 31 who received an influenza immunization during the visit	Medicaid	All non-Medicare & by eligibility category	Annual	No
	MarketScan	All & by age group	Annual	No
	Medicare	All meeting criteria	Annual	No
Percentage of women 41–69 years old who had a mammogram to screen for breast cancer during the measurement year	Medicaid	All non-Medicare meeting criteria	Annual	No
	MarketScan	All meeting criteria	Annual	No
	Medicare	All meeting criteria	Annual	No
Percentage of children age 3- 6 years who have 1 or more well-child visits during the measurement year	Medicaid	All non-Medicare meeting criteria	Annual	No
	MarketScan	All meeting criteria	Annual	No
Well-child visits in the first 15 months of life	Medicaid	All non-Medicare meeting criteria	Annual	No
Percentage of 15-month-olds with no well-child visits	MarketScan	All meeting criteria	Annual	No
Percentage of 15-month-olds with six or more well-child visits				
Percentage of patients age 18 years and older seen for a visit who were screened for tobacco use and who received cessation counseling if identified as user in measurement year	Medicare	All meeting criteria	Annual	No
Initiation and engagement in alcohol and other drug dependence treatment	Medicaid	All non-Medicare meeting criteria	Annual	No
	MarketScan	All meeting criteria	Annual	No
Utilization				
Rate (per 1,000 covered persons) of all-cause acute inpatient hospitalizations	Medicaid	All non-Medicare & by year and eligibility category	Quarterly	No
	MarketScan	All only	Quarterly	Yes
		All & by year and age group	Quarterly	No
	Medicare	All only	Quarterly	Yes
		All & by year and Medicaid status	Quarterly	No

(continued)

Table 2-4. Claims-based measures, source data, populations and time periods reported for descriptive analyses, and whether difference-in-differences analyses are reported (continued)

Measures	Databases	Populations groups for descriptive analysis	Type of descriptive measure	Difference in Differences
Obstetric inpatient admissions (per 1,000 Medicaid beneficiaries)	Medicaid	All non-Medicare meeting criteria	Quarterly	No
Rate (per 1,000 covered persons) of ER visits that did not result in an inpatient hospital admission	Medicaid	All non-Medicare & by year and eligibility category	Quarterly	No
	MarketScan	All only	Quarterly	Yes
	MarketScan	All & by year and age group	Quarterly	No
	Medicare	All only	Quarterly	Yes
		All by year & Medicaid status	Quarterly	No
Rate (per 1,000 discharges) of 30-day readmissions	Medicaid	All non-Medicare only	Quarterly	No
	MarketScan	All only	Quarterly	Yes
	Medicare	All only	Quarterly	Yes
		All by year & Medicaid status	Quarterly	No
Expenditures				
Total payments PMPM	Medicaid	By Medicare enrollment	Quarterly	No
		All non-Medicare & by year and eligibility category	Annual	No
	MarketScan	All only	Quarterly	Yes
		All & by year and age group	Annual	No
	Medicare	All only	Quarterly	Yes
		All & by Medicaid status	Annual	No
Inpatient hospital facility payments PMPM	MarketScan	All only	Quarterly	Yes
		All by year & age group	Annual	No
	Medicare	All only	Quarterly	Yes
		All by year & Medicaid status	Annual	No
Non-inpatient facility payments PMPM	MarketScan	All only	Quarterly	Yes
		All by year & age group	Annual	No
	Medicare	All only	Quarterly	Yes
		All by year & Medicaid status	Annual	No

(continued)

Table 2-4. Claims-based measures, source data, populations and time periods reported for descriptive analyses, and whether difference-in-differences analyses are reported (continued)

Measures	Databases	Populations groups for descriptive analysis	Type of descriptive measure	Difference in Differences
Professional payments PMPM	MarketScan	All only	Quarterly	Yes
		All by year & age group	Annual	No
	Medicare	All only	Quarterly	Yes
		All by year & Medicaid status	Annual	No
Pharmaceutical payments PMPM	MarketScan	All only	Quarterly	Yes
		All by year & age group	Annual	No
FFS payments PMPM	Medicaid	All non-Medicare by year & eligibility category	Annual	No
Capitated payments PMPM	Medicaid	All non-Medicare by year & eligibility category	Annual	No

AHRQ = Agency for Healthcare Research and Quality; DD = difference-in-differences; FFS = fee-for-service; PMPM per member per month.

¹ We were not able to break out evaluation and management visits for primary care and specialists physicians because the specialty filed was missing for a high rate of visits in the MAX files for Arkansas and Minnesota and the comparison group files in Maine and Vermont.

² We were not able to compute PQI indicators for Arkansas and Maine because of the lack of diagnosis-related groups (DRGs) on the Medicaid claims files.

We do not include number of visits to a primary care or specialty provider for Medicaid populations in Arkansas and Minnesota and their respective comparison groups or the comparison group for Maine and Vermont, due to incomplete data on physician specialty in MAX data for these states. We also do not include number of visits to a primary care or specialty provider for the commercial population in Maine because, for the majority of observations in Maine's MarketScan data, provider specialty type was unknown. Furthermore, we do not include the medication management outcomes for Medicare, because we are not using Medicare Part D pharmacy data.

Quality of Care. Improved quality of care is one of the three overarching aims of the SIM Initiative. Measures of quality of care typically show discrepancies between the current standards of care and actual practice. However, the purpose of the quality-of-care measures reported here is not to compare measures for the Test state to a quality benchmark, but rather to compare relative changes over time in the measures between the Test state and its comparison group. We expect the Test states to show more rapid improvement in these measures. The

quality of care measures listed in Table 2-4 are not comprehensive, but together they will reflect general trends in quality of care.

For various reasons, claims-based rates for these measures are often lower than rates reported from survey or electronic health record data. For example, individuals may receive an influenza immunization at work or at a flu shot clinic that would not result in a provider submitting a claim to the insurance provider. Also, physicians may not bill separately for all services provided during a visit—e.g., tobacco screening could be bundled with other services rendered during a physician visit. We do not include tobacco use screening for the Medicaid and commercially insured populations because the number of claims submitted was too low for reliable estimation.

Furthermore, we calculate all rates annually, whereas some services are recommended less frequently. For example, breast cancer screening is recommended every 2 years, so the annual measure is an underrepresentation of the complete breast cancer screening rate. We assume no differential underreporting of claims in the Test state relative to the comparison group. Also, the age range for mammography screening varies by database; we report rates for Medicare and Medicaid beneficiaries ages 41 to 69 years but for the commercially insured ages 41 to 64.

Utilization. As health care system reform strengthens primary care, improves care coordination, and emphasizes healthy behaviors and care management, we expect to see declines in the use of certain expensive health care services, such as emergency room (ER) visits, and hospital admissions and readmissions. We expect to see more rapid declines in these measures in the Test states relative to the comparison groups, thereby indicating a SIM Initiative impact.

For the descriptive analyses in this report, we calculate the utilization measures as rates per 1,000 covered persons (or discharges for readmissions). Inpatient claims are included in a period's total if the admission date on the MarketScan claim or the discharge date on the Medicare or Medicaid claim was during the analysis quarter. For ER visits, we include only those that do not lead to a hospital admission; we expect these outpatient ER visits to be more sensitive to changes in care than the all-cause measure. For the Medicaid population, which is disproportionately composed of women and pregnant teens, we also look at obstetric stays—to determine whether the trends we see in the all-cause measure are driven by changes in birth rates or composition of the Medicaid population.

Expenditures. Another of the three primary aims of the SIM Initiative is to reduce health care costs. Therefore, we also investigate trends in health care expenditures. We define expenditures as payments made by Medicaid, Medicare, or commercial health plans. Enrollee cost-sharing is not included. In the descriptive tables, we calculate weighted average payments per member per month (PMPM). All eligible individuals enrolled in the relevant period are

included in calculating the averages, so the figures also reflect the presence of individuals with zero medical costs. The payments are not risk-adjusted or price-standardized across geographic areas. Payments for inpatient stays are included in a period's total if the discharge date on the Medicare or Medicaid claim or the admission date on the MarketScan claim was during the period.

We dropped all managed care enrollees from the MarketScan and Medicare analysis files to enable us to break out total payments by provider type—inpatient facility, other facility, and professional. In many states, a majority of Medicaid enrollees is enrolled in managed care, and payments are not provided for specific services on encounter claims. Therefore, we break out payments only into FFS and capitation payments.

2.6.4 Sampling and weighting

To conduct appropriate statistical adjustments (e.g., for person-level clustering) in the Medicare population, we randomly sampled observations from each comparison state so that, when combined with the respective Test state, we had a final sample size no larger than 14 million observations. Because Massachusetts itself had over 7 million observations, we had to sample observations from that Test state as well, to maintain the overall number of observations below 14 million. For all other Test states, we included the entire Test state populations meeting the criteria described above.

We weighted the observations in each analysis. Weights were composed of three different components: (1) an eligibility fraction to adjust for partial year enrollment, (2) propensity scores to align the characteristics of the comparison group with the characteristics of the target Test state population, and (3) balancing weights to insure equal contribution from each of the three (or two where necessary) comparison states to the pooled comparison group for each Test state. *Appendix C* provides additional information on how we computed these different components.

2.6.5 Statistical models

In this report, we present results of both descriptive trends and DD analyses. For the descriptive analyses of utilization and expenditures trends in the overall population, we present graphs of quarterly outcomes. Because of seasonal variations in health care use, quarterly data can fluctuate substantially. To mitigate such fluctuation, we use a 12-month moving average for the descriptive quarterly outcomes. Each quarterly data point is a 12-month average, where the last 3 months of the period is the quarter of interest. For care coordination and quality of care measures of the overall population, and for all measures in the subpopulation analyses, we present annual measures based on calendar years.

For Medicare beneficiaries and the commercially insured in the MarketScan database, we use DD methods to test whether the change in utilization and expenditures in the first three

quarters of SIM implementation (first two quarters for Massachusetts) relative to the baseline period was different in each Test state relative to its comparison group. The DD methods estimate the difference in outcomes between Test state residents and comparison individuals during the post-intervention period. The difference in outcomes between the two groups before the intervention began is then subtracted from the post-intervention difference. This approach isolates the SIM impact from any constant differences between the groups. We use weighted ordinary least squares regression models for expenditure outcomes and linear probability models for utilization outcomes. Each model includes individual-level characteristics that may be confounders. *Appendix C* provides details of the analytic methods. *Appendix D* provides the denominators used to calculate the annual utilization and expenditure measures for each payer database.

2.6.6 Interpreting the difference-in-differences findings

The adjusted DD estimate answers the question, “What is the average difference in the pre-post change in the outcome measure between the Test state and its comparison group?”

- A nonsignificant result indicates that, after adjusting for observed covariates, there was no statistically significant difference in the change in the outcome measure in the Test state compared to the change in the comparison group.
- A significant negative value corresponds to one of the following scenarios:
 - a slower rate of increase in the measure in the Test state relative to the comparison group,
 - a faster rate of decline in the measure in the Test state relative to the comparison group, or
 - a decline in the measure in the Test state and an increase in the comparison group.
- A significant positive value corresponds to one of the following scenarios:
 - a faster rate of increase in the measure in the Test state relative to the comparison group,
 - a slower rate of decline in the measure in the Test state relative to the comparison group, or
 - an increase in the measure in the Test state and a decline in comparison group.

For each outcome, a significant negative value is consistent with the expected impact of the SIM initiative. That is, a significant negative value would indicate that residents in the Test state have slower growth or greater decline in utilization and expenditures in the early SIM test period.

3. Cross-State Summary

This chapter provides a cross-state synthesis of the Test states' experience with payment reform, health information technology (health IT) and data infrastructure, workforce development, and population health activities under the SIM Initiative. The chapter also contains a summary of state-reported information on populations reached and payers and providers participating in the SIM Initiative, as well as preliminary results of the statewide claims data analyses. The quantitative outcomes section includes: (1) descriptive analyses of measures of care coordination, quality of care, utilization, and expenditures for Medicaid beneficiaries in a partial baseline period, which varies by state depending on available data; (2) descriptive analyses of care coordination and quality-of-care measures for the commercially insured and Medicare populations in the full baseline period (2010 through 2013); and (3) descriptive and difference-in-difference (DD) regression analyses of changes in utilization and expenditure from the baseline period to the early test period (2 quarters for Massachusetts and 3 quarters for the other five Test states).

3.1 Implementation

The overarching goal shared by the six SIM Initiative Round 1 Test states is to shift the state's health system from encounter-based service delivery to coordinated care, and from volume-based to value-based payment mechanisms. The underlying premise behind these efforts is that better coordinated and more accountable health care leads to higher quality care at lower total cost, and ultimately to improved population health.

Test states are focusing their SIM activities on models that emphasize: (1) primary care practice transformation through patient-centered, coordinated care; and (2) integration of primary care with other health and social services, including behavioral health services and long-term services and supports (LTSS). The Test states are using payment reforms to promote delivery system transformation and a variety of enabling strategies to facilitate and sustain their envisioned health system transformations. The enabling strategies include practice transformation facilitation, workforce development, health IT investment and data analytic capacity building, and stakeholder engagement (including consumer education). In addition, Test states are considering the interplay between their innovation models and statewide population health improvement goals. More information on the Test states' delivery system and payment reform models, enabling strategies, and use of policy levers to support delivery system transformation is included in the *State Innovation Models (SIM) Initiative Evaluation: Model Test Base Year Annual Report* (Gavin et al., 2014).

In this section, we take a closer look at four major components of the Test states' SIM Initiatives: (1) payment reform, (2) health IT and data infrastructure, (3) workforce development, and (4) population health. For each component, we discuss why that component is

important to enable health care delivery reform, the strategies being taken by the Test states, implementation challenges, policy levers states are using to effect change or overcome the challenges, and lessons learned.

3.1.1 Payment reform

Round 1 Test states are implementing new payment models to replace fee-for-service (FFS) payment with value-based payment. By including a component based on provider performance, the new payment methods are designed to incentivize providers to manage the cost and quality of care for a defined population or episode of care, and thereby achieve improved quality of care and better health while lowering costs. Though just one part of overall statewide transformation efforts, new payment models are an integral part of the SIM Initiative in each Round 1 Test state. These payment models are being implemented within the delivery system models tested under the SIM Initiative. These include patient-centered medical homes (PCMHs), health homes for medically complex populations, and accountable care organizations (ACOs)—as well, as for select conditions, retrospective episode-of-care (EOC) and partial capitation payment models applied to various bundles of medical services, behavioral health services, and home and community-based services (HCBS). *Table 3-1* shows the characteristics of the payment models being tested under the SIM Initiative in each Test state, provides a list of policy levers being used to enable or promote the payment model, and indicates whether the model was operational or still in development in first quarter 2015.

Table 3-1. Payment models being investigated in the SIM Initiative Round 1 Test states

Model type	Targeted population	Targeted providers	Payment structure	Category ^a	Policy levers	Implementation progress
Arkansas						
Primary care PCMHs	Medicaid QHPs Commercial Medicare D-SNPs	Primary care	PMPM payments for care coordination and shared savings	Category 3	SPA Medicaid provider manual ^b State law ^c Insurance regulation ^d MIPPA contracts ^e	Operational with 123 PCMHs participating
Health homes for medically complex patients	Medicaid	Behavioral health Developmental disabilities LTSS HCBS	PMPM payments for care coordination	Category 3	SPAs will be needed	In development for I/DD population only; indefinitely delayed for other populations
EOC payment models	Medicaid Commercial	Primary care Specialty care Hospitals	FFS with gain or risk-sharing for all costs associated with an episode	Category 3	SPAs Provider manuals	14 episodes operational; 10 episodes in development

(continued)

Table 3-1. Payment models being investigated in the SIM Initiative Round 1 Test states (continued)

Model type	Targeted population	Targeted providers	Payment structure	Category ^a	Policy levers	Implementation progress
Arkansas (continued)						
Prospective assessment-based payment	Medicaid Enrollees in developmental disabilities HCBS waiver	HCBS	Under evaluation Tiered monthly bundled payments based on functional assessments	Category 3	1915c waiver amendment or SPA will be needed	In development for I/DD HCBS waiver only; assessment-based method will be used to set care plan hours but not rates for aging and physically disabled HCBS
Maine						
Health homes for medically complex patients	Medicaid	Primary care Behavioral health	PMPM payments for care coordination	Category 2	SPA Medicaid regulations ^f	Operational for primary care and behavioral health
Accountable Communities	Medicaid	Primary care Specialty care Behavioral health Developmental disabilities	Shared savings with lead entity: ^g gain-only or gain-and loss-sharing and quality benchmarks	Category 3	SPA	4 accountable communities are operational
Massachusetts						
Primary Care Payment Reform	Medicaid	Primary care	Comprehensive primary care payment, quality incentives, and shared-savings/risk payments	Category 4	1115 waiver State law ^h	Operational; 28 provider organizations are in Year 2 of the 3-year initiative
Accountable care organizations	Medicaid		In development	Category 3	State law ⁱ	In development
Minnesota						
Integrated Health Partnerships	Medicaid	Primary care Specialty care Prevention Integrated health systems	Shared savings with lead entity with gain-only or gain-and loss-sharing relative to total cost of care target, with some shared savings at risk in Years 2 and 3 if quality targets are not met	Category 3	Legislation ^j Contract provisions ^k	16 Integrated Health Partnerships are operational

(continued)

Table 3-1. Payment models being investigated in the SIM Initiative Round 1 Test states (continued)

Model type	Targeted population	Targeted providers	Payment structure	Category ^a	Policy levers	Implementation progress
Oregon						
Coordinated Care Model (CCM)	Medicaid, State Employees, Educators, and members of the qualified health plans	Varies by CCO and state employee plans, but can include Primary care Specialty care Behavioral health Dental care	CCOs are required to implement at least one APM ^l	Category 3 and Category 4	Contract provisions ^m State law ⁿ	16 CCOs with global budgets are operational; APMs within CCOs are in development; state employee plans include CCM elements; educators and QHP members delayed in getting CCM
Vermont						
Blueprint for Health ^o	Medicaid	Primary care	PMPM payments based on NCQA PCMH level Pay for performance under evaluation	Category 2 (with Category 3 under evaluation)	State law	Blueprint and evaluation are operational
Accountable care organizations	Medicaid Commercial Medicare	Primary care	Shared savings payments and fee-for-service payments for ACOs with quality benchmarks	Category 3	1115 waiver SPA	3 SSPs are operational
EOC payment models	Medicaid Commercial	Primary care Specialty care	— ^p	Category 3	EOC Workgroup Ongoing consultation with providers	In development

ACO = accountable care organization; CCO = coordinated care organization; D-SNPs = Dual Eligible Special Needs Plans; EOC = episode of care; FFS = fee-for-service; HCBS = home and community-based services; I/DD = intellectual and developmental disabilities; LTSS = long-term services and supports; NCQA = National Committee for Quality Assurance; PCMH = patient-centered medical home; PMPM = per member per month; QHP = qualified health plan; SPA = state plan amendment.

^a Category of payment progression: (1) FFS with no link to quality, (2) FFS with link to quality; (3) alternative payment models built on FFS architecture; and (4) population-based payment. This framework was presented in supplementary online content for Rajkumar R, Conway PH, Tavenner M (2014). CMS—engaging multiple payers in payment reform. *JAMA* 311(19): 1967–1968. doi:10.1001/jama.2014.3703.

^b Arkansas laid out the rules for Medicaid PCMH participation and payment in its Medicaid provider manual.

^c State law requiring QHPs to pay PMPMs to PCMHs.

^d Insurance regulation implementing the state law referenced above.

^e D-SNPs are required by the Medicare Patient and Provider Improvement Act (MIPPA) to contract with State Medicaid agencies.

^f MaineCare is required to provide support for qualified Health Homes according to Section 91 of MaineCare Benefits Manual, which is based on Section 2703 of the Affordable Care Act.

^g Lead entity shares savings with providers.

(continued)

Table 3-1. Payment models being investigated in the SIM Initiative Round 1 Test states (continued)

^h Chapter 224 directs MassHealth and other public payers to increase the use of APMs.

ⁱ Chapter 224 also directs MassHealth to prioritize and develop standards for “model ACOs.”

^j Legislation passed in 2010 mandated that the Minnesota Department of Human Services develop and implement a demonstration “testing alternative and innovative health care delivery systems, including accountable care organizations.” (Minnesota 2010 Legislative session, 256B.0755).

^k Minnesota’s DHS includes a provision in all Medicaid MCO contracts requiring MCOs to participate in the Integrated Health Partnerships (IHPs) demonstration. Additionally, DHS contracts directly with each IHP.

^l Alternative payment models may include EOCs, bundled payments, shared savings, shared savings with shared (downside) risk, pay-for-performance, payment penalties, and capitation.

^m Oregon required health plans bidding for the Oregon Public Employees Benefit Board to demonstrate how their plan incorporated elements of the coordinated care model.

ⁿ Both the authorizing CCO legislation and 1115 waiver required CCOs to demonstrate their capacity for developing and implementing APMs to use with their contracted providers. See ORS 414.653.

^o The Blueprint for Health operates PCMHs, funded by Medicaid, Medicare, and commercial payers. Vermont is using SIM funds to evaluate pay-for-performance in Medicaid, including possible alignment of incentive payments between PCMHs and the ACO–Shared Savings Program.

^p Vermont spent the first year of VHCIP implementation reviewing EOC payment model options and determined that they are not implementing a payment structure at this time. Instead, SIM funding is supporting the development of clinical and financial data to support provider education. The state is continuing to consult with providers to determine future payment options.

Strategies

Payment reform models are diverse—varying in target populations and providers, payment structure, financial risk to providers, quality metrics, and performance targets. They include per member per month (PMPM) payments for non-visit functions (e.g., care coordination fees); FFS payments with quality incentives (e.g., pay for performance) or shared savings and/or other risk arrangements; prospective and retrospective bundled payments; and full (i.e., global payments), partial (e.g., primary care capitation), or condition-specific capitation, with or without quality pool payments. In general, as listed in footnote *a*, Table 3-1, payment models can be grouped into the following four categories according to the extent to which quality is incorporated (Rajkumar et al., 2014): (1) FFS with no link to quality; (2) FFS with a link to quality; (3) alternative payment models built on an FFS architecture; and (4) population-based payment. The payment models being pursued by the Round 1 Test states range from category 2 through category 4, with the majority in category 3.

In some Test states, Medicaid and commercial payers are making **PMPM care coordination payments to primary care PCMHs and health homes for medically complex individuals**. These payments help defray the costs of care coordination activities and investments in practice transformation needed to achieve and maintain PCMH or health home status. The payments are not at risk, except through requirements for the provider’s continued recognition as a PCMH or health home. Arkansas Medicaid and three self-insured plans in Arkansas are providing PMPM care coordination payments to Medicaid-designated PCMHs, and recent Arkansas Department of Insurance rules require qualified health plans (QHPs) to provide

PMPM care coordination payments to these PCMHs. The care coordination payments are given retrospectively each quarter for each attributed patient, regardless of whether the patient received any care during the month or quarter. In contrast, MaineCare, Maine's Medicaid program, provides PMPM payments to health homes for assigned beneficiaries during the months when care coordination activities take place for a member.

In some Test states, the **PMPM payments to PCMHs and health homes vary based on performance level**, and in other states, **certain PCMHs are eligible for risk-adjusted shared savings**. Vermont's Blueprint for Health pays PCMHs a PMPM payment that varies according to the National Committee for Quality Assurance (NCQA) recognition level met by the practice. In Oregon, most coordinated care organizations (CCOs) are paying PCMHs enhanced, tiered PMPM payments—in which the tiers are delineated by achievement of different standards set by the state's patient-centered primary care home (PCPCH) program. However, a variety of additional alternative payment methodologies are being developed in response to characteristics of the regional delivery systems. Arkansas Medicaid provides PCMHs with 5,000 or more Medicaid beneficiaries risk-adjusted shared savings, if they achieve cost savings and quality improvement. Two private payers in Arkansas anticipate offering shared savings to PCMHs beginning in 2016.

Some Test states are paying or planning to reimburse providers **with partial capitation payments for bundles of services**. Under its Primary Care Payment Reform initiative (PCPRI), MassHealth (Massachusetts Medicaid) provides participating primary care providers a risk-adjusted capitation payment for primary care services. Ten of the 30 participating practices also receive capitation for behavioral health services. Vermont operates a Medicaid-funded Hub and Spoke health home program for individuals with opioid dependence. Hub providers receive a PMPM bundled payment for each patient for whom they can document a treatment and health home (e.g., care coordination) service was provided during the month; spoke providers are paid based on the average monthly number of unique patients for whom Medicaid paid a buprenorphine pharmacy claim. Arkansas is designing a health home model that will include PMPM payments and assessment-based bundled payments to Medicaid HCBS waiver service providers for individuals with developmental disabilities.

Round 1 Test states implementing variations of the **accountable care organization (ACO) model are using a variety of shared savings and shared risk models**. In a typical ACO model, a provider-led organization takes responsibility for the costs of care for a defined population across the delivery system, in return for a global payment with some combination of threshold quality-based targets, quality performance incentive payments, and shared saving or shared risk arrangements. Vermont is operating commercial and Medicaid ACO Shared Savings Programs (SSPs) with participation from three ACOs. Vermont makes shared savings payments with an option to explore downside risk in future contract years. Minnesota's SIM initiative expands Medicaid ACOs under the Integrated Health Partnerships (IHP) demonstration. IHPs

are provider organizations that share financial risk for meeting cost and quality benchmarks, and are eligible to share in savings. In addition to sharing in savings for their FFS population, Minnesota requires its Medicaid managed care organizations (MCOs) to administer shared savings/losses to the IHPs in proportion to the number of IHP-attributed beneficiaries they cover. In the Maine ACO model, known as Accountable Communities (ACs), participating providers are entering into shared savings arrangements with optional shared risk. MaineCare (Maine Medicaid) makes FFS payments for the services delivered by ACs; however, ACs will be eligible for shared savings payments upon meeting quality benchmarks.

Arkansas is the only Test state currently implementing **retrospective EOCs**. Arkansas Medicaid and two major commercial payers in the state currently participate in retrospective EOC models for medical services. While all providers that are part of an episode continue to receive FFS payments under the Arkansas model, the assigned principal accountable provider (PAP) may receive gain-sharing payments or owe risk-sharing payments, based on their documented cost and quality performance at the end of each year-long performance period. Vermont is continuing to explore the viability of EOC payment models, and in 2015 is providing EOC cost and quality data to payers and providers to inform clinical decision-making (but without attached payment incentives or disincentives at this time).

Advanced payment strategies are still in development in many states. Besides the Arkansas health home and Vermont EOC payment models noted above, Oregon and Massachusetts are still developing advanced payment models. Oregon's CCOs must implement at least one advanced payment model—which can include EOCs, bundled payments, shared savings with or without shared risk, pay-for-performance, payment penalties, or capitation. CCOs are implementing these alternative payment models on a pilot basis. Massachusetts is developing an ACO program for its Medicaid beneficiaries.

Policy levers

The Test states are using a range of policy levers to implement payment reforms and promote payer participation, including Medicaid state plan amendments (SPAs) and waivers, state legislation, and contract provisions.

- **Medicaid SPAs.** Three Test states (Arkansas, Maine, and Vermont) have Medicaid SPAs approved or in development to implement payment reform—including EOC payment models, PMPM payments to support PCMHs and health homes, and total cost of care payments for integrated models of care.
- **Medicaid waivers.** Vermont is using a Medicaid 1115 waiver to pursue payment reform under an ACO model. Arkansas is utilizing a 1915(c) home and community-based services waiver to implement prospective bundled payments for individuals with developmental disabilities.

- **State legislation and regulation.** In four of the Test states (Massachusetts, Minnesota, Oregon, and Vermont), SIM Initiative work is, at least partially, directed towards achieving the visions set by preexisting payment reform legislation. Test states have also used regulations to encourage payer participation. For example, in Arkansas, the Insurance Department adopted a rule implementing a state law requiring QHPs to make PMPM payments to PCMHs.
- **Contract provisions.** Test states are also using contractual requirements to encourage payer participation in payment reforms. For example, Minnesota's contracts with the MCOs require the MCO to participate in the shared savings and losses payment methodology for any IHP-assigned beneficiaries they cover. Oregon's contracts with health plans covering its state employee populations require plans to adopt elements of the CCM, including ensuring its members have access to PCPCHs and reporting on quality metrics.

Challenges

All six Test states faced challenges implementing payment reforms—and have adapted their payment reform strategies to respond to issues that include provider fatigue, difficulties reaching stakeholder consensus, political climate, and lack of multi-payer participation (including Medicare). As implementation progresses, states are remaining responsive to stakeholders—making continual updates to the payment models that support their delivery system transformation goals.

Several Test states are facing the challenge of **provider fatigue** from the multiple, concurrent delivery and payment reform initiatives. In response, Test states continue to provide practice support to providers. For example, Vermont delayed further development of a new EOC payment model and is currently offering EOC analytics to providers to support clinical transformation. Massachusetts is working to resolve concerns about obtaining accurate data for performance measurement and is educating providers on data use and performance measure development. Maine is seeking to help health home providers make final quality improvements, as practices draw near to fully achieving Maine's health homes core standards within the required time frame.

A range of interviewees in the Test states reported that **obtaining consensus among the diverse stakeholders** involved in multi-payer payment reforms is an ongoing challenge. In Arkansas, despite collaborative relationships between the state and major private payers, some elements of the state's payment reform under its SIM initiative—EOC payment models for additional conditions and prospective payment models for HCBS services—have been delayed. Implementation of additional retrospective EOCs has been slowed by resistance from some provider groups and a change in administration, as well as the time required for episode development. Opposition from providers concerned about the revenue impact of behavioral prospective payment was a primary factor in the indefinite delay.

Test states are striving to **balance standardization and flexibility** as they expand payment reforms statewide. Minnesota and Oregon have sought balance between maintaining flexibility in payment models demanded by regional variations, on the one hand, while achieving a consistent framework for the programs, on the other. Minnesota is taking steps to ensure small and rural provider organizations have the financial capabilities to participate in the IHPs, and Oregon has elected to allow individual CCOs to determine which APM they will implement. All six Test states have remained responsive to provider and other stakeholder concerns and continue to provide regular opportunities for engagement.

Some states are also facing challenges in **achieving multi-payer participation** in payment reforms. In Massachusetts, none of the six MassHealth MCOs elected to participate in the PCPRI payment model and participation is closed indefinitely. In Arkansas, state officials cite the lack of Medicare participation in payment reform as a major challenge to the success of the Arkansas Health Care Payment Improvement Initiative (APII, the Arkansas SIM Initiative). PCMHs participating in APII but not in Medicare's Comprehensive Primary Care Initiative (CPCI) initiative do not receive PMPM payments for most Medicare patients. In addition to boosting voluntary participation in the APII in 2015, Arkansas has used state law, regulations, and contractual requirements to mandate that QHPs covering Medicaid expansion beneficiaries, as well as Medicare Advantage Dual Eligible Special Needs Plans (D-SNPs) covering Medicare-Medicaid enrollees, participate in payment reforms.

As states test new payment models, **adjustments may be needed**. Maine and Vermont are revisiting the structure and level of PMPM payments to their medical homes and health homes. Maine's Behavioral Health Home Organizations (BHHOs) are concerned that PMPM payments will be insufficient to provide needed care; in response, MaineCare is currently reviewing cost data. Vermont's SIM Initiative is working in coordination with the Blueprint for Health to revisit PMPM payments for PCMHs. Similarly, Massachusetts state officials cited provider concerns—about the financial viability of the PCPRI model and the need for increased provider training on new payment approaches and data use—as a challenge to PCPRI implementation. Vermont's planned Medicaid pay-for-performance reforms have been indefinitely delayed due to across-the-board cuts to state agency budgets.

Conclusion

The Test states are using a range of payment reforms to move their health care systems from FFS to value-based care. The six Test states have faced common challenges garnering provider and other stakeholder buy-in for reforms and promoting multi-payer participation—especially in the context of multiple, ongoing payment and delivery system reforms happening as part of, or complementary to, the SIM Initiative. Lessons learned include the need to:

- (1) continue to promote stakeholder dialogue in development and testing of payment reforms;
- (2) stay responsive to stakeholder concerns;
- (3) use appropriate policy levers—such as state legislation, SPAs, Medicaid Section 1115 Research & Demonstration Projects waivers, and

selective contracting; and (4) make continual updates and adjustments to payment models as needed during implementation.

3.1.2 Health information technology and data infrastructure

Health IT and a robust data infrastructure are central to health delivery system reform. EHRs (electronic health records) improve patient care by supporting access to more comprehensive patient information and clinical supports. The ability of clinicians to efficiently communicate with other treating providers is essential to good care, especially for patients with complex or chronic disorders. Practice-level data analytics enable providers to stratify and better manage their patient populations, identifying gaps in care and anticipating needs. Cost and quality analytics that illustrate provider performance in relation to peers or established benchmarks reinforce quality improvement initiatives. Finally, a strong data infrastructure is critical for state health policymakers and other payers—enabling systematic identification of areas for improvement, evaluating success, and supporting shared savings and other payment reform strategies.

Thus, health IT and data infrastructure capacity building are key components of the Round 1 Test states' SIM Initiatives. **Table 3-2** summarizes the strategies and policy levers the Test states are using.

Table 3-2. Health information technology and data infrastructure strategies and policy levers among Round 1 SIM Test states

	Strategies	Policy levers
Arkansas	<ul style="list-style-type: none"> • Develop Medicaid EOC generator • Use BCBS AHIN portal for providers to access uniform reports on cost and quality • Use state's HIE (SHARE) to send ER and ADT information to Medicaid PCMH providers • Build an APCD 	<ul style="list-style-type: none"> • PCMH requirement to document acquisition of an EHR
Maine	<ul style="list-style-type: none"> • Connect behavioral health providers to the statewide HIE, HealthInfoNet • Provide ER and ADT notification to MaineCare care managers through HealthInfoNet • Pilot patient access to medical records through Blue Button project • Develop uniform measures and reporting across payers • Provide MaineCare with an analytics dashboard 	<ul style="list-style-type: none"> • Financial support to behavioral health organizations to improve their EHR technology and establish access to the statewide HIE •

(continued)

Table 3-2. Health information technology and data infrastructure strategies and policy levers among Round 1 SIM Test states (continued)

	Strategies	Policy levers
Massachusetts	<ul style="list-style-type: none"> • Implement and spread E-Referral, an electronic bidirectional referral system between clinical settings and community-based organizations (CBOs) • Implement and spread Community Links, a portal for medical providers allowing them to access patients' home care records • Create Community Connect, a portal for caregivers and beneficiaries to access home care records • Develop and implement Section Q electronic referral system that facilitates referrals from skilled nursing facilities to CBOs • Streamline the adult AFC/GAFC determination process to allow electronic submission of documentation and requests for determinations 	<ul style="list-style-type: none"> • Chapter 224 mandate that all providers have EHRs by 2017 • eQIP grants to behavioral health and long-term and post-acute care providers to adopt EHR and participate in the Hlway
Minnesota	<ul style="list-style-type: none"> • Increase EHR and HIE use among providers in ACOs and the broader community • Create eHealth Roadmap to increase adoption by behavioral health, local public health, long-term and post-acute care, and social services providers • Analyze privacy, security, and consent management and develop consent management tools • Align data and incentives across payers • Provide quarterly reports to IHPs on utilization, care coordination, quality of care, and costs of Medicaid population 	<ul style="list-style-type: none"> • eHealth grants to increase adoption and use of EHRs and HIE among behavioral health, local public health, long-term and post-acute care, and social services providers in an IHP or other accountable care-like model • Minnesota Health Care Cost Containment Act of 2007, §62J.495, mandating hospitals and healthcare providers to have EHRs in place by 2015 • RFP for vendors to help providers navigate privacy, security, and HIE issues • RFP for vendors to provide IHPs technical assistance in using data to identify cost and quality improvement opportunities
Oregon	<ul style="list-style-type: none"> • Implement EDIE, an electronic system that allows ERs to see patients' past ER records • Implement PreManage, an electronic system that allows CCOs, health plans, and provider groups to upload data to EDIE on a subscription basis • Implement CareAccord, an HIE system that provides a secure messaging platform • Align measures across payers 	<ul style="list-style-type: none"> • HB2294, enacted in June 2015, establishing and funding Oregon HIT program

(continued)

Table 3-2. Health information technology and data infrastructure strategies and policy levers among Round 1 SIM Test states (continued)

	Strategies	Policy levers
Vermont	<ul style="list-style-type: none"> • Develop Event Notification System for sharing ADT data • Improve quality of data reported by ACO providers • Support adoption of EHRs by providers not participating in federal MU EHR incentive programs • Develop a uniform transfer protocol for patients' medical information • Explore telehealth initiatives • Develop a comprehensive statewide health IT plan 	<ul style="list-style-type: none"> • Consumer consent policy allowing one-time opt-in for sharing data with all participation providers • Guidance set forth by state health information technology plan

ACO = accountable care organization; ADT = admission, discharge, and transfer; AFC/GAFC = Adult Foster Care / Group Adult Foster Care; AHIN = Advanced Health Information Network; APCD = all-payer claims database; BCBS = Blue Cross Blue Shield; CBO = community-based organization; CCO = coordinated care organization; EDIE = Emergency Department Information Exchange; EHR = electronic health record; EOC = episode of care; ER = emergency room; HIE = health information exchange; MU = meaningful use; PCMH = patient-centered medical home.

Strategies

The Round 1 Test states are strengthening their health IT and data infrastructure capacity using five primary strategies: (1) engaging and supporting providers that have not typically been connected to health IT, (2) requiring participating providers to report on data and/or implement health IT, (3) making available patient-level health information to providers and systems to improve care coordination, (4) improving data analytics to support quality improvement and payment reform, and (5) aligning metrics and data infrastructure across payers and initiatives.

Test states are **engaging and connecting providers who have previously been left out of health IT initiatives**—including providers of behavioral health services, LTSS, and community services. To do so, states are using two primary strategies: (1) direct grant funding to organizations for health IT development, and (2) development of health IT capacity and resources that can be used by these providers via web portals or other means. Minnesota, Massachusetts, and Maine have made grant funding available to behavioral health, LTSS, and/or community-based providers to enable these organizations to enhance their EHR capacity and connect to their state health information exchange (HIE). Oregon, Massachusetts, and Minnesota have developed tools and resources to support connectivity among providers. Oregon is bolstering the secure messaging platform connected to its HIE—CareAccord—which will allow providers (even those without an EHR) to share care transition plans and other information. Massachusetts has funded technology to streamline connections between practice- or hospital-based providers and community-based organizations—such as eReferral (linking

primary care providers to community social services and supports), Community Links (linking hospital discharge planners and primary care providers to patients' home care records), and Section Q referrals (linking skilled nursing facilities to support services for patients transitioning to the community). Minnesota is funding development of an eHealth Roadmap to support previously unconnected providers in health IT adoption and use.

The majority of Test states are **making patient-level health information available to providers and health systems**. Access to ER and admission, discharge, and transfer (ADT) data to improve care coordination is a clear priority among the Test states. Arkansas is using its HIE system—the State Health Alliance for Records Exchange (SHARE)—to send ER and hospital discharge information to its PCMH providers. Providers are also able to access test results, diagnoses, and discharge summaries if they have configured their SHARE connections to do so. Vermont is working on a uniform transfer protocol, which will allow a minimum data set to be electronically transferred to a new provider when a patient is discharged or transferred. Vermont Information Technology Leaders (VITL)—the state's entity for developing and operating the HIE system—is able to push out real-time ADT information to providers. Maine is working on a similar technology for Medicaid enrollees through its HIE, HealthInfoNet. Oregon's Emergency Department Information Exchange (EDIE) allows ER providers to see previous ER use to identify frequent utilizers; the state is also rolling out PreManage, which will enable plans, CCOs, and others to access a common ER notification technology.

In addition to improving ER and ADT data exchange, Test states are implementing other information exchange strategies—including **telehealth** (Vermont and Oregon are both expanding the use of telehealth technology as a part of their SIM Initiatives); and **specialized web portals** (Massachusetts, as mentioned, has a number of applications; Maine and Massachusetts have developed patient and/or caregiver portals as well).

Test states are also using SIM funds to **enhance their data infrastructure and data analytics capacity** in support of quality improvement and payment reform initiatives. Minnesota, Arkansas, Oregon, and Maine have all developed comprehensive, provider-specific quality reports. In Minnesota these reports include information on coordination of care, cost utilization, and other metrics. Arkansas releases benchmarking reports annually as part of its EOC payment reform initiative. Oregon and Maine have both developed comparative data reports. Oregon publishes comparative reports on its CCOs and has created a multipayer dashboard using its All-Payer All-Claims (APAC) data. Maine uses reports as a tool for quality improvement at the practice level, and reports some measures publicly. Maine's HealthInfoNet is also developing a clinical dashboard that will include predictive risk scores for Medicaid enrollees. Vermont has contracted with VITL on work to improve the data submitted by ACOs as part of the state's SSP.

Test states are taking various approaches to **better align data and incentives across payers**. Minnesota has established a new workgroup that seeks to align data elements on health status/risk level, total expenditures, and utilization across the reports payers distribute to providers in ACOs, to make them more usable. Arkansas has designed its Advanced Health Information Network portal so providers can view uniform reports across payers. Maine has established practice reports that include multiple payers and uniform measures. Oregon and Maine have dedicated resources to align measures across payers; both states are working to better align measures across Medicaid, state employee health plans, and other payers.

Policy levers

The policy levers the Round 1 Test states are using to enable and promote health IT adoption include provider participation requirements, direct financial support, and facilitation of privacy and confidentiality requirements.

- **Provider participation requirements.** Most Test states mandate that providers participate in data reporting and health IT. Minnesota, Arkansas, Vermont, and Massachusetts all require providers and systems participating in reform models in their state's SIM Initiative to report on identified metrics. A Minnesota statute requires all Medicaid participating hospitals and health care providers to have an interoperable EHR system within their hospital or clinical practice setting by 2015 (Minnesota Health Care Cost Containment Act of 2007, §62J.495). Providers participating in Maine's Health Home Practices are required to fully implement an EHR (Section 91, MaineCare Benefits Manual, Health Home Services).
- **Financial support.** Direct funding of health IT initiatives is an important policy lever enabling providers to meet the EHR adoption and data reporting requirements, particularly those providers that have little access to health IT resources. As noted, Minnesota, Massachusetts, and Maine have made grant funding available to behavioral health, LTSS, and/or community-based providers to enable these organizations to enhance their EHR capacity and connect to their state HIE.
- **Privacy and confidentiality requirements.** Some Test states are facilitating their data sharing consent policies. Vermont has updated its consent policy to include a global opt-in that allows individuals to consent at a single time for sharing their medical records among all participating providers. Maine has developed educational tools for behavioral health organizations, to help them understand the opt-in framework under Maine's 2011 state law. Minnesota is developing roadmaps and analysis of privacy, security, and consent policies to help provider organizations understand how to facilitate electronic exchange of information.

Challenges

Test states and stakeholders note challenges in implementing their health IT and data-related initiatives in the following areas: (1) confidentiality, (2) technical or work flow issues in accessing or using data, (3) data validity and completeness, and (4) provider burden.

Confidentiality and privacy barriers regarding mental health and substance use disorders, whether real or perceived, remain a significant challenge. State representatives or other stakeholders in Massachusetts, Vermont, and Maine all cited lack of access to behavioral health data as a barrier, often a significant one. Minnesota’s restrictive privacy and security laws have been cited as the biggest challenge to HIE implementation in that state. Access to substance use disorder information, regulated by federal law (42 CFR Part 2), was noted as a particular barrier indicating the need for additional federal guidance in this area. Provider misperceptions can also impede appropriate information flow. Informants in Oregon, for example, noted that even with consent, providers can still be hesitant to share sensitive health information. Stigma and discrimination were also raised as a concern, in that they lead to legal restrictions. Legislation was proposed in Minnesota (though not passed) to impose even more granular consent requirements on sharing behavioral health information. To address these concerns, states have engaged stakeholders, including providers and advocacy groups, to promote education about current privacy requirements and develop strategies to facilitate appropriate data collection and sharing.

Challenges **incorporating health IT innovations into provider workflow** were noted in several states. Stakeholders in Massachusetts expressed concern about their ability to engage providers to use the Community Links portal. Oregon’s direct messaging technology has seen little uptake by providers, many of whom already have a preferred internal secure messaging system. Some Oregon providers reported that they continue to receive ER notifications via fax, making it less likely that the information will be incorporated into the patient record and utilized for care coordination. In Maine, providers have difficulty using available data to determine eligibility for key programs, such as the state’s health home services. Responses to the provider survey in all Test states show a significant disparity in the percentage of providers who reported having EHRs and the percentage who reported using them to share data or connect to an HIE.⁴ Massachusetts, Minnesota, and Vermont have connected providers to resources to address these issues via learning collaboratives.

With the growing use of data and quality metrics tied to payment, stakeholders in several Test states expressed concerns about **data validity and completeness**. State officials and stakeholders in Massachusetts, for example, noted that concerns about data validity limited provider and plan participation in its PCPRI. Stakeholders in Oregon and Arkansas called attention to deficiencies in behavioral health data reporting—in Oregon describing behavioral health integration measures as “insufficient,” and in Arkansas noting that lack of patient-specific behavioral health data inhibits the ability of providers to appropriately treat patients. Providers in Minnesota had concerns about measurement analytics—including risk adjustment, population size, and how these measures are applied to different types of providers and settings. State

⁴ Results from the provider survey reported in *State Innovation Models (SIM) Initiative Evaluation: Quarterly Report for Fourth Quarter (October- December) 2014* (Gavin et al., 2015a).

officials in Maine noted that a delay in ACO implementation allowed them to refine data, giving ACO participants better confidence in data validity. Looking ahead, Vermont has directed some of its SIM resources to the ACO Gap Analysis and Remediation project, to improve the data the state receives from participating ACOs.

States and stakeholders cited **provider burden and other technical issues** as challenges in reporting, accessing, and using data for care management and quality improvement. Primary care providers in Massachusetts cited the heavy reporting burden associated with the PCPRI program. In Vermont, health IT interoperability and lack of capacity are major issues; 30 different EHR vendors create significant onboarding challenges for HIE adoption, while lack of health IT capacity increases the reporting burden for those providers who remain unable to report data through an EHR. Providers in Oregon expressed related frustrations with the lack of interoperability and time burden.

Conclusion

Delivery system transformation requires timely, accurate, and usable data at the provider, system, and state policymaker levels. Round 1 Test state activity in this area reflects a multi-level approach—including addressing confidentiality in the transfer of information from provider to provider; pushing out key clinical data in a timely and usable way; creating actionable provider and systems reports, preferably in a format that aligns with other payers; and developing credible data analytics to inform state quality improvement and payment reform initiatives. Key challenges include access to and sharing of behavioral health and substance use data; alignment with provider needs, resources, and workflow; and ensuring that states and stakeholders have confidence in the data being used.

3.1.3 Workforce development

The state-led health delivery system transformation supported by the SIM Initiative requires new clinical workflows and professional roles in health care, most notably in primary care practice transformation and care coordination. Workforce development efforts are therefore important in underpinning the success of these measures. **Table 3-3** summarizes the strategies and policy levers Round 1 Test states are using to develop the health care workforce to meet the health care transformation demands.

Table 3-3. Workforce development strategies and policy levers among Round 1 Test states

	Strategies	Policy levers
Arkansas	<ul style="list-style-type: none"> Information, technical assistance, and peer support for practice transformation 	<ul style="list-style-type: none"> Practice transformation support services funding
Maine	<ul style="list-style-type: none"> Host learning collaboratives for Stage A and Stage B health home providers Integrate a physical health component into the mental health rehabilitation curriculum Pilot a project to integrate community health workers (CHWs) Provide physician training on change management and change leadership 	
Massachusetts	<ul style="list-style-type: none"> Support hiring of care managers, care coordinators, and CHWs in PCPRI practices Support the Massachusetts Child Psychiatry Access Project to deliver child psychiatry consultation services via telephone to pediatricians Enable primary care providers to access patients home care records through Community Links 	
Minnesota	<ul style="list-style-type: none"> Accelerate the development and engagement of emerging professions 	<ul style="list-style-type: none"> Grants to providers for integrating emerging professions Grants for practice transformation RFPs issued for development of emerging professions toolkits Authorization of Medicaid reimbursement for services provided by emerging professions Grants to develop learning communities to support provider transformation
Oregon	<ul style="list-style-type: none"> Provide practice transformation assistance through the Transformation Center, including peer-to-peer learning collaboratives and supporting the Patient Centered Primary Care Institute, which provides among other things technical assistance to primary care practices Investigate filling care coordination workforce gap with traditional health workers (e.g., CHWs, peer support, navigators, doulas) Support establishment of a Health Care Interpreters Learning Collaborative 	<ul style="list-style-type: none"> Administrative rules for certification of traditional health workers

(continued)

Table 3-3. Workforce development strategies and policy levers among Round 1 Test states (continued)

	Strategies	Policy levers
Vermont	<ul style="list-style-type: none"> • Develop a micro-simulation demand model for predicting future workforce needs • Hold a statewide workforce symposium • Pilot the Integrated Communities Care Management Learning Collaboratives 	

CHW = community health worker; PCMH = patient-centered medical home; PCPRI = Primary Care Payment Reform initiative.

Strategies

Round 1 Test states' approaches to workforce development as part of the SIM Initiative generally fall into two main categories: (1) efforts to aid primary care practices in realizing delivery system transformation and payment reforms; and (2) efforts to train, credential, finance, or otherwise integrate new types of health professionals into primary care practice, to take on care coordination functions or other emerging roles not necessarily requiring advanced clinical training.

Test states are offering **practice transformation assistance** directly to individual practices and through learning collaboratives—support that providers overwhelmingly appreciate. Uptake of transformation support in Arkansas was so extensive, for example, that the state had to contract with a second vendor to meet demand for these services. Transformation support has also been positively received in Maine, Oregon, and Vermont. Practice transformation support generally takes the form of assistance to practices in meeting the varying state requirements for becoming a PCMH (Arkansas, Maine, Oregon). But such support has also been directed at facilitating alternative payment methodologies (Oregon) and EOCs (Arkansas), and at enabling quality improvement measures by helping practices understand how to read quality metric reports and utilize them to identify improvement opportunities (Minnesota, Maine).

In addition to individualized practice support, most Test states are offering some form of **learning collaboratives**. In Oregon, the Transformation Center has facilitated numerous peer-to-peer learning opportunities, including the Complex Care Learning Collaborative. Oregon is also using SIM funds to establish a Health Care Interpreter Learning Collaborative through the Oregon Health Authority's Office of Equity and Inclusion, to support the training and use of qualified and certified interpreters. Vermont piloted an Integrated Community Care Management Learning Collaborative to help providers better care for at-risk populations. Maine supports learning collaboratives for Stage A and Stage B health homes; these collaboratives use webinars, newsletters, and in-person meetings help providers learn ways to improve care. Minnesota awarded grants for learning communities that will focus on specific health transformation topics; the state is also just beginning a Storytelling Engagement Project, to build

awareness of and support for health system transformation by highlighting the positive impact the SIM Initiative has had on communities.

States are also using SIM funds to conduct **research on current and future workforce needs**. Vermont is developing a micro-simulation demand model that would enable the state to predict future workforce needs and make modifications as needed to higher education and loan repayment policy. Vermont also convened a statewide Workforce Symposium for a diverse group of stakeholders, to discuss changes in supply and demand arising from ongoing payment and delivery system reforms, as well as options for reengineering the workforce to meet the demand. Oregon is investing in a consultant to research sustainability and return on investment—in connection with emerging non-traditional health professionals, such as community health workers (CHWs), to fill the care coordination workforce gap.

Test states are promoting the use of **emerging professions in clinical care settings** through a variety of strategies. The PCPRI in Massachusetts is helping fund the hiring of care managers, care coordinators, and CHWs in participating practices. Maine is piloting a program in four sites to integrate CHWs into PCMHs, health homes, and other care delivery sites. The CHWs at these sites have been primarily used to reach out to behavioral health patients who have missed recommended cancer screenings. Minnesota has awarded nine provider-led “emerging professions” grants specifically targeted at developing and supporting the integration into provider practices across the state of three emerging professions: CHWs, community paramedics, and dental therapists.

Policy levers

The main policy levers the Round 1 Test states are using to support workforce development plans under the SIM Initiative include financial support to practices and Medicaid coverage policy.

- **Financial support.** Arkansas Medicaid offers PCMH practices a set number of hours of practice transformation support services with a contracted vendor free of charge through the end of 2015. Through its Emerging Professions Integration grants program, Minnesota is issuing three rounds of grant funding to support the integration of CHWs, community paramedics, and dental therapists into provider organizations across the state.
- **Medicaid Coverage policy.** To engage the new emerging professions, practices need to be compensated for the services they provide. PMPM care coordination fees cover some of these services. Other services may not be covered unless a traditional health professional provides the service. State legislation in Minnesota authorizes Medicaid reimbursement for the three emerging professions being supported under its SIM Initiative. One Minnesota grantee hopes to demonstrate return on investment in these professions in the hope of interesting commercial payers in also covering its services.

Challenges

The newness of emerging roles such as CHWs presents many challenges. New workforce types take time and energy to integrate into existing workflows. Minnesota's experience has shown that Medicaid payment is necessary but not sufficient to ensure successful integration. The state has experienced **resistance from traditional providers** unfamiliar with or threatened by the new health professionals. These providers see the new professions as competing with rather than complementing their roles. In Oregon, some providers have expressed their wariness of the potential for CHWs to overstep their scope of work vis-à-vis more highly trained professionals. This points to the need to engage additional established providers in efforts to integrate and develop these emerging roles.

Commercial payers are moving slowly in terms of **reimbursement for care coordination activities**. Without a source of funding for these services, sustainability of the innovation models is at risk. Some providers and state officials expressed concern that workforce development support may be discontinued when SIM funding ends.

Credentials for CHWs and other emerging professions are not yet uniformly agreed upon within or between states. Maine is weighing the advantages and disadvantages of formal certification for CHWs.

Conclusion

SIM-funded efforts are helping to lay the groundwork and infrastructure necessary for the development and success of new professional roles around care coordination. While individual practices must engage in the hard work of transformation to achieve improved patient care, state SIM Initiatives are providing the structure, incentives, tools, and training necessary to help practices be successful. States are responding to challenges related to CHWs through: (1) practice transformation support to integrate CHWs into existing workflows and (2) training efforts for these emerging professionals (including necessary updates to credentialing standards and reimbursement rules).

3.1.4 Population health

Most of the Round 1 Test states have an established history of working on population health issues, recently fostered by two national programs—the Public Health Accreditation Board (PHAB), a voluntary national accreditation program for public health departments; and the National Public Health Improvement Initiative (NPHII), a Centers for Disease Control and Prevention (CDC) grant program to support improvements in public health infrastructure and delivery of public health services and programs, as specified in the Affordable Care Act (ACA). These programs were launched in 2010 and 2011, respectively. Through this work, many states made advances in development of a State Health Improvement Plan or Program (SHIP) to assess population-wide health goals and needs and strategies to address them.

In Year 2, CMS and states placed greater focus on how population health–specific initiatives were being integrated into the states’ SIM Initiative. The Innovation Center, supported by CDC experts, worked with states on shaping population health plans to serve as a roadmap for this work. The Innovation Center also identified recommended priority areas for SIM-related population health work, including obesity, tobacco, and cardiovascular disease.

Arkansas, Maine, and Oregon explicitly tied their SIM-supported population health work to SHIP. Oregon leveraged SIM Initiative funds to support staff related to their SHIP. Under the SIM Initiative, Maine and Arkansas are adding new target health priorities, such as diabetes and hypertension, to their states’ SHIPs. Arkansas is also focusing on substance abuse, breastfeeding, and health literacy. **Table 3-4** summarizes the Round 1 Test states’ SIM-related population health strategies and policy levers.

Table 3-4. Population health strategies and policy levers

	Strategies	Policy levers
Arkansas	<ul style="list-style-type: none"> Build on strategies in Arkansas Department of Health (ADH) State Health Improvement Plan (SHIP) 	
Maine	<ul style="list-style-type: none"> Test the Accountable Communities (ACs) model Implement the National Diabetes Prevention Program (NDPP) across the state Add diabetes to the health priorities in Maine’s SHIP 	<ul style="list-style-type: none"> Requirement for ACs to coordinate with at least one public health entity in the service area
Massachusetts	<ul style="list-style-type: none"> Use e-Referral to encourage greater use of preventive care and adoption of healthy behaviors Expand MDPHnet, an electronic disease surveillance system 	<ul style="list-style-type: none"> State Department of Public Health requirement that all Prevention and Wellness Trust Fund grantees implement e-referral
Minnesota	<ul style="list-style-type: none"> Establish Accountable Communities for Health (ACHs) that integrate social service and clinical sectors for specific populations Promote HIE and EHR use by ACH participating providers 	<ul style="list-style-type: none"> Requirement for ACHs to develop population health improvement plans Learning community grant specifically to support ACH grantees in implementing their proposed initiatives and facilitate peer-to-peer sharing of best practices eHealth grants to increase adoption and use of EHRs and HIE among behavioral health, local public health, long-term and post-acute care, and social services providers in an IHP, ACH, or other accountable care-like model

(continued)

Table 3-4. Population health strategies and policy levers (continued)

	Strategies	Policy levers
Oregon	<ul style="list-style-type: none"> • Support staff for development of SHIP • Fund a round of the Behavioral Risk Factor Surveillance System survey among Medicaid beneficiaries • Develop a public health assessment tool • Integrate CCOS with community health agencies 	<ul style="list-style-type: none"> • Grants to foster partnerships between CCOs and local public health departments • Public health metric included among the CCO incentive metrics • Requirement for CCOs to develop a CHIP • Requirement for CCOs to form a Community Advisory Council to advise on assessment of community health needs and the CHIP
Vermont	<ul style="list-style-type: none"> • Explore the potential of Accountable Communities for Health • Analyze data on health trends and burden of illness to identify priorities 	<ul style="list-style-type: none"> • Inclusion of population health quality measures in required ACO reporting set

AC = Accountable Communities; ACHs = Accountable Communities for Health; ADH = Arkansas Department of Health; CCO = coordinated care organization; CHIP = Community Health Improvement Plan; MDPHnet = Mass Department of Public Health net; NDPP = National Diabetes Prevention Program; SHIP = State Health Improvement Plan.

Strategies

The Round 1 Test states' population health strategies include initiatives that: (1) tie population health to payment and delivery system reforms (required for their population health plans), (2) enhance use of data to address population health, and (3) increase integration of health care with community-based services to address social determinants of population health.

Some Test states are testing or investigating a new delivery system model, “accountable communities,” that **extend the integrated care models beyond the traditional medical delivery system to include community and social services**. Examples of these models are Maine’s ACs, Minnesota’s ACHs, and Oregon’s CCOs. Maine’s ACs have relationships or policies to coordinate with at least one public health entity and developmental disability provider (where one exists in the service area). Minnesota has a requirement for all ACHs to conduct a community needs assessment, on which they must base at least one population health improvement project to address the community needs identified. Oregon’s CCOs must develop a Community Health Improvement Plan, which will be supported by the state’s development of a public health assessment tool, and by community prevention grants to foster partnership between its CCOs and local public health departments. Through such work, these newly evolving care models will serve as hubs. The intent is to use these hubs to focus on specific populations or needs of a community, while simultaneously serving the states in identifying specific areas of common need—and, in the future, effective strategies for addressing the population issues that may be leveraged to foster statewide health improvements.

Some Test states have focused their population health strategies on **better monitoring population health metrics, specifically chronic disease measures**, to better understand patterns or trends in population health and target areas of high need. Oregon used some of its SIM award to fund a round of CDC’s Behavioral Risk Factor Surveillance System (BRFSS) focused on Medicaid enrollees. Massachusetts is expanding its state-level disease surveillance system, MDPHnet, which uses data from provider EHRs.

Some states are investigating how to **use population health metrics in their payment reform initiatives**, with the aim of tying payments to population health outcomes. For example, Vermont requires reporting on diabetes and obesity for its Shared Savings Program and Blueprint for Health participants. Oregon includes public health metrics among the CCO incentive metrics.

Other Test states are encouraging the **exchange of data across providers and organizations to address population health needs**. Through enhanced tracking of patients across care and community settings, states aim to better reach target populations and connect them with health and social services resources. For example, Minnesota’s eHealth grantees are encouraged to exchange data on diabetes, obesity, and tobacco use. Massachusetts envisions its e-Referral program, as a way to provide more robust prevention and wellness services to individuals, by fostering connections between traditional medical settings and community resources.

Perhaps uniquely among the SIM Round 1 Model Test states, Minnesota is gathering and publicizing examples of health care improvement in its Storytelling Engagement Project. In contrast to a learning collaborative format, this effort aims to transfer knowledge about examples of health care transformation and individual or population health improvement activities through different media, and to a broad public audience

Policy levers

The Round 1 Test states are using the following policy levers to support the integration of population health goals and initiatives:

- **Requirements tied to delivery system reform models.** These requirements include partnerships with public health departments, the conduct of population health needs assessments, and the development of population health improvement plans. Integrated care models in Maine, Minnesota, and Oregon all have one or more of these requirements.
- **Incentive metrics in payment models.** Oregon currently uses public health metrics as part of CCOs’ incentive metrics. Vermont uses population health metrics in its incentives for the SSP and Blueprint for Health.

- **Public health needs assessment tools.** To help CCOs develop a community health improvement plan, Oregon used SIM funds to prepare a public health needs assessment tool.
- **Grants.** Oregon also offers grants to foster partnerships between CCOs and local public health departments. These grants target a range of different prevention activities—including opiate overdose prevention, pregnancy screening and prenatal care, developmental screenings, and tobacco use prevention.

Challenges

Before identifying and developing initiatives for their eventual population health plans, each state considered **how to define population health and the specific goals** that should be addressed through its population health work. This proved challenging across the Test states, as they sought to achieve consensus across the Innovation Center, CDC, and their own state agencies and stakeholders. One common area of contention, as noted, was the breadth of issues that should be encompassed in a population health plan. Underlying these discussions was concern about the impact a set definition or goal might have on the role of different agencies in relation to a state’s population health work. States continue to work across relevant agencies and stakeholders to develop consensus around a unified population health plan and definition.

Relatedly, the Test states experienced challenges **identifying measurable population health outcomes**. One challenge was lack of adequate available data and the infrastructure needed to cull data to measure relevant outcomes. States seeking to tie population health outcomes to payment reform strategies experienced difficulties in defining appropriate and measurable outcomes. Oregon considered inclusion of a tobacco-related metric as part of its CCOs’ incentive payment model, for example, but ultimately determined that such a metric would hold CCOs accountable for behaviors beyond their control.

Test states vary in their progress toward identifying clear population health strategies for inclusion in a comprehensive SIM population health plan—with some difficulties stemming from the need to **tie population health more explicitly into work already under way**. While certain SIM Initiative activities have clear connections to population health outcomes, state officials found it difficult to link other elements of their SIM models explicitly to population health goals. States also identified challenges with: (1) aligning population health aims for their work under the SIM Initiative with existing population health work, and (2) balancing the desire to achieve outcomes identified for the SIM Initiative while also integrating population health initiatives ongoing in the state. Resources provided by the Innovation Center and CDC to help states with developing a framework for their population health plans have been beneficial in promoting progress.

Because of the crosscutting nature of population health issues, a population health focus within the context of the SIM Initiative promoted **additional or renewed engagement across**

agencies and stakeholders. Arkansas' Medicaid agency has newly engaged with the state's department of public health to develop the agency's population health work. Vermont has formed a Population Health Work Group that includes representatives from providers; insurers; consumer and advocacy groups; universities; and the multiple state agencies tasked with proposing measure sets, payment options, and other strategies for integration of population health into delivery systems and communities. Hurdles to furthering productive engagement arose because of the competing interests of the various groups involved. Examples include debates over priority areas of focus (e.g., specific chronic diseases; upstream needs, such as housing), and divisions over the definitions of population health already noted. Also pervasive were frustrations across groups because of time and labor constraints in developing and implementing population health strategies, and restrictions enforced by current infrastructure and policy limitations (such as insufficient technology to support data collection and reporting).

Conclusion

Although all six Test states have existing population health efforts to build on, many of the specific activities in relation to their SIM funding are freshly under way. The evolving work provides continued opportunity for interagency collaboration and for consideration of how the work encompassed in the SIM Initiatives can engage with national and state efforts—especially those that link delivery system reform and population health. States will continue work in conjunction with the Innovation Center and CDC on the development of population health plans, while also actively incorporating population health into their SIM-related payment and delivery system models. Looking forward, states and the Innovation Center may find opportunities to expand statewide the programs that target specific communities, such as those promoted under the ACH models. State focus may also turn to the long-term viability of programs more narrowly focused on specific populations or population health outcomes.

3.2 Progress toward Preponderance of Care Goal

One of the Innovation Center's goals for the SIM Initiative is for each awardee state, by the end of the SIM test period, to have 80 percent of payments from all payers be under value-based purchasing and/or alternative payment models (APMs)—that is, to have the preponderance of care delivered through value-based payment models.⁵ Round 1 Test states are reporting the numbers of individuals reached by select delivery system models and the number of payers and providers participating in these models, in a standardized online template prepared by the Innovation Center. The models include primary care PCMHs; health homes for medically complex individuals; integrated care models, such as ACOs, CCOs, and IHPs; and EOC payment models.

⁵ L.S. Hughes, A. Peltz, and P.H. Conway. State Innovation Model Initiative: A State-Led Approach to Accelerating Health Care System Transformation. *JAMA*. 2015; 313(13):1317-1318.

The percentages of populations reached and payers and providers participating in these models are only suggestive of the state’s progress toward the “preponderance of care” goal. First, PCMHs, health homes, and integrated care models are delivery models, not payment models. Nevertheless, these delivery models enable APMs and need the support of APMs to incentivize care coordination and advance quality. Second, we do not have data on total payments made under APM arrangements, but rather on participating individuals; and we cannot account for the distribution of high and low health care utilizers across payers and providers participating in APMs. Third, providers participate in and populations are reached by multiple models at the same time. Indeed, PCMHs are often a cornerstone of ACOs, creating the risk of double counting. Fourth, the counts of populations reached and participating providers are not comprehensive; data on both SIM-related and other ongoing initiatives are missing from the reported data. Finally, the actual payment models used in each of the state’s innovative delivery system models vary and are evolving over time; and the percentage currently providing quality incentives to providers is unknown.

3.2.1 Populations reached

To date, states have reported numerators—e.g., number of residents assigned or attributed to a delivery system model—needed to compute the percentage of the population reached. But no state has reported denominators, although Oregon has reported the percentage of the Medicaid and state employee populations accounted for by the CCM delivery model. In place of the missing denominators, we use estimates of the numbers of individuals covered by different types of insurance coverage in each state from the Census Bureau’s March 2015 Annual Social and Economic Supplement (ASEC) to the Current Population Survey (CPS).⁶ The ASEC asks respondents about their health insurance coverage throughout the previous calendar year. Respondents may report having more than one type of coverage. For this analysis, individuals are identified in a single payer category using the following hierarchy: Medicaid (including Medicare-Medicaid enrollees), Medicare, employer, other public, and non-group. Commercial coverage is the sum of employer and non-group coverage. Total population estimates include all covered individuals plus the uninsured.

The content and completeness of the reported numerators vary substantially by state. Arkansas, Massachusetts, and Oregon report on the reach of only SIM-related reform models, whereas Maine, Minnesota, and Vermont report on the reach of SIM-related and other public and private initiatives. All three of these latter states report on the populations reached by the Multi-Payer Advanced Primary Care (MAPCP) demonstration; Vermont also reports on the number of Medicare SSP ACO beneficiaries. Both of these programs pre-date the SIM Initiative. Furthermore, they are not the only delivery system and payment reform initiatives active within

⁶ These numbers are posted on the Kaiser Family Foundation’s *State Health Facts* website (<http://kff.org/other/state-indicator/total-population/>) (select Number) for notes and sources).

these states during the SIM test period. In no state do the reported numbers represent the totality of residents touched by delivery system models and APMs active within the state. Other ongoing initiatives involving individual providers and health systems include the Comprehensive Primary Care Initiative (CPCI: Arkansas and Oregon), Federally-qualified Health Home Advanced Primary Care Practice demonstration (Arkansas, Maine, Massachusetts, Minnesota, and Oregon), Medicare SSP (all six Test states), Pioneer ACO model (Maine, Massachusetts, and Minnesota), various Health Care Innovation Awards (all Test states), Bundled Payments for Care Improvement initiatives (all Test states), and various state initiatives. Finally, the population reach of certain SIM-related models is missing as well; Arkansas, for example, does not report the number of individuals with care episodes paid through the EOC payment model.

Table 3-5 summarizes available information on the size (and percentage) of the populations reached through the innovation models in the Round 1 Test states by state and delivery system model type, many of which were in place prior to the state’s SIM Initiative. All states report on one or more payer population(s) reached by primary care PCMHs or other primary care reform (e.g., Massachusetts’ PCPRI). However, no state provides information on all the populations reached by PCMHs; Arkansas, for example, does not provide counts of the commercial and Medicare populations reached under CPCI. The population served by PMCHs among the Round 1 Test states ranges from 40 percent (Maine) to 84 percent (Vermont) of Medicaid beneficiaries; from 10 percent (Maine) to 31 percent (Vermont) of the commercially insured; and from 31 percent (Maine) to 84 percent (Vermont) of Medicare beneficiaries. Minnesota did not break out these numbers by payer. As a percentage of the total population, **the reported population reach of PCMHs and health homes ranges from 0.1 percent for Massachusetts’ PCPRI to 58 percent for Minnesota’s HCH.**

Four states—Maine, Minnesota, Oregon, and Vermont—report the size of the Medicaid population reached through integrated care models (ACOs), but only Vermont also shows the size of the Medicare and commercially insured populations reached through ACOs. Oregon reported that nearly all (86 percent) Medicaid beneficiaries in the state receive integrated care through CCOs. This program pre-dated the SIM Initiative, as did the initial set of Integrated Health Partnerships (Medicaid ACOs) in Minnesota. Among the SIM-related integrated care models, the Medicaid populations reached varies from 12 percent in Maine to 23 percent in Minnesota to 49 percent in Vermont. Among reporting states, **the percentage of the total state population reached by integrated care models ranges from 2 percent in Maine to 26 percent in Oregon and Vermont.** However, these numbers are substantially undercounted because in no state, except Vermont, do they include counts of individuals touched by non-SIM-related commercial and Medicare ACO programs.

Table 3-5. Populations reached by the innovation models, Round 1 Test states, latest reported figures as of first quarter 2015

State	Patient-centered medical homes/health homes	Integrated care models
Arkansas¹	<u>SIM-related only</u>	
Medicaid	315,680 (49%)	—
Total population	315,680 (11%)	—
Maine	<u>SIM-related and MAPCP</u>	<u>SIM-related only</u>
Medicaid	101,837 (40%)	30,000 (12%)
Commercial	68,974 (10%)	—
Medicare	44,260 (31%)	—
Total population	215,071 (17%)	30,000 (2%)
Massachusetts	<u>SIM-related only</u>	
Medicaid	77,527 (5%) ²	—
Total population	77,527 (0.1%)	—
Minnesota	<u>SIM-related and MAPCP</u>	<u>SIM-related only</u>
Medicaid	Not reported	180,934 (23%)
Total population	3,694,278 (68%)	180,934 (5%)
Oregon	<u>SIM-related only</u>	<u>SIM-related and CCOs</u>
State employees	—	129,010 (97%)
Medicaid	742,065 (70%)	911,680 (86%)
Total population	742,065 (19%)	1,044,680 (26%)
Vermont	<u>SIM-related and MAPCP</u>	<u>SIM-related and MSSP ACO³</u>
Medicaid	106,818 (84%)	62,424 (49%)
Commercial	111,529 (31%)	37,252 (10%)
Medicare	67,621 (84%)	60,070 (75%)
Total population	285,968 (46%)	159,746 (26%)

MAPCP = Multi-Payer Advanced Primary Care; MSSP ACO = Medicare Share Savings Program Accountable Care Organization; SIM = State Innovation Models

Source: For all states, except Oregon, denominators used to compute the percentage of the population reached are Kaiser Family Foundation population estimates based on the Census Bureau's March 2015 Current Population Survey (CPS: Annual Social and Economic Supplements) available at: <http://kff.org/other/state-indicator/total-population/>. The denominator for all payers includes other publicly insured and uninsured individuals, as well as Medicaid, Medicare, and privately insured individuals. For Oregon, the state-reported percentages of Medicaid beneficiaries in patient-centered primary care homes and Coordinated Care Organizations and of state employees in coordinated care model plans in its SIM Q1 2015 Progress Report.

¹ Arkansas did not report the number of individuals whose care was part of the statewide episode-of-care payment model.

² These numbers are for Massachusetts Primary Care Payment Reform Initiative.

³ As noted earlier, the population source used for the denominator (ASEC) groups Medicare-Medicaid enrollees as Medicaid. However, Vermont reports Medicare-Medicaid ACO-attributed enrollees as Medicare because that is the ACO model they participate in. Therefore, the percentages shown here under-represent the Medicaid ACO population and over-represent the Medicare ACO population.

Many individuals are reached by both PCMH/health home and integrated care models. Because the size of the overlap is unknown and the missing program data is extensive, however, the actual reach of the SIM Initiative or value-based payment reform is unknown at this time. In addition, the numbers provided represent delivery system models that can support a variety of payment models; not all have implemented an APM. The Round 1 Test states are using a range of payment reforms to move their health care systems from FFS to value-based care, and as noted in **Section 3.1.1**, the APMs within these delivery system reform models are still in development in many of these states.

3.2.2 Payer participation

Payer participation varies markedly by state. Medicaid is the only participating payer in three Round 1 Test states' SIM Initiatives (Massachusetts, Minnesota, and Maine⁷) and is one of several participating payers in the other three states. **The Test states have had varying levels of success in engaging commercial firms in their SIM Initiatives.** In two Test states—Arkansas and Vermont—the dominant commercial insurance carrier participates in the SIM Initiative.

- Arkansas BCBS (the dominant insurance carrier) and QualChoice participate in the SIM-related PCMH and EOC models. Some large self-insured employer groups, including Walmart, also participate in the Arkansas PMCH and EOC models.⁸
- Blue Cross Blue Shield of Vermont (BCBSVT), the dominant insurance carrier in Vermont, is the lone payer in the SIM-related commercial ACO SSP. BCBSVT also participates in the Blueprint for Health PCMH model, along with MVP Health Plan, Cigna, and some self-insured organizations.

In Oregon, participation in the CCM under the SIM Initiative currently includes commercial insurance carriers contracting with the state to cover state employees and Medicaid beneficiaries. Oregon selected five carriers to provide health benefits centered on the CCM in Public Employees' Benefit Board (PEBB) health plan contracts for state employees. These carriers include Kaiser, Providence, AllCare, Moda, and Trillium. AllCare and Trillium are CCOs serving Oregon's Medicaid population; Kaiser, Providence, and Moda are affiliated with CCOs in various parts of the state. Oregon is making similar contractual changes to health plans offered by the Oregon Educators' Benefit Board (OEBB). In addition, in first quarter 2015,

⁷ Although no commercial firms participate in the SIM-related Stage A and B health homes or ACs in Maine, three of four credible insurance carriers holding over 90 percent of the employer group market share participate in MAPCP—Anthem, Harvard Pilgrim Health Care, and Aetna. Credible insurance carriers include active insurers that have at least 1,000 member years and positive premium earnings.

⁸ Beginning in April 2015, qualified health plans offered through the Marketplace and operated by Arkansas BCBS, QualChoice, and Centene/Ambetter, and Medicare Advantage Special Needs Plans operated by three other commercial carriers are mandated to make PMPM payments to PCMHs.

Aetna was incorporating PCPCH recognition in its payment methodology for commercial health plans in Oregon.

Table 3-6 provides the number of credible insurance carriers, the number participating in either SIM-related or other reported delivery system reform models in first quarter 2015, and the market share of covered lives in each of the participating credible insurance carriers in the Round 1 Test states. Credible insurance carriers include active insurers that have at least 1,000 member years and positive premium earnings.

No Round 1 Test state has implemented delivery system or payment reform models in Medicare under the SIM Initiative. In fact, it was not until well into the SIM test period (April 2015) that CMS invited states to submit ideas on including Medicare in a state-based reform framework. Arkansas and Oregon, however, have included provisions for reaching Medicare-Medicaid enrollees through the SIM Initiative. Beginning in April 2015, Medicare Advantage Special Needs Plans operated by three other commercial carriers in Arkansas are mandated by state law to make PMPM payments to PCMHs. Oregon reported that in first quarter 2015, 44,866 (55 percent) of the state's Medicare-Medicaid enrollees were in CCOs.

Table 3-6. Number of commercial insurance carriers participating in SIM-related or other existing innovation models, Round 1 Test states, latest reported figures as of first quarter 2015

State	Individual	Small firm	Large firm
Arkansas			
Number of credible insurance carriers	5	6	6
Number of participating credible insurance carriers	1	2	1
Market share of participating credible insurance carriers			
Arkansas BCBS	76%	49%	66%
QualChoice	—	1%	—
Maine			
Number of credible insurance carriers	3	4	4
Number of participating credible insurance carriers	1	3	3
Market share of participating credible insurance carriers			
Anthem Health Plans of Maine, Inc.	29%	30%	72%
Harvard Pilgrim Health Care, Inc.	—	44%	17%
Aetna Life Ins. Co.	—	24%	7%
Massachusetts			
Number of credible insurance carriers	9	12	16
Number of participating credible insurance carriers	0	0	0

(continued)

Table 3-6. Number of commercial insurance carriers participating in SIM-related or other existing innovation models, Round 1 Test states, latest reported figures as of first quarter 2015 (continued)

State	Individual	Small firm	Large firm
Minnesota			
Number of credible insurance carriers	8	7	11
Number of participating credible insurance carriers	Not reported	Not reported	Not reported
Oregon			
Number of credible insurance carriers	10	9	13
Number of participating credible insurance carriers	3	3	4
Market share of participating credible insurance carriers			
Kaiser Foundation Health Plan of the NW	10%	15%	41%
Providence Health Plan	6%	14%	14%
Moda Health Plan, Inc.	53%	9%	5%
Aetna	—	—	1%
Vermont			
Number of credible insurance carriers	2	3	4
Number of participating credible insurance carriers	2	2	3
Market share of participating credible insurance carriers			
Blue Cross Blue Shield of Vermont	88%	86%	62%
MVP Health Plan, Inc.	11%	13%	13%
Cigna Health & Life Ins. Co.	—	—	5%

Source: Analysis of 2014 Supplemental Health Care Exhibit Report, Volume I, 2015. Credible insurance carriers include active insurers that have at least 1,000 member years and positive premium earnings. Plans with the same parent company are collapsed into one insurer. Market share is based on covered lives.

3.2.3 Provider participation

Another method of measuring preponderance of care is the percentage of providers in the state participating in the new delivery system models. Some states have reported the number of physicians and/or practices participating in their SIM-related models (*Table 3-7*).

We were not able to identify a data source for the number of medical practices in each of the Test states. However, we were able to find a couple of sources of physician counts to use as denominators with the state-reported number of participating physicians. We used the number of active patient care physicians in the American Medical Association Physician Masterfile as of

Table 3-7. Number of physicians participating in innovation models, Round 1 Test states, latest reported figures as of first quarter 2015

State Innovation model	Medicaid	Commercial	Medicare	All payers
Arkansas				
Primary care PCMH	761	Not reported	Not reported	761 (14%)
Episode-of-care payment	Not reported	Not reported	—	2,200 (41%)
Maine				
Primary care PCMH	Not reported	Not reported	Not reported	518 (13%)
Stage A & B health homes	Not reported	—	—	Not reported
Accountable Communities	Not reported	—	—	Not reported
Massachusetts				
Primary Care Payment Reform	Not reported	—	—	Not reported
Minnesota				
Health Care Homes	Not reported	Not reported	Not reported	3,501 ¹ (25%)
Integrated Health Partnerships	6,667	—	—	6,667 (48%)
Oregon				
Primary care PCMH	Not reported	Not reported	Not reported	Not reported
Coordinated care model	Not reported	Not reported	—	Not reported
Vermont				
Primary care PCMH	Not reported	Not reported	Not reported	694 (37%)
Hub and Spoke health homes	—	—	—	123 (7%)
ACOs	690	832	977	Not reported (≥52%)

ACO = accountable care organization; PCMH = patient-centered medical home

Source: Counts of physicians are state-reported numbers. Denominators for percentages are the number of active patient care physicians in the *2015 State Physician Workforce Data Book*. Published by the Center for Workforce Studies, Association of American Medical Colleges, November 2015. Available at:

<https://www.aamc.org/data/workforce/reports/442830/statedataandreports.html>. Active patient care physicians are federal and nonfederal physicians with a Doctor of Medicine (M.D.) or a Doctor of Osteopathic Medicine (D.O.) who are licensed by a state, work at least 20 hours per week, and whose self-reported type of practice is direct patient care.

¹The number of physicians in Health Care Homes represents all certified providers, which includes physicians, nurse practitioners, and physician assistants.

December 31, 2014.⁹ Active patient care physicians are federal and nonfederal physicians with a Doctor of Medicine (M.D.) or a Doctor of Osteopathic Medicine (D.O.) who are licensed by a state, who work at least 20 hours per week, and whose self-reported type of practice is direct patient care. The extent to which the definition of physicians in the numerators match this definition is unknown.¹⁰

Four Round 1 Test states reported the number of physicians in primary care PCMHs (Maine, Vermont, Minnesota, and Arkansas). In first quarter 2015, **these physicians accounted for 13 percent (Maine) to 37 percent (Vermont) of all active patient care physicians.** In Minnesota, 25 percent of active patient physicians participated in HCHs and 48 percent participated in IHPs. Because many of the physicians participating in the IHPs are also in HCHs, **the total percentage of active patient care physicians that participated in a delivery system reform model in Minnesota would be between 48 percent and 83 percent,** depending on the overlap. Similarly, Arkansas reported that 14 percent of active patient care physicians participated in a PCMH in first quarter 2015 and 41 percent of active patient care physicians had served as a principal accountable physician in an EOC payment model. Therefore, **in Arkansas, the percentage of physicians participating in a delivery system or payment reform model would be between 41 percent and 55 percent.** In Vermont, the number of physicians participating in ACOs are reported by payer. Using the Medicare number of participating physicians (977 [52 percent] of active patient care physicians in the state), together with the number of PCMH and Hub and Spoke health home providers, we estimate **the percentage of physicians participating in a delivery system reform model in Vermont would be between 52 percent and 96 percent.** In Massachusetts and Oregon, no participation estimates are available.

3.3 Trends in Quantitative Outcomes

To determine the impact of the SIM Initiative, we are conducting statewide claims data analyses on *four categories of variables*: (1) care coordination, (2) quality of care, (3) utilization, and (4) expenditures; and *three payer populations*: (1) Medicaid, (2) commercial, and (3) Medicare. Although most Round 1 Test states initially implemented their SIM-related innovation models in Medicaid and certain commercial populations, patients with *different types of insurance* often receive care from the same providers and health systems. This creates a potential for spillover effects on care received by commercially insured individuals and Medicare beneficiaries. Furthermore, the SIM Initiative was intended to spread and support all health care reform in the Test states. Many of the enabling strategies (e.g., health IT investment, workforce

⁹ 2015 State Physician Workforce Data Book. Published by the Center for Workforce Studies, Association of American Medical Colleges, November 2015. Available at: <https://www.aamc.org/data/workforce/reports/442830/statedataandreports.html>.

¹⁰ For example, the number of providers in Minnesota's HCH's includes physicians, nurse practitioners, and physician assistants.

development) implemented under the SIM Initiative are available to all providers statewide, and thus can potentially enhance the impact of other federal, state, and private sector initiatives within the state. To capture these effects, we report statewide claims-based outcomes for the commercially insured and Medicare beneficiaries, as well as Medicaid beneficiaries.

For care coordination and quality of care, we present a descriptive analysis of partial baseline data for Medicaid beneficiaries and full baseline data for the commercially insured and Medicare beneficiaries. Most of our care coordination and quality of care measures require more than one quarter of data—in some cases, a full year. Because we do not have a full year of data for the test period in any of the payer databases, we report only baseline care coordination and quality of care estimates for each baseline year for which we have data. This is less than the full baseline period for Medicaid claims data in all states and comparison groups.

For utilization and expenditure measures, we present quarterly estimates. No quarters of Medicaid claims data for the test period were available for this report. Therefore, similar to the care coordination and quality of care measures, we present only descriptive analyses of utilization and expenditure measures for a partial baseline period among the Medicaid population. We did have early test period data (first two quarters in Massachusetts and first three quarters in the other Test states) for the commercially insured and Medicare beneficiaries. Therefore, in addition to the descriptive analysis, we present estimated impacts from DD regressions run on the statewide MarketScan and Medicare claims data, comparing the average baseline estimate to the average test-period estimate.

We present a cross-state summary of the results of these analyses below. The analyses have a number of limitations that should be considered when reviewing the results. First, the analyses are examining statewide impacts, and therefore, the results are most likely impacted by: (1) other delivery system and payment reform efforts occurring at the same time, and (2) the inclusion of individuals not directly impacted or attributed to a specific intervention. Second, we have early test period data for only the commercial and Medicare populations. This makes it unlikely the data used for the analyses contain many individuals directly affected by the states' SIM Initiatives, and we are too early in the test period to see spillover effects. Finally, even though the study design used a comparison group and adjusts for a range of covariates, the results could still be biased by a weak match of individuals in the Test state to individuals in the comparison group, as well as unmeasured factors we were not able to account for in our methods.

3.3.1 Care Coordination

A key aim of health care transformation in the United States is a shift from encounter-based care delivery to care coordination. Care coordination requires a team-based approach in which all participants in the patient's care—patient, primary care provider, specialists, and

community-based service providers—work together to meet the patient’s care needs and preferences, providing access to comprehensive, quality, and safe care.

In the survey of primary care physicians conducted in fall 2014, we found that engagement in selected care coordination and care management–related strategies before implementation of the SIM Initiative was already quite high in the Round 1 Test states. We found that large proportions of practices assign patients to specific providers or teams, transmit referral information to specialists and other providers, use EHRs and other health IT systems to document medical/progress notes, prescribe medications, and monitor quality-of-care performance at the patient group and practice level. However, the findings also suggest that considerable room for improvement exists in other care coordination and care management strategies—including reminding patients to schedule needed preventive services, following up with patients after referrals, creating links with behavioral health care providers, and monitoring costs and utilization.

In this report, we investigate the levels and trends in baseline claims-based measures we will use in future reports to track changes in care coordination over the SIM test period: (1) number of visits to primary care providers, (2) number of visits to specialists, (3) percentage of inpatient stays with a follow-up visit within 14 days of discharge, (4) percentages of mental health inpatient stays with a follow-up visit within 7 and 30 days of discharge, (5) percentage of patients ages 5 to 64 years with persistent asthma who were appropriately prescribed medication, and (6) percentages of adult patients newly diagnosed with major depression and treated with antidepressants who remained on medication treatment for 84 and 180 days. With improved care coordination, we expect to see higher rates of primary care visits,¹¹ follow-up visits, and appropriate medication management.

In the baseline period, we looked for equivalent levels and trends in the measures between each Test state and its comparison group. Data were too limited at the time of this writing to compare trends in these measures for the Medicaid population. For all payer populations, we found the Test states generally had equivalent or slightly better care coordination than the comparison groups, and the commercially insured and Medicare populations in the Test states had similar trends in care coordination over the baseline period relative to the comparison groups. This latter result validates our selection of comparison groups for the commercially insured and Medicare populations. The data also confirm the survey finding of considerable

¹¹ Although an increase in primary care visits does not, by itself, constitute better care coordination, it is often a first step for many populations. We expect an initial increase in primary care visits, in particular for Medicaid beneficiaries who often receive care at emergency rooms (ERs) and urgent care facilities. Because the Round 1 Test states are focused totally or in part on getting the Medicaid and other groups under care of ACOs, medical homes, or other primary care-oriented models, an increasing number of primary care visits would confirm that not only are those models functioning in each state but that the first step of matching patients with primary care providers is indeed happening. An initial increase in specialist visits may also be indicative of better coordination as the unmet needs of these populations are addressed.

room for improvement in care coordination among the Round 1 Test states. *Appendix E* provides tables of baseline care coordination measures for the six Test states and comparison groups. A brief summary of baseline trends in these measures follows.

- **Visits to primary care providers and specialists.** Relative to the state's comparison group, the Round 1 Test states generally had lower rates of visits to primary care providers and specialists. This finding was true across the commercial, Medicare, and Oregon Medicaid¹² populations. In 2013, the number of primary care visits increased in many states and comparison groups, and the number to specialists increased in all Test states and comparison groups, except Oregon. For the commercially insured, these rates declined from 2010 to 2012 in most Test states and comparison groups.
- **Inpatient admissions with follow-up visits.** Test states had equivalent or slightly higher percentages of inpatient discharges with follow-up visits within 14 days of discharge compared with the comparison groups. No consistent trend in the measure across the states and payer populations was evident over the baseline period.
- **Mental health admissions with follow-up visits.** The percentages of mental health admissions with a follow-up visit within 7 and 30 days following discharge were roughly equivalent across the Test states and comparison groups. Trends among the commercially insured were also similar, with all Test states and comparison groups experiencing a large drop in these percentages in 2013. Because of the consistency of this finding across states and payers, we suspect that a coding change to one that bundles the follow-up visit with the admission for payment may have been made in 2013.
- **Patients with persistent asthma appropriately prescribed medications.** Between 68 percent and 82 percent of Medicaid beneficiaries with persistent asthma, whereas approximately 90 percent of commercially insured patients with persistent asthma, were appropriately prescribed medications in the Test states and the comparison groups. For the commercially insured, the percentage was virtually unchanged from 2011 through 2013 for all Test states and comparison groups, except for Arkansas, in which it dropped from 90 percent in 2011 to 84 percent in 2013.
- **Patients with a new episode of depression treated with antidepressants.** For Medicaid beneficiaries and the commercially insured, relative to the states' comparison groups, the Test states generally had higher percentages of adult patients with a new episode of major depression treated with antidepressants who remained on medication treatment at least 84 and 180 days. No consistent trend in the percentages

¹² Provider specialty coding was incomplete in the Medicaid claims for Arkansas and Minnesota and comparison states for Maine and Vermont; therefore, the comparability of this measure could not be assessed for Medicaid beneficiaries in these Test states.

over the baseline period was evident for the commercially insured in the Test states and comparison groups.

3.3.2 Quality of Care

One of the three overarching aims of the SIM Initiative is to transform the health care system to deliver better quality care. The Institute of Medicine has defined quality of care as the degree to which health services increase the likelihood of desired health outcomes and are consistent with current professional knowledge (Institute of Medicine, 1994). Quality of care measures typically show discrepancies between the current standards of care and actual practice. As an incentive for quality improvement, new delivery system models require participating practices to report on select quality measures, and APMs base incentive payments on practices meeting targeted levels of these measures. For each Round 1 Test state and comparison group, we present baseline estimates on a set of quality of care measures of the type used in the new delivery system and payment models.

To measure quality of care for adults (ages 18 years and older), we report rates of hospitalizations per 100,000 covered lives for ambulatory care sensitive conditions (ACSCs) defined by the Agency for Healthcare Research and Quality's (AHRQ's) Prevention Quality Indicators (PQIs). We hypothesize that greater access to patient-centered, high-quality primary care services under the SIM Initiative will result in lower PQIs. We present three PQIs—overall composite, acute condition composite, and chronic condition composite indicators. We were not able to estimate PQI composite rates for the Medicaid populations in Arkansas and Maine because of missing DRG information on the claims databases; furthermore, we did not have Medicaid claims for Massachusetts in time for this report.

We also introduce three additional quality of care measures for adults in this report: (1) percentage of patients ages 18 years and older who received an influenza immunization between October 1 and March 31, (2) percentage of patients ages 18 years and older who were screened for tobacco use and received cessation counseling if identified as a user, and (3) percentage of women ages 41 to 69 years (64 for the commercially insured) who had a mammogram to screen for breast cancer. Higher rates of these prevention and health promotion procedures are evidence of better quality care. All three measures are endorsed by the National Quality Forum.

To measure the quality of care for young children, we report the percentage of infants who had no well-child visits and those who had six or more well-child visits by the time they turned 15 months. The American Academy of Pediatrics (AAP) and the Centers for Disease Control and Prevention (CDC) recommend up to eight well-child check-ups by age 15 months. We also report the percentage of children ages 3 to 6 years who had one or more well-child visits during the year—AAP and CDC recommend that children in this age range have one well-child visit each year.

In the baseline period, we looked for equivalent levels and trends in these measures between each Test state and its comparison group. Data were too limited at the time of this writing to compare trends in these measures for the Medicaid populations. For all payer populations, the measures investigated did not show a consistent pattern for the quality of care being better in Test states relative to the comparison groups. However, for the commercially insured and Medicare populations, the measures provide evidence that the quality of care improved over the baseline period for both the Round 1 Test states and comparison groups—suggesting that pre-existing initiatives in the Test and comparison states were making progress prior to implementation of the SIM Initiative. The consistent trends in the Test states and comparison groups provide additional validation of the selection of comparison groups. Finally, all measures show room for improvement in quality of care. *Appendix E* provides tables of baseline quality of care measures for the six Test states and comparison groups. A brief summary of baseline trends in these measures follows.

- **Prevention Quality Indicators.** PQI composite rates varied significantly across states and comparison groups and by payer type; no consistent pattern was discernible in the rates for Test states relative to the comparison groups. In all Test states and comparison groups, a consistent downward trend was evident in both the overall and acute composite hospitalization rates from 2010 through 2013, for both the commercially insured and Medicare beneficiaries. Declines in the chronic composite hospitalization rate were smaller and less consistent. For Medicare beneficiaries, a small increase in the chronic composite was evident in most Test states in 2013.
- **Influenza immunization.** Influenza immunization rates measured were generally low. In 2011, influenza immunization rates ranged from 5 percent in Vermont to 17 percent in Maine for Medicaid beneficiaries, from 12 percent in Arkansas to 21 percent in Minnesota for the commercially insured, and from 19 percent in Maine and Vermont to 35 percent in Arkansas for Medicare beneficiaries. No consistent pattern of influenza rates in the Test states relative to the comparison groups is evident in the baseline period. For the commercially insured and Medicare beneficiaries, influenza immunization rates increased or remained unchanged over the baseline period in the Test states and comparison groups.
- **Tobacco use screening and counseling.** We present tobacco use screening and counseling rates only for Medicare beneficiaries; the frequencies found in the MarketScan and Medicaid claims data were too small for analysis. Most Test states began the 3-year baseline period with only 3 percent to 4 percent of Medicare beneficiaries screened and counseled for tobacco use; but by 2013, 9 percent to 23 percent of Medicare beneficiaries were being screened and counseled on tobacco use.
- **Mammography screening.** In four of the Test states—Maine, Massachusetts, Minnesota, and Oregon—mammography screening rates were higher than the comparison groups in all three payer populations, whereas these rates were lower in Arkansas and equivalent in Vermont for all payer populations. The percentage of

women with a breast cancer screening mammogram was fairly stable over the baseline period in the Test states and comparison groups.

- **Well-child visits.** Well-child visit rates varied substantially among infants and young children by state and payer. Generally, Medicaid-covered children were much less likely than commercially insured children to have received the recommended number of well-child visits. Compliance with well-child visit schedules improved or remained unchanged over the baseline period for commercially insured infants and 3- to 6-year-olds in all Test states and comparison groups. Baseline trend data were not available for Medicaid infants and children.

3.3.3 Utilization

As incentives and other mechanisms to improve the efficiency and quality of care are implemented with the support of the SIM Initiative, utilization rates for health care services will be impacted. In particular, as health care systems strengthen primary care and emphasize healthy behaviors and care coordination, we expect to see decreases in hospital admission rates, ER visits, and 30-day hospital readmissions.

We conducted a descriptive analysis of these core utilization measures for all three payer populations. In addition, for the commercially insured and Medicare populations, we tested for significant differences between the Test states and the comparison groups in changes from the baseline period to the early test period in these core measures using DD methods. Because we did not have Medicaid claims for the test period (or even a full baseline period) for any Test state, we could not conduct a similar analysis for the Medicaid population.

We found evidence of declining inpatient admissions in all Test states and comparison groups and declining ER visits in some of the Test states and comparison groups in the baseline period. For the commercially insured and Medicare beneficiaries, we also found evidence of faster declines in these measures in some Test states relative to their comparison groups. However, these findings are too early to be attributed to the SIM Initiative and are likely due to efforts initiated by the states prior to its implementation. We provide graphs showing the trends in the unadjusted quarterly utilization measures and results of the DD analyses in the state-specific chapters. A brief summary of the trends shown in each of the core utilization measures is below, followed by a summary of the DD impact analysis.

- **Acute inpatient admissions.** The unadjusted rate of acute inpatient admissions declined for Medicaid beneficiaries in the baseline years for which we had data. Exceptions include: (1) Medicaid beneficiaries in Minnesota and its comparison group, for whom the rate rose from fourth quarter 2010 to fourth quarter 2011; and (2) Medicaid beneficiaries in Maine, for whom the rate remained steady from third quarter 2011 to fourth quarter 2013. In all Test states and comparison groups, the acute admissions rate declined for the commercially insured and Medicare populations over the baseline and early test period.

- **ER visits.** Trends in the rate of ER visits varied by state and payer population. For Medicaid beneficiaries in the early baseline period, the ER visit rate rose slightly in Arkansas, Minnesota, and Vermont, but declined slightly in Maine and Oregon. For the commercially insured, the unadjusted ER visit rate was either unchanged or declined throughout the baseline and early test period, whereas for Medicare beneficiaries, the rates either rose or were unchanged throughout the baseline and early test period. Generally, similar trends were evident for a Test state and its comparison group.
- **30-day readmissions.** The rate of 30-day hospital readmissions is much more volatile across the baseline and early test period than the other measures, due in part to the smaller sample size. The readmission rate was increasing for Medicaid beneficiaries early in the baseline period in most Test states, but this is not necessarily true for the comparison groups. No consistent trend in the readmission rate is evident across the states for the commercially insured. The readmission rate declined or was unchanged for Medicare beneficiaries in all Test states and comparison groups.

DD impact analysis

In the DD analysis, we found that, relative to the comparison groups, ER visits declined at a significantly faster rate in the test period compared to the baseline for the commercially insured in three of the Test states (Arkansas, Massachusetts, and Minnesota) and for Medicare beneficiaries in two of the Test states (Maine and Minnesota). We also found significantly greater declines in acute inpatient admissions for the commercially insured in Arkansas and Medicare beneficiaries in Vermont. We found no other statistically significant effects. Since these results are too early in the test period to represent spillover effects of the SIM Initiative, they are most likely due to pre-existing delivery system and payment reform initiatives in these populations.

3.3.4 Expenditures

In addition to improving both health care quality and population health, a third primary aim of the SIM Initiative is to reduce overall health care costs. Therefore, we also investigate trends in payments made by the three payer groups. Because of the extensive use of managed care among state Medicaid programs, we cannot break out total payments by type of service. However, for the commercially insured and Medicare beneficiaries, we analyze total payments, as well as payments to inpatient facilities, other facilities, professionals, and outpatient pharmacy. All payments are measured per member per month (PMPM).

Similar to the utilization analyses, we conducted a descriptive analysis of these core expenditure measures for all three payer populations. In addition, for the commercially insured and Medicare populations, we used DD methods to test for significant differences between the Test states and the comparison groups in changes from the baseline period to the early test period in the core measures. Because we did not have Medicaid claims for the test period (or even a full

baseline period) for any Test state, we could not conduct a similar analysis for the Medicaid population.

We provide graphs showing the trends in the quarterly expenditure measures in the state-specific chapters. A brief summary of the trends shown in these graphs follows.

- **Total payments.** Total PMPM payments were unchanged or increased over the early baseline period for most Medicaid beneficiaries and over the baseline and early test period for the commercially insured and Medicare beneficiaries. The exceptions were Medicare beneficiaries in Arkansas and Medicaid beneficiaries in Oregon and its comparison group.
- **Inpatient facility payments.** Inpatient facility PMPM payments for Medicare beneficiaries were unchanged or declined slightly over the baseline and early test period in all Test states and comparison groups. However, for the commercially insured these payments increased in many Test states and comparison groups over this time.
- **Other facility payments.** Other facility PMPM payments increased or remained unchanged over the baseline and early test period for both the commercially insured and Medicare beneficiaries in all Test states and comparison groups.
- **Professional payments.** Professional PMPM payments for the commercially insured in Oregon, and for Medicare beneficiaries in Arkansas and Massachusetts and their comparison groups, declined slightly over the baseline and early test period. In all other Test states and comparison groups, these payments were unchanged or rose slightly over this time.
- **Outpatient pharmacy payments.** The commercially insured is the only population for whom we had these payments. In all Test states and comparison groups, except Vermont, we see a sharp rise in outpatient pharmacy PMPM payments beginning in 2013.

DD impact analysis

For the commercially insured, we found no statistically significant differences in changes to total PMPM payments between the Test states and their comparison groups from baseline to the early test period. However, we did find significantly greater declines in professional payments in Maine and Oregon, and smaller increases in outpatient pharmacy payments in Maine, Oregon, and Vermont. On the other hand, we found significantly greater increases in other facility, professional, and outpatient pharmacy payments in Massachusetts and outpatient facility payments in Oregon.

For Medicare beneficiaries, we found a significantly slower rate of increase from the baseline to the early test period in total PMPM payments in Maine relative to its comparison group, and significantly faster rates of increase in Oregon. Total payment increases in Oregon

resulted from significantly faster rates of increase in all types of service. We also found significantly slower decreases in professional PMPM payments in Maine, Minnesota, and Vermont.

These findings are for early test months and for population subgroups that are not the initial targets for SIM-funded activities. Thus, the impacts are more likely a result of pre-existing reform and other activities occurring within the states than the SIM Initiative. We expect estimated cost savings to: (1) grow for these populations as more quarters of data become available, and (2) be greater for Medicaid beneficiaries, the target population for most of the early Round 1 Test state SIM-related activities.

3.4 Summary of Progress, Challenges, and Lessons Learned

Despite variation across the Test states, the SIM Initiative has made notable progress in accelerating health care transformation among the Round 1 Test states. States have leveraged multi-payer efforts to implement payment and delivery system reforms, engaged wide swaths of the provider community in SIM-related activities, and used a range of policy levers to effect change.

3.4.1 Implementation

Each of the SIM Round 1 Test states is operating in its own unique and constantly evolving health policy environment. Although the health care transformation efforts supported by the SIM Initiative are a major focus in all six Test states, **other health care reforms can affect the implementation of SIM-supported activities.** For example, Oregon struggled to operationalize its ACA state-operated Health Insurance Marketplace, which delayed the state's vision to spread the CCM to qualified health plan enrollees. In Vermont, the state's decision not to move forward with a single payer model for health care must be taken into account in further development of SIM Initiative activities. And the Arkansas Legislative Task Force on Health Care Reform is currently debating the future of Medicaid expansion and the role of the state in health care reforms more broadly. Not only are state officials leading SIM Initiative efforts constantly adapting to the evolving state health policy environment. At the same time, providers in the Test states are grappling with multiple simultaneous changes. Many of our site visit interviews noted "provider fatigue" as a result of continuous and ongoing change.

The Test states have invested considerable effort in promoting consensus among public and private payers about the goals of delivery system reform and the levers to be used to achieve those goals. Some of the most **substantial changes to delivery systems and payment methods are in areas where public and private payers are working together.** For example, PCMH requirements in Arkansas are led by Medicaid and joined by two private insurers. Maine achieved agreement to a voluntary growth cap on total cost of care by public and private payers. And in Vermont, Medicaid, Medicare, and commercial insurers are participating in ACOs. In

contrast, where the state works alone to change payment incentives—for example, in LTSS in Arkansas or the PCPR initiative in Massachusetts’ FFS Medicaid program—affected populations or payments may be too small to incentivize providers to embrace new ways of doing business. In these cases, state SIM Initiative leaders are reevaluating their approaches and continuing to pursue how to engage Medicare in SIM Initiative activities.

The Test states have used **a variety of policy levers to initiate or formalize changes to the health care delivery system** as part of their SIM Initiatives. Commonly used policy levers to date include: legislation (e.g., Arkansas, Massachusetts, and Minnesota); Medicaid policy changes through SPAs and waivers (e.g., Maine, Massachusetts, and Vermont); and contracts with insurance providers, managed care entities, or accountable care organizations (e.g., Arkansas, Minnesota, and Oregon). At least one Test state has also used agency regulation as a policy lever (insurance department regulation in Arkansas). The six Test states used a wide range of policy levers—including SPAs, waivers, state laws, regulations, sub-regulatory guidance, and contract provisions—to formally implement payment reforms. In contrast, the types of policy levers states used to effectuate changes in health IT, workforce, and population health were more focused on financial support and requirements for participating in the innovation models or receiving quality payments—although such levers did include credentialing and reimbursement policy and state privacy laws in a few states. Some of the state officials we interviewed emphasized the importance of voluntary or consensus-based efforts to effect change. In cases where subgroups of stakeholders are less eager to participate in delivery system reforms, these officials believed formal policy levers may be a strategy to bring them into a new system, although they viewed wholesale “mandates” as unlikely to be successful. Other state officials, in contrast, found existing legislation—in some cases predating the SIM awards—to be a helpful lever in implementing elements of their SIM Initiatives more rapidly once funding was secured (e.g., Massachusetts, Oregon, Vermont).

The Test states have also experienced challenges as they implement complex and multifaceted delivery system reforms. In addition to the specific challenges outlined above (in payment reform, health IT, workforce development, and population health), the states participating in the SIM Initiative have faced **challenges in engaging stakeholders from across the health care delivery system**—including public and private payers, primary care and specialty providers, major health systems, and consumers or consumer advocates. The state agencies leading the SIM Initiatives have learned much about engaging diverse groups of stakeholders, some of whom view one another as competitors. For example, as the SIM Initiative activities in states progressed from planning to implementation, state leaders recognized that large groups of stakeholders are helpful for building buy-in and for generating ideas, but that smaller groups are more efficient for decision-making. At times, stakeholders faulted state leaders for the considerable time commitment needed for attending meetings. At other times, stakeholders were skeptical of state agencies’ openness to feedback. The lesson learned is that the key for state leadership is to strike the balance between inclusivity and

efficiency. While maintaining an attitude of transparency and openness, state leaders reported that they needed to engage with different stakeholder subgroups (e.g., payers, consumer advocates, specialty providers) more or less intensively at different points in the process. In some cases, state officials were able to establish strong relationships with individual stakeholders, who then acted as ambassadors to their peers—bringing additional voices to the SIM planning process.

In response to the challenges they have faced and lessons they have learned about working with stakeholders to implement payment and delivery system reforms, Test states have adapted their own approaches. Some states have made modifications to payment structures. Some states have slowed the implementation pace of certain aspects of their models. And some states have added provider training to further support providers in implementing elements of delivery system transformation. A longer-than-anticipated start-up period frustrated some states, but that time investment is now paying off, as states are able to move forward with their SIM Initiatives more concretely.

3.4.2 Preponderance of care

Despite many gaps in the data on populations reached by the SIM Initiative, most states have clearly used the funds to substantially increase the populations reached by innovative delivery system and payment models. If we consider the populations reached by the SIM Initiative together with those reached by other public and private delivery system and payment reform initiatives pre-dating the SIM Initiative, three Test states (Minnesota, Oregon, and Vermont) may be halfway toward the target reach of 80 percent of the state's population. However, a lot of effort is needed to bring these states the rest of the way and the other three Round 1 Test states up to the levels already reached by Minnesota, Oregon, and Vermont.

To increase the populations reached, states must increase participation in the SIM Initiative. Payer participation varies markedly by state. Medicaid is the only participating payer in three Round 1 Test states' SIM Initiatives (Massachusetts, Minnesota, and Maine) and is one of several participating payers in the other three states. The Test states have had varying levels of success in engaging commercial firms in their SIM Initiatives. No Round 1 Test state has implemented delivery system or payment reform models in Medicare under the SIM Initiative at this time. We estimate that incorporating Medicare beneficiaries into states' SIM Initiatives could expand its reach by 13 percent to 17 percent of the states' populations.

Given the emphasis on strengthening primary care in many of the states' SIM initiatives, a substantial percentage of the primary care physicians in each Test state is participating in one or more innovation models. However, the percentage of total providers, including specialists, is unknown. How many of the participating providers are receiving all or part of their reimbursements through value-based alternative payment models is also unknown.

3.4.3 Patient outcomes

It is too early to determine whether the SIM Initiative has changed provider behavior or improved care coordination, care quality, and population health while reducing utilization of expensive services and total health care costs. The data are not yet available to support such analyses. However, we found evidence suggesting that many of the models pre-dating the SIM Initiative, and on which the states built their SIM Initiatives, were having a small but significant impact on these outcomes in the early test period. Additional data are needed to determine whether the SIM Initiative accelerated these trends.

3.5 References

- Gavin, N. et al.: State Innovation Models (SIM) Initiative Evaluation: Model Test Base Year Annual Report. Prepared for the Centers for Medicare & Medicaid Services (CMS). RTI Project Number 0212790.007. Research Triangle Park, NC: RTI International, November 2014. <http://downloads.cms.gov/files/cmmti/SIM-Round1-ModelTest-FirstAnnualRpt_5_6_15.pdf>.
- Institute of Medicine. *America's Health in Transition: Protecting and Improving Quality*. Washington, DC: National Academies Press, 1994.
- Rajkumar, R., Conway, P.H., and Tavenner, M.: The CMS—engaging multiple payers in risk-sharing models. *Journal of the American Medical Association* 311(19):1967–1968, 2014. doi:10.1001/jama.2014.3703.

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4. Arkansas

This chapter provides an updated overview of the Arkansas SIM Initiative model; summarizes major implementation progress, challenges, and lessons learned in the past year; discusses key findings from the site visit interviews and focus groups organized by major topical area; and presents baseline and early test period trends in outcomes. For the Year 2 site visits, we conducted 24 key informant interviews and eight focus groups in Little Rock, Searcy, and Conway, Arkansas. Site visit findings are supplemented with information from a web-based primary care physician survey RTI conducted from July through October 2014. *Appendix Figure E-1* provides a graphical presentation of the federal evaluation of the Arkansas SIM Initiative.

To date, Arkansas has achieved varying degrees of progress in the different Arkansas SIM Initiative reform models. The episode-of-care (EOC) and patient-centered medical home (PCMH) models have made considerable progress since their launch in 2013 (EOCs) and early 2014 (PCMHs). However, reform models for Medicaid services to special needs populations—individuals with behavioral health, developmental disabilities (DD), and long-term services and supports (LTSS) needs—are taking more time to develop and implement, given the complexities of payment systems and some stakeholder resistance. Statewide analyses of the commercially insured population show some significant declines in hospital admissions and emergency room (ER) visits in the early test period (first three quarters), but these declines were small and are most likely due to other co-occurring initiatives, as Arkansas did not target the commercial population during this time. Analyses more specific to Arkansas’ PCMH and EOC models and target populations are planned for future reports, when the data become available.

4.1 Overview of Arkansas Model

Arkansas supports development of three major reform models through its SIM Initiative—known as the Arkansas Health Care Payment Improvement Initiative (AHCPPII). The three reform models are retrospective EOCs, PCMHs, and health homes. The EOCs and PCMHs are well under way but the health homes are still under development. To support these major reforms, Arkansas is investing in data analytics enhancements and has expanded the practice transformation assistance available to providers by having two vendors provide support to practices in becoming PCMHs: Qualis Health and, more recently, the Arkansas Foundation for Medical Care (AFMC). Arkansas is engaging stakeholders in all these reform efforts. Most recently, the Arkansas SIM leaders within the Department of Human Services (DHS, the department that operates the state Medicaid program) worked in collaboration with the Arkansas Center for Health Improvement (ACHI) and the Arkansas Department of Health (the state’s public health department) to develop a population health plan.

To complement the payment and delivery system reform models, Arkansas has invested in health information technology (health IT) strategies, workforce development efforts, and ongoing stakeholder engagement. Under the SIM Initiative, the state aims for these models and strategies to support the state's health care system transformation from a traditional volume-based to a value-based delivery system that rewards high quality of care, cost containment, and guideline-concordant care.

4.2 Site Visit Report

4.2.1 Summary of progress, challenges, and lessons learned

Arkansas has achieved varying degrees of progress in the different reform models, as noted. The EOC and PCMH models are working well. However, services for behavioral health, DD, and LTSS are taking more time to develop and implement.

Episodes of care. Since the beginning of the Arkansas SIM Initiative, the state has implemented 14 retrospective EOCs to provide gain/risk sharing to designated principal accountable providers (PAP) for their management of specific, defined EOCs among their patient pool. Since the last site visit, Arkansas added EOCs for coronary artery bypass grafts, asthma, and chronic obstructive pulmonary disease (COPD). The state Medicaid agency and two large private payers (Arkansas Blue Cross Blue Shield [ARBCBS] and QualChoice) continue to meet to discuss episode design and implementation. In the past year, Ambetter, an Arkansas qualified health plan (QHP) covering Medicaid expansion beneficiaries, has also joined this group to learn more about EOCs for potential participation in the future. However, the state learned that the initial plan to develop and implement up to 50 EOCs within the first 2–3 years of the Arkansas SIM Initiative was overly ambitious and overwhelming to clinicians.

For each EOC, the Arkansas Medicaid agency prepares and disseminates performance reports that detail how each provider's costs compare to that of its peers. State officials and private payers felt that it is still too early in the process of producing these performance reports to gauge whether and how they impact change, although the state is encouraged by early anecdotal findings that show positive outcomes in lowered utilization and costs around the EOCs.

Patient-centered medical homes. Many stakeholders believe the PCMH model has gained the most traction so far. Arkansas SIM leaders reported that enrollment in PCMHs to date has exceeded expectations. Practices too small to be designated PCMHs under Arkansas' rules, which require a minimum of 300 Medicaid beneficiaries, are voluntarily pooling to reach the minimum patient panel size. These voluntary pools among the smaller practices have been an unexpected but very positive development as viewed by state officials, who were uncertain to what degree this would occur. Currently, there are 123 PCMH practices statewide, in addition to the 63 practices participating in the Comprehensive Primary Care initiative (CPCi).

In addition to both Arkansas Medicaid and Medicare, ARBCBS and QualChoice have participated in CPCi since 2012—making per member per month (PMPM) payments to CPCi PCMHs. Beginning in 2014, the state expanded its Arkansas SIM PMCH program, which is voluntary for primary care practices that participate through the traditional Medicaid fee-for-service (FFS) program. Arkansas has also used policy levers to mandate PCMH participation among Marketplace QHPs and Medicare Advantage Special Needs Plans for Medicare-Medicaid beneficiaries (D-SNPs). Beginning in 2015, the Arkansas Department of Insurance regulations require each QHP to pay \$5 PMPM to Medicaid-recognized PCMH practices in the QHP network. In addition, the state’s contracts with Medicare Advantage plans that offer D-SNPs require D-SNPs to make \$5 PMPM payments to PMCH practices. Payments for Medicaid services remain FFS.

Health homes and prospective payments for special needs populations. Development of health homes and prospective assessment-based payments (formerly called ‘assessment-based episodes’) for services related to behavioral health, DD, and LTSS is progressing more slowly. Near the end of 2014, Arkansas Medicaid curtailed most public discussion about health homes, and specific actions to implement health homes have been indefinitely delayed. Behavioral health, DD, and LTSS services are currently delivered by select groups of specialized providers. Since their case mix is dominated by Medicaid enrollees, these providers’ finances would be significantly affected by any care delivery and payment reforms. For this reason, according to state officials and other stakeholders, some of these providers have strongly opposed the development of health homes. One state official posited that, because Medicaid is acting alone in the development of health homes, without the alliance with private payers, the Medicaid agency is more vulnerable to provider opposition. The state continues to pursue other avenues to implement some of the ideas developed through the health homes discussion process. According to state officials, one lesson learned is to give greater weight to the business perspective when presenting payment reform proposals to providers.

In January 2015, the Arkansas legislature passed and the Governor signed the Arkansas Health Reform Act of 2015, also known as Act 46. This law allows continuation of Medicaid expansion using the private option through December 31, 2016. Act 46 also establishes the 16-member Arkansas Health Reform Legislative Task Force. The task force will be chaired by the state’s newly appointed Surgeon General, with advice from an advisory council of representatives from advocacy groups and state agency leaders. The task force will decide future policy directions, with recommendations to the Governor by the end of 2015 regarding the health care delivery system in Arkansas. The Governor plans to call a special legislative session in early 2016, to enact any laws needed to implement the task force recommendations. It is unknown at this time how the task force recommendations might affect components of the Arkansas SIM Initiative—particularly any changes to how services for individuals with behavioral health, DD, or LTSS needs are paid for.

Other lessons learned. A state official volunteered that the state’s ability to convene payers without fear of antitrust violations is a key element underlying all Arkansas’ payment reforms. Private payers similarly reported that a multi-payer initiative is helpful in enabling providers to participate in delivery system reforms like EOCs and PCMHs.

One provider organization suggested that implementing EOCs and PCMHs simultaneously was very difficult, and recommended that PCMHs be well established before the rollout of EOCs.

4.2.2 Delivery system and payment reforms

Below we describe Arkansas’ progress on EOCs, PCMHs, and the state’s efforts to reconfigure and pay for services for individuals with behavioral health, DD, and LTSS needs.

Episodes of care. In the past year, Arkansas’ EOC work focused more on refinement and maintenance of the retrospective episodes already in place and less on developing or launching new ones. Arkansas Medicaid has implemented 14 EOCs since 2011; one private payer has implemented nine and another has implemented four (see *Table 4-1*). The state used a State Plan Amendment (SPA) to authorize the methodology behind Medicaid episode-based payments and initial EOCs, and additional SPAs to add new ones. Upon completion of a performance period, each PAP may be eligible for gain sharing if the PAP achieves a commendable performance status. If the PAP’s performance in containing costs exceeds the acceptable threshold and is deemed not acceptable, the PAP may be required to refund a portion of payments. Both Medicaid and one private payer distributed gain sharing payments and received partial payment refunds for EOCs that ended in 2013; a second private payer will begin to do so later this year for 2014 EOCs.

Development of additional EOCs since the initial 14 has been slower than anticipated for three major reasons: (1) the high level of resources needed, (2) provider pushback, and (3) a legislative moratorium. To ensure stakeholder buy-in, initial development of a new EOC is a 6- to 18-month process, which has been very resource intensive for the state. Revision and maintenance is also time-consuming. According to one state official, Arkansas initially underestimated the resources needed to review and update diagnostic and billing codes for existing EOCs. During 2014, state officials and vendors conducted an intensive review of the EOC definitions included in the first set. The same state official commented that a “tremendous amount of effort and lift” was needed for decision-making about current procedure terminology (CPT) and diagnosis codes, clinical reviews, and other fine-tuning of the EOC definitions in response to provider concerns. After the initial set of EOCs was launched in 2012 there was pushback, particularly among some clinical advisors and provider associations that participated in EOC Clinical Workgroups. Their argument was that too many episodes were planned for rollout in too short a time. The legislative moratorium on development of new behavioral health

Table 4-1. Implementation status of Arkansas' episodes-of-care models

Episode & wave	Legislative review	State plan amendment effective date	Reporting period start date/episode launch	First performance period ends	Payers
Active episodes					
Wave 1a					
1–3. URI	Spring 2012	10-1-12	7-31-12	9-30-13	Medicaid
4. ADHD	Spring 2012	10-1-12	7-31-12	12-31-13	Medicaid
5. Perinatal	Spring 2012	10-1-12	7-31-12	9-30-13	Medicaid, BCBS, QualChoice
Wave 1b					
6. CHF	Nov 2012	2-1-13	11-30-12	12-31-13	Medicaid, BCBS
7. Total joint	Nov 2012	2-1-13	11-30-12	12-31-13	Medicaid, BCBS, QualChoice
Wave 2a					
8. Colonoscopy	May 2013	10-1-13	7-31-13	9-30-14	Medicaid, BCBS, QualChoice
9. Gallbladder	May 2013	10-1-13	7-31-13	9-30-14	Medicaid, BCBS, QualChoice
10. Tonsillectomy	May 2013	10-1-13	7-31-13	9-30-14	Medicaid, BCBS
11. ODD	July 2013	10-1-13	10-31-13	03-31-15	Medicaid
Wave 2b					
12. CABG	July 2013	10-1-13	1-31-14	3-31-15	Medicaid, BCBS
13. Asthma	July 2013	10-1-13	4-30-14	06-30-15	Medicaid, BCBS
14. COPD	July 2013	10-1-13	10-31-14	12-31-15	Medicaid, BCBS
Episodes under development or pending					
15. PCI	July 2013	10-1-13	TBD	TBD	Medicaid, BCBS, QualChoice
16–23. Neonatal	Q2 CY 2014	TBD	TBD	TBD	Medicaid
24. ADHD-ODD	Q2 CY 2014	10-1-13	TBD	TBD	Medicaid

ADHD = attention-deficit hyperactivity disorder; BCBS = Blue Cross Blue Shield; CABG = coronary artery bypass graft; CHF = coronary heart failure; COPD = chronic obstructive pulmonary disease; ODD = oppositional defiant disorder; PCI = percutaneous coronary intervention; SPA = state plan amendment; URI = upper respiratory tract infection.

Sources: Personal communication with Division of Medical Services staff, August 20, 2014, and November 20, 2014; Multi-Payer Episode Chart on the APII Web site, dated May 1, 2014; state plan amendments 12-10, 13-03, 13-05. Revised November 26, 2014.

EOCs was put in place during the 2014 legislative session, which ends on July 1, 2015. Several stakeholders speculated that affected providers and their associations had successfully lobbied for this moratorium because behavioral health providers were reluctant to be named as PAPs.

When Arkansas developed the initial EOCs, the state relied on a single contractor to both develop the EOCs and create the payment methodology to process EOC payments and generate reports. In the past year, Arkansas has transferred responsibility for maintaining what is known as the “rules engine” to a new contractor, and has trained state employees to handle more of the episode generator functions themselves. This transition has also led the state to devote more time to refine the definitions of EOCs, incorporate annual coding changes, document which costs are included, and reexamine which cases should be excluded from EOC calculations. There are both clinical (age, comorbidities) and business (Medicare-Medicaid enrollees, enrollment duration, other third-party payer) exclusions. Private payers are trying to align closely with Medicaid EOC definitions, but have the option to modify the algorithms according to their payment models.

For state officials and across stakeholders—including providers and their associations, payers, and consumer advocates—implementation of EOCs has been both enlightening and challenging. The initial medical conditions for episode development were chosen to touch on a large number of enrollees and a range of provider types—primary care providers, specialists, hospitals, and mental health providers. In retrospect, one state official suggested that EOCs should be concentrated on high intensity, high cost conditions rather than conditions such as upper respiratory infections (URIs), which are low cost but high frequency occurrences. In addition, one consumer advocate cautioned that EOCs for chronic conditions (in particular attention-deficit hyperactivity disorder [ADHD]), which have longer durations, do not provide rapid feedback to providers, and suggested that acute conditions with shorter durations are better suited to early rollout of EOC-based payment.

Payers produce performance reports for the PAPs in their provider networks, to detail how each PAP’s costs compare to those of its peers. In return, PAPs must enter quality metrics information into the BCBS Advanced Health Information Network (AHIN) provider portal to be eligible for shared savings. State officials and private payers shared early success stories of individual providers making changes within their practices, to better align with guideline-based concordant care and decrease costs within their control. But one provider in a focus group complained that s/he received performance reports that did not help identify needed changes and therefore felt frustrated about owing money back to the state. Another provider remarked, “If we got patient-specific information, that would be more helpful. I need to be able to look at a patient and know how much it cost for them to see that psychiatrist and what the psychiatrist did for the patient. For behavioral health, it’s like a hole and you don’t know what they’re going to do. More patient-specific info is what we need.”

Provider focus group participants expressed concern about their ability to control costs and whether it was always desirable. The surgeons designated as PAPs for hip and knee replacement EOCs, for example, were skeptical of their ability to change outcomes such as hospital length of stay, which they argue is more under the control of the patient and hospital. Moreover, these surgeons argued that a patient's extra time in the hospital may have nothing to do with the care a physician provided, but rather with the home life to which the patient is returning. For the perinatal care EOC, obstetricians were divided in their opinions on the utility of tracking outcomes such as C-section rates. A couple of specialists agreed that rates are too high among some of their peers; but others felt the measure should be refined further to document the reason for the C-section, rather than only measuring the total number of C-sections performed. That said, one specialist remarked that a positive aspect of EOC payments is that "something is finally being done to rein in the few specialists who do over-test mothers during pregnancy or perform too many elective C-sections."

Most pediatricians participating in the provider focus groups were not supportive of EOCs for their patient population. "They're the hardest patients and the hardest to make a living on, especially in a solo practice." Their argument was that pediatricians are not in a position to create meaningful savings when treating children, so some are simply cutting back on treating Medicaid patients. One provider said, "it takes time to decide how to code something other than a URI, when it's clearly a URI but they have 18 other problems," while another remarked, "In some ways it makes me feel like I'm coding more correctly. I code viral infection, as opposed to URI, which is a more correct diagnosis; URI is a trash basket code." With regard to care coordination in pediatrics, one clinician said, "I'm not big enough to have financial benefit for them [Medicaid patients] because we don't see enough patients." Some clinicians also argued that children are typically healthier so they have fewer health care needs; as a result, less care coordination is needed than among more chronically ill or older patients. Overall, one pediatrician said, "There's a lot of good in what's happening right now. The idea is right but I don't know if it's implemented correctly. Episodes for ADHD did get [Rehabilitation Services for People with Mental Illness] companies that were taking advantage of the system under control. They're helping with that, but for most pediatricians it's made a hassle for us. It's not giving us the benefit they said—you don't get rewarded unless you really are providing less care than you can."

One state official provided anecdotal evidence that provider acceptance has varied dramatically across providers, with no particular "rhyme or reason." To date, the state has not collected or received formal feedback to ascertain which provider types are more supportive versus resistant to EOC payments. Many providers may not be aware of the existence of the EOC payments or that they have been selected as an EOC PAP. In the primary care physician survey, 40 percent of respondents acknowledged receipt of a payment report, but 24 percent reported that they did not receive a report and 36 percent did not know whether they received a report.

A consumer advocacy organization suggested that more could be done to help providers learn to communicate with patients about practice changes that might result from following the treatment guidelines embedded in an EOC. This advocate believes that some consumers have experienced changes to their care affected by EOCs without understanding why, but said it was the state's intent for EOC payments not to be a change patients detect or need to understand.

Patient-centered medical homes. The PCMH model in Arkansas was widely praised by state officials, providers, and other stakeholders as being the Arkansas SIM component with the most progress to date. State officials have been encouraged by providers' interest in joining PCMHs; enrollment in PCMHs has exceeded expectations. A particularly pleasant surprise to state officials, as noted, is the number of small practices voluntarily pooling to reach the minimum patient panel size of 300 Medicaid beneficiaries to be designated a PCMH. In January 2014, Medicaid began making monthly PMPM payments to 123 practices (659 primary care physicians) serving 76 percent of eligible Medicaid beneficiaries.

State officials responsible for developing and monitoring the transformation through PCMHs argued that the strength of the PCMH model is that it was designed to account for the state's different types of primary care providers. According to one state official, "the strength of ours [PCMH model] is tailoring to Arkansas providers where they are and almost all payers in the state are involved in reinforcing that same message." This sentiment was reinforced in interviews with private payers, including a large self-funded employer, who expressed strong support for PCMHs and praised Arkansas' "custom-made" PCMH model.

Arkansas developed PCMH criteria in consultation with a physician advisory group—which will be phased in over time and are validated by a contractor that performs on-site reviews. According to state officials, of the 123 non-CPCi practices attempting to meet Arkansas' PCMH criteria, 85 have already met them all.

Medicaid pays participating PCMHs a PMPM fee averaging \$4; the actual fee, which depends on patient risk levels, ranges from \$1 to \$30 (per PCMH provider manual). The practices are also eligible for shared savings if they have a minimum population of at least 5,000 Medicaid beneficiaries. Similar to the option for smaller practices to join together in voluntary pools to meet the minimum threshold of 300 Medicaid beneficiaries, smaller practices can also participate in a statewide default pool to meet the minimum panel size for shared savings. Arkansas Medicaid reports that 36 practices enrolled in the PCMH program currently meet the shared savings requirement of 5,000 beneficiaries; the number of practices enrolled is expected to increase substantially in 2015. PCMHs receive incentive payments based on the total cost of care during the year for their panel of patients. There are two payment methods: one based on absolute performance, the other on improvement over the previous year. Medicaid will make the first PCMH shared savings payments in July 2015. Two private payers anticipate paying shared savings beginning in 2016.

Several private payers in Arkansas are adopting the Medicaid PCMH design. Three carriers offering QHPs and five carriers offering Medicare Advantage D-SNPs enrolled providers during the first quarter 2015 and began PMPM payments in second quarter (see **Table 4-2**). One carrier was already participating through both its commercial plans and its administrative services–only contracts in the CPCi; and its QHPs began participating in the Arkansas SIM–supported PCMH program in 2015. This carrier anticipates that its commercial plans will participate in PCMH beginning in 2016.

Table 4-2. Participation of private payers in Arkansas’ primary care transformation initiatives as of the first quarter of 2015

Payer types	SIM-related PCMH	CPCi
Private Carriers		
Fully insured	1 (2016 launch)	3
Self-funded employers	3	6
Public/subsidized		
Marketplace QHPs	3	
Medicaid expansion QHPs	3	
MA D-SNPs	5	

CPCi = Comprehensive Primary Care initiative; MA D-SNP = Medicare Advantage special needs plan for Medicare-Medicaid enrollees; PCMH = Arkansas SIM–related patient-centered medical care home initiative; QHP = qualified health plan.

The Arkansas Department of Insurance regulations, as noted, require each QHP to pay \$5 PMPM to each PCMH that participates in their provider networks starting in 2015. After the rule was enacted in late 2014, some larger private payers scrambled to write contracts with providers, but payers with less market penetration chose to offer the PCMH payment to providers without a contract.

In addition, Arkansas Medicaid leveraged a provision in the Medicaid Improvements for Patients and Providers Act that requires D-SNPs to sign contracts with the state Medicaid agency describing these Medicare Advantage plans’ responsibilities to coordinate Medicare and Medicaid benefits. Arkansas Medicaid used this provision to require D-SNPs to make \$5 PMPM payments to PCMHs, at no cost to Medicaid beyond the agreed-upon capitation rate.

PCMHs have started to receive quarterly reports from the state Medicaid program to show their performance on process metrics, quality metrics, and costs (e.g., total PMPM Medicaid expenditures) compared to state-established thresholds. Although the PCMH metrics are aligned across payers and reported through AHIN, some private payers would have preferred to use existing metrics (e.g., Healthcare Effectiveness Data and Performance Set measures) rather than metrics requiring chart review. One provider organization expressed concern that

PCMH metrics in Arkansas do not match national metrics, making it difficult to compare across states.

State officials, payers, and provider associations shared anecdotal evidence that PCMHs are having a positive impact on access to care and care coordination. Nearly 67 percent of physicians responding to the 2014 primary care physician survey reported offering same-day appointments, and 89 percent reported flexibility in scheduling customized visit lengths. However, one consumer advocacy organization felt the PCMH still has not “caught on” among patients, although no complaints from patients or their caregivers related to practice transformations had been received. This organization did say that, in the coming year, it plans to more formally collect feedback on patient experiences with primary care providers, particularly any changes in care coordination and access to care.

Arkansas Medicaid offers PCMHs a set number of hours of practice transformation support. Each practice can choose from a menu of support services offered by one of two practice transformation support vendors. Both state officials and a practice transformation vendor said that Medicaid funding of practice transformation support is popular and successful, though neither the state nor the vendor could describe the most requested types of assistance. Practice transformation coaches worked with over 70 practices across 140 locations/sites in 2014. PCMH office staff have been most involved with practice transformation activities, but the vendor is optimistic that providers themselves will become more invested in transformation efforts as the PCMH shared savings component rolls out.

According to the same practice transformation vendor, the key for meaningful practice transformation is for practices to identify a “physician champion” that can lead the efforts and be an example for other providers. Primary care providers in our focus groups shared anecdotes of positive changes taking place within their practices that can be attributed to their participation in PCMH transformation activities. Some practices are hiring care coordinators; others are training nurses already in the practice to expand their roles to include more care coordination. All PCMH providers participating in the focus groups, including pediatricians, stated that their practices provide patient education for better prevention, self-management, and appropriate use of the ER. Some, but not all, of those PCMH practices have been rolling out 24/7 access plans. One pediatrician noted “huge opportunities to do good things for kids, but the biggest problem is that there aren’t huge savings for kids in the systems. Unless we can prove that what we’re doing for kids will make them healthier adults, we have to hire new staff and there’s no savings at the end. It makes it really difficult to take care of Medicaid patients.”

Health homes and prospective payments for special needs populations. The targeted health home model—with an assessment-based prospective payment system for home and community-based services (HCBS)—is designed to assist individuals with behavioral health, DD, or LTSS needs in optimizing coordination of these services. Because such services are

covered almost exclusively by Medicaid, private payers are not involved in the design or implementation of these models.

Arkansas' plan to submit SPAs creating health homes for these special populations and implement the Community First Choice option to finance HCBS experienced setbacks last year. State officials said the DD health home SPA is 85 percent complete, although it will need to be reviewed by the state legislature and CMS. But behavioral health home development is on hold due to resistance by behavioral health providers.

Behavioral health caseloads are dominated by Medicaid enrollees, so any payment reforms will have a significant impact on these providers' revenues. State officials and other stakeholders indicated that some of these providers have strongly opposed development of health homes and use of assessment-based methods to determine payments and service tiers. State officials noted the need to help providers better understand the need for change, explain the potential impact on them, and ensure that their concerns will be taken seriously and handled appropriately. According to state officials, as noted, an important lesson learned is to emphasize the business case when presenting proposed changes to those whose revenues will be most impacted—particularly given the view expressed by one state official that, without the alliance of private payers, Medicaid is more vulnerable to provider opposition.

For LTSS, state officials have decided not to proceed with health homes for HCBS waiver participants, primarily because of cost-effectiveness and sustainability issues—particularly concerns regarding the cost of programming the legacy Medicaid management information system, which is being replaced. An HCBS stakeholder was disappointed about this decision, stating it would be a loss for individuals who use HCBS. State officials indicated they planned to enhance case management services already available to HCBS waiver participants rather than proceed with health homes. State officials also indicated that health homes for nursing facility residents are not under consideration.

Even though Arkansas Medicaid curtailed most public discussion about health homes and any specific actions to implement health homes toward the end of 2014, Medicaid leadership remains interested in transforming service delivery and payment models for those with special needs. The state is also developing alternative methods for improving HCBS delivery identified through the planning process.

In addition, new assessment tools based on the Resident Assessment Instrument (interRAI) suite of assessments have been implemented for the HCBS and DD populations and piloted for behavioral health. In the past year, Arkansas developed a component to the assessment tool for DD services that assigns one of 33 levels of care for adults and one of eight levels for children—each level associated with a mean payment amount for 12 months of services. These assessment levels will be used to determine prospective payment levels for DD

HCBS waiver services. One consumer advocacy organization expressed disappointment with the selection of the interRAI assessment tool for DD services, which focuses on functional impairments and service needs (rather than a strengths-based assessment as favored by many DD stakeholders). Even so, that advocacy organization welcomed the flexibility assessment-based payments could bring, is supportive overall of the state's decision and encouraged by the potential for the new tool to improve documentation, and said that large DD providers are supportive.

For HCBS, state officials are proceeding with plans to determine hours of attendant services on HCBS waiver service plans using Resource Utilization Group scores. One HCBS provider felt the use of such scores would be a positive change to reduce disparities in service plans and better target resources. Although several HCBS stakeholders were concerned that many waiver participants lost eligibility for services when the new assessment tool was initially implemented, they expressed support for plans to combine waiver services into one attendant service, which will increase flexibility for waiver participants and simplify billing.

4.2.3 Behavioral health integration

Arkansas conducted extensive stakeholder engagement over several years to develop its behavioral health transformation initiative, leading to development of a draft SPA for behavioral health homes and other policy proposals. Despite high engagement with stakeholders, many behavioral health providers who submitted comments on the draft SPA and other proposed policies in fall 2014 did not support the state's proposals, as noted. Lacking solid stakeholder support and with a new administration coming into office, state officials decided to delay implementation of behavioral health homes and other proposed changes, and wait for feedback from the new administration and the legislatively mandated task force described above.

In the Arkansas behavioral health model, standardized assessments would determine the appropriate tier for care coordination and other behavioral health services. Individuals with serious mental illness or serious emotional disturbance would receive care coordination through behavioral health homes. The health homes would coordinate mental health, substance use disorder, LTSS, and medical services; develop integrated care plans; and be accountable for medical and behavioral health outcomes. Those with less serious mental health needs would receive PCMH-coordinated medical and behavioral health services.

The Arkansas behavioral health home and PCMH models tie payments to metrics for achieving integration. For behavioral health homes, for example, one of the proposed process metrics is the percentage of clients with integrated care plans, which would become a required metric for PMPM payments. Outcome metrics for the behavioral health homes model are related to hypertension and body mass index (BMI), as well as to behavioral health conditions. And one of the PCMH metrics already being tracked for practice support is care plans for high-risk

patients that integrate contributions from other providers, including behavioral health professionals.

State officials said that some behavioral health providers may be unsure how the proposed tier system and PMPM payments to health homes would affect their revenues. Some opposition was attributed to large private behavioral health providers who serve primarily children and are comfortable with revenue streams under the current system. Adults are typically served by the community mental health centers.

Participants in the behavioral health provider focus group said they are following proposed changes closely. They have also been involved in the Arkansas SIM stakeholder process, but they have not yet made changes to their business processes. Focus group providers said they coordinate care for their patients but, under the current Medicaid rehabilitative services option that pays for most community mental health services, providers cannot bill for coordination with other services. Providers said their organizations have implemented electronic health records (EHR) systems or are doing so, which will facilitate improved care coordination and information sharing. State officials agreed that progress on health IT is continuing, including connecting behavioral health providers to the state's health information exchange (SHARE).

State officials noted that primary care physicians play a significant role in behavioral health, especially for children, but that access to behavioral health providers is an issue, particularly access to psychiatrists. While a slight majority (56 percent) of Arkansas primary care physicians responding to the survey said their patients have access to behavioral health services in a timely and convenient manner, 28 percent said patients only have that level of access sometimes, and 16 percent said patients rarely or never have timely and convenient access.

Most Arkansans access behavioral health care through referrals from medical providers. Eighty-five percent of primary care physicians who responded to the survey either refer patients to behavioral health providers or provide patients with names of behavioral health providers. Only 7 percent of physicians responding to the primary care physician survey said they have behavioral health providers co-located in their practices. Behavioral health providers and state officials said Medicaid reimbursement rates currently discourage co-location. Co-location is not a specific Arkansas SIM goal, but state officials recognize that current policy creates a barrier to it and have proposed changes to address the issue; however, these changes were not described during the site visit.

Several behavioral health providers and a state official said that implementation of ADHD EOCs had caused some primary care physicians to stop treating children and youth with ADHD, due to EOC risk-sharing; another stakeholder noted some primary care physicians were

concerned about prescribing stimulants to children. It was not clear from provider and beneficiary focus groups whether such providers still treat their child patients for conditions other than ADHD. Provider focus group participants did not mention this issue. State officials said some behavioral health providers are reacting to ADHD EOCs by diagnosing ADHD patients with comorbid conditions that currently exclude them from the EOC payment systems.

4.2.4 Quality measurement and reporting

Arkansas is tracking physician performance using quality metrics across models. Specifically, the state has chosen clinical quality measures related to each of the 14 EOC payment models implemented to date. Providers have received performance reports for EOCs dating back to the initial wave of EOCs launched in 2012, and some of the EOCs have gone to risk/gain sharing. Arkansas has also chosen a set of clinical quality measures for PCMHs, including all-cause readmissions, preventive care and screening measures, and optimal care measures for select chronic conditions. PCMH practices receive quarterly reports outlining their performance on process measures, quality measures, number of beneficiaries enrolled, and total costs. The state is optimistic that quality will improve across PCMH providers, noting that very few PCMH practices were eligible for shared savings in 2014. The Arkansas SIM Initiative requires PCMHs to participate in the EHR Meaningful Use Incentive Program, which has further improved PCMH capacity to report quality metrics.

According to state officials, efforts are under way to align quality measures across models. This is a moving target, however, given that quality measures are evolving as the Arkansas SIM Initiative progresses. As a result, direct comparisons across performance years cannot be made. Private payers in the state are implementing some quality metrics through participation in the EOCs, but they have chosen to tailor their EOC participation to the needs of their patient populations. One payer noted improvement in quality for the perinatal EOC compared to baseline. Arkansas is also using Clinician and Group Consumer Assessment of Healthcare Providers and Systems [CG-CAHPS] surveys to measure care coordination and communication. These data are reported to physicians annually and performance targets are defined by the state.

Several provider focus group participants expressed concern that quality metrics were not a fair indication of the care they provide. As noted, a few of these providers believed they had been unfairly penalized for hospital length of stay in cases where patients experienced medical exacerbations or social challenges that required prolonging hospitalization beyond the standard length of stay. A few providers also said that quality measures result in less time spent caring for patients and more overhead costs to hire office personnel for reporting. Providers also reported changing the way they code for billing purposes as a result of the quality metrics, particularly related to the ADHD and URI episodes, as noted.

4.2.5 Health information technology and data infrastructure

Arkansas is using five major health IT/data analytic strategies for health care transformation: (1) Medicaid's EOC generator, (2) the BCBS AHIN, (3) State Health Alliance for Records Exchange (SHARE, which is the state's Health Information Exchange), (4) EHRs, and (5) an all-payer claims database (APCD). The EOC generator was developed by the state in conjunction with a data analytics vendor to analyze Arkansas' Medicaid claims to determine risk/gain sharing payments for each EOC. ARBCBS' AHIN provides the portal through which providers can access their quality and cost performance metrics and benchmark their performance to their peers, both for EOCs and PCMH. SHARE is currently being used to send ER and hospital discharge information to providers enrolled in Medicaid's PCMH program. To become a PCMH, providers have up to 24 months to document acquisition of an EHR to facilitate care coordination. Arkansas' APCD will amass health care claims-based data from public and private payers to "better understand how and where health care is being delivered and how much is being spent" (APCD, 2015). All these health IT/data analytic strategies are critical for health care transformation, although none is actually being supported directly by Arkansas SIM funds; but development of health IT/data analytic strategies has been challenging for the state. As one state official remarked, "The systems have been a real choke point for us. You just can't make that many big changes all at the same time. We were more dependent on the health IT systems than we originally anticipated in terms of our timelines."

SHARE has made impressive progress in functionality in the past year. Not only is SHARE able to inform providers about ER visits and hospitalizations occurring in hospitals that have connected to SHARE, it can also provide information on what occurred during the admission. If providers have systems that are configured to upload information from SHARE, practices can download test results, diagnoses, and discharge summaries entered into their EHRs. Even if the practice does not have this functionality, it can still log onto SHARE and see this information. SHARE also works with practices to determine which functionality and workflow best fit their needs. To date, SHARE has on-boarded 143 clinics and has plans to add additional practices in second quarter 2015. Because of providers' need to use clinical data from many sources to calculate quality measures, there will be increased need for SHARE connectivity in the future.

SHARE's utility for health care transformation may not be well understood by all stakeholders, however. The intricacies and cost of connecting to SHARE have been daunting to many providers, as expressed during PCMH advisory group meetings. Some providers within a hospital-based health care system questioned the need to connect to SHARE, because they receive discharge information seamlessly without connecting to SHARE. One vendor said providers are weary of all the initiatives and all the vendors that come along with them, with many vendors asking for money along the way. Payers are aware of SHARE but not currently involved with it; whether they will be involved with SHARE in the future is unclear.

SHARE is working on several pilot projects with Medicaid, but noted the major barriers for sharing information are policy oriented, especially related to the sharing of psychotherapy and substance abuse information. SHARE is evaluating whether it is possible to provide clinical data in the format necessary to calculate quality metrics for diabetes and hypertension. SHARE is working with vendors to make this happen by fourth quarter 2015.

The ARBCBS AHIN is an important Arkansas SIM data infrastructure, because it provides the feedback portal through which physicians see their performance and also is the conduit for providers to manually upload their quality metrics to be part of gain/risk share. The portal was designed so that providers see uniform data reports across payers. The AHIN team is currently working on a process that will allow providers to drill down into their reports, to identify the outlier patients so as better coordinate their care in the future.

Providers are engaged with the state's health IT initiatives both by mandate (e.g., EOC payments and PCMH) and by choice. Although only 12 percent of respondents to the primary care physician survey indicated that their practice is a PCMH, 86 percent reported having an EHR system (of which 59 percent had had one for 3 or more years). Half the providers indicated sharing electronic clinical data with patients via a portal, but only slightly over a quarter are connected to SHARE and less than a quarter either view or share clinical data with other providers. About two-thirds use the EHRs to generate quality measure information, but only about half said they review these data at the practice level and indicated that a portion of their payments from any payer is tied to these performance metrics.

4.2.6 Workforce development

In 2012, ACHI published the *Arkansas Health Workforce Strategic Plan*, which lists specific recommendations to help the state meet four defined health workforce goals. One of those is to adjust the payment system to support changes that increase team-based care, use of technology, and provider supply. Arkansas' activity under the SIM Initiative is one response to these recommendations. In 2013, ACHI released a follow-up report, *Arkansas Health Care Workforce: A Guide for Policy Action*. This quantifies statewide provider shortages and identifies areas of both excess supply (central Arkansas) and severe shortages (southeast and southwest Arkansas). The report also makes recommendations for addressing the uneven distribution of providers in the state. Some of these recommendations are being implemented outside the scope of the Arkansas SIM Initiative, through activities such as the planned opening of two schools of osteopathy and expanded use of telemedicine.

The Arkansas SIM Initiative includes support to providers through active engagement with, and education about, the state's major payment and delivery system reforms—which thus far have been mostly EOCs and PCMHs. Arkansas is providing information, technical assistance, and peer support to help providers make the practice level changes needed to participate successfully under the new payment models.

Participation in Arkansas' alternative payment method using defined EOCs for certain Medicaid services is mandatory for all providers. Affected providers receive annual reports from the state that detail the provider's cost of providing services within each EOC, and compare the provider to his/her peers. These reports can help providers identify areas that may need improvement or changes in practice to better align with best practice guidelines. According to Arkansas SIM leaders, the annual performance reports PAPs receive are helping them adapt to EOCs. One state official said that identifying only one or two small inefficiencies can help a provider make changes that lead to positive financial outcomes. Providers can call a state-contracted vendor for assistance in interpreting the reports and discuss practice changes that may be needed. The state has also contracted for direct assistance to those physicians identified as outliers at risk for owing payments back to the state. The contracted vendor works with these providers to change their practice habits and bring them in line with best practices.

For PCMH, Arkansas established 13 criteria that practices must meet within 24 months to continue receiving PCMH payments. The state conducts on-site validation visits to ensure practices are meeting these criteria, and provides summary reports to practices to highlight any areas that need improvement. To help providers meet the Arkansas-specific PCMH standards, Arkansas Medicaid offers PCMH practices a set number of hours of practice transformation support free of charge to the practice, which is available through the end of 2015.

Each practice can choose from a menu of practice transformation support services offered by Qualis (current and continuing vendor) or AFMC (new practice transformation vendor for 2015). Both state officials and the practice transformation vendors noted that the practice transformation support, from their perspectives, is popular and successful. The practice transformation vendors work with clinical providers as well as billing clerks, front office staff, and office managers to meet PCMH certification criteria. One vendor—the same vendor that suggested requiring a “physician champion” to sign on as a helpful PCMH-certification criterion the state could consider adding—reported that, in some cases, nonclinicians are more easily convinced of the value of meeting PCMH criteria than are their clinical colleagues. A few providers seem unaware of the option to receive assistance from the state's contracted vendors. Despite this, the state has been pleasantly surprised by the participation of providers in the PCMH initiative—reporting that practice transformation services were oversubscribed, which prompted the state to add the second vendor. The state's funding for the vendors' coaching services will end after 2 years. Arkansas Medicaid will assess whether practices need continued support after that time.

The Arkansas SIM Initiative has changed at least some payments for the majority of primary and specialty health care providers in the state, in ways that promote team-based care and care coordination. The provider focus groups uncovered a range of reactions to these payment changes—with many practices changing their practice patterns or staffing structures as a result. Others are still working through the implications of the changes. Some providers are

still struggling to understand the EOC reports they receive, and a few in provider focus groups complained that telephone wait times to speak with a representative who could explain their reports were too long to make the service accessible.

4.2.7 Population health

Arkansas finalized a first draft of their Population Health Plan in late January 2015. The plan was developed collaboratively by ADH, DHS, and ACHI. The SIM-required Population Health Plan gave ADH the opportunity to become more involved. In 2013, ADH developed a State Health Improvement Plan focusing on three major health issues for Arkansans: (1) short life expectancy, (2) high infant mortality, and (3) low health literacy. ADH included in the plan the need to reduce tobacco use, because of its relation to chronic illnesses such as lung and cardiovascular disease. The Population Health Plan builds on what ADH already had in place for tobacco cessation—adding diabetes, obesity, hypertension, substance abuse, breastfeeding, and health literacy. The draft plan includes strategies for addressing each of these topics plus metrics for evaluating their effectiveness, with the single exception of obesity. CMS wanted the state to collect BMI data for patients 6 months before and 6 months after an outpatient visit, but these data are not currently available. As state officials indicated, they tried to develop metrics initially for obesity, but because obesity is such a complex issue, the group was uncomfortable setting firm targets. Arkansas was one of the first states to collect BMI information for children over 12 years, and after seeing no decline in the rates over time, the state recognized new strategies were needed, especially at the local level.

According to state officials, development of the Population Health Plan got off to a rocky start. First, DHS did not include ADH early on, so ADH staff needed to “catch up” when they joined the discussion. ADH, DHS, and ACHI spent considerable time defining population health and could not begin developing the plan until everyone agreed on the definition. The development process went more smoothly once CMS provided a template to work from. State officials suggested that more clarity on how to define responsibilities between Medicaid and ADH would have helped, as the Arkansas SIM Initiative focuses on the Medicaid population but ADH works on health issues across the state.

4.2.8 Stakeholder engagement

Arkansas payers and medical providers are active Arkansas SIM participants through their engagement in planning and implementing payment reforms. Alignment between the major payers in the state helped gain acceptance of EOCs by providers, according to state officials, and the state has reported positive results for the initial EOCs that indicate changes in provider behavior. Voluntary enrollment of providers in PCMHs has exceeded the state’s expectations, as has use of practice transformation services. Stakeholders for LTSS, behavioral health, and DD services were actively engaged in planning until recently, but providers do not appear to be making changes on their own before initiatives are finalized. Some providers for these special

populations are ready to move forward; but others are more hesitant to change, particularly for-profit behavioral health providers and nursing homes, which have brought their concerns to the attention of state legislators.

The engagement of Arkansas payers has been a key factor in progress. Arkansas BCBS and QualChoice began collaborating with Medicaid on designing payment reforms before the Arkansas SIM Initiative began. They participate in project governance through the Multi-Payer Executive Committee, and in clinical work groups for developing the EOC and PCMH initiatives. During the stakeholder outreach phase, these two payers participated in public stakeholder forums across the state, along with Medicaid and other state officials. They have also played important roles in engaging other commercial insurers and self-insured groups.

Participation in the PMCH model is mandatory for QHPs and D-SNPs. That said, these plans appear to be willing participants, based on both their engagement in planning and coordination meetings and comments by other payers and state officials. Plans supporting primary care transformation meet regularly—with QHPs meeting every other week and both QHP and D-SNP plans participating in the CPCi meeting in alternate weeks. Because there is little or no overlap between D-SNPs and the other plans, the D-SNPs also have their own regular meetings with Medicaid. A state official said the D-SNPs seem to have embraced PCMH, noting that one of them asked to extend its provider enrollment period, which would likely increase the plan's payments to PCMHs. At the state's request, the D-SNPs agreed to use Arkansas Medicaid's PCMH quality metrics and targets. D-SNPs, QHPs, and Medicaid have also met to discuss an approach to shared savings in 2016.

Some large self-insured groups are actively involved—by participating in PCMH and EOCs and playing a role in governance through the Employer Council. A notable corporate participant is Walmart, a self-insured plan voluntarily participating in PCMH and EOCs. Walmart has actively been encouraging other employers to participate, and has made a large donation to support the Arkansas SIM Initiative.

Participation by medical providers is high, in both planning and implementation—both because EOCs are mandatory and affect many providers, and because PCMHs have been voluntarily embraced by many PCPs. Some individual providers feel left out of the planning, however, because the public work group meetings do not allow the same level of interaction as the smaller and more frequent clinical work groups.

According to state officials, medical provider associations are concerned that two groups with a major impact on Medicaid spending—nursing facilities and behavioral health providers—have not been included in payment reform implementation to date, except for the ADHD and oppositional defiant disorder (ODD) EOCs.

HCBS providers also expressed concern that nursing facilities are not subject to the same rules that govern HCBS, such as use of the interRAI assessment tool to determine functional eligibility. Otherwise, HCBS provider stakeholders were supportive of changes, though frustrated that the state had suspended development of health homes after so much time had been spent on planning. Large DD providers have also been engaged in planning and are supportive of proposed changes, but a provider stakeholder and state officials said that many small providers, as noted, are threatened by the potential financial ramifications of some proposed changes.

Behavioral health providers appear to be more sharply divided than other provider groups. State officials reported high stakeholder participation in planning payment and delivery reforms, and behavioral health providers in the focus group said they are represented in stakeholder meetings. But while nonprofit providers (such as the community mental health centers) seem generally supportive, many of the for-profit providers (which often specialize in serving children) are actively opposing change, through legislative and executive channels.

The two consumer stakeholder groups reported being engaged in public work group meetings and felt that their level of engagement is satisfactory. One consumer stakeholder commented that the EOC work groups are driven by clinicians and treatment guidelines and not as open to a consumer perspective, but that planning of the health home models offers more opportunities for consumer input.

4.3 Quantitative Outcomes

This section presents information on six types of outcomes: (1) provider and payer participation, (2) populations reached, (3) care coordination, (4) quality of care, (5) health care utilization, and (6) health expenditures. Data on the first two sets of measures come from various state sources. The latter four sets of measures are derived from commercial (MarketScan), Medicare, and Medicaid Analytic eXtract (MAX)/Alpha-MAX claims data.

While Arkansas SIM delivery system and payment reform models are targeted for the Medicaid and commercial population rather than Medicare populations, patients with *different types of insurance* often receive care from the same providers and health systems. This creates a potential for spillover effects on care received by Medicare beneficiaries.¹³ Furthermore, many of the enabling strategies (e.g., health IT investment) implemented under the Arkansas SIM Initiative are available to all providers statewide, and thus can potentially enhance the impact of other federal, state, and private sector initiatives within the state. The Arkansas SIM Initiative was intended to spread and support all health care reform in the state. Therefore, to capture these

¹³ For a description of potential spillover effects and a summary of evidence of these effects from previous delivery system and payment changes, see <https://www.cms.gov/Research-Statistics-Data-and-Systems/Statistics-Trends-and-Reports/ReportsTrustFunds/downloads/spillovereffects.pdf>.

effects, we report claims-based outcomes not only for Medicaid beneficiaries and commercially insured populations, but also for Medicare beneficiaries.

4.3.1 Populations reached

As shown in *Table 4-3*, in first quarter 2015, more than **315,000 Medicaid beneficiaries were attributed to a PCMH, which represents about 80 percent of the eligible Medicaid beneficiaries (49 percent of all Medicaid beneficiaries)**. Eligible Medicaid beneficiaries are all eligible for the primary care case management, which excludes Medicare-Medicaid enrollees, residents of nursing facilities and institutions for individuals with intellectual/ developmental disabilities, and those enrolled under the medically needy spend-down provision. The state provided no numbers of individuals whose care was covered with an EOC payment.

Table 4-3. Population reached in the Arkansas innovation models by payer

Payer	Patient-centered medical homes ¹	Episode-of-care payment model
Medicaid	315,680 (49%)	Not reported
Commercial	Not reported	Not reported
Medicare	—	—

— = not applicable.

Source: The number of Medicaid beneficiaries attributed to PCMHs was reported by the state. The denominator used to compute the percentage of the population reached is a Kaiser Family Foundation population estimate based on the Census Bureau's March 2015 Current Population Survey (CPS: Annual Social and Economic Supplement) available at: <http://kff.org/other/state-indicator/total-population/>.

The state's two major commercial insurers, Arkansas BCBS and QualChoice, participate in both the PCMH and EOC models. Together, these two insurers account for almost a majority of Arkansas' commercial market (Thompson et al., 2014). To date, however, the state has not provided the number of commercially insured members who are enrolled in PCMHs or impacted by EOCs.

As reported previously, Arkansas' Insurance Commissioner promulgated Rule 108, which is known as the Health Care Independence Act of 2013, to provide standards for PCMHs for QHPs participating in the Arkansas Health Insurance Marketplace. As a result, all QHPs are required to enroll their beneficiaries in PCMHs on or after January 1, 2015, which will add to the population reached by the Arkansas SIM models; most QHPs planned to initiate PCMH enrollment in April 2015.

4.3.2 Provider and payer participation

Arkansas reports that 135 primary care practices participate as PCMHs (*Table 4-4*). Among those 135 PCMHs, there are **761 providers, which the state estimates to be approximately 71 percent of eligible Medicaid primary care providers**. We estimate this figure (761) to be 36 percent of the total 2,152 primary care physicians active in patient care in Arkansas and 14 percent of all active patient care physicians. In addition, 2,200 physicians, or **41 percent of active patient care physicians, have received EOC payments**.

Table 4-4. Physicians, practices, and payers participating in the Arkansas innovation models

Participants	Patient-centered medical homes	Episode-of-care payment model
Physicians	761 (14%)	2,200 (41%)
Practices	135	—
Payers	Medicaid ¹	Medicaid, BCBS, QualChoice

BCBS = Arkansas Blue Cross and Blue Shield; — = not applicable.

Source: Counts of physicians and practices are state-reported numbers. Denominators for percentages are the number of active patient care physicians in the *2015 State Physician Workforce Data Book*, published by the Center for Workforce Studies, Association of American Medical Colleges, November 2015. Available at:

<https://www.aamc.org/data/workforce/reports/442830/statedataandreports.html>.

¹ Qualified health plans operated by Arkansas Blue Cross and Blue Shield, QualChoice, and Centene/Ambetter, and Medicare Advantage Special Needs Plans (D-SNPs) operated by three other commercial carriers will begin per member per month payments in April 1, 2015.

4.3.3 Care coordination

Through 2015, the Arkansas SIM Initiative has focused on implementing approximately 15 EOCs and 135 Medicaid PCMHs. Both of these models promote improved care coordination, where all participants in the patient’s care—including the patient, primary care provider or PAP, specialists, and community-based service providers—work together to meet the patient’s care needs and preferences. If these models are successful in improving care coordination, we expect to see an increase in the number of visits to primary care providers, a decrease in the number of visits to specialists, an increase in the percentage of follow-up visits to inpatient admissions, and improved medication management among Arkansas Medicaid beneficiaries relative to its comparison group.

Most of our care coordination measures require more than one quarter of data. Thus, we present these measures on an annual, instead of quarterly, basis. Furthermore, we do not yet have a full year of data for the test period in any of the payer databases. Therefore, we report only baseline care coordination estimates. *Appendix Tables E-1-1* through *E-1-5* provide, for Arkansas and its comparison group, baseline care coordination measures for the Medicaid beneficiaries by eligibility category, the commercially insured by age category, and Medicare beneficiaries by enrollment status.

During the latter baseline period, we found some evidence of improved care coordination in increased primary care visits in Arkansas relative to the comparison group with increased primary care and specialist visits. Because physician specialty field was missing at a high rate in the MAX files, we could only look at the total number of evaluation and management visits for Medicaid beneficiaries. The rate of these visits increased substantially among Arkansas Medicaid beneficiaries from 2010 to 2012 whereas it decreased somewhat among Medicaid beneficiaries in the comparison group. The commercially insured and Medicare beneficiaries in Arkansas experienced a bump in both primary care visits. The other measures of care coordination were fairly stable during this time in all payer populations. Primary care and

specialty visits for the Medicare and commercially insured populations both increased over the period

4.3.4 Quality of care

Influenza administration, mammography screening, tobacco cessation counseling, well-child visits, and substance abuse treatment are all indicators of prevention-focused quality of care. As Arkansas SIM implementation continues, trends in these measures relative to the comparison group may indicate whether the PCMH model is improving quality of care. Because the EOCs are not focused on these measures per se, they are unlikely to make a meaningful impact on many of these prevention-focused quality of care measures.

Most of our quality of care measures require more than one quarter of data. Thus, we present these measures on an annual, instead of quarterly, basis. Furthermore, we do not yet have a full year of data for the test period in any of the payer databases. Therefore, we report only baseline quality of care estimates. *Appendix Tables E-1-6* through *E-1-12* provide, for Arkansas and its comparison group, baseline quality of care measures for Medicaid beneficiaries by eligibility category, the commercially insured by age category, and Medicare beneficiaries by enrollment status. Similar to the care coordination measures, we look for differences in the levels and trends in these measures.

Increasing numbers of Medicare beneficiaries ages 18 and older received an influenza vaccine over the baseline and early test period in Arkansas relative to the comparison group, but this does not carry over to the commercially insured or Medicaid beneficiaries. Rates of well-child visits in the first 15 months of life and of well-child visits for children 3–6 years for the commercially insured increased in Arkansas relative to the comparison group but not for the Medicaid population. Other metrics, such as the overall, acute, and chronic Prevention Quality Indicator (PQI) hospitalization rates for Medicare beneficiaries and commercially insured declined steadily from 2010 to 2013 in both Arkansas and the comparison group. Our analyses of 2010 to 2013 data may be too early to detect noticeable improvements in preventive care.

In 2011, Arkansas Medicaid beneficiaries became eligible for substance abuse treatment. This benefit likely correlates with the increasing trend in treatment initiation between 2010 and 2012, unlike in the comparison group. No such trends are apparent for the commercially insured beneficiaries in Arkansas or the comparison group.

4.3.5 Health care utilization

Both the PCMH and EOC models are expected to improve care coordination and quality of primary care, as well as specialty care, by reducing utilization of unnecessary care. However, because of the required behavioral change on the part of providers and patients, these interventions will take time to achieve the expected improvements in care coordination and quality of care. As a result, it is unlikely that we will see reductions in utilization at this early

implementation stage. Furthermore, the changes should be seen in the Medicaid population first, as this is the target population of the Arkansas SIM interventions.

Figures 4-1 through 4-10 provide, for Arkansas and its comparison group, quarterly averages of core utilization measures for Medicaid beneficiaries, the commercially insured, and Medicare beneficiaries. For Medicaid beneficiaries, we report baseline data only for fourth quarter 2010 through fourth quarter 2012, the latest period for which we have complete data for Arkansas and two of its comparison group states. For the commercially insured and Medicare beneficiaries, we report the complete 3-year baseline period plus the first three quarters of the test period (fourth quarter 2013 through second quarter 2014). **Appendix Tables E-1-13 through E-1-15** provide quarterly averages by year and eligibility category for Medicaid beneficiaries, year and age group for the commercially insured, and year and dual Medicaid enrollment status for Medicare beneficiaries, respectively. Because we had test period data for the commercially insured and Medicare populations, we are also able to present the results of difference-in-differences (DD) analyses of the utilization measures in **Tables 4-5 and 4-6**.

Utilization summary

All-cause acute inpatient admissions trended downward in both Arkansas and the comparison group over the baseline period for which we have data for Medicaid beneficiaries and over the baseline and early test period for the commercially insured and Medicare beneficiaries. Arkansas' rate higher than the comparison group rate for both the Medicaid and commercially insured populations. The rate for ER visits was more variable over time for all payer populations in both Arkansas and the comparison group, with a 2012 peak in both Arkansas and the comparison group for Medicaid beneficiaries and the commercially insured. There was also a downward trend in 30-day readmissions for the Medicare population from 2010 to 2014 in both Arkansas and the comparison group.

No test period data were available for Medicaid beneficiaries to test the impact of the SIM Initiative. But the first three quarters of data for the commercially insured show significantly greater declines in all-cause inpatient admissions and ER visits for the commercially insured in Arkansas relative to the comparison group. These differences were small and likely related to other concurrent reform initiatives in the state. No statistically significant differences were found for Medicare beneficiaries, a population that was not participating in the Arkansas SIM Initiative.

Medicaid

From fourth quarter 2010 through fourth quarter 2012, the rate of all-cause acute inpatient admissions, including obstetric inpatient admissions, among Medicaid beneficiaries in Arkansas declined slightly (**Figures 4-1 and 4-2**). In the comparison group, inpatient admissions rose and obstetric admissions fell dramatically during the period, the latter possibly reflecting a potential data anomaly (such as a coding change) rather than an actual reduction due to clinical

care. By the end of 2012, the rate of all-cause hospitalizations was roughly equal in Arkansas and the comparison group. Over this same period, Medicaid beneficiaries in Arkansas and the comparison group experienced a modest upward trend in ER visits and 30-day readmissions (*Figures 4-3 and 4-4*). However, these analyses are only for the period prior to when the Arkansas SIM Initiative began.

Figure 4-1. All-cause acute inpatient admissions per 1,000 Medicaid beneficiaries, Arkansas and comparison group

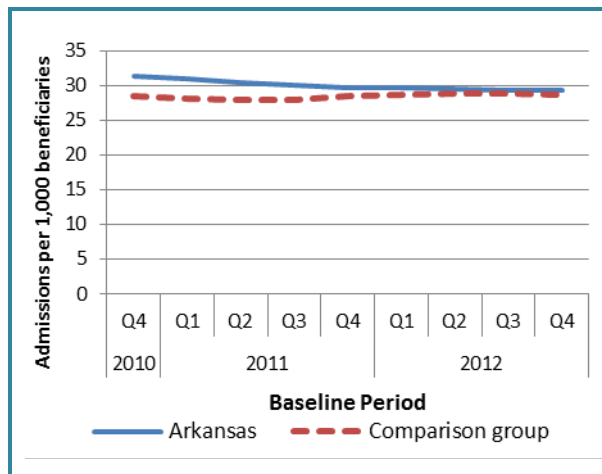


Figure 4-2. Obstetric inpatient admissions per 1,000 Medicaid beneficiaries, Arkansas and comparison group

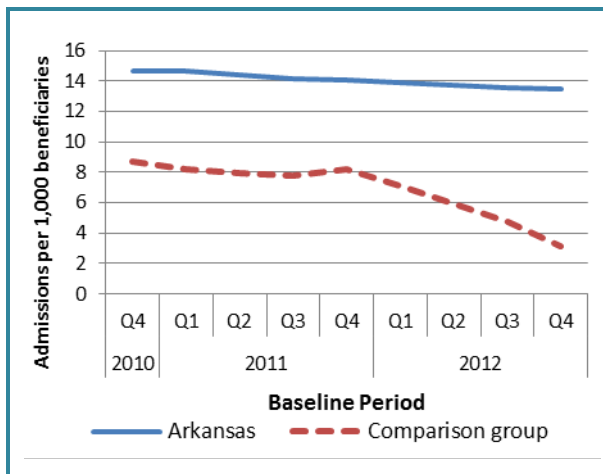


Figure 4-3. Emergency room visits that did not lead to hospitalization per 1,000 Medicaid beneficiaries, Arkansas and comparison group

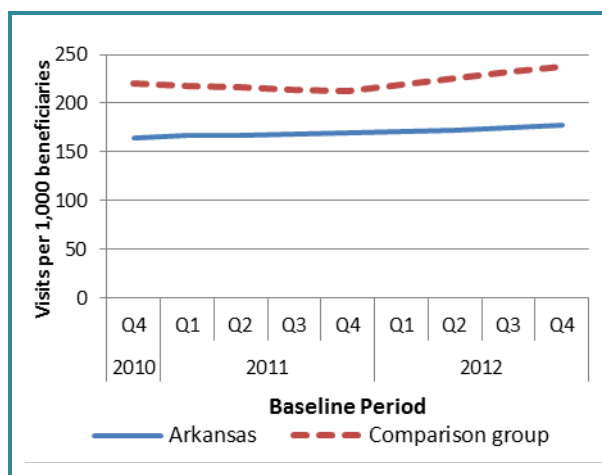
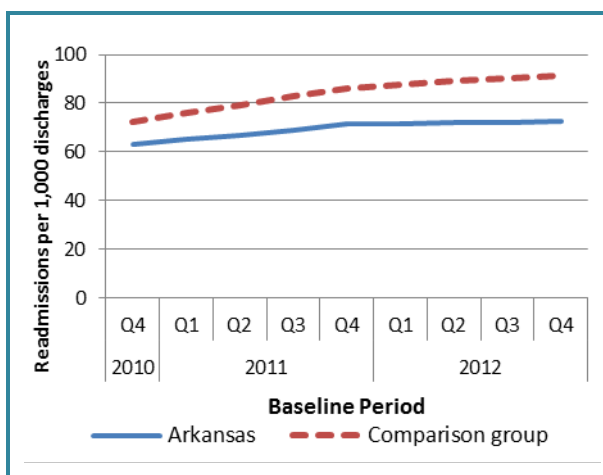


Figure 4-4. 30-day readmissions per 1,000 discharges for Medicaid beneficiaries, Arkansas and comparison group



Commercially insured

According to Arkansas' State Tracking Report, Arkansas BCBS, QualChoice, Centene/Ambetter, and United Healthcare will be participating in PCMH starting in 2015, but the MarketScan data included in this report are prior to commercial carrier PCMH participation and are too early for spillover effects to be evident. Among the commercially insured population, the all-cause acute inpatient admissions rate was slightly higher in Arkansas than the comparison group and declined slightly throughout the baseline and early test period (**Figure 4-5**). ER visits were slightly lower in Arkansas than the comparison group and rose slightly from fourth quarter 2010 through fourth quarter 2012 but then declined slightly through second quarter 2014 (**Figure 4-6**). The 30-day readmission rate in Arkansas was volatile between 2010 and 2012. It was higher than for the comparison group between fourth quarter 2010 and first quarter 2013, but subsequently leveled out to the same rate as in the comparison group for first quarter 2013 through first quarter 2014, and fell to the same rate as in fourth quarter 2010 (**Figure 4-7**).

Figure 4-5. All-cause acute inpatient admissions (per 1,000 covered persons), MarketScan commercially insured, Arkansas and comparison group

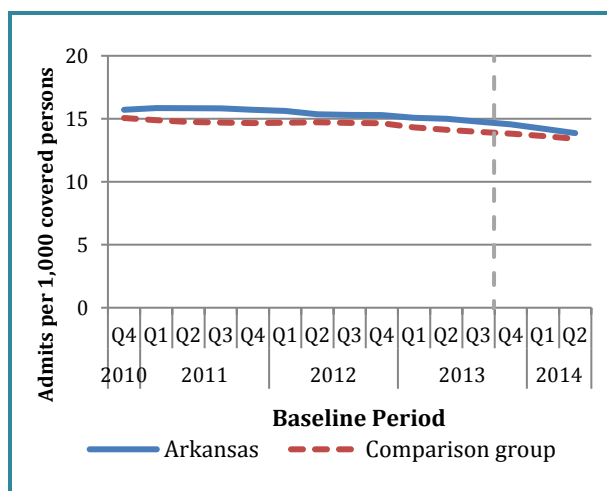


Figure 4-6. Emergency room visits that did not lead to hospitalization (per 1,000 covered persons), MarketScan commercially insured, Arkansas and comparison group

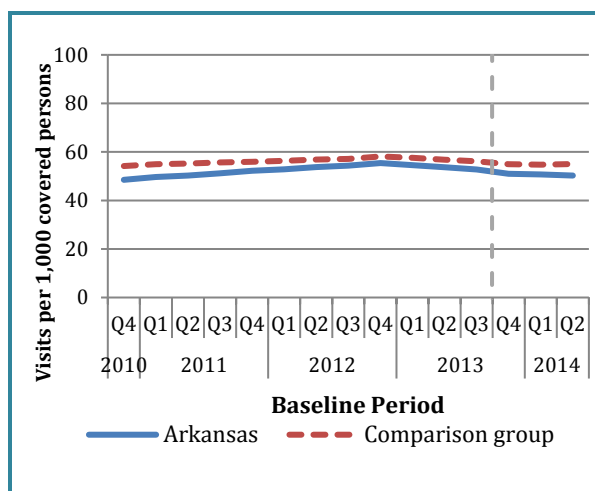
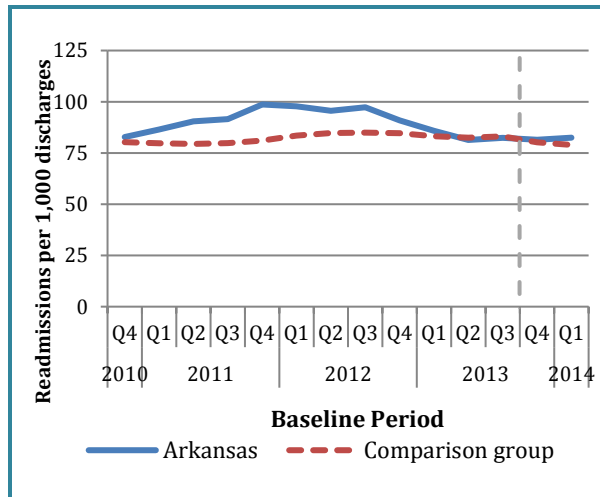


Figure 4-7. 30-day readmissions (per 1,000 discharges), MarketScan commercially insured, Arkansas and comparison group



The regression adjusted DD results show that, relative to the comparison group, Arkansas had greater declines in the rate of all-cause acute inpatient admissions (range: 3 to 559 fewer) and ER visits (from 88 to 1,160 fewer) from baseline to the early test period (*Table 4-5*). Because the commercial population was not the target early on in the Arkansas SIM Initiative, these results are likely attributable to other concurrent reform activities within the state. No statistically significant difference in 30-day hospital readmissions was evident from the baseline to the early test period for Arkansas relative to the comparison group.

Table 4-5. Difference in the pre-post change in expected utilization per 1,000 members, MarketScan commercially insured, Arkansas and comparison group, first three quarters of SIM implementation (October 2013 through June 2014)

Outcome	Regression adjusted difference in differences	95% Confidence interval		p-value
		Lower limit	Upper limit	
Aggregated change in utilization ¹				
All-cause acute inpatient admissions	-281	-559	-3	
Emergency room visits that did not lead to hospitalization	-624	-1,160	-88	
30-day hospital readmissions	-749	-7,965	6,466	
Change in utilization per 1,000 members ²				
All-cause acute inpatient admissions	-0.41	-0.82	-0.005	0.047
Emergency room visits that did not lead to hospitalization	-0.92	-1.71	-0.13	0.023
30-day hospital readmissions per 1,000 discharges	-1.10	-11.72	9.51	0.839

Note: The total number of person-quarters for Test state members in the early test period (Q4 2013–Q2 2014) is 679,690. Bold estimates indicate statistical significance at the $p < 0.05$ level. A linear probability model was used to obtain estimates of the difference in probability of use. A *negative* value corresponds to a *greater decrease* or a *smaller increase* in probability of utilization in the Test state relative to the comparison group. A *positive* value corresponds to a *greater increase* or a *smaller decrease* in probability of utilization in the Test state relative to the comparison group.

¹The quarterly per member estimates are multiplied by the total number of person-quarters to get the aggregated change in utilization.

²The per-member estimates are multiplied by 1,000 to obtain the change in the rate of use per 1,000 persons.

Medicare

The rates of all-cause acute inpatient admissions, ER visits, and 30-day hospital readmissions were similar among Medicare beneficiaries in Arkansas and the comparison group over the baseline and early test period (**Figures 4-8, Figure 4-9, and 4-10**). All-cause acute inpatient admission rates and 30-day hospital readmissions declined throughout this time among Medicare beneficiaries in both Arkansas and the comparison group. ER visit rates among Medicare beneficiaries increased slightly in the baseline period, but began declining slightly in 2013. Trends for Medicare-Medicaid enrollees and other Medicare enrollees were similar (**Table E-1-14**).

Figure 4-8. All-cause acute inpatient admissions per 1,000 Medicare beneficiaries, Arkansas and comparison group

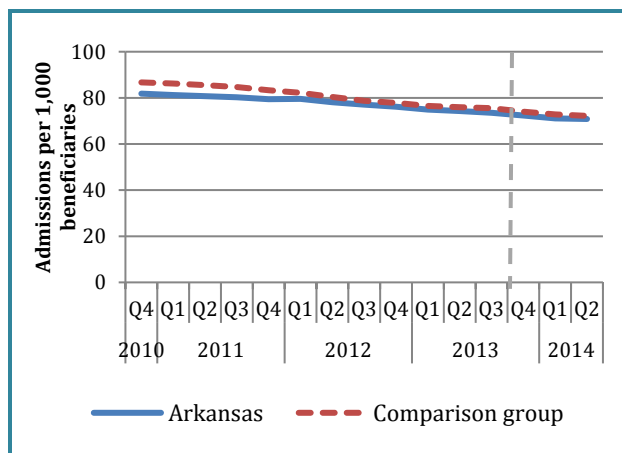


Figure 4-9. Emergency room visits that did not lead to hospitalization (per 1,000 Medicare beneficiaries), Arkansas and comparison group

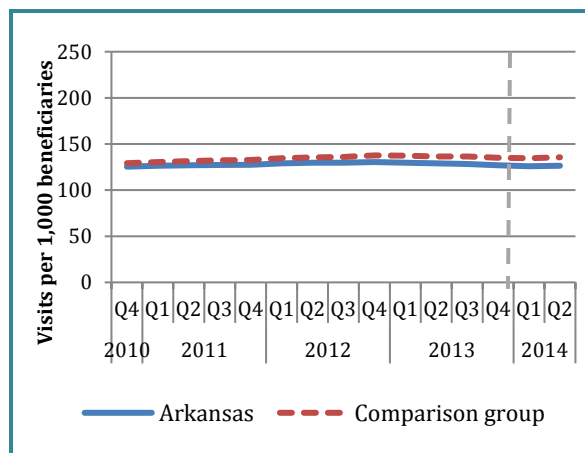
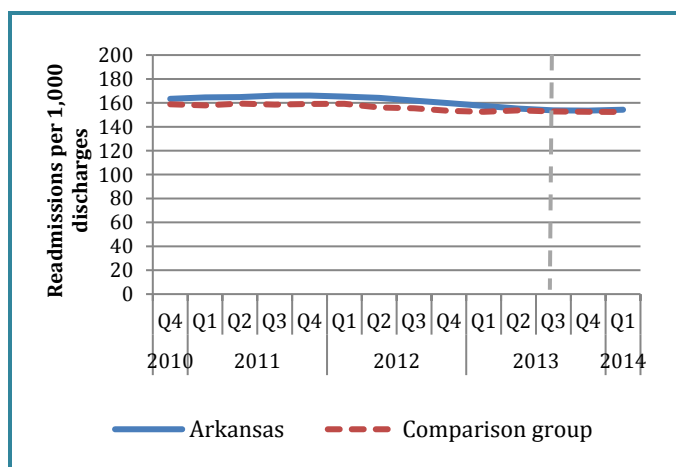


Figure 4-10. 30-day readmissions (per 1,000 discharges) for Medicare beneficiaries, Arkansas and comparison group



The regression adjusted DD results for Medicare beneficiaries indicate no statistically significant differences in utilization from the baseline to the first three quarters of the test period between Arkansas and the comparison group (*Table 4-6*). These results are not surprising given that the Medicare population was not the focus of the Arkansas SIM Initiative. In addition, these analyses reflect the early test period; spillover effects would not be expected at this early stage of implementation.

Table 4-6. Difference in the pre-post change in expected utilization per 1,000 members, Medicare beneficiaries, Arkansas and comparison group, first three quarters of SIM implementation (October 2013 through June 2014)

Outcome	Regression adjusted difference in differences	95% Confidence interval		p-value
		Lower limit	Upper limit	
Aggregated change in utilization ¹				
All-cause acute inpatient admissions	-519	-1,427	519	
Emergency room visits that did not lead to hospitalization	-130	-1,168	1,038	
30-day hospital readmissions	7,265	-259	14,790	
Change in utilization per 1,000 members ²				
All-cause acute inpatient admissions	-0.40	-1.10	0.40	0.3273
Emergency room visits that did not lead to hospitalization	-0.10	-0.90	0.80	0.8969
30-day hospital readmissions per 1,000 discharges	5.60	-0.20	11.40	0.0564

Note: The total number of person-quarters for Test state members in the early test period (Q4 2013–Q2 2014) is 1,297,330. Bold estimates indicate statistical significance at the $p < 0.05$ level. A linear probability model was used to obtain estimates of the difference in probability of use. A *negative* value corresponds to a *greater decrease* or a *smaller increase* in probability of utilization in the Test state relative to the comparison group. A *positive* value corresponds to a *greater increase* or a *smaller decrease* in probability of utilization in the Test state relative to the comparison group.

¹The quarterly per member estimates are multiplied by the total number of person-quarters to get the aggregated change in utilization.

²The per-member estimates are multiplied by 1,000 to obtain the change in the rate of use per 1,000 persons.

4.3.6 Health care expenditures

The improved care coordination and health care quality obtained through PCMH and EOC models are expected to reduce unnecessary and inefficient care, and thereby reduce the growth in health care costs over time. Identifying changes in health care expenditures will help inform if, to what extent, and how these models may have impacted costs.

Figures 4-11 through 4-17 and 4-22 through 4-25 provide, for Arkansas and its comparison group, quarterly PMPM payments for Medicaid beneficiaries, the commercially insured, and Medicare beneficiaries. For Medicaid beneficiaries, we report baseline data for only fourth quarter 2010 through fourth quarter 2012, the latest period for which we have complete data for Arkansas and two states comprising its comparison group.¹⁴ For the commercially

¹⁴ For states where the third state in a Test state's comparison group was not complete, we used just the other two states to comprise the comparison group for this report.

insured and Medicare beneficiaries, we report data for the complete 3-year baseline period (fourth quarter 2010 through third quarter 2013) plus the first three quarters of the test period (fourth quarter 2013 through second quarter 2014). *Appendix Table E-6-16* shows average PMPM total, FFS, and capitated payments for Medicaid beneficiaries by year and eligibility category. *Appendix Tables E-1-17* and *E-1-18* provide average PMPM payments by year and age group for the commercially insured, and year and Medicare-Medicaid enrollment status for Medicare beneficiaries, respectively.

Because we have test period data for the commercially insured and Medicare populations, we also present the results of multivariate regression DD analyses of the expenditure measures in *Tables 4-7* and *4-8*. *Figures 4-18* and *4-26* show the quarterly effects on spending for the commercially insured and Medicare beneficiaries, respectively; *Figures 4-20* and *4-28* show the cumulative effects on spending. *Figures 4-19* and *4-21* show the strength of the evidence for the commercially insured and *Figures 4-27* and *4-29* show the strength of the evidence for Medicare beneficiaries. Early test period results for the commercially insured and Medicare beneficiaries, though, are unlikely to be strongly associated with the Arkansas SIM Initiative, because of inadequate time for any effects on the target Medicaid population to spillover on these populations.

Expenditure summary

Health care expenditures showed no consistent overall trends in either Arkansas or the comparison group over the baseline and early test period. Total payments for Medicaid beneficiaries in Arkansas trended downward slightly, whereas total payments for the comparison group rose slightly in the early baseline period. Although total payments were relatively stable for Arkansas' commercially insured and Medicare beneficiaries, other facility payments for Medicare beneficiaries and outpatient pharmacy payments for the commercially insured increased. The regression adjusted DD results show no statistically significant differences in payments from the baseline to the first three quarters of the test period.

Medicaid

Average total PMPM payments for both Medicaid-only and Medicare-Medicaid beneficiaries in Arkansas were consistently higher than in the comparison group throughout the baseline period (*Figures 4-11* and *4-12*). For Medicaid-only beneficiaries in Arkansas, average total payments rose slightly over the baseline period, but were fairly stable in the comparison group. For Medicare-Medicaid beneficiaries in Arkansas, the average total payments in Arkansas declined from fourth quarter 2010 to fourth quarter 2011, but were unchanged through 2012, whereas average total payments rose slightly throughout the baseline period in the comparison group. These early baseline results show significant room for improvement in the Arkansas Medicaid program for Arkansas SIM activities.

Figure 4-11. Average total PMPM Medicaid payments, Medicaid-only beneficiaries, Arkansas and comparison group

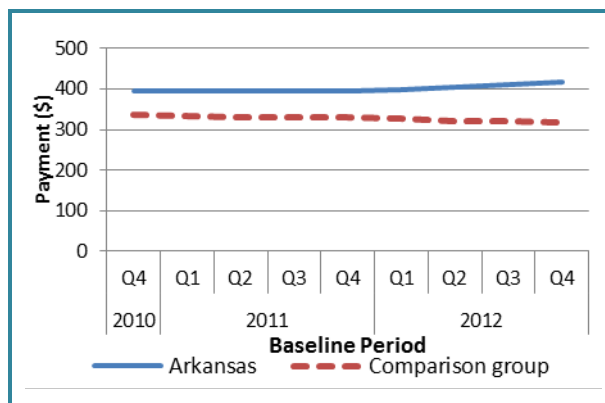
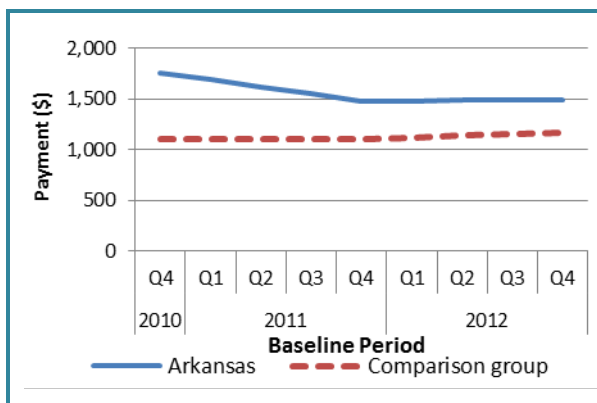


Figure 4-12. Average total PMPM Medicaid payments, Medicare-Medicaid beneficiaries, Arkansas and comparison group



Commercially insured

Throughout the baseline period and the first three quarters of the test period, total PMPM payments were lower for the commercially insured in Arkansas than the comparison group (see **Figures 4-13** through **4-17**). This was true for all major payment categories except inpatient facility payments, which started out higher but then fell below the comparison group trend by 2013. Average PMPM payments for the commercially insured in Arkansas remained fairly stable throughout the baseline and early test period. This was true for all payment categories except outpatient pharmacy payments, which increased steadily throughout the period. Pharmacy payments are not specifically targeted, except for specific EOCs such as URI and ADHD. In the comparison group, average PMPM payments tended to increase in all major payment categories during the period. Trends were similar for infants, children, and adults (**Table E-1-17**).

Figure 4-13. Average total PMPM payments, MarketScan commercially insured, Arkansas and comparison group

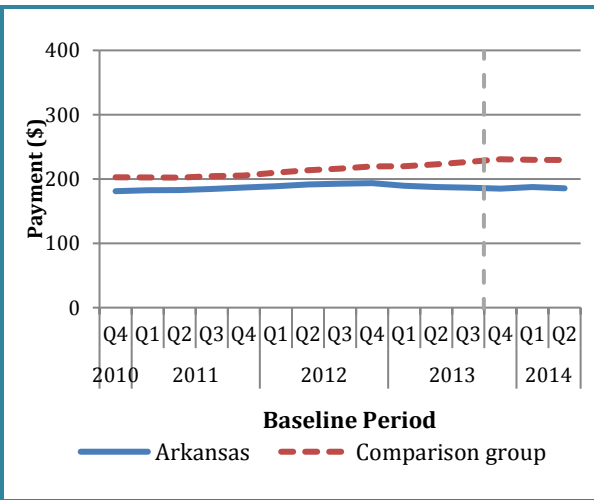


Figure 4-14. Average inpatient facility PMPM payments, MarketScan commercially insured, Arkansas and comparison group

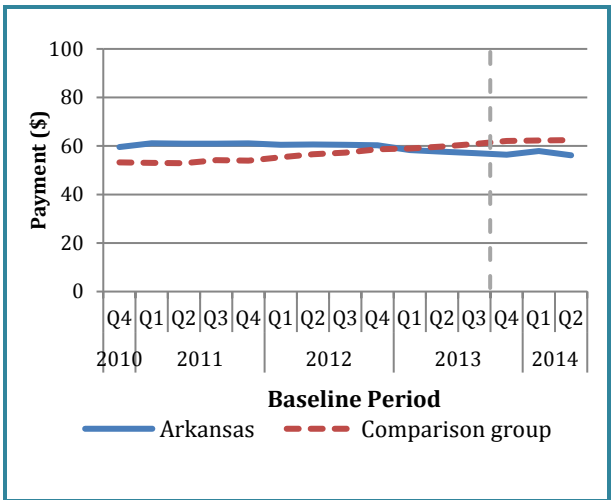


Figure 4-15. Average other facility PMPM payments, MarketScan commercially insured, Arkansas and comparison group

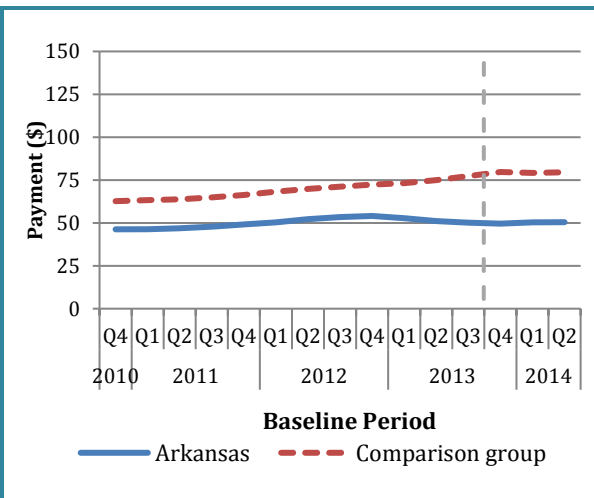


Figure 4-16. Average professional PMPM payments, MarketScan commercially insured, Arkansas and comparison group

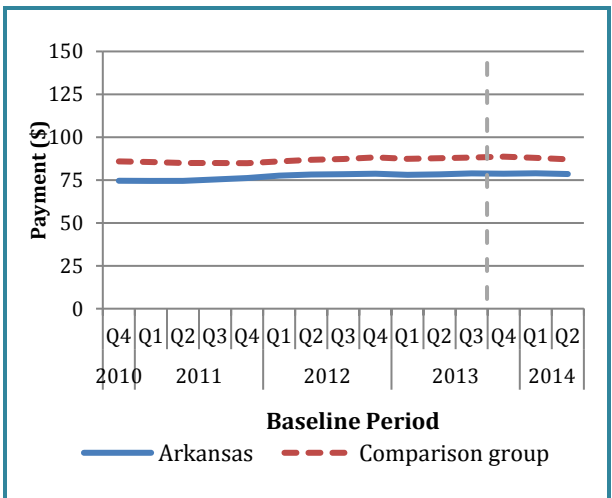
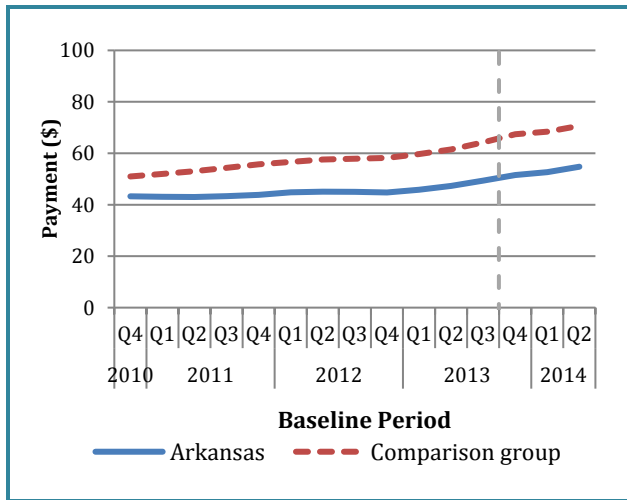


Figure 4-17. Average outpatient pharmacy PMPM payments, MarketScan commercially insured, Arkansas and comparison group



The regression adjusted DD results for the commercially insured population indicate no statistically significant differences in payments from the baseline to the early test period between Arkansas and the comparison group (**Table 4-7**). Because the commercially insured was not the target population of the early SIM Initiative activities in Arkansas and the time period evaluated is too early for spillover effects to be evident, the findings of no statistically significant differences are not surprising.

To assist policy makers in understanding the future prospect of successful results, we convert the DD results for change in total payments into probability estimates and provide graphical representations of the estimated quarterly and program-to-date effects as well as the precision of these estimates. Relative to the comparison group, total quarterly spending estimates for the commercially insured population in Arkansas were significantly lower in the first quarter, significantly higher in the second quarter, and not significantly different in the third test quarter (**Figure 4-18**). Because quarterly spending estimates can be volatile, we also provide cumulative spending estimates. Like the quarterly spending estimates, the cumulative estimates were significantly lower for Arkansas relative to the comparison group in the first test quarter, but not significantly different for the second and third test quarters (**Figure 4-20**). Thus, evidence for savings or losses among the commercially insured in the first three test quarters in Arkansas does not exist, although the data show a moderate probability of losses in the second test quarter (**Figures 4-19 and 4-21**).

Table 4-7. OLS adjusted difference in the pre-post change in PMPM payments, MarketScan commercially insured, Arkansas and comparison group, first three quarters of Arkansas SIM implementation (October 2013 through June 2014)

Outcome	Regression adjusted difference in differences	95% Confidence interval		p-value
		Lower limit	Upper limit	
Aggregated change in payments ¹				
Total (in millions)	−\$7.91	−\$53.65	\$37.82	
Inpatient facility (in millions)	−\$1.34	−\$35.96	\$33.28	
Other facility (in millions)	\$0.68	−\$16.60	\$17.96	
Professional (in millions)	−\$6.59	−\$21.80	\$8.61	
Outpatient pharmacy (in millions)	\$6.02	−\$4.87	\$16.91	
Change in PMPM payments				
Total	−\$1.30	−\$8.80	\$6.20	0.735
Inpatient facility	−\$0.22	−\$5.90	\$5.46	0.940
Other facility	\$0.11	−\$2.72	\$2.95	0.939
Professional	−\$1.08	−\$3.58	\$1.41	0.395
Outpatient pharmacy	\$0.99	−\$0.80	\$2.77	0.278

OLS = ordinary least squares; PMPM = per member per month.

Note: The total number of person-quarters for Test state members in the early test period (Q4 2013–Q2 2014) is 677,347. Bold estimates indicate statistical significance at the $p < 0.05$ level. A *negative* value corresponds to a *greater decrease* or a *smaller increase* in payments in the Test state relative to the comparison group. A *positive* value corresponds to a *greater increase* or a *smaller decrease* in payments in the Test state relative to the comparison group.

¹The PMPM estimates are multiplied by 9 months*677,347 person-quarters to obtain the change in total aggregate expenditures for the early test period.

Figure 4-18. Quarterly effects on total spending, MarketScan commercially insured, Arkansas, fourth quarter 2013 through second quarter 2014

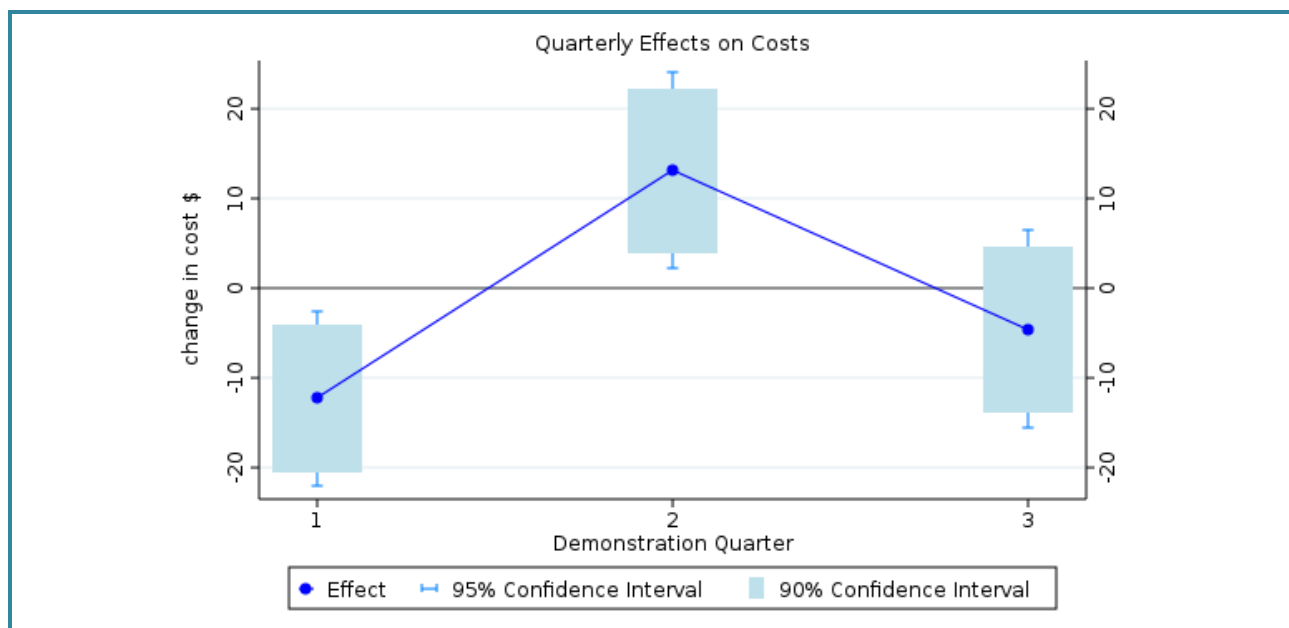


Figure 4-19. Quarterly strength of evidence on total spending, MarketScan commercially insured, Arkansas, fourth quarter 2013 through second quarter 2014

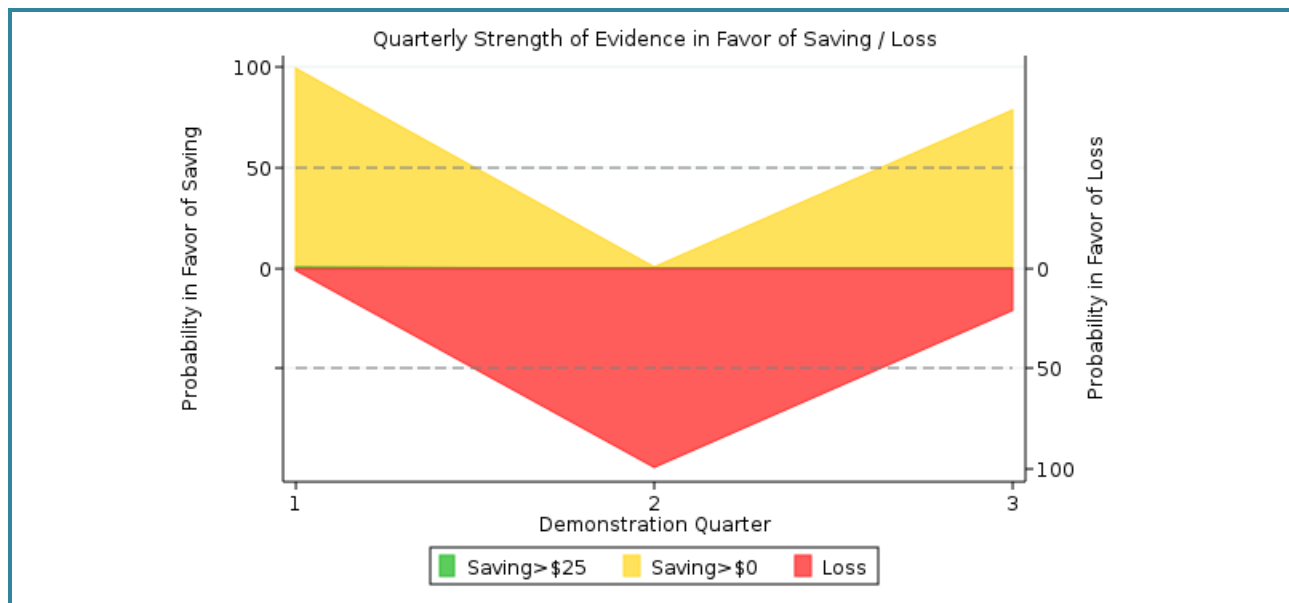


Figure 4-20. Cumulative effects on total spending, MarketScan commercially insured, Arkansas, fourth quarter 2013 through second quarter 2014

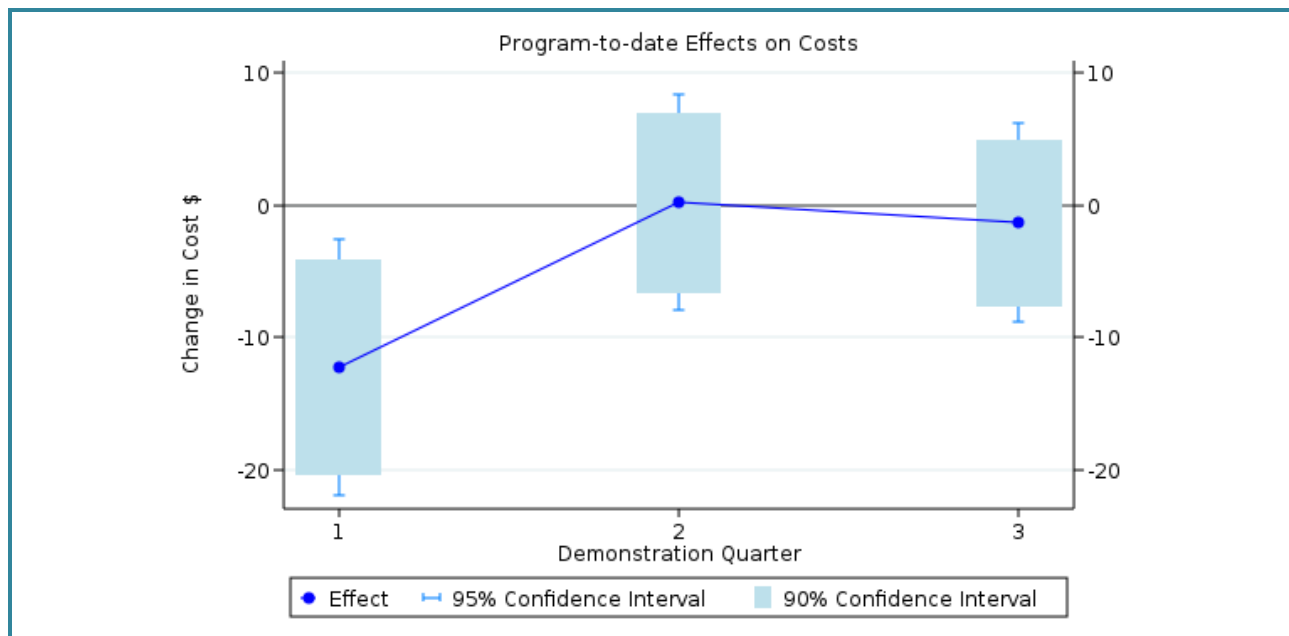
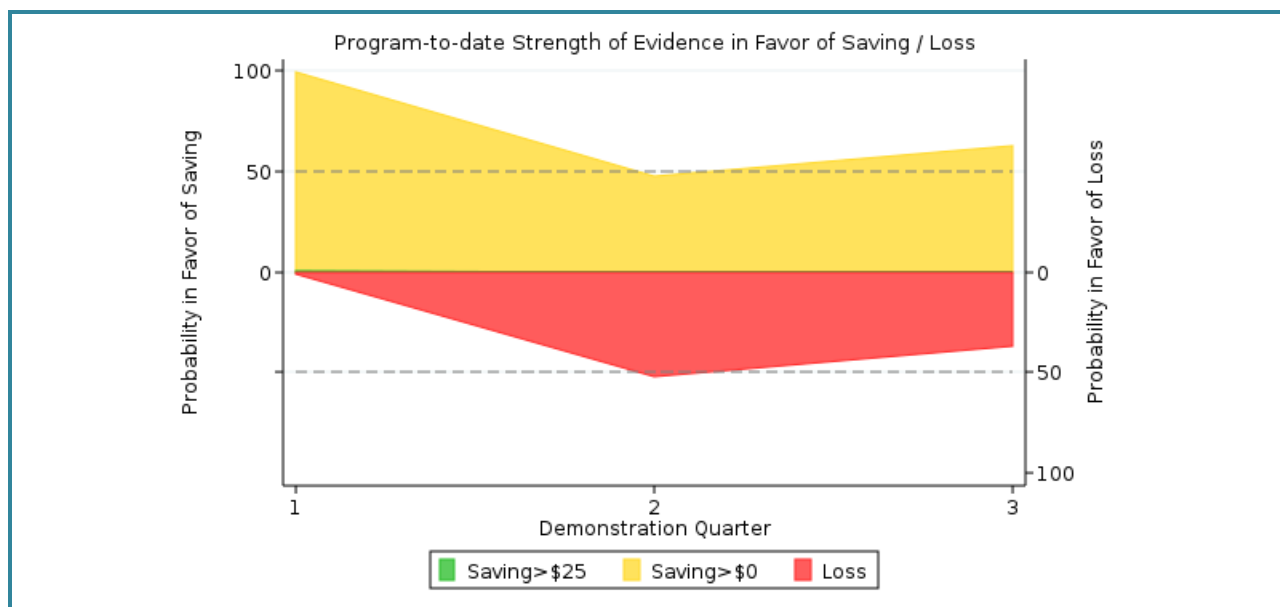


Figure 4-21. Cumulative strength of evidence on total spending, MarketScan commercially insured, Arkansas, fourth quarter 2013 through second quarter 2014



Medicare

Average inpatient facility and professional PMPM payments for Medicare beneficiaries were similar in Arkansas and the comparison group (**Figures 4-23** and **4-25**) and both showed a very slight downward trend. Other facility payments (**Figure 4-24**) were somewhat lower in Arkansas than the comparison group. These payments rose slightly in Arkansas over the baseline and early test period whereas they remained fairly stable in the comparison group (**Figure 4-22**). Trends were similar for Medicare-Medicaid and other Medicare beneficiaries (**Table E-1-18**).

Figure 4-22. Average total PMPM payments, Medicare beneficiaries, Arkansas and comparison group

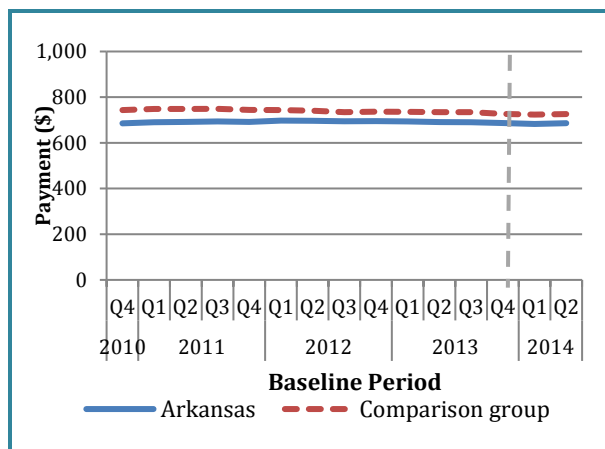


Figure 4-23. Average inpatient facility PMPM payment, Medicare beneficiaries, Arkansas and comparison group

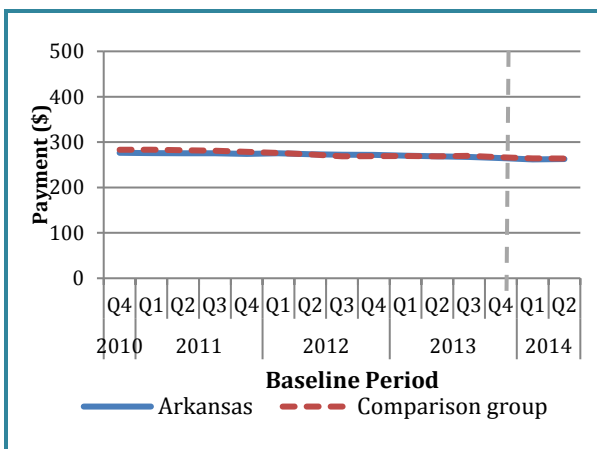


Figure 4-24. Average other facility PMPM payments, Medicare beneficiaries, Arkansas and comparison group

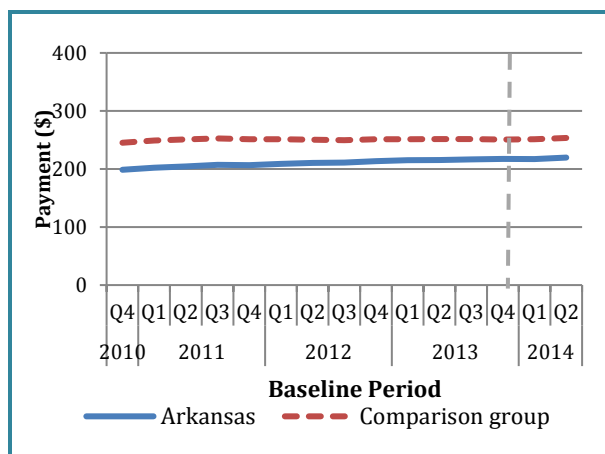
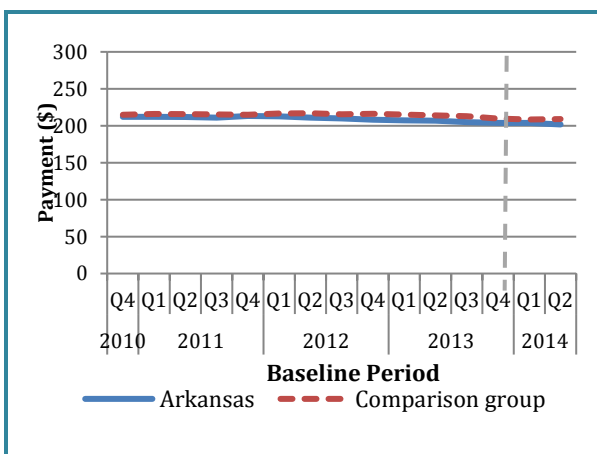


Figure 4-25. Average professional PMPM payments, Medicare beneficiaries, Arkansas and comparison group



The regression-adjusted DD results for Medicare beneficiaries in Arkansas show no statistically significant differences in payments from the baseline to the early test period between Arkansas and the comparison group (*Table 4-8*). These findings are not surprising given that the Medicare population is not the target population of the Arkansas SIM Initiative and it is too early in the test period for spillover effects to be evident.

To assist policy makers in understanding the future prospect of successful results, we convert the DD results for change in total payments into probability estimates and provide graphical representations of the estimated quarterly and program-to-date effects as well as the precision of these estimates. Although less volatile than the results for the commercially insured, Arkansas' Medicare beneficiaries showed a greater decrease or smaller increase in payments relative to the comparison group for the average total, inpatient facility, and professional PMPM payments during the first three quarters of Arkansas SIM implementation relative to the 15 baseline quarters (**Table 4-8**). These savings estimates were not statistically significant. Quarterly and cumulative spending for Medicare beneficiaries were not significantly different in Arkansas than the comparison group in the first three test quarters (**Figures 4-26 and 4-28**). These results suggest that, in the early test period, the Arkansas SIM Initiative had a low probability of generating savings and was just as likely to generated losses (**Figures 4-27 and 4-29**).

Table 4-8. OLS adjusted difference in the pre-post change in PMPM payments, Medicare beneficiaries, Arkansas and comparison group, first three quarters of Arkansas SIM implementation (October 2013 through June 2014)

Outcome	Regression adjusted difference in differences	95% Confidence interval		p-value
		Lower limit	Upper limit	
Aggregated change in payments ¹				
Total (in millions)	−\$31.24	−\$112.22	\$49.74	
Inpatient facility (in millions)	−\$31.27	−\$89.99	\$27.46	
Other facility (in millions)	\$2.82	−\$26.45	\$32.09	
Professional (in millions)	−\$2.81	−\$21.05	\$15.43	
Change in PMPM payments				
Total	−\$2.68	−\$9.61	\$4.26	0.4496
Inpatient facility	−\$2.68	−\$7.71	\$2.35	0.2967
Other facility	\$0.24	−\$2.27	\$2.75	0.8502
Professional	−\$0.24	−\$1.80	\$1.32	0.7628

OLS = ordinary least squares; PMPM = per member per month.

Note: The total number of person-quarters for Test state members in the early test period (Q4 2013–Q2 2014) is 1,297,330. Bold estimates indicate statistical significance at the $p < 0.05$ level. A *negative* value corresponds to a *greater decrease* or a *smaller increase* in payments in the Test state relative to the comparison group. A *positive* value corresponds to a *greater increase* or a *smaller decrease* in payments in the Test state relative to the comparison group.

¹The PMPM estimates are multiplied by 9 months*1,297,330 person-quarters to obtain the change in total aggregate expenditures for the early test period.

Figure 4-26. Quarterly effects on total spending, Medicare beneficiaries, Arkansas, fourth quarter 2013 through second quarter 2014

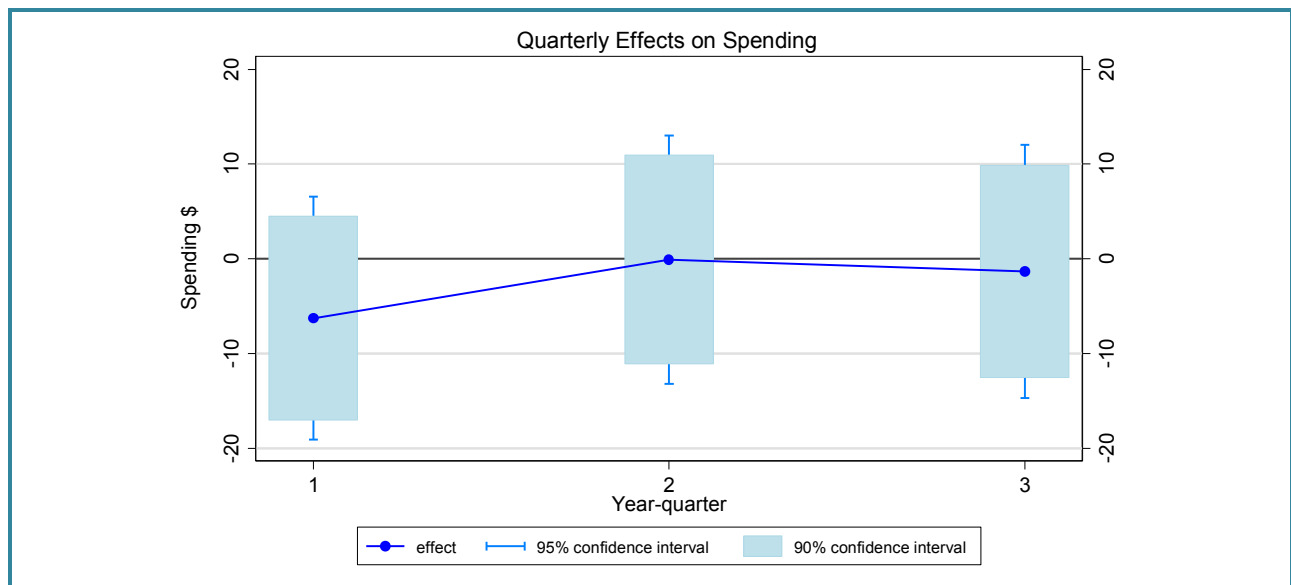


Figure 4-27. Quarterly strength of evidence on total spending, Medicare beneficiaries, Arkansas, fourth quarter 2013 through second quarter 2014

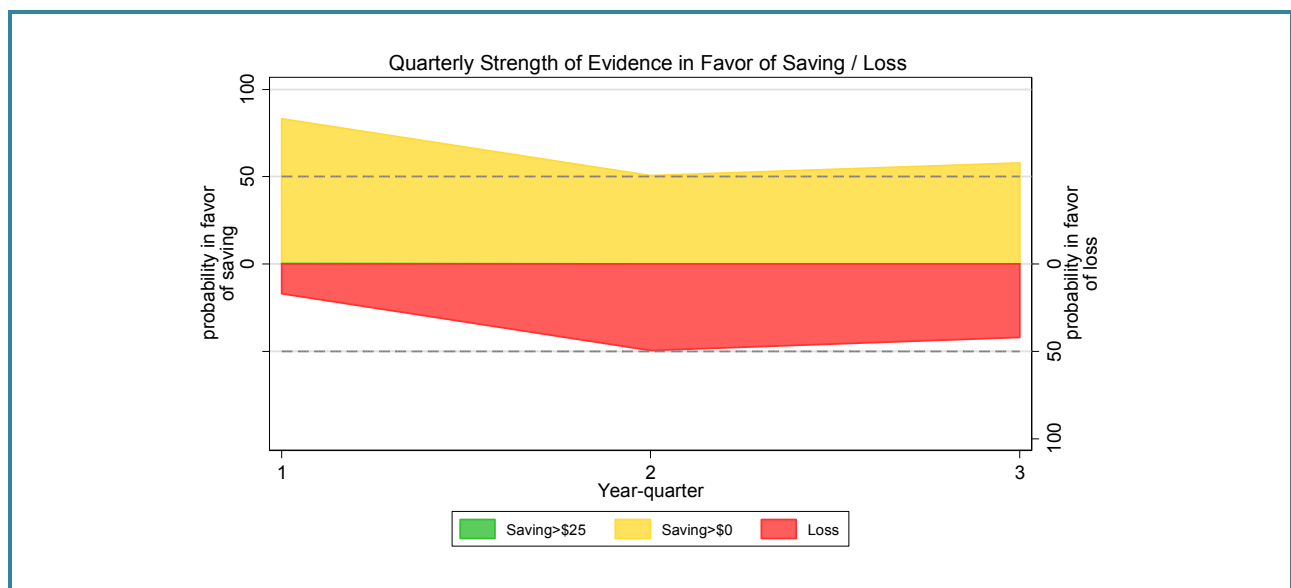


Figure 4-28. Cumulative effects on total spending, Medicare beneficiaries, Arkansas, fourth quarter 2013 through second quarter 2014

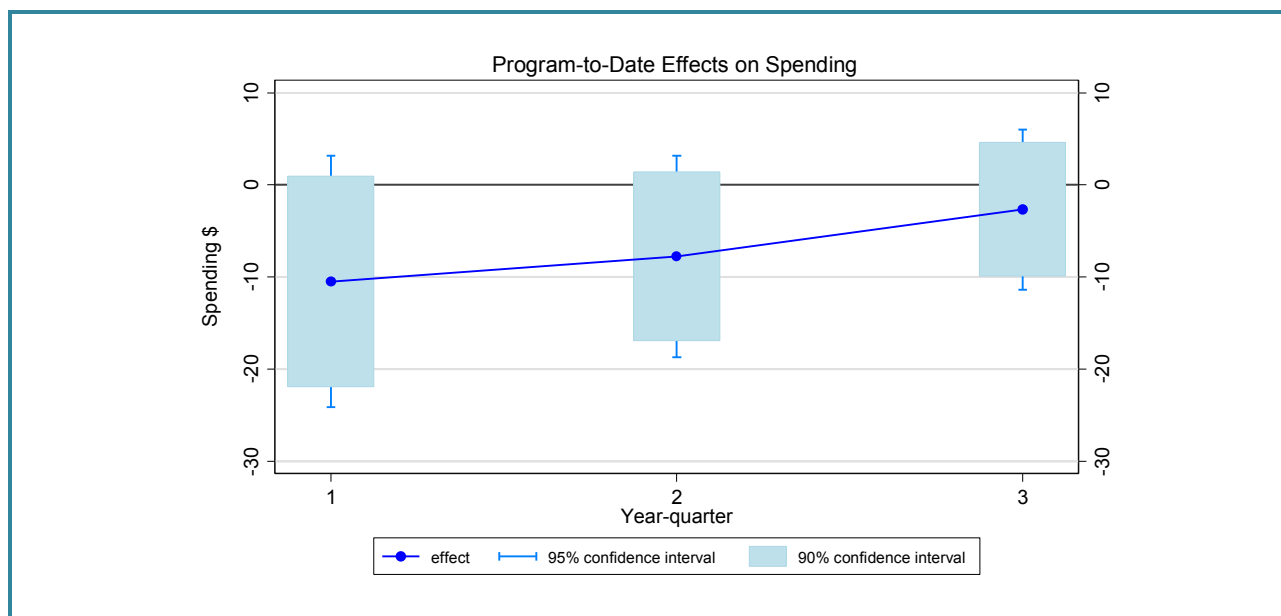
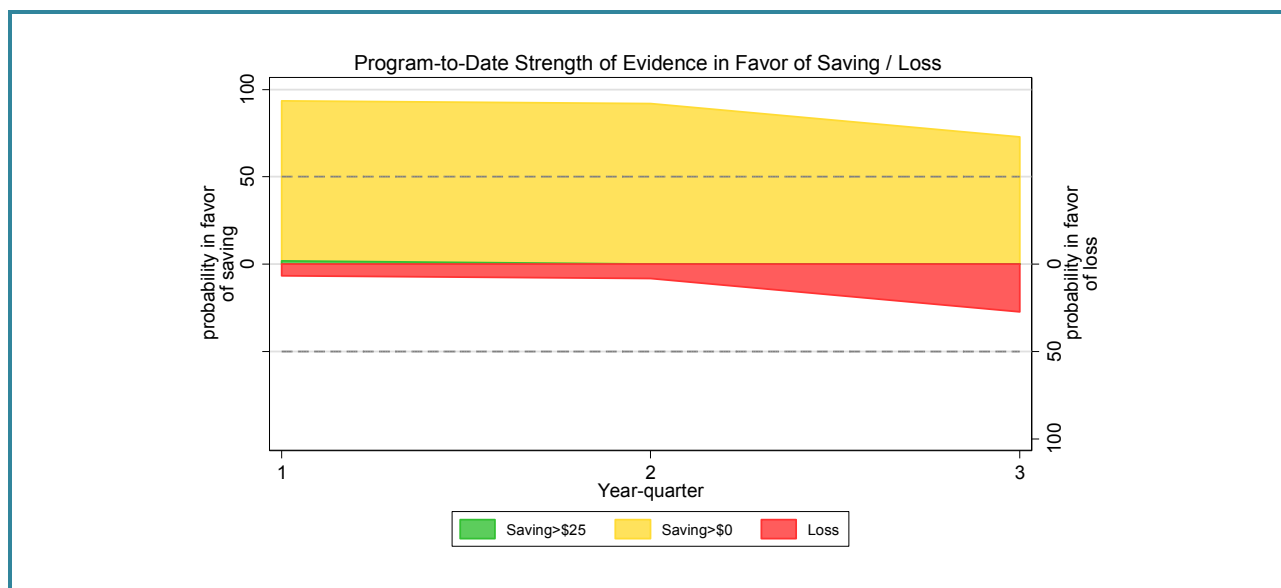


Figure 4-29. Cumulative strength of evidence on total spending, Medicare beneficiaries, Arkansas, fourth quarter 2013 through second quarter 2014



4.4 Overall Summary

Arkansas SIM initiatives are in various stages of development and implementation. Thus, the state is still in its earliest stages of seeing measurable changes in outcomes associated

with PCMHs, EOCs, and other health care reform strategies supported by the Arkansas SIM award. Moreover, there is a time lag in Medicaid data being available for our analyses of outcomes, and the state's initial focus of these models has been on the Medicaid population. Since this annual report includes only data for the first three test quarters of the Arkansas SIM Initiative, it is too early to observe any meaningful changes in care coordination, quality of care, utilization, or expenditures that can be attributed to either the EOC or PCMH models. We observe both favorable and unfavorable trends for some outcomes, and no discernible trends to date for other outcomes. These trends do not seem to be consistent when looking across the Medicaid, commercially insured, and Medicare populations. Future analyses more targeted to Arkansas' PCMH and EOC models over longer periods should provide more meaningful results for potential Arkansas SIM impacts. These preliminary findings may be useful in setting the context for the later impact analyses.

These findings of predominately baseline data suggest that there is room for improvement in terms of the state's SIM initiatives making an impact on improving health care outcomes, and that it is too soon to expect positive changes for many of these outcomes across the various populations. That said, both anecdotal evidence and some empirical evidence suggest that positive changes are occurring and that trends are beginning to bend in the right direction.

A number of study limitations should be considered when reviewing these evaluation results. Although the Arkansas SIM Initiative is a multi-payer initiative, it is unlikely that our analyses of the commercially insured population will reflect the Arkansas SIM models, as most of the emphasis in the early Arkansas SIM years has been on the Medicaid population. Thus, our discussion suggests the potential spillover effects of the interventions to this set of commercially insured patients. Since these analyses are examining statewide impacts, by payer, the results are most likely diluted by the inclusion of individuals not directly impacted by or attributed to a specific intervention. Additionally, even though the rigorous study design used a comparison group and adjusts for a range of covariates, the results could still be biased by the comparability of the states matched to Arkansas, well as residual confounding due to unmeasured factors we were unable to control in our analyses.

4.5 References

- Arkansas All-Payer Claims Database (APCD). (2015). Welcome to the Arkansas All-Payer Claims Database (APCD). Retrieved from <https://www.arkansasapcd.net/Home/>
- Arkansas Center for Health Improvement. (2016, January). Arkansas Health Care Payment Improvement Initiative, 2nd Annual Statewide Tracking Report. Little Rock, AR: ACHI.
- Kaiser Family Foundation (KFF). (2012). Medicare beneficiaries as a percent of total population. State Health Facts website. Accessed December 22, 2015: <http://kff.org/medicare/state-indicator/medicare-beneficiaries-as-of-total-pop/>

Kaiser Family Foundation (KFF). (2015). Primary care physicians by field. Retrieved from <http://kff.org/other/state-indicator/primary-care-physicians-by-field/>

Thompson, J. W., Golden, W., Motley, M., Fendrick, A. M., Mathis, C., & Chernew, M. (2014, October 15). Arkansas payment improvement initiative: Private carriers participation in design and implementation. Health Affairs Blog. Retrieved December 14, 2015, from <http://healthaffairs.org/blog/2014/10/15/arkansas-payment-improvement-initiative-private-carriers-participation-in-design-and-implementation/>

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5. Maine

This chapter provides an updated overview of the Maine SIM Initiative model; summarizes major implementation progress, challenges, and lessons learned in the past year; discusses key findings from the site visit interviews and focus groups organized by major topical area; and presents baseline and early test period trends in outcomes. For the Year 2 site visit, we conducted 22 key informant interviews and eight focus groups in Portland and Bangor, Maine during the week of April 13, 2015. Site visit findings are supplemented with information from a web-based primary care physician survey RTI conducted from July through October 2014. *Appendix Figure F-2* provides a graphical presentation of the federal evaluation of the Maine SIM Initiative.

The state has made significant progress in the development and implementation of delivery system and payment reform models under the SIM Initiative. Stage B health homes for MaineCare¹⁵ (Medicaid) beneficiaries with behavioral health conditions were successfully developed and implemented in April 2014. MaineCare Accountable Communities (ACs), MaineCare's version of accountable care organizations (ACOs), were also successfully developed and implemented in August 2014. In addition, Stage A health homes for MaineCare beneficiaries with chronic conditions, which were implemented prior to the start of the SIM Initiative, are successfully being supported by SIM-funded learning collaboratives. On several outcome measures of care coordination, quality of care, health care utilization, and cost of care, Maine's rates were better than those of its comparison group over the baseline period. For the majority of outcome measures, findings for the early test period (first three quarters) show no significant differences between Maine and its comparison group for the commercially insured or Medicare populations (no early test period data are available yet on the Medicaid population). The lack of significant effects is expected for the commercially insured and Medicare populations, given that the Medicaid population is the major focus of the Maine SIM Initiative and the first three test quarters is too short a period for spillover effects to occur.

5.1 Overview of Maine Model

Maine's SIM Initiative aims to strengthen and expand health care transformation efforts currently under way in the state, by providing an overarching framework to align payment and delivery systems statewide. MaineCare has provided leadership for the Initiative, which is primarily focused on development and expansion of alternative payment models in the Medicaid program. However, several components are also directed at Medicare and the commercial insurance market. The state has identified the following six strategic goals as central to accomplishing its vision:

¹⁵ MaineCare is the Medicaid agency in Maine.

1. Strengthening primary care
2. Integrating primary care and behavioral health
3. Developing new workforce models
4. Supporting development of new payment models
5. Centralizing data analysis
6. Engaging people and communities

Building on its success with the state's multi-payer patient-centered medical home (PCMH) model, a major component of Maine's SIM Initiative seeks to develop an interconnected health care delivery system centered around MaineCare health homes and ACOs. Specifically, the SIM Initiative supports: (1) learning collaboratives and other activities for Stage A health homes that provide primary care support for MaineCare beneficiaries with chronic conditions, (2) implementation of Stage B behavioral health homes (BHHs) to integrate physical and behavioral health care for MaineCare beneficiaries with behavioral health conditions, and (3) implementation of ACs to improve care coordination for MaineCare beneficiaries.

Maine's SIM Initiative is also directing funds toward enhancing its data analytics and reporting infrastructure. Specifically, the state is providing financial incentives to behavioral health providers to adopt health information technology (health IT); developing a consumer engagement campaign to educate patients about delivery reform; building both patient and provider portals; and most importantly, developing a standard set of quality measures for reporting and payment, to drive improvement for providers and payers and allow market forces to accelerate transformation.

5.2 Site Visit Report

5.2.1 Summary of progress, challenges, and lessons learned

Maine has achieved varying degrees of progress in the different reform models, all of which have the goal of integrating care. MaineCare health homes models—Stage A for chronic conditions and Stage B for behavioral health conditions—are well under way and are supported by active learning collaboratives. MaineCare ACs, however, have taken more time to develop and implement. Maine has made progress in supporting health care delivery transformation through health IT, quality measurement and reporting, and workforce development efforts.

Health homes

The MaineCare health home model builds on the state's strong foundation of PCMHs and is supported by the second of Maine's six strategic goals: integrating primary care and behavioral health. Maine established Stage A health homes under Section 2703 of the Affordable Care Act to coordinate care for MaineCare enrollees with one or more chronic

conditions. The primary care providers at participating Stage A health home practices (HHPs) provide clinical care and serve as care coordinators, referring high-needs patients to Community Care Teams (CCTs) for social services. MaineCare pays HHPs \$12 per member per month (PMPM) for health home members with chronic conditions; separate funds provided by the Maine Department of Health and Human Services pay CCTs \$129.50 PMPM for every enrollee who receives a service in a given month. Providers are receptive to the concept of health homes and have found them to be beneficial overall. Several providers in Portland reported that they find the care coordinator aspect to be particularly helpful for identifying patients in need and connecting them to additional services. However, providers reported challenges in determining patient eligibility to participate in health homes, as well as lag time in data on the dashboard and the various permissions associated with accessing patient data. The 90 percent federal match for Stage A health homes expired at the end of 2014; MaineCare is continuing to support Stage A health homes with state funds in 2015.

Maine launched Stage B BHHs to coordinate physical and behavioral health care for MaineCare enrollees with behavioral health conditions. The care coordinator in the Stage B model is the behavioral health provider at participating behavioral health home organizations (BHHOs) and provides community integration and targeted case management services. The BHHOs coordinate with Stage A HHPs for clinical care. At the time of this report, MaineCare paid BHHOs \$330 PMPM for adults with severe and persistent mental illness and \$290 PMPM for children with severe emotional disturbance in each month they receive at least one hour of services.¹⁶ MaineCare also pays the affiliated HHPs \$15 PMPM to scan patient records for care gaps and to coordinate physical health needs of BHH members with BHHOs. Focus groups with Stage A providers revealed that it has been difficult to connect qualifying patients with the Stage B BHHs. One primary care provider said it was easier to coordinate mental health care “in-house” prior to the establishment of BHHs. In addition, our interviews revealed some confusion about how Stage A–affiliated CCTs do or do not interact with Stage B BHHs to facilitate and coordinate needed social services. A final challenge noted by providers is that the PMPM payments may not sustain the level of support needed by Stage B BHH enrollees. The state is evaluating reimbursement rates and may make future adjustments.

Maine Health Info Net continues to expand health IT support for BHHs, albeit slowly. As of spring 2015, 20 behavioral health organizations had established electronic health records (EHRs) and the ability to receive data from primary care practices. These behavioral health organizations are now receiving email notifications of emergency room (ER) and inpatient admissions and lab results for their patients through HealthInfoNet, one of the three major SIM contracted partners. Of these 20 organizations, 15 are Stage B BHHs.

¹⁶ Note that the PMPM dollar amounts cited in this section were as of the time of the April 2015 site visit.

Maine Quality Counts, another of the three major SIM partners, continues to provide training and technical assistance to Stage A health home and Stage B BHH providers, and providers widely praised these training sessions. The trainings—which are delivered through webinars, a web site, a newsletter, and in-person learning sessions—address practice and system delivery, payment reform, and patient population engagement. MaineCare Stage A health home providers join learning collaboratives with multi-payer PCMH providers; MaineCare Stage B behavioral health home providers participate in a separate learning collaborative tailored for them. Quality Counts also conducts an annual combined learning session for health home and behavioral health home providers and practice team members.

A SIM partner reported that both health home and behavioral health home providers overall express high levels of satisfaction with learning activities. In our focus groups, both Stage A and Stage B providers told us that they find the learning collaborative activities informative but not always directly applicable to their practices. Stage B providers expressed satisfaction with the learning collaboratives as a place to share experiences and trade tips. State officials—who are discussing how they will evaluate the effectiveness of the learning collaboratives in influencing practice change—may recommend additions to the curriculum to help practices address change management and implementation of team-based care.

Accountable communities

Maine ACs are also designed to build on the infrastructure laid out by PCMHs. Each AC is centered on a lead entity that, in turn, has partnerships with at least one HHP or primary care practice and at least one provider of services under each of three categories (chronic conditions, developmental disabilities, and behavioral health), if there is such a provider serving members in the AC's service area. Each AC also has relationships or policies to ensure coordination with all hospitals in the AC's service area, and at least one public health entity (if there is one in that service area). The contractual negotiation between MaineCare and the AC lead entities to finalize the AC contracts was more difficult and took much longer than expected. At the time of our 2015 site visit, contracts with four AC lead entities were either signed or in final stages of negotiation; all contracts have been signed as of this writing. MaineCare will continue to pay fee-for-service (FFS) for the services delivered by the ACs. In addition, MaineCare will make shared savings payments to ACs that generate savings and meet quality benchmarks. MaineCare offers ACs the choice between two models: the first offers shared savings only; the second asks ACs to accept downside risk for a chance to receive a higher potential shared savings payment.

One large health system in Maine reported two MaineCare-related challenges with ACs: (1) negotiating contracts with MaineCare and (2) differentiating outcomes attributable to various simultaneous ACO initiatives, some but not all of which are part of Maine's SIM initiative. Nevertheless, providers remain cautiously supportive of the ACs. One provider said, "we're participating because it is the right thing to do, but we are not jumping in with both feet."

One lesson learned by state officials is the importance of timely and accurate data to support transformation efforts. ACs need these data to predict costs and manage patient care. Historically, MaineCare had not been able to provide the desired data, but this capacity has improved. MaineCare began providing data to AC lead entities even before contracts were finalized—which, a state official told us, helped build the lead entities’ confidence that MaineCare can provide needed data for AC population management.

Agreements on total cost of care and performance metrics

The Maine SIM Initiative has made progress in multi-stakeholder agreements related to measuring the cost of care and monitoring performance. One major breakthrough in the past year was development of a voluntary cap on the annual growth in the PMPM cost—by a multi-stakeholder workgroup comprising purchasers, plans, consumers, and providers (see further below)—that can be incorporated into ACO arrangements. In addition, MaineCare, commercial payers, and large self-insured entities agreed on a core set of 44 clinical measures (27 for payment purposes and 17 for monitoring) that will enable comparative analysis within the stakeholder community of how different health systems are performing. A workgroup has been discussing selection of a subset of these measures for public reporting in the future, in order to rate a practice or hospital’s performance as best, better, good, or low.

Other lessons learned

State officials we spoke with emphasized the strength of Maine’s governance structure for the SIM Initiative. While considerable time and effort were expended establishing this structure, state officials are confident the investment has paid off. The governance structure allows all stakeholders to understand how the many elements that make up the state’s SIM Initiative fit together and mutually support one another. In addition, one state official added that the governance structure leverages stakeholder collaboration toward health care transformation, while allowing for state oversight of transformation direction.

At the same time, state officials emphasized the experimental nature of Maine’s SIM Initiative. This attitude of flexibility allowed the SIM Initiative to adapt, make updates, and incorporate changes to respond to newly emerging realities. For example, at the time of our site visit, the state was launching a physician leadership program to fill a newly discovered need for this group to learn about the tenets of patient-centered care and strategies for care coordination (described further below).

5.2.2 Delivery system and payment reforms

This section describes Maine’s progress on the MaineCare delivery system and payment reform efforts, focusing on BHHs and ACs. *Table 5-1* provides a brief overview of the target populations and timeline for the state’s SIM models. In this section, we also discuss strategies for cost of care containment and value-based insurance design (VBID), focusing on the commercial health care sector in Maine.

Table 5-1. Maine Innovation models

	Stage A health homes	Stage B behavioral health homes	Accountable communities
Target population	MaineCare beneficiaries with two or more chronic conditions or one chronic condition and are at risk for another	MaineCare beneficiaries with serious and persistent mental illness and children with serious emotional disturbance	MaineCare beneficiaries
Implementation timeline	Became effective in January 2013	Became effective in April 2014	Contracts signed in spring 2015, with the first performance period spanning August 2014 through July 2015

Stage B behavioral health homes. MaineCare’s Stage B BHHs are partnerships between BHHOs, which are licensed community mental health providers, and one or more HHPs, to manage the physical and behavioral health needs of eligible adults and children with serious and persistent mental illness and with serious emotional disorders. Both organizations, as noted, receive a PMPM payment for health home services provided to enrolled members. The Stage B BHHs build on the existing care coordination and behavioral health expertise of community mental health providers. Participation in Stage B is voluntary and members can opt out of the service at any time.

Stage B BHHs became effective on April 1, 2014, giving them about 1 year of implementation experience by the time of the 2015 site visit. Maine has 22 BHHOs practicing in 51 locations. BHHOs and HHPs integrate and coordinate all primary, acute, behavioral health, and long-term services and supports for enrollees. BHHOs develop and implement a comprehensive plan of care for each member, to improve members’ physical and behavioral health outcomes; reduce hospital admissions and ER use; strengthen transitional care; improve communication between health care providers; and increase use of preventive services, community supports, and self-management tools. In addition, MaineCare requires BHHOs to develop the capacity to use data to identify and implement quality improvement projects. These projects should align with key MaineCare objectives, including reducing: (1) unnecessary service utilization, (2) avoidable ER use, and (3) avoidable hospital admissions.

Providers are enthusiastic about the Stage B model and find it beneficial for patients. One BHHO thought the model developed for integrating behavioral health and primary care “was great, that’s the strength.” According to one provider, the good news for organizations that have not yet become BHHOs is that the pioneers of this model now have a framework they can share. For example, there is “now a template,” according to the provider, with key points that explain what a BHHO needs to do and how to get it done, which could create substantial savings for a new BHHO in startup costs.

Even so, some issues arose in the first year of BHHO operation, such as lower than expected enrollment rates. State officials recognized that not all providers see the Stage B BHHs as a viable business model and might not aggressively recruit patients going forward. As one official put it, “We have not seen the kind of take-up rate that we need to see.” However, state officials also attributed challenges to disparities among the providers—that the business model of one agency can be dramatically different from another’s, which can impact the financial ability of a provider to successfully implement a BHH. “There are some providers that have more capacity than others to take on some risk with a very different payment model.”

According to one BHHO, “the biggest snafu in the first year was financial.” This BHHO explained that it learned fairly quickly that the reimbursement rate did not cover its total service delivery costs. This BHHO thought MaineCare does a fine job in staffing the home—it covers four hours of psychiatric consultation, four hours of medical consultation, some clinical time, a nurse care manager, health home coordinators, and the peer support providers—but that the overhead falls short. Transportation, for example, was not part of the cost model. “It was an oversight. It has been acknowledged, it’s not like the state has not heard us. That’s being looked at.” One provider noted that an important lesson learned was: “You cannot do a cultural transformation and a paradigm shift with no startup funds.”

State officials said the state is committed to conducting an independent analysis of the Stage B reimbursement rate to ensure payments are fair and accurate, but they also expressed the view that consensus is first required that “the model is the right model.” The state feels it is the right model to incentivize integration between physical and behavioral health. However, the state has also heard significant concerns from many BHHOs that care coordination for physical health services will fall more on BHHOs than HHPs, and that those costs may not be adequately reflected in the BHHO rates. Although the state wants to make sure it performs due diligence and commits the resources to properly analyze those rates, it recognizes that this must be done in a timely manner because “if we start losing practices and consumers, it will be hard to get them back.”

State officials and behavioral health providers generally noted an issue with MaineCare payments for behavioral health services arising from a discrepancy in payments between: (1) services provided under the Stage B model and (2) services provided to adults under Section 17 of MaineCare, for which integrated community services are billed at more attractive payment rates.¹⁷ When the BHHs were launched and subsequent MaineCare policies were developed, the state retained Section 17. Officials are now concerned, however, that providers of high-needs patients targeted by Stage B are still billing under Section 17 and that only lower-needs patients

¹⁷ It was also noted by state officials and behavioral health providers that there was an issue with MaineCare payments for behavioral health services arising from a discrepancy in payments between: (1) services provided under the Stage B model and (2) behavioral health services provided to children under Section 13 of MaineCare.

are being served by the Stage B model with the lower payment rates. BHHOs agreed that Section 17 was a substantial issue and a major factor in the lower than expected enrollment in Stage B during its first year. The state is in the process of reforming Section 17 to properly incentivize provider participation in Stage B BHHs.

Accountable communities

Through ACs, MaineCare is engaging in shared savings arrangements with provider organizations that, as a group, coordinate and/or deliver care to a specified patient population. An AC, which is responsible for a population's health and health care costs, is: (1) provider-owned and driven, (2) characterized by community collaboration and a strong consumer component, and (3) involved in shared accountability for both cost and quality. ACs have a choice of two models, as noted, which are differentiated by the risk versus reward built into the contract. Model I has no downside risk, whereas Model II has downside risk in the second and third performance years. Model II, however, has a higher sharing rate on savings than Model I (60 percent versus 50 percent) and a higher cap on shared savings (15 percent of benchmark expenditures versus 10 percent). In both models, providers continue to be paid on an FFS basis. MaineCare and AC lead entities signed contracts in spring 2015, with the first performance period spanning August 2014 through July 2015.

Given the past and current successes of Medicare and commercial ACOs, state officials and providers were generally optimistic that ACs for MaineCare have the potential to be a successful intervention for the state. However, officials also generally agreed that although the AC contracts are now signed (retroactive to August 1, 2014), the negotiation process between MaineCare and the ACs to finalize them was more difficult and took several months longer than expected.

Four AC lead entities have contracts with MaineCare. The original target was five to six ACs, but MaineCare has now shifted the target from the number of ACs to the number of providers in the ACs, since increasing the practices in the ACs "is easier to do." The second contracting phase was going to be summer 2015, but will now be August 1, 2016. State officials thought that "the first round took everyone's energy" and "the capacity of MaineCare to take it on was strained."

From the perspective of the AC lead entities, one said that MaineCare was originally looking to have a uniform contract for all the ACs, and that this entity had to point out to MaineCare that "ACs have different structures." This AC lead entity said that MaineCare was "collaborative" in terms of incorporating edits to better reflect their structure and how they operate, but that MaineCare could have focused more on how to "improve the AC contracts." Another AC lead entity characterized the negotiation process as "extraordinarily slow and frustrating." This entity thought MaineCare had put up too many barriers in the negotiation process and did not provide the data required for decision making. This AC lead entity also

mentioned its long history with the ACO concept and thought MaineCare's relative inexperience with the concept created additional challenges.

Finally, consumers generally thought the AC model would improve care coordination for MaineCare patients but raised the potential issue of reduced access to care. In other words, while the AC model maintains freedom of choice, ACs might be viewed similarly to managed care organizations, which have quality measures but also a profit incentive to reduce access to care.

Voluntary growth caps

The Health Care Cost (HCC) work group is a monthly multi-stakeholder gathering hosted by the Maine Health Management Coalition (MHMC, a SIM partner), where 20–40 individuals discuss actionable strategies to reduce health care costs in Maine. These work group meetings began in 2012 under a Robert Wood Johnson Foundation grant and were resumed and broadened under the SIM Initiative. About 300 invitations to participate were sent out to MHMC members and other stakeholder groups as required by the SIM operational plan—including plans, purchasers, providers, consumers, MaineCare representatives, Medicare representatives, and the other two SIM partners (Maine Quality Counts and HealthInfoNet).

From the first meeting, the participants decided to focus initially on price. The strategy was to outline a range of options to address price for discussion—which included reference pricing, bundled payments, narrow networks, voluntary growth caps for risk-based contracts, rate setting, and transparency. The stakeholders decided to focus on risk-based contracts first, which has occurred over the last year.

Since risk-based contracts were already being put in place, a majority of stakeholders eventually agreed that using voluntary growth caps in the ACO framework would be the best way to add value to help reduce costs. The cap would limit risk-adjusted PMPM costs on a year-to-year basis. The thinking was that constraints on annual increases in health care cost growth would help ensure that any efficiencies gained through risk-based contracts would not be lost through negotiated price increases. The work group spent about half a year debating what the cap should look like and what the implementation process should be. For the cap, there was agreement to use a consumer price index (CPI), but debate ensued among stakeholders on which type of CPI to use. The purchasers and consumers wanted a CPI based on general inflation (all-urban less food and energy), but the providers wanted the medical CPI because they did not have control over all their costs and felt they should be judged against their industry. The medical CPI is also generally higher. After many months of discussion, the stakeholders decided to compromise: over a 5-year period, the cap would start out using the medical CPI but would then trend down towards the general CPI without ever reaching it.

The overall goal is to incorporate this voluntary growth cap into commercial ACO arrangements. Although the HCC work group cannot tell purchasers or ACOs what to do in their

own contracts, the work group emphasized the cap as a voluntary framework that participating providers, plans, and purchasers can use in their ACO arrangements and try their best to stay within. It is also up to the individual contracts to decide what to do if the cap is not met. Currently, the voluntary growth cap has not been incorporated into any commercial ACO contracts, although it is being considered by some stakeholders.

Primary Care Practice Reports

In January 2014, MHMC began distributing Primary Care Practice Reports to all PCPs in Maine on their commercial patients, with SIM Initiative funding. Reports on their Medicaid patients followed in July 2014 (Reports on their Medicare patients were not available as of the time of the site visit). The Reports are designed and developed by MHMC with support from MaineCare and guidance from Maine's Primary Care Medical Home Pilot Conveners, the Primary Care Medical Home Working Group, Pathways to Excellence Steering Committees, and other stakeholders. The Reports reflect the commitment of Maine's health care providers to engage in data-driven practice improvement.

The goal of the Reports is to demonstrate practice pattern variation in cost (and quality) compared to state benchmarks. The Reports display information based on medical and pharmacy claims data for all patients attributed to a given primary care practice, and are based on all the attributed patients' claims data, regardless of where care was received. The Reports consist of measures summarizing cost and resource utilization at the practice level, but also provide more detailed breakdowns across inpatient claims, outpatient and professional claims, and pharmacy claims. National Quality Forum (NQF)-endorsed, national standard quality measures are also provided. All practice measures reported also include a statewide benchmark.

For the first round of Primary Care Practice Reports last year, many providers were unclear on who would have access to them. They were distributed to all practices, and MHMC's policy for that round was that if the practice consented, the report for that practice could also go to the practice's health system. For example, the many practices within the MaineHealth system would each get their own individual practice report, and if a practice authorized it, that practice's report would also go to MaineHealth. MHMC anticipates that this policy could evolve moving forward, as it continues to work with systems and practices on practice report distribution.

A second round of Reports was distributed a few weeks prior to the 2015 site visit. When the data team ran the most recent Reports (which included 2013 claims data), they discovered that more variation than anticipated existed between time periods for a given practice. After 3 months of investigation, the data team determined that much of this variation could be attributed to actions within the risk adjuster and its ability to accurately characterize the extremes of a population. The team recommended a more conservative approach for public reporting (on getbettermaine.org)—to present total cost and resource cost as an average of two consecutive 12-month periods. For the Reports themselves, however, the calculation basis remained as

initially developed, in order to present to the practices the most detailed information available. It is anticipated that, beginning in July of 2015, public reporting on the practices will include cost of care for the first time—a new development under the SIM Initiative.

MHMC said the feedback received from practices during both cycles of the Primary Care Practice Reports indicated that they were valuable tools for the practices. For years, practices had received separate reports from various payers that were not easily comparable. The Primary Care Practice Reports enabled practices, for the first time, to look at cost and utilization (and some limited quality measures) for their entire commercial book of business as a whole.

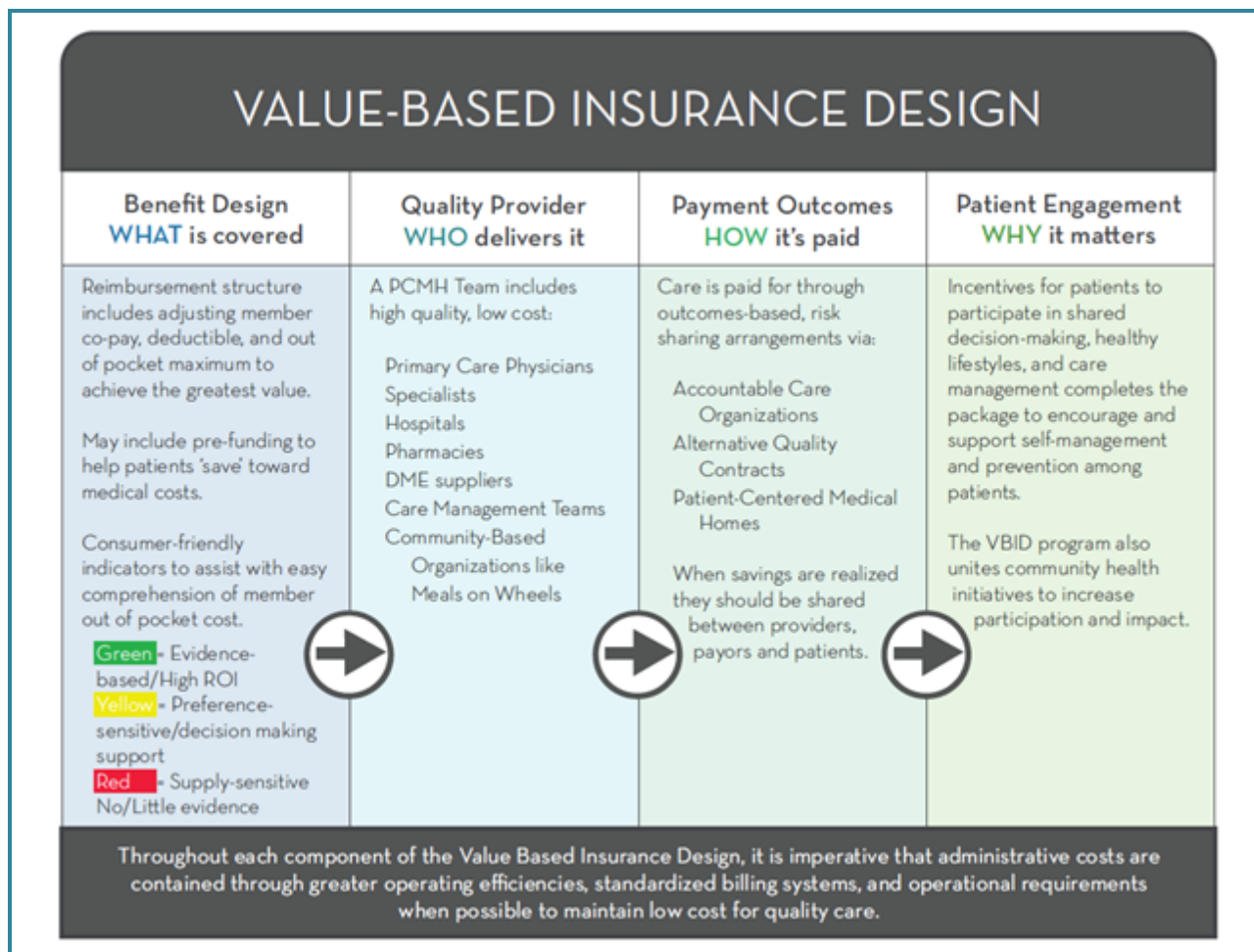
Value-based insurance design

A fundamental way Maine hopes to impact high health care costs is by changing the incentives in the market and aligning costs with the relative value of health care services. VBID is a form of health benefit design that provides incentives to consumers to choose care that is both high quality and low cost. It also incentivizes health care providers to engage patients in a shared decision making process to choose lower cost care options when a range of equally effective approaches to care is available for a given patient.

To explore VBID in more detail and assess its potential for increasing health care value in Maine, over the last year MHMC has convened a VBID work group with the medical directors of health plans, insurance brokers, and providers and representatives of provider associations. Facilitated by MHMC's VBID Manager, the work group is charged with examining VBID examples around the country and identifying best practices. The work group is also responsible for creating a means to rank insurance plans according to select VBID metrics and for encouraging Maine businesses to adopt the new benefit model. While the VBID work group includes all the major health plans in Maine, there is little to no representation from Medicare. As a representative of MHMC put it: "Ideally, this is not just a commercial payer effort—it's across the board."

Figure 5-1 shows the framework for VBID under Maine's SIM Initiative. The VBID framework consists of four components that outline what is covered, who delivers it, how it is paid, and why it matters. The coverage aspect of VBID (first column) is led by the Clinical work group, a subgroup of the VBID work group. The Clinical work group is not asking for plans to give up their product lines, but rather to also offer a common health plan option with a standardized benefit design—to be built in and driven through an EHR that enables shared decision-making during the provider-patient visit. From a provider perspective, services the provider recommends for a patient will be identified by the EHR as green, yellow, or red (as shown) with the patient's real-time cost pulled in. The provider can then discuss the pros and cons of the services and potential cost. To demonstrate how shared-decision making can be facilitated through the model, the Clinical work group will start with the following services:

Figure 5-1. VBID Framework under Maine’s SIM Initiative



Source: Maine Health Management Coalition

(1) early breast/prostate cancer treatment, (2) hip/knee replacement, (3) herniated disc surgery, (4) spinal stenosis, and (5) colon cancer screening. One or more will be added for cardiac disease.

The second column in Figure 5-1 involves examining provider rankings to identify a list of quality providers. Providers are ranked through the getbettermaine.com web site, which is separate from the VBID work group and part of MHMC’s public reporting initiative (the Pathways to Excellence [PTE] activity). The rankings, especially for specialists, are nonetheless important to Maine’s VBID model, as they ensure patients are referred to a network of high quality, efficient providers. PTE is currently looking into measuring quality for four specialty groups: (1) oncology, (2) orthopedics, (3) women’s health, and (4) cardiology. A representative of MHMC said that “specialists are on board with this, they are excited by the potential of being measured.” How these providers will then be paid (third column) is also the focus of MHMC

outside the VBID work group; the work group anticipates an alternative quality contract or ACO arrangement.

Patient engagement (fourth column) is led by a second subgroup of the VBID work group, made up of wellness experts, which has spent time identifying wellness programs that have proven to engage consumers in their own health care. This patient engagement includes finding ways to encourage patients covered by the plan not only to select a primary care provider but also to develop a relationship with that provider.

Ultimately, the work group would like to see savings from the VBID model—achieved “by getting people the right care at the right time and keeping them healthy using lower cost services”—invested in the larger community (that is, beyond those covered).

The VBID work group has been active over the last year, under the SIM Initiative, in overseeing development of this framework. The work group has seen the most success with the willingness of health plans, providers, and purchasers to come together and help build VBID, despite initial skepticism by some stakeholders in the work group that there would be no interest. Most of the challenges for the work group are technical. For example, building the color-coding scheme takes someone with real technical logic and skill; procedure codes need to be categorized by the green/yellow/red color coding scheme. Another challenge is to identify an EHR vendor that is a good fit for the development work required for the VBID model.

Regarding implementation, the VBID workgroup decided that the VBID model under the SIM Initiative would be offered voluntarily. The Maine Bureau of Insurance has to approve every plan being offered in the state. The Bureau wants to make sure all essential health benefits are covered, and that the rate composition is appropriate in the state, along with other criteria. The VBID work group is working towards an implementation date of 2016. A representative of MHMC admitted that the deadline seems aggressive, “but we do already have one purchaser interested in offering this VBID model to their beneficiaries/employees in 2016.” The ultimate objective of the VBID work group is for multiple insurers to take up the standardized plan under the VBID model: “That is the objective and purpose. That is what we are striving for. That would definitely add value.”

5.2.3 Behavioral health integration

Integration of behavioral health and physical health services is a key component of Maine’s Stage B BHHs. Participating BHHO staffs include a nurse care manager, a clinical team leader, medical and psychiatric consultants, peer support specialists, and health home coordinators for patients with serious emotional disturbance and for patients with serious and persistent mental illness. In addition to providing enrolled patients with behavioral health services, as noted, these staff coordinate with participating HHPs regarding the provision of primary care to enrolled patients.

Provider focus groups and interviews revealed challenges in implementing Stage B coordination efforts between BHHOs and HHPs, as noted earlier. The primary care physician survey results confirm this. Just under a third of respondents reported that patients needing behavioral health services see providers on-site and only a quarter reported referring patients to behavioral health partners with whom their practice has an established relationship. Further, coordination efforts appear, at least to behavioral health providers, as one-sided. A majority (71 percent) of primary care providers that responded to the survey reported they have been contacted by behavioral health providers regarding a patient's primary care. Behavioral health providers participating in focus groups revealed frustration with primary care providers' lack of motivation to coordinate and share information with them. The nonclinical team members in this model are thus considered essential by behavioral health providers to track and coordinate patient care. Both behavioral health and primary care providers agreed that proximity to one another is more convenient for patients and would improve integration.

In consumer focus groups, Stage B BHH enrollees were aware of increased care coordination efforts between their behavioral health and primary care providers, specifically referencing that they have signed releases so their providers could share information and that they receive calls from their case managers. The participants also found it fairly easy to schedule appointments with primary care providers. Still, even with increased efforts to coordinate care, enrollees reported that their behavioral health providers know them better than their primary care providers do. For example, primary care providers were not informed of their ER visits, which the participants cited was a result of incompatible health IT software.

Interviews revealed some confusion, as noted, about Stage A-affiliated CCT and Stage B BHH interaction. Many of the patients that BHHOs and CCTs care for require both behavioral health and social services. Interviewed providers noted, however, that appropriate integration of BHHO and CCT services is lacking due to a rigid payment structure. For example, patients enrolled in a Stage B BHH may benefit from additional support from CCTs, but CCTs are not reimbursed for services provided to these patients. This payment structure has prevented BHHOs and CCTs from coordinating with one another to provide needed services and support to patients. Multiple providers highlighted the need for a different payment system. As one CCT put it, "we can't get paid as a CCT if they're in a behavioral health home or in targeted case management—it is a lot of the same population and we do not all do the same thing." Despite this barrier, some increased communication has occurred between BHHOs and CCTs—facilitated in part by notifications sent to CCTs when their patients enroll in Stage B, which allow the CCTs to reach out to the BHHOs and discuss the patients' care.

Data sharing

A key component for behavioral health integration is the ability to share patient data. Maine's SIM Initiative is promoting data sharing through HealthInfoNet's health IT reimbursement initiative. SIM funds are used to support 20 behavioral health organizations

across Maine (15 of which are Stage B BHHs) in their adoption of health IT—including connection to the statewide health information exchange (HIE) to better integrate behavioral and physical health data. The objective is to enable care managers at various types of provider organizations to access one another’s data via the statewide HIE clinical portal for the purpose of coordinating care. Focus groups with Stage B providers highlighted a need for this, with one participant noting duplicative efforts by clinicians at BHHOs and HHPs due to an inability to access one another’s notes. Patients seen at the participating organizations must opt-in to allow all clinicians they have a treating relationship with to access their behavioral health data. The behavioral health data for an enrollee at a participating BHHO who does not opt-in can only be accessed by providers affiliated with the patient’s BHHO after one-time consent is granted or in cases of emergency. Additionally, other provider organizations (such as hospitals) have health IT systems in place that are built to prevent the flow of protected mental health data.

Measuring integration

Another SIM-related activity promoting behavioral health integration is MHMC’s efforts to identify and report providers’ level of integration. Because there are no nationally endorsed behavioral health integration measures, MHMC’s multi-stakeholder clinician steering committee is tasked with determining how to assess the level of behavioral health integration into primary care practices, while its multi-stakeholder behavioral health steering committee is tasked with determining how to assess the level of physical health integration into behavioral health practices. A third crossover committee was established to allow discussion regarding any measures identified in one group that may impact the other. MHMC also hired a physician consultant to help navigate this challenging process. Public reporting of behavioral health providers on the getbettermaine.org website began in January 2015; patients are now able to search for providers by ratings and location or by practice name.

5.2.4 Quality measurement and reporting

Two primary objectives of the Maine SIM Initiative are to: (1) align quality measures across providers and payers and (2) improve public reporting of health care cost and quality data. Both objectives are largely the responsibility of two MHMC-led work groups—the Accountable Care Implementation (ACI) work group and the PTE work group—whose work in the last year has focused intensively on identifying a narrow set of measures that could be used across payers and providers (ACI) and rolling out public reporting of quality measures (PTE).

Previously, many state officials and payers expressed doubts regarding Maine’s ability to identify a core set of quality measures that could be aligned and publicly reported for all participating providers. This concern was again expressed in interviews with various hospital systems, which discussed the large volume of quality measures in use across the state and the difficulty of gaining consensus around a core set. Although the ACI work group identified a core set of approximately three dozen quality measures from a list of more than 300 used across payers and providers in Maine, some stakeholders still find measurement and reporting

overwhelming. One provider commented, “I think it’s [an] overload...I look at this data and it’s so unyielding; some of them I don’t understand anymore”; and a state official voiced concern with work groups and committees becoming paralyzed by the dozens of measures they must continually consider and produce.

Providers discussed a number of reasons why the ACI and PTE work groups have found it difficult to parse the list of core quality measures—including that many smaller practices lack the infrastructure and funding to support certain quality measures, and thus require a broader set of measures until providers are able to find a long-term financial solution. Behavioral health providers cited challenges with determining quality measures for two reasons: (1) many behavioral health measures have not achieved any type of national endorsement or validation and (2) there are recurrent concerns over sharing behavioral health or substance abuse data. In addition, two hospital systems emphasized the need to maintain their own set of quality measures, which are used to assess their performance based on each hospital’s privately negotiated contracts—particularly in risk-based arrangements. One provider organization also noted that a broader set of quality metrics may actually benefit providers, which may then be able to emphasize certain measures they perform well on, and thus compensate for their lower performing measures.

Despite the challenges Maine has faced in developing a core set of quality measures, stakeholders generally agreed on the key characteristics of measures necessary for any quality measures the ACI or PTE work groups consider. First, many insisted that measures need NQF or other national endorsement to certify the accuracy of each, as well as to ensure each measure is reported widely enough for benchmarking at the national, regional, and local levels. Second, several provider groups commented that any quality measure must be a large enough driver of costs, have a large enough volume of claims, and be sustainable in the long term for providers and systems to invest in it. Several clinicians also emphasized the need to continually evaluate quality measures, as over time, the evidence base changes and providers expand their quality reporting capabilities.

While the ACI work group was able to identify this core set of quality measures, many of these have yet to be implemented for a majority of payers and providers in Maine. To gain multi-stakeholder consensus for these measures, the ACI work group agreed to make their use voluntary; payers and providers agreed to use these core measures with the contingency that they could add measures to serve their unique reporting purposes. Large hospital systems remain skeptical that any large national payer will commit to using only a limited sample of measures unique to Maine.

While the PTE and ACI work groups both continue to evaluate, come to agreement on, and advocate for state-wide adoption of particular quality measures, MHMC’s PTE and HCC work groups have begun publishing limited quality measures via the getbettermaine.org web site

as well as the Maine Healthcare Databook released by MHMC in October 2014. Already, some state officials have noticed the use of this limited quality reporting to “tier and steer” providers—where payers use these reports to identify better performing providers (tier) and then waive certain fees for their members if they select these higher performing providers (steer). While these officials were excited by this new development, one consumer advocacy organization was concerned that payers may use this “tier and steer” method to limit which providers patients can see, and thus ultimately restrict access to care.

The primary care physician survey shows variation in how providers and practices report and use quality measures. A majority of respondents (80 percent) use an EHR or other health IT system to generate quality measure data, but another 13 percent do not use their EHR for reporting purposes. When asked whether they monitor quality data for particular patient groups (e.g., type of insurance, chronic conditions, or other categories) or at the practice level, 60 percent of respondents reported that their practices regularly review quality performance at the patient-group level and 66 percent reported regularly reviewing quality performance at the practice level. Of the responding providers that regularly review quality performance, 89 percent reported that their practices use these data to improve quality of care at the patient-group level, while 93 percent use the data to improve care at the practice level. However, only 62 percent of respondents reported that some portion of their payments was based on quality performance. And of those, the vast majority (83 percent) said their performance-based payments affected decision making at their practices only “a little” (53 percent) or “not at all” (30 percent).

5.2.5 Health information technology and data infrastructure

The Maine SIM model includes four health IT strategies to support delivery and payment system reforms: (1) financial reimbursements for behavioral health organizations to improve their EHR technology and connect to the statewide HIE, (2) real-time HIE email notification services, (3) Blue Button pilot for consumers, and (4) clinical dashboard to MaineCare. SIM’s technology partner, HealthInfoNet, is responsible for implementing all four activities. The overall progress of each is described below, along with their utilization by providers and consumers.

Health IT in behavioral health organizations

To promote technology access across all behavioral health providers, HealthInfoNet provided 20 behavioral health organizations (including 15 Stage B BHHs) with financial support to improve their EHR technology and establish access to the statewide HIE through its health IT reimbursement initiative. HealthInfoNet shared mental health information from the first of these behavioral health organizations in the HIE in January 2015, and was preparing to connect four additional ones at the time of the site visit.

Behavioral health organizations are just beginning to leverage HealthInfoNet’s email notifications, which allow them to receive real-time notifications whenever a patient visits the

ER, is admitted or discharged from the hospital, or has new lab results. Additional email notifications are being designed and will be added as available. Because many behavioral health patients visit ERs more often than other patients, these real time notifications will be helpful for both behavioral health organizations and ER staff—enabling case managers to provide a history and offer other support to ER staff.

HealthInfoNet has also spent the last year creating new education tools for behavioral health organizations to help them understand the opt-in framework under Maine State law. By state law, Maine is an opt-out state for all medical information—all patient medical information is automatically loaded into the system, but the patient has the option to opt-out of having their data loaded. However, in the past, the state law specified that mental health or HIV/AIDS data could not be shared in the system. In 2011, the state law was amended to allow the sharing of mental health and HIV/AIDS data with the state designated HIE, operated by HealthInfoNet. Patients now have the right to choose (that is, opt-in) to have their mental health and HIV/AIDS information in the HIE, to be seen by any provider with a treating relationship with the patient. If a patient chooses not to opt-in their mental health and HIV/AIDS information, the information is available in the HIE but is shielded from view until the patient provides opt-in consent. Providers may access this information if the patient gives them a one-time consent, or in case of emergencies as defined by the law. Substance abuse information is not accepted in the HIE per 42 CRF Part 2 federal law and is subsequently blocked from entering the HIE altogether. All patients have the right to opt-out of the HIE and have their record deleted. HealthInfoNet has invested a lot of resources into getting staff educated on how to discuss consent options with their patients. These include monthly webinars and phone conversations, as well as a full-time staff person dedicated to this education activity. Although patients understand the value of having their information shared among clinicians, many are still concerned about privacy breaches. Nonetheless, patient consent and opt-in has gone extremely well and the vast majority of patients are choosing to opt-in when presented with the choice.

There have been implementation delays in connecting some providers' EHRs to the HIE. HealthInfoNet receives health information from EHR systems through Health Level 7 (HL7) messaging. To receive HL7 messages from EHRs, triggers must be installed in the EHR to automatically send the information from the provider's EHR to the HIE as the data are available. When the HealthInfoNet technical team began working with the 20 behavioral health organizations, it became clear that several behavioral health EHR vendors did not have triggers built into their systems—causing significant delay for some behavioral health organizations in meeting their grant milestones due to technical barriers. EHR vendors need to build the technology required to connect to the HIE, but HealthInfoNet and the behavioral health organizations have to work with the vendors' development timelines. HealthInfoNet cannot “force” the development work required to connect EHRs to the HIE, as the vendor contract is between the behavioral health organization and the EHR vendor. HealthInfoNet's role is to ensure the necessary trigger creation is in place to maintain the “real-time” data exchange the

HIE is intended to provide. Additionally, smaller behavioral health organizations typically require more support and time to connect, as many do not have the resources and expertise larger organizations have in-house.

HealthInfoNet would like to continue this behavioral health work, but will first need to evaluate ongoing costs. The goal is to make these improvements as affordable as possible for behavioral health organizations, because many have very limited resources and are concerned about the sustainability of improving health IT systems and educating about them once the SIM Initiative is over.

HIE-notification service for MaineCare

The secure email notification service provided to MaineCare may be used to automate the current fax process of care managers receiving ER and inpatient discharge summary reports from hospitals. The HIE provides real-time electronic email notifications of both ER and inpatient events of care for MaineCare members. HealthInfoNet completed building the technology to provide notifications in October 2014 and now provides MaineCare with a daily summary report of members who have an ER or inpatient visit. Hospitals have varied in how they send patient information to MaineCare; this new tool will hopefully improve the current workflow. As a representative of HealthInfoNet suggested, the next phase of the project will focus on MaineCare's needs for, and use of, the tool.

State officials want to see how providers are using the information from the notification tool and if that information is being delivered in a useful way. One state official mentioned that the data they are receiving are too voluminous to be actionable. The state would like to see the SIM Steering Committee focus on this issue by looking at the flow of the notification service—who reads the notice when it comes in, what that person should be thinking about when s/he reads the notification, and what s/he then does with the information.

Blue Button pilot

Maine's Blue Button pilot provides select Eastern Maine Healthcare System (EMHS) patients with access to their HIE record and the ability to download their statewide HealthInfoNet medical record summary, called the Continuity of Care Document. Because of the state's need to allocate resources to other projects, the Blue Button pilot was scaled back from a 3-year project at multiple sites to a 12-month project at one site, which is currently wrapping up. HealthInfoNet chose to pursue this project because it was the first time HealthInfoNet was able to test the impact of providing patients with direct access to their HIE data.

The pilot has been very successful from HealthInfoNet's perspective. Out of a sample size of just under 800 patients, over 300 have chosen to participate as of the time of the site visit—higher than expected, given the little promotion and outreach HealthInfoNet was able to

do with its limited marketing and educational budget. HealthInfoNet's patient survey showed that patients do want access to their information, including whenever and wherever they need it.

HealthInfoNet identified as a central challenge regarding consumer engagement the lack of patient knowledge on what the HIE is and why sharing their health data is important. This lack of knowledge is of particular concern, given that patients need to make an informed choice about whether to opt-in to share their protected health information in the HIE. Even though no funds are allocated for public awareness, HealthInfoNet has created patient education materials to train staff on how to talk to their patients about the HIE.

As the pilot is ending, HealthInfoNet would like to expand the project and make it sustainable. But bringing the project to scale would need ongoing maintenance and external funding, HealthInfoNet plans to discuss the potential of such an activity with the SIM leadership and the state more generally.

MaineCare analytics dashboard

Another tool HealthInfoNet is providing to MaineCare is an analytics dashboard that includes the integration of MaineCare Claims data with clinical predictive risk scores and information sourced from clinical data in the HIE.

The dashboard has been built; the next step is to figure out the use cases for it. HealthInfoNet is working with MaineCare as MaineCare begins to test and leverage the predictive risk scores of its members—for example, to understand the likelihood of different members being admitted to the ER and to take further action on that information. This will be the first time MaineCare will have access to clinical predictive analytics. Once MaineCare identifies how to fit the clinical dashboard into the workflow, the new tool can be used to its full advantage.

Provider response and use of health IT

Of the primary care providers that responded to the survey, 94 percent said their practices use EHRs, but only about half said their practices use an EHR to access electronic information on their patients through the HIE. Similarly, approximately half use the HIE to share electronic clinical data on their patients with providers outside their practice, but only 33 percent of respondents that use EHRs indicated their practice shares electronic information with behavioral health providers.

Certain providers in the focus groups mentioned challenges regarding the communication and compatibility between EHR systems, specifically how the two competing hospital systems in Maine cannot communicate effectively. Providers from one hospital system can only view information from the other hospital system; if they want to upload information into a different hospital system they cannot do so. However, those whose EHR systems are compatible said they appreciate the improved information they can obtain for clinical decision-making.

Regarding the HIE, providers from the focus groups remain positive and find it useful. Some said they appreciate how the information is user-friendly and does not have data lag. Others commented that the HIE has improved their access to ER discharge data. One provider mentioned getting information more quickly and having an easier time connecting with patients because of the HIE, which has been especially helpful for patients with co-morbidities. Another provider uses the information for predictive risk analytics to enable nurses to reach out to patients with a higher ER risk—thus switching the focus of care from reactive to proactive for these high-risk patients.

Most behavioral health providers interviewed found health IT investments in behavioral health to be the most impactful SIM intervention. Several organizations mentioned the enormous costs associated with maintaining an EHR. The SIM Initiative's health IT reimbursements help cover these operational costs, such as upgrade and licensing fees. Behavioral health providers in the focus groups also found certain health IT interventions to be helpful, most notably the HIE. One provider mentioned how the HIE saves time and money. But some behavioral health providers were frustrated, as noted, that they cannot share information with the HIE but only view the HIE data from other providers.

Consumer response and use of health IT

Consumers are only just beginning to become familiar with patient portals in Maine, including the Blue Button pilot program. Those who do use the portals do so to get test results and referrals, and for communicating with nurses. Some mentioned the convenience of being able to access the portal on their phones or tablets. However, several said they do not have access to any such technology. Providers confirmed that the use of patient portals remains an issue in rural parts of the state, due to lack of technology and Internet access.

As noted, HealthInfoNet conducted a consumer survey to obtain feedback on the Blue Button pilot program. According to the survey, not only was there positive general interest in the portal from consumers, but portal users also responded positively. Patients felt the tool was easy to use and that the format of the patient summary clinical document HealthInfoNet developed was easy to understand.

5.2.6 Workforce development

Maine has used many methods to strengthen and expand its health care workforce—most designed to improve communication and interaction between existing providers and patients. Projects target the developmentally disabled population, community health workers, and physicians, and span a wide variety of topics such as patient-physician communication and provider health IT education.

Learning collaboratives

Maine Quality Counts hosts learning collaboratives for Stage A health home and Stage B BHH providers. These collaboratives—which use webinars, newsletters, and in-person meetings to help providers learn ways to improve care—are receiving mixed reviews from providers. One Stage A health home provider who attended our focus groups valued the learning collaboratives and learned a lot from an in-person meeting that involved problem solving with an interdisciplinary provider team. Many Stage A and B providers valued the networking that occurs. However, some Stage A and B providers at the focus groups felt that, while the information is interesting, it is difficult to put into practice in their particular work environment.

The nurse care manager role is new for Stage B BHHs and there are specific learning opportunities for them. Monthly webinars are held and the nurse care managers are able to request topics for future learning collaboratives. So far, the nurse care managers have requested more information about chronic pain management and consumer engagement/activation, among other topics.

Working with developmentally disabled populations

Another effort to improve communication between practitioners is aimed at primary care providers that work with severely developmentally disabled populations. Both the aides and family members who attend physician appointments and their providers are being taught to better recognize physical health problems, especially when a major behavioral change occurs, and to better communicate with one another. The goal is to improve physical health and reduce the suffering of these patients and their use of behavioral drugs. Some physicians are reluctant to take on these patients; the state is hoping this communication effort will reduce provider reluctance and increase access to care for developmentally disabled patients. A curriculum was recently developed and training will start soon for a self-selected provider group.

Community health workers

Maine's SIM award is paying for four community health worker (CHW) pilot sites. One hospital health system that serves a rural area has hired two CHWs, one full-time and one part-time, to serve patients in the areas surrounding the hospital. The CHWs have been mostly used to target behavioral health patients, a very high percentage of whom have been missing recommended cancer screenings. The CHWs have been talking to patients and working with providers to enable patients to take a colorectal cancer screening test in their homes; the CHWs drop off the testing kits and then pick them up to take back to the physicians' offices. The hospital system has been happy with the effectiveness of this strategy. One interviewee reported hearing that a physician practice was thinking of hiring a CHW with its shared savings, but the interviewee was concerned that the practice would use the CHW to engage only with very-high-needs patients, which might not be maximally effective. The hospital system would like more funding to be available for stipends for volunteer CHWs or retirees who have time and skills to contribute.

Maine is considering requiring a certification process for CHWs to ensure core competencies. One provider that oversees CHWs feared, however, that such a process might drive away qualified people who do not want to take classes at a community college.

Physician leadership training

Maine's SIM Initiative is involving providers in multiple system changes, while other initiatives are simultaneously requiring providers to adapt to health system transformation. In response to provider comments about the various programs intended to transform practices, Maine developed a new SIM-supported project to focus on change management and change leadership. This project, provided by the Daniel Hanley Center for Health Leadership, recruited 34 participating physicians.

Patient-Provider Partnership pilot

The Patient-Provider Partnership (P3) pilots, which ended on March 31, 2015, were focused on educating physicians in best practices that reduce unnecessary care. Practices were engaged in efforts to promote shared decision-making on low-back pain, medication management, or the *Choosing Wisely* program to help patients choose evidence-based care. Two consultant physicians were hired by Maine Quality Counts to help practices implement shared decision-making—support that providers reported as valuable. One SIM Initiative partner organization said that doing this type of patient engagement was hard when other incentives remain in the system; another expressed concern about the short length of the pilot project. No additional SIM funding is currently planned to support continuation of this program.

5.2.7 Population health

The National Diabetes Prevention Program (NDPP) is being implemented across the state. This program is a year-long effort to help patients diagnosed with pre-diabetes to avoid diabetes through lifestyle coaching. When providers wish to recommend NDPP to a patient, the patient or provider can call one central hub to find class availability. While this program existed in Maine before the SIM Initiative began, SIM funding has allowed the state to pay for more trainers, thus allowing more sites to offer NDPP. SIM money is also being used for a small evaluation of this project.

State officials have found SIM's Population Health Plan requirement to be an administratively "challenging process," but ultimately developed a way to integrate this requirement into existing population health efforts. The state conducts an annual review of its State Health Improvement Plan, which preceded the SIM Initiative and currently targets six priorities (including obesity and tobacco cessation). The next review will add diabetes to the priorities, as requested by CMS as part of the Population Health Plan. Multiple high level officials are now at work developing the required Plan.

5.2.8 Stakeholder engagement

Much of Maine's SIM planning and implementation has required comprehensive discussions among the various subcommittees and work groups in Maine's SIM governance structure. Most of these committees and work groups are multi-stakeholder collaborations with provider, purchaser, payer, and consumer representatives. Many of the stakeholders interviewed considered the ability to bring these different groups together as one of SIM's greatest accomplishments—and that creating a venue for multi-stakeholder discussion has been valuable in generating opportunities for fruitful discussions among those interested in the potential of the SIM Initiative to transform health care delivery. The SIM Initiative has also been an opportunity for different groups to come together and build stronger relationships. One state partner representative mentioned that it has been helpful for each of the stakeholders and partners to recognize limitations in their own capacity to do things individually versus collectively.

Two of the multi-stakeholder committees have been successful in keeping stakeholders engaged enough to come to an agreement on important decisions. After months of discussion, as noted, the HCC work group agreed to a voluntary annual growth cap, using a cap methodology that was a compromise among purchasers, payers, consumers, and providers. And the ACI work group was able to agree on a common measure set for ACO contracting.

However, getting certain stakeholder groups engaged has been difficult. According to several interviewees, the committees and work groups are provider-heavy. One partner noted that broadening engagement can be difficult, as regular participants may be more familiar than newcomers with the multi-stakeholder process. Another reason is the sheer number of meetings held by these groups. Many of the smaller employers and rural providers are unable to regularly attend these meetings while simultaneously overseeing their business or practice. Lack of Center for Medicare participation is also of concern to several interviewees. Most committees and work groups have been unable to obtain sufficient Center for Medicare participation because of its focus on other programs and initiatives. Some stakeholders feel that the lack of Center participation is not necessarily a major issue, but others note the necessity of Center for Medicare's participation, because its activities drive so much of the change in Maine's health care systems.

Unfortunately, many involved in Maine's SIM Initiative participate in multiple committees, which carries the danger of eventual stakeholder burn-out. State officials and SIM partners are trying to ensure the benefits of engagement continue to outweigh any fatigue. The committees and work groups are all aware of the need to make sure every meeting is productive to keep people engaged. However, keeping meetings productive is a challenge, since multi-stakeholder engagement prolongs meetings as a result of broad ideas discussed from numerous perspectives. There have also been stakeholder complaints about the amount of time spent at

these meetings trying to meet CMS requirements that keep changing. Rather than spending most of the time discussing policy and activities, a lot of it is spent on process issues.

As noted earlier, these multi-stakeholder gatherings consist largely of providers. In ACI meetings, for example, the conversations about measures were mainly dominated by the providers, with the health plans not contributing much to the dialogue. One state partner representative admitted that, if there is not a lot of interest among providers in exploring a certain activity, it will not go anywhere. Even so, some providers feel their voices are not heard, especially in MHMC work groups. Although these providers fully support the transition to value-based payments, they feel they are being seen as a barrier to these initiatives whenever they disagree on certain decisions the MHMC work groups have made.

Other concerns regarding workflow between the partners and the state committees also affect stakeholder engagement. A provider, a consumer advocate, and a state official all noted that, since the SIM partners (MHMC, Maine Quality Counts, and HealthInfoNet) are at the center of the work and make all the decisions, it is difficult for state committee members to stay engaged. Even though the decisions are filtered down, the discussions do not go into great detail because the decisions have, for the most part, already been handled by the work groups. Hospital systems are aware of this dynamic, particularly regarding their lack of representation in the MHMC work groups. They are worried about the possibility of certain quality measures being approved that hospitals have not had much input on.

Despite the many challenges to multi-stakeholder engagement mentioned above, Maine and its SIM partners regard their commitment and ability to bring various groups together and ensure everyone involved has a voice as a major success. Although discussions are lengthy with so many different stakeholders involved, many people have learned how to collaborate and compromise in a more efficient way.

5.3 Quantitative Outcomes

This section presents information on six types of outcomes for the Maine SIM Initiative: (1) provider and payer participation, (2) populations reached, (3) care coordination, (4) quality of care, (5) health care utilization, and (6) health expenditures. Data on the first two sets of measures come from various state sources. The latter four sets of measures are derived from claims data. Because Maine did not have Medicaid Analytic eXtract (MAX)/Alpha-MAX files for our analysis period, we obtained Medicaid claims for the baseline period (2011 through 2013) directly from the state. Data for the comparison group was obtained from the MAX/Alpha-MAX system, but were only available for 2010 and 2011. We also present the quantitative outcomes for the commercially insured population in the MarketScan database and Medicare beneficiaries. These data were available for the full baseline period (fourth quarter 2010 through third quarter 2013) and the first three quarters of the test period (fourth quarter 2013 through second quarter 2014).

While the Maine SIM Initiative's delivery system and payment reform models are targeting the Medicaid population rather than Medicare or commercially insured populations, patients with *different types of insurance* often receive care from the same providers and health systems. This creates a potential for spillover effects on care received by Medicare beneficiaries.¹⁸ Furthermore, many of the enabling strategies (e.g., health IT investment) implemented under the SIM Initiative are available to all providers statewide, and thus can potentially enhance the impact of other federal, state, and private sector initiatives within the state. The SIM Initiative was intended to spread and support all health care reform in Maine. Therefore, to capture these effects, we report claims-based outcomes, not only for Medicaid beneficiaries but also for Medicare and commercially insured populations.

5.3.1 Populations reached

Maine is working towards having 80 percent of all care provided through value-based purchasing arrangements by supporting the formation of multi-payer ACOs committed to performance-based payment, implementing payment reforms among public/private payers, and spreading the PCMH model of integrated primary care. A workgroup has been created by one of Maine's key SIM partners to develop a new value-based insurance design. The MaineCare Stage A health home, Stage B BHH, and AC initiatives are all SIM-supported efforts that aim to provide an alternative payment model based on quality of care and cost efficiency. Many of the goals for transitioning to value-based purchasing arrangements will also be supported by other federal and state initiatives, including the Medicare All-Payer Advanced Primary Care Practice Demonstration (MAPCP), Advance Payment ACO, and HCIA initiatives, among others.

Maine has made considerable progress in attributing Medicaid beneficiaries to Stage B BHHs. The number of Medicaid beneficiaries reached by Stage B BHHOs by the first quarter 2015 is 3,738, which is close to half of their goal of 8,500 (**Table 5-2**). The number of Medicaid beneficiaries reached through ACs has remained unchanged at 30,000. The number of beneficiaries touched by Stage A health homes is over 72,000. Altogether, **about 42 percent of the state's Medicaid population of 255,400¹⁹ is being reached by these three primary Maine SIM delivery system and payment reform models.** It is important to note that beneficiaries can overlap between the health homes and ACs, so the percentage is an overestimate because of double counting. The number of Maine residents touched by the all-payer PCMH initiative includes over 25,000 Medicaid beneficiaries, 44,000 Medicare beneficiaries, and almost 69,000

¹⁸ For a description of potential spillover effects and a summary of evidence of these effects from previous delivery system and payment changes, see <https://www.cms.gov/Research-Statistics-Data-and-Systems/Statistics-Trends-and-Reports/ReportsTrustFunds/downloads/spillovereffects.pdf>.

¹⁹ Kaiser Family Foundation population estimate based on the Census Bureau's March 2015 Current Population Survey (CPS: Annual Social and Economic Supplement) available at: <http://kff.org/other/state-indicator/total-population/>.

Table 5-2. Population reached in the Maine innovation models by payer

Payer	Patient-centered medical homes under MAPCP	Stage A health homes	Stage B behavioral health homes	Accountable communities
Medicaid	25,816	72,283	3,738	30,000
Commercial	68,974	—	—	—
Medicare	44,260	—	—	—

— = not applicable.

Source: Maine's reported core metrics from Maine's Q1 2015 Quarterly Progress Report (except for populations served by MAPCP, which is based on Maine's self-reported core metrics from Maine's Q3 2015 Quarterly Progress Report).

commercially insured individuals.²⁰ Altogether, **roughly 17 percent of the state's total population is being reached by PCMHs or health homes.**²¹ The total number of residents being reached by value-based payment models is unknown, as these data do not include persons touched by Medicare and commercial ACO models, which were in place prior to the start-up of Maine's SIM Initiative.

5.3.2 Payer and provider participation

Table 5-3 presents the number of physicians (participating providers) and practices (participating organizations) in Maine's SIM-related delivery system reform models, as well as participating payers for each model. As of third quarter 2015, there are 70 all-payer PCMHs under MAPCP, 109 Stage A HHPs, 20 Stage B BHHOs, and four AC lead entities.²²

²⁰ Health Homes Stage A can be administered either under a practice participating in MAPCP or a practice not participating under MAPCP (U. Southern Maine, 2014). It is unclear in Maine's reported core metrics whether or not the MAPCP Medicaid population overlaps with the health homes Stage A Medicaid population. In this section we are assuming there is no overlap.

²¹ The Kaiser Family Foundation population estimate of 1,299,600 was used to compute this percentage. It is based on the Census Bureau's March 2015 Current Population Survey (CPS: Annual Social and Economic Supplement) available at: <http://kff.org/other/state-indicator/total-population/>.

²² Maine's reported Q1 2015 core metrics did not include any data on populations served by MAPCP. We thus use Maine's reported Q3 2015 core metrics for populations served by MAPCP.

Table 5-3. Physicians, practices, and payers participating in the Maine Innovation models

Participants	Patient-centered medical homes under MAPCP	Stage A health homes	Stage B behavioral health homes	Accountable communities
Physicians ¹	518	—	—	28
Practices ²	70	109	20	4 ³
Payers	MaineCare, ⁴ Medicare, Commercial (Aetna, Anthem BCBS, Harvard Pilgrim Health Care)	MaineCare	MaineCare	MaineCare

¹ The terminology from Maine’s reported core metrics is “participating providers,” not physicians.

² The terminology from Maine’s reported core metrics is “provider organizations,” not practices.

³ Number of AC “lead entities”

⁴ MaineCare is the name of the Medicaid agency in Maine.

BCBS = Blue Cross Blue Shield; — = not available in Maine’s reported core metrics.

Source: Maine’s reported core metrics from Maine’s Q3 2015 Quarterly Progress Report.

5.3.3 Care coordination

Care coordination requires a team-based approach in which all participants in the patient’s care—including patient, caregiver, primary care provider, specialists, and community-based service providers—work together to meet the patient’s care needs and preferences, providing access to comprehensive, quality, and safe care. The strategic goals of Maine’s SIM Initiative include strengthening primary care, integrating primary care and behavioral health, and engaging people and communities all serve to improve care coordination. If the Maine SIM Initiative is successful in achieving these goals through the health home and AC initiatives, we would expect to see increased rates of primary care visits, follow-up visits for medical and mental health admissions, and better medication management among the targeted population (i.e., Medicaid beneficiaries) in the SIM test period.

Appendix Tables E-2-1 through E-2-5 provide, for Maine and its comparison group, baseline care coordination measures for Medicaid beneficiaries by eligibility category, the commercially insured by age category, and Medicare beneficiaries by enrollment status. Because most care coordination measures require more than one quarter of data, we present these measures on an annual, instead of quarterly, basis. Furthermore, we do not yet have a full year of data for the test period in any of the payer databases. Therefore, we report only baseline care coordination estimates.

We look for differences in the level and trends in these baseline measures. There are at least two reasons for this. First, it is inherently important to have a baseline profile for Maine, including an examination of levels of measures and also pre-existing trends in measures. This will increase our understanding of Maine’s health care environment prior to the start of its SIM Initiative. Second, examining the baseline profile of Maine against its comparison group’s baseline profile will substantiate the appropriateness of Maine’s comparison group. In summary,

the baseline results shown here provide the context in which Maine's health system reforms are taking place and how Maine compares to the comparison group at baseline on a set of core care coordination metrics.

Baseline care coordination measures indicate that there is room for improvement for Medicaid beneficiaries with the expansion of system delivery and payment reforms in MaineCare, such as Stage B health homes and ACs. Because of a lack of comparable data, it is not possible to determine whether Maine Medicaid beneficiaries had better coordinated care relative to the comparison group over the entire baseline period. From 2011 to 2013, rates of follow-up for both all-cause and mental health admissions steadily declined for Medicaid beneficiaries, while rates increased for the comparison group from 2010 to 2011. In the one year with comparable data (2011), Maine had a higher rate of following up on all-cause admissions, but a lower rate of following up on mental health admissions. Medication management outcomes likewise showed mixed results. In 2011, Medicaid beneficiaries with asthma were appropriately prescribed asthma at lower rates relative to the comparison group; however, a higher percentage of Medicaid beneficiaries with major depression adhered to antidepressant medication treatment relative to the comparison group. Even so, adherence rates declined among Medicaid beneficiaries over the baseline period. In 2011, the comparison group had more evaluation and management visits than Medicaid beneficiaries in Maine for all eligibility categories except the blind/disabled. The number of visits to primary care providers increased in Maine from 2011 to 2012, but fell back in 2013. The number of visits to specialists among Medicaid beneficiaries in Maine grew steadily over the baseline period.

There were few differences between Maine and the comparison group in care coordination measures for the commercially insured and Medicare beneficiaries over the baseline period. Among the commercially insured, the percentage of all-cause inpatient admissions with a follow-up visit increased similarly in Maine and the comparison group over the baseline period. The percentage of mental health admissions with a follow-up visit declined in Maine and the comparison group for both the commercially insured and Medicare beneficiaries. For Medicare beneficiaries, primary care visit rates increased in both Maine and the comparison group, though the rate of increase was greater in Maine relative to the comparison group. The faster increase in visits to primary care providers in Maine is consistent with the rollout of the MAPCP Demonstration (Maine's MAPCP for Medicare began in January 2012 and expanded significantly in January 2013).

5.3.4 Quality of care

One of the three overarching aims of the SIM Maine Initiative is to deliver better quality of care by transforming the state's payment system from FFS to a value-based purchasing system—using system delivery and payment reforms such as MaineCare ACs and health homes, and all-payer PCMHs. In addition to stimulating value-based insurance systems, Maine's SIM-

funded efforts also incentivize higher quality of care by developing public reporting systems for quality and cost information, as well as a comprehensive health IT network.

Appendix Tables E-2-6 through E-2-12 provide, for Maine and its comparison group, baseline quality of care measures for Medicaid beneficiaries by eligibility category, the commercially insured by age category, and Medicare beneficiaries by enrollment status. Because most quality of care measures require more than one quarter of data, we present these measures on an annual, instead of quarterly, basis. Furthermore, we do not yet have a full year of data for the test period in any of the payer databases. Therefore, we report only baseline quality of care estimates. We look for differences in the levels and trends in these baseline measures. The baseline results shown here provide the context in which Maine's health system reforms are taking place and how Maine compares to the comparison group at baseline on a set of core quality metrics. Any significant difference between Maine relative to the comparison group can be attributed to state efforts that pre-date the SIM initiative, such as the all-payer PCMH initiative and the Medicare ACO models.

Relative to the comparison group, Medicaid beneficiaries had higher rates of certain preventive services (influenza immunizations, mammography screenings, and well-child visits among infants) in 2011, and all rates generally remained stable or increased in Maine. Likewise, a higher percentage of Maine Medicaid beneficiaries with new episodes of alcohol and other drug (AOD) dependence initiated and engaged in treatment relative to the comparison group. The rate discrepancy could be due in part to differences in the data sources; rates for Maine were derived from MaineCare claims Maine provided to RTI directly, whereas comparison group rates were derived from MAX data. The differences are also consistent with the expansion of the PCMH model in Maine Medicaid during the baseline period.

The patterns of quality metrics were inconsistent between the commercially insured and Medicare beneficiaries in Maine and the comparison group. Overall rates of avoidable hospitalizations declined from 2010 to 2013 for the commercially insured and Medicare beneficiaries in both Maine and the comparison group. Relative to the comparison group, the commercially insured and Medicare beneficiaries in Maine had lower rates of influenza immunizations and slightly higher rates of mammography screenings throughout the baseline period. Commercially insured infants and young children in Maine had lower compliance with well-child visit schedules relative to the comparison group. Compliance rates increased for both Maine and the comparison group, though Maine increased at a higher rate—thus narrowing the gap between them. Similar percentages of commercially insured individuals with new episodes of AOD dependence in Maine and the comparison group initiated and engaged in treatment.

5.3.5 Health care utilization

The Maine SIM Initiative's focus on improving the coordination of care for individuals with chronic and behavioral health conditions in programs such as the ACs and Stage A and

Stage B health homes is intended to impact health care utilization. In particular, given success in reaching these goals, we expect to see decreases in hospital admission rates, ER visits, and 30-day hospital readmissions, particularly for Medicaid beneficiaries.

Figures 5-2 through 5-11 provide quarterly averages of core utilization measures for Medicaid beneficiaries, the commercially insured, and Medicare beneficiaries in Maine and its comparison group. For Medicaid beneficiaries we only have baseline data,²³ but for the commercially insured and Medicare beneficiaries, we have data for both the baseline period plus the first three quarters of the test period.²⁴ **Appendix Table E-2-13 through E-2-15** provide averages by year and eligibility category for Medicaid beneficiaries, year and age group for the commercially insured, and year and dual Medicaid enrollment status for Medicare beneficiaries, respectively. Because we have early test period data for the commercially insured and Medicare populations, we also present the results of the difference-in-differences (DD) regression analyses of the utilization measures shown in **Tables 5-5 and 5-6**.

Note that in most Round 1 Test states, innovation models are implemented first in Medicaid and certain commercial populations. No Round 1 Test state specifically planned to implement delivery system or payment reform models in Medicare under the SIM Initiative. In fact, it was not until well into the SIM test period (April 2015) that CMS invited states to submit ideas on including Medicare into a state-based reform framework. Nevertheless, patients with *different types of insurance* often receive care from the same providers and health systems. This creates a potential for spillover effects on care received by commercially insured individuals and Medicare beneficiaries.²⁵ Furthermore, many of the enabling strategies (e.g., health IT investment, workforce development) implemented under the SIM Initiative are available to all providers statewide, thus potentially enhancing the impact of other federal, state, and private sector initiatives within the state. The SIM Initiative was intended to spread and support all health care reform in the Test states. Therefore, to capture these effects, we report claims-based outcomes, not only for Medicaid beneficiaries and the commercially insured but also for Medicare beneficiaries.

Utilization summary

The rate of all-cause inpatient admissions remained level throughout the baseline period for Maine Medicaid beneficiaries, while the rate of ER visits and 30-day readmissions declined

²³ For Medicaid beneficiaries, we report baseline data for Maine from third quarter 2011 through fourth quarter 2013 but for the comparison group only from fourth quarter 2010 through fourth quarter 2011, the latest period for which we have complete Medicaid data for all three comparison group states.

²⁴ For the commercially insured and Medicare beneficiaries, we report the complete 3-year baseline period (fourth quarter 2010 through third quarter 2013) plus the first three quarters of the test period (fourth quarter 2013 through second quarter 2014).

²⁵ For a description of potential spillover effects and a summary of evidence of these effects from previous delivery system and payment changes, see <https://www.cms.gov/Research-Statistics-Data-and-Systems/Statistics-Trends-and-Reports/ReportsTrustFunds/downloads/spillovereffects.pdf>.

gradually. For the commercially insured population, the rate of inpatient admissions and ER visits declined gradually throughout the baseline and first three test period quarters, whereas the rate of 30-day readmissions first increased but ultimately decreased. For the Medicare population, the rate of inpatient admissions declined gradually throughout the baseline and first three test period quarters, but the rate of ER visits and 30-day readmissions remained largely unchanged.

These general declining trends in health care utilization rates in the baseline period are consistent with Maine's implementation of the all-payer PCMH model prior to the start of Maine's SIM Initiative,²⁶ as well as other initiatives in the state—such as the use of health information exchange data in the ER, which began prior to the start of Maine's SIM Initiative and has been refined and expanded during the SIM test period. In addition, ACOs have been serving the commercial and Medicare populations in Maine for several years now, well before the start of Maine's SIM Initiative. These slightly declining trends suggest that, despite the improvements made by other long-standing health care reform efforts in Maine, considerable room exists for SIM activities to expand on those efforts. The comparison groups for the commercially insured and Medicare populations have broadly similar levels and trends in health care utilization rates over the baseline period and first three test quarters, suggesting that the comparison group is appropriately matched. Given the limited comparison group data for the Medicaid population, however, no firm conclusions about the appropriateness of the comparison group can be made from these results.

Finally, the regression adjusted DD results show no statistically significant differences in the rates of change in all-cause inpatient admissions, ER visits, or 30-day hospital readmissions among the commercial or Medicare populations in Maine relative to their respective comparison groups in the first three quarters of the SIM test period relative to the 15 baseline quarters. Note that no conclusions can be made from this, however—three quarters is not a long enough time period to test the existence of spillover effects of Maine's SIM Initiative on the commercial and Medicare populations. Further, some Maine SIM strategies, for example value based insurance design, were only in the development phase during the first three quarters of the SIM test period.

Medicaid

From third quarter 2011 through fourth quarter 2013, the rate of all-cause inpatient admissions remained stable for Maine Medicaid beneficiaries, while the obstetric inpatient admission rate declined (**Figures 5-2 and 5-3**). Relative to the comparison group, Maine had a lower all-cause inpatient admission rate, but a higher obstetric inpatient admission rate. The rate of ER visits also decreased over the same period (**Figure 5-4**). However, the readmission rate increased slightly for Maine and dramatically for the comparison group over the time period

²⁶ In addition, MaineCare Health Homes Stage A for Medicaid beneficiaries with chronic conditions was implemented prior to the start of Maine's SIM initiative.

(**Figure 5-5**). During the period of overlap (third and fourth quarter 2011), Maine had a higher ER visit rate than the comparison group.

Figure 5-2. All-cause acute inpatient admissions per 1,000 Medicaid beneficiaries, Maine and comparison group

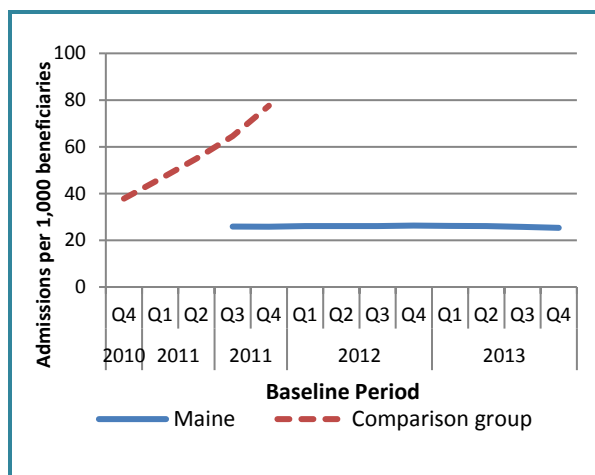


Figure 5-3. Obstetric inpatient admissions per 1,000 Medicaid beneficiaries, Maine and comparison group

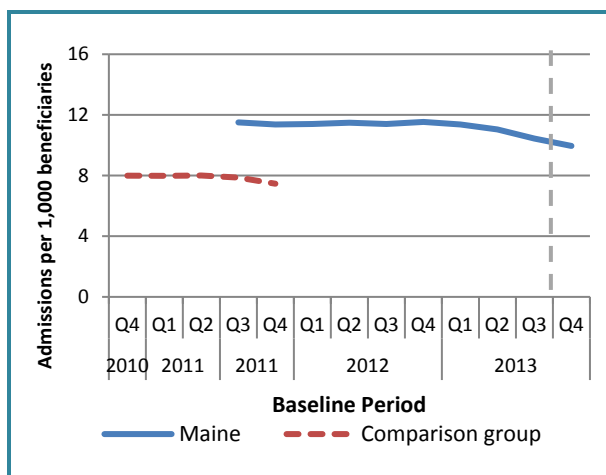


Figure 5-4. Emergency room visits that did not lead to hospitalization per 1,000 Medicaid beneficiaries, Maine and comparison group

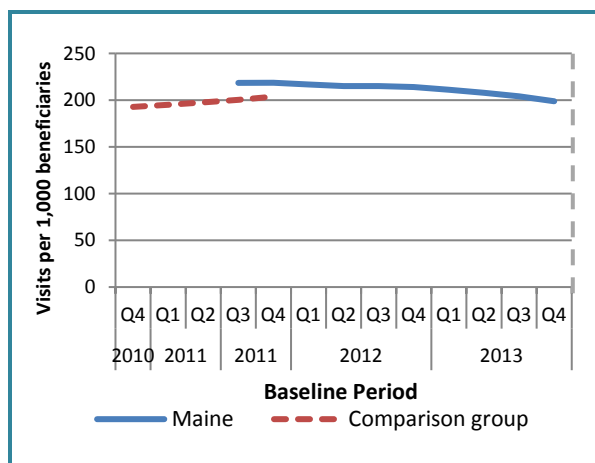
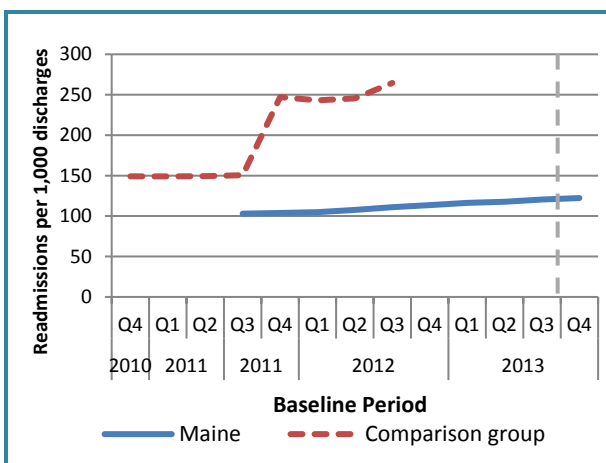


Figure 5-5. 30-day readmissions per 1,000 discharges, Medicaid beneficiaries, Maine and comparison group



Commercially insured

Among the commercially insured population, the all-cause acute inpatient admission rate was slightly lower in Maine than the comparison group between fourth quarter 2010 and second quarter 2014 (**Figure 5-6**). However, rates of ER visits and 30-day readmissions in Maine were slightly higher than in the comparison group during the same period (**Figures 5-7 and 5-8**). The acute inpatient admission and ER visit rates declined slightly throughout the baseline and first three test period quarters for the commercially insured in both Maine and the comparison group.

The rate of readmissions was more volatile, but was lower in first quarter 2014 than fourth quarter 2010 for both Maine and the comparison group.

Figure 5-6. All-cause acute inpatient admissions per 1,000 covered persons, MarketScan commercially insured, Maine and comparison group

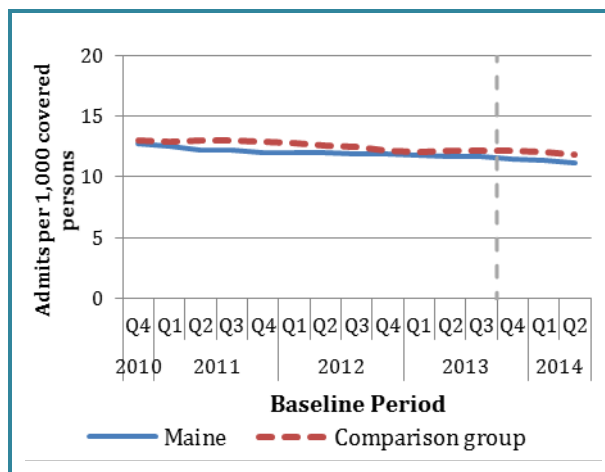


Figure 5-7. Emergency room visits that did not lead to hospitalization per 1,000 covered persons, MarketScan commercially insured, Maine and comparison group

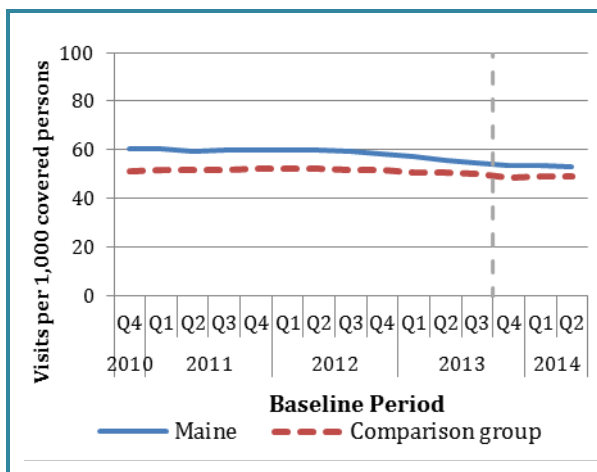
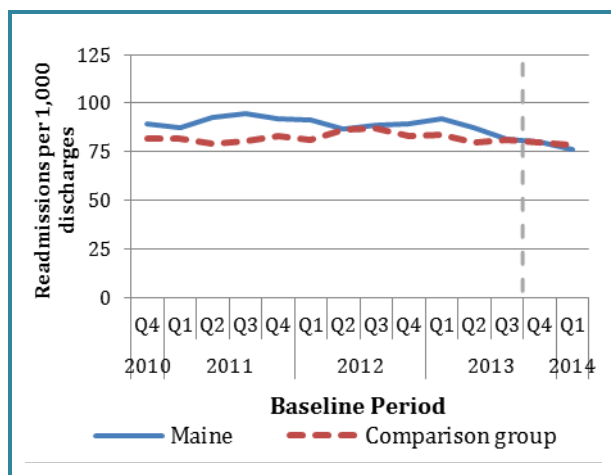


Figure 5-8. 30-day readmissions per 1,000 discharges, MarketScan commercially insured, Maine and comparison group



The regression adjusted DD results show no statistically significant differences in the rates of change in all-cause inpatient admissions, ER visits, or 30-day hospital readmissions among the MarketScan commercially insured in Maine, relative to the comparison group, in the first three quarters of the SIM test period relative to the 15 baseline quarters (*Table 5-4*). This lack of significant results is not surprising given the early implementation period examined in

these analyses, during which we would not expect to see large impacts on utilization in a statewide examination of Maine’s commercially insured population.

Table 5-4. Difference in the pre-post change in expected utilization per 1,000 members, MarketScan commercially insured, Maine and comparison group, first three quarters of SIM implementation (October 2013 through June 2014)

Outcome	Regression adjusted difference in differences	95% Confidence interval		p-value
		Lower limit	Upper limit	
Aggregated change in utilization ¹				
All-cause acute inpatient admissions	17	-258	292	
Emergency room visits that did not lead to hospitalization	557	-19	1,133	
30-day hospital readmissions	1,913	-5,673	9,499	
Change in utilization per 1,000 members ²				
All-cause acute inpatient admissions	0.03	-0.44	0.50	0.903
Emergency room visits that did not lead to hospitalization	0.96	-0.03	1.95	0.058
30-day hospital readmissions per 1,000 discharges	3.30	-9.77	16.36	0.621

Note: The total number of person-quarters for Test state members in the early test period (Q4 2013–Q2 2014) is 580,580. Bold estimates indicate statistical significance at the $p < 0.05$ level. A linear probability model was used to obtain estimates of the difference in probability of use. A *negative* value corresponds to a *greater decrease* or a *smaller increase* in probability of utilization in the Test state relative to the comparison group. A *positive* value corresponds to a *greater increase* or a *smaller decrease* in probability of utilization in the Test state relative to the comparison group.

¹The quarterly per member estimates are multiplied by the total number of person-quarters to get the aggregated change in utilization.

²The per-member estimates are multiplied by 1,000 to obtain the change in the rate of use per 1,000 persons.

Medicare

Rates of all-cause acute inpatient admissions and 30-day hospital readmissions were slightly lower among Medicare beneficiaries in Maine relative to the comparison group over the baseline and first three test period quarters (**Figures 5-9** and **5-11**), whereas the rate of ER visits was slightly higher for Medicare beneficiaries in Maine than the comparison group (**Figure 5-10**). All cause acute inpatient admission rates and 30-day hospital readmissions declined slightly throughout the baseline and first three test period quarters among Medicare beneficiaries in both Maine and the comparison group. ER visit rates remained flat for both groups.

Figure 5-9. All-cause acute inpatient admissions per 1,000 Medicare beneficiaries, Maine and comparison group

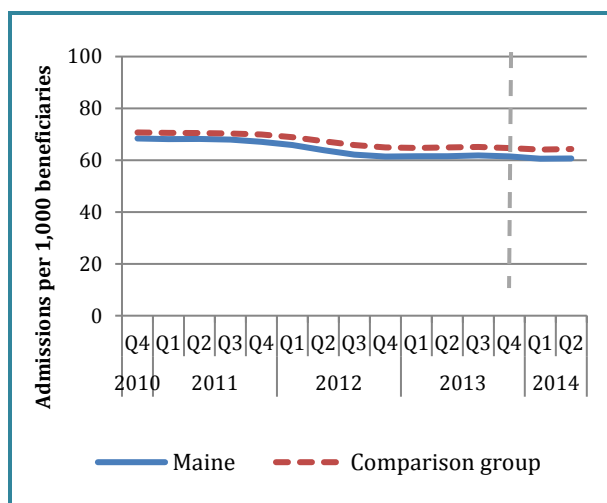


Figure 5-10. Emergency room visits that did not lead to hospitalization per 1,000 Medicare beneficiaries, Maine and comparison group

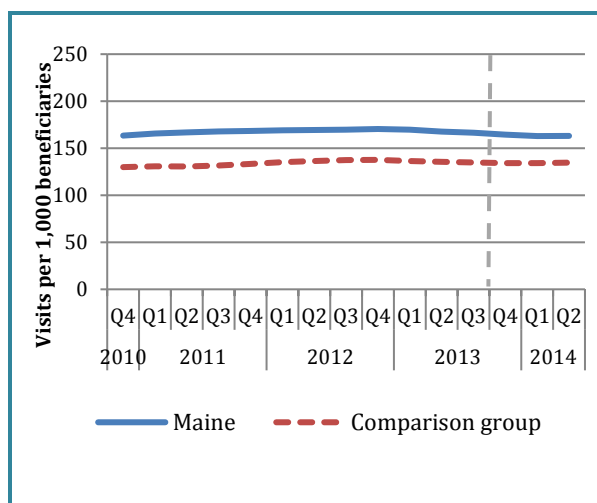
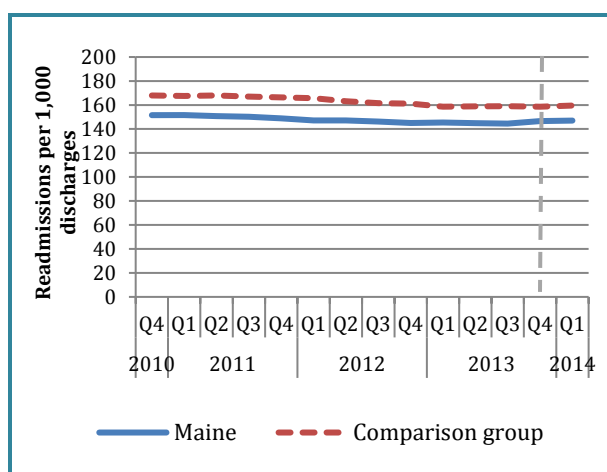


Figure 5-11. 30-day readmissions per 1,000 discharges, Medicare beneficiaries, Maine and comparison group



The regression adjusted DD results show no statistically significant difference in the rates of change in all-cause inpatient admissions, ER visits, or 30-day hospital readmissions among the Medicare beneficiaries in Maine, relative to the comparison group, in the first three quarters of the SIM test period relative to the 15 baseline quarters (*Table 5-5*). This lack of significant results is not surprising given the early implementation period examined in these analyses, during which we would not expect to see large impacts on utilization in a statewide examination of Maine's Medicare population.

Table 5-5. Difference in the pre-post change in expected utilization per 1,000 members, Medicare beneficiaries, Maine and comparison group, first three quarters of SIM implementation (October 2013 through June 2014)

Outcome	Regression adjusted difference in differences	95% Confidence interval		p-value
		Lower limit	Upper limit	
Aggregated change in utilization ¹				
All-cause acute inpatient admissions	22	-156	201	
Emergency room visits that did not lead to hospitalization	-223	-468	0	
30-day hospital readmissions	1,248	-357	2,830	
Change in utilization per 1,000 members ²				
All-cause acute inpatient admissions	0.10	-0.70	0.90	0.8077
Emergency room visits that did not lead to hospitalization	-1.00	-2.10	0.00	0.0542
30-day hospital readmissions per 1,000 discharges	5.60	-1.60	12.70	0.1272

Note: The total number of person-quarters for Test state members in the early test period (Q4 2013–Q2 2014) is 652,898. Bold estimates indicate statistical significance at the $p < 0.05$ level. A linear probability model was used to obtain estimates of the difference in probability of use. A *negative* value corresponds to a *greater decrease* or a *smaller increase* in probability of utilization in the Test state relative to the comparison group. A *positive* value corresponds to a *greater increase* or a *smaller decrease* in probability of utilization in the Test state relative to the comparison group.

¹The quarterly per member estimates are multiplied by the total number of person-quarters to get the aggregated change in utilization.

²The per-member estimates are multiplied by 1,000 to obtain the change in the rate of use per 1,000 persons.

A number of study limitations should be considered when reviewing these evaluation results. For the commercial population, it is unlikely that the dataset used for these analyses contained individuals directly impacted by Maine’s SIM Initiative, which only allows us to discuss potential spillover effects of Maine’s interventions on this set of commercially insured patients. These analyses examine statewide impacts, by payer, of the Maine SIM Initiative, causing the results to most likely be: (1) impacted by other statewide efforts occurring simultaneously and (2) diluted by the inclusion of individuals not directly impacted by or attributed to a specific intervention. In addition, despite the rigorous study design, use of comparison group, and adjusting for a range of covariates, these results could still be biased by a poor match of individuals in Maine to individuals in other states, as well as by unmeasured factors our methods were unable to account for.

5.3.6 Health care expenditures

Beyond the goals of improving health care quality and overall population health, the Maine SIM Initiative also prioritizes reducing overall health care costs—using the state’s AC and health home models to improve care management for beneficiaries, better coordinated care

across providers, increased use of preventive medicine, and avoidance of unnecessary health care utilization. Therefore, we are interested in what impact MaineCare's AC and health home models have on lowering the total costs of care while maintaining quality of care.

Figures 5-12 through 5-18 and 5-23 through 5-26 provide, for Maine and its comparison group, quarterly average per member per month (PMPM) payments for Medicaid beneficiaries, the commercially insured, and Medicare beneficiaries. For Medicaid beneficiaries we only have baseline data,²⁷ but for the commercially insured and Medicare beneficiaries, we have data for both the baseline period plus the first three quarters of the test period.²⁸ **Appendix Table E-2-16** shows average PMPM total, FFS, and capitated payments for Medicaid beneficiaries by year and eligibility category. **Appendix Table E-2-17 and E-2-18** provide average PMPM payments by year and age group for the commercially insured, and year and dual Medicaid enrollment status for Medicare beneficiaries, respectively.

Because we have early test period data for the commercially insured and Medicare populations, we also present the results of the DD regression analyses of the expenditures measures (**Tables 5-5 and 5-6**). **Figures 5-19 and 5-27** show the quarterly effects on spending for the commercially insured and Medicare beneficiaries, respectively. **Figures 5-21 and 5-29** show the cumulative effects on spending. **Figures 5-20 and 5-22** show the strength of the evidence for the commercially insured. **Figures 5-28 and 5-30** show the strength of the evidence for Medicare beneficiaries. As noted above, we expect to eventually see spillover impacts and impacts from certain statewide enabling strategies in these populations, but the first three quarters of the test period may be too early for these effects to be statistically significant.

Expenditure summary

The total PMPM payments for Medicaid beneficiaries in Maine remained below the comparison group's total PMPM payments in 2011, the only year with overlapping data. Total payments for Medicaid beneficiaries in Maine rose steadily from 2011 through 2013. For Maine's commercially insured population, the total payments were nearly identical between Maine and the comparison group during the baseline and three test period quarters, although higher inpatient and other facility payments for Maine were offset by lower professional payments relative to the comparison group. In addition, outpatient prescription drug payments were stable during most of the baseline period for the commercial population in both Maine and its comparison group, but began to increase late in the baseline and into the three test period quarters. Total payments for Medicare beneficiaries were consistently lower in Maine than the

²⁷ For Medicaid beneficiaries, we report baseline data for Maine from third quarter 2011 through fourth quarter 2013 but for the comparison group only from fourth quarter 2010 through fourth quarter 2011, the latest period for which we have complete Medicaid data for all three comparison group states.

²⁸ For the commercially insured and Medicare beneficiaries, we report the complete 3-year baseline period (fourth quarter 2010 through third quarter 2013) plus the first three quarters of the test period (fourth quarter 2013 through second quarter 2014).

comparison group throughout the baseline and three test quarters, and total payments for both groups remained relatively flat.

The general increasing trend in total spending for the Medicaid population over the baseline period shows the importance of focusing on system delivery and payment reform for the Medicaid population in the Maine SIM Initiative. The state's Medicaid-related models and strategies include Stage B health homes (providing primary care integration for Medicaid behavioral health patients), ACs (providing care coordination services generally to Medicaid beneficiaries), health information exchange ER notifications for Medicaid case managers, and learning collaboratives for Stage A health homes (which serve Medicaid beneficiaries with chronic conditions). A primary goal of Maine's SIM Initiative is to contain its PMPM costs for the Medicaid population while maintaining access to high quality care.

In contrast to the Medicaid population, total PMPM payments for the commercially insured and Medicare populations have been relatively stable throughout the baseline and three quarters of the test period. One possible interpretation of this finding is that system delivery and payment reform has been in place longer for the commercial and Medicare populations than for the Medicaid population. For example, commercial and Medicare ACOs have been in place for several years now, whereas ACs only started up in August 2014.

The comparison groups for the commercially insured and Medicare populations have broadly similar levels and trends in total spending over the baseline and first three test quarters, suggesting that the comparison group is appropriate. Given the limited comparison group data for the Medicaid population, no conclusions about the appropriateness of the comparison group can be made from these results.

Finally, the regression adjusted DD results show no statistically significant differences in the rates of change in total PMPM payments for the commercially insured population in Maine relative to the respective comparison groups in the first three quarters of the SIM test period, as compared to the 15 baseline quarters. However, the regression adjusted DD results do show statistically significant differences in the rates of change in total PMPM payments for the Medicare population in Maine. This latter result might be due the Medicare system delivery and payment reforms that have been active in Maine prior to and during the SIM Initiative, including Pioneer ACOs and MAPCP PCMHs. However, no conclusions can be made from these results—three quarters is not a long enough time period to test the impact of Maine's SIM initiative on the commercially insured and Medicare populations. Further, some Maine SIM strategies, for example value based insurance design, were only in the development phase during the first three quarters of the SIM test period.

Medicaid

The average total PMPM payment for Medicaid-only beneficiaries in Maine increased dramatically from 2011 through the end of 2013 (**Figure 5-12**), but remained below the comparison group's 2011 average total PMPM payment. The average total PMPM payment for Medicare-Medicaid beneficiaries in Maine increased as well from 2011 to 2013 (**Figure 5-13**), but remained substantially lower than the average for the comparison group in 2011.

Figure 5-12. Average total PMPM Medicaid payments, Medicaid-only beneficiaries, Maine and comparison group

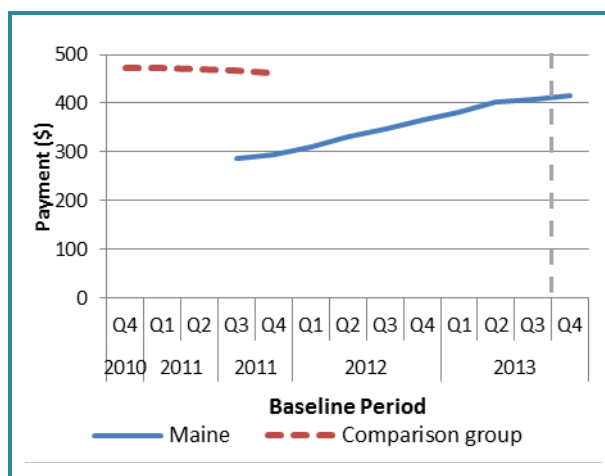
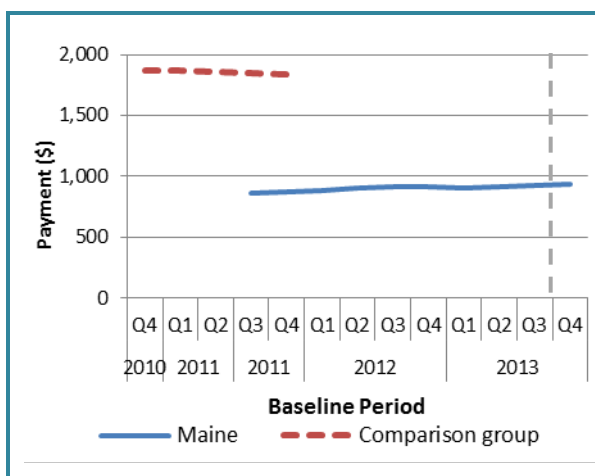


Figure 5-13. Average total PMPM Medicaid payments, Medicare-Medicaid beneficiaries, Maine and comparison group



Commercially insured

Throughout the baseline period and the first three quarters of the test period, average PMPM total and outpatient pharmacy payments were nearly identical for commercially insured individuals in Maine and the comparison group (**Figures 5-14** and **5-18**). For both groups, outpatient pharmacy payments increased sharply beginning in 2013. Inpatient facility payments were higher in Maine than the comparison group throughout the baseline and first three test period quarters, although the gap narrowed as payments in Maine declined and payments in the comparison group increased in the first two quarters of 2014 (**Figure 5-15**). Average other facility and professional payments increased for both groups over the baseline and early test quarters, however, other facility payments were higher in Maine, while professional payments were higher in the comparison group (**Figures 5-16** and **5-17**).

Figure 5-14. Average total PMPM payments, MarketScan commercially insured, Maine and comparison group

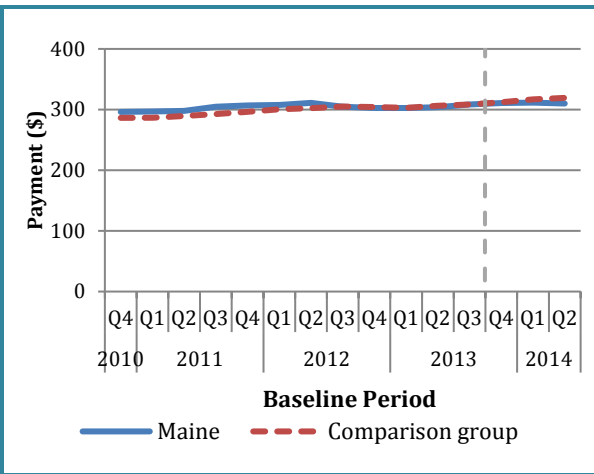


Figure 5-15. Average inpatient facility PMPM payments, MarketScan commercially insured, Maine and comparison group

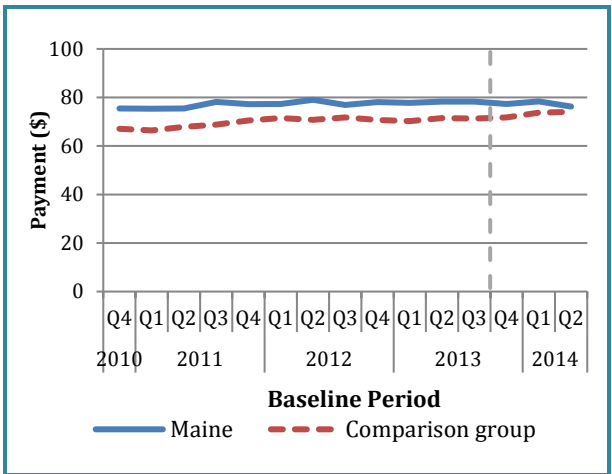


Figure 5-16. Average other facility PMPM payments, MarketScan commercially insured, Maine and comparison group

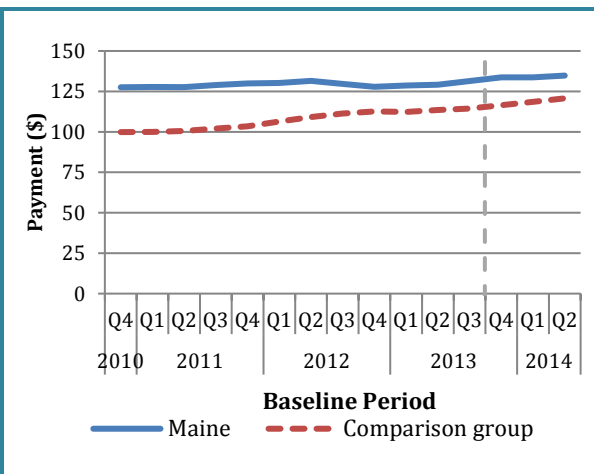


Figure 5-17. Average professional PMPM payments, MarketScan commercially insured, Maine and comparison group

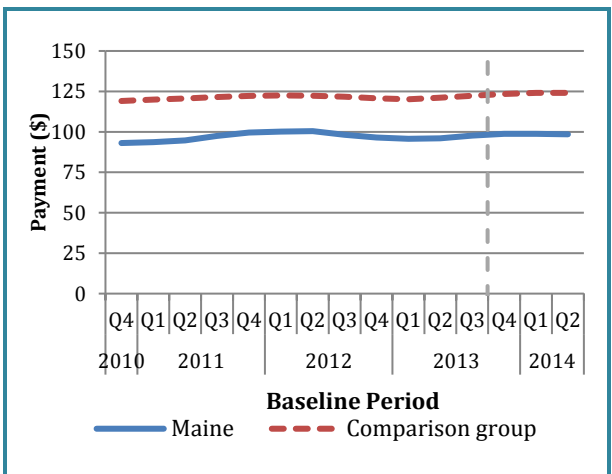
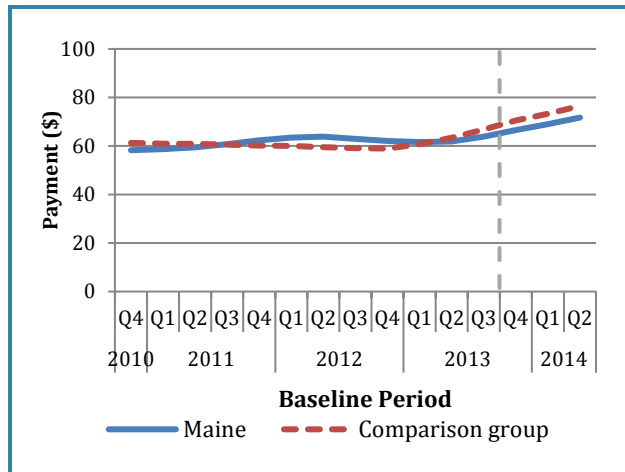


Figure 5-18. Average outpatient pharmacy PMPM payments, MarketScan commercially insured, Maine and comparison group



The regression adjusted DD results indicate that the rate of change in total PMPM payments in the first three quarters of the SIM test period compared to the 15 baseline quarters in Maine was not significantly different than the comparison group (**Table 5-6**). However, the DD results show average PMPM payments for professional and outpatient pharmacy payments among the commercially insured in Maine increased at a slower rate (\$3.32 and \$7.43 total PMPM, respectively, or \$15.12 million and \$33.18 million in aggregate payments, respectively) relative to the comparison group.

To assist policymakers in understanding the future prospect of successful results for the Maine SIM Initiative, we convert the DD results into probability estimates and provide graphical representations of the estimated quarterly and program-to-date effects as well as the precision of these estimates. Because quarterly estimates may show considerable volatility, we also provide cumulative spending estimates. There was no statistically significant difference in quarterly or cumulative spending estimates for Maine’s commercially insured population relative to the comparison group in all three test quarters (**Figures 5-19 and 5-21**), suggesting no strong evidence of savings or losses for the SIM Maine Initiative to date (**Figures 5-20 and 5-22**). Although the qualitative results from site visits, interviews, focus groups, and document review indicate that health care transformation activities were occurring during this window of time, we would not expect to see a statewide impact on health care expenditures this quickly after the SIM Initiative went live in Maine.

Table 5-6. OLS adjusted difference in the pre-post change in PMPM payments, MarketScan commercially insured, Maine and comparison group, first three quarters of SIM implementation (October 2013 through June 2014)

Outcome	Regression adjusted difference in differences	95% Confidence interval		p-value
		Lower limit	Upper limit	
Aggregated change in payments ¹				
Total (in millions)	−\$30.60	−\$80.50	\$19.29	
Inpatient facility (in millions)	−\$16.87	−\$52.22	\$18.48	
Other facility (in millions)	\$3.90	−\$21.62	\$29.43	
Professional (in millions)	−\$15.12	−\$25.91	−\$4.34	
Outpatient pharmacy (in millions)	−\$33.83	−\$44.28	−\$23.38	
Change in PMPM payments				
Total	−\$6.73	−\$17.69	\$4.24	0.229
Inpatient facility	−\$3.71	−\$11.48	\$4.06	0.350
Other facility	\$0.86	−\$4.75	\$6.47	0.764
Professional	−\$3.32	−\$5.69	−\$0.95	0.006
Outpatient pharmacy	−\$7.43	−\$9.73	−\$5.14	0.000

OLS = ordinary least squares; PMPM = per member per month.

Note: The total number of person-quarters for Test state members in the early test period (Q4 2013–Q2 2014) is 505,574. Bold estimates indicate statistical significance at the $p < 0.05$ level. A *negative* value corresponds to a *greater decrease* or a *smaller increase* in payments in the Test state relative to the comparison group. A *positive* value corresponds to a *greater increase* or a *smaller decrease* in payments in the Test state relative to the comparison group.

¹The PMPM estimates are multiplied by 9 months*505,574 person-quarters to obtain the change in total aggregate expenditures for the early test period.

Figure 5-19. Quarterly effects on total spending, MarketScan commercially insured, Maine, fourth quarter 2013 through second quarter 2014

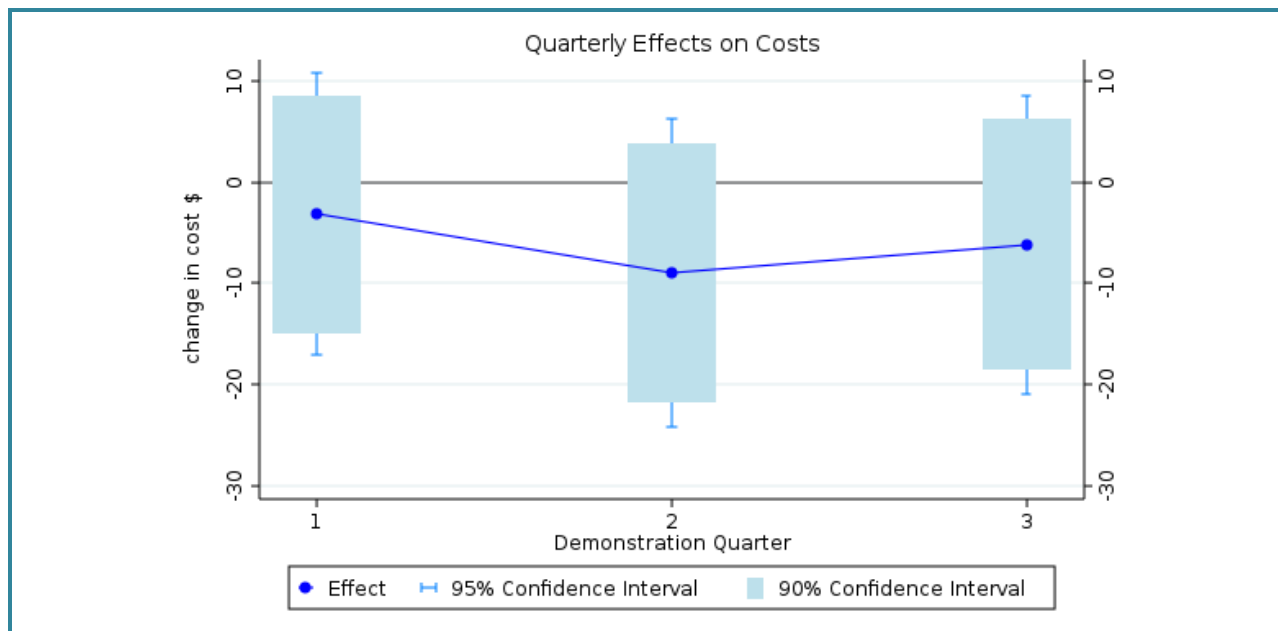


Figure 5-20. Quarterly strength of evidence on total spending, MarketScan commercially insured, Maine, fourth quarter 2013 through second quarter 2014

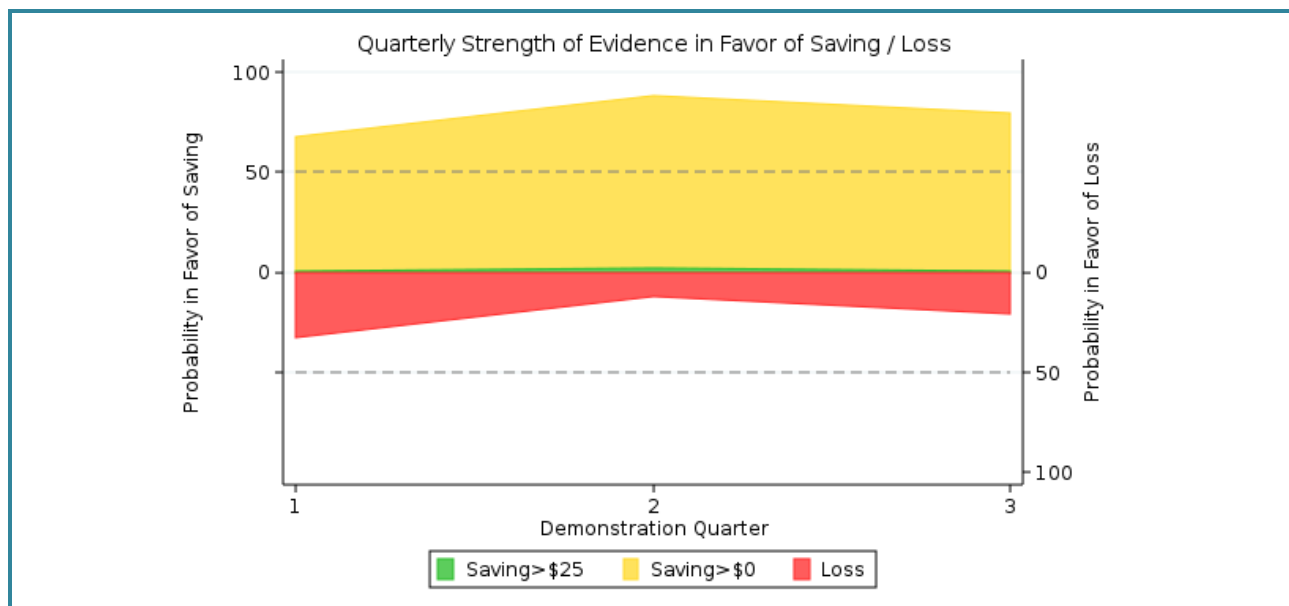


Figure 5-21. Cumulative effects on total spending, MarketScan commercially insured, Maine, fourth quarter 2013 through second quarter 2014

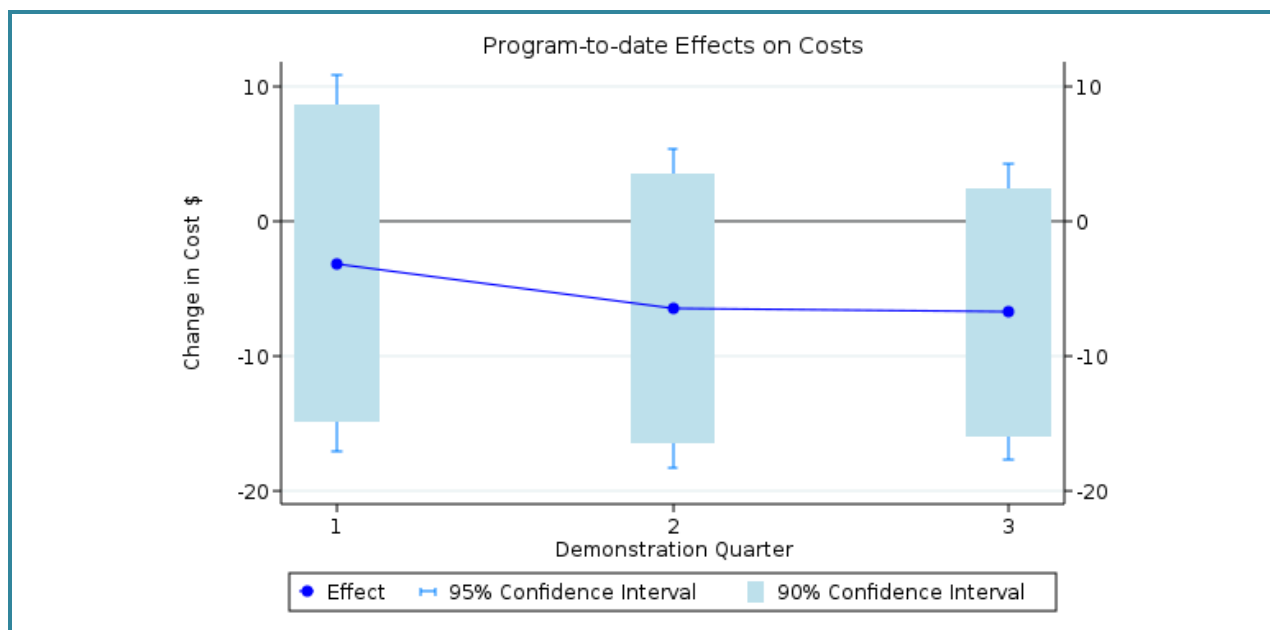
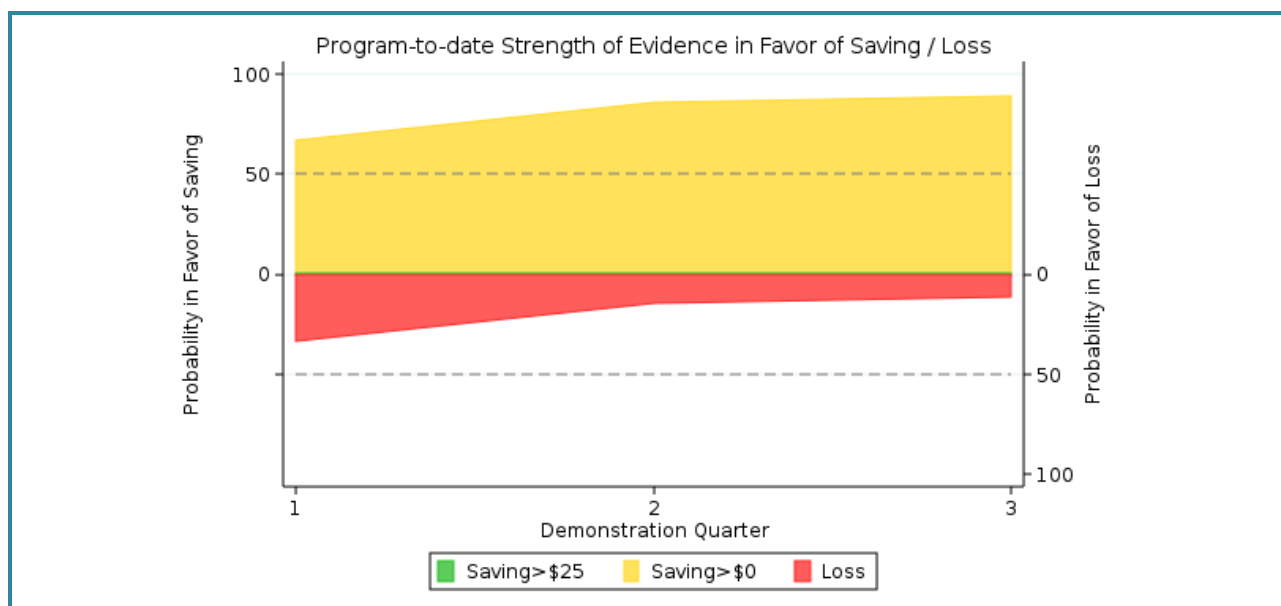


Figure 5-22. Cumulative strength of evidence on total spending, MarketScan commercially insured, Maine, fourth quarter 2013 through second quarter 2014



Medicare

Average PMPM total payments, inpatient facility payments, and professional payments for Medicare beneficiaries held relatively constant in both Maine and the comparison group

across the baseline and early test periods; all three payment categories were distinctly higher in the comparison group than in Maine (*Figures 5-23, 5-24, and 5-26*). Other facility payments for Medicare beneficiaries were nearly identical in Maine and its comparison group, increasing slightly throughout both the baseline and early test periods (*Figure 5-25*).

Figure 5-23. Average total PMPM payments, Medicare beneficiaries, Maine and comparison group

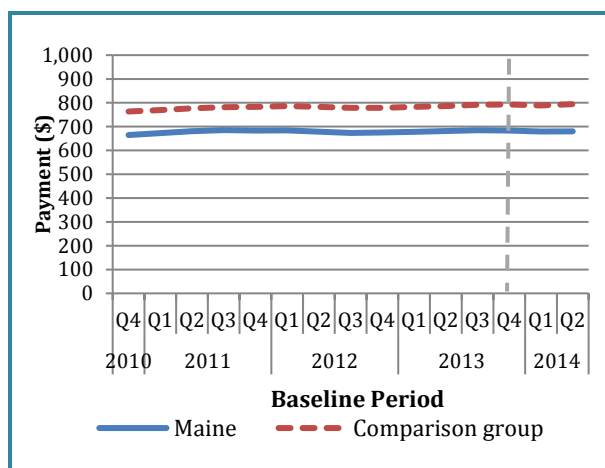


Figure 5-24. Average inpatient facility PMPM payments, Medicare beneficiaries, Maine and comparison group

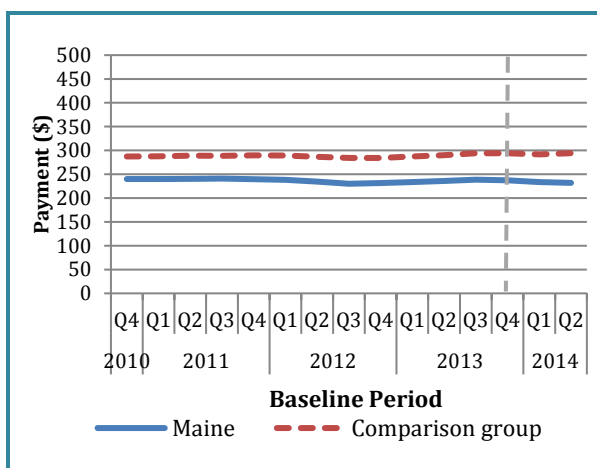


Figure 5-25. Average other facility PMPM payments, Medicare beneficiaries, Maine and comparison group

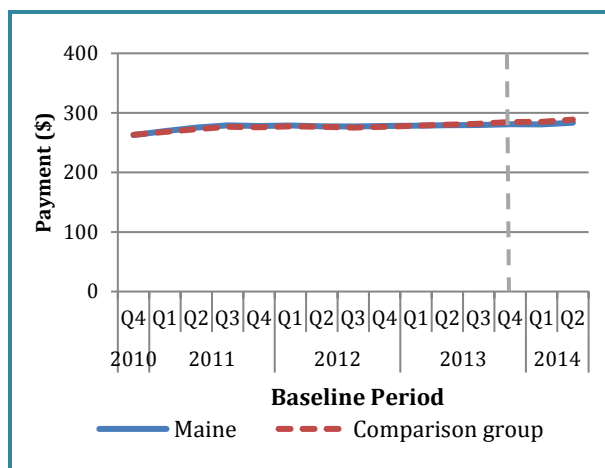
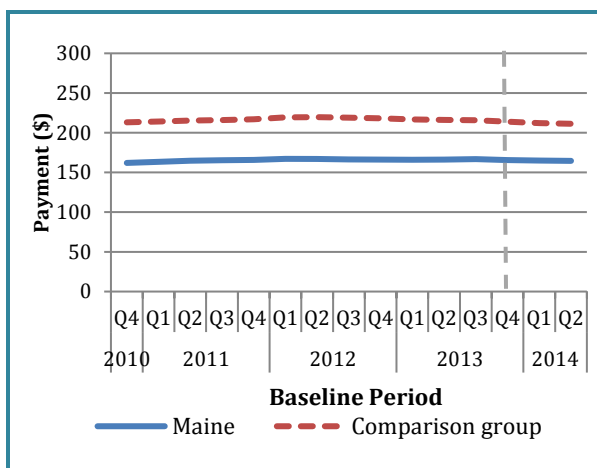


Figure 5-26. Average professional PMPM payments, Medicare beneficiaries, Maine and comparison group



The regression-adjusted DD results for Medicare beneficiaries show greater declines in spending in Maine relative to the comparison group. Compared to the 15 baseline quarters, the average decrease in PMPM total payments for Maine Medicare beneficiaries was greater (\$9.34 PMPM, or \$54.87 million in aggregate payments) than the comparison group's average decrease (**Table 5-7**). Professional payments for Medicare beneficiaries similarly decreased in Maine (\$3.07 PMPM, or \$18.06 million in aggregate payments) relative to the comparison group. Compared to the 15 baseline quarters, there were no other statistically significant changes in payments in the first three test quarters in Maine relative to the comparison group. Although the qualitative results from site visits, interviews, focus groups, and document review indicate that health care transformation activities were occurring during this window of time, we would not expect to see a statewide impact on health care expenditures this quickly after the SIM Initiative went live in Maine.

To assist policymakers in understanding the future prospect of successful results for the Maine SIM Initiative, we convert the DD results for change in total payments into probability estimates and provide graphical representations of the estimated quarterly and program-to-date effects as well as the precision of these estimates. Because quarterly estimates may show considerable volatility, we also provide cumulative spending estimates. Quarterly and cumulative spending showed no statistically significant differences for Maine relative to the comparison group during the first two test quarters, but significantly lower payments in the third test quarter (**Figures 5-27 and 5-29**). These results are suggestive but provide no strong evidence of change for Medicare under SIM over the early test period (**Figures 5-28 and 5-30**).

A number of study limitations should be considered when reviewing these evaluation results. For the Medicare population, it is unlikely that the dataset used for these analyses contained individuals directly impacted by Maine's SIM Initiative, which only allows us to discuss potential spillover effects of Maine's interventions on this set of Medicare patients. These analyses examine statewide impacts, by payer, of the Maine SIM Initiative, causing the results to most likely be: (1) impacted by other statewide efforts occurring simultaneously and (2) diluted by the inclusion of individuals not directly impacted by or attributed to a specific intervention. In addition, despite the rigorous study design, use of comparison group, and adjusting for a range of covariates, these results could still be biased by a poor match of individuals in Maine to individuals in other states, as well as by unmeasured factors that our methods were unable to account for.

Table 5-7. OLS adjusted difference in the pre-post change in PMPM payments, Medicare beneficiaries, Maine and comparison group, first three quarters of SIM implementation (October 2013 through June 2014)

Outcome	Regression adjusted difference in differences	95% Confidence interval		p-value
		Lower limit	Upper limit	
Aggregated change in payments ¹				
Total (in millions)	−\$54.87	−\$104.05	−\$5.69	
Inpatient facility (in millions)	−\$21.71	−\$56.29	\$12.87	
Other facility (in millions)	−\$15.06	−\$34.35	\$4.23	
Professional (in millions)	−\$18.06	−\$26.42	−\$9.69	
Change in PMPM payments				
Total	−\$9.34	−\$17.71	−\$0.97	0.0288
Inpatient facility	−\$3.69	−\$9.58	\$2.19	0.2186
Other facility	−\$2.56	−\$5.85	\$0.72	0.1259
Professional	−\$3.07	−\$4.50	−\$1.65	<0.0001

OLS = ordinary least squares; PMPM = per member per month.

Note: The total number of person-quarters for Test state members in the early test period (Q4 2013–Q2 2014) is 652,898. Bold estimates indicate statistical significance at the $p < 0.05$ level. A *negative* value corresponds to a *greater decrease* or a *smaller increase* in payments in the Test state relative to the comparison group. A *positive* value corresponds to a *greater increase* or a *smaller decrease* in payments in the Test state relative to the comparison group.

¹The PMPM estimates are multiplied by 9 months*63,442 person-quarters to obtain the change in total aggregate expenditures for the early test period.

Figure 5-27. Quarterly effects on total spending, Medicare beneficiaries, Maine, fourth quarter 2013 through second quarter 2014

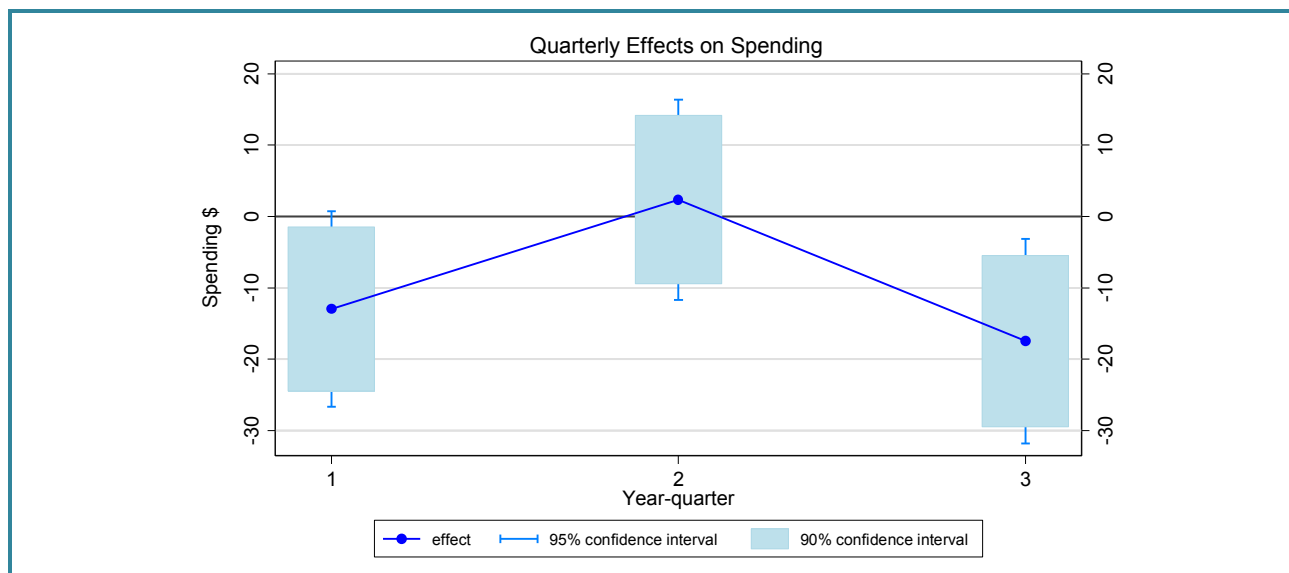


Figure 5-28. Quarterly strength of evidence on total spending, Medicare beneficiaries, Maine, fourth quarter 2013 through second quarter 2014

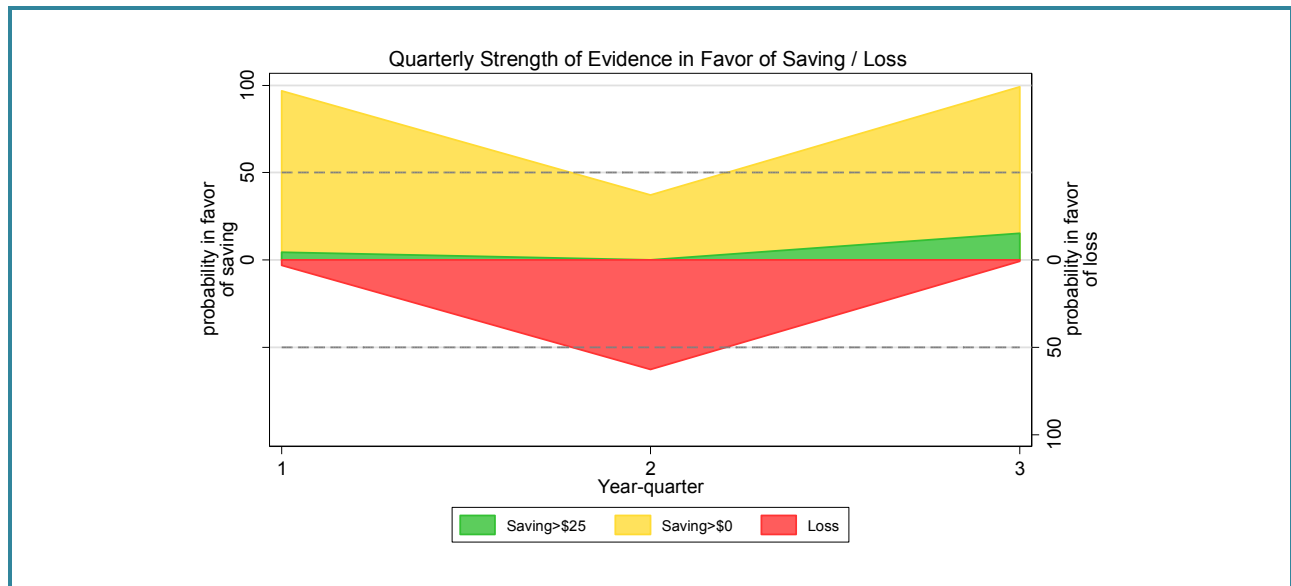


Figure 5-29. Cumulative effects on total spending, Medicare beneficiaries, Maine, fourth quarter 2013 through second quarter 2014

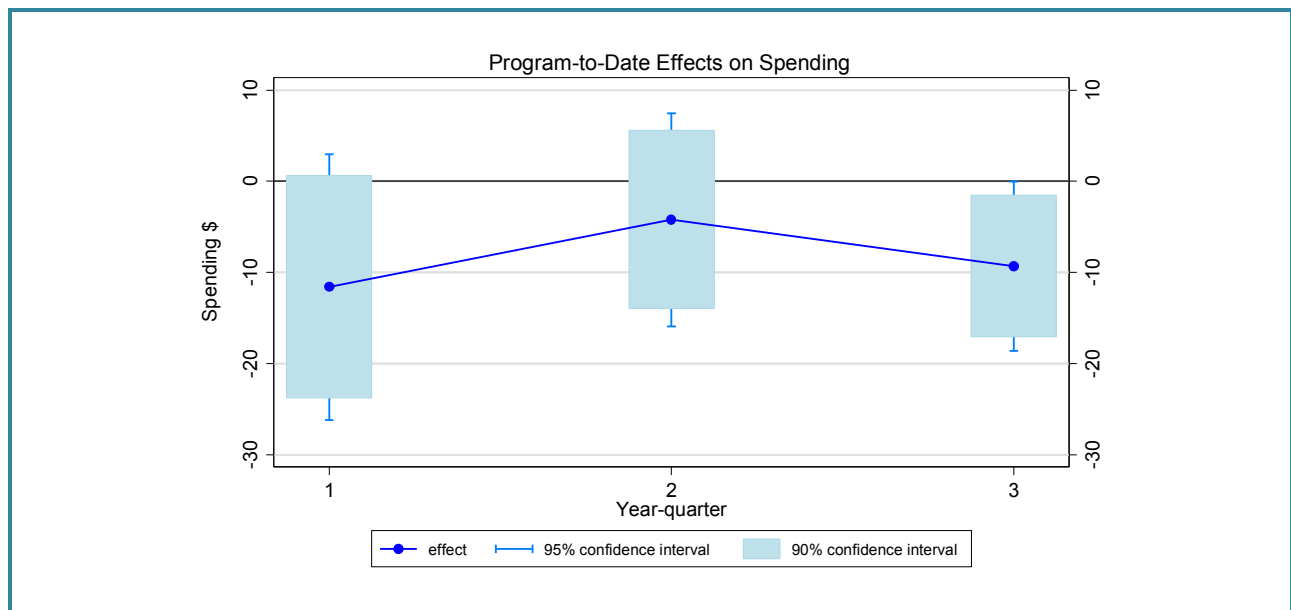
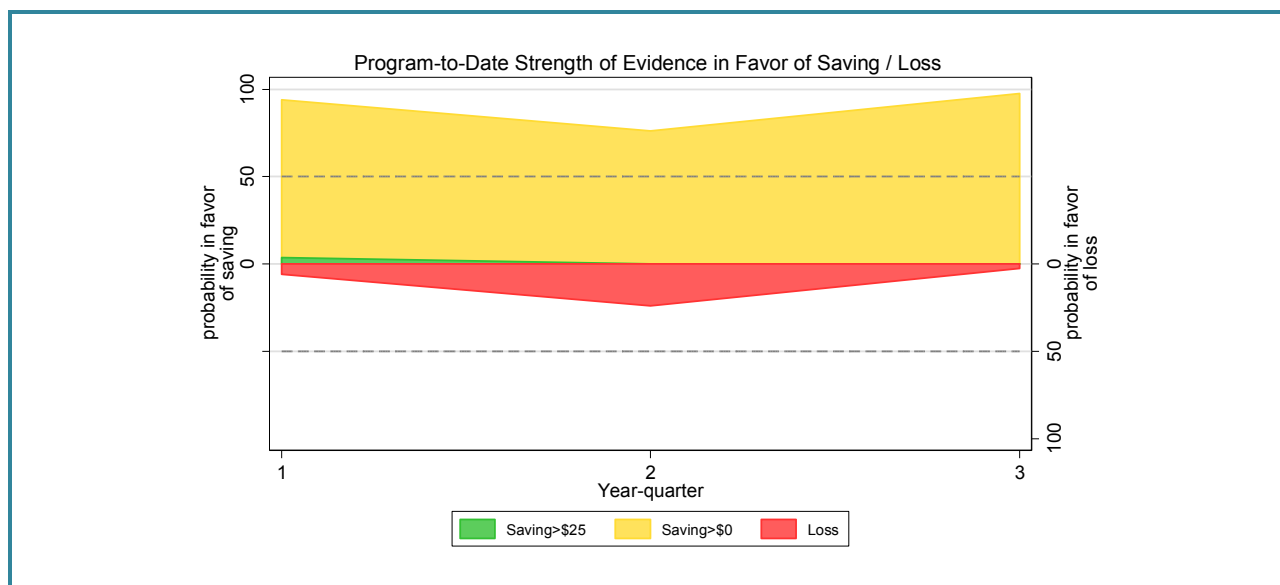


Figure 5-30. Cumulative strength of evidence on total spending, Medicare beneficiaries, Maine, fourth quarter 2013 through second quarter 2014



5.4 Overall Summary

Maine’s SIM Initiative supports programs that aim to improve care coordination and quality of care, decrease unnecessary utilization of health care, and lower the costs of care. A major component of Maine’s SIM Initiative seeks to develop an interconnected health care delivery system centered on Medicaid health homes and ACs. The roll-out of these health homes and ACs may eventually see increases in primary care visits for Medicaid beneficiaries, similar to the current situation for Medicare beneficiaries in Maine’s MAPCP Demonstration. Maine’s SIM Initiative has made significant progress in the development and implementation of these key delivery system and payment reform models, which all strive to provide improved care management to beneficiaries and coordination of care across providers.

The system delivery and payment reforms being implemented by MaineCare under the Maine SIM Initiative are expected to curtail the increasing PMPM total expenditures shown in these baseline quantitative results. The general increasing trend in total spending for the Medicaid population over the baseline period shows the importance of focusing on system delivery and payment reform for the Medicaid population in the Maine SIM Initiative. The state’s Medicaid-related models and strategies include learning collaboratives for Stage A health homes (servicing Medicaid beneficiaries with chronic conditions), Stage B health homes (providing primary care integration for Medicaid behavioral health patients), ACs (providing care coordination services generally to Medicaid beneficiaries), and other initiatives to transform care for Maine’s Medicaid population. A primary goal of Maine’s SIM Initiative is to contain its PMPM costs for the Medicaid population while maintaining access to high quality care.

The SIM Initiative's focus on improved care coordination and enhanced primary care may lead to a decrease over time in avoidable health care utilization. Baseline quantitative results show room to improve care coordination for all populations in Maine. There is already a decline in ER visits over the baseline period for Maine Medicaid beneficiaries, and a decline in inpatient admissions and readmissions for Medicare beneficiaries, which is consistent with the implementation of several initiatives prior to SIM implementation, such as the PCMH model and the use of HIE data in the ER. With the steady progress being made to implement key initiatives under the SIM Initiative that improve primary care support, such as the Medicaid health homes and ACs, we expect to continue seeing declining trends in avoidable health care utilization. The SIM Initiative also aims to lower the costs and improve the quality of care. Medicaid beneficiaries in Maine already have higher rates of some preventive services and engagement in drug treatments than the comparison group. These measures may further improve with the roll-out of SIM-funded initiatives, albeit slowly.

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6. Massachusetts

This chapter provides an updated overview of the Massachusetts SIM Initiative; summarizes major implementation progress, challenges, and lessons learned in the past year; discusses key findings from the site visit interviews and focus groups organized by major topical area; and presents baseline and early test period trends in outcomes. For the Year 2 site visit, we conducted 27 key informant interviews and eight focus groups in Boston and Springfield. The site visit findings are supplemented with information from the survey of primary care physicians, which was conducted by RTI from July through October 2014. *Appendix Figure F-3* provides a graphical presentation of the federal evaluation of the Massachusetts SIM Initiative.

Massachusetts successfully launched the primary care payment reform initiative (PCPRI), and completed development and implementation of the Section Q reporter, community links portal, community connect portal, adult foster care streamline process, and electronic referral. The state had challenges scaling the PCPRI program to the Medicaid population, due to the nonparticipation of the managed care organizations (MCOs) in the state. However, the PCPRI model was lauded by stakeholders for integrating behavioral health into the primary care setting. In addition to these accomplishments, the state initiated a planning process to launch a Medicaid Accountable Care Organization (ACO) that will be more inclusive of the Medicaid population. Extensive stakeholder engagement and planning are currently under way.

Overall, there was little impact on utilization or spending among the commercial or Medicare populations. At this time, we are unable to assess any impacts on the Medicaid population due to data availability. Among the commercially insured, there was a significant decrease in ER visits in the test period among commercially insured beneficiaries in Massachusetts relative to the comparison group. In addition, we find significant increases in other facility, professional, and outpatient pharmacy expenditures; a nonsignificant decrease in inpatient expenditures; but an overall nonsignificant effect on total expenditures. These results are consistent with the intended outcomes of a model that incentivizes additional primary care, integrated behavioral health services, and care coordination.

6.1 Overview of Massachusetts SIM Model

The Massachusetts SIM Initiative supports implementation of the state's payment and delivery reform legislation, Chapter 224 of the Acts of 2012. The key payment and delivery system reform innovation model is the PCPRI, a MassHealth (Massachusetts' Medicaid program) initiative that makes risk-adjusted capitated monthly payments to participating primary care practices, as well as offering shared savings and quality incentives. The innovation began March 1, 2014 with approximately 69,000 MassHealth members enrolled. Massachusetts has also used SIM Initiative funding to consider other payment reform models, including standards for a new MassHealth ACO model. Finally, SIM Initiative funding supports a Group Insurance Commission (GIC) initiative to evaluate alternative payment models (APMs) used by health

plans contracting with the GIC to provide care to state employees, retirees, and their dependents. **Table 6-1** provides an overview of the Massachusetts SIM initiatives, populations impacted, and the timeline of implementation.

Table 6-1. Status of Massachusetts SIM Initiatives, Spring 2015

Initiative	Target Population	Start Date	Completion Date
Payment Reform			
Primary Care Payment Reform (PCPR)	MassHealth beneficiaries enrolled in Medicaid Primary Care Clinician Plan	January 2014	Ongoing; PCPR initiative will become part of new ACO model
Develop and Implement New Accountable Care Strategy (through stakeholder engagement)	Majority of MassHealth beneficiaries to be covered by ACOs or PCMH model. Individuals with significant mental health and substance abuse needs to be served by behavioral health homes. Dually eligible individuals and LTSS users to be covered by integrated care models such as SCO and One Care.	January 2015	Planning Complete by February 2016 Implementation by January 2017
Evaluation of value-based purchasing by health plans contracting with GIC	State employees, retirees, and their dependents covered by health plans	January 2014	SIM support ended in 2015
Health IT			
Section Q Reporter: expedites referrals from SNFs to Aging Service Access Points (ASAPs)	Residents of the state's 450 SNFs who express interest in transitioning to the community	Pilot launched in 2013	Summer 2014
Community Links Provider Portal: enables primary care providers and hospital discharge planners to view patients' home care records in the Senior Information Management System	More than 1,000 consumers and 13 clinical sites participating in Spring 2015	Pilot launched in 2014	SIM support ended in 2015
Community Connect Portal for caregivers and beneficiaries	Two ASAPs and 7 caregivers participating in pilot initially	Pilot launched in February 2015	SIM support ended in 2015

(continued)

Table 6-1. Status of Massachusetts SIM Initiatives, Spring 2015 (continued)

Initiative	Target Population	Start Date	Completion Date
Adult Foster Care/Group Adult Foster Care (AFC/GAFC) Determination Streamline: expedite eligibility determinations and redeterminations	MassHealth beneficiaries residing in Adult Foster Care and Group Adult Foster Care homes	Pilot launched in 2014	SIM support ended in 2015.
Electronic Quality Improvement Program (eQIP): assist BH, LTSS, and post-acute care providers with adoption of EHRs and connection to the state HIE through grants and TA	Behavioral health, LTSS and post-acute care providers who are not eligible for federal EHR incentive payments	SIM-funded grants were planned to be awarded to BH providers in Spring 2015, but were not awarded	SIM support ended in 2015
Population Health			
MCPAP: expansion and evaluation of the Massachusetts Child Psychiatric Access Project	Children with behavioral health conditions	MCPAP was launched in 2004; SIM support of the expansion began in 2014.	Ongoing/Completion of SIM Grant (June 30, 2017)
e-Referral: electronic referrals from primary care providers to community resources	Community Health Centers and community-based organizations	Pilot launched in summer 2014	Ongoing/Completion of SIM Grant (June 30, 2017)
MDPHnet: expand the Massachusetts Department of Public Health Network to enhance public health surveillance capabilities	Health care providers in central and western Massachusetts	MDPHnet was launched in 2012; SIM support of the expansion began in 2015	SIM support ended in 2015

The SIM Initiative helps primary care providers coordinate patient care and interact with the long-term services and supports (LTSS), behavioral health, and public health systems. Health IT infrastructure initiatives include facilitating referrals from nursing facilities to home and community-based services; enabling hospital discharge planners, primary care practices, and caregivers to view patients' home care records; expediting eligibility determinations for adult foster care; and assisting behavioral health, LTSS, and post-acute care providers to connect their electronic health record (EHR) systems to the health information exchange (HIE). Population health initiatives include the e-Referral system to link primary care providers with community resources and an expansion of Massachusetts Department of Public Health Network (MDPHnet),

a system that enhances public health surveillance capabilities. Finally, the SIM Initiative supports expansion and evaluation of the Massachusetts Child Psychiatric Access Project (MCPAP), a telephone referral line that provides behavioral health consultation services to primary care providers.

At the time of the 2015 site visit, the new administration was in the midst of resetting the strategy and direction of Massachusetts' SIM Initiative, to scale up value-based payment and delivery models promoting integration to the MassHealth population. As part of this work, Massachusetts is beginning to re-engage stakeholders in long-range planning for a multi-tier approach that envisions a patient-centered medical home (PCMH) or ACO model of care delivery for the majority of the MassHealth population. The state is also doing strategic planning for the formation of behavioral health homes for beneficiaries with serious behavioral health conditions, and expansion of integrated care for LTSS users.

6.2 Site Visit Report

6.2.1 Summary of progress, challenges, and lessons learned

Since the last site visit, Massachusetts continued implementation of the PCPRI and expanded its payment and delivery system reform strategy. Although state officials hoped to expand provider participation in PCPRI by enlisting MassHealth MCOs, no MCOs joined the initiative, and state officials reported that participation is now closed for the remaining 2 years of PCPRI. Based on feedback from a series of work group meetings with health care providers and health plans, Massachusetts opted to move forward with a new statewide payment reform initiative. If the proposal is approved by CMS, state officials reported plans to leverage SIM Initiative funds to implement an ACO-like payment model by the end of the SIM test period. While the proposed changes are pending approval from CMS, state leaders said they intend to shift the state's emphasis and direction toward relevant SIM Initiative-funded activities.

The Massachusetts SIM Initiative began implementing a number of initiatives in 2014 and early 2015, completing some ahead of schedule and expanding some components. The e-Referral program was implemented on schedule, with four clinical organizations at five sites participating as of April 1, 2015. In response to a positive reception from participating organizations, officials expanded participation. State officials also reported that the Community Links Provider Portal, Section Q, and adult foster care/group adult foster care (AFC/GAFC) electronic determination processes were implemented and operational. The Community Connections Caregiver Portal was still in the pilot stage with seven caregivers participating. SIM Initiative funding enabled the state to expand the MCPAP operations to 5 days per week and supported the launch of a new toolkit and provider training program to increase adolescent substance abuse screening and treatment among pediatricians.

Implementation challenges

The SIM Initiative faced a number of implementation challenges in the past year. State officials reported that their most significant challenges were related to PCPRI implementation, including lack of clarity about the payment methodology used to calculate shared savings rates and challenges relating to data collection, validation, and reporting. The state reported that it is awaiting CMS approval of its proposed shared savings methodology, which delayed the state's ability to finalize the methodology and make payments to providers. Providers affirmed they were concerned about delayed payments and reported that they have not received Year 1 payments; they suggested that smaller providers would not be able to absorb these delays because of insufficient reserve funds.

State officials and stakeholders also noted challenges related to data collection and analysis that impacted PCPRI implementation. One official reported that the state currently lacks sufficient data to analyze behavioral health spending, because it has not received behavioral health data from the vendor. The official also stated that state systems are not fully operational to compute and share historical and recent claims data. Many participating provider sites affirmed that lack of available data has posed challenges, reporting that they do not know whether they will receive shared savings payments for Year 1. MCOs reported one major reason they opted out of PCPRI was their concerns about data validity. Providers were also wary of the uncertainty about their capitation rate structure because historical spending data were not available. The lack of participation by MCOs and most primary care clinical (PCC) providers reduced PCPRI's reach and impact, which resulted in significantly fewer covered lives than expected. Even so, state officials said they believe PCPRI is incrementally changing provider behavior.

Massachusetts applied a number of policy levers to address these challenges and engage providers and payers. Foremost among them was the weight of Chapter 224, Massachusetts' major health reform initiative enacted in 2012, which includes implementation of payment reforms and EHR targets for adoption, among other requirements. The state also plans to use the Section 1115 waiver approval process to garner federal approval for new SIM Initiative-related payment reform strategies and to use the next round of MassHealth MCO contracts to ensure greater MCO participation in future payment reform efforts. Finally, the state is negotiating annual budget legislation that may impact future MassHealth and SIM Initiative policy.

In addition, Massachusetts is re-engaging stakeholders to find solutions. The state convened stakeholders, both at quarterly implementation meetings and in work groups focused on policy development, including the ACO model development. The state sought stakeholder input through a Request for Information (RFI) on the MassHealth ACO model and through Health Policy Commission hearings to better understand the impact of the SIM Initiative on stakeholders.

Changes in department leadership and program direction, as well as staffing difficulties, have created additional challenges. Key leadership staff, including the former SIM Initiative director and the previous Medicaid director, left their positions, and the change in administrations brought a new commissioner. Some stakeholders suggested the SIM Initiative needs consistent, sustained appointed leaders and engagement by high-level state officials to be effective. New leaders in the Executive Office of Health and Human Services stated their commitment to both engaging payers and providers and incorporating the SIM Initiative into a broad payment reform strategy. State officials also reported difficulties recruiting for available positions, stating the salaries offered are lower than in the private sector and retention of those hired and trained has been difficult. Some stakeholders said they felt those involved in developing SIM Initiative policies do not have enough direct experience to understand the needs and behaviors of low-income populations targeted by these initiatives or the providers serving them. For example, they cited implementation of downside risk in Year 2 before participating providers had a chance to understand their performance in Year 1 and adjust accordingly.

External challenges

Massachusetts also faces challenges from its unique political and policy context as a state that is actively pursuing health reform in multiple arenas. Many stakeholders and some state officials noted the multiplicity of reform efforts and state agencies involved, which can generate confusion and fatigue among providers, consumers, and payers. Some participating providers raised concerns that state reform efforts among agencies have not always been well-aligned or coordinated to ensure the greatest impact on health system delivery transformation. As an example, they cited the state's implementation of new ACO certification requirements by the Department of Insurance and the Health Policy Commission, and were uncertain whether the new ACO oversight planned for MassHealth would align. Providers that participated in focus groups were asked about their involvement in payment reforms and other initiatives; many said they are unable to keep track of all the different programs. "Everything out there is alphabet soup," one provider said. New state leaders appear aware of these challenges and expressed an interest in reshaping the SIM Initiative elements to develop a more coherent vision for statewide Medicaid reform as a way to drive system change, given Medicaid's role as the largest payer of health care in Massachusetts.

Finally, state officials reported that CMS oversight through the SIM Initiative sometimes creates unintended administrative burdens for state operations. For example, state officials included travel to SIM Initiative convenings in their budget, but were told they needed multiple levels of CMS approval when they tried to book travel and ultimately did not receive approval before the meeting. Officials also reported that since the beginning of the cooperative agreement, the state has transitioned through three different CMS project officers, and in that process, priority areas of focus for the SIM project requirements changed, causing confusion. Some state officials noted that the reporting requirements are more significant than expected and not always clear, leading the state to spend time on reporting rather than implementation.

Massachusetts also faced challenges in spending its Year 1 funds and expressed a desire to extend and redirect spending to maximize the SIM Initiative's impact for the state; these requests are still pending.

Lessons learned

State officials we interviewed stated that the SIM Initiative's vision for success has not always been clear to stakeholders, given the multiple disparate elements of the Initiative to date. Stakeholders interviewed affirmed this understanding—many have a clearer sense of the individual activities with which they are involved, but lack basic understanding of the full scope of SIM Initiative-funded programs. State leaders said they are using new leadership as an opportunity to reset and recast their vision for SIM.

State officials and stakeholders shared a number of lessons from implementation. First, state officials acknowledged the importance of allowing providers to take on differential levels of risk based on provider capacity. They also pointed to the importance of involving all payers to create more synergy among payment reform initiatives. State officials will explicitly require MCO participation as part of future contracting arrangements. This lesson is one of the major learnings from PCPRI; failure to mandate MCO participation was a major reason for the state's inability to scale the model as planned. As one state official said, "PCPRI stress tested our ability to put alternative payment into the field."

State officials also noted the importance of data reporting capability. "Providers are hungry for more information," one official said, so officials are planning a major investment in data reporting in the next round—including providing participants with their panels' historic cost of care and ongoing data support throughout the Initiative. State officials observed that providers' confidence in the data is critical, and that the PCPRI experience has helped the state better understand providers' needs and ways to address their own gaps in capacity as they prepare for larger scale.

Some state officials and stakeholders observed that the state may need to invest additional resources in long-term support to ensure viability and sustainability of initiatives. For example, the investment in LTSS health IT supported technical and operational changes through implementation, but no additional funding was allocated for broad dissemination. As a result, state officials reported their resources and capacity to promote adoption of initiatives are limited, and take-up will depend instead on providers choosing to adopt the technologies without support; such an approach is unlikely to produce consistent results. Stakeholders involved in implementation of the Community Links portal affirmed that the state delegated promoting provider adoption to them, but that they have limited capacity or authority to encourage providers to participate and fear few providers will opt in until a major provider has modeled success.

6.2.2 Delivery system and payment reforms

Delivery system and payment reform is the main focus of the Massachusetts SIM Initiative, which, as noted, supports Chapter 224 of the Acts of 2012. One of the major priorities of the legislation is to advance adoption of APMs in the state. PCPRI includes a risk-adjusted comprehensive primary care payment for a set of monthly attributed beneficiaries participating in MassHealth's PCC plan. In addition, providers are held accountable for total cost of care through a shared savings/risk arrangement and quality incentives through withholds.

In addition to PCPRI, the state plans to roll out a Medicaid ACO/PCMH model that covers all Medicaid beneficiaries in the state (excluding LTSS and Medicare-Medicaid beneficiaries). By the end of 2017, Massachusetts hopes to have this model fully operational across the state.

Finally, GIC is encouraging adoption of value-based payment contracts between its health plans and integrated risk-bearing organizations (IRBO), to facilitate a move away from fee-for-service (FFS) payment. GIC contracted with an outside vendor to conduct an evaluation of the impact of the IRBO contracts on commercially insured state and municipal employees, retirees, and their dependents. Preliminary results are not yet available, but cost and utilization trends will be monitored through December 2016.

State activities and stakeholder response

MassHealth originally planned to contract with various PCC providers, as well as the six MCOs in the state, to participate in PCPRI. The PCC plan is administered by MassHealth and covers approximately 382,000 lives.²⁹ As of 2012, the PCC plan contracted with 1,040 PCC practices, covering approximately 1,540 PCC sites.³⁰ In addition to the PCC plan, MassHealth wanted to contract with the six MCOs to cover an additional 522,000 lives.³¹ MassHealth was not successful in recruiting any of the six MCOs, as noted, so all the participants were drawn from the PCC sites. As of January 1, 2015, MassHealth had enrolled 77,527 beneficiaries in PCPRI, an increase of 12 percent from the previous year.³²

PCPRI uses prospective attribution on a monthly basis and provides a risk-adjusted capitation payment for primary care services. Ten of the 30 PCC practices also receive capitation on behavioral health services; these providers are either in tier 2 (requiring on-site behavioral health services by masters and bachelors level professionals) or tier 3 (requiring psychiatrist services on-site).

²⁹ Massachusetts Medicaid Policy Institute: MassHealth: The Basics. Facts, Trends and National Context. 2014.

³⁰ MassHealth: MassHealth PCC and MCO Program Overview. 2012.

³¹ Massachusetts Medicaid Policy Institute, 2014.

³² Personal communication with MassHealth, February 2015.

Managed care organization experience

State officials suggested that a confluence of factors is keeping MCOs from joining, including the complication of administering the program. However, they also mentioned other competing priorities. One MCO noted concerns about the calculation of the capitation payments, as well as the risk adjustment methodology. Those interviewed also mentioned that they did not have any history with the members who would have been assigned to their providers. When they asked MassHealth for the historical claims spending, they did not receive it until 9 months later. They were also concerned that the risk adjustment for a minimum sample size of 300 patients is not reliable because of the high amount of churn in the Medicaid population. Another MCO noted that the per member per month (PMPM) medical home payment enables providers to better focus on patients, but that providers find the quality tracking burdensome. Finally, one of the MCOs mentioned that PCPRI is not focused on using integrated systems, but rather putting risk on the primary care providers. They argued that primary care providers at community health centers who do not offer specialty care cannot control referral patterns and that specialists bear no risk. Even though the MCOs support the overall vision of PCPRI, these concerns made them apprehensive about the future of the program.

Provider experience

Providers were cautiously optimistic about the overall shift toward APMs in Medicaid, but after a year of experience in PCPRI they still have concerns about the administration of the program. One of the major concerns is lack of clarity around the capitation payments and changes in providers' capitation rates from Year 1 to Year 2. Some provider groups were concerned about enrolling in PCPRI without even knowing their capitation rates. Although some participants understood which codes went into the capitation payment in Year 1, they noted that these codes have changed between Year 1 and Year 2. They asserted they need more information from MassHealth regarding their patient panel prior to joining the program. Providers do not have confidence in the fee structure going forward; as one stakeholder said, "The leadership at MassHealth does not understand the practical implications of their applied theory."

Providers would particularly like more data analytics from MassHealth; they do not feel they are getting the data they need to be confident they are being paid appropriately. Furthermore, they are not receiving behavioral health data from the Massachusetts Behavioral Health Partnership (MBHP), the vendor that manages the behavioral health carve-out for the PCC members. One provider said, "We are hoping that good care will work out in the end, but we have no analytics to support that assumption. We could be in line for a huge loss." A state official acknowledged this possibility, saying that data transparency is necessary before taking the programs to scale. Some providers were also uncomfortable with the risk adjustment methodology, as well as with the discount factor applied if an attributed patient receives primary care outside the provider's system.

Some providers maintained that the rule-making process has not been adequately collaborative or precisely defined, leaving them unsure of the rules for providing input and without full knowledge of their risk. For example, one provider organization mentioned that its physicians can choose to provide Suboxone treatment for opioid addiction, but if they do, many visits are required and will result in a net loss due to the capitation of primary care. They argued that such a service should be paid FFS rather than being part of the primary care capitation—but the state did not implement this suggestion. When providers clarified, they were afraid of being forced into downside risk, MassHealth did respond by developing criteria to allow certain providers to opt out of downside risk. However, even though providers were held harmless for any overages of the primary care spending and downside risk in Year 1, they reportedly experienced up to 20 percent cuts in their capitation rates between Years 1 and 2.

Providers reported that they feel some requirements are too prescriptive. For example, they are required to engage each patient on their panel every 6 months to meet PCPRI requirements. They argued that this requirement is not necessary and the state should allow providers more flexibility to meet the broader goals of the reform effort. Providers also noted that providing printed information to patients is a quality measure, so they print the requirements and give them to patients, which patients then often discard.

Primary care providers almost universally mentioned the negative impact of the increased reporting burden of PCPRI. Several providers worried that the magnitude of reporting now required will negatively affect primary care providers, who will spend less time with patients and more time on documentation. One provider reassured us that providers support delivery system changes, but that any system trying to improve care by placing more burden on the primary care providers will not work because they are already overloaded. Providers want more of the documentation and social support work shifted to care coordinators and support staff.

Providers were positive about the medical home payment provided under PCPRI, which allows them to hire care coordinators and care managers. These support staff take on the bulk of population management work—reaching out to patients, managing complex patients, providing social resources, etc. This model has alleviated physicians' burden significantly and allowed them to spend more time with patients. For example, at one practice, providers previously spent much time calling patients if they missed an appointment, but now they can refer to the care coordinator to reach out to patients.

Provider groups are implementing care coordination programs targeted at high-risk patients. Some groups have successfully used care coordinators to help with language barriers, which has helped improve the follow-up rates to specialists. One provider mentioned a specific high-risk patient who was homeless and had sickle cell disease. A complex care manager helped connect the patient with housing and a new hematologist in the area, which has decreased the

patient's emergency room (ER) visits from twice a month to only once since the beginning of 2015.

The Blue Cross Blue Shield (BCBS) alternative quality contract (AQC) in the commercial market is driving much of the overall strategy at health centers, according to providers. However, one provider noted that although coordination strategies began because of AQC, more resources were added to practice reform, in the knowledge that MassHealth would eventually encourage APMs and increase care coordination.

Providers also mentioned that PCPRI accelerated the move to value-based payment models, but that many provider groups were already moving that direction. One provider, referring to the move to value-based payment, said: "The train already left the station, but PCPRI accelerated the change rate." However, primary care providers expressed concern that the incentives for the PCPRI program go to the provider group, not necessarily to the individual providers. They emphasized that they are still paid for volume and are not incentivized to do more care coordination.

Several providers mentioned that the MCOs' lack of involvement hurt the providers with patients covered by both the PCC and MCO plans, because half of a health center's patients could be covered by PCPRI while the other half could be paid FFS. The conflicting incentive structures—paying for value versus paying for volume—are challenging for providers.

To determine the impact of these delivery system reforms, some larger practices are collecting and analyzing data, while others are using third-party vendors to help them with analytics. Eighty-one percent of respondents to the primary care physician survey are part of a practice that uses a health IT system to generate quality measure data; but only 20 percent use a health IT system to monitor patient expenditures and utilization for services rendered by the practice. Providers consistently referred to the importance of in-house data management capacity to be successful under APMs.

For care coordination, according to the primary care physician survey, approximately 47 percent of respondents agreed that their practices work in teams, whereas only 37 percent said they are part of a practice where a clinical team prepares together, before a patient's office visit, to meet the patient's chronic care needs. Seventy-five percent agreed that their practice routinely identifies patients for whom clinical care management would be beneficial. Eighty-two percent indicated that performance-based payments affect decisions at their practices (37 percent said "very much" and 45 percent said "a little"). These results do not necessarily reflect the impact of PCPRI; although 87 percent of survey respondents were MassHealth providers, only 17 percent of those providers indicated they were participating in PCPRI.

Consumer perspective

Separate focus groups were held with consumers covered by MassHealth (Medicaid) and consumers covered by GIC (state employees, retirees, and their dependents). Almost all MassHealth participants reported that they see a primary care provider as their main medical provider and are satisfied with the care they receive. Those who did not see a regular provider expressed dissatisfaction due to the lack of continuity and duplication of reporting their health issues. Most participants said their provider has information about their conditions/treatment through EHRs used by the practice. GIC participants were less satisfied with their primary care providers, because they are unable to make appointments in a reasonable timeframe, feel rushed during appointments, and feel they have to explain their medical history at each visit.

MassHealth participants said they often seek care at the ER or an urgent care facility in order to get care quickly. Many participants said their primary care provider is aware of these visits almost immediately after they happen. GIC participants said they use urgent care facilities more frequently for perceived low-acuity conditions, but very few use the ER.

MassHealth participants said that their providers help them take better care of themselves by switching medications or revising doses of current medications, helping them obtain gym memberships, keeping track of their appointments and contacting them when they do not show up, providing detailed advice on healthy dieting, printing handouts with exercise workout or stretching routines they can do at home on their own, facilitating referrals, closely monitoring their health, and keeping track of important events. However, only some GIC and MassHealth participants said their primary care providers are fully aware of what happens at their appointments with specialists.

Overall, participants reported they have not noticed improvement in the care they receive. Many participants—both those satisfied and those unsatisfied with their primary care providers—said that they feel rushed at appointments. Some participants said they have a feeling of disconnect with their primary care providers, and would like follow-up and continuous care to improve.

6.2.3 Behavioral health integration

The Massachusetts SIM Initiative supports three key strategies designed to encourage the integration of primary care and behavioral health: (1) a telephone consultation initiative to help pediatricians address children's behavioral health needs, (2) a set of contractual requirements for PCPRI participants to integrate behavioral health into their primary care practice, and (3) a grant program to encourage behavioral health providers to adopt health IT.

Massachusetts Child Psychiatry Access Project

The MCPAP project delivers child psychiatry consultation services via telephone to approximately 60 percent of practicing pediatricians in the state. The Massachusetts SIM

Initiative is helping to sustain this project, created in 2004, by funding expansion of a hotline pediatricians can call to receive assistance when treating a child with behavioral health conditions. Child psychiatrists staffing the hotline answer questions related to behavioral health treatment and medication, arrange in-person face-to-face sessions with psychiatrists, and help pediatricians identify sources of mental health support in the community. In Year 2, the SIM Initiative is funding development of a toolkit and training program for pediatricians on screening adolescents for possible substance abuse.

The intent of MCPAP is to enhance the capacity of pediatricians to more effectively address behavioral health conditions in a primary care setting and create stronger linkages between pediatricians and behavioral health providers. Only 20 percent of respondents to the primary care physician survey said they refer patients to behavioral health professionals with whom they have an established relationship. Ideally, as MCPAP and the state's other behavioral health integration initiatives mature, more primary care providers and pediatricians will develop formal relationships with behavioral health professionals in their community. The state is currently evaluating its MCPAP initiative by tracking two key process metrics: 1) the percentage of pediatricians accessing the service, and 2) the percentage of calls from pediatricians that are answered within 30 minutes. According to the state's quarterly report, the percentage of MCPAP calls answered within 30 minutes increased from 92 percent to 93 percent over the past quarter.³³

Requirements for PCPRI providers

Massachusetts is also promoting integration of behavioral and physical health care by establishing specific integration requirements for participating PCPRI providers. Examples of requirements include staffing at least one masters or doctoral level behavioral health provider on-site for 40 hours per week, having the capability to schedule an appointment with a behavioral health provider within 14 days from the time of the request, and routinely screening patients for behavioral health conditions.

Multiple site visit respondents noted one challenge: no standard or uniform model exists for behavioral health integration. Consequently, some providers expressed a desire for less prescriptive requirements and more flexibility in meeting state standards. For example, one physician said that the mandate for patients to see a mental health specialist within 14 days of a request is not always realistic, given the patient's condition and availability of timely behavioral health care. Another noted that some state-established timeframes to comply with these requirements are not always feasible, particularly for providers new to integration. Almost half of the respondents to the primary care physician survey said they give patients the names of

³³ Massachusetts. Q4-2014 Progress Report. Submitted January 30, 2015.

behavioral health practitioners to contact on their own; only a quarter reported staffing behavioral health providers on-site at their practice.

In addition to the contractual requirements in PCPRI, the state encourages behavioral health and primary care integration through payment reform. Currently, the state pays 10 out of 30 PCPRI providers a combined behavioral health and primary care capitation payment to spur further coordination and integration. However, certain providers noted that the costs of integration can be significant and that the state's extra add-on payment is not enough to cover these expenses.

Grant and technical assistance program

Finally, Massachusetts is using SIM funds to support the electronic quality improvement program (eQIP), a combined grant and technical assistance initiative to help behavioral health providers adopt EHRs and connect to the state HIE. Behavioral health providers are not currently eligible for Medicare and Medicaid incentive payments to adopt health IT, which hinders them—compared with other providers—in purchasing EHR systems. Three-quarters of the respondents to the primary care physician survey reported they are unable to share electronic information with behavioral health providers outside their practice. Further, a recent analysis performed by MeHI found that 50 percent of behavioral health providers in Massachusetts do not have access to an EHR.

State officials and providers all agreed that improving electronic communication between primary care providers and behavioral health professionals is a necessary step to facilitate integration. Primary care providers in focus groups expressed frustration with their inability to access behavioral health information from mental health professionals both on- and off-site. Physicians attributed at least some of these access challenges to confusion surrounding federal privacy rules—particularly to sharing substance abuse treatment–related information.³⁴ Findings from focus groups and interviews suggest that additional education and clarification from the state on health confidentiality regulations may be helpful.

The state does not have an overarching framework for measuring behavioral health integration across these multiple initiatives, but they are assessing PCPRI participants' progress in meeting select 6-, 12-, 18-, and 24-month milestones.

6.2.4 Quality measurement and reporting

All Massachusetts SIM Initiative interventions are required to report on select process metrics to the state on a quarterly basis. The types of metrics vary depending on the intervention, but examples include numbers of physicians and health care providers participating

³⁴ Specifically, substance use providers are unable to share information with other health care professionals without specific consent from the patient for every disclosure.

(PCPRI), numbers of electronic referrals sent (e-Referral), and numbers of providers sending electronic transactions over the HIE. All measures are tracked and monitored for each specific SIM Initiative investment.

On an annual basis, the state tracks performance on the following core metrics to assess statewide changes in quality:

- Tobacco use assessment and tobacco cessation intervention
- Well-child visits
- Use of appropriate medications for people with asthma
- Follow-up after hospitalization for mental illness
- Follow-up care for children prescribed ADHD medication
- Comprehensive diabetes care: hemoglobin A1c control, LDL-C control, and blood pressure control
- Control of high blood pressure

The state is also administering a patient-experience survey, based on the Consumer Assessment of Healthcare Providers and Systems–Clinician & Group Survey (CG–CAHPS) instrument, to examine how patients perceive the quality of their health care.

In selecting the above set of quality measures, the state incorporated recommendations from the Massachusetts Statewide Quality Advisory Committee (SQAC), an advisory body charged with helping the state align health care performance metrics across payers and providers. During site visit interviews, stakeholders expressed an interest in alignment, but given the lack of participation among MCOs in PCPRI, alignment has not been a key objective of the SIM Initiative to date. Providers, as noted, expressed frustration with the administrative burden of having to respond to multiple quality reporting requirements for private and public payers.

Approximately 70 percent of respondents to the primary care physician survey reported that they regularly review quality performance at the patient group level. Physicians participating in PCPRI noted that although the state requires that they report on quality metrics as a condition of participation in the program, the state has not provided them with timely performance reports based on these metrics.

6.2.5 Health information technology and data infrastructure

Massachusetts included supportive activities in its SIM Initiative to leverage health IT and other infrastructure investments to modernize systems and processes in support of delivery

and payment system reforms. For the past year, these include: (1) e-Referral; (2) LTSS health IT investments; (3) HIway/technical assistance to behavioral health providers; and (4) APCD provider portal.

E-Referral

E-Referral is a SIM-funded health IT and public health initiative using an electronic, bidirectional referral system that links primary care providers in clinical settings to community service organizations. As of April 1, 2015, four clinical organizations at five sites and six community-based service organizations were participating in e-Referral; another six clinical sites and seven community-based organizations (CBOs) were expected to be added by June 30, 2015. Participating clinical sites can use e-Referral to refer patients to participating CBOs for a range of services: diabetes education, older adult fall prevention programs (in-home risk assessment), nutrition services, chronic disease self-management, tobacco cessation, and substance use disorder services. Officials said that e-Referral supports the state's delivery system reform goals by increasing opportunities for coordination between primary care and service providers and by supporting patient education and engagement.

In practice, providers that use e-Referral can use the EHR to select a participating CBO for referral. Providers that have implemented the system said it is easy to use and generates a referral request transmitted to participating CBOs via the e-Referral gateway. State officials reported that new grantees will use the state's HIE, the Massachusetts HIway, to transmit information. Until then, the system is transmitting structured reports via secure email. The CBO can send up to two feedback reports per referral, which can be embedded into the EHR through an additional manual process. The implementing state agency limited participating clinical sites to one CBO, to ensure processes worked smoothly before expanding to other CBOs.

State officials reported that over 200 referrals and 300 feedback reports have been generated since the program was launched with a pilot in summer 2014. Individual clinical sites and CBOs we interviewed reported they are using the system. One clinical site said it is promoting e-Referral and that providers have reported an estimated 50 referrals per month so far. Another site estimated only about 40 per month, but said it expects volume to increase once the site expands its CBO partner sites, which is planned in the coming months. Participating clinical sites plan to track the number of referrals and health outcomes of patients referred to assess how well the system is working for them. State officials planned to implement a formal evaluation/review of patient medical records, to understand the impact of the intervention and to use public health data available in MDPHnet to assess the impact on health outcomes in the catchment area.

Participating clinical sites reported that e-Referral facilitates the referral process for providers by making it more efficient to administer and providing more timely engagements. Before using e-Referral, providers said they typically sent referrals through a paper-based or

telephonic process that was slow, required many staff follow-up calls, and included significant risk of missed connections and threats to patient privacy. Providers appreciated e-Referral's culture of quality and innovation, improved coordination and communication among care providers, and increased knowledge for the primary care team.

Participants also noted some challenges and areas for improvement, mostly related to system operations. For example, CBOs want to be able to submit more than two feedback reports and want the option to share the full assessment report rather than summarizing it in a limited notes section. Some CBOs also want the reason for the referral and more information about the patient to appear on the referral form. One clinical site wants referral reports to automatically embed into the EHR without manual scanning and entering. Some clinical sites reported challenges getting providers to use the tool. Providers also said they want to expand CBO participation to increase the impact of the program on their patient population.

Participating organizations were mixed in their views about the state's role and assistance provided. One CBO reported positive experiences with the state's response to questions about the program and said the state has provided technical assistance and support throughout implementation. Another CBO said the state provided more support at the beginning; however, that CBO says it receives less support now the program is set up and wants more.

State officials reported that their greatest challenges to implementation are legal issues of allowing referral and state agencies to host personally identifiable health information. Another challenge has been helping clinicians and service providers speak with a "shared language," since many of these organizations are working together for the first time. Onboarding the tobacco quitline, which was delayed because of the state's re-procurement of that work to a new vendor, is now in place. Looking ahead, state officials are investigating options to expand in other ways, given significant interest in the program, including the option to allow providers to "self-fund" participation. Clinical sites are also planning to expand to other CBOs.

LTSS health information technology

Nearly all of Massachusetts' implementation of LTSS-related health IT interventions—including the Community Links portal for providers, Community Connections for caregivers and beneficiaries, Section Q referrals, and the AFC/GAFC streamlined determination initiative—was completed in the past year. Community Connections is still in its pilot phase and should be implemented in 2015. Although each initiative holds promise to modernize care delivery and improve provider connections for individuals receiving LTSS, stakeholder interviews suggested take-up and use among providers is inconsistent and may be limited at this phase of implementation.

Community Links portal for providers. Community Links is a secure electronic portal that allows participating hospital discharge planners and primary care practices to view patient

home care records. Through this portal, providers can review information about services a patient is receiving that is recorded in the state's system of record, the Senior Information Management System (SIMS). They can review in-home care or nutrition services and check self-reported medical and prescription information. The portal was piloted and became operational in 2014 and now includes 13 clinical sites, with 42 participating individual providers representing more than 1,000 consumers, according to officials. Once the primary care provider agrees to participate, the provider can view but not enter information into SIMS. The system does not allow aging service access points (ASAPs) or other community organizations to receive or send information to providers directly through the portal. State officials said that primary care practices are being recruited to participate by their local ASAP.

State officials did not have available data on how often Community Links is being used, but said the system is typically used by geriatrician nurse practitioners to plan before or after a visit or discharge from the hospital. State officials said they planned to survey providers on their experience in May 2015.

State officials and stakeholders reported that participating providers and ASAPs have positive experiences with the portal. State officials said primary care providers like being able to see the in-home schedule of services before a clinic visit and to check self-reported medications against the EHR. ASAPs working with primary care providers using the portal reported that they think providers like it and it is helpful in giving providers more information about the scope of care patients receive.

ASAPs that were interviewed and participated in focus groups also shared challenges related to implementation. A number of ASAPs reported that getting providers to commit to participation is challenging. One ASAP said it had worked with a provider for over a year with no agreement to participate in place. Another ASAP representative said she doubts that providers will agree to participate in data sharing with a provider outside their integrated system of care. She also said that this ASAP's patient population is served by so many providers from all over the region that it is unclear how having just one or two participate would impact patient care for the ASAP. One ASAP focus group participant said the portal should have a search engine—as it currently functions, that provider sees a list of patients and has to scroll through several pages to find a specific one.

State officials also reported changes to the portal that providers are seeking, including the opportunity to send information through the portal directly to the ASAP, to correct a patient's medical or prescription history. Currently, providers have to send a separate email or make a phone call. Providers also said case files have too much information and too much jargon; they want the option to minimize text and include more understandable language. Finally, providers said they want to make the portal part of the HIway, so it can be more integrated and visible

without requiring a separate login and password. State officials said they plan to connect to the HIway in future.

Community Connect Portal for caregivers and beneficiaries. The state is also creating a companion portal, called Community Connect, which will give caregivers and beneficiaries access to the same SIMS data. This portal launched in the pilot phase in February 2015 with two ASAPs and seven caregivers participating. State officials said the early feedback on the pilot has been mixed. Although participating caregivers appreciate the ability to see schedules for service providers, they also face some barriers to participation. ASAPs reported to the state that they have difficulty getting busy caregivers to join the pilot and communicate about their experiences. State officials also noted that caregivers' technical needs vary—with barriers (such as outdated browsers, limited computer literacy, and low internet connectivity) hindering delivery of a consistent portal experience. Some caregivers rely on the ASAPs to access the system, limiting their ability to independently navigate it. Caregivers would also like to see more information, such as a reminder that a care manager visit is coming. Officials said they were considering revisions to the portal and planned to invite wider participation in 2015.

Section Q referrals. Massachusetts developed and implemented an electronic system to facilitate referrals from skilled nursing facilities (SNFs) to community-based service organizations for residents who wish to transition to the community. According to state officials, the goal of this initiative is to shorten the resident's time in a nursing home by allowing for a quicker review of the case by the ASAP staff. State officials reported the system is fully implemented and their work on it is complete.

The Section Q electronic referral system relies on a preexisting network connecting each of the 450 SNFs with a local ASAP for referrals. According to state officials and ASAPs, SNFs enter patient information into a web-based system, which automatically generates a referral email notice to the ASAP. The ASAP receives a date-stamped form with a reference number, the resident's date of birth, facility name, and name of the case manager involved with the case. The ASAP then has 5 business days to call the SNF for more information about the referral. ASAPs typically follow up by interviewing residents during their weekly SNF visit.

State officials reported they think Section Q has increased the number of referrals from SNFs to ASAPs. Officials reported the system is generating 117 referrals a month, more than the prior paper referral rate. One ASAP confirmed an increase in referrals, saying that all nine facilities it works with are participating and have made 62 referrals since implementation in August 2014—representing a more than 200 percent increase over the 19 referrals received during the same timeframe in 2013. Two ASAPs reported that Section Q formalizes communication between the ASAPs and the SNFs, making the process more transparent and accountable. One ASAP also said that the new process of initiating contact with a limited form and then having to call the SNF for more information helps the ASAP get more nuanced

information than could be communicated on a paper form alone, and offers a more private way of communicating about patients than through paper transmission.

However, another ASAP reported some frustration with the Section Q process and did not think it has improved communication. This ASAP said it is receiving inconsistent and limited referrals from participating SNFs—only three of the 23 SNFs are sending referrals, totaling about four referrals per month. The ASAP also did not like having to call the SNF for more information, which sometimes requires multiple calls and is an inefficient extra step. The ASAP said it has raised concerns about the form and the process with the state, but said the state is not responsive to feedback, although the ASAP observed the reason might be the need for protection of health information. Although this ASAP remains concerned about the new process (including the paper form and calling), it conceded that the new process affords more privacy for patients.

State officials reported their greatest challenge is that many SNFs are unaware of the Section Q referral requirements and need re-education. In response, officials said they worked with other agency officials to create a policy memo. State officials also reported that SNFs have resisted implementation and do not want to use the system unless it is required for certification. Although an official in the prior administration was perhaps considering requiring system use for certification, those we interviewed did not appear to be considering that option.

AFC/GAFC determination streamlining. Massachusetts also streamlined its adult AFC/GAFC determination process to allow providers and ASAPs to electronically submit documentation and requests for AFC/GAFC eligibility determinations. Before implementing this program, providers and ASAPs had to transmit all determination requests and documents by mail or fax, and eligibility determinations sometimes took up to 6 weeks. The goal of this initiative, according to state officials, is to speed up the current determination process, thereby providing older adults and disabled individuals with AFC/GAFC services sooner, which may in turn prolong their ability to live in community-based settings and reduce institutionalized care. State officials reported that in April 2015, the state expanded participation from a pilot of eight providers to 116 providers statewide, representing the top 50 percent of AFC/GAFC providers.

The state reported positive experiences from the pilot—one ASAP reduced its determination timeframe from a minimum of 2 weeks to a maximum of 2 weeks. One ASAP with 6 months of implementation experience gave the initiative mixed reviews as part of a focus group conversation. This ASAP said that having all the information—application, documentation, and approval letter—in one place is efficient and simplifies the planning and approval process by reducing communications and the risk of losing information in transition. However, the ASAP said the approval process is not appreciably faster because of communication challenges. The state said the problem is systemic, because one ASAP processes applications in each area, and there are not enough nurses to make timely determinations at all

times. State officials also said the provider learning curve in entering information and documents into the new database has been steep and they hope this process will become faster as providers become more acclimated.

HIway/technical assistance to behavioral health providers

Massachusetts' SIM Initiative operational plan proposed to provide technical assistance to behavioral health providers to support adoption of EHRs and participation in the Massachusetts HIE, known as the HIway. State officials said the state's interest arises from the disparate experience of smaller, behavioral health and other providers that have not adopted EHRs and in some cases are ineligible for other incentives. Although the state originally planned to provide direct technical assistance to providers, officials said they realized their capacity to reach these providers was limited and instead chose to leverage existing connections to providers through the Massachusetts e-Health Initiative (MeHI)—an independent state agency that awards grants and provides technical assistance to support EHR adoption. As a result, the state opted to support a new round of eQIP grants to behavioral health and long-term and post-acute care (LTPAC) providers, mostly SNFs.

MeHI contributed \$20 million and the SIM Initiative cooperative agreement contributed \$3 million to implement the eQIP grants to behavioral health and LTPAC providers. State officials reported that MeHI is administering the grant approval process and awarding initial grants to providers that propose a range of technical assistance needs and supports to allow them to implement EHR. Providers that reach the fourth milestone of EHR adoption are then eligible to submit proposals for an additional grant, supported with SIM Initiative funds, that will enable HIway connection and sustained use of 90 days or more. The first round of \$1 million in grants to behavioral health providers was awarded in April 2015 to fund 18 grantees; grants ranged from \$33,000 to \$82,000 over 2 years. LTPAC provider grants were solicited beginning in May 2015. State officials were not sure of the number or amount of the additional HIway grants, which will depend on how many providers reached the fourth milestone. Officials hoped all the grants would be completed and that at least 25 percent of participating organizations will have implemented EHR and be using it by June 2015.

One behavioral health grantee we interviewed said the grant is allowing them to create a new EHR system, so they can keep up with Diagnosis and Statistical Manual of Mental Disorders (DSM) changes more easily; they added that the adoption process would have taken much longer without support. They also said that EHR adoption will have a broader impact on the practice and improve their ability to treat patients more effectively, communicate with other providers, and manage medication and complex conditions.

APCD portal

Massachusetts proposed that SIM funding support creation of a provider-facing portal to the state's APCD, but the state confronted challenges to implementation and decided to put this

project on hold indefinitely. State officials said they initially used SIM funding to solicit feedback from providers about the information they most wanted from the APCD and how they might best use it, and then designed wireframes to respond to inputs from providers. However, when providers reviewed the wireframes and realized the data lag would be considerable, they were less interested in using the portal. As a result, the state decided to complete its current work on the portal and redirect funds to other health IT projects, including strengthening the state data collection and analytic systems capacities.

6.2.6 Workforce development

Providers reported that the PCPRI initiative, in conjunction with other state and federal payment reform efforts, is helping to fund the hiring of care managers, care coordinators, and community health workers in their practices. These new staff perform a variety of care coordination functions—such as helping patients navigate referrals, educating patients about their condition, conducting outreach, and completing various data collection and reporting tasks. Providers participating in focus groups reported that hiring care coordinators had a positive impact on patient care and quality. By relieving physicians from performing certain administrative responsibilities, these additional staff allowed the physicians to focus more on providing clinical care to patients and to work “at the top of their licenses.”

Stakeholders also reported that these initiatives are increasing primary care provider awareness about new areas of care and improving their capacity to provide treatment. State officials and consumer advocacy organizations noted that MCPAP is enhancing pediatric primary care providers’ awareness of behavioral health issues and their ability to confidently treat patients with these conditions. These stakeholders also noted that Massachusetts has a shortage of child psychiatrists and that MCPAP helps facilitate access to these physicians in a cost-effective, efficient manner.

State officials and ASAPs participating in focus groups suggested that the Community Links portal is also increasing primary care providers’ scope of practice by enabling them to be aware of and connect with third-party service providers—including in-home caregivers, nutrition services, and visiting nurses. One state official described the portal as “giving the physician a window into care that they never had before,” and suggested it is a small but important “baby step that is allowing these communities to get to know each other.” However, provider participation is currently limited, amounting to 13 health care organizations with 42 individual providers covering more than 1,000 patients living in the community. This represents less than one percent of the state’s target population of older adult Medicaid beneficiaries living in the community.

6.2.7 Population health

State officials identified two key population health objectives for the Massachusetts SIM Initiative: (1) improve management of chronic conditions, including diabetes, high blood pressure, asthma, and mental illness; and (2) reduce rates of the most prevalent and preventable health conditions. The state's chief strategy for accomplishing these aims is its e-Referral initiative. By linking health care providers to community resources, the state hopes to encourage greater use of preventive care and reduce disease prevalence statewide, by increasing the adoption of healthy behaviors.

Initial impressions about the project's current significance and potential impact on population health were generally positive. Participating organizations noted that e-Referral enables them to target more individuals in the community who need prevention and wellness services (e.g., weight management classes for individuals with diabetes and falls prevention workshops for older adults). Interviewees appreciated the opportunity to have more direct connections with providers and to reach new communities through referral networks. Another site mentioned that e-Referral is helping them reach individuals they otherwise were not targeting, specifically non-English speaking populations. Overall, participating community organizations reported that e-Referral helped improve communication and build connections with primary care providers. Health care providers mentioned that the opportunity to better track and monitor patients' progress after they leave the doctor's office is an important advantage of e-Referral. Eventually the state plans to evaluate the impact of e-Referral on select population health measure—including tobacco use assessment, tobacco cessation intervention, hemoglobin A1c control, and high blood pressure control.

Under its SIM Initiative, as noted, the Department of Public Health is expanding an electronic disease surveillance system known as MDPHnet. MDPHnet allows health care providers throughout Massachusetts to share certain types of electronic data (diagnosis information, lab results, medications, and demographic information) with the Department of Public Health, to improve disease monitoring and surveillance. Currently, three large provider organizations with multiple health care sites are providing access to query their EHR data using MDPHnet. According to stakeholders, the MDPHnet system is more timely and less costly to administer than the Behavioral Risk Factor Surveillance System (BRFSS), because it relies on data already routinely collected by providers and stored in EHRs. In Year 2, Massachusetts is using SIM Initiative funds to expand this surveillance tool to health care sites in the central and western parts of the state. By supporting these data collection efforts, Massachusetts hopes to build public health capacity for monitoring and tracking emerging chronic diseases in future years.

6.2.8 Stakeholder engagement

Massachusetts has used a variety of methods to engage providers, consumers, and payers affected by the SIM Initiative. Although no clear constituency under SIM exists, state officials have made active attempts through public meetings and open-door methods to engage stakeholders. The state's primary means of keeping stakeholders apprised of SIM-funded activities are its quarterly stakeholder meetings. Otherwise, most of the state's engagement efforts focus on gathering inputs from providers and payers on needs and interests related to payment reforms or implementation of specific interventions.

Primary care, behavioral health, and LTSS providers in Massachusetts are participating in implementation of SIM interventions and reported involvement in stakeholder engagement activities by the state. The state also sought and received substantial provider inputs into goals and design for the APCD provider portal, as noted, and decided to defer additional work in that area based on input from providers that they might not use the portal as designed.

Payers have been less directly engaged, which may have contributed to low participation rates among payers, according to one state official. Massachusetts began revising its SIM Initiative payment reform strategies in early 2015 to increase participation, including a new phase of stakeholder engagement to gain feedback on specific proposals, especially ACO design. The state will also work with payers, particularly MassHealth MCOs, to increase alignment and boost payer participation.

At the time of the site visit, stakeholders were generally focused on implementation issues rather than stakeholder engagement activities such as meetings and work groups; several stakeholders reported missing key meetings. One SIM Initiative intervention with high stakeholder engagement in 2014 was the design of a MassHealth ACO model. Stakeholders responded to an RFI, as noted, and participated in an ACO Technical Advisory Group. During the site visit, providers and some other stakeholders expressed concern about the lack of alignment among state agencies on ACO policy.

Several stakeholders said that SIM Initiative public stakeholder meetings seem to focus on updates on various projects, rather than engaging stakeholders to discuss strategies. Multiple stakeholders noted that the various SIM Initiative interventions are not clearly branded (as part of the SIM Initiative), so people may not associate them with SIM. A community stakeholder said the Initiative does not have steering committees to engage stakeholders. However, some stakeholders mentioned separate, frequent meetings with the state and an open-door policy for specific issues that arise.

State officials indicated that they would take a new approach to engaging stakeholders in their efforts to redesign and expand SIM Initiative payment reforms, modeled on successful feedback from the state's OneCare Financial Alignment Initiative demonstration, which received

praise and raised stakeholders' expectations of transparency. The state held a public stakeholder meeting to launch that process in early April 2015. The state also intends to convene payers through an ongoing multi-payer forum.

6.3 Quantitative Outcomes

This section presents information on six types of outcomes for the Massachusetts SIM Initiative: (1) provider and payer participation, (2) populations reached, (3) care coordination, (4) quality of care, (5) health care utilization, and (6) health expenditures. Data on the first two sets of measures come from various state sources. The latter four sets of measures are derived from commercial (MarketScan) and Medicare data. Medicaid claims data were not available for Massachusetts.

6.3.1 Populations reached

Massachusetts aims to shift its MassHealth providers from traditional payment to APMs based on value rather than volume, covering at least 80 percent of MassHealth lives under APMs. **To date, total enrollment in the Massachusetts PCPRI reached 77,527 Medicaid beneficiaries in January 2015 (Table 6-2).** According to the March 2015 supplement to the Current Population Survey, in 2014, MassHealth had a total enrollment of 1,570,100 members, of whom 380,189 were part of the PCC plan.³⁵ **The PCPRI, therefore, covered 20 percent of the eligible PCC members and only 5 percent of the overall MassHealth population.** Massachusetts' PCPRI increased enrollment by 12 percent between January 2014 and January 2015. Enrollment in the program is now closed.

Table 6-2. Population reached in the Massachusetts innovation models by payer

Payer population	Primary care payment reform initiative
Medicaid beneficiaries	77,527
Commercially insured	—
Medicare beneficiaries	—
State employees	—

— = not applicable.

Note: PCPRI enrollment was 69,121 on January 1, 2014 and increased 12 percent to 77,527 on January 1, 2015.

Source: Phone call with Ashlie Brown on February 13, 2015. Primary care payment reform initiative enrollment is current as of January 1, 2015.

³⁵ Center for Health Law and Economics, University of Massachusetts Medical School. July 2015. MassHealth: The basics—facts and trends. Available at: http://bluecrossfoundation.org/sites/default/files/download/publication/MassHealthBasics_Chartpack_Update_v4%20FINAL_12%208%2015update.pdf

6.3.2 Provider and payer participation

To date, there are 30 PCC practices participating in the PCPRI initiative (Table 6-3). This is a small percentage of the 1,040 PCC groups participating in MassHealth.³⁶ However, some of the PCPRI-participating PCC practices represent large numbers of patients. In addition, many payers in Massachusetts other than PCPRI are also promoting APMs, such as the BCBS AQC.

Table 6-3. Physicians, practices, and payers participating in the Massachusetts innovation models

Participants	Primary care payment reform initiative
Physicians	Not reported
Practices	30
Payers	Medicaid

Note: The payer for the primary care payment reform initiative is MassHealth's PCC plan. There are 30 participating practices, representing 47 sites.
Source: Annual site visit on March 30, 2015.

6.3.3 Care coordination

A key aim of health care transformation in Massachusetts is a shift from encounter-based care delivery to care coordination. Care coordination requires a team-based approach in which all participants in the patient's care—including patient, caregiver, primary care provider, specialists, and community-based service providers—work together to meet the patient's care needs and preferences, providing access to comprehensive, quality, and safe care. The PCPRI implemented an additional payment distributed to participating practices to increase care coordination and behavioral health integration. However, no Medicaid claims data are available at this time, so we cannot examine changes in care coordination among PCPRI participants. We will be unlikely to observe any spillover effect in the Medicare or commercial populations, because the predominant participating organizations in PCPRI are community health centers, which primarily serve Medicaid beneficiaries.

Most of the care coordination measures require more than one quarter of data. Thus, we present these measures on an annual, instead of quarterly, basis. Furthermore, we do not yet have a full year of data for the test period in any of the payer databases. Therefore, we report care coordination estimates only for the baseline period. *Appendix Tables E-3-1 through E-3-3* provide, for Massachusetts and its comparison group, baseline care coordination measures for the commercially insured by age category and Medicare beneficiaries by enrollment status, over the

³⁶ Personal e-mail correspondence with Ann Hwang (EOHHS), February 28, 2014.

baseline period (fourth quarter 2010 through fourth quarter 2013). We look for differences in the level and trends in these measures.

The commercially insured in Massachusetts and the comparison group had similar trends in follow-up visits within 14 days of an inpatient admission, mental health inpatient admissions with a follow up visit within 7 and 30 days, and medication management (asthma and depression). Relative to the comparison group, the rate of primary care visits increased in Massachusetts but the rate of specialist visits decreased.

Medicare beneficiaries in Massachusetts and the comparison group had similar trends in the rates of primary care and specialist visits and inpatient admissions with follow up visits within 14 days of discharge. The percentages of mental health admissions with follow up visits within 7 and 30 days was higher for Medicare beneficiaries in Massachusetts than the comparison group.

6.3.4 Quality of care

One of the overarching aims of the SIM Initiative is to transform the health care system to deliver better quality care. Quality of care measures presented in this section provide information on the types of quality of care that APMs are designed to improve. Medicaid claims data are not available at this time so we cannot examine changes in quality of care among PCPRI participants. It is unlikely that we will observe a spillover effect in the Medicare or commercial populations because the predominant participating organizations in PCPRI are community health centers and they primarily serve Medicaid beneficiaries. However, the commercial and Medicare populations may show improved quality of care due to other initiatives in the state—such as the BCBS AQC, Medicare shared savings program (SSP) ACOs, and pioneer ACOs.

Most of the quality of care measures require more than one quarter of data. Thus, we present these measures on an annual, instead of quarterly, basis. Furthermore, we do not yet have a full year of data for the test period in any of the payer databases. Therefore, we report quality-of-care estimates only for the baseline period. *Appendix Tables E-3-4 through E-3-8* provide, for Massachusetts and its comparison group, baseline quality-of-care measures for the commercially insured by age and Medicare beneficiaries by enrollment status. Similar to the care coordination measures, we look for differences in the levels and trends in the measures.

Among the commercially insured, overall Preventive Quality Indicator (PQI) composite hospitalization and acute PQI composite rates declined in both Massachusetts and the comparison group. However, the chronic PQI composite measure increased in the comparison state while declining in Massachusetts. There were similar trends and levels in the percentage of commercially insured receiving influenza immunization. The levels of mammogram screening, alcohol and drug dependence screening and treatment initiation, and well child visits were higher in Massachusetts than the comparison group. The trends were similar in the two groups for all

measures except the mammogram screening rate, which declined in Massachusetts and increased in comparison group.

Among Medicare patients, the PQI measures (overall, acute, composite), showed similar trends over the baseline period. The percentage of eligible Medicare patients with influenza immunization, tobacco screening, and mammography screening increased or remained stable for both Massachusetts and the comparison group.

6.3.5 Health care utilization

As incentives and other mechanisms are implemented with the support of the Massachusetts SIM Initiative to improve the efficiency and quality of care, strengthen primary care, and promote healthy behaviors, comparison with other states may show utilization rates for health care services are impacted. In particular, we may expect to see decreases in hospital admission rates, ER visits, and 30-day hospital readmissions. Medicaid claims data are not available at this time so we cannot examine changes in utilization among PCPRI participants. Furthermore, it is unlikely that we will observe any spillover effect in the Medicare or commercial populations, because the predominant participating organizations in PCPRI are community health centers and they primarily serve Medicaid beneficiaries. However, the commercial and Medicare populations may show decreases in such measures due to other initiatives in the state such as the BCBS AQC, Medicare shared savings program (SSP) ACOs, and pioneer ACOs.

Figures 6-1 through 6-6 provide quarterly averages of core utilization measures for the commercially insured and Medicare beneficiaries in Massachusetts and its comparison group. We report the 3-year baseline period (fourth quarter 2010 through fourth quarter 2013), plus the first two quarters of the test period (first and second quarters 2014). **Appendix Tables E-3-9 and E-3-10** provide quarterly averages by year and age group for the commercially insured and year and dual Medicaid enrollment status for Medicare beneficiaries, respectively. We present the results of the difference-in-differences (DD) regression analyses of the utilization measures in **Tables 6-4 and 6-5**.

Utilization summary

Overall, the commercially insured in Massachusetts had a significantly greater decline in all-cause ER visits in the first two quarters of the test period relative to the control. There were no significant differences between Medicare beneficiaries in Massachusetts and the comparison states in the test period.

Commercially insured

Health care utilization rates were similar among the commercially insured in Massachusetts and the comparison group during the baseline period. Hospitalizations decreased at a slightly faster rate in the comparison group than in Massachusetts (**Figure 6-1**), whereas ER visits declined at comparable rates in both groups (**Figures 6-2 and 6-11**). Readmission rates

among the commercially insured remained relatively stable for Massachusetts but were volatile for the comparison group (**Figure 6-3**). Nonetheless, the readmission rates for the two groups became more similar towards the end of the baseline and early test period. Again, we do not expect the results for the commercially insured to be directly attributable to the SIM Initiative, as there were numerous other initiatives in the commercial market at the same time and spillover effects from the Medicaid PCPRI are not likely.

Figure 6-1. All-cause acute inpatient admissions (per 1,000 covered persons), MarketScan commercially insured, Massachusetts and comparison group

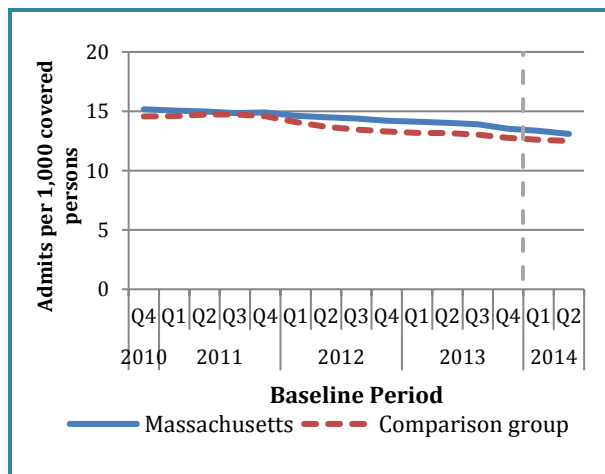


Figure 6-2. Emergency room visits that did not lead to hospitalization (per 1,000 covered persons), MarketScan commercially insured, Massachusetts and comparison group

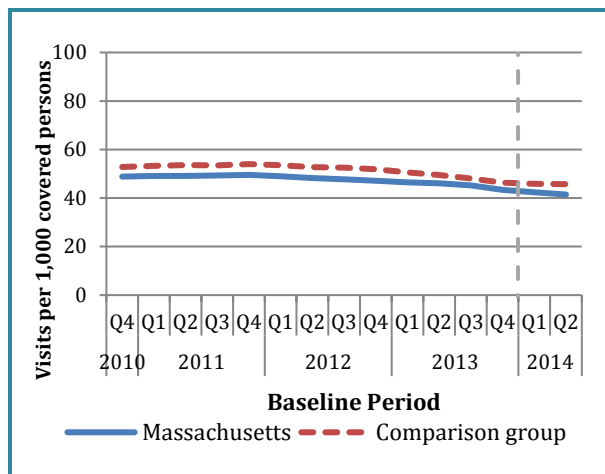
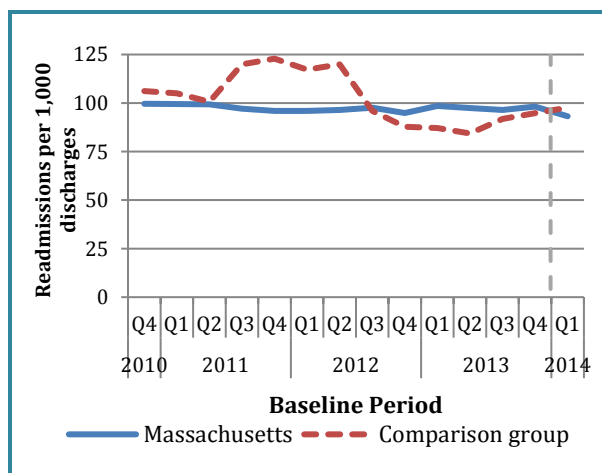


Figure 6-3. 30-day readmissions (per 1,000 discharges), MarketScan commercially insured, Massachusetts and comparison group



The regression adjusted DD results show significantly greater declines in the rate of ER visits among the commercially insured in Massachusetts relative to the comparison group in the first two quarters of the test period (*Table 6-4*). In aggregate, this results in 1,419 fewer all-cause ER visits among the Massachusetts commercially insured than the comparison group in the test period, holding all else equal. This finding is suggestive of a positive impact of the SIM Initiative on the commercially insured population. However, it is important to note that the concurrent commercial initiatives in the state likely contributed to the decrease in ER visits. There were no significant differences in the rates of change in the acute hospitalization rate or 30-day hospital readmissions rate in the first two quarters of the test period.

Table 6-4. Difference in the pre-post change in expected utilization per 1,000 members, MarketScan commercially insured, Massachusetts and comparison group, first two quarters of SIM implementation (January 2014 through June 2014)

Outcome	Regression adjusted difference in differences	95% Confidence interval		p-value
		Lower limit	Upper limit	
Aggregated change in utilization ¹				
All-cause acute inpatient admissions	38	-649	725	
Emergency room visits that did not lead to hospitalization	-1,419	-2,765	-73	
30-day hospital readmissions	-2,354	-26,885	22,177	
Change in utilization per 1,000 members ²				
All-cause acute inpatient admissions	0.03	-0.55	0.61	0.914
Emergency room visits that did not lead to hospitalization	-1.19	-2.32	-0.06	0.039
30-day hospital readmissions per 1,000 discharges	-1.98	-22.59	18.63	0.851

Note: The total number of person-quarters for Test state members in the post period (Q1 2014–Q2 2014) is 1,190,303. Bold estimates indicate statistical significance at the $p < 0.05$ level. A linear probability model was used to obtain estimates of the difference in probability of use. A *negative* value corresponds to a *greater decrease* or a *smaller increase* in probability of utilization in the Test state relative to the comparison group. A *positive* value corresponds to a *greater increase* or a *smaller decrease* in probability of utilization in the Test state relative to the comparison group.

¹The quarterly per member estimates are multiplied by the total number of person-quarters to get the aggregated change in utilization.

²The per-member estimates are multiplied by 1,000 to obtain the change in the rate of use per 1,000 persons.

Medicare

Health care utilization rates were similar for Medicare beneficiaries in Massachusetts and the comparison group during the baseline period (**Figures 6-4**). However, the rate of hospitalizations decreased at a faster rate in Massachusetts than the comparison group. ER visits were unchanged from fourth quarter 2010 to second quarter 2014, whereas readmissions rates declined during this period (**Figures 6-5** and **6-6**).

There were no statistically significant differences in the rates of change in all-cause acute inpatient admissions, all-cause ER visits, or 30-day hospital readmissions in the first two quarters of the SIM test period for Medicare beneficiaries in Massachusetts relative to the comparison group (**Table 6-5**).

Figure 6-4. All-cause acute inpatient admissions per 1,000 Medicare beneficiaries, Massachusetts and comparison group

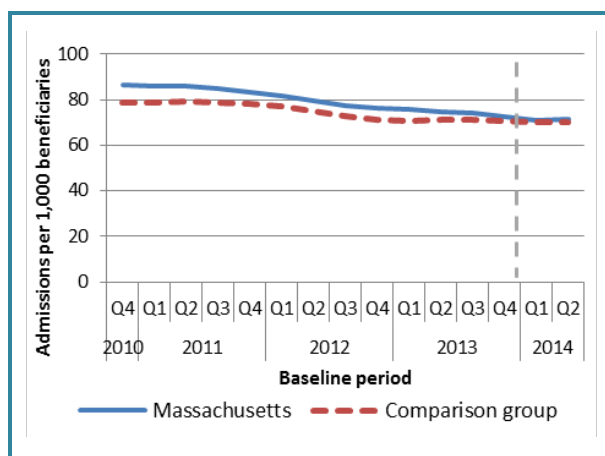


Figure 6-5. Emergency room visits that did not lead to hospitalization (per 1,000 Medicare beneficiaries), Massachusetts and comparison group

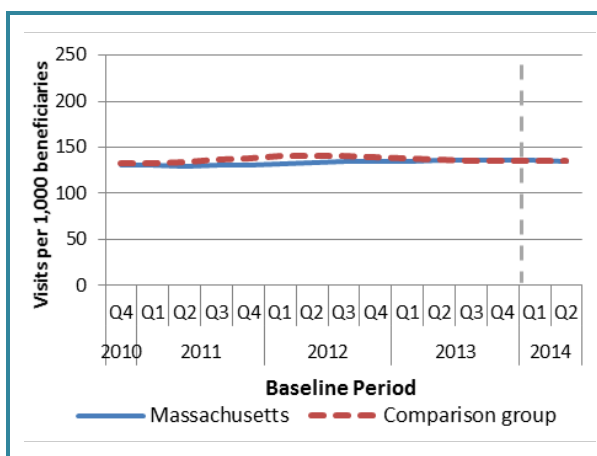


Figure 6-6. 30-day readmissions (per 1,000 discharges) for Medicare beneficiaries, Massachusetts and comparison group

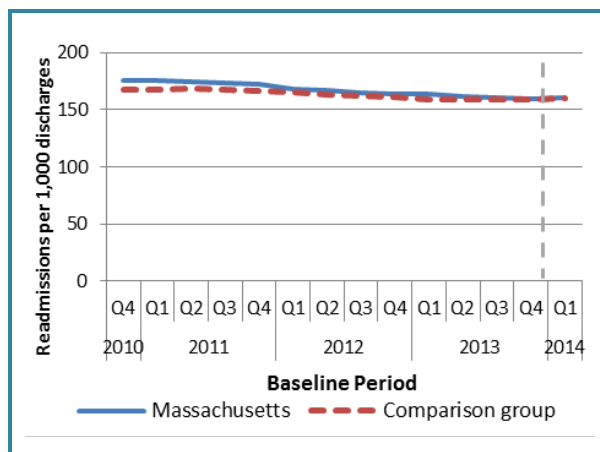


Table 6-5. Difference in the pre-post change in expected utilization per 1,000 members, Medicare beneficiaries, Massachusetts and comparison group, first two quarters of SIM implementation (January 2014 through June 2014)

Outcome	Regression adjusted difference in differences	95% Confidence interval		p-value
		Lower limit	Upper limit	
Aggregated change in utilization ¹				
All-cause acute inpatient admissions	-82	-907	660	
Emergency room visits that did not lead to hospitalization	-330	-1402	660	
30-day hospital readmissions	1,319	-6,101	8,657	
Change in utilization per 1,000 members ²				
All-cause acute inpatient admissions	-0.10	-1.10	0.80	0.7865
Emergency room visits that did not lead to hospitalization	-0.40	-1.70	0.80	0.4835
30-day hospital readmissions per 1,000 discharges	1.60	-7.40	10.50	0.7292

Note: The total number of person-quarters for Test state members in the post period (Q1 2014–Q2 2014) is 824,434. Bold estimates indicate statistical significance at the $p < 0.05$ level. A linear probability model was used to obtain estimates of the difference in probability of use. A *negative* value corresponds to a *greater decrease* or a *smaller increase* in probability of utilization in the Test state relative to the comparison group. A *positive* value corresponds to a *greater increase* or a *smaller decrease* in probability of utilization in the Test state relative to the comparison group.

¹ The quarterly per member estimates are multiplied by the total number of person-quarters to get the aggregated change in utilization.

² The per-member estimates are multiplied by 1,000 to obtain the change in the rate of use per 1,000 persons.

This analysis has a number of study limitations that should be considered when reviewing the results. For the commercial and Medicare populations, it is unlikely that the dataset used for these analyses contained individuals directly impacted by Massachusetts’s SIM Initiative. Therefore, we are only able to speak about potential spillover effects of the interventions to these sets of patients. These analyses are examining statewide impacts, by payer, of the Massachusetts SIM Initiative and therefore the results are most likely: (1) impacted by other statewide efforts occurring simultaneously and (2) diluted by the inclusion of individuals not directly impacted or attributed to a specific intervention. Additionally, even though the rigorous study design used a comparison group and adjusts for a range of covariates, the results could still be biased by the strength of the match of individuals in Massachusetts to individuals in the comparison states, as well as unmeasured factors we were not able to account for in our methods.

6.3.6 Health care expenditures

Another objective of the Massachusetts SIM Initiative is to reduce overall health care costs. The main focus is on Medicaid providers participating in the PCPRI. However, Medicaid claims data are not available at this time so we cannot examine changes in expenditures among PCPRI participants. It is unlikely that we will observe a spillover effect on core expenditure measures in the Medicare or commercial populations, because the predominant participating organizations in PCPRI are community health centers and they primarily serve Medicaid beneficiaries. However, the commercial and Medicare populations may show such decreases due to other initiatives in the state, such as the BCBS AQC, Medicare shared savings program (SSP) ACOs, and pioneer ACOs.

Figures 6-7 through 6-11 provide, for Massachusetts and its comparison group, quarterly average PMPM payments for the commercially insured and Medicare beneficiaries. We report the complete 3-year baseline period (fourth quarter 2010 through fourth quarter 2014) plus the first two quarters of the test period (first and second quarters 2014). **Tables E-3-11 and E-3-12** provide the average PMPM payments by year and age category for the commercially insured and by year and dual Medicaid enrollment status for Medicare beneficiaries, respectively. We present the results of the DD analyses of PMPM payments in **Tables 6-6 and 6-7** and **Figures 6-12 through 6-15**.

Expenditure summary

Overall, there were statistically significant increases in other facility, professional, and outpatient pharmacy expenditures among the commercially insured in Massachusetts relative to the comparison group during the early test period. However, there was no significant increase in total expenditures, which is likely due to the nonsignificant decreases in inpatient expenditures. However, the first two quarters of the test period is too early to see spillover effects from SIM activities and therefore they are most likely related to other health care reforms in the state, such as the BCBC AQC, Medicare shared savings program (SSP) ACOs, and pioneer ACO.

There were no significant changes in expenditures among Medicare beneficiaries in Massachusetts relative to the comparison group. The lack of significant results is not surprising given the early implementation period examined in these analyses, during which we would not expect to see large impacts on utilization in a statewide examination of this population.

Commercially insured

Total, inpatient, other facility, and pharmacy expenditures for the commercially insured in Massachusetts were slightly lower than the comparison group during the baseline period (**Figures 6-7, 6-8, 6-9, and 6-11**). Professional expenditures were higher in Massachusetts in the later years of the baseline period and early test quarters (see **Figure 6-10**). Although there were slight fluctuations, total, inpatient, and other facility expenditures were essentially unchanged or increased slightly throughout the baseline and early test period for both groups. Outpatient

pharmacy expenditures increased, especially in the later periods, for both groups. Overall, it appears that the Massachusetts commercially insured had lower overall utilization rates than the comparison group. This may be due in part to the strong presence of cost reductions initiatives in the state.

Figure 6-7. Average total PMPM payment, MarketScan commercially insured, Massachusetts and comparison group

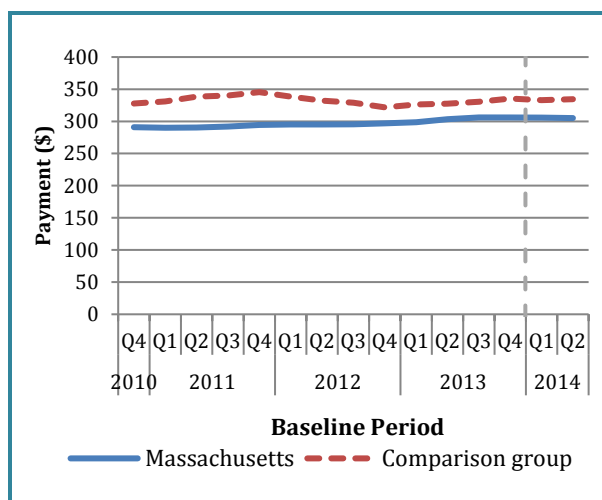


Figure 6-8. Average inpatient facility PMPM payment, MarketScan commercially insured, Massachusetts and comparison group

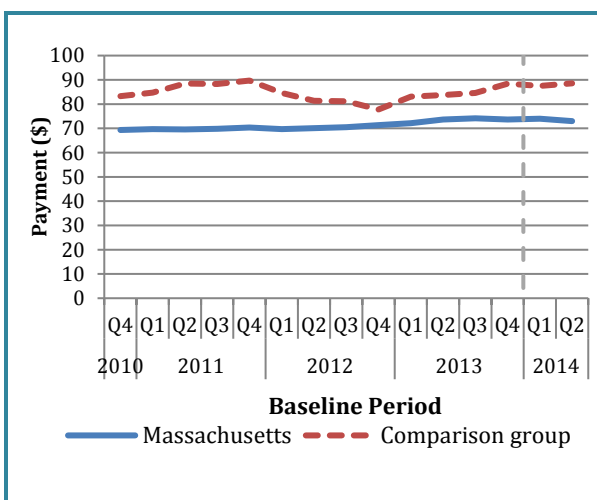


Figure 6-9. Average other facility PMPM payment, MarketScan commercially insured, Massachusetts and comparison group

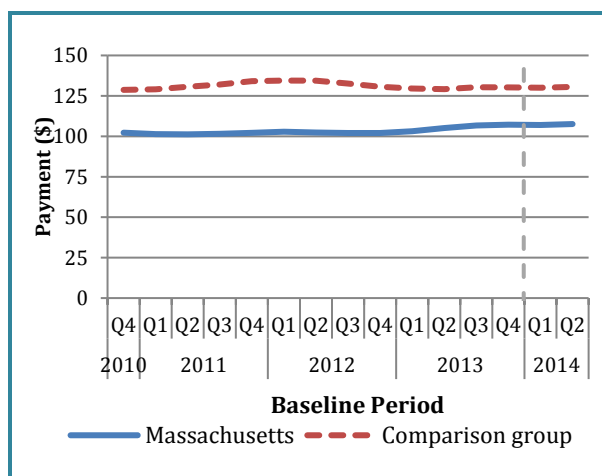


Figure 6-10. Average professional PMPM payment, MarketScan commercially insured, Massachusetts and comparison group

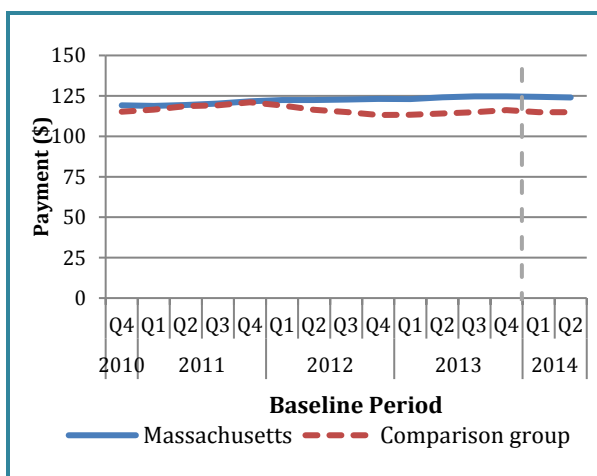
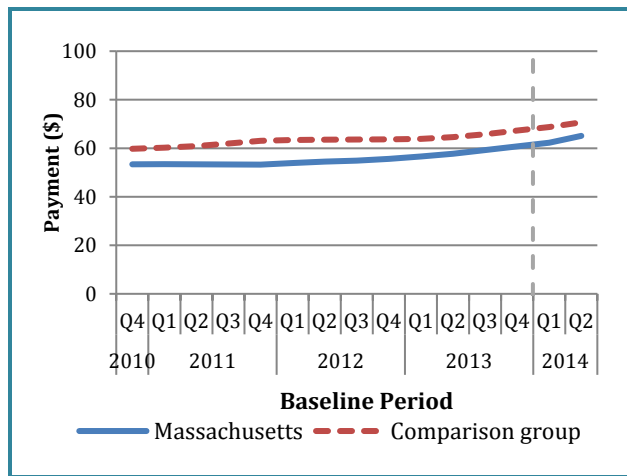


Figure 6-11. Average outpatient pharmacy PMPM payment, MarketScan commercially insured, Massachusetts and comparison group



The regression-adjusted DD results show that relative to the 16 baseline quarters, average total PMPM payments for the commercially insured in Massachusetts were not statistically significantly different in the first two test quarters relative to the comparison group (**Table 6-6**). However, there were significant increases in other facility, professional, and outpatient pharmacy expenditures. There was also a decrease in inpatient expenditures, but it was not statistically significant. These findings are consistent with the early stages of new delivery system models that put greater emphasis on primary care. Although qualitative results from site visits, interviews, focus groups, and document review indicate that health care transformation activities were occurring during this window of time, we would not expect to see a statewide spillover impact on commercial health care expenditures this quickly after the initiative went live in the state.

Table 6-6. OLS adjusted difference in the pre-post change in PMPM payments, MarketScan commercially insured, Massachusetts and comparison group, first two quarters of SIM implementation (January 2014 through June 2014)

Outcome	Regression adjusted difference in differences	95% Confidence interval		p-value
		Lower limit	Upper limit	
Aggregated change in payments ¹				
Total (in millions)	\$56.83	−\$43.41	\$157.07	
Inpatient facility (in millions)	−\$27.55	−\$105.78	\$50.68	
Other facility (in millions)	\$55.68	\$13.44	\$97.92	
Professional (in millions)	\$28.98	\$9.61	\$48.35	
Outpatient pharmacy (in millions)	\$33.78	\$13.84	\$53.71	
Change in PMPM payments				
Total	\$9.19	−\$7.02	\$25.40	0.266
Inpatient facility	−\$4.46	−\$17.11	\$8.20	0.490
Other facility	\$9.01	\$2.17	\$15.84	0.010
Professional	\$4.69	\$1.55	\$7.82	0.003
Outpatient pharmacy	\$5.46	\$2.24	\$8.69	0.001

OLS = ordinary least squares; PMPM = per member per month.

Note: The total number of person-quarters for Test state members in the post period (Q1 2014–Q2 2014) is 1,030,588. Bold estimates indicate statistical significance at the $p < 0.05$ level. A *negative* value corresponds to a *greater decrease* or a *smaller increase* in payments in the Test state relative to the comparison group. A *positive* value corresponds to a *greater increase* or a *smaller decrease* in payments in the Test state relative to the comparison group.

¹The PMPM estimates are multiplied by 6 months*1,030,588 person-quarters to obtain the change in total aggregate expenditures for the post period.

To assist policy makers in understanding the future prospect of successful results for the Massachusetts SIM Initiative, we convert the DD results for change in total payments into probability estimates and provide graphical representations of the estimated quarterly and program to date effects, as well as the precision of these estimates. Quarterly and cumulative spending estimates were higher for Massachusetts than the comparison group in the first two test quarters (**Figures 6-12** and **6-14**), but the differences were not statistically significant. These results are consistent with the early stages of new delivery system models (**Figures 6-13** and **6-15**).

Figure 6-12. Quarterly effects on total spending, MarketScan commercially insured, Massachusetts, first quarter 2014 through second quarter 2014

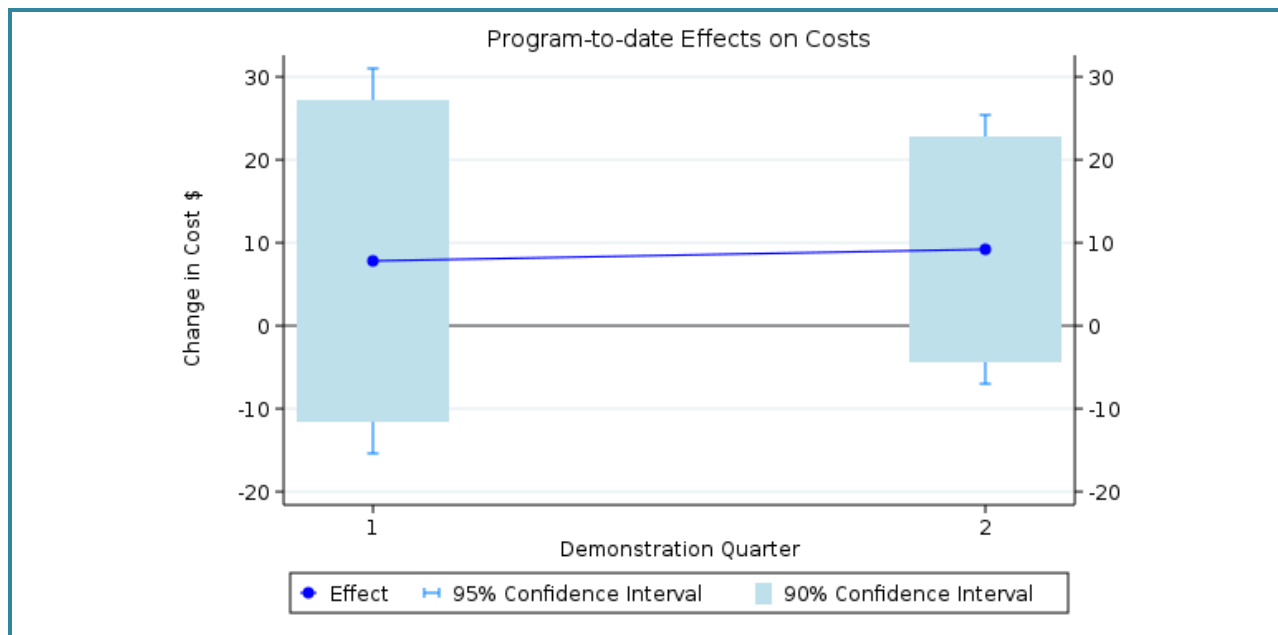


Figure 6-13. Quarterly strength of evidence on total spending, MarketScan commercially insured, Massachusetts, first quarter 2014 through second quarter 2014

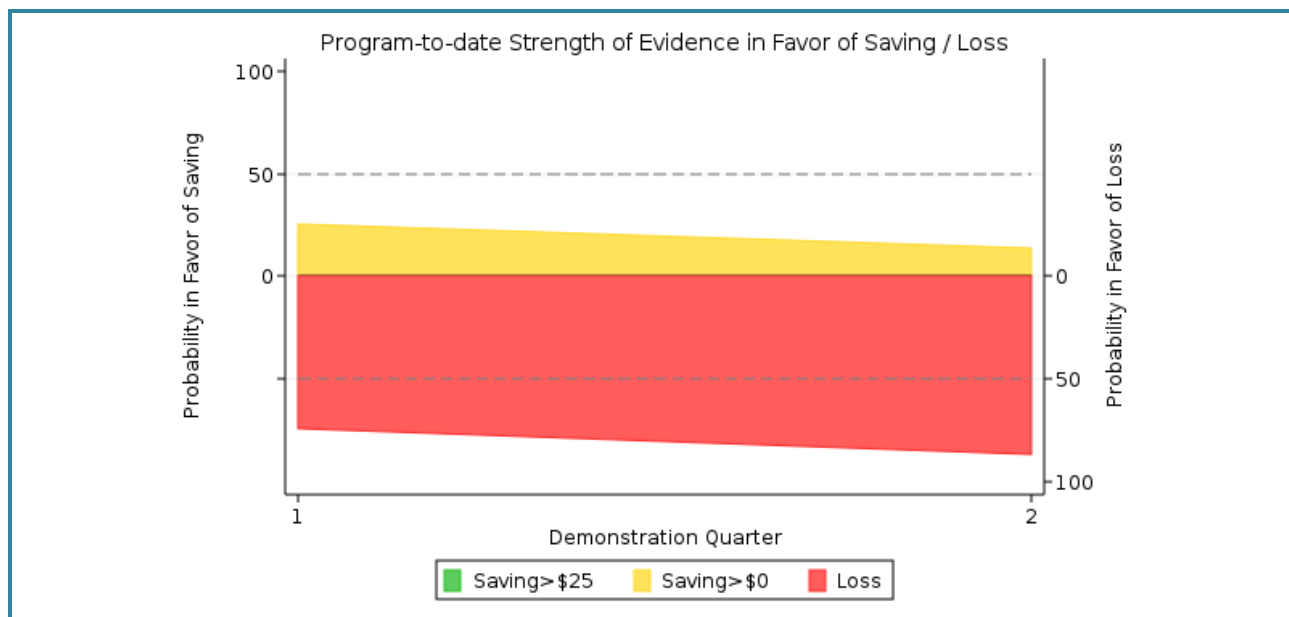


Figure 6-14. Cumulative effects on total spending, MarketScan commercially insured, Massachusetts, first quarter 2014 through second quarter 2014

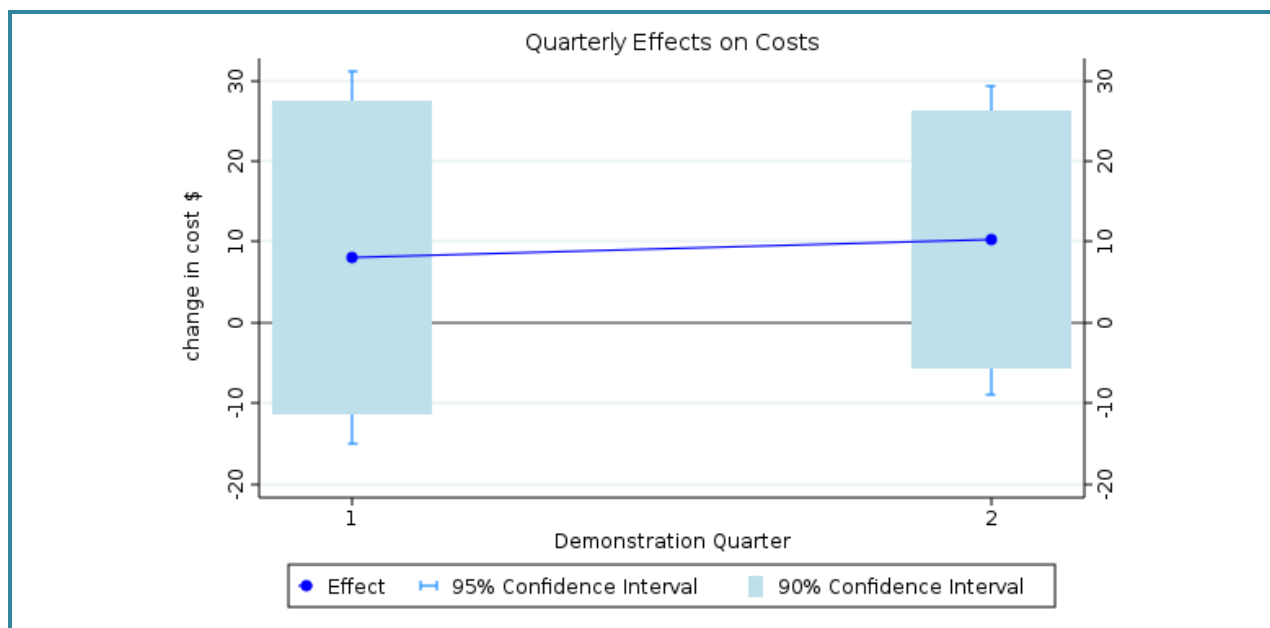
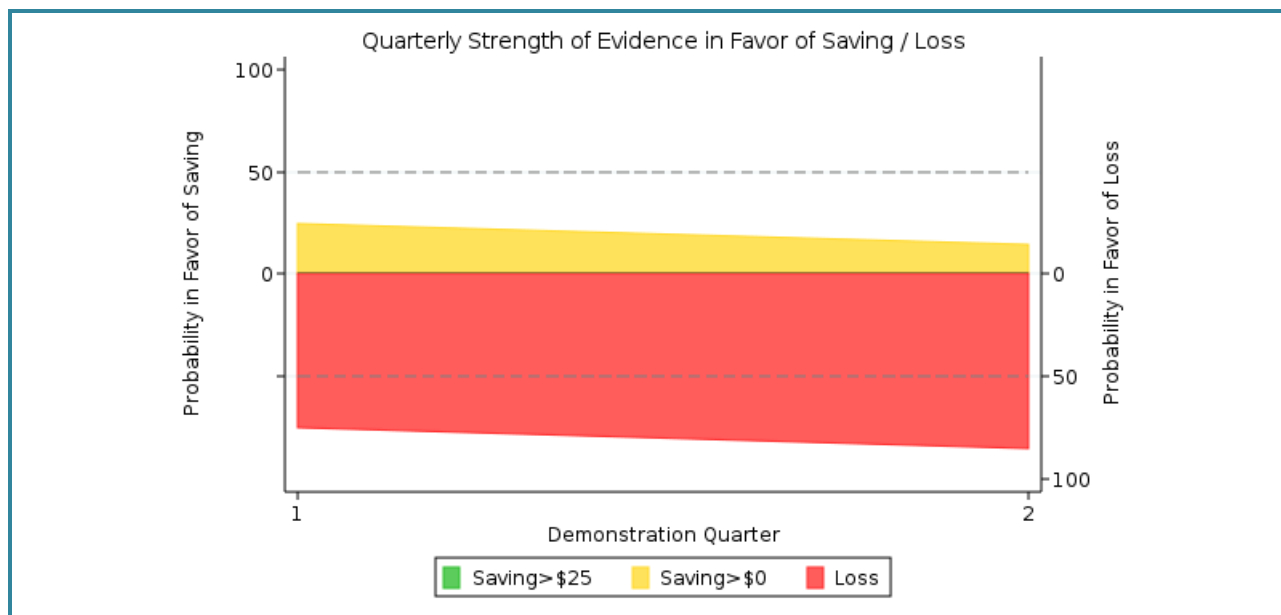


Figure 6-15. Cumulative strength of evidence on total spending, MarketScan commercially insured, Massachusetts, first quarter 2014 through second quarter 2014



Medicare

During the baseline and early test period, Medicare total, inpatient, and other facility expenditures were slightly higher in Massachusetts than the comparison group, whereas

professional expenditures were higher in the comparison group (**Figures 6-16 through 6-19**). It appears that room still exists for SIM activities to realize additional utilization improvements in the Medicare population as the models mature. Other facility payments increased slightly and professional payments declined slightly over the baseline and early test period for both Massachusetts and the comparison group. Trends were similar for Medicare-Medicaid and other Medicare beneficiaries in both Massachusetts and the comparison group (**Table E-3-12**).

Figure 6-16. Average total PMPM payment for Medicare beneficiaries, Massachusetts and comparison group

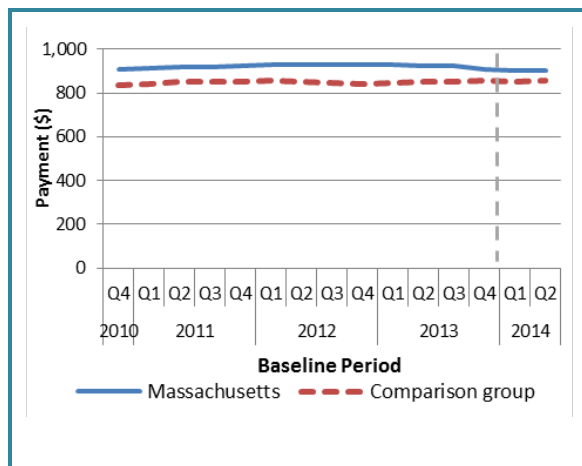


Figure 6-17. Average inpatient facility PMPM payment for Medicare beneficiaries, Massachusetts and comparison group

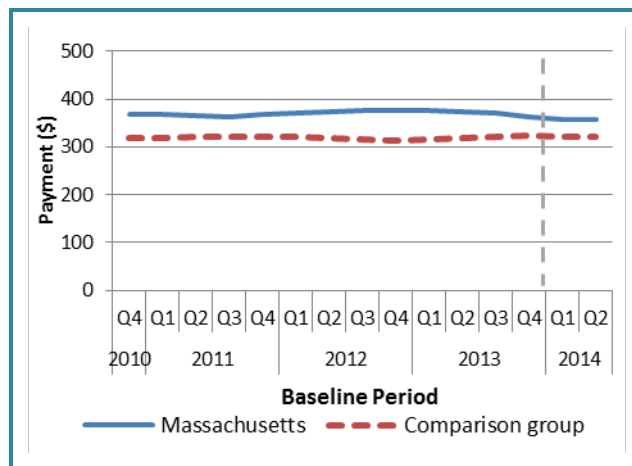


Figure 6-18. Average other facility PMPM payment for Medicare beneficiaries, Massachusetts and comparison group

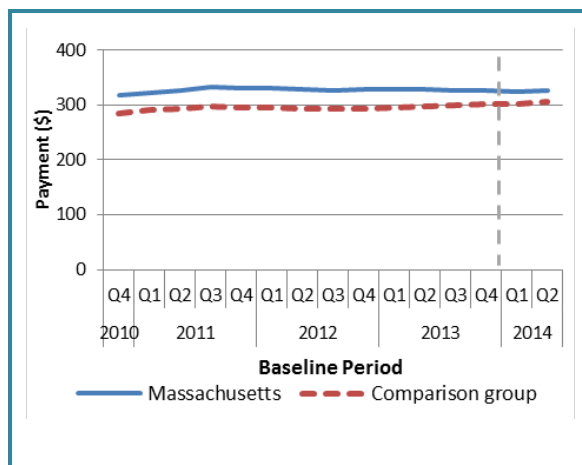
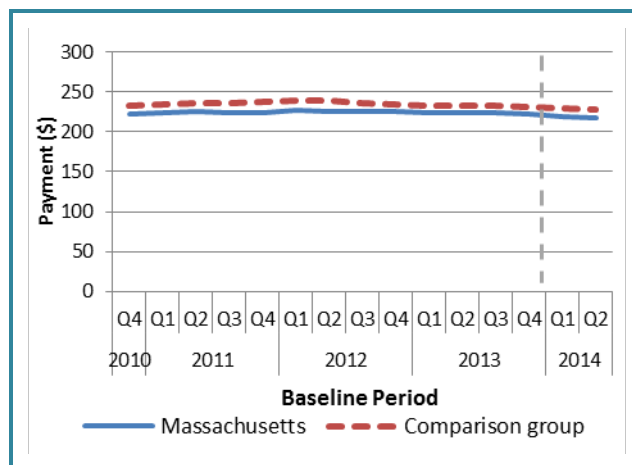


Figure 6-19. Average professional PMPM payment for Medicare beneficiaries, Massachusetts and comparison group



Regression adjusted DD results show no statistically significant differences in payments for Medicare beneficiaries in Massachusetts relative to the comparison group during the first two test quarters (**Table 6-7**). Although qualitative results from site visits, interviews, focus groups, and document review indicate that health care transformation activities were occurring during this window of time, we would not expect to see a statewide spillover impact on Medicare health care expenditures this quickly after the initiative went live in the state.

Table 6-7. OLS adjusted difference in the pre-post change in PMPM payments, Medicare beneficiaries, Massachusetts and comparison group, first two quarters of SIM implementation (January 2014 through June 2014)

Outcome	Regression adjusted difference in differences	95% Confidence interval		p-value
		Lower limit	Upper limit	
Aggregated change in payments ¹				
Total (in millions)	−\$44.92	−\$106.50	\$16.66	
Inpatient facility (in millions)	−\$22.05	−\$66.04	\$21.93	
Other facility (in millions)	−\$13.95	−\$35.98	\$8.07	
Professional (in millions)	−\$8.92	−\$24.46	\$6.61	
Change in PMPM payments				
Total	−\$9.08	−\$21.53	\$3.37	0.1528
Inpatient facility	−\$4.46	−\$13.35	\$4.43	0.3257
Other facility	−\$2.82	−\$7.27	\$1.63	0.2144
Professional	−\$1.80	−\$4.95	\$1.34	0.2604

OLS = ordinary least squares; PMPM = per member per month.

Note: The total number of person-quarters for Test state members in the post period (Q1 2014–Q2 2014) is 824,434. Bold estimates indicate statistical significance at the $p < 0.05$ level. A *negative* value corresponds to a *greater decrease* or a *smaller increase* in payments in the Test state relative to the comparison group. A *positive* value corresponds to a *greater increase* or a *smaller decrease* in payments in the Test state relative to the comparison group.

¹The PMPM estimates are multiplied by 6 months*1,030,588 person-quarters to obtain the change in total aggregate expenditures for the post period.

To assist policy makers in understanding the future prospect of successful results for the Massachusetts SIM Initiative, we convert the DD results for change in total payments into probability estimates and provide graphical representations of the estimated quarterly and program-to-date effects as well as the precision of these estimates. The quarterly and cumulative spending estimates were significantly lower for Massachusetts than the comparison group in the first test quarter but not significantly different in the second test quarter (**Figure 6-20** and **6-22**). These results suggest some evidence for savings in the first quarter and no strong evidence for savings or losses in the second quarter for the SIM Initiative in Massachusetts among Medicare beneficiaries (**Figure 6-21** and **6-23**).

Figure 6-20. Quarterly effects on total spending, Medicare beneficiaries, Massachusetts, first quarter 2014 through second quarter 2014

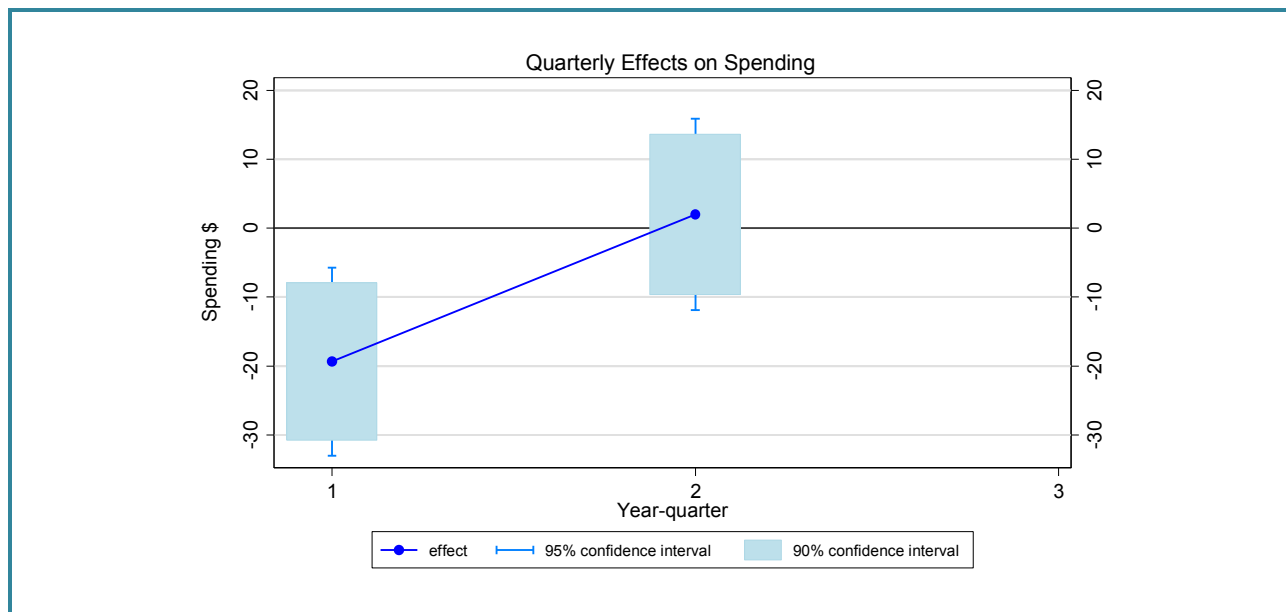


Figure 6-21. Quarterly strength of evidence on total spending, Medicare beneficiaries, Massachusetts, first quarter 2014 through second quarter 2014

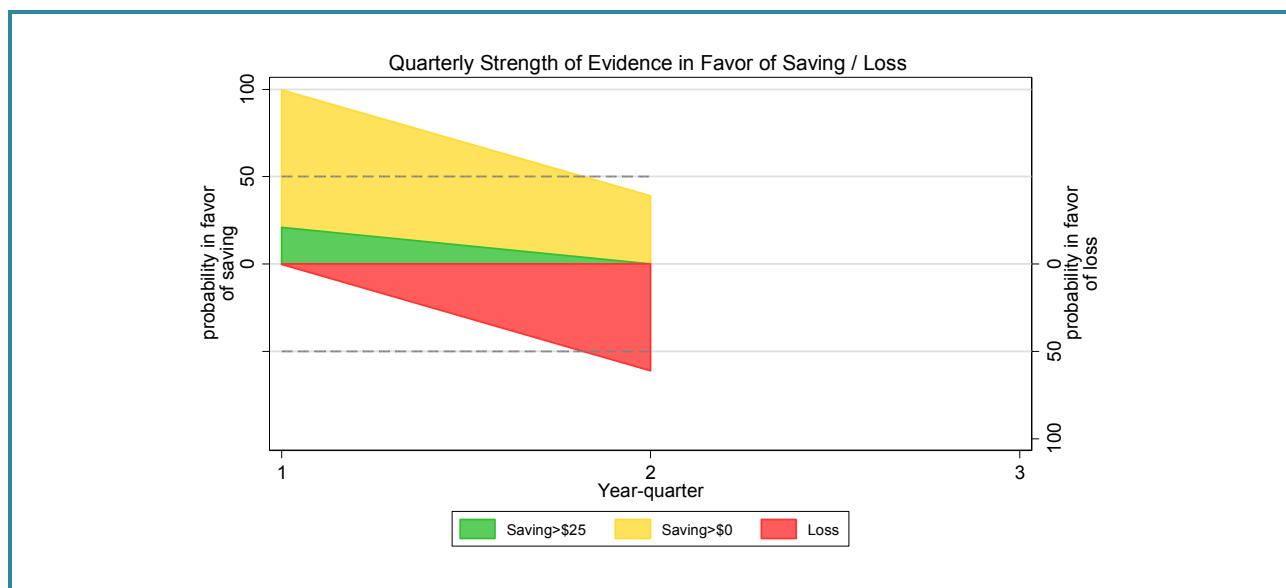


Figure 6-22. Cumulative effects on total spending, Medicare beneficiaries, Massachusetts, first quarter 2014 through second quarter 2014

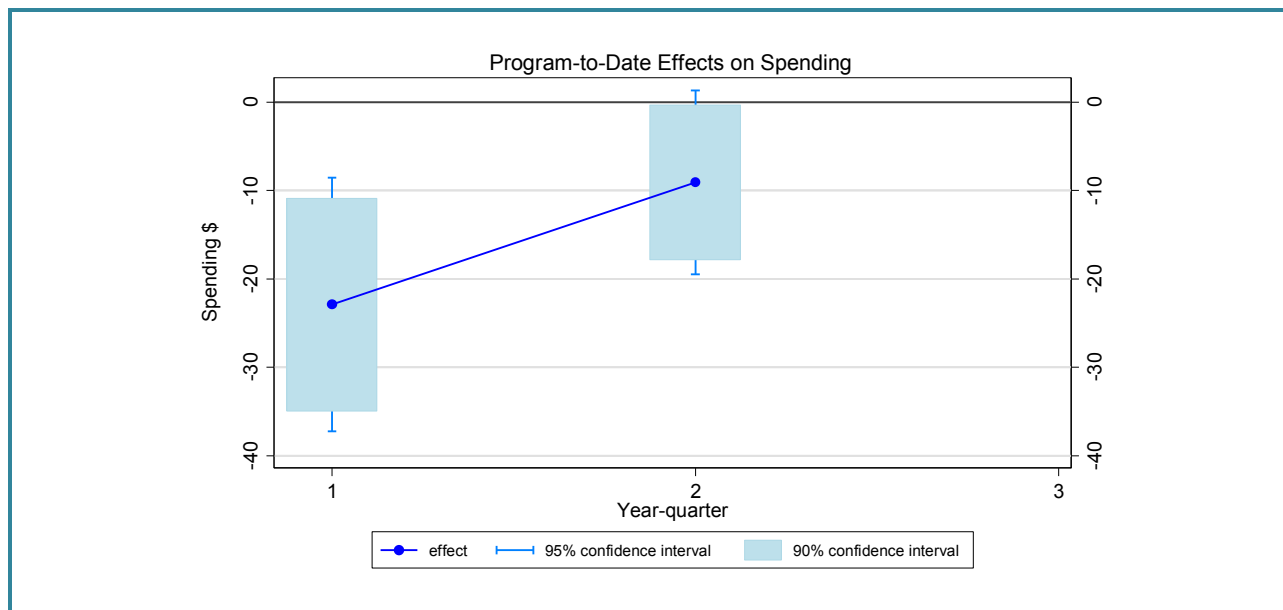


Figure 6-23. Cumulative strength of evidence on total spending, Medicare beneficiaries, Massachusetts, first quarter 2014 through second quarter 2014



The study has a number of limitations that should be considered when reviewing these evaluation results. For the commercial and Medicare populations, it is unlikely that the dataset used for these analyses contained individuals directly impacted by Massachusetts's SIM Initiative and we are only able to speak about potential spillover effects of the interventions to this set of patients. These analyses are examining statewide impacts, by payer, of the Massachusetts SIM Initiative and therefore the results are most likely: (1) impacted by other statewide efforts occurring simultaneously and (2) diluted by the inclusion of individuals not directly impacted by, or attributed to, a specific intervention. Additionally, even though the rigorous study design used a comparison group and adjusts for a range of covariates, the results could still be biased by the strength of the match of individuals in Massachusetts to individuals in the comparison states, as well as unmeasured factors we were not able to account for in our methods.

6.4 Overall Summary

The statistics provided in this report show little effect of the SIM Initiative on utilization or expenditures for two reasons. First, the test period is too short for any reliable effect to be detected. Second, the populations for which we currently have data—the commercially insured and Medicare beneficiaries—are not directly targeted by the SIM initiative and could only be affected by spillover effects of the Medicaid payment model. Some of the other initiatives, such as e-Referral or the community links portal, may have an impact on Medicare beneficiaries, but these impact a very small number of people. The statistically significant decrease in ER visits in the early test period among commercially insured beneficiaries in Massachusetts relative to the comparison group suggests a positive impact, although the expenditures trends are not statistically significant. Reliable impact estimates await data further into the test period, particularly for the Medicaid populations. In addition, we find significant increases in other facility, professional, and outpatient pharmacy expenditures and a nonsignificant decrease in inpatient expenditures, but an overall nonsignificant effect on total expenditures. These results are consistent with the expected outcome of a model that incentivizes additional primary care, integrated behavioral health services, and care coordination.

The state's target of 80 percent of Medicaid beneficiaries participating in APMs has not been met. To date, current levels of take-up are approximately 5 percent of the overall MassHealth population. Our qualitative findings from site visits suggest the state is aggressively working on implementing a new payment model that will cover a large portion of the Medicaid population by the end of 2016. Qualitative findings, which are more current than these quantitative results, suggest that the directly affected health care providers and consumers are beginning to observe changes consistent with SIM goals of improved care coordination and efficiency. Future quantitative analyses, particularly among the participating Medicaid population, will look for evidence of the degree to which these shifts are occurring.

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7. Minnesota

This chapter provides an updated overview of the Minnesota SIM Initiative model; summarizes major implementation progress, challenges, and lessons learned in the past year; discusses key findings from the site visit interviews and focus groups organized by major topical area; and presents baseline and early test period trends in outcomes. For the Year 2 site visit, we interviewed 22 key informants and conducted eight focus groups in Minneapolis and Duluth the week of March 30, 2015. Site visit findings are supplemented with information from a web-based primary care practice survey RTI conducted from July through October 2014. *Appendix Figure F-4* provides a graphical presentation of the federal evaluation of the Minnesota SIM Initiative.

Minnesota is making continued progress in all areas of its SIM work, with a goal of facilitating the delivery system reform the state envisions. The state continues to expand participation in its Health Care Homes (HCHs), Integrated Health Partnerships (IHPs), and Accountable Communities for Health (ACHs), and has begun to issue grants for integrating emerging professionals (e.g., community health workers) into care settings; implementation of eHealth (health information technology); and support for primary care practice transformation. The state is using taskforces, learning communities, and storytelling to engage stakeholders, and is actively working toward better integration of behavioral health. Though state performance in measures of care coordination, quality of care, health care utilization, and health care expenditures relative to the comparison group is mixed, some results suggest promise as Minnesota further expands and implements its SIM Initiative.

7.1 Overview of Minnesota Model

The Minnesota SIM Initiative—also termed the Minnesota Accountable Health Model—seeks to improve health in communities, provide better care, and lower health care costs. According to the state’s operational plan, the state health care system is envisioned by 2017 as one in which “the majority of patients receive care that is patient-centered and coordinated across settings; the majority of providers are participating in Accountable Care Organizations (ACOs) or similar models that hold them accountable for costs and quality of care; financial incentives for providers are aligned across payers; and communities, providers, and payers have begun to implement new collaborative approaches to setting and achieving clinical and population health improvement goals.”

To achieve these goals, the SIM Initiative is supporting further development of Integrated Health Partnerships, an ACO model serving Medicaid beneficiaries under age 65, and expanding the reach of HCHs. The state is developing and funding ACHs to test ways of integrating health care and community services to improve care for a defined population and condition. To foster delivery system and payment reform through these models, Minnesota is using SIM funds to

support providers in making more use of health information technology (health IT), using data analytics to manage costs and improve quality, accelerating clinical data exchange, and testing the role of emerging professions in integrated delivery systems. SIM Initiative–funded learning collaboratives support providers in achieving transformation of health care delivery. In parallel with the work organized with SIM Initiative funds, the state Department of Human Services (DHS) is in the process of establishing behavioral health homes (BHHs) under Medicaid, which will be charged with integrating physical and behavioral health services.

7.2 Site Visit Report

7.2.1 Summary of progress, challenges, and lessons learned

In transitioning from design and planning to implementation, the Minnesota SIM Initiative team pursued four strategies: (1) awarding grant funding for health improvement, health IT, workforce, and practice transformation projects under a competitive bid process, to health and social services organizations that are or could be involved in accountable care arrangements—including local public health agencies, behavioral health care providers, new workforce, and long-term and post-acute care providers; (2) expanding the number and type of providers included in practice transformation activities for Medicaid programs (i.e., the IHP demonstration and the “First Implementers” group of likely Medicaid BHHs); (3) funding grants and contracts to address policy and implementation issues related to health IT, new workforce, and accountable care; and (4) engaging stakeholders through task forces and community forums.

Health care providers frequently reported the advantage of using SIM grant funding for health IT and emerging professionals to develop delivery system changes and facilitate relationships between provider organizations, with the ultimate goal of increased shared savings under an IHP. Health IT continues to be a focus in the state. In focus groups and the baseline provider survey, providers noted high electronic health record (EHR) use and good communication with hospitals, but less frequent exchange with behavioral health providers or providers outside their health systems.

Consumers in focus groups observed changes in health care delivery as compared with the period prior to the SIM Initiative—generally reporting improved coordination of care, understandable communication from providers, positive experiences with provider use of EHRs, information-sharing within (although not between) health systems, access to same-day primary care appointments or by phone after hours in addition to urgent care and emergency room (ER) use, and robust referrals to community resources. Consumers also observed recent improvement in receiving test results and prescriptions in a timely manner, often thanks to patient portals. Even so, consumers reported continued concerns about access to psychiatrists, specialists, and dental care.

Awarding grant funding to providers. In the year between the March 2014 and 2015 site visits, the state successfully funded multiple grant programs to health care providers and social service organizations implementing key aspects of the Minnesota SIM Initiative—including local public health agencies, behavioral health care providers, and long-term and post-acute care providers. State officials noted that Minnesota has pursued a deliberate strategy in making grant awards across a spectrum of communities and organizations. *Figure 7-1* illustrates how SIM funds and parallel state agency–organized initiatives prior to March 2015 either supported organizations directly through grants, or supported activities that could apply to grant-funded and non–grant funded organizations alike. Some funded organizations are supporting more comprehensive transformation with multiple grants, in addition to participation in IHPs and the state’s HCH program.

Figure 7-1. Funding awarded or requests for proposals made to support delivery system transformation across health and social service organizations, as of March 2015

	Provider-led activities	Number to date (planned)	Supporting SIM-initiative funded activities		
SIM Initiative-organized	Workforce grants	9 (14)	Emerging Professionals Toolkits		Learning communities, practice facilitation grants
	Health IT grants	12 (unknown)	Two grants: e-Health Roadmaps and Privacy/Security/Consent		
	ACH grants	15 (15)	Practice transformation grants to health and social service organizations		
State-organized	Health Care Homes	380 (unknown)			
	BHHs	none+			
	IHPs	16 (unknown)	Data analytic support		

Notes: Minnesota expects to launch the behavioral health home initiative July 1, 2016. ACH = Accountable Community for Health; BHHs = behavioral health homes; IHPs = Integrated Health Partnerships; IT = information technology.

The state awarded grants to organizations through a competitive process, with 12 ACH grants awarded in 2014—in addition to three sole source ACH grants to the three community care teams the state piloted in 2011–2012. ACH awardees are generally community based coalitions of health care providers, social service organizations, and in some cases managed care organizations (MCOs). The goal of the ACH program is to promote health and improve health care by strengthening clinical and community partnerships. Grants were awarded to entities based on participation criteria developed by state officials, with guidance from a stakeholder

workgroup. Criteria included being associated with an IHP or other accountable care–like delivery system and developing population-specific care coordination and prevention goals, informed at least in part by a community health needs assessment developed by a local hospital or public health agency. At the time of the 2015 site visit, the ACHs had just begun implementation, after completing negotiation over allowable costs in ACHs’ budgets under Minnesota and CMS rules.

In addition to the ACH grants, Minnesota awarded 12 eHealth grants, 10 practice transformation grants, and nine grants to organizations fostering the integration of emerging professions into their service delivery. Of the eHealth grants, six were 12-month development awards to design a plan for the adoption and effective use of health IT tools, and six were 18-month implementation awards. Similar to the ACH grants, eligibility for an eHealth grant is predicated on some association with an IHP or other accountable care–like entity. Of the 10 practice transformation grants awarded, projects range from redesigning clinic workflows, to implementing patient registries, to developing more robust care coordination models. The emerging professions grants supported integration of community health workers (CHWs), community paramedics, and dental therapists/advanced dental therapists into health care organizations. Minnesota state legislation has authorized Medicaid reimbursement for CHWs since 2007 (with amendments in 2008 and 2009), for dental therapists since 2009, and for community paramedics since 2012. One CHW grantee commented that the SIM award enabled them to spread their program beyond Medicaid patients (the only patients for whom they are reimbursed) to non-Medicaid patients in need of their services. This grantee hopes to show a return on investment that will entice commercial payers to begin covering services provided by these professionals.

Expanding Medicaid programs. Minnesota DHS competitively selected seven new entities as IHPs through a third round of solicitations released in 2014. With the addition of these seven IHPs, the state now contracts with 16 IHPs serving over 180,000 Medicaid beneficiaries under age 65.³⁷ State officials noted that, compared with the previous two solicitations, more rural and small providers applied to be IHPs—demonstrating the continued spread of the Minnesota SIM Initiative and the increasing readiness of rural providers to accept risk.

Minnesota continued to develop its BHH initiative, which aims to promote the bidirectional integration of primary care and behavioral health. State legislation enacted in 2010 gave DHS the authority to design a health home model under Section 2703 of the Affordable Care Act. To date, DHS has drafted a State Plan Amendment (SPA) that will be submitted to CMS in July 2015. Although the work to develop BHHs does not fall under SIM Initiative governance, the two efforts support each other; one state official noted that the SIM Initiative has

³⁷ Source: Minnesota Quarter 1 2015 report to CMS.

helped catalyze provider support and buy-in to BHHs, and that a robust number of BHHs would help the state meet its goals of having a majority of patients receiving patient-centered and coordinated care.

Funding policy analysis and learning communities. Minnesota has dedicated a portion of its SIM funding to support providers and other organizations in adopting and effectively using health IT tools and data analytics, integrating new health professional roles into existing provider staff, and adopting other delivery system changes. With regard to health IT, Minnesota awarded a contract to Stratis Health to develop eHealth roadmaps focused on increasing EHR adoption and health information exchange (HIE) in four priority settings—behavioral health, local public health, social services, and long-term and post-acute care. Minnesota also recognizes that to effectively manage patients and control costs, providers need to be able to exchange information and utilize data analytics. In addition to the eHealth roadmaps, Minnesota released Request for Proposals (RFPs) to: (1) contract with vendors to help providers navigate issues related to data privacy, security, and exchange of clinical information; and (2) provide technical assistance to IHPs in using data reports to identify opportunities for quality improvement and costs savings. Minnesota also issued RFPs soliciting three organizations to develop one toolkit for each emerging profession. These toolkits are aimed at potential employers of emerging professions, and will provide resources needed to successfully integrate emerging health professions into the workforce.³⁸

Finally, Minnesota awarded grants to support providers through learning communities and through targeted practice facilitation. Three learning communities, which will be available to a broad range of providers, will focus on specific health transformation topics. A fourth will support ACH grantees in implementing their proposed initiatives and facilitate peer-to-peer sharing of best practices. Two practice facilitation grants have also been awarded to entities that will assist a select number of provider organizations, one focused on primary care clinics and another on Community Health Centers and Community Mental Health Centers.

Engaging stakeholders. The Minnesota SIM Initiative continued to engage stakeholders in the development and implementation of various SIM-funded activities and health system reform issues, primarily through its two key task forces: the Multi-Payer Alignment Task Force and the Community Advisory Task Force. In the past year, Minnesota also created two workgroups consisting of task force members as well as other payers, health systems, and community organizations. The ACH workgroup provided guidance on strategies to inform and engage communities and stakeholders on the vision for ACHs and on selection criteria for ACH applicants. The data analytics subgroup worked on identifying priority elements of patient-level clinical information for alignment across payers. The standardized data elements will facilitate

³⁸ Minnesota Department of Health (2014). *Request for proposal on Emerging Professions Toolkit Program*. St. Paul, MN. Retrieved from: <http://www.health.state.mn.us/divs/orhpc/workforce/emerging/toolkit/toolkitrfp.pdf>

data sharing and reporting, as well as providers' ability to manage total health care and related costs.

Among the successes Minnesota state officials reported are the level of provider interest in becoming IHPs, the level of interest in participating in SIM Initiative–funded grant programs, and the facilitation of new partnerships that result from providers' participation. For example, from the state's perspective, it was a success to contract with seven IHPs to start on January 1, 2015—in both the numbers and types of IHPs. The third round of IHP contracting even attracted organizations that have a relatively small number of Medicaid-only patients or focus on a more disabled/complex or rural population—in contrast to the larger metro-area-focused IHPs whose contracts started in 2013. For example, one contracted IHP formed its network of small, rural providers with the intent to respond to the state's request for IHP proposals.

State officials also reported a key success working with providers to implement several components of the SIM Initiative. Making funding available through a multitude of competitive RFPs has helped support innovative transformation, build momentum among stakeholders, and engender community support. One state official also added that these grant opportunities have facilitated conversations and new partnerships among payers and providers, and across provider systems. This finding was echoed by a provider approached by a payer to collaborate on an ACH grant: “[finally] we are starting to see some payers change how they approach primary care and work with providers.”

One constraint affecting the state's ability to implement components of the SIM Initiative over the past year relates to data exchange laws. Despite state legislation that mandates all providers to implement EHRs by January 2015, exchanging health information between health systems remains an issue, due in part to strong state privacy laws that limit information exchange without explicit patient consent. This is particularly an issue for behavioral health information. During the past year, Minnesota's only statewide certified Health Information Organization (HIO), which provided HIE governance, was decertified. Minnesota takes a regional approach to exchanging health information—meaning that multiple organizations can serve as HIOs across the state. So, despite the decertification of the only operational HIO, state officials remained confident that Minnesota will have multiple HIOs operating to facilitate data exchange by the end of 2015. Stakeholders expressed broad agreement that data exchange to support care coordination and population health management should be the top priority for the next phase of the SIM health IT strategy.

A key lesson learned in Minnesota comes as a result of distributing grant funding to address a range of health system transformation elements. This approach has allowed Minnesota to stimulate the involvement of a wide range of stakeholder organizations and entities, and learn from the experiences of organizations at different stages of innovation adoption. Minnesota also paid attention to striking a balance between “stack” versus “spread” when considering how SIM

grant funding would be invested. State officials chose to stack some funding by giving multiple grants to the same organization when warranted, in order to foster multiple layers of innovation within each organization. Funding was also spread among a range of other organizations to support discrete projects. Yet, state officials continued to underscore that they had underestimated the administrative capacity required to administer multiple grant programs under the SIM Initiative. They noted that they should have built more staff positions into the SIM budget to write RFPs, review applications, and monitor grantees, in addition to administering their own SIM Initiative award from CMS. They also reported that most staff working on the SIM Initiative are doing so on top of the full responsibilities of their primary jobs.

Other lessons learned stem from implementation of the SIM Initiative governance and grantees' experience to date. For example, in the course of organizing the data analytic subgroup of the two task forces, state officials observed that it was important to seek and achieve agreement around less controversial aspects of aligning approaches to data reports—before addressing potentially more difficult topics in a second phase of work. Additionally, in the Task Force meetings we observed and interviews we conducted, one consistent theme centered on the importance of communicating with consumers about changes in health care, such as the importance of providers' ability to share health information securely and appropriately. The state is just starting a Storytelling Engagement Project that will address the need to communicate the value of the SIM Initiative to a lay audience. Additionally, some payers, providers, and consumer representatives acknowledged that, even though they have been involved in the SIM Initiative from the beginning, the experience of seeing how the grant programs are being implemented is just now helping them understand how different efforts fit together.

Finally, state officials developed SIM-funded grants to help health care organizations integrate emerging professions into their workforce, with the recognition that Medicaid reimbursement alone is insufficient to encourage widespread adoption of new health care roles. However, even in the course of implementing emerging professionals grants under the SIM Initiative, one grantee expressed concern for sustaining its community paramedics program unless additional payers participate. Additionally, more education about these emerging professions may be needed to fully integrate them into the workforce; one non-Medicaid payer noted that it had not yet been approached by providers seeking funding for community paramedics.

7.2.2 Delivery system and payment reforms

Delivery system and payment reform under the SIM Initiative builds on existing payment mechanisms, but it adds the potential for risk-adjusted shared savings or two-sided risk to foster accountable care relationships across providers. Some health care providers in Minnesota have had accountable care arrangements with commercial payers that preceded Minnesota's SIM Initiative. The SIM Initiative has allowed expansion of Medicaid's IHP demonstration with

smaller provider coalitions, which are also benefiting from funding to develop their delivery system infrastructure under the SIM Initiative eHealth and Emerging Professions grants. Results from the 2014 baseline primary care practice survey suggest that provider engagement in selected care coordination and management-related strategies is high in Minnesota. Consumers in focus groups also observed the substantial degree to which the health care system has moved towards greater communication and coordination—reporting high-quality relationships with their primary care providers and relatively high satisfaction with care coordination (both within health systems and across specialists).

Minnesota is using two related mechanisms to spur delivery system change: the Medicaid program’s IHP demonstration and SIM-funded grants to ACHs. In addition, the HCH—a state-specific designation in Minnesota since 2008—is already in existence as a delivery system model; there is some overlap between existing HCHs and IHPs, but there is no formal HCH requirement for IHPs. The number of HCHs is expanding under the SIM Initiative, with HCH staff having the opportunity to participate in SIM-funded learning opportunities.

The central test of payment reform in Minnesota is through its Medicaid IHP demonstration. As of March 2015, other efforts to align payers around a shared savings model have focused on creation of a “Continuum of Accountability Matrix” and self-assessment that payers, provider coalitions, and other organizations can use to identify the degree to which they are participating in alternative (i.e., not fee-for-service [FFS]) payment models or population-based payment arrangements. Medicaid offers a per member per month (PMPM) fee to HCHs who choose to bill for care coordination services provided to qualifying patients, although that payment model in particular is not a focus of the SIM Initiative.

In the IHP payment model, the state calculates a risk-adjusted total-cost-of-care target for each IHP, based on a defined set of services using Medicaid FFS claims and MCO encounter records. IHPs become eligible to receive shared savings payments if they contain costs at a specific threshold at least 2 percent below their total-cost-of-care target, as well as meet performance goals for a core set of clinical quality and patient experience measures. As of early 2015, 14 of the 16 IHPs have proposed cost accountability only for the core set of services required in the state’s IHP RFPs (medical care, including outpatient mental health and chemical dependency services). Of the other two IHPs, one includes all mental health and chemical dependency services in the second year of its 3-year contract with the state; the other includes durable medical equipment. With the new round of seven IHPs contracted to start January 1, 2015—which include IHPs with between 1,000 and 2,000 attributed Medicaid beneficiaries—the state has modified some aspects of the original IHP payment model. Smaller IHPs have customized risk weights and capped upside risk, and are not subject to downside risk at any time.

With regard to IHP implementation, one state official noted that the potential for sharing any cost savings was just one feature that attracted organizations to participate in an IHP. IHP

providers receive important and relevant data on a monthly basis, such as: (1) expenditures data for their attributed Medicaid beneficiaries in nearly all service categories and from all providers, which come directly from Medicaid and which IHP providers generally do not get from Medicaid MCOs; and (2) provider-level quality data on Medicaid patients, in contrast to the aggregated all-patient level usually provided by the Statewide Quality Reporting and Measurement System (SQRMS). With access to these data, the state expects that IHPs can identify additional service areas in which they could reduce costs, thereby motivating negotiation to include a broader scope of services in their cost-accountability agreement. Looking ahead, the state has identified larger provider systems and smaller, nontraditional ACO provider types that could be recruited to submit proposals for future rounds of IHP contracting. With the end of SIM funding for the data analytic and other infrastructure to support IHP implementation in 2016, DHS is starting to plan how it will make its case to the legislature about the state's return on investment in IHPs.

Some state officials see the potential for ACHs to create the relationships necessary to become the “next generation” IHPs—in which social service organizations would participate in accountability for the total cost of care in a population, and earn a portion of any shared savings as well. In the words of one stakeholder, these grants will help investment in the infrastructure to “leapfrog over the ACO” model. ACHs are testing delivery system changes for narrow population segments—for example, adolescents with mental and behavioral health concerns in one school district, IHP-eligible parents and children with mental health diagnoses, individuals served by disability services providers, and IHP members incarcerated in Hennepin County's Adult Corrections Facility—that may or may not overlap entirely with participating providers' attributed IHP population.

The baseline primary care practice survey offers insight into the extent that primary care practices in Minnesota are well-positioned to enter into accountable care arrangements. Large proportions of practices reported they assign patients to specific providers or teams (82 percent), routinely develop care plans for their patients (82 percent), and transmit referral information to specialists and other providers (98 percent). Few practices reported monitoring expenditures at the practice level or for specific groups of patients within the practice (33 percent). A somewhat higher proportion reported reviewing expenditures at the practice level (38 percent). Sixty percent of Minnesota practices responding to the survey reported receiving some payment based on performance.

A key theme around delivery system changes observed by providers in interviews and focus groups was expansion of the clinical care team. Providers in focus groups noted that they have care coordination staff (CHWs or nurse coordinators) provide follow-up with patients about their care. However, a consistent concern was the need to identify the highest-need individuals (where interventions could most improve quality and reduce cost and utilization) to best focus these additional staff resources.

Coordination and communication with hospitals was another prominent characteristic of the delivery system noted by providers. One provider in a focus group noticed more inpatient physicians communicating with the primary care practice when patients are hospitalized, and the primary care practice survey results indicate that over 80 percent of responding practices receive timely information from all or most hospitals. However, other provider focus group participants noted that they could not use health IT to access or share patient data across health systems. Survey responses suggest provider concern for patients who have visited the ER, with nearly 80 percent always or usually following up with these patients. This is consistent with the explicit goals to reduce ER and urgent care use that some practices reported in the focus groups. This general increase in care coordination and communication is not without cost; many providers in the focus groups reported a general sense of having to do more work without the resources to do it (even with expanded staff).

Many providers gave feedback specific to their perception of IHPs. A common theme across many providers interviewed was retrospective attribution of Medicaid beneficiaries to IHPs; this approach, providers noted, detracts from their ability to be proactive in investing to meet the needs of a known IHP population. Additionally, some providers noted that organizing care for the highest-need patients may not yield the greatest return on investment, since some from this population become eligible for Medicare and Medicaid and drop out of the IHP's attributed population. Still, executives at health care provider systems participating in an IHP reported changes in their day-to-day business. One provider system that earned shared savings after its first IHP contract year attributed success to reducing unnecessary ER use, reducing imaging in the ER, and connecting beneficiaries with primary care. Another provider with a new IHP contract noted hiring 40 additional nurse practitioners and physician assistants to provide more intensive primary care services. One provider also noted that its IHP contract has fostered new relationships with mental health care providers and community resources. Finally, one provider noted that the complementary ACH grants have allowed funding for community prevention interventions beyond health care delivery system change.

From the provider and payer perspective, the IHP demonstration has disrupted their existing relationships in several ways. Most providers reported benefits from developing new relationships across different types of providers for the purposes of improving the potential for shared savings. However, one organization observed that casual relationships that once existed with other providers belonging to different IHPs are breaking down, with organizations favoring referrals from their own IHP partners and eschewing referrals from organizations outside the IHP—thus disrupting some referral patterns their providers had been accustomed to and decreasing the flexibility their providers once had to connect patients with needed services.

In looking at the effect of the IHP demonstration on payers' value-based payment activity, payers, providers, and employers had different perspectives. One employer representative did not think the risk-based payments within the IHP payment model are large

enough to change provider behavior. From the provider perspective, having the state enter into IHP contracts directly with providers has diminished incentives for them to fully participate in value-based purchasing with the MCOs, because it is less complicated to do so directly with the state—though one group of providers observed that payers have changed the way they approach funding for primary care services.

State officials and Medicaid MCO representatives noted that health plans contracting with IHP providers questioned whether cost savings attributed to the first year of IHP implementation resulted from the new payment model, or rather from changes to contracts the MCOs have with individual providers. In some instances, MCOs have negotiated different prices for different services or developed targeted opportunities for gain sharing with certain providers. Although state officials and IHP providers noted the simplicity of negotiating a single shared savings contract for all Medicaid-covered patients, one health plan representative described the complexity of determining net payments to a provider in a way that ensures no double-payment for IHP-attributed beneficiaries and services under health plan–specific value-based payment arrangements with individual providers. However, the same health plan representative reported that overall, the SIM Initiative—especially state staff and community stakeholder efforts to develop the Continuum of Accountability Matrix—has made them think about their provider contracting relationships differently, which is helping them move towards greater accountability.

Consumer focus group participants reported experiences with the health care system that reflect the implementation of care coordination practices—although most said that these health care system features have developed in the past 5 to 6 years, rather than just the last 1 to 2 years. For example, most consumers in the focus groups have a consistent source for primary care, as well as a provider who knows them, takes time to listen to them, and communicates in an understandable way. Most felt providers share relevant clinical information, at least within health care systems, and that coordination of care between specialists is good and improving. As one consumer said, “I also have a neurologist with his own thing, but works together with my doctor and it’s virtually seamless. They explain things in [plain] English.” All focus group consumer participants said they receive appointment reminders, preventive care, and educational materials from their primary care practice, and some noted that they have been referred to community resources (like YMCA fitness programs, transportation, nutrition classes, and substance abuse meetings). Some focus group consumers said they can contact their primary care physician office first for a same-day appointment or telephone consult, but others said they are most likely to go directly to an urgent care center or ER. Some consumers noted recently increased timeliness in receiving test results and prescriptions. But others reported challenges in accessing psychiatrists, specialists, and dental care—with a long time to get an appointment, or having to navigate the system themselves instead of managing referrals through a primary care provider.

7.2.3 Behavioral health integration

Minnesota's SIM Initiative has included a behavioral health integration component in three of its primary programs: health IT grants, IHP contracting, and ACH grants. A fourth, implementation of BHHs for Medicaid beneficiaries with serious mental illness or serious emotional disturbance, is expected to launch in 2016.

Behavioral health care is one of four priority areas for increasing EHR and HIE use. Several eHealth planning or implementation grants—in addition to the grants for the eHealth roadmaps and analysis of privacy, security, and consent policies—focus on helping provider organizations understand how to facilitate electronic exchange of information for coordinating a patient's care across the medical system and behavioral health providers.

Medicaid's IHP contracts include outpatient mental and chemical dependency services among the core set of services included in the total-cost-of-care calculation used to determine the risk-adjusted savings (if any) an IHP achieves. The RFP for IHPs encouraged provider organizations to include additional mental and behavioral health services within the total-cost-of-care calculation, although to date only one IHP has done so for its second-year contract.

Minnesota awarded several ACH grants to community coalitions that proposed to address behavioral health needs of children, children and parents, or persons with disabilities. Through these ACH grants, schools, health care providers, and others will focus on increasing access to mental health services and/or integrating primary care with behavioral health. Each ACH grant will have its own measures of success.

In addition to the three main program-oriented mechanisms to support behavioral health integration envisioned by the state, one provider is using some of its work with community paramedics, partially funded with an Emerging Professions grant, to ensure community paramedics are trained and ready to address behavioral health problems in the population they serve. This provider also connects community paramedics with patients recently discharged from the behavioral health and chemical dependency units at their hospital, to help divert patients from making ER visits, to instead telephoning the relevant community paramedic.

From the perspective of many types of stakeholders in Minnesota—including payers, providers, and state officials—the state's laws requiring patient consent for transmission of information from a behavioral health provider to other providers have presented a challenge to greater integration of behavioral health care with other types of services, as noted. Some of the challenge stems from provider organizations, whose own internal policies take a conservative interpretation of requirements under the law.

Practices responding to the 2014 baseline survey varied in their experience of integrating behavioral health care. Some reported having behavioral health providers onsite (32 percent),

while others refer patients to partners with whom the practice has established relationships (41 percent). Fewer than 40 percent reported that behavioral health services are always or usually available to patients in a timely and convenient manner.

Some consumers in the focus groups noted that they have received appropriate referrals to behavioral health or substance abuse providers when needed. As one consumer said, “My doctors are always asking me if I feel safe at home, that’s how my doctor knew I was in a period of depression. Suggested I see a therapist/psychiatrist, talk to them. If they hadn’t asked me, I wouldn’t have known. I think that’s pretty good.” However, multiple consumers indicated that they have trouble accessing care from a psychiatrist when they need it.

7.2.4 Quality measurement and reporting

The site visit discussions revealed clear evidence that health care providers, purchasers, and insurers are using quality measurement as part of Minnesota’s SIM Initiative. Providers’ quality measurement activity builds on a history of Minnesota-specific quality metric development and diffusion. IHPs must report on quality measures in their first contract year. Achieving minimal levels of performance on those measures is among the criteria used to determine shared savings payments to IHPs in the second and third years of their 3-year contracts. Quality improvement plans are also a requirement under the ACH grants. State officials, health plans, and providers we spoke with expressed general support for the importance of quality monitoring and measurement. According to one state official: “The expectations around quality measurement have not changed, in that regardless of size or who the provider is, compliance with the statewide quality reporting measurement system is required.” Public reporting, at least by the state, is not envisioned at this time.

A common standard approach to quality measurement derives from the SQRMS, which is overseen by the Minnesota Department of Health (MDH); measures are developed and data collected by the data collection vendor, Minnesota Community Measurement (MNCM). The SQRMS forms the foundation for most—but not all—efforts in this area. IHPs are held accountable for a subset of measures that providers report to MNCM, as well as additional measures that apply to specific populations—including patient experience measures based on the Clinician and Group Consumer Assessment of Healthcare Providers and Systems (CG-CAHPS) surveys, though other surveys have also been allowed as substitutes. Although payers cannot require providers to report measures outside SQRMS data, commercial MCOs do use different methods when creating quality measures for other purposes.

Application of quality and other measurement to shared savings, particularly through the growth of IHPs, is clearly evolving. As explained by one state official, all IHPs in year 1 of their contract get ‘credit’ for quality, as long as they have reported all the measures for all their participating clinics. In year 2 of their contract, 25 percent of IHPs’ earned shared savings (if any) is impacted by their performance on the quality measure, a share that increases to

50 percent in year 3 of their contract. Good performance versus bad performance is assessed on a relative performance scale, based partially on where the specific organization performs relative to the overall state. State officials noted that there is consistency across all IHPs: “All of that is laid out in the contracts and that’s not something that changes across IHPs. They only get 75 percent of their shared savings in year 2 if they don’t meet any of their quality measures.” We also heard that some small variants in setting performance targets may be acceptable, including getting credit for organizational improvement over prior years—rather than performance relative to a statewide threshold.

Although we heard general consensus around the importance of quality monitoring, providers raised concerns about applying the same SQRMS metrics to value-based purchasing for all providers—particularly when either individual providers lack sufficient numbers of patients to calculate reliable metrics and/or the population served by an IHP is inconsistent with the focus of the core measures. Providers reported that, to address this concern, both Medicaid MCOs and Medicaid under the IHP contracts have introduced variation and flexibility into the set of measures used for value-based purchasing. For example, one of the IHPs includes a children’s hospital. Because this facility does not have the patient base to support measures appropriate only for adults, the state allows for child-based measures to stand in for standard performance requirements.

Holding providers accountable for achieving a minimum level of performance also has providers questioning the risk-adjustment and other methodology for calculating quality measures. One provider organization noted that the current risk adjustment methodology is “creating an unfair playing field for us,” because it does not adjust for socioeconomic status of patients beyond insurance status. Other methodological issues raised include whether metrics should be based on relative improvement or attainment of specific levels or thresholds.

Despite these concerns, the primary care practice survey demonstrated high use of quality performance metrics among responding practices. The survey asked whether providers monitor quality data for particular patient groups or at the practice level. The survey defined patient groups as patients within the practice grouped by either source of insurance (e.g., all Medicare patients), chronic condition (e.g., all patients with diabetes), or other categories; practice-level data monitoring, in contrast, referred to all patients in the practice regardless of source of insurance, chronic condition, or other category. Minnesota providers reported high rates of both patient-level (78 percent) and practice-level (87 percent) review of quality performance metrics. This high awareness and use of quality metric review may reflect Minnesota requirements for reporting that pre-date the SIM Initiative.

Almost all provider focus group participants acknowledged being evaluated according to performance metrics. Clinical quality and patient satisfaction performance metrics were the most commonly cited, with performance metrics based on costs and efficiency not cited as often.

Most provider participants described some metrics as an organizational burden and distraction. As one provider noted: “You practice to the metric. Not a good thing. I think [it’s appropriate for] patient satisfaction and quality and safety to become outcomes, but we are chasing tails to lower readmission, tying up the system to keep from getting a withhold from this year’s payment.” Providers did not describe performance metrics as impacting the way they provide care in a meaningful or specific way. Instead, they noted that they have to be careful to check certain boxes, make sure to hand out pieces of paper, and adhere to protocols regardless of whether they make sense.

Participants in the provider focus groups also told us that, while they are subject to quality performance monitoring and do have access to routine reporting, they lack access to both timely core data and support to drill down to perform additional analyses that really help them understand their performance and how to improve. A few providers expressed frustration that performance data are either too old, too generic, or unadjusted. A desire for more powerful provider-specific analytics was also expressed by a few. We found consumers generally unaware of quality measurement; this is not surprising, given that public reporting is not a focus in Minnesota.

7.2.5 Health information technology and data infrastructure

Minnesota invests SIM funds in both health IT for clinical care and a data analytic infrastructure to support IHPs. The intent of health IT grants is to increase EHR and HIE use among providers in accountable care arrangements. DHS has used SIM funds to build data reporting to IHPs. SIM funds are also supporting a stakeholder-led process to identify data elements that could be aligned across payers when sharing data with providers, to help coordinate care for individuals and populations.

Minnesota has had financial support for health IT in place for the last decade in a range of forms: public/private collaborative investment, the federally funded state HIE cooperative agreement program, state-appropriated grants for adoption, and a zero interest loan program. In addition, a legislative mandate passed in 2008³⁹ requires hospitals and health providers to have an interoperable EHR system. This support and the mandate for EHR adoption place Minnesota ahead of other states in EHR adoption and use, but variation persists among care settings. The mandate was referred to as a “policy lever with no teeth” by a state health official, as it has no enforcement. In the 2015 state legislative session, several bills related to privacy and the EHR mandate, which could have an impact on the SIM Initiative implementation, are still pending. While hospitals and clinics have high adoption rates with reasonably good HIE, behavioral

³⁹ Minnesota statute 62J.49 requires that by 2015, “all hospitals and health care providers must have in place an interoperable EHR system within their hospital or clinical practice setting” (The Office of the Revisor of Statutes 2014) though it does not apply to nursing homes or any provider not eligible for reimbursement under the medical assistance program (Minnesota Department of Health 2013)

health and social services have much lower adoption rates. The Minnesota SIM eHealth grants program, as noted, aims to increase adoption and use of EHRs and HIE in four priority settings: behavioral health, local public health, long-term and post-acute care, and social services.

State officials, providers, and payers all cited the state's privacy and security laws as the biggest challenge to HIE in Minnesota, with behavioral health identified by a state official as an area where privacy advocates are most active. One proposed bill introduced with strong support from privacy advocates early in the 2015 session (but which did not get a hearing) would have further strengthened Minnesota's privacy and security laws to require granular consent for every exchange of data—requiring the patient to be very prescriptive about who, where, and why for each data exchange. A state official said that passage of such a law would be “very detrimental to [the] SIM [Initiative].” Another state official characterized such opposition as “fear-based,” with work to accelerate eHealth under the SIM Initiative and the make-up of the legislature contributing to that fear. MDH is using SIM funds to develop privacy, security, and consent management analysis to address provider organizations' concerns about how to exchange information within current law.

Minnesota's eHealth grantees are required to use an existing Health Data Intermediary to support the technical exchange of electronic information, but otherwise there is no formal requirement for eHealth grantees to align with one another or with larger state efforts. As one state official noted, grants were structured this way because “we've seen great success by providing capacity building at the community level, much more so than from state directed requirements.” State officials, providers, and payers all suggested that the current state of health IT is more focused on relationship building than on technical development. As one state official put it, “the technical piece is the easy piece, once they figure out all those rules of how they are going to share.” One grant is being used by a large integrated health system with a closed HIE, to develop ways of sharing information outside its system to better manage patients with behavioral health or social service needs. Another is supporting behavioral health and social service providers to work collaboratively to determine what information needs to be shared and how to share it with the more traditional providers of care. Though many stakeholders cited privacy and security concerns as an obstacle, particularly with respect to behavioral health services, many felt that, through more communication and transparency, patients would become willing partners. Some of the use cases being developed for the eHealth roadmap will demonstrate to patients the benefit of data sharing across providers.

In addition to building a health IT infrastructure to maintain and exchange patient information in direct clinical care through EHRs and HIEs, SIM funds have allowed DHS to build the data analytic infrastructure necessary to give IHPs more information about the patients they serve. The state provides comprehensive quarterly reports to the IHPs on the utilization, care coordination, quality, and cost of the entire Medicaid population, with the recently added ability to trend over time. MCOs may provide similar information to some provider groups, but

they calculate data elements and trends slightly differently. IHPs' assessments of data from Medicaid are mixed, with one stating "it's the best I've ever seen" but others saying that significant additional resources are needed to make the data actionable.

Minnesota has an all-payer claims database, but its uses are restricted in legislation and it cannot currently be used to deliver these types of claims data to providers. In response to this issue, and an expressed desire for greater alignment from providers, a data analytics subgroup of the two SIM Initiative task forces recently met to determine whether certain basic data elements should be standardized across payers in their reports directly to providers—so providers can better understand their populations without having to reconcile disparate payer data. For example, one large health care provider that has received similar data reports from payers other than Medicaid noted how resource-intensive it is for providers to compare across reports from different payers in which data elements are defined differently.

Payers noted some trepidation around the subgroup's efforts to align around data analytics—stemming from concern that the next step would be standardization around methods for implementing value-based purchasing (e.g., risk-adjustment methodology), an area where MCOs feel they are the innovators. However, with the focus of the data analytics subgroup on eventually delivering both health care and social service data on patients to providers, one state health official characterized the data analytics subgroup work as a way of "bringing people back to the table," so stakeholders can move forward in a coordinated way to better account for and share data with respect to the social determinants of health.

The provider and consumer focus groups, as well as the primary care practice baseline survey, reflected integration of health IT into practices and patient care. Although participants in the provider focus groups expressed frustration with EHRs and the quality of HIE, they also indicated preferences for electronic records relative to paper. Participants in the consumer focus groups noted they use patient portals, observe more timely communication of medical information, and perceive increased communication among providers attributable to health IT use. Many of these consumers indicated that EHR use is helping their physicians get to know them better and allows more time for talking during appointments. The survey of primary care practices reflects a high rate of EHR adoption and use, with 97 percent of respondents saying their practice uses an EHR and 60 percent reporting their practice as having had its current system for 3 years or more. More than 90 percent of respondents reported using an EHR to document notes, print information for patients, and electronically prescribe medications. Approximately 70 percent reported their EHR provides medication alerts, preventive service alerts, and clinical decision support based on evidence-based guidelines to staff. Eighty percent of practices surveyed reported using EHRs to share clinical data with patients. But only 50 percent reported using an EHR or other health IT system to share data with, or access data from, providers outside their own practices.

7.2.6 Workforce development

Minnesota's SIM Initiative encourages and aims to accelerate workforce development through its Emerging Professions Integration Grants and Toolkit programs. Grant awardees and state officials agreed that these build on prior initiatives to increase the diversity of health professionals and support the state's overall efforts on practice transformation and health care delivery system reform. Provider organizations, however, may face challenges with regard to infrastructure, overlap with other care provider roles, and sustainability in pursuing this integration of new health professional roles into care delivery.

Minnesota, as noted, selected three emerging provider types as the focus for workforce development to support delivery system transformation: CHWs, community paramedics, and dental therapists/advanced dental therapists. Medicaid already reimburses claims from these provider types, but there has been relatively low uptake across provider organizations in hiring these workers. With the Emerging Professions Integration grants program, Minnesota will ultimately issue three rounds of grant funding to support these emerging professions at organizations around the state. The state distributed Round 1 awards in the amount of \$30,000 each to five organizations in July 2014. Four additional organizations received \$30,000 each in October 2014 through Round 2 of the funding. Award recipients include small provider and dental agencies, an ambulance service agency, larger health systems, and community health centers that serve populations in the Twin Cities Metro area, Northern Minnesota, and other rural areas of the state. Some of the Emerging Professions grantees participate directly in or are part of larger organizations involved with other SIM programs (such as IHPs, ACHs, and practice transformation grants). Minnesota plans to issue the RFP for Round 3 in summer 2015.

Minnesota also plans to award three contracts to develop one Emerging Professions Toolkit for each of the three chosen professions as a resource for potential employers. The Toolkits have the potential to address challenges around training and integration of the new positions into existing care models.

Among practices surveyed through the 2014 baseline primary care practice survey, 47 percent of respondents indicated that they offer patients meetings with nonclinicians such as CHWs. Further uptake is possible through engagement with private payers, and evidence exists that private payers are taking more notice of emerging professions through the SIM Initiative. For example, at a March 2015 Multi-Payer Alignment Task Force meeting in which an Emerging Professions awardee presented on the community paramedicine program it had developed, one payer representative asked whether the awardee knows who to contact at a payer to negotiate for reimbursement of such a service. To the extent that this payer would also begin reimbursing for this role, the SIM Initiative would have achieved some degree of multi-payer alignment.

Round 1 and 2 grantees will assess the impact of expanded use of these Emerging Professions awards in specific settings and with underserved patients. Hennepin County will use

its Emerging Professions award, for example, to fund a CHW position as part of a team of human services professionals in its jail. Stakeholders noted that this CHW will be a “bridge between the clinical and social services” for patients moving in and out of correctional facilities. The Emerging Professions grant provides unique funding for this setting, because adult correctional facilities are nonbillable to Medicaid. Another Emerging Professions awardee had already been in the process of developing a community paramedicine program for the post-discharge mental health and chemical dependency population; the SIM funding enabled that program’s implementation. Community paramedics responding to urgent situations provide care to patients in their homes and communities outside the hospital setting. Awardees noted that the grant funding “took away some of the risk by covering the salary cost” of these emerging professions positions. Stakeholders noted that the state has a shortage of dentists serving Medicaid patients, and that dental therapist and advanced dental therapist positions offer awardees the opportunity to increase access to dental services by low-income and uninsured people. Multiple grantees are using the funds to support hiring dental therapists to serve children and pregnant women in their communities. Stakeholders indicated that Minnesota’s workforce development efforts through the Emerging Professions grants align with its overall emphasis on community-driven and integrated care.

In interviews and focus groups, primary care providers noted increased use of care coordinators, social workers, and CHWs in their practices. One of the most common strategies mentioned by providers is designation of care coordination staff members and teams, who follow up with patients on lab results and appointments and also connect them with other community resources such as transportation and housing. Nurse care coordinators assist with prescription refills and respond to patient questions. Providers agreed that the care coordination team activities help them work more efficiently. CHWs, community paramedics, and dental therapists serve on some of the providers’ care coordination teams and offer the opportunity to strengthen IHP coordination efforts. One IHP and recipient of an Emerging Professions grant described the recently integrated CHWs and community paramedics as supporting its IHP’s goals by focusing on “high and extreme risk [patients] to get them in the system.”

In expanding emerging professions and increasing uptake, stakeholders have encountered some barriers and foresee challenges moving forward. Orienting emerging professions into provider organizations requires integration support and infrastructure. Organizations with prior history utilizing CHWs, for example, noted that they already have the experience and infrastructure to support increased uptake, whereas they foresee challenges for other practices with less experience in training and managing staff in these roles. Some stakeholders also expressed concern for sustainability of these positions beyond the grant period. Awardees seemed to view the grant period as an opportunity to demonstrate value-added of these positions in support of future reimbursement by other payers and for other settings. As one grantee put it, “Sustainability for us is going back to our foundation to get a small grant and then ultimately go

to the payers. Our CFO wants...to show that this program is generating cost savings not just shifting costs.”

Stakeholders also see potential challenges when new workforce roles conflict with more traditional professions. Stakeholders reported some resistance from providers unfamiliar with or threatened by the new health professionals—saying that home care workers, for example, may take issue with community paramedics over a concern regarding “scope creep.” Provider organizations face the challenge of demonstrating that community paramedics can be complementary to home care workers, rather than competing with them. Dental therapists reportedly face similar issues in their dynamic with dentists. Some providers in focus groups noted that the movement towards nurse care coordinators can sometimes come at the expense of social workers in practices, and lamented the substitution of nurse care coordinators for social workers, noting that each group has a different skill set. Though some providers acknowledged that the nurse care coordinators do add value with respect to managed disease-related aspects of patient care, these providers viewed social workers as best equipped to address patients’ needs in a holistic manner and connect them with community resources.

7.2.7 Population health

Prior to its SIM award, Minnesota had already made significant state investment in state health improvement plans and other efforts to address population health goals—such as improved outcomes for people with diabetes, reduced obesity rates, and increased tobacco cessation. The state has dedicated resources from its SIM award to address community-specific health goals. The ACHs, which aim to integrate the social service and clinical sectors, are the main interventions through which the community-specific health goals will be affected.

Minnesota’s ACHs are required to develop at least one population health improvement project for a target population, selected on the basis of a community needs assessment. The state deliberately selected ACHs at various stages of preparedness, as noted, including both those that needed this funding to get off the ground and those already preparing to do this kind of work. State officials noted that, in the design of the ACH program, community-based governance, coordination, prevention, and measures were consciously considered. Applicants who received an ACH award selected target populations that include people with disabilities living in group homes, people in correctional facilities, the behavioral health population within the Medicaid expansion population, students in low-income schools, and people with chemical dependency. At the request of the Center for Medicare and Medicaid Innovation, Minnesota has analytic reports that pull diabetes, obesity, and tobacco data; and the state encourages eHealth grantees to exchange data for these patients. But one state health official suggested these efforts feel “tacked on,” whereas the population health improvement priorities the ACHs have identified feel “more authentic.”

ACHs are intended to “push ACOs to connect with factors affecting health,” in the words of one state official. By focusing on those social determinants of health for a small, narrowly

defined population, the outcomes for that population may improve. ACHs are required to have a population health plan, and to develop a quality improvement plan. One provider respondent expressed concern that finding metrics relevant to, or valid for, the population of interest will be challenging. Social services data, for example, do not have any systematic data collection associated with them, though some overlap exists between the ACH and eHealth grantees in trying to determine what information should be captured and shared among providers. State evaluators will be conducting focus groups or collecting survey data to assess how patient care has changed, but a state official acknowledged that it is unclear what a “reasonable accomplishment” for an ACH would be.

Payers, providers, and state officials all expressed concerns with respect to lack of clear outcomes expectations. One state official noted specific challenges to the ACH model for rural populations, given the limited number of ACOs available in these areas with which an organization can partner to form an ACH. Those who have received ACH grants are excited to have an opportunity to work on improving health outcomes for their target populations, and often reported they would not have had the resources to target these populations without such funding. However, even if outcomes improve for these populations, few stakeholders sounded confident that these arrangements will be sustainable after the grant funding expires, unless other payers participate.

7.2.8 Stakeholder engagement

A broad range of stakeholders in Minnesota have engaged in health system transformation efforts in several ways. Different types of provider organizations have developed proposals to receive funding for various components of the initiative. In addition, some stakeholders serve as community reviewers of grant proposals; Minnesota has consciously opened the grant review process to community stakeholders such as advocacy groups, provider associations, and providers. As a state health official from the health department noted, “it validates the recommendations for funding when it comes from outside our office.” Multi-stakeholder groups also guide the Minnesota SIM Initiative. Finally, MDH actively communicates with the broader community about the Initiative’s goals, activities, and accomplishments.

The state continues to engage its two key stakeholder groups—the Multi-Payer Alignment Task Force and the Community Advisory Task Force—to provide input into the development of SIM activities and discuss health system transformation broadly. In the past year, as noted earlier, the state also convened two separate work groups consisting of both task force members and other stakeholders—one focused on designing the ACH initiative and the other on identifying opportunities for aligning data analytics.

Some task force members reported that, at first, the task forces lacked clarity and many members were uncertain about their roles. As the task forces have matured, however, multiple

stakeholders reported that the most recent meetings have been very purposeful, with clear goals and actionable discussions. One member said that “it is an effective committee structure and I feel like my perspective is being heard.” Even so, challenges persist. One state official reported that initially it was difficult to engage the Multi-Payer Alignment Task Force in open discussion, because its members compete with one another and are reticent to “put their cards on the table.” In response to this challenge, the task force began giving members “homework assignments,” to provide additional feedback to the state through email.

In May 2015, current task force members’ appointments expired and they needed to apply for reappointment if they wanted to continue as members. This enabled the state to assess whether other perspectives need to be heard. The state intends to designate seats on the Multi-Payer Alignment Task Force for representatives from its four priority service delivery settings: behavioral health, long-term and post-acute care, social services, and local public health.

Stakeholders generally reported that Minnesota is doing a good job of engaging a variety of groups in SIM activities; but some felt that employers and local communities have not been well engaged. One stakeholder commented that “it is my impression that both self-insured and fully-insured employers and individuals don’t really know what is going on [related to health system transformation]”; another commented that “[the] SIM [Initiative] has been innovative in many ways, but not in the way of empowering the communities that are impacted by the public health care system.” Minnesota is actively working to engage community members in activities under the SIM Initiative and health reform broadly. Minnesota held nine regional forums across the state during summer 2014 to engage communities, community-based organizations, and stakeholder groups in the state’s vision for ACHs. The forums provided a venue for groups to learn about the ACH concept as well as network with other organizations interested in collaborating on an ACH proposal. Furthermore, as noted, Minnesota has recently begun a new initiative, the Storytelling Engagement Project, which aims at building awareness and support for health system transformation by producing audio and visual stories of the positive impact the SIM Initiative has had on communities.

7.3 Quantitative Outcomes

This section presents information on six types of outcomes for the Minnesota SIM Initiative: (1) provider and payer participation, (2) populations reached, (3) care coordination, (4) quality of care, (5) health care utilization, and (6) health expenditures. Data on the first two sets of measures come from various state sources. The latter four sets of measures are derived from Medicaid Analytic eXtract (MAX)/Alpha-MAX, commercial (MarketScan), and Medicare claims data.

7.3.1 Populations reached

A primary focus of Minnesota's SIM Initiative is to increase the number of patients served by ACOs or similar models. Minnesota estimates that more than 180,000 Medicaid and Children's Health Insurance Program (CHIP) beneficiaries are currently served by IHPs, **representing approximately 23 percent of the Medicaid/CHIP population in the state (Table 7-1)**. This number is an increase of 35,702 from the previous quarter. Minnesota also plans to reach populations through ACHs. However, since the ACH program has only recently been established, no data on the numbers of individuals reached by the program are available. The number of individuals covered by HCHs is also increasing under the SIM Initiative, with almost 3.7 million reached through HCHs in first quarter 2015. **This represents 68 percent of the state's population being reached by HCHs in Minnesota.**

Table 7-1. Population reached in the Minnesota innovation models by payer

Payer	Health care homes	Behavioral health homes	Integrated Health Partnerships	Accountable Communities for Health
Medicaid/CHIP	Reporting not required	—	180,934 (23%)	—
Commercial	Reporting not required	—	—	—
Medicare	Reporting not required	—	—	—
All payers	3,694,278 (68%)	—	180,934 (5%)	—

CHIP = Children's Health Insurance Program; — = not applicable.

Source: Numerators are core metrics provided by Minnesota for first quarter 2015 on the CMS Web site.

Denominators are Kaiser Family Foundation population estimates based on the Census Bureau's March 2015 Current Population Survey (CPS: Annual Social and Economic Supplement) available at: <http://kff.org/other/state-indicator/total-population/>. The denominator for all payers includes other publicly insured and uninsured individuals, as well as Medicaid, Medicare, and privately insured individuals.

7.3.2 Provider and payer participation

As noted in the overview of Minnesota's model, the state's goal is to have a health care system where the majority of providers are participating in ACOs or similar models. To determine their progress toward this goal the state commissioned the ACO baseline survey. Though intended to guide development of tools and resources for providers and communities, and to inform future monitoring efforts, the survey will also assess participation in ACOs throughout the state. The results of this survey are expected in fall 2015. At that time Minnesota will provide specific metrics relative to participation in ACO models throughout the state—including the numbers of clinics in ACOs, providers in ACOs, and beneficiaries impacted by commercial ACOs. When providers were asked directly in the primary care practice survey whether any portion of payment to their practice (from any insurer) was based on performance for quality of care, costs, efficiency, or any other performance metric, 60 percent responded yes. An additional 22 percent responded no, and the remainder did not know. Minnesota currently provides metrics on IHP participation at both the beneficiary and provider level—numbers that

are presented in **Tables 7-1** and **7-2**, respectively. Note that though the primary care practice survey used a census of primary care practice organizations, the response rate was low (65 out of 737), therefore findings are not necessarily representative of primary care providers or practices statewide.

Table 7-2 shows the state-reported number of providers and practices participating in HCHs and IHPs, with the addition of 65 HCHs practices and seven more IHPs in first quarter 2015 from the previous quarter. **In first quarter 2015, the number of participating HCH physicians (providers) was 3,501; the number of HCH practices was 374.** The number of physicians and provider organizations in IHPs increased by 1,417 and 108, respectively, in first quarter 2015. Minnesota also added 12 ACH grant awardees to the existing three pilot organizations. With respect to BHHs, Minnesota has completed a SAMHSA consultation and released a draft SPA for public comment. An RFP for another round of IHPs was released April 27, 2015, for a start date of January 1, 2016.

Table 7-2. Physicians, practices, and payers participating in the Minnesota innovation models

Participants	Health care homes	Behavioral health homes	Integrated Health Partnerships	Accountable Communities for Health
Physicians	3,501*	—	6,667	—
Practices	374	—	328**	15***
Payers	Not reported	—	Medicaid	—

— = not applicable.

Notes: *The number of physicians in health care homes represents all certified providers, which includes physicians, nurse practitioners, and physician assistants. **This represents the number of provider organizations in Integrated Health Partnerships (IHPs). Provider organizations are defined as self-identified, distinct provider locations, which may include hospitals, clinics, or other sites. *** Accountable Communities for Health are community-based coalitions of health care providers, social service organizations, and in some cases managed care organizations.

Source: Core metrics are provided to CMS by Minnesota for first quarter 2015.

7.3.3 Care coordination

A main goal of the IHP model is to improve quality and cost by coordinating care. As mentioned previously, many providers have designated care coordination staff members and teams, who follow up with patients on lab results and appointments, assist with prescriptions, answer patient questions, and connect patients with community resources. Additionally, Minnesota will be promoting care coordination in the behavioral health setting through their BHHs, slated to begin in 2016. Given that first round IHP grants were awarded in 2013, with additional grants not awarded until July 2014 or later, there will not yet be any SIM-related impact on the care coordination measures. However, there are also active Medicare ACOs in the state, as well as initiatives to better serve populations dually eligible for Medicare and

Medicaid—though the beginning of these initiatives overlaps with the baseline period so their effects may not be present in the data.

Most of our care coordination measures require more than one quarter of data. Thus, we present these measures on an annual, instead of quarterly, basis. Furthermore, we do not yet have a full year of data for the test period in any of the payer databases. Therefore, we report care coordination estimates only for the baseline period. *Appendix Tables E-4-1* through *E-4-5* provide, for Minnesota and its comparison group, baseline care coordination measures for Medicaid beneficiaries by eligibility category, the commercially insured by age group, and Medicare beneficiaries by enrollment status. We looked for differences in the levels and trends in these measures.

Minnesota narrowed the gap with its comparison group from 2010 to 2011 with respect to the number of visits to primary care providers or specialists in the Medicaid population, by decreasing its total number of these visits while those total numbers increased in the comparison group. Percentages of both inpatient admissions with follow-up and mental health inpatient admissions with follow-up were lower in Minnesota relative to the comparison group, with Minnesota trending downward from 2010 to 2011 while the comparison group trended upward over the same period. For asthma medication management, Minnesota began the period with lower percentages than the comparison group but surpassed it by 2011. In both years Minnesota performed better than the comparison group on percentage of beneficiaries diagnosed with depression who remained on anti-depressants.

Commercially insured beneficiaries had a sharp rise in their primary care and specialty provider visit rates in 2013, though overall rates were lower in Minnesota than the comparison group. Minnesota's percentages of both inpatient admissions with follow-up and mental health inpatient admissions with follow-up during the baseline period were consistent with those of the comparison group, with slight increases in inpatient admission follow-up for all age categories and slight decreases in mental health admission follow-ups for children and adults. The percentage of appropriately prescribed asthma medication was flat for all groups. In contrast, the percentage of those newly diagnosed with depression who adhered to antidepressant medication was higher in Minnesota than the comparison group, though the overall trend in all groups was downward.

In Minnesota's Medicare population, the rate of visits to primary care physicians was consistently higher than the comparison group, while the rate of visits to specialists was consistently lower. As with the commercially insured populations, both Minnesota and the comparison group saw sharp increases in the total visits rate for primary care and specialty providers in 2013—an increase that was most pronounced for beneficiaries dually eligible for Medicare and Medicaid. Inpatient admission with follow-up was slightly higher in Minnesota for Medicare beneficiaries relative to the comparison group, but both trends increased slightly

over the baseline period. For mental health admissions with follow-up, Minnesota and its comparison group both showed slight decreases, with the decrease slightly smaller in Minnesota.

7.3.4 Quality of care

As discussed previously, IHPs are required to report on quality measures in the first year of their contract, and their performance on these measures influences their future shared savings. ACH grantees are also required to have quality improvement plans. Minnesota has a long history of reporting quality measures, with providers and clinics being required to report quality data through the SQRMS since 2010.⁴⁰ Therefore, improvements in care quality may pre-date SIM implementation. However, the state is providing additional data to the IHPs with SIM Initiative funds. In particular, the state provides IHPs with provider-level quality data on Medicaid patients, in contrast to the aggregated all-patient level usually provided by SQRMS.

Most of our quality of care measures require more than one quarter of data. Thus, we present these measures on an annual, instead of quarterly, basis. Furthermore, we do not yet have a full year of data for the test period in any of the payer databases. Therefore, we report quality-of-care estimates only for the baseline period. *Appendix Tables E-4-6* through *E-4-13* provide, for Minnesota and its comparison group, baseline quality-of-care measures for Medicaid beneficiaries by eligibility category, the commercially insured by age group, and Medicare beneficiaries by enrollment status. Similar to the care coordination measures, we look for differences in the levels and trends in the measures.

For the Medicaid population, Minnesota's Prevention Quality Indicator (PQI) rates were higher than in the comparison group from 2010 to 2011, with Minnesota trending upwards across all PQIs while the comparison group trended downward on some PQIs. Minnesota's performance was higher than its comparison group with respect to rates of breast cancer screening and well-child visits. Rates of influenza immunization were consistent across groups, while Minnesota's rate of beneficiaries who initiated and remained engaged in alcohol or other drug treatment was lower relative to the comparison group but trended upward over the period.

In the commercially insured population, from 2010 to 2013 Minnesota's PQIs were lower than those of the comparison group and trended downward, while immunization rates were higher than the comparison group and trended upward. For those initiating and remaining engaged in alcohol or other drug dependence treatment, Minnesota's rates were similar to those of the comparison group, with both trending downward. Well-child visit results varied by age category for this population, with Minnesota performing better than the comparison group for infants, but being similar to the comparison group for children ages 3 to 6. The trend in well-child visits was universally upward over the baseline period.

⁴⁰ Minnesota Community Measurement. (2014). Minnesota Statewide Quality Reporting and Measurement Systems (SQRMS). In *Statewide Programs*. Retrieved from <http://mnccm.org/submitting-data/statewide-programs/>

Looking at the Medicare population reveals that Minnesota had lower PQI rates relative to the comparison group in 2010, but the overall composite PQI rate was higher in Minnesota relative to the comparison group in 2013. This is largely attributable to Minnesota seeing a rise in its chronic composite PQI rate while the comparison group did not. In 2011, Minnesota's influenza immunization rate was similar to that in the comparison group, but was surpassed by the comparison group in 2013 because the comparison group's rate increased at a higher rate than Minnesota's. The tobacco screening rate was lower in Minnesota, and though it trended up over the baseline period, the increase was slower than in the comparison group. The breast cancer screening rate among Medicare beneficiaries was higher in Minnesota than the comparison group, and though Minnesota's rate trended slightly downward, it remained higher than the comparison group's.

7.3.5 Health care utilization

Reductions in health care utilization might also be expected as a result of the care coordination and quality of care efforts recently implemented, once data are available for the time period in which the efforts took place. Noting measurable changes in health care utilization can be complex. Lasting changes in utilization of health care services require behavioral change on the part of both providers and patients, and can take some time to achieve as both groups learn to approach and receive health care services in different ways. However, there have been longstanding statewide quality of care initiatives that may be reflected in Minnesota's utilization rates relative to the comparison group for the baseline period. Any improvements from the SIM Initiative would likely be associated with the Medicaid population, as that is the target population for SIM activities in the state. Changes in utilization trends for the Medicaid population are expected to be small in the early test period and to grow as the test period progresses. In addition, no spillover effects on the commercially insured and Medicare populations are expected so early in the SIM Initiative test period.

Figures 7-2 through 7-11 provide quarterly averages of core utilization measures for Medicaid beneficiaries, the commercially insured, and Medicare beneficiaries in Minnesota and its comparison group. For Medicaid beneficiaries, we report baseline data from fourth quarter 2010 through fourth quarter 2011, the latest period for which we have complete Medicaid data for Minnesota and two of the states comprising its comparison group (Iowa and Washington). For the commercially insured and Medicare beneficiaries, we report on the complete 3-year baseline period (fourth quarter 2010 through third quarter 2013) plus the first three quarters of the test period (fourth quarter 2013 through second quarter 2014). **Appendix Tables E-4-14 through E-4-16** present quarterly averages by year and eligibility category for Medicaid beneficiaries, year and age group for the commercially insured, and year and dual Medicaid enrollment status for Medicare beneficiaries, respectively.

Because we have early test period data for the commercially insured and Medicare populations, we also present the results of the difference-in-differences (DD) regression analyses of the utilization measures in *Tables 7-3* and *7-4*.

Utilization summary

The results in the baseline period utilization trends for the Medicaid population in Minnesota relative to the comparison group are mixed, with some rates higher and some rates lower relative to the comparison group, and one significant finding in DD results for the commercially insured and Medicare populations. During the baseline period, Minnesota's rate of all-cause acute inpatient admissions among the Medicaid population was lower than that of the comparison group, although the rate increased slightly over time in both Minnesota and the comparison group. ER visit rates among the Medicaid population trended upward while the comparison group rate generally trended downward. The rate of 30-day readmissions in Minnesota among the Medicaid population was higher than the comparison group's rate, and trended slightly upward over the baseline period. These mixed results for the Medicaid population in the quarter ending in 2011 suggest that although the long-standing health care reform efforts in Minnesota, such as HCHs, EHR adoption policies, and quality reporting, may have improved health care use in some areas, considerable room exists for SIM activities to expand upon those efforts. The DD results for both the commercially insured and Medicare beneficiaries show significantly larger declines in ER visits in Minnesota relative to the comparison group from the baseline to the early test period. However, because these populations are not the target of the early SIM activities, these results are more likely due to other reform efforts, such as all-payer HCHs, that pre-dated the Minnesota SIM Initiative and targeted these populations.

Medicaid

For the baseline period, the rate of all-cause acute inpatient admissions was lower among Minnesota Medicaid beneficiaries relative to the comparison group (*Figure 7-2*). This difference is largely due to obstetric admissions (*Figure 7-3*). In Minnesota, the all-cause inpatient admission rate increased from fourth quarter 2010 to fourth quarter 2011, but obstetric admissions were unchanged before declining in fourth quarter 2011. In the comparison group, all-cause and obstetric admission rates increased over this time. The rate of ER visits among Medicaid beneficiaries was lower in Minnesota relative to the comparison group in fourth quarter 2010; however, the rate increased over time in Minnesota and decreased in the comparison group, making them nearly the same in fourth quarter 2011 (*Figure 7-4*). These baseline trends suggest a real opportunity for the SIM Initiative to expand access to care through efforts to develop emerging professions, and to shift patient behavior towards primary care within IHPs rather than ERs as a source of care. The rate of 30-day readmissions among Medicaid beneficiaries was higher in Minnesota relative to the comparison group. The rate also increased over time in Minnesota and decreased in the comparison group, widening the gap between them (*Figure 7-5*). These mixed results—with Minnesota performing better than the

comparison group with respect to all-cause admissions and ER visits, but worse with respect to 30-day readmissions—may reflect existing state efforts impacting utilization, but room still exists for SIM activities to realize additional utilization improvements in the Medicaid population as the models mature.

Figure 7-2. All-cause acute inpatient admissions per 1,000 Medicaid beneficiaries, Minnesota and comparison group

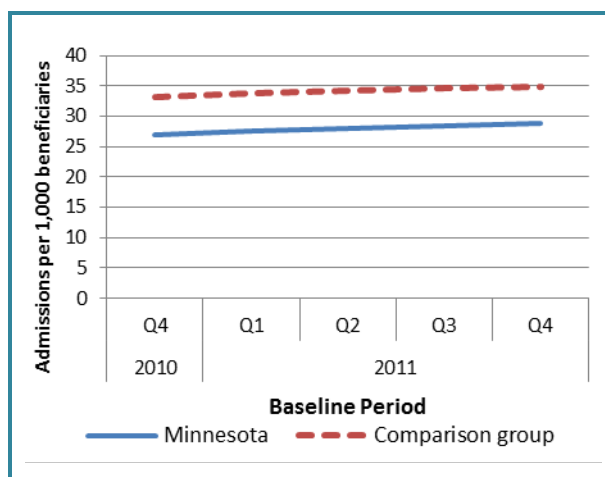


Figure 7-3. Obstetric inpatient admissions per 1,000 Medicaid beneficiaries, Minnesota and comparison group

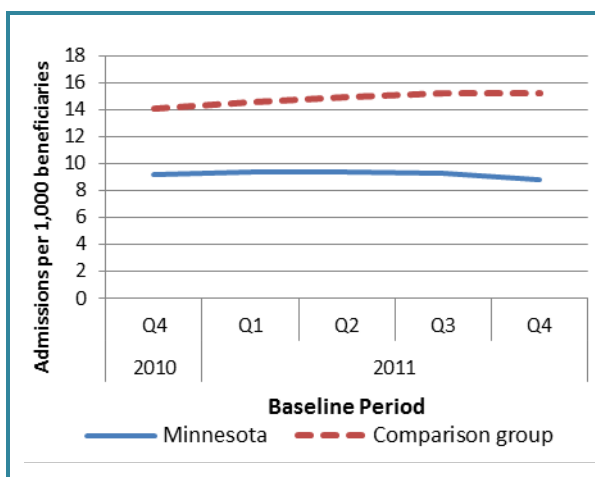


Figure 7-4. Emergency room visits that did not lead to hospitalization per 1,000 Medicaid beneficiaries, Minnesota and comparison group

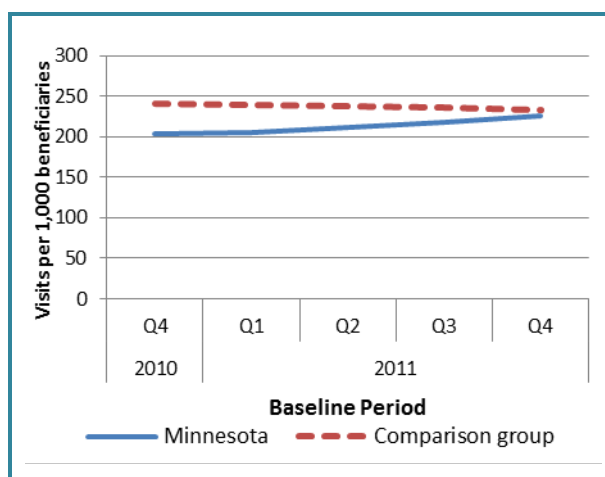
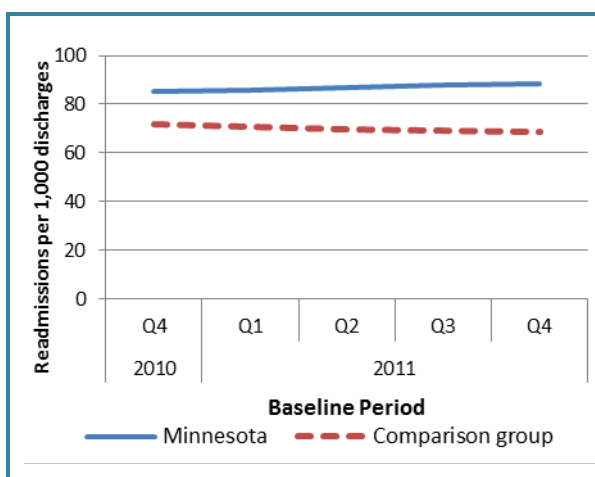


Figure 7-5. 30-day readmissions per 1,000 discharges, Medicaid beneficiaries, Minnesota and comparison group



Commercially insured

Although providers over time tend to follow consistent practice patterns regardless of their patient's insurance coverage, one utilization measure in Minnesota relative to the comparison group during the baseline period showed a different pattern among the Medicaid

population than the commercially insured population. Notably, Minnesota's commercially insured population had higher rates of all-cause inpatient admissions than the comparison group during the baseline and test periods (**Figure 7-6**), whereas that same rate was lower in Minnesota relative to the comparison group among the Medicaid population in the early baseline period for which data for both populations are available. However, similarities existed in the early baseline period for both the rate of ER visits in Minnesota relative to the comparison group (lower for both the Medicaid and commercially insured populations) and the rate of 30-day readmissions (higher for both the Medicaid and commercially insured populations). Thus, the SIM Initiative's emphasis on supporting and accelerating changes for the Medicaid population served by groups of health care providers may, over the longer period, have spillover effects on the commercially insured population.

With regard to the commercially insured population, the rate of ER visits rose slightly in the first part of the baseline period to highs in 2012 and then declined slightly in 2013 and 2014 in both Minnesota and the comparison group (**Figure 7-7**). The 30-day readmission rate for the commercially insured in Minnesota, though volatile in both Minnesota and the comparison group, was consistently higher in Minnesota (**Figure 7-8**). During the early test period, the readmission rate increased for Minnesota and decreased for the comparison group.

The only significant finding from the regression adjusted DD results shows that the rate of ER visits declined from baseline to the first three quarters of the test period at a faster rate in Minnesota than in the comparison group. But the difference was small (-1.93 visit per 1,000 members or 2,057 fewer visits in the first three test quarters (**Table 7-3**). This result is consistent with a positive impact of the SIM Initiative in accelerating health care transformation and reducing ER utilization among the commercially insured in Minnesota. However, these results are most likely not solely attributable to the Minnesota SIM Initiative but indicative of other, pre-SIM health care transformation activities. For example, enhanced access to primary care through HCHs affected a large portion of the commercially insured population, and could be associated with changes in the ER visit rate. The lack of significant results on the other utilization measures is not surprising, given that IHPs' efforts may have more direct influence on all-cause acute inpatient admissions and 30-day admission rates than the work of the HCHs, yet the test period reflects a time when only a few IHPs had more than 6 months of implementation experience. Furthermore, since IHPs are responsible for total cost of care for the Medicaid population, we would not expect to see large impacts on utilization in a statewide examination of the commercially insured population in an early phase of implementation.

Figure 7-6. All-cause acute inpatient admissions per 1,000 covered lives, MarketScan commercially insured, Minnesota and comparison group

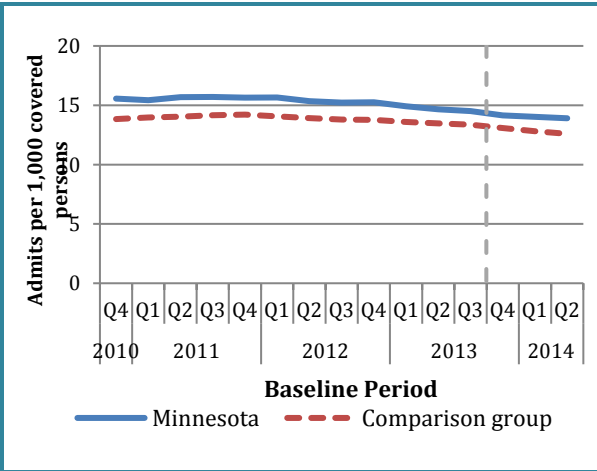


Figure 7-7. Emergency room visits that did not lead to hospitalization per 1,000 covered lives, MarketScan commercially insured, Minnesota and comparison group

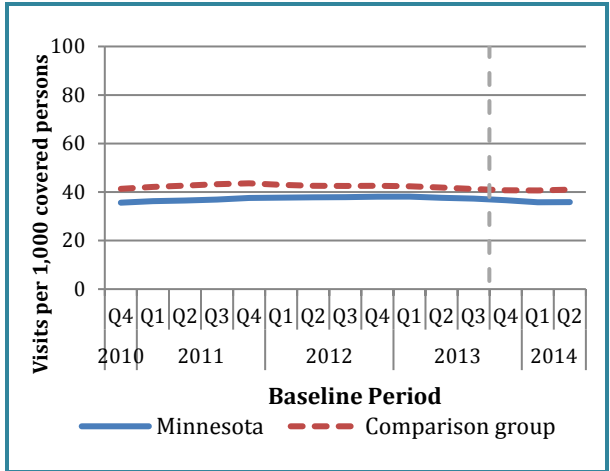


Figure 7-8. 30-day readmissions per 1,000 discharges, MarketScan commercially insured, Minnesota and comparison group

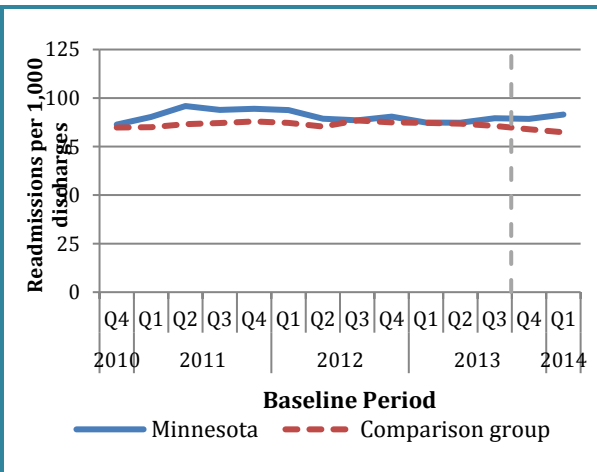


Table 7-3. Difference in the pre-post change in expected utilization per 1,000 members, MarketScan commercially insured, Minnesota and comparison group, first three quarters of SIM implementation (October 2013 through June 2014)

Outcome	Regression adjusted difference in differences	95% Confidence interval		p-value
		Lower limit	Upper limit	
Aggregated change in utilization ¹				
All-cause acute inpatient admissions	29	-320	379	
Emergency room visits that did not lead to hospitalization	-2,057	-2,664	-1,450	
30-day hospital readmissions	-1,382	-11,216	8,452	
Change in utilization per 1,000 members ²				
All-cause acute inpatient admissions	0.028	-0.30	0.36	0.869
Emergency room visits that did not lead to hospitalization	-1.93	-2.50	-1.36	0.000
30-day hospital readmissions per 1,000 discharges	-1.30	-10.53	7.94	0.783

Note: The total number of person-quarters for Test state members in the post period (Q4 2013–Q2 2014) is 1,064,774. Bold estimates indicate statistical significance at the $p < 0.05$ level. A linear probability model was used to obtain estimates of the difference in probability of use. A *negative* value corresponds to a *greater decrease* or a *smaller increase* in probability of utilization in the Test state relative to the comparison group. A *positive* value corresponds to a *greater increase* or a *smaller decrease* in probability of utilization in the Test state relative to the comparison group.

¹The quarterly per-member estimates are multiplied by the total number of person-quarters to get the aggregated change in utilization.

²The per-member estimates are multiplied by 1,000 to obtain the change in the rate of use per 1,000 persons.

Medicare

Similar to the commercially insured population, but in contrast to the Medicaid population, the rate of all-cause acute inpatient admissions was higher among Medicare beneficiaries in Minnesota relative to the comparison group between fourth quarter 2010 and fourth quarter 2014, and the rate decreased over time in both groups (**Figure 7-9**). The rate of ER visits was essentially the same in Minnesota and the comparison group and increased over the baseline and early test periods for both groups (**Figure 7-10**). The rate of 30-day readmissions was higher among Medicare beneficiaries in Minnesota relative to the comparison group. The rate declined over the baseline and early test period in both Minnesota and the comparison group (**Figure 7-11**). Higher or equivalent utilization rates for Medicare beneficiaries in Minnesota and the comparison state may reflect the Medicaid focus of SIM activities and the lack of time for spillover effects to occur.

Figure 7-9. All-cause acute inpatient admissions per 1,000 Medicare beneficiaries, Minnesota and comparison group

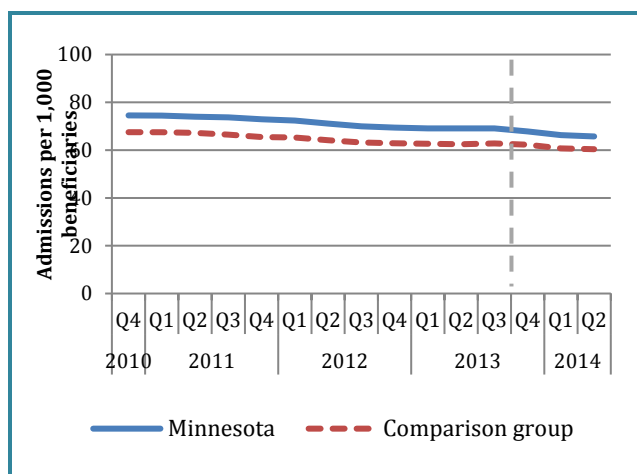


Figure 7-10. Emergency room visits that did not lead to hospitalization per 1,000 Medicare beneficiaries, Minnesota and comparison group

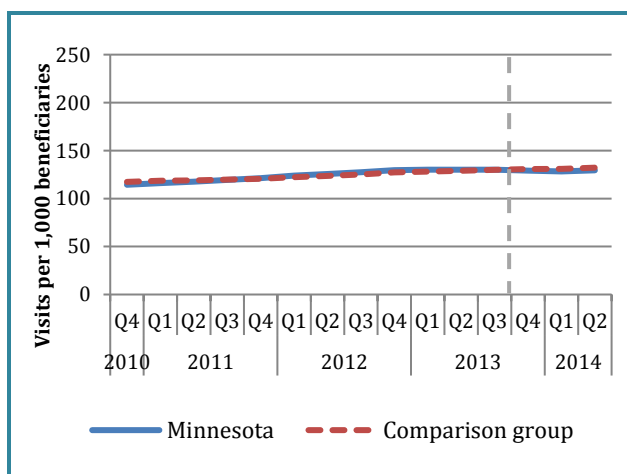
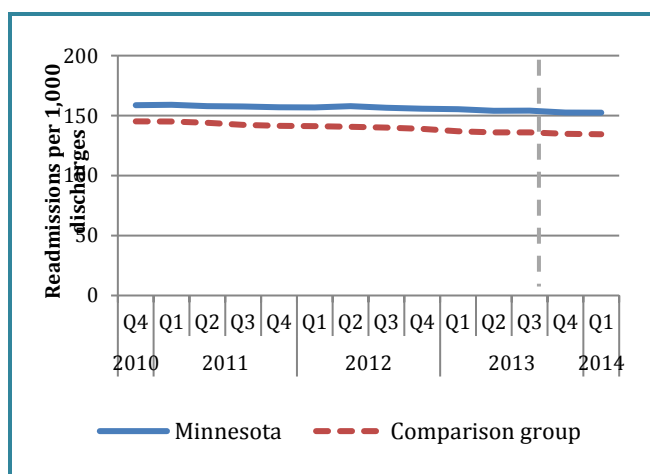


Figure 7-11. 30-day readmissions per 1,000 discharges for Medicare beneficiaries, Minnesota and comparison group



The regression adjusted DD results indicate that, among Medicare beneficiaries in the first three quarters of the test period, ER visits increased at a lower rate in Minnesota than in the comparison group, resulting in 4,594 fewer ER visits in aggregate (*Table 7-4*). These results are consistent with a positive impact of the SIM Initiative in accelerating health care transformation in the state. However, as with interpretation of the results for the commercially insured population, these results are most likely not solely attributable to the Minnesota SIM Initiative but indicative of other, pre-SIM health care transformation activities. For example, enhanced access to primary care through HCHs affected the Medicare population, and could be associated with changes in the ER visit rate. There was no statistically significant change with respect to inpatient admissions or 30-day readmissions in Minnesota relative to the comparison group.

These results are not surprising given that we would not expect to see large impacts on utilization among a statewide examination of the Medicare population so early in the implementation period.

Table 7-4. Difference in the pre-post change in expected utilization per 1,000 members, Medicare beneficiaries, Minnesota and comparison group, first three quarters of SIM implementation (October 2013 through June 2014)

Outcome	Regression adjusted difference in differences	95% Confidence interval		p-value
		Lower limit	Upper limit	
Aggregated change in utilization ¹				
All-cause acute inpatient admissions	-784	-1,569	112	
Emergency room visits that did not lead to hospitalization	-4,594	-5,602	-3,473	
30-day hospital readmissions	3,137	-4,370	10,644	
Change in utilization per 1,000 members ²				
All-cause acute inpatient admissions	-0.70	-1.40	0.10	0.0883
Emergency room visits that did not lead to hospitalization	-4.10	-5.00	-3.10	<0.0001
30-day hospital readmissions per 1,000 discharges	2.80	-3.90	9.50	0.4095

Note: The total number of person-quarters for Test state members in the early test period (Q4 2013–Q2 2014) is 1,120,412. Bold estimates indicate statistical significance at the $p < 0.05$ level. A linear probability model was used to obtain estimates of the difference in probability of use. A *negative* value corresponds to a *greater decrease* or a *smaller increase* in probability of utilization in the Test state relative to the comparison group. A *positive* value corresponds to a *greater increase* or a *smaller decrease* in probability of utilization in the Test state relative to the comparison group.

¹The quarterly per member estimates are multiplied by the total number of person-quarters to get the aggregated change in utilization.

²The per-member estimates are multiplied by 1,000 to obtain the change in the rate of use per 1,000 persons.

A number of limitations should be considered when reviewing the DD results comparing utilization rates between the baseline and early test periods for Minnesota relative to the comparison group, in the commercially insured and Medicare populations. First, the delivery system and payment reform aspects of the SIM Initiative has focused on expanding Medicaid's contracts with IHPs, so the affected population is more likely to be Medicaid beneficiaries, for whom only baseline data are available. Moreover, in the test period, IHPs involved a subset of providers in the state, and these analyses examine statewide outcomes, so results may be affected by: (1) other statewide efforts occurring simultaneously, like the HCHs, and (2) the inclusion of individuals not receiving care from the IHPs. Additionally, even though the rigorous study design uses a comparison group and adjusts for a range of covariates, the results could still be biased by a weak match of individuals in Minnesota to individuals in the comparison group, as well as unmeasured factors that we were not able to account for in our methods; see *Appendixes B and C*.

7.3.6 Health care expenditures

The opportunity for provider organizations to share in savings, a central tenet of IHPs, is intended to introduce incentives for providers to lower health care expenditures by reducing unnecessary and inefficient health care. Minnesota health care providers frequently reported using SIM support for areas such as health IT and emerging professionals, to develop delivery system changes aimed at increasing their shared savings. To help IHPs achieve savings, the state provides them with expenditure information for their attributed Medicaid beneficiaries in nearly all service categories and from all providers. This was previously unavailable, with any such data previously provided from individual MCOs in varying formats, if at all. Any decrease in expenditures related to these efforts is likely not visible yet, as IHPs serve only a fraction of Medicaid beneficiaries so far, and the eHealth and Emerging Professionals grants have not been in place long enough to begin showing results. Because IHPs are specific to the Medicaid population, improvements in other populations may take longer to become measurable because they represent spillover rather than direct effects.

Figures 7-12 through 7-18 and 7-23 through 7-26 provide quarterly average PMPM payments for the Medicaid beneficiaries, commercially insured, and Medicare beneficiaries in Minnesota and its comparison group. For Medicaid beneficiaries, we report baseline data from fourth quarter 2010 through fourth quarter 2011, the latest period for which we have complete Medicaid data for Minnesota and two of the states comprising its comparison group (Iowa and Washington). For the commercially insured and Medicare beneficiaries, we report on the complete 3-year baseline period (fourth quarter 2010 through third quarter 2013) plus the first three quarters of the test period (fourth quarter 2013 through second quarter 2014). **Appendix Table E-4-17** shows average PMPM total, FFS, and capitated payments for Medicaid beneficiaries by year and eligibility category. **Appendix Tables E-4-18 and E-4-19** provide average PMPM payments by year and age group for the commercially insured, and year and Medicare-Medicaid enrollment status for Medicare beneficiaries, respectively.

Because we have early test period data for the commercially insured and Medicare populations, we also provide the DD results for PMPM payments in **Tables 7-5 and 7-6**. **Figures 7-19 and 7-27** show the quarterly effects on spending for the commercially insured and Medicare beneficiaries, respectively, while **Figures 7-21 and 7-29** show the cumulative effects on spending. **Figures 7-20 and 7-22** show the strength of the evidence for the commercially insured and **Figures 7-28 and 7-30** show the strength of the evidence for Medicare beneficiaries.

Expenditure summary

During the baseline period, Minnesota's PMPM expenditures were generally higher relative its comparison group for the Medicaid and commercially insured populations, except for payments to other facilities and outpatient pharmacy payments among the commercially insured. Total Medicaid payments for Medicare-Medicaid and Medicaid only enrollees were virtually unchanged over the 5-quarter baseline period for which we had data (fourth quarter 2010 through

fourth quarter 2011); no test period data on the Medicaid beneficiaries, the target population for the early SIM activities, were available for this report. Total payments and payments for each major service category rose slightly over the baseline and early test period for the commercially insured. For the Medicare population, Minnesota's total payments and payments to other facilities were similar to those of the comparison group, with Minnesota expenditures higher for inpatient facilities but lower for professional services than in the comparison group. The early DD results for the latter populations show significantly slower growth in professional payments in Minnesota relative to the comparison group for both the commercially insured and Medicare populations. However, since the first three quarters of the test period are too early to see spillover effects from SIM activities, these results are most likely related to other health care reforms in the state, such as the all-payer HCHs.

Medicaid

Average total PMPM Medicaid payments for Medicaid-only and Medicare-Medicaid beneficiaries were consistently higher in Minnesota than the comparison group between fourth quarter 2010 and fourth quarter 2011 (*Figures 7-12 and 7-13*). Average total Medicaid payments increased very slightly over the year for Medicaid-only enrollees in Minnesota. These early baseline results show significant room for improvement in the Minnesota Medicaid program for the SIM Initiative activities.

Figure 7-12. Average total PMPM payments, Medicaid-only beneficiaries, Minnesota and comparison group

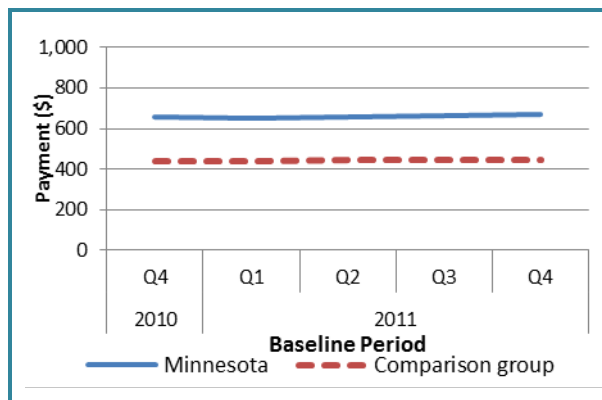
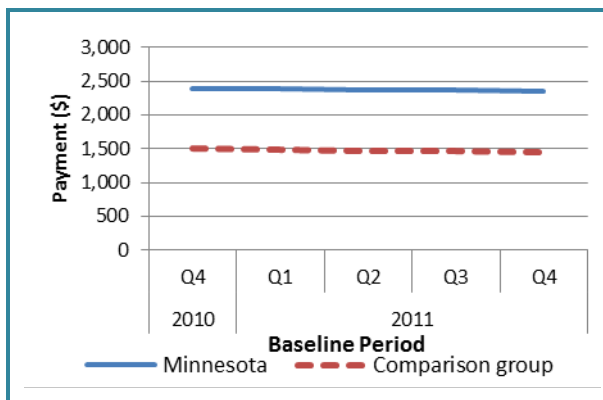


Figure 7-13. Average total PMPM payments, Medicare-Medicaid beneficiaries, Minnesota and comparison group



Commercially insured

For the commercially insured, Minnesota's performance relative to the comparison group was mixed. Average total PMPM payments for the commercially insured population were higher in Minnesota relative to the comparison group between fourth quarter 2010 and second quarter 2014 and increased over time in both groups (*Figure 7-14*). Inpatient facility payments for the commercially insured were generally higher in Minnesota than the comparison group. In

both groups, inpatient facility payments fluctuated and ultimately increased over time (**Figure 7-15**). Payments for other facilities among the commercially insured were slightly lower in Minnesota than the comparison group; however, Minnesota had higher professional payments (**Figures 7-16** and **7-17**). For both other facility and professional payments, payments initially increased then remained relatively stable through second quarter 2014 for both groups. Outpatient pharmacy payments for the commercially insured were fairly comparable in Minnesota and the comparison group. In both groups, these payments increased between second quarter 2012 and second quarter 2014 (**Figure 7-18**).

Figure 7-14. Average total PMPM payments, MarketScan commercially insured, Minnesota and comparison group

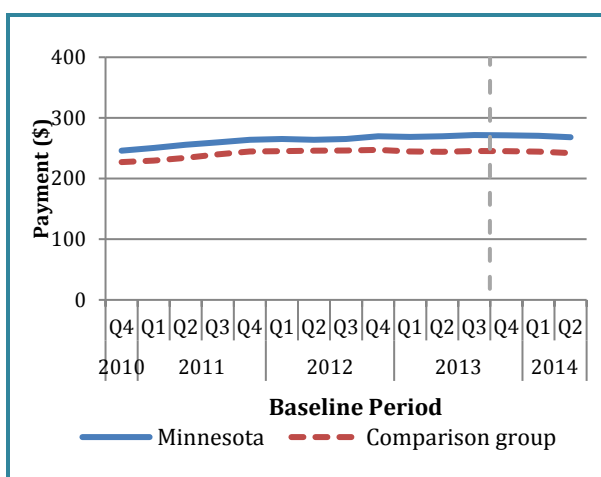


Figure 7-15. Average inpatient facility PMPM payments, MarketScan commercially insured, Minnesota and comparison group

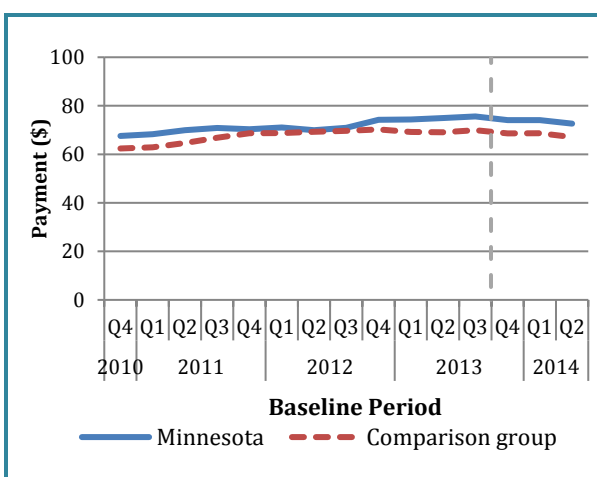


Figure 7-16. Average other facility PMPM payments, MarketScan commercially insured, Minnesota and comparison group

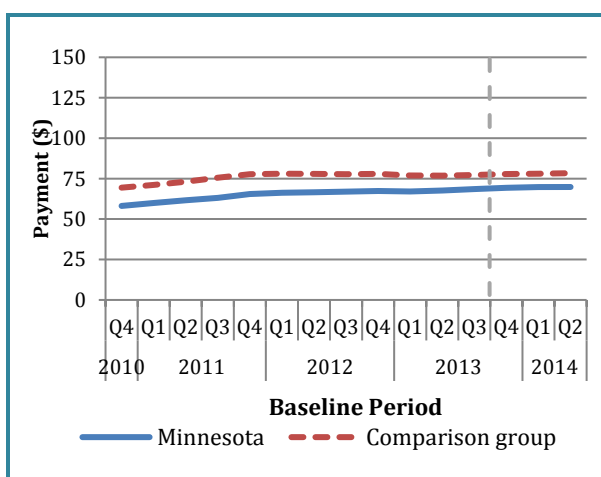


Figure 7-17. Average professional PMPM payments, MarketScan commercially insured, Minnesota and comparison group

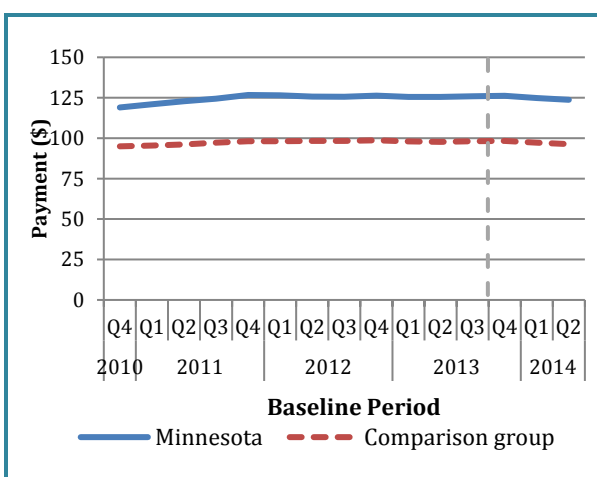
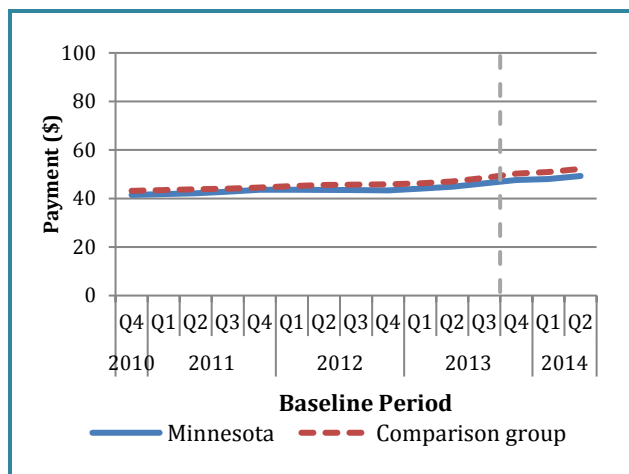


Figure 7-18. Average outpatient pharmacy PMPM payments, MarketScan commercially insured, Minnesota and comparison group



The regression-adjusted DD results show that relative to the 15 baseline quarters, average PMPM payments for professional services in the early test period among the commercially insured in Minnesota decreased at a faster rate (\$2.17 per member) than the comparison group (*Table 7-5*). The potential aggregate savings in professional payments ranges from \$590,000 to \$39 million. This population was not the target of the state’s SIM Initiative, however, and the time period study is too early for spillover effects; the state had just begun to fund grant activities to health care organizations for the purposes of eHealth or practice transformation activities by the second quarter of 2014. Moreover, although some IHPs’ contracts with the state Medicaid began as early as January 1, 2013, SIM Initiative–supported efforts—such as providing detailed cost data on attributed Medicaid beneficiaries to help IHPs understand their practice patterns—had just begun in early 2014. Thus, the relative decline in the growth of professional payments is likely related to other ongoing health care delivery reform, such as the spread of all-payer HCHs. No other changes in PMPM payments were significantly different between the two groups.

To assist policy makers in understanding the future prospect of successful results for the Minnesota SIM Initiative, we convert the DD results for change in total payments into probability estimates and provide graphical representations of the estimated quarterly and program-to-date effects, as well as the precision of these estimates. Overall spending estimates are not statistically significantly different between Minnesota and the comparison group in the first two test quarters, but the estimate in the third test quarter shows a significant savings in Minnesota. These results suggest that Minnesota had a 6-month start up period before showing a moderate probability of generating savings in the third test quarter (*Figures 7-19* and *7-20*). Since quarterly estimates can show considerable volatility, we also show cumulative spending estimates. These estimates show no statistically significant differences between Minnesota and the comparison group in the first three test quarters, providing no evidence for savings or losses in the test period to date (*Figures 7-21* and *7-22*).

Table 7-5. OLS adjusted difference in the pre-post change in PMPM payments, MarketScan commercially insured, Minnesota and comparison group, first three quarters of SIM implementation (October 2013 through June 2014)

Outcome	Regression adjusted difference in differences	95% Confidence interval		p-value
		Lower limit	Upper limit	
Aggregated change in payments ¹				
Total (in millions)	−\$8.21	−\$75.33	\$58.91	
Inpatient facility (in millions)	\$10.88	−\$41.82	\$63.58	
Other facility (in millions)	−\$1.27	−\$22.70	\$20.16	
Professional (in millions)	−\$20.02	−\$39.45	−\$0.59	
Outpatient pharmacy (in millions)	−\$9.45	−\$20.72	\$1.82	
Change in PMPM payments				
Total	−\$0.89	−\$8.15	\$6.37	0.811
Inpatient facility	\$1.18	−\$4.52	\$6.88	0.686
Other facility	−\$0.14	−\$2.45	\$2.18	0.908
Professional	−\$2.17	−\$4.27	−\$0.06	0.043
Outpatient pharmacy	−\$1.02	−\$2.24	\$0.20	0.100

OLS = ordinary least squares; PMPM = per member per month.

Note: The total number of person-quarters for Test state members in the post period (Q4 2013–Q2 2014) is 1,027,402. Bold estimates indicate statistical significance at the $p < 0.05$ level. A *negative* value corresponds to a *greater decrease* or a *smaller increase* in payments in the Test state relative to the comparison group. A *positive* value corresponds to a *greater increase* or a *smaller decrease* in payments in the Test state relative to the comparison group.

¹The PMPM estimates are multiplied by 9 months*1,027,402 person-quarters to obtain the change in total aggregate expenditures for the post period.

Figure 7-19. Quarterly effects on total spending, MarketScan commercially insured, Minnesota, fourth quarter 2013 through second quarter 2014

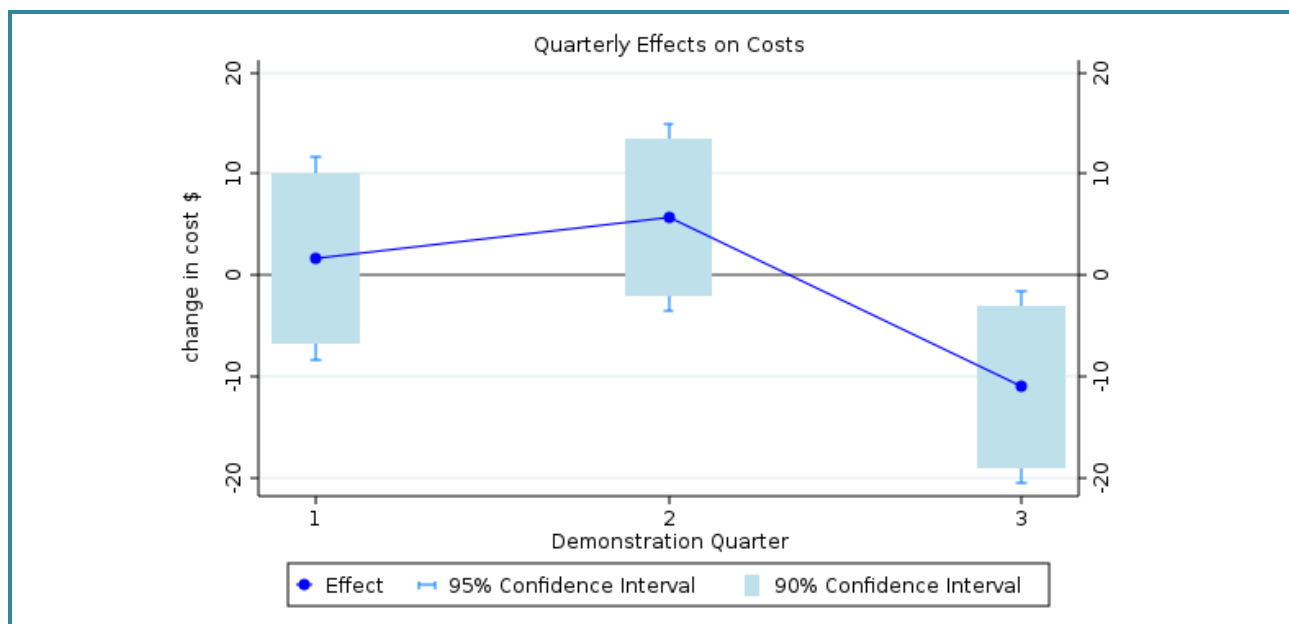


Figure 7-20. Quarterly strength of evidence on total spending, MarketScan commercially insured, Minnesota, fourth quarter 2013 through second quarter 2014

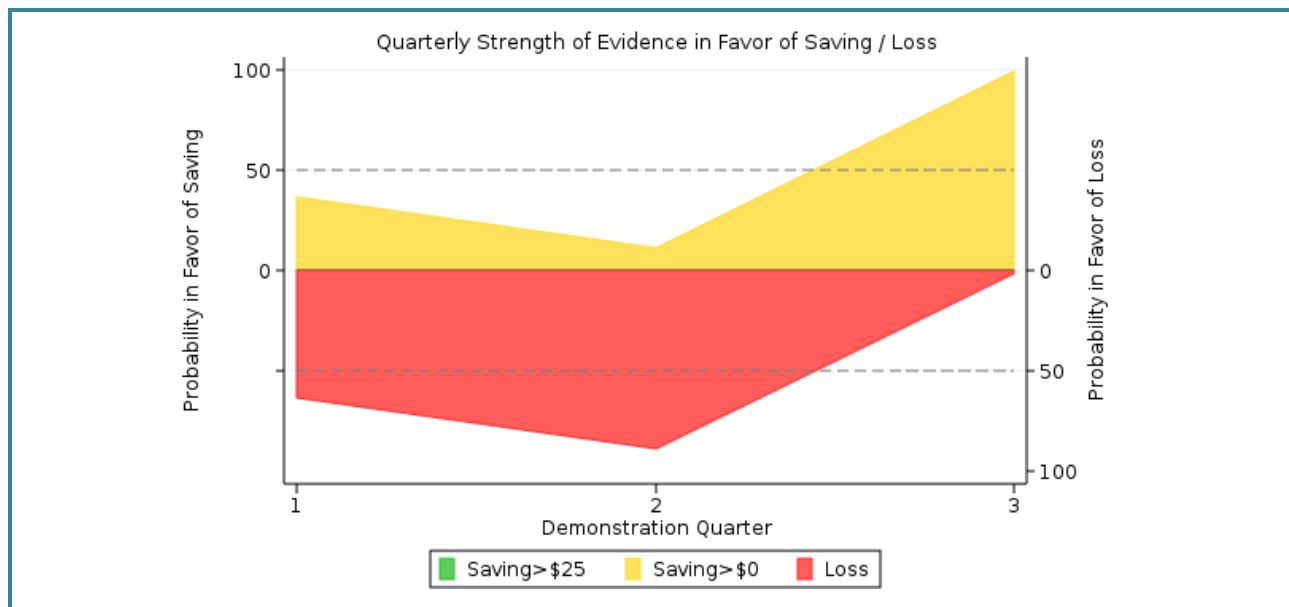


Figure 7-21. Cumulative effects on total spending, MarketScan commercially insured, Minnesota, fourth quarter 2013 through second quarter 2014

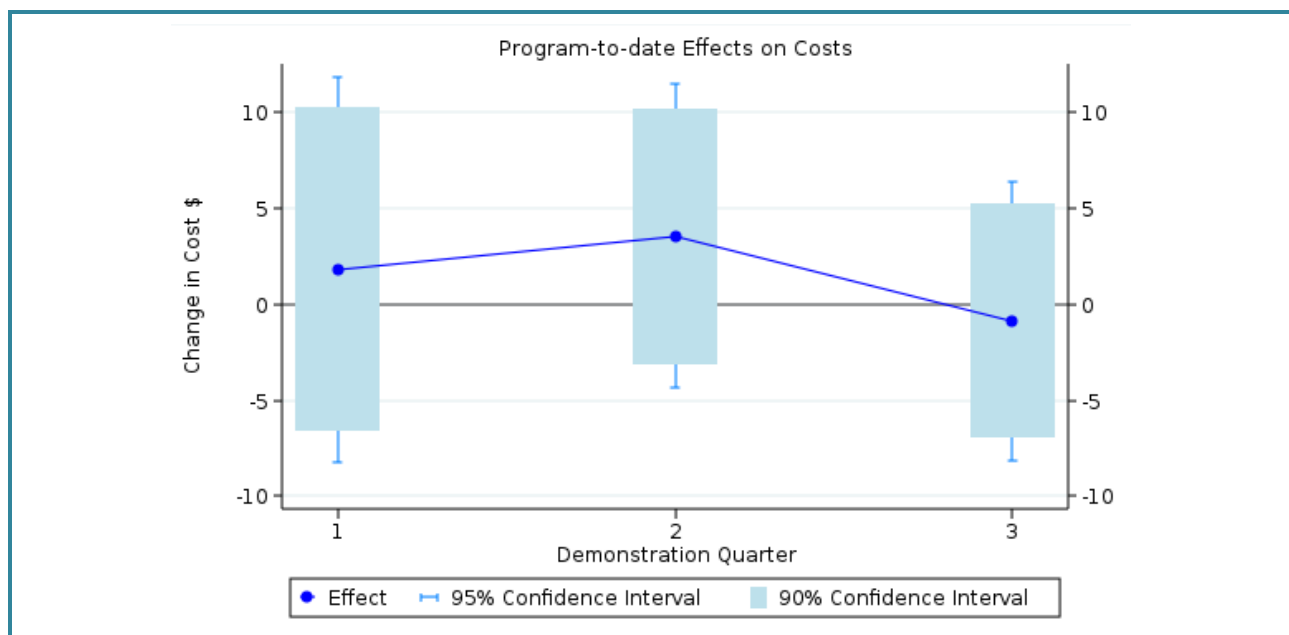
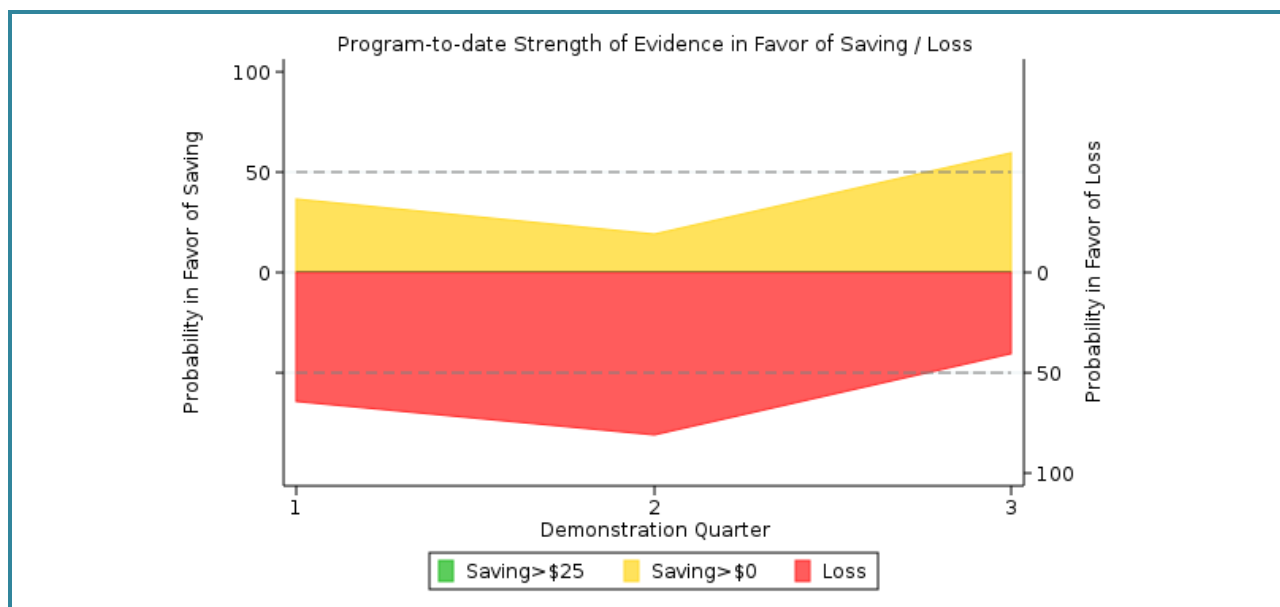


Figure 7-22. Cumulative strength of evidence on total spending, MarketScan commercially insured, Minnesota, fourth quarter 2013 through second quarter 2014



Medicare

Similar to the commercially insured, Minnesota's expenditures for Medicare beneficiaries relative to the comparison group are mixed. The average total and other facility payments for Medicare beneficiaries (**Figures 7-23** and **7-25**) were similar in Minnesota and the comparison group throughout the baseline and early test periods. In both Minnesota and the comparison group, other facility payments increased over the baseline and early test periods, with total payments also increasing over baseline but leveling off in the early test period. Relative to the comparison group, inpatient facility payments for Medicare beneficiaries were higher and professional payments lower in Minnesota. Average inpatient facility and professional PMPM payments remained fairly stable for both Minnesota and the comparison group over the baseline and early test periods (**Figures 7-24** and **7-26**).

Figure 7-23. Average total PMPM payments, Medicare beneficiaries, Minnesota and comparison group

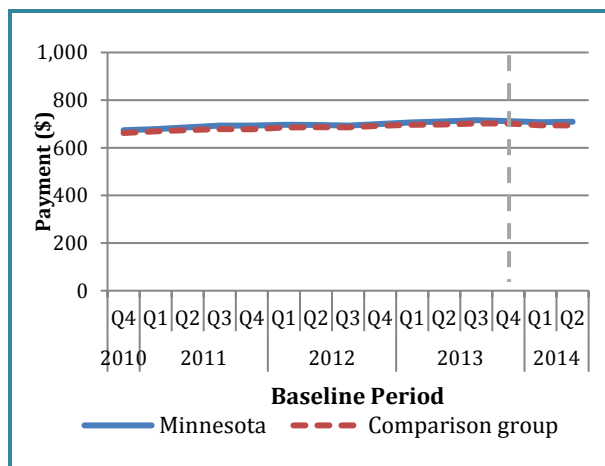


Figure 7-24. Average inpatient facility PMPM payments, Medicare beneficiaries, Minnesota and comparison group

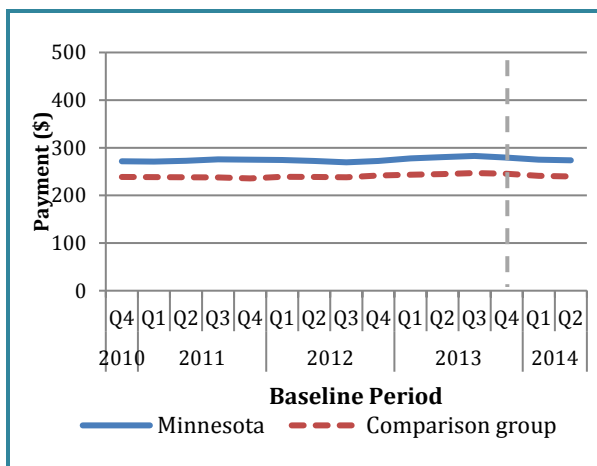


Figure 7-25. Average other facility PMPM payments, Medicare beneficiaries, Minnesota and comparison group

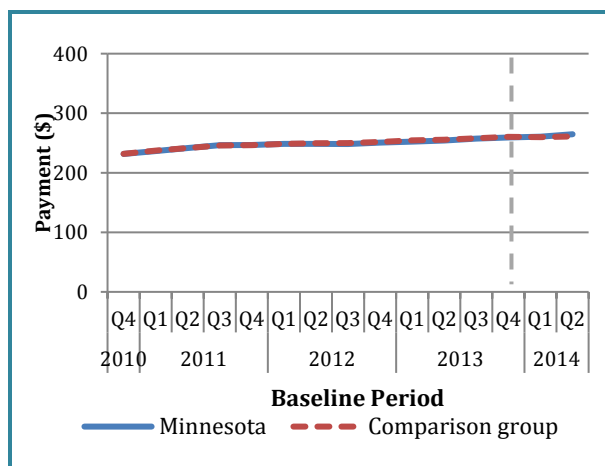
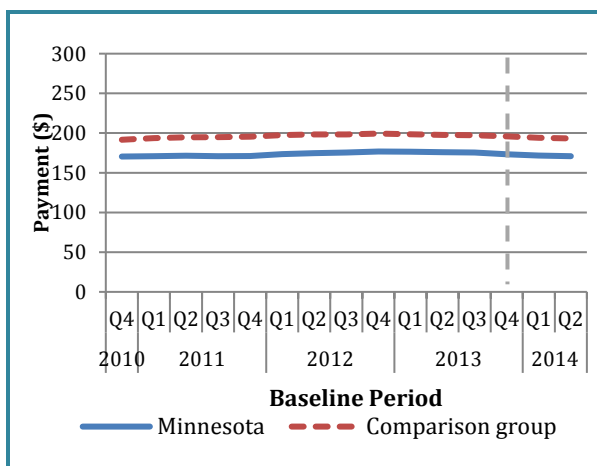


Figure 7-26. Average professional PMPM payments, Medicare beneficiaries, Minnesota and comparison group



Similar to the results for the commercially insured, the DD results for Medicare beneficiaries show significantly greater declines in spending in Minnesota relative to the comparison group. Relative to the 15 baseline quarters, the average decrease in PMPM payments for professional services in the early test period among Minnesota Medicare beneficiaries was significantly greater (\$2.54 per member) than the average decrease in the comparison group (**Table 7-6**). The potential aggregate savings from professional payments ranged from \$9 million to \$42 million. However, this population was not the target of the state's SIM Initiative and the time period studied is too early for spillover effects; qualitative results from site visits, interviews, focus groups, and document review indicate that the state had just

begun to fund grant activities to health care organizations for the purposes of eHealth or practice transformation activities by the second quarter of 2014. Moreover, although some IHPs' contracts with the state Medicaid program began as early as January 1, 2013, SIM Initiative-supported efforts, such as providing them with detailed cost data on attributed Medicaid beneficiaries to help IHPs understand their practice patterns, had just begun in early 2014. Thus, the relative decline in the growth of professional payments is likely related to other ongoing health care delivery reform, such as the spread of all-payer HCHs. No other PMPM payment changes were significantly different between the two groups.

Table 7-6. OLS adjusted difference in the pre-post change in PMPM payments, Medicare beneficiaries, Minnesota and comparison group, first three quarters of SIM implementation (October 2013 through June 2014)

Outcome	Regression adjusted difference in differences	95% Confidence interval		p-value
		Lower limit	Upper limit	
Aggregated change in payments ¹				
Total (in millions)	−\$23.06	−\$107.20	\$61.09	
Inpatient facility (in millions)	−\$22.84	−\$82.72	\$37.04	
Other facility (in millions)	\$25.36	−\$7.57	\$58.30	
Professional (in millions)	−\$25.57	−\$41.98	−\$9.17	
Change in PMPM payments				
Total	−\$2.29	−\$10.63	\$6.06	0.5913
Inpatient facility	−\$2.26	−\$8.20	\$3.67	0.4548
Other facility	\$2.52	−\$0.75	\$5.78	0.1312
Professional	−\$2.54	−\$4.16	−\$0.91	0.0023

OLS = ordinary least squares; PMPM = per member per month.

Note: The total number of person-quarters for Test state members in the post period (Q4 2013–Q2 2014) is 1,120,412. Bold estimates indicate statistical significance at the $p < 0.05$ level. A *negative* value corresponds to a *greater decrease* or a *smaller increase* in payments in the Test state relative to the comparison group. A *positive* value corresponds to a *greater increase* or a *smaller decrease* in payments in the Test state relative to the comparison group.

¹The PMPM estimates are multiplied by 9 months*1,120,412 person-quarters to obtain the change in total aggregate expenditures for the post period.

To assist policy makers in understanding the future prospect of successful results for the Minnesota SIM Initiative, we convert the DD results for change in total payments into probability estimates and provide graphical representations of the estimated quarterly and program-to-date effects, as well as the precision of these estimates. The quarterly spending estimates were significantly lower in Minnesota than in the comparison group in the first test quarter and significantly higher in the third test quarter, with no statistically significant difference in the second test quarter (**Figure 7-27**). Quarterly estimates, while interesting to examine for trends, are also more sensitive to short-term and limited factors that, in the long run, have little importance in lasting effects. Cumulative spending estimates show a lower trend for Minnesota than the comparison group in the first test quarter, and no statistically significant

differences in the second and third test quarters (*Figure 7-29*). These results suggest that, so far, there is no strong evidence for savings or losses for the SIM Initiative in Minnesota among Medicare beneficiaries to date, although there are some potentially important short-term indicators of losses in the second and third test quarters (*Figures 7-28* and *7-30*). However, since these findings are based on only the first three quarters of the SIM test period, they may change going forward.

Figure 7-27. Quarterly effects on total spending, Medicare beneficiaries, Minnesota, fourth quarter 2013 through second quarter 2014

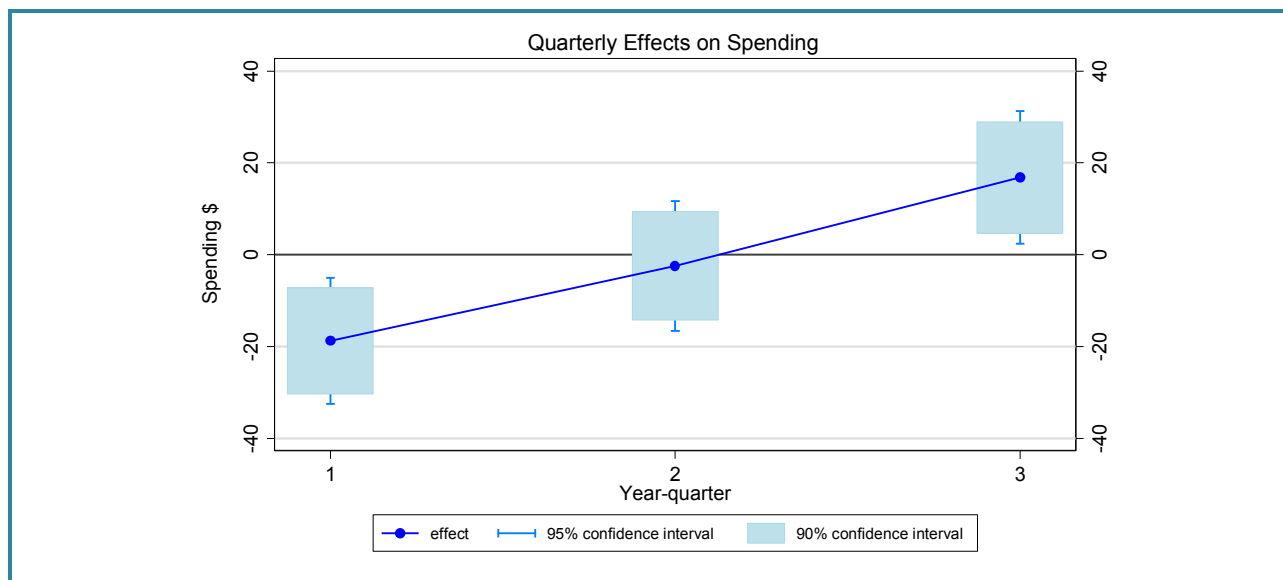


Figure 7-28. Quarterly strength of evidence on total spending, Medicare beneficiaries, Minnesota, fourth quarter 2013 through second quarter 2014

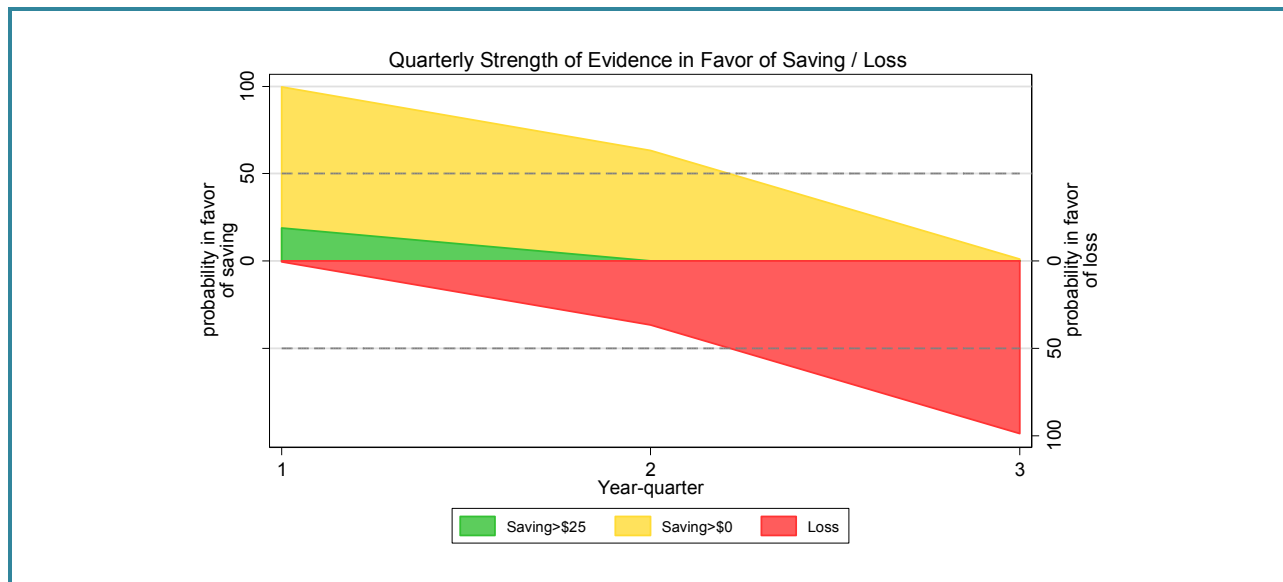


Figure 7-29. Cumulative effects on total spending, Medicare beneficiaries, Minnesota, fourth quarter 2013 through second quarter 2014

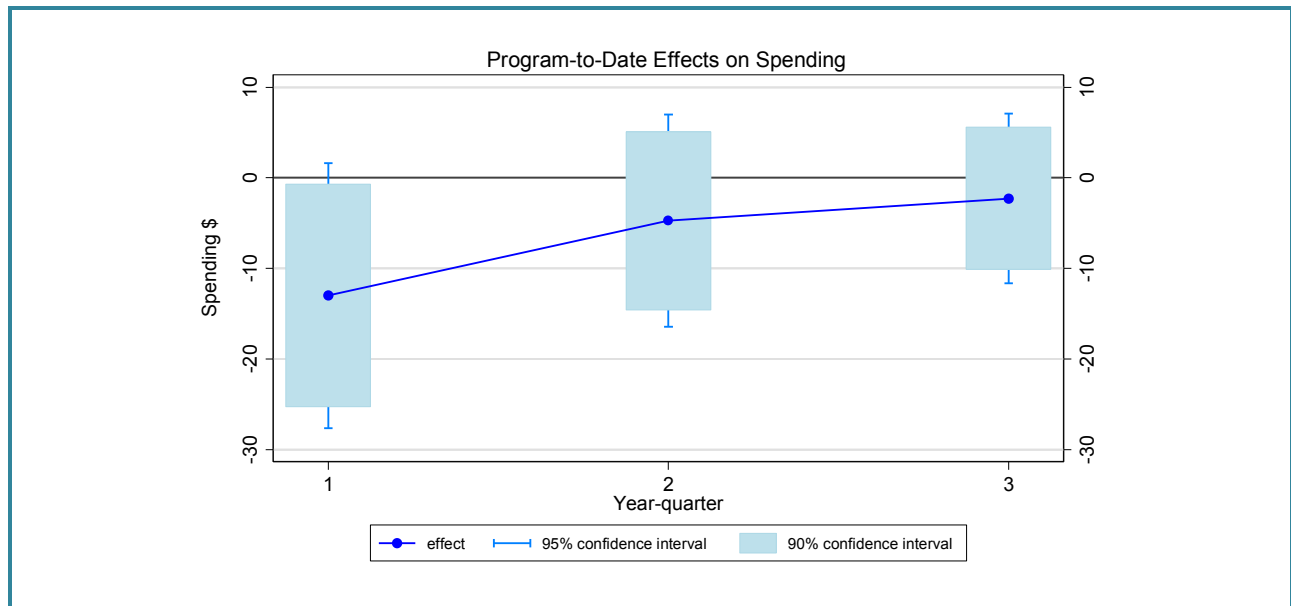
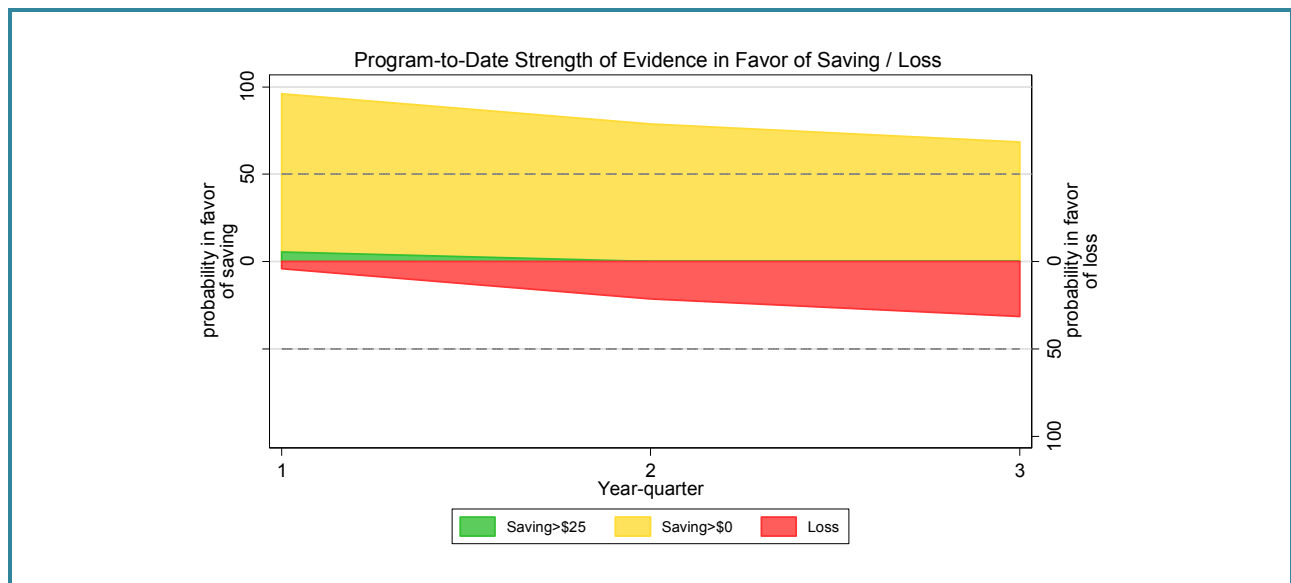


Figure 7-30. Cumulative strength of evidence on total spending, Medicare beneficiaries, Minnesota, fourth quarter 2013 through second quarter 2014



As stated in the review of utilization results, a number of limitations should be considered when reviewing the DD comparisons between the baseline and early test periods for Minnesota

relative to the comparison group, in the commercially insured and Medicare populations. First, the delivery system and payment reform aspects of the SIM Initiative in Minnesota have focused on expanding Medicaid's contracts with IHPs, so the affected population is more likely to be Medicaid beneficiaries, for whom only baseline data are available. Moreover, in the early test period, IHPs involved a subset of providers in the state, and these analyses examine statewide outcomes, so results may be both affected by: (1) other statewide efforts occurring simultaneously, like the HCHs, and (2) the inclusion of individuals not receiving care from the IHPs. Additionally, even though the rigorous study design uses a comparison group and adjusts for a range of covariates, the results could still be biased by a weak match of individuals in Minnesota to individuals in the comparison group states, as well as unmeasured factors that we were not able to account for in our methods; see *Appendix B* and *C*.

7.4 Overall Summary

Minnesota SIM efforts have only recently been implemented, with some important components yet to be implemented. Our qualitative findings from site visit and focus group discussions suggest that key stakeholders, health care providers, and even some patients are beginning to notice changes in the way health care is delivered in Minnesota. Lasting change will involve a wide variety of stakeholders, and we see some of this starting to happen. Consumers in focus groups observed changes in health care delivery as compared with the period prior to the SIM Initiative—generally reporting improved coordination of care, understandable communication from providers, positive experiences with provider use of EHRs, information-sharing within (although not between) health systems, access to same-day primary care appointments or by phone after hours in addition to urgent care and ER use, and robust referrals to community resources. While health care providers identify issues of concern, and areas for improvement, we also saw evidence that they are beginning to change how they structure and deliver health care, particularly to Medicaid patients in IHPs. The baseline primary care practice survey offers insight into the extent that primary care practices in Minnesota are well-positioned to enter into accountable care arrangements. Large proportions of practices reported they assign patients to specific providers or teams (82 percent), routinely develop care plans for their patients (82 percent), and transmit referral information to specialists and other providers (98 percent). These are very positive indicators consistent with movement towards greater care coordination.

There is still room for improvement, however. Few practices reported monitoring expenditures at the practice level or for specific groups of patients within the practice (33 percent). A somewhat higher proportion reported reviewing expenditures at the practice level (38 percent). A key theme around delivery system changes observed by providers in interviews and focus groups was expansion of the clinical care team. Providers in focus groups noted that they have care coordination staff (CHWs or nurse coordinators) provide follow-up with patients about their care.

The data we have available for quantitative data analysis lag behind the timing of our site visit, focus group, and survey findings. Because of this, it is too soon for us to expect to see impacts we can associate with SIM-funded initiatives. Still, there are some interesting findings from our baseline analysis that hint at future trends. Over the baseline period Minnesota's results for coordination of care measures were mixed, with the comparison group generally performing worse than Minnesota for the Medicare population, similarly for the commercially insured, and varying over time for the Medicaid population. This is consistent with most SIM efforts aimed at care coordination, which were only newly implemented as of 2013 and 2014. Minnesota performs comparatively well on most quality of care measures, consistent with Minnesota's more established system for state-wide quality measurement that predates SIM. However, with respect to the Medicaid population, Minnesota is being outpaced on measures of quality of care, which may be due to Medicare Shared Savings initiatives that took effect prior to Minnesota's SIM Initiative. For expenditures, Minnesota is spending more than its comparison group on its Medicaid population, but for the Medicare and commercially insured populations the gap is small and there is some slight downward movement. These findings suggest a good rationale for the state to focus on Medicaid, where opportunities for improvement exist. Qualitative findings, which are more current than these quantitative results, suggest that both health care providers and consumers are beginning to observe changes consistent with SIM goals of improved care coordination and efficiency. Future quantitative analysis will look for evidence of the degree to which these shifts are occurring.

7.5 References

- The Office of the Revisor of Statutes. 2014 Minnesota Statutes: 62J.495 Electronic Health Record Technology. St. Paul, MN: The Office of the Revisor of Statutes, 2014. <<https://www.revisor.mn.gov/statutes/?id=62J.495>>.
- Minnesota Department of Health: Guidance for Understanding the Minnesota 2015 Interoperable EHR Mandate. St. Paul, MN: Minnesota Department of Health, June 2013. <<http://www.health.state.mn.us/e-health/hitimp/2015mandateguidance.pdf>>.

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8. Oregon

This chapter provides an updated overview of the Oregon SIM Initiative; summarizes major implementation progress, challenges, and lessons learned in the past year; discusses key findings from the site visit interviews and focus groups organized by major topical area; and presents baseline and early test period trends in outcomes. For the Year 2 site visits, we conducted 27 key informant interviews and eight focus groups in Portland, Roseburg, and Salem from March 30 through April 3, 2015. The site visit findings are supplemented with information from the primary care physician survey, a web-based survey RTI administered from July through October 2014. *Appendix Figure F-5* provides a graphical presentation of the federal evaluation of the Oregon SIM Initiative.

In the last year, Oregon spread its coordinated care model (CCM) to state employees and their families insured through the Public Employees Benefit Board (PEBB) and is working to incorporate CCM elements into plans for individuals insured through the Oregon Educators Benefit Board (OEBB). Oregon also made progress in other SIM-funded activities—including supporting continued development of Medicaid coordinated care organizations (CCOs), promoting health information technology (health IT) connectivity and telehealth initiatives, developing and standardizing quality metrics, and spreading patient-centered primary care home (PCPCH) certification among primary care practices. The state has already exceeded its target for certifying PCPCHs—which are Oregon’s version of a patient-centered medical home (PCMH). Anecdotal evidence suggests they are having the desired impact on improved care coordination and access. Quantitative results provided here serve mainly to establish the context in which health system transformation is being conducted in Oregon; it will be at least a year before any data are available on health care utilization, spending, and quality among the populations the state is targeting under its SIM Initiative.

8.1 Overview of the Oregon Model

Oregon’s original vision for its SIM Initiative was to support acceleration of the state’s health care transformation by spreading major elements of the coordinated care model (CCM) to all the populations for which it has direct responsibility. The CCM is defined by the state as a means to achieve better health, better care, and lower costs through a combination of best practices, shared responsibility, price and quality transparency, performance measurement, payment for outcomes, and sustainable cost growth. The CCM was originally launched as part of the state’s 2012 amendment to its Medicaid Section 1115 waiver, using CCOs to provide Medicaid enrollees coordinated care across physical, behavioral, and dental services. As a result of the waiver amendment, by 2015 almost all of Oregon’s nearly one million Medicaid beneficiaries were enrolled in one of the 16 CCOs located throughout the state. The state’s plan was to use SIM funds to extend key elements of the CCM to state employees, public educators,

and qualified health plan (QHP) enrollees, and to support further development of the model across all populations through technical assistance and investments in health IT.

A principal goal of Oregon’s SIM Initiative is to have two million Oregonians under the CCM—about half the state’s total population—by 2016. Though not a stated SIM goal, the state also hopes to eventually bring commercially insured individuals into the model, which in turn will align health care payment and delivery of care across all Oregon’s health care payers. State officials believe that, by using the state’s substantial health care purchasing power (state-related health insurance covers nearly 39 percent of insured Oregonians),⁴¹ it can “tip” the balance of how the state delivers and pays for health care, making it easier and more desirable for other payers to adopt core CCM elements.

Toward that end, support and continued advancement of CCOs is a major piece of Oregon’s SIM Initiative. State officials consider CCO success critical to the spread of the CCM. The single largest SIM-funded effort has been establishing and funding the Transformation Center within the Oregon Health Authority (OHA)—which, among other things, supports CCOs through a range of activities (such as technical assistance and learning collaboratives). Apart from supporting CCOs, the Transformation Center has also used SIM funds to promote the spread of the CCM beyond Medicaid. Chief among these activities are promoting use of the PCPCH and supporting state data collection and health analytic capabilities—including development of metrics and enhancements to the All-Payer, All-Claims (APAC) database and public reporting of metrics. In addition, SIM funding has been used to engage commercial payers in health care transformation.

Although long-term services and supports (LTSS) are excluded from the CCO benefit package, SIM funds are being used to coordinate LTSS and medical services—to help better manage care, improve health, and reduce the costs of Medicaid beneficiaries receiving these services. In a related effort, Oregon’s SIM Initiative also calls for the state to develop a Medicare-Medicaid administrative alignment to better coordinate care for Medicare-Medicaid

⁴¹ Urban Institute calculation based on combined reports from several state websites
Oregon.gov: Oregon Health Authority. Public Employees’ Benefit Board. No date.
(http://www.oregon.gov/DAS/PEBB/Pages/about_us.aspx;
Oregon.gov: Oregon Health Authority. Oregon Educator’s Benefit Board. No date.
http://www.oregon.gov/oha/OEBB/Pages/about_us.aspx;
Oregon.gov: Oregon Health Plan: Coordinate Care, Managed Care and Fee for Service Enrollment for March 15, 2015
<http://www.oregon.gov/oha/healthplan/DataReportsDocs/March%202015%20Coordinated%20Care%20Service%20Delivery%20by%20County.pdf>;
OregonHealthcare.gov: Do You Need Health Care Coverage? 2015.
<https://www.coveroregon.com/2015-enrollment-numbers/>;
About OHSU: OHSU Study Shows 63 Percent Drop in Uninsured Oregonians. September 18, 2014.
http://www.ohsu.edu/xd/about/news_events/news/2014/09-18-ohsu-study-shows-63-perc.cfm;
U.S. Census Bureau: QuickFacts Beta—United States. No date.
<http://quickfacts.census.gov/qfd/states/41000.html>).

beneficiaries. Indeed, a stated goal of Oregon's SIM Initiative is to reduce the per-member-per-month (PMPM) cost trend of these dually eligible individuals by one percentage point by 2016.

8.2 Site Visit Report

8.2.1 Summary of progress, challenges, and lessons learned

Progress

In the second year of the SIM Initiative, Oregon continued efforts to further develop and spread the CCM. In doing so, it undertook five overarching strategies: (1) spreading the CCM beyond Medicaid to state employees, (2) supporting continued development of Medicaid CCOs, (3) spreading PCPCH certification among primary care practices, (4) promoting health IT connectivity and telehealth initiatives, and (5) developing and standardizing quality metrics.

Spread of the CCM. In January 2015, Oregon successfully leveraged its purchasing power to spread the CCM to 130,000 state employees and their families insured through the PEBB. Over the course of 2014, the state developed and released a request for proposals (RFP) for carriers to bid on the PEBB contract, with requirements that plans incorporate some of the CCM elements. Oregon ultimately contracted with five health plans, each of which incorporates tenets of the CCM. Two of the new health plans available to PEBB members in certain counties are administered by existing CCOs; the other three plans are administered by firms that have formal partnerships with CCOs in parts of the state (see further below). Consistent with the CCM, all PEBB plans are expected to ensure members have access to PCPCHs and to report on quality metrics reported by CCOs. Moreover, in an effort to control health care spending, the state negotiated an aggregate 3.4 percent growth cap for PEBB insurance, the same premium cap as used for CCOs. Over the past year, Oregon also started to work on a similar process of selecting plans incorporating CCM elements for individuals insured through the OEGB, which provides health care benefits to Oregon's K-12 school districts and community colleges, among other groups. Enrollment of OEGB members and their dependents is expected to begin in the new plans in October 2016.

CCO Support. The SIM-funded Transformation Center provided continued support to CCOs. Since spring 2014, the Transformation Center has facilitated numerous peer-to-peer learning opportunities, such as the complex care learning collaborative and the community advisory council (CAC) learning community, and hosted monthly calls for CCO medical, behavioral health, and dental directors as a venue to discuss system transformation topics and share opportunities and challenges. State officials noted that the Center's forums and workgroups are consistently well attended and receive positive evaluation from participants. In addition, the Transformation Center has continued to provide technical assistance to CCOs as they move forward on clinical delivery redesign, including development of alternative payment methodologies (APMs) and the integration of care across systems. As particularly successful, state officials highlighted the Coordinated Care Model Summit in December 2014—where 1,200

state officials, payers, CCO leaders, providers, consumers, and national experts gathered to learn more about Oregon's health transformation efforts. This past year, the Transformation Center also supported the work of CACs in developing their recommendations for CCOs' Community Health Improvement Plans (CHIPs). Materials the Transformation Center developed for CACs include communication strategies, CHIP sample language, and checklists for areas to consider.

Spread of PCPCHs. Another major effort under Oregon's SIM Initiative was supporting the spread of PCPCH recognition among primary care practices; rural health clinics; federally qualified health centers; and behavioral health, mental health, and substance abuse services providers with integrated primary care services. PCPCH recognition in one of three tiers is awarded to a practice based on its score on 33 items across six core attributes: access, accountability, comprehensive whole-person care, continuity, coordination and integration, and person and family centered care. The standards are similar to the National Committee for Quality Assurance's (NCQA's) PCMH standards, and Oregon recognizes practices that have already completed NCQA recognition with the submission of additional information. State officials felt the PCPCH effort is "influencing the change of care at the ground level." With these efforts, about 550 practices currently have been certified, well above the Oregon SIM target of certifying 500 PCPCHs by 2015. In focus groups with PCPCH providers, participants reported that the certification process was having the desired impact in improved care coordination and access, by calling attention to prevention and emphasizing integrated, patient-centered care.

Promoting health IT. Oregon has also dedicated a portion of SIM funding to support health IT and telehealth initiatives that augment organizations' and practices' capacity to participate in the CCM. In the past year, Oregon's major health IT effort has been implementing the Emergency Department Information Exchange (EDIE), which alerts hospitals when high-utilizer patients visit an emergency room (ER); hospitals also have the ability to add inpatient data to the alert notification for these patients. To date, 55 of the state's 59 hospitals are connected to EDIE. In addition, Oregon's SIM Initiative is funding five telehealth pilots across the state. Also with SIM funding, Oregon is conducting an environmental scan of telehealth initiatives to better understand which providers are already offering telehealth services and how those services are being funded.

Quality metrics and reporting. A SIM accomplishment emphasized by some state officials is the work of the health analytics team, particularly around developing and standardizing quality metrics for CCOs and PEBB and OEBB plans. Provider representatives are very supportive of the alignment of metrics across payers and have already noticed some improvements in this regard. An important measure of CCO success has been their generally strong performance on their quality metrics. One state official praised CCO progress—highlighting that, since implementation, the state has seen a "21 percent reduction in ER use, an

almost 50 percent reduction in chronic disease–related inpatient admissions, and an increase in patient-centered primary care home access.”

Major challenges and changes

Despite these and other successes, Oregon has experienced some setbacks in implementing its SIM Initiative. Notably, the state has had to delay inclusion of CCM requirements in QHPs, which had been planned for 2016. Systemic problems with its health insurance Marketplace, CoverOregon, have forced the state to indefinitely delay these requirements.

LTSS alignment with CCOs also continues to be a challenge and not much integration has taken place to date, as acknowledged by state officials. Even though LTSS agencies and CCOs executed memoranda of understanding (MOUs) about coordinating care and LTSS innovator agents were added to assist CCOs, several state officials remarked that actual movement toward alignment remains limited. As one official put it, the lack of LTSS-CCO alignment is “political and not policy related....Until all the money is in the same place, nothing will change.”

Alignment efforts for Medicare-Medicaid beneficiaries have been similarly stymied. OHA recently hired a new person to spearhead this effort, but as one state official observed, to align care for dually eligible beneficiaries enrolled in CCOs will “take CMS reaching out and meeting us in the middle.”

Apart from programmatic challenges, Oregon has had significant changes in health care leadership over the past year. Most notably, the Governor, a physician who championed Oregon’s health care transformation efforts, resigned in February 2015. The majority of stakeholders we spoke with, however, felt that this resignation would not impede SIM work. As one state official put it, transformation “is so baked into what we do in Oregon, it is not dependent on one person.” Several stakeholders also noted that the new Governor has kept on the previous Governor’s health policy staff person and supported the previous Governor’s selection of the new director of OHA—which had been without a permanent director since late 2013, creating a long-standing void in state health care leadership. Yet another significant leadership change was loss of the Transformation Center’s executive director. At the time of our site visit, it was unclear whether that position would be filled.

Although external health care stakeholders universally praised the state for dedication to health care transformation and believe OHA aims to be a partner in the effort, not all found the state’s work on transformation useful or well promoted. Some CCOs, for example, have struggled, at least initially, to understand the role of the Transformation Center in providing technical assistance and resources as they develop as organizations, and consequently, many have not frequently used the Center. One interviewee noted that his/her organization began

using the Transformation Center for specific resources only within the last 6 months. Some stakeholders also questioned how truly transformative the PCPCH certification process is and noted great variation, even across practices certified at the same level. Moreover, focus group primary care providers noted no changes in how they interact and collaborate with specialists, aside from mental and behavioral health specialists with whom some noted greater coordination.

Finally, some informants remarked that important stakeholders have not yet been truly engaged in transformation. Most noted was the limited engagement of private payers and the business community. While these stakeholders reiterated their general support for the CCM, they also noted that they want to see results from the CCM before participating. Multiple state officials acknowledged that greater emphasis must be placed on engaging commercial plans and self-insured purchasers in the CCM in the coming year, and agreed that education is a critical step in that process. More broadly, several stakeholders raised the issue that more education is needed to increase consumer awareness of, and participation in, health system delivery transformation.

Lessons learned

After 18 months of implementing the SIM Initiative, Oregon stakeholders offered some lessons learned from their experiences to date. Chief among them for the state is the need for political will, as well as broad stakeholder support, in addressing growing health care costs and delivery system inefficiencies in a responsible and productive manner. For example, some noted that a budget imperative to cap health care spending is often the single most effective motivation for policymakers and legislators to spring into action and start developing and implementing transformation plans. Equally crucial, particularly in the early stages of transformation, according to stakeholders, is to engage all stakeholder groups and use a public process to get “buy in” to the transformation vision from all interested parties, including consumers.

Other lessons that emerged from the Oregon’s SIM Initiative include the importance of local context and strong performance metrics. Engaging consumers at the local level and developing transformation plans that address local needs proved very effective in launching CCOs and jumpstarting delivery system innovations throughout the state in a fairly short time. Developing a finite set of performance incentive measures that are both realistic and hold payers accountable helps keep the focus on key outcomes and further promotes change, according to state officials.

Many stakeholders also emphasized state purchasing power as an essential lever in promoting transformation. With OHA exercising regulatory authority over Medicaid, state employees, educators, and QHP enrollees, a large proportion of Oregon’s health insurance market could potentially incorporate key elements of CCM, with the broader market following suit eventually. To that end, state officials strongly believe in maintaining transformation

momentum without being too prescriptive or regulatory, and letting private payers and insurers come on board voluntarily.

Finally, state officials reported that cultivating a productive relationship with CMS is also important in garnering federal support for achieving the state's vision. One state official highlighted how the expenditure growth cap under its Medicaid waiver, along with the relationships the state has forged with CMS during the waiver implementation, has imposed an important new discipline in Oregon to deal squarely with its health care costs.

8.2.2 Delivery system and payment reforms

Oregon has had mixed success launching its delivery system and payment reform efforts. On the one hand, more than 130,000 state employees and their families insured through PEBB are now enrolled in health plans that include major elements of the CCM. In addition, as noted, the 550 primary care providers that became PCPCH certified surpassed Oregon's 2015 target. Also, important outcomes in the Medicaid program have been attributed to CCOs, including increased primary care spending and reduced ER use and chronic disease admissions to hospitals. At the same time, however, Oregon has made limited headway in aligning LTSS and medical services or Medicare and Medicaid services for dually eligible beneficiaries. The state has similarly made limited progress in implementing APMs within CCOs or engaging commercial payers in health care transformation efforts.

Spread of CCM

Central to Oregon's SIM Initiative is spreading the CCM beyond the Medicaid program to other populations and plans—including employees covered by the PEBB and the OEBB, as well as individuals enrolled in QHPs offered through the health insurance Marketplace. This year Oregon made some progress toward this goal by transitioning PEBB members into health plans featuring key elements of the CCM. Most significantly, all PEBB plans are now required to report a common set of performance metrics; PEBB members in all areas of the state have the option of selecting a low-cost plan, some of which include CCOs; and all plans other than Kaiser Permanente HMO include incentives—in the form of lower cost-sharing—for members to use a recognized PCPCH for their primary care. SIM funding supported consultation services that assisted PEBB in its development of the 2015 health benefit contract language.

Following a successful bidding process and comprehensive evaluation of 10 proposals, as noted, PEBB selected five carriers to provide health benefits centered on the CCM. Besides two carriers that have previously contracted with PEBB—Kaiser and Providence—three new carriers were contracted: AllCare, Moda, and Trillium (*Table 8-1*). AllCare and Trillium are CCOs; Kaiser, Moda, and Providence are all affiliated with CCOs in various parts of the state. In addition, as noted, Oregon and PEBB negotiated an aggregate 3.4 percent premium growth rate cap for 2015, the same cap that applies to CCOs.

Table 8-1. Enrollment Distribution in PEBB Health Plans, 2014 and 2015

Plan Year 2014		Plan Year 2015	
Carrier	Percent of members enrolled	Carrier	Percent of members enrolled
Kaiser Permanente	16.2	Kaiser Permanente	16.5
Providence Choice	23.5	Providence Choice	27.4
PEBB PPO Statewide	55.5	PEBB PPO Statewide	48.1
		AllCare	1.1
		Moda	2.1
		Trillium	0.1
Not Enrolled	4.8	Not Enrolled	4.7

Source: Public Employees Benefit Board. 2015 PEBB Post Open Enrollment Report.

Although only a small proportion of PEBB members enrolled in one of the three new plans (*Table 8-1*), the changes required of existing plans mean that all state employees and their family members participating in the PEBB benefits are covered by health plans incorporating CCM principles. According to PEBB representatives, the primary concern when moving PEBB plans to the CCM was to give members a health plan choice. Also, PEBB’s recent experience with implementing the Health Engagement Model Program—a voluntary workplace health promotion and wellness program that generated fierce opposition from PEBB members—served as a learning experience for PEBB in the CCM transition. As a result, rather than “flipping the switch,” the PEBB Statewide PPO plan was kept in place, albeit with new requirements, while ensuring that all counties had at least one more health plan offering to allow members a choice that in most counties included a plan new to PEBB members. State officials said they were not surprised by the limited enrollment in the two CCOs so far (fewer than 2,000 members took up a CCO plan). As one official explained, “the financial pressure [to enroll in a CCO] is not there yet.”

Overall, employee union representatives we spoke with viewed the 2014–2015 PEBB health plan enrollment as a success and said they have received few complaints from members about the CCM model or about incentives favoring the use of PCPCH practices. Representatives also felt the state had been responsive to their concerns when working through issues as the PEBB RFP was being developed.

In the coming year, Oregon hopes to continue spread of the CCM. In PEBB, the state intends to begin pushing on payment reform by entering into a shared savings arrangement with PEBB plans, similar to its incentive quality pool payments made to CCOs for outcomes among their Medicaid clients. In addition, Oregon plans to spread the CCM to the 150,000 individuals insured through OEBB for the 2016–2017 health plan contract year. Officials hope the

legislature will also agree to apply the same 3.4 percent spending cap for OEGB premiums that is in place for PEBB in 2015, which will be determined during the 2015 legislative session.

A major setback for Oregon, as noted, is the delay in spreading the CCM to QHP subscribers, which had been scheduled for 2016. As state officials explained, CoverOregon, the state's health insurance Marketplace, needs to "settle down first" before there can be any thought of introducing the CCM into QHP products. After a rocky start, in March 2015 the Oregon Legislature passed and the Governor signed legislation abolishing CoverOregon and transferring its duties from OHA to the Oregon Insurance Division within the Department of Consumer and Business Services (DCBS). State officials at present have no timeline for moving the CCM into QHPs.

In lieu of QHP progress, officials said they are stepping up efforts to spread CCM to the private insurance market but admitted this has been slow going. A major roadblock is that the Oregon Insurance Division within the DCBS regulates for rate review just 10 percent of the state's insured market. Even so, over the last few years OHA and DCBS staff have been collaborating to better align quality and cost metrics used in the commercial market with those used in Medicaid and PEBB. Over the past year, the SIM Initiative funded an environmental scan of the state's commercial health plan and self-insured purchasing landscape, to determine the use of coordinated care elements among private payers. Also with SIM funding, Oregon recently contracted for a study to: (1) develop a "framework" to help drive CCM expansion and (2) shape development of tools the OHA can use to educate and engage commercial health plans, self-insured purchasers, third party administrators, and brokers. The toolkit is expected to be available in spring 2016.

Spread of PCPCHs

The PCPCH was established by the Oregon Legislature in 2009. Any health care practice in Oregon that provides comprehensive primary care and meets key standards can be recognized as a PCPCH. Oregon's SIM Initiative is supporting continued spread of the PCPCH model, a pillar of delivery system transformation in Oregon, by partially funding the PCPCH program and its staff housed within OHA, as well as the Patient-Centered Primary Care Institute (PCPCI). The PCPCI, a state contractor that receives SIM funding, is a public-private organization that, among other things, provides practice-level assistance to help providers implement the PCPCH model. The PCPCH program is primarily responsible for provider outreach, administration of the certification process, and on-site verification of selected recognized clinics; the PCPCI provides technical assistance to providers and clinics in meeting PCPCH standards.

According to state officials and provider stakeholders, the PCPCH program has been successful in engaging a broad array of practices, primarily due to its flexible three-tiered recognition criteria. Except for the 10 "must pass" criteria, providers are free to pick measures

from a set of standards to achieve a desired tier recognition.⁴² In addition, the PCPCH enrollment incentive metrics for CCOs, as well as an inducement for PEBB members to select a PCPCH as their PCP, have provided added incentives for primary care providers to become recognized. Most of the 550 clinics recognized as PCPCHs thus far are at Tier 3, the highest level a clinic can receive. More broadly, data from the Oregon primary care physician survey show 44 percent of respondents are recognized as a primary care home, through either the PCPCH program or NCQA.

Some slowing in PCPCH certification is anticipated. State officials acknowledged that just about every primary care provider interested in becoming a PCPCH has been recognized already, so the remaining 400–500 practices will likely have additional challenges meeting the standards and require a different outreach strategy and more technical assistance.

While the PCPCH program flexibility allows practices of various sizes, capabilities, and technical infrastructure to participate in the program, some external stakeholders noted that this also contributes to variation in how truly transformative the program has been for PCPCHs, even within the same tier. For example, among the majority of PCPCHs recognized as Tier 3 practices, some may be barely passing the Tier 3 criteria (minimum score of 130 out of 380 possible points) while others may be truly transformed, highly functioning PCMHs.⁴³ Other stakeholders, however, asserted that without the flexibility of the PCPCH program some practices would not bother implementing any practice changes, and that the tiered system encourages continued improvement.

Another challenge to the sustainability and continued spread of the PCPCH model is lack of participation among payers that operate beyond the state. While consumer and provider incentives are tied to PCPCH use by CCO and PEBB members, at the time of the 2015 site visit only one private payer, Aetna, was making PMPM payments to providers based on PCPCH recognition. As one informant explained, there are costs associated with a practice achieving and maintaining PCPCH certification. For the most part, commercial insurers are not involved directly with the PCPCH effort, but individuals they insure who go to a PCPCH-certified practice benefit from the care coordination. As one state official noted, “unless the commercial market is recognizing these clinics and paying them differently we could add 1,000 clinics and it wouldn’t matter.” But the state has been trying to get commercial insurer support. In December 2013, a multi-payer agreement was signed in which commercial payers agreed to change their

⁴² Each measure is assigned a point value, ranging from 5 to 15 points. To be recognized as a Tier 1 clinic, practices must accumulate between 30–60 points, 65–125 points for Tier 2, and 130–380 points for Tier 3.

Oregon Health Authority: Patient-Centered Primary Care Home Program. 2014 Recognition Criteria. April 2015. <<http://www.oregon.gov/oha/pcpch/Documents/TA-Guide.pdf>>.

⁴³ In the most recent report from the PCPCH program, 20 percent of practices had scores between 130 and 190, 45 percent of Tier 3 practices had scores between 195 and 255, and less than 10 percent had scores above 325. Oregon Health Authority: Patient-Centered Primary Care Home Program 2014–2015 Annual Report. October 2015. <<http://www.oregon.gov/oha/pcpch/Documents/2014-2015%20PCPCH%20Program%20Annual%20Report.pdf>>

contracting relationships with primary care providers and offer structured payments that use the PCPCH recognition standards to support primary care providers. At the same time, and as reported last year, external stakeholders were concerned that the language of the agreement was too loose and did not specify how payers would fund PCPCH certification.

Some of these concerns proved valid, as commercial insurers, third-party administrators, and CCOs have been slow to implement financial models to support PCPCHs. SB 609, currently under consideration in the Oregon Legislature, attempts to fortify financial support for PCPCHs by requiring OHA to convene a learning collaborative that will develop payment methods to support provision of care through PCPCHs and require certain payers to adopt these methods.⁴⁴ When asked what would happen if other payers fail to recognize PCPCHs, most stakeholders responded that providers would need to scale back on some services they are providing—which could significantly impede the progress the state has been making in delivery system transformation. At the same time, private payers are concerned that such a PCPCH payment requirement would stifle innovation, because it would preclude them from trying out payment systems and models of care delivery that may be better suited to the individuals they insure.

Adoption of APMs

While Oregon pays CCOs using an APM via global budgeting, the state’s headway in promoting APMs within CCOs at the provider level has been limited. Over the past year, the state has tried to change this, using SIM funds to support CCOs in the development of APMs, as called for in the state’s CCO contract. APM-related work funded by SIM in 2015 involves funding a contractor to provide technical assistance to the two or three CCOs judged most ready to launch a major APM effort, with a target implementation date of 2016.

State officials acknowledged that having CCOs implement APMs is still in the “early stages,” with CCOs “all over the map” in readiness to implement an APM. A major conclusion from the 2014 SIM-funded environmental scan of CCOs’ APM efforts is that, although Oregon health care stakeholders are supportive of APMs, significant implementation barriers exist, with the biggest factors human rather than technical or structural.⁴⁵ In particular, the report highlighted the importance of trust among partners, particularly since an APM is “changing how the check gets cut.” Interestingly, state and non-state stakeholders alike thought CCOs in rural areas might be more ready to implement APMs, because providers are more familiar with one another than are their urban counterparts and there are fewer of them to convince in rural areas.

State and non-state stakeholders also joined in noting obstacles to implementing APMs. One roadblock cited by several was that CCOs still pay providers largely on a fee-for-service

⁴⁴ 78th Oregon Legislative Assembly—2015 Regular Session. Senate Bill 609. 2015. <<https://olis.leg.state.or.us/liz/2015R1/Downloads/MeasureDocument/SB609/Introduced>>

⁴⁵ Leof, A et al.: Alternative Payment Methodologies in Oregon: The State of Reform. Portland, OR: Center for Evidenced-based Policy, Oregon Health and Science University, 2014.

(FFS) basis and maintain an FFS accounting service, which blocks payment innovation. Keeping such a system, however, stems in part from CCOs needing to report on quality metrics that require generating claims “where the widgets are counted.” Others expressed concerns about risk transfer associated with APMs: If too much risk is delegated, does the provider need to be regulated as an insurance carrier? Some state officials questioned whether APMs are needed altogether: “If [CCOs] are getting quality and outcomes and meet budget” does it matter? One official further noted that pushing specific APMs on CCOs makes it difficult for providers when another payer wants to try another APM. Finally, one interviewee observed that even if CCOs successfully implement APMs, to be truly transformative private payers need to be involved as well. “[The] Medicaid slice by itself is too small of any given practice’s revenue to be an incentive toward change.” More broadly, what role the state should play, if any, in how CCOs (or other insurers) pay their providers is another outstanding and difficult issue. Interestingly, the Oregon primary care physician survey showed that among respondents, 55 percent said that some portion of their payments across payers was based on quality of care, costs, efficiency, or other performance metric. At the same time, however, only 22 percent said performance-based payments affected their practice decisions.

LTSS and medical services alignment

Because of strong stakeholder opposition to the integration of LTSS into the CCOs and their global budgets, the SIM Initiative had intended to focus on building relationships between LTSS providers serving Medicaid clients and the CCOs responsible for providing, coordinating, and paying for the acute health care for those clients. The state hired seven long-term care innovator agents (LTCIA), three with SIM funding, who were instrumental in getting in place new MOUs between each CCO and local LTSS agencies. The original MOUs, developed before the LTCIAs were in place, were viewed as overly ambitious, with multiple parties agreeing that the MOUs were not realistic. The MOUs developed this past year have scaled back the goals somewhat, making LTCIA activities more focused on facilitating communication between LTSS case managers and primary care clinics and on the formation of care teams, rather than on high-level coordination between LTSS agencies and the CCOs.

State officials reported increased care coordination over the past year, pointing to evidence of reduced ER use and reduced costs from a small sample of LTSS users. They also reported, however, that while there has been considerable cooperation with primary care providers, CCOs have had relatively little interest in forging relationships with LTSS providers or including their input in care decisions. Indeed, CCO officials knew very little about the activities of the LTCIAs. On the other side of the relationship, the LTCIAs are more likely to work at the level of LTSS case manager than with community providers or clients themselves. Focus groups of LTSS providers and Medicaid beneficiaries who use LTSS echoed this, saying they are not aware of any increased care coordination. State-level contact between staff involved in the acute health system transformation and staff involved in LTSS work also appears limited.

Finally, SIM funds are supporting a housing-with-services-pilot project that integrates subsidized housing with health and other supportive services for low-income older adults and people with disabilities. The pilot has met and exceeded its participation goals and attracted a partnership with CareOregon, one of the partners in the HealthShare CCO. With the success of the model, however, has come increased scrutiny from both consumer advocates and operators of assisted living facilities, who view the pilot as an unlicensed and unregulated competitor.

Medicare-Medicaid beneficiary alignment

The decision not to pursue a Financial Alignment demonstration for Medicare-Medicaid beneficiaries led to a period of inactivity until the arrival in mid-2014 of a SIM-funded staff person charged with Medicare-Medicaid alignment in OHA's Division of Medical Assistance Programs (MAP). Since then, alignment efforts have been largely administrative. One achievement has been negotiating for Medicare Advantage Special Needs Plans (SNPs) to insert language requiring connections with CCO care coordinators when a SNP enrollee is also enrolled in a CCO—although state staff admit there is limited latitude for such language, leading to provisions they describe as “tame.” The state is also working to develop metrics reporting for CCOs that focus on Medicare-Medicaid beneficiaries, to encourage a focus on this population. However, the relatively small CCO share of the costs of caring for a Medicare-Medicaid beneficiary reduces the incentive to do much. That said, OHA staff report that CCOs have begun reconsidering their early opposition to auto-enrolling Medicare-Medicaid beneficiaries into CCOs, for fear of handling the added complexity and volume that dually eligible beneficiaries would bring. Staff now believe there may be room for significant improvement in outcomes with additional coordination of services related to incentive metrics for this population. But barring such a change, efforts have turned to increasing voluntary CCO enrollment, with MAP staff producing marketing materials aimed at dually eligible beneficiaries to aid in that effort.

Transformation Center

While the Transformation Center is not a payment or delivery reform, it supports these efforts. Over the past year, the Transformation Center has been involved in a range of activities, from hosting the Coordinated Care Model Summit; to sponsoring learning collaboratives for CCO medical directors, CEOs, and CACs; to supporting a Technical Assistance Bank for CCOs providing outside consultant experts. In addition, the Transformation Center is working on an environmental scan of behavioral health integration activities throughout Oregon, to identify areas where technical assistance is needed for CCOs as they integrate behavioral with physical health. The Center has also been involved in the Council of Clinical Innovation Fellows Program—a group of Oregon health care leaders convened by the Transformation Center that train awardees in developing health care transformation ideas, implementing pilot projects, and delivering provider-to-provider consultations on innovative transformation projects.

Stakeholders voiced a variety of perspectives on the role and success of the Transformation Center to date. On the positive side, some outside stakeholders reported that

convening CCOs was helpful for sharing information, best practices, and lessons learned. State officials also felt that the Transformation Center has been successful and noted that individuals who have participated in Transformation Center activities report them as valuable in evaluation forms. State officials further noted that the sheer number of people who participate in Transformation Center–sponsored endeavors highlights the success of the Center. One official observed that a particular success was the state being able to provide CCOs assistance to help them meet regulations successfully, rather than simply being a “compliance regulator.”

But other stakeholders questioned whether it is appropriate for the state to convene and collaborate with health care stakeholders, when the state is also the regulator. For example, members of the CACs need support and tools to advocate not only to CCOs but to the state itself, which creates a conflict of interest for the Transformation Center when assisting CACs. This push and pull has created tension and some have called into question the effectiveness of the Center. Still others have not found Center activities substantively helpful. In the learning collaboratives, for example, “People talk about their models but it is another thing to implement them and to have help.” One stakeholder characterized Transformation Center activities as “touchy-feely” but inadequate to effect change.

As health care transformation becomes part of the Oregon landscape, some questioned what role the Transformation Center should play in the future. State officials acknowledged that in the coming year they need to have “robust conversations” about how and whether to sustain the Center and what technical assistance is truly needed to continue the spread of the CCM. In the meantime, OHA’s 2016–2017 budget request asked the legislature to approve funding the Center for 9 months once SIM funding ends.

8.2.3 Behavioral health integration

Oregon’s CCM aims to integrate mental health, behavioral health, and substance abuse services into primary care. To advance this objective, the state has begun pushing change by incorporating elements of behavioral health integration into the CCO incentive metrics as well as the PCPCH certification standards. The PCPCH recognition standards include emphasis on mental and behavioral health, and five of the 17 CCO incentive measures for 2014 are related to behavioral health integration. These standards and metrics both incentivize greater integration of mental/behavioral health services and allow the state to monitor and measure progress in care integration. Although work on developing technical assistance and resources for both providers and CCOs has begun, efforts to develop new payment models that encourage care integration are lacking. State officials and stakeholders alike report that behavioral care integration is still a work in progress and that much time, effort, and resources are still needed to improve such integration. Data from the Oregon primary care physician survey validate these perceptions, showing that only 35 percent of respondents reported having a behavioral health provider onsite

at their practices, and just 12 percent reported that timely and convenient behavioral health services are always available.

SIM-funded activities to improve behavioral health integration in Oregon have largely centered on developing resources and providing technical assistance to providers and CCOs in integrating behavioral health, addiction treatment, and primary care into the CCM. The PCPCI has developed a number of webinars, and in 2013 hosted a training series for more than 40 clinics throughout Oregon on integrating behavioral health into primary care settings. Similarly, the Transformation Center has been working on developing resources to support CCOs in their mental and behavioral health integration efforts. In addition to the SIM-funded environmental scan to assess current behavioral health integration activities in Oregon, the Transformation Center has engaged a consultant to identify potential best practices and challenges to integration. Together, findings from the scan and input from the consultant will inform development of a behavioral health integration technical assistance plan for CCOs. In addition, SIM funds support fielding and analysis of the Behavioral Risk Factor Surveillance Survey (BRFSS), to be administered to all CCO members to provide information about health status and risks for the CCO population.

State officials, providers, consumer advocates, and other stakeholders almost universally agreed that behavioral health integration is one of the most important yet challenging aspects of health care transformation in Oregon. Primary care providers, who bear much of the burden of health care delivery transformation, reported struggling with how to incorporate depression and Screening, Brief Intervention, and Referral to Treatment (SBIRT) into already condensed physician appointments and clinic workflows. While CCOs are accountable to the state for metrics on mental and behavioral health screenings and follow-up, they depend on primary care providers to provide those services. Few CCOs, however, appear to have given technical assistance or financial support to providers to reinforce such integration efforts.

Moreover, some external stakeholders view CCO incentive metrics as insufficient measures of assessing the integration of mental, behavioral, and substance abuse services into primary care. According to one mental health advocate, for example, only one of the CCO incentive metrics—follow-up after hospitalization for mental illness—considers mentally ill individuals of all ages; at the same time, only slightly more than 2,000 people in the entire state were affected by that metric over a 12-month measuring period. This advocate stressed that to truly transform how behavioral health care is delivered in Oregon, stronger metrics together with implementation of a performance-based payment structure are necessary. Another issue acknowledged by both the state and external stakeholders was turf wars between physical health and behavioral health providers because of financing and reimbursement changes.

Both state officials and consumer advocates also reported that colocation with primary care does not necessarily mean greater integration with behavioral health. Provider associations

mentioned concerns about patient privacy and sharing of sensitive health data, particularly around mental health and substance abuse, as impeding effective care integration. Sometimes providers are hesitant to share this information even if a patient gives consent. Finally, state officials, provider associations, and other stakeholders all agreed that the way CCOs are approaching behavioral care integration varies greatly from community to community. The flexibility CCOs have been afforded with global budgets allows them to set their own priorities, which means that behavioral health may be a focus in one community, but that CCOs elsewhere may pay more attention to diabetes, hypertension, or other health concerns if those are more pressing for their populations.

8.2.4 Quality measurement and reporting

A significant part of the state's efforts on quality measurement focuses on building capacity for reporting of performance metrics by CCOs and alignment of these metrics with those of other payers. State officials and stakeholders agreed that these metrics are key to health care delivery transformation, and that although additional work is needed on this front, the effects of the state's alignment efforts are starting to show. The state currently requires CCOs to report on 33 performance metrics, and the new PEBB contracts require plans to report on all but two of these.

Using metrics data, the state publishes on its website regular comparative reports on CCO performance, as well as state-level reports on topics such as racial and ethnic disparities. These reports allow CCOs to gauge their own performance relative to their peers, in addition to giving providers and consumers a way to track CCO and overall Medicaid system performance. Seventeen of the performance ("incentive") metrics, as listed in **Table 8-2**, will affect CCO Medicaid payments starting this year. The remaining metrics span a variety of domains—including health behavior, disease management, preventive screenings, substance misuse treatment, and avoidable health care utilization. The Metrics and Scoring Committee determines each CCO's first stage "quality pool" payment, based on CCO performance on the 17 incentive metrics relative to measuring specific benchmarks. Four of these are classified as "challenge" metrics and are used to allocate any pool funds remaining after the first stage payments. While the first year of CCM experience in PEBB has not yet been completed, PEBB plans are required to report on the same set of performance metrics, and comparative results will be published in a similar manner in coming years.

Table 8-2. CCO Incentive Metrics

• Adolescent well-care visits	• Early elective delivery
• Alcohol or other substance misuse (SBIRT)*	• Electronic health record adoption
• Emergency room utilization	• Follow-up after hospitalization for mental illness
• CAHPS: Access to care	• Follow-up care for children prescribed ADHD medication
• CAHPS: Satisfaction with care	• Hypertension control
• Colorectal cancer screening	• Mental and physical health assessments for children in DHS custody
• Developmental screening	• PCPCH enrollment*
• Depression screening and follow-up plan*	• Timeliness of prenatal care
• Diabetes: HbA1c poor control*	

* “Challenge” metric

Use of incentive metrics has begun to spread beyond CCOs and PEBB. For example, while they are not currently obligated to do so by contract, OEBB plans have begun collecting these metrics. Both state and plan officials familiar with OEBB plans suggest that the current OEBB carrier wants to be ready to respond to the OEBB RFP when it comes out later this year, by developing experience in collecting and reporting standard metrics in advance.

In addition, five of the metrics have been added to the requirements for rate filings by health plans regulated by DCBS. Although performance on these does not affect approval of rates, some advocates—as well as a bill before the Oregon legislature in 2015—view the public reporting requirement as a precursor to incentivizing quality improvement. State officials, although intrigued by this possibility, do not view it as a likely outcome. The market segments where quality monitoring is lagging are in QHPs and self-insured plans regulated under the Employee Retirement Income Security Act (ERISA). There has been no move to require these metrics of ERISA plans, and while QHPs will be required to report them in the future, problems with the launch of CoverOregon have so far delayed implementation of this requirement.

Public reporting of metrics has generated great attention around the state. CCO representatives reported that their interest lies, not only in the financial incentives the reporting brings, but also in learning how their CCO compares to others. Being out-performed on a metric has stimulated interest in learning how other CCOs achieve better results, and the CCO summits have provided a means of sharing lessons learned from practices that might lead to improved results. Some CCO officials expressed interest in having even more data at the CCO level—including, for example, race/ethnicity breakdowns.

Although agreeing that publicly monitoring quality is a valuable tool, some stakeholders expressed frustration with limitations in its content. Metrics relevant to behavioral health were singled out by both stakeholders and state officials as needing development. Several noted the lack of performance data at the provider level, but the lack of quality-related provider payment incentives within CCOs, as noted, provides little reason to report at that level. Data from the

primary care physician survey echoed these sentiments—showing that just over 50 percent of respondents reported that any of their payments were performance-based, and most reported little effect of those incentive payments on their practice behavior. Finally, representatives of health plans that have been operating under a capitated model said that, because many of the required metrics are based on FFS claims, health plans had difficulty producing the necessary reports using the encounter and electronic health record (EHR) data systems. They also felt they may have suffered in receiving performance payments as a result.

8.2.5 Health information technology and data infrastructure

Significant SIM resources support development of new health IT systems. These include EDIE, PreManage, CareAccord, and the provider directory. EDIE—a hospital-based system installed at 55 of 59 hospitals in the state, as noted—allows ERs to see the records of patients presenting in the ER from past ER visits in any participating hospital. Most hospitals are planning to add data from inpatient stays as well. State officials and hospital stakeholders are pleased with the rapid adoption of the technology, but noted that how the systems are used varies considerably across the state. In the most advanced implementations, EDIE data are fed directly to electronic records used by medical staff. Others have elected to receive EDIE data by fax transmission, reducing the likelihood that the information is always used in a timely manner. The state is also encouraging adding the PreManage module to EDIE. PreManage, created by the same contractor as EDIE, is currently in use in the State of Washington and allows CCOs, health plans, or provider groups to upload data to EDIE. For example, plans can upload lists of members so plans can be notified in real time when a member presents at an ER.

CareAccord is a health information exchange (HIE) system that provides a secure messaging platform and will also link to a provider directory, allowing communication of care plans and transition records among providers. The system is designed to be compatible with most EHR systems. Stakeholders reported awareness of this service, but many have an existing service comparable to CareAccord—resulting in little user experience with CareAccord at the time of our 2015 visit.

The vast majority of primary care physician survey respondents (90 percent) reported EHR use. However, focus groups of PCPCH providers reported general frustration with interoperability and the time it takes to use EHRs. This suggests the wisdom of continued focus and effort on increasing HIE technology use.

8.2.6 Workforce development

Although workforce development is not a major focus of Oregon's SIM Initiative, some efforts are being made. These include practice transformation assistance, a Clinical Innovators Program, and the Medicaid Primary Care Loan Repayment program. A particular focus of Oregon's Transformation Center is Traditional Health Workers (THW)—community health

workers, peer support and peer wellness specialists, personal health navigators, and doulas—in part to fill a gap in the workforce necessary for care coordination. As part of these efforts, the Transformation Center surveyed CCOs to determine barriers to THW use. According to one state official, “CCOs know they need to work more with THWs, but they don’t know how to do it, or how to pay for it, or how to sell it to their governance boards.” The Transformation Center has issued an RFP for a consultant to do sustainability planning on THWs, and to research THW return on investment and payment methodologies.

Stakeholders are aware of most of these efforts in a general sense, although responses regarding their level of engagement were mixed. As one stakeholder put it, “I know they [workforce development efforts] exist, but I haven’t been very connected.” But some provider organizations are unaware of workforce development efforts in the state. While supportive of efforts to develop the THW workforce, mainstream clinical providers remain vigilant in terms of potential infringements on their scope of work. On the behavioral health side, while stakeholders expressed support of efforts around THWs, they were generally not aware of efforts specific to the behavioral health workforce, beyond rolling peer support and wellness specialists training into the larger traditional health care worker initiative.

To support other workforce development efforts, SIM funding has also enabled a Health Care Interpreter Learning Collaborative to be established through OHA’s Office of Equity and Inclusion, as a way to support the training and use of qualified and certified interpreters. One provider organization mentioned investments in loan forgiveness and repayment as very important in recruiting primary care providers to work in medically underserved communities.

8.2.7 Population health

Under the SIM Initiative, Oregon has put in place several mechanisms to address population health, but these have yet to gain much traction. SIM funds support three staff members in OHA’s Division of Public Health who, among other activities, helped develop the State Health Improvement Plan.⁴⁶ SIM funds have also funded one round of a BRFSS survey of Medicaid beneficiaries, as well as a public health assessment tool to support development of a CCO’s CHIP. In addition, SIM funding has supported a community prevention grant program designed to foster partnerships between CCOs and local public health departments. These grants support four programs, each targeting a different prevention activity: (1) opiate overdose reversal with naloxone distributed/administered by social workers and their clients, (2) pregnancy screening and prenatal care, (3) developmental screenings, and (4) tobacco

⁴⁶ A State Health Improvement Plan is a plan for making the greatest impacts on health promotion and disease prevention specific to the needs of a state population. It is a prerequisite for Public Health Accreditation Board national accreditation.

prevention. These interventions are under way, but outside the awardees, the existence of these programs seems not widely known.

Results from population health activities have been somewhat disappointing. First, although efforts were made to include several prevention-related metrics as part of the CCO incentive metrics (such as reduction of tobacco use), ultimately the state determined that this metric was too difficult to operationalize. In addition, CCOs were concerned about being accountable for their members' behavior. In the end, a public health metric was included among the CCO incentive metrics. Second, the state requires that each CCO form a CAC to advise the CCO on assessment of community health needs and on development of its CHIP. State officials view CACs as an important component of the CCO model. Having them as part of the CCOs also raised hopes among public health advocates that health system transformation would be broader than just delivery reform. In many cases, however, both advocates and CAC members themselves were disappointed that the advice they had given on addressing upstream conditions like housing, for example, was largely ignored, and that CCOs instead favored population health activities more familiar to the delivery systems (such as chronic disease management and cost control).

8.2.8 Stakeholder engagement

Moving ahead with its health system transformation initiative, Oregon continues to engage stakeholders through multiple means. Providers and payers seem for the most part engaged in transformation initiatives and many representatives we spoke with felt the state is a good partner and receptive to their feedback. Some stakeholders felt disenfranchised, however, and said they had not been meaningfully engaged.

Oregon has sought to engage stakeholders in health care transformation in many ways—including the CACs, workgroups, learning collaboratives, and other stakeholder gatherings (many hosted by the Transformation Center). In particular, the CCO annual summit held in December 2014 was considered a great success by many, with the overwhelming attendance (about 1,200 people) cited as a testament to the effectiveness of the state's stakeholder engagement. Notable workgroups of providers, payers, consumer advocates, and other participants in Oregon's health care transformation include the Sustainable Health Care Expenditures Workgroup, PCPCH Standards Advisory Committee, CCO Metrics and Scoring Committee, Hospital Performance Metrics Advisory Committee, and Coordinated Care Model Alignment Work Group.

For the most part, providers are engaged in Oregon's transformation activities. The state has a productive relationship with the Oregon Association of Hospitals and Health Systems, for example, joining forces with the association in implementing EDIE and hospital performance metrics, and transitioning some of Oregon's hospitals to APM reimbursement. At the same time, one external stakeholder felt hospitals were not engaged in transformation as much as they need

to be, perhaps due to fears that improved care coordination and health outcomes will have a negative impact on hospital profit margins. The same stakeholder also noted that much of the transformation effort to date has focused on pushing primary care, but that hospitals need to be brought in. Provider associations representing physicians view their relationship with the state as valuable and collaborative. As noted above, however, primary care provider focus groups reported no changes in the way they interact and collaborate with specialists, aside from mental and behavioral health specialists. But, as one interviewee observed, much of the transformation to date has focused on Medicaid enrollees, who for the most part seldom use specialists except for psychiatrists. As more individuals are brought under the CCM, the state expects that specialists will need to be engaged.

The business community, still feeling somewhat disenfranchised as the state has yet to engage them in a meaningful and productive manner, is taking a “wait and see” approach. A bill in the 2015 legislative session called for creating a collaborative of insurers, employers, providers, and state officials to talk about how to spread the CCM to the commercial market—with the perceived intent of making the CCM mandatory for insurers and payers of a certain size. The business representative we interviewed, however, noted that “businesses don’t want to do a beta test [of the CCM]. We want to know how it works before we jump in.”

Consumers’ most formal way to engage in transformation may be through the CACs, which comprise mainly consumer representatives and were designed to ensure CCOs address health care needs of consumers and the community. However, some consumer advocates say that the extent to which CACs have reached their full potential varies greatly across the state. In some places, CCOs have fully engaged their CACs and provided them with tools and resources to fulfill their function effectively. But in most of the state, according to consumer advocates, the CACs are controlled by the CCOs and unable to exert any influence on behalf of the community they represent. Although all CCOs are in compliance with the requirement to create a CAC, they are not held accountable for how well CACs perform. Despite Transformation Center offers to help CCOs in standing up their CACs, only three CCOs have actually availed themselves of the available resources and assistance.

More broadly, an array of stakeholders believe there is some public awareness of health care transformation efforts and general support for reforming health care delivery, though some pointed out that the public may confound Oregon’s health system changes with implementation of the Affordable Care Act. One external stakeholder drew attention to the need for public engagement and education, to help consumers understand what delivery system transformation means for them. PEBB, for example, reported that its members were generally aware there was something new and different about the 2015 health plan offerings, but that continued effort will be required to change ingrained thinking about health care and engage members more effectively in their own care.

Many stakeholders, referencing a history of strong collaborative spirit in Oregon, generally felt there was plenty of opportunity to provide feedback and participate in transformation efforts. But others commented that, although getting various interest groups around the same table is nice, it is not enough to effect change. Some also questioned the role of the state as a convener rather than regulator and enforcer, and felt that a more forceful and systematic state action, particularly on payment reform, is needed to truly transform the health delivery system. State officials, however, stressed the importance of keeping the momentum going without being too prescriptive, aware that private payers in particular desire flexibility and strongly oppose mandates.

8.3 Quantitative Outcomes

This section presents information on six types of outcomes for the Oregon SIM Initiative: (1) provider and payer participation, (2) populations reached, (3) care coordination, (4) quality of care, (5) health care utilization, and (6) health expenditures. Data on the first two sets of measures come from various state sources. The latter four sets of measures are derived from commercial (MarketScan), Medicare, and Medicaid Analytic eXtract (MAX)/Alpha-MAX claims data.

8.3.1 Populations reached

In its first quarter 2015 SIM Initiative quarterly report, Oregon reported that **70 percent of the Medicaid/Children's Health Insurance Plan population (742,065 individuals) were receiving primary care from a recognized PCPCH** in first quarter 2015, and **86 percent (911,680 individuals) were in CCOs** as of first quarter 2015, including 44,866 Medicare-Medicaid enrollees (*Table 8-3*). The state also reported that **97 percent of PEBB members were enrolled in a health plan with CCM elements, with the remaining 3 percent opting out of PEBB benefits**. Combined, the Medicaid and PEBB members reached by the CCM constitute just over half of the state population. If the state is successful in incorporating OEGB members and the remainder of Medicaid beneficiaries not currently in a CCO (mostly Medicare-Medicaid), it will have included about 60 percent of the population in the model. If the population reached is expanded to include all users of a PCPCH, regardless of whether the payer is compensating those clinics differently, the state has reached the vast majority of consumers in some way.

Table 8-3. Population reached in the Oregon innovation models by payer

Payer	Patient-centered primary care homes	Coordinated care model
Medicaid beneficiaries	742,065 (70%)	911,680 (86%)
Commercial	Not reported	0%
Medicare beneficiaries	Not reported	44,866 (7%)
Medicare-Medicaid enrollees	Not reported	44,866 (55%)
State employees	Not reported	129,010 (97%)

Source: Percentage values for Medicaid beneficiaries and Medicare-Medicaid beneficiaries sourced from Oregon SIM Q1 2015 Progress Report. Counts for Medicaid beneficiaries and Medicare-Medicaid beneficiaries calculated by authors using Oregon Health Plan March 2015 Physical Health Service Delivery by Eligibility Group (<http://www.oregon.gov/oha/healthplan/Pages/reports.aspx>). Percentage and count of Medicare beneficiaries in the coordinated care model based on authors' calculations using SIM Q1 2015 Progress Report and the Kaiser Family Foundation estimate of the number of Medicare beneficiaries in the state based on the Census Bureau's March 2015 Current Population Survey (CPS: Annual Social and Economic Supplements) available at: <http://kff.org/other/state-indicator/total-population/>.

8.3.2 Provider and payer participation

Oregon was the only payer participating in the coordinated care model (CCM) as of first quarter 2015. As described above, the Oregon Health Authority has put CCM arrangements in place for two populations: Medicaid and state employees. In January 2015, selected elements of the CCM were included in Public Employees' Benefit Board (PEBB) health plan contracts for state employees. In fall 2015, Oregon planned to make similar contractual changes to health plans offered by the Oregon Educators Benefit Board (OEBB) to Oregon public educators (*Table 8-4*).

As of first quarter 2015, 548 primary care practices were recognized as PCPCHs. In addition to Medicaid and PEBB, one private payer (Aetna) was incorporating PCPCH recognition in its payment methodology.

Table 8-4. Physicians, practices, and payers participating in the Oregon innovation models

Participants	Patient-centered primary care homes	Coordinated care model
Physicians	Not reported	Not reported
Practices	548	Not reported
Payers	Medicaid, PEBB, Aetna	Medicaid, PEBB

OEBB = Oregon Educators Benefit Board; PEBB = Public Employees' Benefit Board; QHP = qualified health plans. Source: Recognized patient-centered primary care home (PCPCH) practices sourced from Oregon SIM Q1 2015 Progress Report. Payers participating in the PCPCH initiative sourced from <http://www.oregon.gov/oha/pcpch/Pages/recognition-oregon-payers.aspx>.

8.3.3 Care coordination

Care coordination lies at the heart of Oregon’s SIM Initiative. “Using best practices to manage and coordinate care” is one of the six key elements of the CCM, and care coordination is one of the six standards practices must meet to achieve recognition as a PCPCH. The set of measures tracked in this report include several of the core metrics for CCOs and PEBB plans, and this report provides a baseline that extends back not only before implementation of the SIM Initiative but also before creation of CCOs. We will investigate Oregon’s success in implementing the CCM within the CCOs envisioned in its 1115 waiver, as measured by improving care coordination measures in Medicaid over the course of this evaluation. However, SIM Initiative success in spreading the CCM to state employees and educators will not be detectable in the data reported here. Rather, future analyses of all-payer data will address this research question. Finally, since the other populations tracked here are not directly targeted by the state, any eventual changes in the Medicare and commercial populations can be interpreted—on the assumption that other changes in financing and delivery systems are controlled for adequately—as evidence of spillover from the successful spread of the CCM model as it affects the standard of care delivered beyond the populations directly targeted.

Most of our care coordination measures require more than one quarter of data. Thus, we present these measures on an annual, instead of quarterly, basis. Furthermore, we do not yet have a full year of data for the test period in any of the payer databases. Therefore, we report care coordination estimates only for the baseline period. *Appendix Tables E-5-1* through *E-5-5* provide, for Oregon and its comparison group, baseline care coordination measures for Medicaid beneficiaries by eligibility category, the commercially insured by age category, and Medicare beneficiaries by enrollment status. We look for differences in the levels and trends in these measures.

The Medicaid primary care visit rate from 2010 and 2011 was lower in Oregon than the comparison group, and was falling in Oregon while rising in the comparison group. However, Medicaid beneficiaries in Oregon received better coordinated care than the comparison group, as indicated by a higher rate of ambulatory follow-up after an inpatient stay, especially among infants. After a mental health inpatient stay, Medicaid adults were more likely to have a follow-up in Oregon than the comparison group. On measures of medication management for asthma and depression, Medicaid beneficiaries also fared better in Oregon than the comparison group.

Between 2010 and 2013, Oregonians with commercial insurance and on Medicare showed similar patterns of primary care use relative to the comparison group, as in the Medicaid populations. On other care coordination measures, however, there were few differences between Oregon and the comparison group. The one major exception is the rate of follow-up after a mental health hospitalization for Medicare beneficiaries, which was lower in Oregon than the comparison group, in contrast to the pattern for Medicaid beneficiaries.

8.3.4 Quality of care

While care coordination is an important tool in Oregon’s SIM Initiative, improving the quality of care received by Oregonians is one of the Initiative’s key goals and the focus of many of its core metrics. As with care coordination measures, any effects of the CCM as implemented under the state’s 1115 waiver may become visible in the analysis of Medicaid data, but not in Medicare or commercial data unless and until a “tipping point” for spillover is reached.

Most of our quality of care measures require more than one quarter of data. Thus, we present these measures on an annual, instead of quarterly, basis. Furthermore, we do not yet have a full year of data for the test period in any of the payer databases. Therefore, we report quality-of-care estimates only for the baseline period. *Appendix Tables E-5-6 through E-5-13* provide, for Oregon and its comparison group, baseline quality-of-care measures for Medicaid beneficiaries by eligibility category, the commercially insured by age category, and Medicare beneficiaries by enrollment status. Similar to the care coordination measures, we look for differences in the levels and trends in the measures.

On the three preventive service measures reported here—influenza vaccination, mammography, and tobacco screening—and on treatment of alcohol and drug dependence, Oregon’s rates were largely similar to comparison group rates. In all three of the populations studied, however, Oregon exhibited consistently lower rates of preventable hospitalizations than the comparison group, although the trends over time were similar.

8.3.5 Health care utilization

In its effort to lower costs, Oregon’s SIM Initiative is focused on shifting patterns of utilization away from costly settings and, through better management and coordination, encouraging increased utilization of preventive services and primary care. To that end, any reduction in inpatient admissions and ER use, especially related to primary care–treatable conditions, would be an indicator of success for the Initiative. Any such trends will not be observed, however, until follow up data are available further into the SIM test period.

Figures 8-1 through 8-10 provide, for Oregon and its comparison group, quarterly averages of core utilization measures for Medicaid beneficiaries, the commercially insured, and Medicare beneficiaries. For Medicaid beneficiaries, we report baseline data for Oregon and the comparison group in fourth quarter 2010 through fourth quarter 2011, the latest period for which we have complete Medicaid data. For the commercially insured and Medicare beneficiaries, we report the complete 3-year baseline period (fourth quarter 2010 through third quarter 2013) plus the first three quarters of the test period (fourth quarter 2013 through second quarter 2014). *Appendix Tables E-5-14 through E-5-16* provide quarterly averages by year and eligibility category for Medicaid beneficiaries, year and age group for the commercially insured, and year and dual Medicaid enrollment status for Medicare beneficiaries, respectively. Because we have

early test period data for the commercially insured and Medicare populations, we also present the results of difference-in-differences (DD) regression analyses on the utilization measures in *Tables 8-5* and *8-6*.

Utilization summary

Among Medicaid beneficiaries, the rates of obstetric and other hospital admissions in the baseline period were higher in Oregon than the comparison group, but the rates of ER use and 30-day readmissions were lower. Strong trends in these measures have yet to appear, although there may be some evidence that hospital admissions were falling even before the advent of Medicaid CCOs under Oregon's section 1115 waiver. Among the commercially insured and Medicare beneficiaries, Oregon's rates of inpatient admissions, ER use, and hospital readmissions were lower than the comparison group's rates, and generally declined slightly over the baseline and early test period. The exceptions were the 30-day readmission rate among the commercially insured which was volatile and ended higher at the end of the three-quarter test period but comparable to the comparison group, and the ER visit rate among Medicare beneficiaries which was unchanged. No statistically significant differences were found in the rate of change in these measures from the baseline to the early test period in Oregon relative to the comparison group.

Medicaid

The rates of all-cause acute and obstetric inpatient admissions among Medicaid beneficiaries were higher in Oregon relative to the comparison group in 2010 and 2011 (*Figures 8-1* and *8-2*). Both rates decreased from fourth quarter 2010 to fourth quarter 2011 in Oregon and increased in the comparison group. The rate of ER visits among Medicaid beneficiaries was lower in Oregon relative to the comparison group and decreased slightly from fourth quarter 2010 to fourth quarter 2011 in Oregon and the comparison group (*Figure 8-3*). The rate of 30-day readmissions among Medicaid beneficiaries was lower in Oregon relative to the comparison group, increasing slightly from fourth quarter 2010 to fourth quarter 2011 in Oregon and decreasing in the comparison group (*Figure 8-4*).

Figure 8-1. All-cause acute inpatient admissions per 1,000 Medicaid beneficiaries, Oregon and comparison group

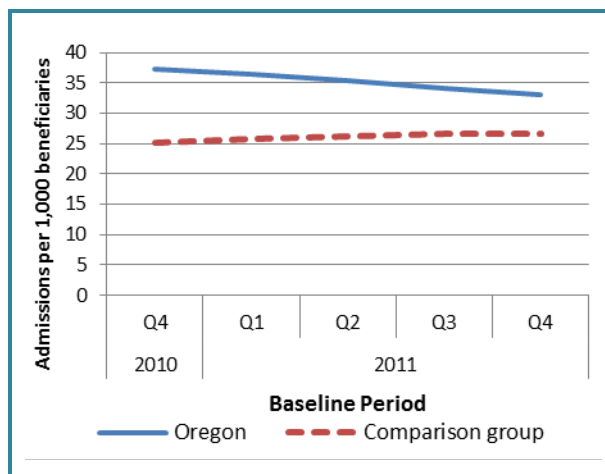


Figure 8-2. Obstetric inpatient admissions per 1,000 Medicaid beneficiaries, Oregon and comparison group

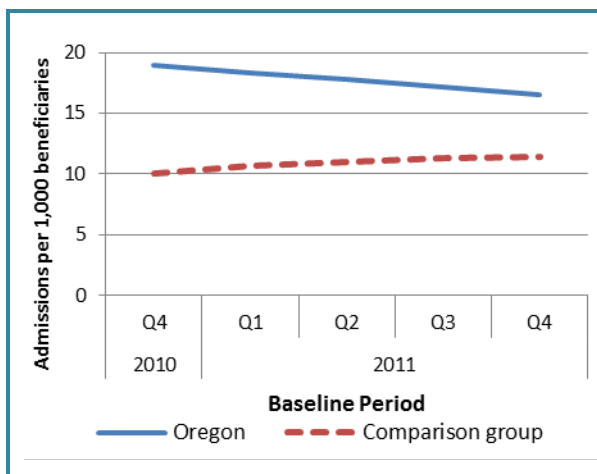


Figure 8-3. Emergency room visits that did not lead to hospitalization per 1,000 Medicaid beneficiaries, Oregon and comparison group

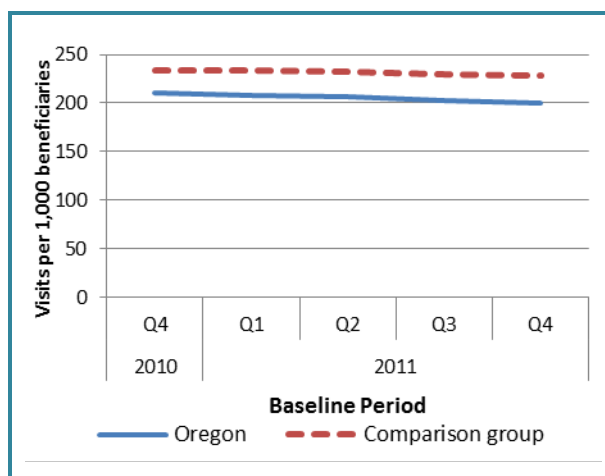
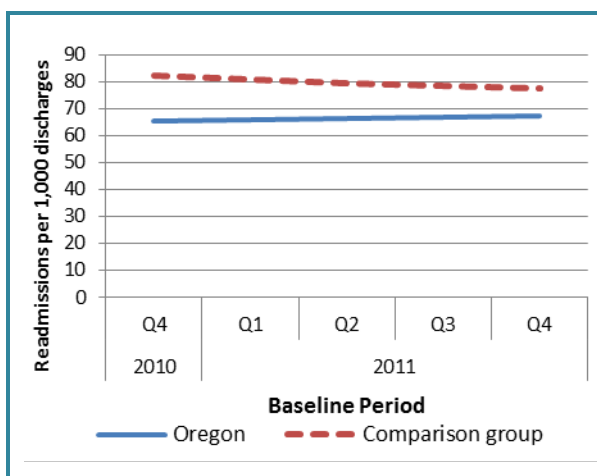


Figure 8-4. 30-day readmissions per 1,000 discharges, Medicaid beneficiaries, Oregon and comparison group



Commercially insured

The rate of all-cause acute inpatient admissions among the commercially insured was lower in Oregon in fourth quarter 2010 relative to the comparison group, but that gap narrowed by second quarter 2014. Over the course of the baseline and early test periods, inpatient admissions declined slightly in Oregon and moderately in the comparison group (*Figure 8-5*). Among the commercially insured, the rate of ER visits was lower in Oregon relative to the comparison group throughout the period and declined slightly in both groups (*Figure 8-6*). The rate of 30-day readmissions was also lower in Oregon relative to the comparison group from fourth quarter 2010 through first quarter 2012, but then rose above the comparison group rate in

second quarter 2013. Whereas the 30-day readmission rate fell throughout the baseline and early test period in the comparison group, it rose slightly in Oregon (*Figure 8-7*).

The regression-adjusted DD results for the commercially insured show no statistically significant differences in the rate of change in inpatient admissions, ER visits, or 30-day readmissions in Oregon relative to the comparison group from the baseline to the early test period. Thus, these results show no impact of the SIM Initiative in the first three quarters of the test period (*Table 8-5*). Because the SIM Initiative's efforts to spread the CCM had not yet been implemented in its first target (state employees), these findings are not surprising.

Figure 8-5. All-cause acute inpatient admissions per 1,000 covered persons, MarketScan commercially insured, Oregon and comparison group

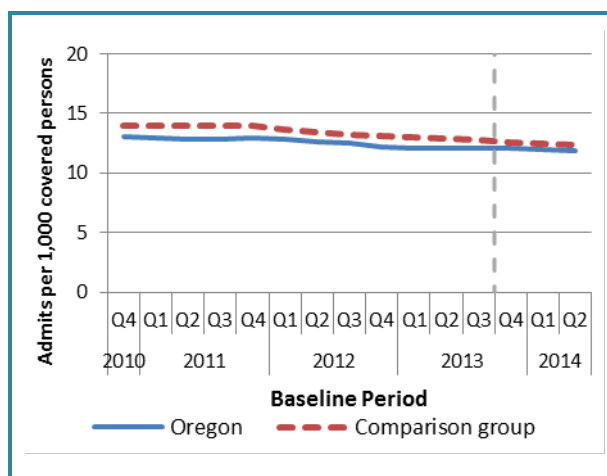


Figure 8-6. Emergency room visits that did not lead to hospitalization per 1,000 covered persons, MarketScan commercially insured, Oregon and comparison group

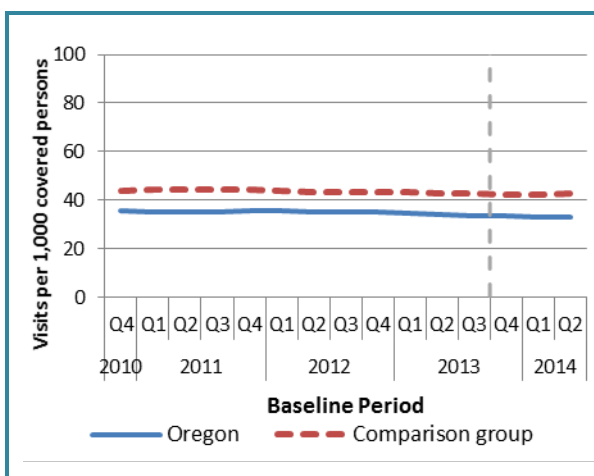


Figure 8-7. 30-day readmissions per 1,000 discharges, MarketScan commercially insured, Oregon and comparison group

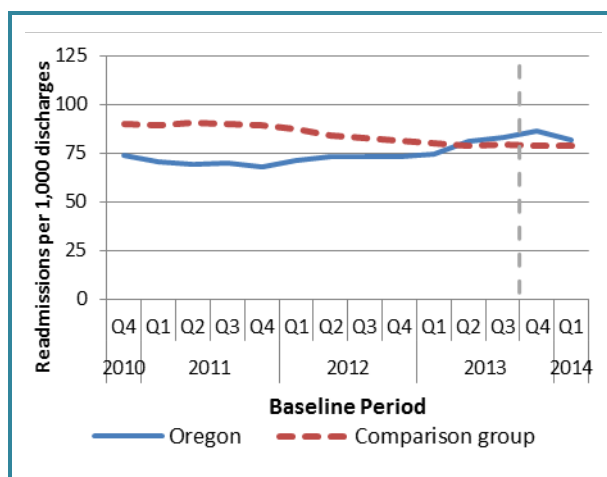


Table 8-5. Difference in the pre-post change in expected utilization per 1,000 members, MarketScan commercially insured, Oregon and comparison group, first three quarters of SIM implementation (October 2013 through June 2014)

Outcome	Regression adjusted difference in differences	95% Confidence interval		p-value
		Lower limit	Upper limit	
Aggregated changes in utilization ¹				
All-cause acute inpatient admissions	44	−309	397	
Emergency room visits that did not lead to hospitalization	172	−356	801	
30-day hospital readmissions	−1,799	−11,722	8,125	
Change in utilization per 1,000 members ²				
All-cause acute inpatient admissions	0.034	−0.24	0.31	0.808
Emergency room visits that did not lead to hospitalization	0.14	−0.36	0.63	0.591
30-day hospital readmissions per 1,000 discharges	−1.41	−9.21	6.38	0.722

Note: The total number of person-quarters for Test state members in the post period (Q4 2013–Q2 2014) is 1,273,062. Bold estimates indicate statistical significance at the $p < 0.05$ level. A linear probability model was used to obtain estimates of the difference in probability of use. A *negative* value corresponds to a *greater decrease* or a *smaller increase* in probability of utilization in the Test state relative to the comparison group. A *positive* value corresponds to a *greater increase* or a *smaller decrease* in probability of utilization in the Test state relative to the comparison group.

¹The quarterly per-member estimates are multiplied by the total number of person-quarters to get the aggregated change in utilization.

²The per-member estimates are multiplied by 1,000 to obtain the change in the rate of use per 1,000 persons.

Medicare

The rate of all-cause acute inpatient admissions among Medicare beneficiaries was lower in Oregon relative to the comparison group between fourth quarter 2010 and fourth quarter 2014, and decreased over time in both Oregon and the comparison group (**Figure 8-8**). The rate of ER visits among Medicare beneficiaries was lower in Oregon relative to the comparison group and fairly stable over the baseline and early test periods (**Figure 8-9**). The rate of 30-day readmissions was lower in Oregon relative to the comparison group and decreased slightly over the period in both groups (**Figure 8-10**).

The regression-adjusted DD results for Medicare beneficiaries indicate (**Table 8-6**) no statistically significant difference in the rate of change in these core utilization measures between Oregon and the comparison group from baseline to the early test periods. Similar to the findings for the commercially insured, these findings are not surprising, given that the SIM Initiative had yet to implement the CCM in any population by the middle of 2014. Thus, any spillover effects of practices reacting to incentives in the treatment of state-insured patients are unlikely to have spread to Medicare patients.

Figure 8-8. All-cause acute inpatient admissions per 1,000 Medicare beneficiaries, Oregon and comparison group

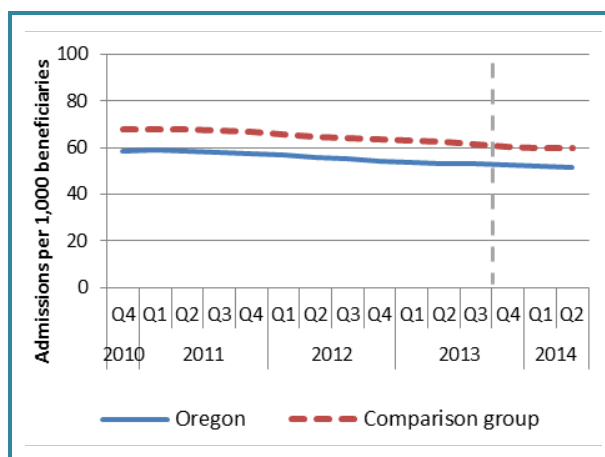


Figure 8-9. Emergency room visits that did not lead to hospitalization per 1,000 Medicare beneficiaries, Oregon and comparison group

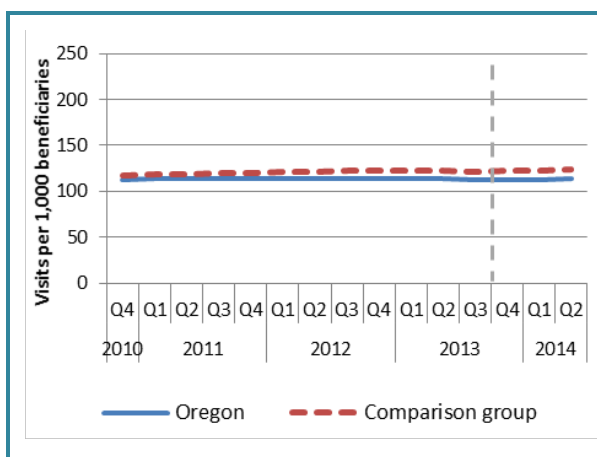


Figure 8-10. 30-day readmissions per 1,000 discharges, Medicare beneficiaries, Oregon and comparison group

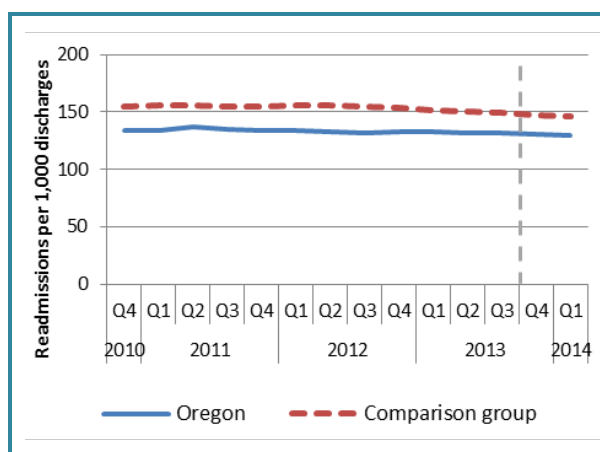


Table 8-6. Difference in the pre-post change in expected utilization per 1,000 members, Medicare beneficiaries, Oregon and comparison group, first three quarters of SIM implementation (October 2013 through June 2014)

	Regression adjusted difference in differences	95% Confidence interval		
Outcome		Lower limit	Upper limit	p-value
Aggregated change in utilization ¹				
All-cause acute inpatient admissions	538	−215	1,398	
Emergency room visits that did not lead to hospitalization	861	−215	1,936	
30-day hospital readmissions	215	−7,100	7,637	
Change in utilization per 1,000 members ²				
All-cause acute inpatient admissions	0.50	−0.20	1.30	0.1636
Emergency room visits that did not lead to hospitalization	0.80	−0.20	1.80	0.1082
30-day hospital readmissions per 1,000 discharges	0.20	−6.60	7.10	0.9480

Note: The total number of person-quarters for Test state members in the post period (Q4 2013–Q2 2014) is 1,075,697. Bold estimates indicate statistical significance at the $p < 0.05$ level. A linear probability model was used to obtain estimates of the difference in probability of use. A *negative* value corresponds to a *greater decrease* or a *smaller increase* in probability of utilization in the Test state relative to the comparison group. A *positive* value corresponds to a *greater increase* or a *smaller decrease* in probability of utilization in the Test state relative to the comparison group.

¹The quarterly per-member estimates are multiplied by the total number of person-quarters to get the aggregated change in utilization.

²The per-member estimates are multiplied by 1,000 to obtain the change in the rate of use per 1,000 persons.

8.3.6 Health care expenditures

The most tangible and measurable aims of Oregon’s SIM Initiative are slowing growth in the cost of care for selected populations. In particular, the SIM Initiative aims to reduce the rate of growth in costs among Medicaid beneficiaries, PEBB members, and Medicare-Medicaid beneficiaries. The findings for Medicaid spending reported here help establish the baseline before either the 1115 waiver or SIM activities began.

Figures 8-11 through **8-17** and **8-20** through **8-23** provide, for Oregon and its comparison group, quarterly average PMPM payments for Medicaid beneficiaries, the commercially insured, and Medicare beneficiaries. For Medicaid beneficiaries, we report baseline data for Oregon and its comparison group from fourth quarter 2010 through fourth quarter 2011, the latest period for which we have complete Medicaid data for Oregon and the comparison group. For the commercially insured and Medicare beneficiaries, we report the complete 3-year baseline period (fourth quarter 2010 through third quarter 2013) plus the first three quarters of the test period (fourth quarter 2013 through second quarter 2014). **Appendix Table E-5-17** shows average PMPM total, FFS, and capitated payments for Medicaid beneficiaries by year and eligibility

category. *Appendix Tables E-5-18* and *E-5-19* present average PMPM payments by year and age group for the commercially insured, and year and dual Medicaid enrollment status for Medicare beneficiaries, respectively.

Because we have early test period data for the commercially insured and Medicare populations, we present the DD results for PMPM payments for these populations in *Tables 8-7* and *8-8*, respectively. *Figures 8-18* and *8-24* show the quarterly estimates for the effects of spending. *Figures 8-19* and *8-25* show the strength of the evidence.

Expenditure summary

From the end of 2010 through 2011, average PMPM Medicaid expenditures among Medicaid-only and Medicare-Medicaid beneficiaries were consistently higher in Oregon than the comparison group, but whereas the gap narrowed for Medicaid-only beneficiaries, it widened for Medicare-Medicaid beneficiaries over this time period. In the commercially insured population, Oregon's PMPM payments were similar to or higher than in the comparison group from fourth quarter 2010 to second quarter 2014 whereas they were consistently lower for the Medicare population. Trends in these core measures over this time period were generally similar between Oregon and the comparison group for the commercially insured and Medicare beneficiaries. The DD results show statistically significant increases in PMPM payments in Oregon relative to the comparison group during the early test period for these largely SIM-independent populations. These findings do not suggest any SIM impact but may prove useful in interpreting impact findings further into the test period.

Medicaid

Average total PMPM payments for Medicaid-only beneficiaries were higher in Oregon relative to the comparison group between fourth quarter 2010 and fourth quarter 2011 (*Figure 8-11*). Average total payments for Medicaid-only beneficiaries declined in Oregon and remained unchanged in the comparison group over the period. Average total PMPM payments for Medicare-Medicaid beneficiaries were also consistently higher in Oregon relative to the comparison group (*Figure 8-12*). From fourth quarter 2010 to fourth quarter 2011, total payments increased for these beneficiaries in Oregon but decreased in the comparison group.

Figure 8-11. Average total PMPM payments, Medicaid-only beneficiaries, Oregon and comparison group

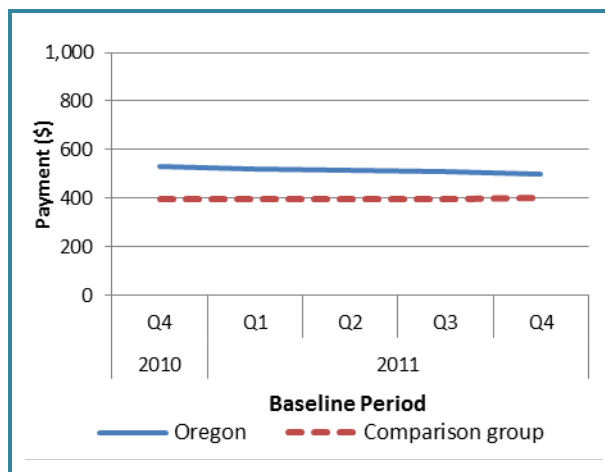
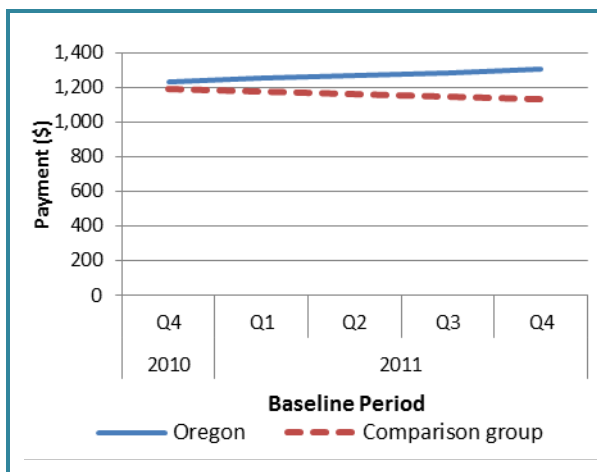


Figure 8-12. Average total PMPM payments, Medicare-Medicaid beneficiaries, Oregon and comparison group



Commercially insured

Average PMPM payments for the commercially insured population were higher in Oregon relative to the comparison group between fourth quarter 2010 and second quarter 2014 and increased slightly over this period in both groups (**Figure 8-13**). In fourth quarter 2010, average inpatient facility payments were similar for the commercially insured in Oregon and the comparison group. Payment trends fluctuated over the baseline and early test periods, with payments ending second quarter 2014 slightly higher in Oregon than the comparison group (**Figure 8-14**). Average other facility payments were slightly higher in Oregon than the comparison group in fourth quarter 2010, but grew slightly more in the comparison group than Oregon over the baseline and early test periods, such that payment levels in the two groups were similar by second quarter 2014 (**Figures 8-15**). Average professional payments were higher in Oregon relative to the comparison group throughout the period. Over time, they decreased slightly in Oregon and remained fairly stable in the comparison group (**Figures 8-16**). Average outpatient pharmacy payments were lower in Oregon relative to the comparison group throughout the period. In both groups, these payments increased between fourth quarter 2012 and second quarter 2014 (**Figures 8-17**).

Figure 8-13. Average total PMPM payments, MarketScan commercially insured, Oregon and comparison group

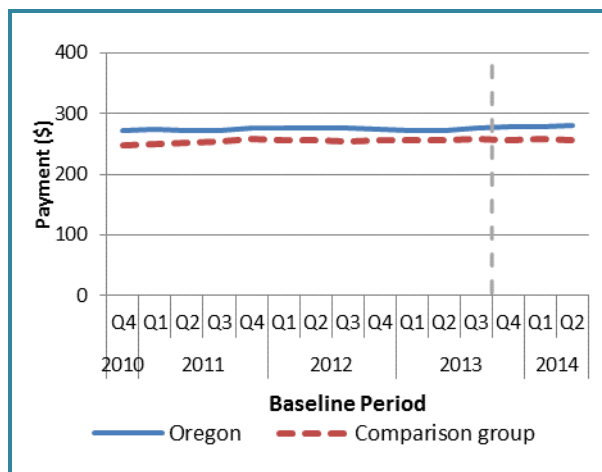


Figure 8-14. Average inpatient facility PMPM payments, MarketScan commercially insured, Oregon and comparison group

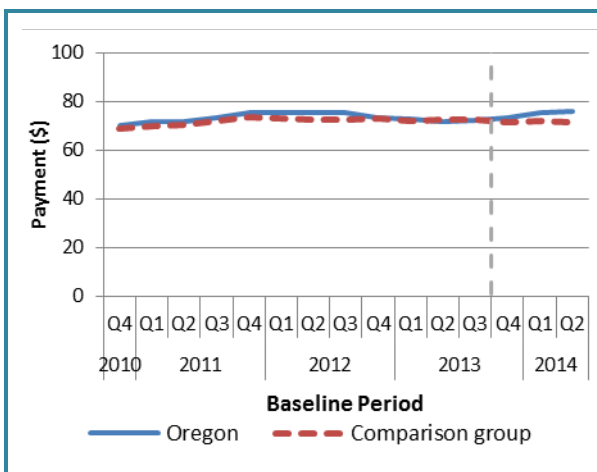


Figure 8-15. Average other facility PMPM payments, MarketScan commercially insured, Oregon and comparison group

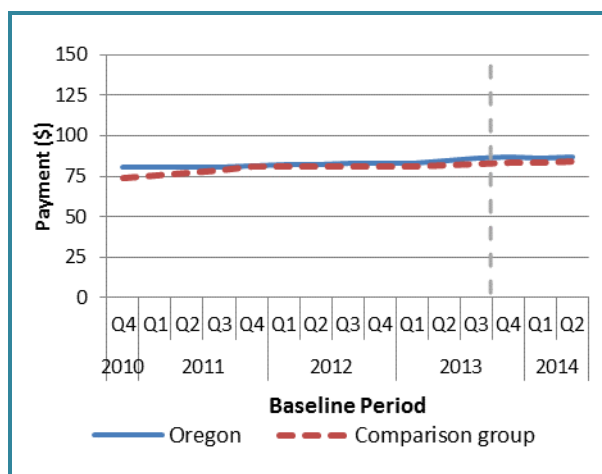


Figure 8-16. Average professional PMPM payments, MarketScan commercially insured, Oregon and comparison group

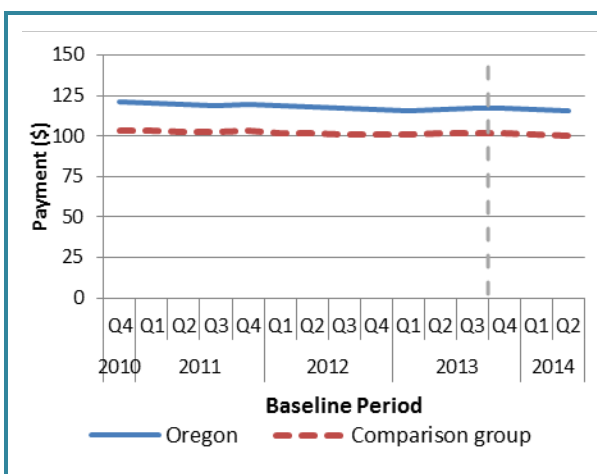
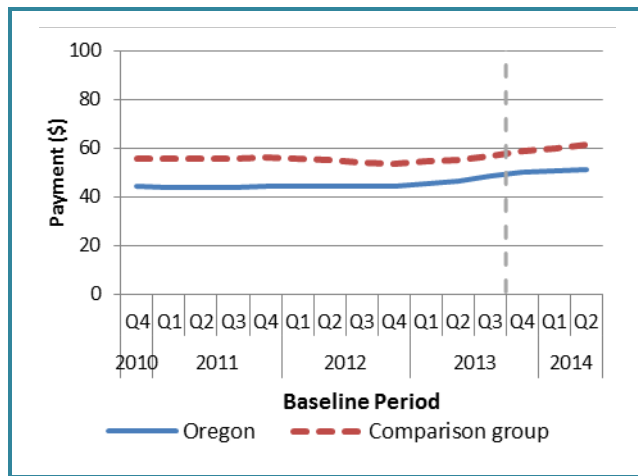


Figure 8-17. Average outpatient pharmacy PMPM payments, MarketScan commercially insured, Oregon and comparison group



The regression-adjusted DD results show that relative to the 15 baseline quarters, average changes in total PMPM payments in Oregon were not significantly changed during the first three test quarters in Oregon, relative to the comparison group (*Table 8-7*). This aggregate finding, however, masks significantly greater increases in inpatient care payments, significantly greater decreases in professional payments, and slower growth in outpatient pharmacy payments in Oregon relative to the comparison group. Quarterly and cumulative spending estimates were lower in Oregon than the comparison group in the first test quarter and higher for Oregon in the second and third test quarters (*Figures 8-18 and 8-19*), but the differences were not statistically significant and provide no evidence of any SIM impact (*Figures 8-20 and 8-21*). However, as stated in the discussion of utilization findings above this is not a surprise, as the state's SIM Initiative had yet to change incentives for care delivery in any of its target populations by the middle of 2014. By the same reasoning, any evidence of cost increases in the commercially insured population between October 2013 and July 2014 is unlikely to have any relationship to the SIM Initiative.

Table 8-7. OLS adjusted difference in the pre-post change in PMPM payments, MarketScan commercially insured, Oregon and comparison group, first three quarters of SIM implementation (October 2013 through June 2014)

Outcome	Regression adjusted difference in differences	95% Confidence interval		p-value
		Lower limit	Upper limit	
Aggregated change in payments ¹				
Total (in millions)	\$25.27	−\$40.17	\$90.72	
Inpatient facility (in millions)	\$49.98	\$2.30	\$97.67	
Other facility (in millions)	−\$6.94	−\$34.10	\$20.22	
Professional (in millions)	−\$20.79	−\$38.43	−\$3.15	
Outpatient pharmacy (in millions)	−\$32.39	−\$45.98	−\$18.80	
Change in PMPM payments				
Total	\$2.41	−\$3.83	\$8.65	0.449
Inpatient facility	\$4.77	\$0.22	\$9.31	0.040
Other facility	−\$0.66	−\$3.25	\$1.93	0.616
Professional	−\$1.98	−\$3.67	−\$0.30	0.021
Outpatient pharmacy	−\$3.09	−\$4.38	−\$1.79	0.000

OLS = ordinary least squares; PMPM = per member per month.

Note: The total number of person-quarters for Test state members in the post period (Q4 2013–Q2 2014) is 1,165,021. Bold estimates indicate statistical significance at the $p < 0.05$ level. A *negative* value corresponds to a *greater decrease* or a *smaller increase* in payments in the Test state relative to the comparison group. A *positive* value corresponds to a *greater increase* or a *smaller decrease* in payments in the Test state relative to the comparison group.

¹The PMPM estimates are multiplied by 9 months *1,165,021 person-quarters to obtain the change in total aggregate expenditures for the post period.

Figure 8-18. Quarterly effects on total spending, MarketScan commercially insured, Oregon, fourth quarter 2013 through second quarter 2014

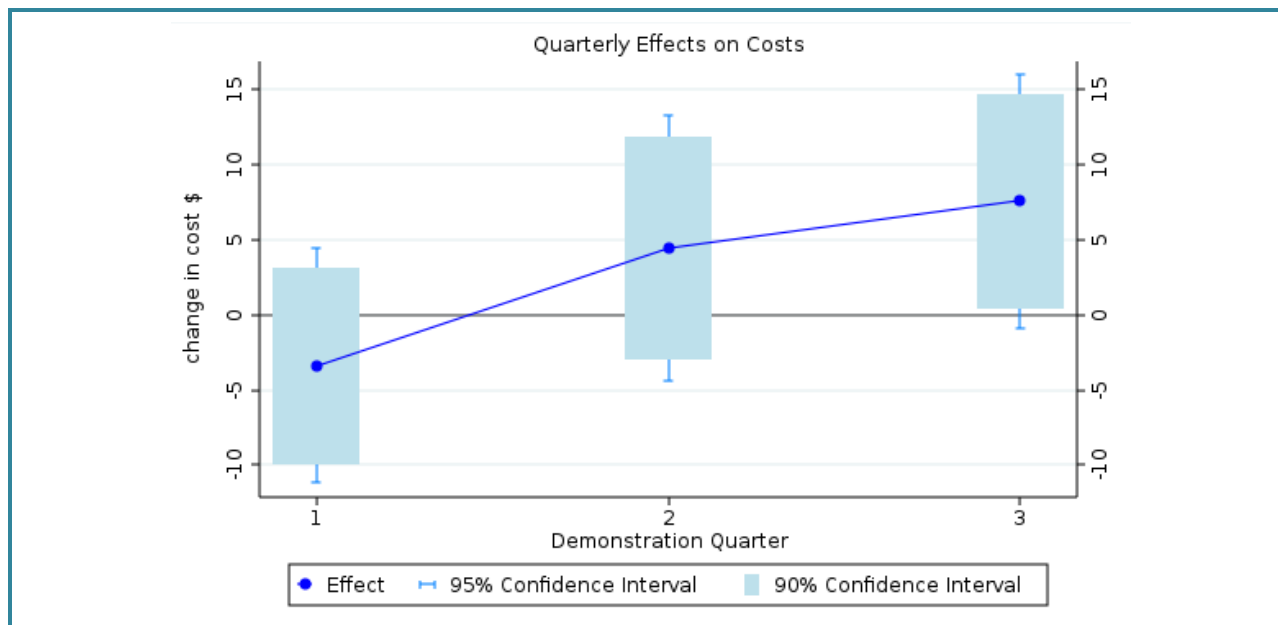


Figure 8-19. Quarterly strength of evidence on total spending, MarketScan commercially insured, Oregon, fourth quarter 2013 through second quarter 2014

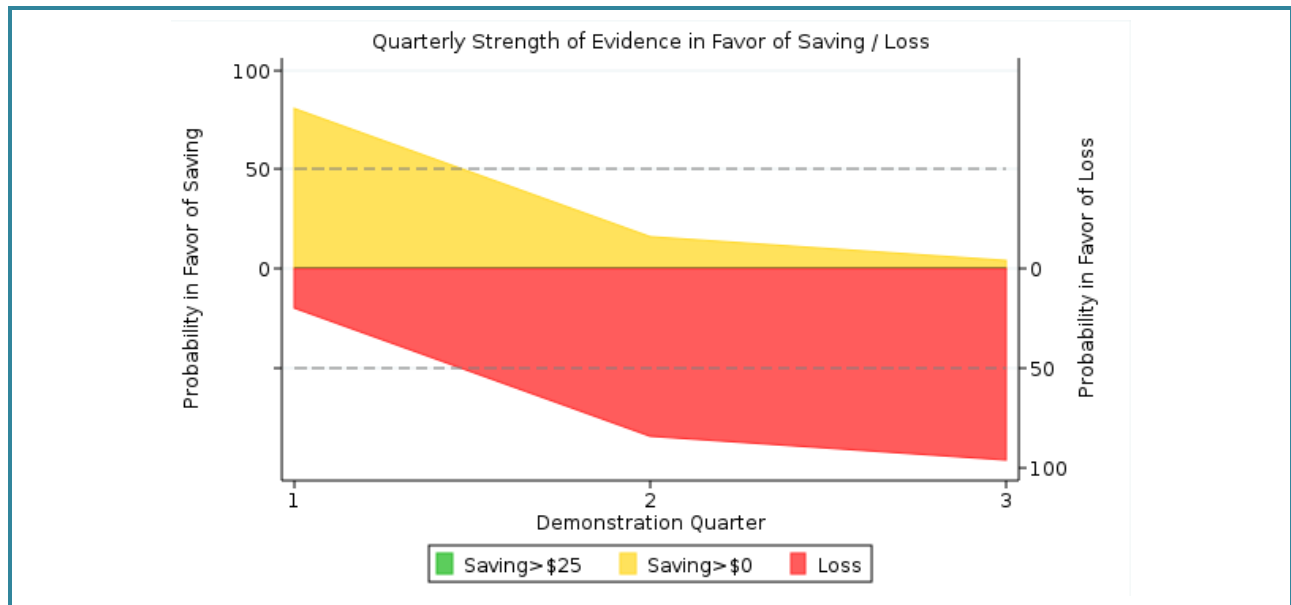


Figure 8-20. Cumulative effects on total spending, MarketScan commercially insured, Oregon, fourth quarter 2013 through second quarter 2014

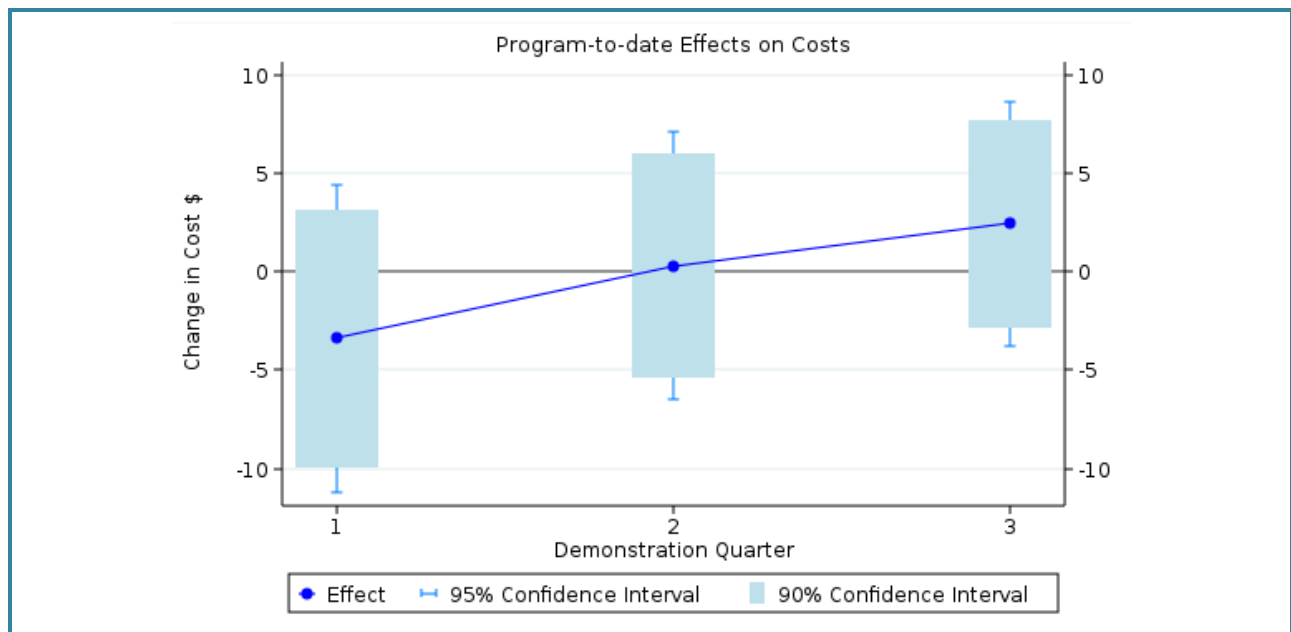
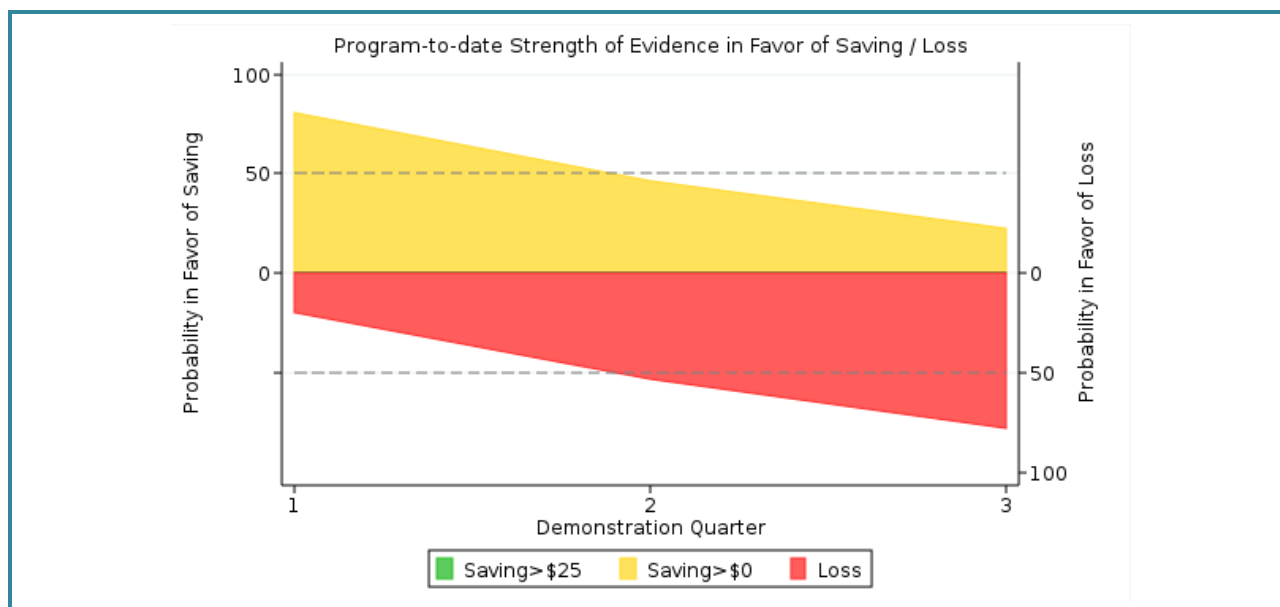


Figure 8-21. Cumulative strength of evidence on total spending, MarketScan commercially insured, Oregon, fourth quarter 2013 through second quarter 2014



Medicare

For Medicare beneficiaries, average total, inpatient facility, other facility, and professional PMPM payments were lower in Oregon relative to the comparison group from fourth quarter 2010 to second quarter 2014 (**Figures 8-22 through 8-25**). Over time, average total PMPM payments increased slightly in Oregon and changed little in the comparison group. Average inpatient facility PMPM payments changed little in both groups (**Figure 8-23**), while average PMPM payments for other facilities grew for both (**Figure 8-24**). Average professional PMPM payments did not change much for either group from fourth quarter 2010 to second quarter 2014 (**Figure 8-25**).

Figure 8-22. Average total PMPM payments, Medicare beneficiaries, Oregon and comparison group

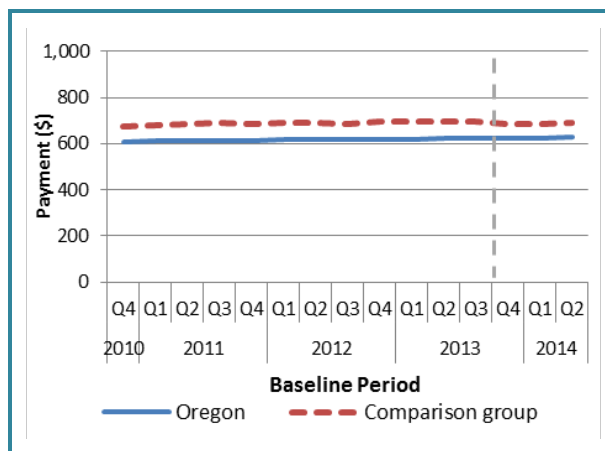


Figure 8-23. Average inpatient facility PMPM payments, Medicare beneficiaries, Oregon and comparison group

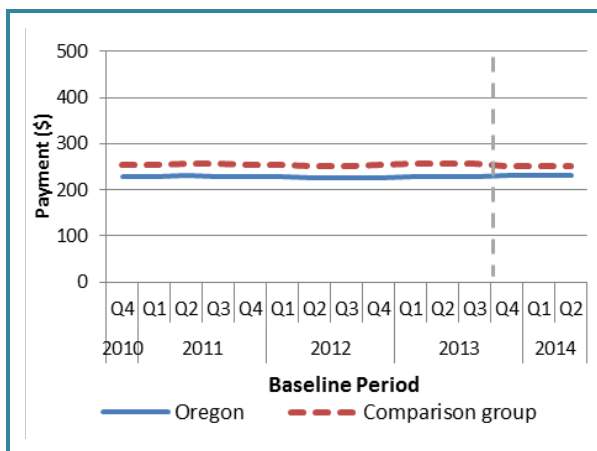


Figure 8-24. Average other facility PMPM payments, Medicare beneficiaries, Oregon and comparison group

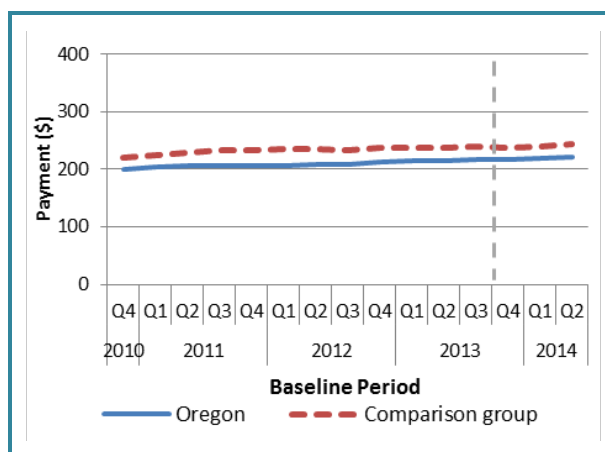
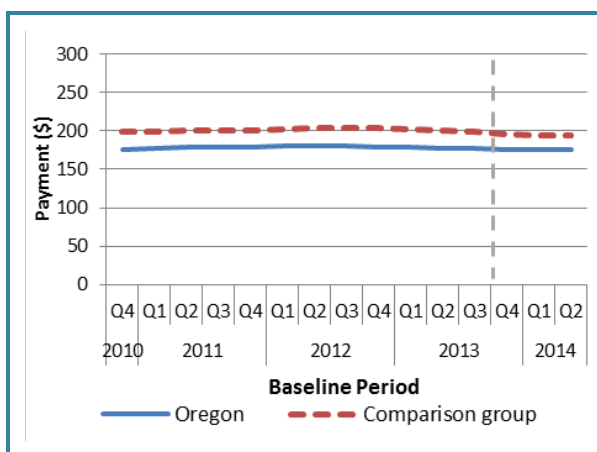


Figure 8-25. Average professional PMPM payments, Medicare beneficiaries, Oregon and comparison group



The regression-adjusted DD results show statistically significant increases during the early SIM test period in Oregon relative to the comparison group for average total PMPM payments among Medicare beneficiaries (\$15.86 PMPM or \$154 million over the three test quarters), a finding that is consistent across each type of payment (**Table 8-8**). Quarterly spending was higher in Oregon than the comparison group in all three test quarters, although the differences in the second and third test quarters were not statistically significant (**Figure 8-26**). Cumulative spending was statistically significantly higher in Oregon relative to the comparison group for each test period quarter (**Figure 8-28**). That Medicare costs probably went up in Oregon (controlling for other factors) during the SIM evaluation period (**Figures 8-27 and 8-29**) is not likely a reflection of SIM impacts, because these were non-SIM related populations. The finding may be useful, however, in interpreting impact findings further into the test period.

Table 8-8. OLS adjusted difference in the pre-post change in PMPM payments, Medicare beneficiaries, Oregon and comparison group, first three quarters of SIM implementation (October 2013 through June 2014)

Outcome	Regression adjusted difference in differences	95% Confidence interval		p-value
		Lower limit	Upper limit	
Aggregated change in payments ¹				
Total (in millions)	\$153.58	\$72.62	\$234.54	
Inpatient facility (in millions)	\$84.41	\$26.21	\$142.60	
Other facility (in millions)	\$41.57	\$11.10	\$72.04	
Professional (in millions)	\$27.58	\$9.34	\$45.81	
Change in PMPM payments ²				
Total	\$15.86	\$7.50	\$24.23	0.0002
Inpatient facility	\$8.72	\$2.71	\$14.73	0.0045
Other facility	\$4.29	\$1.15	\$7.44	0.0075
Professional	\$2.85	\$0.96	\$4.73	0.0030

OLS = ordinary least squares; PMPM = per member per month.

Note: The total number of person-quarters for Test state members in the post period (Q4 2013–Q2 2014) is 1,075,697. Bold estimates indicate statistical significance at the $p < 0.05$ level. A *negative* value corresponds to a *greater decrease* or a *smaller increase* in payments in the Test state relative to the comparison group. A *positive* value corresponds to a *greater increase* or a *smaller decrease* in payments in the Test state relative to the comparison group.

¹The PMPM estimates are multiplied by 9 months * 1,075,697 person quarters to obtain the change in total aggregate expenditures for the post period.

Figure 8-26. Quarterly effects on total spending, Medicare beneficiaries, Oregon, fourth quarter 2013 through second quarter 2014

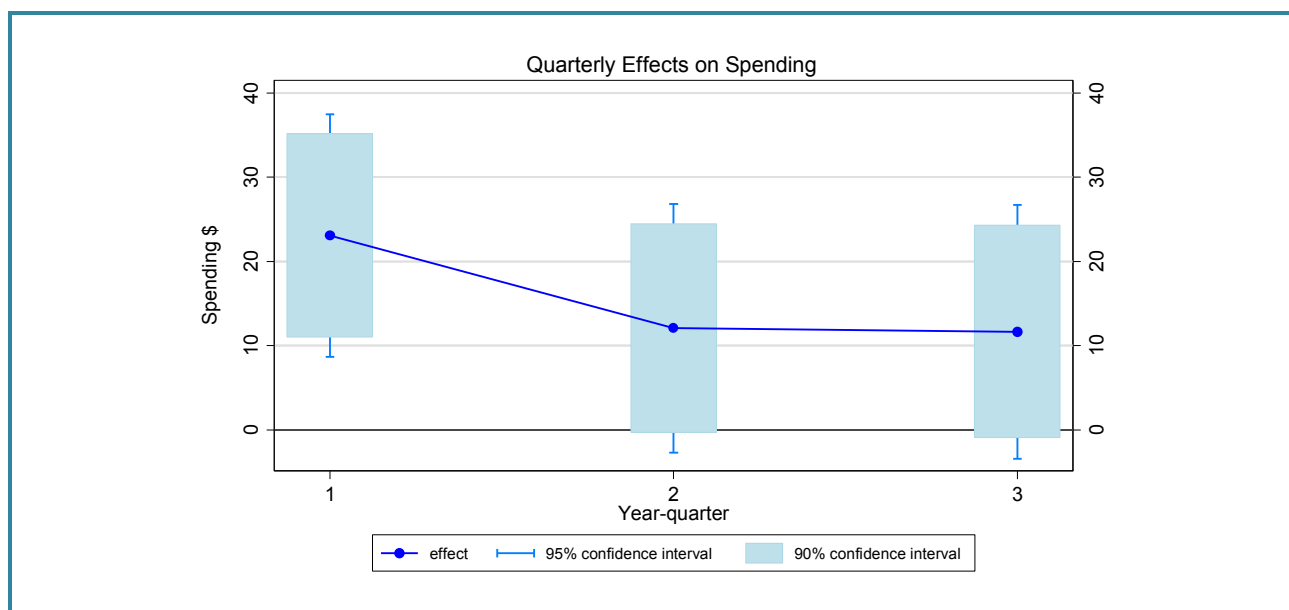


Figure 8-27. Quarterly strength of evidence on total spending, Medicare beneficiaries, Oregon, fourth quarter 2013 through second quarter 2014

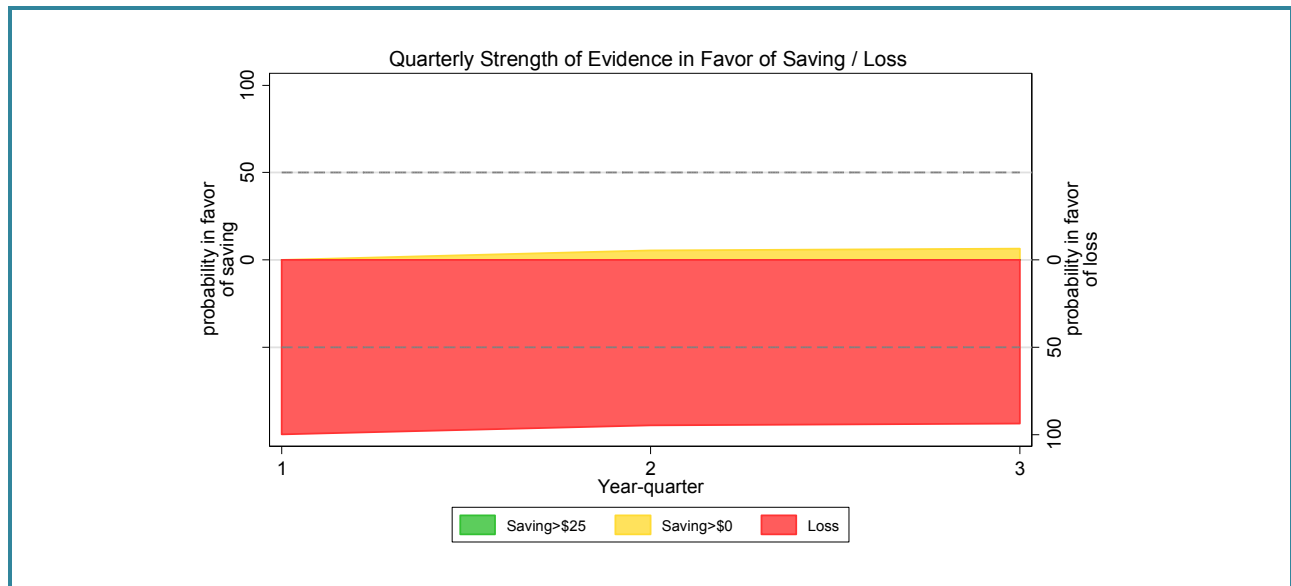


Figure 8-28. Cumulative effects on total spending, Medicare beneficiaries, Oregon, fourth quarter 2013 through second quarter 2014

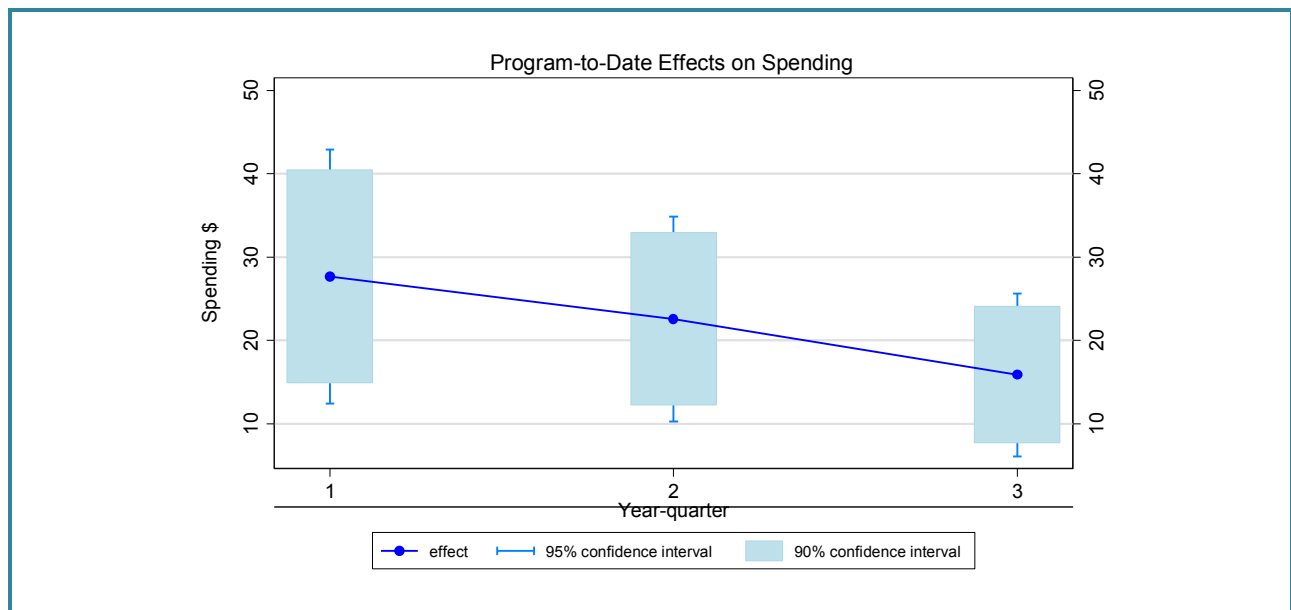
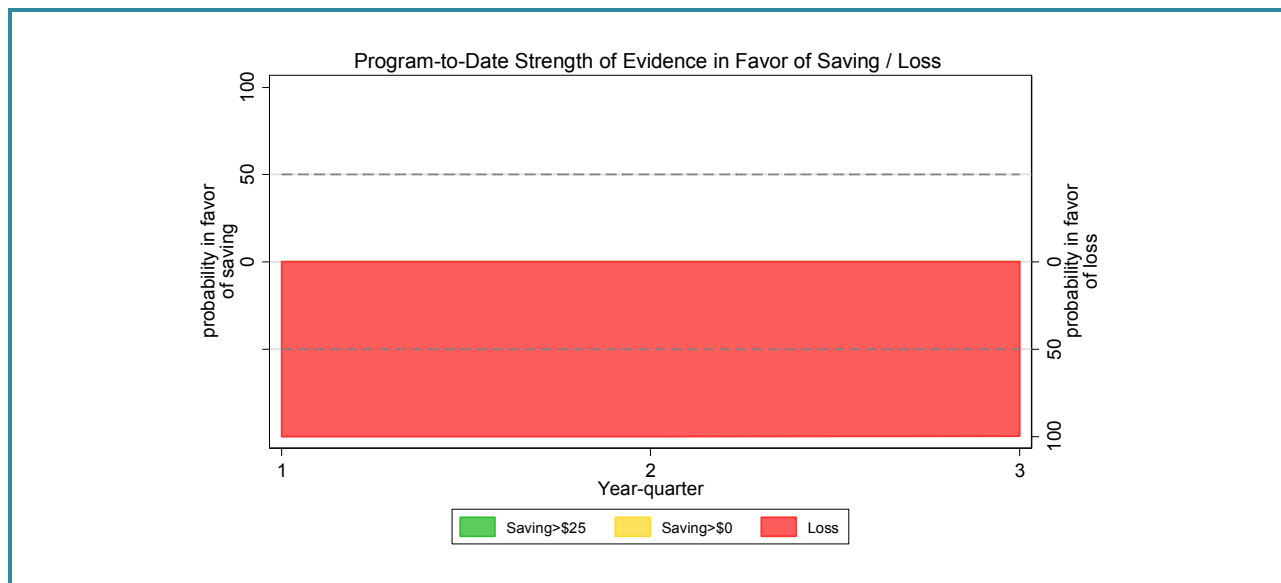


Figure 8-29. Cumulative strength of evidence on total spending, Medicare beneficiaries, Oregon, fourth quarter 2013 through second quarter 2014



8.4 Overall Summary

During the baseline period, conditions were generally stable in Oregon, and at least relative to the comparison group, Oregon appears to have a generally well-functioning system. Quality of care and care coordination outcomes were typically better in Oregon than the comparison group. On several PMPM expenditures, however, Oregon tended to be higher than the comparison group. For the purposes of evaluating the Oregon SIM Initiative, the findings reported here serve mainly to establish the context in which the SIM Initiative is being implemented. The early experience of Medicaid beneficiaries under the state’s 1115 waiver may prove instructive on the potential for the SIM Initiative’s extension of the CCM to change utilization and spending patterns, but the first impact estimates await data further into the test period. During the periods reported here, only the technical assistance activities of the Transformation Center—described in qualitative findings above—could plausibly have affected care delivery. However, because those activities were targeted at CCOs, these effects would likely show up first in the Medicaid results. Thus, attributing any statistically significant movements in the spending metrics for Medicare and commercially insured populations to the SIM Initiative must await Medicaid data that show similar patterns during the same time period. Finally, future analyses of state employees will provide much more direct evidence of SIM impacts than any data available at this time.

9. Vermont

This chapter provides an updated overview of the Vermont SIM Initiative; summarizes major implementation progress, challenges, and lessons learned in the past year; discusses key findings from the site visit interviews and focus groups organized by major topical area; and presents trends in outcomes. For the Year 2 site visits, we conducted 24 key informant interviews and eight focus groups in Burlington, Rutland, and central and southeastern Vermont from April 6 through April 9, 2015. The site visit findings are supplemented with information from the primary care physician survey RTI conducted from July through October 2014. *Appendix Figure F-6* provides a graphical presentation of the federal evaluation of the Vermont SIM Initiative.

SIM-funded activities this year focused on program implementation and development of program supports for the Accountable Care Organization Shared Savings Program (ACO SSP). The ACO SSP Medicaid and commercial lines of business have both achieved robust participation. State officials and stakeholders identified better alignment of ongoing health initiatives in Vermont and improved communication between participants as one of the SIM Initiative's major successes to date. In the context of ACOs, this included engagement of network physicians and affiliated providers; selection of quality measures; cross-ACO system support for reporting measures; and dissemination of care coordination and care management strategies. Financial constraints, coupled with provider and payer fatigue, have caused Vermont to modify its approach to episode-of-care (EOC) payment and Medicaid pay-for-performance initiatives; the state is conducting further analyses of EOC payments and will be creating new pay-for-performance incentives that align across the Blueprint for Health and ACO programs. For Medicaid beneficiaries, only early baseline data were available at this writing. They show Vermont, relative to the comparison group, had lower utilization, equal or lower payments, and mixed results on care coordination and quality of care measures during that period. Results showing savings in the early test period for the commercially insured and Medicare beneficiaries in Vermont are likely related to pre-SIM health reform efforts. These results are promising, however, as the SIM Initiative continues its expansion and refinement of care models and system delivery.

9.1 Overview of the Vermont Model

Vermont is using its SIM Initiative funds to build on and integrate well-established statewide initiatives with new payment and health care delivery system reforms. By enhancing and coordinating Vermont's health care infrastructure, state officials expect to achieve better health care, smarter spending, and healthier people.

Vermont's SIM Initiative, named the Vermont Health Care Innovation Project, has five specific goals:

1. Increase the level of accountability for cost and quality outcomes among provider organizations;
2. Create a health information network that supports the best possible care management and assessment of cost and quality outcomes, and informs opportunities to improve care;
3. Establish payment methodologies across all payers that encourage the best cost and quality outcomes;
4. Ensure accountability for outcomes from both public and private sectors; and
5. Create a commitment to change and synergy between public and private cultures, policies, and behaviors.

To achieve these goals, Vermont is focusing on three driving factors: care models, payment models, and health information technology (health IT). Prior to the SIM Initiative, Vermont had established a foundation in each of these domains; with SIM Initiative funds, state officials continue to make enhancements and work toward creating a health care system that is high quality, affordable, and sustainable.

Vermont's SIM Initiative promotes care models that are more person-centered, offer a wider array of services, and provide a more integrated system of care management and coordination—including linkages to a network of community health and social resources. These enhanced models of care are intended to decrease the amount of avoidable, high-cost acute episodes and improve health outcomes among the population generally. To further reduce costs, Vermont is introducing payment models that move away from traditional fee-for-service (FFS) arrangements and base payments on quality rather than quantity of care. In addition, statewide adoption of electronic health records (EHRs), expansion of practice and hospital connectivity to the state health information exchange (HIE), and the Blueprint for Health's centralized clinical registry (DocSite) are instrumental in the health care system's path to become more efficient and responsive.

The policy levers Vermont is using to support implementation and address challenges mostly involve its role as a regulator and convener of voluntarily engaged stakeholders. State officials said the structure that includes the work group, steering committee, and core team governance gives the state a solid process through which to vet ideas, surface opposition or concerns, and ultimately implement policy change. Officials also said the Green Mountain Care Board's regulatory authority over the commercial market, future rate-setting, and other regulatory oversight has been a tool supporting change that will likely play an increasingly important role in future years.

9.2 Site Visit Report

9.2.1 Summary of progress, challenges, and lessons learned

Vermont has continued its work to implement most components of its SIM-funded payment and delivery reform initiatives. SIM-funded activities have primarily focused on program implementation and development of program supports for the Accountable Care Organization Shared Savings Program (ACO SSP), whose Medicaid and commercial lines of business have both achieved robust participation. Providers participating in both Medicaid and commercial ACO SSPs now represent a significant majority of the state's available primary care providers. ACOs offer services to nearly all residents statewide, and about half of eligible beneficiaries were participating as of late 2014.⁴⁷

In general, interviewees (state officials, payers, and providers) shared a common vision of what success under the SIM Initiative would look like: setting the groundwork for an improved health care system that rewards improved care, higher quality, and lower costs. A number of state officials and stakeholders equated success with real transformation in care practice and delivery, as well as change in health IT/HIE capacity on the ground. Some officials pointed to recent anecdotal positive feedback from providers participating in the Integrated Community Care Management Learning Collaborative as a strong sign of success. Others said the regular convening of ACOs—which had previously refused to meet together in the same room—with representatives from the Vermont Information Technology Leaders, Inc. (VITL), Vermont's HIE contractor, and Blueprint for Health regional networks was a major success that could be transformative in impacting care delivery and integration. A provider representative noted that a number of innovations being tested as part of the state's provider subgrants could transform practice statewide and be highly impactful.

At the same time, state officials and stakeholders identified a number of challenges related to implementation. In particular, state officials noted that the voluntary nature of the program created a lot of work and a need to focus on building consensus. While one state official said they had succeeded in developing a “coalition of the willing,” state officials were aware that the process was time-consuming and burdensome.

Governance and stakeholder engagement. Vermont continued to solicit input from a broad range of private and public stakeholders regarding SIM planning and implementation over the past year. Public engagement is mostly effected through the SIM governance structure, which includes broad stakeholder representation on seven work groups, the steering committee,

⁴⁷ State Innovation Model Year 2 Operational Plan for Health System Innovation Prepared by the State of Vermont for the Centers for Medicare and Medicaid Services. November 3, 2014 (Accessed at http://healthcareinnovation.vermont.gov/sites/hcinnovation/files/VHCIP_Year_2_Operational_Plan_11-2014.pdf on December 2, 2015)

and the core team. Work groups meet regularly and are open to interested members of the public.

Many interviewees (including state officials, payers, and providers) cited these voluntary convenings as a major success, noting that the governance structure has fostered an unprecedented level of communication and collaboration across a broad swath of stakeholders in the health care system. In general, state officials, payers, providers, and consumers all felt it was constructive to have many stakeholders involved. However, state officials and other stakeholders noted that the stakeholder engagement process was labor-intensive and resulted in significant decision-making delays. Providers and some officials acknowledged having learned that some decision-making might have happened more effectively in smaller groups. One official said the stakeholder process was better at discovery than efficient decision-making, and that the state needed to pursue more opportunities to work around the cumbersome process by allowing for discussion and decision-making in closed-door, small group settings.

Collaboration. Officials and stakeholders said one of the SIM Initiative’s primary accomplishments to date was fostering an unprecedented level of collaboration and cooperation among diverse stakeholders and interests. One official said they are seeing an increase in communication and mutual respect among providers, which is positive. A payer commented that the SIM Initiative was “forcing collaboration,” which is having a positive impact on the state’s health system. One state official who has worked in Vermont health care for many years said, “The degree of collaboration and cooperation and working together that’s going on today is way beyond anything I have ever seen or could have really even imagined in those years of working directly in the health care system. Some of it is the changing nature of health care, but I think SIM has helped facilitate that collaboration and cooperation.” State officials more generally said they were able to reach collaboration and shared ownership with stakeholders, due to the higher levels of engagement and communication fostered as part of SIM implementation work.

Shared savings. Data on the first year of the SSPs were still being compiled and only preliminary at the time of the site visit. Payers and state officials indicated that no ACOs were expected to earn savings payments, but none interpreted that as a sign of “failure.”⁴⁸ One payer said it wants to be involved and supports reform. A state official noted that the ACO SSP experience is providing an ideal opportunity to see how these payment models might work, without significant risk to the participants. A provider stakeholder disagreed, however, suggesting that if ACOs do not achieve savings, the SIM Initiative will be a failure given the up-front investments needed to execute reforms.

⁴⁸ Medicaid ACOs did earn shared savings for the first year; those results were not known at the time of the site visit.

Episodes of care and pay for performance. Due to concerns regarding provider and payer fatigue and financial constraints, Vermont modified its approach to the episodes of care (EOCs) and Medicaid pay-for-performance initiatives included in its Year 1 operational plan. Instead of using EOC metrics to support a payment incentive program, the state opted to develop data analytics to identify EOCs and their costs in Vermont, to educate providers. Stakeholders, including providers, praised this decision, saying that pursuing both ACO and EOC payment incentives concurrently might have proven redundant and counterproductive. State officials indicated that they plan to release a request for proposals (RFP) for development of practice profiles for EOCs in late spring or early summer 2015.

Vermont also opted against implementation of the independent Medicaid pay-for-performance reforms originally proposed in Vermont's SIM Operational Plan, because of Medicaid budget cuts. However, the state is pursuing changes to the Blueprint for Health payment model by creating new pay-for-performance incentives that will be aligned across Blueprint for Health and ACO programs.

Health IT/HIE. A challenge noted by stakeholders and officials was the gap between where providers and systems are with respect to health IT/HIE and payment structures and the state's payment reform goals. As one official noted, "[the] HIE needs to work better—now it's a limiting factor for Vermont. It needs to be usable for care management and to allow [the state] to track outcomes." Other officials noted that the health IT investment gap creates a significant burden on providers that cannot report required data or in some cases connect to VITL Access, the state's HIE provider portal. One official also noted that it is hard to change payment structure or habits among providers and payers, because change requires significant investment and most providers are resistant to change.

9.2.2 Delivery system and payment reforms

Accountable care organizations. In the past year, as noted, Vermont's delivery system and payment reform emphasis has been on implementation and support of the Medicaid and commercial ACO SSPs. As summarized in *Table 9-1*, Vermont has three ACOs with three possible lines of business (Medicare, Medicaid, and commercial)—resulting in eight ACO configurations in 2014 (dropping to seven in 2015 as HealthFirst withdrew from the Medicare SSP). Blue Cross Blue Shield of Vermont, the largest private insurer in the state, is the lone payer in the commercial ACO SSP. MVP Health Care initially planned to participate as a commercial payer, but withdrew because it did not have sufficient enrollment with any of the three ACOs.

Each of the three ACOs has its own provider network niche—OneCare Vermont, the hospitals and hospital-owned practices; HealthFirst, the independent physicians; and Community Health Accountable Care (CHAC), the Federally Qualified Health Centers (FQHCs). OneCare Vermont and CHAC have network affiliate agreements with combinations of visiting nurse

Table 9-1. Accountable Care Organization participation in Vermont

ACO Name and Network	Payers		
	Medicare (Pre-SIM)	Medicaid	Blue Cross Blue Shield of Vermont
OneCare Vermont <ul style="list-style-type: none"> includes the two major academic medical centers and all other hospitals, 300+ primary care physicians, and most specialists a few Federally Qualified Health Center (FQHCs) and rural health centers 	January 2013 – ongoing	January 2014 – ongoing	January 2014 – ongoing
HealthFirst (also known as Accountable Care Coalition of the Green Mountains and Vermont Collaborative Physicians) <ul style="list-style-type: none"> independent physicians 	January 2013 – March 2015	chose not to participate	January 2014 – ongoing
Community Health Accountable Care (CHAC) <ul style="list-style-type: none"> most FQHCs and Bi-state Primary Care Association 	January 2014 – ongoing	January 2014 – ongoing	January 2014 – ongoing

Note: Network participants within each ACO vary slightly across payers. Some FQHCs are part of both OneCare Vermont and CHAC, having begun participation with OneCare Vermont in the Medicare ACO before CHAC was operational.

associations, mental health and developmental service agencies, home health and hospice, and/or skilled nursing facilities. The network affiliates do not have attributed patients but will be able to share in a portion of savings through their ACO agreement. HealthFirst does not have contractual agreements with its affiliates. OneCare Vermont and HealthFirst participated in the Medicare SSP prior to the SIM implementation of Medicaid and commercial ACO SSPs. CHAC began its participation in all three business lines simultaneously.

Some state officials and stakeholders expressed the view that it was inefficient for a small state to have three separate ACOs (with separate management and negotiations) and that a natural progression would be to a single statewide ACO, with a few specifically identifying OneCare Vermont as that ACO. Other stakeholders noted that Vermont’s three ACOs exist because they have different practice needs and delivery systems based on their populations. These latter stakeholders voiced concern that a single ACO would not support community-based health care and that some providers do not want to be part of an ACO in which funding is for large management and organizational needs and does not trickle down to individual providers.

Representatives from all three ACOs were positive about the internal planning, structures, and discussions occurring to promote increased integration of care, better health outcomes, and bending the cost curve. State officials, payers, ACO representatives, provider organizations, and individual providers identified cross-ACO collaboration as a new and important step in progress. As one payer phrased it, “That might not [be] quantifiable in terms of programs, but putting groups of people together who perhaps have different interests and focus

and working together to get some consensus ... it takes time but working with disparate groups is really a step in the right direction.” One stakeholder said the actual ACO operational work was done outside the SIM work group structure, because the work groups were too large to be effective.

Reporting and data analytics. Individual providers and ACO representatives commented on the considerable time and effort needed for ACO reporting. HealthFirst allotted funds through its ACO capacity provider subgrant (see below) to support practices with data entry. A practice on the receiving end of those HealthFirst funds appreciated being able to pay staff to complete the work on weekends, rather than having to divert clinical time during the week. Similarly, CHAC used part of its ACO capacity provider subgrant funds to do systemwide chart reviews for its FQHCs.

Shared savings. Medicaid and commercial ACO analytics related to the 2014 performance year are currently being conducted by the state’s contractor and are expected to be released in August 2015. Anecdotally, providers were supportive of the ongoing changes to value-based payments. Some stakeholders said they did not expect to see savings in the Medicaid or commercial SSPs based on the Medicare SSP results, in which none of Vermont ACOs was able to exceed savings targets. They cited Vermont’s pre-existing lower costs and rates of utilization as a challenge to meeting Medicare thresholds. Others were “hopeful” and “cautiously optimistic” about the potential to achieve shared savings.

One stakeholder, as noted, said that shared savings need to be realized or the SIM Initiative will be a failure. Most interviewees, however—including state officials, payers, ACO representatives, and providers—were positive about the ACO experience to date, even if they voiced the view that savings were likely not to be realized in the first year. State officials pointed out examples of ACOs using their Medicare quality measure reporting results to identify areas where care management could improve outcomes. ACO representatives concurred that the greatest progress made to date was through the focus on quality: “We’re probably making more progress on wanting to do well on the quality measure, because that is demonstrable and it matches what everybody thinks their mission ought to be.”

Provider participation. Not all ACO providers were aware of their ACO participation. In the primary care physician survey, when asked if their practice participated in any currently active ACO, 51 percent of respondents said yes, 26 percent said no, and 23 percent did not know. Of those who identified as participating in an ACO, 10 percent could not identify their particular ACO when given the three choices. Similarly, in a provider focus group where participants had been pre-screened as ACO members, some providers either did not know if they were part of an ACO or did not know to which ACO they belonged.

Stakeholders from the pediatrics community expressed concern that the ACO health reform focus was geared towards the adult community, because that is where savings could be recognized in the near term, as opposed to long-term population health benefits and savings from pediatric investments. A state official concurred that providers may see “adults as low-hanging fruit,” but noted that pediatric measures were included in the ACO quality measures and potential EOCs for children were being studied.

Pediatricians communicated that they were under financial strain because of the large proportion of children who qualify for Medicaid under Vermont’s Medicaid expansion (312 percent of federal poverty level) coupled with perceived inadequate state funding for Medicaid. The Affordable Care Act’s payment increase for Medicaid primary care services expired at the end of 2014, resulting in a 21 percent reduction in Vermont’s Medicaid payments for those services in January 2015. Pediatricians noted that having 40 to 50 percent of their patient population covered by Medicaid erases the small \$2 per member per month (PMPM) payment that Blueprint for Health patient-centered medical home (PCMH) providers receive, making it difficult to fund nurse practitioners, social workers, or other positions critical to providing children and families with the care and support they need.

In related feedback on reimbursement rates, independent practice physicians (including pediatricians) voiced concern that their reimbursements were far less than those for hospital-based providers for the same services. They said the state should implement a price transparency program identifying those differences.

ACO alignment with Blueprint for Health. In the 2014 site visit, stakeholders reported an undercurrent of tension among the ACOs and between the state’s two leading payment model initiatives—the Blueprint for Health with its PCMHs and the SIM Initiative with its ACO expansion. In the past year, both teams have made a concerted effort to better align the two initiatives. Blueprint for Health leadership met with ACOs individually in spring and summer 2014; and since fall 2014, regional teams—which include all three ACOs and Blueprint for Health community health teams (CHTs)—have been meeting regularly. The Blueprint-ACO integration has resulted in collaborative quality review and planning, including ACO measures being reported in Blueprint for Health dashboards and profiles. Feedback from state officials and the stakeholder community in the most recent site visit was positive, with participants viewing the initiatives as complementary rather than competing and one step further towards a future value-based system.

Care coordination and care management. Stakeholders were enthusiastic about the care coordination efforts fostered by the Blueprint for Health’s CHTs. One provider explained how team members take responsibility for getting problems solved and connecting patients to the resources they need. That provider declared, “we have a lot of people that get to that level of wanting to be champions for the people they care for.” Providers said CHTs were very helpful in

communicating with patients, tracking follow-up, and coordinating efforts to meet patients' needs. As one put it, "The community care team and panel managers are so helpful because they take a proactive approach. A few years ago, if patients did or didn't come and see me, I didn't go looking for them. Now that happens."

In the primary care physician survey, 44 percent of respondents reported that their practice routinely develops patient care plans. The most common care plan features (80 percent or higher response rate) were: (1) developed collaboratively with patients and or families, (2) recorded in patient medical records, and (3) used to guide subsequent or ongoing care. Eighty percent reported that they routinely identify patients for whom clinical care management services would be beneficial. The most common management services provided to patients (80 percent or higher response rate) were: (1) care coordination with providers outside the practice, (2) referrals to social service organizations, and (3) health education materials. In the context of hospital care, 80 percent of respondents indicated that their practice always or usually follows up with patients seen in an emergency room (ER). For patients with hospital inpatient or post-acute care facility stays, 65 percent of responding providers identified that they or their practices are either part of the inpatient care team or monitor the patient's care during the stay and then follow up after discharge; 28 percent said they follow up with the patient after discharge only.

Interviewed providers thought that, due to care coordination and management, patients can perceive changes in the way care is delivered even though they might not know they are part of an ACO or medical home. Examples included patients being appreciative of a health care team approach, receiving follow-up phone calls and information, and being decision makers in their own care. Most consumer focus group participants felt their doctors know them and are compassionate and knowledgeable. A majority of those who were Medicare-Medicaid enrollees stated that their providers know their medications, either remembering or accessing the information through electronic records. Among other Medicaid enrollees, fewer agreed that their doctors know their medications. Consumers gave mixed answers to whether their doctors are aware of hospitalizations, ranging from doctors not knowing at all to doctors calling to check on them. Most consumers reported some form of patient education or involvement in their own care—such as providers sharing information with them, referrals to nutritionists and education classes, exercises or breathing techniques to work on, and encouragement to quit smoking with accompanying prescriptions to help.

Episode of care and pay for performance. Citing provider fatigue with new initiatives, the SIM Initiative scaled back its initial plans for implementing alternative payment models and has instead focused on analytics. The Payment Models Work Group created an EOC subgroup in early 2015 to assist in developing and defining the focus and future of EOC analytic use in Vermont. That subgroup is reviewing existing EOC programs conducted outside the state (including a study of Arkansas' EOC experience through the Arkansas Payment Improvement Initiative) and within the state (including MVP Health Care's program of provider reports).

The Rutland Regional Medical Center’s Bundled Payment Care Initiative (BPCI) project is another program within Vermont that could be studied in the context of EOC development and use. Prior to the BPCI project, the Community-wide Congestive Heart Failure Collaborative program had been developed as an effort to reduce hospital readmissions. Based on this successful program and its potential for reducing costs for this EOC, the Green Mountain Care Board joined with the collaborative’s team to move forward with the bundled payment concept, by successfully applying to participate in the Center for Medicare & Medicaid Innovation’s BPCI program.

In the context of pay for performance, the SIM Initiative is focusing on potential enhancements to the Blueprint for Health payments—adding quality measures to retain participation of Vermont’s National Committee for Quality Assurance (NCQA)—recognized PCMHs. They will continue exploring and analyzing pay-for-performance incentives for their potential use.

Provider subgrants. The SIM Initiative created a provider subgrant program to foster innovation, awarding \$4,903,145 to 14 provider groups in two rounds. The grants spanned a wide array of providers and innovations—from a visiting nurse and hospice supportive care program for seriously ill patients with congestive heart failure or chronic lung disease; to a hospital program, similar to “Choose Wisely,” designed to reduce unnecessary lab testing; to a program tracking how patient self-confidence leads to improved chronic disease management and a reduction in hospitalization. Three of the grants were awarded to ACOs—one each to HealthFirst and CHAC to support their ACO development, and the third to HealthFirst to enhance collaboration among the three ACOs.

Grant recipients were overwhelmingly positive about the opportunity and experience, though also identifying challenges in grant implementation. They also provided anecdotal or preliminary evidence of initial impacts. One reported success was an effort to connect a practice’s clinical data with patients’ claims data—the grantees successfully collaborated with two commercial payers and Vermont’s Medicaid payer. Another (as part of a different grant) was a care team member’s persistent and ultimately successful efforts to engage a physician in changing a patient’s medication to a more affordable one (to help with compliance), which resulted in the patient adhering to a medication he could afford—thereby avoiding an ER visit.

9.2.3 Behavioral health integration

Stakeholders characterized the importance of behavioral health as an integral part of the entire health picture of the patient, and further, that the health of individuals is affected by the health issues of others within their family. One stakeholder identified behavioral health as a key area for state dollars to be moved upstream: “If we had our way to get our dollars where they need to be, it would be behavioral health for families.”

Pre-dating the SIM Initiative, Blueprint for Health activities provided the foundation for integrating behavioral health into the full spectrum of health care services delivered in Vermont. Practices reported having used their Blueprint for Health CHT funds to hire psychiatric nurse practitioners, counselors, and social workers in-house (or on a shared basis) and to hire psychiatrists on a visiting basis. The Hub and Spoke initiative—implemented as part of the Blueprint for Health and serving patients with behavioral health issues and/or opioid addictions—features regional substance abuse treatment centers (hubs) and ongoing care teams comprising physicians, nurses, counselors, and other social service providers (spokes).

According to the primary care physician survey, 29 percent of respondents have behavioral health providers onsite, 27 percent refer patients to partners with whom the practice has established relationships, and 40 percent give the patient names of behavioral health providers for the patient to contact on his/her own.

SIM funding is enhancing behavioral health integration in multiple ways. An important one is through involvement of Designated Agencies, which are increasing communication between behavioral health community participants and all other stakeholders involved in health reform. Designated Agencies are private, nonprofit service providers. Vermont's Department of Mental Health names one Designated Agency in each geographic region of the state as responsible for ensuring needed services are available through local planning, service coordination, and monitoring outcomes within their region. Every SIM Initiative work group has at least one Designated Agency member to share perspectives and voice concerns on behalf of the mental health, substance abuse, and developmentally disabled populations they represent and serve.

The ACO model being tested is also designed to support and reward integration of care, including behavioral health. Two of the eight payment measures selected for Medicaid and commercial ACOs are related to behavioral health: (1) follow-up after hospitalization for mental illness and (2) initiation and engagement for substance abuse treatment. A third behavioral health-related quality measure, depression screening and follow-up, is required for both Medicaid and commercial ACO reporting. In addition, the Integrated Communities Care Management Learning Collaboratives include behavioral health and community support team members to assist at-risk populations. Finally, the SIM Initiative is committing major resources to improve integration and communication by enhancing data connectivity and quality, and by creating a data repository to securely house Designated Agency data.

Stakeholders were positive about increased behavioral health integration of care, observing that more embedded services would lead to better integrated care. Stakeholders frequently made comments such as this, "... they are moving from colocation to more of integration," to emphasize an increased level of communication and service delivery. Providers and state officials noted that the embedding can occur in both directions—support services

embedded in primary care practices and, for example, FQHC primary care services being provided at Designated Agencies. Providers interviewed thought patients can perceive differences in the way care is delivered, especially those patients participating in the Hub and Spoke initiative.

Workforce is a major challenge in providing mental health and substance abuse services in Vermont. Multiple stakeholders (mental health providers, primary care physicians, ACO representatives, provider focus group participants) identified shortages of psychiatrists, especially pediatric psychiatrists. As one family practice physician said, "... it takes 6 to 12 months to see someone. ... Waiting 6 months for a kid who is depressed is not a good option." A psychiatrist noted that with delays of up to 8 months to see a child psychiatrist, "primary care doctors end up managing medications they are not as comfortable with." Stakeholders noted that Designated Agencies also have shortages and high turnover in nonmedical positions, such as counselors, social workers, and community health workers. In response to the primary care physician survey question on how often behavioral health services are available to patients in a timely or convenient manner, 49 percent of respondents reported 'always or usually' but 51 percent reported 'sometimes or rarely.'

Telehealth is one option for expanding behavioral health services to underserved areas. One stakeholder noted that it could work for stable patients, but that it would be challenging for schizophrenics, for example, who are experiencing paranoia or delusions. A psychiatrist noted it is easier to detect mood and voice inflections in person than via telehealth.

Electronic connectivity is another key issue related to behavioral health. Federal patient confidentiality requirements under 42 CFR Part 2 are a major obstacle to sharing data related to behavioral health and substance abuse. Although state officials expressed "frustration" with barriers to electronic data sharing between behavioral health and medical providers, behavioral health providers wanted the data shared but were also supportive of the added security element for these records. As one provider stated, "the reasons the federal government imposed a greater degree of confidentiality on substance abuse treatment is because of the stigma and the negative consequences that individuals who start treatment experience ... we still have clients coming in to treatment who tell us they lost their job because their employer found out they were getting treatment through us."

Consumer focus group participants conveyed generally positive feedback regarding the care they receive for their behavioral health needs. Some who are recovering from addiction and have close relationships with their primary care providers reported that they feel their providers know and understand them well. Some participants were referred to counseling services for treatment, and one mentioned participating in the Suboxone program. Participants explained that primary care providers check in with patients about their participation in the treatment programs and also when their providers have not heard from them in a while.

9.2.4 Quality measurement and reporting

During the past year, Vermont's Quality and Performance Measures Work Group developed recommendations for the state's current measure set for Medicaid and commercial ACO SSPs, and the core team reviewed and voted on the final set. The Green Mountain Care Board and the Department of Vermont Health Access then approved the measure set for implementation. An interviewee mentioned that this measure set includes the quality measures of the Medicare SSP, and overall has over 50 payment and reporting measures. Gaining consensus on the measure set among the work group's various types of stakeholders was difficult and, in the end, not successful. One reason was that many of the measures desired by consumers and consumer advocates would result in great administrative burden on providers. During the provider focus groups, participants mentioned the need to invest in EHRs, personnel, and staff training to be responsive to quality metric reporting requirements. However, one interviewee mentioned that the state's lack of a functioning HIE is a major obstacle, and that once the state's HIE is developed and fully running, the burden of operationalizing many of the proposed measures will be significantly decreased.

Furthermore, providers felt the investments of time and dollars into quality reporting are greatly increased by the number of quality metric reports for which they are responsible across various initiatives, and the seemingly ever-changing measure sets and targets. One provider mentioned that due to the number of requirements across programs, it is likely that providers cannot focus on all metrics and give greater attention to payment measures. In response to feedback on the many reporting changes, the Quality and Performance Measures Work Group decided to take a hiatus from reviewing the SIM measures set during Year 3.

The state recognizes that the multiple reporting requirements for Meaningful Use (MU), Blueprint for Health, ACO SSPs, and other health care initiatives in Vermont present providers with significant challenges. In an effort to align reporting efforts, the state incorporated the ACO measures into the Blueprint for Health's practitioner profiles, and measure similarity into the requirements of the three ACOs. Some provider focus group participants were aware of the movement toward such alignment. However, they and other interviewees felt there is room for greater alignment and this should involve CMS. They further felt that a higher level of alignment not only would need common measures but also should include common measure specifications across settings.

Providers had positive feelings about the SIM Initiative's quality measurement requirements. One provider mentioned the ability to look at quality data and quality outcomes as one of the greatest impacts of the SIM Initiative. Another had a similar reaction, calling the increased level of engagement in quality outcomes a "big story." Room for improvement in practices' attention to quality was evident in the primary care physician survey, however, with only 62 percent of respondents saying their practice had an EHR that is used for generating

quality data. Furthermore, only 49 percent responded that their practice regularly reviews health care quality performance at the patient group level, and 58 percent indicated that their practice regularly reviews health care quality performance at the practice level. One consumer advocate noted that inclusion of quality reporting in the SIM payment reforms is expected to help Vermont achieve better quality outcomes.

9.2.5 Health information technology and data infrastructure

Vermont is using SIM Initiative funding to implement multiple new investments in health IT and infrastructures to support electronic data reporting and sharing. State officials said they appreciate the investment, which has allowed them to improve the state's health IT infrastructure. They also said their greatest successes in the first year included their work to create, fix, and shore up providers' connections to the Vermont Health Information Exchange (VHIE), and their ability to be flexible and adapt their plans as their understanding of the demonstration and providers' needs evolved.

Officials shared data suggesting that consumers may be supportive of using health IT tools to manage care. They reported that Vermont updated its consumer consent policy to allow for a global opt-in last fall—allowing individuals to opt-in only once to allow their medical records to be shared by all participating providers. Previously, consumers were required to opt-in separately for each provider. The change promotes increased VHIE participation and thereby its effectiveness. State officials reported that 96 percent of Vermonters who have seen a provider to date have chosen to opt-in.

State officials said their greatest challenge in implementing health IT initiatives and systems has been their underestimation of the magnitude of investment needed to achieve a high performing health system. Providers and payers affirmed that the health IT initiatives are necessary to Vermont's success in payment reform and many reported implementation is going well. But some voiced concerns about the value of health IT systems and the performance of Vermont Information Technology Leaders (VITL), the state's HIE contractor (see greater detail below in *ACO Gap Analysis and Remediation Project*). Work related to health IT implementation is governed under the state's HIE/health IT Work Group.

Of the many ongoing initiatives, officials reported on six major SIM-funded initiatives and activities the state is implementing relating to health IT adoption and use: (1) Event Notification System (ENS) implementation; (2) ACO Gap Analysis and Remediation Project; (3) EHR expansion and adoption, with a focus on providers that did not receive MU support; (4) Vermont Uniform Transfer Protocol; (5) Telehealth/Telemedicine Pilot; and (6) Statewide health IT Plan.

Event Notification System. The ENS is a new system that will allow any health care provider with an agreement to share data with VITL to receive real-time electronic notification

when a patient is admitted, discharged, or transferred from one care setting to another. Officials said this system will support the state's integration goals by improving information sharing among treating providers in real-time. The system is being developed collaboratively by state officials, Vermont's three ACOs, and VITL. Owing to ongoing research and discovery, the ENS pilot was not started until April, 2015. This pilot, which includes five practice sites that vary in size, is expected to continue for 3 to 6 months, depending on experience. Once the pilot is complete, VITL will report to the work group on the experience of the pilot sites. A full rollout is planned for later this year, if implementation is feasible based on that experience.

Some practices were aware of the ENS. A representative of one practice already using the system reported that it allows providers to see more information about their patients and said this practice is working to get more patients enrolled in the system.⁴⁹ But another practice doubted that the ENS will be one of its priorities, because the practice has a lot of patients from New Hampshire and already has an operational ENS within its primary health care system. That practice indicated Vermont's ENS will be too limited, assuming that it will only help with Vermont patients receiving care from Vermont hospitals.

ACO gap analysis and remediation project. Vermont has initiated a contract with VITL to support improving the quality of data reported by participating ACO providers as part of the SSP under the ACO Gap Analysis and Remediation project. Officials said that only about 13 percent of the data submitted turned out to be accurate and usable when the ACO SSP started. The state initiated the ACO Gap Analysis and Remediation Project in January 2015 to "achieve accurate, comprehensive performance data utilizing electronic health records (EHRs) and the Vermont Health Information Exchange (VHIE)."⁵⁰ Under this 18-month project, officials said their goal is to get to a 62 percent accuracy rate for reporting of beneficiary data for top priority ACO practices. One state official viewed the gap remediation work as critical, because improving the quality of the data being reported will increase provider confidence and improve the state's ability to monitor and run programs.

VITL operates the VHIE. Although the EHRs in all acute care facilities in the state connect to the VHIE, VITL is continuing to work to connect nonhospital entities. The numerous types of EHRs used in the state pose challenges for the development and maintenance of interfaces between EHRs and the VHIE. The VHIE also collects information from some Designated Agencies, visiting nurse agencies, hospitals, nursing homes, and commercial labs. Payers and providers noted a number of challenges with getting connected to the VHIE, ranging

⁴⁹ Feedback from the state indicates this interviewee may have been using VITL Access, because the provider could not have used the ENS in that time period.

⁵⁰ Vermont Health Care Innovation Project: Gap Remediation Proposal, SIM Initiative HIE/HIT Work Group. November 19, 2014. (Accessed at <http://healthcareinnovation.vermont.gov/sites/hcinnovation/files/HIE.11.19.14.Merged.Meeting.Materials.v2.pdf> on December 12, 2015)

from the need for technical assistance to join, to challenges with EHR adoption. One state official noted that providers are often using multiple portals to report and track information, and that many providers feel the portals are too numerous and complex to use effectively on a regular basis. According to state officials, work on this project has progressed well during the first year and they believe they are on target to meet or exceed their goal of 62 percent usable data by 2017.

Some providers expressed frustration with VITL, however, saying they did not feel it is executing its work quickly enough or providing enough access to clinical data through the VHIE. State officials acknowledged the slower pace of work, which they attributed to a delay in federal contract approval, although CMS officials reported that SIM contracts are typically approved within 30 days unless the required contractual items were not provided.

EHR adoption. One of the SIM Initiative's goals is to reach 100 percent EHR adoption in the state, although not necessarily by the end of the SIM test period. State officials reported high EHR adoption rates—100 percent for hospitals and home health, 97 percent for primary care providers, and 90 percent for FQHCs. Providers that did not participate in federal MU EHR adoption incentive programs—including behavioral health and long-term service and supports (LTSS) providers—have lower EHR adoption rates. The state originally planned to assess the needs of these providers and develop a strategy to promote broader EHR adoption. But they reported after the site visit that they are rethinking their plans, after additional discussions with providers surfaced that they may not have a strong business case for adopting full EHRs.

State officials are instead trying to develop other health IT reporting alternatives that would meet the state and provider connectivity goals of promoting greater reporting and coordination. One alternative under consideration is allowing these providers to view, but not edit, EHRs inside the VHIE system. Another option mentioned is creating a data registry these providers could use to share data for populating EHRs.

In general, the lack of standardization around EHR interfaces is seen as a major challenge to health IT adoption, according to state officials and other stakeholders interviewed. State officials reported that practices and hospitals use over 30 different EHR vendors, creating significant barriers to interoperability. Both state officials and providers reported significant barriers to data sharing between medical and behavioral health providers, due to federal restrictions on sharing data from substance abuse providers under 42 CFR Part 2, as discussed in **Section 9.2.3**, above.

The Department of Vermont Health Access (the state's Medicaid agency) and VITL have collaborated to provide technical assistance and supports to providers to facilitate use of EHR technology and VHIE connection. Over the past year, the state launched a 1-year initiative to provide supports to nontraditional providers that have not benefited from MU EHR incentives at

the federal level—including specialists and LTSS, mental health, and home health providers. Through this program, VITL is helping providers with EHR adoption and the development of interfaces to the VHIE, with the goal of achieving 50 new interfaces.

One state official involved with implementing the work said VITL has created a new process that makes the EHR adoption process simpler and faster for the providers involved—shortening the timeframe from 15 weeks of engagement with a vendor to only 4 days of intensive work plus 3 weeks of work off-site.

Providers participating in the focus groups affirmed the importance of EHR adoption, identifying EHR as one of the most useful strategies for enabling care coordination. Specific outcomes providers identified included improved referral tracking, increased efficiency in accessing patient data, and improved communications with other providers. One participant noted that “EHRs have saved me time and increased my productivity.”

However, many providers also expressed frustration with EHRs. Some felt that EHRs were primarily a billing tool and did not contribute in a meaningful way to care improvement. Providers also found data entry and communication via EHR and the VHIE time consuming and not always as efficient as fax or telephone communications with fellow providers. One provider was uncertain about the benefit of health IT for practices, saying, “The burden of who does the work often falls on the primary care practice, and it is difficult when you try to see patients.” Moreover, some providers said they do not feel the data tracked through EHRs appropriately reflect what the practice is aiming to measure. Others noted several unexpected challenges and costs to implementing EHRs—including investment in staff training and health IT personnel, and difficulties in working across different EHR systems in the state (e.g., EPIC, PRISM).

Uniform transfer protocol. Vermont also launched the Uniform Transfer Protocol (UTP) Project, a new SIM Initiative project that will electronically transmit a minimum set of data about a patient between providers, when the individual is discharged or transferred from one setting of care to another. The idea behind the project, according to state officials, is to promote meaningful care coordination by ensuring critical information about patient needs and care is communicated as part of the transfer. The state executed a contract with a vendor to do research related to this project, beginning in March 2014 and continuing through March 2015. As part of this work, the vendor has been identifying shared vocabulary, processes, and priorities in two regional communities: Bennington and St. Johnsbury. While this research is ongoing, officials said the next phase, which was already beginning at the time of our site visit, is the design phase. Under that phase the vendor will develop a paper form for testing, after which the state plans to develop an electronic version. Officials said that—because this work relates closely to the Integrated Communities Care Management Learning Collaborative (discussed above in **Section 9.2.2**) in which providers work to develop common care plans—the state is now planning to merge the UTP and common care plan work to build a single “Shared Care and

Universal Transfer Protocol” tool. The state’s planned approach is to first develop business and technical requirements through July 2015, and then build the tool to be completed in 2016.

One provider we interviewed was highly supportive of the state’s work on the UTP—calling it a very important part of the state’s health IT strategy, because it will relieve administrative burdens and also create a common lexicon between acute and post-acute care.

Telehealth/telemedicine pilot. The state is also exploring telehealth initiatives and plans to secure a contractor shortly to assess the telehealth landscape in Vermont and nationally. State officials expressed a desire to approach telemedicine pilots strategically to ensure investments are useful to patients and providers, and that data collected through telemedicine are routed into EHRs. State officials reported that they expected to make telehealth investments in the second half of 2015.

Statewide health IT plan. The state Medicaid agency has contracted with Mosaica Partners, LLC to develop a statewide health IT plan, not funded under the SIM Initiative. While there is currently no timeframe for completion, state officials estimated a plan will be ready for review by mid-summer 2015. Officials expect that some of the health IT recommendations in the plan will relate to other SIM Initiative activities. The plan will be reviewed by the Green Mountain Care Board.

9.2.6 Workforce development

The SIM Initiative aims to improve the capacity to measure and address health care workforce needs. These activities are led by a Healthcare Workforce Work Group, which was created through Executive Order concurrent with SIM implementation and has been adapted to support both the SIM Initiative and overall state workforce policy priorities. Vermont’s main SIM-funded workforce activity is development of a micro-simulation demand model that would allow the state to: (1) predict future workforce needs and (2) make modifications as needed to adjust higher education and loan repayment policy. At the time of the site visit, the state had released an RFP for this micro-simulation demand model and was expected to select a vendor in May, 2015. The state also reported plans to update the state’s prior workforce strategic plan in summer 2015.

As part of the state’s ongoing effort to determine workforce needs, the state convened a statewide Workforce Symposium in Burlington on November 7, 2014. The symposium was well-attended by a diverse range of stakeholders—including payers, social service agencies, provider representatives, primary care organizations, hospitals, educational institutions, consumers, and behavioral health organizations, among others. The symposium provided an opportunity for attendees and state officials to discuss options for reengineering the workforce and changes in supply and demand arising from ongoing payment and delivery system reforms, including the SIM Initiative. According to a survey of attendees, participants felt the symposium

was successful in providing a venue for discussion of these issues. A report summarizing key findings from the discussion was expected in late 2015.

State officials expressed appreciation for SIM Initiative funding, which is allowing them to get more and better data about their workforce and future needs to inform their policy decision-making. Officials said their current most pressing need is understanding future needs for clinicians, how reform might impact those, and how telehealth might inform some of the future demands as well. Officials said they had learned in the first year that there remains a strong disconnect between entities that educate versus hire the workforce in the state—a disconnect they are trying to address as part of their SIM Initiative work. Officials also reflected that data were critical to understanding current and future needs and that they think data needs will require continual reassessment, given the rapidly changing landscape. In addition, they learned from the Workforce Symposium that they should think in terms of skills—not number of clinicians—for the optimal workforce post-reform. A specific challenge officials articulated with Workforce Work Group activities in the first year was that the work group had been formed to focus more on medical education policy than health system policy, and members were not involved in or informed about recent payment reform efforts. Some officials said they do not think this work group has been successful in addressing SIM-related activities and goals, because it lacks appropriate staff and also needs more uniform goals to structure its work.

Some stakeholders also had concerns with the state’s progress and direction on workforce development. One was critical of the Workforce Work Group’s progress on recommendations. This stakeholder also mentioned that redeployment of hospital workers to work in the community to prevent admissions should be within the scope of discussion on future workforce needs. A provider wanted the state to take a different direction in workforce development activities, saying the state “could have taken a demand side approach and just surveyed beneficiaries instead around wait times and drive times, as opposed to how many primary care doc[tor]s per 10,000.” This provider wanted to see “more concrete recommendations” from the Workforce Work Group.

Officials believed that the state’s delivery and payment reforms are having an impact on the primary care workforce, primarily through providers using a more team-oriented approach to care, which officials said is the result of “unprecedented” relationship-building. Providers have also been reporting to the state that they appreciate the greater access to data and analytic information, peer-learning opportunities, and quality improvement strategies now available because of the SIM Initiative, and that these strategies are having an impact on how providers do business.

To help providers better care for at-risk populations, the SIM Initiative launched Integrated Communities Care Management Learning Collaborative pilots focused on at-risk populations in three regions. Planners and participants crossed a wide spectrum, including (but

not limited to) staff from primary care practices, mental health providers, visiting nurse and home health agencies, Area Agencies on Aging, and CHTs. The aim is to learn from national and local experts on tools teams can use to engage and support the challenging at-risk population. State officials noted they have had an overwhelming positive response and hope to expand the pilots. One Collaborative participant explained that her local team meets once a month on its own and once a month with the state and other communities, with “subgroups trialing the different tools, and tweaking them and making them our own.”

As noted in **Section 9.2.3** above, providers frequently raised concerns about the need for additional mental health and substance abuse providers in Vermont to address workforce shortages.

9.2.7 Population health

The SIM Initiative is aiming to improve Vermont’s population health through guidance from its Population Health Work Group. This group, which has recently increased its prominence, is currently developing its Population Health Plan in conjunction with the Innovation Center and the Centers for Disease Control and Prevention (CDC). The plan will propose a common set of population health measures, suggest payment options for population health and prevention, and offer ideas for better integration of health services across Vermont’s practices and communities. Although most providers were not aware of SIM’s involvement in a Population Health Plan, many saw potential to focus on areas outside traditional health care that have a greater impact on individuals’ health status and the quality of interventions provided by the health care system.

Vermont’s Population Health Work Group defines population health as: “the health outcomes of a group of individuals, including the distribution of such outcomes within the group.... While not part of the definition itself, it is understood that such population health outcomes are the product of multiple determinants of health, including medical care, public health, genetics, behaviors, social factors, and environmental factors.”

Although this definition has been presented to other SIM work groups and the Steering Committee, many stakeholders disagree on using it as the framework and common definition throughout the project. Many providers, for example, have their own ideas of what population health means. One provider said population health revolves around having the tools to identify anyone within their patient populations who needs to be referred for some care elements, without having to be reminded by those patients to deliver that care. A pediatrics practice focuses its idea of population health around maternal health, children goals, goals for decreasing infant mortality, and children with high developmental needs. An ACO representative mentioned that FQHCs are very oriented towards population health because they are focused on building connections within their communities.

The Population Health Work Group is considering Accountable Communities for Health (ACHs) as a model for integrating care. ACHs operate across the whole population of a community to integrate medical, behavioral health, social, and prevention activities. This work group is exploring examples of ACHs throughout the nation and will research communities within Vermont that have ACH characteristics. The work group will present findings in 2015 to other work groups, and will give guidance to the Steering Committee on whether or not Vermont should implement an ACH model within select communities.

Vermont monitors progress towards population health improvement through some high level population health metrics integrated into the SIM model. The Behavioral Risk Factor Surveillance System (BRFSS) was conducted in Vermont, for example, in collaboration with the CDC. Vermont's ACO SSP and the Blueprint for Health are also measuring certain population health statistics (including obesity and smoking rates). With guidance from the Population Health Work Group, the SIM Initiative plans to add additional population health measures as it implements its self-evaluation plan. One state official reported not anticipating any significant improvements in the population health metrics this early in the SIM Initiative.

Various stakeholders described challenges associated with the Population Health Work Group. A consumer advocate who attends the meetings called the group “reactive,” but says it is becoming a more proactive as it puts more proposals out to other work groups. The same advocate supported some of the newly proposed metrics relating to social determinants of health; however, these measures were not added and were not discussed to the extent the advocate would have liked. Both that advocate and another stakeholder stated that they have not seen any sign that the work group's proposed measures are translating into anything related to payment reform. The latter stakeholder viewed the work product as “premature” and felt it probably would not become valuable until a later date.

9.2.8 Stakeholder engagement

Broad stakeholder engagement is a hallmark of Vermont's SIM Initiative. The SIM structure, as noted, involves seven work groups—Care Models and Care Management, Disability and Long Term Services and Supports, Health Care Workforce, Health Information Exchange, Payment Models, Population Health, and Quality and Performance Measures—each led by two co-chairs. The work groups range in size (from about 20 to about 45 members)—with representatives from ACOs, private insurers, provider organizations, hospitals, Designated Agencies, LTSS organizations, consumer advocacy organizations, and state agencies and departments. The work groups meet monthly and develop recommendations, which are then passed on to the Steering Committee.

The Steering Committee informs, educates, and guides the Core Team. The Steering Committee has nearly 40 members—including at least one co-chair from each work group, state

agency representatives, and stakeholders from multiple groups and organizations, many of whom also participate in the work groups.

The Core Team is the decision-making body. It provides overall direction, acts on guidance from the Steering Committee, makes funding decisions, and resolves conflicts not resolved by work groups or the Steering Committee. The Core Team has eight members, primarily state officials but with two members from the private sector.

With respect to work group or committee composition, some stakeholders expressed concern at what they feel is a low level of consumer representation—making the point that a consumer advocate is not a consumer. One stakeholder noted that consumers are unable to participate on an equal basis with others in the work groups even if present, because they are less familiar with the technical details and terminology.

Concern with the level of provider representation was also expressed, including the lack of physicians and nurses at meetings. Some state officials noted that it is particularly difficult for providers to participate given time constraints and the timing of work group meetings, which are often held mid-day during the week. Provider stakeholders echoed this assessment—noting the lack of physicians and nurses involved as work group members and adding a financial hardship aspect (explaining that committee participation is not part of a small practice’s budget).

Some stakeholders thought state officials have too great a presence on work groups and committees, especially at the top level. One provider noted the large number of state officials in the work groups and said these officials sometimes disagree with one another or their leadership. It was this person’s view that such disagreement undermines the value of state participation and sometimes prompts questions about state officials’ potentially conflicting interests.

Multiple stakeholders, in contrast, were highly supportive of SIM Initiative’s leadership. The project director was described as a “very strong leader” and “very open.” One stakeholder recognized the project director and a Steering Committee co-chair as quite skilled at allowing strong stakeholders to have their voice while still keeping the agenda on track—noting that “the steering committee conversations have been candid and respectful. This helps identify people’s enlightened self-interest and social obligation to the larger community.”

Most state officials and stakeholders commented that active participation of the 225 work group members was beneficial for input but delayed decision-making and inhibited the ability to get work accomplished during meetings. Emphasizing the latter point, one work group participant put it this way: “A lot of the more detailed work moved up to the co-chair level because you can’t have 50 people doing the work.” Another stated, “I think there are times when there is a need for smaller groups to have very serious, detailed conversations that involve their interests directly—the providers and the payers, how are they going to pay, how are they going

to be paid.... There are times when those discussions need to take place and inform the group, as opposed to having the whole group involved in the initial discussions.”

The SIM Initiative is receptive to feedback on its stakeholder engagement. It conducted a stakeholder survey among the seven work groups’ members to gauge work group dynamics, assess goals, better understand how members perceive their work and input is being received, and get a general sense of successes and challenges. The SIM project team will use these findings to refine the system and help co-chairs better manage/guide their work groups.

Positive feedback on stakeholder engagement extended beyond the project planning structure. Stakeholders enthusiastically identified implementation elements—learning collaboratives, ACO governance boards, provider subgrants, health IT projects—as the catalyst for creating new collaborative relationships. As a final illustrative example of collaboration leading to action, a Designated Agency representative commented on how its SIM collaborations and conversations with individuals at an ACO led to that ACO “recognizing their role in moving the needle on outcomes, cost, and consumer satisfaction,” which in turn led to “17 of their primary care physicians [taking] the ex-credential test to become Spoke providers.”

9.3 Quantitative Outcomes

This section presents information on six types of outcomes for the Vermont SIM Initiative: (1) provider and payer participation, (2) populations reached, (3) care coordination, (4) quality of care, (5) health care utilization, and (6) health expenditures. Data on the first two sets of measures come from various state sources. The latter four sets of measures are derived from Medicaid Analytic eXtract (MAX)/Alpha-MAX, commercial (MarketScan), and Medicare claims data.

9.3.1 Populations reached

The Vermont SIM Initiative targets Medicaid beneficiaries and the commercially insured; however, Medicare beneficiaries are included in our analyses because of the potential for spillover effects and because of the synergies and alignment the SIM Initiative aims to provide to other health care reform efforts ongoing in Vermont. **Table 9-2** presents reported population counts for first quarter 2015. The PCMHs have greater numbers of commercially insured and Medicaid beneficiaries than the newly established commercial and Medicaid ACOs. The number of Medicare beneficiaries participating in PCMHs and the number in the existing Medicare ACOs are more comparable. The number of Medicaid beneficiaries participating in PCMHs increased by about 5,700 from the previous quarter. With an estimated Medicaid population of 127,000 in Vermont in 2014, **this indicates that PCMHs reach 84 percent of the**

Table 9-2. Population reached in the Vermont innovation models by payer

Payer population	Patient-centered medical homes	Health homes	Accountable care organizations
Medicaid	106,818 (84%)	Not reported	62,424 (49%)
Commercial	111,529 (31%)	Not reported	37,252 (10%)
Medicare	67,621 (84%)	Not reported	60,070 (75%)

Source: Core metrics reported by Vermont for first quarter 2015 are on the CMS Web site. Clarification and revised commercially insured and Medicaid accountable care organization counts provided by Vermont through email. Denominators used to compute the percentage of the population reached are Kaiser Family Foundation population estimates based on the Census Bureau's March 2015 Current Population Survey (CPS: Annual Social and Economic Supplements) available at: <http://kff.org/other/stateindicator/total-population>.

Medicaid population.⁵¹ The commercially insured PCMH population showed a slight decrease and the Medicare PCMH population remained steady. The estimated commercially insured population in Vermont is 364,000, **indicating the PCMH reach to be 31 percent of the commercially insured population.** With a Medicare population estimated at 80,500, excluding Medicaid-Medicare beneficiaries, **the reach of PCMHs among the Medicare-only population is 84 percent.**

The commercial ACO population count—37,252 (indicating a reach of **10 percent of the commercially insured population**)—increased slightly from the previous quarter. The Medicaid ACO population count increased by 32 percent (to 62,424) because of a reporting correction (indicating a **49 percent reach among the Medicaid population**); Medicaid ACO participants without claims had erroneously been excluded from the attribution counts, resulting in an undercount in 2014. The Medicare ACO population count—60,070 (indicating a **reach of 75 percent of the Medicaid population**)—represents an 11 percent decrease from the previous quarter, due primarily to the withdrawal of the Accountable Care Coalition of the Green Mountains ACO from the Medicare SSP in early 2015.

Many individuals are reached by both PCMHs and ACOs. Because the size of this overlap is unknown, the actual reach of the SIM Initiative in Vermont is unknown at this time.

⁵¹ The total and payer-specific population estimates are Kaiser Family Foundation population estimates based on the Census Bureau's March 2015 Current Population Survey (CPS: Annual Social and Economic Supplements) available at: <http://kff.org/other/state-indicator/total-population/>. Population estimates from the 2014 Vermont Household Health Insurance Survey vary somewhat from the denominators used here. The total, Medicaid, and Medicare populations from the Vermont survey are all larger than the CPS-based estimates whereas the commercial population is smaller. Payer-specific estimates also vary from those obtained from alternative sources, such as Medicaid.gov and CMS.gov for Medicare. Using separate sources for each payer population results in combined totals greater than the state population due to intra-year changes in insurance coverage. Because we wanted unduplicated population estimates that come from a consistent source across the Test states, we use the Kaiser CPS estimates.

However, with a state population of 617,000, these data suggest that **the total population reached by the Vermont SIM Initiative is greater than 46 percent but less than 72 percent.**

9.3.2 Provider and payer participation

In first quarter 2015, Vermont had 694 unique providers in NCQA-recognized PCMHs and 63 provider organizations participating in the Blueprint for Health (*Table 9-3*). This continues the increasing trend in unique providers from the previous quarter. As there are 747 primary care physicians and 1,867 total physicians active in patient care in the state, this indicates a **participation rates of 95 percent among primary care physicians and 37 percent among all physicians.**⁵² The number of provider organizations participating in health homes remained the same (five) as in the previous quarter; the number of physicians participating in health homes decreased slightly to 123. These health homes are part of the Blueprint for Health's Hub and Spoke initiative, serving opioid-dependent patients.

Table 9-3. Physicians, practices, and payers participating in the Vermont innovation models

Participants	Patient-centered medical homes	Health homes	Accountable care organizations
Physicians	694	123	—
Commercial	—	—	832
Medicaid	—	—	690
Medicare	—	—	977
Provider organizations	63	5	—
Commercial	—	—	61
Medicaid	—	—	41
Medicare	—	—	83
Payers	Medicaid, BCBSVT, MVP Health Care, Cigna, some self-insured organizations, Medicare	Medicaid	Medicaid, BCBSVT, Medicare

BCBSVT = Blue Cross Blue Shield of Vermont; — = not applicable.

Note: The practice counts refer to participating provider organizations by unique tax identification number (TIN), which collapses practice sites under a parent organization.

Source: Core metrics reported by Vermont for first quarter 2015 are on the Salesforce Web site. Clarification and supplemental health home physicians count provided by Vermont through email.

Vermont reported that 832 physicians and 61 provider organizations participate in the three commercial ACOs. This represents a 27 percent decrease in the number of physicians from the previous quarter, although the number of provider organizations increased slightly. The number of physicians participating in the two Medicaid ACOs decreased by 25 percent to 690, accompanied by no change in the number of provider organizations. The decreases in

⁵² Counts of active patient care physicians are from the *2015 State Physician Workforce Data Book*, published by the Center for Workforce Studies, Association of American Medical Colleges, November 2015. Available at: <https://www.aamc.org/data/workforce/reports/442830/statedataandreports.html>.

commercial and Medicaid ACO physician counts are mostly due to reporting issues. The 2014 counts for the Medicaid Shared Savings Program (SSP) erroneously included 206 New Hampshire providers, which have been removed from the 2015 counts. There were also some duplicates on the 2014 provider list for the commercial SSP that have been removed from the 2015 list. Additionally, the decrease in commercial and Medicaid ACO physician counts are partly attributable to the Burlington-area FQHC's withdrawal from its ACO, Community Health Accountable Care (CHAC), which participates in all three payer SSPs. ACO physician and provider organization counts for the three Medicare ACOs were newly reported in first quarter 2015 at 977 and 83, respectively. Thus, at least 977 of 1,867 active patient care physicians or **52 percent of all active patient care physicians were participating in an ACO in first quarter 2015.**

9.3.3 Care coordination

Care coordination is an integral component of Vermont's SIM Initiative efforts, with an underlying goal of providing appropriate services that will lead to more preventive care and less acute care. Highlights of SIM efforts include expansion and support of the state's pre-existing Blueprint for Health multi-payer program, which features PCMHs and support services provided through CHTs; implementation of new Medicaid and commercial ACO payment models, promoting care coordination between providers; learning collaboratives to develop and share care coordination strategies; provider subgrants to test innovative care coordination models; and health IT enhancements to support and expand data sharing and reporting. All these efforts incrementally build upon one another. If they are effective, we expect to see gradual positive trends over the test period. Our initial baseline findings for Medicaid cover 2010–2011, when many Blueprint for Health PCMHs and CHTs were in the start-up phase or had not yet begun participation. Our commercial MarketScan sample features baseline results from 2010–2013, as does the Medicare sample. Because these MarketScan data do not include Vermont's commercial payer participating in the ACO payment model, these baseline findings provide a starting point for measuring spillover effects we may see over the test period.

Most of our care coordination measures require more than one quarter of data. Thus, we present these measures on an annual, instead of quarterly, basis. Furthermore, we do not yet have a full year of data for the test period in any of the payer databases. Therefore, we report only baseline care coordination estimates. *Appendix Tables E-6-1* through *E-6-5* provide, for Vermont and its comparison group, baseline care coordination measures for Medicaid beneficiaries by eligibility category, the commercially insured by age category, and Medicare beneficiaries by Medicare-Medicaid enrollment status. We look for differences in the levels and trends in these measures.

Early baseline results (2010–2011) for the Medicaid population indicate total evaluation and management visits were higher in Vermont relative to the comparison group. A timely

follow-up visit for an inpatient admission or mental health inpatient admission is a care coordination action that can support better health outcomes and potentially decrease hospital readmissions. The overall percentage of inpatient admissions with follow-up visits within 14 days of discharge was lower for Medicaid beneficiaries in Vermont than the comparison group. However, the percentage of mental health inpatient admissions with follow-up visits within 7 days and 30 days of discharge was higher in Vermont than the comparison group. Medicaid beneficiaries generally performed better on the medication management measures (for persistent asthma and major depression) in Vermont than the comparison group.

Relative to the comparison group, the commercially insured in Vermont had lower rates of visits to primary care providers and specialists for most years in the baseline period (2010–2013) and most age groups, although the rates for visits to specialists increased markedly for both groups in 2013. Similarly, for the same baseline period the Medicare-Medicaid and other Medicare beneficiaries in Vermont had consistently lower rates of visits to primary care providers and specialists relative to the comparison group. For the measures relating to follow-up visits to inpatient admissions and mental health inpatient admissions, the percentages were higher in Vermont than the comparison group or comparable for most baseline years, for both the commercially insured and Medicare populations.

9.3.4 Quality of care

Vermont SIM-supported quality of care activities may contribute to improved care and health status—by preventing conditions through well-care visits and immunizations, enabling early stage interventions for conditions identified through screenings or visits, and preventing avoidable hospitalizations for clinical conditions that could be managed. Three of the outcomes being investigated in this section—Prevention Quality Indicator (PQI) hospitalization rates, mammography screening, and initiation and engagement in alcohol and other drug dependence treatment—are Vermont SIM’s Medicaid and commercial ACO SSP quality measures required for payment or reporting purposes. We expect to see improvements in the test period for these outcomes. Because ACO participation in Vermont began with Medicare ACO SSPs in 2013, trends in Medicare quality outcome results in the test period will be of interest, both for indicating spillover effects and for gauging the possible timing and impact of reform efforts.

Most of our quality-of-care measures require more than one quarter of data. Thus, we present these measures on an annual, instead of quarterly, basis. Furthermore, we do not yet have a full year of data for the test period in any of the payer databases. Therefore, we report only baseline quality-of-care estimates. *Appendix Tables E-6-6 through E-6-13* provide, for Vermont and its comparison group, baseline quality of care measures for Medicaid beneficiaries by eligibility category, the commercially insured by age category, and Medicare beneficiaries by Medicare-Medicaid enrollment status. Similar to the care coordination measures, we look for differences in the levels and trends in the measures.

Medicaid beneficiaries in Vermont had consistently lower overall, acute, and chronic composite PQI hospitalization rates than the comparison group in the early baseline period. In the commercial population, the Vermont results for these same hospitalization measures were volatile, likely due to small denominators. Except for the final baseline year (2013), the PQI hospitalization rates for the commercially insured were lower in Vermont than the comparison group; both Vermont and the comparison group showed a downward trend in rates. Medicare beneficiaries in Vermont and the comparison had similar overall PQI hospitalization rates. In Vermont, the acute composite rate trended downward for Medicare beneficiaries, while the chronic composite rate increased, relative to the comparison group.

For both the Medicaid population and the commercially insured, infants had higher compliance with the well-child visit schedule in Vermont than the comparison group. For young children, the baseline well-child visit rates for Medicaid beneficiaries were similar in Vermont and the comparison group, while for the commercially insured they were slightly lower in Vermont than the comparison group. Because the Vermont SIM Initiative ACO quality metric for payment related to well-child visits targets the *adolescent* population, future test period results for the infant and young child well-visit measures will not be attributable to SIM ACO efforts.

Baseline mammography screening rates for Medicaid beneficiaries and for the commercially insured were similar in Vermont and the comparison group, although they showed a slight downward trend in the commercial population in Vermont relative to the comparison group. The mammography screening rate for Medicare beneficiaries was higher in Vermont than the comparison group in 2010, but then declined to match the comparison group rate. A lower percentage of Medicaid beneficiaries with new episodes of alcohol and other drug (AOD) dependence initiated and engaged in AOD treatment in Vermont than the comparison group. For the commercially insured, Vermont had slightly higher percentages in AOD treatment relative to the comparison group, except in 2013, which was also marked by sharp decreases in the AOD treatment percentages in Vermont relative to the comparison group.

9.3.5 Health care utilization

The Vermont SIM Initiative's focus on better coordinated care is intended to lead to fewer inpatient hospitalizations, ER visits leading to hospitalization, and 30-day readmissions, which in turn are intended to lower costs. Early effects of the Blueprint for Health's expansion will not be recognizable in the baseline period, but may be present in the test period. Another Vermont SIM Initiative that could have a positive impact in decreasing inappropriate utilization is the Event Notification System described in **Section 9.2.5**; because the full rollout is not expected until 2016, the SIM evaluation's utilization outcomes may not capture its effects during the test period.

Figures 9-1 through 9-10 provide quarterly averages of core utilization measures, for Vermont and its comparison group, for Medicaid beneficiaries, the commercially insured, and

Medicare beneficiaries. For Medicaid beneficiaries, we report baseline data from fourth quarter 2010 through fourth quarter 2011, the latest period for which we have complete Medicaid data for Vermont and the states comprising its comparison group (New Hampshire, Iowa, and Connecticut). For the commercially insured and Medicare beneficiaries, we report the complete 3-year baseline period (fourth quarter 2010 through third quarter 2013) plus the first three quarters of the test period (fourth quarter 2013 through second quarter 2014). **Appendix Tables E-6-14** through **E-6-16** break out the quarterly averages by year and eligibility category for Medicaid beneficiaries, year and age group for the commercially insured, and year and Medicare-Medicaid enrollment status for Medicare beneficiaries, respectively. Because we have early test period data for the commercially insured and Medicare populations, we also present the results of difference in differences (DD) regression analyses of the utilization measures in **Tables 9-4** and **9-5**.

Utilization summary

Medicaid beneficiaries in Vermont had substantially lower rates of utilization relative to the comparison group in the early baseline period. This is consistent with long-term ongoing health reform efforts in Vermont. The increasing trend in 30-day hospital readmissions for Vermont Medicaid beneficiaries provides a baseline reference point for the impact evaluation of the SIM Initiative model reforms. There was no statistically significant difference in rate of change in the core utilization measures from the baseline period to the first three quarters of the test period for the MarketScan commercially insured population in Vermont relative to the comparison group. For the Medicare population in Vermont, there was a small statistically significant greater decrease in all-cause acute inpatient admissions relative to the comparison group, which may be associated with pre-SIM health reforms, including the ongoing Medicare ACO SSP.

Medicaid

In 2010 and 2011, Medicaid beneficiaries had substantially lower rates of utilization for all-cause acute inpatient admissions, obstetric admissions, ER visits, and 30-day readmissions in Vermont than the comparison group (**Figures 9-1** through **9-4**). Rates of all-cause and obstetric inpatient admissions decreased from fourth quarter 2010 through fourth quarter 2011 for Medicaid beneficiaries in Vermont and the comparison group. In contrast, the rate of ER visits increased slightly from fourth quarter 2010 through fourth quarter 2011 for Medicaid beneficiaries in Vermont relative to the comparison group. The 30-day readmission rate also increased in Vermont but remained flat for the comparison group.

Figure 9-1. All-cause acute inpatient admissions per 1,000 Medicaid beneficiaries, Vermont and comparison group

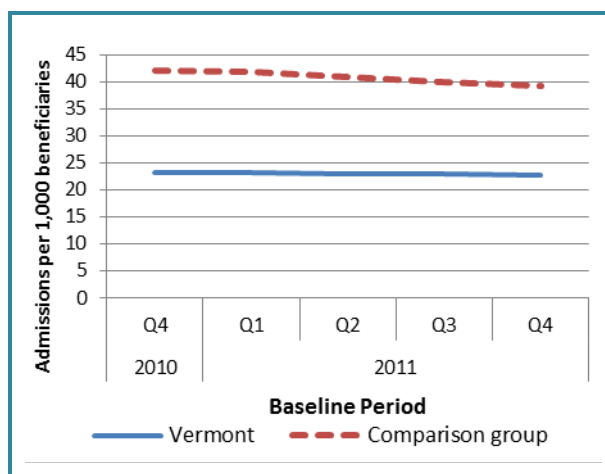


Figure 9-2. Obstetric inpatient admissions per 1,000 Medicaid beneficiaries, Vermont and comparison group

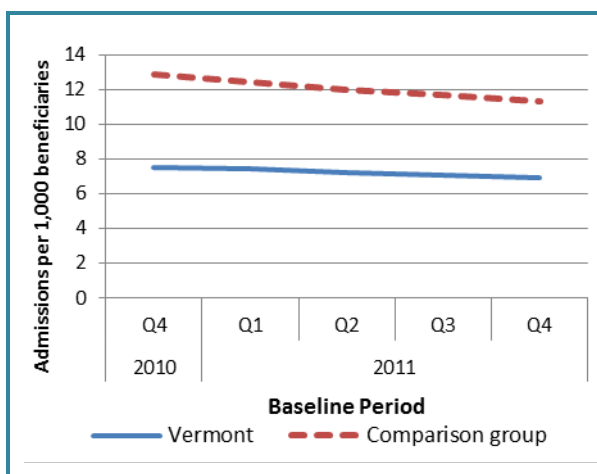


Figure 9-3. Emergency room visits that did not lead to hospitalization per 1,000 Medicaid beneficiaries, Vermont and comparison group

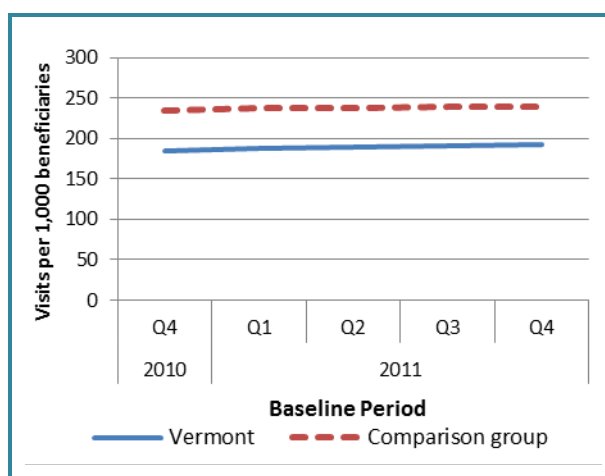
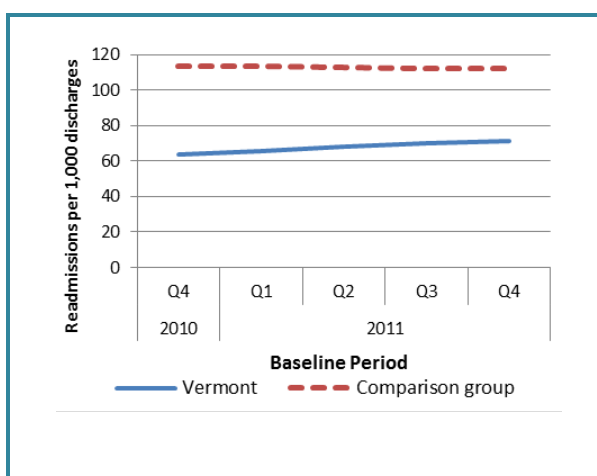


Figure 9-4. 30-day readmissions per 1,000 discharges, Medicaid beneficiaries, Vermont and comparison group



Commercially insured

The commercially insured in Vermont had relatively stable rates for all-cause acute inpatient admissions and ER visits during the baseline period (through third quarter 2013) (**Figures 9-5 and 9-6**). During the early test period (fourth quarter 2013 through second quarter 2014) there was a slight decrease in all-cause acute inpatient admissions for Vermont's commercially insured and hardly any change for the comparison group. Thus, for the early test period, the all-cause acute inpatient rate in the comparison group was comparable to or slightly higher than Vermont. During the baseline and early test period the rate of ER visits was similar in Vermont and the comparison group. Vermont's rate of readmissions within 30 days of discharge for the commercially insured was volatile due to the small sample size; the rate

increased through early 2013 and then decreased through first quarter 2014 (*Figure 9-7*). In contrast, the comparison group's readmission rate was relatively stable throughout the baseline and early test period. Vermont started with a lower readmission rate relative to the comparison group, but the rates were similar by first quarter 2014.

Figure 9-5. All-cause acute inpatient admissions per 1,000 covered persons, MarketScan commercially insured, Vermont and comparison group

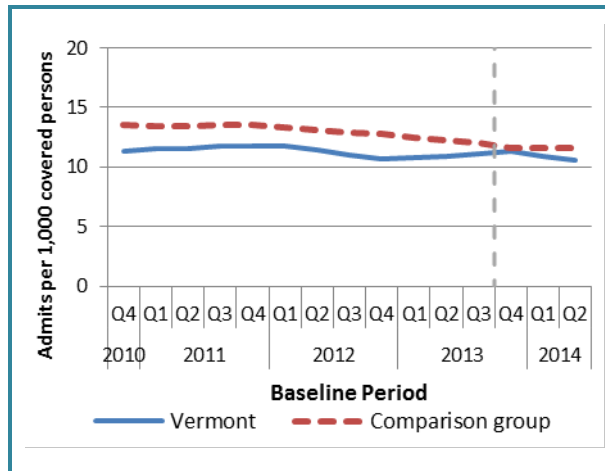


Figure 9-6. Emergency room visits that did not lead to hospitalization per 1,000 covered persons, MarketScan commercially insured, Vermont and comparison group

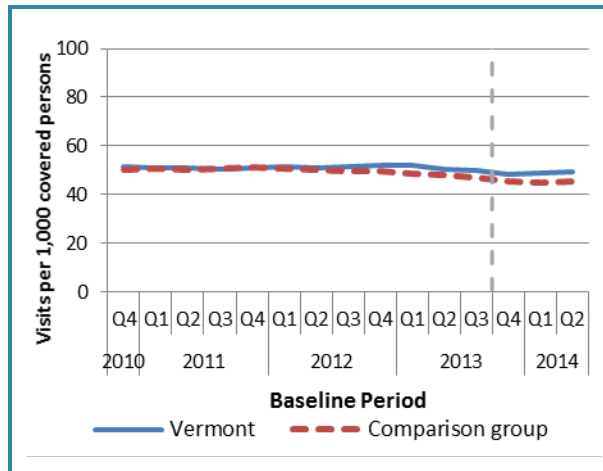
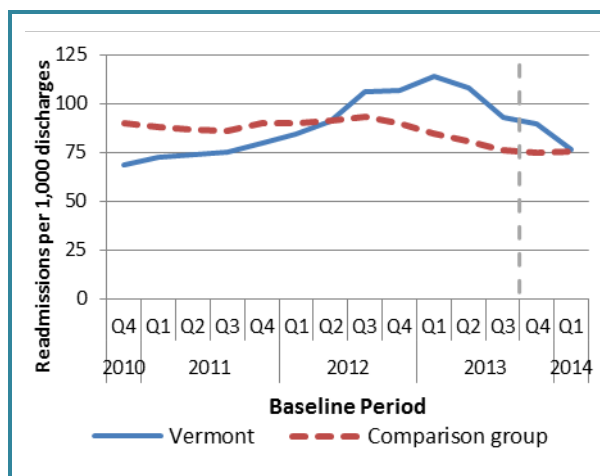


Figure 9-7. 30-day readmissions per 1,000 discharges, MarketScan commercially insured, Vermont and comparison group



Given that we have early test period data for the commercially insured in Vermont and its comparison group, we are able to statistically test for the desired negative relationship between Vermont's SIM Initiative and utilization due to better coordinated care using the DD model. The results are presented in **Table 9-4**. After adjusting for covariates, there was no statistically significant difference in utilization for the MarketScan commercially insured population in Vermont relative to the comparison group. The lack of significant results is not surprising, as we would not expect to see large impacts on utilization in a statewide examination of the commercially insured population in an early phase of implementation.

Table 9-4. Difference in the pre-post change in expected utilization per 1,000 members, MarketScan commercially insured, Vermont and comparison group, first three quarters of SIM implementation (October 2013 through June 2014)

Outcome	Regression adjusted difference in differences	95% Confidence interval		p-value
		Lower limit	Upper limit	
Aggregated change in utilization ¹				
All-cause acute inpatient admissions	-9	-77	58	
Emergency room visits that did not lead to hospitalization	13	-131	158	
30-day hospital readmissions	-1,115	-3,150	919	
Change in utilization per 1,000 members ²				
All-cause acute inpatient admissions	-0.14	-1.14	0.86	0.784
Emergency room visits that did not lead to hospitalization	0.20	-1.94	2.33	0.857
30-day hospital readmissions per 1,000 discharges	-16.44	-46.42	13.55	0.283

Note: The total number of person-quarters for Test state members in the early test period (Q4 2013 – Q2 2014) is 67,851. Bold estimates indicate statistical significance at the $p < 0.05$ level. A linear probability model was used to obtain estimates of the difference in probability of use. A *negative* value corresponds to a *greater decrease* or a *smaller increase* in probability of utilization in the Test state relative to the comparison group. A *positive* value corresponds to a *greater increase* or a *smaller decrease* in probability of utilization in the Test state relative to the comparison group.

¹The quarterly per member estimates are multiplied by the total number of person-quarters to get the aggregated change in utilization.

²The per-member estimates are multiplied by 1,000 to obtain the change in the rate of use per 1,000 persons.

Medicare

The rate of all-cause acute inpatient admissions for Medicare beneficiaries in Vermont and its comparison group decreased slightly throughout the baseline and early test periods (**Figure 9-8**). Throughout both periods the inpatient admission rate in the comparison group remained higher than Vermont. For Medicare beneficiaries in Vermont and the comparison group, rates of ER visits and 30-day readmissions increased slightly early in the baseline period, but decreased during the latter part of the baseline period and the early test period (**Figures 9-9** and **9-10**). One exception was the readmission rate for the comparison group, which steadily declined but remained greater than that for Vermont.

Figure 9-8. All-cause acute inpatient admissions per 1,000 Medicare beneficiaries, Vermont and comparison group

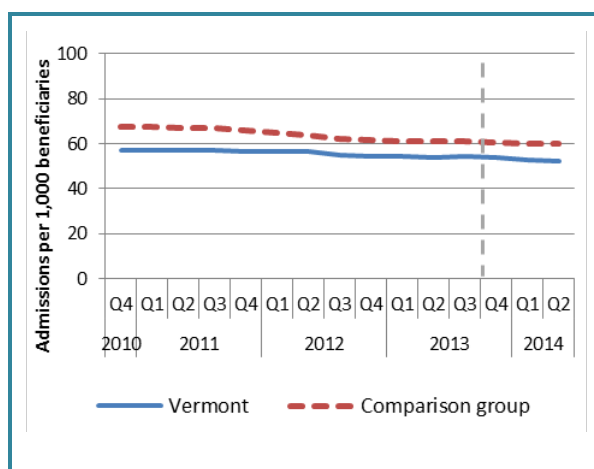


Figure 9-9. Emergency room visits that did not lead to hospitalization per 1,000 Medicare beneficiaries, Vermont and comparison group

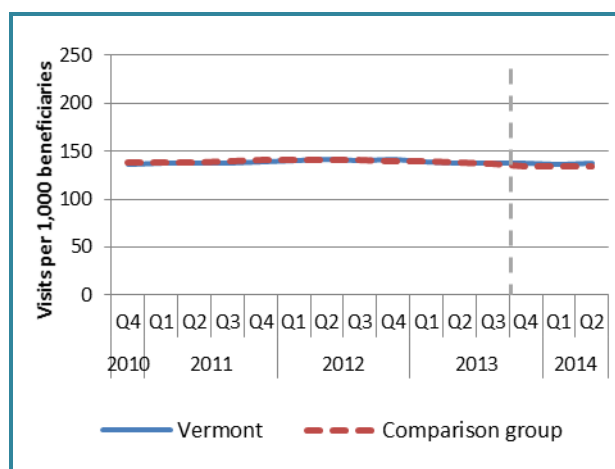
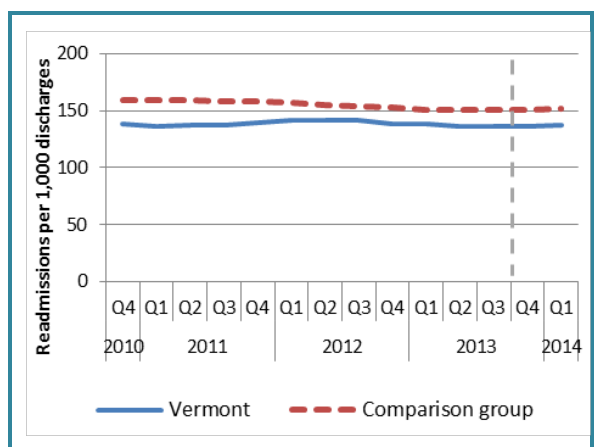


Figure 9-10. 30-day readmissions per 1,000 discharges, Medicare beneficiaries, Vermont and comparison group



The DD results indicate that, among Medicare beneficiaries in the first three quarters of the test period, all-cause acute inpatient admissions decreased at a significantly higher rate in Vermont than the comparison group, resulting in 419 fewer admissions in aggregate (**Table 9-5**). These inpatient admission results are consistent with what we would expect to find if the care coordination and care management efforts in Vermont described in **Section 9.2.2** were effective. Further, the results are promising because they indicate that even for a state such as Vermont that begins with lower admission rates (see **Figure 9-8**), the SIM Initiative and other reform efforts can effect change. However, these results are not solely attributable to the Vermont SIM Initiative; they are likely also indicative of other, pre-SIM health care transformation activities, including the ongoing Medicare ACO SSP and the Blueprint for Health. For example, the Blueprint for Health PCMHs' focus on providing care management and care coordination through the use of community health teams could lead to better disease management, which could, in turn, lead to reductions in inpatient admissions, thereby impacting this outcome. Both the Medicare ACO SSP and the new SIM Initiative ACOs have quality measures related to admissions and follow-up care following hospitalizations.

Table 9-5. Difference in the pre-post change in expected utilization per 1,000 members, Medicare beneficiaries, Vermont and comparison group, first three quarters of SIM implementation (October 2013 through June 2014)

Outcome	Regression adjusted difference in differences	95% Confidence interval		p-value
		Lower limit	Upper limit	
Aggregated change in utilization ¹				
All-cause acute inpatient admissions	−419	−742	−97	
Emergency room visits that did not lead to hospitalization	−65	−516	355	
30-day hospital readmissions	−2,033	−5,194	1,129	
Change in utilization per 1,000 members ²				
All-cause acute inpatient admissions	−1.30	−2.30	−0.30	0.0081
Emergency room visits that did not lead to hospitalization	−0.20	−1.60	1.10	0.7260
30-day hospital readmissions per 1,000 discharges	−6.30	−16.10	3.50	0.2086

Note: The total number of person-quarters for Test state members in the early test period (Q4 2013 – Q2 2014) is 322,620. Bold estimates indicate statistical significance at the $p < 0.05$ level. A linear probability model was used to obtain estimates of the difference in probability of use. A *negative* value corresponds to a *greater decrease* or a *smaller increase* in probability of utilization in the Test state relative to the comparison group. A *positive* value corresponds to a *greater increase* or a *smaller decrease* in probability of utilization in the Test state relative to the comparison group.

¹The quarterly per member estimates are multiplied by the total number of person-quarters to get the aggregated change in utilization.

²The per-member estimates are multiplied by 1,000 to obtain the change in the rate of use per 1,000 persons.

In contrast, there was no statistically significant difference in ER visits or hospital readmissions for Vermont beneficiaries relative to the comparison group. These results are not surprising; we would not expect to see measurable impacts on these measures so early in the test period. Furthermore, we are looking at a statewide population rather than the subpopulation reached by the ACOs and therefore impacts may be obscured. However, given the inclusion of ACO quality measures related to readmissions and noted care management efforts, we might expect to see limited positive results in the future.

A number of study limitations should be considered when reviewing these health care utilization evaluation results. For the commercial population, because it is unlikely that the data used for these analyses contained individuals directly impacted by Vermont's SIM Initiative, we can only speak about potential spillover effects of the interventions for this set of commercial patients. For the commercial and Medicare populations, it is difficult to solely attribute study results to the Vermont SIM Initiative, as individuals included in the analyses have likely been impacted by other existing health care transformation initiatives in the state. These analyses examine statewide impacts, by payer, of the Vermont SIM Initiative and therefore the results are most likely impacted by: (1) other statewide efforts occurring simultaneously and (2) the inclusion of individuals not directly impacted or attributed to a specific intervention. Additionally, even though the rigorous study design used a comparison group and adjusts for a range of covariates (see *Appendixes B* and *C*), the results could still be biased by a weak match of individuals in Vermont to individuals in the comparison group, as well as unmeasured factors that we were not able to account for in our methods.

9.3.6 Health care expenditures

As noted earlier, Vermont SIM Initiative models are testing whether strategies and improvements in care coordination, care delivery, and health data exchange lead to better care, healthier people, and smarter spending. Identifying changes or trends in health care expenditures will help inform if, to what extent, and how Vermont's SIM activities may have impacted costs. Early test period results for the commercially insured and Medicare beneficiaries, though unlikely to be strongly associated with Vermont SIM-supported activities, provide a reference point for potential spillover effects of ongoing health initiatives in Vermont in the baseline period.

Figures 9-11 through 9-17 and 9-22 through 9-25 provide, for Vermont and its comparison group, quarterly average PMPM payments for Medicaid beneficiaries, the commercially insured, and Medicare beneficiaries. For Medicaid beneficiaries, we report baseline data from fourth quarter 2010 through fourth quarter 2011, the latest period for which we have complete Medicaid data for Vermont and the states comprising its comparison group (New Hampshire, Iowa, and Connecticut). For the commercially insured and Medicare beneficiaries, we report the complete 3-year baseline period (fourth quarter 2010 through third

quarter 2013) plus the first three quarters of the test period (fourth quarter 2013 through second quarter 2014). *Appendix Table E-6-17* shows average PMPM total, FFS, and capitated payments for Medicaid beneficiaries by year and eligibility category. *Appendix Tables E-6-18* and *E-6-19* show average PMPM payments by year and age group for the commercially insured and by year and Medicare-Medicaid enrollment status for Medicare beneficiaries, respectively.

We present the results of the DD analyses of PMPM payments in *Tables 9-6* and *9-7*. *Figures 9-18* and *9-26* show the quarterly estimates for the effects on spending and *Figures 9-19* and *9-25* show the strength of the evidence. *Figures 9-20* and *9-28* show the cumulative effects on spending and *Figures 9-19* and *9-25* show the strength of the evidence.

Expenditure summary

Average total PMPM payments for Medicaid-only beneficiaries increased in Vermont and were consistently higher than the comparison group's throughout the early baseline period. In contrast, total PMPM payments for the Medicare-Medicaid beneficiaries in Vermont declined and were substantially lower relative to the comparison group. For the commercially insured population, early test period results were statistically significant for outpatient pharmacy PMPM payments, indicating an aggregated \$6.47 million decrease in payments in Vermont relative to the comparison group. For Medicare beneficiaries, early test period results were statistically significant for professional PMPM payments, indicating an aggregated \$11.16 million decrease in costs in Vermont relative to the comparison group. Although these initial findings appear promising, the first three quarters of the test period are too early to see spillover effects from SIM activities—making the findings most likely related to other health care reform efforts in Vermont, such as the Blueprint for Health.

Medicaid

Average total PMPM payments for Medicaid-only beneficiaries increased in Vermont and declined in the comparison group over the early baseline period (*Figure 9-11*). Vermont's payments were consistently higher than the comparison group's throughout the baseline and first three test period quarters. The opposite occurred for total PMPM payments for the Medicare-Medicaid beneficiaries; total payments declined in Vermont for these dually eligible enrollees and increased in the comparison group (*Figure 9-12*). Vermont Medicaid payments were substantially lower for Medicare-Medicaid beneficiaries relative to the comparison group.

Figure 9-11. Average total PMPM payments, Medicaid-only beneficiaries, Vermont and comparison group

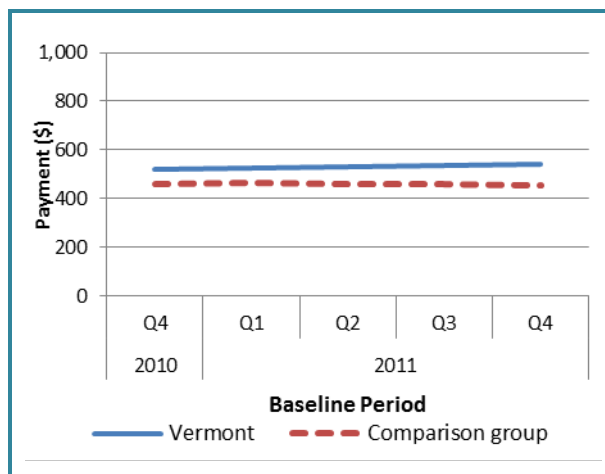
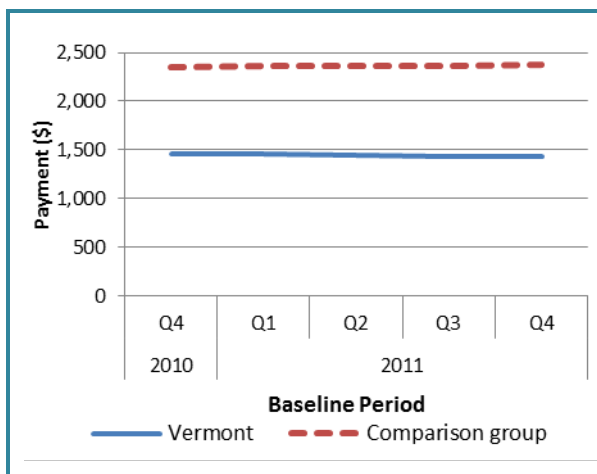


Figure 9-12. Average total PMPM payments, Medicare-Medicaid beneficiaries, Vermont and comparison group



Commercially insured

Average total PMPM payments for Vermont's commercially insured population increased slightly in the baseline period, but were stable during the early test period (**Figure 9-13**). For the commercially insured in the comparison group, total payments remained relatively stable during the baseline period, but increased slightly in the early test period. Total PMPM payments were consistently higher in Vermont relative to the comparison group throughout the baseline and first three test period quarters.

The inpatient facility and other facility PMPM payments for Vermont increased throughout the baseline period, whereas professional PMPM payments remained stable and outpatient pharmacy PMPM payments decreased (**Figures 9-14 through 9-17**). Although inpatient facility payments in the comparison group increased slightly in the early test period, Vermont payments surpassed the comparison group by the end of the early test period. Vermont's other facility payments remained consistently higher than the comparison group's over the baseline and first three test period quarters. In contrast, average professional PMPM payments for the commercially insured were consistently lower in Vermont than the comparison group. As Vermont outpatient pharmacy PMPM payments began to decrease, the comparison group's outpatient pharmacy payments began to increase and became greater than Vermont's payments.

Figure 9-13. Average total PMPM payments, MarketScan commercially insured, Vermont and comparison group

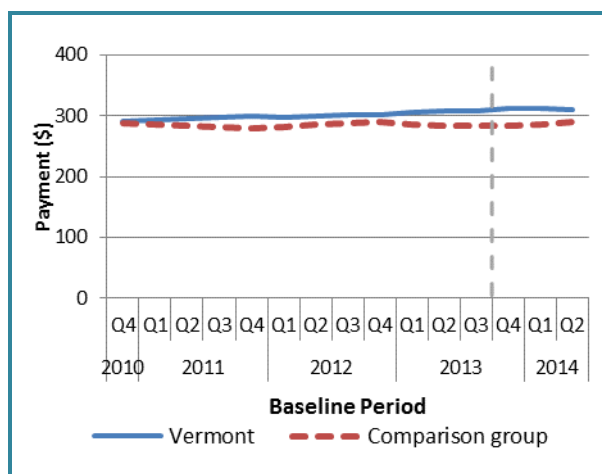


Figure 9-14. Average inpatient facility PMPM payments, MarketScan commercially insured, Vermont and comparison group

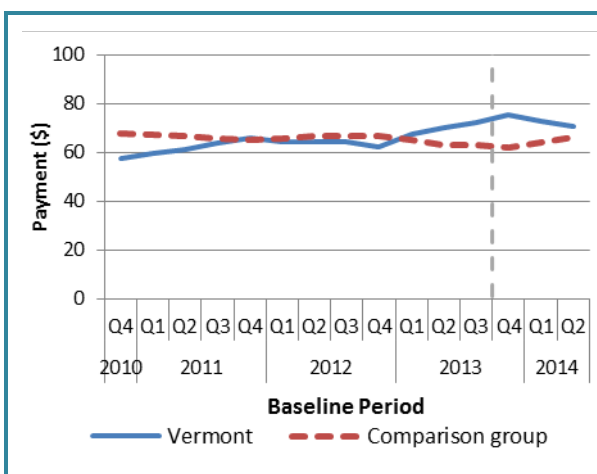


Figure 9-15. Average other facility PMPM payments, MarketScan commercially insured, Vermont and comparison group

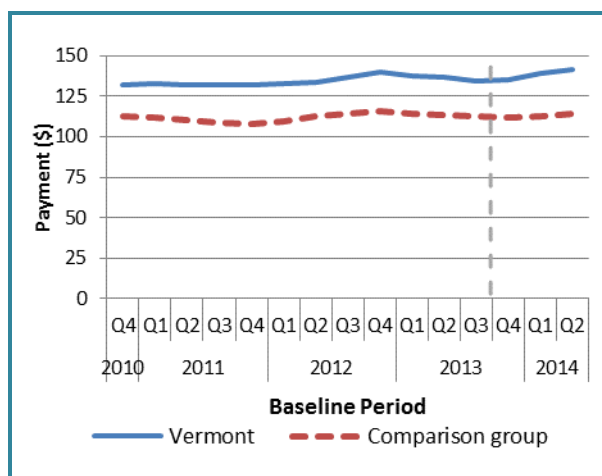


Figure 9-16. Average professional PMPM payments, MarketScan commercially insured, Vermont and comparison group

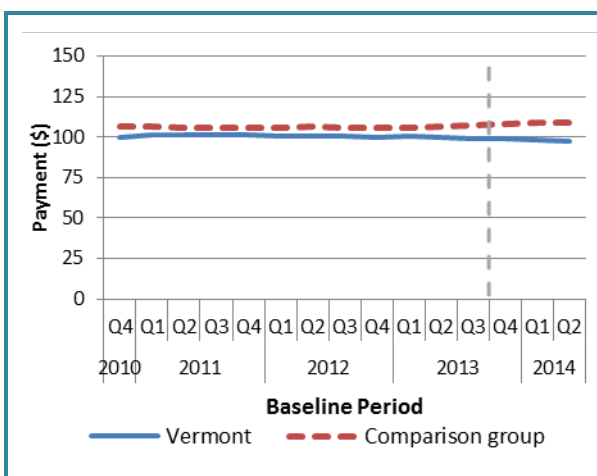
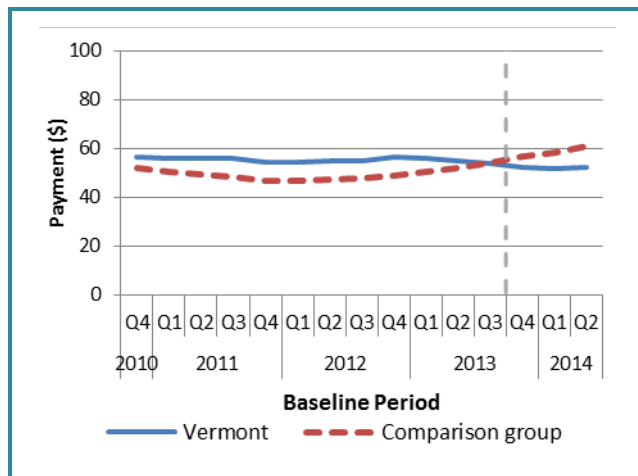


Figure 9-17. Average outpatient pharmacy PMPM payments, MarketScan commercially insured, Vermont and comparison group



The regression-adjusted DD results show that relative to the 15 baseline quarters, average PMPM payments for outpatient pharmacy services in the early test period among the commercially insured in Vermont decreased at a faster rate (\$11.33 PMPM) while the comparison group increased (**Table 9-6**). The potential aggregate savings in outpatient pharmacy payments ranges from approximately \$4 million to \$9 million. We caution that, although these results show statistically significant changes, it is unlikely that the SIM Initiative was responsible for such changes during this time period. The SIM Initiative in Vermont is not directly targeting outpatient pharmacy in its models, with the exception of an ACO quality measure related to appropriate antibiotic use. It is possible that the coordinated care and population health efforts throughout the state may eventually impact this outcome through better overall health care for the state's population (see additional limitations at the end of this section). Relative to the 15 baseline quarters, all other average PMPM payments (total, inpatient, other facility, professional) in Vermont were not significantly changed during the first three quarters of SIM implementation relative to the comparison group. Although qualitative results from site visits, interviews, focus groups, and document review indicate that health care transformation activities were occurring during this window of time, we would not expect to see a statewide impact on health care expenditures this quickly after the initiative went live in the state.

Table 9-6. OLS adjusted difference in the pre-post change in PMPM payments, MarketScan commercially insured, Vermont and comparison group, first three quarters of SIM implementation (October 2013 through June 2014)

Outcome	Regression adjusted difference in differences	95% Confidence interval		p-value
		Lower limit	Upper limit	
Aggregated change in payments ¹				
Total (in millions)	−\$0.72	−\$17.54	\$16.09	
Inpatient facility (in millions)	−\$2.83	−\$11.33	\$5.67	
Other facility (in millions)	\$4.45	−\$7.38	\$16.29	
Professional (in millions)	−\$1.84	−\$4.63	\$0.95	
Outpatient pharmacy (in millions)	−\$6.47	−\$8.69	−\$4.25	
Change in PMPM payments				
Total	−\$1.27	−\$30.72	\$28.18	0.933
Inpatient facility	−\$4.96	−\$19.84	\$9.92	0.514
Other facility	\$7.80	−\$12.93	\$28.53	0.461
Professional	−\$3.22	−\$8.12	\$1.67	0.197
Outpatient pharmacy	−\$11.33	−\$15.21	−\$7.45	0.000

OLS = ordinary least squares; PMPM = per member per month.

Note: The total number of person-quarters for Test state members in the early test period (Q4 2013 – Q2 2014) is 63,442. Bold estimates indicate statistical significance at the $p < 0.05$ level. A *negative* value corresponds to a *greater decrease* or a *smaller increase* in payments in the Test state relative to the comparison group. A *positive* value corresponds to a *greater increase* or a *smaller decrease* in payments in the Test state relative to the comparison group.

¹The PMPM estimates are multiplied by 9 months*63,442 person-quarters to obtain the change in total aggregate expenditures for the early test period.

To assist policy makers in understanding the future prospect of successful results for the Vermont SIM Initiative, we convert the DD results for change in total payments into probability estimates and provide graphical representations of the estimated quarterly and program to date effects, as well as the precision of these estimates. The quarterly estimates of the effect of Vermont's SIM Initiative on total spending for the commercially insured are graphed in **Figure 9-18**, and the quarterly strengths of evidence in **Figure 9-19**. Although the initial quarterly spending difference was positive for Vermont relative to the comparison group, the trend was downward, and by the third test period quarter the difference was negative, though neither estimate was statistically significant. These results suggest that the SIM Initiative in Vermont has a moderate probability of generating savings, and this probability is trending upward over time. Quarterly estimates provide policy makers with information on changes at specific time points but can have a great deal of variation, making interpretation difficult. Therefore, we also present the cumulative, program-to-date equivalents of the previous two graphs in **Figures 9-20** and **9-21**. The cumulative spending estimates were higher in Vermont than the comparison group in the first test quarter and trended downward through the third test quarter to no difference. The differences were not statistically significant, however, providing no strong evidence for savings or loss for the SIM Initiative in Vermont.

Figure 9-18. Quarterly effects on total spending, MarketScan commercially insured, Vermont, fourth quarter 2013 through second quarter 2014

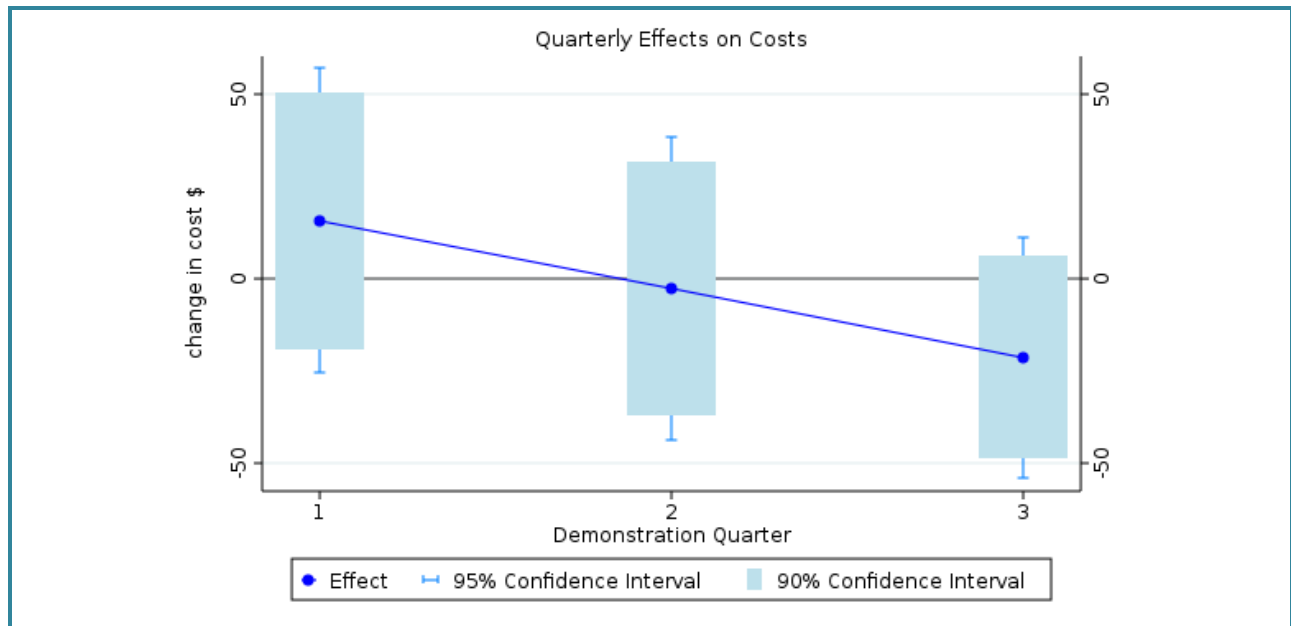


Figure 9-19. Quarterly strength of evidence on total spending, MarketScan commercially insured, Vermont, fourth quarter 2013 through second quarter 2014



Figure 9-20. Cumulative effects on total spending, MarketScan commercially insured, Vermont, fourth quarter 2013 through second quarter 2014

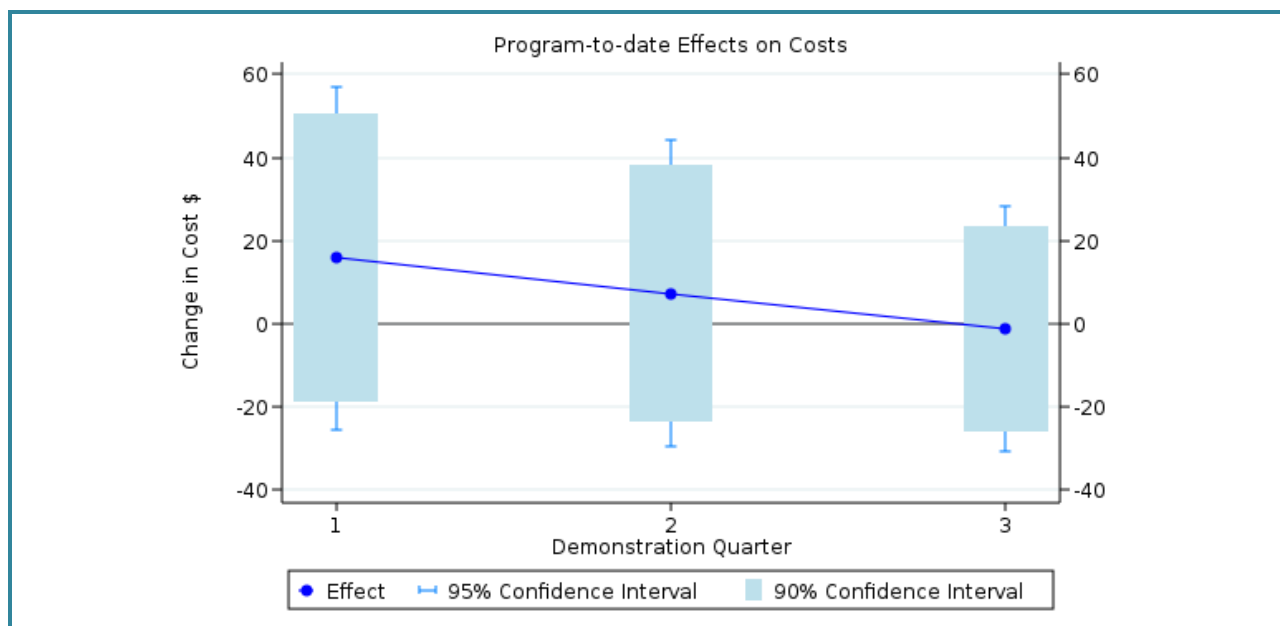
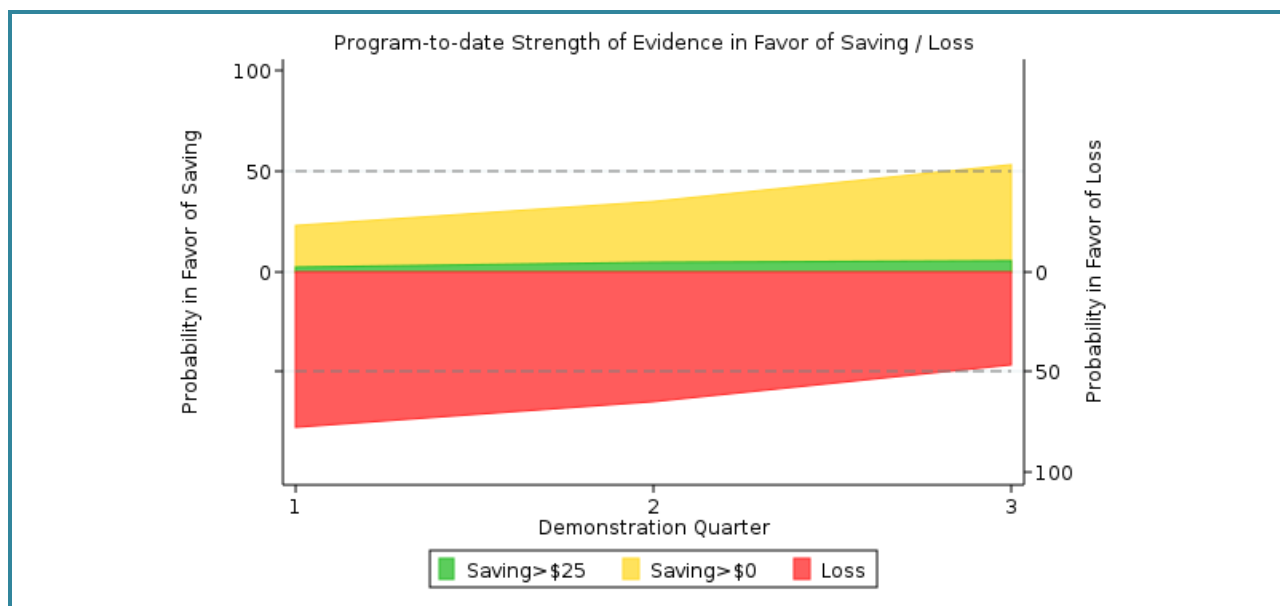


Figure 9-21. Cumulative strength of evidence on total spending, MarketScan commercially insured, Vermont, fourth quarter 2013 through second quarter 2014



Medicare

Average total and other facility PMPM payments for Medicare beneficiaries in Vermont and the comparison group increased during the baseline and early test periods (*Figures 9-22 and*

9-24). Vermont Medicare beneficiaries had lower total payments but higher other facility payments relative to the comparison group. Average inpatient facility PMPM payments for Medicare beneficiaries in Vermont and the comparison group were comparable and remained fairly stable throughout the baseline and first three test period quarters (*Figure 9-23*). Similarly, professional payments were relatively flat for both Vermont and the comparison group, although the comparison group payments were higher than in Vermont and declined slightly in 2014 (*Figure 9-25*).

Figure 9-22. Average total PMPM payments, Medicare beneficiaries, Vermont and comparison group

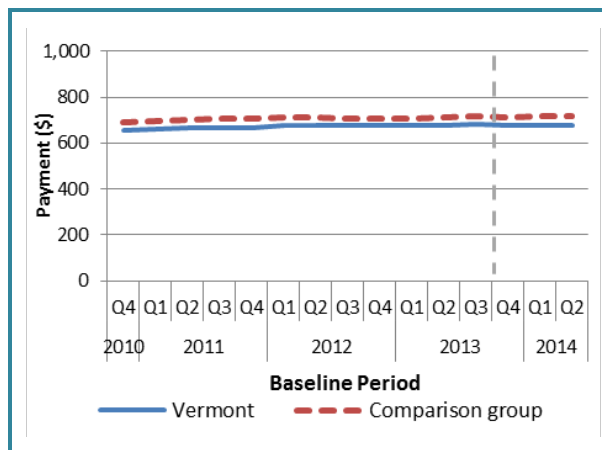


Figure 9-23. Average inpatient facility PMPM payments, Medicare beneficiaries, Vermont and comparison group

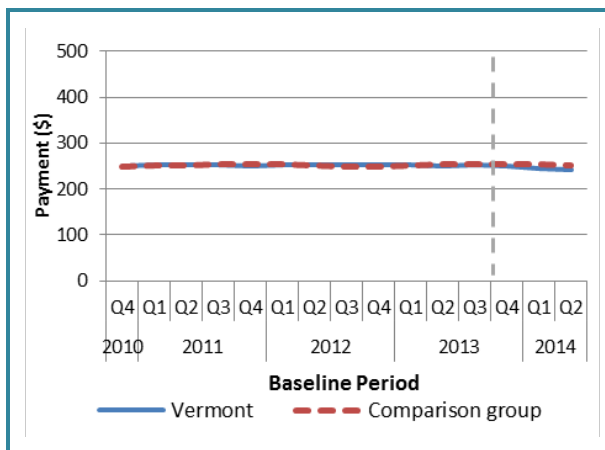


Figure 9-24. Average other facility PMPM payments, Medicare beneficiaries, Vermont and comparison group

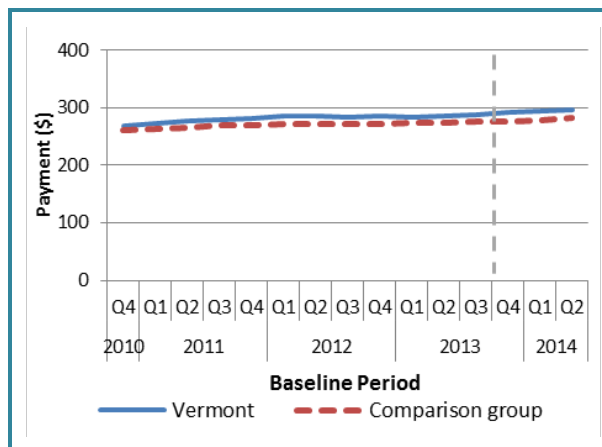
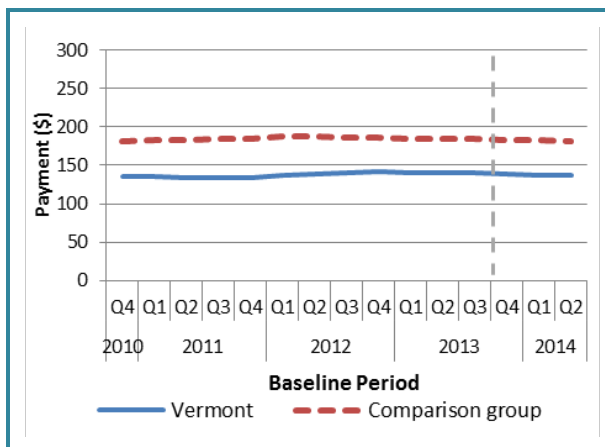


Figure 9-25. Average professional PMPM payments, Medicare beneficiaries, Vermont and comparison group



The regression-adjusted DD program-to-date (cumulative) results for Medicare beneficiaries show greater declines in spending in Vermont relative to the comparison group. Relative to the 15 baseline quarters, the average decrease in PMPM payments for professional

services in the early test period among Medicare beneficiaries in Vermont was significantly greater (\$3.84 per member) than the average decrease in the comparison group (*Table 9-7*). The potential aggregate savings from professional payments ranged from approximately \$6 million to \$16 million. The SIM Initiative was likely not solely responsible for these changes during this time period. The statistically significant decrease in professional payments may be associated with the corresponding Medicare decrease in inpatient hospital admissions described in **Section 9.3.5**—fewer hospitalizations would lead to decreased payments in the hospital professional fees and in follow-up physician visits. This would imply, in turn, that the Medicare ACO and Blueprint for Health’s care coordination efforts could lead to reduced payments, which would be a positive finding and encouraging for SIM Initiative expansion efforts of those pre-existing initiatives. No other differences in payments for Vermont relative to the comparison group were statistically significant. Although qualitative results from site visits, interviews, focus groups, and document review indicate that health care transformation activities were occurring during this window of time, we would not expect to see a statewide impact on health care expenditures this quickly after initial implementation.

Table 9-7. OLS adjusted difference in the pre-post change in PMPM payments, Medicare beneficiaries, Vermont and comparison group, first three quarters of SIM implementation (October 2013 through June 2014)

Outcome	Regression adjusted difference in differences	95% Confidence interval		p-value
		Lower limit	Upper limit	
Aggregated change in payments ¹				
Total (in millions)	−\$21.57	−\$55.50	\$12.36	
Inpatient facility (in millions)	−\$16.51	−\$40.32	\$7.30	
Other facility (in millions)	\$6.15	−\$7.60	\$19.90	
Professional (in millions)	−\$11.16	−\$16.46	−\$5.86	
Change in PMPM payments				
Total	−\$7.43	−\$19.11	\$4.26	0.2128
Inpatient facility	−\$5.69	−\$13.89	\$2.51	0.1740
Other facility	\$2.12	−\$2.62	\$6.85	0.3805
Professional	−\$3.84	−\$5.67	−\$2.02	<0.0001

OLS = ordinary least squares; PMPM = per member per month.

Note: The total number of person-quarters for Test state members in the early test period (Q4 2013 – Q2 2014) is 322,620. Bold estimates indicate statistical significance at the p<0.05 level. A *negative* value corresponds to a *greater decrease* or a *smaller increase* in payments in the Test state relative to the comparison group. A *positive* value corresponds to a *greater increase* or a *smaller decrease* in payments in the Test state relative to the comparison group.

¹The PMPM estimates are multiplied by 9 months*322,620 person-quarters to obtain total aggregate expenditures for the early test period.

To assist policy makers in understanding the future prospect of successful results for the Vermont SIM Initiative (based on spillover effects), we convert the DD results for change in total payments for Medicare beneficiaries into probability estimates and provide graphical

representations of the estimated quarterly and program-to-date effects as well as the precision of these estimates. The quarterly spending estimates were not significantly different for Vermont relative to the comparison group in any test quarters; however, the payment trends in Vermont were lower than the comparison group in the third test quarter (**Figure 9-26**). This suggests that for the third quarter the SIM Initiative has a moderate probability of generating savings, as shown in the strength of evidence graph (**Figure 9-27**). Quarterly estimates, while interesting to examine for potential future trends, are also more sensitive to short-term and limited factors that, in the long run, have little importance in lasting effects; therefore, we also show cumulative spending estimates. These estimates showed a trend for Vermont being lower than the comparison group, but the difference was not statistically significant in any of the test quarters (**Figure 9-28**). These cumulative results suggest there is no strong evidence for savings or losses for the SIM Initiative in Vermont among Medicare beneficiaries to date (**Figure 9-29**).

Figure 9-26. Quarterly effects on total spending, Medicare beneficiaries, Vermont, fourth quarter 2013 through second quarter 2014

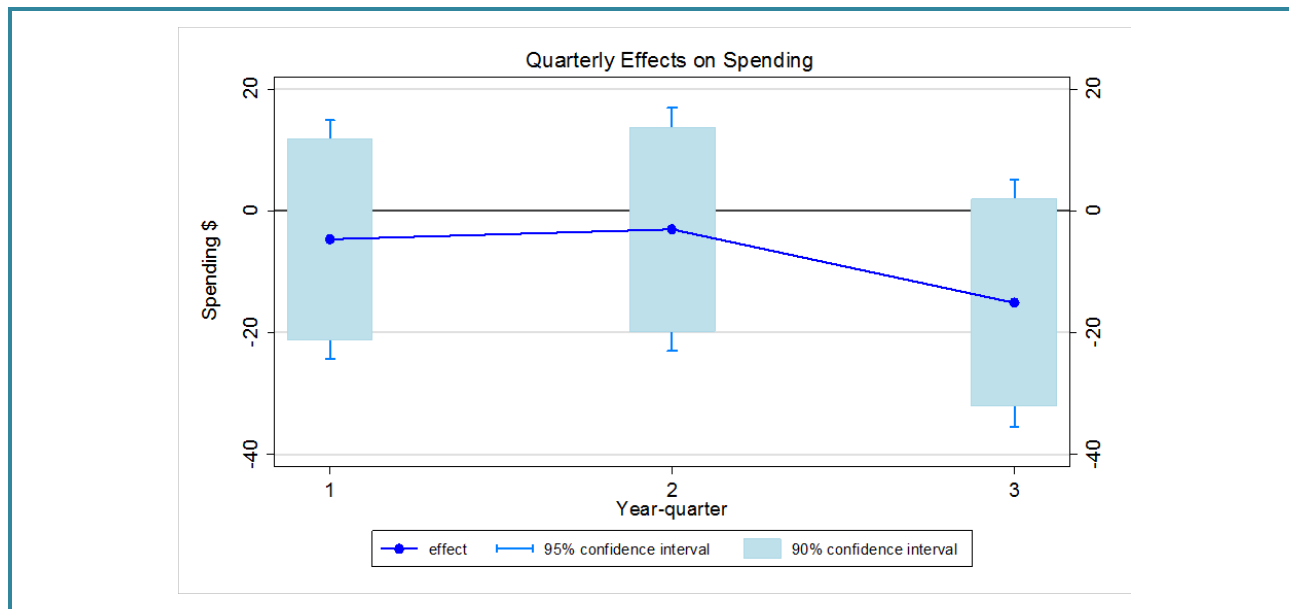


Figure 9-27. Quarterly strength of evidence on total spending, Medicare beneficiaries, Vermont, fourth quarter 2013 through second quarter 2014

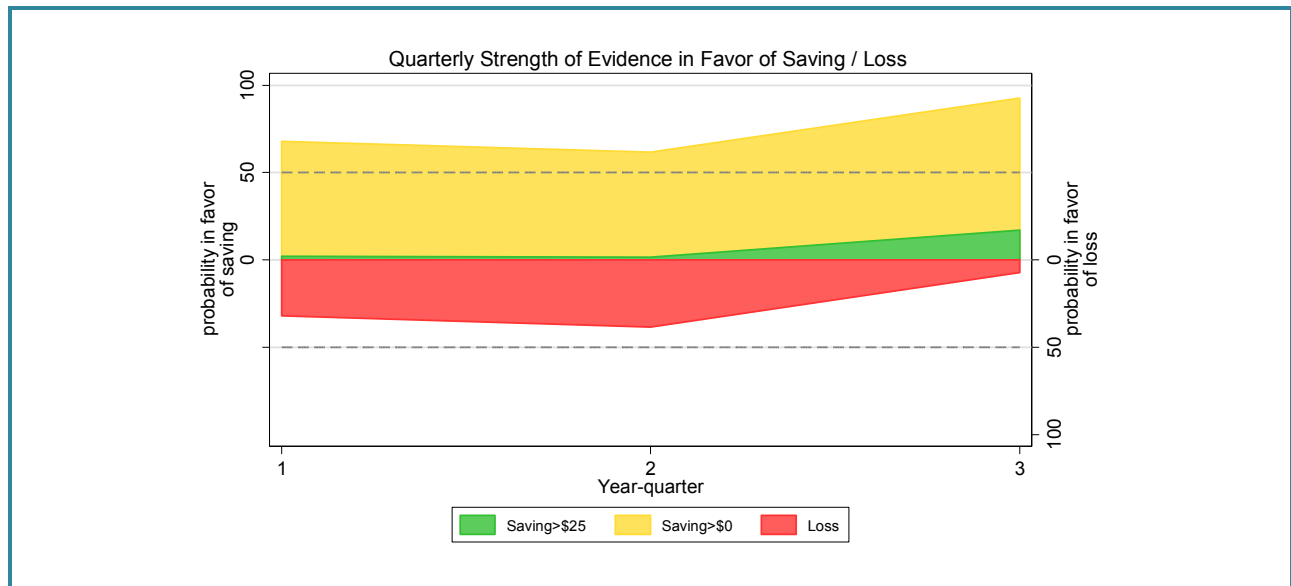


Figure 9-28. Cumulative effects on total spending, Medicare beneficiaries, Vermont, fourth quarter 2013 through second quarter 2014

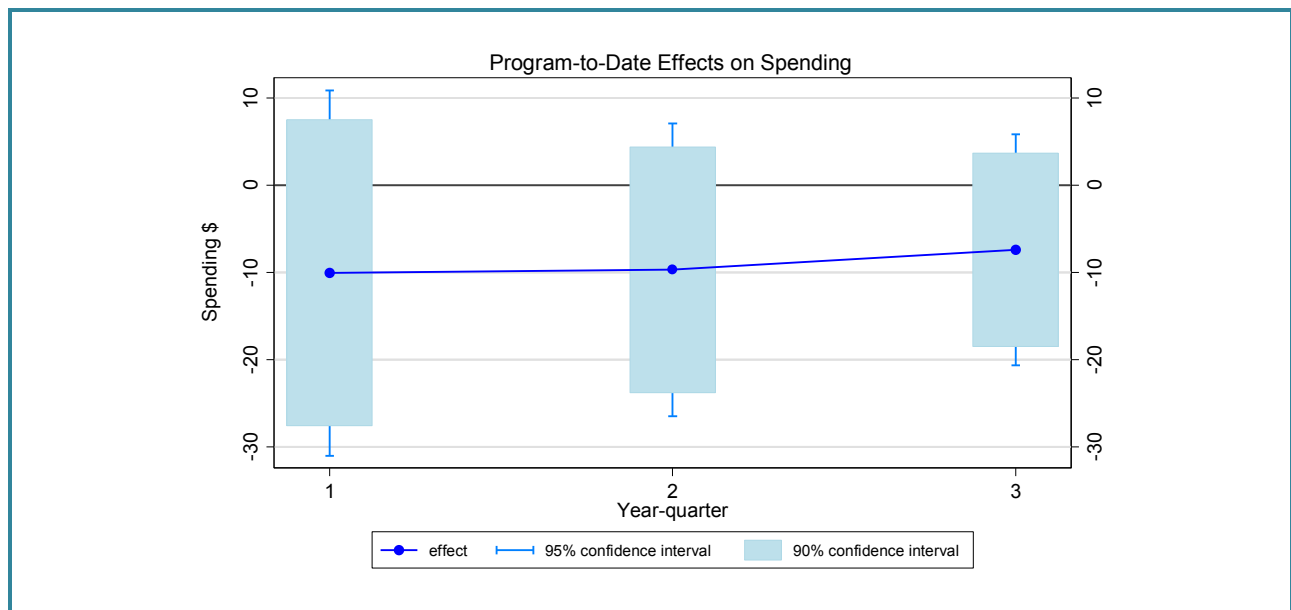
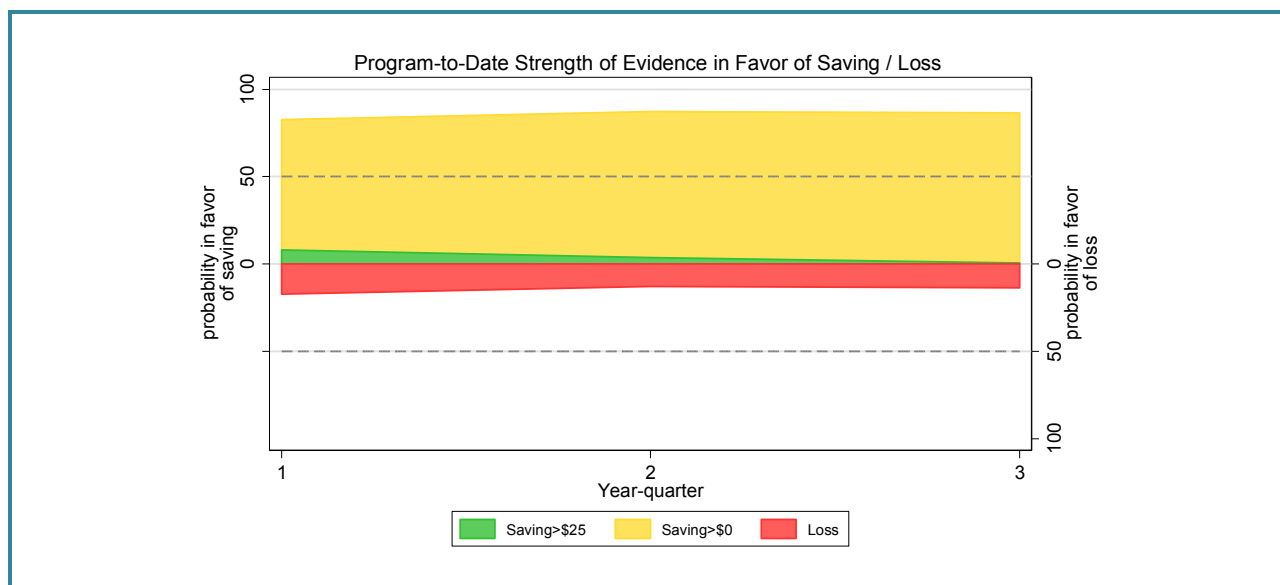


Figure 9-29. Cumulative strength of evidence on total spending, Medicare beneficiaries, Vermont, fourth quarter 2013 through second quarter 2014



As noted earlier in the review of utilization results, a number of study limitations should be considered when reviewing these evaluation results. For the commercial population, it is unlikely that the data used for these analyses contained individuals directly impacted by Vermont’s SIM Initiative; therefore, we are only able to speak about potential spillover effects of the interventions for this set of commercial patients. For the commercial and Medicare populations, it is difficult to solely attribute study results to the Vermont’s SIM Initiative, as individuals included in the analyses have likely been impacted by other existing health care transformation initiatives in the state. These analyses examine statewide impacts, by payer, of the Vermont SIM Initiative and therefore the results are most likely impacted by: (1) other statewide efforts occurring simultaneously and 2) the inclusion of individuals not directly impacted or attributed to a specific intervention. Additionally, even though the rigorous study design used a comparison group and adjusts for a range of covariates (see *Appendix B* and *C*), the results could still be biased by a weak match of individuals in Vermont to individuals in the comparison group, as well as unmeasured factors that we were not able to account for in our methods.

9.4 Summary

Vermont SIM Initiative efforts build on pre-existing programs—Blueprint for Health and Medicare ACO SSP—and expand care coordination, value-based payment reform, and health IT enhancements to improve health outcomes for all Vermont populations. Through multiple channels, the SIM Initiative is involving and reaching the health delivery community and the Vermont population. The Integrated Communities Care Management Learning Collaborative pilots are engaging a broad spectrum of participants in the development and dissemination of

tools to support at-risk populations. Provider subgrants are testing innovative methods throughout the state to improve care delivery, involve patients in managing chronic conditions, prevent complications, and reduce high cost or unnecessary care. New cross-ACO collaboration aims to support efficiency while still allowing for differences in the respective ACO structures and targeted populations. Patient and provider focus groups and provider survey results indicate areas of progress, such as identification of patients needing care management, as well as areas for improvement, such as better access to behavioral health services.

Because of the time lag in available Medicaid data, the quantitative results in this report are only for the early baseline period. Medicaid results for care coordination and quality of care measures indicate several areas where the Medicaid population performed better in Vermont than the comparison group (e.g., PQI hospitalization rate) and several where the groups were comparable or the comparison group performed better. The results show lower pre-SIM utilization rates for Vermont Medicaid beneficiaries than the comparison group and comparable PMPM payments, except for Medicaid-Medicare beneficiaries for which Vermont PMPM payments were much lower. Many elements within the SIM Initiative are targeted to the Medicaid population—such as the Medicaid ACO SSP, data infrastructure improvements for the Designated Agencies and other DLTSS community providers, and the learning collaboratives for at risk populations. Although our qualitative findings describe implementation progress and challenges, it may take years for the cumulative effects to appear in quantitative results. We would not expect to see SIM-related effects in the early intervention period data. Thus, even when more recent Medicaid data become available, they may show the lagged effects of earlier initiatives.

Results for the commercially insured and Medicare populations include the entire baseline period and the initial three quarters of the test period. As noted earlier, because the MarketScan data do not include the commercial payer participating in the ACO model, these results provide a starting point for measuring spillover effects of the SIM Initiative. The commercially insured Vermont sample showed decreasing trends in spending for the early test period and a statistically significant decrease in outpatient pharmacy payments. We would not expect spillover effects to appear early in the intervention. Thus, these preliminary results for the commercial population could indicate positive effects (direct or spillover) of the pre-existing Blueprint for Health's PCMH model. Although the Medicare population is not the targeted focus of the Vermont SIM Initiative, Vermont leveraged its experience with the pre-existing Medicare ACO SSP in expanding the ACO model to the Medicaid and commercial populations. Further, the selection of SIM Initiative ACO quality measures for payment and reporting was informed in part by provider and stakeholder experience with the Medicare ACO SSP. Therefore, the early Medicare quantitative results could signal potential areas where ACO participation, as well as the Blueprint for Health's care coordination efforts, may effect change. The Medicare population results indicate statistically significant decreases in all-cause acute inpatient admissions and in professional PMPM payments in Vermont relative to the comparison

group, as well as quarterly spending trends that indicate savings in the third quarter of the test period. Although these initial findings appear promising, they are likely related to pre-SIM health reform in Vermont. Future quantitative findings based on later test period results and featuring broader targeted Vermont populations, including participants in the Medicaid and commercial ACOs, will provide stronger evidence on the impacts of the Vermont SIM Initiative.

Additionally, as the qualitative findings are more recent, they suggest promising areas for future quantitative results. State officials and stakeholders expressed that the quality metrics chosen for payment and reporting for the SIM Initiative's Medicaid and commercial ACO SSPs, and the alignment of quality metrics in the Blueprint for Health initiative, support a focus on quality and efficiency as well as an opportunity for ongoing practice review that should translate to better care and better health outcomes. These in turn could lead to reductions in costly health care utilization and thereby future savings. Although practice transformation is a long-term iterative process between providers and patients, our site visit interviews, provider and patient focus groups, and survey results indicate positive changes in care as well as awareness of further opportunities for change. Finally, Vermont has long been a state at the forefront of health care delivery and reform. Our findings indicate that state leadership and the extensive stakeholder community are committed to using the SIM Initiative to build on existing initiatives, support and expand current care delivery, and provide investment for future enhancements (such as broader health information technology connectivity) in order to continue improving the health of all Vermonters. Future quantitative analyses will look for evidence of results that support these goals.

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Appendix A: Site Visit and Survey Methods

From February through April 2015, we conducted site visits to each of the Round 1 Test states. These Year 2 site visits were the second of three sets being conducted under the federal evaluation of the State Innovation Models (SIM) Initiative. During the Year 2 visits, we conducted interviews with key informants and focus groups with providers and consumers. When feasible, we also observed advisory and/or task force meetings. Each site visits lasted 3 to 4 days.

In addition, in all six Round 1 Test states, we conducted a baseline survey of provider engagement in different care coordination and management strategies. The survey was a web-based survey administered to primary care physicians or their practices throughout the Test states from July through October 2014.

A.1 Key Informant Interviews

We conducted the Year 2 interviews with a variety of SIM Initiative stakeholders in the Round 1 Test states. In the interviews, we focused on implementation successes, challenges, and lessons learned; significant administrative or program changes that had occurred since the first set of site visits in first quarter 2014; and early effects of the SIM Initiative on health care delivery system transformation. Discussion topics included: (1) delivery system and payment reform, (2) behavioral health integration, (3) quality measurement and reporting, (4) health IT and data infrastructure, (5) workforce development, (6) population health activities, and (7) stakeholder engagement.

Stakeholders interviewed included the states' SIM Initiative teams, other state officials, commercial payers, providers and provider associations, consumer representatives, and health infrastructure personnel. We solicited suggestions from the state SIM teams for interview candidates and identified additional candidates from review of relevant documents. We contacted interview candidates by email or phone to offer them the opportunity to participate within several specific time options. Final lists of site visit interviewees were not shared with state SIM Initiative teams or CMS Information Center staff; the lists remain confidential.

We held the interviews in the offices or locations of the interview participants. All interviews were conducted by at least two evaluation team members. The interview lead used discussion guides to structure each interview session, and a designated note taker recorded the feedback from each session. We also audio-recorded each of the interviews to confirm the notes' accuracy and to clarify areas in the notes that were unclear; we did not transcribe the recordings. Before any recording was made, we obtained permission from all interview participants and instructed them that recordings could be stopped at any time.

Different discussion guides were developed for each major type of stakeholder and tailored for each state. The interviews were interactive; participants were encouraged to share feedback most relevant to their particular roles in the SIM Initiative. To encourage candid discussion, we were clear that we would not identify the specific interview participants or attribute specific comments to individuals in subsequent reporting. Specific interview sessions typically lasted no more than 1 hour.

We conducted 146 interviews in all—ranging from 22 to 27 interviews per state. **Table A-1** provides a distribution of the completed interviews by state and interviewee type. With the greater emphasis on implementation experiences, we conducted fewer interviews with state officials in this round compared with the first round (52 versus 73) and more visits with providers involved in the various innovation models, the states’ subgrantees, and consumer advocacy groups.

Table A-1. Key informant interviews conducted in Round 1 Test states, February to April 2015

State	State officials	Payers and purchasers	Providers and provider associations	Consumer advocacy groups	Other	Total
Arkansas	13	4	3	2	2 ^a	24
Maine	5	0	10	1	6	22
Massachusetts	11	2	3	4	7 ^b	27
Minnesota	7	5	5	2	3 ^c	22
Oregon	12	4	4	5	2 ^a	27
Vermont	4	2	15	3	0	24
Total	52	17	40	17	20	146

^a Contractors

^b Other includes community organizations and health centers participating in SIM MA’s e-referral initiative.

^c Infrastructure support, specifically E-Health and Emerging Professions grantees.

After each site visit, we promptly completed a structured debriefing form to integrate and augment notes taken during the interviews and to record initial observations addressing the key research questions. Subsequently we reviewed the interview notes and tagged passages using a custom coding structure developed for the evaluation. We used the coded text to identify themes and trends in respondents’ comments on different topics of interest tied to our research questions.

Quoted words and phrases cited in the report are from the interview notes and are used to convey perspectives of particular interest. The reports are not intended to provide a verbatim account of all comments received. Further, we report the perspectives we heard; we do not validate the comments received.

A.2 Focus Groups

To collect information on consumers’ and providers’ experience with the system changes resulting from SIM Initiative activities, we conducted focus groups with consumers and providers. Although by their nature, focus groups cannot provide fully representative feedback from stakeholders, they are useful in identifying key issues and perspectives that will help in interpreting the quantitative findings.

We followed standardized protocols for conducting the focus groups in each Test state, but varied the group composition and minor elements of the topic guides to customize the information collected for the specific approach of each state’s SIM Initiative plan. In most states, we repeated the locations, target populations, and general topic areas used for the focus groups conducted the previous year—enabling us to detect changes in the perspectives of the groups over time. Budgeting considerations led us to identify a limited set of locations to conduct the focus groups in each Test state. Location selection depended on having a sufficient concentration of the targeted populations from which to recruit participants. **Table A-2** provides the dates, focus group sites, and numbers and types of groups conducted for each state.

Table A-2. Focus groups conducted in Round 1 Test states, February to April 2015

State, date, and locations	Provider focus groups	Consumer focus groups
Arkansas		
Date: week of February 25	2 groups—primary care practices serving Medicaid and commercial clients participating in a PCMH or likely to become a PCMH, one treating adults (internal medicine and family practice), and the other treating children (pediatricians)	1 group—Traditional Medicaid beneficiaries of varying ages
Locations: Little Rock Searcy Conway	2 groups—one of specialists for the retrospective episodes of care (orthopedic surgeons and obstetrician/ gynecologists), and the second of providers likely to become a BHH	1 group—Medicaid beneficiaries who are users of BH services 2 groups—Private Option Medicaid (one in Little Rock and the second in Conway)
Maine		
Date: week of April 13	2 groups—primary care providers practicing at PCMHs and Stage A Health Homes, one in Portland and one in Bangor	2 groups—MaineCare beneficiaries enrolled in Stage A Health Homes, one in Portland and one in Bangor
Locations: Portland Bangor	2 groups—primary care providers practicing at Stage B BHHs, one in Portland and one in Bangor	2 groups—MaineCare beneficiaries enrolled in Stage B BHHs, one in Portland and one in Bangor
Massachusetts		
Date: week of March 30	2 groups—MassHealth primary care providers participating in the PCC Plan with practices in Boston	2 groups—Medicaid beneficiaries attributed to the PCPR Initiative, one in Boston and one in Springfield
Locations: Boston Springfield	1 group—providers touched by the SIM health IT interventions	2 groups—state employees participating in the GIC plan, one in Boston and one in Springfield

(continued)

Table A-2. Focus groups conducted in Round 1 Test states, February to April 2015 (continued)

State, date, and locations	Provider focus groups	Consumer focus groups
Minnesota		
Date: week of March 16 Locations: Minneapolis Duluth	4 groups—mix of providers participating in IHPs in Minneapolis and Duluth	4 groups—Medicaid beneficiaries in Minneapolis and Duluth area
Oregon		
Date: week of March 30 Locations: Portland Roseburg Salem	3 groups—primary care physicians and nurse practitioners practicing in recognized PCPCHs, one in Portland, one in Roseburg, and one in Salem 2 groups—LTSS providers serving the Medicaid population, one in Portland and one in Roseburg	2 groups—Medicaid-only beneficiaries who use LTSS, one in Portland and one in Roseburg 2 groups—persons employed by educational institutions and insured by OEBC, one in Portland and one in Roseburg
Vermont		
Date: week of April 6 Locations: Montpelier Burlington Rutland	1 group—providers (physicians/ NPs) participating in Medicaid ACOs 1 group—providers (physicians/ NPs) participating in commercial ACOs 1 group—ACO providers (physicians/ NPs) participating in Medicare ACOs 1 group—ACO providers (physicians/ NPs), including some participating in BPCI	1 group—Medicaid only beneficiaries receiving care from an ACO or Blueprint for Health 1 group—Medicare-Medicaid enrollees receiving care from an ACO or Blueprint for Health 2 groups—privately insured individuals receiving care from an ACO or Blueprint for Health, one in Burlington and one in Rutland

Notes: ACO = accountable care organizations; BH = behavioral health; BHH = Behavioral Health Homes; BPCI = Bundled Care for Payment Improvement; GIC = Group Insurance Commission; IHP = Integrated Health Partnerships; LTSS = long-term services and supports; NP = nurse practitioner; OEBC = Oregon Educators Benefit Board; PA = physician assistant; PCC = Primary Care Clinician; PCMH = patient-centered medical home; PCPCH = patient-centered primary care homes; PCPR = Primary Care Payment Reform

RTI worked with the state SIM staff to obtain recruitment lists for both consumers and providers. We recruited focus group participants from provider and consumer populations most likely to be impacted by the delivery system models being tested under the SIM Initiative. Most providers recruited were primary care physicians participating in primary care medical homes (PCMHs) or accountable care organizations (ACOs). However, some focus groups also included other primary care providers, such as nurse practitioners and physician assistants, and some included non-primary care providers participating in selected SIM interventions. For example, provider focus groups in Arkansas included one with orthopedic surgeons and obstetrician/gynecologists impacted by the episode-of-care payment, and two focus groups in Oregon were with LTSS providers.

In all states, we conducted consumer focus groups with Medicaid beneficiaries. In most states, these beneficiaries were attributed to various innovation models being tested under the

SIM Initiative. In Arkansas, two focus groups were with individuals enrolled under the Private Option Medicaid, and in Oregon two groups were with users of LTSS. We also conducted two consumer focus groups with state employees in each of Massachusetts and Oregon.

Consumer information was transmitted to RTI and The Henne Group (THG), a small business engaged to recruit participants and arrange the focus group logistics, via secure web sites. Provider information, though not technically subject to the Health Insurance Portability and Accountability Act (HIPAA), was also held confidential. When necessary, THG performed telematch and used other methods to identify or confirm contact information. THG over-recruited for each focus group to ensure recruitment goals would be met. In general, for every 12 participants recruited per focus group, we requested a recruitment list of at least 100 individuals.

THG recruited consumer participants through telephone calls and providers through faxes and emails. With the use of state-specific screening scripts, THG screened potential participants by phone to determine their eligibility for the groups. In general, consumer participants had to be over 18 years of age and have had at least one visit to a health care provider in the prior 6 months; provider participants had to have been practicing at least 2 years and have a current caseload of more than 50 patients. An exception to this is the LTSS providers in Oregon; they had an average of 5 patients in their patient homes.

During the phone recruitment process, participants were given information regarding compensation for travel and time. We compensated consumers in most states with \$75 each and providers with \$300 each. The Oregon OEBB state employee consumer group participants received \$50 as mandated from the State. This payment was made on-site following focus group participation. THG recruiters contacted participants a few days prior to, and the evening before, the focus group session to confirm participation and provide additional details regarding logistics.

We conducted 24 provider focus groups and 24 consumer focus groups in all—3 to 5 provider focus groups and 4 consumer focus groups per state. From 3 to 11 providers participated in each provider focus group and from 4 to 11 consumers in each consumer focus group—for a total of 172 providers and 198 consumers. We attempted to recruit new participants for both consumer and providers groups in Year 2. However, we did not retain consumer contact data from Year 1 in compliance with HIPAA. Therefore, there was the possibility that participants from Year 1 participated again in the Year 2 focus groups. To minimize this possibility, in some states we asked, “Did you participate in a focus group about Medicaid in [INSERT MONTH] 2014?” However, a handful of providers participated in both years in the smaller states, because of recruiting difficulties where the statewide provider totals are comparatively limited.

We obtained written consent from participants before the start of each group, and provided copies of the consent form for participants' personal records. The focus group facilitator led the discussion with the aid of a topic guide. The topic guides are organized by major topic areas (see **Table A-3**) and include broad, open-ended questions that prompt discussion and response among the group. The goal is for the facilitator to do as little talking as possible, allowing the group discussion to proceed organically. THG facilitated the consumer focus groups and RTI staff facilitated the provider focus groups. As mentioned earlier, a dedicated note taker recorded detailed observations and we audio-recorded the focus groups to ensure a complete record.

Table A-3. Focus group discussion topics

Consumer focus group topics	Provider focus group topics
Where care is received	Care coordination and management
Relationship with provider	Health information technology and other strategies
Process associated with illness	Patient engagement
Primary and preventive care	Concluding comments
Chronic illness strategies	
Referrals and specialized care	
Concluding comments	

Following the focus group sessions, we prepared summary notes and findings, organized by topic area and focused on common themes and perspectives. The summary notes and findings do not identify focus group participants by name or organization affiliation. Rather, they indicate whether a particular viewpoint was universal, a majority opinion, a minority opinion, or the opinion of only a single participant. We noted when participants were unaware of concepts or strategies, which we expect to become less frequent as the state SIM models and strategies are implemented over time.

Processes, procedures, and protocols for the Test state site visit interviews and focus groups were submitted for review and received approval from RTI's institutional review board (IRB). In Vermont, state-based IRB review was also required for the focus groups.

A.3 Provider Survey

Although differences exist in the specific reform models promoted with SIM funds in the six Round 1 Test states, an emphasis on primary care, care coordination, and care management strategies is common among them. As the Test states' SIM Initiatives progress, we expect an increasing proportion of primary care providers in these states to be engaging in strategies to improve care coordination and care management. To estimate the starting point of engagement by providers in these strategies, we conducted a baseline survey in Year 1. This survey asked

primary care providers in the six Test states to indicate their use of a wide range of primary care, care coordination, and/or care management strategies.

A.3.1 Instrument development

The instrument used for the SIM provider survey focused on a range of strategies that providers engaging in accountable care organizations (ACOs), medical homes, or related models would likely apply to their practice. Questions asked whether providers use specific strategies, such as a team approach to patient care; offer various primary care–focused services; are aware of the full range of health care services consumed by patients; and use certain features of health information technology (health IT). Additional questions addressed whether providers are paid in part based on performance, and whether they self-identify affiliation with ACOs, medical homes, or other specific models applicable in their state. The survey concluded with questions related to practice characteristics.

Because a low response rate is a well-known challenge for provider surveys, the survey was limited to take only about 22 minutes to complete. We used standard Likert scale response categories (ranging from Always to Never on a five-point scale) for many of the questions. The instrument was reviewed extensively by RTI survey methodologists, and selected questions were adapted from the National Survey of Provider Organizations. Following methodologist reviews, the instruments were field tested by four RTI physicians who each took the survey and provided comments on wording and length.

To allow cross-state analyses, we incorporated only minimal variation in the instrument for the different Test states. The necessary differences include use of state-specific terminology to describe the health information exchange (HIE) in place in the state, name of the reform model or initiative, and a limited number of additional probing questions to gather information on state-specific initiatives (such as an emphasis on behavioral health). **Table A-4** shows the customizations made to the survey instrument for each Test state.

We programmed each state’s customized survey using a Web-based Voxco platform. Once programmed, the Web interface was extensively tested for possible technical difficulties and potential improvements.

Table A-4. Variations in the provider survey instrument for the Round 1 Test states

State	Changes to provider survey instrument
Arkansas	<ul style="list-style-type: none"> • Used “SHARE” in questions asking about use of the state HIE • Asked about use of the provider portal to monitor patient expenditures and utilization • Asked whether the practice participates in the Arkansas Payment Improvement Initiative • Asked whether the practice received a first full-year payment report issued to principal accountable providers for any episodes of care
Maine	<ul style="list-style-type: none"> • Offered additional response options when asking about care management services the practice provides: person trained through the National Diabetes Prevention Program, person trained in caring for adults with autism and developmental disabilities • Offered a customized response option referring to decision aids, including tools developed by the American Board of Internal Medicine Foundation’s Choosing Wisely® Initiative when asking about how the physician involves patients in decision-making • Asked a question about whether the physician has ever been contacted by a behavioral health specialist about the primary care of the specialist’s patient(s) • Asked whether the practice uses an EHR or other health IT system to share electronic information with behavioral health providers • Offered additional response option when asking about how the practice could be described: MaineCare Health Home for individuals with chronic conditions and MaineCare Behavioral Health Home for individuals with severe mental illness • Asked follow-up questions to practices that are Health Homes or Behavioral Health Homes about the length of time participating in those initiatives • Asked follow-up questions to practices participating in Medicare, Medicaid, or commercial insurance ACOs about length of time as an ACO
Massachusetts	<ul style="list-style-type: none"> • Asked whether the practice uses an EHR or other health IT system to share electronic information with behavioral health providers • Asked follow-up question to practices reporting that a portion of payments to the practice is based on performance for quality of care, costs, efficiency, or any other performance metrics, to specify which metrics are used • Asked whether practice participates in MassHealth, and if so, whether it participates in MassHealth’s Primary Care Payment Reform Initiative
Minnesota	<ul style="list-style-type: none"> • Tailored survey to reflect that it is likely to be filled out for multiple physicians/providers in a practice • Offered Health Care Home in place of Patient-Centered Medical Home and Integrated Health Partnership as response options when asking about how the practice could be described

(continued)

Table A-4. Variations in the provider survey instrument for the Round 1 Test states (continued)

State	Changes to provider survey instrument
Oregon	<ul style="list-style-type: none"> • Asked about use of two different HIE systems by identifying them using the state-specific names, Oregon Health Authority's CareAccord and the Emergency Department Information Exchange • Refined patient-centered medical home response options when asking about how the practice could be described: PCPCH and patient-centered medical home <u>recognized by NCQA or another entity</u> • For practices that could be described as a PCPCH, asked follow-up questions about Tier, source of extra payments for being a PCPCH, and method that payers use to pay the extra payments (e.g., per patient per month, per visit, etc.) • Offered response option when asking whether the practice is affiliated with any entities: Coordinated Care Organization • Asked what percent of patient care revenue comes from each of the following methods of payment: fee-for-service, capitation, case rate, or other
Vermont	<ul style="list-style-type: none"> • Offered additional response options when asking about care management services the practice provides: care coordination with the Blueprint for Health Community Health Teams, care coordination with the SASH Program Wellness Nurses or Coordinators, and health education classes within or referral to classes offered outside the practice, such as the Blueprint for Health Healthy Living Workshops • Asked about use of state sources of electronic health information by identifying them using the state specific names, the Vermont Health Information Exchange or DocSite • Asked whether the practice participates in the Blueprint for Health, and if yes, when the practice became an NCQA-recognized patient-centered medical home • Offered the response options OneCare Vermont, Community Health Accountable Care, and Vermont Collaborative Physicians as response options when asking what ACO the practice participates in, and whether through that ACO the practice receives payments from Medicare, Medicaid, and/or commercial insurers

Notes: ACO = accountable care organizations; EHR = electronic health records; health IT = health information technology; HIE = health information exchange; NCQA = National Committee for Quality Assurance; PCPCH = Patient-Centered Primary Care Home; SASH = Support and Services at Home; SHARE = State Health Alliance for Records Exchange

A.3.2 Sample frame

To maximize the number of responses, we recruited a census of providers offering at least some primary care to patients residing in each Test state. To capture all providers potentially affected by changes in the Test state's delivery and payment models, we included providers who were licensed in the Test state but had a mailing address (home or business) in a bordering state.

The source of provider contact information varied by state. We bought contact information from the boards of licensure in Maine and Oregon, received a combined list of providers participating in Arkansas Medicaid and licensed in Arkansas from the Arkansas Foundation for Medical Care, and received physician lists from Massachusetts and Vermont state

SIM officials. For Minnesota, at the recommendation of the state, we used a list of primary care practice sites registered with the Minnesota Department of Health. In the process of using this list, we learned that multiple practice locations on the list are associated with the same email address, and that the list included organization-level managers rather than specific providers.

From each list, we selected physicians listed as having a primary or secondary specialty as one of the following (specific names of specialties varied by state): adolescent medicine, emergency medicine, family and preventive medicine, family medicine, family medicine/family practice, family practice, family practice/pediatrics, family practice/preventive medicine, general practice, internal medicine, internal medicine/gastroenterology, internal medicine/pediatrics, obstetrics and gynecology, and pediatrics. The total provider sample frames varied from 737 practices in Minnesota to 5,525 physicians licensed in Oregon (see **Table A-5**). Screeners included in the survey instructions and instruments were used to confirm that respondents were currently providing at least some primary care to patients in the relevant Test state, defined as at least 20 hours of direct patient care.

Table A-5. Final provider survey response rate information

Criteria	Arkansas	Maine	Massachusetts	Minnesota	Oregon	Vermont
Sample size	3,595	1,638	4,941	737	5,525	1,112
Screened out	88	96	45	6	130	112
Percentage screened out	2.45%	5.86%	0.91%	0.81%	2.35%	10.07%
Completes	182	96	231	65	288	96
Percentage complete	5.10%	5.90%	4.68%	8.82%	5.21%	8.63%
Dropped with insufficient responses	33	28	34	20	66	28
Percentage dropped with insufficient responses	0.92%	1.71%	0.69%	2.71%	1.19%	2.52%
Returned mail	156	54	112	42	75	45
Percentage returned mail	4.34%	3.30%	2.27%	5.70%	1.36%	4.05%
Average survey completion time (minutes)	24	22	19	28	21	19
AAPOR response rate #2	5.19%	6.23%	4.72%	8.89%	5.34%	9.60%

Note: AAPOR = American Association for Public Opinion Research

Response rate #2 is calculated as follows: Numerator = percent of respondents that completed the survey in full or met a threshold considered adequate for partial completion. Denominator = sample size minus number of people who screened out.

A.3.3 Data collection procedures

We recruited potential provider respondents via an initial letter mailed in a regular business-size envelope, and followed up with non-respondents at least once, and in some states twice, using three different methods (explained below). We followed the mail recruitment

protocols laid out by Don Dillman, where each mailing to a potential respondent varies in appearance (Dillman, 2000). Each letter invited respondents to participate in the Web-based survey. The letter of invitation included a secure URL and participant identification code. A letter of support from CMS staff, and in some cases a state official, was enclosed. Contact information for questions and problems was offered and included RTI and CMS staff. We received a small number of inquiries, including reports from people who told us they would screen out of the survey if they logged in. In all cases of reported technical difficulty, respondent error was identified.

Initial participation invitations were mailed to potential respondents on a state-by-state basis during the second and third weeks of July 2014. A follow-up reminder to participate was sent to non-respondents during the week of August 18, 2014. We tested the success of mailing variations to improve response rates. In particular, we mailed reminders to providers using the following three methods: 50 percent using a regular mailing envelope, 25 percent using a 9X12-inch large mailing envelope, and 25 percent using FedEx. We received a two- to three-fold higher response rate from providers who received the FedEx package reminders compared to providers who received the small envelope reminders. However, the cost of a FedEx package is almost 50 times more expensive than a small envelope mailing (\$5.85 versus \$0.12) and 14 times more expensive than a large envelope mailing (\$5.85 versus \$0.42). We found inconsistent results from the large envelope mailing compared to the small envelope mailing, with substantial increases in three states (over 50 percent higher responses), smaller increases in two other states (12 percent to 16 percent higher responses), and no increase in one state.

In mid-September, 2014, we sent final reminder mailings to non-respondents in Arkansas, Maine, and Vermont, all of which had yielded fewer than 100 responses. Of this group of non-respondents, 50 percent received FedEx envelopes with the reminder letter and 50 percent received UPS envelopes with the reminder letter, to test whether the response rate is different for these two methods, which vary in cost (\$5.85 versus \$4.50). We found no clear difference between FedEx and UPS; both types of mailings were effective at increasing survey response. We also sent an email to the email address on file for non-responding practices in Minnesota, requesting the name and title of the correct person at each non-responding practice location who would be most appropriate for answering the survey. This method yielded specific addressee information for less than 20 locations. We used this addressee information for the final reminder mailing to non-responding practice locations in Minnesota.

Administration of the provider surveys was completed October 29, 2014, resulting in approximately 3 months in the field, depending on the state. Table A-5 provides the final response rates, computed using definition #2 of the American Association for Public Opinion Research (AAPOR). The rates range from a low of 4.72 percent in Massachusetts to a high of 9.60 percent in Vermont. Our response rate measure includes in the denominator all providers who received the survey but did not respond on the basis that they would likely be ineligible

anyway because they do not provide care to patients in the Model Test states. The absolute number of responses in each state ranges from 65 practices in Minnesota, to just under 100 physicians in smaller states such as Maine and Vermont, to 288 physicians in Oregon. Among the surveys sent, the percentage of respondents who screened out ranges from a low of 0.81 percent in Minnesota (6 practices) to a high of 10.07 percent (112 physicians) in Vermont.

A.3.4 Data analysis

Survey results were analyzed for all respondents that completed the survey in full or met a threshold considered adequate for partial completion. We integrated state-specific survey results with other information drawn from provider focus groups and site visits, to present a balanced summary of primary care practice transformation during the state's SIM Initiative.

Appendix B: Comparison Group Methods

For the impact analysis, we are using a pre-post comparison group design, in which the comparison group provides an estimate of what would have happened in the SIM Initiative treatment group in the absence of the intervention. The difference in the changes over time from the pre-test to the test period between a Test state and its comparison group provides an estimate of the impact of the SIM Initiative. The comparison group should be similar to the Test state on all relevant dimensions (e.g., demographic, socioeconomic, political, regulatory, and health and health systems) except for the policy change being tested.

Some Test states are phasing in value-based payment and delivery system models, which produce conditions suitable for within-state comparison groups in the *early* implementation years. However, one goal of the SIM Initiative is for Test states, by the end of the test period, to have 80 percent of the population participating in innovative, value-based delivery models developed by public and private payers. For this reason, we conduct both: (1) model-specific impact analyses with comparison groups drawn from within the Test states and (2) statewide impact analyses with comparison groups drawn from other states.

For the statewide impact analysis, we are using a two-stage procedure to create a comparison group for each Test state. First, we identify three states that best resemble the Test state on key characteristics. Second, for each of three payer databases (MarketScan, Medicare, and Medicaid), we weight individuals within the comparison states, so the population characteristics of the three comparison states together are similar to those in the SIM Initiative target state. The weights—which are based on propensity scores computed from logistic regression of the probability that the individual resides in the Test state—are re-estimated annually.

In the following section, we detail the procedures we used to select the comparison states for Round 1 Test states. It was our intent to use the same three comparison states for each payer database. For this report, however, we are lacking data in the MAX/Alpha-MAX data system—the source of Medicaid claims for the evaluation—for two comparison states, which reduces the number of comparison states to two for Maine, Minnesota, and Oregon.

B.1 Selection of Comparison States

Relying on a single comparison state may be prone to bias, because contrasts may reflect idiosyncratic features of the comparison or Test state. To reduce the risk of this type of bias, we identified three comparison states for each Test state, using the following procedures:

- Identified the pool of potential comparison states
- Computed Euclidean distance scores based on a broad array of state-level characteristics to summarize the difference between each Test state and each potential comparison state
- Used a boosted regression to identify any additional characteristics that were unique to a Test state
- Rank-ordered comparison states by their distance scores
- Identified the states with the three smallest difference scores
- Reviewed the identified states for appropriateness
- Replaced inappropriate states with the next state in the rank-ordering until three comparison states had been identified

B.1.1 State-level characteristics

To select states comparable to the six Test states, we compiled a data base of 25 baseline (pre-SIM Initiative) state-level characteristics in the following dimensions:

- key outcomes of interest, including expenditures, utilization, care coordination, quality of care, provider, and population health
- demographic characteristics of the state's population, including age distribution, income levels, and employment
- access to care measures, such as the percentage of children and adults with no insurance, adults with a usual source of care, and children with medical and preventive care visits
- characteristics of the state's public and private health care systems, including Medicaid eligibility levels, managed care penetration levels, and provider supply
- health policy reforms, including implementation of the Patient Protection and Affordable Care Act Medicaid expansions, and the number of other Innovation Center payment and delivery system initiatives

Table B-1 contrasts the mean values for the six Round 1 Test states with the mean values of the 44 potential comparison states—which include all non-SIM Initiative states as well as SIM Round 1 Design and Pre-test states. The magnitude of the differences is summarized by the effect size (group difference divided by the pooled standard deviation of the measure). Compared with the potential comparison states, the Test states have a lower percentage of the population residing in urban areas, higher health care spending per capita, more physicians per 100,000 population, more providers that have adopted electronic health records, lower rates of uninsured residents, fewer years of potential life lost, higher baseline Medicaid income eligibility levels, and more currently active initiatives of the Center for Medicare and Medicaid Innovation (the Innovation Center). Although these variables can be included in outcome regression

models, any variable misspecification in outcome models could bias the estimated impact of the SIM Initiative.

As shown in Table B-1, the 10 states in the final comparison group on average exhibit much smaller differences across these covariates than the entire pool of potential comparison states. For example, the average number of active Innovation Center initiatives in Model Test states is 7.33 compared to 4.80 in the entire pool of potential comparison states. The average number of active Innovation Center initiatives for the final comparison group is 6.10, closer to the SIM Model Test state average.

Table B-1. Group means and effect sizes for differences in group means, Test states vs. potential and final comparison states

Dimension and measure	State group mean			Effect size	
	Test (N=6)	Potential comparison (N=44)	Final comparison (N=10)	Potential comparison v. Test	Final comparison v. Test
Baseline population characteristic					
Percentage of the state's population living in urban areas, 2010 ¹	63%	75%	73%	-0.80	-0.67
Average median annual income, 2009–2011 ²	\$52,612	\$51,257	\$53,695	0.18	-0.14
Seasonally adjusted unemployment rate, November 2012 ³	6.7%	7.1%	7.5%	-0.24	-0.49
Baseline health care system characteristic					
Health spending per capita, 2011 ⁴	\$7,598	\$6,885	\$7,052	0.76	0.58
Medicaid payment per enrollee, 2010 ⁵	\$6,280	\$5,954	\$5,836	0.25	0.34
Active patient care physicians per 100,000 population, 2010 ⁶	250	212	221	1.06	0.82
Office-based providers with basic EHR systems, 2012 ⁷	47.8%	39.8%	39.3%	0.75	0.79
Hospitals with EHR, 2012 ⁷	68.5%	55.7%	59.4%	0.93	0.66
Community pharmacies e-prescribing, 2012 ⁷	94.5%	93.3%	93.4%	0.51	0.48
Baseline care coordination/quality measure					
Hospital admissions among Medicare beneficiaries for ambulatory care-sensitive conditions, per 100,000 beneficiaries, 2011 ⁸	5,288	5,500	5,780	-0.18	-0.41
Medicare 30-day hospital readmissions as a percent of admissions, 2011 ⁸	17.2%	17.6%	17.9%	-0.18	-0.33

(continued)

Table B-1. Group means and effect sizes for differences in group means, Test states vs. potential and final comparison states (continued)

Dimension and measure	State group mean			Effect size	
	Test (N=6)	Potential comparison (N=44)	Final comparison (N=10)	Potential comparison v. Test	Final comparison v. Test
Baseline access to care measure					
Percentage of adults with a usual source of care, 2011 ⁹	83.0%	78.3%	81.5%	0.80	0.25
Percentage of children with a medical and dental preventive care visit in past year, 2011–2012 ¹⁰	69.7%	67.9%	71.4%	0.29	–0.28
Percentage of adults ages 19–64 uninsured, 2010–2011 ²	15.2%	20.5%	18.0%	–1.00	–0.53
Percentage of children ages 0–18 uninsured, 2010–2011 ²	6.2%	9.3%	7.1%	–0.94	–0.28
Baseline population health measure					
Years of potential life lost before age 75 among adults age 25 and older, 2008–2010 ¹²	7,329	8,338	8,196	–0.63	–0.54
Percentage of adults ages 18–64 who report fair or poor health, 14 or more bad mental health days, or activity limitations, 2011 ⁹	35.0%	34.3%	35.5%	0.17	–0.13
Eligibility for coverage post-ACA among those uninsured before 2014					
Percentage eligible for tax credits	26.2%	28.7%	26.8%	–0.37	–0.09
Percentage ineligible for financial assistance	31.0%	31.0%	30.6%	0.00	0.07
Percentage eligible for Medicaid/CHIP, adult	30.0%	18.3%	26.3%	0.72	0.23
Percentage eligible for Medicaid/CHIP, child	9.7%	11.0%	9.5%	–0.53	0.07
Baseline Medicaid characteristics					
Medicaid eligibility income limit for working parents of dependent children (% of FPL), as of January 2013 ¹³	132.3%	79.3%	87.1%	0.93	0.79
Percentage of Medicaid enrollees in comprehensive managed care plans, 2011 ¹¹	67.2%	74.2%	73.6%	–0.30	–0.28

(continued)

Table B-1. Group means and effect sizes for differences in group means, Test states vs. potential and final comparison states (continued)

Dimension and measure	State group mean			Effect size	
	Test (N=6)	Potential comparison (N=44)	Final comparison (N=10)	Potential comparison v. Test	Final comparison v. Test
Trajectory of state health system					
Change in Medicaid eligibility income limit for parents (FPL percentage points), January 2013 to January 2014 ¹³⁻¹⁵	11.3%	11.3%	29.7%	0.00	-0.41
Number of the Innovation Center's initiatives currently active in the state, 2013 ^{15, 16}	7.33	4.80	6.10	1.10	0.54

Abbreviations: CHIP = Children's Health Insurance Program; EHR = electronic health records; FPL = federal poverty level; the Innovation Center = the Center for Medicare and Medicaid Innovation; SIM = State Innovation Models

Sources:

¹U.S. Census Bureau, 2010 Census. <http://www.census.gov/2010census/>.

²U.S. Census Bureau, *Current Population Survey, 2009–2011 annual social and economic supplements*. <http://www.census.gov/hhes/www/income/data/statemedian/index.html>.

³Bureau of Labor Statistics. (2013). State and territory figures from Table 3, Regional and state employment and unemployment: November 2012, and Unemployment rates by state, seasonally adjusted: November 2011 and 2012. <http://www.bls.gov/news.release/laus.t03.htm>.

⁴Centers for Medicare & Medicaid Services (2011). *Health expenditures by state of residence*. <http://www.cms.gov/NationalHealthExpendData/downloads/resident-state-estimates.zip>.

⁵Kaiser Commission on Medicaid and the Uninsured and Urban Institute estimates based on data from FY 2010 MSIS and CMS-64 reports.

⁶Health Resources and Services Administration (HRSA). (n.d.). *AHRF mapping tool: Data sources, definitions, and notes*. <http://ahrh.hrsa.gov/arfdashboard/ArfGeo.aspx>

⁷Office of the National Coordinator for Health IT, U.S. Department of Health and Human Services. (2013). *Electronic health record adoption: EHR adoption by office-based providers (2012)*. <http://dashboard.healthit.gov/HEALTHITAdoption/?view=0>.

⁸Centers for Medicare & Medicaid Services. (2011). *Chronic conditions data warehouse (CCW)*. <https://www.ccwdata.org/web/guest/about-ccw>.

⁹National Center for Chronic Disease Prevention and Health Promotion, Centers for Disease Control and Prevention. (2010, 2011). *Behavioral Risk Factor Surveillance System (BRFSS)*. <http://www.cdc.gov/brfss/>.

¹⁰U.S. Department of Health and Human Services, Health Resources and Services Administration, Maternal and Child Health Bureau. Data Resource Center for Child and Adolescent Health, Oregon Health and Science University Child and Adolescent Health Measurement Initiative. (2012). *National Survey of Children's Health, 2011/12*. <http://www.nschdata.org>.

¹¹Centers for Medicare & Medicaid Services. (2012). *Medicaid managed care enrollment report*. <http://www.medicaid.gov/Medicaid-CHIP-Program-Information/By-Topics/Data-and-Systems/Downloads/2011-Medicaid-MC-Enrollment-Report.pdf>.

¹²Centers for Disease Control and Prevention, National Center for Health Statistics. (2006, 2007, 2008). *NVSS restricted use micro data period linked birth and infant death data*. <http://www.cdc.gov/nchs/linked.htm>.

¹³Kaiser Family Foundation. (2013). Getting into gear for 2014: Findings from a 50-state survey of eligibility, enrollment, renewal, and cost-sharing policies in Medicaid and CHIP, 2012–2013. <http://kff.org/medicaid/report/getting-into-gear-for-2014-findings-from-a-50-state-survey-of-eligibility-enrollment-renewal-and-cost-sharing-policies-in-medicaid-and-chip-2012-2013/>.

¹⁴Centers for Medicare & Medicaid Services. (n.d.). *Medicaid and CHIP eligibility levels*. <http://medicaid.gov/AffordableCareAct/Medicaid-Moving-Forward-2014/Medicaid-and-CHIP-Eligibility-Levels/medicaid-chip-eligibility-levels.html>.

¹⁵Comparison group analysis.

¹⁶Centers for Medicare & Medicaid Services. (n.d.). *Innovation models*. <http://innovation.cms.gov/initiatives/index.html#views=models>.

B.1.2 State selection procedures

Using this database of state characteristics, we assessed the similarity of each Test state to the pool of 16 Design, three Pre-Test, and 25 non-SIM Initiative comparison states. As noted, similarity was measured by a statistical measure of “distance” between two states known as the Euclidean distance, which is based on the relative magnitude of the differences in state-level means. Distances are summed over characteristics to create a total distance score. The smaller the distance score, the more similar are the two states. We also computed another common distance measure, the Mahalanobis score, but found those scores to be unstable given the large number of characteristics under consideration.

We based the distance scores on the set of 25 characteristics listed in *Section B.1.1* for each Test state. However, since a Test state might have other extreme or unusual characteristics that should also be considered when selecting comparison states, we used boosted regression to examine more than 100 additional characteristics in our database. Boosted regression is a data mining technique that iteratively identifies influential predictors of an outcome using an algorithm that can be efficiently applied to a variety of datasets. For three Test states, all influential variables identified by boosted regression were already part of the base set of 25 state characteristics. For two Test states, the addition of influential variables did not affect distance score rankings. For the remaining Test state, the variables identified by boosted regression resulted in some alterations of the rank-ordering of the top five potential comparison states.

The final step in the state selection process was to produce a list of comparisons for each Test state rank-ordered by distance scores, with the smallest scores at the top of the list. These lists were then reviewed by the evaluation team for problems. We removed comparison states from the list for one of two reasons: (1) unavailability of recent Medicaid claims or encounter data (Wisconsin, Pennsylvania, and New York) and (2) geographic distance or uniqueness (Hawaii). We replaced each eliminated state with the next state in the rank order.

Table B-2 shows the selected states and their distance scores. A total of 10 different states were selected as comparisons for the Round 1 Test states. The three comparison states for Arkansas are not part of the SIM Initiative. The remaining seven comparison states are all SIM Design or Pre-Test states.

Table B-2. Comparison states selected for each SIM Test state

Test state	Comparison states	Distance function value	2010 and 2011 MAX files available	Fourth quarter 2012 Alpha-MAX run-out time (in quarters) ¹
Arkansas			X	6
	Kentucky	11.42	X	6
	Alabama	15.82	X	6
	Oklahoma	18.45	X	3
Maine	New Hampshire	20.74	X	4
	Rhode Island	35.70		
	Connecticut	39.76	X	6
Massachusetts	Connecticut	25.24	X	6
	New Hampshire	31.30	X	4
	Rhode Island	34.42		
Minnesota	Colorado	29.20		
	Iowa	33.83	X	6
	Washington	34.04	X	3
Oregon			X	3
	Colorado	14.14		
	Washington	18.66	X	3
	Michigan	19.41	X	5
Vermont			X	2
	New Hampshire	20.44	X	4
	Iowa	30.04	X	6
	Connecticut	44.15	X	6

Abbreviations: SIM = State Innovation Models

¹Run-out is measured from the end of the data quarter. A run-out length of 6 quarters reflects essentially complete claims data within the MAX/Alpha-MAX system. Any shorter run-out period may be missing claims, particularly inpatient stays.

B.2 Calculation of Person-level Weights

While the state selection process provides a set of three comparison states that are similar in major respects to each Test state, differences may remain between the database populations of the Test and comparison states. To balance the population characteristics, we estimated propensity scores for all individuals from the comparison states in each payer database. A propensity score is the probability that an individual is from the Test state rather than a comparison state.

The objective of propensity score modeling is to create a weighted comparison group with payer characteristics equivalent to those for the Test state population. To the extent that these characteristics are correlated with expenditure, utilization, and quality outcomes, propensity weighting will help balance pre-demonstration levels of the outcomes as well.

B.2.1 Person-level characteristics

The initial step in the process was to select person-level characteristics to be used in each propensity score model. We extracted these characteristics from the respective payer databases; therefore, each is unique to the particular database. **Table B-3** shows the characteristics used in each database grouped by whether they control for demographic, health plan, or health status characteristics.

Table B-3. Covariates for propensity score logistic regressions by payer type

	Medicaid	MarketScan	Medicare
Demographic characteristics			
Gender	X	X	X
Age (age and age squared)	X	X	X
Disabled (yes/no)	(a)	—	X
White race (yes/no)	X	—	X
Resides in metropolitan area (yes/no)	—	X	X
Health plan characteristics			
Medicaid eligibility category (infant, child, nondisabled adult, blind/disabled)	X	—	—
Continuous enrollment indicator (yes/no)	X	—	—
Also enrolled in Medicaid (yes/no)	—	—	X
Employee relationship (employee/spouse/child-other)	—	X	—
Pharmaceutical claims (yes/no)	—	X	—
Mental health claims coverage (yes/no)	—	X	—
Health maintenance organization (yes/no)	—	X	—
Consumer-driven or high-deductible health plan (yes/no)	—	X	—
Individual versus employer plan	—	X	—
Health status measures			
Hierarchical Condition Categories risk score	—	(b)	X
Chronic Illness and Disability Payment score (count of major comorbidities)	X	—	—

(a) Blind/disabled is one of the eligibility categories we use for the Medicaid propensity score models.

(b) HHS-HCCs are calculated using three separate models: infants (0–1), children (2–20); adults (21+) (Kautter et al., 2014).

B.2.2 Estimation and weighting procedures

Using the characteristics listed in *Table B-3*, we estimated propensity models by logistic regression in which the outcome was 1=Test state resident and 0=comparison state resident. Separate models were estimated for 2010, 2011, 2012, 2013, and 2014 data. We ran the Medicaid models for only years 2010 and 2011. Separate Medicaid models were estimated for infants (ages 0–1 years), children and adolescents (ages 2–18 years), blind/disabled adults (ages 19–64 years), and nondisabled adults (ages 19–64 years).

We set analysis weights to 1 for all individuals in a Test state. The weight for a comparison state individual was initially a function of his/her predicted propensity score (weight = $p/(1-p)$, where p is the predicted propensity). We then capped weights at a maximum value of 5.0 to prevent any single individual from having undue influence on the results.

B.3 Propensity Model Evaluation

We evaluated several aspects of the propensity score models. First, we examined plots of predicted probabilities to ensure sufficient overlap in the distributions of the Test and the combined comparison states. This feature, known as common support, is critical because it provides the basis for inferring effects from group comparisons. We found that scores in both groups adequately covered the same ranges.

Second, we compared the logistic results for the same states in the three pre-demonstration years to determine whether the same characteristics were influential over time. With a few minor exceptions, we found that the models were similar each year. This is not surprising, because the same individuals frequently appear in the databases for multiple years. In the MarketScan data, the variables with the greatest impact in the propensity score models were presence of mental health coverage and health plan status (individual vs. employer plan). Thus, the major differences between the Test state and comparison state populations were found for types of insurance coverage. In the Medicare data, the only two factors with comparatively large effects for more than one state were racial group and residence in a metropolitan area.

Finally, we compared unweighted and propensity-weighted means for the characteristics in the model. This was performed for several selected states. As expected, we found that, after weighting, the comparison group means were within a few percentage points of the values for their respective Test state.

Tables B-4 to B-9 show unweighted and (propensity score) weighted means/proportions for each state and its pooled comparison group in 2010 for the Medicare population. The statistics for years 2011–2014 are not significantly different from those shown. In most states the unweighted means/proportions are well balanced prior to propensity score weighting. However, in each state there is at least one covariate near or above the typical 10 percent threshold for assuming covariate balance (i.e., comparability) between Test state and comparison group. The propensity score weighted means/proportions substantially mitigate any observed covariate imbalance.

Table B-4. Unweighted and weighted means and standardized differences, Medicare population, Arkansas 2010

	Unweighted			Weighted		
	Comparison Group	Arkansas	Standardized difference ¹	Comparison Group	Arkansas	Standardized difference ¹
N	450,403	459,158		450,403	459,158	
Male	0.448	0.449	0.084	0.448	0.449	0.030
Age	69.662	69.787	0.934	69.716	69.787	0.331
Dual	0.216	0.235	4.808	0.236	0.235	0.394
Urban	0.556	0.519	7.376	0.53	0.519	2.024
White	0.858	0.872	4.300	0.872	0.872	0.148
Disabled	0.233	0.228	1.167	0.231	0.228	0.575
HCC Score	1.095	1.052	3.836	1.053	1.052	0.093

¹ Absolute standardized differences are expressed as percentages

Table B-5. Unweighted and weighted means and standardized differences, Medicare population, Massachusetts 2010

	Unweighted			Weighted		
	Comparison Group	Massachusetts	Standardized difference ¹	Comparison Group	Massachusetts	Standardized difference ¹
N	448,985	408,760		448,985	408,760	
Male	0.434	0.432	0.340	0.429	0.432	0.744
Age	72.131	70.916	8.801	70.964	70.916	0.260
Dual	0.191	0.249	14.029	0.234	0.249	3.472
Urban	0.823	0.995	62.573	0.996	0.995	1.192
White	0.916	0.893	7.649	0.925	0.916	10.989
Disabled	0.17	0.208	9.678	0.207	0.208	0.186
HCC Score	1.113	1.139	2.256	1.130	1.139	0.567

¹ Absolute standardized differences are expressed as percentages

Table B-6. Unweighted and weighted means and standardized differences, Medicare population, Maine 2010

	Unweighted			Weighted		
	Comparison Group	Maine	Standardized difference ¹	Comparison Group	Maine	Standardized difference ¹
N	678,183	228,695		678,183	228,695	
Male	0.434	0.455	4.262	0.455	0.455	0.0327
Age	72.126	70.166	14.315	70.167	70.166	0.003
Disabled	0.17	0.224	13.559	0.224	0.224	0.003
HCC Score	1.114	1.046	6.296	1.046	1.046	0.009

¹ Absolute standardized differences are expressed as percentages

Table B-7. Unweighted and weighted means and standardized differences, Medicare population, Minnesota 2010

	Unweighted			Weighted		
	Comparison Group	Minnesota	Standardized difference ¹	Comparison Group	Minnesota	Standardized difference ¹
N	466,031	451,970		466,031	451,970	
Male	0.456	0.461	1.022	0.461	0.461	0.060
Age	71.582	70.937	4.758	70.902	70.937	0.168
Dual	0.184	0.155	7.802	0.154	0.155	0.322
Urban	0.699	0.633	13.999	0.629	0.633	0.723
White	0.918	0.936	6.780	0.934	0.936	0.742
Disabled	0.166	0.206	10.371	0.206	0.206	0.055
HCC Score	1.015	1.009	0.544	1.006	1.009	0.173

¹ Absolute standardized differences are expressed as percentages

Table B-8. Unweighted and weighted means and standardized differences, Medicare population, Oregon 2010

	Unweighted			Weighted		
	Comparison Group	Oregon	Standardized difference ¹	Comparison Group	Oregon	Standardized difference ¹
N	628,920	350,730		628,920	350,730	
Male	0.452	0.480	5.551	0.479	0.480	0.091
Age	71.001	70.772	1.795	70.701	70.772	0.367
Dual	0.173	0.174	0.225	0.176	0.174	0.686
Urban	0.773	0.607	36.519	0.614	0.607	1.427
White	0.871	0.943	24.897	0.940	0.943	1.175
Disabled	0.186	0.183	0.983	0.186	0.183	0.875
HCC Score	1.095	0.978	10.519	0.982	0.978	0.257

¹ Absolute standardized differences are expressed as percentages

Table B-9. Unweighted and weighted means and standardized differences, Medicare population, Vermont 2010

	Unweighted			Weighted		
	Comparison Group	Vermont	Standardized difference ¹	Comparison Group	Vermont	Standardized difference ¹
N	816,112	104,819		816,112	104,819	
Male	0.434	0.453	3.709	0.454	0.453	0.255
Age	72.634	70.917	13.024	70.922	70.917	0.029
Dual	0.179	0.238	14.576	0.235	0.238	0.674
White	0.940	0.980	20.279	0.981	0.980	0.415
Disabled	0.151	0.182	8.381	0.181	0.182	0.202
HCC Score	1.074	0.984	8.713	0.982	0.984	0.204

¹ Absolute standardized differences are expressed as percentages

Tables B-10 to B-15 show unweighted and (propensity score) weighted means/proportions for each state and its pooled comparison group in 2010 for the commercially insured population (i.e., MarketScan). The statistics for 2011–2014 are not significantly different from those shown. In most states the unweighted means/proportions are not well balanced prior to propensity score weighting. In each state, more than one covariate is near or above the typical 10 percent threshold for assuming covariate balance (i.e., comparability) between Test state and comparison group. The propensity score weighted means/proportions substantially mitigate any observed covariate imbalance.

Table B-10. Unweighted and weighted means (standard deviations) and standardized differences, MarketScan population, Arkansas 2010

	Unweighted				Weighted			
	Overall	Comparison Group	Arkansas	Standardized difference ¹	Overall (N=)	Comparison Group	Arkansas	Standardized difference ¹
N	2,341,224	2,068,760	272,464		2,341,224	2,068,760 (weighted 268,113)	272,464	
Prescription Drug Coverage	80.8	80.8	80.7	0.3	80.3	79.9	80.7	2.1
Employer Sponsored Coverage	64.3	66.1	50.4	32.3	52.1	53.9	50.4	7.1
MHSA Coverage	65.8	65.6	67.8	4.8	66.6	65.4	67.8	5.1
Male	49.8	49.7	50.6	1.9	50.7	50.8	50.6	0.3
Spouse	20.4	20.3	21.4	2.7	21.3	21.2	21.4	0.3
Child	30.7	30.6	31.3	1.4	31.3	31.4	31.3	0.3
Consumer Driven Health Plan	6.9	6.6	9.6	11	9.7	9.9	9.6	1.0
Metro	65.5	66.1	60.7	11.3	60.3	59.8	60.7	1.7
Age	33.7 (18.4)	33.8 (18.4)	33.3 (18.1)	2.8	33.2 (18.1)	33.2 (24.2)	33.3 (8.7)	0.7
HCC score	1.5 (4.5)	1.5 (4.6)	1.3 (4.3)	4	1.3 (4.5)	1.3 (6.4)	1.3 (2.0)	0.2

¹ Absolute standardized differences are expressed as percentages

Table B-11. Unweighted and weighted means (standard deviations) and standardized differences, MarketScan population, Massachusetts 2010

	Unweighted				Weighted			
	Overall	Comparison Group	Massachusetts	Standardized difference ¹	Overall	Comparison Group	Massachusetts	Standardized difference ¹
N	2,197,642	1,487,206	710,436		2,197,642	1,487,206 (weighted 545,547)	710,436	
Prescription Drug Coverage	71.5	69.0	76.7	17.2	76.9	77.3	76.7	1.5
Employer Sponsored Coverage	59	69.5	36.9	69.3	38.1	39.7	36.9	5.8
MHSA Coverage	90.9	95.8	80.6	48.6	80.8	81.0	80.6	1.1
Male	48.4	48.3	48.6	0.6	49.1	49.8	48.6	2.4
Spouse	21.5	21.3	22.0	1.7	22.0	22.1	22.0	0.1
Child	31.5	31.3	31.9	1.3	32.5	33.1	31.9	2.6
Consumer Driven Health Plan	9.7	10.9	7.0	13.7	7.4	8.0	7.0	3.7
Metro	68.2	86.0	30.9	134.9	33.4	36.5	30.9	11.8
Age	35.1 (18.4)	35.4 (18.4)	34.2 (18.6)	6.5	34.2 (18.6)	34.1 (23.3)	34.2 (14.0)	0.9
HCC score	1.5 (4.4)	1.5 (4.3)	1.5 (4.5)	0.5	1.5 (4.8)	1.5 (6.6)	1.5 (3.4)	0.1

¹ Absolute standardized differences are expressed as percentages

Table B-12. Unweighted and weighted means (standard deviations) and standardized differences, MarketScan population, Maine 2010

	Unweighted				Weighted			
	Overall	Comparison Group	Maine	Standardized difference ¹	Overall	Comparison Group	Maine	Standardized difference ¹
N	1,815,019	1,487,206	327,813		1,815,019	1,487,206 (weighted 358,366)	327,813	
Prescription Drug Coverage	72.8	69.0	89.6	52.4	89.2	88.9	89.6	2.1
Employer Sponsored Coverage	72.1	69.5	83.8	34.3	86.7	89.3	83.8	16
MHSA Coverage	95.7	95.8	95.1	3.7	95.9	96.7	95.1	8.2
Male	48.2	48.3	47.7	1.1	47.5	47.3	47.7	0.9
Spouse	20.9	21.3	19.3	5.0	19.2	19.1	19.3	0.4
Child	30.8	31.3	28.7	5.8	29.0	29.3	28.7	1.4
Consumer Driven Health Plan	10.3	10.9	7.6	11.3	8.2	8.8	7.6	4.1
metro	82.1	86.0	64.1	52.5	70.2	75.9	64.1	25.9
Age	35.7 (18.4)	35.4 (18.4)	36.9 (18.3)	7.9	36.9 (18.4)	36.9 (23.0)	36.9 (11.3)	0
HCC score	1.5 (4.2)	1.5 (4.3)	1.5 (3.7)	1.9	1.5 (3.9)	1.5 (5.1)	1.5 (2.3)	0.6

¹ Absolute standardized differences are expressed as percentages

Table B-13. Unweighted and weighted means (standard deviations) and standardized differences, MarketScan population, Minnesota 2010

	Unweighted				Weighted			
	Overall	Comparison Group	Minnesota	Standardized difference ¹	Overall	Comparison Group	Minnesota	Standardized difference ¹
N	2,060,596	1,639,756	420,840		2,060,596	1,639,756 (weighted 422,436)	420,840	
Prescription Drug Coverage	84.7	85.7	80.6	13.8	81.0	81.4	80.6	2.1
Employer Sponsored Coverage	48.5	49.0	46.8	4.4	46.3	45.8	46.8	2
MHSA Coverage	63.5	62.9	66.0	6.3	65.9	65.9	66.0	0.1
Male	49.6	49.5	49.8	0.5	49.7	49.6	49.8	0.3
Spouse	20.4	20.5	20.2	0.8	20.2	20.3	20.2	0.2
Child	33.5	33.0	35.2	4.6	35.2	35.3	35.2	0.1
Consumer Driven Health Plan	11.5	11.0	13.4	7.4	13.7	14.0	13.4	1.7
Metro	66	61.4	84.0	52.4	84.3	84.5	84.0	1.5
Age	32.9 (18.4)	33.3 (18.5)	31.4 (18.3)	10.2	31.4 (18.3)	31.5 (23.1)	31.4 (11.7)	0.6
HCC score	1.3 (4.1)	1.3 (4.0)	1.3 (4.3)	1.3	1.3 (4.3)	1.3 (5.4)	1.3 (2.7)	0.1

¹ Absolute standardized differences are expressed as percentages

Table B-14. Unweighted and weighted means (standard deviations) and standardized differences, MarketScan population, Oregon 2010

	Unweighted				Weighted			
	Overall	Comparison Group	Oregon	Standardized difference ¹	Overall	Comparison Group	Oregon	Standardized difference ¹
N	3,136,216	2,702,068	434,148		3,136,216	2,702,068 (weighted 424,942)	434,148	
Prescription Drug Coverage	88.7	88.2	91.7	11.5	92.1	92.5	91.7	2.9
Employer Sponsored Coverage	33.8	34.9	26.8	17.6	25.1	23.3	26.8	8.2
MHSA Coverage	76.8	76.3	79.6	7.9	81.2	82.8	79.6	8.1
Male	48.7	48.8	47.9	1.9	47.8	47.6	47.9	0.6
Spouse	22.6	22.7	22.0	1.7	22.4	22.8	22.0	1.9
Child	33.0	32.7	34.8	4.4	34.7	34.6	34.8	0.4
Consumer Driven Health Plan	10.6	10.3	12.5	7.1	11.9	11.4	12.5	3.5
Metro	51.7	47.1	79.8	72.1	78.6	77.3	79.8	6.1
Age	34.9 (19.0)	35.0 (19.1)	33.8 (18.8)	6.6	34.1 (19.0)	34.4 (25.3)	33.8 (9.8)	3.3
HCC score	1.5 (4.4)	1.5 (4.5)	1.4 (4.0)	3.5	1.4 (4.0)	1.4 (5.2)	1.4 (2.1)	1.4

¹ Absolute standardized differences are expressed as percentages

Table B-15. Unweighted and weighted means (standard deviations) and standardized differences, MarketScan population, Vermont 2010

	Unweighted				Weighted			
	Overall	Comparison Group	Vermont	Standardized difference ¹	Overall	Comparison Group	Vermont	Standardized difference ¹
N	1,840,541	1,802,684	37,857		1,840,541	1,802,684 (weighted 29,932)	37,857	
Prescription Drug Coverage	72.0	71.8	78.0	14.3	77.7	77.2	78.0	2.0
Employer Sponsored Coverage	69.0	69.2	60.0	19.3	58.7	57.1	60.0	5.8
MHSA Coverage	87.3	87.3	87.9	1.7	88.1	88.4	87.9	1.6
Male	48.6	48.5	50.0	2.9	50.1	50.3	50.0	0.6
Spouse	21.1	21.0	23.4	5.7	23.3	23.1	23.4	0.7
Child	32.0	32.1	27.8	9.4	28.2	28.7	27.8	1.9
Consumer Driven Health Plan	10.9	10.8	13.8	9.1	14.0	14.3	13.8	1.6
Metro	80.0	81.0	34.2	107.6	40.3	48.2	34.2	28.8
Age	34.7 (18.4)	34.7 (18.4)	36.7 (18.3)	10.7	36.5 (18.3)	36.4 (27.3)	36.7 (3.5)	1.6
HCC score	1.5 (4.2)	1.5 (4.2)	1.4 (4.2)	1.2	1.4 (4.1)	1.4 (5.9)	1.4 (0.8)	0.4

¹ Absolute standardized differences are expressed as percentages

Tables B-16 to B-19 show unweighted and (propensity score) weighted means/proportions for each state and its pooled comparison group in 2010 for the Medicaid population. Although the statistics for 2011 and subgroups are not shown here, they are not significantly different from those shown. In most states the unweighted means/proportions are well balanced prior to propensity score weighting. However, in each state there is at least one covariate near or above the typical 10 percent threshold for assuming covariate balance (i.e., comparability) between Test state and comparison group. The propensity score weighted means/proportions substantially mitigate any observed covariate imbalance.

Table B-16. Unweighted and weighted means (standard deviations) and standardized differences, Medicaid population, Arkansas 2010

	Unweighted			Weighted		
	Comparison Group	Arkansas	Standardized difference ¹	Comparison Group	Arkansas	Standardized difference ¹
N	1,324,210	552,552		1,324,210	552,552	
Female	0.536	0.535	0.198	0.535	0.535	0.046
Age	14.095	13.285	5.980	13.27	13.285	0.135
Continuously enrolled	0.969	0.970	0.953	0.970	0.970	0.032
Infant	0.132	0.119	3.823	0.119	0.119	0.06
Blind/disabled	0.095	0.083	4.165	0.083	0.083	0.025
Nondisabled adult	0.104	0.087	5.857	0.087	0.087	0.032
White	0.475	0.533	11.703	0.533	0.533	0.13
CDPS score	0.995	0.940	4.420	0.938	0.940	0.241

¹ Absolute standardized differences are expressed as percentages

Table B-17. Unweighted and weighted means (standard deviations) and standardized differences, Medicaid population, Minnesota 2010

	Unweighted			Weighted		
	Comparison Group	Minnesota	Standardized difference ¹	Comparison Group	Minnesota	Standardized difference ¹
N	1,446,693	686,878		1,446,693	686,878	
Female	0.547	0.559	2.586	0.560	0.559	0.151
Age	16.474	18.493	13.207	18.501	18.493	0.059
Continuously Enrolled	0.972	0.955	9.111	0.954	0.955	0.500
Infant	0.111	0.108	0.986	0.107	0.108	0.360
Blind/disabled	0.082	0.063	7.027	0.064	0.063	0.187
Nondisabled adult	0.214	0.323	24.836	0.323	0.323	0.114
White	0.476	0.540	12.633	0.538	0.540	0.393
CDPS score	0.877	0.948	6.260	0.985	0.948	2.891

¹ Absolute standardized differences are expressed as percentages

Table B-18. Unweighted and weighted means (standard deviations) and standardized differences, Medicaid population, Oregon 2010

	Unweighted			Weighted		
	Comparison Group	Oregon	Standardized difference ¹	Comparison Group	Oregon	Standardized difference ¹
N	2,717,639	434,626		2,717,639	434,626	
Female	0.552	0.556	0.739	0.556	0.556	0.015
Age	16.85	15.753	7.346	15.737	15.753	0.139
Continuously Enrolled	0.966	0.970	1.88	0.970	0.970	0.041
Infant	0.102	0.132	9.471	0.132	0.132	0.046
Blind/disabled	0.088	0.091	0.961	0.091	0.091	0.127
Nondisabled adult	0.221	0.189	7.981	0.189	0.189	0.033
White	0.541	0.590	9.814	0.590	0.590	0.011
CDPS score	0.909	0.902	0.604	0.903	0.902	0.032

¹ Absolute standardized differences are expressed as percentages

Table B-19. Unweighted and weighted means (standard deviations) and standardized differences, Medicaid population, Vermont 2010

	Unweighted			Weighted		
	Comparison Group	Vermont	Standardized difference ¹	Comparison Group	Vermont	Standardized difference ¹
N	1,113,312	132,392		1,113,312	132,392	
Female	0.550	0.530	3.929	0.531	0.530	0.207
Age	19.933	23.131	18.887	23.052	23.131	0.605
Continuously Enrolled	0.974	0.956	9.334	0.956	0.956	0.026
Infant	0.092	0.065	10.154	0.065	0.065	0.093
Blind/disabled	0.055	0.050	2.000	0.050	0.050	0.080
Nondisabled adult	0.348	0.446	20.057	0.443	0.446	0.436
White	0.493	0.656	33.373	0.653	0.656	0.486
CDPS score	0.977	0.932	3.782	0.932	0.932	0.036

¹ Absolute standardized differences are expressed as percentages

Appendix C: Quantitative Outcomes Data and Measures

C.1 Data Sources

For the second year Annual Report, we produced estimates of selected health outcomes for three populations—Medicaid beneficiaries, the commercially insured in MarketScan, and Medicare beneficiaries. The data sources and methods used are described below.

C.1.1 Medicaid data

The RTI evaluation team used Medicaid data from the CMS Medicaid Analytic eXtract (MAX) and Alpha-MAX research files made available through the CCW enclave. Each state's Medicaid Statistical Information System (MSIS) data are the source of the MAX and Alpha-MAX files. The MAX processing adds enhancements such as claims adjustments, creation of a national type of service field, and state-specific quality issues corrections; Alpha-MAX provides fewer enhancements. The MAX and Alpha-MAX files include a person summary (PS) file, with all enrollment information and summary claims information and four claims files: inpatient hospital (IP), long-term care (LT), prescription drugs (RX), and other (OT) claims. The quarterly Alpha-MAX files are generated for a state once all five MSIS file types for a single quarter are approved. The quarterly files are overwritten and updated each time a new quarter of run-out data is added. Quarterly versions of Alpha-MAX are being produced for each state through 7 quarters of run-out data; therefore, the quarterly files are based on 0 to 7 quarters of run-out time. Annual calendar-year MAX files are prepared from data with 7 quarters of run-out time. For simplicity, we refer to the MAX and Alpha-MAX data as simply MAX data for the remainder of this appendix.

Availability of MAX data files varies by state. Neither Maine nor Massachusetts has MAX data available in the CCW enclave. We obtained Maine Medicaid (MaineCare) data from the state's data vendor, Molina Medicaid Solutions. The data contain demographic and enrollment information, including a monthly indicator of enrollment. The data also include medical and pharmaceutical claims information for all facility and professional services, both inpatient and outpatient. We have applied for Medicaid claims data from Massachusetts but had not received the data in time for this report; therefore, we present no analyses of the MassHealth population in this report.

At the time of this analysis, we also lacked MAX data for Colorado, which is a comparison state for Minnesota and Oregon. Therefore, these states' Medicaid analyses include beneficiaries from only two comparison states each. In addition, because of incomplete encounter data following adoption of managed care among Medicaid enrollees in Kentucky, we dropped it as a comparison state for the Arkansas Medicaid analyses.

The currency of the MAX files also varied by state. We include Medicaid claims data in the analyses only if they had 2 or more quarters of run-out. **Table C-1** shows the latest quarter meeting this criterion for each Test state and its comparison states.

Table C-1. Latest time periods for Medicaid measures reported in the second Annual Report

Test state	End quarter	End quarter for quarterly variables	Years for annual variables
Comparison states			
Arkansas	Q4 2012	Q4 2012	2010, 2011, 2012
Alabama	Q4 2012	Q4 2012	2010, 2011, 2012
Oklahoma	Q4 2012		
Maine	Q4 2013 ¹	Q4 2013 ¹	2010, 2011, 2012, 2013
New Hampshire	Q4 2011	Q4 2011	2010, 2011
Rhode Island	Q4 2011		
Connecticut	Q4 2011		
Minnesota	Q4 2011	Q4 2011	2010, 2011
Iowa	Q4 2012	Q4 2012	2010, 2011, 2012
Washington	Q4 2012		
Oregon	Q4 2011	Q4 2011	2010, 2011
Washington	Q4 2012	Q4 2012	2010, 2011, 2012
Michigan	Q4 2012		
Vermont	Q4 2011	Q4 2011	2010, 2011
New Hampshire	Q4 2011	Q4 2011	2010, 2011
Iowa	Q4 2012		
Connecticut	Q4 2011		

¹ Maine Medicaid data include 1 quarter of test period data (Q4 2013). All other states include baseline data only.

C.1.2 MarketScan data

We used data from Truven Health Analytics' MarketScan Research Databases to calculate outcomes for the commercially insured population in SIM Round 1 Test and comparison states. In future reports, we will add data analyses from the Test states' all-payer claims databases (APCDs) where available. MarketScan may not be as representative of the states' commercially insured population as the APCDs, but it provides similarly constructed comparison state data not otherwise available. The MarketScan data included in this report are from first quarter 2010 through second quarter 2014.

The MarketScan Commercial Claims Database is constructed with data contributed from 279 employers and 26 health plans, representing more than 345 unique carriers. Individuals represented in the database are covered under plan types with a wide variety of delivery and payment types—including fee for service (FFS), fully and partially capitated plans, and various plan models (such as preferred provider organizations). The MarketScan data include covered individuals from all 50 states and the District of Columbia. These data do not contain the same benefit design for everyone included in the sample. In particular, drug claims and mental

health/substance abuse claims are not submitted and/or covered for everyone in the sample. Further, the database overrepresents the self-insured market. Nevertheless, MarketScan is the largest and most complete source of timely commercial claims data in the United States, and importantly, it includes comparable claims in a uniform format for both Test and comparison states.

The MarketScan data include clinical, financial, and demographic fields to support calculation of the SIM Initiative evaluation core and state-specific measures. We created analytic files using the following MarketScan data files:

- **Annual enrollment file.** The Annual Enrollment Summary Table contains enrollment information for every person enrolled during the year, including a monthly indicator of enrollment. We used the annual enrollment file to calculate fraction of time each person was enrolled and total number of people enrolled per year in each state.
- **Claims data.** MarketScan includes files that contain complete header information for all facility claims, all facility and professional encounters and paid claims for inpatient and outpatient services, and outpatient pharmaceutical claims data for a portion of the covered individuals. We used these files to calculate care coordination, quality of care, utilization, and expenditure outcomes.

C.1.3 Medicare data

We used Medicare claims and enrollment data for 2010 through second quarter 2014 from the Chronic Conditions Data Warehouse. These data include: (1) denominator information that indicates number of beneficiaries alive and enrolled in Medicare during the period; (2) enrollment information that indicates number of days beneficiaries were enrolled in Medicare during the period; and (3) claims experience for each beneficiary, including inpatient, hospital outpatient, physician, skilled nursing facility, home health agency, hospice, and durable medical equipment claims.

C.2 Population

For the statewide trend analyses, the target populations are all individuals included in the Medicaid, MarketScan, and Medicare databases. However, because of incomplete data for certain types of enrollees in these databases, we had to drop some groups from select analyses. For example, Medicare Advantage (i.e., managed care) enrollees were excluded from the Medicare analysis because they may not have complete data. The inclusion and exclusion criteria are described in detail in C.2.1. In addition, because of the great variation in health care needs among select population subgroups, we conducted separate analyses of key subpopulations.

C.2.1 Population inclusions and exclusions

For each Test state and comparison group, we include all Medicaid beneficiaries eligible for full benefits; we exclude Medicaid beneficiaries eligible for only a restricted set of benefits, such as family planning program beneficiaries and undocumented immigrants. Because Medicaid claims present only a partial picture of health care use among Medicare-Medicaid beneficiaries, we report care coordination, quality of care, and utilization measures for Medicaid-only beneficiaries. However, we do present total Medicaid payments made on behalf of Medicare-Medicaid beneficiaries.

For the care coordination, quality of care, and utilization outcomes, the target commercial population was all individuals in the MarketScan database identified as enrolled in an included commercial plan at any point during the given analysis quarter or year. Because capitated plans may not have complete expenditure data in the MarketScan database, we restricted the sample for expenditure outcomes to commercially insured individuals identified as enrolled at any point during the year in an FFS plan and having no capitated payments in the database. Approximately 10 percent of the sample was excluded because of capitation payments.

Because Medicare Advantage (i.e., managed care) enrollees may not have complete utilization and expenditure data, we excluded beneficiaries with any months of enrollment in Medicare managed care. We restricted the Medicare sample to beneficiaries who were alive at the beginning of the year, had at least 1 month of both Part A and Part B enrollment, had no months of Part A only or Part B only, and had no months of Medicare managed care enrollment.

C.2.2 Population subgroups

Health care use varies by eligibility category for Medicaid beneficiaries. Therefore, we report annual results for the overall beneficiary population and by eligibility category—infants, children, nondisabled adults, and blind/disabled. Because Medicaid claims represent only a partial picture of health care use among Medicare-Medicaid beneficiaries, we do not report Medicaid outcomes for beneficiaries in the age-eligible category. We do, however, report total Medicaid payments separately for Medicare-Medicaid and Medicaid-only beneficiaries.

Because children and adults have different patterns of health care use, for the MarketScan sample we report descriptive results for the overall population and by age group—infant (0–1 year of age), child (2–18 years of age), and adult (over 18 years of age). For each year, we used age as of last enrollment month to define an individual’s age group.

We report descriptive results for the overall Medicare population and by whether the beneficiaries were Medicare-Medicaid beneficiaries (who have different health care needs and utilization patterns than Medicare-only beneficiaries). Beneficiaries were designated as Medicare-Medicaid enrollees for the year if they were enrolled in Medicaid for at least one month during the year.

C.2.3 Population weights

Eligibility fraction

Because some individuals are not enrolled in insurance throughout an entire period, we calculate eligibility fractions for each individual. The eligibility fraction is defined as total number of months the person was enrolled in a given period divided by total number of months in the period. For example, an individual enrolled in insurance 6 months of a year has an eligibility fraction of 0.5 for that 12-month period. The eligibility fraction is used to inflate expenditure and utilization data if an individual was not enrolled for an entire period. The eligibility fractions are also used as weights in calculating weighted average outcomes. This prevents individuals with limited enrollment but extreme outcomes from strongly influencing the results.

Propensity score

For the comparison groups, outcomes are weighted by the eligibility fraction times the propensity score weight. We used propensity score weights to create a pooled, weighted comparison group from the three comparison states for each target Test state and data source. A description of the methods used to develop the propensity score weights can be found in *Appendix B*.

Balancing weight

To reduce the risk of bias from often-unobserved individual state idiosyncrasies, we used three states to form a pooled comparison group for each Test state. We then created population balancing weights for the Medicaid, MarketScan, and Medicare populations to insure equal contribution from each of the three comparison states in the pooled comparison group, regardless of population size in the comparison state. We created the balancing weight for each comparison state using the formula:

$$BW_i = [(\text{sum of all eligible persons from all three comparison states})/3] / (\text{sum of eligible persons in comparison state } i)$$

For Medicaid analyses where we had to reduce the comparison group to only two states because of the unavailability of data for the third, we revised the formula to:

$$BW_i = [(\text{sum of all eligible persons from the two comparison states})/2] / (\text{sum of eligible persons in comparison state } i)$$

Sampling procedure

To perform appropriate statistical adjustments (i.e., person level clustering), we randomly sampled the Medicare population in comparison states to limit the sample size for each Test state and its comparison group to 14 million observations. In one Test state, Massachusetts, we also needed to sample the Test state population to maintain the overall number of observations below 14 million. We used a SAS procedure to select the random sample for each state. By reducing

the sample at random, there should be no limitations to running the outcome models or biases introduced into the results. **Table C-2** provides the original sample size, sampling rate, restricted sample size, and sampling weights incorporated into the outcome model analyses for each Test state and its pooled comparison group.

Table C-2. Existing & restricted Medicare sample for each test state and pooled comparison group sample

Test state	Total sample	Test state				Comparison group			
		Full	Sample rate	Restricted	Weight	Full	Sample rate	Restricted	Weight
Arkansas	32,702,577	6,554,194	100%	6,554,194	1.00	26,148,383	29%	7,593,400	3.45
Maine	14,147,594	3,290,913	100%	3,290,913	1.00	10,856,681	100%	10,856,681	1.00
Massachusetts	23,004,369	12,147,688	58%	7,045,659	1.72	10,856,681	65%	7,073,797	1.54
Minnesota	28,653,051	6,042,465	100%	6,042,465	1.00	22,610,586	36%	8,105,129	2.78
Oregon	40,075,324	5,166,126	100%	5,166,126	1.00	34,909,198	26%	8,981,468	3.85
Vermont	17,363,276	1,545,140	100%	1,545,140	1.00	15,818,136	80%	12,602,454	1.25

C.3 Measures

We present estimates from claims data for four domains of performance: (1) care coordination, (2) quality of care, (3) health care utilization, and (4) expenditures. In this second Annual Report, we present descriptive results of care coordination and quality-of-care measures based on annual data only for those calendar years for which we have complete data. For utilization and expenditure measures, we present a figure for the 12-month period from July 2013 through June 2014 where we have the data. We also present graphical presentations of quarterly estimates for the utilization and expenditure measures. Thus, we present annual estimates for 2010 through 2013 and the first half of 2014, and quarterly estimates from fourth quarter 2010 through second quarter 2014 from the MarketScan and Medicare databases. The data periods for the annual and quarterly estimates from the Medicaid databases vary by state; for comparison groups we are restricted by the comparison state with the earliest Alpha-MAX end quarter with 2 quarters of run-out. Table C-1 above provides the end quarters used for the quarterly Medicaid measures and the years used for the annual estimates in each Test state and its comparison group.

We also provide results of difference-in-differences (DD) regression analyses of core utilization and expenditure outcomes for Medicare beneficiaries and the commercially insured in the MarketScan database. Test (post-implementation) periods are defined on a state-specific basis. For those states that implemented their SIM plans in October 2013, we have data for three test quarters—fourth quarter 2013 and first and second quarters 2014. For states that implemented their SIM plans in January 2014, we have results for only two test quarters.

C.3.1 Care coordination measures

To evaluate the impact of the Test states' models on care coordination, we report the following care coordination measures for all payers:

- **Number of visits to a primary care provider (per 100 covered persons).** Visits to primary care providers were counted if: (1) provider type was any of the primary care provider types listed in *Table C-2*, and (2) one of the following primary care evaluation and management Current Procedural Terminology (CPT) codes was included on the claim for the visit:
 - 99201–99205, 99211–99215, 99241–99245, 99304–99310, 99315–99316, 99318, 99324–99328, 99334–99350, 99358–99359, 99366–99368, 99374–99397, 99401–99412, 99420, 99429, 99441–99444, 99495, 99496

In MAX data, we identified physician specialty using the taxonomy code, which is missing at a high rate for Arkansas and Minnesota and states in the comparison groups for Maine and Vermont. Therefore, we present only the total number of visits for Medicaid beneficiaries in these states and comparison groups. We also did not include number of visits to a primary care or specialty provider for the commercial population in Maine, because Maine's MarketScan data had significant coding differences in the provider specialty type variable as compared to its comparison group states.

- **Number of visits to a specialty provider (per 100 covered persons).** Visits to specialty providers were counted if: (1) provider type was any of the specialty provider types listed in *Table C-3* and (2) one of the primary care evaluation and management CPT codes shown above was included on the claim for the visit.
- **Percent of acute inpatient hospital admissions with a follow-up visit within 14 days.** This is number of acute inpatient hospital admissions followed by a visit to a provider within 14 days of discharge date, divided by total number of acute inpatient hospital admissions. We used the following CPT codes to identify a follow-up visit:
 - 99201–99205, 99211–99215, 99241–99245, 99304–99310, 99315–99316, 99318, 99324–99328, 99334–99350

Table C-3. Primary and specialty provider types

Primary care providers		Specialty providers
General practice	Allergy/immunology	General surgery
Family practice	Otolaryngology	Anesthesiology
Internal medicine	Cardiology	Neurosurgery
Pediatrics (for MarketScan)	Dermatology	Oral surgery (dentists only)
Geriatric medicine	Gastroenterology	Orthopedic surgery
Multispecialty clinic or group practice	Neurology	Plastic and reconstructive surgery
Preventive medicine	Ophthalmology	Colorectal surgery
Nurse practitioner	Pathology	Thoracic surgery
Physician assistant	Physical medicine and rehabilitation	Hand surgery
Obstetrics/gynecology (for MarketScan; specialty provider for Medicare)	Psychiatry	Vascular surgery
	Pulmonary disease	Cardiac surgery
	Diagnostic radiology	Maxillofacial surgery
	Urology	Surgical oncology
	Nephrology	Sports medicine
	Infectious disease	Geriatric psychiatry
	Endocrinology	Palliative medicine
	Rheumatology	Sleep medicine
	Peripheral vascular disease	Pain management
	Critical care (intensivists)	Osteopathic
	Hematology/oncology	Nuclear medicine
	Neuropsychiatry	Radiology
	Medical oncology	Addiction medicine
	Emergency medicine	

- **Percentage of mental illness–related acute inpatient hospital admissions with a mental health follow-up visit within 7 and 30 days.** This is number of acute inpatient hospital admissions with a primary diagnosis for a behavioral health condition (ICD-9 diagnosis codes 291, 292, 303, 304, 305, 293–302, 306–316) followed by a visit to a provider for a mental health visit (identified by visits with any of the below CPT or revenue codes) within 7 or 30 days of discharge date, divided by total number of acute inpatient hospital admissions with a primary diagnosis for a behavioral health condition. Admissions followed by a readmission to an acute or other facility within 7 or 30 days are excluded from the respective denominators.
 - Procedure code= 90801, 90802, 90804–90819, 90821–90824, 90826–90829, 90845, 90847, 90849, 90853, 90857, 90862, 90870, 90875, 90876, 98960–98962, 99078, 99201–99205, 99211–99215, 99217–99223, 99231–99233, 99238, 99239, 99241–99245, 99251–99255, 99341–99345, 99347–99350, 99383–99387, 99393–99397, 99401–99404, 99411, 99412, 99510. G0155, G0176, G0177, H0002, H0004, H0031, H0034–H0037, H0039, H0040, H2000, H2001, H2010–H2020, M0064, S0201, S9480, S9484, S9485
OR
Revenue code =0513, 0900–0905, 0907, 0911–0917, 0919

In addition, we report the following two medication management care coordination measures computed from the Medicaid and MarketScan data:

- **Percentage of patients ages 5–64 years with persistent asthma who were appropriately prescribed medication during the year.** This is percentage of patients identified with persistent asthma who had an asthma medication dispensed to them during the year. To identify patients with persistent asthma, the patient had to be 5–64 years old and have a diagnosis for asthma (ICD-9 diagnosis codes 493.0, 493.1, 493.8, 493.9) that met at least one of the following four criteria:
 - i. *At least one emergency room (ER) visit with asthma as the principal diagnosis.* (CPT code = 99281–99285 or revenue code=045x, 0981)
 - ii. *At least one acute inpatient discharge with asthma as the principal diagnosis.* (CPT code=99221–99223, 99231–99233, 99238, 99239, 99251–99255, 99291 or revenue code=010x, 0110–0114, 0119, 0120–0124, 0129, 0130–0134, 0139, 0140–0144, 0149, 0150–0154, 0159, 016x, 020x, 021x, 072x, 0987)
 - iii. *At least four outpatient visits on different dates of service, with asthma as one of the listed diagnoses and at least two asthma medication dispensing events.* To identify outpatient visits, CPT code=99201–99205, 99211–99215, 99217–99220, 99241–99245, 99341–99345, 99347–99350, 99382–99386, 99392–99396, 99401–99404, 99411, 99412, 99420, 99429 and revenue code =051x, 0520–0523, 0526–0529, 057x- 059x, 0982, 0983. Asthma medication events were identified using the list of asthma medications in *Table C-4*.
 - iv. *At least four asthma medication dispensing events.* Asthma medication events were identified using the list of asthma medications in the table below. If all four dispensing events were ‘leukotriene modifiers,’ the individual also needed a diagnosis of asthma for any kind of service.

Patients diagnosed with emphysema, COPD, cystic fibrosis, and acute respiratory failure in the prior year were excluded from the denominator (ICD-9 diagnosis codes 492, 518.1, 518.2, 491.2, 493.2, 496, 506.4, 277.0, and 518.81).

For individuals who met the above asthma criteria, we flagged whether or not they were dispensed at least one prescription for one of the asthma controller medications in *Table C-4* during the measurement year and calculated the percentage.

- **Percentage of patients ages 18 years and older diagnosed with a new episode of major depression and treated with antidepressant medication who remained on medication treatment at least 12 weeks or 6 months (depending on the measure).** This is percentage of patients 18 years of age and older who were diagnosed with a new episode of major depression and treated with antidepressant medication, and who remained on an antidepressant medication treatment. Two rates are reported:
 - *Effective Acute Phase Treatment.* This is percentage of newly diagnosed and treated patients who remained on an antidepressant medication for at least 12 weeks (12 weeks).

Table C-4. Asthma medications list

Description		Prescriptions	
Antiasthmatic combinations	• Dyphylline-guaifenesin	• Guaifenesin-theophylline	• Potassium iodide-theophylline
Antibody inhibitor	• Omalizumab		
Inhaled steroid combinations	• Budesonide-formoterol	• Fluticasone-salmeterol	• Mometasone-formoterol
Inhaled corticosteroids	• Beclomethasone	• Flunisolide	• Triamcinolone
	• Budesonide	• Fluticasone CFC free	
	• Ciclesonide	• Mometasone	
Leukotriene modifiers	• Montelukast	• Zafirlukast	• Zileuton
Long-acting, inhaled beta-2 agonists	• Aformoterol	• Formoterol	
	• Indacaterol	• Salmeterol	
Mast cell stabilizers	• Cromolyn	• Nedocromil	
Methylxanthines	• Aminophylline	• Oxtriphylline	
	• Dyphylline	• Theophylline	
Short-acting, inhaled beta-2 agonists	• Albuterol	• Metaproterenol	
	• Levalbuterol	• Pirbuterol	

- *Effective Continuation Phase Treatment.* This is percentage of newly diagnosed and treated patients who remained on an antidepressant medication for at least 6 months (6 months).

To identify patients with a new episode of major depression, patient had to be at least 18 years old and have a diagnosis for major depression (ICD-9 diagnosis codes 296.20–296.25, 296.30–296.35, 298.0, 311) that met at least one of the following criteria:

- At least one principal diagnosis of major depression in any outpatient, ER, intensive outpatient, or partial hospitalization setting (as indicated by the procedure or revenue codes given below)
- At least two visits in an outpatient, ER, intensive outpatient, or partial hospitalization setting (as indicated by the procedure or revenue codes given below) on different dates of service with any diagnosis of major depression
- At least one inpatient (acute or nonacute) claim/encounter with any diagnosis of major depression

To identify the date of the first diagnosis, we used date of first claim/encounter that met one of the above criteria. To identify the date the medication was dispensed, we used date an antidepressant medication (as shown in the below table) was dispensed during the period 30 days prior to 14 days after date of the first diagnosis.

We then checked whether the antidepressant medication was dispensed, respectively, for at least 12 weeks or 6 months of continuous treatment with no more than 30 or 51 gap days in treatment.

Patients who received an antidepressant medication any time 3 months prior to the date the antidepressant medication was dispensed and those who were not continuously enrolled for 45 days prior to and 245 days after the depression diagnosis were excluded from the denominator (*Tables C-5 and C-6*).

Table C-5. Codes to identify visits

Description	CPT	HCPCS	UB Revenue
ED	99281–99285		045x, 0981
Outpatient, intensive outpatient and partial hospitalization	90804–90815, 98960–98962, 99078, 99201–99205, 99211–99215, 99217–99220, 99241–99245, 99341–99345, 99347–99350, 99384–99387, 99394–99397, 99401–99404, 99411, 99412, 99510	G0155, G0176, G0177, G0409–G0411, H0002, H0004, H0031, H0034–H0037, H0039, H0040, H2000, H2001, H2010–H2020, M0064, S0201, S9480, S9484, S9485	0510, 0513, 0515–0517, 0519–0523, 0526–0529, 0900, 0901, 0902–0905, 0907, 0911–0917, 0919, 0982, 0983
	CPT		POS
	90801, 90802, 90816–90819, 90821–90824, 90826–90829, 90845, 90847, 90849, 90853, 90857, 90862, 90870, 90875, 90876, 99221–99223, 99231–99233, 99238, 99239, 99251–99255	WITH	03, 05, 07, 09, 11, 12, 13 14, 15, 20, 22, 24, 33, 49, 50, 52, 53, 71, 72

Table C-6. Antidepressant medications

Description	Prescription		
Miscellaneous antidepressants	• Bupropion	• Vilazodone	
Monoamine oxidase inhibitors	• Isocarboxazid	• Selegiline	
	• Phenelzine	• Tranylcypromine	
Phenylpiperazine antidepressants	• Nefazodone	• Trazodone	
Psychotherapeutic combinations	• Amitriptyline-chlordiazepoxide	• Fluoxetine-olanzapine	
	• Amitriptyline-perphenazine		
SSNRI antidepressants	• Desvenlafaxine	• Duloxetine	• Venlafaxine
SSRI antidepressants	• Citalopram	• Fluoxetine	• Paroxetine
	• Escitalopram	• Fluvoxamine	• Sertraline
Tetracyclic antidepressants	• Maprotiline	• Mirtazapine	
Tricyclic antidepressants	• Amitriptyline	• Desipramine	• Nortriptyline
	• Amoxapine	• Doxepin	• Protriptyline
	• Clomipramine	• Imipramine	• Trimipramine

C.3.2 Quality of care measures

For all three payers, we include three baseline measures of quality of care: (1) ambulatory sensitive–condition hospitalization rates, (2) influenza immunization rates, and (3) breast cancer screening rates. For Medicaid and MarketScan, we additionally report two well-child visit measures: (1) percentage of children ages 3–6 years who had 1 or more well-child visits and (2) percentage of 15 month olds with 0 versus 6 or more well-child visits in the first 15 months of life. For Medicaid, we report the percentage of patients 3–17 years old who had a visit and were screened and/or counseled for BMI and nutrition/physical activity. We calculated the BMI screening measure for children and adults for Medicaid and MarketScan, but we only report child BMI screening for Medicaid due to a low sample size of claims for adults in Medicaid and adults and children in MarketScan. For Medicare, we additionally present the percentage of patients ages 18 years and older seen for a visit who were screened for tobacco use and who received cessation counseling if identified as a user. We also calculated tobacco screening rates for Medicaid and MarketScan, but we again do not present the rates because the sample size of claims was too low to provide meaningful rates. Each measure is described in detail below.

- **Prevention Quality Indicators (ambulatory sensitive–condition hospitalization rates).** For each payer, we evaluated rates of avoidable hospitalizations using the composite Prevention Quality Indicators (PQIs) the Agency for Healthcare Research and Quality has stewarded as ambulatory care–sensitive conditions. The idea behind PQIs is that certain hospitalizations may be avoided with adequate and quality access to primary care services. Given the low rates of the individual measures, we report on the three composite PQIs.⁵³

The calculation of the PQI requires Diagnostic-Related Group (DRG) information, which is not available on MAX claims for Arkansas, Alabama, Oklahoma, or Connecticut. As such, we only report PQI data for Minnesota, Oregon and Vermont for the Medicaid population.

The first, the ***Overall Composite (PQI #90)***, includes 12 of the 14 individual PQIs:

- PQI #01 Diabetes Short-Term Complications Admission Rate
- PQI #11 Bacterial Pneumonia Admission Rate
- PQI #03 Diabetes Long-Term Complications Admission Rate
- PQI #12 Urinary Tract Infection Admission Rate

⁵³ PQI rates are calculated per 100,000 patients. Only observable rates are reported, as risk-adjusted rates posted by the Agency for Healthcare Research and Quality for the PQIs are established based on the general population in a geographic area, and are incorrect when limited to the MarketScan population.

- PQI #05 Chronic Obstructive Pulmonary Disease (COPD) or Asthma in Older Adults Admission Rate
- PQI #13 Angina without Procedure Admission Rate
- PQI #07 Hypertension Admission Rate
- PQI #14 Uncontrolled Diabetes Admission Rate
- PQI #08 Heart Failure Admission Rate
- PQI #15 Asthma in Younger Adults Admission Rate
- PQI #10 Dehydration Admission Rate
- PQI #16 Rate of Lower-Extremity Amputation Among Patients With Diabetes

The second, the *Acute Composite (PQI #91)*, includes three individual PQIs:

- PQI #10 Dehydration Admission Rate
- PQI #12 Urinary Tract Infection Admission Rate
- PQI #11 Bacterial Pneumonia Admission Rate

The third, the *Chronic Composite (PQI #92)*, includes nine individual PQIs:

- PQI #01 Diabetes Short-Term Complications Admission Rate
- PQI #13 Angina without Procedure Admission Rate
- PQI #03 Diabetes Long-Term Complications Admission Rate
- PQI #14 Uncontrolled Diabetes Admission Rate
- PQI #05 Chronic Obstructive Pulmonary Disease or Asthma in Older Adults Admission Rate
- PQI #15 Asthma in Younger Adults Admission Rate
- PQI #07 Hypertension Admission Rate
- PQI #16 Rate of Lower-Extremity Amputation Among Patients With Diabetes
- PQI #08 Congestive Heart Failure Admission Rate

- **Percentage of patients ages 1 year and older seen for a visit between October 1 and March 31 who received an influenza immunization during the visit.** This is percentage of individuals who had a physician visit (as identified by CPT codes given below) during the flu season (service date fell between October 1–March 31) who received an influenza immunization. Individuals were identified as having an influenza immunization if they had one of the following procedure codes: G8482, G8483, G0919, G8484, 90653, 90654, 90656, 90658, 90660, 90661, 90662, 90664, 90666, 90667, 90668, 90672, 90673, 90686, 90688, G0008, Q2034, Q2035, Q2036, Q2037, Q2038, Q2039.

Procedure codes to identify evaluation and management (E&M) visits:

90945	90959	90969	99215	99324	99342
90947	90960	90970	99304	99325	99343
90951	90961	99201	99305	99326	99344
90952	90962	99202	99306	99327	99345
90953	90963	99203	99307	99328	99347
90954	90964	99204	99308	99334	99348
90955	90965	99205	99309	99335	99349
90956	90966	99212	99310	99336	99350
90957	90967	99213	99315	99337	G0438
90958	90968	99214	99316	99341	G0439

- **Percentage of women 41–69 years old who had a mammogram to screen for breast cancer during the measurement year.** This is percentage of women ages 41–69 years at the start of the measurement year who were screened for breast cancer (procedure code = 8736, 8737, 77055–77057, G0202, G0204 or G0206 or revenue code= 0401 or 0403). Women were excluded from the denominator if they were not enrolled for at least 11 of the 12 months of the year or ever had a bilateral mastectomy or two unilateral mastectomies (procedure code = 8541, 8543, 8545, 8547 or 19303–19307). For the MarketScan data, the upper age range for this variable was 64 years; for Medicaid and Medicare it was 69 years.
- **Percentage of children ages 3- 6 years who had one or more well-child visits during the measurement year.** This is percentage of members ages 3–6 years during the year who had at least one well-child visit during the year. A visit counts as a well-child visit if the claim includes a diagnosis code of V20.2, V70.0, V70.3, V70.5, V70.6, V70.8, or V70.9 or a procedure code of 99382, 99383, 99392, or 99393.
- **Well child visits within 15 months of age.** This is percentage of members who turned 15 months old during the measurement year and had the following number of well-child visits during their first 15 months of life:
 - No well-child visits
 - Six or more well-child visits

The denominator includes all infants in Medicaid and MarketScan who turn 15 months in the given year and are continuously enrolled from 1 month to 15 months of age. The numerator is count of children with either 0 or 6 or more well-child visits, as appropriate. A visit counts as a well-child visit if the claim includes a diagnosis code of V20.2, V20.3, V20.31, V20.32, V70.0, V70.3, V70.5, V70.6, V70.8, or V70.9, or a procedure code of 99381, 99382, 99391, 99392, or 99461.

- **Percentage of patients age 18 years and older seen for a visit who were screened for tobacco use and received cessation counseling if identified as a user in**

measurement year. This is percentage of individuals who had a physician visit (as identified by CPT codes given below) who received screening and counseling for tobacco use (CPT code = 4004F or 1036F).

Procedure codes to identify physician visits:

90791	90839	92014	97004	99205	99406
90792	90845	96150	99201	99212	99407
90832	92002	96151	99202	99213	G0438
90834	92004	96152	99203	99214	G0439
90837	92012	97003	99204	99215	

- **Percentage of adolescent and adult patients with a new episode of alcohol and other drug (AOD) dependence who initiate and engage in treatment.** This is the percentage of patients identified with a new alcohol or other drug dependence episode who (1) initiate and (2) engage in treatment. To identify patients with a new episode of AOD, the patient had to be over 13 years old, be continuously enrolled, and have a diagnosis for AOD (ICD-9 diagnosis codes = 291-292, 303.00-303.02, 303.90-303.92, 304.00-304.02, 304.10-304.12, 304.20-304.22, 304.30-304.32, 304.40-304.42, 304.50-304.52, 304.60-304.62, 304.70-304.72, 304.80-304.82, 304.90-304.92, 305.00-305.02, 305.20-305.22, 305.30-305.32, 305.40-305.42, 305.50-305.52, 305.60-305.62, 305.70-305.72, 305.80-305.82, 305.90-305.92, 535.3, 571.1) that met at least one of the following four criteria:
 - ***An inpatient stay with a diagnosis for AOD.*** (A stay with bill type=11 or 12 and one of the diagnosis above OR a procedure code 94.61, 94.63, 94.64, 94.66, 94.67, 94.69)
 - ***An ER visit with an AOD diagnosis.*** (CPT code= 99281-99285 or revenue code=045x, 0981)
 - ***A detoxification visit (with or without AOD diagnosis).*** To identify detoxification visits, ICD-9 procedure code= 94.62, 94.65, 94.68, H0008-H0014 or revenue code = 0116, 0126, 0136, 0146, 0156
 - An AOD dependence diagnosis as defined above plus an outpatient, intensive outpatient, or partial hospitalization visit (codes below):
 - **Procedure_code or ICD9_CM_Procedure_Code** =90804-90815, 98960-98962, 99078, 99201-99205, 99211-99215, 99217-99220, 99241-99245, 99341-99345, 99347-99350, 99384-99387, 99394-99397, 99401-99404, 99408, 99409, 99411, 99412, 99510, G0155, G0176, G0177, G0396, G0397, G0409–G0411, G0443, H0001, H0002, H0004, H0005, H0007, H0015, H0016, H0020, H0022, H0031, H0034-H0037, H0039, H0040, H2000, H2001, H2010-H2020, H2035, H2036
 - **OR Revenue_Code**=0510, 0513, 0515-0517, 0519-0523, 0526-0529, 0900, 0902-0907, 0911-0917, 0919, 0944, 0945, 0982, 0983

- OR **Procedure_code** or **ICD9_CM_Procedure_Code** = 90801, 90802, 90845, 90847, 90849, 90853, 90857, 90862, 90875, 90876 AND **facility_type** = 03, 05, 07, 09, 11, 12, 13, 14, 15, 20, 22, 33, 49, 50, 52, 53, 57, 71, 72
- OR **Procedure_code** or **ICD9_CM_Procedure_Code** = 90816-90819, 90821-90824, 90826-90829, 99221-99223, 99231-99233, 99238, 99239, 99251-99255 AND **facility_type** = 52, 53

Patients diagnosed with AOD 60 days prior to the event identified above and those who were identified based on an inpatient stay that occurred after December 1 of the year were excluded from the denominator.

For individuals who met the above AOD criteria, we flagged them as initiating treatment if they were: (1) identified based on having an inpatient stay with an AOD diagnosis or (2) identified in one of the other categories and the initial visit was followed by an inpatient stay, outpatient visit, intensive outpatient encounter, or partial hospitalization within 14 days of the index event. Individuals were flagged as engaged in treatment if there were two or more AOD dependency diagnoses within 30 days (inclusive) of the date they initiated treatment. We then calculated the percentage who initiated and engaged in treatment.

C.3.3 Utilization measures

Utilization measures are reported as rates per 1,000 covered lives (or discharges for readmissions). For each measure, the numerator is weighted sum of number of events (inpatient admissions, ER visits, and ER visits that lead to a hospitalization). Events are included in a period's total if discharge or service date on the claim was during the period. The denominator is number of eligible plan members in the state enrolled during the period.

- **All-cause hospitalizations.** This is the rate (per 1,000 covered lives) of all admissions to acute care hospitals reported in the inpatient file for the period. For Medicaid, we identified acute care hospital admission by including all admissions in the MAX inpatient (IP) file with a type of service that indicated admission was to an inpatient hospital (type of service = 01) and all inpatient admissions in the MaineCare data with a bill type of 11 or 12. For MarketScan, we identified acute care hospital admission by including all admissions with a place of service that indicated admission was to an inpatient hospital (place of service = 21). For Medicare, we identified all hospital admissions in which the last four digits of the provider values were 0001–0879 (acute inpatient) or 1300–1399 (critical access hospitals). For all data sources, some records in the inpatient claims files may appear to be multiple admissions but are in fact transfers between facilities; these records are counted as a single admission. To combine transfers into one acute admission, we identified claims that had no more than 1 elapsed day between discharge date of the index claim and admission date of the subsequent claim. We combined the claims into one record by taking earliest admission date and latest discharge date and summing all payment amounts.

- **Obstetric hospitalizations.** This is the rate (per 1,000 covered lives) of obstetric (newborn and delivery) admissions to acute care hospitals reported in the inpatient file for the period. We report this rate for Medicaid and MarketScan. Maternal and newborn delivery claims were identified using the ‘delivery code’ variable in MAX and comparable diagnosis codes in MaineCare and MarketScan data (i.e., claims were counted if they had a diagnosis code (ICD-9) of 650, 6400–6769, V271–V279, with an age greater than 9 years, or a diagnosis code of V30, V31–V39).
- **ER visits that did not lead to a hospitalization/observation stay.** This is the rate (per 1,000 covered lives) of visits to the ER that did not result in an inpatient hospital admission. ER visits, including observation stays, were identified in the outpatient services file as visits with a revenue center line item equal to 045X or 0981 (ER care) or 0762 (treatment or observation room, thus counting observation stays in the overall count). If the procedure code on every line item of the ER claim equals 70000 through 79999 or 80000 through 89999, and no line items have a revenue center code equal to 0762, we excluded these claims (thus excluding claims where only radiological or pathology/laboratory services were provided unless it was an observation stay). Because not all states submit complete revenue code information in their Medicaid data, we additionally identified visits that included the following procedure codes as outpatient ER visits in the MAX and MaineCare data: 99281, 99282, 99283, 99284, or 99285.
- **Readmissions.** This is the rate (per 1,000 discharges) of hospitalizations that occurred within 30 days following a live discharge. Index hospital discharges were identified as inpatient stays with a discharge date within the given measurement period (12 months) minus 30 days from the end of the period. We counted number of instances when the beneficiary had an inpatient readmission within 30 days of the index stay discharge. The numerator is sum of number of readmissions within 30 days; the denominator is total number of index hospital discharges.

C.3.4 Expenditure measures

Weighted average payments are calculated on a per member per month (PMPM) basis. For each individual, PMPM payments were estimated as one-third of his/her quarterly payments. Expenditures are defined as payments made by the payer (Medicaid, commercial, or Medicare); enrollee cost-sharing was not included (and is nonexistent or minimal in Medicaid). All individuals enrolled in the period for the state were included in calculating the averages, so the figures also include individuals with zero medical costs. The payments were not risk-adjusted⁵⁴ or price-standardized across geographic areas. Claims were included in a period’s total if discharge or service date on the claim was during the period.

⁵⁴ While the expenditures are not formally risk-adjusted, the comparison groups are weighted by the propensity score (see Appendix C), which includes some risk adjustment measures.

Current Medicaid program designs often include a complex mix of traditional FFS plans and managed care plans with innovative delivery systems (fully or partially capitated plans, primary care case management [PCCM] plans, vulnerable population plans, service carve-out plans, etc.). Due to potential inaccuracies, the Medicaid paid amount for managed care encounter records is set to zero in MAX data. We therefore do not present payment by type of service for Medicaid. Managed care payments—including capitated payments to HMO plans, pre-paid health plans, and PCCM plans—were included as premium payment records with a capitated type of service code. We present the following categories of payments for Medicaid:

- **Total payments.** Total payments represents overall net payment amounts from all FFS claims and all capitated payments made to HMOs, pre-paid health plans, and PCCM plans. Total payments include all FFS payments made for inpatient, other therapy, long-term care, and pharmacy claims. We present quarterly total PMPM payments for each state for Medicaid-only enrollees and Medicare-Medicaid enrollees separately. In addition, we present the average FFS, PCCM, capitated, and total payments by quarter for each state.
- **Total FFS payments.** Total FFS payments represents overall net payment amounts from all FFS claims. Total payments include all FFS payments made for inpatient, other therapy, long-term care, and pharmacy claims.
- **Total capitated payments.** Total capitated payments represents all capitated payments made to HMO, pre-paid health plans, and PCCM plans. Capitated payments to HMO and pre-paid health plans are identified as records in the MAX OT file with type of service = 20 or 21 and PCCM payments are identified as records with type of service = 22. Maine Medicaid operates as an FFS plan with PCCM. We were not able to identify PCCM payments for this report, however, so we present only total payments for Maine data.

We report the following categories of payments for MarketScan and Medicare:

- **Total payments.** Total payments represents overall net payment amounts from all inpatient and outpatient (facility and professional) claims and encounters, excluding member cost sharing. Although pharmacy component expenditures are included for MarketScan, total payments do not include pharmacy claims because MarketScan does not include drug claims for every member.
- **Inpatient hospitals facility.** This represents the sum of net facility payments to a hospital for covered services provided during all inpatient admissions. Inpatient admissions were assigned to a period based on discharge date. Inpatient admissions include stays in psychiatric hospitals and rehabilitation facilities but exclude skilled nursing facility stays.

- **Non–inpatient facility.** This represents the sum of net facility payments for non-inpatient services, including those made for outpatient, home health, hospice, and skilled nursing facility services.
- **Professional.** This represents the overall net payment amounts from all inpatient and outpatient professional claims and encounters, excluding member cost sharing.
- **Pharmaceutical payments.** This is the sum of net payments for outpatient pharmaceutical claims. The denominator for the average pharmaceutical payments is restricted to individuals with drug claims in MarketScan data.

C.4 Statistical Methods

C.4.1 Four-quarter state averages

Quarterly data can fluctuate substantially because of seasonality and other factors. To smooth the data, we use 4-quarter averages for the descriptive quarterly outcomes reported in the graphs, where the last quarter of the 4-quarter period is the quarter of interest. For example, fourth quarter 2010 is the average of the state’s quarterly values for the first through fourth quarters 2010. The regression models use individual level quarterly outcomes with no averaging across quarters.

C.4.2 Difference-in-Differences Regression Analysis

To test for differences in expenditures and utilization estimates during the first three quarters of SIM implementation and the baseline period between the Round 1 Test states and their comparison groups, we use difference-in-differences (DD) regression analyses. We conduct all analyses at the individual beneficiary level with quarterly observations, so the unit of analysis is person-quarters. For the utilization outcomes, we convert quarterly utilization counts into binary outcomes and use weighted linear probability regression models. Count models are not appropriate due to the low occurrence of multiple hospitalizations and ER visits for individual beneficiaries in any quarter. We chose to use the linear probability model (LPM) rather than a logistic regression model because the estimates are consistent and easy to interpret. Furthermore, for the majority of outcomes in each state, over 90 percent of the model predictions fell between 0 and 1, indicating that the LPM is not producing impossible predictions, which is typically the major LPM limitation. For expenditure outcomes, we use weighted ordinary least squares (OLS) regression models.

Regression model

The underlying assumption in the DD models estimating the impact of the SIM Initiative is that trends in the outcomes among individuals in Test states and their respective comparison groups would be similar absent the SIM Initiative (i.e., that the two were on “parallel paths” prior to the start of the SIM Initiative). To assess the parallel assumption’s validity, we modelled core expenditure and utilization outcomes during the baseline period with a linear time trend

interacted with a dichotomous variable for residing in the Test state. The estimated coefficient for the interaction term indicates whether there was a statistically significant difference in trends between the Test state and the comparison group over the baseline period. We generally found either no or small statistically significant differences in the rates of change in the core utilization and expenditure measures for the MarketScan and Medicare populations. While the significant results are generally small, we decided to take the conservative approach and assume that the parallel paths assumption may be violated in the DD models. Therefore, we generate impact estimates that net out the potential baseline differences between the Test state and the comparison group. Specifically, we include a linear time trend interacted with the dichotomous variable for residing in the Test state in the outcomes model. This model specification allows for differences in estimates in the Round 1 Test states and their comparison groups during the baseline period.

We present the DD model below in **Equation C.1**. We use the following notation: Y_{ijt} is the outcome for individual i in state j in quarter t ; I_{ij} ($= 0,1$) is a test indicator equal to 1 if the individual is in a Test state and 0 if the individual is in its comparison group; and Time is a linear time trend ranging from 1 to 18, where Time=1 is the first calendar quarter (first quarter 2010) and 18 is the last calendar quarter (second quarter 2014). The term that interacts the Test state indicator and time variables ($I_{ij} \times \text{Time}$) in **Equation C.1** measures differences in trends over time between a Test state and its comparison group over the entire observation period. In **Equation C.1**, POST is equal to 1 if Time is equal to 16, 17 or 18.⁵⁵ The interaction of the test indicator and POST ($I_{ij} \times \text{POST}$) measures the difference in the pre-post change between the Test state and its comparison group.

$$Y_{ijt} = \alpha_0 + \beta_1 I_{ij} + \alpha_1 \text{Time} + \beta_2 I_{ij} \times \text{Time} + \alpha_2 \text{POST} + \gamma I_{ij} \times \text{POST} + \lambda X_{ijt} + \varepsilon_{ijt} \quad (\text{C.1})$$

The vector X_{ijt} of individual characteristics includes the following covariates for the commercial population in MarketScan: indicators for the urban status of the individual's county of residence, gender, age and age squared, drug coverage, mental health coverage, relationship to the policyholder (spouse or child), plan type indicator (HMO or CDHP), the individual's Hierarchical Condition Categories (HCC) risk score, and the HCC risk score squared to control for health status. The models for the Medicare population include the following covariates: indicators for the urban status of the individual's county of residence, gender, Medicare-Medicaid eligibility, disability status, race (white vs non-white), age and age squared, and HCC risk score and HCC risk score squared. The Medicare models also include county-level covariates from the Area Resource File, including percent without health insurance, education status (percent with less than high school diploma, high school diploma, and at least some college), median age, percent of persons in poverty, primary care shortage indicator, unemployment rate, population density, primary care physician supply, and hospital beds per

⁵⁵ All models for Massachusetts used a two quarter post period of Q1-Q2 2014.

population. We chose to include the available covariates for each payer that could be associated with both the outcomes and residence in a Test State. We did not include the Area Resource File county variables in the MarketScan model, because we cannot include any geographic variables that may identify an area of less than 50,000 people. This restriction required the variables to be at a level of aggregation that lacked meaningful variation for the MarketScan population. The last variable ε_{ijt} is a residual term that represents unobserved heterogeneity in the outcome unexplained by X_{ijt} or being in a Round 1 Test state.

The coefficient β_1 in **Equation C.1** is the difference in the measure between individuals in the Test state and the comparison group at the start of the baseline period, holding constant other variables in the equation. For individuals in the comparison group, the baseline time trend is captured by $\alpha_1 \cdot \text{Time}$; for individuals in the intervention group, it is $(\alpha_1 + \beta_2) \cdot \text{Time}$. The α_2 coefficient captures any deviations between the pre- and test periods not attributable to where the Test state and the comparison group started out or their common time trend. The coefficient of the interaction term between POST and Test state indicators allows us to measure any differences in the pre-post effect between the Test state and the comparison group. Thus, in the test period, the comparison group mean is captured by $\alpha_0 + \alpha_1 \cdot \text{Time} + \alpha_2$, whereas the Test state mean is captured by $(\alpha_0 + \beta_1) + (\alpha_1 + \beta_2) \cdot \text{Time} + (\alpha_2 + \gamma)$. In other words, the between-group difference changes from $\beta_1 + \beta_2 \cdot \text{Time}$ during the baseline years to $\beta_1 + \beta_2 \cdot \text{Time} + \gamma$ during the SIM test period. The DD parameter γ shows whether the between-group difference increased ($\gamma > 0$) or decreased ($\gamma < 0$) after the SIM Initiative was implemented (**Table C-7**). If the intervention is successful in reducing expenditures or utilization in the intervention group relative to the comparison group, then $\gamma < 0$.

Table C-7. Estimates from equation C.1

	Pre Period	Post Period	Pre-Post Difference
Test	$(\alpha_0 + \beta_1) + (\alpha_1 + \beta_2) \cdot \text{Time}$	$(\alpha_0 + \beta_1) + (\alpha_1 + \beta_2) \cdot \text{Time} + (\alpha_2 + \gamma)$	$\alpha_2 + \gamma$
Comparison	$\alpha_0 + \alpha_1 \cdot \text{Time}$	$\alpha_0 + \alpha_1 \cdot \text{Time} + \alpha_2$	α_2
Between Group	$\beta_1 + \beta_2 \cdot \text{Time}$	$\beta_1 + \beta_2 \cdot \text{Time} + \gamma$	γ

Clustering

The data sources for the analyses contain repeated observations for individuals. Consequently, observations will be clustered at the individual level. Clustering effects are present if, even after controlling for observed characteristics, the outcomes over time for a given individual are correlated. To account for the loss of information in the sample that occurs due to clustering, we inflate the standard errors at the individual level. The adjustment reduces the probability of a type I error for hypothesis testing—that is, the probability of a statistically significant but spurious effect estimate—but at the same time reduces the power of the test (i.e., the ability to detect a non-zero effect).

Estimation

For the utilization outcomes, we present estimates for the regression adjusted difference in probability of any service use, i.e., γ in **Equation C.1**. The γ coefficient in the LPM is interpreted as a change in the probability of a person having any service use (e.g., an inpatient admission) in the Test state relative to its comparison group during the given quarter, holding all else constant. The adjusted difference is the average change in the probability of any service use in the test quarters relative to the pre-quarters for the Test state relative to its comparison group. The adjusted difference was multiplied by 1,000 to scale the result for an interpretation of a pre-post change in the rate of any service use per 1,000 members.

For expenditure outcomes, we present the pre-post change in payments for a Test state relative to its comparison group. We again present the coefficient of the interaction of POST and the Test state dummy variable. This exponentiated interaction coefficient is interpreted as the percentage difference in the change in the dollar amount from the pre-period to the test period in the Test state relative to the comparison group, holding all else constant.

Probability of savings graphs

To calculate the chance of SIM Round 1 Test states experiencing savings or losses in test quarters relative to their respective comparison groups, we used the following regression model:

$$Y_{ijt} = \alpha_0 + \alpha_1 I_{ij} + \alpha_2 Q_t + \alpha_3 I_{ij} * Q_{16} + \alpha_4 I_{ij} * Q_{17} + \alpha_5 I_{ij} * Q_{18} + \lambda X_{ijt} + \varepsilon_{ijt} \quad (C.2)$$

where Y_{ijt} is the unlogged total expenditure amount. We graphed the results using α_3 , α_4 , and α_5 to depict the quarterly effects on total payments and percent chance of savings over the first three quarters of SIM implementation.

We use the model shown in **Equation C.1** to calculate the cumulative chance of SIM Round 1 Test states experiencing savings or losses in test quarters relative to their respective comparison groups. To obtain the cumulative estimate for each quarter, we ran the model three times, adding an additional quarter of data each time.

Appendix D: Denominators Used for Utilization and Expenditure Outcomes

Table D-1. Denominators used for population reached by and provider participation in SIM Initiatives

State	Insured population				Active patient care physicians
	Medicaid	Commercial	Medicare	Total insured	
Arkansas	1,408,200	639,200	479,400	2,896,000	5,393
Maine	683,000	255,400	213,500	1,299,600	3,869
Massachusetts	3,902,100	1,570,100	860,500	6,658,100	23,574
Minnesota	3,485,600	803,700	713,500	5,418,500	13,767
Oregon	2,130,700	825,400	635,700	3,962,300	10,443
Vermont	364,000	127,000	80,500	617,000	1,867

Source: The Test states' insured populations in 2014 are Kaiser Family Foundation population estimates based on the Census Bureau's March 2015 Current Population Survey (CPS: Annual Social and Economic Supplement) available at: <http://kff.org/other/state-indicator/total-population/#>. Data on number of active patient care physicians are from the 2015 State Physician Workforce Data Book, published by the Center for Workforce Studies, Association of American Medical Colleges, November 2015. Available at: <https://www.aamc.org/data/workforce/reports/442830/statedataandreports.html>.

Table D-2. Denominators used for annual care coordination and quality of care measures among Medicaid beneficiaries

	Inpatient admissions with follow-up visits within 14 days	Well-child visits in the first 15 months of life	Well-child visits, ages 3–6 years	Patients with persistent asthma appropriately prescribed medication, ages 5–64 years	Mental health inpatient admissions with follow-up visits, ages 6 years and older	Mammography screening, women ages 41–69 years	Initiation and engagement in treatment among patients with new alcohol and other drug dependence episodes	Influenza immunization between October 1 and March 31, ages 1 year and older	Patients newly diagnosed with major depression treated with anti-depressants, ages 18 years and older	Visits to primary care providers and to specialists	Rates of hospitalization for Prevention Quality Indicator clinical conditions
Arkansas											
2010 Overall	27,425	—	—	18,997	3,821	18,093	1,518	202,134	980	552,555	—
Infants	6,852	—	—	—	—	—	—	15,607	—	65,797	—
Children	6,177	—	—	—	658	—	—	160,791	—	392,729	—
Nondisabled adults	101	—	—	—	12	—	—	146	—	47,849	—
Disabled adults	14,295	—	—	—	2,623	—	—	25,590	—	45,718	—
2011 Overall	27,378	23,388	91,447	18,440	3,786	18,493	1,565	202,006	985	558,482	—
Infants	6,306	—	—	—	—	—	—	15,191	—	64,769	—
Children	6,832	—	—	—	653	—	—	160,277	—	397,708	—
Nondisabled adults	76	—	—	—	4	—	—	138	—	48,340	—
Disabled adults	14,164	—	—	—	2,592	—	—	26,400	—	47,203	—
2012 Overall	27,876	23,237	92,078	19,943	3,957	18,691	1,658	212,370	1,092	562,604	—
Infants	6,311	—	—	—	—	—	—	14,852	—	63,723	—
Children	6,920	—	—	—	598	—	—	170,220	—	401,880	—
Nondisabled adults	102	—	—	—	18	—	—	132	—	48,244	—
Disabled adults	14,543	—	—	—	2,805	—	—	27,166	—	48,306	—
2013 Overall	—	—	—	—	—	—	—	—	—	—	—
Infants	—	—	—	—	—	—	—	—	—	—	—
Children	—	—	—	—	—	—	—	—	—	—	—
Nondisabled adults	—	—	—	—	—	—	—	—	—	—	—
Disabled adults	—	—	—	—	—	—	—	—	—	—	—

(continued)

Table D-2. Denominators used for annual care coordination and quality of care measures among Medicaid beneficiaries (continued)

	Inpatient admissions with follow-up visits within 14 days	Well-child visits in the first 15 months of life	Well-child visits, ages 3–6 years	Patients with persistent asthma appropriately prescribed medication, ages 5–64 years	Mental health inpatient admissions with follow-up visits, ages 6 years and older	Mammography screening, women ages 41–69 years	Initiation and engagement in treatment among patients with new alcohol and other drug dependence episodes	Influenza immunization between October 1 and March 31, ages 1 year and older	Patients newly diagnosed with major depression treated with anti-depressants, ages 18 years and older	Visits to primary care providers and to specialists	Rates of hospitalization for Prevention Quality Indicator clinical conditions
Arkansas comparison group											
2010 Overall	92,709	—	—	57,528	11,777	55,230	7,760	577,537	3,479	1,328,181	—
Infants	20,400	—	—	—	—	—	—	105,438	—	177,819	—
Children	27,003	—	—	—	3,439	—	—	394,998	—	886,115	—
Nondisabled adults	540	—	—	—	32	—	—	1,010	—	137,421	—
Disabled adults	44,766	—	—	—	5,929	—	—	76,091	—	125,237	—
2011 Overall	97,689	65,872	205,628	56,656	12,354	59,218	9,389	594,498	3,767	1,409,319	—
Infants	22,410	—	—	—	—	—	—	117,424	—	180,527	—
Children	27,303	—	—	—	3,284	—	—	398,136	—	930,494	—
Nondisabled adults	596	—	—	—	24	—	—	1,087	—	166,159	—
Disabled adults	47,380	—	—	—	6,207	—	—	77,851	—	130,385	—
2012 Overall	37,118	35,445	112,908	37,345	6,797	35,557	5,743	212,370	1,733	701,284	—
Infants	6,580	—	—	—	—	—	—	14,852	—	88,827	—
Children	10,127	—	—	—	1,333	—	—	170,220	—	482,419	—
Nondisabled adults	13	—	—	—	1	—	—	132	—	42,363	—
Disabled adults	20,398	—	—	—	3,955	—	—	27,166	—	87,573	—
2013 Overall	—	—	—	—	—	—	—	—	—	—	—
Infants	—	—	—	—	—	—	—	—	—	—	—
Children	—	—	—	—	—	—	—	—	—	—	—
Nondisabled adults	—	—	—	—	—	—	—	—	—	—	—
Disabled adults	—	—	—	—	—	—	—	—	—	—	—

(continued)

Table D-2. Denominators used for annual care coordination and quality of care measures among Medicaid beneficiaries (continued)

	Inpatient admissions with follow-up visits within 14 days	Well-child visits in the first 15 months of life	Well-child visits, ages 3–6 years	Patients with persistent asthma appropriately prescribed medication, ages 5–64 years	Mental health inpatient admissions with follow-up visits, ages 6 years and older	Mammography screening, women ages 41–69 years	Initiation and engagement in treatment among patients with new alcohol and other drug dependence episodes	Influenza immunization between October 1 and March 31, ages 1 year and older	Patients newly diagnosed with major depression treated with anti-depressants, ages 18 years and older	Visits to primary care providers and to specialists	Rates of hospitalization for Prevention Quality Indicator clinical conditions
Maine											
2010 Overall	28	—	—	—	28	26,890	—	—	471	—	—
Infants	—	—	—	—	—	—	—	—	—	—	—
Children	6	—	—	—	5	—	—	—	—	—	—
Nondisabled adults	14	—	—	—	8	1,206	—	—	—	—	—
Disabled adults	4	—	—	—	4	508	—	—	—	—	—
2011 Overall	287	—	—	14,043	287	32,084	13,007	131,949	15,606	301,017	—
Infants	—	—	—	—	—	—	—	8,585	—	18,446	—
Children	78	—	—	—	45	—	—	55,891	—	117,360	—
Nondisabled adults	138	—	—	—	91	5,378	—	54,662	—	135,437	—
Disabled adults	42	—	—	—	30	2,274	—	12,498	—	19,761	—
2012 Overall	231	5,997	26,566	13,517	231	30,924	11,756	129,383	21,554	290,683	—
Infants	—	4,684	5,991	—	—	—	—	8,146	—	17,774	—
Children	79	3	6	—	41	—	—	55,257	—	116,689	—
Nondisabled adults	80	—	—	—	49	5,034	—	51,883	—	125,843	—
Disabled adults	48	—	—	—	23	2,414	—	13,780	—	21,124	—
2013 Overall	237	5,742	25,808	12,599	237	30,637	11,547	—	19,861	281,297	—
Infants	—	4,575	5,740	—	—	—	—	—	—	16,578	—
Children	106	2	2	—	51	—	—	—	—	12,933	—
Nondisabled adults	61	—	—	—	39	4,362	—	—	—	113,038	—
Disabled adults	46	—	—	—	27	2,624	—	—	—	22,707	—

(continued)

Table D-2. Denominators used for annual care coordination and quality of care measures among Medicaid beneficiaries (continued)

	Inpatient admissions with follow-up visits within 14 days	Well-child visits in the first 15 months of life	Well-child visits, ages 3–6 years	Patients with persistent asthma appropriately prescribed medication, ages 5–64 years	Mental health inpatient admissions with follow-up visits, ages 6 years and older	Mammography screening, women ages 41–69 years	Initiation and engagement in treatment among patients with new alcohol and other drug dependence episodes	Influenza immunization between October 1 and March 31, ages 1 year and older	Patients newly diagnosed with major depression treated with anti-depressants, ages 18 years and older	Visits to primary care providers and to specialists	Rates of hospitalization for Prevention Quality Indicator clinical conditions
Maine comparison group											
2010 Overall	26,458	—	34,512	11,754	4,511	16,030	7,518	111,085	1,717	682,799	—
Infants	11,916	—	—	—	—	—	—	34,478	—	55,386	—
Children	8,290	—	—	—	1,701	—	—	66,644	—	331,846	—
Nondisabled adults	364	—	—	—	5	—	—	737	—	254,481	—
Disabled adults	5,888	—	—	—	828	—	—	9,226	—	36,813	—
2011 Overall	60,665	10,539	34,602	11,660	5,273	16,510	10,399	50,631	1,776	723,794	—
Infants	31,401	—	—	—	—	—	—	9,315	—	55,109	—
Children	23,440	—	—	—	1,936	—	—	33,947	—	343,182	—
Nondisabled adults	349	—	—	—	9	—	—	585	—	283,977	—
Disabled adults	5,475	—	—	—	1,086	—	—	6,784	—	36,980	—
2012 Overall	—	—	—	—	—	—	—	—	—	—	—
Infants	—	—	—	—	—	—	—	—	—	—	—
Children	—	—	—	—	—	—	—	—	—	—	—
Nondisabled adults	—	—	—	—	—	—	—	—	—	—	—
Disabled adults	—	—	—	—	—	—	—	—	—	—	—
2013 Overall	—	—	—	—	—	—	—	—	—	—	—
Infants	—	—	—	—	—	—	—	—	—	—	—
Children	—	—	—	—	—	—	—	—	—	—	—
Nondisabled adults	—	—	—	—	—	—	—	—	—	—	—
Disabled adults	—	—	—	—	—	—	—	—	—	—	—

(continued)

Table D-2. Denominators used for annual care coordination and quality of care measures among Medicaid beneficiaries (continued)

	Inpatient admissions with follow-up visits within 14 days	Well-child visits in the first 15 months of life	Well-child visits, ages 3–6 years	Patients with persistent asthma appropriately prescribed medication, ages 5–64 years	Mental health inpatient admissions with follow-up visits, ages 6 years and older	Mammography screening, women ages 41–69 years	Initiation and engagement in treatment among patients with new alcohol and other drug dependence episodes	Influenza immunization between October 1 and March 31, ages 1 year and older	Patients newly diagnosed with major depression treated with anti-depressants, ages 18 years and older	Visits to primary care providers and to specialists	Rates of hospitalization for Prevention Quality Indicator clinical conditions
Minnesota											
2010 Overall	37,767	—	—	39,700	7,739	32,456	3,322	334,332	5,921	686,918	323,072
Infants	13,039	—	—	—	—	—	—	129,187	—	74,214	—
Children	7,915	—	—	—	1,793	—	—	172,408	—	345,114	—
Nondisabled adults	512	—	—	—	11	—	—	2,052	—	222,164	—
Disabled adults	16,301	—	—	—	4,187	—	—	30,685	—	43,596	—
2011 Overall	50,505	27,019	75,807	27,077	11,789	35,911	3,571	388,231	7,676	835,863	469,675
Infants	24,704	—	—	—	—	—	—	188,212	—	73,035	—
Children	8,553	—	—	—	2,122	—	—	165,960	—	360,070	—
Nondisabled adults	550	—	—	—	11	—	—	1,948	—	356,451	—
Disabled adults	16,698	—	—	—	4,278	—	—	32,111	—	44,557	—
2012 Overall	—	—	—	—	—	—	—	—	—	—	—
Infants	—	—	—	—	—	—	—	—	—	—	—
Children	—	—	—	—	—	—	—	—	—	—	—
Nondisabled adults	—	—	—	—	—	—	—	—	—	—	—
Disabled adults	—	—	—	—	—	—	—	—	—	—	—
2013 Overall	—	—	—	—	—	—	—	—	—	—	—
Infants	—	—	—	—	—	—	—	—	—	—	—
Children	—	—	—	—	—	—	—	—	—	—	—
Nondisabled adults	—	—	—	—	—	—	—	—	—	—	—
Disabled adults	—	—	—	—	—	—	—	—	—	—	—

(continued)

Table D-2. Denominators used for annual care coordination and quality of care measures among Medicaid beneficiaries (continued)

	Inpatient admissions with follow-up visits within 14 days	Well-child visits in the first 15 months of life	Well-child visits, ages 3–6 years	Patients with persistent asthma appropriately prescribed medication, ages 5–64 years	Mental health inpatient admissions with follow-up visits, ages 6 years and older	Mammography screening, women ages 41–69 years	Initiation and engagement in treatment among patients with new alcohol and other drug dependence episodes	Influenza immunization between October 1 and March 31, ages 1 year and older	Patients newly diagnosed with major depression treated with anti-depressants, ages 18 years and older	Visits to primary care providers and to specialists	Rates of hospitalization for Prevention Quality Indicator clinical conditions
Minnesota comparison group											
2010 Overall	69,865	—	—	35,757	8,231	56,969	9,712	556,716	6,209	1,446,703	199,228
Infants	20,850	—	—	—	—	—	—	134,325	—	160,681	—
Children	14,967	—	—	—	2,854	—	—	346,682	—	856,155	—
Nondisabled adults	491	—	—	—	5	—	—	1,356	—	309,841	—
Disabled adults	33,557	—	—	—	3,227	—	—	74,353	—	118,181	—
2011 Overall	70,425	58,548	206,836	36,127	8,504	61,811	11,208	566,137	6,974	1,507,142	217,694
Infants	20,632	—	—	—	—	—	—	131,519	—	158,450	—
Children	15,757	—	—	—	2,956	—	—	357,671	—	895,437	—
Nondisabled adults	493	—	—	—	2	—	—	1,226	—	331,042	—
Disabled adults	33,543	—	—	—	3,381	—	—	75,721	—	120,454	—
2012 Overall	—	—	—	—	—	—	—	—	—	—	—
Infants	—	—	—	—	—	—	—	—	—	—	—
Children	—	—	—	—	—	—	—	—	—	—	—
Nondisabled adults	—	—	—	—	—	—	—	—	—	—	—
Disabled adults	—	—	—	—	—	—	—	—	—	—	—
2013 Overall	—	—	—	—	—	—	—	—	—	—	—
Infants	—	—	—	—	—	—	—	—	—	—	—
Children	—	—	—	—	—	—	—	—	—	—	—
Nondisabled adults	—	—	—	—	—	—	—	—	—	—	—
Disabled adults	—	—	—	—	—	—	—	—	—	—	—

(continued)

Table D-2. Denominators used for annual care coordination and quality of care measures among Medicaid beneficiaries (continued)

	Inpatient admissions with follow-up visits within 14 days	Well-child visits in the first 15 months of life	Well-child visits, ages 3–6 years	Patients with persistent asthma appropriately prescribed medication, ages 5–64 years	Mental health inpatient admissions with follow-up visits, ages 6 years and older	Mammography screening, women ages 41–69 years	Initiation and engagement in treatment among patients with new alcohol and other drug dependence episodes	Influenza immunization between October 1 and March 31, ages 1 year and older	Patients newly diagnosed with major depression treated with anti-depressants, ages 18 years and older	Visits to primary care providers and to specialists	Rates of hospitalization for Prevention Quality Indicator clinical conditions
Oregon											
2010 Overall	25,037	—	—	15,608	3,166	24,547	2,003	225,904	2,561	434,626	220,046
Infants	8,421	—	—	—	—	—	—	81,069	—	57,349	—
Children	4,959	—	—	—	569	—	—	116,029	—	254,493	—
Nondisabled adults	146	—	—	—	5	—	—	666	—	82,222	—
Disabled adults	11,511	—	—	—	1,662	—	—	28,140	—	39,607	—
2011 Overall	27,671	21,557	63,793	18,651	3,752	36,789	2,793	231,519	3,403	474,604	253,902
Infants	11,026	—	—	—	—	—	—	87,487	—	57,777	—
Children	4,944	—	—	—	598	—	—	115,388	—	279,126	—
Nondisabled adults	209	—	—	—	6	—	—	658	—	95,454	—
Disabled adults	11,492	—	—	—	1,678	—	—	27,986	—	41,219	—
2012 Overall	—	—	—	—	—	—	—	—	—	—	—
Infants	—	—	—	—	—	—	—	—	—	—	—
Children	—	—	—	—	—	—	—	—	—	—	—
Nondisabled adults	—	—	—	—	—	—	—	—	—	—	—
Disabled adults	—	—	—	—	—	—	—	—	—	—	—
2013 Overall	—	—	—	—	—	—	—	—	—	—	—
Infants	—	—	—	—	—	—	—	—	—	—	—
Children	—	—	—	—	—	—	—	—	—	—	—
Nondisabled adults	—	—	—	—	—	—	—	—	—	—	—
Disabled adults	—	—	—	—	—	—	—	—	—	—	—

(continued)

Table D-2. Denominators used for annual care coordination and quality of care measures among Medicaid beneficiaries (continued)

	Inpatient admissions with follow-up visits within 14 days	Well-child visits in the first 15 months of life	Well-child visits, ages 3–6 years	Patients with persistent asthma appropriately prescribed medication, ages 5–64 years	Mental health inpatient admissions with follow-up visits, ages 6 years and older	Mammography screening, women ages 41–69 years	Initiation and engagement in treatment among patients with new alcohol and other drug dependence episodes	Influenza immunization between October 1 and March 31, ages 1 year and older	Patients newly diagnosed with major depression treated with anti-depressants, ages 18 years and older	Visits to primary care providers and to specialists	Rates of hospitalization for Prevention Quality Indicator clinical conditions
Oregon comparison group											
2010 Overall	145,136	—	—	87,692	14,608	122,674	17,708	1,199,378	11,733	2,717,653	836,307
Infants	46,161	—	—	—	—	—	—	355,551	—	276,040	—
Children	24,200	—	—	—	1,000	—	—	683,000	—	1,595,491	—
Nondisabled adults	1,035	—	—	—	4	—	—	2,516	—	601,655	—
Disabled adults	73,740	—	—	—	7,567	—	—	158,311	—	240,188	—
2011 Overall	155,449	102,726	357,025	90,062	13,729	131,790	19,774	1,184,077	14,295	2,767,260	831,438
Infants	47,311	—	—	—	—	—	—	333,383	—	273,491	—
Children	26,225	—	—	—	725	—	—	683,141	—	1,621,985	—
Nondisabled adults	1,200	—	—	—	3	—	—	2,535	—	616,869	—
Disabled adults	80,713	—	—	—	7,352	—	—	165,018	—	250,137	—
2012 Overall	—	—	—	—	—	—	—	—	—	—	—
Infants	—	—	—	—	—	—	—	—	—	—	—
Children	—	—	—	—	—	—	—	—	—	—	—
Nondisabled adults	—	—	—	—	—	—	—	—	—	—	—
Disabled adults	—	—	—	—	—	—	—	—	—	—	—
2013 Overall	—	—	—	—	—	—	—	—	—	—	—
Infants	—	—	—	—	—	—	—	—	—	—	—
Children	—	—	—	—	—	—	—	—	—	—	—
Nondisabled adults	—	—	—	—	—	—	—	—	—	—	—
Disabled adults	—	—	—	—	—	—	—	—	—	—	—

(continued)

Table D-2. Denominators used for annual care coordination and quality of care measures among Medicaid beneficiaries (continued)

		Inpatient admissions with follow-up visits within 14 days	Well-child visits in the first 15 months of life	Well-child visits, ages 3–6 years	Patients with persistent asthma appropriately prescribed medication, ages 5–64 years	Mental health inpatient admissions with follow-up visits, ages 6 years and older	Mammography screening, women ages 41–69 years	Initiation and engagement in treatment among patients with new alcohol and other drug dependence episodes	Influenza immunization between October 1 and March 31, ages 1 year and older	Patients newly diagnosed with major depression treated with anti-depressants, ages 18 years and older	Visits to primary care providers and to specialists	Rates of hospitalization for Prevention Quality Indicator clinical conditions
Vermont												
2010	Overall	6,850	—	—	2,662	1,874	12,831	1,677	54,341	967	132,392	88,213
	Infants	4,253	—	—	—	—	—	—	27,117	—	8,549	—
	Children	1,137	—	—	—	358	—	—	23,452	—	58,158	—
	Nondisabled adults	9	—	—	—	-	—	—	18	—	58,991	—
	Disabled adults	1,451	—	—	—	256	—	—	3,754	—	6,647	—
2011	Overall	7,088	3,263	12,148	5,989	2,013	13,785	1,623	54,771	1,055	134,813	90,656
	Infants	4,478	—	—	—	—	—	—	27,165	—	8,620	—
	Children	1,118	—	—	—	344	—	—	23,753	—	58,242	—
	Nondisabled adults	9	—	—	—	—	—	—	26	—	60,958	—
	Disabled adults	1,483	—	—	—	281	—	—	3,827	—	6,936	—
2012	Overall	—	—	—	—	—	—	—	—	—	—	—
	Infants	—	—	—	—	—	—	—	—	—	—	—
	Children	—	—	—	—	—	—	—	—	—	—	—
	Nondisabled adults	—	—	—	—	—	—	—	—	—	—	—
	Disabled adults	—	—	—	—	—	—	—	—	—	—	—
2013	Overall	—	—	—	—	—	—	—	—	—	—	—
	Infants	—	—	—	—	—	—	—	—	—	—	—
	Children	—	—	—	—	—	—	—	—	—	—	—
	Nondisabled adults	—	—	—	—	—	—	—	—	—	—	—
	Disabled adults	—	—	—	—	—	—	—	—	—	—	—

(continued)

Table D-2. Denominators used for annual care coordination and quality of care measures among Medicaid beneficiaries (continued)

	Inpatient admissions with follow-up visits within 14 days	Well-child visits in the first 15 months of life	Well-child visits, ages 3–6 years	Patients with persistent asthma appropriately prescribed medication, ages 5–64 years	Mental health inpatient admissions with follow-up visits, ages 6 years and older	Mammography screening, women ages 41–69 years	Initiation and engagement in treatment among patients with new alcohol and other drug dependence episodes	Influenza immunization between October 1 and March 31, ages 1 year and older	Patients newly diagnosed with major depression treated with anti-depressants, ages 18 years and older	Visits to primary care providers and to specialists	Rates of hospitalization for Prevention Quality Indicator clinical conditions
Vermont comparison group											
2010 Overall	128,864	—	—	13,277	18,996	55,669	7,325	384,004	5,380	1,113,312	235,862
Infants	65,216	—	—	—	—	—	—	132,380	—	102,199	—
Children	38,514	—	—	—	5,248	—	—	215,600	—	558,392	—
Nondisabled adults	1,437	—	—	—	42	—	—	2,453	—	387,368	—
Disabled adults	23,697	—	—	—	5,646	—	—	33,571	—	60,858	—
2011 Overall	118,392	36,283	127,921	49,935	20,673	69,709	10,834	403,545	5,458	1,184,142	253,524
Infants	62,805	—	—	—	—	—	—	141,404	—	101,822	—
Children	31,455	—	—	—	5,554	—	—	225,276	—	581,752	—
Nondisabled adults	1,526	—	—	—	54	—	—	2,609	—	433,606	—
Disabled adults	22,606	—	—	—	5,391	—	—	34,256	—	62,168	—
2012 Overall	—	—	—	—	—	—	—	—	—	—	—
Infants	—	—	—	—	—	—	—	—	—	—	—
Children	—	—	—	—	—	—	—	—	—	—	—
Nondisabled adults	—	—	—	—	—	—	—	—	—	—	—
Disabled adults	—	—	—	—	—	—	—	—	—	—	—
2013 Overall	—	—	—	—	—	—	—	—	—	—	—
Infants	—	—	—	—	—	—	—	—	—	—	—
Children	—	—	—	—	—	—	—	—	—	—	—
Nondisabled adults	—	—	—	—	—	—	—	—	—	—	—
Disabled adults	—	—	—	—	—	—	—	—	—	—	—

Source: RTI analysis of Chronic Conditions Data Warehouse Medicare fee-for-service claims, Medicaid Analytic eXtract (MAX) data, Maine Medicaid claims, and Truven Health MarketScan data.

Table D-3. Denominators used for annual care coordination and quality of care measures among commercially insured

		Inpatient admissions with follow-up visits within 14 days	Well-child visits in the first 15 months of life	Well-child visits, ages 3–6 years	Patients with persistent asthma appropriately prescribed medication, ages 5–64 years	Mental health inpatient admissions with follow-up visits, ages 6 years and older	Mammography screening, women ages 41–69 years	Initiation and engagement in treatment among patients with new alcohol and other drug dependence episodes	Influenza immunization between October 1 and March 31, ages 1 year and older	Patients newly diagnosed with major depression treated with anti-depressants, ages 18 years and older	Visits to primary care providers and to specialists and rates of hospitalization for Prevention Quality Indicator clinical conditions ¹
Arkansas											
2010	Overall	13,961	—	9,269	—	738	54,951	593	137,524	—	279,113
	Infants	1,517	—	—	—	—	—	—	2,377	—	5,491
	Children	989	—	—	—	196	—	51	31,549	—	69,900
	Adults	11,455	—	—	—	542	—	542	103,598	—	203,722
2011	Overall	13,498	1,028	8,821	1,461	793	52,260	795	135,404	1,220	270,365
	Infants	1,512	—	—	—	—	—	—	2,322	—	5,182
	Children	1,015	—	—	—	226	—	62	30,536	—	65,822
	Adults	10,971	—	—	—	567	—	733	102,546	—	199,361
2012	Overall	13,317	1,274	8,747	1,450	912	51,859	969	144,709	1,298	271,397
	Infants	1,495	—	—	—	—	—	—	2,487	—	5,200
	Children	973	—	—	—	277	—	64	32,628	—	64,592
	Adults	10,849	—	—	—	635	—	905	109,594	—	201,605
2013	Overall	12,157	949	8,163	1,172	714	49,746	776	128,693	1,302	258,277
	Infants	1,648	—	—	—	—	—	—	2,160	—	5,085
	Children	951	—	—	—	237	—	41	27,196	—	59,184
	Adults	9,558	—	—	—	477	—	735	99,337	—	194,008
2014	Overall	—	—	—	—	—	—	—	—	—	—
	Infants	—	—	—	—	—	—	—	—	—	—
	Children	—	—	—	—	—	—	—	—	—	—
	Adults	—	—	—	—	—	—	—	—	—	—

(continued)

Table D-3. Denominators used for annual care coordination and quality of care measures among commercially insured (continued)

		Inpatient admissions with follow-up visits within 14 days	Well-child visits in the first 15 months of life	Well-child visits, ages 3–6 years	Patients with persistent asthma appropriately prescribed medication, ages 5–64 years	Mental health inpatient admissions with follow-up visits, ages 6 years and older	Mammography screening, women ages 41–69 years	Initiation and engagement in treatment among patients with new alcohol and other drug dependence episodes	Influenza immunization between October 1 and March 31, ages 1 year and older	Patients newly diagnosed with major depression treated with anti-depressants, ages 18 years and older	Visits to primary care providers and to specialists and rates of hospitalization for Prevention Quality Indicator clinical conditions ¹
Arkansas comparison group											
2010	Overall	110,861	—	73,987	—	5,974	442,070	7,445	1,236,940	—	2,105,675
	Infants	10,683	—	—	—	—	—	—	21,830	—	45,550
	Children	7,895	—	—	—	1,262	—	641	282,851	—	505,165
	Adults	92,283	—	—	—	4,712	—	6,804	932,259	—	1,554,960
2011	Overall	108,919	7,957	71,776	14,635	6,320	445,230	10,783	1,231,357	10,616	2,138,780
	Infants	9,733	—	—	—	—	—	—	20,690	—	44,342
	Children	7,765	—	—	—	1,327	—	805	271,981	—	495,466
	Adults	91,421	—	—	—	4,993	—	9,978	938,686	—	1,598,972
2012	Overall	109,635	10,130	72,049	16,346	6,789	453,104	12,541	1,155,843	11,089	2,238,281
	Infants	11,601	—	—	—	—	—	—	19,054	—	47,098
	Children	7,889	—	—	—	1,419	—	893	261,983	—	514,483
	Adults	90,145	—	—	—	5,370	—	11,648	874,806	—	1,676,700
2013	Overall	71,127	6,782	46,893	11,355	4,242	328,825	8,099	869,544	9,315	1,582,355
	Infants	6,681	—	—	—	—	—	—	14,074	—	32,572
	Children	4,993	—	—	—	953	—	500	184,675	—	359,439
	Adults	59,453	—	—	—	3,289	—	7,599	670,795	—	1,190,344
2014	Overall	35,208	—	—	—	—	302,161	5,374	—	—	1,442,379
	Infants	3,460	—	—	—	—	—	—	—	—	29,253
	Children	2,518	—	—	—	—	—	301	—	—	329,230
	Adults	29,230	—	—	—	—	—	5,073	—	—	1,083,896

(continued)

Table D-3. Denominators used for annual care coordination and quality of care measures among commercially insured (continued)

		Inpatient admissions with follow-up visits within 14 days	Well-child visits in the first 15 months of life	Well-child visits, ages 3–6 years	Patients with persistent asthma appropriately prescribed medication, ages 5–64 years	Mental health inpatient admissions with follow-up visits, ages 6 years and older	Mammography screening, women ages 41–69 years	Initiation and engagement in treatment among patients with new alcohol and other drug dependence episodes	Influenza immunization between October 1 and March 31, ages 1 year and older	Patients newly diagnosed with major depression treated with anti-depressants, ages 18 years and older	Visits to primary care providers and to specialists and rates of hospitalization for Prevention Quality Indicator clinical conditions ¹
Maine											
2010	Overall	13,947	—	8,511	—	997	87,834	2,432	171,430	—	332,632
	Infants	725	—	—	—	—	—	—	2,022	—	4,911
	Children	815	—	—	—	215	—	226	32,564	—	67,335
	Adults	12,407	—	—	—	782	—	2,206	136,844	—	260,386
2011	Overall	12,734	1,165	8,142	4,927	893	84,182	2,529	167,506	3,120	317,759
	Infants	741	—	—	—	—	—	—	1,894	—	4,617
	Children	764	—	—	—	220	—	214	30,452	—	63,078
	Adults	11,229	—	—	—	673	—	2,315	135,160	—	250,064
2012	Overall	10,949	1,113	6,387	3,898	808	80,260	2,369	129,973	3,038	302,025
	Infants	704	—	—	—	—	—	—	1,490	—	4,247
	Children	709	—	—	—	193	—	165	23,402	—	57,987
	Adults	9,536	—	—	—	615	—	2,204	105,081	—	239,791
2013	Overall	8,339	816	5,306	3,306	571	56,782	1,829	111,807	2,222	217,889
	Infants	521	—	—	—	—	—	—	1,223	—	3,018
	Children	531	—	—	—	166	—	103	18,678	—	40,893
	Adults	7,287	—	—	—	405	—	1,726	91,906	—	173,978
2014	Overall	4,097	—	—	—	—	52,775	1,151	—	—	201,836
	Infants	248	—	—	—	—	—	—	—	—	2,774
	Children	264	—	—	—	—	—	70	—	—	37,990
	Adults	3,585	—	—	—	—	—	1,081	—	—	161,072

(continued)

Table D-3. Denominators used for annual care coordination and quality of care measures among commercially insured (continued)

		Inpatient admissions with follow-up visits within 14 days	Well-child visits in the first 15 months of life	Well-child visits, ages 3–6 years	Patients with persistent asthma appropriately prescribed medication, ages 5–64 years	Mental health inpatient admissions with follow-up visits, ages 6 years and older	Mammography screening, women ages 41–69 years	Initiation and engagement in treatment among patients with new alcohol and other drug dependence episodes	Influenza immunization between October 1 and March 31, ages 1 year and older	Patients newly diagnosed with major depression treated with anti-depressants, ages 18 years and older	Visits to primary care providers and to specialists and rates of hospitalization for Prevention Quality Indicator clinical conditions ¹
Maine comparison group											
2010	Overall	70,082	—	42,790	—	4,978	362,978	11,697	794,566	—	1,497,901
	Infants	6,128	—	—	—	—	—	—	10,665	—	25,481
	Children	4,481	—	—	—	976	—	1,065	166,711	—	329,138
	Adults	59,473	—	—	—	4,002	—	10,632	617,190	—	1,143,282
2011	Overall	61,037	4,952	37,343	11,850	4,861	327,456	11,574	752,698	6,412	1,365,956
	Infants	4,771	—	—	—	—	—	—	9,821	—	22,436
	Children	4,207	—	—	—	945	—	1,019	154,696	—	298,731
	Adults	52,059	—	—	—	3,916	—	10,555	588,181	—	1,044,789
2012	Overall	56,419	5,605	33,756	11,045	4,817	321,015	12,207	687,381	6,082	1,324,910
	Infants	4,277	—	—	—	—	—	—	8,659	—	20,519
	Children	3,682	—	—	—	954	—	956	138,940	—	277,669
	Adults	48,460	—	—	—	3,863	—	11,251	539,782	—	1,026,722
2013	Overall	47,871	4,478	29,784	9,568	3,670	268,821	11,134	603,363	6,082	1,133,417
	Infants	3,959	—	—	—	—	—	—	7,234	—	17,605
	Children	3,024	—	—	—	782	—	771	115,165	—	234,418
	Adults	40,888	—	—	—	2,888	—	10,363	480,964	—	881,394
2014	Overall	23,300	—	—	—	—	239,899	7,112	—	—	1,008,799
	Infants	1,854	—	—	—	—	—	—	—	—	15,471
	Children	1,423	—	—	—	—	—	401	—	—	209,892
	Adults	20,023	—	—	—	—	—	6,711	—	—	783,436

(continued)

Table D-3. Denominators used for annual care coordination and quality of care measures among commercially insured (continued)

								Initiation and engagement in treatment among		Patients newly diagnosed with major depression treated with anti- depressants, ages 18 years and older	Visits to primary care providers and to specialists and rates of hospitalization for Prevention Quality Indicator clinical conditions ¹
			Inpatient admissions with follow-up visits within 14 days	Well-child visits in the first 15 months of life	Well-child visits, ages 3–6 years	Patients with persistent asthma appropriately prescribed medication, ages 5–64 years	Mental health inpatient admissions with follow- up visits, ages 6 years and older	Mammo- graphy screening, women ages 41–69 years	patients with new alcohol and other drug dependence episodes	Influenza immunization between October 1 and March 31, ages 1 year and older	
Massachusetts											
2010	Overall	35,943	—	27,466	—	2,199	159,729	3,980	376,269	—	716,500
	Infants	5,940	—	—	—	—	—	—	7,237	—	16,861
	Children	2,633	—	—	—	456	—	395	86,225	—	164,532
	Adults	27,370	—	—	—	1,743	—	3,585	282,807	—	535,107
2011	Overall	34,912	3,764	25,568	7,641	2,387	157,305	4,460	388,182	3,976	706,881
	Infants	5,789	—	—	—	—	—	—	7,468	—	15,918
	Children	2,438	—	—	—	429	—	367	90,094	—	158,614
	Adults	26,685	—	—	—	1,958	—	4,093	290,620	—	532,349
2012	Overall	33,408	4,193	25,608	7,423	2,592	162,783	5,067	390,814	4,279	750,033
	Infants	6,217	—	—	—	—	—	—	7,165	—	17,507
	Children	2,189	—	—	—	455	—	385	88,604	—	169,687
	Adults	25,002	—	—	—	2,137	—	4,682	295,045	—	562,839
2013	Overall	29,891	4,257	22,717	7,064	2,141	146,936	4,303	327,807	3,532	676,923
	Infants	5,554	—	—	—	—	—	—	6,174	—	15,926
	Children	1,942	—	—	—	418	—	287	71,745	—	151,011
	Adults	22,395	—	—	—	1,723	—	4,016	249,888	—	509,986
2014	Overall	14,680	—	—	—	—	134,988	2,958	—	—	616,616
	Infants	2,652	—	—	—	—	—	—	—	—	14,355
	Children	935	—	—	—	—	—	168	—	—	138,825
	Adults	11,093	—	—	—	—	—	2,790	—	—	463,432

(continued)

Table D-3. Denominators used for annual care coordination and quality of care measures among commercially insured (continued)

		Inpatient admissions with follow-up visits within 14 days	Well-child visits in the first 15 months of life	Well-child visits, ages 3–6 years	Patients with persistent asthma appropriately prescribed medication, ages 5–64 years	Mental health inpatient admissions with follow-up visits, ages 6 years and older	Mammography screening, women ages 41–69 years	Initiation and engagement in treatment among patients with new alcohol and other drug dependence episodes	Influenza immunization between October 1 and March 31, ages 1 year and older	Patients newly diagnosed with major depression treated with anti-depressants, ages 18 years and older	Visits to primary care providers and to specialists and rates of hospitalization for Prevention Quality Indicator clinical conditions ¹
Massachusetts comparison group											
2010	Overall	70,082	—	42,790	—	4,978	362,978	11,697	794,566	—	1,497,901
	Infants	6,128	—	—	—	—	—	—	10,665	—	25,481
	Children	4,481	—	—	—	976	—	1,065	166,711	—	329,138
	Adults	59,473	—	—	—	4,002	—	10,632	617,190	—	1,143,282
2011	Overall	61,037	4,952	37,343	11,850	4,861	327,456	11,574	752,698	6,412	1,365,956
	Infants	4,771	—	—	—	—	—	—	9,821	—	22,436
	Children	4,207	—	—	—	945	—	1,019	154,696	—	298,731
	Adults	52,059	—	—	—	3,916	—	10,555	588,181	—	1,044,789
2012	Overall	56,419	5,605	33,756	11,045	4,817	321,015	12,207	687,381	6,082	1,324,910
	Infants	4,277	—	—	—	—	—	—	8,659	—	20,519
	Children	3,682	—	—	—	954	—	956	138,940	—	277,669
	Adults	48,460	—	—	—	3,863	—	11,251	539,782	—	1,026,722
2013	Overall	47,871	4,478	29,784	9,568	3,670	268,821	11,134	603,363	6,082	1,133,417
	Infants	3,959	—	—	—	—	—	—	7,234	—	17,605
	Children	3,024	—	—	—	782	—	771	115,165	—	234,418
	Adults	40,888	—	—	—	2,888	—	10,363	480,964	—	881,394
2014	Overall	23,300	—	—	—	—	239,899	7,112	—	—	1,008,799
	Infants	1,854	—	—	—	—	—	—	—	—	15,471
	Children	1,423	—	—	—	—	—	401	—	—	209,892
	Adults	20,023	—	—	—	—	—	6,711	—	—	783,436

(continued)

Table D-3. Denominators used for annual care coordination and quality of care measures among commercially insured (continued)

		Inpatient admissions with follow-up visits within 14 days	Well-child visits in the first 15 months of life	Well-child visits, ages 3–6 years	Patients with persistent asthma appropriately prescribed medication, ages 5–64 years	Mental health inpatient admissions with follow-up visits, ages 6 years and older	Mammo-graphy screening, women ages 41–69 years	Initiation and engagement in treatment among patients with new alcohol and other drug dependence episodes	Influenza immunization between October 1 and March 31, ages 1 year and older	Patients newly diagnosed with major depression treated with anti-depressants, ages 18 years and older	Visits to primary care providers and to specialists and rates of hospitalization for Prevention Quality Indicator clinical conditions ¹
Minnesota											
2010	Overall	22,232	—	20,917	—	1,309	76,373	1,858	235,155	—	422,551
	Infants	4,878	—		—	—	—	—	6,220	—	12,861
	Children	1,654	—		—	339	—	220	64,764	—	113,165
	Adults	15,700	—		—	970	—	1,638	164,171	—	296,525
2011	Overall	25,837	2,699	22,700	3,675	1,720	88,754	2,763	243,343	1,606	487,168
	Infants	5,515	—	—	—	—	—	—	6,170	—	14,464
	Children	1,915	—	—	—	449	—	313	63,561	—	126,010
	Adults	18,407	—	—	—	1,271	—	2,450	173,612	—	346,694
2012	Overall	25,054	3,772	22,017	4,263	1,724	87,793	3,017	229,114	1,466	486,497
	Infants	5,421	—	—	—	—	—	—	5,658	—	14,153
	Children	1,881	—	—	—	455	—	321	59,605	—	124,584
	Adults	17,752	—	—	—	1,269	—	2,696	163,851	—	347,760
2013	Overall	20,078	3,328	18,356	3,858	1,334	75,275	2,357	191,139	1,374	417,893
	Infants	4,499	—	—	—	—	—	—	4,715	—	12,121
	Children	1,479	—	—	—	330	—	215	47,564	—	106,246
	Adults	14,100	—	—	—	1,004	—	2,142	138,860	—	299,526
2014	Overall	9,131	—	—	—	—	65,307	1,359	—	—	365,148
	Infants	2,085	—	—	—	—	—	—	—	—	10,594
	Children	718	—	—	—	—	—	123	—	—	93,548
	Adults	6,328	—	—	—	—	—	1,236	—	—	261,006

(continued)

Table D-3. Denominators used for annual care coordination and quality of care measures among commercially insured (continued)

		Inpatient admissions with follow-up visits within 14 days	Well-child visits in the first 15 months of life	Well-child visits, ages 3–6 years	Patients with persistent asthma appropriately prescribed medication, ages 5–64 years	Mental health inpatient admissions with follow-up visits, ages 6 years and older	Mammography screening, women ages 41–69 years	Initiation and engagement in treatment among patients with new alcohol and other drug dependence episodes	Influenza immunization between October 1 and March 31, ages 1 year and older	Patients newly diagnosed with major depression treated with anti-depressants, ages 18 years and older	Visits to primary care providers and to specialists and rates of hospitalization for Prevention Quality Indicator clinical conditions ¹
Minnesota comparison group											
2010	Overall	73,579	—	61,951	—	4,389	342,897	6,513	836,587	—	1,662,534
	Infants	11,393	—	—	—	—	—	—	16,355	—	40,289
	Children	5,516	—	—	—	1,122	—	891	194,806	—	408,499
	Adults	56,670	—	—	—	3,267	—	5,622	625,426	—	1,213,746
2011	Overall	70,701	6,915	57,706	12,754	3,823	325,139	8,867	860,818	10,687	1,612,531
	Infants	11,634	—	—	—	—	—	—	15,812	—	37,709
	Children	4,941	—	—	—	935	—	1,001	190,316	—	384,908
	Adults	54,126	—	—	—	2,888	—	7,866	654,690	—	1,189,914
2012	Overall	79,139	9,614	65,783	13,487	4,807	376,440	11,318	899,598	11,231	1,822,426
	Infants	13,308	—	—	—	—	—	—	16,354	—	41,973
	Children	5,316	—	—	—	1,088	—	1,191	196,808	—	428,013
	Adults	60,515	—	—	—	3,719	—	10,127	686,436	—	1,352,440
2013	Overall	67,968	9,438	56,227	14,079	4,095	338,792	9,998	809,248	10,379	1,635,010
	Infants	11,170	—	—	—	—	—	—	14,705	—	37,638
	Children	4,562	—	—	—	976	—	851	171,409	—	374,808
	Adults	52,236	—	—	—	3,119	—	9,147	623,134	—	1,222,564
2014	Overall	32,742	—	—	—	—	310,694	6,142	—	—	1,505,504
	Infants	5,476	—	—	—	—	—	—	—	—	34,200
	Children	2,267	—	—	—	—	—	507	—	—	347,494
	Adults	24,999	—	—	—	—	—	5,635	—	—	1,123,810

(continued)

Table D-3. Denominators used for annual care coordination and quality of care measures among commercially insured (continued)

		Inpatient admissions with follow-up visits within 14 days	Well-child visits in the first 15 months of life	Well-child visits, ages 3–6 years	Patients with persistent asthma appropriately prescribed medication, ages 5–64 years	Mental health inpatient admissions with follow-up visits, ages 6 years and older	Mammography screening, women ages 41–69 years	Initiation and engagement in treatment among patients with new alcohol and other drug dependence episodes	Influenza immunization between October 1 and March 31, ages 1 year and older	Patients newly diagnosed with major depression treated with anti-depressants, ages 18 years and older	Visits to primary care providers and to specialists and rates of hospitalization for Prevention Quality Indicator clinical conditions ¹
Oregon											
2010	Overall	19,515	—	17,204	—	916	96,712	2,630	221,216	—	438,007
	Infants	3,786	—	—	—	—	—	—	3,942	—	10,513
	Children	1,315	—	—	—	200	—	362	48,187	—	107,642
	Adults	14,414	—	—	—	716	—	2,268	169,087	—	319,852
2011	Overall	19,535	2,523	16,952	4,645	945	96,297	2,890	242,863	3,079	440,026
	Infants	3,646	—	—	—	—	—	—	4,275	—	10,236
	Children	1,278	—	—	—	223	—	348	51,075	—	105,765
	Adults	14,611	—	—	—	722	—	2,542	187,513	—	324,025
2012	Overall	22,295	3,026	20,391	4,575	1,134	116,903	2,968	255,831	3,274	542,984
	Infants	4,293	—	—	—	—	—	—	4,411	—	12,426
	Children	1,433	—	—	—	218	—	324	53,532	—	129,349
	Adults	16,569	—	—	—	916	—	2,644	197,888	—	401,209
2013	Overall	19,607	2,923	18,109	4,298	1,090	102,336	2,300	229,929	3,302	482,757
	Infants	3,766	—	—	—	—	—	—	3,863	—	11,462
	Children	1,267	—	—	—	240	—	190	46,249	—	112,682
	Adults	14,574	—	—	—	850	—	2,110	179,817	—	358,613
2014	Overall	9,575	—	—	—	—	94,794	1,346	—	—	441,182
	Infants	1,886	—	—	—	—	—	—	—	—	10,239
	Children	585	—	—	—	—	—	111	—	—	102,925
	Adults	7,104	—	—	—	—	—	1,235	—	—	328,018

(continued)

Table D-3. Denominators used for annual care coordination and quality of care measures among commercially insured (continued)

		Inpatient admissions with follow-up visits within 14 days	Well-child visits in the first 15 months of life	Well-child visits, ages 3–6 years	Patients with persistent asthma appropriately prescribed medication, ages 5–64 years	Mental health inpatient admissions with follow-up visits, ages 6 years and older	Mammography screening, women ages 41–69 years	Initiation and engagement in treatment among patients with new alcohol and other drug dependence episodes	Influenza immunization between October 1 and March 31, ages 1 year and older	Patients newly diagnosed with major depression treated with anti-depressants, ages 18 years and older	Visits to primary care providers and to specialists and rates of hospitalization for Prevention Quality Indicator clinical conditions ¹
Oregon comparison group											
2010	Overall	137,147	—	100,202	—	8,007	639,200	12,840	1,465,956	—	2,733,046
	Infants	17,617	—	—	—	—	—	—	25,163	—	58,546
	Children	9,183	—	—	—	1,733	—	1,332	326,660	—	646,191
	Adults	110,347	—	—	—	6,274	—	11,508	1,114,133	—	2,028,309
2011	Overall	139,122	12,493	99,514	29,708	8,134	641,562	15,868	1,516,328	17,665	2,824,183
	Infants	19,061	—	—	—	—	—	—	25,185	—	59,633
	Children	9,317	—	—	—	1,754	—	1,448	330,059	—	659,668
	Adults	110,744	—	—	—	6,380	—	14,420	1,161,084	—	2,104,882
2012	Overall	146,039	16,578	106,097	30,958	9,340	686,639	19,255	1,562,970	19,182	3,025,094
	Infants	20,562	—	—	—	—	—	—	25,507	—	63,823
	Children	9,438	—	—	—	1,855	—	1,690	337,644	—	701,436
	Adults	116,039	—	—	—	7,485	—	17,565	1,199,819	—	2,259,835
2013	Overall	132,245	15,500	95,024	31,161	8,626	643,040	17,855	1,426,942	17,948	2,819,176
	Infants	18,649	—	—	—	—	—	—	23,174	—	58,654
	Children	8,580	—	—	—	1,867	—	1,370	297,539	—	642,935
	Adults	105,016	—	—	—	6,759	—	16,485	1,106,229	—	2,117,587
2014	Overall	63,759	—	—	—	—	582,457	11,005	—	—	2,573,676
	Infants	9,149	—	—	—	—	—	—	—	—	53,246
	Children	4,261	—	—	—	—	—	785	—	—	594,499
	Adults	50,349	—	—	—	—	—	10,220	—	—	1,925,931

(continued)

Table D-3. Denominators used for annual care coordination and quality of care measures among commercially insured (continued)

		Inpatient admissions with follow-up visits within 14 days	Well-child visits in the first 15 months of life	Well-child visits, ages 3–6 years	Patients with persistent asthma appropriately prescribed medication, ages 5–64 years	Mental health inpatient admissions with follow-up visits, ages 6 years and older	Mammography screening, women ages 41–69 years	Initiation and engagement in treatment among patients with new alcohol and other drug dependence episodes	Influenza immunization between October 1 and March 31, ages 1 year and older	Patients newly diagnosed with major depression treated with anti-depressants, ages 18 years and older	Visits to primary care providers and to specialists and rates of hospitalization for Prevention Quality Indicator clinical conditions ¹
Vermont											
2010	Overall	1,493	—	1,115	—	90	9,740	324	19,973	—	39,242
	Infants	155	—	—	—	—	—	—	242	—	571
	Children	67	—	—	—	14	—	27	3,948	—	7,996
	Adults	1,271	—	—	—	76	—	297	15,783	—	30,675
2011	Overall	1,441	116	1,037	397	114	9,086	355	19,193	264	37,649
	Infants	167	—	—	—	—	—	—	236	—	573
	Children	77	—	—	—	15	—	28	3,660	—	7,611
	Adults	1,197	—	—	—	99	—	327	15,297	—	29,465
2012	Overall	1,314	137	925	391	88	9,194	371	16,827	235	37,346
	Infants	148	—	—	—	—	—	—	186	—	531
	Children	63	—	—	—	10	—	23	3,138	—	7,270
	Adults	1,103	—	—	—	78	—	348	13,503	—	29,545
2013	Overall	994	83	642	273	78	6,514	235	12,388	201	26,745
	Infants	105	—	—	—	—	—	—	147	—	379
	Children	56	—	—	—	22	—	14	2,187	—	5,019
	Adults	833	—	—	—	56	—	221	10,054	—	21,347
2014	Overall	433	—	—	—	—	5,591	149	—	—	23,249
	Infants	53	—	—	—	—	—	—	—	—	341
	Children	18	—	—	—	—	—	10	—	—	4,297
	Adults	362	—	—	—	—	—	139	—	—	18,611

(continued)

Table D-3. Denominators used for annual care coordination and quality of care measures among commercially insured (continued)

		Inpatient admissions with follow-up visits within 14 days	Well-child visits in the first 15 months of life	Well-child visits, ages 3–6 years	Patients with persistent asthma appropriately prescribed medication, ages 5–64 years	Mental health inpatient admissions with follow-up visits, ages 6 years and older	Mammography screening, women ages 41–69 years	Initiation and engagement in treatment among patients with new alcohol and other drug dependence episodes	Influenza immunization between October 1 and March 31, ages 1 year and older	Patients newly diagnosed with major depression treated with anti-depressants, ages 18 years and older	Visits to primary care providers and to specialists and rates of hospitalization for Prevention Quality Indicator clinical conditions ¹
Vermont comparison group											
2010	Overall	84,353	—	55,471	—	5,820	420,225	12,173	934,604	—	1,816,400
	Infants	8,941	—	—	—	—	—	—	14,229	—	34,200
	Children	5,641	—	—	—	—	—	1,202	206,005	—	416,657
	Adults	69,771	—	—	—	4,532	—	10,971	714,370	—	1,365,543
2011	Overall	70,633	5,787	45,815	12,200	5,388	361,056	12,260	865,461	8,427	1,574,563
	Infants	6,710	—	—	—	—	—	—	12,632	—	27,954
	Children	5,002	—	—	—	1,148	—	1,170	185,290	—	355,846
	Adults	58,921	—	—	—	4,240	—	11,090	667,539	—	1,190,763
2012	Overall	68,560	7,019	44,133	11,815	5,580	361,062	13,187	805,081	7,456	1,569,495
	Infants	6,697	—	—	—	—	—	—	11,479	—	26,908
	Children	4,538	—	—	—	1,205	—	1,147	170,026	—	342,080
	Adults	57,325	—	—	—	4,375	—	12,040	623,576	—	1,200,507
2013	Overall	56,570	5,790	37,491	10,598	4,222	301,213	11,789	699,622	6,261	1,327,719
	Infants	5,629	—	—	—	—	—	—	9,604	—	22,740
	Children	3,632	—	—	—	953	—	851	139,410	—	283,869
	Adults	47,309	—	—	—	3,269	—	10,938	550,608	—	1,021,110
2014	Overall	27,727	—	—	—	—	272,212	7,473	—	—	1,197,919
	Infants	2,771	—	—	—	—	—	—	—	—	20,267
	Children	1,726	—	—	—	—	—	455	—	—	258,311
	Adults	23,230	—	—	—	—	—	7,018	—	—	919,341

Source: RTI analysis of Chronic Conditions Data Warehouse Medicare fee-for-service claims, Medicaid Analytic eXtract (MAX) data, Maine Medicaid claims, and Truven Health MarketScan data.

¹ The Adult denominator listed for each year was used to determine rates of hospitalization for Prevention Quality Indicator clinical conditions

Table D-4. Denominators used for annual care coordination and quality of care measures among Medicare beneficiaries

		Inpatient admissions with follow-up visits within 14 days	Tobacco use screening, ages 18 years and older	Mental health inpatient admissions with follow-up visits, ages 6 years and older	Mammography screening, women ages 41–69 years	Influenza immunization between October 1 and March 31, ages 1 year and older	Visits to primary care providers and to specialists and rates of hospitalization for Prevention Quality Indicator clinical conditions
Arkansas							
2010	Overall	122,944	393,276	3,875	73,875	365,147	459,643
	Medicare-Medicaid	41,808	—	2,695	—	—	107,993
	Other Medicare	81,136	—	1,573	—	—	351,650
2011	Overall	120,746	391,639	3,882	74,395	369,076	465,443
	Medicare-Medicaid	42,004	—	2,712	—	—	110,468
	Other Medicare	78,742	—	1,676	—	—	354,975
2012	Overall	118,074	394,243	3,952	75,252	370,576	468,158
	Medicare-Medicaid	40,061	—	2,738	—	—	109,969
	Other Medicare	78,013	—	1,766	—	—	358,189
2013	Overall	111,992	394,375	3,765	75,121	369,033	466,784
	Medicare-Medicaid	37,270	—	2,544	—	—	106,970
	Other Medicare	74,722	—	1,695	—	—	359,814
Arkansas comparison group							
2010	Overall	525,427	1,555,880	10,181	293,254	1,477,141	450,864
	Medicare-Medicaid	159,090	—	6,020	—	—	96,895
	Other Medicare	360,038	—	4,364	—	—	353,969
2011	Overall	518,835	1,575,353	11,046	302,799	1,514,408	462,822
	Medicare-Medicaid	158,757	—	6,473	—	—	100,661
	Other Medicare	353,826	—	4,839	—	—	362,161

(continued)

Table D-4. Denominators used for annual care coordination and quality of care measures among Medicare beneficiaries (continued)

		Inpatient admissions with follow-up visits within 14 days	Tobacco use screening, ages 18 years and older	Mental health inpatient admissions with follow-up visits, ages 6 years and older	Mammography screening, women ages 41–69 years	Influenza immunization between October 1 and March 31, ages 1 year and older	Visits to primary care providers and to specialists and rates of hospitalization for Prevention Quality Indicator clinical conditions
2012	Overall	504,903	1,610,255	11,415	315,278	1,540,885	472,082
	Medicare-Medicaid	157,053	—	6,665	—	—	103,974
	Other Medicare	343,373	—	5,043	—	—	368,108
2013	Overall	476,072	1,601,908	10,073	316,043	1,518,142	467,703
	Medicare-Medicaid	150,311	—	5,864	—	—	102,775
	Other Medicare	322,821	—	4,440	—	—	364,928
Maine							
2010	Overall	47,917	190,689	1,848	33,917	181,366	228,938
	Medicare-Medicaid	22,604	—	1,469	—	—	86,675
	Other Medicare	25,313	—	493	—	—	142,263
2011	Overall	46,789	189,909	1,851	34,387	182,652	230,402
	Medicare-Medicaid	22,082	—	1,559	—	—	86,106
	Other Medicare	24,707	—	445	—	—	144,296
2012	Overall	45,110	191,149	1,875	34,946	184,888	232,832
	Medicare-Medicaid	21,370	—	1,556	—	—	86,789
	Other Medicare	23,740	—	482	—	—	146,043
2013	Overall	43,761	193,906	1,598	35,774	183,659	234,205
	Medicare-Medicaid	20,450	—	1,297	—	—	85,946
	Other Medicare	23,311	—	440	—	—	148,259

(continued)

Table D-4. Denominators used for annual care coordination and quality of care measures among Medicare beneficiaries (continued)

		Inpatient admissions with follow-up visits within 14 days	Tobacco use screening, ages 18 years and older	Mental health inpatient admissions with follow-up visits, ages 6 years and older	Mammography screening, women ages 41–69 years	Influenza immunization between October 1 and March 31, ages 1 year and older	Visits to primary care providers and to specialists and rates of hospitalization for Prevention Quality Indicator clinical conditions
Maine comparison group							
2010	Overall	181,868	649,953	8,110	101,723	616,308	742,602
	Medicare-Medicaid	46,009	—	5,701	—	—	141,896
	Other Medicare	123,961	—	3,311	—	—	600,706
2011	Overall	183,023	659,588	8,242	104,424	627,637	753,906
	Medicare-Medicaid	47,645	—	5,862	—	—	153,616
	Other Medicare	123,923	—	3,422	—	—	600,290
2012	Overall	177,430	670,074	8,194	107,793	633,138	765,118
	Medicare-Medicaid	47,113	—	5,674	—	—	157,498
	Other Medicare	119,327	—	3,590	—	—	607,620
2013	Overall	175,836	680,750	7,346	110,811	640,165	773,031
	Medicare-Medicaid	46,467	—	5,005	—	—	160,186
	Other Medicare	117,567	—	3,228	—	—	612,845
Massachusetts							
2010	Overall	243,528	708,882	11,179	118,928	680,390	409,141
	Medicare-Medicaid	75,728	—	8,055	—	—	101,865
	Other Medicare	167,800	—	3,598	—	—	307,276
2011	Overall	247,048	745,792	11,665	126,166	703,148	427,745
	Medicare-Medicaid	77,146	—	8,411	—	—	106,549
	Other Medicare	169,902	—	3,798	—	—	321,196

(continued)

Table D-4. Denominators used for annual care coordination and quality of care measures among Medicare beneficiaries (continued)

		Inpatient admissions with follow-up visits within 14 days	Tobacco use screening, ages 18 years and older	Mental health inpatient admissions with follow-up visits, ages 6 years and older	Mammography screening, women ages 41–69 years	Influenza immunization between October 1 and March 31, ages 1 year and older	Visits to primary care providers and to specialists and rates of hospitalization for Prevention Quality Indicator clinical conditions
2012	Overall	240,579	771,085	12,058	131,856	727,850	440,026
	Medicare-Medicaid	75,146	—	8,600	—	—	108,879
	Other Medicare	165,433	—	4,038	—	—	331,147
2013	Overall	230,703	799,275	10,942	137,636	741,954	451,277
	Medicare-Medicaid	72,825	—	7,775	—	—	111,420
	Other Medicare	157,878	—	3,675	—	—	339,857
Massachusetts comparison group							
2010	Overall	181,519	649,953	7,721	101,723	616,308	742,602
	Medicare-Medicaid	41,652	—	5,340	—	—	141,896
	Other Medicare	130,032	—	2,976	—	—	600,706
2011	Overall	183,477	659,588	7,960	104,424	627,637	753,906
	Medicare-Medicaid	43,745	—	5,575	—	—	153,616
	Other Medicare	131,507	—	3,098	—	—	600,290
2012	Overall	174,653	670,074	7,889	107,793	633,138	765,118
	Medicare-Medicaid	42,236	—	5,301	—	—	157,498
	Other Medicare	124,934	—	3,255	—	—	607,620
2013	Overall	173,115	680,750	6,971	110,811	640,165	773,031
	Medicare-Medicaid	42,823	—	4,631	—	—	160,186
	Other Medicare	122,576	—	2,900	—	—	612,845

(continued)

Table D-4. Denominators used for annual care coordination and quality of care measures among Medicare beneficiaries (continued)

		Inpatient admissions with follow-up visits within 14 days	Tobacco use screening, ages 18 years and older	Mental health inpatient admissions with follow-up visits, ages 6 years and older	Mammography screening, women ages 41–69 years	Influenza immunization between October 1 and March 31, ages 1 year and older	Visits to primary care providers and to specialists and rates of hospitalization for Prevention Quality Indicator clinical conditions
Minnesota							
2010	Overall	105,644	378,166	5,827	56,391	332,019	452,217
	Medicare-Medicaid	22,365	—	6,149	—	—	70,014
	Other Medicare	83,279	—	2,408	—	—	382,203
2011	Overall	100,965	361,000	5,915	55,738	322,146	438,594
	Medicare-Medicaid	23,253	—	6,653	—	—	74,266
	Other Medicare	77,712	—	2,483	—	—	364,328
2012	Overall	96,326	351,535	6,095	56,190	314,656	430,081
	Medicare-Medicaid	23,691	—	6,822	—	—	77,545
	Other Medicare	72,635	—	2,450	—	—	352,536
2013	Overall	91,040	341,990	5,585	56,673	303,824	419,790
	Medicare-Medicaid	23,632	—	5,437	—	—	79,811
	Other Medicare	67,408	—	2,213	—	—	339,979
Minnesota comparison group							
2010	Overall	336,405	1,291,041	6,925	212,975	1,217,360	896,048
	Medicare-Medicaid	80,873	—	4,734	—	—	162,679
	Other Medicare	259,459	—	2,382	—	—	733,369
2011	Overall	340,250	1,326,451	6,755	219,169	1,236,717	921,125
	Medicare-Medicaid	83,016	—	4,560	—	—	169,184
	Other Medicare	260,241	—	2,372	—	—	751,941

(continued)

Table D-4. Denominators used for annual care coordination and quality of care measures among Medicare beneficiaries (continued)

		Inpatient admissions with follow-up visits within 14 days	Tobacco use screening, ages 18 years and older	Mental health inpatient admissions with follow-up visits, ages 6 years and older	Mammography screening, women ages 41–69 years	Influenza immunization between October 1 and March 31, ages 1 year and older	Visits to primary care providers and to specialists and rates of hospitalization for Prevention Quality Indicator clinical conditions
2012	Overall	338,403	1,341,018	6,804	223,984	1,261,849	935,176
	Medicare-Medicaid	83,237	—	4,430	—	—	170,299
	Other Medicare	256,292	—	2,570	—	—	764,877
2013	Overall	338,754	1,383,288	5,839	235,502	1,293,149	958,257
	Medicare-Medicaid	80,215	—	3,772	—	—	172,752
	Other Medicare	257,505	—	2,235	—	—	785,505
Oregon							
2010	Overall	63,786	277,728	1,886	48,931	263,264	351,093
	Medicare-Medicaid	16,826	—	1,281	—	—	61,039
	Other Medicare	46,960	—	787	—	—	290,054
2011	Overall	66,014	294,343	1,824	52,241	273,114	371,194
	Medicare-Medicaid	16,479	—	1,231	—	—	64,032
	Other Medicare	49,535	—	794	—	—	307,162
2012	Overall	65,054	301,743	1,861	54,841	280,470	383,109
	Medicare-Medicaid	16,475	—	1,293	—	—	67,277
	Other Medicare	48,579	—	815	—	—	315,832
2013	Overall	65,171	309,381	1,744	57,310	286,501	392,737
	Medicare-Medicaid	16,749	—	1,167	—	—	69,548
	Other Medicare	48,422	—	755	—	—	323,189

(continued)

Table D-4. Denominators used for annual care coordination and quality of care measures among Medicare beneficiaries (continued)

	Inpatient admissions with follow-up visits within 14 days	Tobacco use screening, ages 18 years and older	Mental health inpatient admissions with follow-up visits, ages 6 years and older	Mammography screening, women ages 41–69 years	Influenza immunization between October 1 and March 31, ages 1 year and older	Visits to primary care providers and to specialists and rates of hospitalization for Prevention Quality Indicator clinical conditions
Oregon comparison group						
2010 Overall	492,397	2,118,276	12,004	365,269	1,982,222	878,455
Medicare-Medicaid	126,928	—	7,087	—	—	156,305
Other Medicare	366,855	—	5,219	—	—	722,150
2011 Overall	473,039	2,049,767	12,178	355,548	1,911,705	873,634
Medicare-Medicaid	124,231	—	7,227	—	—	163,077
Other Medicare	352,291	—	5,285	—	—	710,557
2012 Overall	465,141	2,064,366	12,039	364,801	1,942,881	882,389
Medicare-Medicaid	122,385	—	6,934	—	—	164,835
Other Medicare	344,755	—	5,475	—	—	717,554
2013 Overall	449,265	2,110,962	10,426	377,817	1,957,741	900,868
Medicare-Medicaid	115,954	—	6,023	—	—	167,061
Other Medicare	334,440	—	4,661	—	—	733,807
Vermont						
2010 Overall	16,771	87,796	661	15,613	84,448	104,920
Medicare-Medicaid	5,116	—	463	—	—	25,032
Other Medicare	11,655	—	272	—	—	79,888
2011 Overall	16,851	89,747	643	16,070	86,584	107,452
Medicare-Medicaid	5,335	—	475	—	—	26,476
Other Medicare	11,516	—	236	—	—	80,976

(continued)

Table D-4. Denominators used for annual care coordination and quality of care measures among Medicare beneficiaries (continued)

	Inpatient admissions with follow-up visits within 14 days	Tobacco use screening, ages 18 years and older	Mental health inpatient admissions with follow-up visits, ages 6 years and older	Mammography screening, women ages 41–69 years	Influenza immunization between October 1 and March 31, ages 1 year and older	Visits to primary care providers and to specialists and rates of hospitalization for Prevention Quality Indicator clinical conditions
2012 Overall	17,310	91,778	607	16,791	88,732	110,034
Medicare-Medicaid	5,325	—	438	—	—	26,459
Other Medicare	11,985	—	238	—	—	83,575
2013 Overall	17,331	94,913	629	17,524	91,474	112,963
Medicare-Medicaid	5,169	—	451	—	—	26,564
Other Medicare	12,162	—	241	—	—	86,399
Vermont comparison group						
2010 Overall	242,562	949,791	10,743	143,363	901,682	1,007,886
Medicare-Medicaid	55,117	—	7,819	—	—	181,685
Other Medicare	179,190	—	3,756	—	—	826,201
2011 Overall	242,525	959,222	10,855	147,330	915,652	1,023,821
Medicare-Medicaid	57,568	—	7,942	—	—	195,094
Other Medicare	176,976	—	3,943	—	—	828,727
2012 Overall	233,389	970,840	10,693	151,870	923,816	1,037,302
Medicare-Medicaid	57,002	—	7,564	—	—	200,157
Other Medicare	169,512	—	4,100	—	—	837,145
2013 Overall	229,600	987,811	9,373	157,007	935,143	1,049,151
Medicare-Medicaid	56,587	—	6,547	—	—	203,216
Other Medicare	166,280	—	3,611	—	—	845,935

Source: RTI analysis of Chronic Conditions Data Warehouse Medicare fee-for-service claims, Medicaid Analytic eXtract (MAX) data, Maine Medicaid claims, and Truven Health MarketScan data.

Table D-5. Denominators used for utilization and expenditure outcomes

		Commercially insured (MarketScan)				
		Utilization outcomes	Expenditure outcomes	Medicare	Medicaid nonduals	Medicaid duals
Arkansas						
2010	Q1	243,117	241,751	416,447	463,588	65,776
	Q2	240,930	239,552	417,480	462,350	65,256
	Q3	240,948	239,611	418,189	464,248	64,909
	Q4	236,881	235,581	416,484	470,514	64,231
2011	Q1	237,052	235,649	401,561	472,203	66,446
	Q2	233,532	232,213	404,041	473,049	65,808
	Q3	233,492	232,238	406,076	474,177	65,263
	Q4	231,747	230,503	406,417	477,021	64,542
2012	Q1	237,056	235,780	394,080	476,982	66,794
	Q2	236,640	235,406	397,586	478,473	66,081
	Q3	236,724	235,547	400,194	478,719	65,756
	Q4	233,699	232,539	399,888	484,212	65,272
2013	Q1	224,631	223,782	383,556	—	—
	Q2	223,383	222,558	386,194	—	—
	Q3	225,869	225,010	388,523	—	—
	Q4	223,741	222,960	387,990	—	—
2014	Q1	227,618	226,857	369,451	—	—
	Q2	228,331	227,530	362,971	—	—
Arkansas comparison group						
2010	Q1	1,798,753	1,760,854	420,798	1,063,648	176,904
	Q2	1,796,479	1,758,967	421,519	1,084,366	175,167
	Q3	1,803,524	1,766,929	424,847	1,106,542	173,859
	Q4	1,791,832	1,755,977	425,981	1,123,112	172,058
2011	Q1	1,832,223	1,767,874	429,840	1,124,381	178,405
	Q2	1,827,443	1,764,156	432,378	1,123,030	176,761
	Q3	1,837,120	1,774,041	437,126	1,138,707	175,730
	Q4	1,826,720	1,764,909	440,156	1,169,830	174,555
2012	Q1	1,898,729	1,836,125	439,419	601,297 ¹	90,748 ¹
	Q2	1,883,231	1,821,484	442,827	597,744	89,490
	Q3	1,897,251	1,836,289	447,527	590,364	88,352
	Q4	1,893,843	1,833,696	449,560	595,015	86,710

(continued)

Table D-5. Denominators used for utilization and expenditure outcomes (continued)

		Commercially insured (MarketScan)				
		Utilization outcomes	Expenditure outcomes	Medicare	Medicaid nonduals	Medicaid duals
2013	Q1	1,310,315	1,262,243	436,040	—	—
	Q2	1,264,487	1,218,100	438,284	—	—
	Q3	1,200,553	1,155,616	442,352	—	—
	Q4	1,136,590	1,093,883	443,932	—	—
	2014 Q1	1,357,120	1,302,169	432,833	—	—
	Q2	1,350,626	1,296,632	428,597	—	—
Maine						
2010	Q1	296,194	258,814	216,554	—	—
	Q2	297,726	260,069	216,477	—	—
	Q3	301,753	264,792	217,606	—	—
	Q4	297,595	261,415	217,643	234,158	48,870
2011	Q1	287,620	254,943	216,556	237,398	48,711
	Q2	284,913	252,920	217,492	239,844	47,016
	Q3	286,616	255,084	219,450	243,228	47,826
	Q4	281,698	250,828	220,565	244,481	45,915
2012	Q1	271,708	239,357	218,350	236,000	45,229
	Q2	257,275	225,227	219,832	236,605	46,499
	Q3	232,812	201,108	221,676	235,941	44,881
	Q4	231,316	200,358	222,306	234,553	44,152
2013	Q1	196,504	172,044	220,478	233,752	42,386
	Q2	194,798	170,523	221,176	230,665	43,334
	Q3	194,992	170,681	222,718	228,716	41,945
	Q4	191,657	167,656	222,850	222,453	39,878
2014	Q1	195,046	169,400	216,161	—	—
	Q2	193,877	168,518	213,887	—	—
Maine comparison group						
2010	Q1	1,292,080	944,890	635,510	238,705	48,153
	Q2	1,290,334	942,463	637,001	240,689	47,735
	Q3	1,312,419	951,701	641,647	239,756	47,014
	Q4	1,305,014	948,924	642,310	240,612	46,565
2011	Q1	1,184,443	934,556	641,020	245,388	49,038
	Q2	1,175,091	929,124	644,153	244,446	48,384
	Q3	1,175,691	928,029	650,937	239,566	47,736
	Q4	1,158,836	914,894	654,165	233,355	47,065

(continued)

Table D-5. Denominators used for utilization and expenditure outcomes (continued)

		Commercially insured (MarketScan)			Medicaid nonduals	Medicaid duals
		Utilization outcomes	Expenditure outcomes	Medicare		
2012	Q1	1,160,596	920,830	649,415	—	—
	Q2	1,101,437	867,952	654,555	—	—
	Q3	1,113,370	868,609	661,973	—	—
	Q4	1,076,080	853,301	662,459	—	—
2013	Q1	991,750	779,237	658,024	—	—
	Q2	964,776	758,390	661,982	—	—
	Q3	906,818	712,210	668,458	—	—
	Q4	857,572	673,392	669,972	—	—
2014	Q1	960,204	762,628	655,067	—	—
	Q2	958,686	763,173	649,197	—	—
Massachusetts						
2010	Q1	639,794	549,551	382,203	—	—
	Q2	638,062	548,017	384,261	—	—
	Q3	641,536	551,283	387,781	—	—
	Q4	636,076	547,768	388,233	—	—
2011	Q1	628,307	558,397	396,853	—	—
	Q2	626,239	556,522	399,666	—	—
	Q3	631,655	561,992	404,105	—	—
	Q4	624,666	556,343	406,382	—	—
2012	Q1	625,163	527,292	405,680	—	—
	Q2	622,906	525,514	409,816	—	—
	Q3	625,311	527,664	416,698	—	—
	Q4	673,688	577,025	418,381	—	—
2013	Q1	608,524	525,280	418,879	—	—
	Q2	608,892	525,826	422,178	—	—
	Q3	606,171	522,870	427,127	—	—
	Q4	596,526	514,873	427,701	—	—
2014	Q1	595,967	516,192	415,693	—	—
	Q2	594,336	514,396	408,741	—	—
Massachusetts comparison group						
2010	Q1	1,292,080	944,890	420,827	—	—
	Q2	1,290,334	942,463	421,830	—	—
	Q3	1,312,419	951,701	424,971	—	—
	Q4	1,305,014	948,924	425,364	—	—

(continued)

Table D-5. Denominators used for utilization and expenditure outcomes (continued)

		Commercially insured (MarketScan)			
		Utilization outcomes	Expenditure outcomes	Medicare	Medicaid nonduals
					Medicaid duals
2011	Q1	1,184,443	934,556	424,422	—
	Q2	1,175,091	929,124	426,431	—
	Q3	1,175,691	928,029	431,030	—
	Q4	1,158,836	914,894	433,237	—
2012	Q1	1,160,596	920,830	431,531	—
	Q2	1,101,437	867,952	435,047	—
	Q3	1,113,370	868,609	439,964	—
	Q4	1,076,080	853,301	440,345	—
2013	Q1	991,750	779,237	437,822	—
	Q2	964,776	758,390	440,501	—
	Q3	906,818	712,210	444,827	—
	Q4	857,572	673,392	445,797	—
2014	Q1	960,204	762,628	435,774	—
	Q2	958,686	763,173	431,838	—
Minnesota					
2010	Q1	378,578	360,786	416,447	536,233
	Q2	377,392	359,831	417,480	546,742
	Q3	378,879	361,172	418,189	558,083
	Q4	374,738	357,781	416,484	569,492
2011	Q1	435,767	419,481	401,561	574,002
	Q2	436,252	420,247	404,041	651,593
	Q3	437,546	421,677	406,076	642,787
	Q4	431,784	416,951	406,417	677,708
2012	Q1	435,834	422,300	394,080	—
	Q2	434,698	421,147	397,586	—
	Q3	434,161	420,663	400,194	—
	Q4	429,755	416,374	399,888	—
2013	Q1	376,434	363,264	383,556	—
	Q2	370,341	357,308	386,194	—
	Q3	367,943	355,157	388,523	—
	Q4	365,148	352,566	387,990	—
2014	Q1	351,809	339,254	369,451	—
	Q2	347,817	335,582	362,971	—

(continued)

Table D-5. Denominators used for utilization and expenditure outcomes (continued)

		Commercially insured (MarketScan)				
		Utilization outcomes	Expenditure outcomes	Medicare	Medicaid nonduals	Medicaid duals
Minnesota comparison group						
2010	Q1	1,441,727	1,343,083	433,625	1,154,770	169,229
	Q2	1,442,510	1,344,065	435,864	1,173,470	167,720
	Q3	1,436,850	1,338,825	440,040	1,191,571	166,735
	Q4	1,407,305	1,311,922	441,322	1,216,337	165,050
2011	Q1	1,381,196	1,301,730	444,288	1,222,618	173,898
	Q2	1,378,452	1,300,460	447,977	1,228,776	171,692
	Q3	1,399,908	1,322,132	453,114	1,234,686	170,025
	Q4	1,384,513	1,309,230	456,281	1,252,666	167,955
2012	Q1	1,579,991	1,505,892	450,022	—	—
	Q2	1,582,654	1,508,436	454,723	—	—
	Q3	1,589,285	1,515,472	460,025	—	—
	Q4	1,586,721	1,513,947	462,284	—	—
2013	Q1	1,401,802	1,328,668	462,219	—	—
	Q2	1,364,283	1,293,313	466,214	—	—
	Q3	1,300,192	1,232,911	471,816	—	—
	Q4	1,237,540	1,173,971	473,928	—	—
2014	Q1	1,423,916	1,364,139	464,400	—	—
	Q2	1,422,440	1,363,281	459,890	—	—
Oregon						
2010	Q1	392,982	358,981	319,466	324,552	59,260
	Q2	391,506	357,558	321,925	332,064	59,163
	Q3	392,774	358,901	325,645	340,326	59,118
	Q4	386,306	352,075	326,581	351,914	58,933
2011	Q1	394,664	358,087	335,118	365,285	61,740
	Q2	397,335	360,917	339,669	373,321	61,353
	Q3	396,412	360,066	345,486	379,690	61,218
	Q4	383,552	348,199	349,101	389,157	61,084
2012	Q1	472,743	433,714	346,582	—	—
	Q2	471,989	432,873	351,976	—	—
	Q3	474,609	435,628	357,212	—	—
	Q4	481,139	442,429	359,326	—	—

(continued)

Table D-5. Denominators used for utilization and expenditure outcomes (continued)

		Commercially insured (MarketScan)			Medicaid nonduals	Medicaid duals
		Utilization outcomes	Expenditure outcomes	Medicare		
2013	Q1	426,150	387,464	356,415	—	—
	Q2	425,945	387,465	360,643	—	—
	Q3	426,959	388,510	365,970	—	—
	Q4	425,836	387,763	368,241	—	—
	2014 Q1	423,324	388,180	355,757	—	—
	Q2	423,902	389,078	351,699	—	—
Oregon comparison group						
2010	Q1	2,413,449	2,147,192	584,439	2,226,082	324,639
	Q2	2,402,857	2,136,502	588,063	2,253,319	322,762
	Q3	2,408,873	2,139,291	591,636	2,283,301	322,171
	Q4	2,374,714	2,108,122	593,263	2,316,672	321,316
2011	Q1	2,479,381	2,198,613	564,378	2,311,329	338,425
	Q2	2,470,075	2,191,246	569,275	2,302,760	336,842
	Q3	2,496,797	2,214,387	575,029	2,301,665	334,051
	Q4	2,454,640	2,175,253	578,604	2,317,144	330,824
2012	Q1	2,659,845	2,381,552	570,742	—	—
	Q2	2,657,706	2,378,959	576,593	—	—
	Q3	2,672,944	2,391,594	582,320	—	—
	Q4	2,661,565	2,382,035	584,611	—	—
2013	Q1	2,463,205	2,165,776	582,296	—	—
	Q2	2,402,746	2,112,029	586,921	—	—
	Q3	2,305,860	2,023,456	592,398	—	—
	Q4	2,207,491	1,933,601	594,530	—	—
2014	Q1	2,461,840	2,179,288	571,035	—	—
	Q2	2,453,315	2,171,897	564,909	—	—
Vermont						
2010	Q1	35,984	33,645	98,812	103,071	18,595
	Q2	35,662	33,347	99,337	105,625	18,301
	Q3	35,150	32,989	100,289	105,140	18,037
	Q4	34,453	32,386	100,580	106,504	17,843
2011	Q1	33,555	31,758	100,364	106,652	18,791
	Q2	33,073	31,495	101,081	108,253	18,711
	Q3	33,175	31,424	102,382	107,736	18,581
	Q4	32,531	30,832	103,227	107,992	18,190

(continued)

Table D-5. Denominators used for utilization and expenditure outcomes (continued)

		Commercially insured (MarketScan)			
		Utilization outcomes	Expenditure outcomes	Medicare	Medicaid nonduals
					Medicaid duals
2012	Q1	33,536	31,791	102,877	—
	Q2	33,307	31,533	103,839	—
	Q3	33,114	31,116	105,119	—
	Q4	32,604	30,726	105,719	—
2013	Q1	23,824	22,157	105,685	—
	Q2	23,436	21,831	106,514	—
	Q3	23,100	21,508	107,960	—
	Q4	23,066	21,521	108,540	—
2014	Q1	22,461	21,024	107,468	—
	Q2	22,324	20,897	106,612	—
Vermont comparison group					
2010	Q1	1,565,944	1,203,393	769,249	847,011
	Q2	1,563,978	1,201,061	770,980	907,364
	Q3	1,587,194	1,211,595	776,131	925,663
	Q4	1,560,927	1,191,086	776,879	947,835
2011	Q1	1,364,064	1,105,566	776,789	959,691
	Q2	1,354,148	1,099,778	779,764	944,913
	Q3	1,358,808	1,103,166	787,081	976,392
	Q4	1,340,369	1,089,367	790,504	990,758
2012	Q1	1,374,051	1,126,873	787,537	—
	Q2	1,324,789	1,083,908	792,751	—
	Q3	1,338,330	1,085,776	800,133	—
	Q4	1,298,869	1,068,528	801,462	—
2013	Q1	1,158,638	938,973	797,875	—
	Q2	1,126,951	913,545	801,613	—
	Q3	1,061,248	860,444	808,839	—
	Q4	1,005,934	815,863	811,019	—
2014	Q1	1,139,026	934,518	796,781	—
	Q2	1,137,668	935,488	789,121	—

Source: RTI analysis of Chronic Conditions Data Warehouse Medicare fee-for-service claims, Medicaid Analytic eXtract (MAX) data, Maine Medicaid claims, and Truven Health MarketScan data.

¹ The comparison group data for Arkansas in 2012 includes Alabama only.

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Appendix E-1: Arkansas Claims Data Outcomes by Payer and Subpopulation

E.1.1 Care coordination

Tables E-1-1 through E-1-5 provide, for Arkansas and its comparison group, baseline care coordination measures for Medicaid beneficiaries by eligibility category, the commercially insured by age group, and Medicare beneficiaries by Medicaid enrollment.

Medicaid

- We did not include the numbers of visits to a primary care provider or specialist for Arkansas Medicaid beneficiaries, because the physician specialty data field was missing at a high rate in the MAX files. Instead we present the total number of evaluation and management visits (*Table E-1-1*). In 2010 to 2011, Arkansas Medicaid beneficiaries had significantly fewer total evaluation and management visits than the comparison group. However, whereas these visits increased from 2010 to 2011 in Arkansas, they declined in the comparison group, thus narrowing the gap. A large increase was seen in the average number of evaluation and management visits among Arkansas Medicaid beneficiaries in 2012. These trends were similar for all eligibility categories except non-disabled adults, for which the number of evaluation and management visits declined sharply in 2012, after increasing in 2011 from its 2010 level.
- Arkansas Medicaid beneficiaries had a lower percentage of follow-up visits within 14 days of an inpatient discharge relative to the comparison group, with little change in the measure from 2010 to 2012 and similar trends for all eligibility categories.
- In contrast to 14-day follow-up visits for all-cause inpatient stays, for all eligibility categories Arkansas Medicaid beneficiaries had higher percentages of mental health inpatient admissions with follow-up visits within 7 and 30 days following discharge relative to the comparison group. The percentages were relatively stable from 2010 to 2011 for both Arkansas and the comparison group.
- About 80 percent of Medicaid patients ages 5 to 64 years were appropriately prescribed asthma medications in both Arkansas and the comparison group (*Table E-1-2*). This measure did not change substantially from 2010 to 2012 in Arkansas and from 2010 to 2011 in the comparison group.
- In 2010, about half of adult Medicaid beneficiaries newly diagnosed with major depression and treated with antidepressants in both Arkansas and the comparison group remained on their antidepressant medications for 12 weeks or more, and 30 percent were on their medications for 6 months or more. Whereas these percentages increased slightly from 2010 to 2011 in the comparison group, they fell to 43 percent and 23, respectively, in Arkansas but rose again in 2012 to 46 percent and 26 percent.

Table E-1-1. Evaluation and management visits and follow-up visits to inpatient admissions, Medicaid beneficiaries, Arkansas and comparison group, baseline (2010–2012)¹

	Total evaluation and management visits ²		Inpatient admission with follow-up visits		Mental health inpatient admissions with follow-up visits, ages 6 years and older ³			
	Number 100 covered lives		Percent within 14 days		Percent within 7 days		Percent within 30 days	
	AR	CG	AR	CG	AR	CG	AR	CG
Overall								
2010	163	293	33	43	44	31	67	57
2011	197	281	32	41	42	31	68	58
2012	260	—	31	—	42	—	66	—
Infant								
2010	368	587	58	68	—	—	—	—
2011	460	555	58	64	—	—	—	—
2012	664	—	58	—	—	—	—	—
Child								
2010	130	222	31	39	45	27	66	53
2011	155	216	31	38	44	28	72	55
2012	228	—	30	—	48	—	70	—
Non-disabled adult								
2010	131	306	22	33	—	—	—	—
2011	165	295	20	33	—	—	—	—
2012	108	—	19	—	—	—	—	—
Blind/disabled adult								
2010	217	453	27	38	38	31	65	58
2011	271	430	26	36	38	33	62	58
2012	385	—	26	—	36	—	61	—

AR = Arkansas; CG = comparison group composed of Medicaid beneficiaries from Alabama and Oklahoma weighted to match the characteristics of Arkansas' Medicaid beneficiaries; — = not applicable.

Note: Appendix D provides denominators for all measures.

¹2012 was the most current full year of available Medicaid data at this writing.²We did not include the numbers of visits to a primary care or specialty provider for Arkansas because the physician specialty data field was missing at a high rate in the MAX/Alpha-MAX files. ³To protect the privacy of individuals, we do not report any outcomes with denominators less than 30. As such, we do not report the mental health inpatient admissions with follow-up visits for the Medicaid non-disabled adult population.

Table E-1-2. Medication management for persistent asthma and newly diagnosed major depression, Medicaid beneficiaries, Arkansas and comparison group, baseline (2010–2012)¹

	Patients with persistent asthma appropriately prescribed medication		Patients newly diagnosed with major depression and treated with antidepressants, ages 18 years and older			
	Percent of patients ages 5–64 years		Percent treated 12 weeks or more		Percent treated 6 months or more	
	AR	CG	AR	CG	AR	CG
2010	80	79	50	50	30	31
2011	80	80	44	53	23	36
2012	78	—	46	—	26	—

AR = Arkansas; CG = comparison group composed of Medicaid beneficiaries from Alabama and Oklahoma weighted to match the characteristics of Arkansas' Medicaid beneficiaries; — = not applicable

Note: Appendix D provides denominators for all measures.

¹ 2012 was the most current full year of available Medicaid data at this writing.

Commercially insured

- Relative to the comparison group, the commercially insured in Arkansas generally had fewer visits to primary care providers and specialists, including fewer follow-up visits for all-cause and mental health inpatient stays (*Table E-1-3*); these trends were more pronounced for children than adults.
- A sharp increase in the number of physician visits, both primary care and specialty visits, was seen in 2013 among the Arkansas commercially insured population. For the comparison group, an increase was seen over the baseline period in visits to specialists but not in visits to primary care providers. A relatively higher increase in primary care provider visits in Arkansas is consistent with the spread of PCMH practices begun in the state in 2012 under the Comprehensive Primary Care initiative (CPCi).
- In contrast, the percentage of mental health inpatient stays with a follow-up visit within 30 days declined in 2013 in both Arkansas and the comparison group, with a greater decline seen among children. Little change was evident over the baseline period, for either Arkansas or the comparison group, in the percentage of all-cause inpatient admissions with follow-up visits.
- Trends in the medication management measures were inconsistent (*Table E-1-4*). The percentage of patients with persistent asthma appropriately prescribed medication fell from 2011 to 2013 in Arkansas but remained constant in the comparison group. In contrast, antidepressant medication adherence fell from 2011 to 2013 in the comparison group but increased in Arkansas in 2013 (from levels in 2011 to 2012).

Table E-1-3. Evaluation and management visits and follow-up visits to inpatient admissions, MarketScan commercially insured, Arkansas and comparison group, baseline (2010–2013)

	Visits to primary care providers		Visits to specialists		Inpatient admissions with follow-up visits		Mental health inpatient admissions with follow-up visits, ages 6 years and older			
	Number per 100 covered lives				Percent within 14 days		Percent within 7 days		Percent within 30 days	
			AR	CG	AR	CG	AR	CG	AR	CG
Overall										
2010	219	245	64	92	40	40	44	51	74	75
2011	215	233	61	88	41	39	42	50	70	75
2012	217	240	61	89	40	40	48	52	71	74
2013	229	237	76	97	42	40	43	45	64	69
Infant										
2010	754	833	41	54	82	85	—	—	—	—
2011	750	765	37	48	82	86	—	—	—	—
2012	744	838	34	51	84	88	—	—	—	—
2013	815	833	41	55	85	86	—	—	—	—
Child										
2010	175	220	30	47	34	40	38	44	69	71
2011	179	212	29	46	33	42	34	47	62	76
2012	182	223	29	47	33	42	41	48	63	73
2013	199	218	39	53	33	44	31	39	54	63
Adult										
2010	223	242	77	109	35	35	47	52	75	76
2011	216	230	72	103	36	34	46	51	73	75
2012	218	234	72	103	35	35	51	53	74	75
2013	227	232	88	111	35	35	48	47	69	71

AR = Arkansas; CG = comparison group composed of commercially insured individuals from Alabama, Kentucky, and Oklahoma weighted to match the characteristics of Arkansas' commercially insured; — = not applicable.

Note: Appendix D provides denominators for all measures.

Table E-1-4. Medication management for persistent asthma and new diagnoses of major depression, MarketScan commercially insured, Arkansas and comparison group, baseline (2011–2013)

	Patients with persistent asthma appropriately prescribed medication		Patients newly diagnosed with major depression and treated with antidepressants, ages 18 years and older			
	Percent of patients ages 5–64 years		Percent treated 12 weeks or more		Percent treated 6 months or more	
	AR	CG	AR	CG	AR	CG
2011	90	89	63	67	40	47
2012	87	88	61	66	39	46
2013	84	88	63	64	45	41

AR = Arkansas; CG = comparison group composed of commercially insured individuals from Alabama, Kentucky, and Oklahoma weighted to match the characteristics of Arkansas' commercially insured.

Note: Appendix D provides denominators for all measures.

Medicare

- In 2010, both Medicare-Medicaid and other Medicare beneficiaries had fewer visits to primary care providers in Arkansas than in the comparison group (*Table E-1-5*). This difference persisted throughout the baseline period, as the rates of primary care providers increased slightly in both Arkansas and the comparison group.
- In contrast, whereas Medicare-Medicaid beneficiaries had slightly more visits to specialists in Arkansas than in the comparison group in 2010 through 2012, the increase in visits to specialists in the comparison group outpaced the increase in Arkansas from 2012 to 2013—resulting in a slightly lower rate of visits to specialists in Arkansas at the end of the baseline period. These trends are consistent with a strengthened primary care sector in Arkansas, with both the advent of the multi-payer CPCi in 2012 and greater coordination in care resulting from episode-of-care payment also initiated in 2012.
- Arkansas and the comparison group had equivalent percentages of follow-up visits within 14 days of discharge from all-cause inpatient stays, and within 7 and 30 days of discharge from mental health inpatient stays. These measures were stable over the 2010–2012 period; but in 2013, the percentages of discharges from mental health inpatient stays fell slightly in both Arkansas and the comparison group.

Table E-1-5. Evaluation and management visits and follow-up visits to inpatient admissions, Medicare beneficiaries, Arkansas and comparison group, baseline (2010–2013)

	Visits to primary care providers		Visits to specialists		Inpatient admissions with follow-up visits		Mental health inpatient admissions with follow-up visits, ages 6 years and older			
	Number per 100 covered lives				Percent within 14 days		Percent within 7 days		Percent within 30 days	
	AR	CG	AR	CG	AR	CG	AR	CG	AR	CG
Overall										
2010	370	410	262	259	40	42	30	30	63	64
2011	367	404	260	259	40	42	31	31	63	63
2012	375	413	262	260	41	42	31	30	61	63
2013	376	419	269	271	41	41	24	26	55	59
Medicare-Medicaid										
2010	449	507	257	239	35	37	28	29	60	62
2011	443	495	254	242	35	38	29	30	61	62
2012	452	506	255	244	36	38	28	28	59	62
2013	460	528	267	273	36	38	21	26	52	58
Other Medicare										
2010	346	381	264	263	43	43	32	32	69	66
2011	344	376	261	263	43	43	33	32	64	64
2012	352	384	264	264	45	44	32	31	63	64
2013	352	388	269	269	43	42	26	27	56	59

AR = Arkansas; CG = comparison group composed of Medicare beneficiaries from Alabama, Kentucky, and Oklahoma weighted to match the characteristics of Arkansas' Medicare beneficiaries.

Note: Appendix D provides denominators for all measures.

E.1.2 Quality of care

Tables E-1-6 through E-1-12 provide, for Arkansas and its comparison group, baseline quality-of-care measures for Medicaid beneficiaries by eligibility category, the commercially insured by age group, and Medicare beneficiaries by Medicaid enrollment.

Medicaid

- Overall and across all ages, a very small percentage (10 percent or less) of Medicaid beneficiaries in both Arkansas and the comparison group had an influenza immunization (as reflected in the claims data) (*Table E-1-6*). This measure remained essentially unchanged over the first part of the baseline period.
- Fewer non-dually eligible Medicaid women in Arkansas had a mammogram during the year than in the comparison group—with both rates less than half the rates in the equivalent Medicare population. The rate remained the same over 2010 to 2012 in Arkansas but declined slightly in the comparison group.

Table E-1-6. Influenza immunization, mammography screening, and initiation and engagement in alcohol and other drug dependence treatment, Medicaid beneficiaries, Arkansas and comparison group, baseline (2010–2012)¹

	Influenza immunization between October 1 and March 31		Mammography screening		Initiation and engagement treatment among patients with new AOD dependence episodes			
	Percent of patients ages 1 year and older		Percent of women ages 41-69 years		Percent initiated treatment		Percent engaged in treatment	
	AR	CG	AR	CG	AR	CG	AR	CG
Overall								
2010	7	6	17	20	15	9	4	3
2011	6	6	17	19	16	8	5	3
2012	7	—	17	18	18	6	4	2
Infant								
2010	10	7	—	—	—	—	—	—
2011	9	6	—	—	—	—	—	—
2012	10	—	—	—	—	—	—	—
Child								
2010	6	7	—	—	—	—	—	—
2011	6	6	—	—	—	—	—	—
2012	6	—	—	—	—	—	—	—
Non-disabled adult								
2010	6	4	—	—	—	—	—	—
2011	6	3	—	—	—	—	—	—
2012	6	—	—	—	—	—	—	—
Blind/disabled adult								
2010	10	9	—	—	—	—	—	—
2011	8	8	—	—	—	—	—	—
2012	9	—	—	—	—	—	—	—

AR = Arkansas; CG = comparison group composed of Medicaid beneficiaries from Alabama and Oklahoma weighted to match the characteristics of Arkansas' Medicaid beneficiaries; — = not applicable; AOD = alcohol and other drug.

Note: Appendix D provides denominators for all measures.

¹ 2012 was the most current full year of available Medicaid data at this writing.

- Relative to the comparison group, a higher percentage of Medicaid beneficiaries with new alcohol and other drug (AOD) dependence episodes initiated and engaged in treatment in Arkansas during the first part of the baseline period. The percentage who initiated treatment also increased slightly in Arkansas over 2010 to 2012 but declined in the comparison group.
- Relative to the comparison group, fewer Medicaid-covered infants in Arkansas received the recommended number of well-child visits, whereas among children ages 3-6 years, compliance with well-child visit schedules was equivalent or slightly better in Arkansas (*Table E-1-7*). Little change was evident over the 2010–2012 period.

Table E-1-7. Well-child visit measures, Medicaid beneficiaries, Arkansas and comparison group, baseline (2010–2012)¹

	Well-child visits in the first 15 months of life				Well-child visits, ages 3–6 years	
	Percent with 0 visits		Percent with 6 or more visits		Percent with 1 or more visits	
	AR	CG	AR	CG	AR	CG
2010	—	—	—	—	64	61
2011	7	3	27	46	64	60
2012	7	3	28	42	65	63

AR = Arkansas; CG = comparison group composed of Medicaid beneficiaries from Alabama and Oklahoma weighted to match the characteristics of Arkansas' Medicaid beneficiaries; — = not applicable.

Note: Appendix D provides denominators for all measures.

¹ 2012 was the most current full year of available Medicaid data at this writing.

Commercially insured

- In 2010, the overall and chronic Prevention Quality Indicator (PQI) composite hospitalization rates for the commercially insured were substantially higher than in the comparison group (**Table E-1-8**). The acute composite PQI hospitalization rates were the same. The overall, acute, and composite PQI hospitalization rates all declined from 2010 to 2013, with larger declines in the overall and chronic composite rates for Arkansas relative to the comparison group—thus narrowing the differences between them.

Table E-1-8. Rates of hospitalization (per 100,000 covered persons) for Prevention Quality Indicator clinical conditions, ages 18 years and over, MarketScan commercially insured, Arkansas and comparison group, baseline (2010–2013)

	Overall composite		Acute composite		Chronic composite	
	AR	CG	AR	CG	AR	CG
2010	417	391	196	201	227	199
2011	384	368	188	184	206	193
2012	378	356	173	180	209	182
2013	326	320	154	151	183	176

AR = Arkansas; CG = comparison group composed of commercially insured individuals from Alabama, Kentucky, and Oklahoma weighted to match the characteristics of Arkansas' commercially insured.

Note: Appendix D provides denominators for all measures.

- In 2010, overall rates of influenza immunization were equally low for the commercially insured in Arkansas and the comparison group, with rates for infants and children slightly lower in Arkansas (**Table E-1-9**). From 2010 to 2013, influenza immunization rates increased for adults in Arkansas and for infants and children in both Arkansas and the comparison group. By 2013, children and adults in Arkansas had slightly higher rates of influenza vaccinations than children and adults in the comparison group.

Table E-1-9. Influenza immunization, mammography screening and initiation, and engagement in alcohol and other drug dependence treatment, MarketScan commercially insured, Arkansas and comparison group, baseline (2010–2013)

	Influenza immunization between October 1 and March 31		Mammography screening		Initiation and engagement in treatment among patients with new AOD dependence episodes			
	Percent of patients ages 1 and older		Percent of women ages 41–64 years		Percent initiated treatment		Percent engaged in treatment	
	AR	CG	AR	CG	AR	CG	AR	CG
Overall								
2010	11	11	34	40	39	41	6	13
2011	13	10	35	40	43	40	10	13
2012	14	12	34	40	40	38	9	12
2013	17	13	36	40	38	38	6	12
Infant								
2010	38	44	—	—	—	—	—	—
2011	41	46	—	—	—	—	—	—
2012	40	46	—	—	—	—	—	—
2013	51	53	—	—	—	—	—	—
Child								
2010	15	17	—	—	35	44	6	16
2011	21	16	—	—	34	40	2	15
2012	23	19	—	—	39	44	6	15
2013	27	23	—	—	44	43	0	15
Adult								
2010	9	9	—	—	39	41	6	13
2011	10	8	—	—	44	40	11	12
2012	11	9	—	—	40	38	9	12
2013	14	10	—	—	37	38	7	12

AR = Arkansas; CG = comparison group composed of commercially insured individuals from Alabama, Kentucky, and Oklahoma weighted to match the characteristics of Arkansas' commercially insured; — = not applicable; AOD = alcohol and other drug.

Note: Appendix D provides denominators for all measures.

- Breast cancer mammography screening rates were slightly higher for commercially insured women ages 41 to 64 in the comparison group than in Arkansas and changed little over the baseline period.
- Similar percentages of commercially insured individuals with new episodes of AOD dependence in Arkansas and the comparison group initiated AOD treatment in the baseline period. The percentage of children with new AOD episodes who initiated treatment was lower in Arkansas relative to the comparison group in 2010 but increased to comparison group levels by 2013. The percentage of commercially insured individuals with new AOD episodes who received treatment beyond the treatment initiation encounter was very low in the comparison group and even lower in Arkansas.

- Commercially insured infants and young children in Arkansas had lower compliance rates with well-child visit schedules than infants and young children in the comparison group (**Table E-1-10**). Compliance rates trended upward in both Arkansas and the comparison group over the baseline period, but ample room for improvement remained in 2013.

Table E-1-10. Well-child visit measures, MarketScan commercially insured, Arkansas and comparison group, baseline (2010–2013)

	Well-child visits in the first 15 months of life				Well-child visits, ages 3–6 years	
	Percent with 0 visits		Percent with 6 or more visits		Percent with 1 or more visits	
	AR	CG	AR	CG	AR	CG
2010	—	—	—	—	45	54
2011	5	2	59	72	46	55
2012	4	2	60	78	48	57
2013	3	1	63	80	53	60

AR = Arkansas; CG = comparison group composed of commercially insured from Alabama, Kentucky, and Oklahoma weighted to match the characteristics of Arkansas' commercially insured; — = not applicable.

Note: Appendix D provides denominators for all measures.

Medicare

- Throughout the baseline period, the overall, acute, and chronic PQI hospitalization rates for Medicare beneficiaries were lower in Arkansas than in the comparison group (**Table E-1-11**). These rates declined steadily from 2010 to 2013 in both Arkansas and the comparison group, except for the chronic composite rate in Arkansas, which after declining from 2010 to 2012, increased in 2013 but remained below its 2010 level.

Table E-1-11. Rates of hospitalization (per 100,000 covered persons) for Prevention Quality Indicator clinical conditions, Medicare beneficiaries (18 years and older), Arkansas and comparison group, baseline (2010–2013)

	Overall composite		Acute composite		Chronic composite	
	AR	CG	AR	CG	AR	CG
2010	1,605	1,681	806	837	876	932
2011	1,582	1,672	796	840	862	922
2012	1,515	1,615	736	783	849	912
2013	1,502	1,555	700	731	867	895

AR = Arkansas; CG = comparison group composed of Medicare beneficiaries from Alabama, Kentucky, and Oklahoma weighted to match the characteristics of Arkansas' Medicare beneficiaries.

Note: Appendix D provides denominators for all measures.

- Throughout the baseline period, Arkansas had a slightly higher percentage of Medicare beneficiaries ages 18 and older receiving an influenza vaccine during the flu season relative to the comparison group (*Table E-1-12*). The percentage increased at a steady but slow pace from 2010 to 2013 in both Arkansas and the comparison group.

Table E-1-12. Influenza immunization, tobacco use screening, and mammography screening, Medicare beneficiaries, Arkansas and comparison group, baseline (2010–2013)

	Influenza immunization between October 1 and March 31		Tobacco use screening		Mammography screening	
	Percent of patients ages 18 year and older		Percent of women ages 41–69 years			
	AR	CG	AR	CG	AR	CG
2010	38	33	3	5	40	41
2011	35	30	5	7	40	41
2012	38	36	8	11	40	41
2013	42	39	20	17	40	41

AR = Arkansas; CG = comparison group composed of Medicare beneficiaries from Alabama, Kentucky, and Oklahoma weighted to match the characteristics of Arkansas' Medicare beneficiaries.

Note: Appendix D provides denominators for all measures.

- Medicare beneficiaries were less likely to be screened and counseled for tobacco use in Arkansas than in the comparison group, except in 2013 when the rate in Arkansas more than doubled (to 20 percent). In both Arkansas and the comparison group, the percentage of Medicare beneficiaries using this service increased throughout the baseline period, with a marked uptick from 2012 to 2013.
- Approximately 40 percent of Medicare-covered women ages 41 to 69 years had a mammogram in Arkansas and the comparison group prior to SIM implementation. The rate remained unchanged over the period.

E.1.3 Health care utilization

Tables E-1-13 through *E-1-15* provide quarterly averages of core utilization measures, for Arkansas and its comparison group, for Medicaid beneficiaries by eligibility category, the commercially insured by age group, and Medicare beneficiaries by Medicaid enrollment.

Medicaid

- Rates of all-cause acute inpatient admissions among Medicaid-covered infants and nondisabled adults were much higher in Arkansas than in the comparison group—in contrast to the rates for Medicaid children, which were lower in Arkansas than in the comparison group (*Table E-1-13*). Inpatient all-cause acute admission rates for the Medicaid blind/disabled population were similar in Arkansas and in the comparison group. In all eligibility categories, Arkansas had a lower rate of emergency room (ER) visits relative to the comparison group.

Table E-1-13. Inpatient admissions and emergency room visits, Medicaid beneficiaries by eligibility category, Arkansas and comparison group, baseline (2010–2012)¹

	All-cause acute inpatient admissions		Emergency room visits that did not lead to hospitalization	
	Number per 1,000 covered lives			
	AR	CG	AR	CG
Overall				
2010	31	28	165	220
2011	30	29	170	212
2012	29	29	177	238
Infant				
2010	66	49	300	340
2011	67	54	309	322
2012	68	45	326	349
Child				
2010	7	11	111	157
2011	6	10	114	150
2012	6	10	117	161
Nondisabled adult				
2010	217	112	352	475
2011	204	97	366	460
2012	197	73	390	548
Blind/disabled adult				
2010	86	79	362	414
2011	83	84	378	414
2012	83	94	397	433

AR = Arkansas; CG = comparison group composed of Medicaid beneficiaries from Alabama and Oklahoma weighted to match the characteristics of Arkansas' Medicaid beneficiaries.

Note: Appendix D provides denominators for all measures.

¹ 2012 was the most current full year of available Medicaid data at this writing.

Commercially insured

- The all-cause acute care hospital admission rate for commercially insured infants was higher in Arkansas than in the comparison group, whereas the rates for children and adults were similar (*Table E-1-14*). Arkansas' child and adult rates of ER visits were slightly lower than the rates in the comparison group but, like the hospitalization rates, the ER visit rates for infants tended to be higher in Arkansas than in the comparison group.

Table E-1-14. Inpatient admissions and emergency room visits, MarketScan commercially insured by age group, Arkansas and comparison group, baseline (2010–2013) and early test period (2014¹)

	All-cause acute inpatient admissions		Emergency room visits that did not lead to hospitalization	
	Number per 1,000 covered lives			
	AR	CG	AR	CG
Overall				
2010	16	15	49	54
2011	16	15	52	56
2012	15	15	55	58
2013	15	14	51	55
2014 ¹	14	13	50	55
Infant				
2010	104	85	94	89
2011	108	80	96	90
2012	106	90	101	98
2013	116	84	89	97
2014 ¹	95	71	91	94
Child				
2010	4	5	41	49
2011	5	5	45	50
2012	5	5	47	52
2013	5	4	43	48
2014 ¹	5	4	41	46
Adult				
2010	18	17	50	55
2011	18	17	54	57
2012	17	16	57	59
2013	16	15	53	56
2014 ¹	15	15	52	57

AR = Arkansas; CG = comparison group composed of commercially insured individuals from Alabama, Kentucky, and Oklahoma weighted to match the characteristics of Arkansas' commercially insured.

Note: All numbers are quarterly averages for the four quarters of the year. Appendix D provides denominators for all measures.

¹The 2014 value is the average of the last two quarters of 2013 and the first two quarters of 2014 and represents the early test period.

Medicare

- All cause acute inpatient admission rates and 30-day hospital readmissions declined throughout the observation period among Medicare beneficiaries in both Arkansas and the comparison group. The rates of ER visits among Medicare beneficiaries increased slightly in the baseline period, started to decline in 2013, but rose again in the first half of 2014. Similar trends were seen for Medicare-Medicaid enrollees and other Medicare enrollees (*Table E-1-15*).

Table E-1-15. Inpatient admissions, emergency room visits, and readmissions, Medicare beneficiaries by dual Medicare-Medicaid eligibility status, Arkansas and comparison group, baseline (2010–2013) and early test period (2014¹)

	All-cause acute inpatient admissions		Emergency room visits that did not lead to hospitalization		30-day readmissions	
	Number per 1,000 covered lives		Number per 1,000 discharges			
	AR	CG	AR	CG	AR	CG
Overall						
2010	82	87	125	129	163	159
2011	79	83	127	133	166	159
2012	76	78	130	138	160	153
2013	72	74	127	135	154	152
2014 ¹	71	72	126	136	154	152
Medicare-Medicaid						
2010	119	122	246	248	192	185
2011	117	117	249	253	196	185
2012	110	109	256	262	190	178
2013	105	105	249	260	183	183
2014 ¹	106	101	257	271	184	181
Other Medicare						
2010	70	75	89	92	185	148
2011	67	72	90	94	185	148
2012	65	68	93	98	178	143
2013	62	64	91	97	183	139
2014 ¹	62	64	98	103	181	139

AR = Arkansas; CG = comparison group composed of Medicare beneficiaries from Alabama, Kentucky, and Oklahoma weighted to match the characteristics of Arkansas' Medicare beneficiaries.

Note: All numbers are quarterly averages for the four quarters of the year. Appendix D provides denominators for all measures.

¹The 2014 values for all-cause inpatient admissions and emergency room visits that did not lead to hospitalization are the average of the last two quarters of 2013 and the first two quarters of 2014 and represent the early test period. The 2014 value for 30-day readmissions is the average of the last three quarters of 2013 and the first quarter of 2014.

E.1.4 Health care expenditures

Tables E-1-16 through E-1-18 provide, for Arkansas and its comparison group, quarterly averages of core expenditure measures for Medicaid beneficiaries by eligibility category, the commercially insured by age group, and Medicare beneficiaries by Medicaid enrollment.

Medicaid

- Both fee-for-service and total payments for Medicaid beneficiaries in all non-aged eligibility categories in Arkansas were higher than in the comparison group across all baseline years (**Table E-1-16**). Capitation payments were lower in Arkansas than in the comparison group in 2010 but much higher than the comparison group in 2011 and 2012. The capitation payments for the comparison group declined significantly after 2010, because Alabama's capitation payments for Medicaid-only beneficiaries declined from \$49 in 2010 to \$0 for 2011 and 2012 (after the state ended its Partnership Health Plan, which made capitated payments).

Table E-1-16. Per member per month Medicaid payments by type of payment, Medicaid-only beneficiaries by eligibility category, Arkansas and comparison group, baseline (2010–2012)¹

	FFS payments		Capitation payments		Total payments	
	AR	CG	AR	CG	AR	CG
Overall						
2010	385	301	9	34	335	394
2011	385	327	9	4	330	394
2012	409	315	8	2	317	417
Infant						
2010	431	257	10	33	441	290
2011	418	325	10	4	428	328
2012	486	413	9	2	495	415
Child						
2010	278	207	8	33	287	240
2011	282	222	8	3	290	226
2012	298	185	8	2	306	187
Nondisabled adult						
2010	564	429	10	36	575	465
2011	544	427	10	3	554	430
2012	567	402	9	2	576	403
Blind/disabled adult						
2010	1,108	967	10	39	1,118	1,007
2011	1,098	1,020	9	9	1,107	1,029
2012	1,135	872	9	1	1,144	873

FFS = fee-for-service; AR = Arkansas; CG = comparison group composed of Medicaid beneficiaries from Alabama and Oklahoma weighted to match the characteristics of Arkansas' Medicaid beneficiaries.

Note: The denominator for each payment includes all beneficiaries in the category regardless of the type of plan they are enrolled in. Appendix D provides denominators for all measures.

¹ 2012 was the most current full year of available Medicaid data at this writing.

Commercially insured

- Per member per month (PMPM) payments for the commercially insured in Arkansas remained fairly stable throughout the baseline and early test period. This was true for all payment categories except outpatient pharmacy payments, which increased steadily throughout the observation period. In the comparison group, average PMPM payments increased in all major payment categories over most or all of the observation period, with similar trends seen for infants, children, and adults (*Table E-1-17*).

Table E-1-17. Per member per month commercial insurance payments by type of service, MarketScan commercially insured by age group, Arkansas and comparison group, baseline (2010–2013) and early test period (2014¹)

	Total PMPM payments		Inpatient facility payments		Other facility payments		Professional payments		Outpatient pharmacy payments	
	AR	CG	AR	CG	AR	CG	AR	CG	AR	CG
Overall										
2010	181	203	60	53	46	63	75	86	43	51
2011	187	205	61	54	49	66	76	85	44	56
2012	194	220	60	59	54	72	79	88	45	58
2013	185	231	56	62	50	80	79	89	52	67
2014 ¹	185	229	56	62	50	80	78	87	55	71
Infant										
2010	636	677	434	427	33	40	169	209	15	15
2011	495	588	290	350	35	43	170	196	12	15
2012	662	633	430	367	34	46	197	220	15	15
2013	684	706	433	417	38	52	212	237	16	16
2014 ¹	648	609	404	353	39	48	205	207	16	16
Child										
2010	65	80	17	16	16	25	31	39	15	20
2011	73	86	20	18	18	27	35	41	17	23
2012	74	92	18	20	19	28	37	43	18	25
2013	84	96	24	21	20	30	39	44	22	28
2014 ¹	79	97	21	22	21	31	37	43	22	29
Adult										
2010	213	234	67	58	57	76	88	99	54	62
2011	219	237	70	60	60	79	88	97	53	67
2012	223	252	67	65	66	87	90	100	54	70
2013	207	263	59	68	59	95	89	100	62	80
2014 ¹	208	262	59	68	60	95	89	98	66	85

PMPM = per member per month; AR = Arkansas; CG = comparison group composed of commercially insured individuals from Alabama, Kentucky, and Oklahoma weighted to match the characteristics of Arkansas' commercially insured.

Note: All numbers are PMPM averages for the year. Appendix D provides denominators for all measures.

¹The 2014 value is the average of the last two quarters in 2013 and first two quarters in 2014 and represents the early test period.

Medicare

- Average inpatient facility and professional PMPM payments for Medicare beneficiaries in Arkansas were similar to those in the comparison group. However, other facility payments were somewhat lower in Arkansas, resulting in lower total payments in Arkansas than the comparison group. Trends were similar for Medicare-Medicaid and other Medicare beneficiaries (*Table E-1-18*).

Table E-1-18. Per member per month Medicare payments by type of service, Medicare beneficiaries by dual Medicare-Medicaid eligibility status, Arkansas and comparison group, baseline (2010–2013) and early test period (2014¹)

	Total PMPM payments		Inpatient facility payments		Other facility payments		Professional payments	
	AR	CG	AR	CG	AR	CG	AR	CG
Overall								
2010	685	743	276	283	199	245	212	215
2011	691	744	274	278	207	251	213	215
2012	695	736	272	269	213	251	208	216
2013	687	727	265	266	217	251	204	210
2014 ¹	686	726	263	264	220	253	202	209
Medicare-Medicaid								
2010	962	1,031	399	403	316	377	247	252
2011	968	1,028	397	398	326	379	245	251
2012	973	1,003	394	383	333	368	245	252
2013	958	1,004	387	384	335	374	235	247
2014 ¹	962	1,003	392	388	343	374	227	241
Other Medicare								
2010	602	658	240	247	164	208	199	203
2011	607	659	236	242	170	214	201	203
2012	612	656	235	235	177	217	199	204
2013	608	646	229	232	183	216	196	198
2014 ¹	610	644	232	232	188	222	190	190

PMPM = per member per month; AR = Arkansas; CG = comparison group composed of Medicare beneficiaries from Alabama, Kentucky, and Oklahoma weighted to match the characteristics of Arkansas' Medicare beneficiaries.

Note: All numbers are PMPM averages for the year. Appendix D provides denominators for all measures.

¹The 2014 value is the average of the last two quarters of 2013 and the first two quarters of 2014 and represents the early test period.

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Appendix E-2: Maine Claims Data Outcomes by Payer and Subpopulation

E.2.1 Care coordination

Tables E-2-1 through E-2-5 provide, for Maine and its comparison group, baseline care coordination measures for Medicaid beneficiaries by eligibility category, the commercially insured by age group, and Medicare beneficiaries by Medicaid enrollment.

Medicaid

- We did not include the numbers of visits to primary care providers or specialists for Maine's comparison group of Medicaid beneficiaries, because the physician specialty data field was missing at a high rate in the MAX files. Instead we present the total number of evaluation and management visits for the comparison group (*Table E-2-1*). In 2011, the comparison group had more evaluation and management visits than Medicaid beneficiaries in Maine for all eligibility categories except the blind/disabled. The number of visits to primary care providers increased in Maine from 2011 to 2012 but fell back in 2013. This trend was seen for infants and children. However, for non-disabled adults and blind and disabled adults, the rate of primary care visits grew steadily over the baseline period. The number of visits to specialists grew steadily over the baseline period for all age groups, except infants.
- Relative to the comparison group, Maine Medicaid beneficiaries had a higher percentage of all-cause inpatient admissions with a follow-up visit within 14 days. In contrast, the percentage of mental health admissions with a follow-up visit within 7 and 30 days was substantially lower in Maine than the comparison group. The rates of follow-up for both all-cause and mental health admissions declined steadily for Maine over the baseline period, indicating room for improvement in care coordination with the expansion of Stage A and Stage B health homes.
- In 2011, a lower percentage of Maine Medicaid patients with persistent asthma was appropriately prescribed medication relative to the comparison group (*Table E-2-2*). In contrast, a higher percentage of Medicaid patients newly diagnosed with depression in Maine adhered to antidepressant medication treatment for 12 weeks or more and 6 months or more in 2011, although adherence to antidepressant treatment declined in Maine over the baseline period.

Table E-2-1. Evaluation and management visits and follow-up visits to inpatient admissions, Medicaid beneficiaries, Maine and comparison group, baseline (2010-2013)¹

	Visits to primary care providers		Visits to specialists		Total evaluation and management visits		Inpatient admissions with follow-up visits		Mental health inpatient admissions with follow-up visits, ages 6 years and older ²			
	Number per 100 covered lives						Percent within 14 days		Percent within 7 days		Percent within 30 days	
	ME	CG	ME	CG	ME	CG	ME	CG	ME	CG	ME	CG
Overall												
2010	—	—	—	—	—	317	—	45	—	38	—	61
2011	202	—	45	—	247	302	84	64	26	57	66	76
2012	210	—	49	—	259	—	72	—	18	—	56	—
2013	204	—	54	—	258	—	63	—	19	—	53	—
Infant												
2010	—	—	—	—	—	614	—	—	—	—	—	—
2011	525	—	35	—	560	576	—	—	—	—	—	—
2012	542	—	37	—	579	—	—	—	—	—	—	—
2013	478	—	33	—	511	—	—	—	—	—	—	—
Child												
2010	—	—	—	—	—	241	—	38	—	36	—	58
2011	169	—	28	—	197	234	64	62	—	60	—	78
2012	173	—	32	—	205	—	52	—	—	—	—	—
2013	168	—	34	—	202	—	43	—	—	—	—	—
Non-disabled adult												
2010	—	—	—	—	—	416	—	40	—	—	—	—
2011	197	—	51	—	248	397	92	60	—	—	—	—
2012	206	—	54	—	260	—	88	—	—	—	—	—
2013	209	—	61	—	270	—	82	—	—	—	—	—
Blind/disabled adult												
2010	—	—	—	—	—	278	—	71	—	52	—	75
2011	260	—	127	—	387	274	94	75		52		75
2012	275	—	137	—	412	—	78	—		—		—
2013	280	—	154	—	434	—	87	—		—		—

ME = Maine; CG = comparison group composed of Medicaid beneficiaries from Connecticut, New Hampshire, and Rhode Island weighted to match the characteristics of Maine's Medicaid beneficiaries; — = not applicable.

Note: Appendix D provides denominators for all measures.

¹The data period for the MaineCare data is fourth quarter 2010–2013. Because 2010 only includes one quarter of data, we do not present annual 2010 measures for Maine. The latest annual MAX data available for the comparison group are for 2011.

²To protect the privacy of individuals, we do not report any outcomes with denominators less than 30. As such, we do not report the mental health inpatient admissions with follow-up visits for the non-disabled adult population in Medicaid.

Table E-2-2. Medication management for persistent asthma and newly diagnosed major depression, Medicaid beneficiaries, Maine and comparison group, baseline (2010-2013)¹

	Patients with persistent asthma appropriately prescribed medication		Patients newly diagnosed with major depression and treated with antidepressants, ages 18 years and older			
	Percent of patients ages 5–64 years		Percent treated 12 weeks or more		Percent treated 6 months or more	
	ME	CG	ME	CG	ME	CG
2010	—	80	—	53	—	34
2011	68	80	58	55	41	35
2012	68	—	54	—	35	—
2013	67	—	56	—	36	—

ME = Maine; CG = comparison group composed of Medicaid beneficiaries from Connecticut, New Hampshire, and Rhode Island weighted to match the characteristics of Maine’s Medicaid beneficiaries; — = not applicable.

Note: Appendix D provides denominators for all measures.

¹The data period for the MaineCare data is fourth quarter 2010–2013. Because 2010 only includes one quarter of data, we do not present annual 2010 measures for Maine. The latest annual MAX data available for the comparison group are for 2011.

Commercially insured

- The percentage of all-cause inpatient admissions with a follow-up visit increased for both Maine and the comparison group over the baseline period (**Table E-2-3**). In contrast, the percentage of mental health inpatient stays with a follow-up visit within 7 or 30 days declined in 2013 in both Maine and the comparison group, with a greater decline seen among children in Maine.
- Little change was evident over the baseline period in the medication management measures in either Maine or the comparison group (**Table E-2-4**). The rate of adherence to antidepressant medication treatment for 6 months declined in Maine, but all other rates remained stable.

Table E-2-3. Evaluation and management visits and follow-up visits to inpatient admissions, MarketScan commercially insured, Maine and comparison group, baseline (2010-2013)

	Inpatient admissions with follow-up visits		Mental health inpatient admissions with follow-up visits, ages 6 years and older			
	Percent within 14 days		Percent within 7 days		Percent within 30 days	
	ME	CG	ME	CG	ME	CG
Overall						
2010	47	47	64	63	84	81
2011	51	50	67	65	86	83
2012	51	50	67	66	85	84
2013	55	53	53	56	78	79
Infant						
2010	86	89	—	—	—	—
2011	85	87	—	—	—	—
2012	86	88	—	—	—	—
2013	88	89	—	—	—	—
Child						
2010	45	45	63	62	87	81
2011	43	47	62	70	85	86
2012	52	46	63	68	86	86
2013	54	52	46	56	77	81
Adult						
2010	45	43	64	63	83	82
2011	49	47	68	64	86	82
2012	49	47	68	65	84	83
2013	53	50	55	56	79	78

ME = Maine; CG = comparison group composed of commercially insured individuals from Connecticut, New Hampshire, and Rhode Island weighted to match the characteristics of Maine's commercially insured; — = not applicable.

Note: Appendix D provides denominators for all measures.

Table E-2-4. Medication management for persistent asthma and new diagnoses of major depression, MarketScan commercially insured, Maine and comparison group, baseline (2011-2013)

	Patients with persistent asthma appropriately prescribed medication		Patients newly diagnosed with major depression and treated with antidepressants, ages 18 years and older			
	Percent of patients ages 5–64 years		Percent treated 12 weeks or more		Percent treated 6 months or more	
	ME	CG	ME	CG	ME	CG
2011	90	91	78	73	60	54
2012	90	90	77	73	58	56
2013	90	89	77	72	56	53

ME = Maine; CG = comparison group composed of Medicare beneficiaries from Connecticut, New Hampshire, and Rhode Island weighted to match the characteristics of Maine's Medicare beneficiaries.

Medicare

- Maine Medicare beneficiaries had a lower rate of visits to primary care providers relative to the comparison group throughout the baseline period (**Table E-2-5**). However, the rate of increase in primary care visits over the baseline period was greater in Maine relative to the comparison group, with the sharpest increase among Medicare-Medicaid beneficiaries. The rate of visits to specialists also increased for both Maine and the comparison group over the baseline period. These results are consistent with the roll out of the Medicare PCMH program in Maine, which began in January 2012 and expanded significantly in January 2013.
- The percentage of all-cause inpatient admissions that had a follow-up visit within 14 days remained stable for both Maine and the comparison group. The percentage of mental health inpatient admissions with a follow-up visit within 7 or 30 days declined for both Maine and the comparison group, with a greater decline in the comparison group.

Table E-2-5. Evaluation and management visits and follow-up visits to inpatient admissions, Medicare beneficiaries, Maine and comparison group, baseline (2010-2013)

	Visits to primary care providers		Visits to specialists		Inpatient admissions with follow-up visits		Mental health inpatient admissions with follow-up visits, ages 6 years and older			
	Number per 100 covered lives				Percent within 14 days		Percent within 7 days		Percent within 30 days	
	ME	CG	ME	CG	ME	CG	ME	CG	ME	CG
Overall										
2010	360	412	304	311	47	44	42	40	72	69
2011	374	415	312	309	49	45	44	39	75	69
2012	373	417	307	311	48	45	45	39	73	69
2013	393	427	315	322	45	43	39	34	69	64
Medicare-Medicaid										
2010	401	497	325	275	45	39	41	40	73	69
2011	415	497	336	273	48	41	45	39	76	70
2012	422	508	333	281	49	43	44	39	74	68
2013	466	525	351	305	49	43	39	33	70	65
Other Medicare										
2010	336	388	291	316	45	44	43	39	66	67
2011	349	391	297	314	47	45	42	38	70	68
2012	343	390	292	316	50	47	44	40	73	67
2013	349	396	294	320	47	45	39	34	66	62

ME = Maine; CG = comparison group composed of Medicare beneficiaries from Connecticut, New Hampshire, and Rhode Island weighted to match the characteristics of Maine's Medicare beneficiaries.

Note: Appendix D provides denominators for all measures.

E.2.2 Quality of care

Tables E-2-6 through *E-2-12* provide, for Maine and its comparison group, baseline quality-of-care measures for Medicaid beneficiaries by eligibility category, the commercially insured by age group, and Medicare beneficiaries by Medicaid enrollment.

Medicaid

- In 2011, relative to the comparison group, Maine Medicaid beneficiaries had higher rates of preventive services—including influenza immunizations and mammography screening—across all eligibility categories (*Table E-2-6*). The discrepancy in rates could be due in part to differences in the data sources; rates for Maine were derived from MaineCare claims that Maine provided to RTI directly, whereas comparison group rates were derived from MAX data. The differences are also consistent with the expansion of the PCMH model in Maine Medicaid during the baseline period.
- A higher percentage of Maine Medicaid beneficiaries with new episodes of alcohol and other drug (AOD) dependence initiated and engaged in treatment relative to the comparison group. The percentages remained stable in Maine but declined in the comparison group.
- Relative to the comparison group, Medicaid infants in Maine also had higher compliance with well-child visit schedules but children ages 3 years to 6 years had lower compliance (*Table E-2-7*).

Commercially insured

- Relative to the comparison group, the overall, acute, and chronic prevention quality Indicator (PQI) composite hospitalization rates were lower for the commercially insured in Maine (*Table E-2-8*). The PQI rates declined for both Maine and the comparison group over the baseline period, with larger declines in Maine—thus widening the differences between them.
- The overall rates of commercially insured patients who received an influenza immunization were low for both Maine and the comparison group, with rates even lower in Maine across all age groups (*Table E-2-9*). The percentage of infants who received an influenza immunization decreased sharply for both Maine and the comparison group over the baseline period.
- The rate of claims for mammograms among women ages 41–64 years was higher in Maine relative to the comparison group throughout the baseline period; however, the rate declined in Maine while it increased in the comparison group—thus narrowing the gap between them.
- Similar percentages of commercially insured individuals with new episodes of AOD dependence in Maine and the comparison group initiated and engaged in treatment. The percentage who initiated and the percentage who engaged declined over the baseline period for both Maine and the comparison group. A higher percentage of adolescents in Maine (age 13–18 years) initiated treatment relative to the comparison group.

Table E-2-6. Influenza immunization, mammography screening, and initiation and engagement in alcohol and other drug dependence treatment, Medicaid beneficiaries, Maine and comparison group, baseline (2010-2013)¹

	Influenza immunization between October 1 and March 31		Mammography screening		Initiation and engagement in treatment among patients with new AOD dependence episodes			
	Percent of patients ages 1 year and older		Percent of women ages 41-69 years		Percent initiated treatment		Percent engaged in treatment	
	ME	CG	ME	CG	ME	CG	ME	CG
Overall								
2010	—	3	—	22	—	30	—	19
2011	17	3	36	20	49	26	37	16
2012	20	—	36	—	50	—	38	—
2013	—	—	36	—	49	—	37	—
Infant								
2010	—	1	—	—	—	—	—	—
2011	39	0	—	—	—	—	—	—
2012	44	—	—	—	—	—	—	—
Child								
2010	—	1	—	—	—	—	—	—
2011	18	1	—	—	—	—	—	—
2012	22	—	—	—	—	—	—	—
Non-disabled adult								
2010	—	4	—	—	—	—	—	—
2011	11	8	—	—	—	—	—	—
2012	14	—	—	—	—	—	—	—
Blind/disabled adult								
2010	—	11	—	—	—	—	—	—
2011	19	12	—	—	—	—	—	—
2012	22	—	—	—	—	—	—	—

ME = Maine; CG = comparison group composed of Medicaid beneficiaries from Connecticut, New Hampshire, and Rhode Island weighted to match the characteristics of Maine's Medicaid beneficiaries; — = not applicable; AOD = alcohol and other drug.

Note: Appendix D provides denominators for all measures.

¹The data period for the MaineCare data is fourth quarter 2010–2013. Because 2010 only includes one quarter of data, we do not present annual 2010 measures for Maine. The latest annual MAX data available for the comparison group are for 2011. The percent of Medicaid beneficiaries that received an influenza immunization for 2013 is not included because data through March 31 2014 is not available.

Table E-2-7. Well-child visit measures, Medicaid beneficiaries, Maine and comparison group, baseline (2010-2013)

	Well-child visits in the first 15 months of life				Well-child visits, ages 3–6 years	
	Percent with 0 visits		Percent with 6 or more visits		Percent with 1 or more visits	
	ME	CG	ME	CG	ME	CG
2010	—	—	—	—	—	70
2011	—	5	—	49	—	71
2012	2	—	72	—	64	—
2013	3	—	73	—	65	—

ME = Maine; CG = comparison group composed of Medicaid beneficiaries from Connecticut, New Hampshire, and Rhode Island weighted to match the characteristics of Maine’s Medicaid beneficiaries; — = not applicable.

Note: Appendix D provides denominators for all measures.

¹The data period for the MaineCare data is fourth quarter 2010–2013. Because 2010 only includes one quarter of data, we do not present annual 2010 measures for Maine. The latest annual MAX data available for the comparison group are for 2011.

Table E-2-8. Rates of hospitalization (per 100,000 covered persons) for Prevention Quality Indicator clinical conditions, ages 18 years and over, MarketScan commercially insured, Maine and comparison group, baseline (2010-2013)

	Overall composite		Acute composite		Chronic composite	
	ME	CG	ME	CG	ME	CG
2010	204	217	97	105	111	115
2011	199	234	98	115	103	124
2012	164	206	65	97	101	113
2013	161	189	67	89	98	102

ME = Maine; CG = comparison group composed of commercially insured individuals from Connecticut, New Hampshire, and Rhode Island weighted to match the characteristics of Maine’s commercially insured.

Note: Appendix D provides denominators for all measures.

- Relative to the comparison group, commercially insured infants and young children in Maine had lower compliance with well-child visit schedules (**Table E-2-10**). Compliance rates increased for both Maine and the comparison group, though Maine increased at a higher rate—thus narrowing the gap between them.

Medicare

- For both Maine and the comparison group, the overall composite PQI hospitalization rate increased in 2011, then declined in 2012 and 2013 (**Table E-2-11**). Maine had higher rates than the comparison group in 2011-2013. Likewise, the acute composite PQI hospitalization rate increased for both Maine and the comparison group in 2011 and then declined. The chronic composite rate fluctuated for both Maine and the comparison group, though Maine had higher rates than the comparison group throughout the baseline period.

Table E-2-9. Influenza immunization, mammography screening, and initiation and engagement in alcohol and other drug dependence treatment, MarketScan commercially insured, Maine and comparison group, baseline (2010-2013)

	Influenza immunization between October 1 and March 31		Mammography screening		Initiation and engagement in treatment among patients with new AOD dependence episodes			
	Percent of patients ages 1 and older		Percent of women ages 41–64 years		Percent initiated treatment		Percent engaged in treatment	
	ME	CG	ME	CG	ME	CG	ME	CG
Overall								
2010	18	21	55	48	45	43	19	18
2011	17	19	55	49	41	43	18	19
2012	18	21	48	47	43	42	21	20
2013	18	21	53	50	31	35	11	15
Infant								
2010	57	61	—	—	—	—	—	—
2011	53	59	—	—	—	—	—	—
2012	46	56	—	—	—	—	—	—
2013	45	53	—	—	—	—	—	—
Child								
2010	22	31	—	—	46	35	19	17
2011	22	30	—	—	44	35	19	15
2012	22	33	—	—	46	36	21	15
2013	23	35	—	—	29	32	6	10
Adult								
2010	16	17	—	—	45	44	19	19
2011	15	15	—	—	41	44	17	20
2012	17	17	—	—	43	43	21	20
2013	16	18	—	—	31	35	12	16

ME = Maine; CG = comparison group composed of commercially insured individuals from Connecticut, New Hampshire, and Rhode Island weighted to match the characteristics of Maine's commercially insured; — = not applicable; AOD = alcohol and other drug.

Note: Appendix D provides denominators for all measures.

Table E-2-10. Well-child visit measures, MarketScan commercially insured, Maine and comparison group, baseline (2010-2013)

	Well-child visits in the first 15 months of life				Well-child visits, ages 3–6 years	
	Percent with 0 visits		Percent with 6 or more visits		Percent with 1 or more visits	
	ME	CG	ME	CG	ME	CG
2010	—	—	—	—	75	85
2011	1	1	76	83	78	86
2012	0	1	77	85	79	87
2013	0	1	83	85	81	88

ME = Maine; CG = comparison group composed of commercially insured individuals from Connecticut, New Hampshire, and Rhode Island weighted to match the characteristics of Maine’s commercially insured; — = not applicable.

Note: Appendix D provides denominators for all measures.

Table E-2-11. Rates of hospitalization (per 100,000 covered persons) for Prevention Quality Indicator clinical conditions, ages 18 years and older, Medicare beneficiaries, Maine and comparison group, baseline (2010-2013)

	Overall composite		Acute composite		Chronic composite	
	ME	CG	ME	CG	ME	CG
2010	1,799	1,860	870	926	1,047	1,045
2011	1,908	1,876	960	975	1,071	1,012
2012	1,846	1,801	926	900	1,026	997
2013	1,839	1,725	887	809	1,059	1,006

ME = Maine; CG = comparison group composed of Medicare beneficiaries from Connecticut, New Hampshire, and Rhode Island weighted to match the characteristics of Maine’s Medicare beneficiaries.

Note: Appendix D provides denominators for all measures.

- The patterns of receipt of preventive measures were inconsistent between Medicare beneficiaries in Maine and the comparison group. While a lower percentage received an influenza immunization throughout the baseline period in Maine, a higher percentage received tobacco use-screening relative to the comparison group for all years except 2013 (*Table E-2-12*). The influenza immunization rate increased for both Maine and the comparison group, with a greater increase in the comparison group.
- Similar percentages of Medicare-covered women ages 41-69 years received mammography screening for Maine and the comparison group, with Maine’s rate slightly higher rate throughout.

Table E-2-12. Influenza immunization, tobacco use screening, and mammography screening, Medicare beneficiaries, Maine and comparison group, baseline (2010-2013)

	Influenza immunization between October 1 and March 31		Tobacco use screening		Mammography screening	
	Percent of patients ages 18 years and older				Percent of women ages 41–69 years	
	ME	CG	ME	CG	ME	CG
2010	19	32	14	5	55	52
2011	19	31	9	6	56	52
2012	22	36	10	8	54	51
2013	22	39	12	18	53	52

ME = Maine; CG = comparison group composed of Medicare beneficiaries from Connecticut, New Hampshire, and Rhode Island weighted to match the characteristics of Maine's Medicare beneficiaries.

Note: Appendix D provides denominators for all measures.

E.2.3 Health care utilization

Tables E-2-13 through E-2-15 provide, for Maine and its comparison group, the quarterly averages of core utilization measures for Medicaid beneficiaries by eligibility category, commercially insured by age group, and Medicaid beneficiaries by Medicaid enrollment.

Medicaid

- Among Maine Medicaid beneficiaries, the all-cause inpatient admission rate declined for infants, remained stable for children, and increased slightly for non-disabled and blind/disabled adults from 2011 through 2013 (*Table E-2-13*). The rate of ER visits declined for all Maine Medicaid eligibility categories over the period.

Table E-2-13. Inpatient admissions and emergency room visits, Medicaid beneficiaries by eligibility category, Maine and comparison group, baseline (2010-2013)¹

	All-cause acute inpatient admissions		Emergency room visits that did not lead to hospitalization	
	Number per 1,000 covered lives			
	ME	CG	ME	CG
Overall				
2010	—	38	—	193
2011	26	78	208	204
2012	26	—	204	—
2013	25	—	188	—
Infant				
2010	—	84	—	291
2011	114	112	268	300
2012	114	—	258	—
2013	84	—	227	—
Child				
2010	—	16	—	127
2011	7	44	142	128
2012	7	—	137	—
2013	7	—	124	—
Nondisabled adult				
2010	—	75	—	285
2011	26	180	240	269
2012	27	—	235	—
2013	28	—	222	—
Blind/disabled adult				
2010	—	58	—	266
2011	69	55	435	243
2012	70	—	436	—
2013	75	—	412	—

ME = Maine; CG = comparison group composed of Medicaid beneficiaries from Connecticut, New Hampshire, and Rhode Island weighted to match the characteristics of Maine's Medicaid beneficiaries; — = not applicable.

Note: Appendix D provides denominators for all measures.

¹The data period for the MaineCare data is fourth quarter 2010–2013. Because 2010 only includes one quarter of data, we do not present annual 2010 measures for Maine. The latest annual MAX data available for the comparison group are for 2011.

Commercially insured

- Among infants, the comparison group had a higher rate of all-cause inpatient admissions than Maine, with similar trends for children and adults (*Table E-2-14*). The rate of ER visits was consistently higher in Maine than the comparison group for infants, children, and adults.

Table E-2-14. Inpatient admissions and emergency room visits, MarketScan commercially insured by age group, Maine and comparison group, baseline (2010-2013) and early test period (2014¹)

	All-cause acute inpatient admissions		Emergency room visits that did not lead to hospitalization	
	Number per 1,000 covered lives			
	ME	CG	ME	CG
Overall				
2010	13	13	60	51
2011	12	13	60	52
2012	12	12	58	52
2013	12	12	54	49
2014 ¹	11	12	53	49
Infant				
2010	56	79	92	79
2011	59	73	98	70
2012	66	71	93	71
2013	66	71	95	72
2014 ¹	53	59	86	73
Child				
2010	4	4	64	52
2011	4	4	64	52
2012	4	4	59	50
2013	4	4	53	47
2014 ¹	4	4	52	46
Adult				
2010	15	14	59	51
2011	14	14	59	52
2012	13	13	58	52
2013	13	13	53	49
2014 ¹	12	13	53	49

ME = Maine; CG = comparison group composed of commercially insured individuals from Connecticut, New Hampshire, and Rhode Island weighted to match the characteristics of Maine's commercially insured.

Note: All numbers are quarterly averages for the four quarters of the year. Appendix D provides denominators for all measures.

¹The 2014 value is the average of the last two quarters of 2013 and the first two quarters of 2014 and represents the early test period.

Medicare

- All-cause acute inpatient admission rates and 30-day hospital readmissions declined slightly over the observation period among Medicare beneficiaries in both Maine and the comparison group. The rate of ER visits remained relatively flat over the period in both groups. Similar trends were seen for other (i.e., non-dually eligible) Medicare beneficiaries (*Table E-2-15*). For Medicare-Medicaid beneficiaries, however, inpatient admissions declined for both groups, but 30-day readmissions declined then increased again in Maine but not in the comparison group. The rate of ER visits increased slightly over the period for Medicare-Medicaid beneficiaries in Maine and the comparison group.

Table E-2-15. Inpatient admissions, emergency room visits, and readmissions, Medicare beneficiaries by dual Medicare-Medicaid eligibility status, Maine and comparison group, baseline (2010-2013) and early test period (2014¹)

	All-cause acute inpatient admissions		Emergency room visits that did not lead to hospitalization		30-day readmissions	
	Number per 1,000 covered lives				Number per 1,000 discharges	
	ME	CG	ME	CG	ME	CG
Overall						
2010	68	71	163	130	152	168
2011	67	70	168	133	149	166
2012	61	65	170	138	145	161
2013	61	65	164	134	147	159
2014 ¹	61	64	163	135	147	160
Medicare-Medicaid						
2010	85	93	255	231	168	203
2011	84	89	264	234	164	196
2012	77	85	269	246	158	193
2013	77	83	261	244	169	190
2014 ¹	77	84	257	241	169	192
Other Medicare						
2010	58	61	107	90	137	155
2011	56	60	110	92	134	154
2012	51	56	110	94	133	147
2013	51	55	108	91	126	145
2014 ¹	52	57	107	91	126	146

ME = Maine; CG = comparison group composed of Medicare beneficiaries from Connecticut, New Hampshire, and Rhode Island weighted to match the characteristics of Maine's Medicare beneficiaries.

Note: All numbers are quarterly averages for the four quarters of the year. Appendix D provides denominators for all measures.

¹The 2014 values for all-cause inpatient admissions and emergency room visits that did not lead to hospitalization are the average of the last two quarters of 2013 and the first two quarters of 2014 and represents the early test period. The 2014 value for 30-day readmissions is the average of the last three quarters of 2013 and the first quarter of 2014.

E.2.4 Health care expenditures

Tables E-2-16 through E-2-18 provide, for Maine and its comparison group, quarterly averages of core expenditure measures for Medicaid beneficiaries by eligibility category, the commercially insured by age group, and Medicare beneficiaries by Medicaid enrollment.

Medicaid

- The average total PMPM payment for Medicaid-only beneficiaries in Maine gradually increased from 2011 to the end of 2013, but remained below the comparison group's 2011 average total PMPM payment (*Table E-2-16*). Similar trends were seen in total Medicaid payments for all eligibility categories in Maine.

Commercially insured

- Throughout the baseline period, the total PMPM and outpatient pharmacy PMPM payments were nearly identical for commercially insured individuals in Maine and the comparison group (*Table E-2-17*). For both groups, outpatient pharmacy payments increased sharply beginning in 2013. The average inpatient facility PMPM payments were higher in Maine than the comparison group throughout the period. Average other facility and professional payments increased for both groups; however, other facility payments were higher in Maine while professional payments were higher for the comparison group. Similar trends were seen for children and adults; but commercially insured infants in Maine had lower expenditures than the comparison group for every category except outpatient pharmacy.

Medicare

- Average total PMPM payments, inpatient facility payments, and professional payments for Medicare beneficiaries were relatively constant for both Maine and the comparison group over the observation period, with all three payment categories distinctly higher in the comparison group (*Table E-2-18*). The average other facility PMPM payments for Medicare beneficiaries were nearly identical for Maine and the comparison group, increasing slightly over time. Similar trends were seen for Medicare-Medicaid and other Medicare enrollees.

Table E-2-16. Per member per month Medicaid payments by type of payment, Medicaid-only beneficiaries by eligibility category, Maine and comparison group, baseline (2010-2013)¹

	FFS payments		Capitation payments		Total payments	
	ME	CG	ME	CG	ME	CG
Overall						
2010	—	342	—	132	—	473
2011	—	328	—	135	294	463
2012	—	—	—	—	366	—
2013	—	—	—	—	416	—
Infant						
2010	—	273	—	155	—	428
2011	—	243	—	132	224	375
2012	—	—	—	—	323	—
2013	—	—	—	—	296	—
Child						
2010	—	224	—	110	—	335
2011	—	215	—	113	254	329
2012	—	—	—	—	288	—
2013	—	—	—	—	314	—
Nondisabled adult						
2010	—	170	—	246	—	416
2011	—	170	—	263	183	432
2012	—	—	—	—	245	—
2013	—	—	—	—	296	—
Blind/disabled adult						
2010	—	1,344	—	21	—	1,365
2011	—	1,262	—	22	1,401	1,283
2012	—	—	—	—	1,609	—
2013	—	—	—	—	1,712	—

FFS = fee-for-service; ME = Maine; CG = comparison group composed of Medicaid beneficiaries from Connecticut, New Hampshire, and Rhode Island weighted to match the characteristics of Maine's Medicaid beneficiaries; — = not applicable.

Note: The denominator for each payment includes all beneficiaries in the category regardless of the type of plan they are enrolled in. Appendix D provides denominators for all measures.

¹The data period for the MaineCare data is fourth quarter 2010–2013. Because 2010 only includes one quarter of data, we do not present annual 2010 measures for Maine. The latest annual MAX data available for the comparison group are for 2011.

Table E-2-17. Per member per month commercial insurance payments by type of service, MarketScan commercially insured by age group, Maine and comparison group, baseline (2010-2013) and early test period (2014¹)

	Total PMPM payment		Inpatient facility payment		Other facility payment		Professional payment		Outpatient pharmacy payment	
	ME	CG	ME	CG	ME	CG	ME	CG	ME	CG
Overall										
2010	296	286	75	67	128	100	93	119	58	61
2011	307	296	77	70	130	103	100	122	62	60
2012	303	304	78	71	128	113	96	121	62	59
2013	311	312	77	72	134	116	99	123	67	70
2014 ¹	310	319	76	74	135	121	99	124	72	76
Infant										
2010	389	509	193	275	36	49	164	185	11	9
2011	476	626	244	345	44	47	188	231	9	10
2012	470	540	259	301	53	47	157	192	16	9
2013	492	520	274	275	50	48	165	196	13	11
2014 ¹	414	531	197	285	65	47	149	198	14	13
Child										
2010	118	114	21	17	42	33	54	64	20	23
2011	122	130	20	23	43	38	60	69	23	24
2012	121	136	25	24	40	41	56	71	25	26
2013	123	135	22	25	43	39	58	71	29	33
2014 ¹	127	133	26	23	43	39	58	71	30	35
Adult										
2010	342	330	88	78	151	119	102	133	69	73
2011	352	336	89	79	153	122	109	135	73	71
2012	345	343	89	79	150	132	106	132	72	68
2013	354	352	88	80	157	136	108	135	76	80
2014 ¹	353	362	87	83	158	142	108	136	83	88

PMPM = per member per month; ME = Maine; CG = comparison group composed of commercially insured individuals from Connecticut, New Hampshire, and Rhode Island weighted to match the characteristics of Maine's commercially insured.

Note: All numbers are PMPM averages for the year. Appendix D provides denominators for all measures.

¹ The 2014 value is the average of the last two quarters of 2013 and first two quarters of 2014.

Table E-2-18. Per member per month Medicare payments by type of service, Medicare beneficiaries by dual Medicare-Medicaid eligibility status, Maine and comparison group, baseline (2010-2013) and early test period (2014¹)

	Total PMPM payment		Inpatient facility payment		Other facility payment		Professional payment	
	ME	CG	ME	CG	ME	CG	ME	CG
Overall								
2010	665	763	240	287	263	263	162	213
2011	683	783	239	290	278	276	166	217
2012	676	779	231	284	278	277	166	218
2013	684	793	237	294	281	285	166	214
2014 ¹	680	794	232	294	283	289	165	211
Medicare-Medicaid								
2010	798	956	295	388	320	323	183	246
2011	823	956	300	378	337	333	186	245
2012	814	965	287	378	339	336	187	251
2013	825	967	297	384	341	342	187	242
2014 ¹	828	984	295	396	350	357	183	232
Other Medicare								
2010	582	669	206	242	228	232	149	195
2011	598	691	203	247	242	244	153	200
2012	591	685	197	240	241	244	153	200
2013	600	694	202	248	245	250	153	197
2014 ¹	603	712	202	258	252	263	149	191

PMPM = per member per month; ME = Maine; CG = comparison group composed of Medicare beneficiaries from Connecticut, New Hampshire, and Rhode Island weighted to match the characteristics of Maine's Medicare beneficiaries.

Note: All numbers are PMPM averages for the year. Appendix D provides denominators for all measures.

¹ The 2014 value is the average of the last two quarters of 2013 and first two quarters of 2014.

Appendix E-3: Massachusetts Claims Data Outcomes by Payer and Subpopulation

E.3.1 Care coordination

Tables E-3-1 through *E-3-3* provide, for Massachusetts and its comparison group, baseline care coordination measures for the commercially insured by age group and Medicare beneficiaries by Medicaid enrollment.

Commercially insured

- The rate of primary care visits remained stable for the commercially insured in Massachusetts over the baseline period (2010 through 2013) while declining in the comparison group (*Table E-3-1*). As a result, whereas Massachusetts had a lower rate of primary care provider visits than the comparison group in 2010, the Commonwealth and its comparison group had similar rates in 2013. In contrast, Massachusetts and the comparison group had similar rates of specialist visits in 2010 but diverged in 2013, with a higher rate of specialist visits in the comparison group. These trends were similar for both children and adults.
- The commercially insured in Massachusetts and the comparison group had similar rates of follow-up visits within 14 days of an inpatient hospitalization, which remained stable over the baseline period. In contrast, Massachusetts and the comparison group both saw declines in the percentage of mental health inpatient admissions with a follow-up visit within 7 and 30 days for the commercially insured over the period, as well as for children and adults.
- The medication management measures remained relatively stable over the baseline period for the commercially insured in both Massachusetts and the comparison group (*Table E-3-2*). Massachusetts and the comparison group had similar percentages of asthma patients ages 5 to 64 who were appropriately prescribed asthma medication; but Massachusetts had a slightly higher percentage of adults with new episodes of major depression treated with medication for 12 weeks or more and 6 months or more.

Table E-3-1. Evaluation and management visits and follow-up visits to inpatient admissions, MarketScan commercially insured, Massachusetts and comparison group, baseline (2010–2013)

	Visits to primary care providers		Visits to specialists		Inpatient admissions with follow-up visits		Mental health inpatient admissions with follow-up visits, ages 6 years and older			
	Number per 100 covered lives				Percent within 14 days		Percent within 7 days		Percent within 30 days	
			MA	CG	MA	CG	MA	CG	MA	CG
Overall										
2010	252	272	83	84	50	51	65	63	83	81
2011	249	271	83	85	50	51	64	65	82	83
2012	249	268	75	83	51	50	65	66	82	84
2013	250	252	97	110	52	53	55	56	78	79
Infant										
2010	910	880	51	45	93	92	—	—	—	—
2011	916	886	53	53	94	92	—	—	—	—
2012	927	865	48	47	95	91	—	—	—	—
2013	918	865	54	53	95	92	—	—	—	—
Child										
2010	270	259	46	45	50	50	66	62	88	81
2011	273	265	46	45	49	49	65	70	86	86
2012	268	265	45	47	50	49	63	68	84	86
2013	268	250	56	63	55	57	52	56	78	81
Adult										
2010	231	263	96	98	41	43	64	63	82	82
2011	227	259	95	99	40	44	63	64	82	82
2012	227	256	86	96	40	42	65	65	82	83
2013	229	240	111	126	41	44	56	56	78	78

MA = Massachusetts; CG = comparison group composed of commercially insured individuals from Connecticut, New Hampshire, and Rhode Island weighted to match the characteristics of Massachusetts' commercially insured; — = not applicable.

Note: Appendix D provides denominators for all measures.

Table E-3-2. Medication management for persistent asthma and newly diagnosed major depression, MarketScan commercially insured, Massachusetts and comparison group, baseline (2011–2013)

	Patients with persistent asthma appropriately prescribed medication		Patients newly diagnosed with major depression and treated with antidepressants, ages 18 years and older			
	Percent of patients ages 5 to 64 years		Percent treated 12 weeks or more		Percent treated 6 months or more	
	MA	CG	MA	CG	MA	CG
2011	90	91	75	73	57	54
2012	89	90	77	73	60	56
2013	89	89	74	72	56	53

MA = Massachusetts; CG = comparison group composed of commercially insured individuals from Connecticut, New Hampshire, and Rhode Island weighted to match the characteristics of Massachusetts' commercially insured. Note: Appendix D provides denominators for all measures.

Medicare

- In both Massachusetts and the comparison group, the overall rate of primary care and specialist visits among Medicare beneficiaries remained relatively stable from 2010 through 2012, then increased in 2013—with similar trends for Medicare-Medicaid and other Medicare beneficiaries (*Table E-3-3*). Massachusetts had fewer specialist visits than the comparison group throughout the baseline period. For primary care visits, however, the Commonwealth had lower rates of primary care provider visits from 2010 to 2012, both overall and for Medicare-Medicaid and other Medicare beneficiaries, but a higher overall rate in 2013 (made up of an equivalent rate for Medicare-Medicaid enrollees and a higher rate for other Medicare beneficiaries).
- Medicare beneficiaries in Massachusetts and the comparison group had similar percentages of inpatient admissions with follow-up visits within 14 days of discharge, overall and for Medicare-Medicaid and other Medicare beneficiaries, which inched up over the baseline period. The percentages of mental health inpatient admissions with follow-up visits within 7 and 30 days were slightly higher for Medicare beneficiaries in Massachusetts relative to the comparison group. These rates remained fairly stable until 2013, when they dropped for Medicare beneficiaries in both the Commonwealth and the comparison group—overall and for the two Medicare eligibility categories.

Table E-3-3. Evaluation and management visits and follow-up visits to inpatient admissions, Medicare beneficiaries, Massachusetts and comparison group, baseline (2010–2013)

	Visits to primary care providers		Visits to specialists		Inpatient admissions with follow-up visits		Mental health inpatient admissions with follow-up visits, ages 6 years and older			
	Number per 100 covered lives				Percent within 14 days		Percent within 7 days		Percent within 30 days	
	MA	CG	MA	CG	MA	CG	MA	CG	MA	CG
Overall										
2010	444	462	280	303	45	43	41	40	72	69
2011	454	460	280	301	47	45	42	39	72	69
2012	454	459	282	304	47	46	42	40	73	69
2013	483	470	306	317	47	46	37	34	67	64
Medicare-Medicaid										
2010	487	536	239	276	42	43	40	39	71	69
2011	498	530	240	278	45	45	41	39	72	70
2012	496	536	244	283	45	46	42	39	73	69
2013	562	562	305	314	48	46	37	34	67	65
Other Medicare										
2010	430	441	293	314	46	45	43	40	73	67
2011	440	439	293	312	47	46	43	39	71	69
2012	441	436	295	314	48	47	43	40	73	68
2013	458	441	307	322	47	47	37	34	66	63

MA = Massachusetts; CG = comparison group composed of Medicare beneficiaries from Connecticut, New Hampshire, and Rhode Island weighted to match the characteristics of Massachusetts' Medicare beneficiaries.

Note: Appendix D provides denominators for all measures.

E.3.2 Quality of care

Tables E-3-4 through *E-3-8* provide, for Massachusetts and its comparison group, baseline quality-of-care measures for the commercially insured by age group and Medicare beneficiaries by Medicaid enrollment.

Commercially insured

- The overall, acute, and chronic Prevention Quality Indicator (PQI) composite hospitalization rates for the commercially insured in Massachusetts declined over the baseline period, with larger declines for the overall and acute composite measures (*Table E-3-4*). The overall and acute PQI composite hospitalization rates similarly declined in the comparison group but the chronic PQI composite hospitalization rate increased. The overall, acute, and chronic composite rates were higher in Massachusetts than the comparison group in 2010, but by 2013 the overall and chronic rates were lower in Massachusetts.

Table E-3-4. Rates of hospitalization (per 100,000 covered persons) for Prevention Quality Indicator clinical conditions, ages 18 years and over, MarketScan commercially insured, Massachusetts and comparison group, baseline (2010–2013)

	Overall composite		Acute composite		Chronic composite	
	MA	CG	MA	CG	MA	CG
2010	277	233	138	112	144	124
2011	270	311	132	188	144	131
2012	196	277	89	130	112	149
2013	194	209	90	72	109	141

MA = Massachusetts; CG = comparison group composed of commercially insured individuals from Connecticut, New Hampshire, and Rhode Island weighted to match the characteristics of Massachusetts' commercially insured. Note: Appendix D provides denominators for all measures.

- Commercially insured patients in Massachusetts and the comparison group received an influenza immunization at similar rates, which remained stable for both groups over the baseline period (**Table E-3-5**). Similar trends were seen for children and adults. Infant rates were lower in Massachusetts relative to the comparison group, however, and although the comparison group rate declined for infants over the baseline period, the Massachusetts rate was still lower in 2013.
- The percentage of commercially insured women ages 41–64 years who had a mammogram was higher in Massachusetts relative to the comparison group. However, the rate declined in Massachusetts and increased in the comparison group over the baseline period, thus narrowing the gap between them.
- Among commercially insured patients with new alcohol and other drug (AOD) dependence episodes, less than half initiated treatment and less than a quarter engaged in treatment in both Massachusetts and the comparison group, with rates in Massachusetts somewhat high than in the comparison group. Rates remained fairly stable for adults and children from 2010 through 2012, with the rates for children somewhat lower and the rates for adults higher. Rates declined for all groups in 2013.
- Commercially insured infants and young children in Massachusetts had very high compliance rates with well-child visit schedules, which increased slightly over the baseline period (**Table E-3-6**). Compliance rates were lower among infants and children in the comparison group, but similarly increased over the period.

Table E-3-5. Influenza immunization, mammography screening, and initiation and engagement in alcohol and other drug dependence treatment, MarketScan commercially insured, Massachusetts and comparison group, baseline (2010–2013)

	Influenza immunization between October 1 and March 31		Mammography screening		Initiation and engagement in treatment among patients with new AOD dependence episodes			
	Percent of patients ages 1 and older		Percent of women ages 41–64 years		Percent initiated treatment		Percent engaged in treatment	
	MA	CG	MA	CG	MA	CG	MA	CG
Overall								
2010	20	21	55	48	45	43	19	18
2011	18	19	55	49	45	43	20	19
2012	21	21	50	47	45	42	22	20
2013	22	21	53	50	41	35	19	15
Infant								
2010	48	61	—	—	—	—	—	—
2011	41	59	—	—	—	—	—	—
2012	44	56	—	—	—	—	—	—
2013	48	53	—	—	—	—	—	—
Child								
2010	29	31	—	—	30	35	12	17
2011	25	30	—	—	33	35	13	15
2012	30	33	—	—	31	36	11	15
2013	32	35	—	—	26	32	7	10
Adult								
2010	16	17	—	—	47	44	20	19
2011	15	15	—	—	46	44	21	20
2012	17	17	—	—	46	43	23	20
2013	18	18	—	—	42	35	20	16

MA = Massachusetts; CG = comparison group composed of commercially insured individuals from Connecticut, New Hampshire, and Rhode Island weighted to match the characteristics of Massachusetts' commercially insured; — = not applicable; AOD = alcohol and other drug.

Note: Appendix D provides denominators for all measures.

Table E-3-6. Well-child visit measures, MarketScan commercially insured, Massachusetts and comparison group, baseline (2010–2013)

	Well-child visits in first 15 months of life				Well-child visits, ages 3–6 years	
	Percent with 0 visits		Percent with 6 or more visits		Percent with 1 or more visits	
	MA	CG	MA	CG	MA	CG
2010	—	—	—	—	91	85
2011	0	1	93	83	91	86
2012	0	1	93	85	92	87
2013	0	1	94	85	92	88

MA = Massachusetts; CG = comparison group composed of commercially insured individuals from Connecticut, New Hampshire, and Rhode Island weighted to match the characteristics of Massachusetts' commercially insured; — = not applicable.

Note: Appendix D provides denominators for all measures.

Medicare

- The overall, acute, and chronic composite PQI hospitalization rates were similar for Medicare beneficiaries in Massachusetts and the comparison group (*Table E-3-7*). All three rates declined in both groups over the baseline period, with the largest drop in the acute composite rates and a slight uptick in the chronic composite rates in 2013.

Table E-3-7. Rates of hospitalization (per 100,000 covered lives) for Prevention Quality Indicator clinical conditions, Medicare beneficiaries (18 years and over), Massachusetts and comparison group, baseline (2010–2013)

	Overall composite		Acute composite		Chronic composite	
	MA	CG	MA	CG	MA	CG
2010	1,976	1,946	1,005	970	1,101	1,091
2011	1,961	1,984	1,002	1,003	1,082	1,100
2012	1,884	1,853	960	937	1,035	1,025
2013	1,841	1,819	888	850	1,058	1,067

MA = Massachusetts; CG = comparison group composed of Medicare beneficiaries from Connecticut, New Hampshire, and Rhode Island weighted to match the characteristics of Massachusetts' Medicare beneficiaries.

Note: Appendix D provides denominators for all measures.

- The rates of receipt of preventive measures generally increased in both Massachusetts and the comparison group over the baseline period. The percentage of Medicare beneficiaries who received an influenza immunization and the percentage who were screened and counseled for tobacco use during the year increased in both Massachusetts and the comparison group over the period, with both rates higher for the comparison group (*Table E-3-8*).
- The percentage of eligible women who had a mammogram rose slightly in Massachusetts and remained stable in the comparison group during the baseline period, with both rates higher for Massachusetts relative to the comparison group throughout.

Table E-3-8. Influenza immunization, tobacco use screening, and mammography screening, Medicare beneficiaries, Massachusetts and comparison group, baseline (2010–2013)

	Influenza immunization between October 1 and March 31		Tobacco use screening		Mammography screening	
	Percent of patients ages 18 years and older		Percent of women ages 41–69 years			
	MA	CG	MA	CG	MA	CG
2010	30	32	6	5	57	52
2011	29	31	8	6	58	52
2012	34	36	10	8	58	51
2013	34	39	14	18	59	52

MA = Massachusetts; CG = comparison group composed of Medicare beneficiaries from Connecticut, New Hampshire, and Rhode Island weighted to match the characteristics of Massachusetts' Medicare beneficiaries.
Note: Appendix D provides denominators for all measures.

E.3.3 Health care utilization

Tables E-3-9 and *E-3-10* provide, for Massachusetts and its comparison group, the quarterly averages of core utilization measures for the commercially insured by age group and Medicaid beneficiaries by Medicaid enrollment.

Commercially insured

- Health care utilization rates were similar among the commercially insured in Massachusetts and the comparison group during the baseline period. Hospitalizations decreased slightly faster rate in the comparison group than in Massachusetts (*Table E-3-9*) but ER visit rates declined at comparable rates. Similar trends were seen for children and adults in Massachusetts and the comparison group; however, infants in Massachusetts had a higher rate of ER visits relative to the comparison group throughout.

Medicare

- Medicare-Medicaid and other Medicare enrollees in Massachusetts and the comparison group had similar levels and trends in hospitalization and 30-day readmission rates over the baseline and early test period (*Table E-3-10*). Relative to the comparison group, the ER visit rates were somewhat lower for Medicare-Medicaid enrollees and slightly higher for other Medicare enrollees in Massachusetts, with little variation over the observation period.

Table E-3-9. Inpatient admissions and emergency room visits, MarketScan commercially insured, Massachusetts and comparison group, baseline (2010–2013) and early test period (2014¹)

	All-cause acute inpatient admissions		Emergency room visits that did not lead to hospitalization	
	Number per 1,000 covered lives			
	MA	CG	MA	CG
Overall				
2010	15	15	49	53
2011	15	15	50	54
2012	14	13	47	52
2013	14	13	43	46
2014 ¹	13	12	41	46
Infant				
2010	129	111	85	77
2011	136	115	85	73
2012	134	108	85	74
2013	130	126	80	62
2014 ¹	108	98	76	66
Child				
2010	5	4	51	51
2011	5	4	51	52
2012	4	4	48	48
2013	4	3	44	43
2014 ¹	4	3	41	41
Adult				
2010	16	16	47	53
2011	15	16	48	54
2012	15	14	46	53
2013	14	13	42	47
2014 ¹	13	13	41	47

MA = Massachusetts; CG = comparison group composed of commercially insured individuals from Connecticut, New Hampshire, and Rhode Island weighted to match the characteristics of Massachusetts' commercially insured. Note: All numbers are quarterly averages for the four quarters of the year. Appendix D provides denominators for all measures.

¹ The 2014 value is the average of the last two quarters of 2013 and first two quarters of 2014 and represents the early test period.

Table E-3-10. Inpatient admissions and emergency room visits, Medicare beneficiaries by dual Medicare-Medicaid eligibility status, Massachusetts and comparison group, baseline (2010–2013) and early test period (2014¹)

	All-cause acute inpatient admissions		Emergency room visits that did not lead to hospitalization		30-day readmissions	
	Number per 1,000 covered lives		Number per 1,000 discharges			
	MA	CG	MA	CG	MA	CG
Overall						
2010	86	79	130	132	176	168
2011	83	78	131	138	172	166
2012	77	71	135	140	164	161
2013	72	71	136	135	160	159
2014 ¹	71	70	134	135	160	160
Medicare-Medicaid						
2010	103	102	245	261	203	177
2011	99	98	245	276	201	172
2012	92	90	252	278	190	168
2013	88	91	257	274	188	167
2014 ¹	91	91	245	277	188	168
Other Medicare						
2010	81	72	92	93	164	155
2011	78	72	94	97	160	155
2012	71	65	97	98	153	148
2013	67	64	98	93	147	145
2014 ¹	68	65	96	92	148	146

MA = Massachusetts; CG = comparison group composed of Medicare beneficiaries from Connecticut, New Hampshire, and Rhode Island weighted to match the characteristics of Massachusetts' Medicare beneficiaries. Note: All numbers are quarterly averages for the four quarters of the year. Appendix D provides denominators for all measures.

¹The 2014 values for all-cause inpatient admissions and emergency room visits that did not lead to hospitalization are the average of the last two quarters of 2013 and the first two quarters of 2014 and represents the early test period. The 2014 value for 30-day readmissions is the average of the last three quarters of 2013 and the first quarter of 2014.

E.3.4 Health care expenditures

Tables E-3-11 and *E-3-12* provide, for Massachusetts and its comparison group, quarterly averages of core expenditure measures for the commercially insured by age group and Medicare beneficiaries by Medicaid enrollment.

Commercially insured

- For commercially insured children and adults in Massachusetts, expenditures in all categories rose slightly throughout the baseline period and leveled off or fell slightly in the early test period (*Table E-3-11*). For infants the declines in total and inpatient facility payments started a year earlier and were larger than for children and adults. Expenditures in almost all categories grew for adults in the comparison group throughout the observation period. Trends in expenditures for infants and children in the comparison group were less consistent, with total and inpatient facility PMPM payments for infants obviously skewed by an outlier in 2013.

Table E-3-11. Per member per month commercial insurance payments by type of service, MarketScan commercially insured by age group, Massachusetts and comparison group, baseline (2010–2013) and early test period (2014¹)

	Total PMPM payments		Inpatient facility payments		Other facility payments		Professional payments		Outpatient pharmacy payments	
	MA	CG	MA	CG	MA	CG	MA	CG	MA	CG
Overall										
2010	291	328	69	83	102	129	119	115	53	60
2011	294	345	70	90	102	134	122	121	53	63
2012	297	322	71	78	102	131	123	113	56	64
2013	306	336	74	88	107	130	125	116	61	67
2014 ¹	305	334	73	89	108	130	124	115	65	71
Infant										
2010	664	802	344	494	66	62	254	245	15	12
2011	743	736	391	431	66	53	280	251	14	11
2012	767	658	407	403	66	47	294	207	19	11
2013	742	1,298	372	938	75	56	294	302	15	15
2014 ¹	654	847	306	543	72	61	274	242	14	18
Child										
2010	146	144	25	27	40	49	82	68	23	26
2011	149	159	23	35	40	50	86	74	22	28
2012	155	132	23	19	41	44	90	69	24	32
2013	158	136	24	22	41	43	92	70	27	29
2014 ¹	156	133	23	22	41	42	91	70	29	29
Adult										
2010	328	379	77	93	123	158	128	128	64	73
2011	329	398	78	100	122	163	129	134	64	76
2012	331	376	79	89	122	161	130	126	67	75
2013	341	382	82	94	128	160	131	127	72	81
2014 ¹	341	386	82	99	129	160	130	126	78	86

MA = Massachusetts; CG = comparison group composed of commercially insured individuals from Connecticut, New Hampshire, and Rhode Island weighted to match the characteristics of Massachusetts' commercially insured; PMPM = per member per month.

Note: All numbers are PMPM averages for the year. Appendix D provides denominators for all measures.

¹ The 2014 value is the average of the last two quarters of 2013 and first two quarters of 2014 and represents the early test period.

Medicare

- During the baseline and early test period, total, inpatient, and other facility expenditures for Medicare beneficiaries were slightly higher in Massachusetts than in the comparison group, but professional expenditures were higher in the comparison group (*Table E-3-12*). Other facility payments increased slightly and professional payments declined slightly over the period for both Massachusetts and the comparison group. Similar trends were seen for Medicare-Medicaid and other Medicare enrollees in both Massachusetts and the comparison group.

Table E-3-12. Per member per month commercial insurance payments by type of service, Medicare beneficiaries by dual Medicare-Medicaid eligibility status, Massachusetts and comparison group, baseline (2010–2013) and early test period (2014¹)

	Total PMPM payments		Inpatient facility payments		Other facility payments		Professional payments	
	MA	CG	MA	CG	MA	CG	MA	CG
Overall								
2010	911	836	369	317	318	285	223	233
2011	923	854	368	322	330	296	225	237
2012	931	842	376	313	329	294	226	235
2013	911	857	363	323	326	303	222	231
2014 ¹	902	855	356	322	328	306	218	228
Medicare-Medicaid								
2010	1,077	1,043	464	434	363	337	251	273
2011	1,077	1,047	458	428	376	345	243	275
2012	1,092	1,043	471	419	372	350	249	274
2013	1,068	1,064	458	438	364	358	246	268
2014 ¹	1,088	1,092	472	453	382	381	234	258
Other Medicare								
2010	856	776	338	284	304	270	214	222
2011	872	799	338	292	315	280	218	227
2012	878	787	345	285	315	278	218	224
2013	860	799	332	291	313	287	214	221
2014 ¹	854	799	331	295	319	293	204	211

PMPM = per member per month; MA = Massachusetts; CG = comparison group composed of Medicare beneficiaries from Connecticut, New Hampshire, and Rhode Island weighted to match the characteristics of Massachusetts' Medicare beneficiaries.

Note: All numbers are PMPM averages for the year. Appendix D provides denominators for all measures.

¹The 2014 value is average of the last two quarters of 2013 and first two quarters of 2014 and represents the early test period.

Appendix E-4: Minnesota Claims Data Outcomes by Payer and Subpopulation

E.4.1 Care coordination

Tables E-4-1 through *E-4-5* provide, for Minnesota and its comparison group, baseline care coordination measures for Medicaid beneficiaries by eligibility category, the commercially insured by age group, and Medicare beneficiaries by Medicaid enrollment.

Medicaid

- We did not include the numbers of visits to primary care providers or specialists for Minnesota or comparison group Medicaid beneficiaries because the physician specialty data field was missing at a high rate in the MAX files. Instead we present the total number of evaluation and management visits (*Table E-4-1*). In 2010–2011, Minnesota Medicaid beneficiaries had significantly higher total evaluation and management visits than the comparison group. However, whereas these visit decreased from 2010 to 2011 in Minnesota, they increased in the comparison group, thus narrowing the gap. This general trend was observed across all age groups except children, who had more visits in 2011 in Minnesota.
- The percentages of inpatient admissions (all-cause and mental health) with follow-up visits were lower among Medicaid beneficiaries in Minnesota relative to the comparison group. From 2010 to 2011, all rates decreased slightly in Minnesota and increased slightly in the comparison group. The lower 14-day follow-up visit rate for all-cause hospitalizations in Minnesota was largely driven by lower rates for infants and children. In contrast, all eligibility groups in Minnesota had lower rates of 7- and 30-day follow-up visits for mental health inpatient admission.
- In 2010, Minnesota had a lower asthma medication management rate than the comparison group; however, in 2011, Minnesota's rate surpassed the comparison group's rate (*Table E-4-2*). For both years, Minnesota performed better than the comparison group with respect to beneficiaries diagnosed with depression who remained on antidepressant medication treatment for 12 weeks or more and 6 months or more.

Table E-4-1. Evaluation and management visits and follow-up visits to inpatient admissions, Medicaid beneficiaries, Minnesota and comparison group, baseline (2010–2011)¹

	Total evaluation and management visits		Inpatient admissions with follow-up visits		Mental health inpatient admissions with follow-up visits, ages 6 years and older ²			
	Number per 100 covered lives		Percent within 14 days		Percent within 7 days		Percent within 30 days	
	MN	CG	MN	CG	MN	CG	MN	CG
Overall								
2010	376	181	44	46	39	48	66	71
2011	367	222	42	47	37	52	64	74
Infant								
2010	649	334	63	64	—	—	—	—
2011	634	455	63	68	—	—	—	—
Child								
2010	254	122	37	45	45	55	70	78
2011	261	160	39	47	45	60	71	81
Nondisabled adult								
2010	449	225	41	39	—	—	—	—
2011	400	267	37	39	—	—	—	—
Blind/disabled adult								
2010	559	351	44	44	39	46	67	71
2011	582	448	45	44	41	49	70	73

MN = Minnesota; CG = comparison group composed of Medicaid beneficiaries from Iowa and Washington weighted to match the characteristics of Minnesota's Medicaid beneficiaries; — = not applicable.

Note: Appendix D provides denominators for all measures.

¹ 2011 was the most current full year of available Medicaid data at the time of this writing.

² To protect the privacy of individuals, measures with denominators less than 30 have been removed. As such, we do not report the inpatient admission or mental health inpatient admission follow-up results for non-disabled adults.

Table E-4-2. Medication management for persistent asthma and newly diagnosed major depression, Medicaid beneficiaries, Minnesota and comparison group, baseline (2010–2011)¹

	Patients with persistent asthma appropriately prescribed medication		Patients newly diagnosed with major depression treated with antidepressants, ages 18 years and older			
	Percent of patients ages 5–64 years		Percent treated 12 weeks or more		Percent treated 6 months or more	
	MN	CG	MN	CG	MN	CG
2010	55	68	75	44	59	27
2011	73	68	74	55	57	35

MN = Minnesota; CG = comparison group composed of Medicaid beneficiaries from Iowa and Washington weighted to match the characteristics of Minnesota's Medicaid beneficiaries.

Note: Appendix D provides denominators for all measures.

¹ 2011 was the most current full year of available Medicaid data at the time of this writing.

Commercially insured

- Throughout most of the baseline period, rates of primary care and specialty care visits were lower for the commercially insured in Minnesota relative to the comparison group (*Table E-4-3*). For all age groups in both Minnesota and the comparison group, the primary and specialty visit rates declined or held steady from 2010–2012, then increased sharply in 2013.

Table E-4-3. Evaluation and management visits and follow-up visits to inpatient admissions, MarketScan commercially insured, Minnesota and comparison group, baseline (2010–2013)

	Visits to primary care providers		Visits to specialists		Inpatient admissions with follow-up visits		Mental health inpatient admissions with follow-up visits, ages 6 years and older			
	Number per 100 covered lives				Percent within 14 days		Percent within 7 days		Percent within 30 days	
	MN	CG	MN	CG	MN	CG	MN	CG	MN	CG
Overall										
2010	209	218	47	71	48	48	57	59	80	80
2011	210	208	46	67	49	48	59	59	81	80
2012	198	212	46	61	50	49	56	59	79	79
2013	215	225	56	76	52	50	50	49	75	73
Infant										
2010	760	770	41	48	90	90	—	—	—	—
2011	756	722	36	43	91	89	—	—	—	—
2012	736	745	36	42	91	91	—	—	—	—
2013	811	801	41	50	92	91	—	—	—	—
Child										
2010	199	201	29	39	41	46	55	59	82	80
2011	209	193	30	37	43	46	65	59	84	83
2012	192	195	29	35	44	46	62	62	82	82
2013	207	211	36	46	47	51	49	46	73	71
Adult										
2010	195	207	54	84	36	36	58	59	80	80
2011	194	199	53	78	37	37	56	59	80	79
2012	183	203	52	72	38	37	54	58	78	78
2013	200	213	63	88	40	39	50	50	76	74

MN = Minnesota; CG = comparison group composed of commercially insured individuals from Colorado, Iowa, and Washington weighted to match the characteristics of Minnesota's commercially insured; — = not applicable.

Note: Appendix D provides denominators for all measures.

- Similar percentages of the commercially insured with medical admissions had a follow-up visit within 14 days of discharge in Minnesota and the comparison group. This percentage increased slightly over the baseline period for all age groups in both Minnesota and the comparison group. Similarly, percentages of the commercially insured with mental health admissions who had a follow-up visit within 7 or 30 days of

discharge were comparable for Minnesota and the comparison group. These percentages declined for children and adults in 2013 in both Minnesota and the comparison group.

- The percentages of commercially insured asthma patients appropriately prescribed medication were similar for Minnesota and the comparison group and remained flat for both groups across the baseline period (**Table E-4-4**). In contrast, the percentages of patients newly diagnosed with depression who adhered to antidepressant medication treatment for 12 weeks or more and 6 months or more were higher in Minnesota than in the comparison group, and the percentages declined from 2011 to 2013.

Table E-4-4. Medication management for persistent asthma and newly diagnosed major depression, MarketScan commercially insured, Minnesota and comparison group, baseline (2011–2013)

	Patients with persistent asthma appropriately prescribed medication		Patients newly diagnosed with major depression treated with antidepressants, ages 18 years and older			
	Percent of patients ages 5–64 years		Percent treated 12 weeks or more		Percent treated 6 months or more	
	MN	CG	MN	CG	MN	CG
2011	90	89	76	70	60	50
2012	91	89	76	70	58	51
2013	91	89	74	68	56	49

MN = Minnesota; CG = comparison group composed of commercially insured individuals from Colorado, Iowa, and Washington weighted to match the characteristics of Minnesota’s commercially insured.

Note: Appendix D provides denominators for all measures.

Medicare

- Among Medicare beneficiaries in the baseline period, the rate of visits to primary care physicians was consistently higher in Minnesota relative to the comparison group, whereas the rate of visits to specialists was consistently lower (**Table E-4-5**). In both Minnesota and the comparison group, the rates of visits to primary care and specialty providers were fairly stable from 2010 through 2012 and increased sharply in 2013, with the increase more pronounced for Medicare-Medicaid than other Medicare beneficiaries.
- For all Medicare beneficiaries, the percentage of inpatient admissions with a follow-up visit within 14 days was slightly higher in Minnesota than the comparison group and rose slightly over the baseline period in both groups. The percentage of mental health admissions with a follow-up visit within 7 and 30 days was generally comparable between Minnesota and the comparison group; both rates dropped for Medicare-Medicaid and other Medicare beneficiaries in Minnesota and the comparison group in 2013, but the decline was slightly greater in the comparison group.

Table E-4-5. Evaluation and management visits and follow-up visits to inpatient admissions, Medicare beneficiaries, Minnesota and comparison group, baseline (2010–2013)

	Visits to primary care providers		Visits to specialists		Inpatient admissions with follow-up visits		Mental health inpatient admissions with follow-up visits, ages 6 years and older			
	Number per 100 covered lives				Percent within 14 days		Percent within 7 days		Percent within 30 days	
	MN	CG	MN	CG	MN	CG	MN	CG	MN	CG
Overall										
2010	386	376	268	323	49	47	37	36	71	69
2011	379	376	269	322	50	48	38	39	72	71
2012	384	375	269	318	51	49	38	39	72	70
2013	394	389	278	326	51	49	35	34	69	65
Medicare-Medicaid										
2010	439	425	262	275	45	43	36	35	71	69
2011	432	419	266	278	48	45	37	37	72	71
2012	447	414	267	276	49	46	37	39	72	71
2013	477	457	305	309	51	48	34	33	69	65
Other Medicare										
2010	377	368	269	335	50	47	38	38	70	69
2011	368	369	270	335	50	48	37	42	70	71
2012	371	368	270	331	51	49	38	38	70	68
2013	374	376	271	334	51	49	36	35	68	64

MN = Minnesota; CG = comparison group composed of Medicare beneficiaries from Colorado, Iowa, and Washington weighted to match the characteristics of Minnesota's Medicare beneficiaries.

Note: Appendix D provides denominators for all measures.

E.4.2 Quality of care

Tables E-4-6 through E-4-13 provide, for Minnesota and its comparison group, baseline quality-of-care measures Medicaid beneficiaries by eligibility category, the commercially insured by age group, and Medicare beneficiaries by Medicaid enrollment.

Medicaid

- The overall, acute, and chronic Preventive Quality Indicator (PQI) composite hospitalization rates for Medicaid beneficiaries in Minnesota were higher than in the comparison group (*Table E-4-6*). All rates increased for Minnesota from 2010 to 2011, but the overall and acute composite rates decreased in the comparison group while the chronic composite rate increased.
- In 2010–2011, influenza immunization rates were comparable and stable for all Medicaid eligibility groups in Minnesota and the comparison group (*Table E-4-7*).
- The breast cancer screening rate for Medicaid beneficiaries in Minnesota was higher than the comparison group's rate in 2010, with the discrepancy widening slightly in 2011.

Table E-4-6. Rates of hospitalization (per 100,000 covered persons) for Prevention Quality Indicator clinical conditions for Medicaid beneficiaries (18 years and over), Minnesota and comparison group, baseline (2010–2011)¹

	Overall composite		Acute composite		Chronic composite	
	MN	CG	MN	CG	MN	CG
2010	285	224	47	37	242	190
2011	299	222	50	32	253	194

MN = Minnesota; CG = comparison group composed of Medicaid beneficiaries from Iowa and Washington weighted to match the characteristics of Minnesota's Medicaid beneficiaries.

Note: Appendix D provides denominators for all measures.

¹ 2011 was the most current full year of available Medicaid data at the time of this writing.

Table E-4-7. Influenza immunization, mammography screening, and initiation and engagement in alcohol and other drug dependence treatment, Medicaid beneficiaries, Minnesota and comparison group, baseline (2010–2011)¹

	Influenza immunization between October 1 and March 31		Mammography screening		Initiation and engagement in treatment among patients with new AOD dependence episodes			
	Percent of patients ages 1 year and older		Percent of women ages 41-69 years		Percent initiated treatment		Percent engaged in treatment	
	MN	CG	MN	CG	MN	CG	MN	CG
Overall								
2010	9	9	31	23	15	24	7	13
2011	8	9	33	22	18	23	8	13
Infant								
2010	11	11	—	—	—	—	—	—
2011	8	11	—	—	—	—	—	—
Child								
2010	8	9	—	—	—	—	—	—
2011	6	9	—	—	—	—	—	—
Non-disabled adult								
2010	10	7	—	—	—	—	—	—
2011	9	7	—	—	—	—	—	—
Blind/disabled adult								
2010	16	13	—	—	—	—	—	—
2011	15	12	—	—	—	—	—	—

MN = Minnesota; CG = comparison group composed of Medicaid beneficiaries from Iowa and Washington weighted to match the characteristics of Minnesota's Medicaid beneficiaries; — = not applicable; AOD = alcohol and other drug.

Note: Appendix D provides denominators for all measures.

¹ 2011 was the most current full year of available Medicaid data at the time of this writing.

- The percentage of beneficiaries who initiated and who remained engaged in alcohol and other drug (AOD) treatment was lower in Minnesota relative to the comparison group. The rate of treatment initiation increased slightly in Minnesota from 2010 to 2011 but remained essentially unchanged in the comparison group.
- Medicaid infants and children in Minnesota had higher compliance with well-child visit schedules than Medicaid infants and children in the comparison group (*Table E-4-8*).

Table E-4-8. Well-child visit measures, Medicaid beneficiaries, Minnesota and comparison group, baseline (2010–2011)¹

	Well-child visits in the first 15 months of life				Well-child visits, ages 3–6 years	
	Percent with 0 visits		Percent with 6 or more visits		Percent with 1 or more visits	
	MN	CG	MN	CG	MN	CG
2010	—	—	—	—	61	55
2011	6	7	39	29	61	57

MN = Minnesota; CG = comparison group composed of Medicaid beneficiaries from Iowa and Washington weighted to match the characteristics of Minnesota’s Medicaid beneficiaries; — = not applicable.

Note: Appendix D provides denominators for all measures.

¹ 2011 was the most current full year of available Medicaid data at the time of this writing.

Commercially insured

- The overall, acute, and chronic PQI composite hospitalization rates for the commercially insured in Minnesota were lower than in the comparison group and declined for both groups from 2010 to 2013 (*Table E-4-9*).

Table E-4-9. Rates of hospitalization (per 100,000 covered persons) for Prevention Quality Indicator clinical conditions, ages 18 years and over, MarketScan commercially insured, Minnesota and comparison group, baseline (2010–2013)

	Overall composite		Acute composite		Chronic composite	
	MN	CG	MN	CG	MN	CG
2010	182	191	88	97	96	97
2011	187	201	99	103	93	102
2012	165	175	78	84	90	94
2013	160	149	71	64	90	89

MN = Minnesota; CG = comparison group composed of commercially insured individuals from Colorado, Iowa, and Washington weighted to match the characteristics of Minnesota’s commercially insured.

Note: Appendix D provides denominators for all measures.

- Throughout the baseline period, influenza immunization rates among the commercially insured in Minnesota were consistently higher than in the comparison group (*Table E-4-10*). These rates increased between 2010 and 2013, with similar trends seen in all age groups.

Table E-4-10. Influenza immunization, mammography screening, and initiation and engagement in alcohol and other drug dependence treatment, MarketScan commercially insured, Minnesota and comparison group, baseline (2010–2013)

	Influenza immunization between October 1 and March 31		Mammography screening		Initiation and engagement in treatment among patients with new AOD dependence episodes			
	Percent of patients ages 1 and older		Percent of women ages 41–64 years		Percent initiated treated		Percent engaged in treatment	
	MN	CG	MN	CG	MN	CG	MN	CG
Overall								
2010	22	13	46	42	43	44	18	22
2011	21	13	48	41	40	43	17	21
2012	24	18	46	42	39	41	16	19
2013	26	19	45	42	36	41	14	19
Infant								
2010	56	46	—	—	—	—	—	—
2011	56	48	—	—	—	—	—	—
2012	58	53	—	—	—	—	—	—
2013	66	59	—	—	—	—	—	—
Child								
2010	28	19	—	—	43	45	20	24
2011	29	21	—	—	42	45	20	25
2012	34	27	—	—	36	43	17	23
2013	36	29	—	—	42	42	18	20
Adult								
2010	18	10	—	—	43	44	18	22
2011	17	10	—	—	39	43	17	20
2012	19	14	—	—	39	41	16	19
2013	21	15	—	—	35	40	14	19

MN = Minnesota; CG = comparison group composed of commercially insured individuals from Colorado, Iowa, and Washington weighted to match the characteristics of Minnesota's commercially insured; — = not applicable; AOD = alcohol and other drug.

Note: Appendix D provides denominators for all measures.

- Breast cancer screening rates among commercially insured women ages 41 to 64 were consistently higher in Minnesota than in the comparison group. Rates fluctuated slightly in Minnesota between 2010 and 2013 but were more stable in the comparison group.
- In 2010, similar percentages of commercially insured individuals with new episodes of alcohol and other drug (AOD) dependence initiated AOD treatment in Minnesota and the comparison group. Rates declined from 2010 to 2013 in both Minnesota and the comparison group, but at a faster rate in Minnesota. The relatively greater decline in Minnesota was driven by a lower percentage of adults initiating treatment. The percentage of commercially insured with new AOD episodes who received treatment

beyond the treatment initiation encounter was low in the comparison group and even lower in Minnesota.

- A higher percentage of commercially insured infants in Minnesota were in compliance with the well-child visit schedule relative to the comparison group (**Table E-4-11**). The rate of well-child visits among children ages 3 to 6 was similar for Minnesota and the comparison group. Both rates inched up over the baseline period in Minnesota and the comparison group.

Table E-4-11. Well-child visit measures, MarketScan commercially insured, Minnesota and comparison group, baseline (2010–2013)

	Well-child visits in the first 15 months of life				Well-child visits, ages 3–6 years	
	Percent with 0 visits		Percent with 6 or more visits		Percent with 1 or more visits	
	MN	CG	MN	CG	MN	CG
2010	—	—	—	—	68	69
2011	1	1	81	77	71	69
2012	1	2	80	78	70	70
2013	1	1	84	80	72	72

MN = Minnesota; CG = comparison group composed of commercially insured individuals from Colorado, Iowa, and Washington weighted to match the characteristics of Minnesota’s commercially insured; — = not applicable.

Note: Appendix D provides denominators for all measures.

Medicare

- In 2010, the overall, acute, and chronic PQI composite hospitalization rates for Medicare beneficiaries in Minnesota were lower than in the comparison group (**Table E-4-12**). However, whereas the overall and acute composite rates declined for both groups from 2011 to 2013, the chronic composite rate rose in Minnesota but not in the comparison group. Consequently, whereas the chronic composite rate was equivalent in Minnesota and the comparison group in 2010, the Minnesota rate was considerably higher than the comparison group rate in 2013. As a consequence, whereas the overall composite rate was lower in Minnesota relative to the comparison group rate in 2010, it was slightly higher in 2013.

Table E-4-12. Rates of hospitalization (per 100,000 covered persons) for Prevention Quality Indicator clinical conditions, ages 18 years and over, Medicare beneficiaries, Minnesota and comparison group, baseline (2010–2013)

	Overall composite		Acute composite		Chronic composite	
	MN	CG	MN	CG	MN	CG
2010	1,650	1,713	857	924	884	886
2011	1,695	1,718	871	953	912	856
2012	1,635	1,675	806	883	910	877
2013	1,620	1,612	758	835	943	857

MN = Minnesota; CG = comparison group composed of Medicare beneficiaries from Colorado, Iowa, and Washington weighted to match the characteristics of Minnesota’s Medicare beneficiaries.

Note: Appendix D provides denominators for all measures.

- Minnesota had comparable influenza immunization rates relative to the comparison group in 2011. However, in 2012 and 2013 Minnesota's rate rose more slowly than that of the comparison group, bringing Minnesota's rate below the comparison group's (*Table E-4-13*).
- Similarly, the tobacco use screening rate was lower in Minnesota than in the comparison group in all baseline years. The rate rose in both groups from 2010 to 2013, but at a faster rate in the comparison group.
- The breast cancer screening rate among female Medicare beneficiaries in Minnesota was slightly higher than in the comparison group. The Minnesota rate declined slightly over the baseline period but remained higher than the rate in the comparison group, which was unchanged throughout.

Table E-4-13. Influenza immunization, tobacco use screening, and mammography screening, Medicare beneficiaries, Minnesota and comparison group, baseline (2010–2013)

	Influenza immunization between October 1 and March 31						Tobacco use screening		Mammography screening	
	Percent of patients ages 18 years and older						Percent of women ages 41–69 years			
	MN	CG	MN	CG	MN	CG				
2010	32	30	4	9	50	46				
2011	29	29	5	6	50	47				
2012	30	35	5	11	49	46				
2013	34	39	10	23	48	46				

MN = Minnesota; CG = comparison group composed of Medicare beneficiaries from Colorado, Iowa, and Washington weighted to match the characteristics of Minnesota's Medicare beneficiaries.

Note: Appendix D provides denominators for all measures.

E.4.3 Health care utilization

Tables E-4-14 through *E-4-16* provide, for Minnesota and its comparison group, the quarterly averages of core utilization measures for Medicaid beneficiaries by eligibility category, commercially insured by age group, and Medicaid beneficiaries by Medicaid enrollment.

Medicaid

- The rate of all-cause acute inpatient admissions was lower among Minnesota Medicaid beneficiaries relative to the comparison group during the baseline period (*Table E-4-14*). In Minnesota, the all-cause inpatient admission rate increased from 2010 to 2011. In the comparison group, all-cause admission rates increased over the period. Infants had the largest increase in acute inpatient admissions in both Minnesota and the comparison group.

Table E-4-14. Inpatient admissions and emergency room visits, Medicaid beneficiaries by eligibility category, Minnesota and comparison group, baseline (2010–2011)¹

	All-cause acute inpatient admissions		Emergency room visits that did not lead to hospitalization	
	Number per 1,000 covered lives			
	MN	CG	MN	CG
Overall				
2010	27	33	203	240
2011	29	35	225	233
Infant				
2010	45	50	310	327
2011	51	56	327	323
Child				
2010	8	8	124	133
2011	8	8	134	134
Nondisabled adult				
2010	38	63	263	392
2011	40	61	292	345
Blind/disabled adult				
2010	102	118	406	544
2011	99	119	429	534

MN = Minnesota; CG = comparison group composed of Medicaid beneficiaries from Iowa and Washington weighted to match the characteristics of Minnesota's Medicaid beneficiaries.

Note: Appendix D provides denominators for all measures.

¹ 2011 was the most current full year of available Medicaid data at the time of this writing.

- The rate of ER visits among Medicaid beneficiaries was lower in Minnesota relative to the comparison group in 2010; however it increased over time in Minnesota and decreased in the comparison group, making the two nearly the same by 2011. Similar trends were seen among infants, children, non-disabled adults, and blind/disabled adults; the decrease in ER visits for the comparison group was most pronounced for non-disabled adults.

Commercially insured

- The all-cause acute inpatient admission rate was higher for the commercially insured in Minnesota relative to the comparison group (*Table E-4-15*). The overall rate was fairly stable in from 2010 to 2012 and began to decrease in 2013, with the largest decline among infants from 2013 to 2014.
- Commercially insured children and adults in Minnesota had slightly lower rates of ER visits relative to the comparison group throughout the baseline and early test periods, whereas commercially insured infants in Minnesota had a higher rate. The rate of ER visits rose slightly in the first part of the period to highs for all age groups in 2012, after which it declined slightly in both Minnesota and the comparison group.

Table E-4-15. Inpatient admissions and emergency room visits, MarketScan commercially insured by age group, Minnesota and comparison group, baseline (2010–2013) and early test period (2014¹)

	All-cause acute inpatient admissions		Emergency room visits that did not lead to hospitalization	
	Number per 1,000 covered lives			
	MN	CG	MN	CG
Overall				
2010	16	14	36	41
2011	16	14	38	44
2012	15	14	38	43
2013	14	13	37	41
2014 ¹	14	13	36	41
Infant				
2010	132	108	86	84
2011	133	116	88	88
2012	135	118	93	84
2013	124	109	88	82
2014 ¹	108	93	85	79
Child				
2010	5	4	37	41
2011	5	4	40	44
2012	5	4	39	42
2013	4	4	37	40
2014 ¹	4	4	35	39
Adult				
2010	16	15	33	40
2011	16	15	35	42
2012	16	14	36	42
2013	14	14	35	40
2014 ¹	14	13	35	40

MN = Minnesota; CG = comparison group composed of commercially insured individuals from Colorado, Iowa, and Washington weighted to match the characteristics of Minnesota's commercially insured.

Note: All numbers are quarterly averages for the four quarters of the year. Appendix D provides denominators for all measures.

¹ The 2014 value is the average of the last two quarters of 2013 and first two quarters of 2014 and represents the early test period.

Medicare

- The rate of all-cause acute inpatient admissions was higher among Medicare beneficiaries in Minnesota relative to the comparison group between 2010 and 2014 and decreased over time in both groups (*Table E-4-16*). The same general trends were seen among Medicare-Medicaid enrollees and other Medicare beneficiaries in both Minnesota and the comparison group.

Table E-4-16. Inpatient admissions and emergency room visits, Medicare beneficiaries by dual Medicare-Medicaid eligibility status, Minnesota and comparison group, baseline (2010–2013) and early test period (2014¹)

	All-cause acute inpatient admissions		Emergency room visits that did not lead to hospitalization		30-day readmissions	
	Number per 1,000 discharges					
	MN	CG	MN	CG	MN	CG
Overall						
2010	75	68	114	117	159	145
2011	73	65	121	121	157	142
2012	69	63	130	127	156	139
2013	68	62	129	131	153	135
2014 ¹	66	60	130	132	152	134
Medicare-Medicaid						
2010	96	86	251	268	209	181
2011	93	83	256	272	203	176
2012	88	81	271	281	203	172
2013	86	79	264	279	198	173
2014 ¹	83	77	270	278	197	172
Other Medicare						
2010	71	64	90	92	146	133
2011	69	62	94	93	144	129
2012	65	59	99	97	141	127
2013	63	58	98	99	137	121
2014 ¹	62	56	101	102	137	121

MN = Minnesota; CG = comparison group composed of Medicare beneficiaries from Colorado, Iowa, and Washington weighted to match the characteristics of Minnesota's Medicare beneficiaries.

Note: All numbers are quarterly averages for the four quarters of the year. Appendix D provides denominators for all measures.

¹The 2014 values for all-cause inpatient admissions and emergency room visits that did not lead to hospitalization are the average of the last two quarters of 2013 and the first two quarters of 2014 and represents the early test period. The 2014 value for 30-day readmissions is the average of the last three quarters of 2013 and the first quarter of 2014.

- The rate of ER visits by Medicare beneficiaries was very similar in Minnesota and the comparison group and increased over the observation period for both groups. Medicare-Medicaid enrollees in Minnesota had fewer ER visits than Medicare-Medicaid enrollees in the comparison group, with both peaking in 2012 before dropping slightly.

E.4.4 Health care expenditures

Tables E-4-17 through E-4-19 provide, for Minnesota and its comparison group, quarterly averages of core expenditure measures for Medicaid beneficiaries by eligibility category, the commercially insured by age group, and Medicare beneficiaries by Medicaid enrollment.

Medicaid

- Average total PMPM Medicaid payments for Medicaid-only and Medicare-Medicaid beneficiaries were consistently higher in Minnesota than in the comparison group between 2010 and 2011 (*Table E-4-17*) and increased slightly over the year.
- Minnesota's average total Medicaid payments were higher than the comparison group's in all eligibility categories in 2010 and 2011. Minnesota had higher payments than the comparison group for all categories in both years, lower average fee-for-service (FFS) payments than the comparison group for infants and nondisabled adults in both years, and higher average FFS payments for child and blind/disabled adults. From 2010 to 2011, average total payments increased for enrollees in all eligibility categories in the comparison group but declined slightly for infants and blind/disabled adults in Minnesota.

Table E-4-17. Per member per month Medicaid payments by type of payment, Medicaid-only beneficiaries by eligibility category, Minnesota and comparison group, baseline (2010–2011)¹

	FFS payments		Capitation payments		Total payments	
	MN	CG	MN	CG	MN	CG
Overall						
2010	266	358	300	79	655	437
2011	257	357	328	88	670	446
Infant						
2010	132	251	421	140	554	392
2011	129	270	377	147	505	417
Child						
2010	221	189	219	46	440	235
2011	216	188	243	53	459	242
Nondisabled adult						
2010	112	320	416	163	528	483
2011	131	337	454	156	584	493
Blind/disabled adult						
2010	2,623	2,111	188	81	2,811	2,192
2011	2,609	2,139	154	106	2,763	2,248

PMPM = per member per month; FFS = fee-for-service; MN = Minnesota; CG = comparison group composed of Medicaid beneficiaries from Iowa and Washington weighted to match the characteristics of Minnesota's Medicaid beneficiaries.

Note: Appendix D provides denominators for all measures.

¹ 2011 was the most full year of current available Medicaid data at the time of this writing.

Commercially insured

- Total and inpatient facility payments increased for the commercially insured in all age groups in Minnesota until 2014, when payments start to drop. The drop began in 2013 for the comparison group (**Table E-4-18**). Increases were more consistent over the observation period in other payments for children and adults; for infants, the 2014 drop in spending was seen in all payment categories except pharmacy payments.

Table E-4-18. Per member per month commercial insurance payments by type of service, MarketScan commercially insured by age group, Minnesota and comparison group, baseline (2010–2013) and early test period (2014¹)

	Total PMPM payments		Inpatient facility payments		Other facility payments		Professional payments		Outpatient pharmacy payments	
	MN	CG	MN	CG	MN	CG	MN	CG	MN	CG
Overall										
2010	246	227	68	62	58	69	119	95	41	43
2011	264	245	70	69	66	78	127	98	44	45
2012	270	247	74	70	67	78	126	99	43	46
2013	271	245	74	69	69	78	126	98	48	50
2014 ¹	268	242	73	67	70	78	124	96	49	52
Infant										
2010	763	602	449	336	54	53	260	213	13	12
2011	725	661	390	369	56	60	279	232	17	11
2012	792	663	447	363	58	61	286	238	10	9
2013	798	689	445	371	62	60	290	258	11	12
2014 ¹	727	590	384	299	55	56	273	235	11	12
Child										
2010	119	103	25	23	28	32	64	48	19	17
2011	136	111	29	23	33	36	74	51	21	19
2012	135	113	30	24	33	36	71	52	21	19
2013	138	112	29	23	35	36	73	53	23	21
2014 ¹	133	109	27	21	35	36	71	52	23	21
Adult										
2010	280	265	72	70	70	85	136	110	51	55
2011	297	284	76	78	78	94	142	112	53	56
2012	303	286	79	79	80	94	142	112	53	57
2013	304	281	79	77	82	94	140	110	58	62
2014 ¹	301	279	78	76	83	95	138	108	60	65

PMPM = per member per month; MN = Minnesota; CG = comparison group composed of commercially insured individuals from Colorado, Iowa, and Washington weighted to match the characteristics of Minnesota's commercially insured.

Note: All numbers are PMPM averages for the year. Appendix D provides denominators for all measures.

¹ The 2014 value is the average of the last two quarters of 2013 and first two quarters of 2014 and represents the early test period.

Medicare

- The average total and other facility payments for Medicare beneficiaries were higher in Minnesota than the comparison group throughout the baseline and early test period (**Table E-4-19**). The trends were relatively similar for the two groups, however, with other facility payments increasing over the baseline and early test period, and total payments also increasing over the baseline but leveling off in the early test period. Similar trends were seen among Medicare-Medicaid and other Medicare beneficiaries with one exception. Although total payments increased from 2013 to 2014 for Medicare-Medicaid beneficiaries, they decreased for other Medicare beneficiaries.
- Relative to the comparison group, inpatient facility payments for Medicare beneficiaries were higher in Minnesota but professional payments were lower. Average inpatient facility and professional PMPM payments remained fairly stable for both Minnesota and the comparison group over the baseline and early test period, with similar trends among Medicare-Medicaid and other Medicare beneficiaries.

Table E-4-19. Per member per month Medicare payments by type of service, Medicare beneficiaries by Medicare-Medicaid eligibility status, Minnesota and comparison group, baseline (2010–2013) and early test period (2014¹)

	Total PMPM payments		Inpatient facility payments		Other facility payments		Professional payments	
	MN	CG	MN	CG	MN	CG	MN	CG
Overall								
2010	674	662	369	317	232	232	170	192
2011	693	677	368	322	247	246	171	195
2012	700	693	376	313	251	252	177	199
2013	712	702	363	323	259	260	173	196
2014 ¹	709	694	356	322	265	261	171	193
Medicare-Medicaid								
2010	833	822	377	331	254	283	202	208
2011	851	832	384	326	265	297	201	209
2012	854	857	375	338	270	304	209	215
2013	859	847	379	328	275	309	205	210
2014 ¹	882	854	393	337	290	316	199	201
Other Medicare								
2010	645	632	253	222	228	220	165	190
2011	661	645	253	218	243	234	165	194
2012	666	656	250	221	247	238	170	198
2013	678	667	256	226	256	247	166	194
2014 ¹	669	645	250	216	262	247	157	183

MN = Minnesota; CG = comparison group composed of Medicare beneficiaries from Colorado, Iowa, and Washington weighted to match the characteristics of Minnesota's Medicare beneficiaries.

Note: All numbers are PMPM averages for the year. Appendix D provides denominators for all measures.

¹The 2014 value is the average of the last two quarters of 2013 and the first two quarters of 2014 and represents the early test period.

Appendix E-5: Oregon Claims Data Outcomes by Payer and Subpopulation

E.5.1 Care coordination

Tables E-5-1 through *E-5-5* provide, for Oregon and its comparison group, baseline care coordination measures for Medicaid beneficiaries by eligibility category, the commercially insured by age group, and Medicare beneficiaries by Medicaid enrollment.

Medicaid

- Relative to the comparison group, Medicaid beneficiaries in Oregon had fewer primary care and specialty visits in Oregon in 2010 and 2011 (*Table E-5-1*) for all eligibility categories. From 2010 to 2011, the rate of primary care visits declined in Oregon but rose in the comparison group—an increase concentrated among infants and children. The rate of specialty care visits increased in all eligibility categories in both Oregon and the comparison group.
- Medicaid beneficiaries in Oregon received slightly better coordinated care in 2010 and 2011 relative to the comparison group. Among all Medicaid beneficiaries, the rates of follow-up after medical and mental health admissions and medication management measures were higher in Oregon than the comparison group in 2010 and 2011—trends that generally held for the overall Medicaid population and all eligibility categories.
- The percentage of medical admissions with a follow-up visit was generally slightly higher for Medicaid beneficiary groups. However, the rate declined slightly from 2010 to 2011 overall and for each Medicaid eligibility category in Oregon but increased (for the overall population, infants, and children) or remained stable (nondisabled adults and blind/disabled adults) in the comparison group. The percentages of mental health admissions with a follow-up visit within 7 and 30 days were generally higher in Oregon than in the comparison group except for children, with no trends from 2010 to 2011.
- Medicaid patients with persistent asthma were slightly more likely to receive appropriate prescriptions in Oregon than the comparison group, with no trends from 2010 to 2011 (*Table E-5-2*).
- Relative to the comparison group, Oregon Medicaid patients newly diagnosed with major depression who were prescribed antidepressants were more likely to continue treatment for 12 weeks or more and 6 months or more, rates that increased in both Oregon and the comparison group from 2010 to 2011.

Table E-5-1. Evaluation and management visits and follow-up visits to inpatient admissions, Medicaid beneficiaries, Oregon and comparison group, baseline (2010–2011)¹

	Visits to primary care providers		Visits to specialists		Total evaluation and management visits		Inpatient admissions with follow-up visits		Mental health inpatient admissions with follow-up visits, age 6 years or older ²			
	Number per 100 covered lives						Percent within 14 days		Percent within 7 days		Percent within 30 days	
	OR	CG	OR	CG	OR	CG	OR	CG	OR	CG	OR	CG
Overall												
2010	254	277	45	47	333	333	51	46	50	45	74	68
2011	237	281	47	49	320	334	49	47	50	46	73	70
Infant												
2010	533	557	37	37	612	608	77	64	—	—	—	—
2011	516	583	46	40	611	628	73	68	—	—	—	—
Child												
2010	165	188	24	27	206	222	42	45	46	45	72	71
2011	158	195	27	28	203	226	40	47	47	51	69	71
Non-disabled adult												
2010	290	333	57	65	404	410	42	39	—	—	—	—
2011	264	330	59	69	379	403	41	39	—	—	—	—
Blind/disabled adult												
2010	384	453	150	169	615	636	49	44	54	49	75	72
2011	355	449	153	175	600	630	48	44	55	47	76	73

OR = Oregon; CG = comparison group composed of Medicaid beneficiaries from Michigan and Washington weighted to match the characteristics of Oregon's Medicaid beneficiaries; — = not applicable.

Note: Appendix D provides denominators for all measures.

¹2011 was the most current full year of available Medicaid data at the time of this writing. ²To protect the privacy of individuals, measures with denominators less than 30 have been removed. As such, we do not report the inpatient admission or mental health inpatient admission follow-up results for the non-disabled adult population in Medicaid.

Table E-5-2. Medication management for persistent asthma and newly diagnosed major depression, Medicaid beneficiaries, Oregon and comparison group, baseline (2010–2011)¹

	Patients with persistent asthma appropriately prescribed medication		Patients newly diagnosed with major depression and treated with antidepressants, ages 18 years or older			
	Percent of patients ages 5–64 years		Percent treated 12 weeks or more		Percent treated 6 months or more	
	OR	CG	OR	CG	OR	CG
2010	72	67	58	46	40	29
2011	71	67	61	56	42	36

OR = Oregon; CG = comparison group composed of Medicaid beneficiaries from Michigan and Washington weighted to match the characteristics of Oregon's Medicaid beneficiaries.

Note: Appendix D provides denominators for all measures.

¹2011 was the most current full year of available Medicaid data at the time of this writing.

Commercially insured

- Throughout the baseline period, the commercially insured in Oregon had lower visit rates to both primary care providers and specialists than the commercially insured in the comparison group. The rate of primary care visits among the commercially insured declined in Oregon between 2010 and 2011 but was fairly stable for the remainder of the baseline period (**Table E-5-3**). The primary care visit rate also declined in the comparison group from 2010 to 2011 but grew after that, ending the baseline period substantially higher than the 2010 level. In contrast, in both Oregon and the comparison group, visits to specialists among the commercially insured in all age groups declined from 2010 to 2012 and then rose above the 2010 level in 2013.

Table E-5-3. Evaluation and management visits and follow-up visits to inpatient admissions, MarketScan commercially insured, Oregon and comparison group, baseline (2010–2013)

	Visits to primary care providers		Visits to specialists		Inpatient admissions with follow-up visits		Mental health inpatient admissions with follow-up visits, age 6 years and older			
	Number per 100 covered lives				Percent within 14 days		Percent within 7 days		Percent within 30 days	
	OR	CG	OR	CG	OR	CG	OR	CG	OR	CG
Overall										
2010	205	216	71	76	50	46	60	61	81	82
2011	198	209	65	72	50	46	60	61	80	82
2012	195	214	63	68	50	47	61	61	80	81
2013	197	232	75	80	50	48	52	48	74	72
Infant										
2010	710	736	29	42	91	91	—	—	—	—
2011	698	701	27	40	92	91	—	—	—	—
2012	699	729	25	41	94	92	—	—	—	—
2013	700	781	28	45	92	92	—	—	—	—
Child										
2010	174	193	33	40	39	46	52	63	80	83
2011	174	187	30	38	42	46	51	62	76	84
2012	169	193	30	37	40	48	57	66	80	84
2013	174	210	38	45	44	50	43	44	65	70
Adult										
2010	203	212	85	89	40	38	62	61	82	82
2011	194	205	77	84	40	38	63	61	81	81
2012	192	210	75	79	40	38	62	60	80	81
2013	192	227	88	92	40	39	54	50	77	73

OR = Oregon; CG = comparison group composed of commercially insured individuals from Colorado, Michigan, and Washington weighted to match the characteristics of Oregon's commercially insured; — = not applicable.

Note: Appendix D provides denominators for all measures.

- For the commercially insured, the percentage of inpatient hospital admissions with a follow-up visit within 14 days was generally higher in Oregon relative to the comparison group in each of the 4 years examined, with no trend over the period. The only exception was among children, whose rate was lower in Oregon than the comparison group and grew slightly over the period in both groups.
- The percentage of mental health admissions with a follow-up visit within 7 days and 30 days after admission among the commercially insured was similar in Oregon and the comparison group, with no change from 2010 to 2012 but a decline in 2013. The only exception was for children—for whom the percentage was lower in Oregon than in the comparison group and whose 7-day follow-up percentage in both groups rose from 2010 to 2012, before declining in 2013.
- The percentage of commercially insured patients who had persistent asthma and who received appropriately prescribed medication was roughly equivalent between Oregon and the comparison group from 2011 through 2013 and remained consistently high (**Table E-5-4**). The share of the population receiving this treatment, however, dropped slightly over the period in both groups.
- In 2010, the percentages of commercially insured patients with newly diagnosed depression who adhered to antidepressant medication treatment for 12 weeks or more and 6 months or more were lower in Oregon than in the comparison group. From 2011 to 2013, however, the rates increased in Oregon while decreasing slightly in the comparison group, making the 2013 rates equivalent.

Table E-5-4. Medication management for persistent asthma and newly diagnosed major depression, MarketScan commercially insured, Oregon and comparison group, baseline (2011–2013)

	Patients with persistent asthma appropriately prescribed medication		Patients newly diagnosed with major depression and treated with antidepressants, ages 18 years or older			
	Percent of patients ages 5–64 years		Percent treated 12 weeks or more		Percent treated 6 months or more	
	OR	CG	OR	CG	OR	CG
2011	91	91	63	72	49	55
2012	90	90	73	72	57	54
2013	90	89	72	71	52	53

OR = Oregon; CG = comparison group composed of commercially insured individuals from Colorado, Michigan, and Washington weighted to match the characteristics of Oregon’s commercially insured.

Note: Appendix D provides denominators for all measures.

Medicare

- Among Medicare beneficiaries overall, the rate of visits to primary care providers was consistently lower in Oregon relative to the comparison group over the baseline years, whereas the rate of visits to specialists was consistently higher (*Table E-5-5*). Visit rates to both primary care providers and specialists declined slightly over the period in Oregon but remained fairly stable in the comparison group.

Table E-5-5. Evaluation and management visits and follow-up visits to inpatient admissions, Medicare beneficiaries, Oregon and comparison group, baseline (2010–2013)

	Visits to primary care providers		Visits to specialists		Inpatient admissions with follow-up visits		Mental health inpatient admissions with follow-up visits, ages 6 years and older			
	Number per 100 covered lives				Percent within 14 days		Percent within 7 days		Percent within 30 days	
	OR	CG	OR	CG	OR	CG	OR	CG	OR	CG
Overall										
2010	352	367	285	271	47	46	35	40	59	72
2011	345	365	282	272	49	47	37	40	63	73
2012	335	365	278	271	49	48	36	40	60	72
2013	336	366	280	277	48	46	36	35	61	67
Medicare-Medicaid										
2010	381	445	273	257	40	41	32	39	54	72
2011	361	440	271	254	46	44	34	39	60	73
2012	352	441	265	258	46	45	34	40	58	73
2013	361	442	277	280	47	44	35	35	61	68
Other Medicare										
2010	346	350	287	272	49	48	40	41	66	73
2011	342	349	284	275	50	48	39	41	66	72
2012	332	348	281	273	50	48	38	41	61	71
2013	331	349	281	275	49	47	38	36	61	65

OR = Oregon; CG = comparison group composed of Medicare beneficiaries from Colorado, Michigan, and Washington weighted to match the characteristics of Oregon's Medicare beneficiaries.

Note: Appendix D provides denominators for all measures.

- The percentage of medical inpatient admissions who had a follow-up visit within 14 days after discharge was slightly higher for Medicare beneficiaries overall in Oregon relative to the comparison group from 2010 to 2013 and remained fairly steady over the baseline period in both groups. However, the rate increased for Medicare-Medicaid beneficiaries in Oregon and the comparison group, with a greater increase in Oregon.
- In contrast, the percentages of mental health admissions with a follow-up visit within 7 and 30 days were generally lower for Medicare beneficiaries in Oregon relative to the comparison group. Rates increased slightly for Medicare-Medicaid beneficiaries in Oregon from 2010 to 2013, but declined for other Medicare beneficiaries in the state. In

the comparison group, these percentages were fairly stable from 2010 to 2012 but declined in 2013.

E.5.2 Quality of care

Tables E-5-6 through E-5-13 provide, for Oregon and its comparison group, baseline quality-of-care measures Medicaid beneficiaries by eligibility category, the commercially insured by age group, and Medicare beneficiaries by Medicaid enrollment.

Medicaid

- Similar to the results for Medicare and MarketScan commercial populations, the overall, acute, and chronic composite PQI hospitalization rates for the Medicaid population in Oregon were substantially lower than in the comparison group (*Table E-5-6*). Both Oregon and the comparison group saw an increase in PQI composite rates between 2010 and 2011, with rates consistently lower in Oregon than the comparison group.

Table E-5-6. Rates of hospitalization (per 100,000 covered persons) for Prevention Quality Indicator clinical conditions for Medicaid beneficiaries (18 years and over), Oregon and comparison group, baseline (2010–2011)¹

	Overall composite		Acute composite		Chronic composite	
	OR	CG	OR	CG	OR	CG
2010	202	312	32	55	175	266
2011	223	396	34	71	192	335

OR = Oregon; CG = comparison group composed of Medicaid beneficiaries from Michigan and Washington weighted to match the characteristics of Oregon's Medicaid beneficiaries.

Note: Appendix D provides denominators for all measures.

¹2011 was the most current full year of available Medicaid data at the time of this writing.

- Influenza immunization and breast cancer screening rates among Medicaid beneficiaries were slightly higher in Oregon relative to the comparison group and remained stable from 2010 to 2011 (*Table E-5-7*).
- A lower percentage of Medicaid beneficiaries with new episodes of alcohol and other drug (AOD) dependence in Oregon initiated and engaged in AOD treatment relative to the comparison group, with no trend over the period.
- In 2011, Medicaid-covered infants were more likely to be in compliance with well-child visit schedules in Oregon than the comparison group, whereas Medicaid-covered children ages 3 to 6 were less likely to be in compliance in Oregon (*Table E-5-8*).

Table E-5-7. Influenza immunization, mammography screening, and initiation and engagement in alcohol and other drug dependence treatment, Medicaid beneficiaries, Oregon and comparison group, baseline (2010–2011)¹

	Influenza immunization between October 1 and March 31		Mammography screening		Initiation and engagement in treatment among patients with new AOD dependence episodes			
	Percent of patients ages 1 year and older		Percent of women ages 41-69 years		Percent initiated treatment		Percent engaged in treatment	
	OR	CG	OR	CG	OR	CG	OR	CG
Overall								
2010	12	9	32	30	10	18	3	9
2011	11	8	33	30	11	18	4	9
Infant								
2010	11	12	—	—	—	—	—	—
2011	9	10	—	—	—	—	—	—
Child								
2010	11	8	—	—	—	—	—	—
2011	10	8	—	—	—	—	—	—
Non-disabled adult								
2010	10	6	—	—	—	—	—	—
2011	10	5	—	—	—	—	—	—
Blind/disabled adult								
2010	18	13	—	—	—	—	—	—
2011	18	10	—	—	—	—	—	—

OR = Oregon; CG = comparison group composed of Medicaid beneficiaries from Michigan and Washington weighted to match the characteristics of Oregon's Medicaid beneficiaries; — = not applicable; AOD = alcohol and other drug.

Note: Appendix D provides denominators for all measures.

¹ 2011 was the most current full year of available Medicaid data at the time of this writing.

Table E-5-8. Well-child visit measures, Medicaid beneficiaries, Oregon and comparison group, baseline (2010–2011)¹

	Well-child visits during the first 15 months of life				Well-child visits, age 3–6 years	
	Percent with 0 visits		Percent with 6 or more visits		Percent with 1 or more visits	
	OR	CG	OR	CG	OR	CG
2010	—	—	—	—	52	62
2011	4	6	41	33	52	64

OR = Oregon; CG = comparison group composed of Medicaid beneficiaries from Michigan and Washington weighted to match the characteristics of Oregon's Medicaid beneficiaries; — = not applicable.

Note: Appendix D provides denominators for all measures.

¹ 2011 was the most current full year of available Medicaid data at the time of this writing.

Commercially insured

- The overall, acute, and chronic PQI composite hospitalization rates for the commercially insured were substantially lower in Oregon than in the comparison group (*Table E-5-9*). All rates fell over the baseline period for both groups.

Table E-5-9. Rates of hospitalization (per 100,000 covered persons) for Prevention Quality Indicator clinical conditions, age 18 years and over, MarketScan commercially insured, Oregon and comparison group, baseline (2010–2013)

	Overall composite		Acute composite		Chronic composite	
	OR	CG	OR	CG	OR	CG
2010	153	262	79	118	75	150
2011	146	258	70	119	77	143
2012	123	211	55	93	70	121
2013	118	192	51	78	69	116

OR = Oregon; CG = comparison group composed of commercially insured individuals from Colorado, Michigan, and Washington weighted to match the characteristics of Oregon's commercially insured.

Note: Appendix D provides denominators for all measures.

- The overall rate of influenza immunization among the commercially insured population in Oregon and the comparison group was similar and low (*Table E-5-10*). From 2010 to 2011, the rate fell slightly in Oregon and remained unchanged in the comparison group, before increasing in both groups from 2011 and 2013. Age-specific rates were comparable in Oregon and the comparison group throughout the baseline period.
- The breast cancer screening rate among the commercially insured decreased in Oregon from 2010 to 2013 but held constant at in the comparison group, resulting in roughly equivalent rates in 2013.
- From 2010 to 2012, a lower percentage of commercially insured individuals with new episodes of AOD dependence initiated treatment in Oregon relative to the comparison group. However, a slightly higher percentage remained engaged beyond the initial treatment episode in Oregon. The percentages of individuals who initiated and who engaged in AOD treatment remained relatively stable in Oregon but declined slightly in the comparison group. By 2013, a higher percentage of individuals in Oregon than the comparison group initiated treatment.
- Commercially insured infants and young children had lower compliance rates with well-child visit schedules in Oregon than in the comparison group (*Table E-5-11*). Compliance rates trended upward in both Oregon and the comparison group over the baseline period.

Table E-5-10. Influenza immunization, mammography screening, and initiation and engagement in alcohol and other drug dependence treatment, MarketScan commercially insured, Oregon and comparison group, baseline (2010–2013)

	Influenza immunization between October 1 and March 31		Mammography screening		Initiation and engagement in treatment among patients with AOD dependence episodes			
	Percent of patients ages 1 and older		Percent of women ages 41–64 years		Percent initiated treatment		Percent engaged in treatment	
	OR	CG	OR	CG	OR	CG	OR	CG
Overall								
2010	14	14	47	44	42	47	23	19
2011	12	14	47	44	42	45	23	19
2012	17	18	43	44	40	42	21	17
2013	19	20	43	44	42	41	22	16
Infant								
2010	52	48	—	—	—	—	—	—
2011	46	50	—	—	—	—	—	—
2012	53	53	—	—	—	—	—	—
2013	62	59	—	—	—	—	—	—
Child								
2010	22	21	—	—	47	44	31	21
2011	19	21	—	—	49	46	33	23
2012	27	26	—	—	47	41	26	18
2013	32	30	—	—	49	42	29	16
Adult								
2010	10	11	—	—	41	48	22	19
2011	9	11	—	—	41	45	22	19
2012	14	15	—	—	39	43	21	17
2013	15	16	—	—	41	41	21	16

OR = Oregon; CG = comparison group composed of commercially insured individuals from Colorado, Michigan, and Washington weighted to match the characteristics of Oregon’s commercially insured; — = not applicable; AOD = alcohol and other drug.

Note: Appendix D provides denominators for all measures.

Table E-5-11. Well-child visit measures, MarketScan commercially insured, Oregon and comparison group, baseline (2010–2013)

	Well-child visits in the first 15 months of life				Well-child visits, ages 3–6 years	
	Percent with 0 visits		Percent with 6 or more visits		Percent with 1 or more visits	
	OR	CG	OR	CG	OR	CG
2010	—	—	—	—	63	70
2011	1	1	75	80	63	72
2012	2	2	78	81	65	72
2013	2	1	78	83	66	74

OR = Oregon; CG = comparison group composed of commercially insured individuals from Colorado, Michigan, and Washington weighted to match the characteristics of Oregon’s commercially insured; — = not applicable.

Note: Appendix D provides denominators for all measures.

Medicare

- Overall, acute, and chronic composite PQI hospitalization rates for Medicare beneficiaries, although substantially higher than those for the commercially insured, exhibited similar trends (*Table E-5-12*). Both Oregon and the comparison group saw a decline in their PQI composite rates between 2010 and 2013, with Oregon's rates being consistently lower than the comparison group's rates. The only discrepancy was a slight increase in Oregon's chronic composite rate in 2013.

Table E-5-12. Rates of hospitalization (per 100,000 covered persons) for Prevention Quality Indicator clinical conditions, Medicare beneficiaries (18 years and over), Oregon and comparison group, baseline (2010–2013)

	Overall composite		Acute composite		Chronic composite	
	OR	CG	OR	CG	OR	CG
2010	1,605	1,681	806	837	876	932
2011	1,582	1,672	796	840	862	922
2012	1,515	1,615	736	783	849	912
2013	1,502	1,555	700	731	867	895

OR = Oregon; CG = comparison group composed of Medicare beneficiaries from Colorado, Michigan, and Washington weighted to match the characteristics of Oregon's Medicare beneficiaries.

Note: Appendix D provides denominators for all measures.

- The rate of influenza immunization among Medicare beneficiaries and the breast cancer screening rate among women beneficiaries ages 41 to 69 were comparable in Oregon and the comparison group (*Table E-5-13*). However, whereas the influenza immunization rate increased from 2010 to 2013 for both groups, the breast cancer screening rate declined slightly.

Table E-5-13. Influenza immunization, tobacco use screening, and mammography screening, Medicare beneficiaries, Oregon and comparison group, baseline (2010–2013)

	Influenza immunization between October 1 and March 31		Tobacco use screening		Mammography screening	
	Percent of patients ages 18 years or older		Percent of women age 41–69 years			
	OR	CG	OR	CG	OR	CG
2010	30	32	4	8	47	47
2011	30	30	6	10	47	46
2012	38	36	14	13	45	45
2013	40	39	23	23	45	45

OR = Oregon; CG = comparison group composed of Medicare beneficiaries from Colorado, Michigan, and Washington weighted to match the characteristics of Oregon's Medicare beneficiaries.

Note: Appendix D provides denominators for all measures.

- The rate of screening for tobacco use increased substantially in Oregon and the comparison group between 2010 and 2013, with Oregon’s increase even sharper. In consequence, although Oregon’s rate was lower at the beginning of the baseline period, it was equivalent to the comparison group rate by 2013.

E.5.3 Health care utilization

Tables E-5-14 through E-5-16 provide, for Oregon and its comparison group, the quarterly averages of core utilization measures for Medicaid beneficiaries by eligibility category, commercially insured by age group, and Medicaid beneficiaries by Medicaid enrollment.

Medicaid

- The rate of all-cause acute inpatient admissions among Medicaid beneficiaries was higher in Oregon relative to the comparison group in 2010 and 2011 (*Table E-5-14*). The overall rate decreased from 2010 to 2011 in Oregon but increased in the comparison group, with similar trends among all eligibility groups.

Table E-5-14. Inpatient admissions and emergency room visits, Medicaid beneficiaries by eligibility category, Oregon and comparison group, baseline (2010–2011)¹

	All-cause acute inpatient admissions		Emergency room visits that did not lead to hospitalization	
	Number per, 1,000 covered lives			
	OR	CG	OR	CG
Overall				
2010	37	25	211	234
2011	33	27	200	228
Infant				
2010	73	44	264	315
2011	70	51	261	313
Child				
2010	8	5	119	133
2011	6	5	115	132
Nondisabled adult				
2010	97	64	402	436
2011	80	68	357	414
Blind/disabled adult				
2010	79	80	397	497
2011	76	81	390	484

OR = Oregon; CG = comparison group composed of Medicaid beneficiaries from Michigan and Washington weighted to match the characteristics of Oregon’s Medicaid beneficiaries.

Note: Appendix D provides denominators for all measures.

¹ 2011 was the most current full year of available Medicaid data at the time of this writing.

- The rate of ER visits among Medicaid beneficiaries was lower in Oregon relative to the comparison group and decreased slightly from 2010 to 2011— in both groups and all eligibility categories.

Commercially insured

- The rate of all-cause acute inpatient admissions among the commercially insured was lower in Oregon in 2010 relative to the comparison group, a gap that narrowed by 2014. Over the course of the observation period, inpatient admissions declined slightly in Oregon and moderately in the comparison group (*Table E-5-15*). This general trend was seen for children and adults in Oregon and the comparison group, but infants in Oregon had a higher inpatient admission rate than infants in the comparison group.

Table E-5-15. Inpatient admissions and emergency room visits, MarketScan commercially insured by age group, Oregon and comparison group, baseline (2010–2013) and early test period (2014¹)

	All-cause acute inpatient admissions		Emergency room visits that did not lead to hospitalization	
	Number per 1,000 covered lives			
	OR	CG	OR	CG
Overall				
2010	13	14	36	44
2011	13	14	35	44
2012	12	13	35	43
2013	12	13	33	42
2014 ¹	12	12	33	43
Infant				
2010	118	103	62	85
2011	118	107	62	86
2012	116	104	63	82
2013	116	103	57	82
2014 ¹	101	85	57	81
Child				
2010	4	4	34	45
2011	4	4	33	45
2012	3	4	32	43
2013	3	4	32	42
2014 ¹	3	4	31	41
Adult				
2010	14	15	36	42
2011	13	15	35	43
2012	13	14	35	43
2013	12	13	33	42
2014 ¹	12	13	33	42

OR = Oregon; CG = comparison group composed of commercially insured individuals from Colorado, Michigan, and Washington weighted to match the characteristics of Oregon's commercially insured.

Note: All numbers are quarterly averages for the four quarters of the year. Appendix D provides denominators for all measures.

¹ The 2014 value is the average of the last two quarters of 2013 and first two quarters of 2014 and represents the early test period.

- Among the commercially insured, the rate of ER visits was lower in Oregon relative to the comparison group for all age groups, and declined slightly in both Oregon and the comparison group over the observation period.

Medicare

- The rate of all-cause acute inpatient admissions among Medicare beneficiaries was lower in Oregon relative to the comparison group between 2010 and 2014, and decreased over the period in both groups (*Table E-5-16*). The same general trends were seen among Medicare-Medicaid enrollees and other Medicare beneficiaries in Oregon and the comparison group, although acute admissions increased among Medicare-Medicaid enrollees in the comparison group between 2013 and 2014 but not in Oregon.

Table E-5-16. Inpatient admissions and emergency room visits, Medicare beneficiaries by Medicare-Medicaid eligibility status, Oregon and comparison group, baseline (2010–2013) and early test period (2014¹)

	All-cause acute inpatient admissions		Emergency room visits that did not lead to hospitalization		30-day readmissions	
	Number per 1,000 covered lives				Number per 1,000 discharges	
	OR	CG	OR	CG	OR	CG
Overall						
2010	59	68	113	117	134	155
2011	57	67	114	119	134	155
2012	54	64	114	123	133	154
2013	53	60	113	122	130	147
2014	52	60	114	124	130	146
Medicare-Medicaid						
2010	88	96	243	251	169	191
2011	82	90	239	251	174	191
2012	76	87	232	260	174	188
2013	75	81	230	256	170	182
2014	73	84	238	268	161	190
Other Medicare						
2010	53	62	87	88	122	143
2011	52	61	89	92	121	143
2012	49	58	89	93	119	142
2013	48	55	88	92	117	134
2014	48	55	92	96	118	137

OR = Oregon; CG = comparison group composed of Medicare beneficiaries from Colorado, Michigan, and Washington weighted to match the characteristics of Oregon's Medicare beneficiaries.

Note: All numbers are quarterly averages for the four quarters of the year. Appendix D provides denominators for all measures.

The 2014 values for all-cause inpatient admissions and emergency room visits that did not lead to hospitalization are the average of the last two quarters of 2013 and the first two quarters of 2014 and represents the early test period. The 2014 value for 30-day readmissions is the average of the last three quarters of 2013 and the first quarter of 2014.

- The rate of ER visits among Medicare beneficiaries was also lower in Oregon relative to the comparison group, and was fairly stable over the observation period while the rate in the comparison group increased. The rate of ER visits declined for Medicare-Medicaid beneficiaries in Oregon throughout most of the observation period, before increasing in 2014 (although not to its 2010 level). The rate among Medicare-Medicaid beneficiaries in the comparison group increased relatively steadily over the period.
- The rate of 30-day readmissions was lower in Oregon relative to the comparison group. In both groups the rate decreased over the observation period, with a sharper decrease in the comparison group. Among Medicare-Medicaid beneficiaries in Oregon, the rate increased from 2010 to 2012, then fell from 2012 to 2014; among other Medicare beneficiaries in Oregon the rate fell more steadily over the period. In the comparison group, the rates fell from 2010 through 2013 and then increased slightly in the first half of 2014 for both Medicare-Medicaid beneficiaries and other Medicare beneficiaries.

E.5.4 Health care expenditures

Tables E-5-17 through E-5-19 provide, for Oregon and its comparison group, quarterly averages of core expenditure measures for Medicaid beneficiaries by eligibility category, the commercially insured by age group, and Medicare beneficiaries by Medicaid enrollment.

Medicaid

- From 2010 to 2011, Medicaid PMPM payments for infants decreased in both Oregon and the comparison group (*Table E-5-17*). The comparison group experienced a larger decrease, driven mostly by a larger relative decrease in capitated payments for infants. Among children, nondisabled adults, and blind/disabled adults, total Medicaid PMPM payments decreased in Oregon but remained the same or increased in the comparison group.

Commercially Insured

- Because adults account for the largest share of the population, their trends tend to dominate trends for the population as a whole. Very few differences were seen in trends between Oregon and the comparison group for each payment category (*Table E-5-18*). Total PMPM payments had no strong trends either up or down between 2010 and 2014. However, there does appear to have been an upward trend in both other facility and outpatient pharmacy payments, and a downward trend in professional payments over the period.

Table E-5-17. Per member per month Medicaid payments by type of payment, Medicaid-only beneficiaries by eligibility category, Oregon and comparison group, baseline (2010–2011)¹

	FFS payments		Capitation payments		Total payments	
	OR	CG	OR	CG	OR	CG
Overall						
2010	153	180	301	215	529	395
2011	139	181	360	218	499	399
Infant						
2010	94	114	381	319	475	433
2011	87	112	377	300	464	412
Child						
2010	58	80	196	102	254	182
2011	52	91	183	106	236	197
Nondisabled adult						
2010	120	179	665	351	786	530
2011	100	176	650	354	750	530
Blind/disabled adult						
2010	764	919	947	603	1,711	1,522
2011	756	912	916	622	1,672	1,534

PMPM = per member per month; FFS = fee for service; OR = Oregon; CG = comparison group composed of Medicaid beneficiaries from Michigan and Washington weighted to match the characteristics of Oregon's Medicaid beneficiaries.

Note: Appendix D provides denominators for all measures.

¹ 2011 was the most current full year of available Medicaid data at the time of this writing.

Table E-5-18. Per member per month commercial insurance payments by type of service, MarketScan commercially insured by age group, Oregon and comparison group, baseline (2010–2013) and early test period (2014¹)

	Total PMPM payments		Inpatient facility payments		Other facility payments		Professional payments		Outpatient pharmacy payments	
	OR	CG	OR	CG	OR	CG	OR	CG	OR	CG
Overall										
2010	272	247	70	69	80	74	121	103	44	56
2011	276	258	75	74	81	81	120	103	44	56
2012	273	255	74	73	83	81	116	101	44	54
2013	278	257	74	71	87	83	117	102	50	59
2014 ¹	280	256	76	71	87	84	116	100	51	62
Infant										
2010	513	542	254	281	41	52	217	201	9	12
2011	565	620	293	330	40	54	231	223	7	10
2012	572	611	293	330	39	53	239	223	7	9
2013	593	637	302	337	37	58	254	242	9	10
2014 ¹	553	550	279	278	37	51	237	221	8	11
Child										
2010	103	106	20	24	28	32	55	49	14	20
2011	109	111	22	25	30	35	57	51	16	21
2012	108	111	23	23	29	37	56	50	16	21
2013	109	114	23	23	30	38	56	53	18	23
2014 ¹	110	112	23	22	30	37	56	53	18	24
Adult										
2010	323	290	83	80	99	89	141	120	56	69
2011	326	300	88	84	99	97	138	118	55	69
2012	321	295	85	84	102	96	133	115	54	66
2013	325	294	84	81	106	99	134	115	62	72
2014 ¹	327	295	88	82	107	100	132	113	63	75

PMPM = per member per month; OR = Oregon; CG = comparison group composed of commercially insured individuals from Colorado, Michigan, and Washington weighted to match the characteristics of Oregon's commercially insured; Note: All numbers are PMPM averages for the year. Appendix D provides denominators for all measures.

¹ The 2014 value is the average of the last two quarters of 2013 and first two quarters of 2014 and represents the early test period.

- The payments for infants and children were more volatile, although among infants there does appear to have been an increase between 2010 and 2013 followed by a decrease in the early test period. This is especially evident in inpatient facilities and professional payment, which account for the bulk of spending on infants. Not surprisingly, PMPM inpatient facility and professional spending on infants is higher than any other group.

Medicare

- From 2010 to 2014, total Medicare payments for Medicare-Medicaid beneficiaries fluctuated in both Oregon and the comparison group, with total payments lower in Oregon at the end of the period and basically unchanged in the comparison group (**Table E-5-19**). For both Medicare beneficiary groups, inpatient facility payments and payments for other facilities increased between 2013 and 2014, while professional payments decreased.
- Among other Medicare beneficiaries, total payments increased from 2010 to 2014 in Oregon. Total payments increased for other Medicare beneficiaries in the comparison group from 2010 to 2012, but fell back somewhat from 2012 to 2014, due to a decline in professional payments. The decline in professional payments was also seen in Oregon but was not enough to outweigh the increase in total payments. Other facility payments grew steadily over the observation period in both Oregon and the comparison group for Medicare-Medicaid and other Medicare beneficiaries.

Table E-5-19. Per member per month commercial insurance payments by type of service, Medicare beneficiaries by Medicare-Medicaid eligibility status, Oregon and comparison group, baseline (2010–2013) and early test period (2014¹)

	Total PMPM payments		Inpatient facility payments		Other facility payments		Professional payments	
	OR	CG	OR	CG	OR	CG	OR	CG
Overall								
2010	605	674	228	255	201	221	176	198
2011	614	688	229	254	206	233	179	201
2012	618	695	226	254	212	237	180	204
2013	625	687	231	252	218	239	176	196
2014 ¹	630	690	232	252	222	244	176	195
Medicare-Medicaid								
2010	895	941	359	374	323	336	213	231
2011	846	919	341	359	299	330	207	231
2012	844	929	341	362	300	331	202	236
2013	855	897	349	347	306	328	200	222
2014 ¹	870	943	356	376	319	349	195	218
Other Medicare								
2010	547	618	202	230	176	198	169	191
2011	567	639	206	233	188	212	173	194
2012	571	644	202	230	194	217	175	197
2013	577	641	207	232	199	219	171	190
2014 ¹	585	637	213	232	205	224	167	182

PMPM = per member per month; OR = Oregon; CG = comparison group composed of Medicare beneficiaries from Colorado, Michigan, and Washington weighted to match the characteristics of Oregon's Medicare beneficiaries. Note: All numbers are PMPM averages for the year. Appendix D provides denominators for all measures.

¹The 2014 value is based on the last two quarters of 2013 and first two quarters of 2014 and represents the early test period.

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Appendix E-6: Vermont Claims Data Outcomes by Payer and Subpopulation

E.6.1 Care coordination

Tables E-6-1 through *E-6-5* provide, for Vermont and its comparison group, baseline care coordination measures for Medicaid beneficiaries by eligibility category, the commercially insured by age group, and Medicare beneficiaries by Medicaid enrollment.

Medicaid

- The number of visits to primary care providers among Medicaid beneficiaries declined from 2010 to 2011 for all eligibility groups in Vermont (*Table E-6-1*). The specialist visit rate also declined for all eligibility groups except infants in Vermont, for whom it rose slightly. Total evaluation and management visits were higher for Medicaid beneficiaries in Vermont relative to the comparison group. Furthermore, whereas the total visit rate declined from 2010 to 2011 in Vermont, it increased in the comparison group.
- In all eligibility groups, the percentage of inpatient admissions with follow-up visits within 14 days of discharge was lower for Vermont Medicaid beneficiaries than for the comparison group in 2010. However, in 2011 the gap narrowed because of a greater decrease in the comparison group rate. In 2011, infant and child Medicaid beneficiaries in Vermont each had a higher follow-up visit percentage relative to the comparison group, nondisabled adult beneficiaries a similar percentage, and blind or disabled adults beneficiaries a lower percentage.
- For both children and adults in 2010 and 2011, the percentage of mental health inpatient admissions with follow-up visits within 7 days and 30 days of discharge was higher in Vermont than the comparison group. The rate generally declined over the baseline period in Vermont but held steady in the comparison group, thus narrowing the gap between them.
- Medicaid beneficiaries generally performed better in Vermont than Medicaid in the comparison group on the medication management measures (*Table E-6-2*). The percentage of asthma patients with appropriately prescribed medication was higher in Vermont than the comparison group and remained unchanged from 2010 to 2011. The antidepressant medication adherence rates were similar in 2010 for Medicaid beneficiaries in Vermont and the comparison group diagnosed with a new episode of major depression. However, a gap appeared in 2011, as adherence improved in Vermont and declined in the comparison group.

Table E-6-1. Evaluation and management visits and follow-up visits to inpatient admissions, Medicaid beneficiaries, Vermont and comparison group, baseline (2010–2011)¹

	Visits to primary care providers		Visits to specialists		Total evaluation and management visits		Inpatient admissions with follow-up visits		Mental health inpatient admissions with follow-up visits, ages 6 years and older ²			
	Number per 100 covered lives						Percent within 14 days		Percent within 7 days		Percent within 30 days	
	VT	CG	VT	CG	VT	CG	VT	CG	VT	CG	VT	CG
Overall												
2010	220	—	65	—	285	199	39	48	50	43	72	63
2011	207	—	61	—	268	234	37	39	46	42	70	63
Infant												
2010	535	—	52	—	587	383	67	68	—	—	—	—
2011	527	—	55	—	582	480	65	61	—	—	—	—
Child												
2010	175	—	38	—	213	152	37	49	60	54	79	75
2011	171	—	36	—	207	187	36	33	58	58	80	78
Nondisabled adult												
2010	214	—	84	—	298	225	—	—	—	—	—	—
2011	193	—	76	—	269	242	—	—	—	—	—	—
Blind/disabled adult												
2010	298	—	152	—	450	320	38	43	47	36	71	55
2011	268	—	144	—	412	362	36	40	43	35	68	55

VT = Vermont; CG = comparison group composed of Medicaid beneficiaries from Connecticut, Iowa, and New Hampshire weighted to match the characteristics of Vermont Medicaid beneficiaries; — = not applicable.

Note: Appendix D provides denominators for all measures.

¹2011 was the most current full year of available Medicaid data at the time of this writing.

²To protect the privacy of individuals, measures with denominators less than 30 have been removed. As such, we do not report the inpatient admission or mental health inpatient admission follow-up results for non-disabled adults in Vermont.

Table E-6-2. Medication management for persistent asthma and newly diagnosed major depression, Medicaid beneficiaries, Vermont and comparison group, baseline (2010–2011)¹

	Patients with persistent asthma appropriately prescribed medication		Patients newly diagnosed with major depression and treated with antidepressants, ages 18 years and older			
	Percent of patients ages 5–64 years		Percent treated 12 weeks or more		Percent treated 6 months or more	
	VT	CG	VT	CG	VT	CG
2010	82	77	63	63	45	46
2011	82	77	67	57	49	38

VT = Vermont; CG = comparison group composed of Medicaid beneficiaries from Connecticut, Iowa, and New Hampshire weighted to match the characteristics of Vermont Medicaid beneficiaries.

Note: Appendix D provides denominators for all measures.

¹2011 was the most current full year of available Medicaid data at the time of this writing.

Commercially insured

- Relative to the comparison group, the commercially insured in Vermont had lower rates of visits to primary care providers and specialists for most years in the baseline period and for most age groups (*Table E-6-3*). The exception was the infant primary care rate, which was higher in Vermont than the comparison group in 2010 and 2011. The primary care visit rate decreased in Vermont throughout the baseline period, whereas the decline in the comparison group rate was concentrated in 2012 to 2013. The specialist visit rate increased markedly in both Vermont and the comparison group from 2012 to 2013.

Table E-6-3. Evaluation and management visits and follow-up visits to inpatient admissions, MarketScan commercially insured, Vermont and comparison group, baseline (2010–2013)

	Visits to primary care providers				Visits to specialists		Inpatient admissions with follow-up visits		Mental health inpatient admissions with follow-up visits, ages 6 years and older1			
	Number per 100 covered lives				Percent within 14 days		Percent within 7 days		Percent within 30 days			
	VT	CG	VT	CG	VT	CG	VT	CG	VT	CG		
Overall												
2010	259	274	44	52	47	47	75	60	84	81		
2011	253	268	43	47	50	48	67	62	83	82		
2012	234	272	47	51	50	48	63	63	81	82		
2013	220	246	70	100	51	50	45	54	69	78		
Infant												
2010	877	816	28	42	85	89	—	—	—	—		
2011	818	802	32	37	92	87	—	—	—	—		
2012	711	824	21	40	91	89	—	—	—	—		
2013	755	854	27	56	90	90	—	—	—	—		
Child												
2010	240	241	25	31	54	42	—	—	—	—		
2011	237	241	24	27	49	44	—	—	—	—		
2012	225	246	24	32	63	42	—	—	—	—		
2013	211	239	39	57	57	49	—	—	—	—		
Adult												
2010	256	274	49	57	42	42	75	60	84	81		
2011	249	267	49	52	44	43	65	62	85	81		
2012	230	271	53	56	43	44	63	63	79	82		
2013	216	239	78	111	46	45	40	54	59	78		

VT = Vermont; CG = comparison group composed of commercially insured individuals from Connecticut, Iowa, and New Hampshire weighted to match the characteristics of Vermont's commercially insured; — = not applicable.

Note: Appendix D provides denominators for all measures.

¹To protect the privacy of individuals, measures with denominators less than 30 have been removed. As such, we do not report the mental health inpatient admission follow-up results for children in Vermont.

- Among the commercially insured, the percentage of inpatient admissions with follow-up visits within 14 days was similar in Vermont and the comparison group for all age groups except children, whose follow up visit rate was somewhat higher in Vermont. The rate remained stable over time for both groups with no consistent trend.
- For most baseline years, the percentage of mental health inpatient admissions with follow-up visits within 7 days and 30 days was higher for the commercially insured in Vermont relative to the comparison group. The rate decreased for both Vermont and the comparison group over the baseline period, with a sharper decline for Vermont.
- The percentage of commercially insured asthma patients with appropriately prescribed medication was nearly equivalent and remained stable in Vermont and the comparison group over the period (**Table E-6-4**). The antidepressant medication adherence rates (12 weeks or more and 6 months or more) were both slightly higher in Vermont than the comparison group for commercially insured patients diagnosed with a new episode of major depression. The only rate that changed over the period was the 12-week adherence rate in Vermont, which declined.

Table E-6-4. Medication management for persistent asthma and newly diagnosed major depression, MarketScan commercially insured, Vermont and comparison group, baseline (2011–2013)

	Patients with persistent asthma appropriately prescribed medication		Patients newly diagnosed with major depression and treated with antidepressants, ages 18 years and older			
	Percent of patients ages 5–64 years		Percent treated 12 weeks or more		Percent treated 6 months or more	
	VT	CG	VT	CG	VT	CG
2011	91	90	77	72	54	51
2012	90	89	78	72	55	54
2013	89	89	73	71	55	51

VT = Vermont; CG = comparison group composed of commercially insured individuals from Connecticut, Iowa, and New Hampshire weighted to match the characteristics of Vermont's commercially insured.

Note: Appendix D provides denominators for all measures.

Medicare

- Among Medicare-Medicaid and other Medicare beneficiaries, the primary care and specialty visit rates were consistently lower in Vermont relative to the comparison group throughout the baseline period (**Table E-6-5**). In Vermont and the comparison group, both visit rates fell or remained unchanged from 2010 to 2012 but rose in 2013.
- The percentage of inpatient admissions with follow-up visits within 14 days of discharge was similar for Medicare beneficiaries in Vermont and the comparison group and increased slightly over the baseline period. Relative to the comparison group, the follow-up visit percentage for Medicare-Medicaid beneficiaries in Vermont was slightly higher, but for other Medicare beneficiaries it was slightly lower.

Table E-6-5. Evaluation and management visits and follow-up visits to inpatient admissions, Medicare beneficiaries, Vermont and comparison group, baseline (2010–2013)

	Visits to primary care providers		Visits to specialists		Inpatient admissions with follow-up visits		Mental health inpatient admissions with follow-up visits, ages 6 years and older			
	Number per 100 covered lives				Percent within 14 days		Percent within 7 days		Percent within 30 days	
	VT	CG	VT	CG	VT	CG	VT	CG	VT	CG
Overall										
2010	337	389	352	392	45	46	46	41	77	72
2011	329	391	344	386	46	47	43	41	74	73
2012	330	391	342	381	49	48	46	42	74	73
2013	337	404	346	385	48	48	37	37	73	68
Medicare-Medicaid										
2010	382	470	371	411	43	42	45	41	77	73
2011	367	469	358	405	45	44	43	41	73	74
2012	366	476	356	399	48	45	44	42	74	73
2013	384	512	381	418	48	46	37	36	75	69
Other Medicare										
2010	323	363	346	388	46	48	48	41	76	71
2011	317	364	340	384	47	49	46	41	76	72
2012	319	364	338	380	49	50	50	41	75	70
2013	323	370	335	377	48	49	37	36	68	65

VT = Vermont; CG = comparison group composed of Medicare beneficiaries from Connecticut, Iowa, and New Hampshire weighted to match the characteristics of Vermont's Medicare beneficiaries.

Note: Appendix D provides denominators for all measures.

- The percentage of mental health inpatient admissions with a follow-up visit within 7 or 30 days was slightly higher or equivalent in Vermont relative to the comparison group during the baseline period. These percentages remained fairly stable from 2010 to 2012 before dropping in 2013, and similar trends were seen for Medicare-Medicaid and other Medicare beneficiaries.

E.6.2 Quality of care

Tables E-6-6 through E-6-13 provide, for Vermont and its comparison group, baseline quality-of-care measures for Medicaid beneficiaries by eligibility category, the commercially insured by age group, and Medicare beneficiaries by Medicaid enrollment.

Medicaid

- Medicaid beneficiaries in Vermont had consistently lower overall, acute, and chronic composite Prevention Quality Indicator (PQI) hospitalization rates than the comparison group (*Table E-6-6*). These rates increased from 2010 to 2011 in both groups, with the exception of the acute composite rate for the comparison group, which declined in 2011.

Table E-6-6. Rates of hospitalization (per 100,000 covered persons) for Prevention Quality Indicator clinical conditions, Medicaid beneficiaries (18 years and over), Vermont and comparison group, baseline (2010–2011)¹

	Overall composite		Acute composite		Chronic composite	
	VT	CG	VT	CG	VT	CG
2010	168	232	18	44	154	192
2011	184	249	23	40	161	213

VT = Vermont; CG = comparison group composed of Medicaid beneficiaries from Connecticut, Iowa, and New Hampshire weighted to match the characteristics of Vermont's Medicaid beneficiaries.

Note: Appendix D provides denominators for all measures.

¹ 2011 was the most current full year of available Medicaid data at the time of this writing.

- The unusually low influenza immunization rates in both Vermont and the comparison group, especially for the infant and child subgroups, are at least partly an artifact of Medicaid data reporting (*Table E-6-7*). This is because, since the Vermont federally qualified health center data are bundled, individual immunization procedures are not separable—preventing identification of influenza immunizations administered in such centers.
- The breast cancer screening rate for Medicaid beneficiaries was similar in Vermont and the comparison group and remained stable over the baseline period.
- A lower percentage of Medicaid beneficiaries with new episodes of alcohol and other drug (AOD) dependence in Vermont initiated and engaged in AOD treatment in the baseline period relative to the comparison group. The rate in both groups increased slightly from 2010 to 2011.
- Relative to the comparison group, Vermont had a higher percentage of infants and a similar percentage of young children in compliance with the well-child visit schedules in the early baseline period (*Table E-6-8*).

Table E-6-7. Influenza immunization, mammography screening, and initiation and engagement in alcohol and other drug dependence treatment, Medicaid beneficiaries, Vermont and comparison group, baseline (2010–2011)¹

	Influenza immunization between October 1 and March 31		Mammography screening		Initiation and engagement in treatment among patients with new AOD dependence episodes			
	Percent of patients ages 1 year and older		Percent of women ages 41-69 years		Percent initiated treatment		Percent engaged in treatment	
	VT	CG	VT	CG	VT	CG	VT	CG
Overall								
2010	5	4	32	30	19	24	9	13
2011	5	4	31	31	20	26	10	15
Infant								
2010	0	2	—	—	—	—	—	—
2011	0	3	—	—	—	—	—	—
Child								
2010	0	2	—	—	—	—	—	—
2011	0	3	—	—	—	—	—	—
Non-disabled adult								
2010	8	6	—	—	—	—	—	—
2011	8	5	—	—	—	—	—	—
Blind/disabled adult								
2010	14	12	—	—	—	—	—	—
2011	12	10	—	—	—	—	—	—

VT = Vermont; CG = comparison group composed of Medicaid beneficiaries from Connecticut, Iowa, and New Hampshire weighted to match the characteristics of Vermont's Medicaid beneficiaries; — = not applicable; AOD = alcohol and other drug.

Note: Appendix D provides denominators for all measures.

¹ 2011 was the most current full year of available Medicaid data at the time of this writing.

Table E-6-8. Well-child visit measures, Medicaid beneficiaries, Vermont and comparison group, baseline (2010–2011)¹

	Well-child visits in the first 15 months of life				Well-child visits, ages 3–6 years	
	Percent with 0 visits		Percent with 6 or more visits		Percent with 1 or more visits	
	VT	CG	VT	CG	VT	CG
2010	—	—	—	—	67	67
2011	3	4	58	49	69	70

VT = Vermont; CG = comparison group composed of Medicaid beneficiaries from Connecticut, Iowa, and New Hampshire weighted to match the characteristics of Vermont's Medicaid beneficiaries; — = not applicable.

Note: Appendix D provides denominators for all measures.

¹ 2011 was the most current full year of available Medicaid data at the time of this writing.

Commercially insured

- The overall, acute, and chronic rates of composite PQI hospitalizations among the commercially insured in Vermont were volatile over the baseline period, likely due to small denominators (**Table E-6-9**). All rates showed a more consistent downward trend beginning in 2011 in the comparison group. In both Vermont and the comparison group, the rate was lower in 2013 than in 2010 but higher in Vermont than the comparison group.

Table E-6-9. Rates of hospitalization (per 100,000 covered persons) for Prevention Quality Indicator clinical conditions, ages 18 years and over, MarketScan commercially insured, Vermont and comparison group, baseline (2010–2013)

	Overall composite		Acute composite		Chronic composite	
	VT	CG	VT	CG	VT	CG
2010	239	240	115	115	127	129
2011	189	250	76	125	116	128
2012	209	224	100	105	116	124
2013	193	177	74	75	120	105

VT = Vermont; CG = comparison group composed of commercially insured individuals from Connecticut, Iowa, and New Hampshire weighted to match the characteristics of Vermont's commercially insured.

Note: Appendix D provides denominators for all measures.

- The overall influenza immunization rate was slightly lower for the commercially insured in Vermont than the comparison group throughout the baseline period (**Table E-6-10**). The rate increased from 2010 to 2013 for children and adults in both groups but declined for infants.
- The breast cancer screening rate for women ages 41 to 64 among the commercially insured was similar for Vermont and the comparison group in 2010. Over the baseline period, the rate declined slightly in Vermont and increased in the comparison group, leading to a higher rate for the comparison group in 2013.
- Relative to the comparison group, a slightly higher percentage of commercially insured individuals with new episodes of alcohol and other drug (AOD) dependence in Vermont initiated AOD treatment and received treatment beyond initiation from 2010 to 2012. The rates were fairly steady over this period but then dropped in both Vermont and the comparison group in 2013. Since the percentage declined at a faster rate in Vermont, Vermont ended the baseline period below the comparison group.
- Commercially insured infants in Vermont had higher compliance with the well-child visit schedule than the comparison group but young children had lower compliance (**Table E-6-11**). The compliance rate increased slightly in the comparison group over the baseline period but had no clear trend in Vermont.

Table E-6-10. Influenza immunization, mammography screening, and initiation and engagement in alcohol and other drug dependence treatment, MarketScan commercially insured, Vermont and comparison group, baseline (2010–2013)

	Influenza immunization between October 1 and March 31		Mammography screening		Initiation and engagement in treatment among patients with new AOD dependence episodes			
	Percent of patients ages 1 and older		Percent of women ages 41–64 years		Percent initiated treatment		Percent engaged in treatment	
	VT	CG	VT	CG	VT	CG	VT	CG
Overall								
2010	16	19	48	47	42	43	23	18
2011	15	18	46	48	46	43	24	19
2012	19	20	46	47	46	42	22	20
2013	20	21	45	49	34	36	12	16
Infant								
2010	50	57	—	—	—	—	—	—
2011	49	55	—	—	—	—	—	—
2012	51	55	—	—	—	—	—	—
2013	45	54	—	—	—	—	—	—
Child								
2010	20	28	—	—	41	36	26	16
2011	20	27	—	—	39	35	14	16
2012	27	31	—	—	43	38	17	18
2013	25	33	—	—	50	35	7	13
Adult								
2010	15	16	—	—	42	43	23	18
2011	13	14	—	—	46	44	24	19
2012	17	16	—	—	46	43	22	20
2013	18	17	—	—	33	36	13	16

VT = Vermont; CG = comparison group composed of commercially insured individuals from Connecticut, Iowa, and New Hampshire weighted to match the characteristics of Vermont's commercially insured; — = not applicable; AOD = alcohol and other drug.

Note: Appendix D provides denominators for all measures.

Table E-6-11. Well-child visit measures, MarketScan commercially insured, Vermont and comparison group, baseline (2010–2013)

	Well-child visits in the first 15 months of life				Well-child visits, ages 3–6 years	
	Percent with 0 visits		Percent with 6 or more visits		Percent with 1 or more visits	
	VT	CG	VT	CG	VT	CG
2010	—	—	—	—	75	81
2011	2	1	84	81	81	82
2012	1	1	88	83	77	82
2013	5	1	86	84	77	84

VT = Vermont; CG = comparison group composed of commercially insured individuals from Connecticut, Iowa, and New Hampshire weighted to match the characteristics of Vermont's commercially insured; — = not applicable.

Note: Appendix D provides denominators for all measures.

Medicare

- Medicare beneficiaries in Vermont and the comparison group had similar rates of overall and acute composite PQI hospitalization rates, with an overall decline in both groups over the baseline period (**Table E-6-12**). Medicare beneficiaries had a slightly lower chronic composite rate in Vermont than the comparison group at the start of the baseline period, but the rate increased in Vermont and declined in the comparison group over time, until Vermont surpassed the comparison group in 2013.

Table E-6-12. Rates of hospitalization (per 100,000 covered persons) for Prevention Quality Indicator clinical conditions, ages 18 years and over, Medicare beneficiaries, Vermont and comparison group, baseline (2010–2013)

	Overall composite		Acute composite		Chronic composite	
	VT	CG	VT	CG	VT	CG
2010	1,867	1,887	1,016	1,006	964	993
2011	1,903	1,899	1,065	1,033	964	981
2012	1,861	1,857	996	985	970	978
2013	1,812	1,789	939	927	980	960

VT = Vermont; CG = comparison group composed of Medicare beneficiaries from Connecticut, Iowa, and New Hampshire weighted to match the characteristics of Vermont's Medicare beneficiaries.

Note: Appendix D provides denominators for all measures.

- Medicare beneficiaries in Vermont had lower influenza immunization and tobacco screening and counseling rates than Medicare beneficiaries in the comparison group over the baseline period (**Table E-6-13**). All rates increased over time for both groups.
- The breast cancer screening rate for Medicare beneficiaries was higher in Vermont than the comparison group in 2010, but then declined to match the rate in the comparison group.

Table E-6-13. Influenza immunization, tobacco use screening, and mammography screening, Medicare beneficiaries, Vermont and comparison group, baseline (2010–2013)

	Influenza immunization between October 1 and March 31		Tobacco use screening		Mammography screening Percent of women ages 41–69 years	
	Percent of patients ages 18 years and older					
	VT	CG	VT	CG	VT	CG
2010	19	31	3	9	54	51
2011	21	30	3	6	52	52
2012	26	34	5	10	51	51
2013	26	38	9	21	51	51

VT = Vermont; CG = comparison group composed of Medicare beneficiaries from Connecticut, Iowa, and New Hampshire weighted to match the characteristics of Vermont's Medicare beneficiaries.

Note: Appendix D provides denominators for all measures.

E.6.3 Health care utilization

Tables E-6-14 through E-6-16 provide, for Vermont and its comparison group, the quarterly averages of core utilization measures for Medicaid beneficiaries by eligibility category, commercially insured by age group, and Medicaid beneficiaries by Medicaid enrollment.

Medicaid

- In 2010 and 2011, Medicaid beneficiaries had substantially lower rates of utilization in Vermont than the comparison group (*Table E-6-14*). Rates of all-cause and obstetric inpatient admissions decreased from 2010 to 2011 for Medicaid beneficiaries in both Vermont and the comparison group, with similar trends for all Medicaid eligibility categories.
- In contrast, the rate of emergency room (ER) visits increased from 2010 to 2011 for Medicaid beneficiaries in Vermont and the comparison group. Similar trends were seen among infants and children but not for the two adult categories. The rate declined for blind/disabled groups in both Vermont and the comparison group and for non-disabled adults in the comparison group.

Table E-6-14. Inpatient admissions and emergency room visits, Medicaid beneficiaries by eligibility category, Vermont and comparison group, baseline (2010–2011)¹

	All-cause acute inpatient admissions		Emergency room visits that did not lead to hospitalization	
	Number per 1,000 covered lives			
	VT	CG	VT	CG
Overall				
2010	23	42	185	234
2011	23	39	192	239
Infant				
2010	37	76	234	320
2011	32	77	241	348
Child				
2010	6	13	115	144
2011	6	13	124	155
Nondisabled adult				
2010	36	65	229	316
2011	35	59	232	303
Blind/disabled adult				
2010	59	65	413	389
2011	56	61	403	385

VT = Vermont; CG = comparison group composed of Medicaid beneficiaries from Connecticut, Iowa, and New Hampshire weighted to match the characteristics of Vermont's Medicaid beneficiaries.

Note: Appendix D provides denominators for all measures.

¹ 2011 was the most current full year of available Medicaid data at the time of this writing.

Commercially insured

- The commercially insured in Vermont had relatively stable rates of all-cause acute inpatient admissions and ER visits during the baseline period (*Table E-6-15*). During the early test period there was a slight increase in all-cause acute inpatient admissions and a slight decrease in ER visits. Inpatient admission rates for the commercially insured in the comparison group were higher than Vermont in 2010, but stayed the same throughout the observation period. The rate of ER visits was higher in Vermont than the comparison group in 2010 but the same over the rest of the period. Similar trends for inpatient admissions and ER visits were evident for children and adults. However, infants in Vermont had higher rates of inpatient admissions through 2012, though not thereafter, and lower rates of ER visits relative to the comparison group throughout the observation period.

Table E-6-15. Inpatient admissions and emergency room visits, MarketScan commercially insured by age group, Vermont and comparison group, baseline (2010–2013) and early test period (2014¹)

	All-cause acute inpatient admissions		Emergency room visits that did not lead to hospitalization	
	Number per 1,000 covered lives			
	VT	CG	VT	CG
Overall				
2010	11	14	52	50
2011	12	13	51	51
2012	11	13	52	49
2013	11	12	48	46
2014 ¹	11	12	49	45
Infant				
2010	104	94	64	88
2011	107	101	54	95
2012	104	99	72	85
2013	101	102	62	82
2014 ¹	81	86	71	80
Child				
2010	2	4	50	50
2011	3	4	52	52
2012	3	4	53	49
2013	3	3	48	45
2014 ¹	3	3	47	44
Adult				
2010	13	15	52	49
2011	13	15	51	50
2012	11	14	52	49
2013	12	12	48	45
2014 ¹	11	12	50	45

VT = Vermont; CG = comparison group composed of commercially insured individuals from Connecticut, Iowa, and New Hampshire weighted to match the characteristics of Vermont's commercially insured.

Note: All numbers are quarterly averages for the four quarters of the year. Appendix D provides denominators for all measures.

¹ The 2014 value is the average of the last two quarters of 2013 and first two quarters of 2014 and represents the early test period.

Medicare

- The rate of inpatient admissions for Medicare beneficiaries in Vermont decreased slightly throughout the baseline and early test period (**Table E-6-16**). The rate in the comparison group was higher than in Vermont throughout but also decreased over the period. Similar trends were seen for Medicare-Medicaid and other Medicare enrollees.

Table E-6-16. Inpatient admissions and emergency room visits, Medicare beneficiaries by dual Medicare-Medicaid eligibility status, Vermont and comparison group, baseline (2010–2013) and early test period (2014¹)

	All-cause acute inpatient admissions		Emergency room visits that did not lead to hospitalization		30-day readmissions	
			Number per 1,000 discharges			
	VT	CG	VT	CG	VT	CG
Overall						
2010	57	67	137	138	138	160
2011	57	66	138	141	139	158
2012	55	62	141	140	139	153
2013	54	61	137	135	136	151
2014 ¹	52	60	137	134	137	134
Medicare-Medicaid						
2010	73	88	254	256	158	196
2011	73	85	251	263	164	188
2012	69	81	253	262	162	185
2013	68	80	249	256	163	186
2014 ¹	67	82	251	258	161	188
Other Medicare						
2010	52	60	100	100	129	147
2011	51	59	102	101	127	147
2012	49	55	105	101	127	140
2013	49	54	103	97	123	137
2014 ¹	48	54	103	100	126	137

VT = Vermont; CG = comparison group composed of Medicare beneficiaries from Connecticut, Iowa, and New Hampshire weighted to match the characteristics of Vermont's Medicare beneficiaries.

Note: All numbers are quarterly averages for the four quarters of the year. Appendix D provides denominators for all measures.

¹The 2014 values for all-cause inpatient admissions and emergency room visits that did not lead to hospitalization are average of the last two quarters of 2013 and the first two quarters of 2014 and represents the early test period. The 2014 value for 30-day readmissions is the average of the last three quarters of 2013 and the first quarter of 2014.

E.6.4 Health care expenditures

Tables E-6-17 through **E-6-19** provide, for Vermont and its comparison group, quarterly averages of core expenditure measures for Medicaid beneficiaries by eligibility category, the commercially insured by age group, and Medicare beneficiaries by Medicaid enrollment.

Medicaid

- Average total PMPM payments for Medicaid-only beneficiaries increased in Vermont and declined in the comparison group over the baseline and early test period (**Table E-6-17**). Vermont's payments were consistently higher than the comparison group's throughout the period. The same trends were seen for each eligibility category in Vermont and the comparison group, except that total payments increased for infants and blind/disabled adults in the comparison group.

Table E-6-17. Per member per month Medicaid payments by type of payment, Medicaid-only beneficiaries by eligibility category, Vermont and comparison group, baseline (2010–2011)¹

	FFS payments		Capitation payments		Total payments	
	VT	CG	VT	CG	VT	CG
Overall						
2010	515	391	5	69	520	460
2011	535	391	5	65	539	456
Infant						
2010	367	232	5	140	371	372
2011	403	243	5	141	408	385
Child						
2010	432	238	4	50	437	288
2011	454	232	4	53	458	285
Nondisabled adult						
2010	452	391	5	73	457	463
2011	463	389	5	62	468	451
Blind/disabled adult						
2010	1,676	1,718	4	37	1,681	1,754
2011	1,687	1,727	4	38	1,691	1,767

PMPM = per member per month; FFS = fee-for-service; VT = Vermont; CG = comparison group composed of Medicaid beneficiaries from Connecticut, Iowa, and New Hampshire weighted to match the characteristics of Vermont's Medicaid beneficiaries.

Note: Appendix D provides denominators for all measures.

¹ 2011 was the most current full year of available Medicaid data at the time of this writing.

Commercially insured

- Average total PMPM payments for the commercially insured in Vermont increased slightly in the baseline period, but were stable during the early test period (**Table E-6-18**). Total payments remained relatively stable in the comparison group in the baseline period but increased slightly in the early test period. Total payments were consistently higher in Vermont relative to the comparison group throughout the observation period. Total payments for adults and children in both groups followed similar patterns, but total payments were more volatile for infants in both Vermont and the comparison group.

Table E-6-18. Per member per month commercial insurance payments by type of service, MarketScan commercially insured by age group, Vermont and comparison group, baseline (2010–2013) and early test period (2014¹)

	Total PMPM payment		Inpatient facility payment		Other facility payment		Professional payment		Outpatient pharmacy payment	
	VT	CG	VT	CG	VT	CG	VT	CG	VT	CG
Overall										
2010	290	287	58	68	132	113	100	106	56	52
2011	300	279	66	65	132	107	102	106	55	47
2012	302	289	62	67	140	116	100	106	56	49
2013	312	283	75	62	135	112	99	108	52	57
2014 ¹	310	290	71	66	141	114	97	109	52	61
Infant										
2010	571	553	303	298	53	51	214	203	7	11
2011	470	520	258	252	31	56	181	212	14	10
2012	441	455	228	196	39	56	174	203	5	7
2013	625	699	374	389	38	62	202	247	12	12
2014 ¹	584	550	353	268	43	60	185	221	15	11
Child										
2010	94	107	9	16	36	35	49	55	21	20
2011	126	117	28	21	42	37	56	59	19	20
2012	118	115	16	18	43	37	59	59	21	22
2013	129	114	21	17	44	36	64	61	19	23
2014 ¹	127	113	16	17	45	36	66	60	18	24
Adult										
2010	340	333	68	78	159	135	112	119	67	62
2011	343	320	73	75	157	128	112	117	65	55
2012	347	333	72	78	165	138	109	117	66	57
2013	350	319	84	69	158	132	106	118	60	66
2014 ¹	349	330	79	75	165	135	103	120	61	71

PMPM = per member per month; VT = Vermont; CG = comparison group composed of commercially insured individuals from Connecticut, Iowa, and New Hampshire weighted to match the characteristics of Vermont's commercially insured.

Note: All numbers are PMPM averages for the year. Appendix D provides denominators for all measures.

¹ The 2014 value is the average of the last two quarters of 2013 and first two quarters of 2014 and represents the early test period.

- The inpatient facility PMPM payments for Vermont increased or held steady throughout the baseline period, but declined in the early test period. In contrast, inpatient facility payments in the comparison group declined slightly in the baseline period, then increased slightly in the early test period. The comparison group had higher inpatient facility payments than Vermont in 2010, but Vermont payments surpassed the comparison group by the end of the observation period. Similar trends were seen for infants, children, and adults.

- Other facility payments for the overall commercially insured population, which were consistently higher for Vermont than the comparison group, increased for both groups over the observation period. In contrast, average professional payments for the commercially insured were consistently lower in Vermont than the comparison group. Professional payments remained stable during the baseline and early test period in Vermont, but comparison group payments increased slightly from 2013 to 2014. Similar to the overall population, other facility payments for commercially insured children and adults in Vermont increased over the period but declined for infants. For infants, children, and adults in the comparison group, payments followed similar trends as in the overall population. Professional payments declined among infants and adults in Vermont but increased among children. Professional payments followed no consistent trend for infants in the comparison group but increased and remained stable for children and adults, respectively.
- Outpatient pharmacy payments among the commercially insured were fairly stable and higher in Vermont than the comparison group until 2012. Pharmacy payments then declined in 2013 and 2014 in Vermont but increased in the comparison group, resulting in Vermont payments being below the comparison group's in 2013 and 2014. Similar trends were seen for children and adults in Vermont and the comparison group, with no consistent trend for infants in either group.

Medicare

- Average total and other facility PMPM payments for Medicare beneficiaries in Vermont and the comparison group increased during the baseline and early test period (**Table E-6-19**). Medicare beneficiaries had lower total payments but higher other facility payments in Vermont relative to the comparison group. The same general trends were seen for Medicare-Medicaid and other Medicare beneficiaries.
- Average inpatient facility PMPM payments for Medicare beneficiaries in Vermont and the comparison group were comparable and remained fairly stable throughout the observation period. Similarly, professional payments were relatively stable for both Vermont and the comparison group, although payments were higher in the comparison group than in Vermont and declined slightly in 2014. The same general trends were seen for Medicare-Medicaid and other Medicare beneficiaries.

Table E-6-19. Per member per month Medicare payments by type of service, Medicare beneficiaries by dual Medicare-Medicaid eligibility status, Vermont and comparison group, baseline (2010–2013) and early test period (2014¹)

	Total PMPM payments		Inpatient facility payments		Other facility payments		Professional payments	
	VT	CG	VT	CG	VT	CG	VT	CG
Overall								
2010	655	691	251	249	269	261	135	181
2011	667	709	250	254	283	269	134	185
2012	678	708	252	249	285	273	141	186
2013	680	714	250	253	291	277	139	183
2014 ¹	676	717	242	252	297	283	138	182
Medicare-Medicaid								
2010	813	880	316	332	334	339	163	209
2011	826	883	330	328	339	343	157	211
2012	827	887	326	327	335	346	166	214
2013	830	902	322	336	347	354	161	213
2014 ¹	823	922	316	344	352	376	156	202
Other Medicare								
2010	605	631	230	222	249	237	126	173
2011	615	651	224	229	264	246	127	177
2012	630	651	228	224	269	250	133	177
2013	633	655	227	227	274	254	132	174
2014 ¹	628	658	220	230	281	260	127	168

PMPM = per member per month; VT = Vermont; CG = comparison group composed of Medicare beneficiaries from Connecticut, Iowa, and New Hampshire weighted to match the characteristics of Vermont's Medicare beneficiaries.

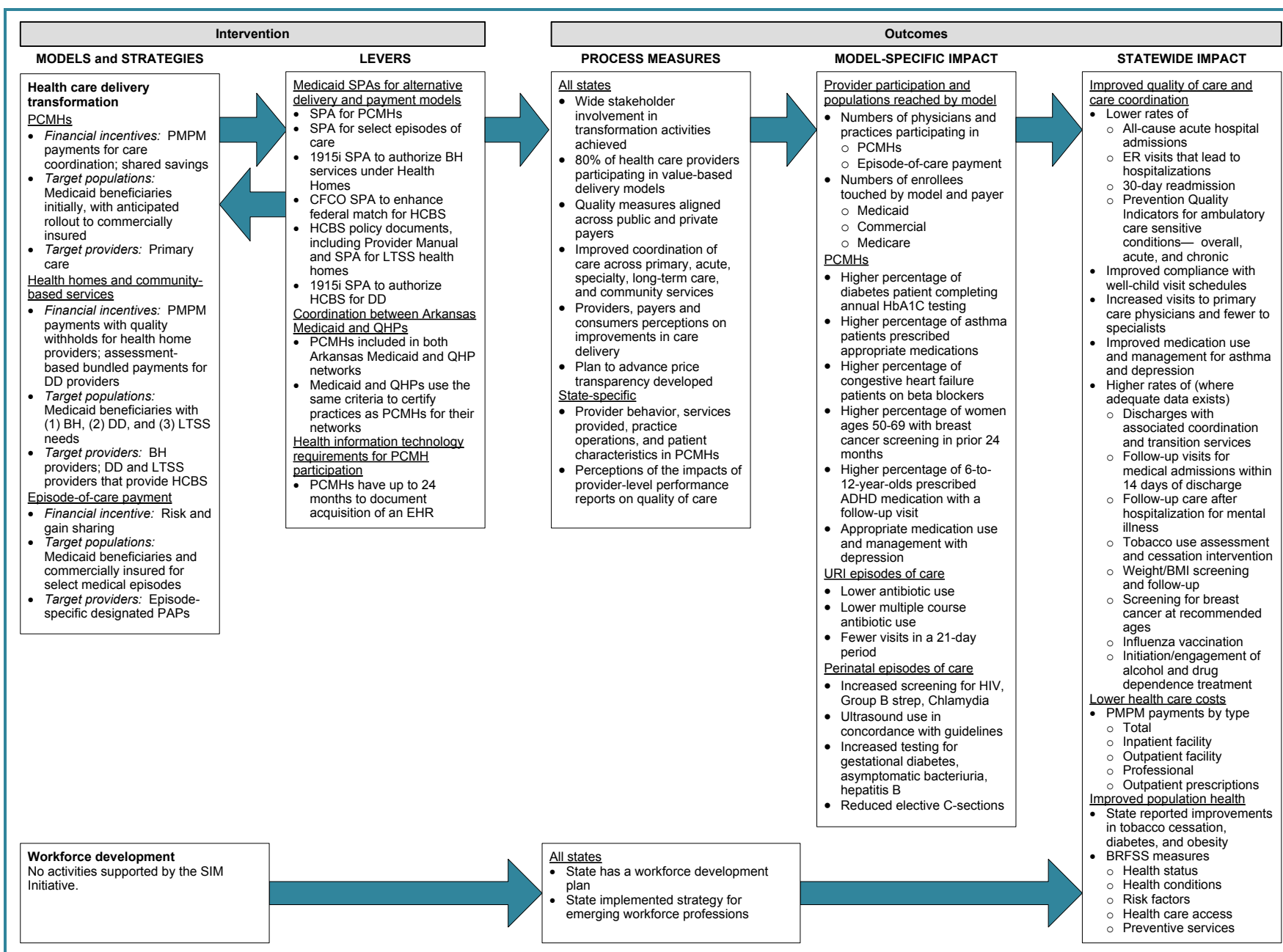
Note: All numbers are PMPM averages for the year. Appendix D provides denominators for all measures.

¹The 2014 value is based on the last two quarters of 2013 and first two quarters of 2014 and represents the early test period.

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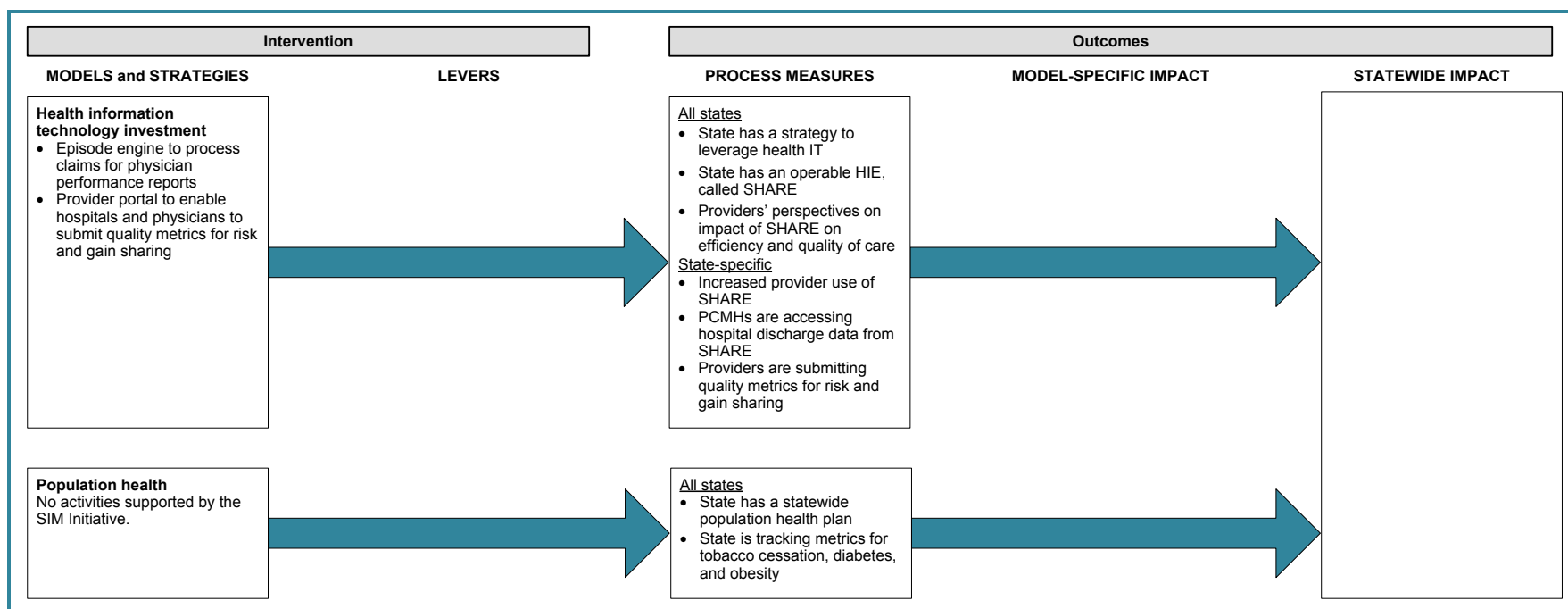
Appendix F: Logic Models

Figure F-1. Arkansas



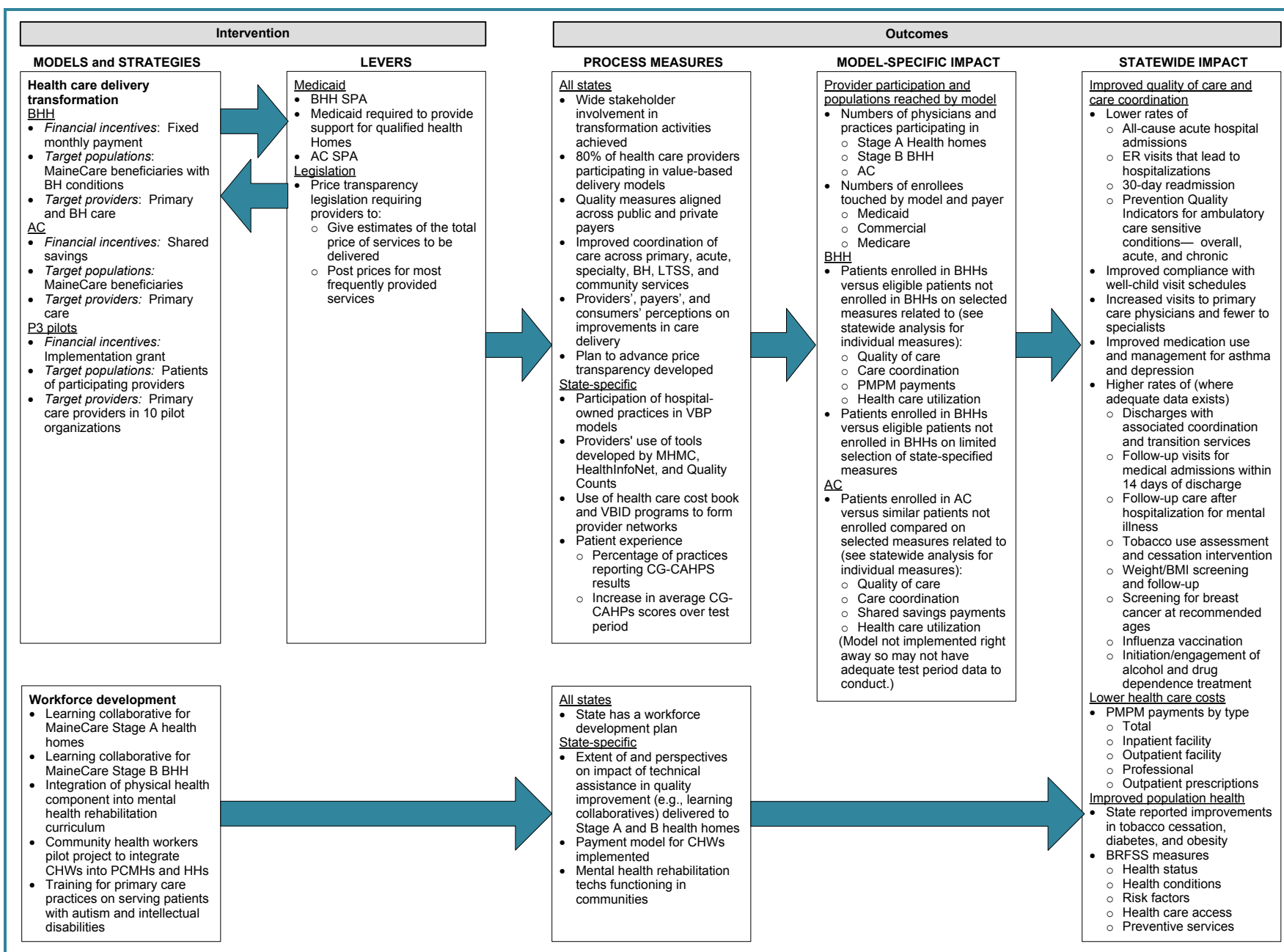
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Figure F-1. Arkansas (continued)



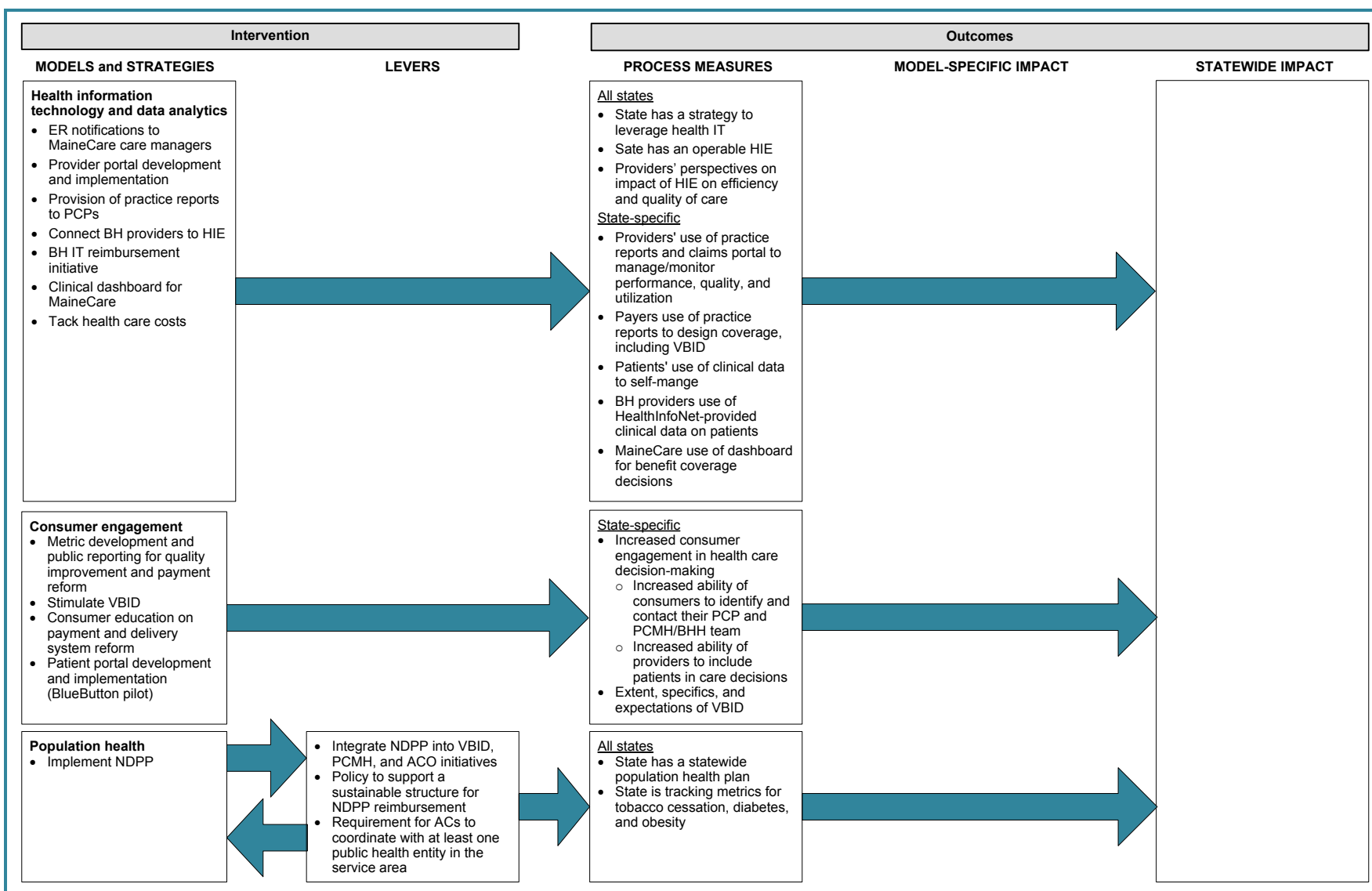
ADHD = attention-deficit hyperactivity disorder; BH = behavioral health; BMI = body mass index; BRFSS = Behavioral Risk Factor Surveillance System; CFCO = Community First Choice Option; CMS = Centers for Medicare & Medicaid Services; DD = developmental disabilities; ER = emergency room; HCBS = home- and community-based services; health IT = health information technology; HIV = human immunodeficiency virus; LTSS = long-term services and supports; PAP = principal accountable provider; PCMH = patient-centered medical home; PMPM = per member per month; QHP = qualified health plan; SHARE = State Health Alliance for Records Exchange; SIM = State Innovation Models; SPA = state plan amendment; URI = upper respiratory infection

Figure F-2. Maine



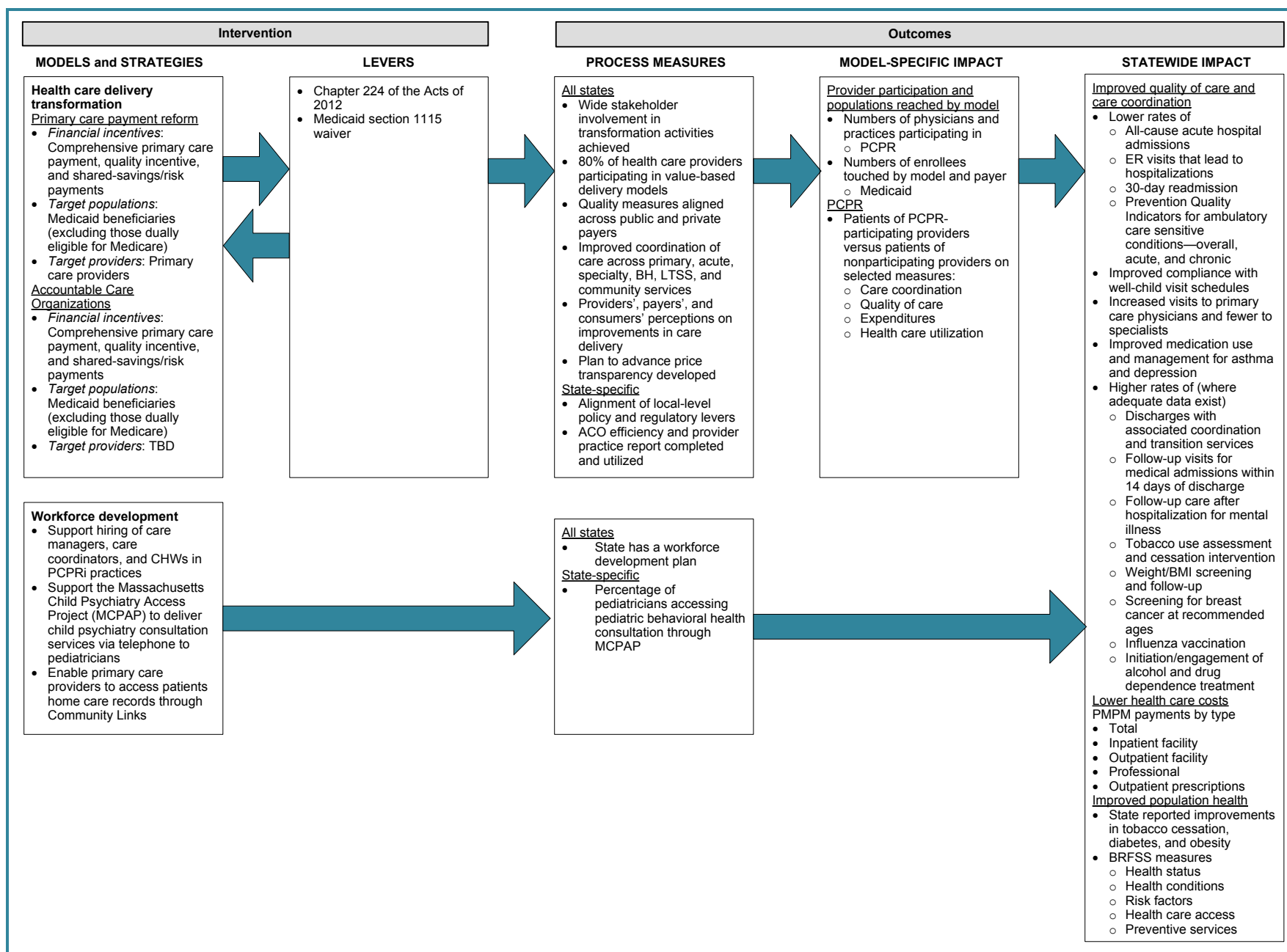
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Figure F-2. Maine (continued)



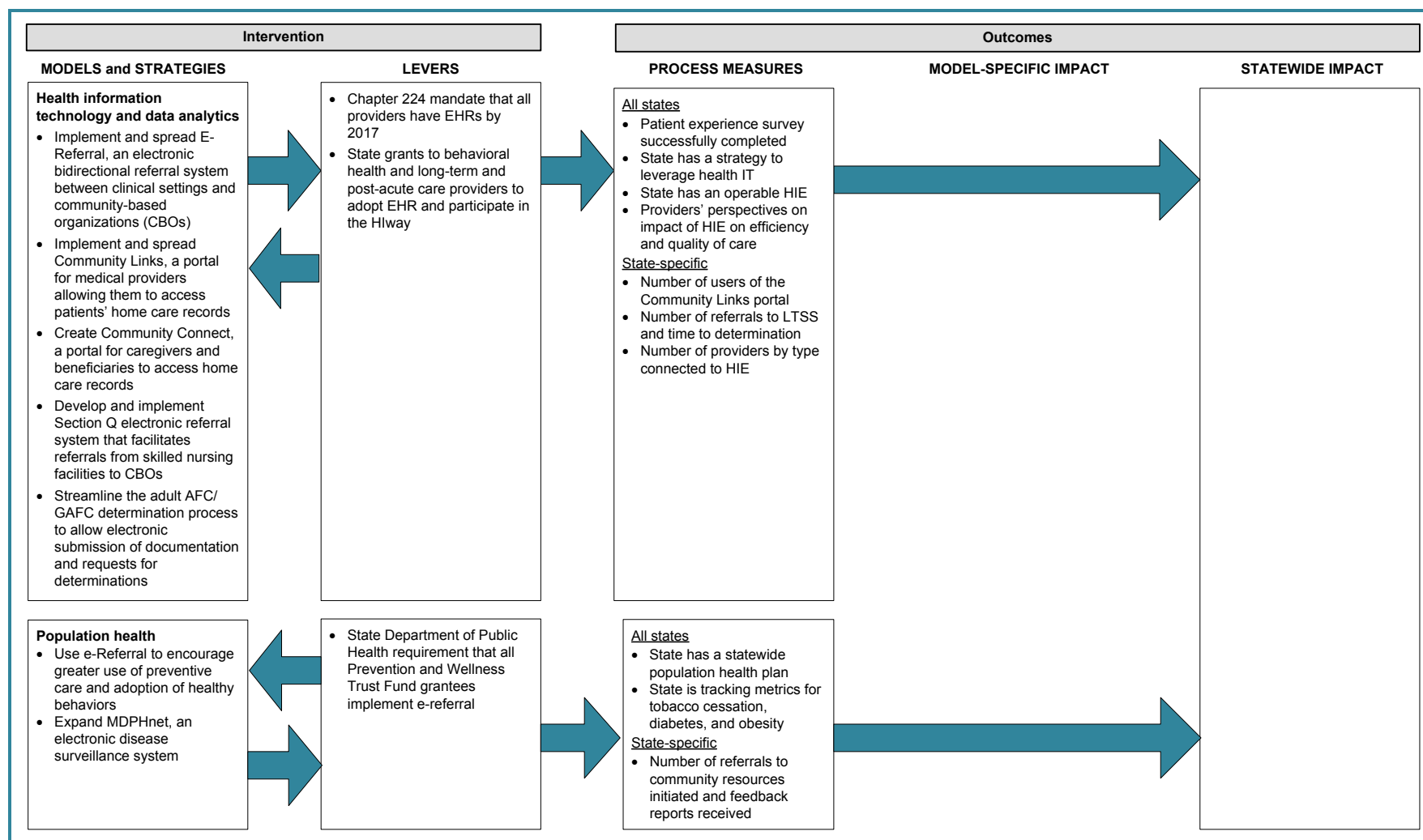
Note: AC = Accountable Communities; ACO = accountable care organization; BH = behavioral health; BHH = behavioral health home; BMI = body mass index; BRFSS = Behavioral Risk Factor Surveillance System; CG-CAHPS = Consumer Assessment of Healthcare Providers and Systems Clinician & Group Surveys; CHW = community health worker; ER = emergency room; HIE = health information exchange; health IT = health information technology; LTSS = long-term services and supports; MHMC = Maine Health Management Coalition; NDPP = National Diabetes Prevention Program; P3 = patient-provider partnership; PCMH = patient-centered medical home; PCP = primary care provider; PMPM = per member per month; SPA = state plan amendment; VBID = value-based insurance design; VBP = value-based purchasing

Figure F-3. Massachusetts



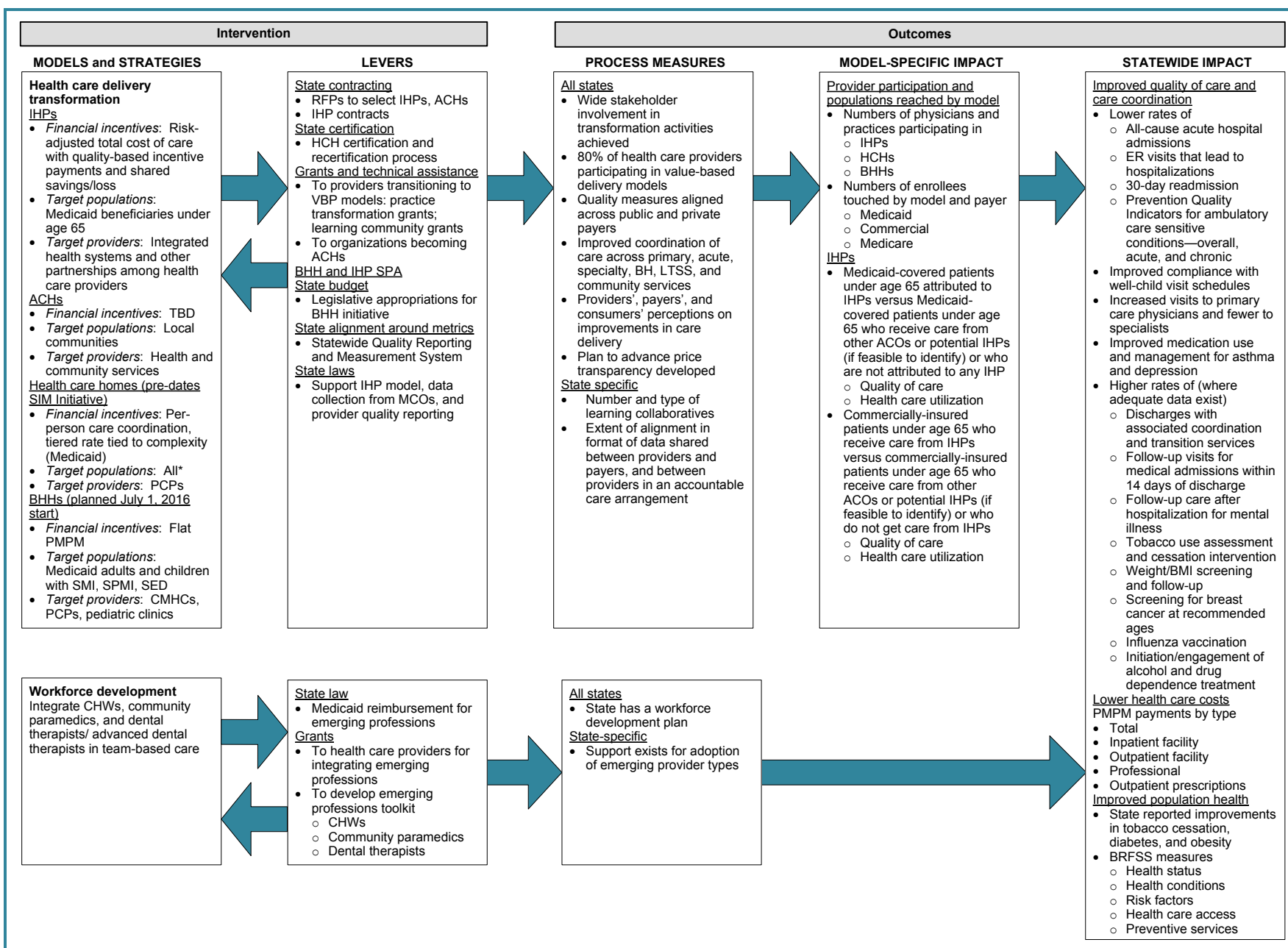
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Figure F-3. Massachusetts (continued)



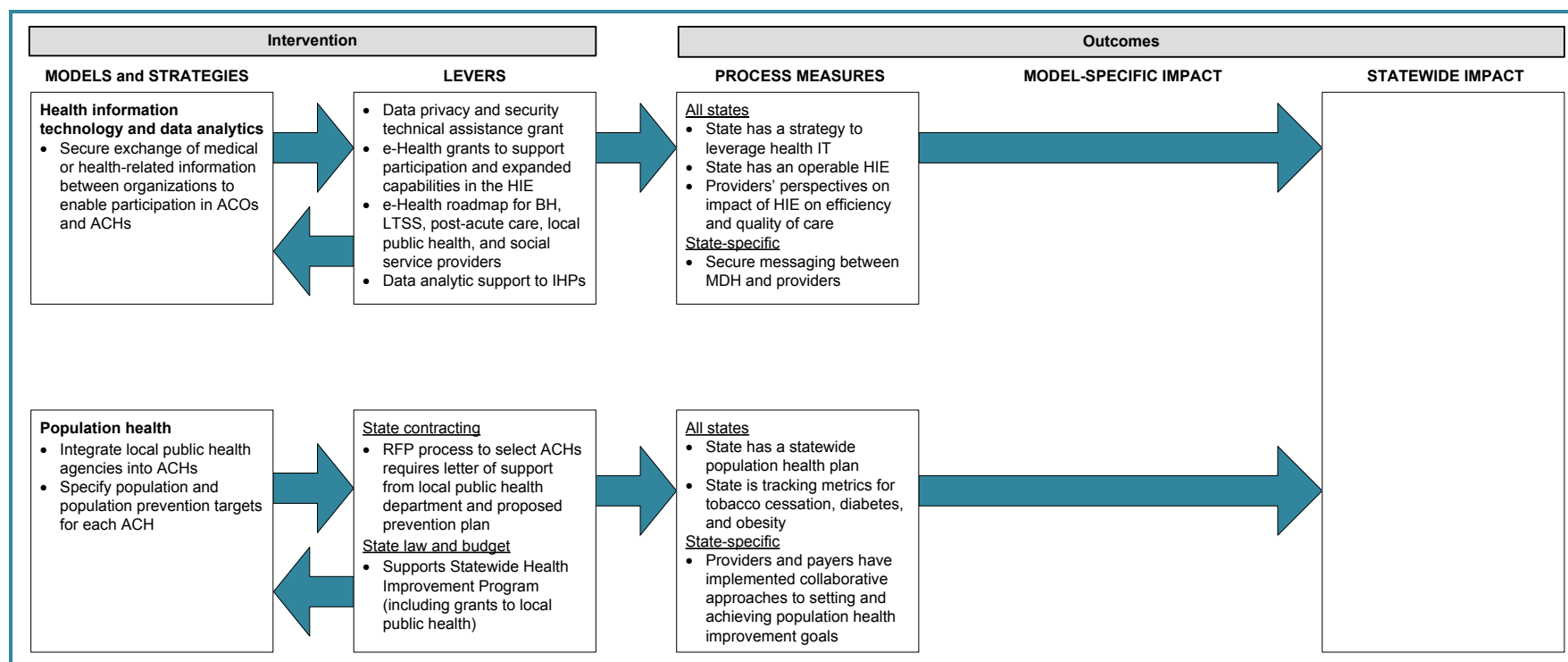
Note: ACO = accountable care organization; APCD = all-payer claims database; BH = behavioral health; BRFSS = Behavioral Risk Factor Surveillance System; EHR = electronic health record; ER = emergency room; GIC = Group Insurance Commission; HIE = health information exchange; IRBO = Integrated Risk-Bearing Organization; IT = information technology; LTSS = long-term services and supports; MAPCP = Massachusetts Child Psychiatry Access Project; PCPR = primary care payment reform; PMPM = per member per month; RFI = request for information

Figure F-4. Minnesota



(continued)

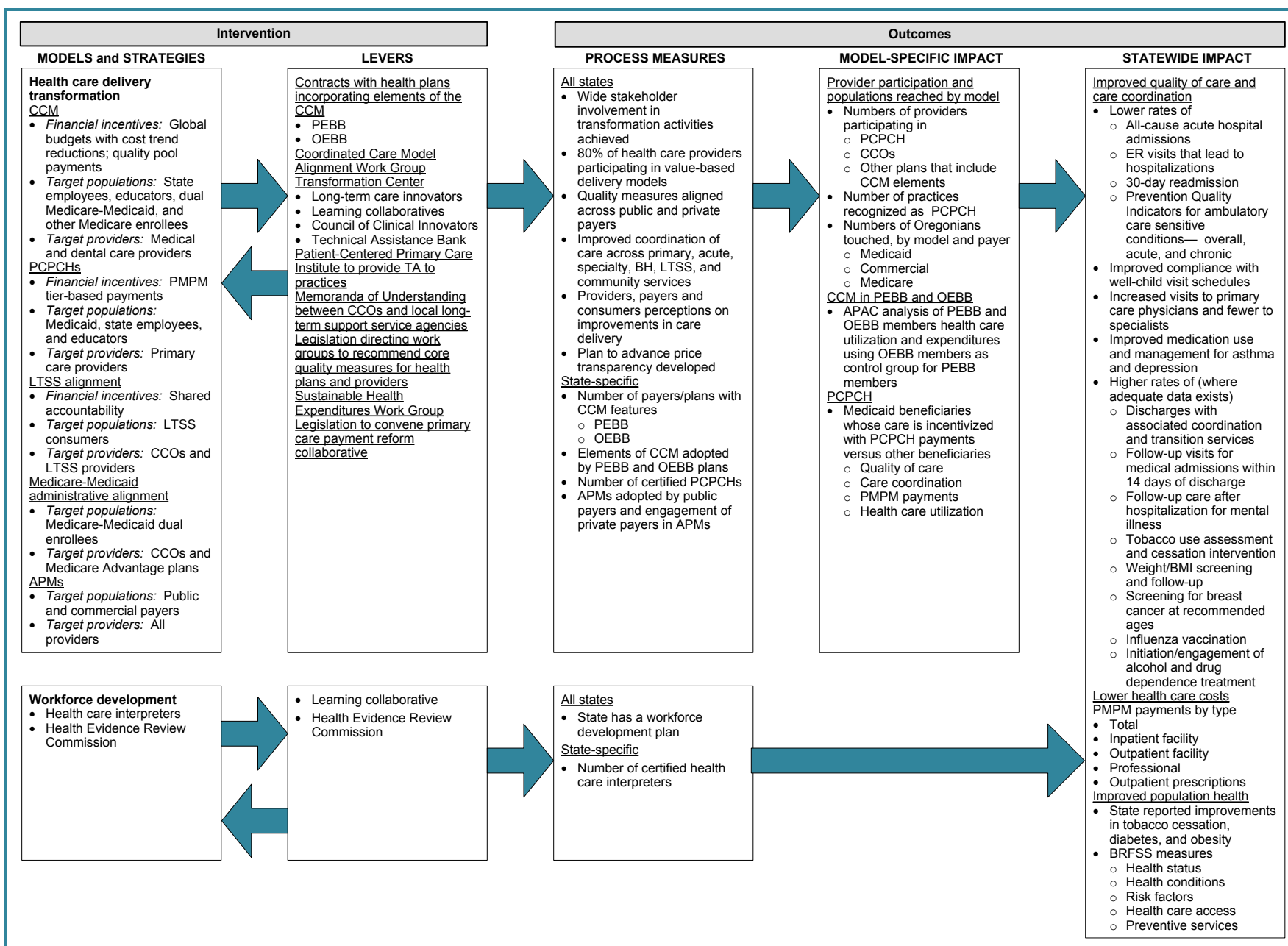
Figure F-4. Minnesota (continued)



Note: ACH = Accountable Communities for Health; ACO = accountable care organization; BH = behavioral health; BHH = behavioral health homes; BMI = body mass index; BRFSS = Behavioral Risk Factor Surveillance System; CHW = community health worker; CMHC = Community Mental Health Center; EHR = electronic health record; ER = emergency room; HCH = health care home; HIE = health information exchange; IHP = Integrated Health Partnership; LTSS = long term services and supports; MCO = managed care organization; MDH = Minnesota Department of Health; PCP = Primary Care Practice; PMPM = per member per month; RFP = request for proposals; SED = serious emotional disturbance; SMI = serious mental illness; SPMI = serious and persistent mental illness; SPA = state plan amendment; VBP = value-based purchasing; TBD = to be determined.

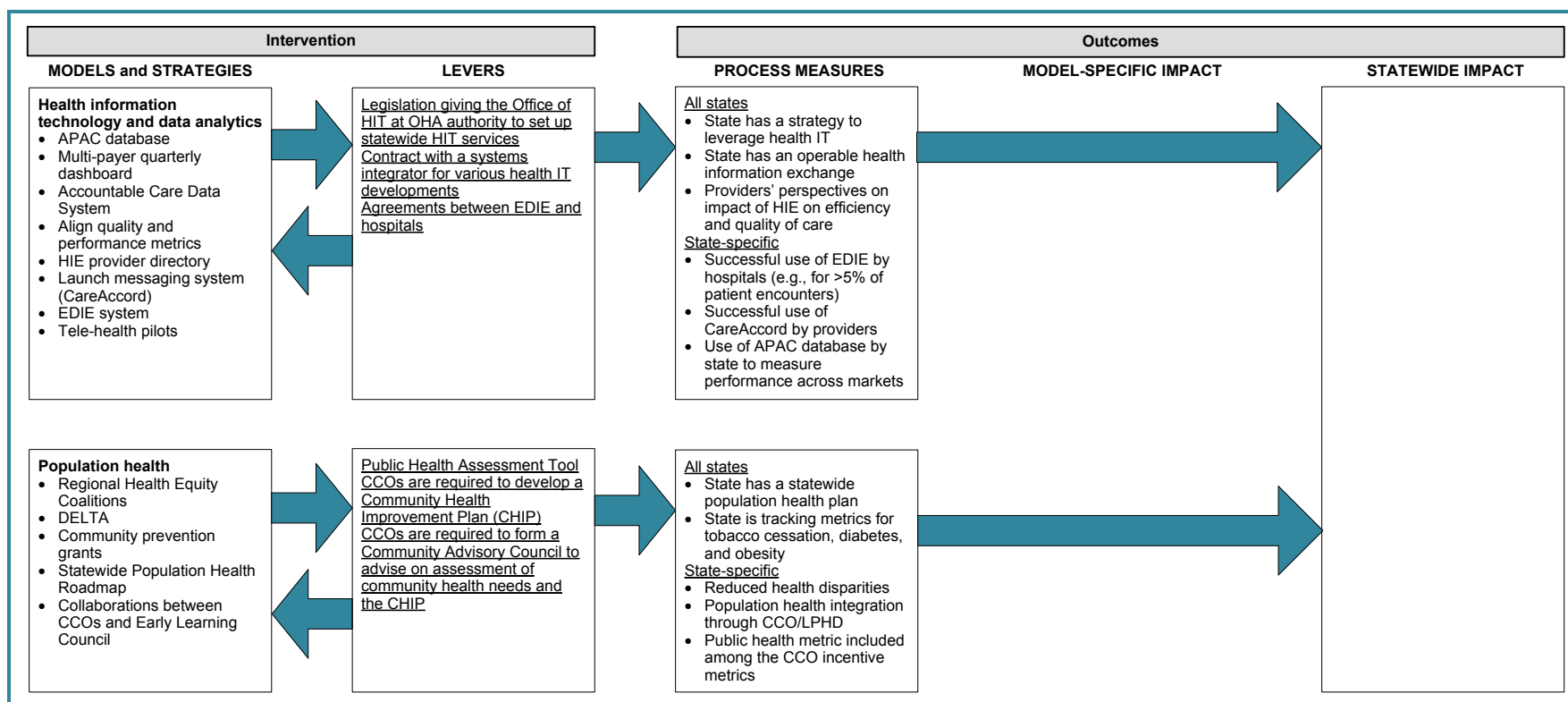
*State law requires all payers (except for self-insured) to make care coordination payments to HCHs; however, Medicaid is the only payer currently doing so. HCHs may also pursue payments for qualifying Medicare beneficiaries under the new care coordination billing codes.

Figure F-5. Oregon



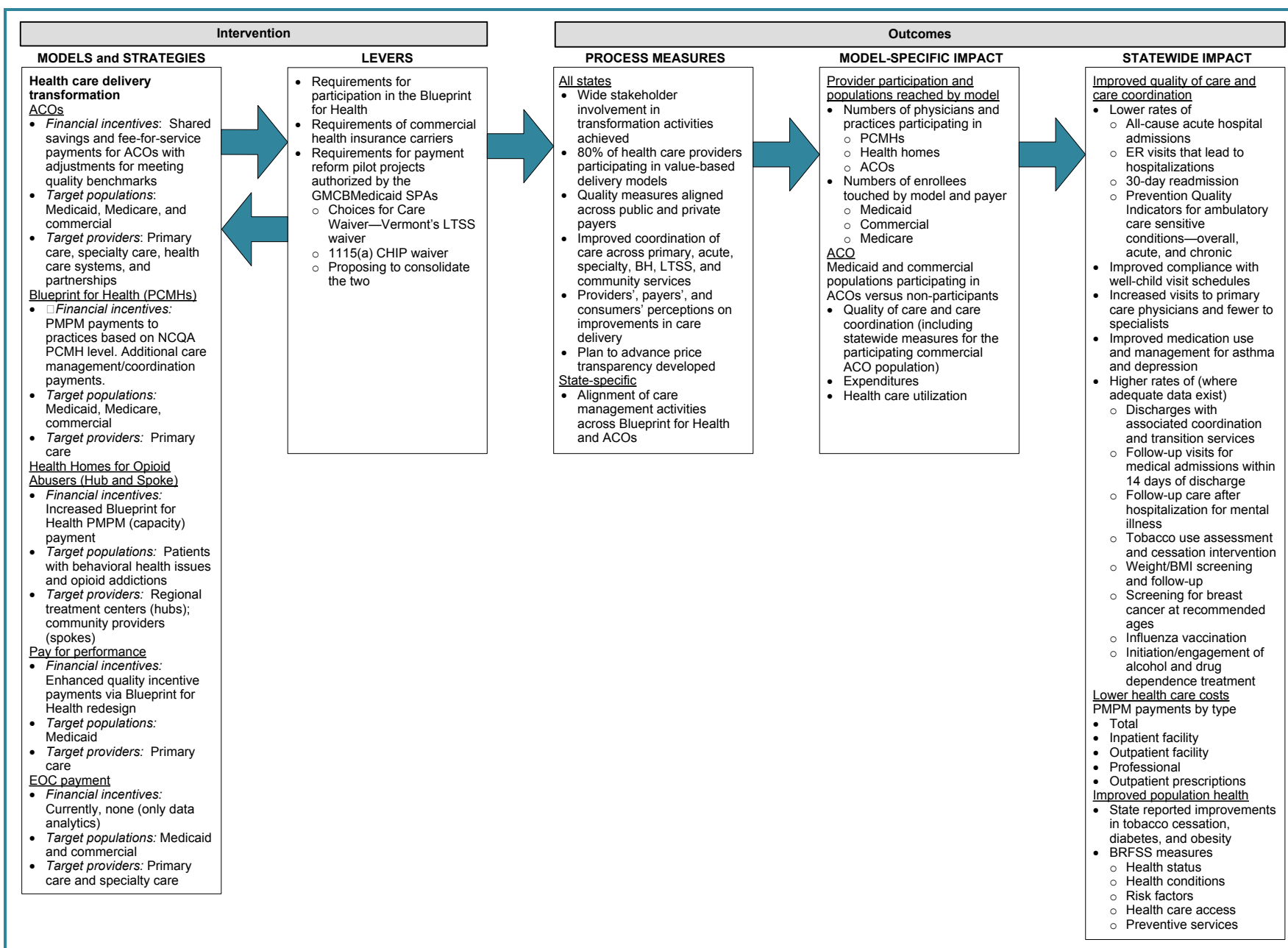
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Figure F-5. Oregon (continued)



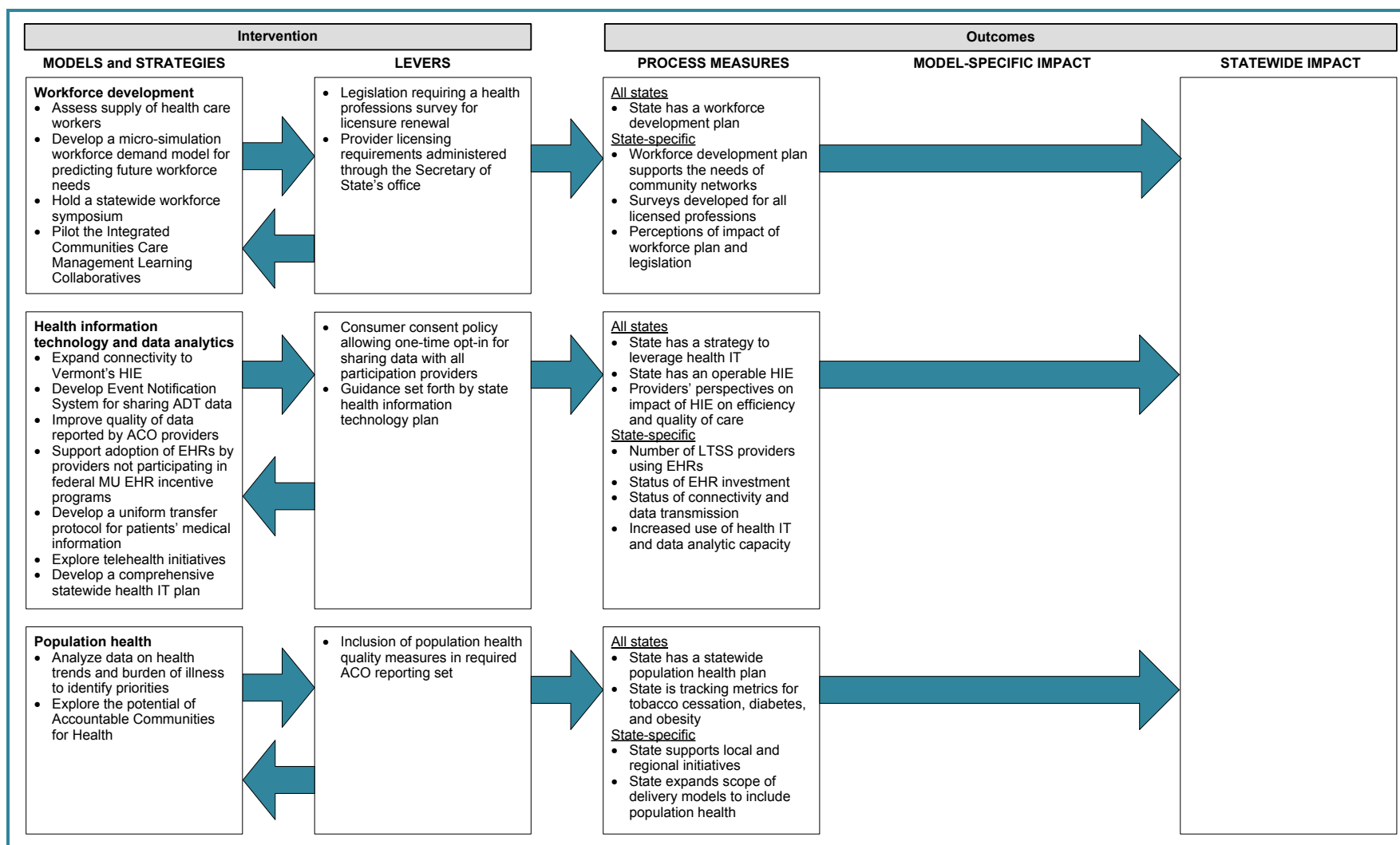
Note: APAC = all-payer, all-claims; APM = alternative payment methodology; BMI = body mass index; BRFS = Behavioral Risk Factor Surveillance System; CCM = coordinated care model; CCO = coordinated care organization; DELTA = Developing Equity Leadership through Training and Action; EDIE = Emergency Department Information Exchange; ER = emergency room; health IT = health information technology; HIE = health information exchange; LPHD = local public health department; LTSS = long-term services and supports; OEBB = Oregon Educators Benefit Board; PCPCH = patient-centered primary care home; PEBB = Public Employees Benefit Board; PMPM = per member per month; SPA = state plan amendment

Figure F-6. Vermont



(continued)

Figure F-6. Vermont (continued)



Note: ACO = accountable care organizations; BRFSS = Behavioral Risk Factor Surveillance System; EHR = electronic health record; EOC = episode of care; ER = emergency room; health IT = health information technology; HIE = health information exchange; LTSS = long-term services and supports; PCMH = patient-centered medical homes; PMPM = per member per month; TBD = to be determined; VHICP = Vermont Health Care Innovation Project