State Innovation Models (SIM) Initiative Evaluation

Model Test Year Three Annual Report

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List of Acronyms

Acronym	Definition		
AC	Accountable Communities		
ACA	Patient Protection and Affordable Care Act		
ACH	Accountable Community for Health		
ACO	accountable care organization		
AHCPII	Arkansas Health Care Payment Improvement Initiative		
AHRQ	Agency for Healthcare Research and Quality		
APCD	all-payer claims database		
BCBS	Blue Cross Blue Shield		
ВНН	behavioral health home		
BRFSS	Behavioral Risk Factor Surveillance System		
ССМ	Coordinated Care Model		
ССО	Coordinated Care Organizations		
CFR	Code of Federal Regulations		
СНІР	Children's Health Insurance Program		
CMS	Centers for Medicare & Medicaid Services		
DD	developmental disabilities		
DHS	Department of Human Services		
D-in-D	difference-in-difference		
D-SNPs	Dual Eligible Special Needs Plans		
DSRIP	Delivery System Reform Incentive Payment		
EDIE	Emergency Department Information Exchange		
EHR	electronic health record		
ENS	event notification system or service		
EOC	episode of care		
ER	emergency room		
ERISA	Employee Retirement Income Security Act		
FFS	fee for service or fee-for-service (adj.)		
FQHC	federally qualified health centers		
GMCB	Green Mountain Care Board		
HCBS	home and community-based services		
НСН	health care home		
health IT	health information technology		
HIE	health information exchange		
HPC	Health Policy Commission		
I/DD	intellectual or developmental disabilities		
IHP	Integrated Health Partnership		

Acronym	Definition
ITSA	interrupted time series analysis
LTSS	long-term services and supports
МСО	managed care organization
MCPAP	Massachusetts Child Access and Psychiatry Project
MMIS	Medicaid Management Information System
NCQA	National Committee for Quality Assurance
OEBB	Oregon Educators Benefit Board
PAP	principal accountable provider
PCC	Primary Care Clinicians
РСМН	patient-centered medical home
РСРСН	patient-centered primary care home
PCPRI	Primary Care Payment Reform Initiative
PEBB	Public Employees Benefit Board
PMPM	per member per month
QHP	qualified health plan
SIM	State Innovation Models
SPA	state plan amendment
SSP	Shared Savings Program
VHIE	Vermont Health Information Exchange
VPM	value-based payment model

Executive Summary

The State Innovation Models (SIM) Initiative tests the ability of state governments to use their policy and regulatory levers to accelerate statewide health care system transformation. This transformation will move health care from encounter-based service delivery to care coordination, and from volume-based to value-based payment. States are tasked with increasing the proportion of patients served by providers participating in value-based payment models (VPMs) across multiple payers. These models realign incentives for patients to receive the right care at the right place and time.

The Center for Medicare and Medicaid Innovation (the Innovation Center) in 2013 awarded funds through the Round 1 SIM Initiative to six states: Arkansas, Maine, Massachusetts, Minnesota, Oregon, and Vermont. These states are testing how SIM funding could augment state-led health care system transformation. This report presents results from the independent evaluation and describes interim implementation progress from April 2015 through March 2016 (or about 2.5 years of the test period) and early findings of the impact of the SIM Initiative on statewide utilization and expenditures through 1 year of the test period.

Expansion of VPMs, although mostly focused on Medicaid. SIM states are using their own Medicaid programs to move health care providers into VPMs. States established Medicaid accountable care organizations (ACOs) in Maine, Minnesota, and Vermont (also planned in Massachusetts) and Medicaid health home models for individuals with behavioral health care needs in Maine (also planned in Minnesota).

Arkansas has achieved multi-payer participation in its expanded patient-centered medical home (PCMH) model largely through regulation and contract requirements.

SIM SNAPSHOT

Round 1 SIM Initiative Test States:

- Arkansas
- Maine
- Massachusetts
- Minnesota
- Oregon
- Vermont

SIM states are making policy changes in Medicaid and state employee health plans (Oregon) to expand the reach of VPMs.

SIM investments aim to enhance providers' success in VPMs. States are:

- Connecting medical and nonmedical providers
- Distributing advanced data analytics to help providers understand their patients and practice patterns
- Developing electronic health information exchange
- Streamlining quality monitoring across payers

More people are getting care under VPMs in the SIM states.

It is too early to detect SIM impact on expenditures and utilization.

Participating payers include Medicaid, qualified health plans (QHPs) on the Arkansas Health Insurance Marketplace, Medicare Advantage dual eligible special needs plans, and the private insurers Arkansas BCBS and QualChoice. One policy lever used to achieve wide participation is Rule 108—promulgated by Arkansas's Insurance Commissioner under the authority of the Health Care Independence Act of 2013—which requires QHPs to enroll their members in PCMHs on or after January 1, 2015, and pay PCMHs \$5 per member per month (PMPM) to support care coordination.

Increasing health care provider participation in VPMs. States encouraged provider participation by giving providers flexibility and options in bearing risk. For example, Minnesota, Maine, and Vermont allow ACOs to choose between one- or two-sided risk (i.e., have the opportunity for reward only or also the potential for penalties if actual costs exceed a threshold above expected costs). For Minnesota and Vermont, ACOs also have some choice in which service lines are included in total cost calculations. As of 2016, in Arkansas, all PCMHs are potentially eligible for shared savings because of flexibility in how a practice achieves a minimum number of Medicaid beneficiaries in its patient panel.

Additionally, states are making adjustments in their Medicaid VPMs in response to stakeholder feedback. Maine increased the PMPM payment for behavioral health homes in Maine. Minnesota refined the model for attributing Medicaid beneficiaries to ACOs that would be accountable for their care to improve accuracy in identifying where beneficiaries receive services.

States have also used programmatic investments supported by the SIM Initiative to enhance providers' likelihood of financial success under VPMs. These investments include the following:

- a. **Convening and connecting providers across service sectors.** Vermont formed regional collaborations of medical and nonmedical providers (e.g., long-term services and supports providers) dedicated to reviewing and improving core quality measure results for the ACO shared savings program under Medicare, Medicaid, and a commercial insurer. Minnesota is testing the formation of Accountable Communities for Health that aim to coordinate health and social services. Maine has a pilot program in four communities in which community health workers serve as liaisons between health and social services.
- b. Data analytics. Under the SIM Initiative, some states are offering data on cost and quality to which providers did not previously have access. Maine and Massachusetts produce physician- or practice-level quality and financial data on their patients; Minnesota offers cost and quality data to Medicaid ACOs; and Vermont noted achievement in increasing ACO access to data needed to monitor and measure outcomes. States are also helping providers use advanced data reports. In Maine, the Medicaid program hosted webinar trainings for behavioral health homes to share ideas on how to fully leverage quality reports. In response to requests for assistance in making effective use of data received, Minnesota contracted with a vendor to provide Medicaid ACOs with technical assistance in interpreting data analytic reports. Eleven Minnesota Medicaid ACOs received additional grant funding

designed to increase their ability to integrate, aggregate, and use clinical, administrative, and financial information in provider decision-making processes. Providers in Arkansas, Oregon, and Vermont receive reports under other state initiatives.

c. Systems for electronic health data exchange across clinicians. States are investing SIM resources in connecting behavioral health providers to health information exchanges (Arkansas, Maine, Minnesota, and Vermont) and supporting secure health data exchanges across provider groups (Minnesota). Oregon's SIM Initiative invested seed money in the Emergency Department Information Exchange (EDIE), which connects the majority of hospitals in the state to collect and share information on patients who use emergency rooms (ERs) often or have complex health needs. EDIE allows hospital staff to direct them to more appropriate care settings. EDIE's companion tool, PreManage, enables health plans, Coordinated Care Organizations (CCOs), and providers to receive real-time notifications when a member uses the ER.

Challenges in garnering private sector payers' participation in VPMs. Using SIM funds to align and accelerate VPMs beyond Medicaid has been challenging. Lacking the direct policy levers they have for the Medicaid program, states have relied instead on implementation of policies that create conditions under which commercial payers may be more likely to adopt VPMs. For example, Massachusetts (with the Health Policy Commission) and Vermont (with the Green Mountain Care Board) have used legislatively granted authority to set standards for ACOs. In Oregon, state legislation passed in 2015 encourages private payer adoption of VPM models in two ways: (1) by setting consistent primary care reporting standards for Medicaid CCOs and commercial health plans, and (2) by removing certain antitrust concerns to allow payers to share best practices related to implementation of primary care VPMs.

Private sector involvement is evident in some states: commercial payers have voluntarily adopted VPMs in Arkansas (episodes of care and PCMH models) and in Vermont (the ACO shared savings program). In Massachusetts, commercial payers are active participants in multi-stakeholder discussions of the newly developing ACO model. Yet, even though early CCO results in Oregon show reductions in hospital readmissions and avoidable ER visits among Medicaid beneficiaries, these findings have yet to convince commercial payers to adopt similar elements of the Coordinated Care Model CCM on a voluntary basis.

Leveraging Medicaid innovations for statewide change. SIM states' focus on expanding and accelerating VPMs has yielded real results, at least for Medicaid populations. The proportion of the population receiving care under VPMs increased between 2015 and 2016 in Round 1 SIM states. These states have combined policy changes with SIM-funded investments to increase the number of providers participating in VPMs. This increase in participating providers in turn has driven increases in the Medicaid population attributed to ACO-type models in Maine (12 to 18 percent), Minnesota (23 to 44 percent), and Vermont (49 to 62 percent). **Too early to detect SIM impact on expenditures and utilization.** The effects of statewide investments made under the SIM Initiative are diffuse and unlikely observable in interim data. Many of the impacts the evaluation is monitoring are affected by multiple factors and stakeholders, some related but some independent of the SIM Initiative. Some impacts, particularly those related to population health, may only become observable when patient behaviors change over many years. Still, the evaluation is using a preponderance of evidence approach, looking for consistent direction using multiple indicators and measures.

Only Vermont has Medicaid data sufficient for detecting change among Medicaid beneficiaries statewide relative to its comparison states. But the results are potentially promising. One significant finding is that Vermont Medicaid had a relative decrease in ER visits and observation stays not leading to hospitalization (19 fewer visits per 1,000 beneficiaries than comparison group) after 1 year of SIM implementation. Interim positive findings for the Vermont Medicaid population may not be surprising given that the Medicaid population has a high rate of exposure to new delivery models—in addition to 62 percent of the Medicaid population being served by ACOs, 86 percent of the Medicaid population is served by PCMHs under the Blueprint for Health.

The evaluation is designed to capture spillover effects of focused SIM investments in the Medicaid delivery system to other populations. With more than 1 year of data in the Test period, Minnesota and Vermont showed reductions in utilization (inpatient admissions and ER visits) relative to the comparison group for their Medicare and commercially insured populations statewide.

Future reports will include:

- State-specific analyses of outcomes for individuals reached by delivery system models.
- Final analyses of implementation progress drawn from key informant interviews and focus groups.
- Statewide quantitative analyses to capture additional years of Test period implementation on Medicaid, Medicare, and commercially insured populations.

1. Introduction

State governments have the potential to accelerate statewide health care system transformation. To test this potential, the Center for Medicare and Medicaid Innovation (the Innovation Center) in 2013 awarded funds through the Round 1 State Innovation Models (SIM) Initiative to six Model Test states—Arkansas, Maine, Massachusetts, Minnesota, Oregon, and Vermont. Model Test states are using policy and regulatory levers to enable or facilitate the spread of innovative health care models, integrating population health into transformation efforts, engaging a broad range of stakeholders, and leveraging existing efforts to improve health care delivery and outcomes.

Under the SIM Initiative, states are using a variety of methods to encourage health care providers to adopt models of health care that promote coordination across provider types, integration of primary care and behavioral health care, and attention to social determinants of health. For example, the states are changing payment models used by Medicaid, and where possible, aligning these payment models with new or existing efforts across Medicare and commercial payers. States are also offering technical assistance to primary care practices and others to implement new delivery system models, and are developing or enhancing services such as health information technology (health IT) and data analytic investment—that enable or improve model effectiveness.

To obtain an independent federal evaluation of the SIM Initiative, the Innovation Center contracted with a team led by RTI International, which includes The Urban Institute, National Academy for State Health Policy, Truven Health Analytics, and The Henne Group.

1.1 Purpose of the Year 3 Annual Report

As the third of five planned annual reports, the purpose of this report is to describe evaluation findings focused on (1) our understanding of progress and challenges of the six Model Test states after approximately 2.5 years of SIM Initiative implementation (as of March 2016), and (2) the impact of the SIM Initiative based on quantitative data from the early test period. Our synthesized findings offer an interpretation of how health and health care is changing in states participating in Round 1 of the SIM Initiative. The research questions addressed in this report fall into two categories:

How states have implemented the SIM Initiative

- What progress have the states made on SIM Initiative activities? These include but are not limited to:
 - supporting health system transformation
 - building and establishing the payment and delivery system models

- integrating behavioral health and primary care
- identifying key clinical or public health strategies to improve population health within these target care models
- aligning quality measures across multiple payers
- enhancing health IT
- conducting outreach to payers, communities, providers, and target populations
- What changes have states made in designing, implementing, or operationalizing their SIM Initiatives?
- What were the key successes, challenges, and lessons learned through the SIM implementation and testing process?
- Which policy and regulatory levers are the states using to transform health care delivery systems?

Health care experience, utilization, and expenditures in SIM Initiative Test states

- What experience of care do consumers report early in SIM implementation, among those populations most likely to be reached by SIM Initiative–related delivery system and payment models (i.e., Medicaid beneficiaries in five of the Test states and public employees and educators in Oregon)?
- Given its focus on changing state health policy broadly, is the SIM Initiative affecting health care utilization and expenditures in absolute terms, or reducing the growth rate of health care costs, as measured on a statewide aggregate basis? How do the trends differ from those in the 3 years prior to the SIM test period and from those of the six Test states' comparison groups?

1.2 Methods and Data Sources for the SIM Initiative Model Test Evaluation

The federal SIM Initiative evaluation is designed to collect and analyze data to understand *what* health care delivery system models and health care transformation strategies states are implementing; *how* states are implementing them; and *whether* any impact occurred that would be predicted from SIM implementation activities. *Figure 1-1*, which depicts the framework for how the SIM Initiative could affect key outcomes of health and health care, guides our approach to the evaluation. As the examples in Figure 1-1 illustrate, each state's SIM Initiative intervention consists of one or more health care delivery and payment reform models; 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; and policy levers to allow or facilitate the spread of these models and strategies throughout the state. Each state's evaluation then consists of a process analysis of implementation and progress, one or more model-specific impact analyses, and a statewide impact analysis.





BH = behavioral health; health IT = health information technology; LTSS = long-term services and supports.

In this report, the analysis of SIM Initiative implementation (i.e., consisting of models and strategies, policy levers, and implementation activities) draws from monthly evaluation calls with state officials and document review. These sources of qualitative data help explain a key measure of SIM Initiative progress: state-reported data on the measures of consumers and providers reached by delivery system and payment models related to the SIM Initiative. They also help guide interpretation of available consumer survey results and analysis of health care claims data. In addition to this report, which covers SIM Initiative implementation during approximately April 2015 to March 2016, more detail on each Test state's SIM Initiative implementation of Test states' plans and initial implementation progress as of 3–6 months after the October 1, 2013, start date (Gavin et al., 2014), and (2) a Year Two annual report, which included analysis of progress, challenges, and lessons learned approximately 18 months into the test period of SIM Initiative implementation (Gavin et al., 2016).

To evaluate the impact of the SIM Initiative, we take the following approach: (1) statewide aggregate analyses comparing core health and health care measures for each Test state with measures from its comparison group of non-Test states, and (2) state-specific analyses designed to capture the impact of the discrete SIM Initiative–related delivery system and payment models among specific provider practices and patient populations (Gavin et al., 2016). The two types of analyses answer different questions. For example, in most states, the SIM Initiative supports Medicaid program interventions—such as payment models to support delivery systems that emphasize care coordination—and reaches providers that serve Medicaid beneficiaries in the Test states. Those providers may be more likely to be making changes to improve care coordination, health care quality, and health care outcomes, which can be measured with quantitative claims-based data analyses. However, the same providers often are engaging in delivery system redesign as part of contracts with other payers (i.e., commercial or Medicare) and are caring for the commercially insured and Medicare populations as well. Thus, consistent with the broad vision of the SIM Initiative, we present statewide data for all three major payer populations in all states except Massachusetts (where the providers involved largely serve only Medicaid beneficiaries) and Oregon (where Medicare-only beneficiaries are not likely to receive care from SIM-participating providers). In addition, model-specific analyses, to be presented in future reports, will examine the impact of participation in SIM Initiative–related payment models on Medicaid beneficiaries or other specific patient populations.

At the time of analysis for this report, Medicaid data are available for Vermont and its comparison group of non-Test states for approximately 1 year after the SIM Initiative began (early test period), allowing for a difference-in-differences regression model to detect changes for the Medicaid population. Early test period Medicaid data are available for Maine and Massachusetts, but not for their comparison states. For these two states, therefore, we introduce an interrupted time series analysis, using commercial payer data as a comparison group and simple pre-post regression analyses as a sensitivity analysis, to provide early indications of possible SIM impact on Medicaid enrollees. Only baseline period Medicaid data are available on a statewide basis in Arkansas, Minnesota, and Oregon—thus precluding the opportunity for any impact analysis on the Medicaid population in these states.

This report presents additional interim analyses of utilization and expenditure measures (through 2014) from Medicare and commercial claims data for most Test states and their comparison groups as part of an early look at whether the statewide aspects of the SIM Initiative (or spillover from Medicaid-focused delivery system and payment model development) can be observed. In most states, these changes are fairly distal from the focus of SIM Initiative activities in the early implementation period, and so few changes are expected.

Finally, this report includes data from a consumer experience of care survey conducted in the six Test states. We staggered the data collection period in each state, and in total, the survey was in the field for several months beginning in late 2014 through mid-2015. Findings from this consumer survey also reflect the early SIM Initiative test period.

1.3 Year 3 Annual Report Overview

Chapter 2 of this report offers a cross-state analysis, describing progress and adjustments the six Test states have made in implementing health care transformation activities under the SIM Initiative as of March 2016. This chapter also includes quantitative data describing utilization and expenditure measures during the baseline and early implementation periods. **Chapter 3** contains state-specific summaries of successes, challenges, and lessons learned during the period April 2015 to March 2016. **Chapter 4** presents lessons learned for policy makers interested in state-led health care transformation, drawn from the successes and challenges of the six Test states.

Appendix A presents the state-specific case studies of SIM Initiative implementation including factors contributing to Test states' progress toward meeting the goal of spreading value-based payment models to at least 80 percent of providers in the state and the patients they serve.

Appendix B offers all data to support the analyses in this report: the results from overall population and subgroup analyses of Medicaid, Medicare, and MarketScan claims databases (B.1); the methods and results from the analysis of Behavioral Risk Factor Surveillance System (BRFSS) baseline data on Test and comparison states (B.2); and the methods and results from a survey (the consumer survey) of Medicaid beneficiaries in five of the six Test states and public employees in Oregon (B.3).

Appendix C describes the methods for qualitative data collection and analysis (C.1), selecting comparison states used in the BRFSS and claims data analyses (C.2), and calculating utilization and expenditure results (C.3).

1.4 References

- Gavin, N., et al. (2014, November). State Innovation Models (SIM) Initiative Evaluation: Model Test Base Year Annual Report. Prepared for the Centers for Medicare & Medicaid Services (CMS). https://downloads.cms.gov/files/cmmi/SIM-Round1-ModelTest-FirstAnnualRpt_5_6_15.pdf
- Gavin, N., et al. (2016, February). State Innovation Models (SIM) Initiative Evaluation: Model Test Year Two Annual Report. Prepared for the Centers for Medicare & Medicaid Services (CMS). https://downloads.cms.gov/files/cmmi/sim-round1-secondannualrpt.pdf

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2. Cross-State Progress and Findings

As of March 2016, five of the six Round 1 Test states (Arkansas, Maine, Minnesota, Oregon, and Vermont) have spent 2.5 years in the test period of the SIM Initiative, making significant progress in (1) expanding providers' participation in value-based payment models (VPMs) under Medicaid (all five states) and private payers as well (Arkansas, Oregon, and Vermont); and (2) supporting providers' transitions to new delivery and payment models through investments in practice transformation, quality measurement and reporting, health information technology (health IT), and data analytics infrastructure. At the same time, Massachusetts—which was nearing the completion of the first test year—has a plan to launch Medicaid Accountable Care Organization (ACO) models that will align with VPM features of other payers in the state, following an intensive process of stakeholder collaboration. The intent of state-led shifts in health care delivery and payment is to promote patient-centered, coordinated care, with the ultimate goal of achieving higher quality care at lower cost, with better health outcomes across populations.

This chapter describes *what* the Test states have accomplished in increasing patientcentered, coordinated care and shifting payment models from volume- to value-based purchasing; and analyzes *how* they made that progress. The major cross-state progress and findings for the analytic reporting period April 2015–March 2016 are presented in the following sequence:

- Continuing implementation of delivery system and payment model reforms, including:
 - Participation among providers, payers, and populations in SIM Initiative-related delivery system and payment models
 - Early statewide changes in health care utilization and expenditures
- Provider and payer engagement in the SIM Initiative
- Infrastructure to support delivery system and payment reform in three areas:
 - Practice transformation assistance
 - Quality measurement and reporting
 - Health IT and data analytics infrastructure
- Integration of behavioral health and primary care
- Sustainability of SIM Initiative activities

2.1 Continuing Implementation of Delivery System and Payment Reforms

2.1.1 Summary

In the analytic period for this report (April 2015–March 2016), states enhanced and adjusted payment models already implemented, developed new models, and undertook efforts to move models from a "test" phase to a more permanent component of the health care landscape, through expansion to more payers or policy changes.

Key Results From the Round 1 SIM Initiative, April 2015–March 2016

- SIM-supported delivery system and payment models reached increasing numbers of providers and proportions of the population.
- Key populations reported via surveys largely coordinated care in the early test period, with room for improvement.
- Measures of utilization and expenditures in the early test period (through 2014) may be more reflective of prior reforms in each than of the SIM Initiative's impact, thus giving context for the SIM Initiative work.

2.1.2 Overview of models

Delivery system models in the Test states include patient-centered medical homes (PCMHs), behavioral health homes (BHHs), and ACOs. The payment model associated with PCMHs and BHHs is typically a per member per month (PMPM) fee, but some states have also instituted the opportunity for shared savings. The payment model for ACOs offers providers the opportunity to either earn shared savings only, or also accept risk for exceeding target total costs—usually once quality targets are met. One Test state, Arkansas, has implemented payment to providers for episodes of care (EOCs), which offers the potential for gain- or loss-sharing in addition to fee-for-service (FFS) payment. *Table 2-1* summarizes the delivery system and payment models across the six Test states.

		Targeted		
Model type	Targeted population	providers	Payment structure	Policy levers
Arkansas				
Primary care PCMHs	Medicaid QHPs Commercial Medicare D-SNPs	Primary care	PMPM payments for care coordination and options for shared savings	SPA Medicaid provider manual ¹ State law ² Insurance regulation ³ MIPPA contracts ⁴
EOC payment models	Medicaid Commercial	Primary care Specialty care Hospitals	FFS with gain- or loss- sharing for all costs associated with an episode	SPAs Provider manuals

Table 2-1. Payment models in the SIM Initiative Round 1 Test states

(continued)

Targeted				
Model type	Targeted population	providers	Payment structure	Policy levers
Maine				
Health homes for medically	Medicaid	Primary care	PMPM payments for care	SPA
complex patients		Behavioral health	coordination	Medicaid regulations ⁶
Accountable Communities	Medicaid	Primary care	Shared savings with lead	SPA
		Specialty care	entity: ⁵ options for gain-	Contracts between
		Behavioral health	only or gain- and loss-	Medicaid and the
		Developmental disabilities	benchmarks	Accountable Communities
Massachusetts				
Primary care payment reform	Medicaid	Primary care	Comprehensive primary	1115 waiver
			care payment, quality	State law ⁷
			incentives, and shared-	
			savings/risk payments	
Accountable care	Medicald	(Varies, but can include)	Options for FFS with	State law ^o
development)			care shared savings. or	Contracts with MCOs
,		LISS Managad care plane	prospective capitation with	
		Integrated health systems	full risk for total cost of	
		FOHCs	care	
Minnesota				
IHPs	Medicaid	Primary care	Shared savings with lead	State law ⁹
111.5	medicald	Specialty care	entity with options for	Contract provisions ¹⁰
		Prevention	gain-only or gain- and loss-	
		Integrated health systems	sharing relative to total	
			cost of care target, with	
			some shared savings at risk	
			quality targets are not met	
Oregon			. , c	
CCM	Medicaid	(Varies by CCO and state	CCOs are required to	State law ¹²
	State employees	employee plans, but can	implement at least one	Contract provisions ¹³
		include)	APM ¹¹	
		Primary care		
		Specialty care		
		Behavioral health		
Vermeent		Dental care		
	Madiasid	Deinean ann	DMDM accurate based on	Chata Jaw
Blueprint for Health (PCMH)**	Commorcial	Primary care	NCOA PCMH level and	State law
	Medicare		participation in learning	
	medicale		collaboratives	
			Pay for performance on	
			quality and utilization	
ACOs	Medicaid	Primary care	FFS payments and shared	1115 waiver
	Commercial	Specialty care	savings payments for ACOs	SPA
	Medicare ¹⁵		with quality benchmarks	

Table 2-1. Payment models in the SIM Initiative Round 1 Test states (continued)

ACO = accountable care organization; APM = alternative payment methodologies as defined in Oregon; CCM = Coordinated Care Model; CCO = coordinated care organization; D-SNPs = Dual Eligible Special Needs Plans; EOC = episode of care; FFS = fee-for-service; FQHC = federally qualified health center; IHP = Integrated Health Partnership; LTSS = long-term services and supports; MCO = managed care organization; MIPPA = Medicare Patient and Provider Improvement Act; NCQA = National Committee for Quality Assurance; PCMH = patient-centered medical home; PMPM = per member per month; QHP = qualified health plan; SPA = state plan amendment.

(continued)

Table 2-1. Payment models in the SIM Initiative Round 1 Test states (continued)

¹Arkansas laid out the rules for Medicaid PCMH participation and payment in its Medicaid provider manual.

² State law requiring QHPs to pay PMPMs to PCMHs.

³ This insurance regulation implements the state law referenced above.

⁴ D-SNPs are required by MIPPA to contract with state Medicaid agencies.

⁵ Lead entity shares savings with providers.

⁶ 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.

⁷ Chapter 224 directs MassHealth and other public payers to increase the use of alternative payment models as they are defined in Massachusetts.

⁸ Chapter 224 also directs MassHealth to prioritize and develop standards for "model ACOs."

⁹ Legislation passed in 2010 mandated that the Minnesota Department of Human Services (DHS) develop and implement a demonstration "testing alternative and innovative health care delivery systems, including accountable care organizations" (Minnesota 2010 Legislative session, 256B.0755).

¹⁰ Minnesota's DHS includes a provision in all Medicaid MCO contracts requiring MCOs to participate in the IHPs demonstration. Additionally, DHS contracts directly with each IHP.

¹¹ APMs may include EOCs, bundled payments, shared savings, shared savings with shared (downside) risk, pay-forperformance, payment penalties, and capitation.

¹² 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.

¹³ Oregon required health plans bidding for the Oregon Public Employees Benefit Board to demonstrate how their plan incorporated elements of the coordinated care model.

¹⁴ The Blueprint for Health operates PCMHs funded by Medicaid, Medicare, and commercial payers; however, Medicare is not participating in the new Pay-for-Performance (P4P) incentives. The SIM Initiative supported evolution of P4P incentives delivered through the Blueprint for Health by enabling discussion of how to sustain and align the program in the context of the shared savings program (SSP) and ultimately the All-Payer ACO Model. Specifically, the quality measures that serve as the basis for new P4P payments beginning January 2016 have been aligned with those used for the SSP.

¹⁵ The Medicare ACO SSP predates the SIM Initiative.

2.1.3 Implementation findings

States are enhancing, adjusting, and accelerating innovative delivery system and

payment models. In the period April 2015–March 2016, Arkansas, Minnesota, Oregon, Maine, and Vermont moved into a more mature phase of delivery system and payment reform, with SIM activities enhancing and furthering development of models already in place before the test period began on October 1, 2013. The Year 2 Annual Report shows that several Test states were considering adjustments to their new payment models. In 2015 and early 2016, several states did adjust their Medicaid payment models supported under the SIM Initiative. For example, Minnesota instituted minor modifications to the patient attribution model used for the state's Medicaid ACOs (called Integrated Health Partnerships [IHPs]), as the IHPs renew their contracts with Medicaid. The change in attribution model will have the effect of maintaining attribution of patients who are not incurring as many visits to the IHP as before because of greater efficacy in managing care and who, as a result, would have been dropped from attribution to that IHP under the pre-modification model. In Maine, although the total number of provider organizations participating in the state's Medicaid BHH program held constant at seven, the specific providers participating fluctuated, as providers both left and joined the program. After reviewing cost data

related to BHHs, MaineCare (Medicaid) established new, higher PMPM rates in December 2015 to better support providers participating as BHHs.

States are offering flexibility in implementing payment models in efforts to enable a wider variety of providers to participate. Our review of Test state payment models suggests that the states used payment options and alternatives (i.e., within Maine's Accountable Communities [ACs, the name for the state's Medicaid ACOs], Massachusetts' planned ACOs, Minnesota's IHP models, and Vermont's ACOs) to offer providers choice about (1) the level of risk to accept for health care costs of attributed patients, or (2) the timeline for taking on risk. These options may be associated with increased provider participation as described in more detail below. Notably, in Massachusetts, respondents from Medicaid managed care organizations (MCOs) reported that one of the reasons many health care providers were unwilling to participate in the state's initial Primary Care Payment Reform Initiative (PCPRI) was that the model was too prescriptive and did not allow providers enough choice in how the payment model could be applied or adopted.

States continue to develop and grow new models, suggesting a continuing process of reform that will continue beyond the SIM funding period. Massachusetts, Maine, and Minnesota planned or implemented newly developed delivery system models under the SIM Initiative in 2015 and early 2016. After realizing the limited provider and payer participation in its Medicaid-led PCPRI, Massachusetts' focus for its second year of SIM implementation shifted to designing and planning a Medicaid ACO model, which will be piloted starting in late 2016 and more widely implemented in late 2017. Maine established four Medicaid ACs in January 2015; although no new applications were received for additional ACs in January 2016, during the analytic period for this report the existing ACs continued to grow the number of practices participating in the model. Minnesota focused on implementation of Accountable Communities for Health (ACHs) to test ways of integrating health care and community services to improve care for a defined population and condition. Development and implementation of BHHs in Minnesota also began.

Delivery system and payment models have become more established in policy and practice, driven by uptake in provider participation and increasing staff expertise. In Arkansas, one state official said, "the PCMH and EOC models are now part of DHS [Department of Human Services] and the health care innovation team that runs those models. They are here to stay." Success in achieving shared savings may also contribute to these models becoming more established in the Test states. For example, in October 2015, Arkansas awarded more than \$5 million to PCMH practices collectively credited with saving the state's Medicaid program more than \$34 million in 2014. Minnesota Medicaid reported that projected savings achieved by the first and second cohorts of IHPs totals \$65 million, which the state attributes to the ability of the partnerships to deliver the "right care" in the "right place" at the "right time"; as of 2016, the state is moving the IHP model into its Medicaid State Plan. Vermont reported more than \$14

million in savings from the two ACOs participating in the Medicaid SSP. The state's commercial and Medicaid SSPs have directly informed its All-Payer ACO Model, which the state will begin implementing in 2017, following successfully completed negotiations with CMS in fall 2016.

Most consumers in the early SIM Initiative period reported positive features of the delivery system, but there remains room for improvement. Results from the consumer survey fielded by the RTI International team in the six Test states in late 2014 through mid-2015¹ suggest that providers have a strong foundation for delivering patient-centered care (*Figure 2-1*). These results reflect the weighted average of (1) Medicaid beneficiaries in five of the six Test states (all but Oregon), where children under age 19 make up over half of Medicaid beneficiaries and thus responses in these states; and (2) state employees and family members in Oregon (all over age 18).

SIM Initiative activities in several Test states are focused on creating greater linkages between health care providers and community services (e.g., the e-Referral program in Massachusetts; ACHs in Minnesota). Results from the consumer survey fielded during early SIM implementation suggest that these foci represent room for improvement. When asked about services at home or in the community to help manage their health conditions (including housing and food), few (11 to 16 percent of Medicaid beneficiaries in five states, 3 percent of state employees in Oregon) indicated that they had this need; however, among respondents who did express this need, just over half said their usual provider usually or always provided help in getting the needed services.

With regard to care coordination, most consumers reported that their usual provider usually or always seemed informed about care received from specialists (see *Figure 2-2*). A high percentage of survey respondents also reported having usual providers who usually or always knew important information regarding recent hospital stays (data available in *Appendix B.3*).

In their SIM Initiatives, states are also encouraging health IT adoption and use as a tool to better coordinate care and engage consumers. In four Test states, 32 to 47 percent of Medicaid beneficiaries responding to the survey reported that their usual providers offered them access to a web portal to retrieve their own electronic health information in the last 6 months; this figure was higher in Minnesota (57 percent) and highest among state employees in Oregon (59 percent).

¹ Survey methods and results are included in Appendix B.3.

Figure 2-1. Consumers in Test states have usual providers knowledgeable about their medical history and needs, but less often have providers who connect them to nonmedical services, 2014-2015



Notes: All questions refer to care received in 6 months prior to survey. These results represent the weighted average across Medicaid beneficiaries in four eligibility groups in Arkansas, Maine, Minnesota, and Vermont (child; non-aged, non-disabled adult; disabled adult; and aged adult) and across three eligibility groups in Massachusetts (child; non-aged, non-disabled adult; disabled adult). Oregon consumers are state employees receiving health care benefits through either the Public Employees Benefits Board or Oregon Educators Benefits Board.

Data collection spanned different dates for the different states, with Arkansas and Maine running from November 2014 to May 2015; Vermont running from January to June 2015; Oregon running from January to March 2015; and Massachusetts and Minnesota running from February to August 2015.

+ Question only asked of respondents who needed care or services at home or in the community, which ranged from 11 to 16 percent among Medicaid beneficiary respondents in five states and 3 percent among state employees in Oregon.

Figure 2-2. Consumers in Test states observe that their usual provider is often informed about care from specialists, but less often are coordinating care across multiple kinds of services, 2014–2015



Notes: All questions refer to care received in 6 months prior to survey. These results represent the weighted average across Medicaid beneficiaries in four eligibility groups in Arkansas, Maine, Minnesota, and Vermont (child; non-aged, non-disabled adult; disabled adult; and aged adult) and across three eligibility groups in Massachusetts (child; non-aged, non-disabled adult; disabled adult). Oregon consumers are state employees receiving health care benefits through either the Public Employees Benefits Board or Oregon Educators Benefits Board.

Data collection spanned the early implementation period for states supporting Medicaid-related delivery system and payment model changes, with collection in Arkansas and Maine from November 2014 to May 2015; Vermont from January to June 2015; and Massachusetts and Minnesota from February to August 2015. Data collection in Oregon occurred during a baseline time period prior to when SIM Initiative efforts would affect state employees, January–March 2015.

*Question only asked of respondents who had received care from more than one kind of health care service, which ranged from 38 to 44 percent among Medicaid beneficiary respondents in five states and 50 percent among state employees in Oregon.

+ Question only asked of respondents who had scheduled an appointment with a mental health or behavioral health care provider, which ranged from 24 to 29 percent among Medicaid beneficiary respondents in five states and 14 percent among state employees in Oregon.

^ Question only asked of respondents who had received care a specialist other than a mental health provider, which ranged from 36 to 41 percent among Medicaid beneficiary respondents in five states and 49 percent among state employees in Oregon.

2.1.4 Participation in SIM-related delivery system and payment models

One key metric of success for the SIM Initiative is whether a "preponderance of care" is delivered through value-based payment models by the end of the Test period, defined by the Innovation Center as having 80 percent of payments from all payers be under value-based purchasing or alternative payment models (Hughes, Peltz, & Conway, 2015). As a proxy for percentage of payments, Test states report the numbers of individuals reached by SIM-related delivery system models and the number of payers and providers participating in these models.

SIM-supported models are reaching increasing numbers of providers and consumers.² *Figures 2-3 through 2-5* present state-reported data on (1) the participation of individual physicians (or providers, as reported in some states) in SIM-supported models (PCMH/Health Homes, integrated care models, and EOCs, respectively), and (2) the populations receiving health care under those models. Some models that were in place prior to the state's SIM Initiative contribute to the high participation rates. Yet, Vermont and Minnesota attained substantial growth in relatively new models as well. In Minnesota, the proportion of Medicaid beneficiaries attributed to IHPs rose from 23 to 44 percent as the state contracted with a new round of IHPs beginning in January 2016. In Vermont, the proportion of Medicaid beneficiaries receiving care under the Medicaid SSP rose from 49 to 62 percent between March 2015 and March 2016.

Some policy levers also play a role in achieving increasing participation among providers and consumers. For instance, enrollment of members in certified patient-centered primary care homes (PCPCHs) is one of the performance metrics for Oregon Medicaid's coordinated care organizations (CCOs). The number of primary care practices recognized as PCPCHs increased from 548 to 610, surpassing the goal of 600 practices by early 2016, and the percentage of Medicaid beneficiaries receiving care from PCPCHs was 77 percent. More examples of these policy levers are described in *Section 2.2*.

² Data reported here should be interpreted with several caveats: first, multiple models affect participating providers and populations reached in the SIM Initiative (e.g., PCMHs are often a cornerstone of ACOs), which creates the risk of double counting. Second, 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. Third, the calculation of a percentage of provider, practice, or population involved in the SIM Initiative uses publicly reported data as its denominator source, which may not align exactly with the definitions states use to report the numerators.

Figure 2-3. PCMH/Health homes: Participating payers, providers, and populations, March 2016



(continued)

Figure 2-3. PCMH/Health homes: participating payers, providers, and populations, March 2016 (continued)

(notes continued)

Sources of reported data:

Counts of physicians are state-reported numbers unless otherwise noted. Denominators for percentages are the numbers of active patient care physicians in the 2015 State Physician Workforce Data Book. Center for Workforce Studies, Association of American Medical Colleges (2015, November). 2015 State Physician Workforce Data Book. 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 (MD) or a Doctor of Osteopathic Medicine (DO) who are licensed by a state, work at least 20 hours per week, and whose self-reported type of practice is direct patient care.

Counts of population reached are state-reported numbers unless otherwise noted. 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) unless otherwise noted. Kaiser Family Foundation. (2016). Health insurance coverage of the total population. Available at http://kff.org/other/state-indicator/total-population/. For states that report all payer counts, the denominator for includes other publicly insured and uninsured individuals and Medicaid, Medicare, and privately insured individuals.

State-specific notes:



Arkansas: Arkansas's statewide PCMH model leveraged its participation in CMS's Comprehensive Primary Care Initiative; Arkansas Medicaid certifies PCMHs using its own requirements as opposed to criteria established by an external national body (e.g., National Committee for Quality Assurance). Count of physicians provided by the Arkansas Center for Healthcare Improvement. The entire Medicaid population is used as the denominator for the percent of Medicaid population served by PCMHs. The state reports that a smaller number of the Medicaid population is actually eligible to be served by a PCMH; of that smaller portion, the PCMH model reached 78 percent in 2015 and 80 percent in 2016. The denominator for self-insured individuals was provided through correspondence with state officials; there are approximately 575,000 individuals covered by self-insured employers in Arkansas, including state employees.



MN

Maine: Maine has both PCMHs and HHs. PCMHs are defined as primary care practices participating in CMS's Multi-Payer Advanced Primary Care Practice (MAPCP) Demonstration starting in 2010. HHs are defined under Maine's Medicaid Health Homes State Plan Amendments pursuant to Section 2703 of the Affordable Care Act (primary care HHs started 2013, BHHs started in 2014). Both PCMHs and HHs require some level of PCMH recognition from the National Committee for Quality Assurance in addition to meeting Maine-specific expectations.



Minnesota: Health Care Homes (HCHs) are certified by the Minnesota Department of Health, authorized under state legislation passed in 2008; they participated in CMS's MAPCP Demonstration from 2011 to 2014. The number of physicians in HCSs represents all certified providers—which includes physicians, nurse practitioners, and physician assistants; we do not have a comparable denominator and thus do not report this as a percentage.

(notes continued)				
OR Oregon: Patient-centered primary care homes (PCPCHs) are recognized by the Orego Authority according to state-defined criteria, authorized under state legislation passe Options also exist for qualifying as a PCPCH based on achievement of National Comm Quality Assurance PCMH recognition. Count of total number of clinicians working in a PCPCH calculated based on the state's estimated median of four clinicians per PCPCH Health Authority (2015). The Oregon Health Authority Patient-Centered Primary Care Program 2014 -2015 Annual Report. Available at				
	20Annual%20Report.pdf. Percentages of populations reached by its models reported by the state to CMS; see Table A.5-4 to see how counts were calculated.			
VT	Vermont: PCMH criteria include some level of recognition from the National Committee for Quality Assurance in addition to meeting Vermont-specific expectations. PCMHs participate in Vermont's Blueprint for Health, codified in 2006 state legislation and launched on a pilot basis starting in 2008; they participated in CMS's MAPCP Demonstration starting in 2011.			





physicians are federal and nonfederal physicians with a Doctor of Medicine (MD) or a Doctor of Osteopathic Medicine (DO) who are licensed by a state, work at least 20 hours per week, and whose self-reported type of practice is direct patient care.

(notes continued)

(continued)

Figure 2-4. Integrated care model: Participating payers, providers, and populations, March 2016 (continued)

(notes continued)

Counts of population reached are state-reported numbers unless otherwise noted. 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) unless otherwise noted. Kaiser Family Foundation. (2016). *Health insurance coverage of the total population*. Available at http://kff.org/other/state-indicator/total-population/. For states that report all payer counts, the denominator includes other publicly insured and uninsured individuals and Medicaid, Medicare, and privately insured individuals.

State-specific notes:



Maine: Defined as participation in Accountable Communities (ACs), authorized by a Medicaid State Plan Amendment that became effective in 2014. Maine has four ACs.



Minnesota: Defined as participation in Integrated Health Partnerships (IHPs), authorized by 2010 state legislation and a 2012 Medicaid State Plan Amendment. IHPs hold contracts with the state Medicaid agency directly for attributed Medicaid beneficiaries under age 65. The first cohort of IHPs began January 1, 2013; as of 2016, there are 19 IHPs. IHPs can participate in the "integrated" IHP model aimed at larger health care or hospital systems, or the "virtual" IHP model of smaller provider groups without a hospital affiliation; each has its own payment model options.

OR

Oregon: Defined as participation in the coordinated care model (CCM), either through participation in a Medicaid Coordinated Care Organization (in place since Oregon's 2012 amendment to its Medicaid Section 1115 waiver) or in a health plan contracted by the Public Employees Benefit Board, which required that health plans adopt CCM elements by January 1, 2015. State-reported percentage of physicians participating in Medicaid, based on the Physician Workforce Survey. For the 2014 version of this survey report, see Oregon Health Authority (2014). 2014 Oregon Physician Workforce Survey. Available at https://www.oregon.gov/oha/analytics/Documents/2014PhysicianWorkforceSurvey.pdf.



Vermont: Defined as participation as an Accountable Care Organization (ACO) under the Medicare Shared Savings Program (began January 1, 2013) or the Medicaid or commercial Shared Savings Program (both began January 1, 2014). Vermont has three ACOs. The population source used for the denominator (the Census Bureau's March 2015 Current Population Survey: Annual Social and Economic Supplements) groups Medicare-Medicaid enrollees as Medicaid. However, Vermont reports Medicare-Medicaid ACO-attributed enrollees as Medicare, because that is the ACO model in which they participate. Therefore, the percentages shown here underrepresent the Medicaid ACO population and overrepresent the Medicare ACO population.
Figure 2-5. Episodes of care: Participating payers, providers, and populations in the SIM Initiative, 2016



⁻⁻ Not available () Percentage of Count <a>Sincrease from 2015

Represents participation in one or more of the 14 active episodes of care (EOCs). Participation in episode-based payment is mandatory for providers that accept Medicaid beneficiaries and the participating private carriers' insurance products. However, the two participating private payers—Arkansas Blue Cross Blue Shield and QualChoice—select which of the 14 EOCs are most relevant for their enrollee populations and therefore are implemented for payment.

Sources of reported data:

Counts of physicians are state-reported numbers unless otherwise noted. Denominators for percentages are the numbers of active patient care physicians in the 2015 State Physician Workforce Data Book. Center for Workforce Studies, Association of American Medical Colleges (2015, November). 2015 State Physician Workforce Data Book. 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 (MD) or a Doctor of Osteopathic Medicine (DO) who are licensed by a state, work at least 20 hours per week, and whose self-reported type of practice is direct patient care.

Counts of population reached are state-reported numbers unless otherwise noted. 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) unless otherwise noted. Kaiser Family Foundation. (2016). Health insurance coverage of the total population. Available at http://kff.org/other/state-indicator/total-population/. For states that report all payer counts, the denominator for includes other publicly insured and uninsured individuals and Medicaid, Medicare, and privately insured individuals.

2.1.5 Statewide utilization and expenditure findings

In most Round 1 Test states, value-based delivery system and payment models are implemented first by their Medicaid program and by one or more commercial insurers. No Round 1 Test state specifically planned to implement delivery system or payment reform models in Medicare under the SIM Initiative. Additionally, only a subset of health care providers in each state participate in the innovative models. Nevertheless, our evaluation examines changes on *statewide* populations of patients with *different types of insurance*, for two reasons. First, 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 a state. Additionally, the SIM Initiative was intended to spread and support all health care reform in the Test states. Second, patients with different types of insurance often receive care from the same providers and health systems, many of whom participate in the new Medicaid or commercial insurance-sponsored delivery system and payment models. This creates a potential for spillover effects on care received by other commercially insured individuals and Medicare beneficiaries.³ Therefore, to capture these effects, we report claims-based outcomes, not only for Medicaid beneficiaries and the commercially insured, but also for Medicare beneficiaries.

Even so, this approach has limitations. Given the lack of states' SIM Initiatives directly aimed at Medicare and (except in Oregon) commercial populations, it is unlikely that we would observe, or could reasonably attribute to the SIM Initiative, changes in trends within these populations. It is more likely that findings in the commercial and Medicare populations are therefore the result of preexisting delivery system and payment reforms in these populations. Furthermore, in states where a small proportion of patients are served by participating providers and health systems, any "SIM effect" may be diluted by examining the statewide population covered by each payer.

Acknowledging these limitations, the question we ask here is this: As incentives and other mechanisms to improve the efficiency and quality of care are implemented with SIM Initiative support, are utilization rates and expenditures for health care services impacted? As health care systems strengthen primary care and emphasize healthy behaviors and care coordination, we expect to see decreases in hospital admission rates, emergency room (ER) and observation visits that do not lead to a hospitalization (outpatient ER visits), 30-day hospital readmissions and overall expenditures. The statewide results are summarized in *Table 2-2* and then by payer (detailed results in *Appendix B.1*). We include Medicaid results for the three states with sufficient post implementation Medicaid data available (Maine, Massachusetts, and Vermont) and Medicare and commercial results for the five states where a spillover effect from Medicaid-focused SIM Initiative changes is plausible (all except Massachusetts).

Medicaid

Preliminary data for the Medicaid population suggest the most promising trends in utilization are in Vermont. We compared the outcomes of Vermont Medicaid beneficiaries to

³ 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/Reports/TrustFunds/downloads/spillovereffects.pdf.

Table 2-2.Differences in statewide changes in utilization and expenditure outcomes for
each Test state relative to their comparison group* after 1 year of the Test
period

		Admissions	ER	Readmissions	Total PMPM
AR	Medicaid	FC	FC	FC	FC
	Commercial				0
	Medicare	J	0	0	J
	Medicaid	J			
ME	Commercial		0		
•	Medicare	Ç			
МА	Medicaid		NR		¢
MN	Medicaid	FC	FC	FC	FC
	Commercial		¢		
	Medicare		¢		
	Medicaid	FC	FC	FC	FC
OR	Commercial				
	Medicare-Medicaid		O		
VT	Medicaid		¢		0
	Commercial				
	Medicare	0	e		e

(continued)

Table 2-2.Differences in statewide changes in utilization and expenditure outcomes for
each Test state relative to their comparison group* after 1 year of the Test
period (continued)

*Appendix B.1 presents detailed data for each state, Appendix C.2 describes the comparison group methods, and Appendix C.3 describes the modeling methods. Comparison groups comprised statewide data from other states, by payer, except for Maine and Massachusetts Medicaid analyses, in which trends for the Medicaid population of interest were compared to an in-state commercially insured population to control for in-state secular trends.

In Oregon, we restricted the Medicare population to Medicare-Medicaid beneficiaries, because more than half of Medicare-Medicaid beneficiaries in Oregon are enrolled in a coordinated care organization.

If a state of the state of t

NB = not reported

 \bigcirc = change is in expected direction—statistically significant decrease relative to comparison group at p < .10 level, corresponds to a *greater decrease* or a *smaller increase* in payments in the Test state relative to the comparison group

• = change is in unexpected direction—statistically significant increase relative to comparison group at the p < 0.10 level, corresponds to a *greater increase* or a *smaller decrease* in payments in the Test state relative to the comparison group

"--" = no statistically significant difference in the change in Test state relative to comparison group at p < 0.10 level

Admissions = All-cause acute inpatient admissions per 1,000 covered lives. For Medicaid, includes Medicaid-only beneficiaries.

ER = Emergency room visits that did not lead to hospitalization per 1,000 covered lives. For Medicaid, includes Medicaid-only beneficiaries. We do not report ER visits for Massachusetts because we did not have the procedure codes or revenue center codes for managed care enrollees for this measure.

Readmissions = 30-day readmissions per 1,000 discharges. For Medicaid, includes Medicaid-only beneficiaries. Total PMPM = Average total per member per month payments. For Medicaid, includes Medicaid-only beneficiaries.

outcomes for their comparison group with a difference-in-difference (D-in-D) analysis. With 1 year of post-SIM Initiative data, our D-in-D regression analyses show that outpatient ER visits decreased in Vermont while remaining stable in the comparison group. Overall, the change in the rate of ER visits resulted in 19 fewer outpatient ER visits per 1,000 beneficiaries in Vermont relative to the comparison group in the post period. There were no statistically significant differences in the changes in all-cause inpatient admissions and 30-day readmissions for Vermont Medicaid beneficiaries relative to their comparison group counterparts. Although the average total PMPM payments for Vermont Medicaid beneficiaries increased more than the comparison group, this could be because Vermont had Medicaid expansion in place prior to expansion in comparison states indicating a larger program relative to Connecticut and Iowa (*Table 2-2*). As noted in *Section 2.1.4*, we found increasing provider participation in VPMs and high rates of Medicaid beneficiary exposure to providers that have adopted VPMs. Vermont's promising results may reflect its long history of multi-payer voluntary collaboration to support delivery system change; Maine and Massachusetts have not had the same strength of multi-payer collaboration or provider participation in VPMs.

In Maine, we ran an interrupted time series analysis (ITSA) that compared trends in the Medicaid population to secular trends in the state's commercial population. We observed a slight decline in inpatient admissions in Medicaid relative to the state's commercial population; however, there were no statistically significant differences in the change in outpatient ER visits, 30-day readmissions, or total per member per month (PMPM) payments. With fewer than 20 percent of Medicaid beneficiaries reached by PCMHs, BHHs, or ACOs beginning in 2014, the time period for analysis of changes in utilization and expenditure, it may be premature to expect changes in these trends among all state Medicaid beneficiaries.

Our ITSA regression analyses during the first year of Massachusetts' SIM Initiative shows Medicaid expenditures declined relative to the comparison group for a net difference of -9.60 per member per quarter, p < 0.10. However, given the limited reach of the PCPRI program, the changes in expenditures are likely the result of other factors affecting the Medicaid population in Massachusetts. We do not observe any changes in health care utilization; however, future analyses of beneficiaries specifically reached by PCPRI may exhibit more relevant findings.

Commercial insurance

With a few exceptions (total expenditures in Arkansas and ER visit use in Maine and Minnesota), we found few changes in utilization and expenditure outcomes in the commercially insured populations in Test states relative to comparison states during the first year of SIM Implementation (*Table 2-2*). Because it is too early to observe spillover effects, it is not surprising that we did not find many changes in utilization or expenditures in the commercially insured populations.

Medicare

Vermont showed the most consistent improvement in utilization and expenditure outcomes relative to the comparison group for its Medicare population. Acute inpatient admissions and outpatient ER visits declined slightly for Medicare beneficiaries in Vermont while increasing for beneficiaries in its comparison group. Total PMPM Medicare payments increased less for Vermont beneficiaries relative to the comparison group. As noted above, Vermont has a long history of multi-payer voluntary collaboration to support delivery system change. The promising Medicare results could plausibly be associated with pre-SIM activities such as enhanced access to primary care and practice transformation support through the State's Advanced Primary Care Medical Home Initiative (also called the Blueprint for Health) and improved care coordination through Medicare ACOs.

There were mixed findings for Medicare beneficiaries in Arkansas—inpatient admissions decreased more while ER visits increased more for Arkansas beneficiaries relative to the comparison group. Despite trends indicating fewer inpatient admissions relative to the comparison group, 30-day readmissions increased in Arkansas while declining in the comparison

group. Likewise, total PMPM Medicare payments declined in Arkansas while increasing in the comparison group from the baseline to the test period. Eventually we anticipate some spillover effects of Arkansas's PCMH initiative on the Medicare population; indeed, the Medicaid PCMH initiative was designed around Comprehensive Primary Care Initiative that began with 69 practices serving Arkansas's Medicare population. However, these results may not reflect the SIM Initiative's impact on provider behavior for Medicare beneficiaries, because this analysis captures care provided only during the early stage of SIM implementation.

2.2 Progress Engaging Providers and Payers in the SIM Initiative

Reaching more providers and consumers with care delivered under value-based payment models requires multi-payer and provider engagement. For some Test states, the reach of delivery system and payment models across providers and populations as of first quarter 2016, as reported in *Figures 2-3, 2-4, and 2-5* above, reflects in part the investment in stakeholder engagement that predates the SIM Initiative but which SIM resources continue to cultivate. Progress in increasing participation in these models can be attributed in part to policy levers embedded in state legislation, Medicaid state plans and waivers, regulatory power, and purchasing power to influence provider and payer interest. The choices state leaders make in designing Medicaid payment models to make them attractive to providers can be particularly important in increasing participation.

States are benefiting from existing legislation to support VPM implementation, but limited state legislative activity took place in 2015 and early 2016. State-enacted legislation is one policy lever available to states to support advanced practice models or other health care payment and service delivery reform. Several Test states had legislation in place prior to the SIM Initiative that directed state agencies to increase value-based purchasing. For example, in 2011 Vermont's health reform legislation included creation of the Green Mountain Care Board (GMCB) which, among other roles, oversees state efforts to shift to value-based payments. Likewise, in 2012 Massachusetts' Chapter 224 directed MassHealth (the state's Medicaid program) and other public payers to increase use of alternative payment models. Finally, 2010 legislation in Minnesota directed the state Department of Human Services to develop and implement innovative delivery systems including ACOs.

However, state legislation as a policy lever was used infrequently in the past 2 years, with relevant laws enacted only in Minnesota and Oregon in 2015 and Vermont in 2016. In Minnesota, the state amended legislation to include BHHs among the health homes that the state Department of Human Services is authorized to implement in the Medicaid program. In Oregon, passage of Senate Bill 231 enables, through limited exemptions from state antitrust laws, formation of a voluntary multi-payer primary care reform learning collaborative of insurers, purchasers, and providers to develop and disseminate best practices for implementation of alternative payment methodologies that can spur innovation and quality improvement in primary

care (SB 231-B, 2015). This bill also requires CCOs and private plans to report the share of expenditures spent on primary care. Although the legislation does not explicitly require payers to implement alternative primary care payments, the collaborative is expected to produce technical assistance materials and tools to facilitate greater adoption of alternative payment methodologies for primary care. In Vermont, Act 113 enabled the Agency of Administration and GMCB to implement an all-payer model and enter into an agreement with CMS waiving Medicare provisions. It further directed the GMCB's role in ACO oversight.

Medicaid program state plan amendments and waivers continue to be key policy levers to enact change. States have used a number of state plan amendments (SPAs) and waivers to support SIM-related delivery system and payment model development within their Medicaid programs. These SPAs and waivers, some of which received federal approval before or relatively early in the SIM implementation period, allow states to go beyond traditional FFS models to create new ways of delivering and reimbursing care in Medicaid. Relevant SPAs have been implemented in Arkansas (enabling EOCs, PMPM payments for PCMHs, and shared savings); Maine (enabling PMPM payments to support PCMHs and health homes and authorizing shared savings models for ACs); Minnesota (enabling BHHs and the extension of IHPs) and Vermont (enabling total cost of care payments for integrated models of care). Oregon's 1115 waiver established CCOs and required them to adopt an alternative payment methodology; Vermont's 1115 waiver enabled payment reform under an ACO model; and in 2016, Massachusetts was in the process of developing and applying for its 1115 waiver and Delivery System Reform Incentive Payments (DSRIP) funds.

State insurance regulations have been used in a limited way. States can leverage their regulatory power in their insurance markets, although this power is limited to the commercial market (state regulations do not apply to self-insured employer-sponsored health plans under the federal Employee Retirement Income Security Act exemption). However, among the Test states, only Arkansas has used state law and insurance regulations to require Qualified Health Plans to participate in PCMHs through contributions of PMPM payments supporting care coordination.

States are leveraging their direct purchasing power to spread delivery system and payment model innovations. Because states are both purchasers and payers of health care for Medicaid beneficiaries and state employees and their dependents, they can use that purchasing power to shape health plans' activities. In 2015, Oregon began requiring commercial health plans serving state employees to incorporate tenets of the CCM underpinning their Medicaid CCOs into their contracts with the state. As of March 2016, Oregon is working to duplicate this process for health plans serving Oregon educators. Massachusetts also plans to include contractual requirements to align health plans serving state employees with ACO certification standards set by the Health Policy Commission. In procuring the next round of Medicaid MCO contracts, Massachusetts will make MCO participation in ACO models a requirement. Previously, the state failed to achieve sufficient voluntary Medicaid MCO participation in its PCPRI model.

States are offering health care providers options to participate in different models as a strategy to increase the models' reach. States have taken steps to maximize the number of providers participating in payment reform models. Such models often require providers to assume risk for the costs and outcomes of specified aspects of their patients' care. But large integrated health systems are better equipped to assume risk than are smaller, independent providers. Round 1 SIM states aim to expand the reach of their Medicaid delivery system and payment models using the following approaches:

- Minnesota allows providers a choice of payment models for participation in an IHP. The first model has two-sided risk; the second model is a virtual IHP with one-sided risk only, intended to be a more attractive option for smaller, more rural providers.⁴
- In Maine's ACs, providers can choose between two levels of risk. The first model has one-sided risk; the second model has two-sided risk in Year 2 and Year 3, balanced with a higher shared savings rate in those years than in the first model.
- In developing the new ACO initiative, Massachusetts plans to offer three payment models to enable provider choice. The Accountable Care Partnership Plan (ACO Model A) is a closely aligned partnership between an MCO and a health system or provider network that will assume full risk; the Primary Care ACOs (ACO Model B) allows provider-led ACOs to contract directly with MassHealth, instead of with a health plan, and does not entail full insurance risk; the MCO-Contracted ACO (ACO Model C) is a provider-led ACO for those with less experience than required for ACO Model A or B, which therefore entails a lower level of risk and a higher level of assistance with ACO functions from health plans.

Despite policy levers and strategies, multi-payer implementation of payment models is present in only three states. Multi-payer participation in the SIM Initiative may be essential to spreading delivery system and payment models to become truly statewide. Although all the Test states have made progress in shifting Medicaid beneficiaries to value-based payment, commercial health plans are participating in SIM-related delivery system and payment models in only half of the states (Arkansas, Oregon, and Vermont). Arkansas has achieved voluntary participation of commercial plans in the governance of the overall Arkansas Health Care Payment Improvement Initiative. Oregon and Vermont, in particular, offer examples of how *past* payer and provider engagement has yielded results for the SIM Initiative. For example,

⁴ One-sided risk means that providers are eligible to earn shared savings for meeting lower total cost target but are not subject to penalties for higher-than-expected costs; two-sided risk means that providers are eligible to earn shared savings (the percentage earned is usually higher than one-sided risk options) for meeting lower total cost target and are expected to pay back money if costs are higher than expected.

Oregon's CCOs, which are based on the coordinated care model (CCM), were established in 2012 as part of the state's Medicaid Section 1115 waiver. As of 2016, nearly 90 percent of Medicaid beneficiaries in the state were enrolled in CCOs. Oregon continues to invest in the CCM, refining and transferring lessons learned about CCO implementation in the Medicaid population to commercial health plans that are incorporating CCM elements under state employee health plan contracts.

Vermont has been the most successful Test state in securing multi-payer participation in value-based payment reform. The Blueprint for Health, which also predated the SIM Initiative, involves Medicaid, Medicare, and commercial payers. Likewise, the ACO SSPs in Vermont are multi-payer, with the Medicaid and commercial SSPs developed with SIM support to complement the pre-SIM Medicare SSP. These three individual payer SSPs will evolve and align further with Vermont's All-Payer ACO Model, its population-based payment model, which it will implement on a staggered basis with the Medicaid strand launching in 2017 in four communities in the state, and the Medicare and commercial strands launching in 2018.

In contrast, in the first 1.5 years of its SIM Initiative, Massachusetts was unable to secure sufficient participation by providers and payers (MCOs) in its Medicaid PCPRI. Massachusetts' experience suggests that active multi-payer stakeholder engagement in the design of payment models is essential, and indeed the state has taken that approach in designing its new ACO models to be piloted in fall 2016. The models themselves were selected specifically to better align MassHealth with other payers and thus expand the scope and reach of VPMs across the state.

Having options for implementing VPMs may also encourage multi-payer participation. Although Oregon requires its CCOs to implement an alternative payment methodology by statute, the state leaves the choice of method up to the individual CCO. A review of payment methods implemented to date in Oregon indicates that the majority of CCOs have adopted pay-for-performance models (one-sided risk, without downside risk), although a smaller number of CCOs have adopted methods with two-sided risk such as partial capitation and case rates. Arkansas officials attribute the decision to allow payers to be selective in the EOCs they implement as instrumental to ensuring wide payer participation.

Table 2-3 summarizes the supporting strategies and policy levers used by Test states as of March 2016 to increase participation in delivery system and payment models supported by the SIM Initiative.

	Strategies	Policy levers
Arkansas	 Garner voluntary participation of commercial plans in governance of the overall Arkansas Health Care Payment Improvement Initiative. Garner voluntary participation of commercial plans and self-insured groups in PCMH and episodes of care. Support practice transformation through technical assistance provided directly to PCMHs by a practice transformation vendor. 	 Medicaid SPA authorizing PCMH and episodes of care payment models State law and insurance regulations requiring PCMH participation by QHPs receiving public funds through Medicaid expansion "private option" MIPPA contracts between Arkansas Medicaid and D-SNPs requiring PCMH participation
Maine	 Identify core measures for use across payers and providers in public reporting, contracting, and performance measurement. Achieve multi-payer agreement for a voluntary growth cap that includes both public and private health care spending. Convene workgroup on value-based insurance design. Support practice transformation. 	 Medicaid SPA authorizing PMPM payments for BHHs Medicaid SPA authorizing shared savings payment models for ACs Medicaid SPA requirement for ACs to include lead entity and partnerships with various providers (including health homes, hospitals, and public health entities in the service area)
Massachusetts	 Align MassHealth with other payers by adopting ACO models. Increase data analytics capacity. Maximize provider engagement by offering different ACO models (e.g., more or less risk). 	 State convening of eight stakeholder groups to develop areas of multi-payer alignment (including attribution, quality metrics, and all-payer ACO certification) MassHealth ACO procurement requiring all- payer ACO certification MassHealth MCO procurement requiring participation in ACO models
Minnesota	 Conduct ACO Baseline Assessment to understand reach of ACOs or ACO-like models in payers other than Medicaid. Increase data analytics capacity. Support practice transformation. Maximize provider engagement by offering different IHP models (e.g., more or less risk). 	 Medicaid SPA authorizing IHP model

Table 2-3.Increasing participation in value-based payment models: Strategies and policy
levers

(continued)

	Strategies	Policy levers
Oregon •	 Conduct readiness assessment of CCOs for alternative payment methodologies. 	 1115 waiver establishing CCOs and requiring them to implement at least one alternative payment methodology of their selection
	 Provide technical assistance to CCOs on alternative payment methodologies through the Transformation Center. Support practice transformation 	 State contracting: requiring PEBB plans (and in the future OEBB plans) to incorporate elements of the Coordinated Care Model and report on CCO quality measures
	through technical assistance to practices through the Patient Centered Primary Care Institute.	 Legislation (Senate Bill 231) requiring convening of a Multi-Payer Primary Care Reform Learning Collaborative
Vermont	 Introduce SSP: ACO model with shared savings payments implemented through Medicaid and commercial payer contracts (Medicare SSP implemented pre-SIM). Analyze and develop value-based purchasing in Medicaid and population-based payment for all payers (planned). Support practice transformation. 	 Pre-SIM Legislation (Act 48) that created the independent GMCB to oversee the development and implementation of new payment and delivery models and gave it rate setting regulatory authority: 2016 legislation (Act 113) enabled implementation of an all-payer model and expanded the GMCB's role in ACO oversight Medicaid SPA and 1115 waiver authorizing the SSP (Medicaid and commercial payer ACOs) Legislation approving increased payment for Blueprint for Health and new payment structure: PMPM payment based on NCQA PCMH level and pay-for-performance incentives based on quality measures
		 Package of waivers approved in All-Payer ACO Model

Table 2-3.Increasing participation in value-based payment models: Strategies and policy
levers (continued)

AC = accountable community; ACO = accountable care organization; BHH = behavioral health home; CCM = Coordinated Care Model; CCO = coordinated care organization; D-SNPs = Dual Eligible Special Needs Plans; FFS = fee-for-service; GMCB = Green Mountain Care Board; IHP = Integrated Health Partnership; MCO = managed care organization; MIPPA = Medicare Patient and Provider Improvement Act; NCQA = National Committee for Quality Assurance; OEBB = Oregon Educators and Benefit Board; PCMH = patient-centered medical home; PEBB = Public Employees Benefit Board; PMPM = per member per month; QHP = qualified health plan; SPA = state plan amendment; SSP = Shared Savings Program.

2.3 Infrastructure to Support Delivery System and Payment Reform

As states have carried forward with payment and delivery reforms of the SIM Initiative, they have also engaged in concurrent work on strategies designed to ensure that providers and payers have the capacity to transition to new delivery system models and VPMs. Activities have focused primarily on:

- practice transformation assistance in the form of grants, technical assistance, and learning collaboratives to help providers adapt to changing models of care delivery and payment
- investment in health IT to facilitate clinical care and in infrastructure to support data analysis
- quality measurement and reporting to drive quality improvement

2.3.1 Practice transformation

Practice transformation assistance includes a slate of activities that support the ability of providers and other relevant services to participate in payment and delivery system reforms. SIM states' aim is for grants, individualized or group technical assistance, and workshops or learning collaboratives to enable clinicians and nonmedical service providers to change how they serve patients/clients to optimize their participation in VPMs.

Round 1 Test states have taken different approaches to facilitating practice transformation. Most practice transformation efforts establish resources through which participants can learn from or engage with peers and experts. Maine, Minnesota, Oregon, and Vermont have developed learning collaboratives. Other strategies are use of practice transformation coaches (Arkansas, Maine, Minnesota), learning sessions (Maine), and grants to support specific transformation needs (Minnesota, Oregon, Vermont).⁵ Several states also engage in activities that deliver direct technical assistance to providers mainly aimed at helping them achieve certification or meet requirements for delivery and payment models (Arkansas, Maine, Massachusetts, Minnesota, Oregon). As part of sustainability and dissemination strategies, some states are creating toolkits or resource libraries for materials developed through practice transformation facilitation efforts (Minnesota, Oregon). Among these efforts, several themes have emerged from the work states have engaged in since April 2015, as specified below.

Test states are offering practices dedicated support related to data reporting and interpretation. One focus of practice transformation facilitation common across multiple states is support for the creation, delivery, and interpretation of quality and cost reports. For its PCPRI participants, Massachusetts distributes patient-level reports to help providers more effectively identify high-risk patients. PCPRI providers use these reports to develop data dashboards and implement quality improvement processes to improve the care delivered to patients with the most complex conditions. These reports can be an important tool for delivering actionable information to providers relevant to how they deliver care, yet some providers or designated analytics staff have had challenges in interpreting or understanding how to take action on the

⁵ Learning collaboratives engage groups of providers or relevant stakeholders to share ideas and learn from experts on a topic or topics of focus for the collaboratives. Learning sessions are events where participants are taught information related to a specific topic or topics by designated experts.

reports received. Maine provides feedback reports to primary care practices, behavioral health homes, and ACs. The reports detail trends in utilization, cost, and quality for a practice's commercial and Medicaid patient panels. They also compare the practice's outcomes to statewide benchmarks. In addition, the state makes some of the data publicly available on www.getbettermaine.com, a website devoted to publicly reporting quality information on Maine doctors and hospitals. Arkansas offers physician-level reports to principal accountable providers and hospitals under its episode of care model, and also to PCMHs.

SIM-supported practice transformation efforts are reaching beyond medical providers. Especially as Test states progress in their plans for integrating behavioral health and population health services with primary care (described below), the involvement of nontraditional and nonclinical providers and services in population-wide reforms appears to be increasing. In the survey of consumers in Test states in the early SIM Initiative implementation period, about half of Medicaid beneficiaries who needed care or services at home or in the community (53 to 59 percent) reported that their usual provider or other staff at their health care provider's office helped them get those services. Vermont and Minnesota, where fewer consumers reported receiving help getting those services, made intentional efforts to ensure that community organizations, social services, and other nontraditional providers were included in transformation efforts. After noting challenges with community engagement across its ACHs, Minnesota focused technical assistance activities to support ACHs' improved engagement with community-based organizations. Vermont formed regional collaborations of medical and nonmedical providers (e.g., long-term services and supports providers and community providers) dedicated to reviewing and improving the results of core SSP quality measures, supporting the introduction and extension of new service models, and providing guidance for medical home and community health team operations.

States face a challenge in offering practice transformation facilitation that is useful and scalable. Practices participating in states' reform activities have varied capabilities; the support they need to engage in transformation is similarly varied. One approach to using resources strategically is to offer facilitation that appeals to many providers. However, facilitation may be more effective if it is tailored to the individual needs of each provider participating in new delivery system and payment models. Vermont and Minnesota loosely defined the parameters of their transformation activities to allow providers flexibility to design grant-funded activities or programs based on their own needs. Still, Vermont officials shared that their smaller, more targeted efforts were too narrow to impact a high number of patients.

Provider engagement is a challenge, especially for practices involved in multiple initiatives or with limited resources. Some Test states acknowledged ongoing challenges with engaging providers because of "provider burnout." This fatigue has been brought about by multiple national, state, local, public, and private initiatives competing for providers' attention.

As one strategy to mitigate burn out, Vermont focused on aligning Blueprint for Health and ACO SSP measures, so the two would be complementary rather than competitive. Maine also noted "health care reform fatigue" among stakeholders and providers participating in workgroups providing guidance to the SIM Initiative and among health care leaders carrying out delivery system transformation. To address this, Maine established clear timelines and focused agendas for workgroup participation. For health care leaders, Maine contracted with an organization to develop and implement a leadership development program through which health care teams can develop the skills needed to manage and sustain transformation activities in health care.

Providers may view practice transformation assistance as a burden rather than help, depending on how this assistance is offered. For example, low uptake among providers for vendor-provided care coordination services at a monthly fee to providers resulted in a termination of that vendor's contract in Arkansas. On the other hand, Arkansas noted the continued popularity of its PCMH transformation activities that were offered at no cost to participating providers initially. Vermont explicitly noted the challenge of engaging providers when little or no funding is available to practices to support attendance at events.

2.3.2 Health IT and data analytics infrastructure

Implementation of SIM-supported activities in 2015 and early 2016 continues to underscore the importance of infrastructure to enable the reporting and analytics necessary for payment reform. Such infrastructure involves updates to state data systems (for the Medicaid program) and provider electronic health records (EHRs) that facilitate reporting of data for quality measurement. Several states continued investment in health IT to ensure connectivity of providers participating in their payment reform initiatives. However, the costs of implementing data and reporting systems needed for coordinated care continue to impose a major barrier to increasing such connectivity.

State officials view data analytics infrastructure as a backbone of delivery system and payment model implementation. Officials in Vermont, for example, noted particular achievement in increasing ACO access to data needed to monitor and measure outcomes related to its ACO SSP. Even though not explicitly funded by the SIM Initiative, Arkansas also acknowledged the importance of health IT systems to support its provider portal, through which practices upload data on quality metrics and receive reports on performance to support the state's EOC and PCMH models. Massachusetts reported that a key lesson drawn from its PCPRI was the need for data reports to support the payment model, because providers viewed these reports positively. PCPRI providers used these reports with patient-level data to update quality improvement processes for care delivery to patients with the most complex conditions. State officials in Massachusetts intend to create similar reports for providers who participate in their planned ACO model. Maine reported that one factor in the delay in the startup of the Accountable Communities (ACs) was the lack of MaineCare data that the ACs needed to identify and monitor their patient panels.

Providers face challenges in making large, up-front health IT investments. Investments in health IT are intended to facilitate greater coordination. Examples of such investments include installing EHR technology, connecting technology to health information exchanges (HIEs) or other data repositories, and ensuring that practices are appropriately trained and staffed to collect data and analyze reports regarding performance. But these systems are costly. Estimates range from \$15,000 to \$200,000 to implement EHR systems alone (Thune et al., 2015). A 2013 survey of ACOs found that ACOs spent on average \$856,000 on IT systems operations that year.⁶ As states continue to implement initiatives intended to improve connectivity, providers face continued challenges in making investments in health IT while also balancing the potential budget implications of new payment models and other changing markets conditions (e.g., other payment reform activities, insurance market reforms, shifting consumer bases). Evaluators from the Providence Center for Outcomes Research and Evaluation, in their study of Oregon's CCO models, hypothesized that these cost concerns may have negatively impacted provider participation in that state's payment reform efforts. Similarly, Vermont reported provider-side costs as a barrier to securing full engagement from some ACO providers in its efforts to remediate "gaps" in data needed to assess or measure performance. Arkansas Medicaid providers pushed back on the state DHS about requirements to connect with the Arkansas HIE—partly because the EHR vendors were charging exorbitant amounts to facilitate the connectivity, but also because many providers were affiliated with delivery systems that incorporated information such as hospital discharges into the providers' EHRs. With SIM funds, Minnesota helped expand EHR capabilities in practices that might not have otherwise been ready to participate in a value-based model. Maine's SIM Initiative has provided both financial and technical support to connect behavioral health homes to the state's HIE, but this effort has faced obstacles. The process of connecting the EHRs was not without some technical challenges, and despite providing initial financial support to these behavioral health homes to connect to the HIE, the costs of maintaining EHRs and the HIE connection are burdensome for some of these health homes.

2.3.3 Quality measurement and reporting

Early in the implementation of the SIM Initiative, states began to define measures by which they would assess their payment and delivery system reform efforts. During the analytic period of 2015 and early 2016, states continued to evolve their use of measures in tandem with

⁶ The survey was based on 35 ACOs, which ranged in size from 5,100 to 78,000 assigned beneficiaries. Estimate includes costs spend to run IT systems internally and costs expended on external vendors. Source: National Association of ACOs (2014). *National ACO Survey*. Available at https://www.naacos.com/pdf/ACOSurveyFinal012114.pdf

the evolution of their models. Vermont made changes to measures in response to changes in national standards. Oregon offered assistance to providers to help them collect, report on, and analyze defined measures.

States are incorporating behavioral health and population health measures into their quality measure sets. Test states that use quality measures in their payment models are integrating measures that explicitly target behavioral or population health. For example, Oregon added two new metrics for its CCOs to monitor tobacco use and childhood immunizations. The GetBetterMaine website began reporting new measures on behavioral health integration for Maine's providers.

However, states continue to face challenges monitoring quality because of variation across providers in measurement and reporting capacity. This variation is attributable in part to lagging health IT infrastructure described in the section above, but also to mixed priorities on measures needed for reforms. These challenges delay provider reporting on metrics, development of analytic reports delivered to providers to better understand their performance, and payments related to achieving metrics. Challenges also result in inconsistencies in the type and quality of information available across measures identified by a state. To resolve these issues, some Test states are working to develop more consistent vehicles for data collection and reporting of quality information (such as standardized forms for data submission and streamlined reports to highlight metrics of highest priority based on the state's payment reform aims).

2.4 Integration of Behavioral Health and Primary Care

The prevalence of poor mental health days, and their impact on physical health, utilization, and expenditures, is a driver of other delivery system and payment reform activities in the Test states. According to BRFSS data, between 2006 and 2013 (the baseline data period included in this report, see *Appendix B.2*), across the six Test states, 30 to 40 percent of adults 18 and older reported one or more days in which mental health was not good.

Integration of behavioral health providers and services with primary and acute physical care providers and services is beginning to take a more prominent role in Test states. State officials identified several factors that have made this integration a central focus of the SIM Initiative, including (1) increasing recognition of the impact of behavioral health needs on delivery and payment reforms being implemented in the states; and (2) increasing state and national attention on issues relevant to behavioral health, such as opioid use, and on expenditures on behavioral health services. Furthermore, consumers who receive services from behavioral health providers indicated in the consumer experience of care survey fielded during the early SIM implementation period (*Appendix B.3*) that their usual providers are often not aware of the behavioral health care they receive (64 to 73 percent of Medicaid beneficiaries [Arkansas, Maine, Massachusetts, Minnesota, and Vermont] and 44 percent of state employees [Oregon] reported that their usual provider usually or always seemed informed about the behavioral health care they received).

States are incorporating measures and payment for behavioral health services into value-based payment models. Most states have moved to or are considering the addition of behavioral health indicators as factors in their payment reform initiatives. Oregon has based 4 of the 17 global budget metrics for CCOs on behavioral health metrics. Arkansas has included behavioral health diagnoses in its EOCs. Vermont's planning of its all-payer model included substance abuse measures. Relatedly, several states used SIM funds to expand current behavioral health payment or delivery models operating in the state, specifically BHH programs (in Vermont, Maine, and Minnesota).

States are targeting practice transformation facilitation support toward integration of behavioral health providers and services. States recognize that dedicated efforts are necessary to bring behavioral health and traditional clinical providers and stakeholders together, to understand current capacity for integration, and to address challenges that the prospect of integration poses. Test states have organized technical assistance activities to PCMHs, BHH organizations, and community care teams (Maine) and CCOs (Oregon); increased providers' access to expert faculty and facilitators (Oregon, Vermont, Maine); and developed learning collaboratives and training focused on behavioral health integration (Maine, Minnesota, Oregon, Vermont). Oregon is building a new behavioral health integration resource library, which will showcase best practices gleaned through its numerous activities aimed at supporting primary care and behavioral health services integration. Massachusetts and Minnesota report correlation between these activities and either provider participation in behavioral health programs or progress on integration activities.

States are fostering connections with social services/other agencies. Recognizing that individuals with behavioral health issues have complex care needs, often requiring the services of a variety of social service agencies, many states emphasized inclusion of nonclinical, social service and other providers as part of their activities to address care integration needs for this population. Such efforts include providing social service agencies grants to promote cross-agency collaboration (Oregon) and inclusion of stakeholders representing these agencies in conversations/decisions about payment reforms and models (Massachusetts, Vermont, Maine). In Massachusetts, the expanded e-Referral program connects primary care organizations with community-based resources that offer a variety of health and wellness services.

States also took steps to ensure that their delivery and payment reform efforts would not supplant or duplicate current capacity of behavioral health service providers in the state. For example, in response to stakeholder input that proposed that ACOs should not develop in-house capacity to serve individuals with complex needs, but rather leverage or build off what exists in the state, Massachusetts plans to certify a select number of "community partners" that ACOs

may refer to for care coordination, options counseling, and social services screening and referral. Massachusetts will also require participation from behavioral health providers in ACO governance structures.

Oregon and Vermont are continuing to assess behavioral health needs. During 2015–March 2016, Oregon and Vermont engaged in activities to better assess and understand behavioral health providers and needs in the state—information they plan to use strategically to identify how best to promote integration into ongoing initiatives. Oregon is using its findings to inform strategies for addressing professional shortages, while Vermont will use information gleaned through its workgroups to develop a new mental health and substance abuse payment model for its all-payer model. Oregon's work on behavioral health integration was informed by conversations between its Transformation Center and its CCOs about CCO priorities for integration. Vermont completed a comprehensive gap analysis of the technical capabilities of behavioral health providers, an analysis that enabled Vermont to identify areas for future investment to promote data sharing and transfer among these providers.

Some states are connecting behavioral health providers and resources through telehealth. To address behavioral health provider shortages, Massachusetts and Oregon have both developed initiatives to leverage telehealth services to spread access to these services specifically by enabling primary care providers to consult with psychiatric specialists. Although these initiatives in both states were established before the SIM Initiative, SIM funding has enabled these programs to expand. Massachusetts' program, known as the Massachusetts Child Psychiatry Access Project (MCPAP), which focuses on pediatric services, will soon be expanded to serve postpartum mothers as well.

Challenges to behavioral health integration remain. While recognizing the increasing need to promote integration of behavioral health services into their work, the Round 1 Test states also reported many barriers that hindered progress in this area. Although many of these challenges also predate the SIM Initiative, in many cases SIM efforts, including those described above, brought to light some of these challenges and affected the approaches taken by the states related to behavioral health integration under the SIM Initiative. One challenge noted explicitly by officials in several states is difficulty in bridging professional divides (e.g., differing approaches to care, definition and use of terminology) between clinical providers and those focused on behavioral health needs. For example, one learning collaborative topic in Maine focused on introducing different types of providers to one another.

Information sharing was reported across almost all states as a major barrier impeding progress on behavioral health integration. Some of these issues are ingrained in federal statute, specifically 42 CFR Part 2, a federal law governing the confidentiality of patient records related to alcohol and drug abuse, which restricts data flow around these issues.

Other communication and data sharing challenges stem from the lack of infrastructure and capacity to enable providers and agencies delivering behavioral health services to access and exchange patient information electronically. Maine has made progress connecting its behavioral health homes to Maine's HIE, but not without having to face both technical and financial obstacles throughout the process. Vermont has made notable progress in addressing these issues through its SIM Initiative. Beyond the gap analysis described earlier, the state has many initiatives (detailed in *Appendix A.6*) tailored to promoting connectivity of behavioral health providers through more robust EHRs, data collection and reporting, and data transfer infrastructure.

Table 2-4 summarizes how Round 1 Test states have approached behavioral health integration.

	Strategies		Policy levers
Arkansas •	Introduce care coordination (proposed) for individuals with serious mental illness by managed care organizations, health homes, or other care management entities.	•	Contractual obligations for managed care entities (proposed) PMPM payments and quality metrics for behavioral health homes (proposed)
Maine •	Implement behavioral health home initiative to provide integrated care and targeted case management services for adults and children with behavioral health conditions. Support practice transformation through learning networks that provide education and technical assistance for health homes and health care providers. Connect behavioral health providers to the statewide HIE, HealthInfoNet.	•	Medicaid SPA to authorize behavioral health homes MaineCare payment of \$394.20 PMPM for patients enrolled in behavioral health home organizations MaineCare payment of \$15 PMPM for health home practices to coordinate care for patients with behavioral health conditions Financial support for behavioral health homes to facilitate connection with the HIE

Table 2-4.	Integrating behaviora	and physical health:	Strategies and policy levers
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(continued)

		Strategies		Policy levers
Massachusetts	•	Increase behavioral health integration in PCMHs through PCPRI. Include behavioral health providers in ACO networks and governance. Engage community behavioral health providers as ACO partners in serving individuals with serious mental illness.	•	PCPRI payment model to support integration through option to include outpatient behavioral health in capitation payments PCPRI contracts that include behavioral health milestones PCPRI technical assistance provided to help providers achieve behavioral health integration milestones Proposed ACO certification to include requirements for behavioral health provider participation Plans for partnerships between
				MassHealth ACOs and certified behavioral health community partners leveraged by DSRIP funds
Minnesota	•	Obtain federal planning funds designed to support health home planning to hire contractor to support prospective behavioral health home practices, termed the "first implementers group," in understanding their capacity to participate in behavioral health homes.	•	CMS approval of a Medicaid SPA to implement behavioral health homes in Medicaid for adults with serious and persistent mental illness and children with serious emotional disturbance SIM-funded practice transformation grants specifically awarded to prospective behavioral health homes (from the "first implementers group")
Oregon	•	Conduct behavioral health environmental scan. Provide technical assistance on behavioral health integration through the Transformation Center, including the opportunity to access consultants through the technical assistance bank, support of a learning collaborative for 10 behavioral health practices to develop integrated primary care capacities, and a contract with a leading CCO staff person to share best practices and lessons learned with other CCOs.	•	Inclusion of elements of behavioral health integration in PCPCH certification standards Inclusion of behavioral health services in CCO global budget Inclusion of 4 CCO incentive metrics (out of 17 total) related to behavioral health

Table 2-4.Integrating behavioral and physical health: strategies and policy levers
(continued)

(continued)

	Strategies		Policy levers		
Vermont •	Analyze health IT infrastructure, data collection, and reporting needs of behavioral health providers. Analyze current mental health and substance abuse spending to inform incorporation into the All-Payer Model. Align and streamline behavioral health measures used across state programs. Support Vermont's Hub and Spoke initiative, which targets Medicaid beneficiaries with chronic opioid addiction, through provision of additional quality improvement facilitators, expert faculty, training, and investments in health IT that support participation in the program.	•	Medicaid State Plan Option under Section 2703 of the ACA Act 179, which requires a report on strategies to achieve a more comprehensive health care service delivery system based on a greater integration of substance abuse payment and care coordination with physical and mental health		

Table 2-4.Integrating behavioral and physical health: Strategies and policy levers
(continued)

ACA = Affordable Care Act; ACO = accountable care organization; CCM = Coordinated Care Model; CCO = coordinated care organization; DSRIP = Delivery System Reform Incentive Payment; HIE = health information exchange; PCMH = patient-centered medical home; PCPRI = Primary Care Payment Reform Initiative; PMPM = per member per month; QHP = qualified health plan; SPA = state plan amendment.

2.5 Sustainability

As of March 2016, Test states had already begun to pursue a diverse set of strategies and policy changes intended to sustain efforts developed under the SIM Initiative. Strategies reflect where states are investing in infrastructure to support delivery system and payment models. Strategies include (1) developing and maintaining capacity to implement delivery system and payment models, (2) training and knowledge transfer to other providers/organizations, (3) evaluating activities to prioritize future efforts, and (4) engaging a variety of stakeholders, especially commercial payers. Using policy levers gives states the authority to continue implementation of delivery systems, payment models, and infrastructure to support those models. Levers include (1) Medicaid Section 1115 waivers and SPAs, (2) state appropriations for model sustainability, and (3) state legislation to enact or augment reforms. *Table 2-5* summarizes the varied avenues that Test states have planned to help sustain aspects of their work initiated or continued under the SIM Initiative. Brief descriptions of state-specific examples of each strategy and policy lever follow.

	Arkansas	Maine	Massachusetts	Minnesota	Oregon	Vermont
Strategies						
Capacity for delivery system and payment model implementation	х	х	х	х	х	Х
Training and knowledge transfer				Х	х	х
Evaluation and prioritization		х				х
Stakeholder engagement				Х		х
Policy levers						
Medicaid Section 1115 waivers and SPAs		х	Х	Х	Х	Х
State appropriations	Х		х		х	
State legislation				Х		х

Table 2-5. Sustainability of SIM-supported delivery system and payment models: Strategies and policy levers

SPA = state plan amendment.

Capacity for delivery system and payment model implementation. Under the SIM Initiative, Test states have incorporated new delivery system and payment model development or enhancement into their regular state agency business. Arkansas has developed its Medicaid agency staff's capacity to operate implementation of their delivery and payment models. The state will also contract with vendors to provide data analytics necessary to operate EOC and PCMH models. Oregon will continue operation of CCOs and health plans for state employees and educators that support coordinated care efforts. Massachusetts is developing ACO models, and Vermont has developed an All-Payer ACO model to follow its SIM-supported SSP pilot. Minnesota plans to continue implementing BHHs and to extend the IHP model beyond the initial demonstration period.

Training and knowledge transfer. Test states have identified mechanisms by which they can continue training and knowledge transfer from the SIM Initiative test period to after the test period. Minnesota is using the Storytelling Engagement Project developed under the SIM Initiative to share lessons learned with the broader state community through toolkits, lesson guides, and multimedia platforms. Oregon state staff will work with their CCOs to enhance quality improvement skills. Vermont will adopt lessons learned from practice transformation efforts to develop "train the trainer" modules.

Evaluation and prioritization. Several Test states will concentrate future efforts on only a selected number of efforts started under the SIM Initiative. Maine has undertaken an evaluation process to narrow the scope of its initiatives to focus on activities with the highest potential impact. Vermont identified three priority areas on which to focus sustainability efforts:

payment reforms, health IT, and practice transformation. Additionally, Vermont will systematically review Medicaid provider types to determine whether or how it can integrate them into delivery system and payment models.

Stakeholder engagement. Test states use advisory committees, workgroups, and other collaborative efforts that strategically engage stakeholders. Minnesota plans to continue to involve stakeholders in the SIM Community Advisory and Multi-Payer Alignment Task Forces to strategically plan future reforms after the SIM Initiative test period ends. To develop a health IT strategic plan informed by work conducted under the SIM Initiative, Vermont will maintain the health data infrastructure stakeholder workgroup.

Renewed Medicaid Section 1115 waivers and SPAs. For Test states that have implemented new delivery systems and payment models under their Medicaid programs, one key policy lever is to seek or maintain federal approval for these models. For example, a major source of implementation funding for Massachusetts' new Medicaid ACOs and community partners will be the federal DSRIP, which the state will request as part of Section 1115 waiver. Vermont is seeking a package of Medicare waivers in addition to a renewed Section 1115 Global Commitment waiver for Medicaid. An existing Section 1115 waiver authorizes CCOs in Oregon, and a SPA provides the funding authority for care in Maine's BHHs and ACs. Minnesota will also seek SPAs for BHHs and will submit an amendment to modify components of the IHP model (included in the Medicaid state plan) in response to input from IHP providers.

State appropriations. Obtaining state budget support is a useful policy lever in sustaining efforts begun under the SIM Initiative. Arkansas has appropriated state funds for full-time state employees who understand the intricacies of EOC development and maintenance to oversee contracted staff working with the data that support the new models. In Massachusetts, MDPHnet expansion support and some SIM-funded staff positions have been shifted to state general funds. In addition, legislation supported by behavioral health advocates imposed a surcharge on commercial health insurance, which Massachusetts will request be used to sustain and scale up MCPAP. The Oregon legislature passed a budget that provides financial support for the Transformation Center through December 2017.

State legislation. Across the Test states, legislation has supported multiple components of the SIM Initiative, as described in earlier sections. Legislation is also a policy lever for sustaining delivery system and payment models. In Vermont, state legislation will support the ACO regulatory framework and continue sustainability of ACO models. The state legislature in Minnesota authorized the Medicaid program to seek SPAs needed for continued BHH and IHP implementation.

2.6 References

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3. State-Specific Findings and Lessons Learned

3.1 Arkansas

The SIM Initiative in Arkansas is known as the Arkansas Health Care Payment Improvement Initiative (AHCPII). Its goal is to shift the state's payment system from one that primarily reimburses for services on the basis of volume, to a more sustainable, value-based model. The core principle of the AHCPII is to develop a system that is "patient-centered, clinically appropriate, practical, and data-driven."

As of March 2016, 2.5 years after SIM implementation, the state continues with implementing two of its major delivery system and payment models—patient-centered medical homes (PCMHs) and episodes of care (EOCs). These are now integral to health care delivery in Arkansas, and administration of these programs is a routine part of operations at the state Department of Human Services (DHS). These two models were designed to act synergistically—with the PCMH model focused on efficient provision of primary care services and care management, and the EOC model used for value-based purchasing of both primary and specialty services. Arkansas Medicaid and private payers are implementing both models, and public and private payers attribute the models' success to this multi-payer support.

Key Results from Arkansas's SIM Initiative, April 2015–March 2016

- Arkansas used a combination of legislative mandates, voluntary participation, and operational flexibility in implementation to engage *commercial payers* in its SIM Initiative. The two payment models supported by Arkansas's SIM Initiative, patient-centered medical homes (PCMHs) and episodes of care (EOCs), have strong multi-payer support.
- Arkansas also has strong provider participation in PCMHs. Nearly 80 percent of eligible primary care providers that accept Medicaid participate voluntarily in the PCMH model, which includes PMPM payments for practice transformation and an opportunity to earn shared savings (one-sided risk). A legislative mandate for Health Insurance Marketplace qualified health plans (QHPs), which provide coverage for the Medicaid expansion population, requires these plans to participate in PCMHs.
- Payment and delivery reforms for special populations served by Medicaid were still under development in the last year of the test period. Plans to redesign payment and delivery for Medicaid LTSS, I/DD, and behavioral health services were on hold as State officials awaited guidance from a legislative task force.
- The SIM Initiative supported provider and payer engagement via regular and transparent communication. State officials say this communication helped change the culture of care delivery and encouraged the sustainability of its two payment models. With high provider participation, the state is sustaining these payment models by integrating them into state government operations. Costs for both the continued oversight of PCMH and development of new EOCs and maintenance of existing EOCs are now included within DHS's budget as routine operations.

Arkansas's strategies to support delivery system and payment models. Arkansas state officials continue to assist providers participating in the models with practice transformation and data analytics support. Development of care coordination models for special populations—those with behavioral health needs, those with intellectual or developmental disabilities (I/DD), and beneficiaries using long-term services and supports (LTSS)—continues to progress more slowly. Arkansas has developed and implemented a new assessment-based methodology to calculate hours of attendant care for older adults and adults with physical disabilities using Medicaid home and community-based services (HCBS). The state plans to continue working with stakeholders on a care coordination model—potentially a health home or a managed care entity—to serve these special populations. SIM funding was integral to establishing relationships across the state, especially between DHS and providers. The full Arkansas report is available in *Appendix A*.

3.1.1 Successes in multi-payer engagement, provider participation, and plans for sustainability

Arkansas has engaged a range of payers through a combination of regulation and flexibility in how payers adopt the models. Arkansas Medicaid, DHS, and the state's two major commercial insurers—Arkansas Blue Cross and Blue Shield (BCBS), and QualChoice of Arkansas—have partnered in implementing both the PCMH and EOC models. On the one hand, Arkansas has achieved multi-payer participation by promulgating Rule 108 under the authority of the Health Care Independence Act of 2013, which requires QHPs participating in the Arkansas Health Insurance Marketplace to enroll beneficiaries in PCMHs on or after January 1, 2015, and pay PCMHs a PMPM fee. On the other hand, also importantly, commercial payers have been able to implement a subset, which they can choose, of the 14 EOCs established by the state.

Provider and payer participation has spread the PCMH model to a growing proportion of residents in the state and produced Medicaid savings. The PCMH program is well entrenched in the state, with more than 878 eligible physicians within 179 eligible practices treating Medicaid patients participating in PCMHs currently—reaching over 330,000 Medicaid beneficiaries by March 2016. According to a state report, Arkansas credited PCMH practices more than \$5 million for collectively saving the state's Medicaid program over \$34 million in 2014 (Arkansas Center for Health Improvement, 2016). PCMH expansion is also occurring among private payers in both the commercial and Medicaid expansion populations. With the required enrollment of members from QHP plans into PCMHs, by March 2016 nearly 200,000 commercially insured individuals received care from a PCMH.

The EOC model will be sustained with state budget investment and payers' physician participation rules. The costs for both the PCMH program and the development and maintenance of EOCs have been included within DHS' budget as a routine part of state operations. As of April 2016, 14 different EOCs each has a standardized definition across all payers. Participation in episode-based payment is mandatory for providers that accept Medicaid beneficiaries and the BCBS and QualChoice insurance products. By March 2016, over 1,300 physicians were principal accountable providers (PAPs) for Arkansas's EOC model and exposed to two-sided risk,⁷ and these PAPs were serving over half a million commercially insured individuals (39 percent of the commercially insured population).

Arkansas supports AHCPII participants using a range of quality measurement activities and practice transformation technical support. Arkansas uses a provider portal to collect performance metrics from providers, as well as to share PCMH and EOC cost and quality reports back to providers in a standardized format across all payers. The state pays for PCMH practice transformation support for up to 2 years—to help providers who need assistance in understanding their performance metrics, analyzing their practice patterns, and identifying needed changes and opportunities for improvement.

3.1.2 Challenges in moving ahead on additional model development

During the past year, progress has been delayed on some activities, as state officials await decisions by elected officials on broad strategies to coordinate care and restrain Medicaid spending. In February 2015, the Arkansas Health Care Reform Act created the Health Reform Legislative Task Force, charged with recommending ways to modernize Medicaid. The Task Force's recommendations and any subsequent legislation could impact the structures within which PCMH and EOC operate, particularly if the state chooses to move significant Medicaid populations into managed care arrangements. In October 2015, the Task Force's consultant, The Stephen Group, presented its report recommending continuation of the Medicaid expansion private option and implementation of reforms for traditional Medicaideither through expanded implementation of PCMH, EOC, and health homes for all populations, or through transition to managed care (The Stephen Group, 2015). In March 2016, the Task Force voted to continue the Medicaid expansion private option, but split on whether to support Medicaid managed care or an alternative managed fee-for-service (FFS) model (Davis, Arkansas Democrat-Gazette, March 8, 2016; The Stephen Group, February 15, 2016). According to state officials, provider groups oppose transitioning Arkansas Medicaid to managed care. Instead, these provider groups support the continued transformation of the current payment and delivery system models that operate within the FFS approach. State SIM officials are optimistic that the

⁷ One-sided risk means that providers are eligible to earn shared savings for meeting lower total cost target but are not subject to penalties for higher-than-expected costs; two-sided risk means that providers are eligible to earn money for meeting lower total cost target and are expected to pay back money if costs are higher than expected. Arkansas's EOC program has two-sided risk termed "Risk Share" or "Gain Share;" voluntary participation in Arkansas's PCMH Shared Savings program has one-sided risk only.

ultimate decisions will support the AHCPII vision—including PCMHs, EOCs, and some form of care coordination for special populations (including behavioral health, I/DD, and LTSS).

Payment reform for the behavioral health, I/DD, and LTSS populations has not yet occurred. The state plans to continue working with stakeholders on a care coordination model. The Governor's office, state Medicaid officials, providers, and other stakeholders continue to discuss whether all Medicaid populations should be served by some form of managed care. Thus, care coordination for special populations served primarily by Medicaid—behavioral health, I/DD, and LTSS—continues to evolve, with the outcome uncertain during the timeframe included in this evaluation.

3.1.3 Lessons learned

Arkansas attributes its ability to change the "culture of care delivery" to regular and transparent communications with providers and payers that were facilitated by the SIM Initiative. SIM funds allowed the state to act as neutral convener for multi-payer participation within the framework of value-based payment reform.

A critical element of Arkansas's success and future sustainability of value-based payment models is the dominance of one private-sector payer. This commercial payer has been involved in developing, facilitating, supporting, and advancing Arkansas's PCMH and EOC models, but has not been involved with the behavioral health, I/DD, or LTSS populations. This may help explain why payment reform efforts for these populations have encountered significant barriers, and as a result, have moved slowly.

3.2 References

Arkansas Center for Health Improvement. (2016, January). Arkansas health care payment improvement initiative: 2nd annual statewide tracking report, January 2016. Little Rock, AR: Arkansas Center for Health Improvement. Retrieved July 20, 2016, from http://www.achi.net/Docs/338/.

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3.3 Maine

The SIM initiative in Maine began implementation on October 1, 2013. Since that time, the state has made progress toward achieving its six stated strategic objectives: (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, and (6) engaging people and communities. Maine has also been focusing on identifying the most promising strategies for more focused investment going forward.

Maine's reform initiatives center on developing behavioral health homes (BHHs) and accountable communities (ACs) for its MaineCare (Medicaid) population. Both models of care build upon on an earlier state initiative to create patient-centered primary care health homes (called health homes). BHHs are partnerships between primary care health homes and community mental health providers to manage the physical and behavioral health needs of adults and children with chronic mental health conditions. ACs are responsible for the health and health care costs of a defined population. In an AC, a lead entity collaborates with health care providers and can share savings if total costs are lower than a benchmark.

Key Results from Maine's SIM Initiative, April 2015–March 2016

- Maine increased Medicaid payment rates to behavioral health homes in 2015. The state responded to stakeholder feedback that payment rates were too low. SIM workgroups were regularly informed during the rate review process. After making this change, the number of behavioral health homes increased to 27 in 2016, with 287 participating providers, serving over 4,400 Medicaid beneficiaries.
- In 2016, Maine narrowed the scope of its delivery-system reform initiatives for the remainder of the SIM Initiative. With guidance from stakeholders, Maine has chosen to focus on improving diabetes care based on the effective use of claims-based performance data to guidance continuous quality improvement, and on reducing care fragmentation by piloting a predictive analytics tool that will allow providers to target the highest service utilizers for proactive care management. The state views these activities as having the greatest potential for improving health care cost, quality, and utilization.
- Maine has had limited success spreading delivery transformation supported by the SIM Initiative to payers outside of Medicaid. For example, Maine led a successful collaborative effort to develop voluntary growth caps for commercial Accountable Care Organizations (ACOs), but to the state's knowledge, commercial payers have not adopted the caps in ACO contracts.

Maine's strategies to support delivery system and payment models. In 2015 and early 2016, Maine continued to sponsor learning networks for health care providers engaged in these delivery system reforms. The state also worked to align quality measures across providers and payers and advance public reporting of health care cost and quality information. Additionally, the state increased connectivity of behavioral health providers to the health

information exchange (HIE) and launched several tools that use the HIE to support case management and program and policy development. To support population health, Maine will add diabetes as a priority topic to the State Health Improvement Plan and has used SIM funding to expand the National Diabetes Prevention Program, a Centers for Disease Control and Prevention (CDC) educational initiative, in the state. The state also tested the use of community health workers to increase engagement and the use of needed care by underserved populations. At the end of the SIM implementation period, MaineCare will continue to make payments to BHHs and ACs, and the state expects to continue to benefit from SIM-funded infrastructure investments. The full Maine report is available in *Appendix A.2*.

3.3.1 Success in increasing reach of Medicaid delivery systems, implementing health information technology, and distributing cost and quality reports

The number of MaineCare beneficiaries reached by new delivery system models has grown in 2015 and early 2016 through increased provider participation. Maine increased its per member per month (PMPM) payment rate to BHHs for both adults and children to reduce turnover among provider organizations participating as BHHs, and to increase access to the program. Additionally, the Medicaid program eliminated the requirement for BHHs to deliver at least 11 hour of services to a member to be eligible for the PMPM payment. Combined, these policy changes helped expand the number of providers affiliated with BHHs to 27 by the end of 2015, serving 4,418 enrolled MaineCare beneficiaries. Among the four ACs serving 45,000 MaineCare beneficiaries in 14 communities, one more than doubled its number of affiliated practices between its Year 1 and Year 2 contracts with the state, and at least two will be adding more practices in Year 3 (starting mid-2016).

Maine's SIM Initiative continues to strengthen delivery system changes through investments in learning collaboratives, health information technology, and provider feedback reports. The SIM Initiative has sponsored learning network sessions for health homes and BHHs. In addition, SIM Initiative activities in 2015 and early 2016 include connecting behavioral health providers to Maine's designated HIE. By early 2016, 20 behavioral health organizations received SIM-funded assistance to connect successfully to the HIE, and half could contribute data to the HIE. The state also advanced data sharing among primary care and behavioral health providers, developed an electronic notification system to alert MaineCare managers when patients use the emergency room (ER) or inpatient hospital services, created a clinical dashboard to help MaineCare target case management services for at-risk patients, and established electronic quality and cost reports to allow providers to compare their performance against that their peers.

3.3.2 Challenges in multipayer delivery system transformation, sustaining HIE connections, and attaining early impact on Medicaid cost and utilization

Commercial payers in Maine had been developing their own health care reforms prior to the SIM Initiative, which has limited multipayer action on delivery system and payment models. The primary delivery system reforms under Maine's SIM initiative, BHHs and ACs, are Medicaid focused. The state has used SIM funding to support work with commercial insurers to develop a voluntary growth cap that limits the rate of increase in monthly payments for commercial ACOs. It also has supported the efforts of a workgroup on value-based insurance design to identify best practices for improving the quality of health coverage in the state. As of early 2016, commercial payers had not implemented the voluntary growth cap, instead pursuing their own reform agendas, and SIM Initiative support for the VBID group ended in early 2016 as part of a broader effort to refocus activities for the remainder of the test period.

BHHs do not have the resources to maintain electronic health records (EHRs) needed to connect to the state's HIE. Maine has supported the connection of behavioral health organizations to the HIE through the SIM Initiative, but BHHs have expressed concern about the cost of maintaining EHRs and the HIE connection fees. Without additional financial investments, some BHHs reported that they may not be able to either sustain an EHR or the connection to the HIE. The state is investigating options for decreasing the cost of connection.

With 1 year of test period data available, observable statewide changes in Medicaid cost and utilization measures are limited. Improved care coordination should in turn decrease utilization of emergency rooms for avoidable events that could be managed within another setting and reduce the need for more expensive care like inpatient hospital stays. With fewer than 20 percent of Medicaid beneficiaries reached by PCMHs, BHHs, or ACOs beginning in 2014, the time period for analysis of changes in utilization and expenditure, it may be premature to expect changes in these trends among all state Medicaid beneficiaries. The interim quantitative analysis shows a statistically significant declining trend in inpatient admissions among Medicaid beneficiaries statewide during the test period (through 2014). However, measures of emergency department visits, 30-day readmissions, and total per member per month payments were not statistically significant. These interim results indicate that the SIM Initiative had a relatively limited impact on the Medicaid population as of 2014.

3.3.3 Lessons learned

Stakeholder consultation can inform payment rates. MaineCare received feedback from stakeholders that managing children in a BHH required the same amount of time and effort as managing adults. Medicaid initiated a rate review process, which led to a new payment rate of \$394.20 PMPM that applies to both adults and children, up from \$365.00 PMPM for adults and \$322.00 PMPM for children. Since making this change, the number of behavioral health homes

increased to 27 in 2016, with 287 participating providers, serving over 4,400 Medicaid beneficiaries.

Flexibility allows for a refocus of SIM Initiative priorities. Maine narrowed the scope of its delivery-system reform initiatives for the remainder of the SIM Initiative. The SIM Maine leadership team recognized that priorities shift over time and that goals and objectives set at the beginning of the SIM Initiative needed to be reassessed. Members of SIM Steering committee formed the Strategic Objective Review Team (SORT) to review progress made in each of Maine's SIM objectives. Based on recommendations from the SORT review, some SIM projects will not continue for the remainder of the SIM Initiative while others will. Further, the SORT review recommended key adjustments to areas expected to provide good return on SIM investments, namely a stronger focus on improving diabetes care based on the effective use of claims-based data to guide continuous quality improvement, and on reducing care fragmentation by piloting a predictive analytics tool that will allow providers to target the highest service utilizers for proactive care management. The state views these activities as having the greatest potential for improving health care cost, quality, and utilization.

3.4 Massachusetts

Between April 2015 and March 2016, Massachusetts continued to support 28 primary care clinician practices (PCCs) covering 62 sites that participated in the PCPRI. PCPRI was successful in driving behavioral health integration and serving as a test case for development of patient-level reports to support practices in their reform efforts. One of the key challenges the state faced was scaling PCPRI to the entire Medicaid population, which was largely the result of the lack of participation from any Medicaid managed care plans. In light of this setback, the state shifted its focus from the PCPRI effort to soliciting feedback and designing a Medicaid Accountable Care Organization (ACO) model that is strongly integrated with Medicaid managed care plans. The new model is anticipated to launch with a small group of providers in December 2016, and then go statewide in the fall of 2017.

Key Results from Massachusetts' SIM Initiative, April 2015—March 2016

- Massachusetts shifted the focus of its SIM initiative from the Primary Care Payment Reform Initiative (PCPRI) to designing a new model based on Medicaid ACOs with extensive stakeholder engagement. The new model incorporates lessons learned from PCPRI, which the state was unable to scale because of limited provider and payer participation. The state conducted extensive stakeholder engagement in the design phase and expects the ACO model to move MassHealth into closer alignment with alternative payment methods used by private payers in the state.
- Provider enrollment into PCPRI ended but the initiative continued and was credited with driving integration of behavioral health with primary care in 28 participating practices with 62 sites. With SIM Initiative funds, PCPRI supported practices in achieving transformation milestones and spurred improvements in patient-level reporting.
- Massachusetts directed SIM Initiative funding to support health care transformation through expansion of two population health initiatives and use of the Mass HIway, the state's health information exchange. The electronic referral (e-Referral) initiative (electronic referrals between primary care and community resources) was expanded from 4 to 14 sites, sustainable funding for the Massachusetts Child Psychiatry Access Project (MCPAP) was identified, and SIM Initiative funding for MCPAP was shifted to a new MCPAP for Moms program targeting postpartum mothers. New Mass HIway initiatives included streamlining and simplifying the process for connecting to the HIway, clarifying the state's policy on opting in and out of the HIway, and the planning and development of a new admission, discharge, and transfer notification service to expand the HIway's functionality.

Massachusetts' strategies to support delivery system and payment models. During the same period, the state also directed resources toward expanding its e-Referral program to additional sites as well as the Massachusetts Child Psychiatry Access Project (MCPAP) to postpartum mothers. MCPAP is a telephonic consultation initiative that enhances the capacity of pediatricians and primary care physicians to deliver behavioral health services to children and

postpartum mothers. The state also refined its data infrastructure to support the upcoming ACO participants based on lessons learned from PCPRI and is in the process of increasing the use and functionality of the Mass HIway (the state's HIE) through efforts such as streamlining the process for connecting to the HIway and clarifying the state's policy for opting in and out of the HIway.

A quantitative analysis of health care claims data shows that by the end of 2015, no reductions in utilization occurred statewide for the Medicaid population, the focus of SIM Initiative work, as would be expected given the limited reach of PCPRI. However, there was a decrease in overall expenditures, relative to the in-state comparison group of the commercially insured population⁸ over the same time period. The full Massachusetts report is available in *Appendix A*, including a fuller discussion of these results. Data on measures of utilization and expenditures available from statewide claims-based analyses for the Medicaid population are available in *Appendix B.1*.

3.4.1 Successes in developing data reports for providers, designing ACO model, and expanding population health initiatives

PCPRI drove practice change through behavioral health integration and patientlevel utilization reports. PCPRI practices achieved important milestones related to the integration of primary care and behavioral health services, such as new processes to ensure follow-up after a behavioral health–related hospital admission, and ensuring access to mental health consultations. State officials credit SIM funding with supporting the creation and development of patient-level reports designed to help providers more effectively identify high-risk patients. PCPRI providers are using these reports to develop data dashboards and update certain quality improvement processes for care delivery to patients with the most complex conditions. State officials intend to create similar reports for providers participating in the forthcoming ACO model.

Massachusetts engaged in an extensive stakeholder engagement process to inform the design of the Medicaid ACO model. The state solicited feedback from integrated health care systems, managed care organizations, provider associations, consumer advocates, and community-based organizations with the goal of developing a more inclusive Medicaid ACO model. The state organized a series of listening sessions to inform the public of its health care reform plans and created eight stakeholder workgroups of payers, providers, and community groups to gather input and feedback on critical design elements. The process received positive feedback from the stakeholder community. The timing of these events coincided with a new

⁸ We used an in-state comparison group of commercially insured to control for any secular trends in the state because Medicaid data from the comparison group were not available. The PCPRI program is targeted to providers who primarily serve Medicaid populations, so we decided that it was reasonable to assume that the commercial population would not be touched by the SIM Initiative in Massachusetts during this reporting period.

administration in Massachusetts and a new SIM project team hired to facilitate execution of a revised health care transformation plan for the remainder of the SIM award period.

Massachusetts expanded two of its original SIM Initiative activities—e-Referral and MCPAP. The e-Referral system connects primary care organizations with community-based resources that offer a variety of health and wellness services. State officials credit the e-Referral system with helping to build stronger connections between primary care providers and local community organizations. The state expanded the number of clinical organizations participating from four to 14. The state intends to further expand the program in 2016-2017 by establishing linkages with Boston public schools. According to state officials, the percentage of pediatricians using MCPAP services has increased from 62 percent in state fiscal year 2014 to 67 percent in state fiscal year 2015. For the remaining period of performance, state SIM officials intend to expand the program to postpartum mothers (MCPAP for Moms), which will deliver psychiatric support to perinatal providers and other clinicians treating new moms with postpartum depression.

Massachusetts took initial steps to sustain its SIM-supported strategies. The state plans to fund start-up and for a limited time, continuing costs associated with its ACO initiative, via two investment programs: (1) the Infrastructure and Capacity Building (ICB) grant program, authorized through the state's current Medicaid Section 1115 Research & Demonstration Projects waiver ending June 30, 2017, and the federal Delivery System Reform Incentive Payment (DSRIP) program, authorized through the state's next 1115 waiver extension that is slated to begin July 1, 2017. Over time, the state anticipates that shared savings accrued from implementing value payment in its ACO model will sustain long-term operations. The state has already secured sustainability for MCPAP through a surcharge on commercial health care plans, and state officials have discussed the possibility of imposing a user fee on providers to sustain its e-referral program.

3.4.2 Challenges in provider participation in the PCPRI and Mass HIway

Massachusetts did not achieve expected enrollment in the PCPRI. The state opted to discontinue enrollment of new PCCs in PCPRI as of January 2015, although it allowed the 28 participating PCCs to add additional sites. Two of the PCCs added an additional 15 sites, bringing total participating sites to 62. Total enrollment in the program reached 90,388 Medicaid beneficiaries. Reasons for the low participation include lack of participation by Medicaid managed care organizations and lack of provider take-up among the PCCs. Some of the reasons for the lack of participation among managed care organization included concerns about the validity of data provided by the State, complications related to the state health insurance exchange, the emergence of expensive Hepatitis C drugs, and the accountability for total cost of care being borne by the primary care provider alone. State officials said that under these

circumstances, the plans had little interest in negotiating a contract amendment to add PCPRI as a contractual requirement.

Massachusetts did not achieve the desired provider uptake of the Mass HIway. The state shifted its health information technology (health IT) focus from developing numerous systems to the current focus on increasing the use and functionality of the Mass HIway, the statewide state-sponsored HIE. Although most hospitals in Massachusetts are connected to the HIway, only 9 percent of total provider organizations are connected as of March 2016. Mass Health convened a cross-agency strategic planning work group in June 2015 to assess barriers to accessing the HIE and recommend solutions for improving connectivity. The work group identified three critical barriers to adoption: (1) the complexity of connecting to the HIway, (2) provider confusion surrounding the state's policy on patient consent, and (3) the limited functionality of the HIway. Massachusetts proposes to address these barriers by streamlining and simplifying the process of connecting to the HIway; clarifying opt-in provisions through regulations; and adding tools to increase the functionality of the HIway, such as an Event Notification System to alert providers when their patients are admitted, discharged, or transferred from hospitals to support provider efforts to better coordinate care and facilitate transitions.

3.4.3 Lessons Learned

Massachusetts incorporated lessons learned from PCPRI into the design and planning of Medicaid ACOs, in part by offering providers multiple ACO models from which to choose . One of the lessons learned from PCPRI was the need to provide better data to support providers' management of their patient panels. Massachusetts also incorporated feedback from providers who wanted to participate in alternative payment methods but opted out of PCPRI because they wanted to (1) take on more risk than the model allowed, and (2) have hospitals and primary care providers share accountability. Based on this feedback, MassHealth opted to offer three different ACO models, enabling providers to select a model that best matches their capabilities and risk tolerance.
3.5 Minnesota

Minnesota's SIM Initiative aims to "expand patient-centered, team-based care through service delivery and payment models that support integration of medical care, behavioral health, long-term care, and community prevention services" (Accountable Communities for Health Grant Projects, 2016). Specifically, the SIM Initiative is (1) accelerating development of Integrated Health Partnerships (IHPs), an ACO model that serves Medicaid beneficiaries under age 65 and builds off the state's existing health reform efforts; (2) expanding health care homes (HCHs); (3) funding Accountable Communities for Health (ACHs), which are partnerships between IHPs, or other ACO-like entities, and community-based service providers; and (4) expanding exchange and use of health information, technology and data analytics across care settings through grants and development of an e-Health roadmap. Parallel to this work, Minnesota also established BHHs under Medicaid, which took effect on July 1, 2016.

Key Results from Minnesota's SIM Initiative, April 2015–March 2016

- Between 2015 and 2016, Minnesota nearly doubled the proportion of the Medicaid population receiving health services from IHPs (to 44 percent) and increased provider participation in IHPs. Minnesota's flexible IHP participation options and its use of SIM-funded grants made participation by a wider variety of practices easier.
- Minnesota's SIM Initiative has had success engaging providers, but challenges in involving other stakeholders. Providers are participating in health care system transformation efforts through SIM-funded grants and voluntary participation in IHPs. Yet, relationships with other stakeholders present challenges. For example, in task forces, commercial payers do not share insights on issues such as payment reform strategies, because of concern that they may reveal proprietary information to their competitors. Working within SIM-supported ACHs, health care providers report they underestimated the effort required to establish formal working relationships with their community partners.
- Minnesota's use of policy levers indicates interest in sustaining SIM-initiated efforts. Minnesota is using SIM funds to prepare practices for participation in newly legislated behavioral health homes. A new Medicaid state plan amendment also adds new flexibility to the IHP model, such as adjustments to the attribution methodology that increase its accuracy.

Minnesota's strategies to support delivery system and payment models. As of March 2016, after 2.5 years of implementation, Minnesota continues to expand provider participation in its reform efforts, by adjusting its IHP model and continuing to provide a variety of technical assistance to providers. Considering the IHP model successful, the state has amended its Medicaid plan to extend the ongoing IHP demonstration. Another state plan amendment (SPA) implementing BHHs took effect in July 2016, with practice transformation grants successfully preparing interested providers, as evidenced by 12 practices being certified and ready to provide services on the first day BHHs were implemented. Despite these successes, coordination with the commercial sector is limited to such issues as aligning around concepts such as appropriate

data analytics to providers (rather than on designing and advancing delivery system and payment models), and implementation of ACH models among grantees has progressed slower than expected. The full Minnesota report is available in *Appendix A*.

3.5.1 Successes in expanding provider participation, learning activities, and plans for model sustainability

Minnesota expanded provider participation in payment reforms with a flexible model for IHPs. Participation in the IHP demonstration is possible in two ways: as an "integrated IHP" or a "virtual IHP." The integrated IHP model is aimed at larger systems that have the capacity to deliver a broad range of services and can commensurately bear two-sided financial risk. The virtual IHP model allows for collaborative relationships among smaller provider groups without a hospital affiliation (such as small, rural, and independent providers), with one-sided financial risk. The state now contracts with 19 IHPs serving over 220,000 Medicaid beneficiaries under age 65, out of just over one million beneficiaries enrolled in Medicaid as of February 2016 (CMS, 2015). In addition, Minnesota made minor updates to the IHP attribution model to improve the model's accuracy and reduce beneficiary churn between performance periods. Despite having the opportunity to earn additional revenue through shared savings, however, state officials noted the high initial cost of participation, such as workflow changes and infrastructure investments, led some IHPs to express concerns about the financial stability of their organizations if they continued to participate.

State officials report that IHPs are beginning to reduce costs and utilization. Preliminary calculations show that in the second year of the program (2014), the first and second IHP cohorts saved an estimated \$61.5 million compared to their projected costs (Minnesota Accountable Health Model, SIM Minnesota, 2015), resulting in all nine IHPs receiving interim settlements totaling \$22.7 million (Spaan, 2016). IHPs also reported an increase in the number of outpatient visits, coupled with a reduction in emergency room (ER) visits that did not lead to a hospitalization and inpatient hospitalizations. State officials attribute these results to IHPs' ability to provide patients with the "right care" in the "right place" at the "right time," though these results have not been confirmed by an independent evaluation. Most respondents to a statewide Medicaid consumer survey conducted in Minnesota in 2015 identified a regular provider of care and felt that, within care teams, office staff were informed of their pertinent health information and their usual provider knew their most important medical history. Having a regular provider of care that is knowledgeable about health information is one potential factor that would contribute to patient-centered care.

Together, state-reported utilization changes among Medicaid beneficiaries served by IHPs and the federal SIM evaluation's consumer survey results suggest that Medicaid beneficiaries in Minnesota are experiencing some degree of coordinated care. Although we do not have any test period data for Minnesota Medicaid beneficiaries, we did find a statistically significant decrease in ER visits for the commercially insured and Medicare beneficiaries in Minnesota statewide as compared to its comparison group with 1 year of data from the SIM Initiative test period (fourth quarter 2013 through fourth quarter 2014). These results are most likely indicative of other pre-SIM activities, such as enhanced access to primary care through HCHs, which as of 2016 served 73 percent of Minnesotans statewide. Nonetheless, as the SIM Initiative continues its emphasis on access to and coordination of care under IHPs for the Medicaid population, the effects may be observable in all populations.

Minnesota has focused SIM-funded technical assistance to support a range of providers participating in delivery system reform. In 2015 and early 2016, Minnesota continued to use SIM funds to support providers through grants focused on: (1) increasing the use of health IT and use of data analytics to manage costs and improve quality; (2) accelerating clinical data exchange; (3) increasing participation in HCHs; and (4) testing the role of new types of professions in the health care workforce, such as community health workers and community paramedics, The state also is using SIM funding to support provider learning collaboratives that bring together stakeholders with similar goals to learn from experts and facilitate the exchange of best practices. The first of these collaboratives, an ACH-specific learning collaborative, concluded in February 2016. Additional events are scheduled into 2017. The state conducted an ACO baseline assessment in 2015 that identified opportunities for improvement in the technical assistance the state provides.

Minnesota is leveraging SIM funding to integrate behavioral health using Behavioral Health Homes. The BHH model, which began in July 2016, aims to promote the bidirectional integration of primary care and behavioral health for Medicaid adults with serious and persistent mental illness and children with serious emotional disturbance, building off learnings from the HCH model. SIM-funded practice transformation grants dedicated specifically to supporting prospective practices develop the technical infrastructure and capacity necessary to become BHHs. Twenty-four practices were awarded these grants and typically used them for clinical systems and workflow redesign, staff training, and development of quality improvement infrastructure. As of February 2016, 14 of these practices have submitted applications to become certified BHHs.

Minnesota has committed to its reforms by amending its state Medicaid plan. The state reports that all six IHPs in the first cohort, whose initial agreement ended at the end of 2015, are willing to continue the IHP demonstration and sign agreements for an additional 3-year period. Because of this support, state officials amended their current Medicaid state plan to extend the program beyond a 3-year demonstration. A SPA to establish BHHs independent of the IHP model has already been approved.

3.5.2 Challenges in engaging commercial payers and developing relationships across medical and social service sectors

Minnesota has invested in getting a diverse array of perspectives; however, there is minimal alignment in implementing specific payment models across public and private payers. Groups such as the SIM Multi-Payer Alignment Task Force and the SIM Community Advisory Task Force worked collaboratively to establish ongoing priorities, including health information exchange and data analytics, alignment of incentives with desired outcomes, and community partnerships and authentic engagement. Though private payers have participated in SIM efforts through involvement in SIM Task Forces, and are engaging in delivery system and payment reform efforts independently, efforts to coordinate or align these initiatives with Medicaid initiatives have been minimal. Consistent with lack of alignment, our statewide analysis of commercially insured individuals does not show spillover effects on most utilization and expenditures from Medicaid's investment in delivery system and payment reform.

Efforts to focus on population health at the community level are stymied by challenges that health care and community service providers face in developing rapport with each other. ACHs, in partnership with IHPs or another accountable care–like entity, are testing delivery system reforms for narrowly defined populations, by strengthening health care and community partnerships, with the goal of improving population health. Over the past two years, individual ACHs have grown through developing more defined and collaborative relationships between their medical provider(s) and community organization partners, instituting governance structures, and developing population health plans. However, state officials have found that implementation for many ACHs has progressed slower than initially anticipated, because of limited resources and varying levels of experience in coordinating with community organizations. Specifically, state officials noted that medical providers were still learning how to work with community providers, and community providers remain concerned they would not be treated as true partners. Yet, medical and community providers continue to make progress in defining, developing, and implementing their working relationships.

3.5.3 Lessons learned

Providers vary, making flexibility to meet different needs important. The adjustments made in the IHP model are encouraging IHPs nearing the end of their initial 3-year contract to renew. The variety of technical assistance available to providers has helped Minnesota get different practices the specific types of assistance they need to be successful in an era of health reform.

Meaningfully engaging certain stakeholders can be challenging. Although Minnesota has brought its commercial players to the table in some respects, coordination between commercial payers and Medicaid has been minimal to date. For example, commercial payers were reticent to share their experiences on broad strategic questions or payment approaches in

Multi-Payer Task Force meetings because of concern about what that might reveal to their competitors. Minnesota attempted to address this concern by allowing participants to share written feedback to the state in advance that could be then be discussed anonymously within the group, but had limited success.

Legislation can be valuable in sustaining SIM Initiative work. Minnesota has used authority provided in state legislation to move forward with Medicaid SPAs, both to implement BHHs and to extend the IHP model beyond the initial demonstration period.

3.6 References

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3.7 Oregon

As of March 2016, 2.5 years after initial implementation of the SIM Initiative, Oregon continues to focus on reinforcement of the Coordinated Care Model (CCM) and spreading key features of the model to new payers and populations. The state succeeded in integrating CCM elements into health plans serving approximately 130,000 state employees and their families insured through the Public Employees Benefit Board (PEBB). SIM Initiative funding supports strategic efforts to facilitate the expansion of Patient-Centered Primary Care Homes (PCPCHs), marking success in surpassing the state goal of recognizing 600 practices by first quarter 2016.

Key Results from Oregon's SIM Initiative, April 2015–March 2016

- As of March 2016, 50 percent of Oregonians receive health care services that contain elements of the CCM. Oregon has used a significant portion of its SIM funds to establish learning collaboratives and provide technical assistance to implement the CCM in the state's recently developed delivery system innovations, Medicaid Coordinated Care Organizations (CCOs) and PCPCHs. Virtually all of Oregon's Medicaid beneficiaries are enrolled in CCOs with many being seen by primary care providers who are PCPCHs, and some state employees and commercially insured individuals are also being seen by PCPCHs.
- Although Oregon has made inroads in the expansion of the CCM to Medicaid and state employees, continued spread of the model to other markets has slowed. CCM implementation in public educators' health plans was delayed for 2 years, with implementation now set for the plan year 2017-2018, and indefinitely postponed in qualified health plans because of administrative and technological challenges. Further, even though early CCO results show reductions in hospital readmissions and avoidable ED visits among Medicaid beneficiaries, commercial payers have yet to adopt the CCM on a voluntary basis.
- State regulatory and legislative powers have been central to helping Oregon transform its health care system, but there have been limits. The state passed a number of laws pertaining to health care transformation, including bills to better align performance metrics across payers and to further develop health information technology infrastructure by allowing public-private partnerships. A proposed bill that would have required public and private payers to adopt value-based payment models for primary care, however, was eventually watered down to legislation calling for the convening of a voluntary multi-payer learning collaborative.

The largest spending category under the state's SIM Initiative, the Oregon Health Authority's Transformation Center, continues to support CCM implementation and spread by disseminating best practices and technical assistance, particularly around adoption of valuebased payments and integration of physical and behavioral health care. Other SIM-funded projects underpinning Oregon's delivery system change include practice transformation support, quality measurement and reporting, and development of health IT infrastructure. State officials believe that implementation of the Emergency Department Information Exchange (EDIE) to address unnecessary utilization of emergency services is one of the major health IT achievements of the SIM Initiative. The full Oregon report is available in *Appendix A.5*.

3.7.1 Successes in expanding new delivery models, health IT investments, and practice transformation assistance

Fostering Patient-Centered Primary Care Homes (PCPCHs) has been a successful strategy to spread the CCM. A total of 610 primary care clinics in Oregon are now recognized as PCPCHs, with more than 100 new practices becoming certified since 2014. This represents approximately 400 new individual clinicians, bringing the total of PCPCH certified clinicians to more than 2,400. A major feature of the CCM is using financial incentives to encourage individuals to go to PCPCH-certified clinics for care. Expanding the number of PCPCH clinics is thus critically important to CCM success. In an effort to achieve that goal, SIM funds have supported the PCPCH program staff, as well as the Patient Centered Primary Care Institute, charged with providing technical assistance to primary care practices seeking PCPCH certification.

Oregon is expanding CCM beyond the Medicaid population to a total of 50 percent of Oregonians. Oregon has used regulatory authority to require CCM-related reforms in health plans offered to state employees. As of January 2015, approximately 130,000 PEBB members were receiving benefits featuring selected CCM elements. Oregon reports that as of March 2016, 50 percent of Oregonians receive care containing elements of the CCM, meeting its SIM Initiative goal. This calculation includes the 87.6 percent of Medicaid beneficiaries who are enrolled in a CCO, all state employees, and commercially insured individuals who the state estimated as being seen by a PCPCH certified primary care provider.

EDIE and PreManage may be the biggest health IT accomplishments of the Oregon SIM Initiative. EDIE is designed to collect and share emergency department (ED) data, helping hospital staff identify patients who use EDs often or have complex health needs and direct them to more appropriate care setting. The majority of the hospitals in the state are connected. EDIE's companion tool, PreManage, which enables health plans, CCOs, and providers to receive real-time notifications when a member utilizes the ED. Both these tools hold promise for reducing emergency services utilization and improving care coordination, population management, and discharge planning.

Oregon is taking steps to sustain health system transformation momentum after its SIM Initiative ends. Among other things, the state has been working on renewing its Medicaid Section 1115 waiver, set to expire June 2017, in which the state is considering proposing policy changes that would allow CCOs to continue serving Medicaid beneficiaries. As of March 2016, state officials were also considering trying to insert some support for the Transformation Center into the waiver renewal. In addition, the Oregon legislature appropriated funds in the state's 2015-2017 budget to keep the Transformation Center open temporarily through December 2017 after SIM funding ended in September 2016. Oregon also hopes to continue the spread of the CCM by pushing out more elements of the model to state employees' health plans and bringing public educators under the model, and eventually spreading to the broader market.

3.7.2 Challenges in private payer involvement, implementing payment models with two-sided risk

Despite meeting its goal of 50 percent coverage, Oregon's vision of expanding the CCM model to other state employees and commercially insured populations has fallen short. This can partly be attributed to the drawn-out negotiations in extending the CCM contractual requirements for health plans serving Oregon educators. An additional setback is the indefinite delay of CCM implementation in qualified health plans participating in Oregon's Health Insurance Marketplace. This postponement was driven by complications with the 2013 launch of the Marketplace. Moreover, other than the state convening a CCM Alignment Work Group to develop strategies and tools to spread the CCM tenets to the private market, little progress has been made in getting commercial payers to adopt the CCM. Regardless of the failure to get private payers to participate in a new payment model, as mentioned above, the state considers a large share of the commercially insured as touched by the CCM because they receive care from a recognized PCPCH (see above).

Pay-for-performance models, with no downside risk to providers, are the most common form of alternative payment model among CCOs. CCOs are required by the terms of the 2012 amendment to Oregon's Medicaid Section 1115 waiver to implement an alternative payment model⁹ of their choice in an effort to move from fee-for-service (FFS) to value-based payments. After relatively limited focus on payment reform at the onset of the SIM Initiative, CCOs recently started implementing a range of alternative payment methods, from pay-for-performance to bundled payments. Nevertheless, the most common alternative payment method is still a pay-for-performance model. Fifteen out of the 16 CCOs have implemented such a model, under which performance payments are made for meeting quality or financial targets with no downside risk. However, performance payments simply overlay the current FFS payment system that many CCOs continue to use to pay providers, potentially limiting the impact of this type of alternative payment method. As of early 2016, the share of CCO payments to providers that were FFS was 47 percent, and although the state reports having changed its methodology for calculating this measure, this appears to be an *increase* compared to the end of 2014, when the share was 43 percent (Oregon Health Authority report to CMS, 2016).

⁹ In this section, we use the term "alternative payment model or method" as it is defined in Oregon, and not under CMS's Quality Payment Program established by the Medicare Access and CHIP Reauthorization Act of 2015.

The lack of payment models to support behavioral health integration with primary care is one of the critical challenges providers face, but some integration is occurring. Of the 50 alternative payment methods that CCOs recently put in place, less than 20 percent target behavioral health providers. Still, behavioral health integration efforts, varying from planning stages to full-fledged implementation, are under way across Oregon communities. The state's assessment of the level and extent to which integration of behavioral health into primary care is taking place revealed that implemented models range from collaborative arrangements between primary care and behavioral health providers to full integration of behavioral specialists in primary care clinics. To strengthen the integration efforts in CCOs, Oregon has invested SIM funding in providing technical assistance to CCOs and has sponsored learning collaboratives pertaining to behavioral health integration.

3.7.3 Lessons learned

The state's purchasing power is an integral lever in promoting the spread of the CCM, but administrative challenges can slow adoption of the model. As described above, the state has successfully used its purchasing power to spread the CCM to state employees and their families insured through PEBB in January 2015. However, the plans to spread the CCM to the Oregon Educators and Benefit Board (OEBB) were delayed by more than a year because of turnover at OEBB and the complexity of negotiations with a group consisting of 900 different employee groups (part of an estimated 500-600 collective bargaining units).

Legislation is a viable mechanism for helping Oregon formalize its health care transformation efforts, but it does not always succeed. A number of bills have passed, particularly in the 2015 legislative session, supporting and advancing SIM Initiative objectives. These include legislation promoting primary care payment reform, aligning metrics across payers, and further developing health IT. Although health system transformation seems to enjoy legislative support, bills calling for some more sweeping reforms have been tempered before signed into law. For example, one bill originally called for requiring public and private payers to adopt alternative payment methods for primary care. Instead, the law that was passed, Senate Bill 231 convenes a voluntary multi-payer collaborative "to advise and assist the Oregon Health Authority in developing a Primary Care Transformation Initiative to develop and share best practices in technical assistance and methods of reimbursement that direct greater health care resources and investments towards supporting and facilitating health care innovation and care improvement in primary care."

Technical assistance should help cultivate relationships, teach practical skills, and be responsive to recipient needs. Through its work of promoting the CCM implementation, the Transformation Center has learned some important lessons and is refining its approaches to technical assistance as a result. Participants in learning collaboratives are divided into smaller groups to create more networking opportunities and foster relationship-building. To help spread innovative practices, the collaboratives are also being redesigned to not only disseminate new information but give participants skills to implement what they learned and spread best practices to others. Lastly, the Transformation Center has recognized the variable nature of CCOs' technical assistance needs because of the unique communities they serve and their level of experience in providing care; the Center is also examining strategies for making technical assistance targeted to each CCO's needs.

3.8 References

Oregon Health Authority report to CMS (2016). Metric 'Proportion of CCO payments that are non-FFS.'

3.9 Vermont

Between April 2015 and March 2016, Vermont continued to implement several components of its SIM Initiative, with a major focus on its primary mechanism for payment reform—the Shared Savings Program (SSP), a value-based payment model implemented by three ACOs in the state. The populations reached and provider participation increased for both Medicaid and commercial SSPs.

Key Results from Vermont's SIM Initiative, April 2015–March 2016

- Vermont's strong stakeholder engagement has led to sustained progress of its valuebased payment models under the SIM Initiative. Through collaborative planning, Vermont gave providers flexibility in how they participate in the SIM-supported Medicaid and commercial ACO SSPs, including an initial option to take on one- or twosided risk through the Medicaid SSP. Learning from stakeholder experiences with these models, and with the pre-SIM Medicare SSP, Vermont designed its All-Payer Accountable Care Organization Model (agreement with CMS approved in fall 2016). The All-Payer ACO Model will strengthen and build upon the ACO SSP delivery model after the end of the SIM Initiative.
- Vermont's SIM Initiative has completed multiple projects to expand connectivity and improve data quality. Vermont is strategic in its work to develop infrastructure and data analytics in support of payment models, care coordination, and behavioral health. The state first conducts analyses to identify the gaps in infrastructure and data quality, and then implements remediation efforts. This methodical process, in addition to the complexity of engaging multiple health IT systems, has made for a slower pace of progress than Vermont envisioned.
- After 1 year of the SIM Initiative test period, findings for the Vermont Medicaid population show a decrease in emergency room (ER) visits not leading to a hospitalization in 2014, relative to the Medicaid population in the comparison group (Connecticut and Iowa). These early findings may be a result of the pre-SIM Blueprint for Health PCMH model, which by 2014 (time period of analysis) had reached approximately 85 percent of Medicaid beneficiaries, rather than the newly implemented SIM-supported Medicaid ACO SSP, which reached 49 percent of the Medicaid population in 2015 and 62 percent in 2016. Populations served by the Medicaid ACO SSP overlap significantly with those participating in the Blueprint for Health.

Vermont's strategies to support delivery system and payment models. Most significantly, Vermont has invested in the areas of health IT and practice transformation, which are considered essential to enabling the state's payment and delivery reforms. Simultaneously, Vermont has focused on sustainability of its SIM reform efforts, a major component being its planned All-Payer ACO Model proposal, which would implement a single payment model similar to the current ACO SSPs and the federal Medicare Next Generation ACO model. The

All-Payer ACO Model will encompass Medicaid, Medicare, and commercial payer participation. The full Vermont report is available in *Appendix A.6.*

3.9.1 Successes in stakeholder engagement and health system transformation

Vermont engages stakeholders in a shared vision and builds on preexisting and ongoing efforts to transform health care delivery. As outlined in *Figure 3-1*, Vermont continues to leverage its SIM efforts to move the state from its pre-SIM situation to where it wants to be post-SIM implementation—introducing and refining new models and identifying and addressing gaps along the way. Vermont has maintained its strong stakeholder commitment throughout the SIM Initiative, including multi-payer participation in its models and broad community involvement in work groups.





PCMH = patient-centered medical home; SSP = shared savings program.

More than half (56 percent) of Vermont's population¹⁰ **is attributed to providers receiving value-based payment.** Additionally, 95 percent of primary care physicians and 38 percent of all physicians practice in NCQA-recognized PCMHs. Although individuals and providers have increased participation in the recently established Medicaid or commercial ACO SSPs throughout 2015, the Blueprint for Health, Vermont's preexisting Advanced Primary Care Practice model, continues to have a larger number of commercially insured and Medicaid beneficiaries than the ACOs. The Medicare SSP, which was established pre–SIM implementation, has a similar number of Medicare beneficiaries to the number participating in a PCMH.

Stakeholder work groups supported by the SIM Initiative have helped align payfor-performance (P4P) activities with other payment reform. The SIM Initiative supports continued evolution of P4P incentives delivered through the Blueprint for Health, specifically by

¹⁰ State-reported percentage based on an eligible population, such as excluding incarcerated individuals and individuals serving in the military.

enabling discussion of how to sustain and align payments so that they support the same goals as the SSPs and ultimately the All-Payer ACO Model. The All-Payer ACO Model would implement a population-based payment model and encompass Medicaid, Medicare, and commercial payer participation. Under this model, provider payments would be structured using the Medicare Next Generation's (Next-Gen) value-based payment models, such as capitation or global budgets.

Quality measures that serve as the basis for P4P payments from January through June 2016 have been aligned with those used for the ACO SSP program. Additionally, stakeholders engaged in the SIM Initiative were included in discussion of community health team payment modifications, which were implemented in July 2015 to reflect payers' market share. In 2015, the governor included continued support for Blueprint for Health P4P payments as part of the budget approved by the state legislature.

Vermont reports its Medicaid SSP achieved \$14.6 million in total savings in Year 1 (2014). Half of this amount represents the ACOs' potential share, and on the basis of financial and quality performance, the state distributed \$6.7 million to the two participating ACOs. OneCare Vermont, the state's largest ACO, earned 100 percent of its savings based on its quality score; Community Health Accountable Care, the newest ACO comprising FQHCs, earned 85 percent of its savings based its quality score. Although none of the three ACOs participating in the commercial SSP or in the pre-SIM Medicare SSP earned savings in the corresponding time period, all are committed to the model's quality focus.

Statewide Medicare claims data show statistically significant decreases in all-cause acute inpatient admissions and ER visits that did not lead to hospitalization, and reduced increases in total PMPM payments and professional PMPM payments. Health care delivery system and payment model transformation aims to improve care coordination efforts, which should in turn decrease utilization of emergency rooms for avoidable events that could be managed within another setting, and reduce the need for more expensive inpatient care. The decreases in utilization and lower increases in expenditures, relative to Vermont's comparison group, are consistent with what we would expect if the care coordination and care management efforts in Vermont-via the Blueprint for Health, the Medicare ACO SSP, and the SIM Initiative—are effective. The results for the Medicare population, for which efforts to change delivery system and payment models pre-date the SIM Initiative, and have reached a large proportion of the population participating in both models, offer early evidence that similar expanded interventions in the Medicaid and commercially insured populations -may achieve similar results in future years. Vermont aims to attain continued positive outcomes by broadening the reach of multi-payer and multi-model reform through the Blueprint for Health and the proposed All-Payer ACO Model.

Vermont strengthened its health IT infrastructure to support payment and delivery reforms. Vermont strategically uses its SIM funds to first conduct gap analyses to identify and understand issues and then implement gap remediation activities to address those issues. In 2015, Vermont continued its ACO gap remediation work to improve the quality and quantity of data moving from providers' EHRs into and out of the Vermont Health Information Exchange (VHIE), enabling better assessment of SSP quality measures among ACOs. Vermont conducted new gap analyses on the technical capabilities of LTSS and behavioral health providers, groups that do not qualify for federal meaningful use support. Its gap remediation efforts for these providers include improving connectivity to the VHIE and the quality of data being submitted. Vermont is also developing a behavioral health–specific data repository to enable aggregating, analyzing, and sharing these data with appropriate entities.

Vermont is disseminating care management and population health strategies through learning collaboratives. The Integrated Communities Care Management Learning Collaborative effort launched in late 2014, with the intent to engage as many patient-facing care providers within each community as possible, to test interventions aimed at serving individuals with complex care needs. Under this effort, collaboratives have expanded from 3 communities to 11. During this period, Vermont also engaged in a Core Competency training series, which provided training and resources for staff working on the "front line" of care coordination. Vermont also developed the collaborative-like Accountable Communities for Health (ACH) Peer Learning Lab, slated to launch in May 2016, to provide support for statewide interest in an ACH model.

3.9.2 Challenges in slower than anticipated progress on health IT and maintaining providers' participation in learning activities

Early evidence from our statewide analysis of Medicaid claims is mixed on whether Vermont's SIM-supported activities have affected the Medicaid population. We looked at utilization trends through third quarter 2014 (1 year of SIM test period implementation) and found a slight statistically significant decrease in ER visits. Our regression findings for other utilization measures were not statistically significant. On the expenditures measure, our regression analysis showed that Vermont expenditures increased while expenditures for the comparison group decreased. Because these are early test period results, they may be more attributable to preexisting Blueprint for Health PCMH efforts than to the Medicaid SSP.

There is little evidence that the state's investment of SIM funds in supporting the commercial SSP has had spillover effects on the Vermont commercially insured population. We looked at utilization trends through 2014—including all-cause inpatient admissions, ER visits, and 30-day readmissions among commercially insured Vermonters, using the MarketScan database of a portion of employer-based insurance claims in the state—and found no statistically significant difference in utilization trends over the baseline and SIM Initiative test periods

between Vermont and its comparison group. (We also looked at Vermont's all-payer claims database ([APCD], which includes the insurer participating in the ACO SSP, but no similar APCD comparison group data are available.) Measures of health care expenditures for the same population were similarly non-significant.

Although Vermont has initiated multiple activities developing and supporting health IT infrastructure, progress has been slower than anticipated. Complexities in the existing EHR systems and EHR vendor reluctance to participate in remediation efforts were identified as challenges. Provider readiness, including ability to bear high provider-side costs, was another barrier to progress. Privacy issues also slowed progress, as the state worked to navigate current laws that hinder or restrict data sharing of behavioral health information and access to data by providers that do not fit within the federal legal framework (such as Area Agencies on Aging and Councils on Aging).

Participation in learning collaboratives, ACH learning labs, and regional collaborations is challenging because of other health interests competing for time and resources. This appears to be a challenge shared across many of Vermont's providers who may lack the capacity, funds, or infrastructure necessary to fully engage in SIM activities. This in turn limits the extent to which care transformation strategies can be disseminated and implemented. Intentional alignment across initiatives has eased this challenge.

3.9.3 Lessons learned

Vermont's use of Medicaid and Medicare waivers and legislation are key policy levers in delivery system transformation. In the context of Medicaid, Vermont's program operates under the Global Commitment to Health Demonstration Waiver. Also, Vermont created its Hub-and-Spoke health home model for opioid-addicted individuals through a Medicaid State Plan option as part of the Affordable Care Act. Its proposed All-Payer ACO Model—Vermont's "next generation" of aligned Medicaid, Medicare, and commercial value-based payment reforms—features Medicare payment waivers, state innovation waivers, infrastructure payment waivers, and fraud and abuse waivers. The Vermont Legislature passed Act 113 in 2016, allowing the Green Mountain Care Board (GMCB) and the Agency of Administration to pursue waivers with CMS in support of the All-Payer ACO Model, and tasking the GMCB with oversight of ACOs.

Vermont reassesses and readjusts its scope and direction periodically, rather than moving forward with reform just for reform's sake. Vermont originally planned to implement ACO SSPs, EOC models, and pay for performance. The state SIM team then recognized it had a bandwidth issue in testing three reform models, both on the implementation side and in provider readiness and support. Vermont focused on its ACO SSP model successfully launching the Medicaid and commercial SSPs, refining its ACO SSP model through better alignment with the Blueprint for Health initiative and cross-ACO collaboration—thereby moving forward toward its proposed stronger All-Payer ACO Model.

Allowing providers flexibility in how they participate in ACO implementation in Vermont has facilitated ACO engagement in delivery system transformation. As an example, the state's three ACOs have very different populations and provider composition (hospital-based providers, FQHCs, and independent physicians). Through the SIM Initiative, these different ACO types have been able to participate as separate entities in any or all of the state's three SSPs—Medicare, Medicaid, and commercial. Ongoing cross-ACO collaboration facilitated through the SIM Initiative resulted in a tentative agreement giving ACOs the choice to merge into a single entity for Vermont's proposed All-Payer ACO Model—the next value-based payment iteration.

4. Lessons for Policymakers From Round 1 States

The experience of SIM Initiative Round 1 Test states may have particular relevance for other ongoing and future health system reform efforts at the state level. Policymakers can look to how Test states achieved certain successes of the SIM Initiative in this analytic period, 2015 and early 2016, including (1) leveraging policies and strategies intended to grow delivery system and payment models to reach more providers and consumers, (2) building the infrastructure and capacity necessary for delivery system and payment models' effective operation, (3) supporting efforts to address local issues or health priorities within statewide system reform strategies, and (4) learning and refining strategies based on stakeholder feedback and recognition of a changing environment.

Additionally, policymakers can learn from challenges Test states experienced, including (1) external factors that can hinder or facilitate multi-payer involvement, (2) difficulty in implementing policy levers only nominally within the state's control—such as changes in Medicaid policy and state employee health plan purchasing standards; (3) providers' concerns related to sustaining their participation in value-based payment models (VPMs); and (4) the availability and quality of data that would help improve care delivery.

4.1 Successes

SIM funds can enhance the use of policy levers for delivery system and payment reform. The SIM Initiative is testing the ability of state governments to use their policy and regulatory levers to accelerate statewide health care system transformation. We found that Test states are taking advantage of the synergy of funds and policy to implement and sustain existing VPMs. Examples include:

- Leveraging a goal set by the state legislature. In Massachusetts, SIM funds supported stakeholder engagement necessary to design a payment model (three types of accountable care organizations [ACOs]) that would allow Massachusetts Medicaid to reach the state-legislated goal of 80 percent of eligible Medicaid beneficiaries in state-defined alternative payment models by June 2019.
- *Building on state legislation*. In Minnesota, a 2015 state legislative amendment gave the state authority to establish Medicaid health homes to include BHHs, and SIM funds are supporting training to providers on how to become BHHs.
- *Influencing state budget allocations*. In Oregon, SIM funds established a Transformation Center to help Coordinated Care Organizations (CCOs) support practice transformation efforts; the state budget allocated funds to support the Center through 2017.

States can make policy changes to sustain VPMs or encourage new delivery system and VPM development. Policies can directly or indirectly foster an environment in which VPMs are easier to develop and implement. Direct policies can mandate participation in VPMs or provide funding for VPMs, while policies that are more indirect can establish state infrastructure in which VPMs can develop. Examples include:

- Using state regulatory authority. Arkansas used state regulatory authority to require qualified health plans in the Arkansas Health Insurance Marketplace to participate in the state Patient-Centered Medical Home (PCMH) model, which has been in place in the Medicaid program since 2014.
- *Stimulating state legislative action*. Vermont state legislation led to payment increases and pay-for-performance incentives for the SIM Initiative's Blueprint for Health, the state's PCMH model.
- *Encouraging information sharing about alternative payment methodologies.* Also in Oregon, 2015 state legislation requires CCOs and private plans to report their share of expenditures spent on primary care and removes certain antitrust concerns to allow payers to share best practices related to primary care alternative payment methodologies.
- *Instituting state oversight*. In Vermont, 2016 legislation supported implementation of an all-payer model for ACO implementation and the Green Mountain Care Board's oversight of ACOs in the state.

There are particular needs for infrastructure investment to accelerate statewide health care system transformation. This infrastructure focuses particularly on behavior change of medical and nonmedical providers, health information technology (health IT) resources for sharing clinical data, and data analytics for understanding the characteristics and health care needs of specific patient panels. Examples include:

- *Creating opportunities for practice learning and transformation.* States are investing SIM funds in assistance to providers, via direct grants to facilitate change (Minnesota, Oregon, Vermont), technical assistance vendors (Arkansas, Massachusetts, Minnesota, Oregon), and learning collaboratives (Maine, Minnesota, Oregon, Vermont). One common area for support is in helping providers interpret and use new quality and cost reports they are receiving as part of VPM participation. Another is to support behavioral health care providers, social services, and community organizations as they become increasingly integral to achieving improved health outcomes under new delivery system models.
- *Facilitating non-medical care provider involvement in delivery models*. States are using a variety of mechanisms to incorporate non-medical/physical health care providers as part of health care system transformation. Vermont supports Regional Collaboratives to guide medical providers, community organizations, and long-term

services and supports (LTSS) providers in addressing care delivery challenges. Minnesota's SIM Initiative awarded grants to Accountable Communities for Health (ACHs), which involve both medical providers and community organizations to address specific health issues on a local level. Through Medicaid policy, Massachusetts will set partnership prerequisites for medical, behavioral health care, and LTSS providers that Massachusetts ACOs will have to meet to qualify for startup funding. Massachusetts has also expanded its e-Referral system under its SIM Initiative to connect primary care with social service providers.

- Integrating and coordinating care using health IT. States are using SIM funds to connect providers to health information exchanges (HIEs), which is often important for the integration of behavioral health providers into system reform—whose health IT capabilities tend to lag those of other health providers (Arkansas, Maine, Minnesota, Vermont). Hospital event notifications to other providers and payers is another area of interest, such as how Oregon is leveraging the SIM-funded Emergency Department Information Exchange (EDIE) through use of PreManage, a tool that enables subscribers to view member/patient information from EDIE in real time.
- *Providing data analytics.* States are using data analytics to help providers make appropriate use of the data at their disposal—including Minnesota's data analytic technical assistance to its Medicaid ACOs, Maine's data quality reports for its BHHs, Arkansas's data analytic support for implementation of its episode of care (EOC) model, and MaineCare's clinical dashboard.

Within their statewide system reform strategies, Test states are finding it important to use SIM funds to support investments in services tailored specifically to particular populations or particular local issues. This strategy allows for delivery system change from the bottom up rather than statewide policy change. Examples include:

- *Community prevention*. A community prevention grant program in Oregon funds partnerships of CCOs and local public health authorities, targeting different prevention areas such as opiate overdose reversal, pregnancy screening and prenatal care, developmental screening, and tobacco cessation.
- *Child mental health.* The Massachusetts Child Psychiatry Access Project provides primary care providers with telephone consultation with psychiatrists to help diagnose and treat children, which the state is now expanding to include postpartum mothers.
- *Diabetes.* Maine is expanding the state's component of the National Diabetes Prevention Program.
- *Opioid addiction.* Vermont's Hub and Spoke initiative is expanding a health home program specifically for Medicaid beneficiaries with chronic opioid addiction.

Test states can be flexible enough to promptly change the focus of their SIM-funded health system reform strategies when indicated. The Innovation Center paired a relatively brief period of performance for the original SIM Initiative (3 years) and ambitious targets, requiring Test states to evaluate the initial range of activities they set out to do and refine activities as needed. Examples include:

- *Shifting when certain achievable proximate goals have been met.* Maine shifted the focus of its SIM Initiative away from original workgroups to foster multi-payer collaboration after the state met key goals (for example, when stakeholders achieved agreement on voluntary growth in annual risk-adjusted per member per month payments for commercial ACOs or when standardized forms providers would use when entering into value-based insurance design agreements with payers were completed).
- *Changing focus to streamline VPM implementation*. Even though Vermont had completed analysis of 50 EOCs planned for inclusion in its Medicaid program, for example, potential misalignment between these and the state's all-payer model led the state to eliminate further EOC work.

4.2 Challenges

External factors inevitably influence the potential to meet the SIM Initiative's goal of having 80 percent of a Test state's population served by providers working under VPMs. Multi-payer engagement—necessary to reach the 80 percent goal—remains elusive for some Test states, which have concentrated most of their work on implementing VPMs in the Medicaid program (Maine, Massachusetts, Minnesota). With smaller private insurance markets, each with a dominant payer, Arkansas and Vermont have had greater success achieving voluntary commercial participation in VPM implementation.

Even policy levers that may be used at the state's discretion can be slow to change. Despite successes in increasing the spread of VPMs in the Medicaid population in several Test states, even policy levers nominally within the state's control to transform payment models—such as changes in Medicaid policy and state employee health plan purchasing standards—can be difficult to implement. Several Test states faced such challenges in driving delivery system change through state policy, for example:

- Arkansas scaled back on its broader plans to implement a health homes model as a result of opposition from behavioral health, intellectual or development disabilities, and LTSS service providers; their industry representatives; and ultimately political resistance within the state legislature; instead, the state implemented more incremental change.
- Oregon's intent to spread its Coordinated Care Model to health plans contracted through the Oregon Educators Benefits Board (OEBB)—as it did through the Public

Employees Benefits Board—has been delayed because of OEBB staff turnover and complexity—comprising 900 employee groups that are part of an estimated 500–600 collective bargaining units.

Providers have concerns about VPM participation, which Test states are trying to address. Examples include:

- Payout of shared savings may not be sufficient to ensure the financial stability and upfront investment needs of practices as they move to new care models. The costs of necessary health IT or data analytics infrastructure, quality improvement programs, or additional staff to qualify for participation in delivery system and other reforms can be substantial. Even though earned shared savings can mitigate the high upfront costs, payouts may not materialize until 2 or more years in the future because of the lag in receiving and processing claims to determine whether participating providers met thresholds for quality measures and total cost of care. Furthermore, as providers improve the quality and efficiency of their care delivery, it can become increasingly hard for them to reduce costs and yield savings over time. Payers must consider how to decrease payment lag times and continue to reward quality and efficiency.
- *Measures not aligned across payers and programs create reporting burdens.* Test states are making continued commitments to increase alignment across payers—including engaging public and private payers in establishing a core quality measures set and total cost of care index (Maine), aligning quality measures required for Integrated Health Partnerships and ACHs with measures used by other efforts in the state (Minnesota), and aligning ACO Shared Savings Program quality measures with national measure and reporting standards (Vermont).

Data availability and quality is as much a concern as electronic health information exchange. With SIM Initiative funds, Test states have invested in technology to increase the number and types of providers connected to HIEs or event notification services. However, Test states are also giving increased scrutiny to what data are being collected and how data are used and analyzed. Massachusetts, for example, has identified data on care transitions as a future focus area after finding that only 28 percent of the providers connected to its HIE use data available to aid in transition services. Vermont, recognizing underuse of public health data in the state, plans to explore how to better leverage these data sources to target and measure its SIMfunded reforms. Minnesota developed recommendations to improve consistency of data shared across providers and provider types. Future efforts will also focus on identifying "high priority" data elements related to social determinants of health and understanding the barriers to data sharing across the spectrum of care.

4.3 Next Steps

The SIM Initiative intends to accelerate health care system transformation in an already dynamic and busy state and federal policy environment. With each year of SIM implementation,

a more nuanced set of lessons for policymakers emerges about the potential for success, and persistent challenges, in supporting VPMs and delivery system reform. It is still too early to identify what strategies, policies, and reforms—related to either the SIM Initiative or the context in which the SIM Initiative occurred—have the biggest impact on statewide health care utilization, expenditures, quality, and outcomes. Data available at the time of this report are limited to 1 year of the SIM Initiative test period. The interim analysis of cost and utilization measures shows a few statistically significant reductions for Medicaid, Medicare, or commercially insured populations in a few states, mostly where pre–SIM Initiative activity reached a large proportion of state residents (Minnesota and Vermont). Because the Test states are leveraging prior activities under the SIM Initiative, this interim analysis signals hope for promising results once the data are available for the time period during which the SIM Initiative implementation is more mature (i.e., after 2014).

Future reports will offer quantitative analyses designed to detect changes for a subset of the statewide population and will include measures based on more than 1 year of the SIM Initiative test period. The Model Test Year Four Annual Report will present analyses on cost, utilization, and quality measures for consumers who get their care from providers participating in SIM-supported delivery system and payment models—in most cases, a subset of Medicaid beneficiaries, and in the case of Oregon, state employees and a multi-payer population. The Model Test Year Five Annual Report will contain statewide and model-specific analyses using more complete test period data.

In addition to the limitations of data availability for this current report, this evaluation is not designed to capture the impact of locally focused projects to reach specified subsets of the state geography or overall patient population, which are unlikely to be reflected in statewide data or even payer-specific data. Even without these outcome measures, however, there is significant value in interim findings—on what is working and not working in shifting payers and providers away from volume-based and toward value-based health care payments—which help interpret major data trends and thus inform future policy.

Glossary

Accountable care organization: A health care provider organization or group of health care organizations that take responsibility for coordinating patients' care with the aim of improving quality and spending resources efficiently and that accept some financial risk for care provided to those patients under a prearranged contract with a payer. For example, Medicare defines accountable care organizations (ACOs) as "groups of doctors, hospitals, and other health care providers, who come together voluntarily to give coordinated high quality care to their Medicare patients" (Centers for Medicare & Medicaid Services, 2015a). Medicare, Medicaid, and some commercial payers offer different programs in which providers can enroll to become ACOs when caring for patients covered by those insurance programs.

Behavioral health integration/Integrated behavioral health care: The care a patient experiences as a result of a team of primary care and behavioral health clinicians working together with patients and families, using a systematic and cost-effective approach to provide patient-centered care for a defined population. This care may address mental health and substance abuse conditions, health behaviors (including their contribution to chronic medical illnesses), life stressors and crises, stress-related physical symptoms, and ineffective patterns of health care utilization (Peek, C. J., & the National Integration Academy Council, 2013).

Bundled payment model: Payers offer a single payment—usually on a prospective basis—for all services rendered by multiple providers caring for a patient during an episode of care (a defined set of services over a defined time period).¹¹

Consumer engagement: Activities directed specifically at changing consumer/patient behavior. Examples include patient-centered communication; changes in the clinical setting to activate patients in their own care, such as access to their own health information; and choice architecture within insurance plans to help consumers choose the highest value health care services (e.g., value-based insurance design).

Data analytics: Development or enhancement of systems to maintain clinical, utilization, or expenditure data—or all three—in an aggregate manner for the purpose of providing population-level quality and cost information. Examples include all-payer claims databases, public reporting of quality and cost, other data systems designed to provide

¹¹ This definition is different from the one used by Medicare in its Bundled Payment for Care Improvement Initiative (see http://innovation.cms.gov/initiatives/bundled-payments/), which includes both retrospective and prospective payments to single or multiple providers, but consistent with other sources (see Center for Healthcare Quality and Payment Reform. Transitioning to Episode-Based Payment, available at http://www.chqpr.org/downloads/TransitioningtoEpisodes.pdf).

aggregation of various data sources and analytics, and strategies designed to use population-level data to identify hot spots of disease burden or frequent utilization.

Delivery system model: The way in which health care providers organize themselves to deliver health care to the patients they serve. Delivery system models vary according to the types of health care providers involved and the minimum threshold necessary for provider reorganization to satisfy the basic characteristics of the model. A delivery system model may be implemented in conjunction with any payment model.

Enabling strategy: An activity usually led by an entity outside of the health care delivery system to build or transform the infrastructure that supports health promotion and health care delivery.

Episode of care payment model: Payers offer a retrospective payment reconciled to a target price for all of the services rendered by one or more providers for a patient's episode of care, defined as a set of services over a defined time period for a specific condition or procedure (Center for Healthcare Quality and Payment Reform, n.d.).

Global budget: A fixed budget for a fixed patient population instead of payment for each service.

Health home model: Health homes, a variant of patient-centered medical homes, offer patients—usually those with medically or socially complex conditions—person-centered care and facilitate access and coordination across primary care and providers of mental health, substance abuse services, long-term services and supports, and other specialists. Section 2703 of the Patient Protection and Affordable Care Act gave states the statutory authority to provide health homes for Medicaid enrollees with chronic conditions through a state plan amendment to the Medicaid State Plan.

Health information technology (health IT): Systems that maintain and transmit individually identifiable clinical data. Examples include health information exchange for communicating across providers, new adoption or increased use of electronic health records, use of secure messaging (email) with patients, and providing patient access to their own health information through secure Web portals.

Long-term services and supports: Community- or provider-based capacity to help elderly or disabled individuals perform daily living tasks (Woodcock, 2011).

Patient-centered medical home model: Primary care practices that adopt five core functions: comprehensive primary care services to children and adults that meet the majority of a person's physical and mental health needs, including preventive, chronic, and acute care; patient-centered care; coordinated care; accessible care; and commitment to quality and safety.

The model also includes three enabling attributes to provide the supporting structure: health IT, workforce development, and payment models (Agency for Healthcare Research and Quality, 2014).

Payment model: The way in which health care payers (insurance companies, Medicaid, Medicare) pay health care providers, with regard to who receives the payment (individual clinicians, individual institutions, or combinations), unit of payment (procedure or visit, course of treatment or episode of illness, care for a patient during a specified period of time), whether payment is prospective or retrospective with respect to when care is delivered, whether all or part of the payment is based on quality, and whether the provider bears risk for the cost or quality of care, and if so, what type of risk. The payment model could also include how payment is distributed to the component parts of a combination of providers and institutions.

Population health: Health outcomes for a group of individuals, including the distribution of such outcomes within the group over such characteristics as race/ethnicity, disability status, geographic residence, and family income (Kindig, 2008). These groups are usually within a geographic or geopolitical region, and outcomes are usually driven by multiple determinants of health. In contrast, "Population health management or population medicine are useful to describe activities limited to clinical populations and a narrower set of health outcome determinants" (Kindig, 2015).

Practice transformation support: Organizations and policies that support technical assistance to practitioners within the health care delivery system. The focus of this assistance may be on the transition to a medical home, adoption of team-based care, improvement on certain health or cost outcome aims, integration with community resources, and readiness to participate in value-based payment models.

Section 1115 waiver: Granted by CMS to give states flexibility to design and improve their Medicaid and Children's Health Insurance programs (CHIP) via Section 1115 Research & Demonstration Projects, which evaluate policy approaches such as "expanding eligibility to individuals who are not otherwise Medicaid or CHIP eligible; providing services not typically covered by Medicaid; or using innovative service delivery systems that improve care, increase efficiency, and reduce costs" (Centers for Medicare & Medicaid Services, 2015b).

State plan amendment: Documents submitted by states to CMS for review and approval, to "make a change to its program policies or operational approach" in administering Medicaid and CHIP, or "to request permissible program changes, make corrections, or update their Medicaid or CHIP state plan with new information" (Centers for Medicare & Medicaid Services, 2015c).

Value-based payment model: A payment model that does not pay health care providers on the basis of volume of patient visits (in contrast to a fee-for-service payment model), but instead considers population-based metrics of quality and cost when determining payment, with the intent of incentivizing value-based and person-centered care. As stated by the Health Care Payment Learning and Action Network (2016) when describing its alternative payment model framework, "By reconfiguring payments to incentivize value, and by ensuring that valuable activities (e.g., care coordination) are compensated appropriately, providers will be able to invest in care delivery systems that are optimized for the provision of care that is more focused on patient needs."

Workforce development: Policies and programs designed to enhance the existing health care workforce and add roles or professional categories not previously considered as part of the clinical workforce. Examples include policies that plan for future health care workforce needs, address workforce training, influence the distribution of the workforce within a state, and change the scope of practice laws or licensing requirements. The strategies may involve community health workers and other health-related personnel outside of the traditional health care delivery system.

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Appendix A. State Progress and Findings

A.1 Arkansas SIM Initiative Progress and Findings

As of March 2016, 2.5 years after the SIM Initiative began in Arkansas, the state continued to implement two of its major delivery system reform models: patient-centered medical homes (PCMH) and episodes of care (EOC). Proposed changes for special populations—those with behavioral health needs, intellectual or developmental disabilities (I/DD), and beneficiaries using long-term services and supports (LTSS)—have been on hold for over a year. RTI's qualitative analyses show that PCMH and EOC are now integral to health care delivery in Arkansas, and administration of these programs is a routine part of state operations at the Department of Human Services (DHS). These two reforms, described in detail below and in previous annual reports, were designed to act synergistically—with PCMH focused on efficient provision of primary care services and care management and EOC used for value-based purchasing of both primary and specialty services. Arkansas Medicaid and private payers are implementing both of these models, and both public and private payers attribute the models' success to this multi-payer support.

Key Results from Arkansas's SIM Initiative, April 2015–March 2016

- Arkansas used a combination of legislative mandates, voluntary participation, and operational flexibility in implementation to engage *commercial payers* in its SIM Initiative. The two payment models supported by Arkansas's SIM Initiative, PCMHs, and EOCs, have strong multi-payer support.
- Arkansas also has strong provider participation in PCMHs. Nearly 80 percent of eligible primary care providers that accept Medicaid participate voluntarily in the PCMH model, which includes per member per month (PMPM) payments for practice transformation and an opportunity to earn shared savings (one-sided risk). A legislative mandate for Health Insurance Marketplace qualified health plans (QHPs), which provide coverage for the Medicaid expansion population, requires these plans to participate in PCMHs.
- Payment and delivery reforms for special populations served by Medicaid were still under development in the last year of the test period. Plans to redesign payment and delivery for Medicaid LTSS, I/DD, and behavioral health services were on hold as state officials awaited guidance from a legislative task force.
- The SIM Initiative supported provider and payer engagement via regular and transparent communication. State officials say this communication helped change the culture of care delivery and encouraged the sustainability of its two payment models. With high provider participation, the state is sustaining these payment models by integrating them into state government operations. Costs for both the continued oversight of PCMH and development of new EOCs and maintenance of existing EOCs are now included within DHS's budget as routine operations.

Development of care coordination models for those with behavioral health or I/DD needs and beneficiaries using LTSS continues to progress more slowly. Arkansas has developed and implemented a new assessment-based methodology to calculate hours of attendant care for older adults and adults with physical disabilities using Medicaid home and community-based services (HCBS). The state plans to continue working with stakeholders on a care coordination model, potentially a health home or a managed care entity, to serve these special populations.

Interim measures of impact on cost and utilization. Quantitative analyses of health care claims data showed mixed results for changes in utilization and expenditures for the statewide commercially insured population in Arkansas relative to the comparison group after approximately 1 year of SIM Initiative test period (through 2014). The proportion of this commercially insured population that received care from PCMHs or under an EOC payment model (10 episodes active in 2014) is unknown for this time period. A brief discussion of these results appears in this chapter, and the full set of data on measures of utilization and expenditures available from statewide claims-based analyses for the Medicaid, commercial, and Medicare populations are available in *Appendix B.1*.

A.1.1 Overview of the Arkansas SIM Initiative

The SIM Initiative in Arkansas, which began implementation in October 2013, grew from the Arkansas Health Care Payment Improvement Initiative (AHCPII) established in 2011. In the AHCPII, Arkansas Medicaid, the Arkansas DHS, Arkansas Blue Cross and Blue Shield (BCBS), and QualChoice of Arkansas partnered in an effort to shift to a higher-quality and more costefficient system of care (Arkansas Health Care Payment Improvement Initiative, 2012). The payment models implemented under AHCPII are multi-payer and reward providers for achieving desired outcomes, particularly with respect to quality of care and affordability. The core principles of the SIM Initiative follow those of the AHCPII: to develop a system that is patient centered, clinically appropriate, practical, and data driven (Arkansas Department of Human Services, 2012, p.21).

Arkansas's three major delivery system and payment reforms include PCMHs; EOCs; and care coordination for individuals with behavioral health needs, I/DD, and those needing LTSS. Arkansas supports providers in adopting the major delivery system and payment reforms via strategies that include practice transformation support and data analytics. Technical assistance is available to help providers to (1) better understand and use quality of care and cost metrics reports to analyze their practice patterns, and (2) identify any needed changes to the way they deliver care. The reforms supported with SIM Initiative funding as of Spring 2016 are shown in *Table A-1*.

Activity	Activity type	Payers	Provider types	Dates	Supporting policies (if any)
Primary care PCMHs	Delivery/ Payment System	Medicaid QHPs Medicare D- SNPs Commercial: Enrollees in self insured groups; in BCBS and QualChoice plans	Primary care	January 1, 2014 and ongoing	SPA Medicaid provider manual ¹ State law ² Insurance regulation ³ MIPPA contracts ⁴
Health homes for medically complex patients	Delivery/ Payment System	Medicaid	Behavioral health services Developmental disabilities services LTSS	On hold	SPAs and other policy changes will be needed
EOC payment models	Delivery/ Payment System	Medicaid Commercial: in BCBS and QualChoice plans	Primary care Specialty care Hospitals	July 31, 2012 and ongoing	SPAs Provider manuals
Prospective assessment- based payments	Delivery/ Payment System	Medicaid	HCBS	On hold	1915c waiver amendments (or SPA for State Plan HCBS) will be needed
Practice transformation coaching	Practice transformation	Medicaid and commercial	PCMH practices and those seeking certification	2015–2017	
Care coordinator services	Practice transformation	Medicaid and commercial	PCMH practices and those seeking certification	2015	
Quality measurement and reporting	Quality measurement	Medicaid, BCBS, and QualChoice	Principal Accountable Providers (for EOCs); PCMH practices	2012 and ongoing (PAPs) 2014 and ongoing (PCMHs)	

Table A-1. Summary of SIM Initiative activities in Arkansas, Spring 2016

BCBS = Blue Cross and Blue Shield; D-SNPs = Dual Eligible Special Needs Plans; EOC = episode of care; HCBS = home and community-based services; LTSS = long-term services and supports; MIPPA = Medicare Improvements for Patients and Providers Act; NA = not applicable; PAP = principal accountable providers; PCMH = patient-centered medical home; PMPM = per member per month; QHP = qualified health plan; SPA = state plan amendment. ¹ Arkansas laid out the rules for Medicaid PCMH participation and payment in its Medicaid provider manual.

² State law requires QHPs to pay PMPMs to PCMHs.

³ Insurance regulation implementing the state law referenced above.

⁴ D-SNPs are required by MIPPA to contract with state Medicaid agencies.

A.1.2 Delivery System and Payment Reform Activities

A.1.2.1 Summary and key outcomes to date

By March 2016, 2.5 years into its implementation, Arkansas's SIM Initiative continues to support operations for PCMHs and EOCs and to further develop a model of care coordination for special needs populations. The delivery system and payment models that are currently operational are summarized in *Table A-2* and described in more detail below.

PCMH model. Arkansas leveraged its participation in the CMS-sponsored Comprehensive Primary Care Initiative (CPCi) to launch its own multi-payer PCMH model statewide using SIM funding. Arkansas Medicaid certifies PCMHs using its own requirements, rather than relying on accreditation from a group such as the National Committee for Quality Assurance. In 2012, CPCi enrolled 69 practices initially—encompassing 275 providers, three commercial insurers, Medicaid beneficiaries, and more than 54,000 Medicare beneficiaries. The state began expanding PCMH to Medicaid practices and patients, beginning in 2014.

EOC model. Under the EOC model, all providers continue to receive fee-for-service (FFS) payments from payers; principal accountable providers (PAPs) are accountable for the total cost of a defined EOC, with retrospective sharing of gain and risk. Only valid episodes are counted, based on algorithms and exclusion criteria specific to the episode. Each PAP's average cost of care for valid episodes is calculated and compared to that of other PAPs providing the same type of episode. Each payer sets its own cost thresholds, and PAP performance is classified as commendable, acceptable, or unacceptable. PAPs whose cost performance is commendable qualify for gain sharing if they achieved quality metrics specific to that episode (Arkansas Center for Health Improvement, 2016, p.19).

As of April 2016, 14 EOCs are active. Detailed information about active episodes and episodes still under development is included in *Table A-3*. Participation in episode-based payment is mandatory for providers that accept Medicaid beneficiaries and the participating private carriers' insurance products. However, the two participating private payers—Arkansas BCBS and QualChoice—are allowed to participate in only a subset of the 14 EOCs established by the state and can select which EOCs they will participate in.

Delivery system model	Payment model	Participating payers	Retrospective or prospective	Payments based on whom?	Risk ¹	Payment targets	Implementation progress
Episodes of care	FFS payment + Risk/Gain Sharing	Medicaid FFS BCBS (subset of episodes); QualChoice (subset of episodes)	Retrospective	For patients based on EOC-specific criteria	Two-sided	Financial and quality	Operational
РСМН	FFS + PMPM for care coordination and overall practice transformation	Medicaid FFS	Prospective	Quarterly \$1-\$30 PMPM risk adjusted payment (average = \$4 PMPM for beneficiaries assigned to PCMH)	NA	Process measures (10 PCMH activities during first 2 years)	Operational
		BCBS commercial products in 2016	(unknown)	For beneficiaries assigned to PCMH	NA	NA	-
		QHPs—4 carriers in 2016: Ambetter, BCBS, QualChoice, UnitedHealth	Prospective	\$5 PMPM for beneficiaries assigned to PCMH	NA	NA	-
		Medicare Advantage D- SNPs (5 carriers)	Prospective	\$5 PMPM for beneficiaries assigned to PCMH	NA	NA	-
		Self-funded employers (3 employers)	Prospective	For beneficiaries assigned to PCMH	NA	NA	-
РСМН	PCMH shared savings	Medicaid FFS	Retrospective	Annual payment for beneficiaries who selected PCP	One-sided	Financial and quality	Operational
		BCBS	Retrospective	Annual payment for beneficiaries who selected PCP or were attributed based on geographic location	One-sided	Financial and quality	-

Table A-2. SIM Initiative-related delivery system and payment models in Arkansas

BCBS = Blue Cross and Blue Shield; D-SNPs = Dual Eligible Special Needs Plans; EOC = episode of care; FFS = fee-for-service; NA = not applicable; NCQA = National Committee for Quality Assurance; PCMH = patient-centered medical home; PCP = primary care provider; PMPM = per member per month; QHP = qualified health plan.

¹ One-sided risk means that providers are eligible to earn shared savings for meeting lower total cost target but are not subject to penalties for higher-thanexpected costs; two-sided risk means that providers are eligible to earn shared savings (the percentage earned is usually higher than one-sided risk options) for meeting lower total cost target and are expected to pay back money if costs are higher than expected.

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

Table A-3. Implementation status of Arkansas's episodes-of-care models

(continued)

Episode & Wave	Legislative review	State plan amendment effective date	Reporting period start date/episode launch	First performance period ends	Episode status	Payers
24. ADHD-ODD	July 2013	10-1-13	TBD	TBD	In design review	Medicaid
25. Tympanostomy ear tubes procedure) ²	TBD	TBD	TBD	TBD	Commercial carriers may still be interested in this as an EOC	Unknown
26. Pediatric Pneumonia (in ED/ER)	TBD	TBD	TBD	TBD	In promulgation process	Medicaid
27. Urinary Tract Infection (ER)	TBD	TBD	TBD	TBD	In promulgation process	Medicaid
28. Hysterectomy	TBD	TBD	TBD	TBD	In promulgation process	Medicaid
29. Appendectomy	TBD	TBD	TBD	TBD	In promulgation process	Medicaid

Table A.-3. Implementation status of Arkansas's episodes-of-care models (continued)

ADHD = attention deficit hyperactivity disorder; BCBS = Blue Cross and Blue Shield; CABG = coronary artery bypass graft; CHF = coronary heart failure; COPD = chronic obstructive pulmonary disease; ED/ER = emergency department/emergency room; EOC = episode of care; ODD = oppositional defiant disorder; PCI = percutaneous coronary intervention; SPA = state plan amendment; TBD = to be determine; URI = upper respiratory infection. ¹ Arkansas Center for Health Improvement (2016). *Arkansas Health Care Payment Improvement Initiative, 2nd annual statewide tracking report*. Little Rock, AR: ACHI. Accessed on May 27, 2016, from http://www.achi.net/Content/Documents/ResourceRenderer.ashx?ID=338

² Medicaid's research showed insufficient variations in the tympanostomy procedure or costs to justify launching this episode, therefore not appropriate for an EOC.

Provider and payer participation. State SIM Initiative leaders are encouraged by the way providers are responding to the financial incentives associated with PMCHs and EOCs. They say the Arkansas experience has shown that the state can lead payment and delivery system reforms and work collaboratively with private payers to adopt elements of the state's initiatives. Arkansas's success to engage both providers and payers in its SIM models is the result of a combination of regulation and voluntary participation. On the other hand, EOCs are only mandated to operate within the Medicaid program but private payers are voluntarily adopting subsets of EOCs. Arkansas enhanced multi-payer participation by allowing the two private payers flexibility in selecting whether to implement particular EOCs based on their beneficiary population. For example, neither of the private payers saw the need to implement the attention deficit hyperactivity disorder (ADHD) or oppositional defiant disorder (ODD) EOCs as these conditions were either not as prevalent or did not have the large cost disparities compared to Medicaid beneficiaries. Together, these two payers account for 80 percent of Arkansas's commercial market (Thompson et al., 2014).

Provider participation in PCMHs and EOCs is shown in *Table A-4*. In 2016, the state reported an increase in the number of providers participating in Medicaid PCMHs, and for the first time, reported the number of providers receiving PCMH payments from commercial insurance carriers as a result of the state mandate for QHPs. On the assumption that some providers receive payments from multiple payers, the minimum reach of the PCMH program in first quarter 2016 was 87 percent of eligible physicians, whereas it was 75 percent in 2015. The number of eligible practices participating in the PCMH program also increased from 2015 to 2016. EOC payments are tracked by the principal accountable provider assigned to the episode, rather than by practice, which explains why we do not have practice information for EOCs.¹²

Populations reached. As shown in *Table A-5*, an additional 14,500 beneficiaries were reached as part of Arkansas's PCMH program from the first quarter 2015 to the first quarter 2016, reaching 80 percent of PCMH-eligible Medicaid beneficiaries (Arkansas Center for Health Improvement, 2016, p. 6). Only those Medicaid beneficiaries eligible for primary care case management can be attributed to a PCMH—which excludes Medicare-Medicaid enrollees, residents of nursing facilities and institutions for individuals with I/DD, and those enrolled under the medically needy spend-down provision.

Early implementation results from a survey of randomly selected Medicaid beneficiaries in Arkansas conducted in first quarter 2015¹³ indicate that most consumers have favorable care experiences with their primary care providers and associated practices. Eighty percent of consumers reported that most of their providers were usually or always aware of their patient history, and 90 percent felt their providers usually or always explained issues in ways they could understand and also listened carefully and respectfully to patients. However, some variation in perception across eligibility groups shows room for improvement. Although 60 percent of the parents of children and aged adults rated the overall health care they receive as a 9 or 10 (where 10 is the best care possible) only 40 percent of nondisabled, non-aged adults and disabled adults receiving Medicaid considered their overall care as a 9 or 10. The predominantly favorable ratings reported by consumers surveyed may reflect the longevity of their care by the practice; more than 60 percent of those surveyed had been with the same practice for more than 3 years.

¹² In addition to models supported by the SIM Initiative, Arkansas is engaged in other delivery system and payment reform models through various CMS Initiatives including the CPCi, several ACOs under the Medicare Shared Savings Program and Advanced Payment ACO Model, and four Health Care Innovation Award grants.
¹³ The methods and state-specific results from the consumer survey fielded in Arkansas are available in Appendix B.3.
Participants	Patient-centered medical homes	Episode-of-care payment model	
Physicians			
2015			
Medicaid	761	Not reported	
Commercial	Not reported	Not reported	
Medicare	Not reported ¹	Not reported	
All payers	Not reported	2,200 (37%) ²	
2016			
Medicaid	878 ²	Not reported	
Commercial—BCBS	649	Not reported	
Commercial—QualChoice	618	Not reported	
Medicare	Not reported ¹	Not reported	
All payers	Not reported 2,252 (38%) ²		
Practices			
2015			
All payers	136 (52%)	NA	
2016			
Medicaid	179	NA	
Commercial—BCBS	144	NA	
Commercial—QualChoice	85	NA	
Medicare	Not reported ¹	NA	
All payers	179	NA	
Payers	Medicaid, BCBS, QualChoice, and Centene/Ambetter ³	Medicaid, BCBS, QualChoice	

Table A-4.Physicians, practices, and payers participating in SIM Initiative-related models in
Arkansas, 2015 and 2016

BCBS = Blue Cross and Blue Shield. NA = not applicable.

Source: Counts for first quarters 2015 and 2016 are provided by Arkansas via quarterly progress reports to CMS unless otherwise noted. Denominators for percentages of participating providers 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. Payer information reported in Thompson, J. W., Golden, W., Motley, M., Fendrick, M. Mathis, C., & Chernew, M. (2014, October 15). *Health Affairs Blog; Arkansas Payment Improvement Initiative: Private carriers participation in design and implementation.* Accessed on May 26, 2016 from http://healthaffairs.org/blog/2014/10/15/arkansas-payment-

improvement-initiative-private-carriers-participation-in-design-and-implementation/. Percentage of participating providers are only given for all payer counts.

¹ Separate from the Arkansas SIM Initiative, an unknown number of physicians in 57 primary care practices are participating in the CMS Comprehensive Primary Care Initiative.

² Count provided through correspondence with state officials; according to the state, this represents nearly 80 percent of eligible primary care providers that accept Medicaid.

³ Arkansas Blue Cross and Blue Shield, QualChoice, and Centene/Ambetter began participation April 1, 2015, for the Qualified Health Plans and Medicare Advantage Special Needs Plans they operate.

Payer Patient-centered medical homes		Episode-of-care payment model	
Medicaid			
2015	315,680 (78%)	Not reported	
2016	330,000 (80%)	34,488 (5%)	
Commercial			
2015	Not reported	Not reported	
2016	197,039 (14%) ¹	544,000 (39%)	
Medicare			
2015	Not reported ²	NA	
2016	Not reported ²	NA	
Self-insured			
2015	Not reported	Not reported	
2016	55,000 (10%) ³	Not reported	

Table A-5. Population reached in the Arkansas innovation models by payer

NA = not applicable.

Source: Counts and denominators for first quarters 2015 and 2016 are provided by Arkansas via quarterly progress reports to CMS unless otherwise noted. Denominators reported by the state are eligible individuals and not all individuals covered by payers.

¹Numerator count provided through correspondence with state officials.

² Separate from the Arkansas SIM Initiative, an unknown number of Medicare fee-for-service beneficiaries are being reached under Arkansas's Comprehensive Primary Care Initiative.

³ Count includes approximately 30,000 state employees. Denominator provided through correspondence with state officials; there are approximately 575,000 individuals covered by self-insured employers in Arkansas, including state employees.

Interim measures of impact on cost and utilization. The two models implemented in Arkansas by 2014—PCMH and EOC models—were intended to work synergistically to increase the efficiency of provision of services. For example, if health events were managed through improved access to effective PCMHs or a principal accountable provider under an EOC, avoidable emergency room (ER) use and total cost of care would decline. The PCMH model is intended to improve primary care services and care management, and the EOC model is used for value-based purchasing of both primary and specialty services.

Sufficient data are not available to measure changes in utilization and expenditures for Arkansas Medicaid beneficiaries in the interim period (fourth quarter 2013 through fourth quarter 2014) relative to Medicaid beneficiaries in a group of comparison states. Total expenditures increased for commercially insured in Arkansas relative to the comparison group while total expenditures declined among Medicare beneficiaries in Arkansas relative to the comparison group (see *Appendix B.1* for all results from claims-based analysis).

The decline in total expenditures for Arkansas Medicare beneficiaries was likely related to the relative decline in inpatient expenditures and admissions. Even though inpatient admissions declined for Arkansas Medicare beneficiaries, ER visits and 30-day readmissions increased for Arkansas relative to the comparison group, which suggests room for improvement in quality of care and care coordination for the Medicare population in Arkansas. Although these changes provide context for the health care system in Arkansas during early SIM implementation, they are not likely related to SIM because the commercial and Medicare populations were not the target early on in the Arkansas SIM Initiative. Additionally, relatively small proportions of the Medicaid and commercially insured populations received services under both models in the early SIM Initiative test period, and a relatively small proportion of the Medicare population received services from practices that participated in CPCI prior to the SIM Initiative; proportion unknown.

A.1.2.2Progress and lessons learned

In both 2015 and early 2016, increasing numbers of payers began making PMPM payments to PCMHs to support care coordination and practice transformation; as of 2016, all PCMHs are eligible for shared savings.

According to state officials, DHS, payers, and practices are all learning from EOC implementation, with EOCs now fully integrated into ongoing operations of the Arkansas Medicaid program. Originally, the contractor assisting the state with the EOCs developed massive SAS coding programs for each episode. The state is now involving a new contractor that uses more modular and flexible coding, which the state sees as an obvious improvement. EOCs have been a challenging endeavor. For each quarter, the analytic engine generates 25,000 to 30,000 reports, which are sent to several thousand PAPs.

Whereas PCMHs and EOCs are well underway, some activities under Arkansas's SIM Initiative have been delayed. The state is awaiting decisions by elected officials on broad strategies to coordinate care and restrain Medicaid spending growth—decisions that will, in part, be informed by the recently established Health Reform Legislative Task Force. Additionally, the state has been able to make only incremental changes to its Medicaid models of care for beneficiaries with behavioral health care needs, adults with physical disabilities, and individuals with I/DD.

Arkansas has achieved multi-payer participation in its expanded PCMH model largely through regulation and contract requirements. Participating payers include Medicaid, QHPs, Medicare Advantage dual eligible special needs plans (D-SNPs), and the private insurers Arkansas BCBS and QualChoice. One policy lever used to achieve wide participation is Rule 108—promulgated by Arkansas's Insurance Commissioner under the authority of the Health Care Independence Act of 2013—which requires QHPs participating in the Arkansas Health Insurance Marketplace to enroll their members in PCMHs on or after January 1, 2015 (most QHPs initiated PCMH enrollment in April 2015) and pay PCMHs a \$5 PMPM.¹⁴ Arkansas Medicaid uses another policy lever to expand PCMH model participation to Medicare Advantage D-SNPs by including a similar provision in its contracts with D-SNPs. To be able to operate in states, D-SNPs are required under the Medicare Improvements for Patient and Provider Act to coordinate with state Medicaid programs. Participation in the PCMH model is voluntary for carriers' commercial plans and the self-insured groups they administer.

As of 2016, all PCMHs are potentially eligible for shared savings because of flexibility in how a practice achieves a minimum number of Medicaid beneficiaries in its patient panel. In addition to receiving a PMPM, practices can be eligible to take on one-sided risk (shared savings only) by meeting the minimum pool size of 5,000 in one of three ways: (1) by meeting the minimum pool size of attributed beneficiaries within its own practice, (2) pool attributed beneficiaries with other participating practices, or (3) participate in a default pool if the practice cannot meet the requirements of (1) or (2). The beneficiary cost of care and performance metrics are measured across the combined pool for all three pooling methods. The shared savings targets and quality metrics for Medicaid are outlined in Section II of the PCMH provider manual and annual updates (Arkansas Medicaid, 2016).

Primary care delivery has changed in response to adoption of the PCMH model. Arkansas's Medicaid agency has documented practice changes and an increase in guidelineconcordant care since implementing PCMH. In an evaluation of the AHCPII conducted by the state, Chernew and colleagues (2015) noted that physicians' reports that care coordination and practice transformation take time, and the PMPM payments have helped offset the cost of these activities. *Section A.5.1* discusses practice transformation assistance to PCMHs under the SIM Initiative.

Implementation of EOCs is now part of the "state culture" and is also associated with changes in physician coding of diagnoses. With EOC implementation, the state is learning how some EOCs are being implemented in practice. For example, Arkansas includes treatment for behavioral health diagnoses among the EOCs (ADHD Level 1, ADHD Level 2, ODD, and comorbid ADHD-ODD). The first three of these are currently active. When the ADHD episodes were first introduced, it appeared that many children shifted from having a diagnosis of only ADHD to a comorbid diagnosis. State officials in Arkansas explained that some of this apparent shift is because of electronic health records (EHR) system upgrades that allow providers to send more than one diagnosis on claims. An additional explanation is that the EOC system has led to more specific diagnosis coding. With regard to a chronic condition such as ADHD, providers are asking whether this should be an EOC or handled within the context of

¹⁴ The Arkansas Health Care Independence Act of 2013 requires Qualified Health Plans to make PMPM payments to PCMHs (http://www.achi.net/Content/Documents/ResourceRenderer.ashx?ID=122). The Arkansas Insurance Department's Rule 108 implemented the law (http://www.insurance.arkansas.gov/index_htm_files/Rule108.pdf).

a PCMH (Chernew et al., 2015). The state is seeing PCMH primary care practices that choose to treat patients with ADHD within their practice rather than involving Rehabilitative Services for Persons with Mental Illness providers are able contain costs, typically meeting the acceptable or commendable performance range for the EOC, which puts them at a higher likelihood of gain share for the EOC.

Results from a 2015 legislative task force's work to find ways of modernizing Medicaid may influence the vision of the Arkansas SIM Initiative, including PCMHs, **EOCs, and care coordination for special populations.** In February 2015, the Arkansas Health Care Reform Act created the Health Reform Legislative Task Force, charged with recommending ways to modernize Medicaid. The Task Force's recommendations and any subsequent legislation could impact the structures within which PCMH and EOC operate, particularly if the state chooses to move significant Medicaid populations into managed care arrangements. In October 2015, the Task Force's consultant presented its report, recommending continuation of the Medicaid expansion private option and implementation of reforms for traditional Medicaid-through either expanded implementation of PCMHs, EOCs, and health homes for all populations, or transition to managed care (The Stephen Group, 2015a). In March 2016, the Task Force voted to continue the Medicaid expansion private option, but split on whether to support Medicaid managed care or an alternative managed FFS model (Davis, Arkansas Democrat-Gazette, March 8, 2016; Arkansas Online, 2016). The Governor's office, state Medicaid officials, providers, and other stakeholders continue to discuss whether all Medicaid populations should be served by some form of managed care; but according to state officials, provider groups oppose transitioning Arkansas Medicaid to managed care. These provider groups instead support continued transformation of the current payment and delivery system models that operate within the FFS approach.

Ongoing legislative developments related to health care transformation in Arkansas will surely influence the landscape within which SIM-supported reforms operate. State SIM Initiative officials are optimistic that the ultimate decisions will support the vision of AHCPII—including PCMHs, EOCs, and some form of care coordination for special populations (including behavioral health, I/DD, and LTSS). Thus, plans for care coordination for these special populations served primarily by Medicaid continue to evolve.

Health homes and assessment-based allocation of HCBS have been the slowest of the three models to be developed, because of stakeholder opposition, but the state has moved forward with incremental changes. Arkansas scaled back on its broader plans to implement a health homes model as a result of opposition from behavioral health, I/DD, and LTSS service providers, their industry representatives, and ultimately political resistance within the state legislature; instead, the state implemented more incremental change. Prior to the SIM Initiative, Arkansas Medicaid began implementing independent assessments to be performed for older adults, adults with physical disabilities, and individuals with I/DD covered by HCBS waiver

services. Since then, Arkansas Medicaid consolidated two HCBS waivers, implementing an assessment-based method to determine hours of attendant care services for the elderly and I/DD beneficiaries.

Other changes are awaiting decisions by elected officials on a model for managing care. In spring 2016, the Governor withdrew a bill that would have moved Medicaid enrollees with I/DD or some mental health conditions into managed care. According to the state, providers are still concerned about managed care for these populations, and new DHS leadership has been asked to suggest a path forward. According to state officials, the state Medicaid agency is likely to move forward with managed care for behavioral health and I/DD populations because this could meet the needs of beneficiaries currently on a long waitlist for HCBS waiver services.

A.1.3 Integration of Behavioral Health and Primary Care

Behavioral health integration is important in Arkansas, as treatment for those with behavioral health conditions (including their physical health care) represents a major proportion of Medicaid expenditures in the state—approximately \$900 million per year, or 22 percent of Medicaid FFS spending in 2014 (The Stephen Group, 2015b). According to data in the Behavioral Risk Factor Surveillance System,¹⁵ since 2006, the percentage of adults 18 years and over who have indicated that their mental health was "not good" has fluctuated, from a low of 32.5 percent in 2008 to a high of 37.5 percent in 2011. This rate dropped to 34 percent in 2013. In the comparison group, the percentage of individuals indicating that their mental health was not good has stayed relatively stable but like Arkansas, dropped to 34 percent in 2013.

Arkansas's SIM operational plan outlined a proposal to develop behavioral health homes to coordinate care for those with significant behavioral health needs, but progress has been delayed for over a year. Implementation of those plans was initially delayed by opposition from some behavioral health providers, and then delayed again while state agencies awaited direction from the Legislative Health Reform Task Force. Beginning in late 2015 and through spring 2016, recommendations from the Task Force began to emerge. The Stephen Group consultants to the Task Force recommended some form of managed care for all high-cost Medicaid populations, including those with behavioral health needs (The Stephen Group, 2015a). The Governor prefers full-risk managed care, while some legislators support an option that shares risk between care management organizations and the state (Ramsey, 2016); final agreement has yet to be reached.

To date, SIM behavioral health integration efforts have focused on Medicaid beneficiaries with serious behavioral health conditions, and discussions have been limited to state agencies—the Medicaid program, the Division of Behavioral Health Services, and the

¹⁵ The methods and state-specific results from the Behavioral Risk Factor Surveillance System survey data, 2006-2013, are available in Appendix B.2 of this report.

Division of Developmental Disabilities Services—and their stakeholders. Although health homes were initially considered, to date no consensus has been reached on a model of care for the behavioral health population. State officials are not aware of any efforts among private payers to address behavioral health integration, and behavioral health integration has not been a goal of the multi-payer PCMH initiative.

Although revamping Arkansas's Medicaid behavioral health program has moved more slowly than planned, the primary care providers of patients with mental and behavioral health problems are still being informed of this care, according to the survey of Medicaid beneficiaries fielded in early 2015 (see *Appendix B.3*). Seventy-two percent of the disabled adult population surveyed said their primary providers usually or always knew about care provided by mental health or behavioral health specialists, compared to 45 percent, 67 percent, and 62 percent, respectively, for older adults, children, and prime age adults.

A.1.4 Population Health

Population health initiatives in Arkansas extend beyond the SIM Initiative, which has focused on the health care delivery system. Nevertheless, Arkansas SIM leaders submitted a population health plan to CMS in April 2015. The Arkansas Department of Health (ADH), DHS, and Center for Health Improvement (ACHI) collaborated to identify seven population health focus areas: (1) tobacco prevention, (2) diabetes, (3) obesity, (4) hypertension, (5) substance abuse, (6) breastfeeding/perinatal issues, and (7) health literacy.

More recently, the Governor's "Healthy Active Arkansas" initiative launched in October 2015, with the release of a 10-year plan to help Arkansans achieve healthy weight (Winthrop Rockefeller Institute, 2015). Both ADH and DHS (Medicaid) participate in Healthy Active Arkansas planning and implementation. The nine priority areas in the Healthy Active Arkansas framework dovetail with the SIM Initiative population health plan.

Arkansas's delivery system and payment reforms can also serve to support population health goals. For example, Arkansas's SIM partner ACHI profiled how one PCMH is using data to focus on population health (Arkansas Center for Health Improvement, 2016). The interdisciplinary care teams at the clinic use diabetes measures to monitor the care provided to their patients. Any strides in population health can only improve the current health status of Arkansans. From 2006 to 2013, approximately 20 percent of the adult population indicated that they were in fair or poor health. Perceptions of physical health among adults were worse: over this same time period almost 40 percent of adult Arkansans considered their physical health to be "not good." The comparison group had similarly poor perceptions of overall and physical health to that of Arkansans. Both Arkansas and the comparison group had a reduction in smoking rates from 2006 to 2013, with Arkansas having very slightly lower rates than the comparison group. We anticipate that Arkansas's population health initiative focused on tobacco prevention will reduce smoking rates even further over time.

A.1.5 Strategies to Support Delivery System and Payment Reform

A.1.5.1Practice transformation

Recognizing that it can be difficult for providers to adapt to new payment and delivery system models, the state has continued to offer two types of technical assistance—practice transformation assistance and care coordination services.

Assistance to practices that have, or are seeking, Arkansas PCMH recognition with practice transformation was made available in 2015 and is planned to continue through 2017. When the Medicaid PCMH program began in 2013, state officials selected two types of vendors to assist practices in transforming to functioning PCMHs. One type of vendor helps practices meet the Arkansas PCMH requirements while another delivers care coordination services, such as tracking referrals and making reminder calls to patients. Practices that succeed in coordinating care will likely meet cost and quality metrics and thus be eligible for shared savings payments. Practices' use of either type of vendor is voluntary.

According to state officials, services provided by the practice transformation vendors in 2015 and early 2016 have been very popular and effective with PCMH practices—nearly every practice enrolled in or has taken advantage of this service. The vendors assist with practice transformation to meet PCMH requirements and are paid directly by the state, with no out-of-pocket expenses to providers. Providers have extensively engaged with practice transformation vendors. Two entities—Arkansas Foundation for Medical Care (AFMC) and Qualis Health— provided these practice transformation services in 2015. In 2016, AFMC will remain as the sole practice transformation vendor going forward as Qualis Health's contract was not renewed. State officials envisioned that practice transformation vendors would assist practices with meeting such requirements as 24/7 access and same-day appointments. Over time, however, the role of practice transformation about the PCMH program and explaining rules about shared savings. A state analysis of the first cohort of PCMH practices (enrolled January 2014) found that practices that engaged practice transformation vendors were more likely to complete all PCMH requirements than practices that did not engage these vendors.

Results from a survey of Medicaid beneficiaries in 2015 confirm the success of practice transformation efforts to meet PCMH requirements (see *Appendix B.3*). Patients noted that practices reminded them of their appointments 70 percent of the time. Of the patients who needed care when their provider's office was closed, such as in the evenings or on weekends or holiday, 50 percent were able to get care; the other half were unable to get care. More than 80 percent of providers usually or always knew about important aspects of their medical history.

An important aspect of PCMHs is to coordinate primary and specialty care. According to the beneficiary survey, more than 60 percent helped coordinate care with other providers, specifically care with specialists, and more than 60 percent were usually or always informed about and facilitated care received by specialists. Of those who needed home or community-based care, the provider or practice usually or always facilitated receipt of care for 60 percent of those surveyed. The providers definitely knew about important aspects of the hospitalization for more than half of the consumers surveyed. Over all age groups combined, 85 percent of consumers indicated that they typically receive their care from a doctor's office or private clinic. Of these consumers receiving care from a doctor's office or clinic, about 76 percent indicated that they see one provider when needing care or for advice. This suggests that more than 60 percent of consumers have one provider overseeing most of their care. Although these survey results reflect early SIM implementation in Arkansas, they do suggest that providers and practices are helping to coordinate care for the Medicaid population.

The second type of technical assistance, provision of care coordination services, was underutilized. In 2015, only three practices chose to use the care coordination vendor, which was financed by fees paid by the practices themselves from their monthly risk-adjusted PMPM payments. The vast majority of practices chose instead to provide care coordination themselves. Some hired dedicated care coordinators to fulfill this role; others used existing staff in a team approach to care coordination. State officials suggested that the practice transformation vendors noted above may also be assisting practices with elements of care coordination. As a result of low uptake of care coordination vendor services, Arkansas Medicaid canceled the care coordination vendor contract after 6 months.

Arkansas also provides assistance to help PAPs transform their practice patterns, although state officials noted that they only use the term "practice transformation" when referring to PCMH. As we describe in more detail below, PAPs for EOCs receive reports on care they provide and assistance in interpreting practice reports and identifying any practice changes that may be indicated by those reports.

A.1.5.2Quality measurement and reporting

The EOC and PCMH programs use quality metrics to determine payments to providers, measuring achievement of quality of care thresholds for PAPs (EOC program) and PCMHs participating in the shared savings program (Medicaid and BCBS only). Additionally, quality metric reports to providers (described further in *Section A.5.3*) are intended to help practices improve the care patients receive, although the lag between providing care and receiving feedback on that care from claims-based reports may slow providers' quality improvement cycles.

Neither PCMH nor EOC quality-of-care metric reports are made public, but providers are aware that these reports exist. State officials noted in January 2016 that some PCMH providers

were beginning to ask for specialist profiles based on cost and quality of care metrics (available for PAPs) before making referrals, because specialist performance could impact a PCMH's shared savings calculation, which is based on total cost of care. One state official noted that this interest in overall cost and quality is "probably the singular achievement of the state's model," and both the Medicaid program and private carriers would like to accommodate such requests in the future.

A.1.5.3Health IT and data infrastructure

Four major health information technology (health IT) components continue to support health care transformation in Arkansas: (1) the BCBS Advanced Health Information Network (AHIN); (2) the State Health Alliance for Records Exchange (SHARE), the state's health information exchange, established by and under the direction of the Office of Health Information Technology (OHIT); (3) EHR records required for PCMH practices; and (4) the all-payer claims database (APCD). Although none of these health IT components is supported directly by SIM funds, the state leverages these health IT systems to support both EOC and PCMH payment and delivery system reforms.

The first three health IT components supporting health care transformation in Arkansas— AHIN, SHARE, and EHR—are assisting clinical practices by allowing providers to use data to improve care for their current patient panels. AHIN provides a web-based physician portal for providers to upload their quality of care metrics and receive uniform data reports across payers. In spring 2016, Arkansas is working on AHIN enhancements that will allow providers to receive more granular data on their own performance. In addition, reports will show the performance of "medical neighborhoods," so providers can see patient interactions outside their own offices.

On the February 2016 evaluation call, Arkansas state officials indicated that the state's previous vendor for SHARE offered a "one size fits all" package, which was met with resistance from providers and hospitals. The state has since moved to a different platform that allows an à la carte menu for pricing their services. Although the original requirements for the medical home program was to participate in SHARE, the state has since changed the requirements. Practices must either be (1) a member of SHARE or (2) a member of a hospital information network that will transmit information to practices within 48 hours of an acute care event such as an ER visit or hospitalization. State officials indicated that the new options satisfied stakeholders but no practices have dropped SHARE as a result of the new rules so the allowances likely had little effect. Besides connecting PCMHs, OHIT is working to connect behavioral health outpatient facilities to SHARE so they can receive notifications of hospitals stays and ER visits as well.

Medicaid PCMHs in Arkansas are required to have EHRs, and the state is leveraging that capacity for quality reporting. State officials told us that the most significant change in health IT over the past year is that, as of March 2016, all PCMHs are required to submit quality-of-care

metrics for hypertension, diabetes, and body mass index from their EHRs. If this is successful, additional EHR metrics will be added in the future.

The final health IT component, an APCD, builds the state's data infrastructure to allow for better population health management. The Arkansas Healthcare Transparency Initiative Act, passed by the legislature in 2015, requires payers with more than 2,000 covered lives to submit claims to Arkansas's APCD. Roughly 45 payers have signed up, including health insurance carriers, dental carriers, workers' compensation carriers, and third-party administrators. Medicare also participates voluntarily. In February 2016, state officials told us they expected the APCD to be fully populated by the end of the year, except for payers who receive an extension from the Arkansas Insurance Department. The Supreme Court's March 1, 2016, decision in *Gobeille v. Liberty Mutual* holds that states may not require self-insured plans to participate in an APCD (Gobeille v. Liberty Mutual, 2016). It remains to be seen whether affected plans (largely self-funded employer groups) in Arkansas will submit data to the APCD as planned, but state officials are optimistic.

A.1.6 Sustainability

With this being the last year of Arkansas's SIM Initiative, state officials have emphasized the importance of integrating the PCMH and EOC models within state government operations. The management structure and budget for the Arkansas Medicaid program now include ongoing administration of these payment and delivery system reforms by full-time state employees. Said one senior state official, "These [programs] have become an integral part of Arkansas DHS and the health care innovation team, and they march forward regardless of SIM funding." The multipayer participation that is a hallmark of the PCMH and EOC models in Arkansas lends additional support to maintaining these efforts.

From the beginning of the state's EOC work, Arkansas Medicaid has stated strongly that EOCs are a payment model the Medicaid agency intends to sustain beyond the end of federal funding support through the SIM Initiative. Over the past year, Arkansas has strengthened the data infrastructure needed to support EOC maintenance and development. State employees who understand the intricacies of maintaining EOC oversee contracted staff who work with the data. This allows Arkansas to maintain EOCs as part of its routine Medicaid program into the future.

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A.2 Maine SIM Initiative Progress and Findings

As of March 2016, 2.5 years after initial implementation, the primary reform initiatives under Maine's SIM Initiative—behavioral health homes (BHHs) and accountable communities (ACs) for its MaineCare (Medicaid) population—continue to build on an earlier initiative by the state to create patient-centered primary care health homes (hereafter referred to as health homes).

Key Results from Maine's SIM Initiative, April 2015–March 2016

- Maine increased Medicaid payment rates to BHHs in 2015. The state responded to stakeholder feedback that payment rates were too low. SIM workgroups were regularly informed during the rate review process. Since making this change, the number of BHHs increased to 27 in 2016, with 287 participating providers, serving more than 4,400 Medicaid beneficiaries.
- In 2016, Maine narrowed the scope of its delivery-system reform initiatives for the remainder of the SIM Initiative. With guidance from stakeholders, Maine has chosen to focus on improving diabetes care based on the effective use of claims-based data to guide continuous quality improvement, and on reducing care fragmentation by piloting a predictive analytics tool that will allow providers to target the highest service utilizers for proactive care management. The state views these activities as having the greatest potential for improving health care cost, quality, and utilization.
- Maine has had limited success spreading delivery transformation supported by the SIM Initiative to payers outside of Medicaid. For example, Maine led a successful collaborative effort to develop voluntary growth caps for commercial Accountable Care Organizations (ACOs), but to the state's knowledge, commercial payers have not adopted the caps in ACO contracts.

Maine's strategies to support delivery system and payment models. As in prior years, in 2015 and early 2016 Maine sponsored learning networks for health care providers participating in health homes and BHHs. The state also worked to align quality measures across providers and payers and advance public reporting of health care cost and quality information. Maine made progress connecting BHHs with the health information exchange (HIE). By early 2016, 20 behavioral health organizations received SIM-funded assistance to connect successfully to the HIE, and half were able to contribute data to the HIE. The 20 behavioral health organizations chosen to receive SIM funding to connect to the HIE were chosen before the first round of BHHs were finalized, and three of them did not become BHHs.

Additionally, the state launched several tools that use the HIE such as email notifications to MaineCare care managers and the MaineCare clinical dashboard; these tools support case management and care coordination efforts of MaineCare care managers and for MaineCare more generally as a payer of health services. To promote population health throughout the state, Maine will add diabetes as a priority topic to the State Health Improvement Plan (SHIP) and has used SIM funding to expand the National Diabetes Prevention Program. The state also tested the use of community health workers (CHWs) in underserved populations to provide culturally

appropriate health education and outreach and to link individuals to health and social services within the community. At the end of the SIM Initiative implementation period, MaineCare will continue to make payments to BHHs and ACs, and the state expects to continue to benefit from SIM-funded infrastructure investments.

Interim measures of impact on cost and utilization. A quantitative analysis of health care claims data shows that by the end of 2014, there were few changes in utilization and expenditures statewide for Maine's Medicare, Medicaid, and commercial populations. This result may be expected, as only a relatively small proportion of Medicaid beneficiaries would have been directly affected by the state's initiative during the time period analyzed. A brief discussion of these results appears in this chapter, and the full set of data on measures of utilization and expenditures available from statewide claims-based analyses for the Medicaid, commercial, and Medicare populations is available in *Appendix B.1*.

A.2.1 Overview of the Maine SIM Initiative

The SIM Initiative in Maine began implementation on October 1, 2013. Since that time, the state has made progress toward achieving its six strategic goals: (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, and (6) engaging people and communities (Maine DHHS, Maine State Innovation Model, 2014). The SIM Initiative originated from the Commissioner of Health's Office. The Maine SIM Initiative has been working with three main contractors—Maine Health Management Coalition (MHMC), Maine Quality Counts, and HealthInfoNet (HIN)—to implement SIM-supported activities.

The major delivery system reforms supported by the SIM Initiative are BHHs and ACs, which is the term Maine uses for ACOs for the Medicaid population. Both incorporate best practices from an earlier initiative by the state to create patient-centered primary care health homes (called health homes), with the aim of an interconnected health care delivery system. BHHs provide care in conjunction with health homes for MaineCare enrollees with behavioral health conditions. MaineCare also supports Health Home and BHH activities through learning networks that provide educational opportunities and technical assistance. ACs are also built on the infrastructure laid out by health homes. Each AC contracts with a lead entity that has partnerships with at least one Health Home, and with a variety of providers that can, together, provide comprehensive primary, acute, and chronic health care services.

The SIM Initiative is also directing funds toward enhancing data analytics and infrastructure. Specifically, MaineCare, together with its SIM partners MHMC and HIN, has connected BHHs to the state's HIE, built clinical data dashboards for MaineCare, provided

practice reports, and incentivized quality of care through public reporting. These activities all aim to support the strategic goals of the SIM Initiative, especially centralizing data analytics and integrating physical and behavioral health. *Table A-6* summarizes the status of SIM activities in the areas of delivery and payment systems, population health, practice transformation, health information technology (health IT), and data analytics.

					Supporting
Activity	Activity type	Payers	Provider types	Dates	policies (if any)
Behavioral Health Homes	Delivery/payment system	Medicaid	Behavioral health	Started 2014	SPA Medicaid regulations ¹
Accountable Communities (ACs)	Delivery/payment system	Medicaid	Primary care Specialty care Behavioral health Developmental disabilities	Started January 2015	SPA Medicaid regulations
Voluntary Growth Caps	Delivery/payment system	All payers		NA	
Value-based Insurance Design	Delivery/payment system	All payers		NA	
Health Homes	Delivery/payment system	Medicaid	Primary care	Started 2013	SPA Medicaid regulations
Patient-centered medical homes	Delivery/payment system	All payers	Primary care	Started 2010	
Coordination with State Health Improvement Plan	Population health				
Expansion of NDPP	Population health			Started 2015	
Community Health Worker (CHW) Pilot Project	Population health	All payer	CHWs	Started March 2015	
Health Home and BHH Learning Network Sessions	Practice transformation	Medicaid	Primary care Behavioral health Developmental disabilities	Started 2015	
Total Cost of Care Workgroup and Accountable Care Implementation workgroup	Practice transformation	All payer	All providers	Started 2014	
Connecting behavioral health organizations to HIE	Health IT	Medicaid	Behavioral health	Started 2014	

Table A-6. Summary of SIM Initiative activities in Maine, Spring 2016

(continued)

Activity	Activity type	Payers	Provider types	Dates	Supporting policies (if any)
Email notifications to MaineCare care managers	Health IT	Medicaid	Care managers	Started June 2015	
MaineCare clinical dashboard	Health IT	Medicaid	NA	Started 2016	
Primary care practice reports	Data analytics	All payer	Primary care	Started January 2014	
Value-based payment portal for BHHs	Data analytics	Medicaid	Behavioral health	Started December 2015	
Monthly and quarterly utilization and quality reports to ACs	Data analytics	Medicaid	Primary care Specialty care Behavioral health	2015	
Blue Button dashboard	Patient engagement	All payer	Primary care	2014–May 2015	

Table A-6. Summary of SIM Initiative activities in Maine, Spring 2016 (continued)

BHH = behavioral health home; HIE = health information exchange; NA = not applicable; NDPP = National Diabetes Prevention Program; SPA = State Plan Amendment.

¹ 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.

A.2.2 Delivery System and Payment Reform Activities

A.2.2.1 Summary and key outcomes to date

Under the SIM Initiative, Maine developed BHHs and ACs in its Medicaid program. These delivery system and payment models followed an earlier patient-centered medical home (PCMH) model developed under the Multi-Payer Advanced Primary Care Practice (MAPCP) demonstration, which began in 2010, and Medicaid health homes, which began in 2013. In addition to its work implementing delivery system and payment models in Medicaid, Maine initiated workgroups pertaining to value-based insurance design (VBID) and a voluntary growth cap for commercial ACOs. *Table A-7* provides additional detail on the three delivery system and payment models that Maine has implemented or supported under the SIM Initiative.

In January 2013, CMS approved Maine's Medicaid Health Homes State Plan Amendment (SPA) pursuant to Section 2703 of the Affordable Care Act. This approval facilitated the development of health homes. As of May 2016, there are 112 of these health homes throughout the state. These are primary care practices that support MaineCare members with chronic conditions through outreach, preventive health, care coordination, and patient and family engagement. All PCMH practices that had been participating in the MAPCP demonstration became health homes. In addition, practices that did not participate in MAPCP

Delivery system Implementation Participating Retrospective Payments based on Financial model Payment model or prospective whom? Risk target yes/no Quality target yes/no progress payers **Health Homes** FFS + \$12.00 PMPM to Medicaid Health home NA Retrospective No Yes, but quality Operational practice receives performance has no Health Home practice for care coordination + PMPM for all impact on payment \$129.50 PMPM for enrolled patients 21 quality measures **Community Care** that meet chronic including NCQA, Teams + \$15 PMPM to condition criteria; HEDIS, among others health home practices Community care to coordinate physical team receives health care for BHH PMPM in months enrollees when service is provided Behavioral Health \$394.40 PMPM to Medicaid Behavioral health NA No Yes, but quality Operational Retrospective Homes behavioral health homes receive performance has no homes for case PMPM for all impact on payment management for enrolled patients 13 guality measures in children and adults who receive at least Year 1 for behavioral one service that health homes, three month; health home additional measures in practices receive Year 2 payment for all enrolled patients Accountable Care FFS + shared savings Medicaid Retrospective Assignment based Model I: one-Yes Yes Operational Communities on health home sided only-50% 14 core quality enrollment, plurality of shared savings measures and a of primary care up to 10% of choice of three of services (for benchmark seven elective members not in a expenditures; measures health home), or Model II: twoplurality of ER visits sided—60% of (for members shared savings up without a primary to 15% of care visit in the last benchmark 12 months) expenditures (downside begins Year 2)

Table A-7. SIM Initiative-related delivery system and payment reform in Maine

BHH = behavioral health home; ER = emergency room; FFS = fee for service; HEDIS = Healthcare Effectiveness Data and Information Set; NA = not applicable; NCQA = National Committee for Quality Assurance; PMPM = per member per month.

elected to participate in the Medicaid Health Home program. The Health Home program also includes community care teams—multidisciplinary, community-based care teams—that help health homes provide targeted case management and social support services for high-cost, high-risk patients. Health homes receive a per member per month (PMPM) payment from MaineCare of \$12.00 for care coordination, in addition to fee-for-service (FFS) payments for the health care services they provide (Medicaid.gov, 2013). The PMPM payments to health homes described in Table A-7 are not directly supported by SIM funds, but SIM funding is used to support learning collaboratives for these health homes.

In 2014, MaineCare began implementing BHHs. BHHs are partnerships between licensed community health providers (known as behavioral health home organizations) and one or more health homes to manage the physical and behavioral health needs of eligible adults and children with serious and persistent mental illness and with serious emotional disorders. BHHs are authorized by a Medicaid SPA approved in 2014 (Medicaid.gov, 2014). By the end of 2015, there were 27 participating provider organizations in the Behavioral Health Home initiative. An increase in the PMPM rate in late November 2015, as described below, provided additional incentive for the formation of these health homes. PMPM payments for these organizations are not directly funded by the SIM Initiative, but SIM funding has been used for the development of the BHH program and for learning collaboratives and information technology support, as also described below.

The most recent delivery system model to be developed under Maine's SIM Initiative is ACs. MaineCare ACs are authorized by a Medicaid SPA effective April 1, 2014 (Medicaid.gov, 2016). As of January 2015, MaineCare had finalized contracts with four ACs: Beacon Health, LLS; Community Care Partnership of Maine, LLC; Kennebec Region Health Alliance; and Maine Health ACO (Maine DHHS, MaineCare Services, 2016b). Each AC is headed by a lead entity, which must include at least one health home or primary care practice and at least one provider of services for chronic conditions, developmental disabilities, and behavioral health. Each AC also must have relationships with hospitals and public health entities in the AC's geographic service area.

MaineCare members are attributed to an AC in three ways. First, MaineCare members enrolled in a health home that is part of an AC are attributed to that AC. Second, members who have a plurality of primary care visits with a provider who is part of an AC are attributed to that AC. Third, members who have three or more ER visits to a hospital that is part of an AC are attributed to that AC.

Maine offers ACs two shared savings payment models (see *Table A-8*). All four ACs have chosen Model I with one-sided risk only,¹⁶ with no downside risk, even though Model II has a higher shared savings rate than Model I and a higher cap on shared savings. Both models specify continuing provider payment on an FFS basis. To minimize variation from one year to the next because of members with large claims, annual claims for any individual member that exceed a defined claims caps are not included in the benchmark for total cost of care. For ACs with 1,000–1,999 members, the defined cap is \$50,000; for those with 2,000–4,999 members, it is \$150,000; for those with 5,000 or more members, it is \$200,000.

	Model I	Model II
Minimum number of members	1,000	2,000
Risk	One-sided risk	One-sided risk—Year 1
		Two-sided risk—Year 2
Shared savings	50% maximum savings, with cap at	60% maximum savings, with cap at 15%
	10% benchmark total cost of care	benchmark total costs of care
Shared losses	None	Year 1: none
		Year 2–3: 40%–60% with cap at 5% of
		benchmark total cost of care in Year 2
		and 10% of benchmark total costs of
		care in Year 3

Table A-8.	Table A-3:	MaineCare	Accountable	Communities	models ¹
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¹ Maine Department of Health and Human Services, MaineCare Services (2015). *MaineCare's Accountable Communities Initiative*. Accessed May 27, 2016 from: http://www.maine.gov/dhhs/oms/pdfs_doc/vbp/AC/2015%20AC%20Pres%20for%20VBP%20Site.pdf

All 67 practices that are part of the four ACs serve members with chronic conditions and therefore receive the PMPM payments for those members. The same practices also serve AC members who do not have chronic conditions, for whom no such PMPM payments are made. During end-of-year reconciliation, MaineCare subtracts health home payments from AC payments to avoid duplication. As of May 2016, MaineCare and MHMC were working to calculate shared savings and quality measures for ACs, but no findings were available.

Increased provider participation by 2016. Provider and payer participation is the mechanism by which more Maine residents receive care delivered under value-based payment models or changed delivery systems. *Table A-9* presents the number of physicians (participating providers) and practices (participating organizations) in Maine's SIM-related delivery system reform

¹⁶ One-sided risk means that providers are eligible to earn shared savings for meeting a lower total cost target but are not subject to penalties for higher-than-expected costs; two-sided risk means that providers are eligible to earn shared savings (the percentage earned is usually higher than one-sided risk options) for meeting lower total cost target and are expected to pay back money if costs are higher than expected.

models and participating payers for each model.¹⁷ As of first quarter 2016, there are 68 all-payer PCMHs participating in the MAPCP Demonstration, 112 practices under health homes (with 248 participating providers), 27 practices under BHHs (with 287 participating providers), and 67 practices under Maine's four ACs. Even though the number of ACs did not change from 2015 to 2016, the number of practices participating under ACs increased from 28 in 2015 to 67 in 2016 because of one of the ACs securing the participation of many provider organizations the past year. BHHs also experienced an increase in practice participation, most likely because of changes in the rate increase and participation requirements that went into effect in late November 2015, as described in *Section A.1*.

Participants	Patient-centered medical homes under MAPCP	Health Homes	Behavioral Health Homes	Accountable Communities
Physicians ¹				
2015	513 (33%)	Not reported	Not reported	Not reported
2016	468 (30%)	248	287	Not reported
Practices ²				
2015	71	111	21	28 (4 ³)
2016	68	112	27	67 (4 ³)
Payers	Medicaid, Commercial (Aetna, Anthem BCBS, Harvard Pilgrim Health Care), Medicare	MaineCare	MaineCare	MaineCare

Table A-9. Physicians, practices, and payers participating in SIM Initiative-related models in
Maine, 2015 and 2016

BCBS = Blue Cross Blue Shield; MAPCP = the Multi-Payer Advanced Primary Care Practice Demonstration. Source: Counts for second quarter 2015 and first quarter 2016 from Maine's Master Metrics Tables. Denominators for percentages of participating providers (where given) are the number of active patient care primary 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 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 Accountable Community "lead entities."

A larger percentage of the MaineCare population reached. With this level of provider participation, Maine has surpassed its target numbers of Medicaid beneficiary attribution for both BHHs and ACs, the two initiatives directly supported by SIM funds. The number of Medicaid beneficiaries reached by BHHs increased from 3,738 in first quarter 2015 to 4,418 in first quarter 2016, surpassing the state's goal of reaching 4,000 beneficiaries

¹⁷ In addition to models supported by the SIM Initiative, Maine is also engaged in other delivery system and payment reform models through various CMS initiatives including the Multi-Payer Advanced Primary Care Practice initiative; the Community-based Care Transitions Program (CCTP); two Health Care Innovation Award (HCIA) grants; the Medicaid Emergency Psychiatric Demonstration (MEPD); and the Transforming Clinical Practice Initiative (TCPI).

(*Table A-10*). Over the same period, the number of Medicaid beneficiaries reached by ACs increased from 30,000 to 45,000, surpassing the state's goal of 35,000 beneficiaries. The late November 2015 rate change for BHHs was one modification that encouraged providers to take on more beneficiaries. The increase in Medicaid beneficiaries reached by ACs is mostly because one of the ACs secured the participation of many provider organizations the past year, thus almost doubling the number of Medicaid beneficiaries attributed to that AC. Because the extent of overlap in Medicaid beneficiaries served by health homes, BHHs, and ACs is unknown, we cannot provide unduplicated total numbers of Medicaid beneficiaries reached by providers participating in value-based payment models.

	Patient-centered medical		Behavioral Health	Accountable Care
Payer	homes under MAPCP	Health Homes	Homes	Organizations
Medicaid				
2015	26,675 (10%)	72,283 (28%)	3,738 (1%)	30,000 (12%)
2016	25,126 (10%)	52,338 (21%)	4,418 (2%)	45,000 (18%)
Commercial				
2015	67,726 (10%)	—	_	—
2016	67,274 (10%)	—	_	—
Medicare				
2015	45,482 (22%)	—	_	—
2016	43,268 (20%)	_	_	_

Table A-10. Population reached in the Maine innovation models by payer

MAPCP = Multi-Payer Advanced Primary Care Practice.

- = not applicable.

Source: Counts for first quarters 2015 and 2016 from Maine's quarterly Master Metrics Tables. The denominators used to compute the percentage of the population reached in 2015 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 and Medicaid, Medicare, and privately insured individuals.

With an increase in beneficiaries reached from BHHs and ACs, we expect Medicaid beneficiaries in particular to receive improved care coordination. A core feature of care coordination is to have one provider, generally the primary care provider, understand all of the patient's medical care needs and coordinate among all the providers and services the patient is receiving. In a survey of randomly selected Medicaid beneficiaries in Maine in 2015,¹⁸ early in the implementation of health homes and ACs, 89 percent of respondents said their usual provider knew about all of their medical care needs. Seventy percent of respondents who received care from more than one kind of health care provider or used more than one kind of health care

¹⁸ The methods and state-specific results from the consumer survey fielded in Maine are available in Appendix B.3 of this report.

service in the past 6 months reported that their usual provider usually or always helped coordinate their care among these different providers and services.

Multi-payer activity in Maine to develop PCMHs under the MAPCP Demonstration, starting in 2010, may have laid the groundwork for ensuring that patients regardless of payer have personal health care providers well positioned to coordinate their health care needs. According to statewide data from the Behavioral Risk Factor Surveillance System (BRFSS) collected during the pre-SIM Initiative baseline period (2006-2013), the percentage of adults in Maine who do not have a personal health care provider has decreased slightly from 12.4 percent in 2010 to 11.6 percent in 2013 and has consistently been lower than its comparison group states since 2010.¹⁹

Interim measures of impact on cost and utilization. The intent of new models of care promoted through the Medicaid program is to improve care coordination efforts beyond levels already attained through preexisting PCMH efforts. The 2006-2013 BRFSS measures and 2015 Medicaid consumer survey responses described above demonstrate levels of care coordination in place prior to the time period for interim claims-based analysis. Improved care coordination should in turn decrease utilization of emergency rooms (ERs) for avoidable events that could be managed within another setting and reduce the need for more expensive care like inpatient hospital stays. With fewer than 20 percent of Medicaid beneficiaries reached by PCMHs, BHHs, or ACOs beginning in 2014, the time period for analysis of changes in utilization and expenditure, it may be premature to expect changes in these trends among all state Medicaid beneficiaries. An interrupted time series analysis using an in-state comparison group of commercial insurance data to control for secular trends shows a statistically significant declining trend in inpatient admissions among Medicaid beneficiaries statewide during the test period (through 2014) (see Appendix B.1 for all results from claims-based analysis). However, measures of ER visits, 30-day readmissions, and total PMPM payments were not statistically significant. These interim results indicate that the SIM Initiative had a relatively limited impact on the Medicaid population as of 2014.

There were a few statistically significant findings in the interim analysis of changes in utilization and expenditures for Maine's statewide Medicare and commercial populations relative to the comparison group of similar states. In this interim period of analysis, none of these findings could be linked to substantive changes under the SIM Initiative, which largely focuses on delivery system and payment model change in the Medicaid program.

A.2.2.2Progress and lessons learned

MaineCare refined rules and payments for the BHH program to increase provider participation effectively. In December 2015, BHHs began to receive \$394.20 PMPM from MaineCare for all enrolled patients—children and adults—who receive at least one service per

¹⁹ The methods and state-specific results from the BRFSS, 2006-2013, are available in Appendix B.2 of this report.

month. Health homes also receive an additional \$15.00 PMPM to coordinate physical health care for enrollees. MaineCare established these rates in late November 2015, following a rate review process in summer and fall of 2015. Previously, the BHH rates were \$365.00 for adults and \$322.00 for children.

The rate increase was partly intended to encourage providers who serve high-need patients to bill under the BHH program-instead of Sections 13 and 17 of the MaineCare benefits manual, which authorize payments for integrated care for adults and children. In the Year 2 Annual Report, we noted that state officials were concerned that providers for high-needs patients preferred to continue billing under Section 17 instead of the BHH program, because of more attractive payment rates. MaineCare retained Sections 17 and 13 of the MaineCare Benefits Manual (Maine DHHS, MaineCare Services, 2016c), but effective April 8, 2016, changed Section 17 to eliminate intensive case management as a covered service and to require a primary diagnosis of schizophrenia or schizoaffective disorder to qualify (Maine DHHS, MaineCare Services, 2016d). In addition, MaineCare eliminated the requirement for BHHs to deliver at least 1 hour of services to a member to be eligible for the PMPM payment. Providers reported that the rate change has allowed them to serve more members, and the number of BHHs in Maine continues to grow, totaling 27 organizations as of first quarter 2016. A few of the six BHHs that joined the program in 2016 said they did so because of the recent rate increase. However, a remaining challenge noted by new entrants was hiring staff, especially peer specialists.

Maine's four ACs encompass health systems that are among the largest in the state, and they continue to add providers to the AC program. The first program year ended July 31, 2015. Although no new applications were submitted for the program's Year 2, participation continues to grow. One of the ACs more than doubled the number of its practices between Year 1 and Year 2, and at least two ACs plan to add more practices in Year 3.

As of 2016, Maine is shifting the focus of its SIM activities away from multi-payer workgroups that have achieved some key goals. The SIM Initiative has engaged commercial payers to develop voluntary growth caps and study VBID, although these initiatives will not be a priority for the SIM program going forward. In 2015, the SIM partner MHMC led discussions that resulted in multi-payer agreement to a voluntary growth cap.²⁰ This cap, which aims to keep the rate of increase in annual risk-adjusted PMPM payments for commercial ACOs at or below the agreed-upon voluntary cap, was a milestone in the group's work (Maine DHHS, MaineCare Services, 2015). As of May 2016, the state reported the growth cap had been the subject of several contract renewal discussions but, to its knowledge, had not yet been adopted. SIM

²⁰ The methodology for establishing the voluntary cap was described in the SIM Round 1 Evaluation Year 2 Annual Report 2 (Gavin et al., 2016).

funding for further work on the voluntary growth cap was terminated in early 2016 as part of a broader effort to refocus resources on priority initiatives.

Until April 2016, SIM funding supported MHMC's work to convene the VBID workgroup. This workgroup is responsible for examining VBID examples around the country and identifying best practices (Maine DHHS, Maine State Innovation Model, 2016a). During 2015 and early 2016, the group recommended a standard online provider enrollment application for participation in VBID that all health plans have agreed to accept. This standardized form replaces individual forms that practices previously had to complete for each provider and each health plan (Maine DHHS, Maine State Innovation Model, 2016b). MHMC expects that the form will be released in late spring 2016 (Maine DHHS, Maine State Innovation Model, 2016b). Work on a broader framework for pursuing VBID is ongoing even in the absence of SIM Initiative funding.

A.2.3 Integration of Behavioral Health and Primary Care

Integration of behavioral health services with primary care has remained a central focus of the Maine SIM Initiative in 2015 and early 2016. Maine's 30-day readmission rates for mental health conditions are 21.5 percent, compared to the U.S. average of 11.8 percent (Maine.gov 2016). BHHs support the connections necessary to increase communication and coordination between physical health and mental health providers, lower health care costs, and improve outcomes. Analysis of the 2015 consumer survey of Medicaid beneficiaries in Maine (*Appendix B.3*) indicated that 73 percent of the beneficiaries who pursued behavioral health care reported that their regular provider seemed informed that such care was received. Although the BRFSS data (*Appendix B.2*) show a gradual increase in the percentage of adults in Maine reporting one or more days in which mental health was not good from 2006 (32 percent) to 2012 (36 percent), the percentage decreased significantly from 2012 to 2013 (to 33 percent).

As one strategy for integrating behavioral health and primary care, health home and BHH providers participate in intensive learning sessions and monthly webinars (see *Section A.5.1*), with topics such as the role of community mental health in integrated care. Also, SIM partner Maine Quality Counts facilitates these learning sessions and webinars, in addition to quality improvement support, access to state and national strategies for health care transformation, tools, resources, and best practice examples (Maine.gov, 2016).

A.2.4 Population Health

Maine's population health activities under the SIM Initiative complement payment and delivery system reforms. According to the BRFSS data during the pre-SIM Initiative period, from 2006 to 2012, the percentage of adults in Maine that reported fair or poor health was consistent around 14 to 15 percent, with a decrease to 13 percent in 2013 (*Appendix B.2*). To continue improving Maine's population health, the SIM Initiative prioritizes three activities.

Two activities address diabetes, a priority health concern in the state, and a third tests the use of CHWs to facilitate care in underserved communities. In the first activity related to diabetes, Maine is combining SIM requirements regarding population health with the state's ongoing effort to carry out its SHIP (Maine SIM Program, 2015, p. 145). Currently, Maine's SHIP includes four priority topic areas (immunizations, obesity, substance abuse and mental health, and tobacco use) and two public health infrastructure goals (educating the public and mobilizing community partnerships) (Maine Center for Disease Control and Prevention, 2016). The state expects to add diabetes to its revised SHIP by June 2016.

Maine has provided SIM funding to its partner, Maine Center for Disease Control & Prevention, to implement the National Diabetes Prevention Program (NDPP), a Centers for Disease Control and Prevention (CDC) educational initiative to help patients at risk for diabetes make lifestyle changes to avoid or delay progression of the disease. Over the past year, the program has expanded training resources to such an extent that it exceeded its target reach by more than 400 percent (Maine DHHS, Maine State Innovation Model (2016c). As of February 2016, 78 new lifestyle coaches have been trained and deployed, and 855 individuals have completed the program. Through SIM funding, the NDPP program created a Maine NDPP Data Dashboard. Lifestyle coaches enter participant session data, which are transmitted to the Maine CDC. The dashboard offers providers real-time tracking and updates on NDPP participants. Primary care practices that are NDPP sites with U.S. CDC Diabetes Prevention Recognition Program recognition and that have a current NDPP Letter of Understanding²¹ with the Maine CDC have access to the dashboard. Each primary care site determines who has access to the dashboard.

Maine is increasing access to the NDPP by making it a state-funded health benefit. In June 2015, the state added the program to WellStarME, a wellness initiative for state employees and retirees. As of September 2015, a cost-benefit analysis was underway to evaluate adding the program to MaineCare. A separate evaluation of the NDPP program is expected in September 2016.

Finally, the CHW pilot project is a SIM-supported effort to test the use of CHWs to engage communities and help underserved populations receive the care they need (Maine DHHS, Maine State Innovation Model (2016b). Analysis of the consumer survey of Medicaid beneficiaries in Maine showed that among those who needed care or services at home or in the community, 59 percent reported that their health care provider or other staff usually or always helped them get those services (*Appendix B.3*). Since March 2015, four pilot sites have been serving various patient populations in different geographic regions and clinical settings. The four pilots are expected to continue through the end of 2016, but project sustainability is

²¹ The Letter of Understanding describes responsibilities of the Maine CDC-Diabetes Prevention and Control Program and each NDPP site.

uncertain. Key issues include obtaining third-party payment and addressing how CHWs fit into new payment models (Maine SIM Program, 2015, p. 96). In February 2016, the CHW stakeholder group completed recommendations for CHW training standards that could pave the way for third-party reimbursement. Also in January 2016, the SIM steering committee noted its intent to continue discussion on how CHWs may fit into new payment models (SIM Steering Committee, 2016).

A.2.5 Strategies to Support Delivery System and Payment Reform

A.2.5.1 Practice transformation

As of early 2016, MaineCare continues to facilitate practice-level change through learning opportunities for health home and BHH providers, which are developed and delivered by SIM partner Maine Quality Counts. The learning session curriculum was initially based on foundational needs identified through quarterly reports submitted by health homes and BHHs to Maine Quality Counts. Topics covered included quality improvement, internal measurement, and integration of physical and behavioral health. Maine Quality Counts uses progress reports from participants and feedback from surveys provided at each session to assess their effectiveness. State officials reported receiving positive feedback regarding the progression of learning sessions and content from both health home and BHH providers.

For the health home learning collaborative, 2015 attendance averaged 68 percent of health homes and BHHs per session. Maine Quality Counts hosted one intensive learning session in February 2016 for this learning collaborative, with two additional sessions scheduled for June 2016 and September 2016, in conjunction with the BHH learning collaborative. In addition to the learning sessions, webinars for health home and BHH providers are planned monthly between January and September 2016—with topics ranging from optimizing patient supports during transitions of care to palliative care in primary care settings (Maine.gov, 2016). Although less frequently used during this reporting period, Maine Quality Counts also provided quality improvement coaching for the health homes and BHHs. For the BHH learning collaborative, 2015 participation averaged 90 percent of BHHs per session. Webinars are also planned monthly for this group between January and September 2016—with topics ranging from utilizing consultants as part of the behavioral health team to learning collaborative review (Maine.gov, 2016).

Finally, the Maine Developmental Disabilities Council used SIM funding to develop a curriculum for primary care providers that teaches best practices for communication with patients with developmental disabilities, their family members, and their aides. As of January 2016, state officials reported 476 individuals had been trained.

A.2.5.2Quality measurement and reporting

Two important goals for the Maine SIM Initiative are aligning quality measures across payers and provider types in the commercial sector, Medicare, and MaineCare, and publicly

reporting health care cost and quality information. As described below, to improve alignment, MaineCare and its SIM partners have developed a total cost of care index and core quality measures for ACOs across sectors. To improve public reporting, SIM funding has also provided primary care and behavioral health information for consumers on GetBetterMaine.org, a website devoted to publicly reporting quality information on Maine doctors and hospitals.

Under the SIM Subcommittee on Payment Reform, which provides guidance to the aspects of the SIM Initiative related to the development and alignment of new payment models, MHMC led two workgroups to facilitate alignment of quality measures across payers and providers. One of the workgroups, the Total Cost of Care workgroup, included both public and private payers. The Total Cost of Care workgroup established a voluntary total cost of care index to be incorporated into AC structures. This index is a measure of a primary care provider's risk-adjusted cost-effectiveness at managing the population it cares for and includes all costs associated with treating members—including professional, facility inpatient and outpatient, pharmacy, lab, radiology, ancillary, and behavioral health services (Maine DHHS, Maine State Innovation Model, 2014).

MHMC also led the Accountable Care Implementation workgroup, which identified a core set of ACO measures that could be used across payers and providers in public reporting, contracting, and performance measurement. The group finalized 44 payment and quality measures in Year 2 of the SIM Initiative (Gavin et al., 2016). State officials reported broad acceptance of these measures, and in 2015, the core measure set accounted for 66 to 72 percent of performance measures in risk contracts. All major health systems, commercial health plans, and MaineCare participated in identifying the core measure set and have committed to using it. These measures are intended to increase alignment, reduce reporting burden, and deliver a consistent message to providers. They are also voluntary and can be modified or supplemented based on covered populations or areas of focus. Challenges remain in the collection and reporting of clinical data, but the workgroup has achieved its initial objectives.

Finally, the SIM Initiative built on the existing infrastructure of GetbetterMaine.org to allow for voluntary public reporting on quality and cost metrics beginning in January 2016. MHMC established GetbetterMaine.org in 2011 to empower the public to make informed decisions about the care they receive (Maine Health Management Coalition, 2011). As of March 2016, GetBetterMaine.org had published quality and cost data on 1,794 adult primary care providers (PCPs), 385 pediatric PCPs, and 135 behavioral health sites—representing 459 behavioral health providers in all. Public reporting was initially scheduled to begin July 2015 but deferred until January 2016 because of concerns in the provider community about how data were assigned and displayed on the website. Information on the total cost of care for adult primary care providers is based on blended 2-year aggregate data. GetBetterMaine.org also displays a behavioral health integration icon, behavioral health measures, and pediatric measures such as asthma and immunizations. All publicly reported measures are updated by MHMC on

GetBetterMaine.org four times a year and reviewed by a steering committee to ensure that the measures continue to be relevant and robust.

A.2.5.3Health information technology and data infrastructure

In 2015 and early 2016, the SIM Initiative made progress on multiple fronts to advance health IT and the use of data to support delivery system reforms, with SIM partner HIN. Technical accomplishments include (1) making progress in connecting behavioral health providers to the state's designated HIE as most behavioral health organizations were able to view information on the HIE and half were able to contribute data to the HIE, (2) implementing electronic notifications to alert MaineCare managers when patients use ER or inpatient hospital services, and (3) creating a clinical dashboard MaineCare can use to support program reforms. In addition to these accomplishments, Maine used data from the HIE to distribute reports to PCPs, BHHs, and ACs, and it also tested a portal for providing patients with access to a medical summary document from the HIE.

Maine's effort to connect behavioral health providers to the state's HIE and implement data sharing between primary care and behavioral health providers and the exchange has been moving forward in 2015 and early 2016, although with delays for some providers. Behavioral health organizations need to complete three testing phases before sharing data through the HIE. By early 2016, 20 behavioral health organizations received SIM-funded assistance to connect successfully to the HIE, and half were able to contribute data to the HIE. The remainder were either in various stages of testing or had not yet demonstrated the technical capacity to share information using the required standards. This delay was the result of electronic health record (EHR) vendors being unable to meet timelines and failing to satisfy requirements for interoperability (HealthInfoNet, 2016a). HIN has been providing technical support, including monthly webinars for behavioral health organizations and weekly calls for the vendors in an effort to get the work back on track (Maine DHHS, Maine State Innovation Model (2016d).

Around June 2015, after months of testing, HIN began sending secure email notifications from the HIE to MaineCare care managers when patients use inpatient or ER services. The messages, which include information about the visit and associated medical records, are intended to improve coordination and help patients receive the care they need in the most efficient setting (Maine DHHS, Maine State Innovation Model (2016d). According to HIN, by replacing faxes, the electronic notifications created a more efficient workflow for both the hospital and MaineCare staff (HealthInfoNet, 2016b). From the 2015 Medicaid beneficiary survey (*Appendix B.3*), fielded prior to these electronic notifications, 64 percent of beneficiaries who were hospitalized overnight agreed that their provider definitely knew important information about their recent hospital stay, and 58 percent of beneficiaries who were hospitalized overnight stay.

The MaineCare clinical dashboard launched in early 2016. This web-based analytics dashboard, which combines clinical data from the HIE and MaineCare claims data, marks the first use of Maine's HIE to support a payer using data from EHRs (Maine DHHS, Maine State Innovation Model, 2016b). This effort is important to the SIM Initiative because of its potential to help MaineCare target case management for at-risk patients and super-utilizers through development of more sensitive and specific risk profiles.

To improve reporting of health care cost and quality data, Maine provides feedback reports to primary care practices, BHHs, and ACs. The reports detail trends in utilization, cost, and quality for a practice's commercial and Medicaid patient panels. They also compare the practice's outcomes to statewide benchmarks. MHMC began distributing Primary Care Practice Reports to all PCPs in Maine for commercial patients in January 2014 and for Medicaid patients in July 2014. The reports are designed and developed by MHMC with support from MaineCare and guidance from stakeholders (Gavin et al., 2016, p. 122). In 2017, the Pathways to Excellence workgroup—MHMC's steering committee to improve public reporting—plans to increase provider reporting and expand it to specialists. MHMC is also planning to convene an employer-led workgroup to engage large health systems in the state to encourage provider participation.

Quality data reports were made available to BHHs through the Value-Based Payment Portal beginning in December 2015. This portal covers eight quality measures and provides scores comparing providers to their peers on each measure. MaineCare focused on providing technical support to orient providers to the portal and incorporate it into daily workflow. MaineCare also hosted webinar trainings with the goal of sharing ideas on how to use claims data in a meaningful way and broadcast messages with suggested portal uses. The provider community reportedly had a positive reaction to the portal, although MaineCare reported challenges with sharing substance use disorder and mental health information because of the federal 42 CFR Part 2 regulations. As of March 2016, the state started to share mental health data through the portal.

MaineCare provides ACs with data on a monthly and quarterly basis. Spreadsheets of utilization metrics on each AC member are provided on a monthly basis. Utilization measures include ER visits and number of inpatient admissions in the past quarter and past year and members who have not had a primary care provider visit in the past year. Separately, quarterly quality reports let providers view a quality score for each measure, enabling them to make improvements on the patient level. Total cost of care reports, also provided on a quarterly basis, show total spending and PMPM spending on aggregate across the AC and on the individual practice level. These reports also break down spending into several population categories, so ACs can decide which populations to focus on and how to properly monitor those populations. Provision of these monitoring data was seen as so critical to the success of the AC program that ACs were operational until MaineCare could provide these data.

Finally, Maine's Blue Button HIE project was a 1-year pilot to test providing patients with access to a medical summary document from the state HIE. Under the pilot, which ended in May 2015, HIN worked with Eastern Maine Healthcare Systems to link three primary care practice portals with the state HIE. Through this Blue Button link, patients could download a continuity of care document with demographic and health information—including allergies, medication history, active health issues, encounter and procedure histories, and laboratory results. Patients' use of the service exceeded expectations, and users reported that they wanted access to even more information, especially doctors' notes. However, users also expressed confusion about the relationship between the Blue Button portal and the inpatient and outpatient portals providers must have to satisfy Meaningful Use requirements (HealthInfoNet, 2016a).

A.2.6 Sustainability

The SIM Maine leadership team has recognized that priorities shift over time and that goals and objectives set at the beginning of the SIM Initiative needed to be reassessed. Members of the SIM Steering Committee formed the Strategic Objective Review Team (SORT) to review progress made in each of Maine's SIM objectives. Based on recommendations from the SORT review, some SIM projects will not continue for the remainder of the SIM Initiative and others will because they advance the priorities identified through the SORT review. Further, the SORT review recommended key adjustments to areas expected to provide good return on SIM investments, namely a stronger focus on improving diabetes care based on the effective use of claims-based data to guide continuous quality improvement, and on reducing care fragmentation by piloting a predictive analytics tool that will allow providers to target the highest service utilizers for proactive care management. The state views these activities as having the greatest potential in improving health care cost, quality, and utilization.

After federal SIM funding ends, MaineCare will continue to make payments to BHHs and ACs, and the state expects to continue to benefit from SIM-funded infrastructure investments. However, one concern raised by a SIM partner regards the sustainability of BHHs' connection to the HIE. In particular, stakeholders expressed concern about the high fees charged to small BHHs to maintain connection to the HIE. HIN charges providers \$230 per year, but additional charges by vendors can drive total costs above the BHH payments to serve patients. Participants on an evaluation call identified that one vendor, which supports six BHHs, charges per transaction fees that can add to upwards of \$30,000-\$40,000 a year—more than the same vendor charges some hospital systems in the area. MaineCare is working with HIN and health IT vendors to address technical challenges to implementing an EHR and connecting it to the HIE, but financial challenges associated with maintaining connections are expected to continue.

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A.3 Massachusetts SIM Initiative Progress and Findings

By March 2016, near the end of its first test year, Massachusetts continued to support practices participating in the primary care payment reform initiative (PCPRI), but because of challenges with scaling PCPRI to the entire Medicaid population, the state shifted its focus from the PCPRI effort to soliciting feedback and designing a Medicaid accountable care organization (ACO) strategy.

Key Results from Massachusetts' SIM Initiative, April 2015–March 2016

- Massachusetts shifted the focus of its SIM Initiative from the PCPRI to designing a new model based on Medicaid ACOs with extensive stakeholder engagement. The new model incorporates lessons learned from PCPRI, which the state was unable to scale because of limited provider and payer participation. The state conducted extensive stakeholder engagement in the design phase and expects the ACO model to move MassHealth into closer alignment with alternative payment methods used by private payers in the state.
- Provider enrollment into PCPRI ended but the initiative continued and was credited with driving integration of behavioral health with primary care in 28 participating practices with 62 sites. With SIM Initiative funds, PCPRI supported practices in achieving transformation milestones and spurred improvements in patient-level reporting.
- Massachusetts directed SIM Initiative funding to support health care transformation through expansion of two population health initiatives and use of the Mass HIway, the state's health information exchange (HIE). The electronic referral (e-Referral) initiative (electronic referrals between primary care and community resources) was expanded from 4 to 14 sites, sustainable funding for the Massachusetts Child Psychiatry Access Project (MCPAP) was identified, and SIM Initiative funding for MCPAP was shifted to a new MCPAP for Moms program targeting postpartum mothers. New Mass HIway initiatives included streamlining and simplifying the process for connecting to the HIway, clarifying the state's policy on opting in and out of the HIway, and the planning and development of a new admission, discharge, and transfer notification service to expand the HIway's functionality.

Massachusetts' strategies to support delivery system and payment models. In addition to developing the ACO strategy in 2015 and early 2016, the state directed resources toward expanding the e-Referral program to additional sites and the Massachusetts Child Psychiatry Access Project (MCPAP) to postpartum mothers. It also refined its data infrastructure to support the upcoming ACO participants based on lessons learned from PCPRI and is in the process of developing a plan for increasing the use and functionality of the Mass HIway (the state's health information exchange [HIE]) by streamlining the process for connecting to the HIway and clarifying the state's policy for opting in and out of the HIway.

Interim measures of impact on cost and utilization. A quantitative analysis of health care claims data shows that by the end of 2015, no reductions in utilization occurred statewide

for the Medicaid population, the focus of SIM Initiative work, as would be expected given the limited reach of PCPRI. However, there was a decrease in overall expenditures, relative to the in-state comparison group of the commercially insured population²² over the same time period. The full set of data on measures of utilization and expenditures available from statewide claims-based analyses for the Medicaid and commercial populations are available in *Appendix B.1*.

A.3.1 Overview of the Massachusetts SIM Initiative

Between April 2015 and March 2016, Massachusetts continued to support 28 primary care clinician practices (PCCs) participating in its PCPRI. However, during the past year the state shifted its focus from the PCPRI effort to designing a Medicaid ACO strategy, which state officials consider a better path for widely implementing value-based payments and achieving closer alignment with other payers' delivery models. Massachusetts experienced challenges scaling the PCPRI to the Medicaid population, partially because of limited participation and interest from health care providers and no participation by MassHealth managed care plans. In light of this setback, the state worked with CMS to redesign its SIM Initiative in an effort to expand the number of Medicaid beneficiaries receiving care from providers paid under alternative payment methodologies.

Although full Medicaid ACO implementation is not scheduled to begin until fall 2017, the state spent the last year planning the details of the model and laying the groundwork for participation and will launch a 1-year pilot, scheduled to begin in December 2016. The state organized a series of public listening sessions to inform the public of its health care reform plans and created eight stakeholder workgroups of payers, providers, advocates, and community groups to gather input and feedback on critical design elements.

During 2015, Massachusetts also expanded and redesigned some of its enabling strategies, which support delivery system reform regardless of payer. Because of the ongoing success and support of two of these strategies in particular—e-Referral and MCPAP, the state (1) broadened the reach of its e-Referral project by increasing the number of primary care organizations transmitting electronic referrals to community partners from 4 to 14, and (2) created a new psychiatric consultation program for mothers with postpartum depression— MCPAP for Moms. Additionally, after convening a cross agency workgroup on health information technology (health IT), the state created a new E-health plan in 2015, which recommended devoting future SIM resources toward standardizing the process for connecting to the Mass HIway (the state's HIE), planning an event notification service for providers to eventually enable them to receive notification when their patients are admitted, discharged, or

²² We used an in-state comparison group of commercially insured to control for any secular trends in the state because Medicaid data from the comparison group were not available. The PCPRI program is targeted to providers who primarily serve Medicaid populations, so we decided that it was reasonable to assume that the commercial population would not be touched by the SIM Initiative in Massachusetts during this reporting period.
transferred from a hospital, and reducing provider burden for managing patient consent. Massachusetts also ended its previous SIM support to other health IT activities (Community Links Portal, Section Q reporter, and Adult Foster Care Determinations).²³

Table A-11 provides a summary of Massachusetts' SIM Initiative–related activities as of March 2016.

Activity	Activity type	Payers	Provider types	Dates	Supporting policies
Primary Care Payment Reform	Delivery/Payment System	Medicaid	Primary Care (Community Health Centers)	Mar 2014–Dec 2016	1115 waiver State law ¹ Contract provisions
Accountable Care Organization (ACO)	Delivery/Payment System	Medicaid	Integrated health systems, hospitals, primary care organizations w/ required partnerships w/ community providers	Pilot: Dec 2016– Dec 2017 ACO: Oct 2017– ongoing	1115 waiver (DSRIP) ICB grant State law ² Contract provisions
Massachusetts Child Psychiatry Initiative Access Program (MCPAP)	Behavioral Health Integration	Multi-payer	Primary Care	Launched in 2014; SIM supported Mar 2014–Jun 2017	Legislation appropriation Surcharge on commercial health plans
MCPAP for Moms	Behavioral Health Integration	Multi-payer	Primary Care	April 2015–Jun 2017	Legislation appropriation Surcharge on commercial health plans
e-Referral	Population Health	NA	Primary Care, Community organizations	Summer 2014–Jun 2017	Prevention and Wellness Trust Fund grant requirements
MDPHnet expansion	Population Health	NA	Primary Care	Launched in 2012; SIM supported 2014–2015	NA

Table A-11. Summ	ary of SIM Initiative active	vities in Massachusetts	, March 2016
			,

(continued)

²³ For more information on these activities, see the Base Year Annual Report (Gavin et al., 2014).

Activity	Activity type	Payers	Provider types	Dates	Supporting policies
eHealth Plan	Health information technology	NA	All Provider types	Jun–Oct 2015; implementation of recommendations TBD	State law and regulations

Table A-11. Summary of SIM Initiative activities in Massachusetts, March 2016 (continued)

ICB = Infrastructure and Capacity Building; DSRIP = Delivery System Reform Incentive Payment; NA = not applicable; TBD = to be determined.

¹ Chapter 224 directs MassHealth and other public payers to increase the use of state-defined alternative payment methods.

² Chapter 224 also directs MassHealth to develop standards for "model ACOs."

A.3.2 Delivery System and Payment Reform Activities

A.3.2.1 Summary and key outcomes to date

Massachusetts has used its SIM Initiative to support implementation of Chapter 224 of the Acts of 2012, the state's delivery system and payment reform legislation.²⁴ Implementation of the SIM Initiative began March 1, 2014, approximately 6 months later than the other Round 1 Model Test states. Initially, the PCPRI was the state's lead approach for incentivizing payment and delivery reform across the state. However, because of limited participation by PCCs, and no participation by Medicaid managed care organizations (MCOs), the state shifted its focus to development of a Medicaid ACO strategy in 2015. Massachusetts' revised SIM strategy features the design and implementation of three Medicaid ACO models, which allows for participation opportunities by providers and MCOs. State officials have worked to align with other payers' models, while accepting that each payer will retain its own payment methods and rates.

To accomplish Chapter 224's goal of slowing the rate of growth in health care spending, the law (1) created new agencies, commissions, and task forces to implement its provisions; (2) instituted timeframes for the adoption of alternative payment methods and health IT; (3) created certification mechanisms for ACOs and patient-centered medical homes; and (4) provided funding for health IT and prevention and wellness activities. Among the state agencies with responsibilities for implementing Chapter 224 are the Executive Office of Health and Human Services (EOHHS) and MassHealth, the state's Medicaid and Children's Health Insurance Program agency and a division of EOHHS. EOHHS provides executive leadership for the SIM Initiative. Initially, the SIM team worked under the Secretary of EOHHS. However, in 2015 the SIM team was officially transferred into MassHealth, which now manages the SIM

²⁴ Chapter 224 of the Acts of 2012, "An Act Improving the Quality of Health Care and Reducing Costs through Increased Transparency, Efficiency, and Innovation" aims to control health care cost growth in Massachusetts by encouraging adoption of alternative payment methods, enforcing compliance with a health care cost growth benchmark, increasing price transparency, and supporting investments in health and wellness, among other strategies.

Initiative, with the Secretary of HHS continuing to provide oversight (Massachusetts EOHHS, 2016, pp. 60; Massachusetts EOHHS, 2013, pp. 6–8).

Chapter 224 set an ambitious goal for alternative payment method adoption by MassHealth, which the agency was unable to meet. The law required MassHealth to use alternative payment methods for 50 percent of beneficiaries whose primary coverage is Medicaid by July 1, 2014, and 80 percent by July 1, 2015 (Seifert & Gershon, 2012, p.3). MassHealth officials expected to achieve that goal, but PCPRI participation fell below expectations and state auditors found that some existing Medicaid payment methods did not qualify as state-defined alternative payment methods (Massachusetts Office of the State Auditor, 2016). In response, the timeframe was extended to 80 percent coverage by July 2018.

As shown in *Table A-12* and described in more detail below, the 28 provider organizations participating in PCPRI receive three types of alternative payments. First, providers receive capitated monthly payments to finance most primary care services and an additional amount for care coordination services; some practices elected to receive additional payments to cover select behavioral health services. Second, providers also receive quality incentive payments for reporting and achieving quality metrics. Third, providers may qualify to receive shared savings/risk payments based on the total cost of the care their panel receives outside the primary care practice.

Provider participation is critical to model success. Provider participation is the primary mechanism by which more Massachusetts residents receive care delivered under alternative payment methods or changed delivery systems in 2016.²⁵ There are currently 28 PCCs participating in the PCPRI initiative (*Table A-13*). Although enrollment was closed to new PCCs in December 2015, the program permitted existing PCCs to add sites in 2015. In that year, two PCCs added a total of 15 additional sites, bringing the total number of sites to 62. Overall, 28 PCCs represent a small percentage of the 1,536 PCC groups participating in MassHealth; even so, some of the PCPRI-participating PCCs represent large numbers of patients (Hwang, 2014). The PCPRI will continue under current funding through December 2016. The state is seeking funding to continue the PCPRI program until the full launch of the ACO program in fall 2017, but funds have not been secured as of June 2016. State officials expect that most current PCPRI providers will choose to participate in the new ACO program. Many payers in Massachusetts other than Medicaid are also promoting alternative payment methods, including the Blue Cross Blue Shield Alternative Quality Contract.

²⁵ In addition to models supported by the SIM Initiative, Massachusetts is engaged in other delivery system and payment reform models through various CMS Initiatives including the Community-based Care Transitions program; various ACOs under the Financial Alignment Initiative, Medicare Shared Savings Program, Advanced Payment ACO Model, and the Pioneer ACO Model; a dozen Health Care Innovation Award grants; and the Transforming Clinical Practice Initiative.

Payment model	Payment type	Payments	Risk ¹	Payment targets	Quality targets	Implementation progress
Comprehensive Primary Care Payments	Risk-adjusted capitated payments for primary care services, option to include outpatient behavioral health services	For all attributed members	NA	NA	NA	Implemented March 2014
Shared Savings	Retrospective	For all attributed members	Two-sided risk applies only to non-primary care spending	Financial and quality	Must achieve quality threshold to be eligible for shared savings	Implemented March 2014
Quality Incentives	Retrospective	For all attributed members	Reduction in shared savings percentage	Quality only	22 metrics based on primary care performance, including population health metrics	Pay for reporting in 2014 and 2015, pay for performance in 2016

Table A-12. Components of PCPRI financing

PCPRI = primary care payment reform initiative; NA = not applicable.

¹ One-sided risk means that providers are eligible to earn shared savings for meeting lower total cost target but are not subject to penalties for higher-than-expected costs; two-sided risk means that providers are eligible to earn shared savings (the percentage earned is usually higher than one-sided risk options) for meeting lower total cost target and are expected to pay back money if costs are higher than expected.

Table A-13.	Physicians, practices, and payers participating in SIM Initiative-related models in
	Massachusetts, 2015 and 2016

Participants	Primary care payment reform initiative	Accountable care organizations ¹
Physicians		
2015	Not reported	NA
2016	Not reported	NA
Practices		
2015	28 (47 sites ²)	NA
2016	28 (62 sites ²)	NA
Payers	Medicaid ³	Medicaid

NA = not applicable.

Source: Counts for first quarters 2015 and 2016 are provided by Massachusetts via quarterly progress reports to CMS unless otherwise noted.

¹ Massachusetts Medicaid accountable care organization pilot is scheduled to launch in fall 2016, with full launch expected in fall 2017. In addition, Massachusetts has several other Accountable Care Organizations (ACOs) participating in other CMS Initiatives including (1) the Medicare Shared Savings Program, (2) the Advanced Payment ACO Model (concluded December 2015), and (3) the Pioneer ACO Model. The exact number or percentage of physicians and practices participating in these ACOs is unknown.

² Number of sites provided through correspondence with state officials.

³The payer for the primary care payment reform initiative is MassHealth's primary care clinician plan.

Increased percentage of the Medicaid population reached. Total enrollment in the Massachusetts PCPRI was 90,388 Medicaid beneficiaries as of May 2016 (*Table A-14*). Massachusetts' PCPRI increased enrollment by 17 percent between January 2015 and May 2016. According to the March 2015 supplement to the Current Population Survey, MassHealth had a total enrollment of 1,570,100 members in 2014, of whom 380,189 were part of the PCC plan (MassHealth, 2015). These numbers imply that the PCPRI covered nearly 24 percent of the eligible PCC members but only 6 percent of the overall MassHealth population. Despite the limited reach of the Massachusetts PCPRI initiative, most respondents to a statewide consumer survey of Medicaid beneficiaries reported that their provider knows their medical history when they come in for a visit and the provider helps them arrange appointments with other providers when needed, which suggests that many Medicaid beneficiaries are experiencing patient-centered, coordinated care.²⁶ Similarly, only 11 percent of Massachusetts adults responding to the national Behavioral Risk Factor Surveillance System (BRFSS) survey reported not having a personal physician or primary care provider in the pre-SIM Initiative period.²⁷

Paver population	Primary care payment reform initiative	Accountable care organizations ¹		
Medicaid				
2015	77,527 (5%)	NA		
2016	90,388 (6%)	NA		
Commercial				
2015	NA	Not reported		
2016	NA	Not reported		
Medicare				
2015	NA	Not reported		
2016	NA	Not reported		

Table A-17. Topulation reached in the Massachusetts innovation models, by paye	Table A-14.	Population	reached in	the N	lassachusetts	innovation	models,	by r	payer
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NA = not applicable.

Source: Counts for first quarters 2015 and 2016 provided through correspondence with state officials. The denominators used to compute the percentage of the population reached in 2015 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/. ¹ Massachusetts' Medicaid accountable care organization pilot is scheduled to launch in fall 2016, with full launch expected in fall 2017. In addition, Massachusetts has several other Accountable Care Organizations (ACOs) participating in other CMS Initiatives including (1) the Medicare Shared Savings Program, (2) the Advanced Payment ACO Model (concluded December 2015), and (3) the Pioneer ACO Model. The exact number or percentage of populations reached by these ACOs is unknown.

²⁶ The methods and state-specific results from the consumer survey fielded in Massachusetts are available in Appendix B.3 of this report.

²⁷ The methods and state-specific results from the BRFSS survey data, 2006–2013, are available in Appendix B.2 of this report.

The remainder of this section summarizes the specific changes in the delivery system and payment reforms Massachusetts made in 2015 and early 2016, after 2 years of SIM Initiative implementation.

A.3.2.2Progress and lessons learned

During 2015 and early 2016, Massachusetts continued to implement PCPRI—including monitoring progress on milestones and quality reporting, upgrading MassHealth's capacity to provide meaningful performance reports, and providing technical assistance to help providers meet their required milestones. However, the major focus in 2015 was designing and planning for the Medicaid ACO strategy, which included significant stakeholder participation.

Practices participating in the PCPRI achieved most of their contract milestones during the first year and continued making progress during 2015. In April and May 2015, the state conducted site visits to PCPRI practices to monitor performance on 12-month contract milestones. It found that compliance on milestones ranged from 88.4 percent for behavioral health integration to 78.7 percent for connection to the Mass HIway HIE. To improve performance, practices with deficiencies submitted corrective action plans and some lowerperforming practices received technical assistance tailored to their needs, focusing particularly on multidisciplinary care teams and behavioral health integration (MassHealth, 2015).

Massachusetts incorporated lessons learned from PCPRI into the design, planning, and implementation of Medicaid ACOs. One important lesson was the need to prepare better data to support providers' management of their patient panels. Massachusetts also incorporated feedback from providers who wanted to participate in alternative payment methodologies but opted out of PCPRI because they wanted (1) to take on more risk than the model allowed, and (2) hospitals and primary care providers to share accountability. Additionally, to ensure that MCOs will play a key role in executing the Medicaid ACO model, Massachusetts will build explicit requirements for participation in the ACO model into its MCO reprocurement.

Three models of ACOs will enable providers to select their level of risk. After a new administration took office in early 2015, Massachusetts reset its strategy to scale up value-based care for Medicaid beneficiaries across the state. Based on extensive stakeholder feedback that began in fall 2014, ACOs were selected as the primary vehicle for Medicaid payment and delivery system reform. During fall 2015 and first quarter 2016, Medicaid ACO models were developed and multi-payer alignment was planned. MassHealth will offer three ACO models, as described in *Figure A-1* and summarized in *Table A-15*. These models will enable providers to select a model that matches their capabilities and desired level of risk. The Medicaid ACO models described below reflect the state's design at the end of March 2016.

Figure A-1. Description of Medicaid ACO models in Massachusetts

Accountable Care Partnership Plan (ACO Model A). Partnership Plans will be closely aligned partnerships between an MCO and a health system or provider network that will assume full risk and receive prospective capitated payments, allowing flexibility to invest in new care models and expanded benefits. State officials said the intent is to create a limited network of highly coordinated providers. MCOs can also support the ACOs by providing them with access to claims data to help them better manage the health of their population and obtain closer to real-time access to claims data. Medicaid beneficiaries will be able to select a Partnership Plans as their managed care plan. Beneficiaries who do not select a plan may be auto-assigned to Partnership Plans if they are attributed to a PCP participating in an ACO.¹

Primary Care ACO (ACO Model B). The Primary Care ACO design is based on the Next Generation ACO model, according to state officials. Advanced provider-led ACOs will contract directly with MassHealth rather than partnering with an MCO. ACOs will be held accountable for retrospective upside and downside performance risk, rather than full insurance risk as under Partnership Plans. ACOs must meet contractual requirements that depend on robust care coordination capabilities and capacity for sharing information. Primary Care ACOs will not have health plan functions such as enrolling members and will receive support from MassHealth with functions such as claims processing, data management, and performance reporting. Like Partnership Plans, Primary Care ACOs will be offered as a managed care plan choice for beneficiaries, and beneficiaries who do not select plans may be auto-assigned to Primary Care ACOs if they are attributed to PCPs participating in Primary Care ACOs.¹

MCO-Contracted ACO (ACO Model C). This model is a provider-led ACO with less experience with value-based incentives than Model A and B ACOs but able to take on some performance risk for an attributed population. MCO-Contracted ACOs may contract with multiple managed care plans (Medicaid MCOs) to take accountability for managed care-eligible beneficiaries attributed to the ACO's primary care network. These ACOs will receive a higher level of assistance with performing ACO functions from managed care plans. Beneficiaries will not be able to select MCO-Contracted ACOs as their plans, as MCO-Contracted ACOs are not health plans. Instead, beneficiaries who select a traditional Medicaid MCO will be attributed to an MCO-contracted ACO if they are attributed to a PCP participating in that ACO.¹

¹ Massachusetts Executive Office of Health and Human Services (February 29, 2016). Massachusetts State Innovation Model Operational Plan: Model Test Year 2. Supplied by CMS.

Payment model	Payment type	Payments based on whom?	Risk	Payment targets	Quality targets	Implemen- tation progress
Accountable Care Partnership Plan (ACO Model A)	Prospective integrated ACO-MCO capitated payments	For all attributed members	Two-sided insurance risk	Financial and quality	Measures under development	Under development
Primary Care ACO (ACO Model B)	Retrospective shared savings and risk	For all attributed members	Two-sided performance risk	Financial and quality	Measures under development	Under development

Table A-15. Co	mparison of	planned Medicaid AC	CO models in I	Massachusetts,	, March 2016
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(continued)

Payment model	Payment type	Payments based on whom?	Risk	Payment targets	Quality targets	Implemen- tation progress
MCO- Contracted ACO (ACO Model C)	Retrospective shared savings and risk (lower levels of gain/risk than Primary Care ACO)	For all attributed members	Two-sided performance risk	Financial and quality	Measures under development	Under development

Table A-15. Comparison of planned Medicaid ACO models in Massachusetts, March 2016 (continued)

ACO = accountable care organization; MCO = managed care organization.

Extensive stakeholder engagement has shaped Medicaid ACO design and areas of multi-payer alignment. The design of the Medicaid ACO program emerged from input provided in public listening sessions and eight stakeholder work groups. The three ACO models are intended to align more closely with the total cost of care models increasingly used by other Massachusetts payers and large provider organizations. Additionally, MassHealth and other payers agreed on all-payer ACO certification as a means of alignment; further alignment will occur in technical aspects of payment models, such as quality metrics and member attribution. State officials cited three reasons they believe the ACO model will succeed: (1) there was highlevel stakeholder engagement in the design and planning process, leading to enthusiasm and a sense of inevitability about ACOs; (2) the ACO models create new business opportunities for managed care organizations; and (3) offering a choice of ACO models will allow provider organizations to make a selection that aligns with their Medicare and commercial contracts.

Massachusetts is adding the ACO models to the existing Medicaid managed care program. Currently, most Medicaid beneficiaries are enrolled in some form of managed care and select a plan and a physician. Plan choices include Medicaid MCOs or the PCC plan, which relies on primary care providers to manage care within a plan administered by MassHealth. Under the new system, beneficiaries will continue to select a plan and a PCP. Beneficiaries who do not make selections will be auto-assigned based on an attribution algorithm, with a 90-day opt-out period to change physicians or plans. Beneficiaries' choices of managed care plans and PCPs will determine whether they are attributed to an ACO. For beneficiaries attributed to ACOs, their ACOs will function as the preferred provider network within their plans' networks.

As noted, the state will lay the groundwork for Medicaid ACO implementation with a 1year pilot scheduled to begin in December 2016. The ACO pilot will provide an opportunity to test certain systems in advance of the full ACO launch and allow some ACOs to immediately take on retrospective total cost of care risk for Medicaid beneficiaries. To ensure alignment and MCO participation, the full ACO launch is scheduled to coincide with the start of the new Medicaid MCO contracts in fall 2017 (Massachusetts EOHHS, 2016, Attachment D, pp. 9–10, 30).

Massachusetts determined that voluntary alignment of ACO rates and payment methodologies was not feasible because other payers consider those details proprietary (Massachusetts EOHHS, 2016, Attachment D, pp. 30–35). Massachusetts is using a twopronged approach to multi-payer alignment, engaging with stakeholders to develop areas of voluntary alignment and using the state's purchasing and regulatory levers. Voluntary alignment is focused on three areas—ACO certification, technical aspects of the payment model (including attribution, risk adjustment, quality metrics, and reporting requirements), and the overall payment model using a total cost of care construct.

Interagency collaboration and stakeholder engagement played an important role in developing ACO certification requirements. Chapter 224 requires certification of ACOs and assigns that responsibility to the Health Policy Commission (HPC), an independent state agency created by Chapter 224. HPC and MassHealth led an ACO certification work group to determine requirements for provider organizations seeking to operate as ACOs—including governance, partnerships across the continuum of care, and data analytics capabilities. MassHealth will require prospective Medicaid ACOs to be certified by the HPC. The Group Insurance Commission (GIC), which administers public employee health insurance, is also considering requiring its health plans to use HPC certification for ACOs. MassHealth and HPC are engaged in discussions with commercial health plans about adopting the ACO certification standards.

Massachusetts used a similar work group process to develop alignment on technical aspects of the payment model. For example, the technical work group on attribution included MassHealth, the HPC, and stakeholders (including two payers). Commercial payers agreed to use an aligned methodology for their PPO plans, and MassHealth will adopt the same methodology with minor modifications. Under this method, attribution to an ACO is tied to the patient's choice of primary care provider.

Massachusetts will use purchasing power in Medicaid and state employees' health plans as a policy lever to increase alternative payment method adoption. MassHealth will link procurement for Medicaid MCOs with participation with ACOs, and new MCO contracts will be effective concurrent with the planned roll out of the ACO models in fall 2017. Because MassHealth contracts with most providers in the state, greater use of alternative payment methods within Medicaid could serve as a catalyst for their wider adoption by providers across the state. GIC has also linked its contracts with health plans to participation in its accountable care initiative, known as Centered Care (Massachusetts EOHHS, 2016, pp. 17, 19, 35).

Medicaid beneficiaries' needs will be addressed through ACO requirements and establishment of Community Partners. MassHealth will supplement HPC certification with its own requirements. Based on stakeholder feedback that ACOs should leverage the expertise of community-based organizations to serve beneficiaries with complex needs, rather than developing similar capacity in-house, MassHealth will procure a select number of "Community" Partners (CPs)," which will be community-based organizations that will provide care coordination supports for members with behavioral health and long-term services and supports (LTSS) needs. Medicaid ACOs will be required to partner with CPs for management of members with complex conditions as a prerequisite to receive startup funding. CPs will be procured by the state and will also be eligible to receive startup funding directly from the state if they have signed Memoranda of Understanding with ACOs. The source of startup funds will be Delivery System Reform Incentive Payment (DSRIP) program funding, which the state will request as part of its Medicaid Section 1115 waiver renewal (Massachusetts EOHHS, 2016, pp. 20–22). In addition, the state is requesting permission from CMS to use funds from the Infrastructure and Capacity Building (ICB) grant (authorized through its current Medicaid Section 1115 waiver) to fund some of the startup costs for the pilot ACOs starting in 2016.

ACOs and their CPs will work together to manage care for beneficiaries with complex needs. Massachusetts will procure two types of CPs—Behavioral Health CPs and LTSS CPs. The Behavioral Health CPs will support eligible adult members with Serious Mental Illness or Substance Use Disorders, as defined by the state, with health-home like care coordination services. The LTSS CPs will provide care coordination supports for eligible members ages 3 and older with complex LTSS needs, which may include members with physical disabilities, acquired or traumatic brain injury, intellectual or developmental disabilities and others, as defined by the state. LTSS CPs will also provide LTSS care planning using a person-centered approach and choice counseling (Massachusetts EOHHS, 2016, p.32; Attachment D).

A.3.3 Integration of Behavioral Health and Primary Care

According to BRFSS data, approximately 35 percent of Massachusetts adults selfreported that their mental health was not good for one or more days in the last month (see *Appendix B.2*). To better address the behavioral health needs of Medicaid beneficiaries, MassHealth prioritized behavioral health integration in its PCPRI by supporting integration through its contractual milestones, payment model, and practice transformation technical assistance. Massachusetts reported that 88.4 percent of PCPRI providers achieved the behavioral health integration milestones in 2014. Examples of milestones include having processes in place for follow-up after a behavioral health–related hospital admission, instituting regular meetings between medical and behavioral health leadership, ensuring access to behavioral health consultations, and having the ability to track behavioral health referrals (MassHealth, 2015). In a survey of randomly selected Medicaid beneficiaries in Massachusetts in 2015 (see *Appendix B.3*), 60 percent of respondents reported that their primary care provider was either always or usually aware they were receiving care from a mental health professional.

Despite these successes, state officials noted a few specific challenges in meeting key milestones related to behavioral health integration. For example, some behavioral health professionals reported feeling that their full skill sets were not appreciated by PCPs and that they were being asked to perform lesser functions than they were trained to deliver (such as motivational interviewing). There were also reports that formal meetings between medical and behavioral health leaders were not always fruitful. More generally, PCPs and behavioral health professionals are not used to collaborating within the same setting, which poses challenges to full integration. However, state officials reported that practices with poor performance on integration were showing considerable progress after receiving technical assistance in late 2015.

Moving forward, although state officials found value in some of the PCPRI requirements related to behavioral health/primary care integration with the shift to the new ACO models, they do not intend to build these requirements into the ACO procurement. This is in part because PCPRI providers have communicated to state officials that the current requirements are overly prescriptive. In addition to PCPRI, SIM has supported expansion of MCPAP, which is available to pediatricians regardless of payer. MCPAP's regional teams provide telephone consultations with psychiatrists to help pediatricians better identify and treat children and adolescents with behavioral health problems. In 2015, the percentage of pediatricians using MCPAP services increased from 62 percent in state fiscal year 2014 to 67 percent in state fiscal year 2015. Similarly, the number of practices using MCPAP increased from 71 percent to 78 percent. Massachusetts used SIM funds to support development of a toolkit to help primary care providers implement evidence-based screenings, brief interventions, referrals for substance use by adolescents, and MCPAP teams will train providers on the toolkit in 2016. Because of MCPAP's success, Massachusetts decided to expand the program with an MCPAP for Moms pilot. SIM funds will be used to scale-up MCPAP for Moms (Massachusetts EOHHS, 2016, pp. 53–55).

A.3.4 Population Health

Massachusetts has invested SIM funds in several population health initiatives, which are payer-agnostic. The most significant SIM investment in population health is e-Referral, a bidirectional electronic referral system developed by the state Department of Public Health (DPH) with SIM support. E-Referral makes it easier for PCPs to make referrals to community resources directly from patients' electronic records, increasing the likelihood that referrals will be made to such resources as smoking cessation, fall prevention, chronic disease selfmanagement, and diabetes education programs. Analysis of the survey of Medicaid beneficiaries in Massachusetts conducted in 2015 revealed that just over half of respondents reported always or usually receiving help from their PCP in accessing community-based services to help them manage their condition.

E-Referral was piloted in 2014 and received a boost when communities awarded grants from the Prevention and Wellness Trust Fund were required to participate in the e-Referral pilot. Additional sites were added in 2015. By February 2016, e-Referral had been implemented in 14 primary care organizations linked to 11 community-based organizations, and more than 800 referrals had been sent. The DPH piloted a pediatric asthma referral type in 2015 that allows clinicians to send asthma action plans to school nurses. Six clinical sites were connected to 26 Boston public schools using the e-Referral gateway. State officials expect to add new referral types to e-Referral to increase its functionality and support care management (Massachusetts EOHHS, 2016, pp. 49–50).

SIM funds were also used to expand the Massachusetts Department of Public Health electronic surveillance network (MDPHnet) to the provider organizations in western Massachusetts during 2015. MDPHnet enables public health officials to quickly and efficiently query the electronic health records of participating primary care clinics serving more than 1.2 million Massachusetts residents. MDPHnet is an important tool for population health management, and state officials also plan to use the system as a tool for evaluating the impact of the SIM Initiative's population health measures (Massachusetts EOHHS, 2016, pp. 55–56).

A new population health initiative to address social determinants of health emerged in 2015, which is targeted to Medicaid beneficiaries. In addition to helping beneficiaries with their health care, LTSS, and behavioral health needs, the ACOs' CPs will help beneficiaries with such social needs as finding and maintaining affordable housing, nutrition, physical activity, and employment.

A.3.5 Strategies to Support Delivery System and Payment Reform

A.3.5.1Practice transformation

By early 2016, state officials were pleased with PCPRI practices' progress on behavioral health integration, which they attributed to the contractual milestones, flexibility of the primary care payments, and targeting technical assistance to practices that need help with integration. State officials said the milestones and PCPRI payment structure had provided a catalyst for some less advanced practices to take steps toward integration—while more advanced practices were able to use their capitated payments for such innovation as creating open office hours when a patient can walk in and get an immediate behavioral health appointment.

State officials said they were challenged by the variation in practices' capabilities and needs, which made it difficult to set milestones, monitor progress, and provide appropriate technical assistance. In response, the PCPRI initiative moved to develop individual practice transformation plans with individualized goals and technical assistance targeted to the specific

needs of provider organizations having difficulty achieving key practice transformation milestones. A technical assistance report showed considerable progress on the 10 behavioral health integration milestones between November 30, 2015, and December 31, 2015, for practices enrolled in required technical assistance (University of Massachusetts Medical School, 2016).

Another successful practice transformation activity noted by state officials was the monthly patient-level reports provided to practices participating in PCPRI. Reports include information on recent hospitalizations, emergency room visits, and other relevant information to help providers identify high-risk patients. Some providers are using these data to develop dashboards and implement quality improvement processes. State officials said their capacity to provide actionable data has improved since the beginning of PCPRI, and their experience with PCPRI helped prepare for the ACO initiative. ACO providers will receive both summary- and patient-level information (Massachusetts EOHHS, 2016, pp. 22–23). State officials said that ACO certification requirements will help drive further practice transformation.

A.3.5.2Quality measurement and reporting

During 2015, Massachusetts worked to align quality metrics for Medicaid ACOs with other payers' metrics while continuing progress on quality within PCPRI. Multi-payer alignment of quality measures has been a Massachusetts goal for some time, and recent work on alignment builds on the work of the Statewide Quality Advisory Council (SQAC), created by state legislation in 2010. The Medicaid ACO design process provided an opportunity to engage agencies and stakeholders in a quality improvement work group, with participants including SQAC and HPC. The work group identified multi-payer alignment as a core principle, and state officials said that a set of multi-payer quality measures will be used by Medicaid ACOs and measures specific to Medicaid beneficiaries. Massachusetts also plans to incorporate CMS core measures as much as possible (Massachusetts EOHHS, 2016, pp. 63–64). State officials said Medicaid ACOs will be paid to report quality measures for the first year at a minimum and then generally shift to pay-for-performance incentives during the second or third year, depending on whether the measures are already validated or being piloted.

The PCPRI payment structure includes quality incentives, and state officials said reporting compliance was good for 2014. PCPRI providers can earn quality incentive payments up to 5 percent of their total PCPR bundled payment. Providers were paid to report for 2014 and 2015, as noted, and will be paid for performance for 2016. State officials said they have not seen a big shift in performance associated with the shift from pay-for-reporting to pay-for performance—except that providers who were doing well received incentive payments, which enabled them to accelerate their progress. State officials said they were pleased with quality reporting for the first year of PCPRI. Thirty-eight percent of practice sites had 100 percent reporting compliance, and 64 percent had higher than 90 percent compliance (including those with 100 percent compliance). Measures with lower compliance rates were medication reconciliation and four pediatric measures: childhood immunizations, developmental screening, pediatric weight and counseling, and depression screening for adolescents (MassHealth, 2015). PCPRI quality measures were selected from SQAC's Standard Quality Measure Set.

A.3.5.3Health information technology and data analytics infrastructure

The focus of health IT and data infrastructure efforts shifted during 2015, as Massachusetts redirected its attention to increasing use and functionality of the Mass HIway. Although most hospitals were connected to the HIway as of early 2016, only a small percentage (9 percent) of total provider organizations were connected to the HIway (Massachusetts EOHHS, 2016, p. 9). Most of those that used the HIE used it for referrals, prescriptions, and reporting quality and public health measures; only 28 percent reported using it for care transitions (Massachusetts EOHHS, 2016, pp. 40–44). Similarly, only 50 percent of respondents to a statewide Medicaid consumer survey reported that their primary care provider was aware of important details related to a recent hospital admission, indicating gaps in information sharing across providers.

MassHealth convened a cross-agency strategic planning work group in June 2015 to address issues with the HIway. The work group is supported by MassHealth staff and IT contractors funded by the SIM Initiative. Recommendations of the work group have become the focus of health IT efforts. The work group identified three critical barriers to adoption: the complexity of connecting to the HIway, provider confusion about the state's policy on patient consent for sharing their information via the HIway, and the limited functionality of the HIway (Massachusetts EOHHS, 2016, pp. 40–44).

Three near-term initiatives were recommended to address the barriers to HIway use. The first, known as FAST, addresses the complexity of connecting to the HIway by standardizing available connection methods, providing estimated times required to connect for each method, and deploying support teams to streamline the process and ensure that timeframes are met (Massachusetts EOHHS, 2016, p. 41). The second initiative addresses the state's opt-in consent policy, which requires providers to obtain patients' consent before sharing their information through the HIway. Work group recommendations include a possible shift to an opt-out consent policy, as used in many other states; and the feasibility of work group recommendations is being explored. The third initiative is development of an Event Notification Service, which will use the HIway to transmit notifications of hospital admissions, discharges, and transfers to health care providers—all of which will support provider efforts to coordinate care and improve care transitions and improve the value proposition for using the HIway (Massachusetts EOHHS, 2016, pp. 41–43).

SIM support for some of the initial health IT and data initiatives ended during 2015. SIM-funded work on LTSS initiatives was completed by spring 2015. Two other health IT initiatives were dropped—the all-payer claims database provider portal and an initiative to help behavioral health and LTSS providers connect to the HIE.

A.3.6 Sustainability

State officials expect the SIM initiatives to be sustained beyond the SIM Initiative through sustainable revenue streams and are focusing their sustainability planning on funding to complete implementation of SIM activities. A major source of implementation funding for Medicaid ACOs and CPs will be DSRIP program funding, which the state will request as part of its Medicaid Section 1115 waiver renewal (Boozang, Woda, & Codner, 2016). The DSRIP funding would closely link federal funds to time-limited investments in large-scale delivery system transformation (Boozang, Woda, & Codner, 2016). DSRIP funds will be used for ACO and Community Partner startup costs, infrastructure costs, and some statewide investments. DSRIP funding will also be used to finance flexible services to address the social needs of beneficiaries. The state is also applying to use ICB grant funds to support the pilot ACOs with their startup costs prior to the DSRIP funding any flexible services the ACOs choose to continue. State officials were also planning to take advantage of the enhanced Federal Medical Assistance Percentage to finance health home services during the first eight operating quarters.

Massachusetts is also taking steps to sustain SIM activities that support delivery system and payment reform. State officials are confident that MCPAP has sustainable funding and have shifted SIM support to scaling up MCPAP for Moms. Legislation supported by behavioral health advocates imposed a surcharge on commercial health insurance; although funding was not earmarked for MCPAP, state officials said a strong case can be made for using the new funding for MCPAP (Massachusetts EOHHS, 2016). State officials are exploring the feasibility of provider fees to sustain e-Referral, similar to fees for use of the HIway. They hope that adding community resources will increase the value proposition for providers, thereby increasing adoption and use and helping providers manage care and improve quality outcomes. The SIM Initiative is no longer providing any funding for MDPHnet expansion, whose ongoing operation is now supported by state general funds. Some SIM-funded staff positions also have been shifted to state funding.

State officials expect key SIM activities to have a lasting impact, including ACOs, e-Referral, the Mass HIway initiatives, and MDPHnet. Although PCPRI is scheduled to end by the time the ACOs are launched, the lessons learned from PCPR implementation have had a major influence on ACO design and implementation.

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A.4 Minnesota SIM Initiative Progress and Findings

As of March 2016, 2.5 years after initial implementation, Minnesota continues to expand provider participation in its reform efforts. Specifically, the SIM Initiative is (1) supporting further development of Integrated Health Partnerships (IHPs), an Accountable Care Organization (ACO) model that serves Medicaid beneficiaries under age 65 and builds off the state's existing health reform efforts; (2) expanding health care homes (HCHs); (3) funding Accountable Communities for Health (ACHs), which are partnerships between IHPs or other ACO-like entities and community-based service providers; and (4) expanding exchange and use of health information technology (health IT) and data analytics across care settings through grants and development of an e-Health roadmap.

Key Results from Minnesota's SIM Initiative, April 2015–March 2016

- Between 2015 and 2016, Minnesota nearly doubled the proportion of the Medicaid population receiving health services from Integrated Health Partnerships (IHPs) (to 44 percent) and increased provider participation in IHPs. Minnesota's flexible IHP participation options and its use of SIM-funded grants made participation by a wider variety of practices easier.
- Minnesota's SIM Initiative has had success in engaging providers but challenges in involving other stakeholders. Providers are participating in health care system transformation efforts through SIM-funded grants and voluntary participation in IHPs. Yet, relationships with other stakeholders present challenges. For example, in task forces, commercial payers do not share insights on payment reform strategies because of concern that they may reveal proprietary information to their competitors. Working within SIM-supported Accountable Communities for Health (ACHs), health care providers report that they underestimated the effort required to establish formal working relationships with their community partners.
- Minnesota's use of policy levers indicates interest in sustaining SIM-initiated efforts. Minnesota is using SIM funds to prepare practices for participation in newly legislated behavioral health homes (BHHs). A new Medicaid state plan amendment also adds new flexibility to the IHP model, such as adjustments to the attribution methodology that increase its accuracy.

Minnesota's strategies to support delivery system and payment models. Considering the IHP model successful, the state has amended its Medicaid plan to extend the demonstration. Despite these successes, coordination with the commercial sector is limited to issues such as aligning around concepts like appropriate data analytics to providers, rather than on designing and advancing delivery system and payment models, and implementation of the ACH model among grantees has progressed more slowly than expected. Parallel to this work, Minnesota also established BHHs under Medicaid, which took effect on July 1, 2016.

Interim measures of impact on cost and utilization. A quantitative analysis of health care claims data showed that emergency room (ER) visits declined for the commercially insured

and Medicare populations in Minnesota relative to the comparison group. These results are most likely indicative of other pre-SIM activities, such as enhanced access to primary care through HCHs. A brief discussion of these results appears in this chapter, and the full set of data on measures of utilization and expenditures available from statewide claims-based analyses for the Medicaid, commercial, and Medicare populations are available in *Appendix B.1*.

A.4.1 Overview of the Minnesota SIM Initiative

The Minnesota SIM Initiative, also referred to as the Minnesota Accountable Health Model, seeks to improve health in communities and provide better health care at lower costs. In March 2016, after 2.5 years of implementation, the original goals of the Initiative remain to transform the state's health care system by 2017 into 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" (State of Minnesota, 2013).

To achieve these goals, the SIM Initiative is supporting further development of Minnesota Medicaid's contracts with IHPs—the ACO model that serves Medicaid beneficiaries under age 65—and expanding the reach of HCHs serving all Minnesotans. Both IHPs and HCHs predated the SIM Initiative. The state is also using SIM funds to test how IHPs, or other ACO-like entities, and community-based service providers can integrate health care and community services through establishing ACHs. An ACH aims to improve care for a narrowly defined population, with respect to a specific condition, and is tailored to the needs of that specific ACH's community.

To foster providers' ability and willingness to participate in these delivery system and payment reforms, Minnesota is using SIM funds to support providers through grants focused on (1) increasing the use of health IT and data analytics to manage costs and improve quality, (2) accelerating clinical data exchange, (3) increasing participation in HCHs, and (4) testing the role of new types of professions in the health care workforce (such as community health workers and community paramedics). The state is also using SIM funding to support provider learning collaboratives, which bring together stakeholders with similar goals and allow them to learn best practices from both experts and one another. The first of these was specifically for ACHs. Parallel to the work organized with SIM funds, the state Department of Human Services (DHS) recently received CMS approval for a state plan amendment to establish BHHs under Medicaid, to take effect on July 1, 2016. Participating practices will be charged with integrating physical and behavioral health services. To support the ultimate implementation of BHHs, SIM funds have been used to help practices determine their readiness to become a BHH and to provide practice transformation support for that purpose. Minnesota's SIM Initiative–related activities are summarized in *Table A-16*.

Activity	Activity Type	Payers	Provider types	Start Date	Supporting policies (if any)
Integrated Health Partnerships (IHPs)	Delivery/ Payment System	Medicaid	Primary care Specialty care Prevention Integrated health systems	2013	Legislation ¹ Managed care contract provisions ²
Accountable Communities for Health	Delivery/ Payment System	NA	Prevention IHPs Community Partners	2014	
Health Care Homes	Delivery/ Payment System	Multi- payer	Primary care Prevention	2010	Legislation ³ Medicaid state plan amendment
Behavioral Health Homes	Delivery/ Payment System and Behavioral Health Integration	Medicaid	Primary care Specialty care Prevention Behavioral health care	2016	Medicaid state plan amendment
Practice Transformation grant program	Practice transformation and Behavioral Health Integration	NA	Primary care Specialty care Prevention	2015	
Learning Community grant program	Practice transformation	NA	Primary care Specialty care Prevention	2015	
Privacy, Security, and Consent Management for Health Information Exchange grant program	Health IT	NA	Primary care Specialty care Prevention Integrated health systems	2015	Legislation ⁴
e-Health Roadmap	Health IT	NA	Behavioral health, Local public health, Long-term and post-acute care Social services	2016	Legislation ⁴

Table A-16.	Summary of S	IM Initiative	activities in	Minnesota,	Spring 2016
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(continued)

Activity	Activity Type	Payers	Provider types	Start Date	Supporting policies (if any)
E-Health grant program	Health IT	NA	Primary care Specialty care Prevention Integrated health systems Behavioral health, Local public health, Long-Term and post-acute care Social services	E-Health grant program	Legislation ⁴
Data Analytics IHP provider grant program	Data analytics	Medicaid	IHPs	2015	
Data Analytics Vendor contract (3M)	Data analytics	Medicaid	IHPs	2015	
Emerging Professionals grant program	Workforce Development		Dental prevention Public health	2014	
Storytelling Engagement Project	Other	NA	NA	2015	

Table A-16. Summary of SIM Initiative activities in Minnesota, Spring 2016 (continued)

NA = not applicable.

¹ Legislation passed in 2010 mandated that the Minnesota Department of Human Services (DHS) develop and implement a demonstration "testing alternative and innovative health care delivery systems, including accountable care organizations" (Minnesota 2010 Legislative session, 256B.0755).

² Minnesota's DHS includes a provision in all Medicaid managed care organization (MCO) contracts requiring MCOs to participate in the IHPs demonstration. Additionally, DHS contracts directly with each IHP.

³ Minnesota Health Care Homes (Minnesota Statute §256B.0751, available at this link:

https://www.revisor.mn.gov/statutes/?id=256B.0751

Minnesota Interoperable Electronic Health Record Mandate (Minnesota Statute §62J.495 (Electronic Health Record Technology)) supports these activities, available at this link:

https://www.revisor.mn.gov/statutes/?id=62J.495. For more information: http://www.health.state.mn.us/e-health/hitimp/ and http://www.health.state.mn.us/e-health/lawsmn.html

A.4.2 Delivery System and Payment Reform Activities

A.4.2.1 Summary and key outcomes to date

Much of the delivery system and payment reform activity under Minnesota's SIM Initiative is located within the Medicaid program. The state has used legislation, contracting, and grants funded by the SIM Initiative as key policy levers to implement these reforms. Legislation passed in 2010 mandated the DHS to develop and implement alternative delivery models, including ACOs, to control costs and improve quality (Office of the Revisor of Statutes, 2010). The IHP model was developed as a result of this legislation and established more recently as part of the state's Medicaid State Plan. The state also leveraged language in its Medicaid managed care contracts to require managed care plans to participate in the IHP demonstration on behalf of its members. Minnesota continues to use a competitive application process to solicit and ultimately contract with new IHPs.

In the IHP payment model, the state calculates a risk-adjusted total-cost-of-care target for each IHP. Targets are based on Medicaid fee-for-service (FFS) claims and Medicaid managed care organization encounter records for a defined set of services from a baseline year. If IHPs contain costs at a specific threshold below their total-cost-of-care target (i.e., achieve savings) and meet performance goals for a core set of clinical quality and patient experience measures, they become eligible to share in the savings. Conversely, certain IHPs become responsible for making shared loss payments if their total cost of care reaches a specific threshold above their total-cost-of-care target. More information about the IHP model can be found in the SIM Initiative Year 1 and Year 2 Annual Reports (Gavin et al., 2016). Additional detail on IHP implementation, as of March 2016 after 2.5 years of SIM Initiative implementation, is provided in *Table A-17* and in the rest of this section.

In 2010, the state passed legislation that gave DHS the authority to design a health home model under section 1945 of the Social Security Act. In 2015, DHS amended this language to include behavioral health provisions, thus establishing the BHH model (The Office of the Revisor of Statutes, 2015). This model aims to promote the bidirectional integration of primary care and behavioral health care for Medicaid adults with serious and persistent mental illness and children with serious emotional disturbance. CMS approved the DHS's Medicaid state plan amendment to establish BHHs in March 2016, and the model took effect July 1, 2016. As shown in *Table A-17*, participating providers receive per member per month (PMPM) payments for eligible patients in both Medicaid FFS and managed care. Specifically, providers certified as BHHs will receive a \$245 PMPM payment for providing care coordination or other health home core services to enrolled beneficiaries. During an individual's first 6 months of enrollment in a BHH, his or her BHH receives an enhanced PMPM rate of \$350 to support the additional costs of initial patient engagement.

Lastly, in 2015 and early 2016, ACHs matured and progressed from planning and development to early phases of implementation. ACHs are partnerships between IHPs (or another accountable care–like entity) and community-based service providers that test ways of integrating health care and community services—with the intent of improving a self-defined aspect of health status for the population they serve. The need for these kinds of partnerships is reflected in the survey of Medicaid beneficiaries conducted in 2015,²⁸ with half of respondents receiving assistance in coordinating home and community-based services, but 40 percent unsure of whom they would ask for such assistance. In 2014, the state awarded 12 grants to coalitions of community-based organizations and provider groups associated with an IHP or accountable

²⁸ The methods and state-specific results from the consumer survey fielded in Minnesota are available in Appendix B.3 of this report.

Delivery system model	Payment model	Participating payers	Retrospective or prospective	Payments based on whom?	Risk ¹	Payment targets	Implemen- tation progress
Integrated Health Partnerships (ACO)	Shared savings/ shared risk	Medicaid (both FFS and managed care populations)	Retrospective payment of shared savings/ repayment of shared losses (annual)	Attributed patients	Integrated Model: one- sided and two- sided Virtual Model: one-sided only	Financial and quality	Operational
Behavioral Health Homes	Per member per month for providing health home services	Medicaid (both FFS and managed care populations)	Retrospective	Patients receiving health home services	NA	NA	Operational
Health Care Homes	Per member per month for providing health home services	Multi-payer	Retrospective	Patients receiving health home services	NA	NA	Operational

Table A-17. SIM Initiative-related delivery system and payment models in Minnesota

ACO = accountable care organization; FFS = fee for service; NA = not applicable.

¹ One-sided risk means that providers are eligible to earn shared savings for meeting lower total cost target but are not subject to penalties for higher-than-expected costs; two-sided risk means that providers are eligible to earn shared savings (the percentage earned is usually higher than one-sided risk options) for meeting lower total cost target and are expected to pay back money if costs are higher than expected.

care–like entity through a competitive proposal process. The state also awarded three sole source ACH grants to the three community care teams the state piloted in 2011–2012.

Increased provider and payer participation by 2016. Provider and payer participation is the mechanism by which more Minnesotans receive care delivered under value-based payment models or changed delivery systems. The number of providers participating in delivery system models supported by the SIM Initiative continues to increase, as shown in *Table A-18*. The state's flexibility in determining IHP criteria (described below) has increased provider participation. With the addition of three new IHPs in 2016, the state now contracts with 19 IHPs. The first two cohorts of IHPs, which began January 1, 2013, and January 1, 2014, respectively, continued to operate during this period. The cumulative effect of the increasing number of providers participating in IHPs and ACHs, and the number of providers expressing interest in participating in BHHs, is expected to bring together providers across the spectrum of care: medical, behavioral health, long-term services and supports, and public health.

Participants	Health care homes	Behavioral health homes ¹	Integrated Health Partnerships	Accountable Communities for Health
Physicians				
2015	3,501 ²	NA	6,667 (43%)	Not reported
2016	3,417 ²	NA	9,167 (59%)	Not reported
Practices				
2015	374	NA	328 ³	Not reported (15 ⁴)
2016	396	NA	422 ³	220 (15 ⁴)
Payers	Medicaid, commercial payers, Medicare	Medicaid	Medicaid	_

Table A-18. Physicians, practices, and payers participating in SIM Initiative-related models in
Minnesota, 2015 and 2016

NA = not applicable.

Source: Counts for first quarters 2015 and 2016 provided by Minnesota via quarterly progress reports to CMS. Denominators for percentages of participating providers 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 Minnesota's behavioral health homes are scheduled to launch in July 2016.

² The number of physicians in health care homes represents all certified providers, which includes physicians, nurse practitioners, and physician assistants; we do not have a comparable denominator and thus do not report this as a percentage.

³ This represents the number of provider organizations in Integrated Health Partnerships. Provider organizations are defined as self-identified, distinct provider locations, which may include hospitals, clinics, or other sites.
 ⁴ In 2015 and 2016, there were 15 Accountable Communities for Health, which are community-based coalitions of health care providers, social service organizations, and in some cases managed care organizations.

Although we cannot calculate the extent of the overlap, providers and health systems participating in Minnesota's SIM-related delivery system and payment reform efforts have also been participating in HCHs, the state's multi-payer patient-centered medical home initiative. SIM-funded practice transformation grants have helped additional practices become certified HCHs. SIM-related efforts also overlap other payers' initiatives, such as the Medicare Shared Savings Program and commercial insurers' delivery system and payment reform efforts documented in a 2015 ACO Baseline Assessment. Private payers have participated in Minnesota's SIM Initiative through SIM-related task forces, whose goal is to design potential areas of alignment on topics (such as data analytics) but have not engaged in coordination or alignment around delivery system and payment models across all payers (i.e., private, Medicaid, and Medicare).

Increased percentage of the populations reached. Concurrently, the number of Minnesotans covered by Medicaid who are reached by SIM-related delivery system and payment models has also increased, as indicated in *Table A-19*. Growth in the number of IHPs entering into contracts with Medicaid accounts for a substantial increase in the population participating in SIM-related activities between 2015 and 2016.

D		Behavioral health	Accountable Care Organizations / Medicaid Integrated Health	Accountable Communities for
Payer	Health care nomes	nomes	Partnerships	Health
Medicaid				
2015	Not reported	NA	180,934 (23%)	Not reported
2016	Not reported	NA	350,475 (44%)	Not reported
Commercial				
2015	Not reported	NA	Not reported	Not reported
2016	Not reported	NA	447,872 (12%)	Not reported
Medicare				
2015	Not reported	NA	Not reported ¹	Not reported
2016	Not reported	NA	Not reported ¹	Not reported
All payers				
2015	3,694,278 (73%)	NA	Not reported	Not reported
2016	3,667,371 (73%)	NA	Not reported	Not reported

Table A-19. Population reached in the Minnesota innovation models by payer

NA = not applicable.

Source: Counts for first quarters 2015 and 2016 provided by Minnesota via quarterly progress reports to CMS. The denominators used to compute the percentage of the population reached in 2015 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, and Medicaid, Medicare, and privately insured individuals.

¹ In addition to IHPs supported by the SIM Initiative, Minnesota has other Accountable Care Organizations (ACOs) participating in CMS's Medicare Shared Savings Program and Pioneer ACO models although the exact number for population reached by these ACOs is unknown.

Interim measures of impact on cost and utilization. Improved care coordination offered by IHPs or HCHs should decrease utilization of ERs for avoidable events that could be managed within another setting and reduce the need for more expensive care like inpatient hospital stays. Although we do not have any test period data for Minnesota Medicaid beneficiaries, we did find a statistically significant slower increase in ER visits for the commercially insured and Medicare beneficiaries in Minnesota as compared to the comparison group during the early SIM implementation period (fourth quarter 2013 through fourth quarter 2014). Although these results are most likely indicative of other pre-SIM activities such as enhanced access to primary care through HCHs, the results are nonetheless encouraging that the SIM Initiative's emphasis on access to and coordination of care for the Medicaid population may, over a longer period, change outcomes for the Medicaid population and also have spillover effects on the commercially insured and Medicare populations. *Appendix B.1* contains detailed findings on baseline trends in utilization and expenditures for Minnesota and comparison group Medicaid beneficiaries, along with changes in utilization and expenditures for the Medicare FFS and commercially insured populations statewide relative to a comparison group.

The remainder of this section outlines more specific changes in the delivery system and payment reforms Minnesota has made in 2015 and early 2016.

A.4.2.2Progress and lessons learned

Minnesota has two definitions of its IHP model, thereby increasing the number and variety of Medicaid providers participating in risk-based contracts. As shown in *Table A-2*, IHPs can choose to participate in the demonstration in two ways: as an "integrated IHP" or a "virtual IHP." The integrated IHP model is aimed at larger health care or hospital systems that have the capacity to deliver a broad range of services and are commensurately able to bear both one- and two-sided risk. The virtual IHP model allows for collaborative relationships between smaller provider groups without a hospital affiliation; these IHPs typically have smaller attributed populations and bear only one-sided risk.

The virtual IHP model allows small, rural, independent, and other unique providers to participate. The minimum participation requirements of the integrated IHP model are 2,000 in attributed population, a standard that excludes many small, rural, or independent providers from participating in an IHP. In 2014 and 2015, Minnesota state staff focused specifically on engaging providers that could become virtual IHPs, but with smaller attributed populations (1,000 to 2,000). As a result, state officials reported that more rural and small providers applied in the third round of solicitations for the cohort of IHPs, whose contracts started January 1, 2015. The state believes this increase illustrates these providers' willingness and ability to take on risk. The focus on smaller providers continued in the fourth round of solicitations; one new IHP starting January 1, 2016, is a collection of individual physicians, and another is a specialty group of pediatric providers. The state will continue to focus on expanding IHP participation among a variety of provider types and sizes.

After its early implementation period, Minnesota made minor updates to the IHP attribution model. The intent of these changes was to increase the accuracy of the attribution model and reduce the level of beneficiary churn between performance periods. For the first 2 years of the model, attribution was retrospectively determined based on a 12-month period. The state has adjusted the model to look back an additional 12 months should a beneficiary not be attributed after the first 12-month period. The state reported that, as IHPs improved the self-management of their assigned populations, those patients were not requiring as many evaluation and management visits and were therefore not being attributed to the IHP in subsequent periods. This adjustment to the attribution algorithm aims to prevent IHPs from losing patients for whom they are effectively managing care.

State officials view high-cost savings associated with IHPs as a success. According to DHS, which administers the IHP program, the first cohort of IHPs saved \$14.8 million in the first year (2013) compared to their projected costs (MN Accountable Health Model, 2015), resulting in five of the six IHPs earning shared savings payments ranging from \$570,000 to \$2.4 million (Minnesota Department of Human Services, 2016). Additionally, preliminary calculations show that in the second year of the program (2014), the first and second cohort of IHPs saved an estimated \$61.5 million compared to their projected costs (MN Accountable

Health Model, 2015), resulting in all nine IHPs receiving interim settlements totaling \$22.7 million (Minnesota Department of Human Services, 2016). State officials attribute these results to IHPs' providing patients with the "right care" in the "right place" at the "right time." IHPs also reported to the state an increase in the number of outpatient visits, coupled with a reduction in ER and inpatient hospitalizations. As discussed previously, we likewise found a relative decrease in ER visits for the commercially insured and Medicare beneficiaries in Minnesota as compared to the comparison group during the early SIM implementation period.

The high initial cost of participation—and delayed payout of any shared savings have led some IHPs to express concerns about the financial stability of their organization's continued participation. Depending on the IHP, upfront costs include the augmentation of health IT or data analytics infrastructure, implementation of quality improvement programs, or hiring additional staff. This burden is often exacerbated for virtual IHPs that lack the financial infrastructure of a large, integrated hospital or health system. Ultimately, earned shared savings can mitigate the initial infrastructure investments made by IHPs. However, as state officials point out, shared savings presents two challenges: (1) the retrospective nature of savings determinations means savings, if achieved, are not realized by IHPs until 1.5 to 2.5 years after the performance period ends; and (2) over time, as providers improve the quality and efficiency of their care delivery, it may become increasingly harder for them to reduce costs and thus yield savings. To address these concerns, Minnesota state officials are continuing to consider how the IHP model can be altered in the future to decrease payment lag times and continue to reward quality and efficiency.

By 2015, Medicaid beneficiaries in Minnesota generally reported having a regular provider of care. In a survey of randomly selected Medicaid beneficiaries in Minnesota in 2015 (see *Appendix B.3*), 80 percent of respondents felt that different office staff were informed of their pertinent health information and that their usual provider knew the most important parts of their medical history. Depending on eligibility category, 40 percent to 60 percent of Medicaid beneficiaries reported that they have been receiving care at the same location for more than 5 years. These findings suggest that IHPs are managing a relatively consistent population of assigned beneficiaries over time.

At the time of the 2015 Medicaid consumer survey, perceptions of access to and coordination across care settings were mixed. Respondents to the consumer survey (see *Appendix B.3*) indicated that usual providers were aware of hospitals stays in 80 percent to 90 percent of cases, but less informed with respect to when their patients see specialists (60 percent). Access to specialists was good, with 75 percent of patients reporting that they could usually or always get an appointment when needed, including with behavioral health providers. These survey results suggest that there may be changes in behavior at the provider level that are evident at the consumer level, but there remains room for improvement with respect to coordination with and access to specialists.

Although IHPs are not directly funded through the SIM Initiative, all IHPs receive SIM-funded technical assistance aimed at supporting and accelerating practice change. By March 2016, IHPs continued to receive technical assistance with respect to data analytics from the state's contractor, 3M. Eleven IHPs also received additional grant funding to augment their data analysis capabilities. Additionally, numerous IHPs and IHP providers have received grants to expand their health IT infrastructure (see the Health IT section for more detail) and test the role of new types of professionals in team-based care (see the Practice Transformation section for more detail). Clinicians from IHPs also have participated in SIM-funded in-person meetings and learning collaboratives. In addition, some IHP practices have received grants to support practice transformation activities, such as staff training and workflow redesign, or direct technical assistance, through SIM-funded practice facilitation contractors (see the Practice Transformation section for more detail).

The BHH initiative is preparing mental health care providers to participate in IHPs. State officials expressed that the BHH initiative gives mental health providers the opportunity to improve their capacity to work with data and focus on population health, ultimately making them viable partners in IHP arrangements. Additionally, BHHs may overlap with other payment and delivery reforms associated with Minnesota's SIM efforts. For example, several HCHs also have expressed interest in becoming BHHs, and core services required under the BHH model align with HCH standards. Several mental health providers planning to participate in BHHs are also key partners in ACHs. (See the behavioral health integration section for more on how Minnesota is using SIM funds to support providers to become BHHs.)

The ACH program is preparing health care organizations and community-based organizations to collaborate to meet specific needs and priorities. Since grants were awarded to ACHs, individual ACHs have progressed by developing more defined and collaborative relationships between their medical providers and community organization partners, instituting governance structures, and developing population health plans. However, ACHs are diverse in their target populations and scopes of work. Examples of foci at different ACHs are (1) reducing the incidence of unmanaged diabetes in Latino and East African populations, (2) linking chronically ill adults with community services, and (3) reducing recidivism among those in correctional facilities by addressing homelessness, employment, and health (Accountable Communities for Health Grant Projects, 2016). The health care organizations participating in ACHs have had varying levels of experience collaborating with community organizations. For this reason, state officials have found that implementation for many ACHs has progressed more slowly than initially anticipated. The state provides ACHs with technical assistance through a SIM-funded contractor and includes webinars and peer-to-peer learning calls. In late 2015 and early 2016, technical assistance focused on strategies for ACHs to engage their broader communities, including local community-based organizations-a continued priority for ACHs in their next implementation year.

A.4.3 Integration of Behavioral Health and Primary Care

The main SIM Initiative activity related to the integration of behavioral health and primary care is the establishment of BHHs in Medicaid. As noted, the BHH model aims to promote the bidirectional integration of primary care and behavioral health for Medicaid adults with serious and persistent mental illness and children with serious emotional disturbance. Although BHHs are not directly supported by the SIM Initiative, SIM funds have been used to support providers as they prepare to become BHHs. The Medicaid consumer survey, in which 46 percent of respondents felt their provider was never or sometimes informed of care received from a mental health or behavioral health provider (see Appendix B.3), suggests room for improvement for this type of integration. Building on an earlier learning community of "first implementers" funded by a CMS health homes planning grant, in which 39 providers participated—community mental health centers, other mental health providers, and primary care providers (including several HCHs)-Minnesota dedicated its third round of SIM-funded practice transformation grants specifically to prospective BHHs. The goal of these grants is to develop the technical infrastructure and capacity necessary to become BHHs. Twenty-four practices from the first implementers group were awarded these grants and used them for activities including clinical systems and workflow redesign, staff training, and development of quality improvement infrastructure. As of February 2016, 14 of those practices had submitted an application through the state's online portal to become certified BHHs.

A.4.4 Population Health

A key state official reiterated that large-scale population health goals, such as those related to diabetes care, are such broad statewide initiatives that Minnesota cannot attribute successes in these areas specifically to the SIM Initiative. Statewide data from the Behavioral Health Factors Surveillance System (BRFSS) indicate that from 2009 to 2013, on average, fewer Minnesotan adults reported one or more days when physical health was not good relative to adults in the comparison group (difference of 3.4 percentage points).²⁹ Because statewide successes in population health are being achieved through other means, population health within the SIM Initiative is more focused. Specifically, within the SIM Initiative, ACHs are required to have a specific population goal, but these goals are narrowly tailored to the target population of the ACH. All ACH grantees have to meet the demonstration requirement to develop a population health improvement plan for their target population (for example, reducing overuse of prescription and use of illegal drugs in seniors) (Accountable Communities for Health Grant Projects, 2016). In their second year, these plans must also contain core metrics on which to assess the ACH's progress on their population health goals.

²⁹ The methods and state-specific results from the BRFSS survey data, 2006-2013, are available in Appendix B.2 of this report.

A.4.5 Strategies to Support Delivery System and Payment Reform

A.4.5.1 Practice transformation

By March 2016, after 2.5 years of SIM Initiative implementation, all SIM-funded practice transformation grants, technical assistance available to providers, and community learning activities were focused on building the capacity of participating providers to (1) implement effective care teams, and (2) promote specific changes in provider practices. Providers benefiting from these activities included a wide variety of primary care practices and BHHs. Practice transformation grants awarded in December 2015 were specifically aimed at enhancing practice transformation activities that advance BHHs. Awardees were practices participating in the Behavioral Health First Implementers group that were implementing an action plan for achieving BHH certification. Previously, the state made grants to support practice redesign and efforts to achieve HCH certification (e.g., grants to primary care practices in October 2015).

With regard to technical assistance to providers, in mid-2015 Minnesota contracted with two organizations to facilitate providers' implementation of team-based, coordinated care: the National Council on Behavioral Health, which supports practices interested in behavioral health and primary care integration; and the Institute for Clinical Systems Improvement. Additionally, Stratis Health works with practices on broader practice transformation priorities. Examples of these services include individual coaching, technical assistance, webinars, and establishment of affinity groups for sharing best practices among similar types of providers.

The SIM-funded learning community grant program fosters sharing of best practices and peer learning on specified topics. The first round of learning community grants focused on four topics: ACHs, community paramedic training and community health workers, primary care and HCH expansion, and mental health in refugee communities. The first round ended in February 2016. The second round focused on building the capability of rural practices to become HCHs and participate in other integrated care models outside the Minneapolis–Saint Paul metropolitan area.

In addition to practice transformation activities for BHHs, HCHs, and primary care providers, the state invested SIM Initiative funds in developing new workforce roles. The emerging professions initiative focuses on expanding the role of community health workers, community paramedics, and dental/advanced dental therapists and incorporating them into the delivery of integrated, team-based health care. Minnesota focused on these three professions because of their potential to increase access to health care for low-income populations and fill current gaps in the health care delivery system. Organizations receiving SIM-funded emerging professions grants will be evaluated based on how a profession's integration into the organization's care team has affected the team's capacity to serve patients and patient outcomes. The state also awarded SIM-funded contracts for development of a "toolkit" specific to each profession. These toolkits provide resources on defining practice scope, training standards, regulatory processes, and billing and payment mechanisms. The state expects these toolkits to be publicly available on the Minnesota Department of Health website in the fall of 2016.

The emerging professions initiative represents a SIM investment designed to achieve change in the prevailing practice of health care in Minnesota, extending beyond the delivery system models supported by the SIM Initiative. The state expects health care to become more affordable by making greater use of emerging professions in the delivery of care, particularly by safety net providers. As noted, evaluation of this initiative is underway.

A.4.5.2Quality measurement and reporting

The SIM Initiative in Minnesota has not changed quality measurement and reporting for providers; rather, each of the major operational components the SIM Initiative is supporting or funding (IHPs and ACHs) has aligned with existing efforts in the state or federal government. Quality measures required from IHPs are a subset of Minnesota's existing Statewide Quality Reporting and Measurement System (SQRMS), which is the prevailing quality measurement system applicable to all Minnesota health care providers (as described in more detail in the Year 1 and 2 Annual Reports). An IHP's performance on these measures is incorporated into its shared savings/losses calculations. ACH quality measures continue to be specific to each grantee's target population and are intended to draw from the SQRMS measure set if an appropriate measure is available. Once BHHs are implemented, their quality measures will be consistent with the CMS core health home measures.

A.4.5.3Health information technology and data analytics infrastructure

Minnesota is using SIM Initiative funds to address providers' use of health IT and data analytics infrastructure through both direct grants to providers and contracts to nonprovider groups for policy analysis. For example, SIM funding has supported a variety of health IT capacity building activities through awards to IHPs, other ACO-like delivery models, and affiliated providers. The state also has invested SIM funding into policy analysis designed to further the adoption of health IT broadly across all Minnesota's health care delivery systems.

With SIM Initiative funds, the state has made grants available to providers to develop their use of health IT (the e-Health grant program) or data analytics capability. The e-Health program supports health care providers with adopting effective health IT use. The first round of e-Health grants focused on enhancing readiness of providers to implement secure exchange of medical or health-related information between organizations. The second grant round, made in 2015, furthered health information exchange by connecting care team members from at least two of four priority settings—public local public health departments, long-term and post-acute care, behavioral health, and social services. Eleven Data Analytics IHP provider grants were made in 2015. These awards are designed to increase the ability of IHPs to integrate, aggregate, and use clinical, administrative, and financial information in provider decision-making processes—in

response to IHPs' stated need for assistance in making effective use of the data they are collecting. In addition to direct awards to IHPs, as noted, the SIM Initiative contracted with 3M as a data analytics vendor to help IHPs make effective use of data.

With regard to policy analysis, the Minnesota e-Health roadmap project provides recommendations to support and accelerate the adoption of e-Health in the four priority settings noted above. During development of the roadmap during 2015 and 2016, separate workgroups were established to identify information gaps and barriers to sharing data in each of the priority settings. Because of extensive similarities in gaps and barriers identified across the priority settings, one roadmap (still under development as of March 2016) will be applied across all settings.

Research and policy analysis efforts specifically aimed at facilitating electronic data sharing include the work of the Data Analytics Subgroup and the e-Health Legal Analysis During phase one, the SIM Data Analytics Subgroup recommended and prioritized the data elements necessary to motivate greater consistency in data sharing between payers and providers. These recommendations, issued in March 2015, were guided by the limitations of current data availability, infrastructures, and analysis skills. Phase two, which began in late 2016, will focus on identifying high-priority data elements associated with social determinants of health determined high priority by stakeholders and how to share them across different types of providers within a common accountability framework. The e-Health Legal Analysis project, an additional SIM-funded activity, is identifying legal barriers to data sharing across provider organizations and analyzing the state's data privacy and consent laws. The goal is to create resources that help providers understand the legal landscape with respect to sharing and accessing health information and encourage more data sharing across the spectrum of care.

In sum, most of the SIM e-health activities are directly or indirectly focused on enhancing provider capability to exchange health information among other providers and health systems. The e-Health grants aim to build the capacity of individual providers to adopt health IT effectively by using it to exchange data with other provider organizations. The e-health roadmap project, rather than targeting individual providers, is developing strategies and resource materials that will be made available to all providers to enhance their effective use of health IT. Likewise, the e-Health legal analysis project is a technical assistance effort designed to build the capacity of all providers to overcome barriers to sharing and accessing health information. Thus, Minnesota's health IT initiatives simultaneously pursue two distinct strategies, both of which state officials believe are needed.

A.4.6 Sustainability

As of March 2016, Minnesota identified a three-pronged strategy for sustaining the efforts of the SIM Initiative after SIM funding ends: (1) ensuring the continuation of delivery system and payment reform initiatives through Medicaid state plan amendments, (2) maintaining

the collaboration between the state and stakeholders to support adoption of further delivery system change in priority areas, and (3) capturing and disseminating the lessons learned from these initiatives and the grant-funded efforts to support delivery system and payment reforms. The relationships established among state officials and providers in implementing the SIM Initiative are viewed by all involved as laying the groundwork for collaboration on the evolution of any new health policy change.

First, the Medicaid state plan amendment that established IHPs provided for a 3-year operational period for each IHP entity. State officials are working on an amendment to their current Medicaid state plan that would extend the program beyond a 3-year demonstration and also add more flexibility to the model. For example, state officials are planning to include provisions to more easily allow IHPs to incorporate non-core services into their total cost-of-care calculations, and permit participation of additional provider types in the virtual IHP model. Also, state officials are looking at ways to address IHPs' concerns about the high startup costs associated with joining the initiative and the lengthy payment lag associated with retrospective payment models. The state reports that all six IHPs in the first cohort, whose initial 3-year agreements terminated on December 31, are willing to continue the initial demonstration by signing agreements for another 3-year period.

BHHs are permanently established through CMS's approval of Minnesota's Medicaid BHH state plan amendment, and HCHs are permanently established in state legislation. In contrast, the funding mechanism for ACHs after the SIM Initiative ends is uncertain. State officials are considering other funding options, such as additional grants. One state official noted that over the long term, the IHP in an ACH partnership may be able to generate enough savings to independently sustain the ACH.

Second, state officials participated in internal strategic planning sessions to identify key aspects of SIM Initiative work stakeholders could adopt to sustain future reforms. Then, the two task forces that are part of the governance structure of the SIM Initiative—the SIM Multi-Payer Alignment Task Force and the SIM Community Advisory Task Force—validated and supported the strategic plans that came out of those sessions. Together, the state and stakeholders on the task forces identified priorities for ongoing collaborative work: (1) health information exchange and data analytics; (2) value-based purchasing/alignment of incentives with desired outcomes; and (3) community connections, partnerships, and authentic engagement. The ACO baseline assessment also identified opportunities for improvement in such areas as using data analytics to support population health management, quality improvement, and cost containment; engaging patients; and improving clinical decision making and case management. These survey results provide another resource for state officials as they continue to modify the IHP and other ACO-like models and think about potential areas for alignment across payers.

Third, to support these ongoing activities after the SIM Initiative ends, Minnesota has a variety of efforts underway to capture and disseminate the lessons learned from the SIM Initiative, such as the emerging professions toolkit and health IT resource materials. Additionally, the storytelling engagement project is using SIM funds to collect, produce, and share community-developed stories of innovations and health care integration aligned with SIM Initiative aims. This project aims to strengthen the ability of providers and communities to form partnerships and both expand and sustain interest in health care integration and innovation. In addition, both the state and SHADAC, the state evaluator for the SIM Initiative, will make findings from the SIM Initiative publicly available to inform future reform efforts.

A.4.7 References

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A.5 Oregon SIM Initiative Progress and Findings

As of March 2016, 2.5 years into the test period of the SIM Initiative, Oregon continued to focus on reinforcement of the coordinated care model (CCM) and spreading key features of the model to new payers and populations. SIM-supported strategic efforts to advance these goals include expansion of the Patient-Centered Primary Care Home (PCPCH) program and dissemination of best practices and technical assistance (TA), particularly around adoption of value-based payments and integration of physical and behavioral health care.

Key Results from Oregon's SIM Initiative, April 2015–March 2016

- As of March 2016, 50 percent of Oregonians receive health care services that contain elements of the CCM. Oregon has used a significant portion of its SIM funds to establish learning collaboratives and provide technical assistance (TA) to implement the CCM in the state's recently developed delivery system innovations—Medicaid Coordinated Care Organizations (CCOs) and PCPCHs. Virtually all of Oregon's Medicaid beneficiaries are enrolled in CCOs with many being seen by primary care providers who are PCPCHs, and some state employees and commercially insured individuals are also being seen by PCPCHs.
- Although Oregon has made inroads in the expansion of the CCM to Medicaid and state employees, continued spread of the model to other markets has slowed. CCM implementation in public educators' health plans was delayed for 2 years, with implementation now set for the plan year 2017-2018, and indefinitely postponed in qualified health plans because of administrative and technological challenges. Further, even though early CCO results show reductions in hospital readmissions and avoidable emergency room (ER) visits among Medicaid beneficiaries, commercial payers have yet to adopt the CCM on a voluntary basis.
- State regulatory and legislative powers have been central to helping Oregon transform its health care system, but there have been limits. The state passed a number of laws pertaining to health care transformation, including bills to better align performance metrics across payers and to further develop health information technology infrastructure by allowing public-private partnerships. A proposed bill that would have required public and private payers to adopt value-based payment models for primary care, however, was eventually replaced with less ambitious legislation calling for the convening of a voluntary multi-payer learning collaborative.

Oregon's strategies to support delivery system and payment models. Other SIMfunded projects underpinning Oregon's health system transformation include practice transformation support, quality measurement and reporting, health equity initiatives, and development of health information technology (health IT) infrastructure.

Interim measures of impact on cost and utilization. A quantitative analysis of health care claims data shows that by the end of 2014, in the populations for which data are available, there were few statewide reductions in utilization or expenditures, although none of the populations for which data are available would have been directly affected by the state's

initiative during the time periods analyzed. A brief discussion of these results appears in this chapter, and the full set of data on measures of utilization and expenditures available from statewide claims-based analyses for the Medicaid, commercial, and dually Medicare and Medicaid eligible populations are available in *Appendix B.1*.

A.5.1 Overview of the Oregon SIM Initiative

Oregon has continued to invest SIM funding to accelerate health system transformations already in place before its SIM Initiative began in October 2013. As of March 2016, 2.5 years into the test period of the SIM Initiative in Oregon, the state has made policy changes to use its purchasing power to spread its major delivery system innovation—the CCM—beyond its Medicaid CCOs to state employees' health plans. In January 2015, state employees insured through the Public Employees Benefit Board (PEBB) began receiving health benefits from insurance plans featuring CCM elements. Fostering PCPCHs is another ongoing strategy to spread the CCM. The state has continued to engage new providers, surpassing its goal of recognizing 600 practices by early 2016.

Oregon has made significant investments of SIM funds to support the Transformation Center, a state-run resource supporting CCOs and the spread of the CCM through TA and learning collaboratives on key health system transformation topics such as payment reform and behavioral health integration with primary care. CCOs, which have served Medicaid beneficiaries since 2012, have made some progress implementing a range of alternative payment methodologies,³⁰ after limited focus on value-based payments in previous years. Integration of behavioral health and primary care continues to be a work in progress for most CCOs. The state has made advances in its population health efforts, although SIM support in this area has been modest compared to other health transformation activities. To promote both the successful operation of CCOs and the spread of the CCM, Oregon has continued its investments in supporting strategies such as practice transformation, quality measurement and reporting, and health IT, health equity, and data infrastructure. Oregon's SIM Initiative–related activities are summarized in *Table A-20*.

³⁰ In this section, we use the term "alternative payment model or methodologies" as it is defined in Oregon, and not under CMS's Quality Payment Program established by the Medicare Access and CHIP Reauthorization Act of 2015.

Activity	Activity type	Payers	Provider types	Dates	Supporting policies
Expansion of Coordinated Care Model (CCM) beyond Medicaid	Delivery/Payment System Reforms	Medicaid/CCOs Public Employees Benefit Board (PEBB) Oregon Educators and Benefit Board (OEBB) Qualified Health Plans Commercial	Varies by CCO and PEBB plans, but can include Primary care Specialty care Behavioral health Dental care	Elements of CCM were first spread to PEBB plans in January 2015; will be spread to OEBB in fall 2017	Health benefit purchasing contract provisions State law Alignment of quality metrics and reporting
CCM Alignment Workgroup	Delivery/Payment System Reforms	Medicaid/CCOs PEBB OEBB Qualified Health Plans Commercial		2013; 2014–2016	
Expansion of Patient- centered primary care homes (PCPCHs)	Delivery/Payment System Reforms	Medicaid/CCOs PEBB Aetna	Primary care	2011 and ongoing	PCPCH standards Incentive metric for CCOs and PEBB plans
Adoption of Alternative Payment Methodologies by CCOs	Delivery/Payment System Reforms	Medicaid/CCOs	Primary care Specialty care Behavioral health Dental care Pharmacy Other/nonclinical	2013 and ongoing	Section 1115 waiver Legislation convening multi-payer learning collaborative
Transformation Center: Technical Assistance Bank	Delivery/Payment System Reforms Behavioral and Oral Health Integration Practice Transformation	Medicaid/CCOs PEBB		2015 and ongoing	State general fund allocated for next biennium

Table A-20. Key SIM Initiative activities in Oregon, Spring 2016

(continued)
Activity	Activity type	Payers	Provider types	Dates	Supporting policies
Transformation Center: Learning Collaboratives	Delivery/Payment System Reforms Behavioral Health Integration Practice Transformation	Medicaid/CCOs	Primary care Behavioral health Dental	2013 and ongoing	
Transformation Center: Behavioral Health Integration Resource Library	Behavioral Health Integration	Medicaid/CCOs	Primary care Behavioral health	Mid-2016 and ongoing	
Transformation Center: Community Health Improvement Plan Implementation Grants	Delivery System reform / Population Health	CCOs		Mid 2016-Mid 2017	
Transformation Center: Expansion of Project ECHO (Extension for Community Healthcare Outcomes)	Behavioral Integration	Medicaid/CCOs PEBB	Primary care	2014 -2017	
Oregon Public Health Assessment Tool	Population Health	Medicaid/CCOs PEBB		2012	
Community Prevention Grant Program	Population Health	Medicaid/CCOs		2013–2017	
Oregon State Health Improvement Plan	Population Health	Medicaid/CCOs PEBB OEBB Commercial		2015–2019	
Transformation Center: Innovation Café & Coordinated Care Model Summits	Delivery/Payment System Reforms Behavioral Health Integration Practice Transformation	Medicaid/CCOs PEBB OEBB Commercial		2013 and ongoing	

Table A-20. Summary of SIM Initiative activities in Oregon, Spring 2016 (continued)

(continued)

Activity	Activity type	Payers	Provider types	Dates	Supporting policies
Transformation Center: Council of Clinical Innovators Fellows program	Practice transformation Workforce Development Behavioral Health Integration Tele-health	Medicaid/CCOs	Multidisciplinary professionals (e.g., registered nurses, social workers, behavioral health counselors)	2014 and ongoing	
Office of Equity and Inclusion: Health Care Interpreter training program	Practice transformation/ Workforce Development		Certified health care interpreters	2014 and ongoing	
Office of Equity and Inclusion: Regional Health Equity Coalitions	Practice transformation/ Workforce Development		CCOs, local health departments, other health systems	2011, 2014 (SIM)	
Office of Equity and Inclusion: Developing Equity Leadership through Training and Action	Practice transformation/ Workforce Development		Cross-sector partnerships / promotes health equity and inclusion	2013 and ongoing	During the 2013 legislative session, <u>House Bill (HB) 2611</u> passed into law
Patient Centered Primary Care Institute: Learning Collaboratives Webinars Online resources	Practice Transformation	Medicaid/CCOs Commercial	Primary care	2012 and ongoing	
Health Evidence Review Commission: Patient Decision Support Tools Toolkit	Practice Transformation	Medicaid/CCOs Commercial	Primary care	2016 and ongoing	
Medicaid / Medicare Alignment	Delivery System Reforms	Medicare/ Medicaid		2014 - 2016	

 Table A-20.
 Summary of SIM initiative activities in Oregon, Spring 2016 (continued)

Table A-20. Summary of SIM initiative activities in Oregon, Spring 2016 (continued)

Activity	Activity type	Payers	Provider types	Dates	Supporting policies
Emergency Department	Health IT	Medicaid/CCOs	Hospitals	2014 and ongoing	State legislation
Information Exchange &	ι	Commercial	CCO providers		
PreManage					
CareAccord Direct	Health IT	Medicaid/CCOs	Hospitals	April 2012	State legislation
Secure Messaging			Primary care		
			Federally qualified health		
			centers		
Telehealth pilots	Health IT		Rural health clinics	2014–2016	
			Dental care		
			Pharmacists		
			Home care		
			Pediatric Psychiatrists		

CCOs = Coordinated Care Organizations.

Data from the Behavioral Risk Factor Surveillance System (BRFSS) over the 8 years preceding implementation of Oregon's SIM Initiative show that the fraction of adults reporting that they did not have a personal doctor or other health care provider had been rising after 2009, reaching more than 20 percent by 2013.³¹ Because one of the goals of the SIM Initiative is to increase the use of person-centered care, these statistics represent an opportunity for the state to reverse this trend. Among two groups Oregon's SIM Initiative is targeting most immediately (state employees and educators) survey data from early 2015 show 83 percent with a single health care provider who knew about all the respondent's medical needs. Although this represents a fairly high baseline, any improvements in these groups will help in reversing the statewide trend.³²

A.5.2 Delivery System and Payment Reform Activities

A.5.2.1 Summary and key outcomes to date

Oregon's SIM model, as noted, is based on the spread of the CCM. The state considers the CCM as a means to achieving better health and better health care at lower cost—through a combination of best practices, shared responsibility, price and quality transparency, performance measurement, payment for outcomes, and sustainable cost growth (Oregon Health Authority, 2015a). The CCM is the foundation of the state's 2012 amendment to its Medicaid Section 1115 waiver, with CCOs being the major delivery system reform for realizing the CCM in Medicaid. CCOs are ACO-like networks of different provider types (e.g., physical, behavioral, and oral health) that operate under global budgets to provide coordinated care to Medicaid beneficiaries in their community. At present (2016) 16 CCOs are in operation.

Although the state pays CCOs through global budgets, for the most part CCOs continue to pay providers on a fee-for-service (FFS) basis. Thus, ample room for payment innovation remains at the provider level. Each CCO is responsible for designing and implementing an alternative payment methodology, the choice of which is up to each individual CCO. In spring 2015, CCOs had made only limited progress with their alternative payment methods; however, by spring 2016, alternative payment method development had progressed. As of March 2016, even though CCOs are required to develop only one alternative payment method, all but one CCO had multiple alternative payment methods in operation or in development. One state official attributed that surge to the designation of payment reform as a priority for both the state's 1115 waiver renewal and the Oregon Health Policy Board, which is a policy-making and oversight board for the Oregon Health Authority. *Table A-21* summarizes the characteristics of the alternative payment methods in operation within CCOs.

³¹ The methods and state-specific results from BRFSS survey data, 2006-2013, are available in Appendix B.2 of this report.

³² The methods and state-specific results from the consumer survey fielded in Oregon are available in Appendix B.3 of this report.

Payment model	Retrospective or prospective	Payments based on whom?	Risk ²	Payment targets	Quality targets	No. CCOs with model ³
P4P	Retrospective	All attributed members	One-sided	Financial and quality	Population health metrics included	15
Partial Capitation	Prospective	All attributed members	Two-sided	Financial and quality	Population health metrics included in some case	11
Case rates	Retrospective	Those receiving services	Two-sided	Financial only	Not applicable	3
PMPM	Prospective	Vary ⁴	One-sided	Financial only	Not applicable	2
Shared savings	Retrospective	All attributed members	One-sided	Financial and quality	Population health metrics included	2
Shared risk	Retrospective	All attributed members	Two-sided	Financial and quality	Not specified	2
Bundled payments	NA	Those receiving services	Two-sided	Financial and quality	Not specified	1

Table A-21. Oregon CCO payment models¹

CCO = Coordinated Care Organization; NA = not applicable; P4P = pay for performance; PMPM = per member per month.

¹ This table is based on data on value-based payment models in CCOs as of March 2015 compiled by Bailit Health for the Oregon Health Authority.

² One-sided risk means that providers are eligible to earn shared savings for meeting lower total cost target but are not subject to penalties for higher-than-expected costs; two-sided risk means that providers are eligible to earn shared savings (the percentage earned is usually higher than one-sided risk options) for meeting lower total cost target and are expected to pay back money if costs are higher than expected.

³ Fifteen of Oregon's 16 CCOs have value-based payment models. Because most CCOs have multiple models, this column's total is greater than 15.

⁴ Health Share of Oregon has a pediatric high-risk care coordination payment, paid only if services are received. Primary Health of Josephine County has a case management fee paid for nonvisit functions for all attributed members.

Notes: (1) P4P. Providers may earn additional payment on top of fee-for-service (FFS) for meeting quality or financial targets. These payments are made retrospectively after performance review. (2) Partial capitation. Fixed, prospective PMPM payments are made to providers, based on estimated costs for a specific set of services (such as some or all behavioral health or primary care services), in contrast to full capitation, or global payments for most services. The provider assumes risk. (3) Case rates. A case rate is a flat amount paid for a group of procedures and services, usually provided by one provider at one point in time (e.g., colonoscopy) as opposed to bundled payments involving multiple providers over time. (4) PMPM for nonvisit services. Providers receive additional PMPM payments for services not typically reimbursed for under FFS, such as care coordination. (5) Shared savings. A retrospective payment made on top of FFS, if savings based on the cost of services being delivered come in below budget, is shared with providers—often tied to a provider's performance on quality measures to determine eligibility for or amount of shared savings earned. (6) Shared risk. In an FFS system, providers are at financial risk if the actual cost of services is higher than the budgeted amount, in addition to being eligible for any shared savings. (7) Bundled payments. A flat amount is paid for care for one individual receiving a defined set of services (e.g., joint replacement) that may involve multiple providers across a specified period of time. Payment may be prospective or retrospective.

The state's SIM Initiative has enhanced the development and effective functioning of the Medicaid CCOs through strategies such as TA, offered by Oregon's Transformation Center, and quality measurement and reporting. Another strategy, intended to support both CCOs and the spread of the CCM beyond Medicaid, is increasing the number of PCPCH-certified practices in Oregon through investing SIM funds in the Patient Centered Primary Care Institute (PCPCI) and by advancing health IT efforts to promote greater connectivity and health information exchange among providers.

The state hopes that the success of CCOs in improving quality of care and lowering costs will create momentum for other payers to voluntary adopt the CCM and has used a number of policy levers to help advance the CCM. For example, the state used its purchasing power to spread the CCM to health plans serving state employees. In January 2015, health plans serving state employees and their families insured through the PEBB began offering benefits featuring elements of the CCM, as contractually required by the state. Legislative action has also been an important lever. Examples of legislation supporting SIM objectives include multi-payer payment reform, alignment of metrics, and health IT.

Increased provider participation by 2016. Provider and payer participation is the mechanism by which more Oregonians receive care delivered under value-based payment models or changed delivery systems. First-quarter 2016 data reported by the state show that 89 percent of physicians are participating in the CCM through some health plan, either Medicaid or another. Additionally, the number of primary care practices recognized as PCPCHs increased from 548 in first quarter 2015 to 610 in first quarter 2016.³³ Payer participation has not changed since first quarter 2015, with one private payer (Aetna) in addition to Medicaid and PEBB incorporating PCPCH recognition in its payment methodology, and Medicaid and PEBB participating in the CCM, in first quarter 2016 (*Table A-22*).

Steady percentage of populations reached. Oregon reported that 88 percent of Medicaid beneficiaries were served by CCOs as of first quarter 2016 (*Table A-23*). 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 entirely. Combined, the Medicaid and PEBB members reached by the CCM constitute just over half the state population. However, efforts to continue the spread of the CCM to Oregon educators experienced some setbacks, as described below.

³³ In addition to models supported by the SIM Initiative, providers in Oregon are engaged in other delivery system and payment reform models through various CMS Initiatives including the Comprehensive Primary Care Initiative; Medicare Shared Savings Program; five Health Care Innovation Awards grants; and the Transforming Clinical Practice Initiative.

Participants	Patient-centered primary care homes ¹	Coordinated care model	
Physicians			
2015	2,192 (56%) ²	Not reported	
2016	2,440 (62%) ²	89% ³	
Practices			
2015	548	Not reported	
2016	610	Not reported	
Payers	Medicaid, PEBB, Aetna	Medicaid, PEBB	

Table A-22. Physicians, practices, and payers participating in SIM Initiative-related models inOregon, 2015 and 2016

PEBB = Public Employees Benefit Board.

Source: Counts for first quarters 2015 and 2016 provided by Oregon via quarterly progress reports to CMS unless otherwise noted. Payers participating in the patient-centered primary care home initiative were sourced from http://www.oregon.gov/oha/pcpch/Pages/recognition-oregon-payers.aspx.

¹ In addition to the Patient-Centered Primary Care Homes (PCPCHs) supported by SIM, Oregon has 65 primary care practices participating in CMS's Comprehensive Primary Care Initiative (CPCI), although the exact number of physicians and payers participating in the CPCI model is unknown.

² Count of total number of clinicians working in a recognized PCPCH calculated based on state's estimated median of four clinicians per PCPCH; see http://www.oregon.gov/oha/pcpch/Documents/2014-

2015%20PCPCH%20Program%20Annual%20Report.pdf. Denominator for percentages of participating providers are the number of active patient care primary 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.

³ State reported percentage of physicians participating in Medicaid based on the Physician Workforce Survey. For 2014 version of this survey report see

https://www.oregon.gov/oha/analytics/Documents/2014PhysicianWorkforceSurvey.pdf.

Payer population	Patient-centered primary care homes ¹	Coordinated care model
Medicaid		
2015	742,065 (70%)	911,680 (86%)
2016	812,561 (77%)	928,641 (88%)
Commercial		
2015	Not reported	NA
2016	Not reported	NA
Medicare-Medicaid		
2015	Not reported	37,741 (55%)
2016	Not reported	38,791 (54%)
State employees		
2015	Not reported	129,010 (97%)
2016	Not reported	129,010 (97%)

Table A-23. Population reached in the Oregon innovation models by payer

NA = not applicable.

Source: Percentage values for Medicaid beneficiaries, Medicare-Medicaid beneficiaries, and state employees provided by Oregon via quarterly progress reports to CMS. Counts of Medicaid enrollees in Patient-Centered Primary Care Homes (PCPCHs) calculated using state-reported PCPCH enrollment percentage among Coordinated Care Organization (CCO) enrollees times state reported CCO enrollment percentage among all Medicaid enrollees. Counts of Medicare-Medicaid enrollees calculated using Oregon Health Plan March 2015 and May 2016 Physical Health Service Delivery by Eligibility Group available at

http://www.oregon.gov/oha/healthplan/Pages/reports.aspx. Counts of state employees calculated using the total number of Public Employees Benefit Board (PEBB) members and dependents reported via the PEBB website (133,000) available at http://www.oregon.gov/oha/pebb/Pages/about_us.aspx.

¹ In addition to the PCPCHs supported by SIM, Oregon has 65 primary care practices participating in CMS's Comprehensive Primary Care Initiative (CPCI) although the exact population reached by the CPCI model is unknown.

Interim measures of impact on cost and utilization. Improved care coordination offered by PCPCHs (participating payers include Medicaid, PEBB, and Aetna) or under the CCM (Medicaid and PEBB) should decrease utilization of ERs for avoidable events that could be managed within another setting and reduce the need for more expensive care like inpatient hospital stays. We do not have any test period data for Oregon Medicaid beneficiaries so were not able to test for changes over time among the Medicaid population. There were a few significant findings with 1 year of test period data (through 2014) in the statewide commercially insured population relative to a comparison group of similar states, but it is unlikely these findings could be linked to substantive changes under the SIM Initiative, for several reasons. First, an unknown proportion of the statewide commercially insured population receives care from PCPCHs. Second, the PEBB population only began receiving health benefits featuring CCM elements starting in January 2015. Additionally, although 54 percent of Medicare-Medicaid beneficiaries are enrolled in CCOs, we did not find any changes in the expected direction in utilization or Medicare payments among Medicare-Medicaid beneficiaries in Oregon

relative to the comparison group. However, ER visits and professional payments did increase more among Medicare-Medicaid beneficiaries in Oregon relative to the comparison group during the early test period, but the magnitude was small. *Appendix B.1* contains detailed findings on baseline trends in utilization and expenditures for Oregon and comparison group Medicaid beneficiaries, along with changes in utilization and expenditures for the Medicare-Medicaid FFS and commercially insured populations statewide relative to a comparison group.

The remainder of this section outlines progress and lessons from specific changes in the delivery system and payment reforms that Oregon made in 2015 and early 2016, 2.5 years into the test period of the SIM Initiative.

A.5.2.2Progress and lessons learned

The state's use of purchasing power to spread the CCM beyond Medicaid was successful with one group, but then faced greater complexity. The state used its purchasing power for this population as a lever, by requiring carriers wishing to bid on the PEBB contract to incorporate elements from the CCM. Because 97 percent of PEBB members get their health benefits through PEBB, this resulted in extending the CCM to 129,010 PEBB members. The intent was to duplicate this strategy in 2016 for the 147,000 teachers, dependents, and retirees represented through the Oregon Educators Benefits Board (OEBB). However, turnover at OEBB and the complexity of this group—comprising 900 employee groups, part of an estimated 500-600 collective bargaining units—necessitated delaying a request for proposals for CCM-based health plans until September 2016, for coverage beginning in 2017. The state has convened a CCM Alignment Work Group, reporting to the Oregon Heath Policy Board, whose charge is to develop a toolbox of strategies for spreading the CCM to payers' commercial lines of business, the self-insured, and eventually qualified health plans.

Fostering PCPCHs—Oregon's medical homes—has been a successful strategy to spread the CCM. The SIM Initiative supports expansion of the PCPCH model by partially funding the PCPCH program within the Oregon Health Authority (OHA) and TA to primary care providers (PCPs) offered through the PCPCI.³⁴ By March 2016, the number of recognized PCPCHs climbed to 610, as noted, increasing by more than 100 practices since 2014 and surpassing the state goal of certifying 600 clinics by the end of 2016 in the year's first quarter (Oregon Health Authority, 2016b).

One of the performance metrics for both CCOs and PEBB plans is enrollment of members in certified PCPCHs. In addition, the PEBB statewide plan offers lower cost sharing to members who receive primary care from a recognized primary care home. Although the current share of PEBB members enrolled in PCPCHs is unknown, the state reports that 88 percent of CCO members received their primary care from a recognized PCPCH in March 2016 (Oregon

³⁴ Please see the Year 2 Annual Report for more details on the PCPCH program (Gavin et al., 2016).

Health Authority, 2016b). A baseline patient experience survey among PEBB and OEBB members conducted in 2015 (see *Appendix B.3*), before the CCM elements were implemented in PEBB health plans, indicates that having a PCP increased the likelihood of experiencing coordinated and patient-centered care. This finding suggests that promoting enrollment in PCPCHs is a promising strategy for transforming Oregon's health care system.

Other delivery system reforms supported by SIM funds include integrating long-term services and supports, housing with services, and Medicaid/Medicare alignment initiatives.³⁵ However, there have been few major developments in these areas in the period covered in this report.

After receiving relatively limited attention at the onset of Oregon's SIM Initiative, payment reform in 2015 became a higher priority. CCOs are required by the terms of the 2012 amendment to Oregon's Medicaid Section 1115 waiver to implement an alternative payment methodology of their choosing. Alternative payment method adoption, however, has been a low priority in the implementation stages, when CCOs were preoccupied by administrative and operational challenges. To encourage CCOs in development and adoption of alternative payment methods, Oregon Health Authority's Transformation Center began offering targeted TA and learning collaboratives. Since April 2015, most CCOs have made progress in implementing a range of alternative payment methods. However, the most common alternative payment method, pay-for-performance, exists on top of the current FFS payment system, potentially limiting its impact. As of early 2016, the share of CCO payments to providers that were FFS was 47 percent, and although the state reports having changed its methodology for calculating this measure, this appears to be an *increase* compared to the end of 2014, when the share was 43 percent (Oregon Health Authority report to CMS, 2016).

As of March 2016, 15 CCOs had more than 50 operational alternative payment methods, with at least 7 more under development. Besides pay-for-performance for meeting quality or financial performance targets, other alternative payment methods implemented by CCOs include partial capitation (11 CCOs), case rates (3 CCOs), per member per month payment for nonvisit functions (2 CCOs), shared savings (2 CCOs), shared risk (2 CCOs), and bundled payments (1 CCO). (See note in *Table A.5-4* for a description of these payment models.)

Most commonly, CCOs use alternative payment methods for reimbursement of primary care services (30 percent of alternative payment methods), followed by behavioral health care (19 percent), specialty care (14 percent), and dental care (12 percent). Some CCOs have developed alternative payment methods to reimburse acute hospital services (8 percent of

³⁵ Please see the Year 2 Annual Report for a more detailed report on these areas of SIM implementation in Oregon (Gavin et al., 2016).

alternative payment methods), nontraditional services such as transportation or physical therapy (8 percent), and pharmacy (2 percent). Lastly, about 7 percent of alternative payment methods are focused on provider networks.³⁶ CCOs are also making efforts at aligning measures—in many cases using measures for their own internal alternative payment methods that are aligned with CCO incentive measures determined by the state.

The Transformation Center supported CCOs' payment reform efforts by developing a TA Bank for adoption of alternative payment methods. (The TA Bank is discussed further in Section A.5.5.1.) In addition, in August 2015 the Transformation Center contracted with the Center for Evidence-based Policy to solicit proposals from CCOs interested in intensive TA to help them develop and implement an alternative payment method by September 2016. Three CCOs were selected in October 2015: Health Share, Pacific Coast Gorge, and Cascade Health Alliance. By March 2016, however, Health Share and Pacific Coast were no longer participating. They instead elected to move forward with more advanced TA that the Transformation Center was able to arrange through their TA Bank. Cascade Health Alliance, a CCO at a comparatively more initial stage of alternative payment method development, continues to receive TA through the Center for Evidence-based Policy.

Separate from the SIM Initiative, CCOs earned quality incentive funds. CCOs operate under global budgets for which they assume full financial risk for physical, behavioral, and oral health care delivered to the Medicaid population in the community they serve. Depending on their performance on predetermined incentive measures, CCOs are eligible for payments from a quality incentive pool, which is funded by withholding a certain percentage of the CCO's global budget funds. In 2015, 4 percent of the CCOs payments were held back, totaling to almost \$168 million distributed to CCOs as incentive payments. Fifteen of the 16 CCOs received 100 percent of their eligible quality pool payments, and the remaining CCOs received 60 percent (Oregon Health Authority, 2016).

Aiming to encourage payment reform initiatives beyond Medicaid, Oregon passed legislation in 2015 supporting multi-payer primary care payment reform. Senate Bill 231 requires that both CCOs and private plans report to the state legislature their share of expenditures spent on primary care. The bill also convenes a voluntary multi-payer learning collaborative, the Primary Care Payment Reform Collaborative (PCPRC) (SB 231-B). The PCPRC, consisting of a number of members of the PCPCH advisory committee, is to convene between April and September 2016, under the direction of the Transformation Center, to advise OHA in development of best practices related to primary care alternative payment methods.

³⁶ Based on data on alternative payment methods in CCOs compiled by Bailit Health for the Oregon Health Authority, March 2015.

A.5.3 Integration of Behavioral Health and Primary Care

Data from the BRFSS (*Appendix B.2*) show a modest deterioration in self-reported mental health status between 2006 and 2013, and data from the survey of public employees and educators in 2015 (*Appendix B.3*) suggest that PCPs were less aware of their patients' use of behavioral health services than they were of other types of specialist care or hospitalizations. Both findings suggest an opportunity for improvement by focusing on a better integration between physical and behavioral health services.

In parallel to the SIM Initiative, Oregon has supported CCOs in integrating behavioral health and primary care through aligning and developing quality-based incentive measures and offering practice transformation learning opportunities. Oregon's CCM encourages integration of behavioral health and primary care services as a means to increase access, streamline service provision to reduce inefficiencies in the system, and ultimately improve health outcomes while reducing costs.

To that end, Oregon includes behavioral health services in its global budgets paid to CCOs. Additionally, as described in more detail later, CCOs are held financially accountable for their performance on 17 incentive measures—4 of which were related to behavioral health in 2015. Although there are financial levers at the CCO level to integrate behavioral health care with primary care, progress in integrating behavioral health services at the practice level remains slow, although it has improved over time.

In February 2015, the state completed an environmental scan to gauge the degree to which behavioral health integration had occurred in CCOs and to assess the need for TA. Scan results showed that, while integration was taking place in most parts of the state, approaches taken and progress made varied significantly. State officials similarly reported in February 2016 that, while all CCOs were working on behavioral health integration, the extent to which integration had permeated primary care practices was modest, despite inclusion of elements of behavioral health integration in PCPCH standards—core attributes a practice must meet to be recognized as a PCPCH.³⁷ Analysis of the 2015 patient experience survey of Oregon state employees and educators confirms that behavioral health integration in primary care settings is lacking. Only 44 percent of respondents who had visited a behavioral health professional reported that their usual provider knew of their behavioral health appointment.

Behavioral health professional shortages are hampering integration efforts for some CCOs. To mitigate this challenge, some CCOs are utilizing traditional health workers and leveraging telehealth resources to bring behavioral health services to their primary care practices.

³⁷ The core attributes of PCPCH standards of recognition include (1) access to care, (2) accountability,

⁽³⁾ comprehensive care, (4) continuity of care, (5) coordination and integration of care, and (6) patient and family-centered care. See https://www.oregon.gov/oha/pcpch/Pages/standards.aspx.

Models of integration used by CCOs range from coordination (e.g., collaborative agreements with other providers, referral, and follow-up) to co-location (e.g., separate systems, shared facilities) and full integration (e.g., shared systems and facilities). As noted above, CCOs are beginning to develop alternative payment methods that align with and foster integrated models of care, which may help to spur transformation at the practice level. However, as of March 2015, only a small proportion of CCOs had operational alternative payment methods that focused on behavioral health services specifically (19 percent of alternative payment methods).³⁸

SIM-funded activities to improve behavioral health integration in Oregon have largely centered on developing and providing resources and direct TA to providers and CCOs. State officials have anecdotally observed that it may be more difficult to integrate primary care services into behavioral health settings than to integrate behavioral health services into primary care settings. The reason, state officials suggest, may be that patients served in behavioral health clinics have serious mental illnesses and are also more likely to have multiple comorbidities and higher social service needs. Indeed, even among the relatively well-off group of state employees and educators, only 53 percent of those who needed home and community-based services reported in the consumer survey in early 2015 (*Appendix B.3*) that their primary care provider regularly helped coordinate those services. Because of the complexity of these patients, PCPs joining behavioral health settings may need to reduce their panel size and adjust their practice style to meet the unique needs of these patients—challenging the feasibility of the payment model under which they are currently operating.

To support CCOs and providers, the Transformation Center is in the process of developing a behavioral health integration resource library, which is scheduled to launch by mid-2016. The library will include a "virtual site visit" video for CCOs and their practices that showcases best practices in integrated care. Transformation Center staff has also met with each CCO to discuss its behavioral health integration priorities and TA needs. To support CCO needs, the Center also has added numerous consultants and other experts in this area to its TA Bank.

One CCO, Trillium Community Health Plan, has been running a structured learning collaborative for its primary care and behavioral health practices to promote and operationalize integration. The Transformation Center aims to collect and disseminate best practices learned from this CCO and offer opportunities for other CCOs to receive TA.

Additionally, Oregon is using some of its SIM funds to expand its Project ECHO (Extension for Community Healthcare Outcomes) initiative for psychiatric medication management. Project ECHO enables PCPs to consult with specialists remotely through

³⁸ Calculation is based on data on alternative payment methods in CCOs compiled by Bailit Health for the Oregon Health Authority, March 2015.

technology. The ECHO initiative launched in 2014 at Oregon Health and Sciences University and predominantly served PCPs in the Portland area.

A.5.4 Population Health

In the 8 years leading up to the SIM Initiative, Oregon's population, like those in its comparison group, reported decreasing rates of smoking among adults, but increasing rates of self-reported diabetes and hypertension (see *Appendix B.2*). These disease-specific trends are consistent with the modest deterioration in self-reported physical health status seen in the state over the same period. Several of the state's SIM-funded population health initiatives have the potential to improve these outcomes over time.

Between April 2015 and March 2016, Oregon has used SIM Initiative funds to support population health activities, including building public health infrastructure and offering grants. With regard to public health infrastructure, the SIM Initiative continued to fund three OHA staff in the Public Health Division. It also continued to fund the Oregon Public Health Assessment Tool to analyze and display public health data; these data have helped inform development of CCOs' Community Health Improvement Plans (CHIPs).

Public Health Division staff members supported with SIM funds were part of the team that developed the Oregon State Health Improvement Plan (SHIP) (Oregon Health Authority, 2015b), which identifies seven key priority areas for improving Oregonians' health outcomes. Although not required to do so, most CCOs have aligned their CHIPs with key priority areas outlined in the Oregon SHIP. State officials report that among all CCO CHIPs taken together, every SHIP priority area is represented. The most commonly addressed health improvement priority areas among CCOs include reduction of harms associated with alcohol and substance use, improvement in oral health, slowing the increase of obesity, and prevention and reduction of tobacco use.

Oregon also invested SIM funding in the community prevention grant program, which provided funding to four partnerships consisting of at least one CCO and the local public health authority in various regions of the state. The goal of the grant program is to foster collaboration between CCOs and local public health departments as they implement strategies for addressing priority health concerns identified in CCOs' CHIPs. Each grantee's project is targeting a different prevention area, respectively: (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 cessation. These 3-year grant projects started in 2013 and will conclude in 2016. According to state officials, these grant programs have been effective in encouraging such partnerships. One CCO involved in the grantee partnership in eastern Oregon has committed to funding the staff coordinator position that will be working on this project after SIM funding concludes, thus confirming the perceived value this particular CCO sees in the partnership.

Lastly, after significant time dedicated to development, the state was successful in adding two population health-related metrics to the CCO incentive metrics for performance year 2016: tobacco use prevalence and childhood immunization status. (These population health–related metrics are discussed further in Section A.5.5.2.) The Public Health Division within OHA has been working with CCOs on strategies to decrease tobacco use among their members and improve immunization rates among children as they begin being held accountable for their performance in these areas.

A.5.5 Strategies to Support Delivery System and Payment Reform

A.5.5.1 Practice transformation

Summary

In 2015 and early 2016, Oregon has continued to expand its TA and resources available. The state takes a two-pronged approach to supporting practice transformation, at both the CCO and practice levels, through the Transformation Center and PCPCI. First, the Transformation Center works with CCOs to support them in working with their providers to foster practice transformation. The Transformation Center has continued to sponsor learning and networking opportunities and provide TA to CCOs. In June 2015, it hosted an Innovation Café, where CCOs and practices presented on innovative initiatives. In November 2015, the Transformation Center held the third Coordinated Care Model Summit, which was attended by close to 800 people—including state officials, CCO representatives, health plan officials, and providers. The agenda focused largely on breakout sessions on topics of interest to CCOs, including behavioral health integration and social determinants of health. CCOs and CCO practices had many opportunities throughout the Summit to showcase their work, by either participating as a panelist in a breakout session or presenting a poster during the poster session.

The Transformation Center also expanded its TA Bank for CCOs by adding national experts and consultants, as described earlier, who offered up to 35 hours of expert TA per CCO. CCOs took advantage of the resources available to them through the Bank, and according to state officials, approximately 83 percent of the TA recipients who completed evaluations found the assistance to be "very valuable."³⁹ As of spring 2016, the Transformation Center received 38 requests. Many of these requests have focused on CCO Community Advisory Council [CAC] development). Each CCO must have a CAC, an advisory body (including consumer representatives), to ensure that community health care needs are addressed.

³⁹ Personal communication, December 2015.

Additionally, the Transformation Center continued to convene learning collaboratives for CCO leadership, CCO quality improvement leadership, and CACs. Recent topics covered in the CCO leadership learning collaborative have been aligned with areas of focus for CCOs including behavioral health integration, traditional health workers, and recently added population health incentive measures. Based on the Transformation Center's annual learning collaborative report, released at the end of 2015, participation in the CCO learning collaboratives has increased since its inception and participants' evaluations are very positive (Oregon Health Authority, 2015c).

The Transformation Center also continued to provide targeted TA to CCOs about a subset of CCO incentive measures (more information about measures can be found in Section A.5.5.2). CCOs can receive additional support through guidance documents produced by the OHA Office of Health Analytics. These guidance documents include technical specifications for how measures are calculated and best practices CCOs can implement to help improve their performance.

The Transformation Center is also facilitating two workforce development initiatives: the Council of Clinical Innovators Fellows program and the Health Care Interpreter training program. The Council of Clinical Innovator Fellows program selects clinical leaders from CCOs to participate in a year-long learning collaborative to develop and implement innovative projects in the CCO they are affiliated with. The first cohort of Clinical Innovators graduated from the program in December 2015. Some of their projects have already produced promising outcomes, including a program in one primary care clinic aiming to improve care post-hospital care transitions—which produced a post-hospitalization telephone follow-up rate of 75 percent, an increase in 7-day ambulatory follow-up from 30 to 70 percent, and a reduction in the all-cause hospital readmission rate from 20 percent to 11 percent (Flynn, 2014). The second cohort, of 15 mid-career professionals representing 12 of 16 CCOs, recently completed the Clinical Innovators program is also underway and has seen growing demand for the interpreter trainings in 2016.

Second, the PCPCH program, also within OHA, and the PCPCI, a SIM-supported subcontractor, provide TA directly to providers as they work to transform their practices into medical homes. The robust set of resources they offer to PCPCH practices include online resources about primary care transformation and webinars. Webinar topics have focused on development of workflows to support staff working at the top of their licenses, development of quality improvement processes, end of life care, referral tracking and care coordination, and Screening, Brief Intervention, and Referral to Treatment (SBIRT).

Lessons learned

The Transformation Center has refined its approach to TA based on its experiences through early 2016, 2.5 years into the test period of the SIM Initiative. It has found that

learning collaboratives are more effective at fostering relationship building when participants are divided into smaller groups. It has also made efforts to structure its collaboratives so participants not only learn and share information about particular topics, but also gain skills to train or teach other CCO colleagues or community partners about what they learned (i.e., a train-the-trainer approach). In addition, the Transformation Center has recognized the variable nature of CCOs' TA needs because of the unique communities they serve and their level of experience in providing care. For example, some CCOs were converted from managed care organizations, while others formed from new community partnerships. In response, the Transformation Center is looking into models that will allow CCOs to provide more specific and targeted TA, rather than convening broad learning collaboratives.

State officials recognize that they must also address concerns about clinician well-being and burnout because of the cumulative demands of concurrent practice transformation activities. State officials have found that it can be hard for CCOs to advance multiple competing priorities. Officials believe that provider burnout may be attributed to the many transformation activities practices are expected to undertake to effectively participate in the state's complex delivery and payment reform efforts. In response to the large number of demands placed on providers, the state conducted a scan of the level of provider fatigue and convened a stakeholder meeting in December 2015 to address the issue. Stakeholders at the meeting recommended that a toolkit be developed and disseminated to CCOs and providers on strategies to manage practice transformation expectations.

A.5.5.2Quality measurement and reporting

Oregon's SIM quality measurement strategy builds on the measurement strategy it developed for CCOs under its Medicaid Section 1115 waiver: (1) CCO performance measurement and reporting, and (2) the alignment of quality metrics between CCOs and health plans participating in the CCM. With SIM support of the Transformation Center and the All Payer All Claims database, the OHA continues to develop a robust set of performance metrics, which state officials recognized as a key lever to drive delivery system change in CCOs. Transformation Center activities with CCOs are particularly focused on improvements in the common set of performance metrics. However, the state had limited opportunities between April 2015 and March 2015 to align metrics across CCOs and commercial health plans because of challenges in spreading the CCM to OEBB and commercial markets.

Summary

As of March 2016, the state requires CCOs to report on 33 performance metrics, 18 of which are incentive measures for which CCOs are eligible to receive financial incentive payments from the "quality pool." If funds remain in the "quality pool" after financial incentives have been paid to all eligible CCOs, then CCOs may be eligible to earn additional incentives based on select "challenge" measures. (See *Table A-24* for the list of incentive measures in performance year 2015.)

Table A-24. 2015 CCO incentive metrics

Adolescent well-care visits	Diabetes: HbA1c Poor Control ¹
Alcohol or other substance misuse (SBIRT) ¹	Effective contraceptive use among women at risk of unintended pregnancy
CAHPS composite: access to care	Electronic health record adoption
CAHPS composite: satisfaction with care	Emergency room utilization
Colorectal cancer screening	Follow up after hospitalization for mental illness
Controlling high blood pressure	Mental, physical, and dental health assessments within 60 days for children in DHS custody
Dental sealants on permanent molars for children	Patient-Centered Primary Care Home enrollment
Depression screening and follow-up plan ¹	Timeliness of prenatal care
Developmental screening in the first 36 months of life ¹	

CAHPS = Consumer Assessment of Healthcare Providers and Systems; CCO Coordinated Care Organization= DHS = Department of Human Services.

¹ "Challenge" metric.

The state has also continued to focus on development of quality measurement alignment between CCOs and other health plans. PEBB-contracted health plans report on all but two of the 2015 CCO incentive metrics: (1) dental sealants on permanent molars for children; and (2) mental, physical, and dental health assessments within 60 days for children in Department of Human Service custody.⁴⁰ Additionally, as noted in the Year 2 report, the use of incentive metrics has spread to OEBB (Gavin et al., 2014). Although not currently obligated to do so by contract, the state reports that as of October 2015, the OEBB has aligned its existing health plan quality measures with CCO metrics. There is also legislative support for metrics alignment efforts. In the 2015 legislative session, Oregon legislators passed Senate Bill 440, which requires the Oregon Health Policy Board to establish the Health Plan Quality Metrics Committee (SB 231-B). The Committee will be charged with developing aligned quality and outcome measures for CCOs, PEBB, and OEBB plans and publishing their performance data. As of March 2016, the Oregon Health Policy Board is working on a strategic plan to carry out this work.

Lessons learned

To spur continuous quality improvement at the CCO level, the state annually revisits the CCO performance metrics and adds or retires metrics as appropriate. The addition of new metrics often aligns with areas of development for CCOs, reflecting CCO evolution and increasing sophistication. In performance year 2015, the state added two new metrics: effective contraceptive use among women at risk of unintended pregnancy and dental sealants on permanent molars for children. The addition of an oral health metric came in response to the integration of dental care into the CCO global budget in 2014. In performance year 2016, the state added the first population-based metrics to the incentive measure set:

⁴⁰ http://www.oregon.gov/oha/analytics/MetricsDocs/MS-02262016-MeasuresMatrix.pdf

cigarette smoking prevalence and childhood immunization status. The addition of three public health related measures since 2015 (dental sealants, childhood immunizations, cigarette smoking prevalence) correlates with priority areas in both the state's SHIP and CCO CHIPs.

State officials report that some of the metrics added in 2015 and 2016 have caused concern among CCOs about how the data would be accurately collected. There was particular concern on the cigarette smoking prevalence measure; CCOs have been working with their providers to help them develop reports in their electronic health record systems to capture these data.

To encourage quality improvement, the state publishes performance reports describing each CCO's performance on the 33 performance metrics. These reports not only enable CCOs to understand how they are performing relative to other CCOs, but also give state policymakers, providers, and consumers the opportunity to track CCO performance and Medicaid delivery system transformation over time. The most recent report looks at CCO performance between July 2014 and June 2015. Among other outcomes, the report shows that ER utilization by Medicaid beneficiaries enrolled in a CCO has decreased 23 percent since 2011 baseline data, and hospital admissions for adults with complications from diabetes have decreased by 32 percent over the same period (Oregon Health Authority, 2016a).

CCOs seem to be making good progress in improving quality of care. State officials report that CCOs have found it most effective to focus first on having the right technology in place to collect the data, and then work with providers on strategies to improve their performance on a specific measure. State officials have remarked that incentive measures are effective levers for driving change at the CCOs. This is supported by the improvements in CCO performance over time, and as noted, in reductions in ER utilization and hospital admissions for adults with certain chronic conditions.⁴¹

A.5.5.3Health information technology and data infrastructure

A portion of SIM resources is dedicated to supporting development of health IT capacity and telehealth initiatives that aid providers in improving the way care is delivered. Since SIM implementation began, these efforts have included implementation of the Emergency Department Information Exchange (EDIE) and its companion tool, PreManage; development of a direct secure messaging platform in Care Accord; and telehealth pilots. New legislation, described in this section, institutes policy levers the state can use to enhance its health IT infrastructure.

State officials believe EDIE and PreManage have been the biggest health IT accomplishments of the Oregon SIM Initiative. EDIE is designed to collect and share ER

⁴¹ More information on CCO performance on incentive metrics from July 2014 through June 2015 can be found here: http://www.oregon.gov/oha/Metrics/Documents/2015%20Mid-Year%20Report%20-%20Jan%202016.pdf

admission, discharge, and transfer data with other hospitals connected to the system; hospitals can also upload inpatient admission data directly to EDIE. EDIE helps hospitals identify patients who use EDs often or have complex health needs and direct them to more appropriate care setting. The majority of the hospitals in the state are connected to EDIE. The state is also encouraging the use of PreManage—a subscription-based tool that allows subscribers (such as health plans and CCOs) to view their members'/patients' information in EDIE and receive realtime notifications when a member/patient utilizes the ER. Under the enhanced subscription of PreManage, users can also upload patient information. Eleven CCOs have subscribed or are in the process of subscribing to PreManage, and all have elected to subscribe to the enhanced package. CCOs have reported to the state that PreManage notifications have been particularly effective in helping CCOs reach vulnerable and transient populations. Some CCOs send care coordinators to the ER to assist the members who have been treated with connections to primary care and other needed services. In addition to providing seed money to develop EDIE, SIM funds support the state's assertive community treatment (ACT) teams' subscription to PreManage. ACT teams, funded through OHA's Addiction and Mental Health Services division, provide community-based mental health treatment and support services to individuals with serious mental illness. Many of these individuals are Medicaid beneficiaries who receive care through CCOs.

CareAccord, administered by the OHA, is a health information exchange system that provides a secure messaging platform. Direct secure messaging facilitates provider-to-provider communication and secure sharing of patient information for care coordination, referrals, and follow-up care. Overall, CareAccord adoption has been slow statewide. However, CareAccord has had some uptake among many federally qualified health centers (FQHCs) that contract with CCO networks, because CareAccord is the direct secure messaging subcontractor for OCHIN— the electronic health records vendor for most of Oregon's FQHCs. As a baseline for the level of information sharing across providers, among the state employees and educators who had a hospital stay in the 12 months prior to the survey in early 2015, 86 percent reported that their PCP had at least some knowledge of the important information about the stay after they were discharged, but only 60 percent reported that the provider definitely knew the important information (see *Appendix B.3*).

SIM funds are also being used to support five telehealth pilot projects that aim to increase access to specialty services in rural or remote areas of the state. Each pilot launched between May and September 2015. Project focus areas include (1) dementia care, (2) oral health care, (3) medication management for persons living with HIV/AIDS, (4) psychiatric services for children, and (5) reduction of hospital readmissions through community paramedics.

In the 2015 legislative session, the Oregon legislature passed House Bill 2294, aspects of which directly impact SIM-related health IT initiatives (HB 2294-B, 2015). For example, the

bill allows OHA to offer health IT services to the private sector and charge fees to users of these services. This affords OHA the option of charging fees for entities using CareAccord as their direct secure messaging platform. The bill also moves the health IT Oversight Council under the Oregon Health Policy Board to foster alignment between health IT initiatives and health system transformation. Lastly, the bill permits OHA to enter into partnerships or collaboratives with other organizations in Oregon to create or advance health IT infrastructure. This enables OHA to serve as a formal member of EDIE's governing body and vote with other member organizations about strategic and developmental aspects of EDIE; previously, it could serve only in the capacity of an ex-officio member.

A.5.6 Sustainability

Oregon has developed several strategies to ensure that key components of its CCM are sustained after SIM support ends. In 2015 and 2016, OHA focused on the renewal of Oregon's 1115 waiver, which is set to expire in June 2017. If approved by CMS, the renewal will allow CCOs to continue to operate as the delivery system for the majority of Oregon's Medicaid beneficiaries. It will also address specific policy issues the state believes will help the CCM to continue to evolve—including extending the hospital transformation performance program and adjusting the rate development process for CCOs to allow for incorporation of health-related services (i.e., nonmedical services that cannot be billed for in traditional FFS or encounter-based payment models).⁴² State officials are also having preliminary discussions about the potential to incorporate some support for the Transformation Center into their waiver renewal.

In the interim, while the waiver is being developed and submitted for approval, the Oregon legislature passed a budget that provides financial support for the Transformation Center, the largest spending category under SIM, between the end of the SIM grant period (September 30, 2016) and the end of the next biennium (through December 31, 2017). This funding will allow the Transformation Center to continue to provide TA to CCOs. The state officials report having ongoing conversations about making some Transformation Center positions permanent, and as mentioned above, potentially including some support for the Transformation Center in their waiver renewal. However, plans for sustaining the Transformation Center in 2018 and beyond remain to be determined.

Beyond CCOs, the CCM will be sustained through state employee and educator health plans. As discussed, beginning in 2015, all five health plans contracting with PEBB are required to incorporate tenets of the CCM and also report on a set of performance metrics similar to CCOs' performance metrics. Although spreading the CCM to OEBB subscribers has suffered delays, the state is at present working on developing a request for proposals, which will also require OEBB contracted health plans to incorporate elements of the CCM into its plan design.

⁴² More information about flexible services in Oregon can be found here: https://www.oregon.gov/oha/Transformation-Center/Resources/Flexible-services-final.pdf.

Efforts such as the CCM Alignment Workgroup may also create sustainable pathways for the spread of the CCM beyond CCOs.

A.5.7 References

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A.6 Vermont SIM Initiative Progress and Findings

As of March 2016, 2.5 years after initial implementation, Vermont continued to implement several components of its SIM Initiative with a major focus on its primary mechanism for payment reform, the Shared Savings Program (SSP), a value-based payment model implemented by three Accountable Care Organizations (ACOs) and two payers in the state.

Key Results from Vermont's SIM Initiative, April 2015–March 2016

- Vermont's strong stakeholder engagement has led to sustained progress of its valuebased payment models under the SIM Initiative. Through collaborative planning, Vermont gave providers flexibility in how they participate in the SIM-supported Medicaid and commercial ACO Shared Savings Programs (SSPs), including an initial option to take on one- or two-sided risk through the Medicaid SSP. Learning from stakeholder experiences with these models, and with the pre-SIM Medicare SSP, Vermont designed its All-Payer ACO Model (agreement with CMS approved in fall 2016). The All-Payer ACO Model will strengthen and build on the ACO SSP delivery model after the end of the SIM Initiative.
- Vermont's SIM Initiative has completed multiple projects to expand connectivity and improve data quality. Vermont is strategic in its work to develop infrastructure and data analytics in support of payment models, care coordination, and behavioral health. The state first conducts analyses to identify the gaps in infrastructure and data quality, and then implements remediation efforts. This methodical process, in addition to the complexity of engaging multiple health information technology (health IT) systems, has made for a slower pace of progress than Vermont envisioned.
- After 1 year of the SIM Initiative test period, findings for the Vermont Medicaid population show a decrease in emergency room (ER) visits not leading to a hospitalization in 2014, relative to the Medicaid population in the comparison group (Connecticut and Iowa). These early findings may be a result of the pre-SIM Blueprint for Health patient-centered medical home (PCMH) model, which by 2014 (time period of analysis) had reached approximately 85 percent of Medicaid beneficiaries, rather than the newly implemented SIM-supported Medicaid SSP, which reached 49 percent of the Medicaid population in 2015 and 62 percent in 2016. Populations served by the Medicaid ACO SSP overlap significantly with those participating in the Blueprint for Health.

Vermont's strategies to support delivery system and payment models. Vermont has invested most significantly in the areas of health IT infrastructure development and practice transformation, which is considered essential to enabling the state's payment and delivery reforms.

Interim measures of impact on cost and utilization. A quantitative analysis of health care claims data shows that by the end of 2014, some reductions in utilization and expenditures occurred statewide for the Medicare and Medicaid populations, as described further below. A brief discussion of these results appears in this chapter, and the full set of data on measures of

utilization and expenditures available from statewide claims-based analyses for the Medicaid, commercial, and Medicare populations is available in *Appendix B.1*.

A.6.1 Overview of the Vermont SIM Initiative

Vermont's primary goal under the SIM Initiative, otherwise known as the Vermont Health Care Innovation Project, is to develop a high-performance health system that achieves full coordination and integration of care throughout a person's lifespan, ensuring better health care, better health, and lower cost for all Vermonters (CMS, 2015). Vermont categorized the project into five major areas of focus: (1) creation and implementation of value-based payment models for all Vermont payers; (2) practice transformation that supports integrated care delivery and management; (3) improved health data infrastructure to support care delivery, payment reform, and population health management; (4) project evaluation to ensure that program goals are being met; and (5) program management to ensure organization of the activities under the SIM Initiative. The bulk of Vermont's efforts, however, focus on areas one through three (payment models, practice transformation, and health data infrastructure). *Table A-25* summarizes the status of activities under Vermont's SIM Initiative as of early 2016.

Important to Vermont's SIM Initiative is its purposeful build on existing activities in the state. These include Vermont's Blueprint for Health,⁴³ a statewide initiative mainly focused on supporting patient-centered medical homes (PCMHs); the Medicare ACO SSP; and the work of the Green Mountain Care Board (GMCB), a legislatively created independent board charged with ensuring that changes in the health system improve quality while stabilizing costs. The Blueprint for Health's key components include multi-payer (Medicaid, Medicare, and commercial) payments to National Committee for Quality Assurance (NCQA)-recognized PCMHs; support for practice facilitators, professionals trained in quality improvement and change management; support for community health teams, professionals charged with care coordination and connection to services, who may be co-located in PCMHs or in regional Health Service Areas; and development and support of the Hub and Spoke Health Home program, which targets opioid addiction (addressed in *Section A.6.3*). Vermont has made a concentrated effort to align or integrate its SIM reform work with the Blueprint for Health, to strengthen both initiatives. Moreover, the GMCB has served as an important regulatory body with authority to take action on Vermont's payment reforms.

Also pervasive throughout the work described here is the influence of Vermont's active SIM Initiative leadership and stakeholder work groups—whose efforts and projects are supported directly by SIM funds. The work groups, which have had important influence in guiding and building support for the SIM Initiative, include the Core Team, Steering

⁴³ The Blueprint for Health is also known as the Advanced Primary Care Medical Home Initiative. Medicare joined as a participant through the Multi-Payer Advanced Primary Care Practice Demonstration.

Activity	Activity type	Payers	Provider types	Dates	Supporting policies (if any)
Shared Savings Program (SSP)	Delivery/Payment System	Medicaid and commercial (Blue Cross Blue Shield of Vermont); Medicare (pre- SIM)	Three ACOs: Community Health Accountable Care (CHAC), OneCare Vermont (OCV), and Vermont Collaborative Physicians	Medicare implemented an SSP in 01/2013; Medicaid and commercial implemented SSPs in 01/2014	Medicaid SSP SPA 1115 waiver Green Mountain Care Board implementation authority under state law (Act 48)
Blueprint for Health / Pay-for-Performance (P4P) Incentives	Delivery/Payment System	Medicaid, Medicare, and Vermont's three largest commercial insurers	Primary care	Pilot launched in 2008; Medicare joined through the MAPCP Demonstration in 07/2012; P4P incentive payments began 01/2016	State law 1115 waiver
Episodes of Care Payment Models	Delivery/Payment System	Medicaid	Primary care Specialty care	Data analytics conducted in 2014-2015; 04/2016 decision to suspend development	
All-Payer ACO Model	Delivery/Payment System	Medicaid, Medicare, and commercial	Three ACOs; participating individually or potentially as a newly merged single ACO	The state will launch the Medicaid strand in four communities in Vermont in 2017 and will launch the Medicare and commercial strands in 2018	Medicare waiver and 1115 Medicaid waiver State law (Act 113) ¹
Hub and Spoke Initiative (Health homes for Medicaid beneficiaries with opioid addiction)	Delivery/Payment System	Primarily Medicaid and commercial; limited payment by Medicare (Spokes)	Behavioral health Primary care	Implemented 01/2013 through the Blueprint for Health	ACA Section 2703 Health Home State Plan Amendment
Medicaid Value-Based Purchasing "Medicaid Pathway"	Delivery/Payment System	Medicaid	Mental health and substance abuse; Disability and long-term services and supports (DLTSS)	Feasibility study and development began Fall 2015	State law (Act 113) ¹

Table A-25. Summary of SIM Initiative activities in Vermont, Spring 2016

(continued)

Activity	Activity type	F	Payers	Provider types	Dates	Supporting policies (if any)
Accountable Communities for Health (ACHs)	Delivery/Payment System Population Health	NA		Community-level practices and public health programs	Research and design in 2015; Model exploration launch of ACH Peer Learning Lab in 2016	
Integrated Communities Care Management Learning Collaborative	Practice transformation	NA		Patient-facing care providers (e.g., nurses, care coordinators, social workers, mental health clinicians, physicians)	Initial webinar 11/2014	
Core Competency Trainings (including Disability Awareness)	Practice transformation	NA		Case managers and care coordinators	Initial training 03/2016	
Provider Sub-Grant Program and Technical Assistance (TA)	Practice transformation	NA		Provider and community-based organizations	Round 1 awarded 04/2014; Round 2 awarded 10/2014; TA initiated 01/2015	
Regional Collaborations	Practice transformation	NA		Medical and nonmedical providers (e.g., DLTSS and community providers); Blueprint for Health and ACO leadership	Leadership meetings began in 11/2014; Launched in 06/2015	
Expand Connectivity to Health Information Exchange (HIE)—Gap Analyses and Gap Remediation	Health IT	NA		ACO providers; DLTSS providers	ACO analysis in 2014 and remediation efforts began 03/2015; DLTSS analysis in 2015 and remediation efforts began 01/2016	
Expand Connectivity to HIE—ACO Gateways (Enabling Data Extracts)	Health IT	NA		Three ACOs—OCV, CHAC, and Vermont Collaborative Physicians	OCV 2014-2015; CHAC 2015; Vermont Collaborative Physicians 2016	

Table A-25. Summary of SIM Initiative activities in Vermont, Spring 2016 (continued)

(continued)

Activity	Activity type	Р	Pavers Provider types	Dates	Supporting policies (if any)
Data Quality Improvement	Health IT	NA	ACOs and Designated Mental Health Agency (DA) providers	Initiated in 03/2015	(,)
Electronic Medical Record Expansion	Health IT	NA	Non-MU providers at Specialized Service Agencies (SSAs) and state psychiatric hospital	Initiated 01/2015	
Behavioral-Health Data Repository	Health IT	NA	DA and SSA providers	Vendor contract executed 09/2015	
Health Data Inventory	Health IT	NA	Data sources—Vermont agencies, Vermont and national organizations, federal agencies	Launched in 12/2014; completed 12/2015	
Care Management Tools—Shared Care Plan, Universal Transfer Protocol (UTP)	Health IT	NA	Long- term care, mental health, home care, and specialist providers	Technical analyses conducted in 2015; UTP dissemination in 2016 via learning collaboratives	
Care Management Tools—Event Notification System	Health IT	NA	Statewide, open to all providers	Project initiated in 04/2014; statewide launch in 2016	SIM subsidizes 70% of costs for 12 months
Telehealth Pilots	Health IT	Unknown	Primary care and specialists	Strategic plan developed in 2015; Two pilot projects launched in 2016	State law

Table A-25. Summary of SIM Initiative activities in Vermont, Spring 2016 (continued)

ACO = Accountable Care Organization; health IT = health information technology; MAPCP = Multi-Payer Advanced Primary Care Practice; MU = Meaningful Use; NA = not applicable; SPA = State Plan Amendment.

¹State of Vermont Act 113, An act relating to implementing an all-payer model and oversight of accountable care organizations, signed May 16, 2016. Available at http://legislature.vermont.gov/bill/status/2016/H.812 Committee, Disability and Long-Term Services and Supports (DLTSS), Health Care Workforce, Health Data Infrastructure, Payment Model Design and Implementation, Population Health, and Practice Transformation. Vermont restructured its work groups in fall 2015 to streamline and better align each with how SIM activities have evolved since the SIM Initiative's initial launch. Work groups meet on a monthly or bimonthly basis and include representation of all relevant state agencies; the GMCB; and stakeholders representing ACOs, provider groups, insurers, mental health and substance abuse agencies, DLTSS, health information technology (health IT), quality improvement, faith communities, consumers, and consumer advocates.⁴⁴

A.6.2 Delivery System and Payment Reform Activities

A.6.2.1 Summary and key outcomes to date

The majority of Vermont's payment reform work from April 2015 through March 2016 focused on continued operation of the SIM Initiative's major activities, mainly the SSP, and to a lesser extent, Pay-for-Performance (P4P). During this period, Vermont received from its state contractor the first comprehensive set of results from a full year of the SSP (2014), in which the Medicaid SSP demonstrated total savings of \$14.6 million. Analyses of claims data under this independent federal evaluation showed some statistically significant changes in cost and utilization for the statewide Medicaid and Medicare populations, as described in more detail below.

Vermont also began dedicated work toward development of an All-Payer ACO Model (described in *Section A.6*). The All-Payer ACO Model would implement a population-based payment model and encompass Medicaid, Medicare, and commercial payer participation; it is part of Vermont's sustainability efforts—the next iteration of its current ACO SSPs, building on lessons learned from its Medicare SSP and SIM Initiative SSP experiences. Development of the All-Payer ACO Model, and progress made through other SIM activities, led Vermont to shift priorities and focus over this period. Notably, Vermont decided to eliminate work related to its planned episodes of care (EOCs), focusing instead on the models described in *Table A-26*.

As of spring 2016, the state reports that 56 percent of Vermonters⁴⁵ are participating in alternative to fee-for-service (FFS) payment models through the SSP or the Blueprint for Health, which includes P4P in its PCMH payments, a result of increased provider participation in these models. Through early 2016, Vermont saw continued evolution of each of these programs, including increased efforts to find and foster points of alignment across all payment reform initiatives—to collectively move the state toward a unified vision of alternative payments to be codified by the All-Payer ACO Model.

⁴⁴ Further detail about Vermont's SIM Initiative work groups can be found on Vermont's Health Care Innovation website: http://healthcareinnovation.vermont.gov/

⁴⁵ State-reported percentage based on an eligible population, such as excluding incarcerated individuals and individuals serving in the military.

Delivery system model	Payment model	Participating payers	Payment type	Payments based on whom?	Risk ¹	Payment targets	Implementation progress
Accountable Care Organization	FFS + shared savings	Medicaid	Retrospective	For all attributed members	One-sided with option for two- sided risk (none opted for two- sided risk)	Financial and quality	Implemented 01/2014
	FFS + shared savings	Commercial	Retrospective	For all attributed members	One-sided	Financial and quality	Implemented 01/2014
PCMH (Blueprint for Health)	FFS + PCMH (base payment of \$3.00 PMPM) + Pay-for- Performance (P4P) incentives (performance-based payments up to an additional \$0.50 PMPM) + CHTs (~\$2.70 PMPM for CHTs)	Medicaid/ commercial/ Medicare; Medicare is not participating in the new P4P incentives	Retrospective	For all attributed members	One-sided	Medical home recognition, participation in learning collaboratives, performance on quality and utilization	New P4P incentive structure implemented 01/2016

Table A-26. SIM Initiative-related delivery system and payment models in Vermont

CHT = Community Health Team; FFS = fee for service; PCMH = patient-centered medical home; PMPM = per member per month.

¹One-sided risk means that providers are eligible to earn shared savings for meeting lower total cost target but are not subject to penalties for higher-thanexpected costs; two-sided risk means that providers are eligible to earn shared savings (the percentage earned is usually higher than one-sided risk options) for meeting lower total cost target and are expected to pay back money if costs are higher than expected. **Increased provider and payer participation by 2016.** Provider and payer participation is the mechanism by which more Vermonters receive care delivered under value-based payment models or changed delivery systems. In first quarter 2016, Vermont had 712 unique providers in NCQA-recognized PCMHs, a slight increase from the past year (*Table A-27*). Because 747 primary care physicians and 1,867 total physicians are active in patient care in the state, this indicates participation rates of 95 percent among primary care physicians and 38 percent among all physicians (AAMC, 2015). Additionally, on the assumption of some unknown overlap in the physicians and practices participating in the Medicaid, Medicare, and commercial ACO SSP, at least 1,016 of 1,867 active patient care physicians (54 percent) were participating in an ACO in first quarter 2016—again a slight increase from 2015, with participation increasing in both the Medicaid and commercial SSPs.⁴⁶

Increased percentage of the populations reached. The number and percentage of Vermonters involved in each of the SIM-related delivery system and payment models increased in almost all cases in first quarter 2016 when compared to first quarter 2015, across all payers (*Table A-28*). The percentage of Medicaid beneficiaries receiving care from the Medicaid SSP increased from 49 percent in 2015 to 62 percent in 2016.

Indicators of pre-SIM Initiative care coordination. Data from the Behavioral Risk Factor Surveillance System (BRFSS) during the pre-SIM Initiative baseline period (2006-2013) indicated that 12 percent of all Vermont adults 18 and older did not have a personal doctor or health care provider, which was lower than the comparison group states (15 percent).⁴⁷ This rate aligns with the large population reached by the Blueprint for Health. Results from a survey of randomly selected Medicaid beneficiaries across Vermont, fielded in 2015,⁴⁸ indicate that care coordination and care management efforts begun under the Blueprint for Health could be impacting the way Medicaid enrollees perceive their care, because the date of the survey was early in Medicaid SSP implementation. However, these results also support the need for the SIM Initiative's continued efforts. For example, wide variation exists between children, adults, older adults, and disabled adults in perception and receipt of coordinated care. Older adults were most likely to feel their usual provider was always informed about their medical history (71 percent),

⁴⁶ In addition to new models supported by the SIM Initiative and preexisting models described earlier (Blueprint for Health and Medicare ACO SSP), Vermont is engaged in other delivery system and payment reform models through various CMS initiatives including two Health Care Innovation Award grants and the Transforming Clinical Practice Initiative.

⁴⁷ The methods and state-specific results from the BRFSS, 2006-2013, are available in Appendix B.2 of this report.

⁴⁸ The methods and state-specific results from the consumer survey fielded in Vermont are available in AppendixB.3 of this report.

	Blueprint for Health patient-	Hub and Spoke health	Accountable care
Participants	centered medical homes	homes	organizations
Physicians			
2015			
Medicaid	Not reported	123	690
Commercial	Not reported	NA	832
Medicare	Not reported	NA	977
All payers	694 (93%)	NA	Not reported
2016			
Medicaid	Not reported	140	893
Commercial	Not reported	NA	1,016
Medicare	Not reported	NA	939
All payers	712 (95%)	NA	Not reported
Provider			
Organizations			
2015	63	5	Not reported
Medicaid	Not reported	5	41
Commercial	Not reported	NA	61
Medicare	Not reported	NA	83
2016	60	5	Not reported
Medicaid	Not reported	5	48
Commercial	Not reported	NA	65
Medicare	Not reported	NA	79
Payers	Medicaid, BCBSVT, MVP Health	Medicaid	Medicaid, BCBSVT,
	Care, Cigna, some self-insured organizations, Medicare		Medicare

Table A-27. Physicians, practices, and payers participating in the Vermont innovation models

BCBSVT = Blue Cross Blue Shield of Vermont, MVP = Mohawk Valley Plan; NA = not applicable.

Note: The practice counts refer to participating provider organizations by unique tax identification number, which collapses practice sites under a parent organization. The Blueprint for Health usually reports practice sites (129 in 2015; 128 in 2016) rather than provider organizations; for accountable care organization comparability purposes, the table contains only provider organization counts.

Source: Counts for participating physicians and provider organizations for first quarters 2015 and 2016 were provided by Vermont via quarterly progress reports to CMS, except for those counts that were supplied or updated via correspondence with state officials: 2015—Medicaid Hub and Spoke health homes physician counts and total Blueprint for Health patient-centered medical home practice sites; 2016—Medicaid Hub and Spoke health homes physician counts, Medicaid Accountable Care Organization physician counts, and total Blueprint for Health patient-centered medical nome provider organization counts. Denominators for percentages are the numbers of active patient care primary care physicians in: Association of American Medical Colleges (AAMC) (2015, November). *2015 State Physician Workforce Data Book*, published by the Center for Workforce Studies. Accessed May 26, 2016 from http://members.aamc.org/eweb/upload/2015StateDataBook%20(revised).pdf

Blueprint for Health patient-			Accountable care
Payer population	centered medical homes	Hub and Spoke health homes	organizations
Medicaid			
2015	106,818 (84%)	Not reported	62,424 (49%)
2016	108,654 (86%)	Not reported	78,758 (62%)
Commercial			
2015	111,529 (31%)	NA	37,252 (10%)
2016	128,629 (35%)	NA	43,922 (12%)
Medicare			
2015	67,621 (84%)	NA	60,070 (75%)
2016	70,617 (88%)	NA	69,955 (87%)

Table A-28. Population reached in the Vermont innovation models by payer

NA = not applicable.

Note: Vermont progress reports did not indicate the Medicaid population reached by Hub and Spoke health homes and therefore is displayed as "not reported."

Source: Counts for first quarters 2015 and 2016 provided by Vermont via quarterly progress reports to CMS, except for these counts that were updated via correspondence with state officials: 2015—Medicaid and commercial accountable care organization (ACO) population; 2016—commercial ACO population. 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. This source groups Medicare-Medicaid ACO-attributed enrollees as Medicare because that is the ACO model they participate in (numerator). Therefore, the percentages shown here underrepresent the Medicaid ACO population and overrepresent the Medicare ACO population.

followed by children's primary providers (69 percent). Disabled individuals (64 percent) and prime aged adults (62 percent) were least likely to feel their provider knew the important information on their medical history. Similarly, older adults were most likely to feel there was one provider who knew about all their medical care needs (78 percent), followed by children's primary providers (71 percent). Disabled individuals (66 percent) and prime aged adults (58 percent) were least likely to feel there was one provider who knew about all their medical care needs. Older adults felt their usual provider was the most up to date on specialist care (60 percent), while prime aged adults were least likely to feel their provider was up to date on the care they received from specialists (45 percent).

Interim measures of impact on cost and utilization. Pre-SIM Initiative efforts may also help to explain early SIM Initiative implementation-period results regarding health care utilization and expenditures found for the Medicaid and Medicare populations in Vermont (see *Appendix B.1* for full results). These pre-SIM Initiative efforts include the Blueprint for Health for all payer populations and Medicare ACO SSP. Among the Vermont Medicaid population—for whom the SSP began during the SIM Initiative test period—ER visits declined from the baseline to the test period while remaining stable for Medicaid beneficiaries in comparison group, resulting in a net difference of 19 fewer ER visits per 1,000 beneficiaries for

Vermont relative to the comparison group. From the baseline to the test period, total Medicaid payments increased for Vermont while decreasing in the comparison group, although that may be explained by the disparate number of new enrollees in the comparison states because of the Medicaid expansion.

With approximately 1 year of test period data, statewide Medicare claims data show statistically significant decreases in all-cause acute inpatient admissions and ER visits that did not lead to hospitalization, and decreases in total per member per month (PMPM) payments, relative to Medicare beneficiaries in the comparison group. Specifically, from the baseline to the test period, inpatient admissions and ER visits among Vermont Medicare beneficiaries decreased while admissions and ER visits among Medicare beneficiaries in the comparison group increased. Total PMPM expenditures increased for both Vermont and the comparison group, but total expenditures increased less among Vermont Medicare beneficiaries.

A.6.2.2Progress and lessons learned

State SIM officials describe state-reported first year results from the SSP as "promising," with some Medicaid shared savings and changes in utilization. In September 2015, Vermont released the first year's results of SSP implementation for the three participating ACOs—Community Health Accountable Care (CHAC), OneCare Vermont (OCV), and Vermont Collaborative Physicians. State SIM officials described the results as "promising," with ACOs performing at or above national standards for the majority of reporting measures. Results also indicated a decrease in Medicaid emergency room (ER) utilization (Slusky, Jones, & Cooper, 2015). The total shared savings achieved by the two ACOs participating in the Medicaid SSP reached \$14.6 million; slightly less than half of this was split between the two ACOs proportionally, based on number of covered lives and the quality score. No savings were achieved by the commercial SSP ACOs, because spending in that program was higher than predicted. State officials believe the original spending target was inaccurate for the commercial ACO population, comprising the new 2014 Health Insurance Marketplace population that had no historical claims data on which to base a spending prediction.

ACOs participating in the SSP developed different savings structures for use of the money gained from the program, based on their composition. Of savings given back to the two Medicaid ACOs, OCV (mainly hospitals and hospital-owned practices) uses 10 percent to support ACO infrastructure and splits the remaining amount to physicians. After paying back liabilities, CHAC (mainly federally qualified health centers) sets 10 percent of savings aside for reserves and 20 percent for infrastructure investments. Of the remaining funds returned to the ACOs, 45 percent goes to primary care providers based on attributed lives; 40 percent is invested regionally in community providers (e.g., home health, mental health agencies, Area Agencies on Aging [AAAs]) as decided by providers within each region; 5 percent is evenly split among community providers; and 10 percent is distributed back to investors.

The SSP offered ACOs options in bearing risk for different services in Year 2 and Year 3 of implementation, but few adjustments were made. Medicaid SSP participants could opt into a two-sided risk option for Year 2 (2015); none did. Additionally during Year 2, the two ACOs participating in the Medicaid SSP were given the option to adopt "tracks" to include pharmacy and non-emergent transportation as part of the program; neither did. During 2015, stakeholders debated the addition of other optional tracks for Year 3 starting in 2016, including a new track for dental. However, as Vermont further explored implementing the All-Payer ACO Model, the focus shifted from adding new tracks or rolling out new risk models for payer-specific SSP (e.g., a two-sided risk model for commercial plans in Year 3 of the SSP) to look at ways to align the SSP with a future transition to the All-Payer ACO Model. Even so, Vermont did implement minor adjustments to the SSP for 2015 and 2016, including changes to the measure specifications and guidelines.

As of 2016, some providers shifted their participation in the SSP from one ACO to another, and the state moved to increase payer participation. Year 3 of the SSP launched in January 2016, and Vermont has begun to see a movement of providers in their ACO affiliation with several switching from OCV to CHAC. One state official described this as a "natural shake out" of providers and practices churning through the program and evaluating which ACO might best support their individual practices.

With regard to payers involved in the SSP, the state plans, later in 2016, to engage in a big push to bolster SSP participation, specifically targeting large self-insured employers in the state, beginning with public and self-funded employers. Vermont anticipates that this engagement may take time, because much conversation needs to happen with these groups to bring them up to speed with all the reforms occurring in the state. Engagement efforts are expected to launch during fall 2016. Vermont is currently trying to align the end of the SSP with the beginning of the All-Payer ACO Model. The Medicaid SSP covers approximately 62 percent of all current Medicaid enrollees in the state (78,758 lives); the commercial SSP covers 12 percent of all commercial plan enrollees (43,922 lives).

As details of Vermont's plans for its All-Payer ACO Model evolved, the EOC program, as originally envisioned, no longer seemed "a perfect fit" and Vermont eliminated it from its SIM Initiative. As of July 31, 2015, Vermont completed an analysis of 50 potential EOCs to include in a Medicaid program. In fall 2015, the state began broad conversations with stakeholders, including clinicians, on the development of three potential episodes, with particular interest in an episode related to children's mental health. However, stakeholders saw potential for the program to ultimately foster misalignment with other payment reform initiatives. Ultimately, after conversations with the Innovation Center, Vermont decided to eliminate pursuit of EOCs as part of its SIM Initiative.

Stakeholder work groups supported by the SIM Initiative have helped align P4P activities with other payment reform. The SIM Initiative supports continued evolution of P4P incentives delivered through the Blueprint for Health, specifically by enabling discussion of how to sustain and align the program in the context of the SSP and ultimately the All-Payer ACO Model. Quality measures that serve as the basis for P4P payments from January through June 2016 have been aligned with those used for the SSP program. Additionally, stakeholders engaged in the SIM Initiative were included in discussion of community health team payment modifications, which were implemented in July 2015 to reflect payers' market share.

A.6.3 Integration of Behavioral Health and Primary Care

Results from the Centers for Disease Control and Prevention's BRFSS indicate that the proportion of Vermont adults 18 and older reporting one or more days in which mental health was not good was consistently higher than that of the comparison group from 2006 to 2013, by an average of 3.5 percent. When compared to the other SIM Model Test states, Vermont adults scored higher (worse) than most of them.⁴⁹ Although Vermont had already established a history of including behavioral health as a component of its prior reforms (e.g., Blueprint for Health), payment reform and other activities advanced through the SIM Initiative generated ever increasing awareness by Vermont's SIM Core Team and stakeholders of the importance of coordinating with—and where possible integrating—behavioral health throughout its reforms.

This need was underscored by, as described by one state official, increased awareness of the large proportion of Medicaid spending consumed by individuals with behavioral health needs. Based on a survey of randomly selected Medicaid beneficiaries across Vermont fielded in 2015, roughly half of disabled respondents and 28 percent of adult respondents reported making an appointment with a mental health or behavioral health specialist in the 6 months prior to being surveyed. Responses to this survey, conducted in the early implementation of Vermont's SIM Initiative, indicate that activities to achieve integration through other initiatives in the state may already be working. Of those respondents who reported making an appointment with a mental health or behavioral health specialist in the 6 months prior to being surveyed, 75 percent of the disabled and 71 percent of the adult segment thought their primary care provider was aware of the care they were receiving, with no statistically significant difference between those enrolled in a PCMH and those who were not.

Vermont has deliberately considered how behavioral health care might be integrated in its health care transformation efforts under the SIM Initiative. For example, Vermont developed aspects of its health data infrastructure to support behavioral health needs (described in more detail in *Section A.5.3*). Vermont also considered how behavioral and mental health, substance abuse, and DLTSS fit within value-based payment models through two studies. First, Act 179 of

⁴⁹ The methods and state-specific results from BRFSS analysis from Vermont and comparison groups are available in Appendix B.2 of this report.

the Vermont Legislature (passed in 2014) legislatively mandated a report on the development of a substance abuse and mental health services payment methodology (No. 179 Fiscal Year 2015 Appropriations Act, 2014), which was completed in spring 2015. Second, in fall 2015, the SIM Initiative funded an assessment of spending on mental health and substance abuse services (e.g., on services provided by Designated Agencies, Specialized Service Agencies, and preferred substance use treatment providers) within the Agency of Human Services (State of Vermont Agency of Administration Health Care Reform, 2016). This assessment aimed to determine whether new payment models (e.g., the All-Payer ACO Model) could help achieve better integration of substance abuse and mental health services with other parts of the health care system.

The SIM Initiative has also provided support for Vermont's health homes, or Hub and Spoke initiative, which targets Medicaid beneficiaries with chronic opioid addiction. Implemented through a State Plan Amendment, Hub and Spoke integrates addiction care into general medical settings (Spokes) and links these settings to specialty addiction treatment programs (Hubs) in a unifying clinical framework. Bundled monthly payments are provided to Hubs and a capacity-based payment is given to Spokes. The SIM Initiative supports convening and strategic planning relevant to the alignment of Hub and Spoke with other reforms in the state. State officials stressed the importance of supporting these conversations to coordinate and align programs in an environment where there are "at least 28 other programs and funding streams going to mental health care."

Through the SIM Initiative, Vermont has been able to expand and enhance the health homes program through provision of additional quality improvement facilitators, expert faculty, training, and investments in health IT that support participation in the program. As of December 2015, the state reports that 5,179 beneficiaries participate in the program, with the goal of 5,200 total patients expected to be reached by June 2017. Currently, SIM activities related to Hub and Spoke are focused on further expanding the state's capacity to collect and report on performance metrics specific to this program and how to integrate the health homes initiative into greater plans for SIM sustainability.

A.6.4 Population Health

A Vermont SIM state official described a "confluence of activity" the state has engaged in over the past year related to population health—mostly stemming from CMS's requirement of SIM Model Test states to develop a population health plan. Based on the 2013 BRFSS data (see *Appendix B.2*), 11 percent of Vermont adults 18 and older reported fair or poor health, which is below the comparison group (13 percent). In 2015 and early 2016, Vermont developed a population health plan outline, engaged with stakeholders around the meaning of the term "population health," and identified opportunities to leverage SIM activities to advance
population health goals—exploring potential areas related to quality measurement, learning collaboratives, data analytics, and Accountable Communities for Health (ACHs).

In November 2015, Vermont released a draft outline of a population health plan, which it considered to be a "kickoff" for more focused population health work. The outline was finalized in the first half of 2016. The draft plan was completed in September and distributed for discussion among the Vermont SIM work groups and committees in fall 2016 (Vermont Health Care Innovation Project, 2016b).

When engaging with stakeholders to discuss how the state will address population health priorities, Vermont state officials observed a sense of frustration among some stakeholders, mainly stemming from differences in how the term "population health" is used by different groups. Providers participating in clinical health delivery within an ACO may use the term "population health" to mean health of a population attributed to that ACO, whereas a population health stakeholder may literally be referring to an entire population. SIM leadership worked to break down silos that existed between stakeholder groups related to different uses of language and terminology by encouraging more active participation from traditional population health and public health stakeholders, such as the Vermont Department of Health (VDH), regional VDH offices, and local organizations including prevention coalitions.

Conversations spurred by the population health plan have led to more deliberate integration of population health components into ongoing SIM Initiative projects. For example, the SIM team has increasingly been engaged around development of population health quality measures for the SSP and the All-Payer ACO Model and how the integrated care learning collaboratives (described below) can better coordinate care across populations. Vermont has also engaged in a project to provide a secure data connection from its Health Information Exchange (HIE) to ACOs' analytics vendors, which will allow ACOs direct access to timely data feeds for population health analytics. Additionally, one area the state has targeted for further exploration is better use of public health data, recognizing this as a potentially underutilized data source to target future health improvement initiatives.

Vermont's interest in ACHs developed at the urging of stakeholders participating in the Population Health Work Group. Because of strong stakeholder interest, in 2015, Vermont commissioned a report by the Prevention Institute to explore ACH models and their potential for implementation in Vermont (full report and executive summary are available at Mikkelsen & Haar, 2015). The report identified incremental steps the state could take toward ACH development, noting some challenges with developing a statewide program, in part because of the realities of establishing a framework that would be inclusive of the contributions of diverse sectors (e.g., health care, mental health, public health, community services, food systems) and developing financing models to support ACHs. However, the report also acknowledged many existing "building blocks" in Vermont that could serve as a good foundation on which to build the ACH model, including communities already established through Vermont's Blueprint for Health. Additionally, results from the 2015 survey of Medicaid beneficiaries indicated that 80 percent of children were usually or always asked about things in their life that affect their health, indicating existing attention among primary care providers to needs beyond clinical health care.

In the near term, SIM Initiative funds will be used to develop an ACH Peer Learning Lab for communities across the state that have expressed interest in moving toward an ACH model. Built on its regional collaborations and coordinated with Vermont's other practice transformation initiatives (described below) and slated to launch in May 2016, the Lab will support participating communities in increasing their capacity and readiness across the nine core elements of the ACH model. The Peer Learning Lab will include a mixture of in-person sessions, webinars, and local coaching conducted over a 9-month span and has a proposed budget of \$232,000. Participating organizations are expected to include clinical and social services, public health prevention coalitions, education, and other organizations. Despite interest from 10 communities, no funds are being made available to organizations directly to participate, and state officials suggested that this may hinder participation of some interested parties that have access to only limited resources or are experiencing "learning collaborative fatigue" from participation in Vermont's other health reform initiatives.

A.6.5 Strategies to Support Delivery System and Payment Reform

A.6.5.1 Practice transformation

Vermont has dedicated SIM Initiative resources to three projects intended to encourage practice transformation—Integrated Communities Care Management Learning Collaboratives, the sub-grantee program, and regional collaborations—and development of written resources to support the Blueprint for Health and SSP participants. Although each is designed to meet slightly different aims, they all provide opportunity for practice-level innovation intended to support practice transformation. These transformation efforts are yielding delivery system changes on a small scale and targeted toward specific communities or provider groups, in areas such as incorporating behavioral and population health goals into traditional clinical settings. Vermont is beginning to consider how to scale up successful initiatives, which may be a challenge without additional investments. Primary strategies for spread include consideration of how to incorporate successful strategies more explicitly into current curricula or standards of care. More details about Vermont's practice transformation efforts are provided below.

Integrated Communities Care Management Learning Collaborative. The Integrated Communities Care Management Learning Collaborative program launched in late 2014 with a cohort of three communities, representing 90 providers. In July 2015, Vermont expanded the program to 2 additional cohorts with 8 total additional communities, bringing total participation to 11 of the state's 14 health service areas (also known as hospital service areas) and approximately 200 providers. Extending beyond clinical providers, these learning collaboratives

intend to engage as many patient-facing care providers within each community as possible including nurses, care coordinators, social workers, mental health clinicians, physicians, and others representing a broad spectrum of health, community, and social service organizations (e.g., community health teams, home health agencies [HHAs], mental health agencies, and housing organizations). For example, one participating collaborative focused on social determinants includes participation from housing services and the local food bank.

Collaborative participants are tasked with testing interventions aimed at serving individuals with complex care needs while participating in multiple in-person learning sessions and webinars and local meetings to support their work. For example, participants in one of Vermont's first learning collaborative cohorts developed a pilot aimed at improving health outcomes and lowering costs with a health coach. The pilot included creation of shared care plans, implementation of care conferences, and development of "Camden Cards" based on tools developed by the Camden Coalition of Health Care Providers (New Jersey), which assessed patient needs and barriers to and goals of care.

Although these collaboratives have provided support for innovation in practice transformation, they are focused on small populations of high-needs individuals. For example, one health service area reports only reaching 25 beneficiaries through its pilot. Based on the consumer survey of Medicaid beneficiaries in Vermont (see *Appendix B.3*), 37 percent of respondents reported having a provider or someone in his or her office always help them get services at home or in the community, with aged adults reporting the highest (57 percent) and nonaged adults reporting the lowest (28 percent). These findings suggest that a focus on collaborating around services and programs aimed at the aged adult population may already be established, but that the need for collaboration and engagement across the many community service providers for other age groups could be improved.

Vermont is considering how to harness and spread findings from the cohorts of learning collaborative participants—a challenge, as each collaborative participant's niche areas of focus may make learnings difficult to spread widely. Vermont's SIM Initiative is contracting with a vendor to create a training curriculum around core competencies for care management, based on disability awareness briefs and care management content developed for the learning collaborative. Vermont is also tracking measures on how participants are using learning collaborative resources in the hope of inspiring new ideas of how to use and share materials in the future. Finally, Vermont currently is in exploratory conversations with universities (medical schools) and other groups to brainstorm ideas about how the competency trainings can be converted into modules or tools that can be used across multiple settings. Additionally, the tools and concepts of the learning collaborative are being embedded into the Blueprint for Health and OneCare's ACO model activities.

Sub-grant Program. The sub-grant program awarded 14 provider and communitybased organizations grants to support activities that directly enhance provider capacity to test one or more of the three value-based payment models approved in Vermont's SIM grant application or develop infrastructure consistent with development of a statewide high-performing health care system. One awardee, for example, used funds to spread its wellness program across locations in its community, including to employers and schools. Another grantee is implementing a patient engagement tool, HowsYourHealth.org, to evaluate patient engagement.

In total, awardees touch more than 15,000 providers and 300,000 beneficiaries across the state. Symposia were held for round one and round two grantees in May and October 2015, respectively. Through these sessions, SIM officials sought to identify key challenges providers are facing as they strive to achieve transformation goals. Takeaways included the importance of (1) listening to "front-line" staff and providers, and (2) identifying "champions" to keep the momentum of any planning initiatives going.

Regional Collaborations. Vermont's Blueprint for Health divides the state into 14 regional health service areas. Within each region, Blueprint for Health and ACO leadership have combined to form regional collaborations of medical and nonmedical providers (e.g., DLTSS providers and community providers) that are dedicated to reviewing and improving the results of core SSP quality measures, supporting the introduction and extension of new service models, and providing guidance for medical home and community health team operations. Each collaboration is tasked with identifying key focus areas, with the most common areas of focus including reducing ER utilization, increasing hospice utilization, examining 30-day all cause readmissions, improving care coordination, and addressing care for patients with chronic heart failure and chronic obstructive pulmonary disease. State officials believe the regional collaborations may provide a foundation for future ACHs. As of November 2015, six collaborations have developed charters and established a decision-making process to advance work on identified focus areas. Collaborations have varied, however, in how much they have engaged with community organizations that could be partners in addressing social needs. Additionally, as with ACHs, regional collaboration participation is not funded and engagement is challenging, especially considering competing interests for time and resources for clinicians and others involved.

In addition to these three formal learning activities, Vermont has developed resources for use by providers and others as reference guides to inform care transformation efforts. For example, the Disability and Long-Term Services and Supports Work Group developed a series of Disability Awareness Briefs to serve as an "overview of the essential information necessary for providers to deliver effective and quality care for individuals with disabilities" (State of Vermont Agency of Administration Health Care Reform, 2016). Throughout 2016, Vermont will implement and modify a dissemination strategy for these materials, with the intent to collect lessons drawn from their use by December 2016. Beyond direct support for transformation, Vermont is commissioning a micro-simulation demand model to identify future workforce needs in the state. The intent of the study is to get as much information into the hands of policy-makers as possible to inform a future workforce strategy for the state. The study is expected to be completed toward the end of 2016.

A.6.5.2Quality measurement and reporting

Vermont state officials have described a statewide movement to "be more national about measurement and reporting," to counter an existing mentality across agencies and stakeholders of "that's the way we've always measured" and a reticence to change from established strategies. In 2015 and early 2016, Vermont has made small tweaks to ACO measures, mostly to align existing measures with language or definitions used for national clinical guidelines. State officials speculated that the time is not yet ripe to truly evaluate the impact of the measures on driving reforms—an issue the state may be able to understand further once it receives an additional year's worth of data from SSP participants and can track patterns across years.

In the long term, the state's vision is to enable as much passive data collection—data automatically distilled or organized through the use of pre-programmed algorithms—as possible. In 2015 and early 2016, conversations between agencies and SIM work groups enabled officials and stakeholders to consider how measures could be aligned and streamlined to fit into a broader picture of reform, versus what has been established for disparate programs. For example, officials expressed intent to ensure that language codified in any statute or regulation regarding practice-level payments is aligned, whether specifically referring to ACOs, PCMHs, or any other transformation effort. State officials also noted the importance of using these conversations to compromise on a level of measurement—one that is not overly burdensome yet would still require adequate accountability. For example, Vermont state officials engaged with mental health systems and developmental disability agencies to identify existing behavioral health measures in the state. In total, more than nine pages of measures were identified, many duplicative or layered onto previously existing measures. Vermont next aims to better rationalize and streamline those measures, with a new measure set to be recommended in July 2016.

Members of SIM's Payment Model Work Group identified several challenges with developing measures for the SSP, covering four categories: health care quality, health care delivery/outcomes, financial and cost considerations, and patient satisfaction (detailed list of Vermont's measure set available at Vermont Health Care Innovation Project, 2015). One challenge is ACOs not being able to use electronic health data for their attributed populations to generate data for measures that require clinical data. ACOs have had to use sampling techniques and medical record review instead. The work group anticipates that this issue will be reduced when more, high quality, data flow through the Vermont Health Information Exchange (VHIE). Another challenge expressed was difficulty in developing quality measures and reports for small

populations in ways that both achieve statistical significance and ensure beneficiary confidentiality.

A.6.5.3Health information technology and data infrastructure

Health IT and data infrastructure is a significant area of investment for Vermont, which has concentrated its efforts in four areas:

- 1. Improved connectivity and data flow to support SIM Initiative reforms.
- 2. Comprehensive statewide data inventory to support future health data infrastructure planning—information used for broader health IT strategic planning efforts in the state.
- 3. Infrastructure to enable better care management tools for patients.
- 4. Telehealth pilots to address workforce needs.

Improving connectivity, data flow, and data quality. Specifically through the SIM Initiative, Vermont conducted a series of gap analyses to evaluate electronic health record (EHR) system capabilities of health care organizations, interface ability of EHR systems, and the data transmitted within those interfaces. The gap analysis on ACO data for the SSP was conducted by Vermont Information Technology Leaders (VITL), which manages the VHIE, and the gap analysis on data from DLTSS providers was conducted by H.I.S. Professionals. These gap analyses informed plans for remediation (connectivity and data quality improvement), but as described below, challenges remain.

The SIM Initiative engaged VITL to analyze EHR data and improve their quality and usability specifically in relation to population health metrics related to the SSP. Areas of focus include an examination of how data are captured, formatted, and entered. By February 2016, state officials reported that ACOs have started to benefit from the health IT infrastructure work already supported by SIM funds, specifically remediation efforts targeting data collection and reporting gaps identified earlier among Vermont's SSP ACOs (Gavin et al., 2016). Its largest ACO, which started with access to only 22 percent of necessary data for reporting through SSP, is up to 64 percent as of early 2016. In addition, the data collection process has become more "passive" because of improved automation of collection and reporting practices. In another ACO-related project, VITL completed two of the three ACO "Gateways" in 2015 and the third in 2016.

In tandem with its ACO efforts, Vermont has focused on IT improvements for its DLTSS providers. A gap analysis of DLTSS providers, conducted by H.I.S. Professionals in November 2015, resulted in two actions to remediate areas of concern. First, Vermont developed a plan approved in January 2016 to improve connectivity and data quality from HHAs' EHRs by December 2016. Second, it planned to create a data collection framework for documenting data within designated agency providers' EHRs, also by December 2016, to address the significant

amount of human error in—and the lack of national standards for—collecting mental health and substance abuse data in EHRs. Both of these actions will address a finding from the 2015 consumer survey, which demonstrated that disabled individuals, and adult respondents, were least likely to feel their provider knows the important information on their medical history.

Vermont is also engaged in efforts to allow the Vermont Care Partners community-based agencies serving individuals with developmental disabilities, mental health conditions, and substance use disorders—which include Designated Mental Health Agencies and Specialized Service Agencies—to send specific data to a centralized data warehouse that is compliant with 42 CFR Part 2 (see below). The state hopes the warehouse will eventually connect to the HIE and to state agencies, other stakeholders, and additional interested parties. In addition to connectivity, this project is expected to provide members with advanced data analytic capabilities that will support the agencies as Vermont transitions from FFS to alternative payment methodologies. Finally, Vermont is targeting resources to support EHR adoption by non–Meaningful Use providers, including the state psychiatric hospital (completed in June 2015) and developmental disability agencies (to be completed in June 2016).

Remediation efforts have not been without challenges. Organization size and readiness were identified as key factors influencing progress, with officials speculating that more beneficiaries would have been reached if remediation efforts had targeted larger organizations. Initial ACO remediation targets were also described by state officials as "optimistic" and depending on "significant provider readiness that may not have borne out." A state official also noted challenges in working with EHR vendors that were reluctant to operationalize remediation solutions. Vermont is leveraging pressure from the National Coordinator for Health Information Technology (ONC) to push EHR vendors to participate in remediation efforts. However, despite challenges, Vermont was able to succeed in meeting its goal for the number of organizations connected and sharing data (42 organizations) in 2015.

An additional challenge noted by state officials is navigating around current laws that prohibit or hinder data sharing, especially around behavioral health or across specific provider organizations. Data subject to privacy protections under 42 CFR Part 2, a federal law governing the confidentiality of patient records related to alcohol and drug abuse, has restricted data flow capacity around these issues. DLTSS providers such as AAAs/Councils on Aging—nonprofit agencies that offer information and assistance with issues that affect older people—do not fit within the federal legal framework as a "health care organization" under the Health Insurance Portability and Accountability Act, which means Vermont will have to complete some legal work to include them in the VHIE, delaying their inclusion in remediation efforts.

Finally, the SIM Initiative's Health Data Infrastructure work group identified "exorbitant" provider-side costs as a significant challenge for remediation efforts. VITL is currently contacted under Vermont's SIM Initiative to conduct this work and has specific

resources available to support VHIE connections with small practices, which helps mitigate some costs. A proposed solution to streamline costs is to create a single source for all ACOs that contains data about their attributed populations and aggregate information from across the other ACOs. The work group believes this would provide more analytic capabilities to the ACOs.

Statewide data inventory. In December 2015, the SIM Initiative received a final report on its data inventory, which included a comprehensive list of health data sources in Vermont, gathered key information about each source, and catalogued them in a web-accessible format. As described by one state official, it was important for Vermont to understand what its data systems could and could not support in terms of what Vermont hoped to achieve through payment and delivery reforms—a justification for Vermont's continued investments in these projects. The official described this as particularly relevant to Vermont's behavioral health activities where, to quote the official, "barriers to even getting enough data about behavioral health issues have prevented Vermont from addressing issues systematically and appropriately."

The report listed many recommendations on how to make data more accessible, understandable, and interoperable in Vermont. One challenge identified in the report is that many of Vermont's data sources have grown organically, to meet a specific need as it is identified. As one state official described it, the report showed that many variations of similar data are being collected across agencies, which is a possible area of focus in reducing data duplication. Information from this report will feed into development of a health IT strategic plan. A state official speculated that one solution would be to add more people into state agencies who are solely dedicated to working with this technology—similar to the way many private sector industries, like banking, have adopted tech experts. The same official specified that this may not mean hiring more individuals, but rather using current expertise more effectively—while also recognizing that the state would have to be strategic in recommending potential staffing or structural changes that could impact multiple agencies.

Reflecting on lessons learned from the SIM health IT activities to date, one state official said that, although Vermont had a grasp on system capabilities, the state had not realized the extent of the burden its proposed reforms would impose on the state's old systems. The state official further described new ONC guidance, which has helped describe what technological changes "take" to complete.

Care management tools. From April 2015 through March 2016, Vermont dedicated SIM resources toward development of three initiatives to improve care management tools and infrastructure in the state: (1) the Shared Care Plan (SCP)⁵⁰ project, to provide a Shared Care Plan technical solution to Vermont's provider organizations; (2) the Universal Transfer Protocol (UTP) project, to provide a UTP to Vermont's provider organizations that will allow providers

⁵⁰ SCPs were intended to allow providers across the care continuum to electronically exchange data and information.

across the care continuum to electronically exchange data and information; and (3) the Event Notification System (ENS) project, which will implement a system to proactively alert participating providers regarding their patients' medical service encounters. Many challenges were identified to the Health Data Infrastructure Work Group related to development of the SCP and UTP projects—including concerns about the wide number and variety of systems being used across agencies, duplication of existing tools and efforts, and the need for a more deliberate strategy integrated with ongoing work. In March 2016, that work group recommended against further pursuit of a technical solution for SCPs—recommending, instead, that the UTP project work with the Integrated Care Learning Collaboratives to provide support services to transform practice workflows to support the UTP use case.

Related to the ENS, a vendor contract was finalized in March 2016, with the project expected to formally launch in April 2016. The selected ENS solution will provide admission, discharge, and transfer data to participating providers. The SIM Initiative will subsidize 70 percent of the costs of providers to participate in the program over a 12-month period. All providers in the state are welcome to participate, although the state is particularly targeting care managers, post-acute facilities, ACOs, and hospitals as key provider groups of interest. According to the consumer survey of Medicaid beneficiaries fielded in 2015 (see Appendix B.3), 61 percent of respondents who had a recent hospital stay thought that providers knew about their hospital stay.

Telehealth pilots. In September 2015, Vermont finalized a telehealth strategy document developed through a contract with JBS International and executed through the SIM Initiative. Following the document's completion, Vermont released an RFP to solicit pilot projects to address telehealth options in different geographic areas, delivery settings, and patient populations that align with the state's delivery system structures—with the aim to improve health outcomes and lower costs. Delays in contracting with two pilot sites has moved the project timeline to late 2016 through early 2017 (Vermont Health Care Innovation Project, 2016a).

A.6.6 Sustainability

Vermont's SIM leaders describe three categories under which they have been conceptualizing sustainability in 2015 and early 2016: payment reform, health IT and data infrastructure, and practice transformation.

Payment reform. The most significant elements of Vermont's plans for sustainability, especially around payment reform, are tied to its proposed All-Payer ACO Model. Policy levers to be used to implement the All-Payer ACO Model include an agreement between the state and the federal government to target a sustainable rate of growth for health care spending in Vermont across Medicaid, Medicare, and commercial payers. Provider payments would be structured using the Medicare Next Generation's (next-gen) value-based payment models, such as

capitation or global budgets. Implementation of the All-Payer ACO Model will also require a package of waivers, including a waiver between the Innovation Center and Vermont to govern Medicare programs, along with some nonbinding references to Medicaid. Vermont will also negotiate a renewed Section 1115 Global Commitment waiver for Medicaid. Vermont will launch the All-Payer ACO Model in 2017 beginning with the Medicaid strand, which will serve as a pilot, focusing on four communities and 30,000 Vermonters. In 2018, the Medicare and commercial strands will be implemented. Vermont submitted its term sheet to CMS in January 2016. Negotiations with CMS continued through most of 2016 and were successfully completed in September. Following dissemination of the final proposed agreement and public comment, the GMCB approved the All-Payer ACO Model in late October. Additionally, the Vermont legislature adopted Act 113 in 2016, which granted the GMCB the authority to enter in the All-Payer ACO Model agreement and codified the ACO regulatory framework to support it (General Assembly, State of Vermont, 2016; Green Mountain Care Board, State of Vermont, 2016).

The SIM Initiative supports analytical work conducted to plan for the All-Payer ACO Model and serves as the basis from which Vermont is building the model. A state official described how the work being done through the SIM Initiative to advance value-based payment models has helped ensure that payers and providers are ready to move to the more aggressive payment model proposed under the All-Payer ACO Model. First, the term sheet for the proposal contains quality measures built off the SIM measures, including one based on substance abuse. Second, the services subject to a finance cap are the same as those defined in the SSP, although the state is also considering how to build off the next-gen model. Third, the term sheet discusses a pathway for integration of behavioral health and LTSS, building off relevant work in this area conducted under the SIM Initiative. This plan will begin in 2017-the theory being that the All-Payer ACO Model will directly pick up where the SIM Initiative ends. Vermont's three ACOs are preparing for the transition to the All-Payer ACO Model and are considering a proposed merger as a single ACO. Beyond payment models and measures, Vermont feels that the SIM Initiative has built the health IT and learning system infrastructures to support the All-Payer ACO Model moving forward. The state plans continued conversations with CMS, the Innovation Center, and stakeholders around the state to refine and implement its All-Payer ACO Model.

Beyond the All-Payer ACO Model, SIM officials describe wanting to build toward an integrated delivery system, with multi-payer alignment. Medicaid is a key component of the model. Recognizing the diversity of services and providers that receive Medicaid funding (e.g., mental health and substance abuse providers), the state aims to review all services systematically to see if all providers and data systems are ready for integration. This planning will continue to evolve over Year 3 of the SIM Initiative.

Health IT and data infrastructure. Spurred by the work of the SIM Initiative, Vermont developed and released a draft health infrastructure strategic plan in January 2016 (Vermont Health Information Technology Plan, 2016). The plan describes 17 key short- and longer-term initiatives to enable Vermont to continue to build on its current work to bolster transfer of information that will support Vermont's health care reform initiatives and providers. The initiatives aim to establish clear governance and leadership for health IT and information exchange, continue and expand stakeholder dialog, expand connectivity and interoperability, improve quality and reliability of health data, ensure timely access to relevant health data, and prioritize privacy protections. In early 2016, the plan was awaiting approval by the GMCB. A SIM official also recommended that the state continue support for its health data infrastructure work group. Prior to the SIM Initiative, health IT planning was organized by a small subset of state officials. By bringing more stakeholders to the table, the SIM Initiative has been better able to identify and reduce duplication of efforts.

Practice transformation. Sustainability planning for practice transformation efforts will evolve in tandem with progress on the All-Payer ACO Model, as efforts will need to align with proposed new delivery and payment structures supported by the model. SIM Initiative officials say they will also draw on lessons gathered by the current transformation activities—including the regional collaborations between Blueprint for Health providers and ACOs, and "train the trainer" models that can be developed from the learning collaboratives, core competency training, and sub-grantees.

Lessons learned. As state officials reflected on the activity and accomplishments completed through the SIM Initiative through March 2016, they offered several lessons that could inform their own future planning efforts and those of other states engaging in similar initiatives. First, they cautioned against the impacts of fatigue across those who have had to maintain a "high level of transformation" throughout ongoing implementation efforts, leading to some premature complacency and satisfaction that "there has been enough change." Second, officials stressed the importance of prioritizing staffing so that adequate staff are in place early on to enable contracting and compliance—especially to comply with CMS requirements that state processes are not always set up to be flexible about or responsive to effectively. Third, they described the importance of setting up guardrails and thoughtfulness on stakeholder engagement, stressing the value of engagement to "look at what others see" as projects are implemented. Finally, throughout the project SIM officials have continually "beat the drum" that SIM investments are "one-time dollars"—which has helped set the state up well for its conversations with stakeholders on understanding the limits of the program and for proactively thinking on project sustainability.

A.6.7 References

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Appendix B.1: Utilization and Expenditures Claims Analysis

To estimate the impact of the SIM Initiative on health care utilization and expenditures, we examine statewide data from at least three different data sources in each Model Test state and its comparison group: Claims data for Medicaid-only and Medicare-Medicaid enrollees, Medicare fee-for-service (FFS) enrollees, and some commercially insured state residents (as available in Truven Health Analytics' MarketScan Research Databases). The utilization and expenditure measures are derived from Medicaid Analytic eXtract (MAX)/Alpha-MAX, commercial (MarketScan and All-Payer Claims data from Maine and Vermont), and Medicare claims data. For the commercially insured and Medicare beneficiaries in all states except Massachusetts (explained below), we report the complete 3-year baseline period plus the first 5 quarters of the test period (fourth quarter [Q4] 2013 through Q4 2014). For Medicaid beneficiaries, we report the baseline period through the most recent data available by state: Q1 2014 for Arkansas, Q3 2014 for Maine and Vermont, Q3 2015 for Massachusetts, and Q1 2013 for Minnesota and Oregon. *Table C.3-1* in *Appendix C* details the Medicaid data periods for each state and their comparison group.

We provide graphs of quarterly averages of core utilization measures for Medicaid beneficiaries, the commercially insured, and Medicare beneficiaries in each Test state and its comparison group. Additional tables present 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. At the time of analysis for this report (July 2016), only baseline period Medicaid data are available on a statewide basis in Arkansas, Minnesota, and Oregon—thus restricting the opportunity for an impact analysis on the Medicaid population. Impact analyses are available for Maine and Massachusetts (interrupted time series analyses, using the commercial population as a comparison group) and Vermont (difference-in-differences [D-in-D] regression using a comparison group of otherwise similar non–SIM Initiative states).

Because we have early test period data for the commercially insured and Medicare populations, we also present the results of (D-in-D regression analyses of the utilization and expenditure measures. Quantitative data on health care outcomes and Medicare and commercial claims data are available for 5 quarters of post–SIM Initiative implementation for most Test and comparison group states (through 2014).

In Massachusetts, we do not include any data for Medicare or MarketScan (commercially insured population), because activities funded under the SIM Initiative in that state reached providers who served primarily Medicaid beneficiaries and supported only payment reform under the state's Medicaid agency; therefore, it is not informative to analyze differences in Massachusetts and its comparison states between the pre– and post–SIM Initiative periods. In

Oregon, we restricted the Medicare population to Medicare-Medicaid beneficiaries, because over half of Medicare-Medicaid beneficiaries in Oregon are enrolled in a coordinated care organization.

Detailed information on the sample inclusion criteria, measure specifications, and statistical methods we used can be found in *Appendix C.2* (methods for selecting the statewide comparison groups) and *Appendix C.3* (data sources, population inclusion and exclusion criteria, and methods for calculating measures of utilization and expenditures).

B.1.1 Expected Changes in Utilization and Expenditures

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. 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.⁵¹ 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 a state. Additionally, 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.

This section reviews how the delivery system and payment models supported by the SIM Initiative in each state are expected to influence trends in utilization and expenditures for each of the populations examined in this report.

B.1.1.1 Arkansas

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. As a result, it is unlikely that we will see reductions in utilization or health care expenditures for most services during the time period covered by this report. Furthermore, the changes should be seen in the Medicaid population first, as this is the initial target population of the Arkansas SIM Initiative.

⁵¹ 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/Reports/TrustFunds/downloads/spillovereffects.pdf.

B.1.1.2 Maine

The Maine SIM Initiative's focus on improving the coordination of care for individuals with chronic and behavioral health conditions, in Maine Medicaid (MaineCare) programs such as the Accountable Communities (ACs) health homes, and behavioral health homes (BHHs) is intended to impact health care utilization. In particular, we expect to see decreases in hospital admission rates, emergency room (ER) visits, and 30-day hospital readmissions, particularly for Medicaid beneficiaries. In addition, we expect to see increases in primary care utilization, given it is a major emphasis of these programs. However, we have limited expectations for significant changes in utilization for Medicare and commercially insured individuals on a statewide basis, since ACs health homes, and BHHs serve an unknown number of Medicare and commercially insured individuals in addition to MaineCare beneficiaries.

Beyond the goals of improving health care quality and overall population health, the Maine SIM Initiative also prioritizes reducing overall health care costs. It aims to achieve this goal by using the state's AC, health home, and BHH models to improve care management for MaineCare beneficiaries, better coordinate care for beneficiaries across providers, increase use of preventive medicine, and heighten avoidance of unnecessary health care utilization. However, again because of the required behavioral change on the part of providers and patients to adapt to new delivery system and payment models, these interventions will take time to achieve the expected improvements in care coordination, quality of care, reductions in hospital utilization, and reductions in overall expenditures.

B.1.1.3 Massachusetts

Implementation of the SIM Initiative in Massachusetts began March 1, 2014, approximately 6 months later than the other Round 1 Model Test states. Initially, the primary care payment reform initiative (PCPRI) was the state's lead approach for incentivizing improvements in care coordination and quality of care through payment and delivery reforms across the state. However, due to limited participation by primary care clinicians, and no participation by Medicaid MCOs, the state shifted its focus to development of a Medicaid ACO in 2015. Massachusetts' revised SIM strategy features the design and implementation of three Medicaid ACO models, all of which allow for participation opportunities by providers and managed care organizations (MCOs). Because the ACO has not been implemented and the PCPRI had a limited reach, we do not expect to see large changes in expenditures and utilization for the Medicaid population during the early SIM test period.

B.1.1.4 Minnesota

Minnesota's care coordination and quality of care efforts are expected to eventually produce measurable reductions in health care utilization. However, 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. Furthermore, longstanding statewide quality of care initiatives may be reflected in Minnesota's utilization rates relative to the comparison group for the baseline period, setting a higher bar for measurable SIM-related change. Any improvements from the SIM Initiative would likely be associated with the Medicaid population, the target population for SIM activities in the state, including implementing the Integrated Health Partnership (IHP) model (Medicaid Accountable Care Organizations [ACOs]) and support to IHPs. 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 early in the SIM Initiative test period.

The opportunity for provider organizations to share in health care savings is a key feature of IHPs. Shared savings are intended to incentivize providers to lower health care expenditures by reducing unnecessary and inefficient health care. Minnesota health care providers frequently reported using SIM funding and other resources for areas such as health information technology (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. These data were previously unavailable to IHPs, unless they were provided by individual Managed Care Organizations.

Expansion of the IHP program in 2015 and the efforts of individual IHPs to constrain health care utilization could produce modest decreases in health care expenditures over time within the Medicaid population. Other activities, such as eHealth and emerging professional grants, were only implemented as of mid-2015 and therefore could not have affected expenditures in 2014. Because IHPs target only Minnesota's Medicaid beneficiaries, any reductions in spending for commercial and Medicare populations may take longer to materialize and would represent spillover rather than direct effects.

B.1.1.5 Oregon

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. However, because the first major change in payment incentives propagated under SIM did not go into effect until the beginning of 2015, any such trends will not be observed until follow up data are available further into the SIM test period.

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, Public Employee benefit Board (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.

B.1.1.6 Vermont

Many of the Vermont SIM Initiative activities are geared towards improving the coordination of care, which over time is expected to lower the more costly forms of utilization inpatient hospitalizations, ER visits leading to hospitalization, and 30-day readmissions. Because the quantitative results we are presenting correspond to baseline and early in the implementation, we expect pre-SIM activities to have a higher level of influence on health care utilization than the ongoing SIM efforts. Vermont's Blueprint for Health is a preexisting allpayer patient-centered medical home (PCMH) initiative (including Medicare through the Multi-Payer Advanced Primary Care [MAPCP] Demonstration) in the state and has focused Community Health Teams on improving care coordination. Similarly, the Medicare ACO shared savings plan (SSP) was implemented pre-SIM Initiative in January 2013, with its goal of getting the right care at the right time to Medicare beneficiaries. Vermont SIM activities that may not appear in these results but could have an effect on utilization in upcoming years include the Integrated Communities Care Management Learning Collaboratives, which focus on care coordination and were initiated in late 2014; the Regional Collaborations, involving Blueprint for Health and ACO leadership and medical and non-medical providers; the Medicaid and commercial ACOs with their emphasis on quality measures; and health IT improvements, such as the Event Notification System, expected to fully rollout in 2016 (see Section 8.2.4).

New to this year's quantitative outcomes for the commercially insured population are trend lines in the figures showing results from the Vermont all payer claims database (APCD) in addition to the Vermont MarketScan data ([©]2016 Truven Health Analytics Inc, an IBM Company). The Vermont APCD commercial data contains payers in the MarketScan data and other commercial payers, including the commercial payer participating in the ACO model, which is the dominant payer in the state. Therefore, we would expect effects from the SIM Initiative to appear in the Vermont APCD trend lines earlier than in the Vermont MarketScan population, because a greater proportion of commercially insured would be directly affected via the commercial ACO model.

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. As noted earlier, because the Medicare population was involved in multiple pre-SIM efforts (including Blueprint for Health and Medicare ACO SSP), we would expect to see decreases in expenditures for Medicare beneficiaries before those of the commercially insured populations if these health initiatives are effective. Additionally, positive results for the Medicare population could signal expected future results under the SIM Initiative for the commercially insured.

B.1.2 Utilization and Expenditure Results from Claims Data

B.1.2.1 Medicaid data

Arkansas

Utilization. From Q4 2010 through Q1 2014, the rate of all-cause acute inpatient admissions fluctuated, but declined slightly overall among Medicaid beneficiaries in Arkansas (*Figure B.1-1*). An evaluation of the contrast between Arkansas and the comparison group during the test period is not available because the comparison group only had data for the baseline period; however, the trends in the baseline quarters in the comparison group were similar to Arkansas until Q3 2012, when the rate of inpatient admissions in the comparison group rose dramatically.

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



Medicaid beneficiaries in Arkansas experienced a modest decline in ER visits that did not lead to a hospitalization from Q1 of 2013 to Q1 of 2014. There was no apparent trend in the comparison group for the baseline quarters—in fact there seemed to be a decline starting in Q 4 of 2012 followed by a rise starting in Q 2 of 2013 (*Figure B.1-2*). For both Arkansas and the comparison group, there was no apparent trend in 30-day readmission per 1,000 discharges for baseline quarters up to Q4 and Q2 of 2013, respectively (*Figure B.1-3*). Arkansas 30-day readmission rates stayed stable at about 55 readmissions per 1,000 discharges.

Figure B.1-2. Emergency room visits that did not lead to hospitalization per 1,000 Medicaid beneficiaries, Arkansas and comparison group

Figure B.1-3. 30-day readmissions per 1,000 discharges for Medicaid beneficiaries, Arkansas and comparison group



Rates of all-cause acute inpatient admissions among Medicaid-covered nondisabled adults in 2013 were much higher in Arkansas than in the comparison group (159 admissions per 1,000 beneficiaries vs 92 admissions). However, inpatient admission rates among Medicaidcovered children and infants in 2013 were lower in Arkansas than in the comparison group (6 vs 9 admissions, and 47 vs 63 admissions, respectively) (*Table B.1-1*). Inpatient all-cause acute admission rates for the Medicaid blind/disabled population were similar in Arkansas and the comparison group in 2011 and 2012, but lower in Arkansas in 2013. In all eligibility categories, Arkansas had a lower rate of ER visits relative to the comparison group.

	All-cause acute in	patient admissions	Emergency room visi hospita	ts that did not lead to lization
		Number per, 1	.,000 covered lives	
	AR	CG	AR	CG
Overall				
2011	27	25	165	197
2012	26	22	167	205
2013	26	34	173	236
Infant				
2011	53	38	280	290
2012	53	22	285	288
2013	47	67	291	355
				(continued)

Table B.1-1. Inpatient admissions and emergency room visits, Medicaid beneficiaries by eligibility category, Arkansas and comparison group, 2011–2013¹

B.1-7

	All-cause acute in	natient admissions	Emergency room visit	ts that did not lead to lization
		Number per. 1.	000 covered lives	
	AR	CG	AR	CG
Child				
2011	6	10	114	143
2012	6	10	113	148
2013	6	9	119	161
Nondisabled ad	ult			
2011	171	86	310	375
2012	163	68	324	433
2013	159	92	322	387
Blind/disabled a	adult			
2011	79	80	369	383
2012	80	80	388	415
2013	78	102	378	471

Table B.1-1. Inpatient admissions and emergency room visits, Medicaid beneficiaries by eligibility category, Arkansas and comparison group, 2011–2013¹ (continued)

AR = Arkansas; CG = comparison group composed of Medicaid beneficiaries from Alabama and Oklahoma weighted to match the characteristics of Arkansas's Medicaid beneficiaries. ¹ Fiscal year.

Expenditures. Average total per member per month (PMPM) payments for Medicaidonly beneficiaries in Arkansas were consistently higher than in the comparison group from Q4 2010 to Q1 2013 (*Figure B.1-4*). Average payments rose in the comparison group to similar levels in Arkansas from Q4 2012 to Q3 2013. From Q3 2013 to Q1 2014 average payments declined in Arkansas to below baseline levels in the comparison group. As shown in *Figure B.1-5*), average total payments were consistently higher for Medicare-Medicaid beneficiaries in Arkansas than payments in the comparison group. Payments declined from 2010 through 2011, then fluctuated slighted from quarter to quarter but overall remained relatively stable through Q1 2014. By contrast, the comparison group had stable average PMPM payments of just above \$1,000 throughout the baseline period.

While average PMPM payments in Arkansas for both Medicaid-only and the Medicare-Medicaid beneficiaries appeared to decline slightly during the implementation periods, there were no data available for comparison group payments for the same time period. Therefore, we cannot conclude whether SIM activities are contributing to this decline or whether it would have occurred independent of SIM. However, baseline and implementation results show room for improvement to lower total PMPM Medicaid payment in the Arkansas Medicaid program. Figure B.1-4. Average total PMPM Medicaid payments, Medicaid-only beneficiaries, Arkansas and comparison group

Figure B.1-5. Average total PMPM Medicaid payments, Medicare-Medicaid beneficiaries, Arkansas and comparison group



Both FFS and total payments for Medicaid beneficiaries overall in Arkansas were higher than in the comparison group across all baseline years (*Table B.1-2*). For children and infants, FFS and total payments were higher in Arkansas than in the comparison group during the baseline years. While total payments were higher in Arkansas for both disabled and non-disabled adults in 2011 and 2012, Arkansas had lower average total payments in 2013 for both populations, relative to the comparison group. Capitation payments were higher in Arkansas than in the comparison group for all categories except the blind/disabled adults, whose capitation payments were lower in 2013.

	FFS payments		Capitation	Capitation payments		Total payments	
	AR	CG	AR	CG	AR	CG	
Overall							
2011	352	296	8	3	360	299	
2012	375	293	7	4	383	297	
2013	378	367	8	5	386	372	
Infant							
2011	331	262	9	3	340	265	
2012	384	227	8	3	392	230	
2013	295	268	8	4	304	272	

 Table B.1-2. Per member per month Medicaid payments by type of payment, Medicaid-only

 beneficiaries by eligibility category, Arkansas and comparison group, 2011–2013¹

(continued)

	(continued)					
	FFS pa	FFS payments		Capitation payments		ayments
	AR	CG	AR	CG	AR	CG
Child						
2011	266	208	8	3	274	211
2012	283	213	7	3	290	216
2013	286	239	8	4	293	243
Nondisabled a	dult					
2011	435	359	8	2	443	362
2012	451	346	8	3	459	349
2013	442	487	9	4	451	491
Blind/disabled	adult					
2011	1031	935	9	8	1040	943
2012	1078	940	8	9	1086	949
2013	1147	1390	9	16	1156	1406

Table B.1-2. Per member per month Medicaid payments by type of payment, Medicaid-only
beneficiaries by eligibility category, Arkansas and comparison group, 2011–20131
(continued)

AR = Arkansas; CG = comparison group composed of Medicaid beneficiaries from Alabama and Oklahoma weighted to match the characteristics of Arkansas's Medicaid beneficiaries; FFS = fee for service. ¹ Fiscal year.

Maine

Utilization. Prior to the start of the SIM Initiative, the rate of all-cause inpatient admissions for Medicaid beneficiaries in Maine slightly increased, but the rate declined during the test period (*Figure B.1-6*). Furthermore, ER visits for Maine Medicaid beneficiaries declined slightly during the baseline period and the test period. The rate of 30-day readmissions per 1,000 discharges increased for Medicaid beneficiaries in Maine then remained flat during the test period. Comparison group data for these measures only run through 2012 and are not currently available for the test period. Judging from the data that are present, however, it would appear that the Maine Medicaid population has, on average, similar rates of ER visits but lower rates of inpatient admissions and 30-day readmissions than the comparison group if trends from 2012 persisted through Q4 2014 (*Figures B.1-6, B.1-7,* and *B.1-8*).

Table B.1-3 reveals that all-cause inpatient admissions and ER visit trends for infants, children, and blind/disabled adults in Maine and the comparison group were similar to the overall trends.

Figure B.1-6. All-cause acute inpatient admissions per 1,000 Medicaid beneficiaries, Maine and comparison group

Figure B.1-7. Emergency room visits that did not lead to hospitalization per 1,000 Medicaid beneficiaries, Maine and comparison group



Figure B.1-8. 30-day readmissions per 1,000 discharges for Medicaid beneficiaries, Maine and comparison group



		All-cause acute inp	patient admissions	Emergency room lead to hos	visits that did not pitalization	
			Number per, 1,000 covered lives			
		ME	CG	ME	CG	
Overall						
2011	Baseline	26	38	208	224	
2012	Baseline	27	34	204	203	
2013	Baseline	27		197		
2014	Test	25		182		
Infant						
2011	Baseline	120	76	265	273	
2012	Baseline	125	64	259	244	
2013	Baseline	153		250		
2014	Test	124		225		
Child						
2011	Baseline	8	12	148	138	
2012	Baseline	7	8	143	118	
2013	Baseline	7		136		
2014	Test	7		120		
Nondisable	d adult					
2011	Baseline	27	56	230	306	
2012	Baseline	27	50	226	276	
2013	Baseline	29		222		
2014	Test	28		210		
Blind/disab	led adult					
2011	Baseline	69	87	444	363	
2012	Baseline	70	87	443	369	
2013	Baseline	75		423		
2014	Test	71		384		

Table B.1-3. Inpatient admissions and emergency room visits, Medicaid beneficiaries by eligibility category, Maine and comparison group, 2011–2014¹

CG = comparison group composed of Medicaid beneficiaries from Connecticut and New Hampshire weighted to match the characteristics of Maine's Medicaid beneficiaries; ME = Maine.

¹ Fiscal year; Baseline = Q4 2010–Q3 2013 and Test = Q4 2013–Q3 2014.

Due to lack of Medicaid comparison data, we modeled the comparison group for the interrupted time series analysis (ITSA) using the MarketScan database of commercial beneficiaries in Maine. ITSA measures how the trend in outcomes differed between Medicaid beneficiaries and commercially insured persons before and after the test period began. We present the difference in trends for Medicaid and commercially insured as well as the D-in-D of the two trends. Inpatient admissions declined among Medicaid beneficiaries. The D-in-D was statistically significant, indicating that inpatient admissions decreased by 0.88 more

admissions per 1,000 persons per quarter for Medicaid beneficiaries relative to the commercially insured (*Table B.1-4*, *Figure B.1-9*). The D-in-D in trends was not statistically significant for either ER visits or 30-day readmissions, however (*Table B.1-4*, *Figure B.1-10* and *Figure B.1-11*).

	Test period trend	90% Confide			
Outcome	estimate	Lower limit	Upper limit	p-value	
All-cause acute inpatient a	admissions				
Medicaid	-0.91	-1.21	-0.61	0.00	
Commercially insured	-0.028	-0.23	0.17	0.82	
Difference	-0.88	-1.24	-0.52	0.00	
Emergency room visits not	t leading to a hospitaliza	ation			
Medicaid	3.93	1.18	6.68	0.03	
Commercially insured	1.32	-0.67	3.31	0.28	
Difference	2.6	-0.79	5.99	0.22	
30-day hospital readmission	ons per 1,000 discharge	S			
Medicaid	-2.49	-9.58	4.60	0.57	
Commercially insured	0.15	-4.19	4.49	0.96	
Difference	-2.64	-10.95	5.67	0.61	

Table B.1-4.	Change in linear trend of inpatient admissions and 30-day readmissions in post
	period, Medicaid beneficiaries and commercially insured (MarketScan), Maine,
	first year of SIM implementation (October 2013 through September 2014)

Notes: An interrupted time series regression analysis of rate of events per 1,000 persons (adjusting for autocorrelation) was used to obtain the time trend estimates. MarketScan is [©]2016 Truven Health Analytics Inc., an IBM Company.

Figure B.1-9. All-cause acute inpatient admissions per 1,000, Maine Medicaid beneficiaries and commercially insured Figure B.1-10. Emergency room visits that did not lead to hospitalization per 1,000, Maine Medicaid beneficiaries and commercially insured



Figure B.1-11. 30-day readmissions per 1,000 discharges, Maine Medicaid beneficiaries and commercially insured



Note: MarketScan ([©]2016 Truven Health Analytics Inc., an IBM Company) is the source for data on commercially insured beneficiaries.

Expenditures. Average total PMPM payments for Medicaid-only beneficiaries steadily increased through the baseline and test period. For Medicare-Medicaid beneficiaries, PMPM payments stayed relatively constant throughout both the baseline and test periods. Comparable data for the comparison group were not available for both Medicaid-only and the Medicare-Medicaid population during the test period. However, total PMPM Medicaid payments for comparison group Medicaid-only beneficiaries are higher than payments in Maine during the baseline period. Payments for Medicaid beneficiaries are, on average, much higher for

the comparison group than for Maine from Q4 2010 through Q3 2012 (*Figures B.1-12* and *B.1-13*).



Figure B.1-12. Average total PMPM Medicaid payments, Medicaid-only beneficiaries, Maine and comparison group

Maine

🗕 🗕 🗕 Comparison group

Figure B.1-13. Average total PMPM Medicaid payments, Medicare-Medicaid beneficiaries, Maine and comparison group

Maine

- - Comparison group

As with the overall Maine Medicaid population, PMPM Medicaid payments for infants, children, nondisabled adults, and blind/disabled adults increased through the baseline to the test period (*Table B.1-5*).

Table B.1-5.	Per member per month Medicaid payments by type of payment, Medicaid-only
	beneficiaries by eligibility category, Maine and comparison group, 2011–2014 ¹

		Total p	ayments
		ME	CG
Overall			
2011	Baseline	292	485
2012	Baseline	354	506
2013	Baseline	420	
2014	Test	450	
Infant			
2011	Baseline	213	369
2012	Baseline	321	357
2013	Baseline	406	
2014	Test	374	
			(N

(continued)

		Total p	ayments
	_	ME	CG
Child			
2011	Baseline	243	293
2012	Baseline	273	293
2013	Baseline	305	
2014	Test	314	
Nondisabled adult			
2011	Baseline	166	460
2012	Baseline	214	467
2013	Baseline	279	
2014	Test	298	
Blind/disabled adult			
2011	Baseline	1,351	2074
2012	Baseline	1,550	2084
2013	Baseline	1,667	
2014	Test	1,681	

Table B.1-5. Per member per month Medicaid payments by type of payment, Medicaid-only
beneficiaries by eligibility category, Maine and comparison group, 2011–20141
(continued)

CG = comparison group composed of Medicaid beneficiaries from Connecticut and New Hampshire weighted to match the characteristics of Maine's Medicaid beneficiaries; ME = Maine.

¹ Fiscal year; Baseline = Q4 2010–Q3 2013 and Intervention = Q4 2013–Q3 2014

In the ITSA model, the trend in total PMPM payments decreased in the Medicaid population and increased in the commercially insured population. However, the difference in trends between the Medicaid and commercial populations was not statistically significant (*Table B.1-6, Figure B.1-14*).

Table B.1-6. Change in linear trend of total PMPM payments in post period, Medicaid only
beneficiaries and commercially insured (MarketScan), Maine, first year of SIM
implementation (October 2013 through September 2014)

	90% Confidence interval				
	Test period trend estimate	Lower limit	Upper limit	p-value	
Medicaid	-5.29	-14.12	3.54	0.33	
Commercially insured	5.4	-0.64	11.44	0.15	
Difference	-10.69	-21.38	0.0025	0.11	

PMPM = per member per month.

Notes: An interrupted time series regression analysis of total PMPM payments (adjusting for autocorrelation) was used to obtain the time trend estimates. MarketScan is [©]2016 Truven Health Analytics Inc., an IBM Company.





Note: MarketScan ([©]2016 Truven Health Analytics Inc., an IBM Company) is the source for data on commercially insured beneficiaries.

Massachusetts

Utilization. *Figures B.1-15* and *B.1-16* present the all-cause acute inpatient admissions and 30-day readmissions for Medicaid beneficiaries in Massachusetts as well as a comparison group. We do not include ED because we did not have the procedure codes or revenue center codes for managed care enrollees. The comparison group data do not span the same time periods as the Massachusetts data, therefore, we only present the available data for the comparison group through 2012. The overall trend of inpatient admissions is declining in Massachusetts and readmissions remain mostly constant. The comparison group exhibits large variations in the limited time periods presented.

Figure B.1-15. All-cause acute inpatient admissions per 1,000 Medicaid beneficiaries, Massachusetts and comparison group

Figure B.1-16. 30-day readmissions per 1,000 discharges for Medicaid beneficiaries, Massachusetts and comparison group



Due to the lack of Medicaid comparison data, we modeled the comparison group for the ITSA using the MarketScan database of commercial beneficiaries in Massachusetts. ITSA measures how the trend in outcomes differed between Medicaid beneficiaries and commercially insured persons before and after the test period began. We present the difference in trend for the Medicaid and commercially insured population as well as D-in-D of the two trends. The D-in-D was not statistically significant for either inpatient admissions or 30-day readmissions (*Table B.1-7*, *Figures B.1-17* and *B.1-18*).

Table B.1-7. Change in linear trend of inpatient admissions and 30-day readmissions between
pre and post period, Medicaid beneficiaries and commercially insured
(MarketScan), Massachusetts, four quarters of SIM implementation (January
2014 through December 2014)

	Difference in pre-	90% Confide		
Outcome	post-trend estimate	Lower limit	Upper limit	p-value
All-cause acute inpatient admissions				
Medicaid	0.28	-0.15	0.71	0.29
Commercially insured	0.18	-0.25	0.61	0.49
Difference	0.10	-0.51	0.71	0.79
30-day hospital readmissions per 1,000 discharg	es			
Medicaid	0.41	-2.55	3.37	0.91
Commercially insured	5.06	-0.04	10.16	0.12
Difference	-4.65	-10.56	1.26	0.21

Notes: An interrupted time series regression analysis of rate of events per 1000 persons (adjusting for autocorrelation) was used to obtain the time trend estimates. MarketScan is ©2016 Truven Health Analytics Inc., an IBM Company.



Figure B.1-18. 30-day readmissions per 1,000 discharges, Massachusetts Medicaid beneficiaries and commercially insured



Note: MarketScan ([©]2016 Truven Health Analytics Inc., an IBM Company) is the source for data on commercially insured beneficiaries.

Expenditures. *Figures B.1-19* and *B.1-20* present the total PMPM payments for Medicaid beneficiaries in Massachusetts as well as Medicare-Medicaid beneficiaries in Massachusetts. Because the comparison group data do not span the same time periods as the Massachusetts data, we only present the available data for the comparison group through 2012. The overall trend of spending increased over time in Massachusetts, with a downturn around the beginning of 2014 and continued increase beginning in 2015. The trajectory for Medicare-Medicaid beneficiaries increased steadily over time.



As explained above, because of lack of comparison group data, we modeled the comparison to Massachusetts Medicaid for the ITSA using commercial beneficiaries in Massachusetts. We present the difference in trend for Medicaid and commercially insured as well as the D-in-D of the two trends. The D-in-D in trends was statistically significant (p=.076), indicating that the quarterly trend in spending declined \$9.59 more per quarter for Medicaid than for the commercially insured (*Table B.1-8*, *Figure B.1-21*).

Table B.1-8. Change in linear trend of total PMPM payments between pre and post period,
Medicaid only beneficiaries and commercially insured (MarketScan),
Massachusetts, four quarters of SIM implementation (January 2014 through
December 2014)

	Difference in pre- post- trend estimate	90% Confidence interval		
		Lower limit	Upper limit	p-value
Medicaid	0.31	-5.69	6.31	0.93
Commercially insured	9.90	3.90	15.90	0.01
Difference	-9.59	-18.09	-1.09	0.08

PMPM = per member per month.

Notes: An interrupted time series regression analysis of total PMPM payments (adjusting for autocorrelation) was used to obtain the time trend estimates. MarketScan is [©]2016 Truven Health Analytics Inc., an IBM Company.





Note: MarketScan ([©]2016 Truven Health Analytics Inc., an IBM Company) is the source for data on commercially insured beneficiaries.

Sensitivity analysis. In addition to the interrupted time series, we ran a pre-post regression on Medicaid data only as a sensitivity analysis. The results for total spending were similar to the trend estimate found in the interrupted time series in the test period for Massachusetts Medicaid beneficiaries. We did not use this as our primary analysis as there is no comparison group.

Minnesota

Admissions per 1,000 beneficiaries

Utilization. For the baseline period with available data (Q 4 2010 through Q 1 2013), the rate of all-cause acute inpatient admissions among Medicaid beneficiaries in Minnesota remained relatively stable but decreased among the comparison group (*Figures B.1-22*). In the comparison group, inpatient admissions decreased significantly in the Q 4 2012. This decrease was sustained in Q1 2013, resulting in all-cause admissions in the comparison group being lower than in Minnesota for those quarters. As of Q4 2011, the ER visit rate for Medicaid beneficiaries in Minnesota increased while decreasing in the comparison group, resulting in a widening gap between the two groups. This gap began to close in the Q4 2012 as the comparison group's rate began in increase (*Figure B.1-23*). The 30-day readmission rate decreased modestly for Medicaid enrollees in both Minnesota and the comparison group between the Q4 2010 and Q1 2013, with Minnesota's rate higher than the comparison group's (*Figure B.1-24*). These analyses are only for the period prior to the start of Minnesota's SIM Initiative.







Figure B.1-24. 30-day readmissions per 1,000 discharges for Medicaid beneficiaries, Minnesota and comparison group



In the 2011 and 2012 fiscal years, Minnesota had fewer all-cause admissions in almost all categories, with the largest difference in the blind/disabled adults category. Minnesota had a lower rate of ER visits relative to the comparison group for non-disabled adults and blind/disabled adults in both 2011 and 2012, but for infants and children this was true only for 2011. In 2012 Minnesota had higher ER visit rates relative to comparison group for infants and children (*Table B.1-9*).

Expenditures. Average total PMPM payments for both Medicaid-only and Medicare-Medicaid beneficiaries in Minnesota were consistently higher than in the comparison group throughout the baseline period (*Figures B.1-25* and *B.1-26*). For Medicaid-only beneficiaries in Minnesota, average total payments rose slightly over the baseline period. Average total payments for comparison Medicaid-only beneficiaries rose slightly until Q3 2012 and then declined dramatically through the end of the baseline period. For Medicare-Medicaid beneficiaries in both Minnesota and the comparison group, the average total payments were relatively stable throughout the baseline period. These early baseline results show significant room for improvement in the Minnesota Medicaid program for Minnesota SIM activities.
	All-cause acute in	patient admissions	Emergency room visit hospita	ts that did not lead to lization
		Number per, 1	,000 covered lives	
	MN	CG	MN	CG
Overall				
2011	26	31	199	219
2012	25	32	220	197
Infant				
2011	41	43	282	295
2012	39	43	308	265
Child				
2011	7	8	123	129
2012	7	7	129	116
Nondisabled adult				
2011	36	53	246	313
2012	36	65	291	301
Blind/disabled adul	t			
2011	96	110	401	506
2012	79	112	422	505

Table B.1-9. Inpatient admissions and emergency room visits, Medicaid beneficiaries by eligibility category, Minnesota and comparison group, baseline (2011-2012)¹

CG = comparison group composed of Medicaid beneficiaries from Iowa and Washington weighted to match the characteristics of Minnesota's Medicaid beneficiaries; MN = Minnesota. ¹ Fiscal year

Figure B.1-25. Average total PMPM Medicaid payments, Medicaid-only beneficiaries, Minnesota and comparison group



Q1

2013



FFS payments were lower in Minnesota than in the comparison group for infants and non-disabled adults but higher for children and blind/disabled adults. Total payments for Medicaid beneficiaries in all non-aged eligibility categories in Minnesota were higher than in the comparison group in 2011 and 2012 (*Table B.1-10*). Capitation payments also were much higher in Minnesota than in the comparison group in 2011 and 2012.

	FFS pay	FFS payments		payments	Total payments	
	MN	CG	MN	CG	MN	CG
Overall						
2011	309	318	288	78	597	396
2012	294	350	314	85	608	436
Infant						
2011	106	215	350	128	457	343
2012	108	213	337	135	445	348
Child						
2011	201	179	226	48	427	227
2012	202	171	200	57	402	229
Nondisabled a	dult					
2011	108	277	377	134	485	412
2012	119	372	431	138	550	510
Blind/disabled	l adult					
2011	2,434	1,961	140	99	2,574	2,061
2012	2,165	1,968	445	124	2,611	2,094

Table B.1-10.	Per member per month Medicaid payments by type of payment, Medicaid-only
t	eneficiaries by eligibility category, Minnesota and comparison group, baseline
(2011–2012) ¹

CG = comparison group composed of Medicaid beneficiaries from Iowa and Washington weighted to match the characteristics of Minnesota's Medicaid beneficiaries; FFS = fee for service; MN = Minnesota. ¹ Fiscal year.

Oregon

Utilization. Data on utilization and expenditures in Medicaid predate the SIM initiative in Oregon, but include the first operational year of the Coordinated Care Organizations (CCOs). From Q4 2010 through Q1 2013, the rate of all-cause acute inpatient admissions among Medicaid beneficiaries in Oregon exhibited seasonal fluctuation, but declined slightly year over year (*Figure B.1-27*). In the comparison group, admissions showed seasonal fluctuation, but were generally stable over the period. The rate of inpatient admissions was higher in Oregon over the entire period, although the gap had narrowed by the Q1 2013. Over the same period, Medicaid beneficiaries in Oregon and the comparison group fluctuated but showed neither an upward or downward trend in ER visits (*Figure B.1-28*). The rate of 30-day readmissions in Oregon appears to have declined somewhat over the period (*Figure B.1-29*). The rate in the comparison group was higher than in Oregon and fluctuated dramatically.

Figure B.1-27. All-cause acute inpatient admissions per 1,000 Medicaid beneficiaries, Oregon and comparison group

Figure B.1-28. Emergency room visits that did not lead to hospitalization per 1,000 Medicaid beneficiaries, Oregon and comparison group



Figure B.1-29. 30-day readmissions per 1,000 discharges for Medicaid beneficiaries, Oregon and comparison group



Rates of all-cause acute inpatient admissions among Medicaid-covered infants and nondisabled adults were much higher in Oregon than in the comparison group (*Table B.1-11*). Inpatient all-cause acute admission rates for Medicaid covered children and blind/disabled adults were similar in Oregon and in the comparison group. In all eligibility categories, Oregon had a lower rate of ER visits relative to the comparison group.

	All-cause acute in	patient admissions	Emergency room visi hospita	ts that did not lead to lization				
-		Number per, 1,000 covered lives						
-	OR	CG	OR	CG				
Overall								
2011	30	24	187	217				
2012	27	23	175	199				
Infant								
2011	54	39	232	289				
2012	49	38	218	264				
Child								
2011	6	5	109	128				
2012	6	5	103	117				
Nondisabled adu	lt							
2011	75	60	330	382				
2012	66	57	294	330				
Blind/disabled ac	lult							
2011	73	76	373	464				
2012	71	70	371	445				

Table B.1-11. Inpatient admissions and emergency room visits, Medicaid beneficiaries by
eligibility category, Oregon and comparison group, baseline (2011–2012)¹

OR = Oregon; CG = comparison group composed of Medicaid beneficiaries from Michigan and Washington weighted to match the characteristics of Oregon's Medicaid beneficiaries. ¹ Fiscal year

Expenditures. Average total PMPM payments for both Medicaid-only and Medicare-Medicaid beneficiaries in Oregon were consistently higher than in the comparison group throughout the baseline period (*Figures B.1-30* and *B.1-31*). For Medicaid-only beneficiaries in Oregon, average total payments rose beginning in 2012, but while fluctuating, were generally stable in the comparison group. For Medicare-Medicaid beneficiaries in Oregon, the average total payments in Oregon declined from Q1 2011 to Q1 2013, and average total payments declined slightly over the baseline period in the comparison group.

Figure B.1-30. Average total PMPM Medicaid payments, Medicaid-only beneficiaries, Oregon and comparison group

Figure B.1-31. Average total PMPM Medicaid payments, Medicare-Medicaid beneficiaries, Oregon and comparison group



Both capitation and total payments for Medicaid beneficiaries in all eligibility categories in Oregon were higher than in the comparison group while FFS payments were lower across all baseline years (*Table B.1-12*). In Oregon, between 2011 and 2012, capitation payments per beneficiary increased and FFS payments decreased as enrollment in (capitated) CCOs grew. No such general trend is apparent in the comparison group. Further, averaged across all beneficiary categories, total payments per beneficiary fell in Oregon while they increased in the comparison group.

	FFS payments		Capitation	payments	Total payments	
	OR	CG	OR	CG	OR	CG
Overall						
2011	125	164	327	201	452	336
2012	118	154	329	202	447	356
Infant						
2011	71	86	326	278	397	364
2012	66	88	349	251	415	340
Child						
2011	49	82	170	100	219	182
2012	46	83	175	101	221	184

Table B.1-12. Per member per month Medicaid payments by type of payment, Medicaid-only
beneficiaries by eligibility category, Oregon and comparison group, baseline
(2011–2012)¹

(continued)

(2011–2012) ⁺ (continued)										
	FFS pa	FFS payments		Capitation payments		ayments				
	OR	CG	OR	CG	OR	CG				
Nondisabled ad	lult									
2011	91	158	585	312	675	469				
2012	89	147	540	311	629	458				
Blind/disabled	adult									
2011	693	849	843	577	1,536	1426				
2012	668	770	886	613	1,554	1383				

Table B.1-12. Per member per month Medicaid payments by type of payment, Medicaid-only
beneficiaries by eligibility category, Oregon and comparison group, baseline
(2011–2012)¹ (continued)

CG = comparison group composed of Medicaid beneficiaries from Michigan and Washington weighted to match the characteristics of Oregon's Medicaid beneficiaries; FFS = fee for service; OR = Oregon. ¹ Fiscal year.

Vermont

Utilization. The rate of all-cause acute inpatient admissions for Medicaid beneficiaries in Vermont remained stable through baseline and exhibited a moderate downward trend in the four quarters of the test period. Admission rates among the out-of-state comparison group, however, decreased dramatically from Q3 2011 to Q1 2012 and again from Q4 2013 to Q1 2014, leading to a large overall decrease in rates between baseline and the test periods (*Figure B.1-32*). Similar dramatic decreases were seen in the comparison group's 30-day readmission rates. Among Vermont Medicaid beneficiaries, readmission rates were overall stable, with a moderate increase just prior to the test period (Q1 2013 to Q3 2013). Rates of ER visits were higher among the comparison group during the early baseline period, but were roughly equal to those in the treatment group in the quarters just prior to the test period. During the test period, Vermont ER rates exhibited a moderate initial decrease and remained stable thereafter, while ER rates for the comparison group decreased initially but then increased dramatically during the last three quarters (Q1 2014 to Q3 2014) (*Figures B.1-33* and *B.1-34*).

Rates of all-cause inpatient admissions decreased between baseline and test periods for both Vermont and its comparison group and across all sub-populations (infants, children, disabled adults and non-disabled adults) (*Table B.1-13*). However, the largest percentage decrease was seen in the comparison group among non-disabled adults. This is likely the result of Medicaid expansion during this period and the enrollment of individuals with less need of inpatient care. While Medicaid expansion occurred in all states, we observed the largest influx of new beneficiaries in comparison states Connecticut and Iowa. We feel this largely explains the dramatic decreases seen in inpatient rates in the comparison group over this time. Unfortunately, this also diminishes our ability to distinguish change, if any, resulting from the Figure B.1-32. All-cause acute inpatient admissions per 1,000 Medicaid beneficiaries, Vermont and comparison group Figure B.1-33. Emergency room visits that did not lead to hospitalization per 1,000 Medicaid beneficiaries, Vermont and comparison group



Figure B.1-34. 30-day readmissions per 1,000 discharges for Medicaid beneficiaries, Vermont and comparison group



		All-cause acute in	patient admissions	Emergency room lead to hos	visits that did not pitalization		
			Number per, 1,000 covered lives				
		VT	CG	VT	CG		
Overall							
2011	Baseline	21	35	177	206		
2012	Baseline	20	30	179	186		
2013	Baseline	21	27	177	184		
2014	Test	19	21	162	182		
Infant							
2011	Baseline	26	65	216	300		
2012	Baseline	26	53	230	264		
2013	Baseline	25	49	227	255		
2014	Test	20	50	212	270		
Child							
2011	Baseline	6	14	117	145		
2012	Baseline	6	10	118	125		
2013	Baseline	6	8	115	122		
2014	Test	5	7	106	124		
Nondisabled a	dult						
2011	Baseline	32	46	209	230		
2012	Baseline	30	40	210	208		
2013	Baseline	32	37	207	206		
2014	Test	27	19	184	162		
Blind/disabled	adult						
2011	Baseline	56	57	392	331		
2012	Baseline	54	56	391	341		
2013	Baseline	59	54	390	341		
2014	Test	52	48	366	344		

Table B.1-13. Inpatient admissions and emergency room visits, Medicaid beneficiaries byeligibility category, Vermont and comparison group, 2011–2014¹

CG = comparison group composed of Medicaid beneficiaries from Connecticut and Iowa weighted to match the characteristics of Vermont's Medicaid beneficiaries; New Hampshire Medicaid data were not available for fiscal years 2013 and 2014; VT = Vermont.

¹ Fiscal year; Baseline = Q4 2010–Q3 2013 and Intervention = Q4 2013–Q4 2014.

Vermont SIM Initiative during this period. However, going forward we hope that the effect of Medicaid expansion is primarily confined to 2014, and that comparison group rates will stabilize in later quarters of the test period.

The rate of ER visits not leading to hospitalization declined from the baseline to the test period among Vermont Medicaid beneficiaries while remaining relatively stable for comparison group beneficiaries resulting in a net difference of 19 fewer visits per 1,000 for Vermont beneficiaries relative to the comparison group (*Table B.1-14*). There were no statistically significant differences between the two groups with respect to all-cause inpatient and 30-day readmissions.

Table B.1-14. Differences-in-differences estimates for utilization per 1,000 members,Medicaid insured, Vermont and comparison group, four quarters of SIMimplementation (October 2013 through September 2014)

Change in utilization per 1,000 members	Pre- Period Adjusted Mean, VT	Pre- Period Adjusted Mean, CG	Test- Period Adjusted Mean, VT	Test- Period Adjusted Mean, CG	Regression-adjusted difference-in- differences (90% confidence interval)	Relative difference (%)	p- value
All-cause acute inpatient admissions	15.00	26.44	11.80	20.68	0.12 (-0.42, 0.67)	0.80	0.370
Emergency room visits that did not lead to hospitalization	115.42	124.74	99.17	125.27	-19.04 (-20.51, -17.57)	-16.50	0.000
30-day hospital readmissions per 1,000 discharges	67.29	94.85	48.79	71.91	-2.56 (-12.17, 7.04)	-3.80	0.661

CG = comparison group; D-in-D = differences-in-differences; VT = Vermont.

Note: A logistic regression model was used to obtain estimates of the difference in probability of use. The probability of any admission and probability of any emergency room visit estimates are multiplied by 1,000 to obtain an approximate rate per 1,000 beneficiaries and probability of any readmission is multiplied by 1,000 to obtain the rate of readmissions per 1,000 discharges. The regression-adjusted D-in-Ds are calculated as the average treatment effect *on the treated*, whereas the D-in-D derived from the adjusted means represents the average treatment effect. As a result, the regression-adjusted D-in-D and the D-in-D calculated from the adjusted means will differ. A *negative* value for the regression-adjusted D-in-D corresponds to a *greater decrease* or a *smaller increase* in an outcome during the SIM Initiative test period for the Test state relative to the comparison group. A *positive* value corresponds to a *greater increase* or a *smaller decrease* in an outcome during the SIM Initiative test period for the relative difference is the D-in-D estimate as a percentage of the Test state relative to the comparison group. The relative difference is the D-in-D estimate as a percentage of the Test state's baseline period adjusted mean.

Expenditures. Average total PMPM payments among Medicaid-only beneficiaries were consistently higher in Vermont than in the comparison group throughout the baseline and test periods (*Figure B.1-35*). During the baseline period, average total payments consistently increased among Vermont beneficiaries but remained fairly stable in the comparison group. The first four quarters of the test period saw average Medicaid-only payments decreasing in Vermont in a linear fashion. In the comparison group, a dramatic decrease was seen between Q4 2013 and Q1 2014, though payments were stable in all other quarters (*Figure B.1-36*). For Medicare-Medicaid beneficiaries in Vermont, average total payments increased only slightly between baseline and test periods. Among Medicare-Medicaid beneficiaries in the comparison group, average total payments were overall stable, though with short-lived single-quarter increases observed in Q3 2012 and Q3 2013.

Figure B.1-35. Average total PMPM Medicaid payments, Medicaid-only beneficiaries, Vermont and comparison group

Figure B.1-36. Average total PMPM Medicaid payments, Medicare-Medicaid beneficiaries, Vermont and comparison group



Among Medicaid-only beneficiaries in Vermont, average FFS payments increased between the early baseline and the late baseline/test period for all sub-populations. This same pattern is seen in the Medicaid-only comparison sub-populations, with the exception of nondisabled adults (where a large decrease is evident between 2013 and 2014) (*Table B.1-15*). We believe this resulted from the large influx of relatively healthier beneficiaries from Medicaid expansion that disproportionately occurred in the comparison group states. Capitated payments, which largely appear not to play a role in Vermont, also decreased dramatically in the comparison group across all sub-populations except for blind/disabled adults.

Total PMPM Medicaid payments increased for Vermont Medicaid-only beneficiaries while declining for their comparison group counterparts from the baseline to the test period. As a result, total PMPM payments increased by \$138 for Vermont beneficiaries relative to the comparison group after SIM implementation (*Table B.1-16*).

		FFS pa	yments	Capitation payments		Total payments	
		VT	CG	VT	CG	VT	CG
Overall							
2011	Baseline	484	347	4	86	488	433
2012	Baseline	498	395	4	37	502	433
2013	Baseline	540	413	4	25	544	438
2014	Test	518	344	4	30	522	375
Infant							
2011	Baseline	339	168	4	203	343	371
2012	Baseline	338	267	4	65	342	332
2013	Baseline	351	300	4	20	355	320
2014	Test	361	302	3	35	364	337
Child							
2011	Baseline	422	201	4	71	426	273
2012	Baseline	434	225	4	37	438	263
2013	Baseline	455	233	4	28	459	262
2014	Test	459	237	4	34	463	271
Nondisabled adult							
2011	Baseline	409	290	4	85	413	375
2012	Baseline	422	352	4	27	426	380
2013	Baseline	446	373	4	14	450	387
2014	Test	436	216	4	16	439	232
Blind/disabled adult							
2011	Baseline	1,609	1,739	4	62	1,613	1,803
2012	Baseline	1,620	1,755	4	62	1,624	1,819
2013	Baseline	1,842	1,756	4	75	1,846	1,833
2014	Test	1,810	1,742	4	115	1,814	1,857

Table B.1-15. Per member per month Medicaid payments by type of payment, Medicaid-only
beneficiaries by eligibility category, Vermont and comparison group, 2011–2014¹

CG = comparison group composed of Medicaid beneficiaries from Connecticut and Iowa weighted to match the characteristics of Vermont's Medicaid beneficiaries; New Hampshire Medicaid data was not available for fiscal years 2013 and 2014; FFS = fee for service; VT = Vermont.

¹ Fiscal year; Baseline = Q4 2010–Q3 2013 and Intervention = Q4 2013–Q4 2014.

Table B.1-16. Differences-in-differences estimates for PMPM payments, Medicaid insured,Vermont and comparison group, four quarters of SIM implementation (October2013 through September 2014)

Change in PMPM	Pre-Period Adjusted	Pre-Period Adjusted	Test- Period Adjusted	Test- Period Adjusted	Regression-adjusted difference-in-differences	Relative difference	n volvo
payments	iviean, v i	wean, CG	wean, vi	wean, CG	(90% confidence interval)	(%)	p-value
Total	\$1,398.83	\$1,160.74	\$1,520.82	\$1,145.10	\$137.63 (\$89.36, \$185.90)	9.84	0.000

CG = comparison group; D-in-D = differences in differences; PMPM = per member per month; VT = Vermont. Note: An ordinary least square model was used to obtain estimates for differences in expenditures. 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. A *positive* value corresponds to a *greater increase* or a *smaller decrease* in payments in the Test state relative to the comparison group. The regression-adjusted D-in-D may not match exactly with the D-in-D calculated from the adjusted means because of rounding. The relative difference is the D-in-D estimate as a percentage of the Test state's baseline period adjusted mean.

B.1.2.2 MarketScan data

Arkansas

Utilization. According to Arkansas's State Tracking Report, Arkansas Blue Cross Blue Shield, QualChoice, Centene/Ambetter, and United Healthcare will be participating in the PCMH program starting in 2015; the MarketScan data included in this report are prior to commercial carrier PCMH participation and are too early for spillover effects to be evident. However, the introduction of payments based on episodes of care (EOCs in the commercial population for select diseases may have an effect on some types of utilization, particularly readmission. 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 B.1-37*). Outpatient ER visits were slightly lower in Arkansas than the comparison group over the baseline and test periods (Figure B.1-38). Similar trends for inpatient admission and outpatient ER visits were seen for children and adults; however, the rate of inpatient admissions increased among infants in Arkansas and declined among infants in the comparison group (*Table B.1-17*). The 30-day readmission rate in Arkansas was volatile between 2010 and 2013. During the test period, 30-day readmission rates for both Arkansas and comparison group continued to fluctuate over the baseline to test periods, with no notable trend (Figure B.1-39).

Figure B.1-37. All-cause acute inpatient admissions (per 1,000 covered persons), MarketScan commercially insured, Arkansas and comparison group Figure B.1-38. Emergency room visits that did not lead to hospitalization (per 1,000 covered persons), MarketScan commercially insured, Arkansas and comparison group



Note: MarketScan is [©]2016 Truven Health Analytics Inc., an IBM Company.

Table B.1-17. Inpatient admissions and emergency room visits, MarketScan commercially
insured by age group, Arkansas and comparison group, baseline (FY 2011–2013)
and test period (FY 2014)

		All-cause acute in	patient admissions	Emergency room vis hospita	its that did not lead to alization
			Number per 1	L,000 covered lives	
	Period	AR	CG	AR	CG
Overall					
2011	Baseline	16	15	51	57
2012	Baseline	15	15	55	58
2013	Baseline	15	14	53	57
2014	Test	14	13	50	55
Infant					
2011	Baseline	105	78	93	93
2012	Baseline	103	83	101	95
2013	Baseline	109	78	95	101
2014	Test	107	71	92	96
Child					
2011	Baseline	5	5	45	52
2012	Baseline	5	5	45	52
2013	Baseline	5	5	46	50
2014	Test	5	4	41	47

(continued)

Table B.1-17. Inpatient admissions and emergency room visits, MarketScan commerciallyinsured by age group, Arkansas and comparison group, baseline (FY 2011–2013)and test period (FY 2014) (continued)

		All-cause acute in	Emergency room visits that did not lea All-cause acute inpatient admissions hospitalization							
			Number per 1,000 covered lives							
	Period	AR	CG	AR	CG					
Adult										
2011	Baseline	18	18	53	58					
2012	Baseline	17	17	57	60					
2013	Baseline	16	16	55	58					
2014	Test	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's commercially insured. Notes: All numbers are quarterly averages for the four quarters of the fiscal year. MarketScan is [©]2016 Truven Health Analytics Inc., an IBM Company.

Figure B.1-39. 30-day readmissions (per 1,000 discharges), MarketScan commercially insured, Arkansas and comparison group



Note: MarketScan is [©]2016 Truven Health Analytics Inc., an IBM Company.

The regression adjusted D-in-D results show no statistically significant differences in allcause inpatient admissions, ER visits that did not lead to a hospitalization, or 30-day readmissions between Arkansas and its comparison groups from baseline through the test period (*Table B.1-18*). Because the commercial population was not the target early on in the Arkansas SIM Initiative, it is likely that there was little Medicaid provider behavior spillover to the commercial population. As such, it is reasonable that there would be no detectable differences in these utilization outcomes for the time period of this report.

Table B.1-18. Differences-in-differences estimates for utilization per 1,000 members,MarketScan commercially insured, Arkansas and comparison group, first fivequarters of SIM implementation (October 2013 through December 2014)

					Regression- adjusted		
Change in utilization per 1,000 members	Pre- Period Adjusted Mean, AR	Pre-Period Adjusted Mean, CG	Test- Period Adjusted Mean, AR	Test- Period Adjusted Mean, CG	difference-in- differences (90% confidence interval)	Relative difference (%)	p-value
All-cause acute inpatient admissions	13.01	13.59	11.78	11.55	-0.14 (-0.47, 0.20)	-1.08	0.500
Emergency room visits that did not lead to hospitalization	41.03	49.37	39.79	48.37	-0.41 (-1.07, 0.25)	-1.00	0.310
30-day hospital readmissions per 1,000 discharges	64.67	73.10	70.34	78.66	0.02 (-0.10, 0.13)	0.03	0.818

AR = Arkansas; CG = comparison group; D-in-D = differences-in-differences.

Note: A logistic regression model was used to obtain estimates of the difference in probability of use. The probability of any admission and probability of any emergency room visit estimates are multiplied by 1,000 to obtain an approximate rate per 1,000 beneficiaries and probability of any readmission is multiplied by 1,000 to obtain the rate of readmissions per 1,000 discharges. The regression-adjusted D-in-Ds are calculated as the average treatment effect *on the treated*, whereas the D-in-D derived from the adjusted means represents the average treatment effect. As a result, the regression-adjusted D-in-D and the D-in-D calculated from the adjusted means will differ. A *negative* value for the regression-adjusted D-in-D corresponds to a *greater decrease* or a *smaller increase* in an outcome during the SIM Initiative test period for the Test state relative to the comparison group. A *positive* value corresponds to a *greater increase* or a *smaller decrease* in an outcome during the SIM Initiative test period for the relative difference is the D-in-D estimate as a percentage of the Test state relative to the comparison group. The relative difference is the D-in-D estimate as a percentage of the Test state's baseline period adjusted mean. MarketScan is [©]2016 Truven Health Analytics Inc., an IBM Company

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—although it may be too early to detect any effects on costs in the commercial population, despite some EOC models being introduced by private payers in 2013.

Throughout the baseline period and the first five quarters of the test period, average total PMPM payments were lower for the commercially insured in Arkansas than in the comparison group (*Figures B.1-40* through *B.1-44*). This was true for other facility and pharmacy payment categories as well. Average inpatient PMPM payments for the commercially insured in Arkansas remained fairly stable throughout the baseline and early test period. While professional payments were higher in the comparison group through the baseline period, Arkansas and the comparison group had similar average payments from Q1 2014 through Q4 2014. Similarly, in both other facility and professional PMPM payments, there were no

meaningful differences in spending from the baseline to the test period. Outpatient pharmacy payments increased steadily from mid-2012 through 2014 in both Arkansas and the comparison groups. Pharmacy payments are not specifically targeted by Arkansas's SIM Initiative, 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. The trends for infants, children, and adults were similar to the overall trends for both Arkansas and the comparison group (*Table B.1-19*).

Figure B.1-40. Average total PMPM payments, MarketScan commercially insured, Arkansas and comparison group







Figure B.1-42. Average other facility PMPM payments, MarketScan commercially insured, Arkansas and comparison group

Figure B.1-43. Average professional PMPM payments, MarketScan commercially insured, Arkansas and comparison group



Figure B.1-44. Average outpatient pharmacy PMPM payments, MarketScan commercially insured, Arkansas and comparison group



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		Total I payn	PMPM nents	Inpatien payn	nt facility ments	Other payn	facility nents	Profes payn	ssional nents	Outp phar payn	atient macy nents
	Period	AR	CG	AR	CG	AR	CG	AR	CG	AR	CG
Overall											
2011	Baseline	185	210	61	56	48	67	75	86	44	56
2012	Baseline	194	214	61	56	54	71	79	87	45	58
2013	Baseline	187	229	57	62	50	76	79	91	49	65
2014	Test	196	222	57	59	54	77	84	86	61	74
Infant											
2011	Baseline	504	441	303	228	33	39	167	174	13	16
2012	Baseline	617	486	399	251	36	43	183	191	13	13
2013	Baseline	657	567	410	306	37	49	210	212	16	16
2014	Test	710	478	450	232	38	46	221	200	15	17
Child											
2011	Baseline	72	85	20	18	18	26	34	40	17	22
2012	Baseline	73	88	18	19	18	27	37	42	18	23
2013	Baseline	82	96	23	22	21	30	39	44	21	27
2014	Test	88	96	23	22	23	31	42	43	25	29

Table B.1-19. Pe	r member per month commercial insurance payments by type of service,
Mar	ketScan commercially insured by age group, Arkansas and comparison
grou	p, baseline (FY 2011–2013) and test period (FY 2014)

(continued)

				PMPM nents	Inpatien payn	nt facility nents	Other payn	facility nents	Profes payr	ssional nents	Outpa phar payn	atient macy nents
	Period	AR	CG	AR	CG	AR	CG	AR	CG	AR	CG	
Adult												
2011	Baseline	217	246	70	65	59	81	88	99	53	67	
2012	Baseline	225	249	68	64	66	85	91	100	55	70	
2013	Baseline	211	263	61	69	60	91	90	103	59	78	
2014	Test	218	257	60	67	64	92	94	97	74	89	

Table B.1-19. Per member per month commercial insurance payments by type of service,MarketScan commercially insured by age group, Arkansas and comparisongroup, baseline (FY 2011–2013) and test period (FY 2014) (continued)

AR = Arkansas; CG = comparison group composed of commercially insured individuals from Alabama, Kentucky, and Oklahoma weighted to match the characteristics of Arkansas's commercially insured. Note: All numbers are PMPM averages for the fiscal year. MarketScan is [©]2016 Truven Health Analytics Inc., an IBM Company.

From the baseline period to the test period, total PMPM payments increased for the commercially insured in Arkansas over time and relative to the comparison group where a decrease was observed (\$10.19 relative increase, p < 0.01) (*Table B.1-20*). The increase in total payments was driven in part by the difference in the change in professional payments, which increased in Arkansas while declining in the comparison group resulting in a \$5.94 relative increase (p < 0.0001). Additionally, other facility and outpatient pharmacy increased statistically significantly more in Arkansas relative to the comparison group (p<0.05). There was no statistically significant difference in the change in inpatient facility payments. Because the commercially insured was not the target population of the early SIM Initiative in Arkansas, and the time period evaluated is too early for spillover effects to be evident, other policy and payment reforms in the state may explain these findings. While some private payers began EOC payments for some conditions in 2013, it may be too early to attribute these result to the EOC interventions in the commercial population. Private payers in Arkansas are set to expand EOC payments to additional disease categories and introduce PCMH payments in 2016. Analyses of MarketScan data after 2016 may indicate whether the SIM interventions are evident in the commercial population.

Table B.1-20. Differences-in-differences estimates for PMPM payments, MarketScancommercially insured, Arkansas and comparison group, first five quarters ofArkansas SIM implementation (October 2013 through December 2014)

					Regression-adjusted		
Change in	Pre-Period	Pre-Period	Test-Period	Test-Period	difference-in-	Relative	
PMPM	Adjusted	Adjusted	Adjusted	Adjusted	differences (90%	difference	
payments	Mean, AR	Mean, CG	Mean, AR	Mean, CG	confidence interval)	(%)	p-value
Total	\$195.57	\$230.83	\$202.43	\$227.49	\$10.19 (4.10, 16.18)	5.21	0.005
Inpatient	\$66.94	\$65.21	\$61.26	\$58.88	\$0.64 (-3.66, 4.94)	0.96	0.806
facility							
Other facility	\$49.33	\$79.01	\$57.22	\$82.98	\$3.92 (1.30 <i>,</i> 6.54)	7.95	0.014
Professional	\$79.02	\$86.09	\$83.93	\$85.06	\$5.94 (3.68 <i>,</i> 8.20)	7.52	0.000
Outpatient pharmacy	\$50.67	\$52.59	\$73.03	\$71.31	\$3.64 (1.86, 5.42)	7.18	0.001

AR = Arkansas; CG = comparison group; D-in-D = differences-in-differences; PMPM = per member per month. Note: An ordinary least square model was used to obtain estimates for differences in expenditures. 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 increase* or a *smaller decrease* 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. The regression-adjusted D-in-D may not match exactly with the D-in-D calculated from the adjusted means because of rounding. The relative difference is the D-in-D estimate as a percentage of the Test state's baseline period adjusted mean. MarketScan is [©]2016 Truven Health Analytics Inc., an IBM Company.

Maine

Utilization. Among the commercially insured population in MarketScan data, the allcause acute inpatient admission rate was slightly lower in Maine than the comparison group between Q4 2010 and Q4 2014 (*Figure B.1-45*). Also, the rate of 30-day readmissions was volatile for both Maine and the comparison group, but the comparison group had a higher readmissions rate than Maine at the end of the period (*Figure B.1-47*). However, rates of ER visits were slightly higher in Maine than in the comparison group over this time (*Figure B.1-46*). In addition, the acute inpatient admission and ER visit rates witnessed minor fluctuation increasing slightly and then decreasing—during the first five test period quarters for the commercially insured in both groups. Inpatient admission and outpatient ER visit trends for children and adults were similar to the overall trends for both Maine and the comparison group; however, the rate of inpatient admissions increased among infants in Maine and declined among infants in the comparison group (*Table B.1-21*).

Also presented are utilization results for Maine using the commercially insured data from Maine's All-Payer Claims Database (APCD) furnished by the Maine Health Data Organization. These commercially insured data have a larger sample size than the MarketScan sample for Maine, and are more representative of the commercially insured population in Maine. On the other hand, these results cannot be directly compared to the comparison group results, since the comparison group results are based on the MarketScan sample. The utilization levels and trends Figure B.1-45. All-cause acute inpatient admissions per 1,000 covered persons, MarketScan and APCD commercially insured, Maine and comparison group Figure B.1-46. Emergency room visits that did not lead to hospitalization per 1,000 covered persons, MarketScan and APCD commercially insured, Maine and comparison group



Figure B.1-47. 30-day readmissions per 1,000 discharges, MarketScan and APCD commercially insured, Maine and comparison group



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		All-cause acute ir	npatient admissions	Emergency room lead to hos	visits that did not pitalization
			Number per 1,0	00 covered lives	
	Period	ME	CG	ME	CG
Overall					
2011	Baseline	12	14	60	54
2012	Baseline	12	13	60	55
2013	Baseline	12	13	55	53
2014	Test	11	12	55	51
Infant					
2011	Baseline	55	81	91	76
2012	Baseline	65	71	95	73
2013	Baseline	65	77	98	73
2014	Test	66	72	87	73
Child					
2011	Baseline	4	4	63	53
2012	Baseline	4	5	61	53
2013	Baseline	4	4	54	51
2014	Test	4	4	53	46
Adult					
2011	Baseline	14	15	59	54
2012	Baseline	13	15	59	55
2013	Baseline	13	14	55	53
2014	Test	12	13	55	51

Table B.1-21. Inpatient admissions and emergency room visits, MarketScan commerciallyinsured by age group, Maine and comparison group, baseline (FY 2011–2013)and test period (FY 2014)

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; ME = Maine. Note: All numbers are quarterly averages for the four quarters of the fiscal year. MarketScan is [©]2016 Truven Health Analytics Inc., an IBM Company.

based on the Maine APCD data for the commercially insured are broadly similar to the levels and trends based on the MarketScan data for Maine, except that the utilization levels for ER visits are markedly lower in the Maine APCD. Maine has targeted ER utilization as a prime target in its SIM Initiative to lower costs. Maine also has a state-of-the-art health information exchange that is available to ER clinicians, which could reduce the number of ER visits that lead to a hospitalization.

There were no statistically significant differences in the rates of change in all-cause inpatient admissions or 30-day hospital readmissions among the MarketScan commercially insured in Maine, relative to the comparison group from the baseline to test period (*Table B.1-22*). ER visits, on the other hand, increased for the commercially insured in Maine from the baseline to the test period while decreasing in the comparison group, resulting in an estimated 3.38 more emergency visits per 1,000 persons in Maine than in the comparison group. However, we caution that no conclusions can be drawn from this result, given that the Maine

SIM initiative is focused on the Medicaid population and early spillover effects to the commercial population are not likely.

Change in utilization per 1,000 members	Pre-Period Adjusted Mean. ME	Pre-Period Adjusted Mean. CG	Test-Period Adjusted Mean. ME	Test-Period Adjusted Mean. CG	Regression- adjusted difference-in- differences (90% confidence interval)	Relative difference (%)	p-value
All-cause acute inpatient admissions	10.60	12.56	8.81	10.62	-0.15 (-0.54, 0.24)	-1.45	0.526
Emergency room visits that did not lead to hospitalization	47.77	50.38	48.64	47.65	3.38 (2.45, 4.30)	7.64	0.000
30-day hospital readmissions per 1,000 discharges	67.76	83.38	51.03	66.82	-3.50 (-14.15, -4.71)	-4.71	0.589

Table B.1-22. Differences-in-differences estimates for utilization per 1,000 members,MarketScan commercially insured, Maine and comparison group, first fivequarters of SIM implementation (October 2013 through December 2014)

CG = comparison group; D-in-D = differences-in-differences; ME = Maine.

Note: A logistic regression model was used to obtain estimates of the difference in probability of use. The probability of any admission and probability of any emergency room visit estimates are multiplied by 1,000 to obtain an approximate rate per 1,000 beneficiaries and probability of any readmission is multiplied by 1,000 to obtain the rate of readmissions per 1,000 discharges. The regression-adjusted D-in-Ds are calculated as the average treatment effect *on the treated*, whereas the D-in-D derived from the adjusted means represents the average treatment effect. As a result, the regression-adjusted D-in-D and the D-in-D calculated from the adjusted means will differ. A *negative* value for the regression-adjusted D-in-D corresponds to a *greater decrease* or a *smaller increase* in an outcome during the SIM Initiative test period for the Test state relative to the comparison group. A *positive* value corresponds to a *greater increase* or a *smaller decrease* in an outcome during the SIM Initiative test period for the relative difference is the D-in-D estimate as a percentage of the Test state relative to the comparison group. The relative difference is the D-in-D estimate as a percentage of the Test state's baseline period adjusted mean. MarketScan is [©]2016 Truven Health Analytics Inc., an IBM Company.

Expenditures. Total PMPM payments were nearly identical the first four quarters of the baseline period and then slightly higher for commercially insured individuals in the comparison group than in Maine from Q4 2011 through Q4 2014 (*Figure B.1-48*). Outpatient pharmacy payments for the commercially insured population in the comparison group also exceeded those for Maine; these payments increased sharply for both groups beginning in 2013 (*Figure B.1-52*). Inpatient PMPM facility payments were nearly the same in Maine and the comparison group throughout the baseline and first five test period quarters (*Figure B.1-49*). 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 throughout the period, while professional

payments were significantly higher for the comparison group (*Figures B.1-50* and *B.1-51*). The trends for infants, children, and adults were similar to overall trends (*Table B.1-23*).





Figure B.1-49. Average inpatient facility PMPM payments, MarketScan and APCD commercially insured, Maine and comparison group



Figure B.1-50. Average other facility PMPM payments, MarketScan and APCD commercially insured, Maine and comparison group

Figure B.1-51. Average professional PMPM payments, MarketScan and APCD commercially insured, Maine and comparison group



Figure B.1-52. Average outpatient pharmacy PMPM payments, MarketScan and APCD commercially insured, Maine and comparison group



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		Total		Innation	t facility	Other	facility	Profes	sional	Outo	ationt
		navn	nents	npatier	nents	pavn	nents	navm	ents	pharmacy	navments
	Period	MF		MF	60.10	MF	6	MF		MF	(G
Overall											
2011	Baseline	308	309	79	75	130	110	98	124	62	62
2012	Baseline	310	322	79	76	132	119	100	126	64	65
2013	Baseline	311	325	80	79	132	122	98	124	64	69
2014	Test	318	329	80	79	137	126	100	124	74	80
Infant											
2011	Baseline	444	479	220	235	43	53	184	189	7	10
2012	Baseline	497	406	274	181	53	42	170	183	19	9
2013	Baseline	472	557	260	324	51	46	158	187	12	10
2014	Test	487	526	258	284	67	47	160	194	14	14
Child											
2011	Baseline	120	131	20	23	42	39	58	69	22	25
2012	Baseline	122	140	23	28	41	40	58	72	25	26
2013	Baseline	121	138	23	28	42	40	57	71	27	32
2014	Test	126	129	25	23	43	37	58	69	29	37

Table B.1-23.	Per member per month commercial insurance payments by type of service,
Γ	MarketScan commercially insured by age group, Maine and comparison group,
k	paseline (FY 2011–2013) and test period (FY 2014)

(continued)

				PMPM nents	Inpatien payn	nt facility nents	Other payn	facility nents	Profes paym	sional ients	Outp pharmacy	atient payments
	Period	ME	CG	ME	CG	ME	CG	ME	CG	ME	CG	
Adult												
2011	Baseline	354	354	93	87	154	130	107	137	73	73	
2012	Baseline	354	367	90	87	156	141	109	139	75	75	
2013	Baseline	356	368	91	88	156	143	108	136	74	79	
2014	Test	363	376	91	90	161	149	110	136	85	91	

Table B.1-23. Per member per month commercial insurance payments by type of service,MarketScan commercially insured by age group, Maine and comparison group,baseline (FY 2011–2013) and test period (FY 2014) (continued)

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; ME = Maine. Note: All numbers are PMPM averages for the fiscal year. MarketScan is [©]2016 Truven Health Analytics Inc., an IBM Company.

The regression-adjusted D-in-D results indicate that the rate of change in total PMPM payments in the first five quarters of the SIM test period compared to the 12 baseline quarters in Maine was not statistically significantly different from the comparison group (*Table B.1-24*). Of the four separate categories of PMPM payments, only outpatient pharmacy payments had a significant difference in rate of change, showing an estimated slower increase in PMPM spending of \$5.11 in Maine than its comparison group. This finding confirms to *Figure B.1-52*, which illustrates that beginning in the last half of 2012 Maine's average outpatient pharmacy PMPM payments are increasing at a lower rate than the comparison group's payments.

Table B.1-24. Differences-in-differences estimates for PMPM payments, MarketScancommercially insured, Maine and comparison group, first five quarters of MaineSIM implementation (October 2013 through December 2014)

					Regression-adjusted		
Change in	Pre-Period	Pre-Period	Test-Period	Test-Period	difference-in-	Relative	
PMPM	Adjusted	Adjusted	Adjusted	Adjusted	differences (90%	difference	p-
payments	Mean, ME	Mean, CG	Mean, ME	Mean, CG	confidence interval)	(%)	value
Total	\$312.02	\$314.23	\$321.42	\$322.58	\$1.05	0.33	0.864
					(\$-9.04, \$11.15)		
Inpatient facility	\$78.69	\$79.59	\$74.33	\$76.01	-\$0.78	-0.99	0.854
					(\$-7.81 <i>,</i> \$6.24)		
Other facility	\$136.91	\$116.78	\$146.63	\$122.23	\$4.27	3.23	0.203
					(\$-1.25 <i>,</i> \$9.78)		
Professional	\$96.81	\$117.54	\$101.60	\$124.01	-\$1.68	-1.62	0.220
					(\$-3.94 <i>,</i> \$0.57)		
Outpatient	\$62.38	\$59.58	\$76.47	\$78.78	-\$5.11	-7.70	0.000
pharmacy					(\$-7.45 <i>,</i> \$-2.77)		

CG = comparison group; D-in-D = differences-in-differences; ME = Maine; PMPM = per member per month. Note: An ordinary least square model was used to obtain estimates for differences in expenditures. 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. A *positive* value corresponds to a *greater increase* or a *smaller decrease* in payments in the Test state relative to the comparison group. The regression-adjusted D-in-D may not match exactly with the D-in-D calculated from the adjusted means because of rounding. The relative difference is the D-in-D estimate as a percentage of the Test state's baseline period adjusted mean. MarketScan is [©]2016 Truven Health Analytics Inc., an IBM Company.

Minnesota

Utilization. At the close of 2014, few of Minnesota's SIM initiatives had been implemented. Therefore, there is no expectation of reduced utilization in the commercial population due to SIM activities. Minnesota's commercially insured population had higher rates of all-cause inpatient admissions than the comparison group and similar rates of ER visits to the comparison group during the baseline and test periods (*Figures B.1-53 and B.1-54*). With regard to the commercially insured population, the rate of inpatient admissions declined from Q4 2010 through Q4 2014 and the rate of ER visits fluctuated slightly in both Minnesota and the comparison group (*Figure B.1-54*). The rate of 30-day readmissions also fluctuated in both groups throughout the baseline and test periods (*Figure B.1-55*). Similar trends were seen in infants, children, and adults (*Table B.1-25*).

Figure B.1-53. All-cause acute inpatient admissions per 1,000 covered lives, MarketScan commercially insured, Minnesota and comparison group





Figure B.1-55. 30-day readmissions per 1,000 discharges, MarketScan commercially insured, Minnesota and comparison group



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				Emergency room visi	ts that did not lead to		
		All-cause acute in	patient admissions	hospitalization			
			Number per 1	1,000 covered lives			
	Period	MN	CG	MN	CG		
Overall							
2011	Baseline	16	14	37	42		
2012	Baseline	15	13	38	42		
2013	Baseline	15	13	37	40		
2014	Test	14	12	37	40		
Infant							
2011	Baseline	131	110	84	83		
2012	Baseline	130	109	91	79		
2013	Baseline	124	105	89	80		
2014	Test	125	107	87	78		
Child							
2011	Baseline	5	4	40	42		
2012	Baseline	5	4	39	41		
2013	Baseline	5	4	38	39		
2014	Test	4	4	36	38		
Adult							
2011	Baseline	16	15	35	41		
2012	Baseline	16	14	36	41		
2013	Baseline	15	14	36	40		
2014	Test	14	13	35	40		

Table B.1-25. Inpatient admissions and emergency room visits, MarketScan commerciallyinsured by age group, Minnesota and comparison group, baseline (FY 2011–2013) and test period (FY 2014)

CG = comparison group composed of commercially insured individuals from Colorado, Iowa, and Washington weighted to match the characteristics of Minnesota's commercially insured; MN = Minnesota. Note: All numbers are quarterly averages for the four quarters of the fiscal year. MarketScan is [©]2016 Truven Health Analytics Inc., an IBM Company.

The only statistically significant finding from the regression-adjusted D-in-D results shows that the rate of ER visits increased less from baseline through the Q5 of the test period in Minnesota relative to the comparison group, but the difference was small (relative decrease of -0.98 visits per 1,000 members) (*Table B.1-26*). Though these results are consistent with the SIM Initiative goals of accelerating health care transformation, these results are most likely indicative of other pre-SIM activities. For example, enhanced access to primary care through health care homes (HCHs) affected a large portion of the commercially insured population and could be associated with changes in the ER visit rate. Given some pre-SIM activities seem to have spilled over into the commercial population, the SIM Initiative's emphasis on access to and coordination of care for the Medicaid population may, over a longer period, also may have spillover effects on the commercially insured population.

Table B.1-26. Differences-in-differences estimates for utilization per 1,000 members,MarketScan commercially insured, Minnesota and comparison group, first fivequarters of SIM implementation (October 2013 through December 2014)

Change in utilization per 1,000 members	Pre- Period Adjusted Mean, MN	Pre- Period Adjusted Mean, CG	Test- Period Adjusted Mean, MN	Test- Period Adjusted Mean, CG	Regression-adjusted difference-in- differences (90% confidence interval)	Relative difference (%)	p- value
All-cause acute inpatient admissions	12.37	13.20	10.64	11.20	0.16 (-0.10, 0.42)	1.29%	0.32
Emergency room visits that did not lead to hospitalization	26.13	38.57	26.33	39.91	-0.83 (-1.30, -0.37)	-3.19%	0.00
30-day hospital readmissions per 1,000 discharges	50.55	58.19	70.54	80.65	0.065 (-7.18, 7.31)	0.13%	0.99

CG = comparison group; D-in-D = differences-in-differences; MN = Minnesota.

Note: A logistic regression model was used to obtain estimates of the difference in probability of use. The probability of any admission and probability of any emergency room visit estimates are multiplied by 1,000 to obtain an approximate rate per 1,000 beneficiaries and probability of any readmission is multiplied by 1,000 to obtain the rate of readmissions per 1,000 discharges. The regression-adjusted D-in-Ds are calculated as the average treatment effect *on the treated*, whereas the D-in-D derived from the adjusted means represents the average treatment effect. As a result, the regression-adjusted D-in-D and the D-in-D calculated from the adjusted means will differ. A *negative* value for the regression-adjusted D-in-D corresponds to a *greater decrease* or a *smaller increase* in an outcome during the SIM Initiative test period for the Test state relative to the comparison group. A *positive* value corresponds to a *greater increase* or a *smaller decrease* in an outcome during the SIM Initiative test period for the relative difference is the D-in-D estimate as a percentage of the Test state relative to the comparison group. The relative difference is the D-in-D estimate as a percentage of the Test state's baseline period adjusted mean. MarketScan is [©]2016 Truven Health Analytics Inc., an IBM Company.

Expenditures. At the close of 2014, there were nine established IHPs, with six of these operational since 2013. However, because resources to achieve savings are focused on Medicaid beneficiaries, we do not expect spillover effects in the commercial population in the near term. Thus, the flat or increasing trends expenditure trends for this population as of the end of 2014, discussed below, are likely not indicative of SIM efforts (*Table B.1-27*).

Minnesota's commercially insured population has lower average health spending than its comparison group for some types of health care services but similar or higher spending for other types of services. Average total PMPM payments and professional PMPM payments are higher in Minnesota than in the comparison group throughout both baseline and test periods (*Figures B.1-56* and *B.1-59*). On the other hand, other facility PMPM payments for Minnesota's commercially insured population are consistently lower than those for the comparison group (*Figure B.1-58*). Each of these three PMPM categories exhibit seasonal variations in costs (*Figures B.1-56, B.1-58,* and *B.1-59*). In general, both groups are trending up as of Q5 of the intervention period relative to the baseline period.

		Total PMPM		Inpatient facility		Other facility		Professional		Outpatient	
	Period	MN		MN	rg	MN	CG	MN	CG	MN	CG
Overall	1 61104										
2011	Baseline	262	249	72	72	64	77	125	100	43	46
2011	Baseline	202	245	72	72	67	90	125	100	45	40
2012	Baseline	205	235	71	72	60	80 87	125	100	44	47 50
2015	Daseillie	275	257	70	74	72	02	120	101	47	50
2014	Test	2/1	257	/2	/1	72	84	125	101	51	56
Infant											
2011	Baseline	740	779	410	470	58	63	272	246	14	14
2012	Baseline	727	680	395	387	56	60	276	232	13	10
2013	Baseline	838	731	477	412	64	68	296	251	12	10
2014	Test	769	708	418	385	57	60	293	263	13	12
Child											
2011	Baseline	131	111	29	24	31	35	71	51	21	18
2012	Baseline	137	118	30	28	34	37	72	52	22	18
2013	Baseline	138	119	30	26	34	39	73	54	23	20
2014	Test	133	118	26	24	34	38	71	55	22	22
Adult											
2011	Baseline	295	285	78	78	76	92	140	114	53	58
2012	Baseline	297	290	76	80	79	96	140	113	54	58
2013	Baseline	304	293	80	81	81	98	140	114	57	61
2014	Test	304	293	77	78	86	101	139	113	62	69

Table B.1-27. Per member per month commercial insurance payments by type of service,MarketScan commercially insured by age group, Minnesota and comparisongroup, baseline (FY 2011–2013) and test period (FY 2014)

CG = comparison group composed of commercially insured individuals from Colorado, Iowa, and Washington weighted to match the characteristics of Minnesota's commercially insured; MN = Minnesota; PMPM = per member per month.

Note: All numbers are PMPM averages for the fiscal year. MarketScan is [©]2016 Truven Health Analytics Inc., an IBM Company

Inpatient PMPM expenditures for commercially insured individuals in Minnesota and in the comparison group were similar and remained fairly constant over the baseline and test periods (*Figure B.1-57*). Outpatient pharmacy PMPM payments for the commercially insured also were similar in Minnesota and the comparison group, though pharmacy spending in Minnesota was slightly lower. In both Minnesota and the comparison group, pharmacy spending has increased over time (*Figure B.1-60*). Payment trends were generally similar among infants, children, and adults; however, payments declined across all categories for infants in the comparison group. Figure B.1-56. Average total PMPM payments, MarketScan commercially insured, Minnesota and comparison group Figure B.1-57. Average inpatient facility PMPM payments, MarketScan commercially insured, Minnesota and comparison group





Figure B.1-58. Average other facility PMPM payments, MarketScan commercially insured, Minnesota and comparison group

Figure B.1-59. Average professional PMPM payments, MarketScan commercially insured, Minnesota and comparison group



Figure B.1-60. Average outpatient pharmacy PMPM payments, MarketScan commercially insured, Minnesota and comparison group



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pharmacy

The regression-adjusted D-in-D results show no statistically significant changes in PMPM spending in Minnesota relative to the comparison group for any spending outcomes (*Table B.1-28*).

Minnesota SIM implementation (October 2013 through December 2014)								
Change in PMPM	Pre-Period Adjusted	Pre-Period Adjusted	Test- Period Adjusted	Test- Period Adjusted	Regression-adjusted difference-in- differences (90%	Relative difference		
payments	Mean, MN	Mean, CG	Mean, MN	Mean, CG	confidence interval)	(%)	p-value	
Total	264.31	262.13	252.18	250.27	-\$0.27 (-6.64, 6.11)	0.10%	0.95	
Inpatient facility	77.62	77.54	64.75	62.94	\$1.73 (-3.42, 6.88)	2.23%	0.58	
Other facility	66.59	79.43	64.13	78.50	-\$1.55 (-3.65, 0.56)	-2.32%	0.23	
Professional	120.09	104.02	122.81	107.51	-\$0.77 (-2.52, 0.97)	-0.64%	0.47	
Outpatient	39.99	46.33	50.85	57.86	-\$0.68 (-1.79 <i>,</i> 0.44)	-1.69%	0.32	

Table B.1-28.	Differences-in-differences estimates for PMPM payments, MarketScan
c	commercially insured, Minnesota and comparison group, first five quarters of
Г	Vinnesota SIM implementation (October 2013 through December 2014)

CG = comparison group; D-in-D = differences-in-differences; MN = Minnesota; PMPM = per member per month. Note: An ordinary least square model was used to obtain estimates for differences in expenditures. 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. A *positive* value corresponds to a *greater increase* or a *smaller decrease* in payments in the Test state relative to the comparison group. The regression-adjusted D-in-D may not match exactly with the D-in-D calculated from the adjusted means because of rounding. The relative difference is the D-in-D estimate as a percentage of the Test state's baseline period adjusted mean. MarketScan is [©]2016 Truven Health Analytics Inc., an IBM Company.

Oregon

Utilization. The rate of all-cause acute inpatient admissions among the commercially insured was lower in Oregon in Q4 2010 relative to the comparison group, but that gap narrowed by Q4 2014. Over the course of the baseline and early test periods, inpatient admissions declined slightly in Oregon and moderately in the comparison group (*Figure B.1-61*). Among the commercially insured, the rate of ER visits was lower in Oregon relative to the comparison group throughout the period and declined very slightly in both groups during the baseline period but remained stable during the test period (*Figure B.1-62*). The rate of 30-day readmissions was volatile in Oregon over both the baseline and test periods, but it appears to be declining in the comparison group (*Figure B.1-63*).

The regression-adjusted D-in-D 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 its comparison group from the baseline to the early test period. Thus, these results show that the early test period of the SIM Initiative was not associated with any significant changes in these outcomes (*Table B.1-29*). Because the SIM Initiative's efforts to spread the coordinated care model (CCM) had not yet been implemented for its first target (state employees), these findings are not surprising.



Figure B.1-62. Emergency room visits that did not lead to hospitalization per 1,000 covered persons, MarketScan commercially insured, Oregon and comparison group



Figure B.1-63. 30-day readmissions per 1,000 discharges, MarketScan commercially insured, Oregon and comparison group



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Change in utilization per 1,000 members	Pre- Period Adjusted Mean, OR	Pre-Period Adjusted Mean, CG	Test- Period Adjusted Mean, OR	Test- Period Adjusted Mean, CG	Regression-adjusted difference-in- differences (90% confidence interval)	Relative difference (%)	p- value
All-cause acute inpatient admissions	10.62	12.00	9.34	10.55	0.0023 (-0.25, 0.25)	0.02	0.99
Emergency room visits that did not lead to hospitalization	30.02	37.02	29.97	36.92	0.042 (-0.42, 0.51)	0.14	0.88
30-day hospital readmissions per 1,000 discharges	54.41	62.74	45.64	58.25	-5.79 (-12.69, 1.11)	-10.64	0.17

Table B.1-29. Differences-in-differences estimates for utilization per 1,000 members,MarketScan commercially insured, Oregon and comparison group, first fivequarters of SIM implementation (October 2013 through December 2014)

CG = comparison group; D-in-D = differences-in-differences; OR = Oregon.

Note: A logistic regression model was used to obtain estimates of the difference in probability of use. The probability of any admission and probability of any emergency room visit estimates are multiplied by 1,000 to obtain an approximate rate per 1,000 beneficiaries and probability of any readmission is multiplied by 1,000 to obtain the rate of readmissions per 1,000 discharges. The regression-adjusted D-in-Ds are calculated as the average treatment effect *on the treated*, whereas the D-in-D derived from the adjusted means represents the average treatment effect. As a result, the regression-adjusted D-in-D and the D-in-D calculated from the adjusted means will differ. A *negative* value for the regression-adjusted D-in-D corresponds to a *greater decrease* or a *smaller increase* in an outcome during the SIM Initiative test period for the Test state relative to the comparison group. A *positive* value corresponds to a *greater increase* or a *smaller decrease* in an outcome during the SIM Initiative test period for the relative difference is the D-in-D estimate as a percentage of the Test state relative to the comparison group. The relative difference is the D-in-D estimate as a percentage of the Test state's baseline period adjusted mean. MarketScan is [©]2016 Truven Health Analytics Inc., an IBM Company.

Expenditures. Average PMPM payments for the commercially insured population in Oregon and its comparison group were approximately equal in O4 2010. Payments increased slightly through Q4 2014 in both groups, but the rate of growth was slightly higher in Oregon (Figure B.1-64). In Q4 2010, average inpatient facility payments were similar for the commercially insured in Oregon and its comparison group. Payments fluctuated over the baseline and early test periods, with payments ending slightly higher in Q4 2014 in Oregon than the comparison group (*Figure B.1-65*). Average other facility payments were similar in Oregon and its comparison group throughout the baseline and test periods, both growing moderately to be approximately 24 percent higher in Q4 2014 than in Q4 2010 (Figures B.1-66). Average professional payments were higher in Oregon relative to the comparison group throughout the period. Over time, payments fluctuated in similar seasonal patterns in both groups, ending 2014 at approximately the same level as in Q4 2010 (*Figures B.1-67*). Average outpatient pharmacy payments were lower in Oregon relative to the comparison group throughout the period. In both groups, these payments increased between Q4 2012 and Q4 2014 (Figures B.1-68).



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Figure B.1-66. Average other facility PMPM payments, MarketScan commercially insured, Oregon and comparison group

Figure B.1-67. Average professional PMPM payments, MarketScan commercially insured, Oregon and comparison group



Figure B.1-68. Average outpatient pharmacy PMPM payments, MarketScan commercially insured, Oregon and comparison group



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The regression-adjusted D-in-D results show that relative to the 12 baseline quarters, average changes in total PMPM payments during the first five test quarters were not significantly different in Oregon relative to the comparison group (*Table B.1-30*). This aggregate finding, however, masks significantly slower growth in professional payments and outpatient pharmacy payments in Oregon relative to the comparison group. However, as stated in the discussion of utilization findings above, there were no significant changes in commercial payment incentives associated with SIM by the end of 2014, so these significant D-in-D estimates are unlikely a result of SIM activities.
	Pre-Period	Pre-Period	Test- Period	Test- Period	Regression-adjusted difference-in-	Relative	
Change in PMPM	Adjusted	Adjusted	Adjusted	Adjusted	differences (90%	difference	р-
payments	Mean, OR	Mean, CG	Mean, OR	Mean, CG	confidence interval)	(%)	value
Total	265.48	256.84	269.95	262.79	\$-1.47 (-7.54, 4.59)	-0.55	0.69
Inpatient facility	66.08	79.63	65.72	76.65	\$2.63 (-1.63, 6.88)	3.98	0.31
Other facility	81.20	87.31	85.62	90.42	\$1.30 (-1.58, 4.18)	1.60	0.46
Professional	118.17	89.37	118.32	94.94	\$ -5.43 (-7.07, -3.78)	4.60	0.00
Outpatient pharmacy	45.20	50.06	46.82	54.83	\$-3.15 (-4.42, -1.88)	-6.97	0.00

Table B.1-30. Differences-in-differences estimates for PMPM payments, MarketScancommercially insured, Oregon and comparison group, first five quarters ofOregon SIM implementation (October 2013 through December 2014)

CG = comparison group; D-in-D = differences-in-differences; OR = Oregon; PMPM = per member per month. Note: An ordinary least square model was used to obtain estimates for differences in expenditures. 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. A *positive* value corresponds to a *greater increase* or a *smaller decrease* in payments in the Test state relative to the comparison group. The regression-adjusted D-in-D may not match exactly with the D-in-D calculated from the adjusted means because of rounding. The relative difference is the D-in-D estimate as a percentage of the Test state's baseline period adjusted mean. MarketScan is [©]2016 Truven Health Analytics Inc., an IBM Company.

Vermont

Utilization. *Figures B.1-69–B.71* present descriptive graphs for utilization outcomes for MarketScan and commercially insured data from Vermont's APCD (source: the Green Mountain Care Board and Vermont Healthcare Claims Uniform Reporting System). Across both the baseline period and the early test period, the rates for all-cause acute inpatient admissions were lower for the Vermont MarketScan population than for its comparison group, and lower still for the Vermont APCD (*Figure B.1-69*). In the most recent two quarters of data (O3 2014 through Q4 2014), all-cause acute inpatient admissions slightly increased for both Vermont MarketScan and its comparison group, while the APCD rate decreased. Commercially insured ER visits that did not lead to hospitalization showed an interesting pattern of seasonality, with all three samples moving together and the Vermont APCD population consistently lower (Figure B.1-70). In the early test period including the most recent 2 quarters of data, the Vermont MarketScan ER visits were stable while the comparison group showed a slight decrease to the level in the Vermont APCD. (Vermont APCD rates for the final guarter may be affected by claims run out.) The rate of readmissions within 30 days of discharge for the commercially insured was highly volatile across all time periods, likely due to the small sample size for this outcome (Figure B.1-71). Vermont MarketScan 30-day readmissions, which showed large spikes during the baseline period, appear more similar to the comparison group rates in the full 5 quarters of the early test period, with both groups showing an overall decline. In contrast, the Vermont APCD 30-day readmissions are higher, on average, during the test period than during the baseline period, an unexpected finding. One possible explanation for the increase could be a new or shifting 2014 population within the Vermont APCD, as more individuals became insured through the state health insurance Marketplace. The population shift also may have affected the Vermont MarketScan sample, which decreased by approximately 25 percent from baseline to the test

period. Utilization trends were similar for children and adults; however, inpatient admissions increased for infants in Vermont and the comparison groups, while ER visits increased for infants in Vermont and declined for those in the comparison group (*Table B.1-31*).

Figure B.1-69. All-cause acute inpatient admissions per 1,000 covered persons, MarketScan and APCD commercially insured, Vermont and comparison group



Figure B.1-70. Emergency room visits that did not lead to hospitalization per 1,000 covered persons, MarketScan and APCD commercially insured, Vermont and comparison group



Figure B.1-71. 30-day readmissions per 1,000 discharges, MarketScan and APCD commercially insured, Vermont and comparison group



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		All-cause acute ir	nations admissions	Emergency room vis	its that did not lead to
			Number per 1	.000 covered lives	
	Period	VT	CG	VT	CG
Overall					
2011	Baseline	12	14	51	53
2012	Baseline	11	13	52	51
2013	Baseline	11	12	50	50
2014	Test	11	12	50	46
Infant					
2011	Baseline	103	92	58	102
2012	Baseline	98	91	65	99
2013	Baseline	94	102	63	93
2014	Test	108	108	68	93
Child					
2011	Baseline	3	4	51	55
2012	Baseline	2	4	53	52
2013	Baseline	3	4	51	51
2014	Test	3	3	46	44
Adult					
2011	Baseline	13	15	50	51
2012	Baseline	12	14	52	51
2013	Baseline	12	13	50	49
2014	Test	11	13	51	46

Table B.1-31. Inpatient admissions and emergency room visits, MarketScan commerciallyinsured by age group, Vermont and comparison group, baseline (FY 2011–2013)and test period (FY 2014)

CG = comparison group composed of commercially insured individuals from Connecticut, New Hampshire, and Iowa weighted to match the characteristics of Vermont's commercially insured; VT = Vermont;. Note: All numbers are quarterly averages for the four quarters of the fiscal year. MarketScan is [©]2016 Truven Health Analytics Inc., an IBM Company.

Given that we have early test period data for the commercially insured in Vermont and its comparison group, we are able to use the D-in-D model to statistically test for the desired negative relationship between Vermont's SIM Initiative and utilization due to better coordinated care (*Table B.1-32*). After adjusting for covariates, there was no statistically significant difference in utilization for the MarketScan commercially insured population in Vermont relative to its 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 that is not participating in a key reform effort, the commercial ACO SSP.

Change in utilization per 1,000 members	Pre-Period Adjusted Mean, VT	Pre-Period Adjusted Mean, CG	Test-Period Adjusted Mean, VT	Test-Period Adjusted Mean, CG	Regression- adjusted difference- in- differences (90% confidence interval)	Relative difference (%)	p-value
All-cause acute inpatient admissions	9.77	12.67	8.20	10.72	0.38 (-0.94, 0.84)	3.86%	0.931
Emergency room visits that did not lead to hospitalization	35.56	44.23	33.64	43.22	-0.90 (-3.34, 0.72)	-2.55%	0.288
30-day hospital readmissions per 1,000 discharges	71.49	84.51	43.02	58.84	-2.80 (-33.90, 16.75)	-3.92%	0.578

Table B.1-32. Differences-in-differences estimates for utilization per 1,000 members,MarketScan commercially insured, Vermont and comparison group, first five
quarters of SIM implementation (October 2013 through December 2014)

CG = comparison group; D-in-D = differences-in-differences; VT = Vermont.

Note: A logistic regression model was used to obtain estimates of the difference in probability of use. The probability of any admission and probability of any emergency room visit estimates are multiplied by 1,000 to obtain an approximate rate per 1,000 beneficiaries and probability of any readmission is multiplied by 1,000 to obtain the rate of readmissions per 1,000 discharges. The regression-adjusted D-in-Ds are calculated as the average treatment effect *on the treated*, whereas the D-in-D derived from the adjusted means represents the average treatment effect. As a result, the regression-adjusted D-in-D and the D-in-D calculated from the adjusted means will differ. A *negative* value for the regression-adjusted D-in-D corresponds to a *greater decrease* or a *smaller increase* in an outcome during the SIM Initiative test period for the Test state relative to the comparison group. A *positive* value corresponds to a *greater increase* or a *smaller decrease* in an outcome during the SIM Initiative test period for the relative difference is the D-in-D estimate as a percentage of the Test state relative to the comparison group. The relative difference is the D-in-D estimate as a percentage of the Test state's baseline period adjusted mean. MarketScan is [©]2016 Truven Health Analytics Inc., an IBM Company.

Expenditures. There was no clear trend in average total and inpatient facility PMPM payments between baseline and the test period for the Vermont commercially insured population relative to its comparison group. *Figure B.1-72* shows the overall seasonality of fluctuations for the total PMPM payments. In contrast, *Figure B.1-73* shows non-parallel fluctuations for inpatient facility PMPM, with the Vermont APCD sample having the greatest variability. It also indicates a possible slight increasing trend for the comparison group over the test period. Average other facility PMPM payments in the Vermont population (both MarketScan and APCD) increased during the test period relative to the more moderate trend seen in its comparison group (*Figure B.1-74*). Trends in professional PMPM payments were mostly flat in the baseline period, with a slight increase seen among all three groups during the later quarters of the test period (*Figure B.1-75*). This late period increase in average professional payments was largest, however, among the comparison group. An increase in professional payments could be expected,

as improved care coordination under the Blueprint for Health and SIM Initiative could lead to more frequent physician visits. These might occur before a decrease in hospitalizations and a corresponding expected decrease in inpatient and other facility PMPM payments. Finally, average pharmacy PMPM payments were similar across both the Vermont and comparison populations during baseline, with both populations increasing during the test period (*Figure B.1-76*). For unknown reasons, pharmacy payments in the APCD population decreased dramatically in Q2 2014 and then stabilized.

Figure B.1-72. Average total PMPM payments, MarketScan and APCD commercially insured, Vermont and comparison group





Figure B.1-74. Average other facility PMPM payments, MarketScan and APCD commercially insured, Vermont and comparison group

Figure B.1-75. Average professional PMPM payments, MarketScan and APCD commercially insured, Vermont and comparison group



Figure B.1-76. Average outpatient pharmacy PMPM payments, MarketScan and APCD commercially insured, Vermont and comparison group



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The regression-adjusted D-in-D results indicate that between the baseline and test periods, the average PMPM payments for outpatient pharmacy services increased at a slower rate (by \$9.34 PMPM) for the Vermont commercially insured population than for the comparison group (*Table B.1-33*). The baseline to test period changes in all other average PMPM payments

(total, inpatient, other facility, professional) were not significantly different between Vermont and the comparison group (*Table B.1-34*).

Although this outpatient pharmacy result is statistically significant, 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). Further, although our qualitative results describe health care transformation activities occurring during this window of time, we would not expect to see a statewide impact on health care expenditures for the commercially insured this early in the implementation period.

	Total PMPM payments		Inpatier payr	Inpatient facility payments		Other facility payments		ssional nents	Outpatient pharmacy payments		
	Period	VT	CG	VT	CG	VT	CG	VT	CG	VT	CG
Overall											
2011	Baseline	296	298	63	71	131	120	101	107	54	51
2012	Baseline	305	297	66	69	138	122	102	106	54	51
2013	Baseline	307	290	72	66	134	117	99	106	54	52
2014	Test	315	306	69	74	146	121	99	110	53	61
Infant											
2011	Baseline	407	485	195	220	45	61	167	203	11	12
2012	Baseline	537	437	307	184	34	56	195	197	3	9
2013	Baseline	393	439	175	182	29	55	180	200	7	6
2014	Test	714	570	469	278	35	64	206	226	20	9
Child											
2011	Baseline	122	118	28	20	40	40	54	58	19	22
2012	Baseline	117	116	15	19	43	38	59	59	20	21
2013	Baseline	125	113	20	17	44	37	61	58	20	22
2014	Test	141	113	23	18	51	37	67	58	17	23
Adult											
2011	Baseline	340	343	71	82	156	142	113	118	64	59
2012	Baseline	350	342	75	80	163	145	111	116	64	59
2013	Baseline	349	333	83	77	157	138	107	117	63	61
2014	Test	353	350	76	85	171	143	106	121	62	71

Table B.1-33.	Per member per month commercial insurance payments by type of service,
I	MarketScan commercially insured by age group, Vermont and comparison group,
ł	paseline (FY 2011–2013) and test period (FY 2014)

CG = comparison group composed of commercially insured individuals from Connecticut, New Hampshire, and Iowa weighted to match the characteristics of Vermont's commercially insured; PMPM = per member per month; VT = Vermont.

Note: All numbers are PMPM averages for the fiscal year. MarketScan is [©]2016 Truven Health Analytics Inc., an IBM Company.

Table B.1-34. Differences-in-differences estimates for PMPM payments, MarketScancommercially insured, Vermont and comparison group, first five quarters of SIMimplementation (October 2013 through December 2014)

Change in	Pre-Period	Pre-Period	Test- Period	Test- Period	Regression-adjusted difference-in-differences	Relative	
PMPM	Adjusted	Adjusted	Adjusted	Adjusted	(90% confidence	difference	
payments	Mean, VT	Mean, CG	Mean, VT	Mean, CG	interval)	(%)	p-value
Total	\$333.96	\$291.81	\$326.77	\$275.04	\$9.57 (-\$13.56, \$32.71)	2.87%	0.496
Inpatient	\$73.27	\$73.31	\$58.71	\$62.60	-\$3.84 (-\$16.66, \$8.98)	-5.24%	0.622
facility							
Other facility	\$152.72	\$110.71	\$159.62	\$103.27	\$14.34 (-\$1.80, \$30.49)	9.39%	0.144
Professional	\$107.32	\$107.95	\$108.59	\$109.10	\$0.12 (-\$4.42 <i>,</i> \$4.66)	0.11%	0.965
Outpatient	\$54.71	\$48.42	\$59.23	\$62.28	-\$9.34 (-\$12.95, -\$5.73)	-17.07%	0.000
pharmacy							

CG = comparison group; D-in-D = differences-in-differences; PMPM = per member per month; VT = Vermont. Note: An ordinary least square model was used to obtain estimates for differences in expenditures. 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. A *positive* value corresponds to a *greater increase* or a *smaller decrease* in payments in the Test state relative to the comparison group. The regression-adjusted D-in-D may not match exactly with the D-in-D calculated from the adjusted means because of rounding. The relative difference is the D-in-D estimate as a percentage of the Test state's baseline period adjusted mean. MarketScan is [©]2016 Truven Health Analytics Inc., an IBM Company.

B.1.3 Medicare data

Arkansas

Utilization. The rates of all-cause acute inpatient admissions, ER visits, and 30-day readmissions were generally similar between Arkansas and its comparison group from the baseline through the implementation period (*Figures B.1-77, Figure B.1-78,* and *B.1-79*). There were no observable differences in inpatient admissions between Arkansas and its comparison group, and there was noticeable seasonality in the rates over the baseline and implementation period. The rate of ER visits appears stable for both Arkansas and the comparison group, with Arkansas having a slightly lower rate over the baseline and the implementation period. The rate of 30-day all-cause readmission appears to decline for both Arkansas and the comparison group from the baseline through the implementation period, but with no notable differences between the two groups. Trends for Medicare-Medicaid enrollees and other Medicare enrollees were similar (*Table B.1-35*).

Figure B.1-77. All-cause acute inpatient admissions per 1,000 Medicare beneficiaries, Arkansas and comparison group Figure B.1-78. Emergency room visits that did not lead to hospitalization (per 1,000 Medicare beneficiaries), Arkansas and comparison group



Figure B.1-79. 30-day readmissions (per 1,000 discharges) for Medicare beneficiaries, Arkansas and comparison group



		All-cause acute in	patient admissions	Emergency room vis hospita	its that did not lead to alization		
			Number per 1	,000 covered lives			
	Period	AR	CG	AR	CG		
Overall							
2011	Baseline	81	85	127	132		
2012	Baseline	78	80	129	136		
2013	Baseline	75	75	128	136		
2014	Test	71	71	129	136		
Medicare-I	Medicaid						
2011	Baseline	124	125	250	256		
2012	Baseline	118	117	255	265		
2013	Baseline	113	110	254	264		
2014	Test	109	105	252	265		
Medicare-	only						
2011	Baseline	69	73	90	93		
2012	Baseline	66	68	92	96		
2013	Baseline	64	65	92	97		
2014	Test	61	61	94	99		

Table B.1-35. Inpatient admissions and emergency room visits, Medicare beneficiaries by
dual Medicare-Medicaid eligibility status, Arkansas and comparison group,
baseline (FY 2011–2013) and test period (FY 2014)

AR = Arkansas; CG = comparison group composed of Medicare insured individuals from Alabama, Kentucky, and Oklahoma weighted to match the characteristics of Arkansas's Medicare insured. Note: All numbers are quarterly averages for the four quarters of the fiscal year.

Table B.1-36 highlights the regression-adjusted D-in-D results for Medicare beneficiaries in Arkansas and its comparison groups. From the baseline to the test period, beneficiaries in Arkansas had a larger decrease in admissions per 1,000 members relative to the comparison group (p < 0.001). Additionally, Medicare beneficiaries in Arkansas had a larger increase in ER visits per 1,000 members relative to the comparison group from the baseline to the test period (p < 0.05). Despite trends indicating fewer inpatient admissions relative to the comparison group, 30-day readmissions increased in Arkansas while declining in the comparison group, amounting to 4.77 more readmissions per 1,000 hospital discharges after the SIM Initiative Test period started (p < 0.05). Eventually we anticipate some spillover effects of Arkansas's PCMH initiative on the Medicare population; indeed, the Medicaid PCMH initiative was designed around Comprehensive Primary Care Initiative (CPCi) that began with 69 practices serving Arkansas's Medicare population. However, these results may not reflect SIM's impact on provider behavior for Medicare beneficiaries, as this analysis captures care provided only during the early stage of SIM implementation.

Table B.1-36. Differences-in-differences estimates for utilization per 1,000 members,Medicare Beneficiaries, Arkansas and comparison group, first five quarters ofSIM implementation (October 2013 through December 2014)

Change in utilization per 1,000 members	Pre- Period Adjusted Mean, AR	Pre- Period Adjusted Mean, CG	Test- Period Adjusted Mean, AR	Test- Period Adjusted Mean, CG	Regression-adjusted difference-in- differences (90% confidence interval)	Relative difference (%)	p-value
All-cause acute inpatient admissions	60.43	62.83	54.66	58.54	-1.66(-2.21, -1.10)	-2.75	0.000
Emergency room visits that did not lead to hospitalization	94.61	96.56	98.80	99.86	0.91 (0.23, 1.60)	0.96	0.028
30-day hospital readmissions per 1,000 discharges	153.77	156.26	156.47	154.13	4.77 (1.03, 8.50)	3.10	0.036

AR = Arkansas; CG = comparison group; D-in-D = differences-in-differences.

Note: A logistic regression model was used to obtain estimates of the difference in probability of use. The probability of any admission and probability of any emergency room visit estimates are multiplied by 1,000 to obtain an approximate rate per 1,000 beneficiaries and probability of any readmission is multiplied by 1,000 to obtain the rate of readmissions per 1,000 discharges. The regression-adjusted D-in-Ds are calculated as the average treatment effect *on the treated*, whereas the D-in-D derived from the adjusted means represents the average treatment effect. As a result, the regression-adjusted D-in-D and the D-in-D calculated from the adjusted means will differ. A *negative* value for the regression-adjusted D-in-D corresponds to a *greater decrease* or a *smaller increase* in an outcome during the SIM Initiative test period for the Test state relative to the comparison group. A *positive* value corresponds to a *greater increase* or a *smaller decrease* in an outcome during the SIM Initiative test period for the relative difference is the D-in-D estimate as a percentage of the Test state relative to the comparison group. The relative difference is the D-in-D estimate as a percentage of the Test state's baseline period adjusted mean.

Expenditures. Total PMPM expenditures remained stable over the baseline and implementation period for both Arkansas and its comparison group, with Arkansas having slightly lower expenditures over the implementation period for average total PMPM payments and average other facility PMPM payments. Average inpatient facility and professional PMPM payments for Medicare beneficiaries were similar in Arkansas and its comparison group (*Figures B.1-81* and *B.1-83*), with both showing a very slight downward trend with similar seasonality patterns. Other facility payments (*Figure B.1-82*) were somewhat lower in Arkansas than its comparison group over the baseline and implementation periods (*Figure B.1-80*). Trends were similar for Medicare-Medicaid and Medicare-only beneficiaries (*Table B.1-37*).

Figure B.1-80. Average total PMPM payments, Medicare beneficiaries, Arkansas and comparison group



Figure B.1-81. Average inpatient facility PMPM payment, Medicare beneficiaries, Arkansas and comparison group



Figure B.1-82. Average other facility PMPM payments, Medicare beneficiaries, Arkansas and comparison group

Figure B.1-83. Average professional PMPM payments, Medicare beneficiaries, Arkansas and comparison group



		Total payr	PMPM ments	Inpatien payn	nt facility ments	Other payn	facility nents	Profes payn	ssional nents
	Period	AR	CG	AR	CG	AR	CG	AR	CG
Overall									
2011	Baseline	684	735	278	280	194	240	212	214
2012	Baseline	682	722	274	270	197	237	211	215
2013	Baseline	678	714	269	266	202	237	207	211
2014	Test	682	711	264	258	210	241	208	211
Medicare-N	ledicaid								
2011	Baseline	973	1,038	414	413	309	370	251	255
2012	Baseline	963	1,010	407	396	306	357	250	257
2013	Baseline	959	995	405	387	311	355	242	253
2014	Test	953	994	396	385	316	355	241	255
Medicare-o	nly								
2011	Baseline	597	641	237	239	160	200	200	202
2012	Baseline	599	633	235	231	165	200	199	202
2013	Baseline	597	629	230	229	171	202	196	198
2014	Test	606	630	227	222	180	208	199	199

Table B.1-37. Per member per month Medicare payments by type of service, Medicare beneficiaries by dual Medicare-Medicaid eligibility status, Arkansas and comparison group, baseline (FY 2011–2013) and test period (FY 2014)

AR = Arkansas; CG = comparison group composed of Medicare insured individuals from Alabama, Kentucky, and Oklahoma weighted to match the characteristics of Arkansas's Medicare insured; PMPM = per member per month. Note: All numbers are PMPM averages for the fiscal year.

There was a statistically significant relative decrease in total PMPM payments for Arkansas Medicare beneficiaries relative to the comparison group (p < 0.05) (*Table B.1-38*). Total PMPM Medicare payments declined in Arkansas while increasing in the comparison group from the baseline to the test period. The relative decline in total PMPM payments was driven in part by a relative decline in inpatient spending; inpatient PMPM expenditures declined for Medicare beneficiaries in Arkansas while increasing in the comparison group for a net decrease of \$4.70 PMPM. Other facility expenditures also increased less among Arkansas Medicare beneficiaries relative to the comparison group, amounting to an average payment of \$3.74 PMPM less than the comparison group (p < 0.01). There were no statistically significant differences in professional expenditures between Arkansas and its comparison group over the baseline and implementation periods. These expenditure results suggest spillover effects of the SIM to the Medicare population, which is somewhat surprising given that Arkansas's SIM Initiative does not include the Medicare population and has been ongoing for only 2 years. As such, other explanations for these differences are likely, such as other concurrent reform activities within the state.

Table B.1-38. Differences-in-differences estimates for PMPM payments, MedicareBeneficiaries, Arkansas and comparison group, first five quarters of Arkansas SIMimplementation (October 2013 through December 2014)

Change in PMPM payments	Pre-Period Adjusted Mean, AR	Pre-Period Adjusted Mean, CG	Test-Period Adjusted Mean, AR	Test-Period Adjusted Mean, CG	Regression-adjusted difference-in- differences (90% confidence interval)	Relative difference (%)	p-value
Total	\$681.12	\$702.06	\$679.67	\$707.84	-7.43 (-13.30, -1.56)	-1.09	0.037
Inpatient facility	\$271.81	\$265.04	\$262.68	\$269.61	-\$4.70 (-8.75,-0.64)	-1.73	0.057
Other facility	\$192.58	\$230.69	\$200.00	\$241.85	-\$3.74 (-5.84, -1.64)	-1.94	0.003
Professional	\$216.73	\$206.34	\$216.78	\$205.38	\$1.01 (-0.42, 2.45)	0.47	0.246

AR = Arkansas; CG = comparison group; D-in-D = differences-in-differences; PMPM = per member per month. Note: An ordinary least square model was used to obtain estimates for differences in expenditures. 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 increase* or a *smaller decrease* in payments in the Test state relative to the comparison group. The regression-adjusted D-in-D may not match exactly with the D-in-D calculated from the adjusted means because of rounding. The relative difference is the D-in-D estimate as a percentage of the Test state's baseline period adjusted mean.

Maine

Utilization. Rates of all-cause acute inpatient admissions were very similar among Medicare beneficiaries in Maine relative to its comparison group over the baseline period. During the first 5 test period quarters, however, admissions for the comparison group began exceeding admissions for Maine (*Figure B.1-84*). Medicare beneficiaries in Maine had higher rates of ER visits than its comparison group throughout both the baseline period and the first 4 test period quarters. However, ER visits declined faster among Maine Medicare beneficiaries than among its comparison group during the most recent test period quarter (*Figure B.1-85*). With regard to 30-day readmissions, Maine exhibited a modest decrease throughout the baseline period that diminished somewhat during the first 5 test period quarters. In contrast, the comparison group witnessed significant variation in this measure during the baseline period but less so during the test period. By the early test period, the comparison group's readmissions were at nearly the same level as for Maine, with the former being slightly higher than the latter in the most recent quarter posted (*Figure B.1-86*). The trends for the Medicare-Medicaid and Medicare-only beneficiaries were similar to those of the overall population (*Table B.1-39*). Figure B.1-84. All-cause acute inpatient admissions per 1,000 Medicare beneficiaries, Maine and comparison group Figure B.1-85. Emergency room visits that did not lead to hospitalization per 1,000 Medicare beneficiaries, Maine and comparison group



Figure B.1-86. 30-day readmissions per 1,000 discharges, Medicare beneficiaries, Maine and comparison group



Table B.1-39. Inpatient admissions and emergency room visits, Medicare beneficiaries by dual Medicare-Medicaid eligibility status, Maine and comparison group, baseline (FY 2011–2013) and test period (FY 2014)

		Emergency room visits that did not lea					
		All-cause acute in	patient admissions	hospita	alization		
			Number per 1	,000 covered lives			
	Period	ME	CG	ME	CG		
Overall							
2011	Baseline	69	70	163	158		
2012	Baseline	63	65	166	158		
2013	Baseline	63	64	164	158		
2014	Test	61	64	161	154		
Medicare-M	ledicaid						
2011	Baseline	89	93	255	268		
2012	Baseline	81	89	261	275		
2013	Baseline	82	83	260	266		
2014	Test	80	85	256	266		
Medicare-o	nly						
2011	Baseline	55	57	104	104		
2012	Baseline	50	51	104	101		
2013	Baseline	50	53	103	106		
2014	Test	50	54	104	106		

CG = comparison group composed of Medicare insured individuals from Connecticut, Rhode Island, and New Hampshire weighted to match the characteristics of Maine's Medicare insured; ME = Maine. Note: All numbers are quarterly averages for the four quarters of the fiscal year.

For Maine Medicare beneficiaries during the SIM Initiative Test period, inpatient admissions declined from the baseline period and relative to the comparison group where an increase was observed (*Table B.1-40*). There were no statistically significant differences in the rates of change in ER visits or 30-day hospital readmissions among the Medicare beneficiaries in Maine, relative to its comparison group, in the first 5 quarters of the SIM test period relative to the 15 baseline quarters.

This lack of significant results is not surprising for several reasons. First, the short implementation period examined in these analyses reduces the possibility for large impacts on utilization in a statewide examination of Maine's Medicare population. Second, the Maine SIM interventions primarily focused on Maine's Medicaid population as opposed to Medicare beneficiaries in the state. The SIM Initiative affects the Medicare population only to the extent that it produces relevant spillover effects, because it does not directly impact these individuals. Third, any SIM effect on the Medicare population may be diluted by simultaneous initiatives within Medicare itself, such as the Medicare ACO, PCMH, or bundled payment programs.

imple	Implementation (October 2013 through December 2014)										
Change in utilization per 1,000 members	Pre- Period Adjusted Mean, ME	Pre- Period Adjusted Mean, CG	Test- Period Adjusted Mean, ME	Test- Period Adjusted Mean, CG	Regression-adjusted difference-in- differences (90% confidence interval)	Relative difference (%)	p-value				
All-cause acute inpatient admissions	53.51	52.16	52.82	53.27	-1.70 (-3.19, -0.20)	-3.27	0.063				
Emergency room visits that did not lead to hospitalization	109.84	114.73	110.40	116.54	-1.20 (-3.53, 1.14)	-1.09	0.400				
30-day hospital readmissions per 1,000 discharges	142.74	147.06	144.02	148.10	0.27 (-10.36, 10.89)	0.19	0.967				

Table B.1-40. Differences-in-differences estimates for utilization per 1,000 members,Medicare beneficiaries, Maine and comparison group, first five quarters of SIMimplementation (October 2013 through December 2014)

CG = comparison group; D-in-D = differences-in-differences; ME = Maine.

Note: A logistic regression model was used to obtain estimates of the difference in probability of use. The probability of any admission and probability of any emergency room visit estimates are multiplied by 1,000 to obtain an approximate rate per 1,000 beneficiaries and probability of any readmission is multiplied by 1,000 to obtain the rate of readmissions per 1,000 discharges. The regression-adjusted D-in-Ds are calculated as the average treatment effect *on the treated*, whereas the D-in-D derived from the adjusted means represents the average treatment effect. As a result, the regression-adjusted D-in-D and the D-in-D calculated from the adjusted means will differ. A *negative* value for the regression-adjusted D-in-D corresponds to a *greater decrease* or a *smaller increase* in an outcome during the SIM Initiative test period for the Test state relative to the comparison group. A *positive* value corresponds to a *greater increase* or a *smaller decrease* in an outcome during the SIM Initiative test period for the relative difference is the D-in-D estimate as a percentage of the Test state relative to the comparison group. The relative difference is the D-in-D estimate as a percentage of the Test state's baseline period adjusted mean.

Expenditures. Average PMPM total payments, inpatient facility payments, and other facility payments for Medicare beneficiaries exhibited some seasonal variation, but held relatively constant in both Maine and its comparison group across the baseline and early test periods (*Table B.1-41*). Fluctuations in one group's payment amounts largely mirrored fluctuations in the other group's payments during both baseline and early test periods. Also, all three payment categories were distinctly higher in the comparison group than in Maine (*Figures B.1-87, B.1-88*, and *B.1-89*). Average professional payments also exhibited seasonal variation but otherwise remained relatively stable during baseline and early test periods. The comparison group payments again exceeded Maine average payments, however this gap was far less pronounced than the other payment categories (*Figure B.1-90*). Payment trends for the Medicare-Medicaid and Medicare-only populations were similar to the overall trends with one exception: total payments spiked in 2012 for Medicare-Medicaid enrollees in the comparison group, driven primarily by a spike in inpatient facility payments.

		Total payr	PMPM nents	Inpatien payn	it facility nents	Other payn	facility nents	Profes payn	ssional nents
	Period	ME	CG	ME	CG	ME	CG	ME	CG
Overall									
2011	Baseline	675	792	242	284	268	328	165	179
2012	Baseline	662	800	231	289	265	328	166	184
2013	Baseline	675	799	240	287	269	332	166	179
2014	Test	683	797	234	287	279	331	169	179
Medicare-M	ledicaid								
2011	Baseline	835	1,037	309	381	339	443	187	213
2012	Baseline	815	1,080	291	413	336	447	188	220
2013	Baseline	835	1,027	307	378	338	439	190	210
2014	Test	851	1,038	302	386	354	438	195	214
Medicare-o	nly								
2011	Baseline	572	663	199	233	222	268	150	162
2012	Baseline	564	649	192	222	221	263	152	164
2013	Baseline	577	679	198	240	227	276	152	163
2014	Test	587	694	196	244	237	285	155	164

Table B.1-41. Per member per month Medicare payments by type of service, Medicare beneficiaries by dual Medicare-Medicaid eligibility status, Maine and comparison group, baseline (FY 2011–2013) and test period (FY 2014)

CG = comparison group composed of Medicare insured individuals from Connecticut, Rhode Island, and New Hampshire weighted to match the characteristics of Maine's Medicare insured; ME = Maine; PMPM = per member per month.

Note: All numbers are PMPM averages for the fiscal year.

The regression-adjusted D-in-D results for Medicare beneficiaries exhibit no statically significant changes in Maine relative to the comparison group for total payments, inpatient facility payments, and other facility payments (*Table B.1-42*). Professional PMPM expenditures increased in Maine while decreasing in the comparison group, however, resulting in \$3.75 PMPM more Medicare spending on professional services in the first 5 test quarters in Maine relative to the comparison group. One possible explanation for this payment differential is the investments Maine Medicare ACOs have made in primary care, resulting in relatively higher payments for providers under this category. Overall, however, the D-in-D results suggest that health care expenditures have not significantly changed in Maine relative to the comparison group ince the baseline period. The changes to Maine's health care delivery system documented qualitatively in site visits, interviews, and focus groups have not yet translated into any significant statewide impact on health care expenditures for the Medicare beneficiaries, the potential impact of simultaneous initiatives within Medicare itself, and the short timetable for SIM implementation of only 5 test quarters.

Figure B.1-87. Average total PMPM payments, Medicare beneficiaries, Maine and comparison group





Figure B.1-89. Average other facility PMPM payments, Medicare beneficiaries, Maine and comparison group

Figure B.1-90. Average professional PMPM payments, Medicare beneficiaries, Maine and comparison group



Table B.1-42. Differences-in-differences estimates for PMPM payments, Medicarebeneficiaries, Maine and comparison group, first five quarters of Maine SIMimplementation (October 2013 through December 2014)

Change in PMPM payments	Pre-Period Adjusted Mean, ME	Pre-Period Adjusted Mean, CG	Test-Period Adjusted Mean, ME	Test-Period Adjusted Mean, CG	Regression-adjusted difference-in- differences (90% confidence interval)	Relative difference (%)	p-value
Total	\$657.67	\$794.89	\$681.15	\$811.34	\$7.02 (\$-12.63, \$26.67)	1.06	0.557
Inpatient facility	\$246.60	\$273.41	\$250.17	\$281.83	\$-4.86 (\$-16.60, \$6.89)	-1.99	0.496
Other facility	\$256.45	\$330.85	\$273.80	\$340.03	\$8.16 (\$-1.66, \$17.99)	3.15	0.172
Professional	\$154.63	\$190.63	\$157.18	\$189.48	\$3.71 (\$1.25, \$6.17)	2.37	0.013

CG = comparison group; D-in-D = differences-in-differences; ME = Maine; PMPM = per member per month. Note: An ordinary least square model was used to obtain estimates for differences in expenditures. 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. A *positive* value corresponds to a *greater increase* or a *smaller decrease* in payments in the Test state relative to the comparison group. The regression-adjusted D-in-D may not match exactly with the D-in-D calculated from the adjusted means because of rounding. The relative difference is the D-in-D estimate as a percentage of the Test state's baseline period adjusted mean.

Minnesota

Utilization. Minnesota's Medicare beneficiaries had higher rates of inpatient admissions and readmissions than its comparison group and similar rates of outpatient ER visits between Q4 2010 and Q4 2014. The all-cause inpatient admission rate decreased over time for both Medicare beneficiaries in Minnesota and its comparison group but remained consistently higher for Minnesota (*Figure B.1-91*). This higher rate of all-cause inpatient admissions in Minnesota Medicare beneficiaries resembles trends in the commercially insured population. The rates of outpatient ER visits increased in Minnesota and in the comparison group in both the baseline and early test periods (*Figure B.1-92*). The rate of 30-day readmissions declined over the baseline and early test periods for both Minnesota's Medicare beneficiaries and its comparison group, but this rate was consistently higher for Medicare beneficiaries (*Figure B.1-93*). Medicare-Medicaid and Medicare-only beneficiaries exhibited trends that were similar to the overall population (*Table B.1-43*). Figure B.1-91. All-cause acute inpatient admissions per 1,000 Medicare beneficiaries, Minnesota and comparison group

Figure B.1-92. Emergency room visits that did not lead to hospitalization per 1,000 Medicare beneficiaries, Minnesota and comparison group



Figure B.1-93. 30-day readmissions per 1,000 discharges for Medicare beneficiaries, Minnesota and comparison group





		All-cause acute inp	patient admissions	Emergency room vis hospita	its that did not lead to alization
			Number per 1	L,000 covered lives	
	Period	MN	CG	MN	CG
Overall					
2011	Baseline	75	69	118	121
2012	Baseline	71	65	126	127
2013	Baseline	70	64	129	131
2014	Test	66	62	131	136
Medicare-	-Medicaid				
2011	Baseline	106	96	243	268
2012	Baseline	100	90	258	275
2013	Baseline	97	89	256	276
2014	Test	92	87	257	281
Medicare-	only				
2011	Baseline	67	62	87	89
2012	Baseline	63	59	90	92
2013	Baseline	62	57	92	94
2014	Test	58	55	92	97

Table B.1-43. Inpatient admissions and emergency room visits, Medicare beneficiaries by
dual Medicare-Medicaid eligibility status, Minnesota and comparison group,
baseline (FY 2011–2013) and test period (FY 2014)

CG = comparison group composed of Medicare insured individuals from Colorado, Iowa, and Washington weighted to match the characteristics of Minnesota's Medicare insured; MN = Minnesota. Note: All numbers are quarterly averages for the four quarters of the fiscal year.

The change in the outpatient ER visit rate was smaller in Minnesota relative to its comparison group; the ER visit rate increased by 1.09 fewer visits per 1,000 beneficiaries in Minnesota during the first 5 quarters of the test period (*Table B.1-44*). However, this finding is unlikely to be the result of spillover effects from the Minnesota SIM Initiative, because SIM support of practice transformation activities did not begin until 2015. On the other hand, the slower increase in outpatient ER visit rates could be associated with enhanced access to primary care through HCHs or improved care coordination from Medicare programs such as the SSP and the Pioneer ACO Model. There were no statistically significant differences in the rate of change for inpatient admission rates or 30-day hospital readmission rates in Minnesota relative to its comparison group.

Table B.1-44. Differences-in-differences estimates for utilization per 1,000 members,Medicare beneficiaries, Minnesota and comparison group, first five quarters ofSIM implementation (October 2013 through December 2014)

Change in utilization per 1,000 members	Pre- Period Adjusted Mean, MN	Pre- Period Adjusted Mean, CG	Test- Period Adjusted Mean, MN	Test- Period Adjusted Mean, CG	Regression-adjusted difference-in- differences (90% confidence interval)	Relative difference (%)	p- value
All-cause acute inpatient admissions	58.32	53.86	54.47	50.81	-0.57 (-1.18, 0.05)	-0.97	0.13
Emergency room visits that did not lead to hospitalization	89.48	92.72	92.20	96.62	-1.08 (-1.85, -0.31)	-1.21	0.02
30-day hospital readmissions per 1,000 discharges	154.86	134.58	154.97	134.11	0.61 (-3.73, 4.96)	0.40	0.82

CG = comparison group; D-in-D = differences-in-differences; MN = Maine.

Note: A logistic regression model was used to obtain estimates of the difference in probability of use. The probability of any admission and probability of any ER visit estimates are multiplied by 1,000 to obtain an approximate rate per 1,000 beneficiaries and probability of any readmission is multiplied by 1,000 to obtain the rate of readmissions per 1,000 discharges. The regression-adjusted D-in-Ds are calculated as the average treatment effect *on the treated*, whereas the D-in-D derived from the adjusted means represents the average treatment effect. As a result, the regression-adjusted D-in-D and the D-in-D calculated from the adjusted means will differ. A *negative* value for the regression-adjusted D-in-D corresponds to a *greater decrease* or a *smaller increase* in an outcome during the SIM Initiative test period for the Test state relative to the comparison group. A *positive* value corresponds to a *greater increase* or a *smaller decrease* in an outcome during the SIM Initiative test period for the Test state relative to the comparison group. The relative difference is the D-in-D estimate as a percentage of the Test state's baseline period adjusted mean.

Expenditures. Average inpatient expenditures for Minnesota's Medicare beneficiaries were consistently higher than its comparison group, while professional expenditures were consistently lower for Minnesota (*Figures B.1-95* and *B.1-97*). The average total and other facility payments for Medicare beneficiaries (*Figures B.1-94* and *B.1-96*) were similar in Minnesota and its comparison group throughout the baseline and early test periods. In both Minnesota and its comparison group, average total PMPM payments and average other facility PMPM payments increased during both the baseline and test periods. In both Minnesota and its comparisonal PMPM payments remained stable during the baseline and early test periods. Medicare-Medicaid and Medicare-only beneficiaries exhibited trends that were similar to the overall population (*Table B.1-45*).

Figure B.1-94. Average total PMPM payments, Medicare beneficiaries, Minnesota and comparison group



Figure B.1-95. Average inpatient facility PMPM payments, Medicare beneficiaries, Minnesota and comparison group



Figure B.1-96. Average other facility PMPM payments, Medicare beneficiaries, Minnesota and comparison group

Figure B.1-97. Average professional PMPM payments, Medicare beneficiaries, Minnesota and comparison group



		Total I payn	PMPM nents	Inpatier payn	nt facility nents	Other payn	facility nents	Profes payn	ssional nents
	Period	MN	CG	MN	CG	MN	CG	MN	CG
Overall									
2011	Baseline	679	676	277	245	231	235	171	196
2012	Baseline	679	681	272	244	232	237	175	200
2013	Baseline	700	693	284	252	240	243	175	198
2014	Test	711	708	280	253	255	254	175	201
Medicare-N	ledicaid								
2011	Baseline	935	888	433	366	283	301	219	222
2012	Baseline	929	876	421	357	283	296	225	223
2013	Baseline	934	884	428	366	282	299	224	220
2014	Test	955	909	430	373	300	312	225	224
Medicare-o	nly								
2011	Baseline	619	625	241	216	219	219	159	190
2012	Baseline	614	631	233	215	219	222	162	194
2013	Baseline	634	640	243	221	229	228	162	192
2014	Test	638	650	236	218	242	238	160	194

Table B.1-45. Per member per month Medicare payments by type of service, Medicare
beneficiaries by dual Medicare-Medicaid eligibility status, Minnesota and
comparison group, baseline (FY 2011–2013) and test period (FY 2014)

CG = comparison group composed of Medicare insured individuals from Colorado, Iowa, and Washington weighted to match the characteristics of Minnesota's Medicare insured; MN = Minnesota; PMPM = per member per month. Note: All numbers are PMPM averages for the fiscal year.

D-in-D estimates indicate that there were no statistically significant differences in two out of four PMPM payment categories in Minnesota relative to its comparison group (*Table B.1-46*). Other facility PMPM payments increased by \$4.50 more in Minnesota relative to its comparison group between the baseline and test periods (P < 0.01). On other hand, between the baseline and test periods, professional payments declined by \$1.70 more in Minnesota relative to the comparison group (P < 0.10). In the commercial population, there were no significant differences between Minnesota and the comparison group for any of the PMPM categories.

These statistically significant change in other facility payments are not likely to be the result of spillover from IHPs, but could be related to strengthened relationships between hospitals and non-inpatient facilities resulting from ACO formation. In addition, two of Minnesota's Pioneer ACOs are exempted for the "SNF 3-day rule"—which requires that Medicare beneficiaries remain in the inpatient setting for at least 3 days prior to being transferred to a skilled nursing facility.

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Change in PMPM	Pre-Period Adjusted	Pre-Period Adjusted	Test- Period Adjusted	Test- Period Adjusted	Regression-adjusted difference-in- differences (90%	Relative difference	
payments	Mean, MN	Mean, CG	Mean, MN	Mean, CG	confidence interval)	(%)	p-value
Total	667.95	705.23	689.49	721.68	\$5.09 (-2.06, 12.25)	0.76	0.24
Inpatient facility	282.39	245.60	286.04	246.94	\$2.30 (-2.64, 7.24)	0.81	0.44
Other facility	228.61	245.06	249.34	261.29	\$4.50 (1.74 <i>,</i> 7.26)	1.97	0.01
Professional	156.94	214.57	154.11	213.44	-\$1.70 (-3.15, -0.26)	-1.08	0.05

Table B.1-46. Differences-in-differences estimates for PMPM payments, Medicarebeneficiaries, Minnesota and comparison group, first five quarters of MinnesotaSIM implementation (October 2013 through December 2014)

CG = comparison group; D-in-D = differences-in-differences; MN = Minnesota; PMPM = per member per month. Note: An ordinary least square model was used to obtain estimates for differences in expenditures. 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 increase* or a *smaller decrease* in payments in the Test state relative to the comparison group. The regression-adjusted D-in-D may not match exactly with the D-in-D calculated from the adjusted means because of rounding. The relative difference is the D-in-D estimate as a percentage of the Test state's baseline period adjusted mean.

Oregon

Utilization. We limit our analysis of Medicare utilization and spending to those Medicare beneficiaries who are also covered by Medicaid. These are the only Medicare beneficiaries with any direct exposure to Oregon's CCM, with about half of them enrolled in a CCO. The rate of all-cause acute inpatient admissions among Medicare-Medicaid beneficiaries was lower in Oregon relative to its comparison group between Q4 2010 and Q4 2014, and decreased over time in both Oregon and its comparison group (*Figure B.1-98*). The rate of ER visits among Medicare-Medicaid beneficiaries was about equal in Oregon and the comparison group in Q4 2010. By Q4 2014, the rate of ER visits had risen in both Oregon and its comparison group, but at a higher rate in the comparison group (*Figure B.1-99*). The rate of 30day readmissions was lower in Oregon relative to its comparison group between Q4 2010 and Q4 2014. The rates remained generally level over that time in Oregon and its comparison group (*Figure B.1-100*).

The regression-adjusted D-in-D results for Medicare-Medicaid beneficiaries indicate (*Table B.1-47*) no statistically significant differences in the rate of change in inpatient admissions or 30-day readmissions between Oregon and its comparison group from baseline to the early test periods. ER visits increased by 1.56 more visits in Oregon relative to the comparison group, however.

Figure B.1-98. All-cause acute inpatient admissions per 1,000 Medicare-Medicaid beneficiaries, Oregon and comparison group Figure B.1-99. Emergency room visits that did not lead to hospitalization per 1,000 Medicare-Medicaid beneficiaries, Oregon and comparison group



Figure B.1-100. 30-day readmissions per 1,000 discharges, Medicare-Medicaid beneficiaries, Oregon and comparison group



Table B.1-47. Differences-in-differences estimates for utilization per 1,000 members,Medicare-Medicaid beneficiaries, Oregon and comparison group, first fivequarters of SIM implementation (October 2013 through December 2014)

Change in utilization per 1,000 members ¹	Pre- Period Adjusted Mean, OR	Pre- Period Adjusted Mean, CG	Test- Period Adjusted Mean, OR	Test- Period Adjusted Mean, CG	Regression-adjusted difference-in- differences (90% confidence interval)	Relative difference (%)	p-value
All-cause acute inpatient admissions	49.16	49.24	46.96	47.32	-0.27 (-0.79, 0.26)	-0.55	0.41
Emergency room visits that did not lead to hospitalization	86.55	84.67	91.89	88.30	1.56 (0.83, 2.29)	1.80	0.00
30-day hospital readmissions per 1,000 discharges	134.87	132.30	138.55	137.34	-1.35 (-5.56, 2.86)	-1.00	0.60

CG = comparison group; D-in-D = differences-in-differences; OR = Oregon.

Note: A logistic regression model was used to obtain estimates of the difference in probability of use. The probability of any admission and probability of any emergency room visit estimates are multiplied by 1,000 to obtain an approximate rate per 1,000 beneficiaries and probability of any readmission is multiplied by 1,000 to obtain the rate of readmissions per 1,000 discharges. The regression-adjusted D-in-Ds are calculated as the average treatment effect *on the treated*, whereas the D-in-D derived from the adjusted means represents the average treatment effect. As a result, the regression-adjusted D-in-D and the D-in-D calculated from the adjusted means will differ. A *negative* value for the regression-adjusted D-in-D corresponds to a *greater decrease* or a *smaller increase* in an outcome during the SIM Initiative test period for the Test state relative to the comparison group. A *positive* value corresponds to a *greater increase* or a *smaller decrease* in an outcome during the SIM Initiative test period for the relative to the comparison group. The relative difference is the D-in-D estimate as a percentage of the Test state's baseline period adjusted mean.

Expenditures. For Medicare-Medicaid beneficiaries, average total, inpatient facility, other facility, and professional PMPM payments were lower in Oregon relative to its comparison group from Q4 2010 to Q4 2014 (*Figures B.1-101* through *B.1-104*). Over time, average total PMPM payments fluctuated but exhibited no strong trend for any type of service in Oregon or its comparison group.

Figure B.1-101. Average total PMPM payments, Medicare-Medicaid beneficiaries, Oregon and comparison group

Figure B.1-102. Average inpatient facility PMPM payments, Medicare-Medicaid beneficiaries, Oregon and comparison group



Figure B.1-103. Average other facility PMPM payments, Medicare-Medicaid beneficiaries, Oregon and comparison group

Figure B.1-104. Average professional PMPM payments, Medicare-Medicaid beneficiaries, Oregon and comparison group



The regression-adjusted D-in-D results show no statistically significant difference between Oregon and its comparison group in the rate of change in average total PMPM payments, inpatient facility payments, or other facility payments for Medicare-Medicaid beneficiaries during the first 5 quarters of Oregon SIM implementation *(Table B.1-48)*. However, average professional payments for this population statistically significantly increased in Oregon relative to its comparison group during this time period by \$3.63 PMPM.

Table B.1-48. Differences-in-differences estimates for PMPM payments, Medicare-Medicaidbeneficiaries, Oregon and comparison group, first five quarters of Oregon SIMimplementation (October 2013 through December 2014)

Change in PMPM payments	Pre-Period Adjusted Mean, OR	Pre-Period Adjusted Mean, CG	Test-Period Adjusted Mean, OR	Test-Period Adjusted Mean, CG	Regression-adjusted difference-in- differences (90% confidence interval)	Relative difference (%)	p-value
Total	630.36	643.70	655.05	665.52	\$2.86 (-3.64, 9.36)	0.45	0.47
Inpatient facility	248.32	232.13	256.03	238.35	\$1.48 (-3.02, 5.98)	0.60	0.59
Other facility	208.26	206.45	223.90	224.33	\$-2.25 (-4.70, 0.20)	-1.08	0.13
Professional	173.77	205.12	175.12	202.84	\$3.63 (2.15, 5.12)	2.09	0.00

CG = comparison group; D-in-D = differences-in-differences; OR = Oregon; PMPM = per member per month. Note: An ordinary least square model was used to obtain estimates for differences in expenditures. 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. A *positive* value corresponds to a *greater increase* or a *smaller decrease* in payments in the Test state relative to the comparison group. The regression-adjusted D-in-D may not match exactly with the D-in-D calculated from the adjusted means because of rounding. The relative difference is the D-in-D estimate as a percentage of the Test state's baseline period adjusted mean.

Vermont

Utilization. The rate of all-cause acute inpatient admissions for Medicare beneficiaries in Vermont and its comparison group decreased steadily throughout the baseline period. In the comparison group, the magnitude of decrease in admissions diminished during the test period. The magnitude of decrease in admissions among Vermont Medicare beneficiaries in the test period was similar to the baseline period (*Figure B.1-105*). Throughout both periods the inpatient admissions rate remained higher in the comparison group than Vermont.

Rates of ER visits not leading to hospitalization were similar for both groups, exhibiting seasonal fluctuation throughout the baseline and test periods (*Figure B.1-106*). Rates of 30-day readmissions were also similar for both groups and decreasing slightly throughout the baseline period. Rates in Vermont exhibited a greater amplitude of quarter-to-quarter variation than the comparison group, with a pronounced effect in Q2 and Q3 2014 that may indicate an additional underlying reduction in readmissions in Vermont during the test period (*Figure B.1-107*). The trends for inpatient admissions, ER visits, and readmissions were similar for Medicare-Medicaid and Medicare-only beneficiaries in both Vermont and its comparison group (*Table B.1-49*).

Figure B.1-105. All-cause acute inpatient admissions per 1,000 Medicare beneficiaries, Vermont and comparison group Figure B.1-106. Emergency room visits that did not lead to hospitalization per 1,000 Medicare beneficiaries, Vermont and comparison group



Figure B.1-107. 30-day readmissions per 1,000 discharges, Medicare beneficiaries, Vermont and comparison group



Table B.1-49. Inpatient admissions and emergency room visits, Medicare beneficiaries by
dual Medicare-Medicaid eligibility status, Vermont and comparison group,
baseline (FY 2011–2013) and test period (FY 2014)

			Emergency room visits that did no							
		All-cause acute in	patient admissions	hospita	alization					
			Number per 1	,000 covered lives						
	Period	VT	CG	VT	CG					
Overall										
2011	Baseline	58	67	138	140					
2012	Baseline	56	62	141	142					
2013	Baseline	55	61	138	141					
2014	Test	52	58	135	138					
Medicare-N	1edicaid									
2011	Baseline	83	91	253	257					
2012	Baseline	78	85	255	264					
2013	Baseline	77	82	250	257					
2014	Test	73	81	247	253					
Medicare-o	nly									
2011	Baseline	49	57	96	98					
2012	Baseline	47	53	99	99					
2013	Baseline	47	52	98	100					
2014	Test	44	51	96	99					

CG = comparison group composed of Medicare insured individuals from Connecticut, New Hampshire, and Iowa weighted to match the characteristics of Vermont's Medicare insured; VT = Vermont. Note: All numbers are quarterly averages for the four quarters of the fiscal year.

Inpatient admissions declined among Vermont Medicare beneficiaries in the early test period and relative to the comparison group where an increase was observed. As a result, Vermont Medicare beneficiaries had 2.55 fewer admissions per 1,000 beneficiaries relative to the comparison group in the test period (*Table B.1-50*). Likewise, ER visits for Vermont beneficiaries declined from the baseline period and relative to the comparison group where an increase was observed. The relative decrease in the rates of ER visits in Vermont is statistically significant, with Vermont exhibiting 4.36 fewer visits per 1,000 beneficiaries than its comparison group. There were no statistically significant differences in the change in 30-day hospital readmissions.

These significant decreases in utilization are consistent with what we would expect to find if the care coordination and care management efforts in Vermont, via the Blueprint for Health, the Medicare ACO SSP, and the SIM Initiative, were effective. Better care coordination facilitated through the Blueprint's Community Health Teams or adapted by practices through dissemination efforts of the SIM Learning Collaboratives and Regional Collaborations (see **Section 9.2.4**) should lead to better disease management, which in turn should lead to fewer inpatient hospitalizations. Further, both the Medicare ACO SSP and the SIM Medicaid and commercial ACO SSP include quality measures related to hospitalizations, readmissions, and

Table B.1-50. Differences-in-differences estimates for utilization per 1,000 members,Medicare beneficiaries, Vermont and comparison group, first five quarters ofSIM implementation (October 2013 through December 2014)

Change in utilization per 1,000 members	Pre- Period Adjusted Mean, VT	Pre- Period Adjusted Mean, CG	Test- Period Adjusted Mean, VT	Test- Period Adjusted Mean, CG	Regression-adjusted difference-in- differences (90% confidence interval)	Relative difference (%)	p- value
All-cause acute inpatient admissions	44.43	50.26	44.34	53.22	-2.55 (-3.51, -1.59)	-5.70	0.000
Emergency room visits that did not lead to hospitalization	100.09	100.19	97.23	101.79	-4.36 (-5.74, -2.98)	-4.38	0.000
30-day hospital readmissions per 1,000 discharges	132.45	139.51	134.76	149.24	-6.77 (-14.52, 0.98)	-5.12	0.151

CG = comparison group; D-in-D = differences-in-differences; VT = Vermont.

Note: A logistic regression model was used to obtain estimates of the difference in probability of use. The probability of any admission and probability of any emergency room visit estimates are multiplied by 1,000 to obtain an approximate rate per 1,000 beneficiaries and probability of any readmission is multiplied by 1,000 to obtain the rate of readmissions per 1,000 discharges. The regression-adjusted D-in-Ds are calculated as the average treatment effect on the treated, whereas the D-in-D derived from the adjusted means represents the average treatment effect. As a result, the regression-adjusted D-in-D and the D-in-D calculated from the adjusted means will differ. A negative value for the regression-adjusted D-in-D corresponds to a greater decrease or a smaller increase in an outcome during the SIM Initiative test period for the Test state relative to the comparison group. A positive value corresponds to a greater increase or a smaller decrease in an outcome during the SIM Initiative test period for the Test state relative to the D-in-D estimate as a percentage of the Test state's baseline period adjusted mean.

follow-up, indicating a concerted effort to focus on reducing hospitalizations. While results in the Medicare population are likely not solely attributable to Vermont's SIM Initiative, they nonetheless provide encouraging support that expanded care coordination and care management interventions in Medicaid and the commercially insured populations may exhibit similar results over time.

Expenditures. Overall, average total PMPM payments were generally similar between Vermont and its comparison group and largely stable throughout the baseline period. However, total payments appeared to increase slightly during the test period among the comparison group while remaining stable among Vermont Medicare beneficiaries (*Figure B.1-108*). Average inpatient payments were stable throughout the baseline period and appeared to decrease slightly for both groups during the test period, but at a slightly greater rate for Vermont beneficiaries— with Vermont payments lower than its comparison groups in the final two quarters of the period (*Figure B.1-109*). Average other facility payments were very similar for both groups, increasing gradually over the baseline and test periods (*Figure B.1-110*). Average professional payments were seasonal (i.e., dips in Q1) but overall stable, with consistently lower payments among Vermont Medicare beneficiaries in all quarters relative to its comparison group (*Figure B.1-111*). Payment trends were similar for Medicare-Medicaid and Medicare-only beneficiaries in both Vermont and its comparison group (*Table B.1-51*).

Figure B.1-108. Average total PMPM payments, Medicare beneficiaries, Vermont and comparison group



Figure B.1-110. Average other facility PMPM payments, Medicare beneficiaries, Vermont and comparison group

Figure B.1-111. Average professional PMPM payments, Medicare beneficiaries, Vermont and comparison group



Figure B.1-109. Average inpatient facility PMPM payments, Medicare beneficiaries, Vermont and comparison group

		Total I payn	PMPM nents	Inpatien payn	it facility nents	Other payr	facility nents	Profes payn	ssional nents
	Period	VT	CG	VT	CG	VT	CG	VT	CG
Overall									
2011	Baseline	659	679	254	243	272	269	134	166
2012	Baseline	671	680	254	240	277	273	140	167
2013	Baseline	674	687	253	245	281	279	140	163
2014	Test	672	690	241	240	290	286	140	164
Medicare-N	/ledicaid								
2011	Baseline	882	895	356	329	361	379	165	188
2012	Baseline	881	909	352	335	359	385	170	190
2013	Baseline	895	905	357	333	367	386	170	185
2014	Test	895	914	338	330	386	396	171	188
Medicare-o	nly								
2011	Baseline	581	604	217	214	241	231	123	159
2012	Baseline	598	600	220	207	248	234	129	159
2013	Baseline	598	614	217	216	251	243	129	155
2014	Test	597	624	209	213	259	254	130	157

Table B.1-51. Per member per month Medicare payments by type of service, Medicare
beneficiaries by dual Medicare-Medicaid eligibility status, Vermont and
comparison group, baseline (FY 2011–2013) and test period (FY 2014)

CG = comparison group composed of Medicare insured individuals from Connecticut, New Hampshire, and Iowa weighted to match the characteristics of Vermont's Medicare insured; PMPM = per member per month; VT = Vermont.

Note: All numbers are PMPM averages for the fiscal year.

Relative to the baseline period, total PMPM Medicare payments increased for both Vermont and the comparison group, but the increase was statistically significantly smaller in Vermont (\$17.50 lower per beneficiary) (*Table B.1-52*). The slower growth in total payments was driven in part by differences in the changes in inpatient expenditures; inpatient spending declined for Vermont Medicare beneficiaries in the test period while increasing in the comparison group (\$9.28 PMPM relative decrease, p < 0.10). Similarly, from the baseline to the test period, Medicare spending for professional services declined in Vermont while remaining stable in the comparison group, resulting in a net relative decrease of \$4.35 PMPM for Vermont relative to the comparison group. No statistically significant difference was seen in the rate of change in average other facility payments during this test period.

implementation (October 2013 through December 2014)											
Change in PMPM	Pre-Period Adjusted	Pre-Period Adjusted	Test- Period Adjusted	Test- Period Adjusted	Regression-adjusted difference-in-differences (90% confidence	Relative difference					
payments	Mean, VT	Mean, CG	Mean, VT	Mean, CG	interval)	(%)	p-value				
Total	\$605.55	\$728.68	\$616.67	\$757.30	-\$17.50 (-\$29.99, -\$5.00)	-2.89	0.021				
Inpatient facility	\$234.82	\$260.98	\$232.07	\$267.50	-\$9.28 (-\$17.71, -\$0.85)	-3.95	0.070				
Other facility	\$257.34	\$284.06	\$275.10	\$305.69	-\$3.87 (-\$9.09, \$1.35)	-1.50	0.223				
Professional	\$113.39	\$183.64	\$109.50	\$184.10	-\$4.35 (-\$6.19\$2.52)	-3.84	0.000				

Table B.1-52. Differences-in-differences estimates for PMPM payments, Medicare
beneficiaries, Vermont and comparison group, first five quarters of SIM
implementation (October 2013 through December 2014)

CG = comparison group; D-in-D = differences-in-differences; PMPM = per member per month; VT = Vermont. Note: An ordinary least square model was used to obtain estimates for differences in expenditures. 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 increase* or a *smaller decrease* in payments in the Test state relative to the comparison group. The regression-adjusted D-in-D may not match exactly with the D-in-D calculated from the adjusted means because of rounding. The relative difference is the D-in-D estimate as a percentage of the Test state's baseline period adjusted mean.

The relative declines observed in total, inpatient, and professional payments for the Vermont Medicare population are encouraging; however, it is unlikely that the SIM Initiative was solely responsible for these results. The slower increase in total payments aligns with corresponding larger decreases in utilization, as would be expected. The result in professional payments may be associated with the decline in inpatient payments—i.e., fewer hospitalizations leading to decreased payments in hospital professional fees and follow-up physician visits. If true, this could suggest that the Medicare ACO and Blueprint for Health's care coordination efforts could be helping to reduce payments, which would be a positive and encouraging finding for SIM Initiative expansion efforts of those pre-existing initiatives.
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Appendix B.2: Baseline Trends in Health Status and Health Care Measures

In this appendix we provide baseline trends for four measures drawn from the Behavioral Risk Factor Surveillance System (BRFSS) for each Round 1 Test state and its comparison group. We also provide baseline trends that compare the measures across all six of the Test states. The four measures are described in *Table B.2-1* and include three measures of health status and one measure of access to health care. We begin with an overview of the BRFSS and the steps taken to prepare the data for analysis, followed by a cross-state comparison of baseline trends for the Test states and then the comparison of trends for each Test state and its comparison group.

Table B.2-1. Summary of outcome measures from the Behavioral Risk Factor SurveillanceSystem

Measure	Specification			
Fair or poor general health	Percent of adults whose self-reported general health status was fair or poor			
Physical health not good	Percent of adults whose self-reported physical health was not good for one or more of last 30 days			
Mental health not good	Percent of adults whose self-reported mental health was not good for one or more of past 30 days			
No personal doctor	Percent of adults who did not report having one or more personal doctors or health care providers			

B.2.1 Data Source and Data Preparation

The BRFSS is a state-based telephone survey conducted by state health departments and guided by the CDC (CDC, 2013).⁵² The survey is used to collect data among U.S. residents on health insurance coverage, health risk behaviors, health status, and preventative health practices. For the baseline trend analysis, we rely on data from 2006–2013.

Comparing data over the 2006–2013 period in the BRFSS is complicated since the survey underwent two major changes in 2011: the random-digit-dial sample frame was expanded to include cell phones, and the post-stratification weighting process was changed to an iterative proportional fitting process that included additional measures and greater consistency across

⁵² Because the BRFSS is conducted by the states, there are state-specific deviations in questionnaire design, sampling and weighting protocols, sample sizes, survey fielding, response rates, and data processing. Such differences across states and over time will introduce measurement error in cross-state and cross-time comparisons.

states.⁵³ Consequently, the first task for preparing the BRFSS data for analysis involved adjusting for changes in the sampling design and weighting in 2011. To make these adjustments, we applied an iterative proportional fitting process, commonly referred to as "raking," to adjust the existing BRFSS weights using a consistent set of variables over time and across states for all analysis years.⁵⁴ The set of variables included in the adjustment of the BRFSS weights were the following population characteristics and targets from the American Community Survey (ACS) for each state and year: age, gender, race/ethnicity, education level, marital status, household income, household size, and urbanicity.⁵⁵ We rely on the ACS as it provides large nationally representative samples of the civilian noninstitutionalized population in each state. The re-weighting was done using the ipfweight command in Stata (StataCorp, 2013; Bergmann, 2011).

In addition to the adjustment for the weights in the BRFSS, we used propensity score reweighting to better match the characteristics of the adults in the comparison group for each Test state to the characteristics of the adults in that Test state. The propensity score reweighting was done separately for each year of the BRFSS for each Test state-comparison group pairing, based on age, gender, race/ethnicity, education level, marital status, household income, household size, and urbanicity.

B.2.2 Cross-state Trends

Health status. The share of adults 18 and older who reported fair or poor health in 2006 was roughly 11 to 15 percent for all Round 1 Test states except Arkansas (*Figure B.2-1*). In Arkansas, more than 20 percent of the adults reported fair or poor health in 2006. Over time, the shares of adults reporting fair or poor health has remained relatively stable in the Test states, except for Oregon, which saw a shift upward in 2010 that has persisted over time.

⁵³ The CDC continued to refine the weighting process in 2012 and 2013. Further, the CDC changed the final disposition code assignment process in 2012, which resulted in a greater number of partial completes.

⁵⁴ As part of SIM1, the RTI team found that imposing consistent raking of the BRFSS weights across time reduces shifts in key outcome trends after 2010 that correspond to the 2011 changes in the BRFSS design. Further, the revised weights yielded trends in key outcomes in the BRFSS that corresponded more closely to those in the American Community Survey and Current Population Survey, for which survey design shifts in 2011 were not a factor.

⁵⁵ Because of missing data for several of the variables included in the post-stratification process, we first imputed values for missing data using the multiple imputation (mi) command in Stata (StataCorp, 2013).



Figure B.2-1. Share of adults 18 and older reporting fair or poor health, BRFSS, all model test states, 2006–2013

By contrast, the shares of adults reporting one or more days in which physical health (*Figure B.2-2*) or mental health (*Figure B.2-3*) were not good were relatively similar across all the Test states between 2006 and 2009. However, in 2010, the cross-state differences widened. Most notably, in Minnesota, the share of adults reporting one or more days of poor physical health dropped by more than 5 percentage points and the share reporting one or more days of poor mental health dropped by almost 4 percentage points between 2009 and 2010. Minnesota remained well below the other states on these measures in 2013. And, although less dramatic, the share of adults reporting that their mental health was not good increased steadily in Oregon—from roughly 33 percent in 2006 to 39 percent in 2013.



Figure B.2-2. Share of adults 18 and older reporting one or more days in which physical health was not good, BRFSS, all model test states, 2006–2013

Figure B.2-3. Share of adults 18 and older reporting one or more days in which mental health was not good, BRFSS, all model test states, 2006–2013



Access to care. As shown in *Figure B.2-4*, the Test states split into two groups on the access to care measure. In three states—Arkansas, Minnesota, and Oregon—roughly 18 to 24 percent of the adults reported that they did not have a personal doctor or health care provider in 2006, with the level rising over time. In the remaining three states—Maine, Massachusetts, and Vermont—the level in 2006 was much lower, at 11 to 12 percent, and remained relatively stable over time.





B.2.3 Test State and Comparison Group Trends

Arkansas. The trends over time for the measures of health status and health care access were generally similar for Arkansas and its comparison group over the 2006 to 2013 period, as shown in *Figures B.2-5* to *B.2-8*. The greatest differences are for the shares of adults reporting one or more days in which their physical health (*Figure B.2-6*) or their mental health (*Figure B.2-7*) are not good, although even for those outcomes the patterns for Arkansas and its comparison group are moving in similar directions over time.



Figure B.2-5. Share of adults 18 and older reporting fair or poor health, BRFSS, Arkansas and comparison group, 2006–2013

Figure B.2-6. Share of adults 18 and older reporting one or more days in which physical health was not good, BRFSS, Arkansas and comparison group, 2006–2013



Figure B.2-7. Share of adults 18 and older reporting one or more days in which mental health was not good, BRFSS, Arkansas and comparison group, 2006–2013



Figure B.2-8. Share of adults 18 and older who do not have a personal doctor or health care provider, BRFSS, Arkansas and comparison group, 2006–2013



Maine. The trends over time for the measures of health status and health care access were quite similar for Maine and its comparison group, as shown in *Figures B.2-9* to *B.2-12*. The greatest differences are for the shares of adults reporting one or more days in which their mental health was not good (*Figure B.2-11*) and that they did not have a personal doctor or other health care provider (*Figure B.2-12*), although even for those outcomes the patterns for Maine and its comparison group have similar overall trajectories over time.



2009

Baseline Period

2010

2011

– • Comparison group

2012

2013



Figure B.2-10. Share of adults 18 and older reporting one or more days in which physical health was not good, BRFSS, Maine and comparison group, 2006–2013

2006

2007

2008

Maine







Figure B.2-12. Share of adults 18 and older who do not have a personal doctor or health care provider, BRFSS, Maine and comparison group, 2006–2013



Massachusetts. The trends over time for the measures of health status and health care access were quite similar for Massachusetts and its comparison group, as shown in *Figures B.2-13* to *B.2-16*. However, the level of the share of adults reporting that they do not have a personal doctor or other health care provider is consistently lower in Massachusetts than its comparison group over the 2006 to 2013 period, reflecting a higher level of access to care in Massachusetts throughout the period (*Figure B.2-16*).





Figure B.2-14. Share of adults 18 and older reporting one or more days in which physical health was not good, BRFSS, Massachusetts and comparison group, 2006–2013



Figure B.2-15. Share of adults 18 and older reporting one or more days in which mental health was not good, BRFSS, Massachusetts and comparison group, 2006–2013



Figure B.2-16. Share of adults 18 and older who do not have a personal doctor or health care provider, BRFSS, Massachusetts and comparison group, 2006–2013



Minnesota. While Minnesota and its comparison states are following similar trends in the health status measures early in the 2006 to 2009 period (*Figures B.2-17* to *B.2-20*), there is a shift in the trend line for Minnesota in 2009/2010. The shift is most notable in the shares of adults reporting one or more days in which their physical health is not good (*Figure B.2-18*), which drops sharply in 2010. By contrast, the trend over time in the share of adults who do not have a personal doctor or health care provider was quite similar for Minnesota and its comparison group, although the level in Minnesota was consistently higher than that in the comparison group (*Figure B.2-20*).





Figure B.2-18. Share of adults 18 and older reporting one or more days in which physical health was not good, BRFSS, Minnesota and comparison group, 2006–2013







Figure B.2-20. Share of adults 18 and older who do not have a personal doctor or health care provider, BRFSS, Minnesota and comparison group, 2006–2013



Oregon. The levels and trends over time for the measures of health status and health care access were generally similar for Oregon and its comparison group (*Figures B.2-21* to *B.2-24*). However, it does appear that the share of adults reporting one or more days in which their mental health was not good has been trending up over time in Oregon, while the level in the comparison states has remained relatively constant (*Figure B.2-23*). In addition, the share of adults who do not have a personal doctor or health care provider tends to be somewhat higher in Oregon than its comparison state over the baseline period.



Figure B.2-21. Share of adults 18 and older reporting fair or poor health, BRFSS, Oregon and comparison group, 2006–2013

Figure B.2-22. Share of adults 18 and older reporting one or more days in which physical health was not good, BRFSS, Oregon and comparison group, 2006–2013







Figure B.2-24. Share of adults 18 and older who do not have a personal doctor or health care provider, BRFSS, Oregon and comparison group, 2006–2013



Vermont. The trends over time for the measures of health status and health care access were generally similar for Vermont and its comparison group (*Figures B.2-25* to *B.2-28*). However, the levels do seem to vary, with adults in Vermont more likely to report one or more days in which their physical health (*Figure B.2-26*) and mental health (*Figure B.2-27*) were not good than adults in its comparison group. Vermont adults also appear less likely to report that they do not have a personal doctor or health care provider (*Figure B.2-28*).





Figure B.2-26. Share of adults 18 and older reporting one or more days in which physical health was not good, BRFSS, Vermont and comparison group, 2006–2013





Figure B.2-27. Share of adults 18 and older reporting one or more days in which mental health was not good, BRFSS, Vermont and comparison group, 2006–2013

Figure B.2-28. Share of adults 18 and older who do not have a personal doctor or health care provider, BRFSS, Vermont and comparison group, 2006–2013



B.2.4 References

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Appendix B.3: Consumer Experience of Care Survey

Current health care reform models focus on a range of approaches to control costs and improve quality of care—generally through shifts toward a larger and more specifically defined role for primary care, improved care coordination, and value-based payment systems. The most prominent of these transformation models are patient-centered medical homes (PCMHs) and accountable care organizations (ACOs). Both models place some level of financial incentive on participating health care providers to offer care that focuses on improved health care outcomes. The underlying assumption is that providers paid (at least in part) based on patient outcomes will provide more patient-centered and evidence-based care, and less unnecessary and duplicative care—thereby achieving better quality care and improved health outcomes at lower cost.

To support expansion and acceleration of the diffusion of these new care models, the Centers for Medicare & Medicaid Services (CMS) funded the State Innovation Models (SIM) Initiative. Five of the six Round 1 Model Test states—Arkansas, Minnesota, Maine, Massachusetts, and Vermont—are using SIM Initiative funds to transform health care delivery and payment systems in their Medicaid programs to promote increased integration and coordination of care. Oregon, the sixth Test state, which had implemented an integrated care model for its Medicaid beneficiaries prior to the SIM Initiative, is spreading the model to state employees and educators under its SIM Initiative. Employees covered under Public Employees Benefits Board (PEBB) and Oregon Educators Benefits Board (OEBB) will have access to health plans that include elements of the coordinated care model (CCM)—such as additional payments for primary care providers recognized as Patient-Centered Primary Care Homes (PCPCHs) and incentives for members to use those providers.

Although patients are typically not aware of financial incentives offered to providers under the reform models, model success typically requires the patients' understanding and compliance. Therefore, to determine whether patients are observing and participating in expected care delivery strategies, as part of the federal evaluation of the SIM Initiative we conducted a consumer experience of care survey—among Medicaid beneficiaries in all the Round 1 Model Test states except Oregon, and among state employees in Oregon. We conducted the survey in the early implementation period of the SIM Initiative—between November 2014 and August 2015—to serve as a baseline survey for the evaluation.

Instrument development. For this study, we adapted the Patient Perceptions of Integrated Care (PPIC) Survey (PPIC, 2105) developed by the Harvard School of Public Health. The PPIC instrument draws from questions used in the Consumer Assessment of Healthcare Providers and Systems (CAHPS) family of consumer survey instruments (AHRQ, 2016, March). We included in the SIM instrument a limited number of supplemental items from the CAHPS instrument for Clinicians and Groups (CG-CAHPS)—concerning goals for care, opportunities for shared decision making, having access to care after usual business hours, ease in getting appointments with specialists, getting help from a provider in coordinating care across multiple providers, and receiving fair treatment regardless of race/ethnicity or insurance source. Since a large proportion of the Medicaid population is under-aged children, we also created a child version to be completed by parents and guardians of respondents under age 18. We translated both versions into Spanish available to Spanish-speaking respondents on request.

To help promote consistent and reliable interpretation of survey questions across respondents, the adult instrument was cognitively tested with nine Medicaid recipients; the child instrument was cognitively tested with eight parents or guardians of Medicaid recipients. Cognitive testing resulted in minor changes to instructions or item wording for clarity—all pertaining to new questions not previously validated through testing of the PPIC or CAHPS. Cognitive testing showed the average completion time of the surveys to be 10 minutes.

The core survey instrument, which can be found after this introductory text (starting on page B.3-7), was used in Massachusetts, Maine, and Vermont. The Arkansas and Minnesota surveys added several questions intended to capture specific elements of care that initiatives in those states aimed to address. The Oregon survey of state employees added questions about the type of health plan respondents were enrolled in and deleted a question about whether respondent was treated fairly because of insurance type; it also asked for respondents' utilization of care in the previous 12 months before the survey (rather than the previous 6 months, as used for the five state surveys of Medicaid beneficiaries). *Table B.3-1* shows the customizations made for Arkansas, Minnesota, and Oregon; no customizations were made for the other three Test states.

Sampling frame. Medicaid agencies in each of the five states that surveyed Medicaid respondents developed a file of contact information for a randomly selected sample of Medicaid beneficiaries, stratified by the four eligibility categories—child (younger than 19 years of age), aged adult (65 years of age and older), nonaged disabled adult, and nonaged nondisabled adult. Excluded were any beneficiaries who had not been continuously enrolled in Medicaid for the past 6 months, were in restricted benefit categories (e.g., emergency benefits for undocumented immigrants, family planning enrollees), and/or were living in medical institutions. Because the Primary Care Payment Reform model being tested under the SIM Initiative in Massachusetts does not include aged Medicaid beneficiaries, we did not receive a list of aged enrollees in that state.

Three states also supplied flags indicating a potential sample member's participation in selected innovation models at baseline. We oversampled the flagged individuals to enable analysis of responses by model-specific participation. In Maine and Minnesota, we oversampled Medicaid beneficiaries enrolled in ACOs; in Vermont, we oversampled Medicaid beneficiaries enrolled in the Blueprint for Health, the state's PCMH program.

State	Changes to consumer survey instrument
Arkansas	 Added question: In the past 6 months, have you [has your child] been to this provider or someone in his or her office for a bad cold, sore throat, or sinus infection? Added two additional questions for those responding "yes" to the above question:
	 Did this provider or someone in his or her office do any tests like swabbing your [your child's] throat with a cotton swab during this visit?
	Did this provider/doctor prescribe any antibiotics for your [your child's] cold, sore throat, or sinus infection during this visit?"
Minnesota	 Added question: In the last 6 months, have you [has your child] received any services or help with needs related to your [your child's] health from the community you live in? For example, help from a community health worker, or with housing, transportation, or something else that helps you take care of yourself [your child]?
Oregon	Changed look-back period from 6 months to 12 months
	 Added question: Did you recently change where you usually go to see a health care provider?
	 Added question for those responding "yes" to the above question: Why did you change where you usually go to see a health care provider?
	 Response options to the above question were: Provider no longer practicing; I changed health plans, and provider was not in my new plan's network; provider no longer accepts my health plan; my health plan offers lower cost sharing with the new provider; I moved to a new area; I found a better option; other reason)
	 Deleted question: In the last 6 months, how often have you been treated unfairly at the place you usually go for care because of the type of health insurance you have?

Table B.3-1. Customizations in the consumer survey instrument for Arkansas, Minnesota, andOregon

In Oregon, the survey population included state employees, public educators, and family members who obtained medical benefits through either the PEBB or OEBB. The state provided a stratified random sample of 24,000 employees from each group as of September 2014.

Data collection. Data collection for the Medicaid beneficiary surveys spanned different dates for the different states, with Arkansas and Maine running from November 2014–May 2015, Vermont running from January–June 2015 and Massachusetts and Minnesota running from February–August 2015. Data collection for Oregon state employees ran from January–March 2015.

For Medicaid beneficiaries, the data were collected by mail with telephone follow-up. We used an adaptive sampling design in which the sample was released in waves, with the size and mode of the third and final wave depending on the response received from the previously released sample. Each state could receive up to four mailings before we started the computerassisted telephone interview (CATI) follow-up. Mailing 1 was a lead letter informing recipients they had been selected to participate in the survey and inviting them to take the survey via the online survey platform. Mailing 2 was a recruitment package that included an invitation letter, letter of support, paper survey instrument, and return envelope. Mailing 3 was a reminder postcard. Mailing 4 was a second recruitment package that also included a frequently asked questions document.

In Arkansas, Massachusetts, and Minnesota, we dropped the CATI follow-up in the final wave because of the extent of missing or invalid telephone numbers or poor response. Consequently, nearly all responses were obtained via paper and pencil interviewing (PAPI) in Arkansas and 80 percent in Massachusetts and Minnesota. In Maine and Vermont, about 60 percent of responses were through PAPI and obtained through mail, 35 percent through CATI, and 5 percent through the web. In all five states, adults and parents/caretakers were more likely to respond via the web than aged and disabled adults.

Because of the availability of email addresses for most of the target population for the Oregon state employee survey, we used a web-based survey mode. Survey sample members with email addresses received via email a lead letter from their state agency lead and an initial invitation to complete the web questionnaire; non-respondents received via email up to four follow-up reminders (three from RTI and one from the state agency lead). Ninety-five percent of the study sample had email addresses on file with the state; for the few hundred who did not, we sent a hard copy letter, with a state agency lead letter of support, in the mail. Because of the very low response from the mail group and the significant online response, we decided not to try PAPI follow-up with the mail group.

No monetary or other incentives were offered to respondents in any state.

Survey response. Each survey received was reviewed and classified as either (1) ineligible, (2) complete, (3) partial, or (4) insufficient. Any respondent who did not answer the question about the kind of place s/he goes to most often to see a health care provider or indicated s/he had not seen a medical provider in the past 6 months (12 months in Oregon) was categorized as *ineligible*. This was done to limit the sample to those who had relatively recent episodes of care with their usual provider. We categorized a survey response as *complete*, if valid responses were provided for a minimum section-specific number of questions in all eight sections of the survey; and *partial*, if at least one but less than eight of the section-specific minimum response counts was met. If the survey did not meet either criterion, it was categorized as *insufficient* and discarded.

The final analysis sample included all respondents who completed the survey in full or met the partial completion threshold. We calculated the overall final response rates based on the American Association for Public Opinion Research definition #2. Under this definition, the numerator is the number of respondents who completed the survey in full or met a threshold considered adequate for partial completion, and the denominator is the sample size minus the

number of ineligible cases (i.e., frame ineligible or screened out). *Table B.3-2* provides sample sizes and response rates among Medicaid beneficiaries, by eligibility, for each of the five states that surveyed Medicaid samples.

	Arkansas	Maine	Massachusetts	Minnesota	Vermont
Sample size	15,097	13,289	16,199	13,825	13,075
Ineligible ¹ /screened out	8.4%	6.9%	3.9%	5.3%	5.5%
Insufficient responses	0.0%	0.3%	0.1%	0.1%	0.2%
Completes	17.1%	19.0%	10.9%	18.4%	21.0%
Partially complete	0.8%	0.7%	0.4%	0.6%	0.8%
All eligibility groups					
Response rate ²	19.5%	21.1%	11.7%	20.1%	23.1%
Analysis sample size	2,689	2,617	1,822	2,631	2,854
Adult					
Response rate ²	13.7%	12.5%	9.5%	14.6%	18.0%
Analysis sample size	683	558	632	654	701
Child					
Response rate ²	16.5%	17.1%	11.9%	14.4%	21.4%
Analysis sample size	693	677	586	617	764
Aged					
Response rate ²	34.4%	44.5%	—	34.0%	29.2%
Analysis sample size	709	694	—	669	690
Disabled					
Response rate ²	23.5%	28.7%	15.2%	29.3%	27.6%
Analysis sample size	604	688	604	691	699

Table B.3-2. Medicaid consumer survey sample sizes and response rates by state

Note: Oregon survey respondents were state employees, not Medicaid beneficiaries, so Oregon results are not shown in this table. The analysis sample totaled 11,930 complete and partial surveys—6,305 PEBB subscribers and 5,625 OEBB subscribers. The survey response rate was 27.0 percent overall, 28.7 percent for PEBB, and 25.4 percent for OEBB.

¹ Ineligibles failed to meet frame eligibility criteria (e.g., subject was institutionalized, moved out of interviewing area, did not identify a usual source of care, or did not use health care in the past 6 months).

² To compute the response rate we used the American Association for Public Opinion Research definition #2, in which the numerator is the number of respondents who completed the survey in full or met a threshold considered adequate for partial completion and the denominator is the sample size minus the number of ineligible cases (i.e., frame ineligible or screened out).

For Medicaid beneficiaries, the response rates varied from 11.7 percent in Massachusetts to 23.1 percent in Vermont, and varied substantially by eligibility category. In all states in which Medicaid beneficiaries were surveyed, adults had the lowest response rates, ranging from 9.5 percent in Massachusetts to 18.0 percent in Vermont; the aged had the highest response,

ranging from 29.2 percent in Vermont to 44.5 percent in Maine. In Oregon all respondents were 18 years or older. The analysis sample totaled 11,930 complete and partial surveys—6,305 PEBB subscribers and 5,625 OEBB subscribers. The survey response rate was 27.0 percent overall, 28.7 percent for PEBB, and 25.4 percent for OEBB.

Statistical methods. We calculated weights to adjust for nonresponse in the analyses. The weights for each respondent reflect the inverse selection probabilities and differential response rates of sample members. Although weighted estimation typically reduces bias in the sample estimates, inequalities in the sampling weights inflate the variances of sample estimates above what would be obtained from a simple random sample of the same size.

Summary results are available in *Table B.3-3* (Medicaid consumer responses) and *Table B.3-4* (Oregon state employee consumer responses). *Table B.3-3* presents the total response, which accounts for the weighted response rate for each eligibility category. Although the percentage of respondents in each Medicaid eligibility category was approximately equal in all five states using a Medicaid sample, the *weighted* characteristics of the Medicaid population varied considerably by state. Children accounted for just under half the weighted sample in all Medicaid-survey states except Arkansas, where they accounted for two-thirds of the weighted sample. Nonaged, nondisabled adults constituted from 13 percent of the weighted sample in Arkansas to 50 percent in Massachusetts. Disabled adults constituted from 10 percent in Massachusetts, Minnesota, and Vermont to 22 percent in Maine. In contrast to statewide responses that heavily weight responses of children in the five states surveying Medicaid beneficiaries, all respondents to the Oregon were age 18 or older. Detailed responses by eligibility category are available upon request for the five states in which Medicaid consumers were surveyed.

We tested for consistency of responses between respondents who could be attributed to providers participating in SIM Initiative-related delivery system models—versus those not attributable to those providers—in Maine, Minnesota, and Vermont, using a Wald chi-square test. These responses and results are available upon request. Because of the large number of comparisons in the analysis, we need to consider the possibility of false positive significance findings due to multiple comparisons (Ioannidis, 2005. To protect against this, we use a conservative assessment of statistically significant differences in response patterns that considers a "significant difference" if p < 0.01, where the p-value was based on the F-statistic computed from the Wald chi-square test. Comparisons between responses from SIM Initiative–related delivery system models participants and non-participants do not control for differences in any underlying characteristics between the two groups that could influence their experiences of care.

The complete text of the survey follows, after which we present the summary responses by survey population.

References

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- Ioannidis, J.P.A. (2005). Why most published research findings are false. *PLoS Medicine*, *2*(8), e124. doi:10.1371/journal.pmed.0020124. PMC 1182327 PMID 1606722

Patient Perception of Integrated Care (PPIC) (2015). Accessed June 2, 2016 from http://www.integratedpatientcare.org/



2014 Experience of Care Survey

Your Privacy is Protected. All information that would let someone identify you or your family will be kept private. RTI International will not share your personal information with anyone. Your responses to this survey are also completely **confidential**. You may notice a number on this survey. This number is used **only** to let us know if you returned your survey so we don't have to send you reminders.

Your Participation is Voluntary. You may choose to answer this survey or not. If you choose not to, this will not affect the health care you get. If you want to know more about this study, please call the RTI International SIM Evaluation Team at 866-354-4992.

This questionnaire is estimated to take you 10 minutes to complete.

Survey Instructions

Answer each question by marking the box to the left of your answer. You are sometimes told to skip over some questions in this survey. When this happens you will see an arrow with a note that tells you what question to answer next, like this:

✓ Yes → IF "YES," GO TO QUESTION 2

🗆 No

Your Provider

 Some questions in this survey will ask you about the care you receive in the place you go most often to see a health care provider.

What kind of place do you go to *most often* to see a health care provider when you are sick or for advice about your health? Please select **ONLY** one.

- Doctor's office or private clinic
- □ Community health center or public clinic
- □ A hospital emergency department
- □ Urgent care / walk-in (not at a hospital or health center)
- □ Pharmacy-based clinic
- □ Other

- 2. Some questions in this survey will ask you about the usual provider you see at the place named in Question 1. When you visit the place named in Question 1, is there a specific doctor, nurse, or other clinical staff member that you see when you are sick or for advice about your health?
 - ☐ YES → I see a specific doctor, nurse, or other clinical staff member. Please think of this person as you answer the survey.
 - □ NO → I see whoever is available. Please think of providers you generally see as you answer the survey.





- **3.** How long have you been going to the place named in Question 1?
 - □ Less than 6 months
 - \Box At least 6 months but less than 1 year
 - \Box At least 1 year but less than 3 years
 - \Box At least 3 years but less than 5 years
 - \Box 5 years or more
- **4.** In the last 6 months, how many times have you called or gone to the place named in Question 1 because you were sick or needed advice about your health?
 - □ 0 times → IF "0," Thank you. Please return the completed survey in the postage-paid envelope
 - \Box 1 time
 - \square 2 times or more

Care from this Provider and this Provider's Office

5. These questions ask about the care you received from the provider (doctor, nurse, or other clinical staff) you thought of in Question 2, called "this provider."

Some offices remind patients about appointments. Before your most recent visit with this provider, did you get a reminder from this provider's office about the appointment?

□ Yes

- D No
- **6.** In the last 6 months, how often did this provider seem to know the important information about your medical history?
 - □ Never
 - □ Sometimes
 - □ Usually
 - □ Always



- 7. In the last 6 months, how often did this provider ask about things in your work or life at home that affect your health?
 - □ Never
 - □ Sometimes
 - □ Usually
 - □ Always
- **8.** In the last 6 months, how often did this provider explain things in a way that was easy to understand?
 - □ Never
 - □ Sometimes
 - □ Usually
 - □ Always
- **9.** In the last 6 months, how often did this provider listen carefully to you?
 - □ Never
 - □ Sometimes
 - □ Usually
 - □ Always
- **10.** In the last 6 months, how often did this provider show respect for what you had to say?
 - □ Never
 - □ Sometimes
 - □ Usually
 - □ Always
- **11.** Some health care providers have Web sites that let patients make appointments, send email to providers, or view lab test results. This might be called a "patient portal."

In the last 6 months, did the provider you thought of in Question 2 offer you the opportunity to send and receive information about your health care through a Web site?

- □ Yes
- □ No



Care from Other Staff at this Provider's Office

12. People often get instructions about their health from more than one person in the same office, such as other doctors, nurses, nutritionists, and social workers.

In the last 6 months, did you get any instructions about your health from staff other than the provider you thought of in Ouestion 2?

□ Yes

 \square No \rightarrow IF "NO," GO TO QUESTION 14

- **13.** In the last 6 months, how often did these other staff seem to know the important information about your medical history?
 - □ Never
 - □ Sometimes
 - □ Usually
 - □ Always

Care from Someone in this Provider's Office

14. These questions ask about the care you received from the provider you thought of in Question 2 or someone in his or her office.

In the last 6 months, did this provider or someone in his or her office talk with you about specific goals for your health?

□ Yes □ No

15. In the last 6 months, did this provider or someone in his or her office order a blood test, x-ray, mammogram, or other diagnostic test for you?

□ Yes □ No → IF "NO," GO TO QUESTION 19

- **16.** In the last 6 months, when this provider or someone in his or her office ordered a blood test, x-ray, mammogram, or other diagnostic test for you, how often did this provider or someone from his or her office follow up to give you those results?
 - □ Never
 - □ Sometimes
 - □ Usually
 - Always
- **17.** In the last 6 months, how often did you have to request your test results before you got them?
 - □ Never
 - □ Sometimes
 - □ Usually
 - □ Always
- **18.** In the last 6 months, how often were your test results easy to understand?
 - □ Never
 - □ Sometimes
 - □ Usually
 - □ Always
- **19.** In the last 6 months, did you and this provider or someone in his or her office talk about having surgery or any type of procedure?
 - □ Yes
 - □ No → IF "NO," GO TO QUESTION 23
- **20.** Did you and this provider or someone in his or her office talk about the reasons you might want to have the surgery or procedure?
 - □ Yes
 - 🗆 No



21. Did you and this provider or someone in his or her office talk about the reasons you might not want to have the surgery or procedure?

□ Yes

- D No
- **22.** When you and this provider or someone in his or her office talked about having surgery or a procedure, did this provider ask what you thought was best for you?
 - □ Yes
 - D No
- 23. Some people receive care in their home, or services from organizations in the local community where they live, to help them manage health conditions. These services may include things like help with housing or food.

In the last 6 months, did you need services at home or in the community to help you take care of your health?

- □ Yes
- □ No \rightarrow IF "NO," GO TO QUESTION 25
- **24.** In the last 6 months, how often did this provider or someone in his or her office help you get these services at home or in the community to take care of your health?
 - □ Never
 - □ Sometimes
 - □ Usually
 - □ Always
- **25.** In the last 6 months, if you had any trouble taking care of your health at home, would you know who to ask for help?
 - □ Yes, definitely
 - □ Yes, somewhat
 - D No

- **26.** In the last 6 months, did you take any prescription medicine?
 - □ Yes
 - □ No → IF "NO," GO TO QUESTION 28
- **27.** You may get an explanation of a medication when a provider prescribes it for you.

In the last 6 months, how often did this provider or someone in his or her office talk with you about **how** you were supposed to take your medicine?

- □ Never
- □ Sometimes
- □ Usually
- □ Always
- **28.** In the last 6 months, how often did this provider or someone in his or her office contact you between visits to see how you were doing?
 - □ Never
 - □ Sometimes
 - □ Usually
 - □ Always
- **29.** Sometimes people need care when their provider's office is closed, like during evenings, weekends, or holidays.

If you needed care during these times, were you able to get it from *this* provider's office?

- □ I didn't need care during these times
- □ Yes, I needed care and *was* able to get it
- □ No, I needed care and *was not* able to get it



Care from Specialists Outside this Provider's Office

30. Many people have a need for mental or behavioral health services from time to time.

In the last 6 months, did you make an appointment with a mental health or behavioral health provider?

□ Yes

- □ No → IF "NO," GO TO QUESTION 33
- **31.** In the last 6 months, how often was it easy to get appointments with a mental health or behavioral health provider?
 - □ Never
 - □ Sometimes
 - □ Usually
 - □ Always
- **32.** In general, how often does the provider you thought of in Question 2 or someone in his or her office seem informed that you received care from a mental health or behavioral health provider?
 - □ Never
 - □ Sometimes
 - □ Usually
 - □ Always
- **33.** Now think of specialists **other than** mental or behavioral health providers. These specialists are doctors like surgeons, heart doctors, allergy doctors, skin doctors, and other doctors who specialize in one area of health care.

In the last 6 months, did you receive care from any of these kinds of specialists **outside** the office of the provider you thought of in Question 2?

□ Yes

```
□ No → IF "NO," GO TO QUESTION 36
```



- □ Never
- □ Sometimes
- □ Usually
- □ Always
- **35.** In general, how often does the provider you thought of in Question 2 or someone in his or her office seem informed and up-to-date about the care you get from specialists?
 - □ Never
 - □ Sometimes
 - □ Usually
 - □ Always
- **36.** In the last 6 months, did you get care from more than one kind of health care provider or use more than one kind of health care service, other than from the provider you thought of in Question 2?
 - □ Yes

□ No → IF "NO," GO TO QUESTION 38

- **37.** In the last 6 months, did the provider you thought of in Question 2 or someone in his or her office help coordinate your care among these different providers or services?
 - □ Yes
 - D No



Your most Recent Hospital Stay

38. In the last 6 months, were you admitted to a hospital overnight or longer?

□ Yes

- $\Box \text{ No} \rightarrow \text{IF "NO," GO TO QUESTION 43}$
- **39.** After your most recent hospital stay, did the provider you thought of in Question 2 or someone in his or her office contact you to see how you were doing?
 - □ Yes
 - □ No
- **40.** After your most recent hospital stay, were you prescribed any medicines?
 - □ Yes

□ No \rightarrow IF "NO," GO TO QUESTION 42

- **41.** After your most recent hospital stay, did the provider you thought of in Question 2 or someone in his or her office contact you to check if you were able to follow instructions about any medicines you were prescribed?
 - □ Yes
 - □ No
- **42.** After your most recent hospital stay, did the provider you thought of in Question 2 seem to know the important information about this hospital stay?
 - \Box Yes, definitely
 - □ Yes, somewhat
 - □ No

Your Overall Experience

- **43.** Using any number from 0 to 10, where 0 is the worst health care possible and 10 is the best health care possible, what number would you use to rate all your health care from **all** providers in the last 6 months?
 - \Box 0 Worst health care possible
 - **D** 1
 - **□** 2
 - **D** 3
 - **口** 4
 - **D** 5
 - **6**
 - **D** 7

 - **□** 9
 - \square 10 Best health care possible
- **44.** People sometimes need to manage their medical care by making appointments with multiple providers, following their instructions and taking medicines as prescribed.

Using any number from 0 to 10, where 0 is hard and 10 is easy, what number would you use to rate how easy it was for you to manage your medical care in the last 6 months?

- □ 0 Hard to manage
- **□** 1
- **□** 2
- **D** 3
- Δ 4
- **□** 5

□ 6

- □ 7 □ 8
- \square 10 Easy to manage





- **45.** In the last 6 months, was there one provider who knew about all your medical care needs?
 - □ Yes, definitely
 - □ Yes, somewhat
 - 🗆 No
- **46.** In the last 6 months, how often have you been treated unfairly at the place named in Question 1 because of your race or ethnicity?
 - □ Never
 - □ Sometimes
 - □ Usually
 - □ Always
- **47.** In the last 6 months, how often have you been treated unfairly at the place named in Question 1 because of the type of health insurance you have?
 - □ Never
 - □ Sometimes
 - □ Usually
 - □ Always

About You

48. In general, how would you rate your overall health?

- □ Excellent
- □ Very good
- □ Good
- 🛛 Fair
- □ Poor

- **49.** In the last 6 months, how much of a problem were each of these for you?
 - a. Lack of information about your medical conditions.
 - □ Not a problem at all
 - □ A small problem
 - □ A moderate problem
 - □ A big problem
 - □ A very big problem
 - b. Lack of information about treatment options.
 - □ Not a problem at all
 - □ A small problem
 - □ A moderate problem
 - □ A big problem
 - □ A very big problem
- **50.** What is your age?
 - □ 18 to 24
 - □ 25 to 34
 - □ 35 to 44
 - □ 45 to 54
 - □ 55 to 64
 - □ 65 to 74
 - \Box 75 or older
- 51. Are you male or female?
 - □ Male
 - □ Female
- **52.** What is the highest grade or level of school that you have completed?
 - □ 8th grade or less
 - □ Some high school, but did not graduate
 - □ High school graduate or GED
 - □ Some college or 2-year degree
 - □ 4-year college graduate
 - □ More than 4-year college degree





- **53.** Are you of Hispanic or Latino origin or descent?
 - Yes, Hispanic or Latino / Latina
 - No, not Hispanic or Latino / Latina
- 54. What is your race? Please mark one or more.
 - □ White
 - □ Black or African-American
 - Asian
 - Native Hawaiian or Other Pacific Islander
 - American Indian or Alaska Native
 - \Box Other
- **55.** Are you married or living with a significant other?
 - □ Yes
 - □ No
- **56.** Do you use any of the following devices to access the internet? Check all that apply.
 - □ Desktop or laptop computer
 - Smartphone (e.g., iPhone, Android, Blackberry)
 - □ Tablet (e.g., iPad, Samsung Galaxy Tab)
 - \Box Other
 - Don't know
 - □ I do not access the Internet

- 57. Did someone help you complete this survey?
 - □ Yes
 - □ No → Thank you. Please return the completed survey in the postage-paid envelope
- **58.** How did that person help you? Please mark one or more.
 - \Box Read the questions to me
 - □ Wrote down the answers I gave
 - \Box Answered the questions for me
 - □ Translated the questions into my language
 - □ Helped in some other way

Thank you

Please return the completed survey in the postage-paid envelope.

Please do not include any other correspondence.







2014 Experience of Care Survey

Your Privacy is Protected. All information that would let someone identify you or your family will be kept private. RTI International will not share your personal information with anyone. Your responses to this survey are also completely confidential. You may notice a number on this survey. This number is used only to let us know if you returned your survey so we don't have to send you reminders.

Your Participation is Voluntary. You may choose to answer this survey or not. If you choose not to, this will not affect the health care your child gets. If you want to know more about this study, please call the RTI International SIM Evaluation Team at 866-354-4992.

This questionnaire is estimated to take you 10 minutes to complete.

Survey Instructions

Answer each question by marking the box to the left of your answer. You are sometimes told to skip over some questions in this survey. When this happens you will see an arrow with a note that tells you what question to answer next, like this:

✓ Yes → IF "YES," GO TO QUESTION 2

🗆 No

Your Child's Provider

1. Some questions in this survey will ask you about the care your child receives in the place you take your child most often to see a health care provider.

What kind of place does your child go to *most often* to see a health care provider when he or she is sick or needs preventive care like vaccinations, or for advice about health? Please select **ONLY** one.

- □ Doctor's office or private clinic
- □ Community health center or public clinic
- □ A hospital emergency department
- Urgent care / walk-in (not at a hospital or health center)
- □ Pharmacy-based clinic
- □ Other

- 2. Some questions in this survey will ask you about the usual provider your child sees at the place named in Question 1. When your child visits the place named in Question 1, is there a specific doctor, nurse, or other clinical staff member that your child sees when he or she is sick, or needs preventive care, or for advice about health?
 - YES → My child sees a specific doctor, nurse, or other clinical staff member.
 Please think of this person as you answer the survey.
 - □ NO → My child sees whoever is available. Please think of providers you generally see as you answer the survey.





- **3.** How long has your child been going to the place named in Question 1?
 - □ Less than 6 months
 - \Box At least 6 months but less than 1 year
 - □ At least 1 year but less than 3 years
 - □ At least 3 years but less than 5 years
 - \Box 5 years or more
- 4. In the last 6 months, how many times have you called or gone to the place named in Question 1 because your child was sick or you needed advice about your child's health?
 - □ 0 times → IF "0," Thank you. Please return the completed survey in the postage-paid envelope
 - \square 1 time
 - \square 2 times or more

Care from this Provider and this Provider's Office

 These questions ask about the care your child received from the provider (doctor, nurse, or other clinical staff) you thought of in Question 2, called "this provider."

Some offices remind patients about appointments. Before your child's most recent visit with this provider, did you get a reminder from this provider's office about the appointment?

□ Yes □ No

- 6. In the last 6 months, how often did this provider seem to know the important information about your child's medical history?
 - □ Never
 - □ Sometimes
 - □ Usually
 - □ Always



- 7. In the last 6 months, how often did this provider ask about things in your child's life at home that affect his or her health?
 - □ Never
 - □ Sometimes
 - □ Usually
 - □ Always
- **8.** In the last 6 months, how often did this provider explain things in a way that was easy to understand?
 - □ Never
 - \square Sometimes
 - □ Usually
 - □ Always
- **9.** In the last 6 months, how often did this provider listen carefully to you?
 - □ Never
 - □ Sometimes
 - □ Usually
 - □ Always
- **10.** In the last 6 months, how often did this provider show respect for what you had to say?
 - \square Never
 - □ Sometimes
 - Usually
 - □ Always
- 11. Some health care providers have Web sites that let patients make appointments, send email to providers, or view lab test results. This might be called a "patient portal."

In the last 6 months, did the provider you thought of in Question 2 offer you the opportunity to send and receive information about your child's health care through a Web site?

- □ Yes
- 🗆 No


Care from Other Staff at this Provider's Office

12. People often get instructions about their child's health from more than one person in the same office, such as other doctors, nurses, nutritionists, and social workers.

In the last 6 months, did you get any instructions about your child's health from staff other than the provider you thought of in Question 2?

□ Yes

□ No → IF "NO," GO TO QUESTION 14

- **13.** In the last 6 months, how often did these other staff seem to know the important information about your child's medical history?
 - \Box Never
 - □ Sometimes
 - □ Usually
 - □ Always

Care from Someone in this Provider's Office

14. These questions ask about the care your child received from the provider you thought of in Question 2 or someone in his or her office.

In the last 6 months, did this provider or someone in his or her office talk with you about specific goals for your child's health?

- □ Yes □ No
- **15.** In the last 6 months, did this provider or someone in his or her office order a blood test, x-ray, or other diagnostic test for your child?

□ Yes
 □ No → IF "NO," GO TO QUESTION 19

- **16.** In the last 6 months, when this provider or someone in his or her office ordered a blood test, x-ray, or other diagnostic test for your child, how often did this provider or someone from his or her office follow up to give you those results?
 - □ Never
 - □ Sometimes
 - □ Usually
 - □ Always
- 17. In the last 6 months, how often did you have to request your child's test results before you got them?
 - □ Never
 - □ Sometimes
 - Usually
 - □ Always
- **18.** In the last 6 months, how often were your child's test results easy to understand?
 - □ Never
 - □ Sometimes
 - □ Usually
 - □ Always
- **19.** In the last 6 months, did you and this provider or someone in his or her office talk about your child having surgery or any type of procedure?
 - □ Yes
 - □ No \rightarrow IF "NO," GO TO QUESTION 23
- **20.** Did you and this provider or someone in his or her office talk about the reasons you might want your child to have the surgery or procedure?
 - □ Yes
 - □ No



21. Did you and this provider or someone in his or her office talk about the reasons you might not want your child to have the surgery or procedure?

□ Yes □ No

22. When you and this provider or someone in his or her office talked about your child having surgery or a procedure, did this provider ask what you thought was best for your child?

□ Yes □ No

23. Some people receive care in their home, or services from organizations in the local community where they live, to help them manage health conditions. These services may include things like help with housing or food.

In the last 6 months, did your child need services at home or in the community to help you take care of his or her health?

□ Yes □ No → IF "NO," GO TO QUESTION 25

24. In the last 6 months, how often did this provider or someone in his or her office help you get these services at home or in the community to take care of your child's health?

□ Never

- \square Sometimes
- □ Usually
- □ Always
- **25.** In the last 6 months, if you had any trouble taking care of your child's health at home, would you know who to ask for help?
 - □ Yes, definitely
 - □ Yes, somewhat
 - 🛛 No

26. In the last 6 months, did your child take any prescription medicine?

□ Yes

- □ No → IF "NO," GO TO QUESTION 28
- **27.** You may get an explanation of a medication when a provider prescribes it for your child.

In the last 6 months, how often did this provider or someone in his or her office talk with you about **how** your child was supposed to take this medicine?

- □ Never
- □ Sometimes
- □ Usually
- □ Always
- **28.** In the last 6 months, how often did this provider or someone in his or her office contact you between your child's visits to see how he or she is doing?
 - □ Never
 - □ Sometimes
 - □ Usually
 - □ Always
- **29.** Sometimes people need care when their provider's office is closed, like during evenings, weekends, or holidays.

If your child needed care during these times, were you able to get it from *this* provider's office?

- □ I didn't need care during these times
- □ Yes, my child needed care and *was* able to get it
- □ No, my child needed care and *was not* able to get it



Care from Specialists Outside this Provider's Office

30. Some children have a need for mental or behavioral health services from time to time.

In the last 6 months, did you make an appointment for your child with a mental health or behavioral health provider?

□ Yes

□ No → IF "NO," GO TO QUESTION 33

- **31.** In the last 6 months, how often was it easy to get appointments for your child with a mental health or behavioral health provider?
 - □ Never
 - □ Sometimes
 - □ Usually
 - □ Always
- **32.** In general, how often does the provider you thought of in Question 2 or someone in his or her office seem informed that your child received care from a mental health or behavioral health provider?
 - □ Never
 - \square Sometimes
 - □ Usually
 - □ Always
- **33.** Now think of specialists **other than** mental or behavioral health providers. These specialists are doctors like surgeons, heart doctors, allergy doctors, skin doctors, and other doctors who specialize in one area of health care.

In the last 6 months, did your child receive care from any of these kinds of specialists **outside** the office of the provider you thought of in Question 2?

□ Yes □ No → IF "NO," GO TO QUESTION 36



- **34.** In the last 6 months, how often was it easy to get appointments for your child with specialists?
 - □ Never
 - Sometimes
 - □ Usually
 - □ Always
- **35.** In general, how often does the provider you thought of in Question 2 or someone in his or her office seem informed and up-to-date about the care your child gets from specialists?
 - □ Never
 - □ Sometimes
 - □ Usually
 - □ Always
- **36.** In the last 6 months, did your child get care from more than one kind of health care provider or use more than one kind of health care service, other than from the provider you thought of in Question 2?
 - □ Yes
 - □ No → IF "NO," GO TO QUESTION 38
- **37.** In the last 6 months, did the provider you thought of in Question 2 or someone in his or her office help coordinate your child's care among these different providers or services?
 - □ Yes
 - □ No

Your Child's Most Recent Hospital Stay

- **38.** In the last 6 months, was your child admitted to a hospital overnight or longer?
 - □ Yes

□ No → IF "NO," GO TO QUESTION 43



39. After your child's most recent hospital stay, did the provider you thought of in Question 2 or someone in his or her office contact you to see how your child was doing?

□ Yes □ No

- **40.** After your child's most recent hospital stay, was your child prescribed any medicines?
 - □ Yes
 □ No → IF "NO," GO TO QUESTION 42
- **41.** After your child's most recent hospital stay, did the provider you thought of in Question 2 or someone in his or her office contact you to check if you were able to follow instructions about any medicines your child was prescribed?
 - □ Yes
 - □ No
- **42.** After your child's most recent hospital stay, did the provider you thought of in Question 2 seem to know the important information about this hospital stay?
 - □ Yes, definitely
 - □ Yes, somewhat
 - 🗆 No

Your Child's Overall Experience

- **43.** Using any number from 0 to 10, where 0 is the worst health care possible and 10 is the best health care possible, what number would you use to rate all your child's health care from **all** providers in the last 6 months?
 - \Box 0 Worst health care possible
 - **D** 1
 - **D** 2
 - **D** 3
 - **口** 4
 - **D** 5
 - **6**
 - **D** 7

 - □ 9
 - \Box 10 Best health care possible
- **44.** People sometimes need to manage their children's medical care by making appointments with multiple providers, following their instructions and taking medicines as prescribed.

Using any number from 0 to 10, where 0 is hard and 10 is easy, what number would you use to rate how easy it was for you to manage your child's medical care in the last 6 months?

- □ 0 Hard to manage
- **D** 1
- **□** 2
- **□** 3
- **□** 4
- **D** 5

- □ 10 Easy to manage





- **45.** In the last 6 months, was there one provider who knew about all your child's medical care needs?
 - □ Yes, definitely
 - □ Yes, somewhat
 - □ No
- **46.** In the last 6 months, how often have you been treated unfairly at the place named in Question 1 because of the race or ethnicity of you or your child?
 - □ Never
 - □ Sometimes
 - □ Usually
 - □ Always
- **47.** In the last 6 months, how often have you been treated unfairly at the place named in Question 1 because of the type of health insurance your child has?
 - □ Never
 - □ Sometimes
 - □ Usually
 - □ Always

About Your Child and You

- **48.** In general, how would you rate your child's overall health?
 - □ Excellent
 - □ Very good
 - □ Good
 - 🗖 Fair
 - □ Poor

- **49.** In the last 6 months, how much of a problem were each of these for you?
 - a. Lack of information about your child's medical conditions.
 - □ Not a problem at all
 - □ A small problem
 - □ A moderate problem
 - □ A big problem
 - \Box A very big problem
 - b. Lack of information about treatment options for your child.
 - □ Not a problem at all
 - □ A small problem
 - □ A moderate problem
 - □ A big problem
 - □ A very big problem

50. What is your child's age?

- □ Less than 1 year old
- □ Between 1 and 4 years old
- $\square \quad \text{Between 5 and 11 years old}$
- □ Between 12 and 17 years old
- 51. Is your child male or female?
 - □ Male
 - Female
- **52.** Is your child of Hispanic or Latino origin or descent?
 - □ Yes, Hispanic or Latino / Latina
 - No, not Hispanic or Latino / Latina

- **53.** What is your child's race? Please mark one or more.
 - □ White
 - □ Black or African-American
 - 🗖 Asian
 - □ Native Hawaiian or Other Pacific Islander
 - American Indian or Alaska Native
 - □ Other
- 54. How are you related to the child?
 - □ Mother or father
 - □ Grandparent
 - □ Aunt or uncle
 - □ Older sibling
 - □ Other relative
 - Legal guardian
- 55. What is your age?
 - □ 18 to 24
 - □ 25 to 34
 - □ 35 to 44
 - □ 45 to 54
 - □ 55 to 64
 - □ 65 to 74
 - □ 75 or older
- 56. Are you male or female?
 - □ Male
 - □ Female

- **57.** What is the highest grade or level of school that you have completed?
 - □ 8th grade or less
 - □ Some high school, but did not graduate
 - □ High school graduate or GED
 - □ Some college or 2-year degree
 - □ 4-year college graduate
 - □ More than 4-year college degree
- **58.** Do you use any of the following devices to access the internet? Check all that apply.
 - □ Desktop or laptop computer
 - □ Smartphone (e.g., iPhone, Android, Blackberry)
 - □ Tablet (e.g., iPad, Samsung Galaxy Tab)
 - □ Other
 - Don't know
 - □ I do not access the Internet
- 59. Did someone help you complete this survey?
 - □ Yes
 - □ No → Thank you. Please return the completed survey in the postage-paid envelope
- **60.** How did that person help you? Please mark one or more.
 - Read the questions to me
 - □ Wrote down the answers I gave
 - \Box Answered the questions for me
 - □ Translated the questions into my language
 - □ Helped in some other way

Thank you

Please return the completed survey in the postage-paid envelope.

Please do not include any other correspondence.





Table B.3-3. Medicaid	Consumer Su	rvey Res	ponses by	y State
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Survey Question Response	Weighted Percent					
	Arkansas	Maine	Massachusetts	Minnesota	Vermont	
A. Your Provider: Some questions in this survey will ask you about the care you receive in the place you go most often to see a health care provider						
Q1. What kind of place do you go to most often to see a health care provider when you are sick or for advice about your health?						
Doctor's office or private clinic	85%	83%	68%	70%	78%	
Community health center or public clinic	10%	12%	24%	21%	17%	
Hospital ED	2%	2%	5%	2%	2%	
Urgent care/walk-in	2%	1%	1%	4%	1%	
Pharmacy-based clinic	0%	0%	0%	1%	0%	
Other	1%	2%	1%	2%	2%	
Q2. When you visit the place named in Question 1, is there a specific doctor, nurse, or other clinical staff member that you see when you are sick or for advice about your health?						
Yes	76%	85%	83%	79%	81%	
No	24%	15%	17%	21%	19%	
Q3. How long have you been going to the place named in Question 1?						
< 6 months	6%	5%	7%	8%	4%	
At least 6 months but <1 year	8%	6%	7%	8%	6%	
At least 1 year but <3 years	24%	18%	17%	19%	18%	
At least 3 years but <5 years	19%	17%	16%	14%	15%	
5 years or more	43%	54%	53%	51%	56%	

Survey Question	Weighted Percent					
Response	Arkansas	Maine	Massachusetts	Minnesota	Vermont	
Q4. In the last 6 months, how many times have you called or gone to the place named in Question 1 because you were sick or needed advice about your health?						
1 time	31%	37%	43%	39%	40%	
2 or more times	69%	63%	57%	61%	60%	
B. Care from this Provider and this Provider's Office: These questions ask about the care you received from the provider (doctor, nurse, or other clinical staff) you thought of in Question 2, called 'this provider.'						
Q5. Some offices remind patients about appointments.						
Before your most recent visit with this provider did you get a reminder from this office about the appointment?						
Yes	70%	90%	92%	83%	85%	
No	30%	10%	8%	17%	15%	
Q6. In the last 6 months, how often did this provider seem to know the important information about your medical history?						
Never	3%	2%	3%	3%	2%	
Sometimes	14%	8%	11%	11%	7%	
Usually	27%	24%	25%	29%	25%	
Always	55%	65%	62%	57%	66%	

Survey Question Response	Weighted Percent				
	Arkansas	Maine	Massachusetts	Minnesota	Vermont
Q7. In the last 6 months, how often did this provider ask about things in your work or life at home that affect your health?					
Never	17%	7%	8%	8%	8%
Sometimes	22%	17%	18%	19%	17%
Usually	25%	24%	26%	27%	26%
Always	36%	52%	48%	45%	49%
Q8. In the last 6 months, how often did this provider explain things in a way that was easy to understand?					
Never	2%	1%	2%	1%	1%
Sometimes	8%	5%	6%	6%	4%
Usually	20%	18%	17%	22%	17%
Always	70%	75%	75%	71%	78%
Q9. In the last 6 months, how often did this provider listen carefully to you?					
Never	2%	1%	2%	1%	1%
Sometimes	8%	7%	6%	6%	5%
Usually	19%	18%	16%	22%	17%
Always	70%	74%	76%	71%	76%
Q10. In the last 6 months, how often did this provider show respect for what you had to say?					
Never	2%	1%	2%	1%	1%
Sometimes	7%	6%	5%	6%	5%
Usually	16%	15%	14%	18%	13%
Always	75%	78%	79%	75%	80%

Table B.3-3. Medica	aid Consumer Surve	y Responses by	y State	(continued)
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Survey Question	Weighted Percent				
Response	Arkansas	Maine	Massachusetts	Minnesota	Vermont
Some health care providers have Web sites that let patients make appointments, send email to providers, or view lab test results. This might be called a 'patient portal.'					
Q11. In the last 6 months did the provider you thought of in Question 2 offer you the opportunity to send and receive information about your health care through a Web site?					
Yes	32%	38%	47%	57%	39%
No	68%	62%	53%	43%	61%
<i>C. Care from Other Staff at this Provider's Office:</i> People often get instructions about their health from more than one person in the same office, such as other doctors, nurses, nutritionists, and social workers.					
Q12. In the last 6 months, did you get any instructions about your health from staff other than the provider you thought of in Question 2?					
Yes	42%	43%	51%	47%	43%
No	58%	57%	49%	53%	57%
Q13. In the last 6 months, how often did these other staff seem to know the important information about your medical history?					
Never	4%	4%	4%	4%	4%
Sometimes	18%	17%	17%	17%	19%
Usually	29%	35%	34%	39%	33%
Always	49%	44%	45%	40%	44%

Table B.3-3. Medicaid Consumer Survey Responses by State (continued)
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Survey Question	Weighted Percent				
Response	Arkansas	Maine	Massachusetts	Minnesota	Vermont
D. Care from Someone in this Provider's Office: These questions ask about the care you received from the provider you thought of in Question 2 or someone in his or her office.					
Q14. In the last 6 months, did this provider or someone in his or her office talk with you about specific goals for your health?					
Yes	56%	68%	66%	61%	62%
No	44%	32%	34%	39%	38%
Q15. In the last 6 months, did this provider or someone in his or her office order a blood test, x-ray, mammogram, or other diagnostic test for you?					
Yes	48%	59%	66%	62%	53%
No	52%	41%	34%	38%	47%
Q16. In the last 6 months, when this provider or someone in his or her office ordered a blood test, x-ray, mammogram or other diagnostic test for you, how often did this provider or someone from his or her office follow up to give you those results?					
Never	5%	4%	6%	5%	5%
Sometimes	11%	8%	11%	9%	8%
Usually	15%	17%	19%	20%	17%
Always	69%	70%	63%	66%	70%
Q17. In the last 6 months, how often did you have to request your test results before you got them?					
Never	70%	71%	66%	74%	72%
Sometimes	16%	16%	16%	13%	16%
Usually	6%	6%	7%	6%	6%
Always	8%	7%	10%	6%	7%

Survey Question	Weighted Percent				
Response	Arkansas	Maine	Massachusetts	Minnesota	Vermont
Q18. In the last 6 months, how often were your test results easy to understand?					
Never	3%	3%	3%	2%	3%
Sometimes	10%	10%	11%	11%	10%
Usually	25%	27%	27%	31%	28%
Always	62%	60%	59%	56%	60%
[Arkansas only] In the past 6 months, have you been to this provider or someone in his or her office for a bad cold, sore throat. or sinus infection?					
Yes	57%				
No	43%				
[Arkansas only] Did this provider or someone in his or office do any tests like swabbing your throat with a cotton swab during this visit?					
Yes	62%				
No	38%				
[Arkansas only] Did this provider prescribe any antibiotics for your cold, sore throat, or sinus infection during this visit?					
Yes	85%				
No	15%				
Q19. In the last 6 months, did you and this provider or someone in his or her office talk about having surgery or any type of procedure?					
Yes	17%	21%	22%	23%	19%
No	83%	79%	78%	77%	81%

Survey Question Response	Weighted Percent				
	Arkansas	Maine	Massachusetts	Minnesota	Vermont
Q20. Did you and this provider or someone in his or her					
office talk about the reasons you might want to have the					
surgery or procedure?					
Yes	89%	96%	96%	94%	97%
No	11%	4%	4%	6%	3%
Q21. Did you and this provider or someone in his or her					
office talk about the reasons you might not want to have the					
surgery or procedure?					
Yes	51%	61%	61%	63%	64%
No	49%	39%	39%	37%	36%
Q22. When you and this provider or someone in his or her					
office talked about having surgery or a procedure, did this					
provider ask what you thought was best for you?					
Yes	74%	84%	84%	80%	88%
No	26%	16%	16%	20%	12%
Some people receive care in their home, or services from					
organizations in the local community where they live, to					
help them manage health conditions. These services may					
include things like help with housing or food.					
Q23. In the last 6 months, did you need services at home or					
in the community to help you take care of your health?					
Yes	13%	16%	11%	14%	15%
No	87%	84%	89%	86%	85%

Survey Question	Weighted Percent				
Response	Arkansas	Maine	Massachusetts	Minnesota	Vermont
Q24. In the last 6 months, how often did this provider or someone in his or her office help you get these services at home or in the community to take care of your health?					
Never	27%	26%	28%	31%	24%
Sometimes	15%	15%	14%	16%	22%
Usually	13%	18%	17%	19%	17%
Always	45%	41%	41%	34%	37%
Q25. In the last 6 months, if you had any trouble taking care of your health at home, would you know who to ask for help?					
Yes, definitely	53%	67%	55%	59%	65%
Yes, somewhat	20%	19%	21%	21%	20%
No	27%	15%	24%	20%	15%
Q26. In the last 6 months, did you take any prescription medicine?					
Yes	85%	79%	74%	76%	73%
No	15%	21%	26%	24%	27%
Q27. You may get an explanation of a medication when a provider prescribes it for you. In the last 6 months, how often did this provider or someone in his or her office talk with you about how you were supposed to take your medicine?					
Never	7%	7%	7%	6%	7%
Sometimes	9%	6%	8%	7%	9%
Usually	15%	15%	14%	18%	15%
Always	70%	72%	71%	70%	69%

Survey Question			Weighted Percent			
Response	Arkansas	Maine	Massachusetts	Minnesota	Vermont	
Q28. In the last 6 months, how often did this provider or someone in his or her office contact you between visits to see how you were doing?						
Never	63%	53%	54%	57%	58%	
Sometimes	17%	24%	21%	23%	22%	
Usually	9%	11%	10%	10%	9%	
Always	11%	13%	16%	10%	11%	
Q29. Sometimes people need care when their provider's office is closed, like during evenings, weekends, or holidays. If you needed care during these times, were you able to get it from this provider's office?						
I didn't need care during these times	54%	51%	56%	55%	54%	
Yes, I needed care and was able to get it	24%	35%	31%	31%	32%	
No, I needed care and was not able to get it	22%	14%	13%	14%	15%	
E. Care from Specialists Outside this Provider's Office						
Q30. Many people have a need for mental or behavioral health services from time to time. In the last 6 months, did you make an appointment with a mental health or behavioral health provider?						
Yes	24%	29%	25%	23%	26%	
No	76%	71%	75%	77%	74%	
Q31. In the last 6 months, how often was it easy to get appointments with a mental health or behavioral health provider?						
Never	8%	4%	9%	6%	6%	
Sometimes	14%	10%	15%	21%	13%	
Usually	26%	27%	22%	27%	23%	
Always	52%	59%	53%	46%	59%	

Table B.3-3. Medicai	d Consumer Survey	/ Responses by State	(continued)
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Survey Question			Weighted Percent		
Response	Arkansas	Maine	Massachusetts	Minnesota	Vermont
Q32. In general, how often does the provider you thought of in Question 2 or someone in his or her office seem informed					
that you received care from a mental health or behavioral health provider?					
Never	20%	13%	18%	15%	12%
Sometimes	14%	13%	18%	16%	15%
Usually	20%	22%	22%	26%	21%
Always	47%	51%	42%	43%	52%
health providers. These specialists other than mental or behavioral health providers. These specialists are doctors like surgeons, heart doctors, allergy doctors, skin doctors, and other doctors who specialize in one area of health care. Q33. In the last 6 months, did you receive care from any of these kinds of specialists outside the office of the provider you thought of in Question 2?	37%	39%	41%	36%	40%
No	63%	61%	59%	64%	60%
Q34. In the last 6 months, how often was it easy to get appointments with specialists?					
Never	5%	4%	3%	4%	3%
Sometimes	14%	15%	16%	18%	17%
Usually	27%	30%	30%	34%	31%
Always	55%	52%	52%	44%	49%

Survey Question					
Response	Arkansas	Maine	Massachusetts	Minnesota	Vermont
Q35. In general, how often does the provider you thought of in Question 2 or someone in his or her office seem informed and up-to-date about the care you get from specialists?					
Never	13%	5%	7%	10%	5%
Sometimes	15%	16%	13%	16%	16%
Usually	24%	29%	27%	31%	31%
Always	47%	50%	52%	43%	48%
Q36. In the last 6 months, did you get care from more than one kind of health care provider or use more than one kind of health care service, other than from the provider you thought of in Question 2?					
Yes	40%	42%	38%	42%	44%
No	60%	58%	62%	58%	56%
Q37. In the last 6 months, did the provider you thought of in Question 2 or someone in his or her office help coordinate your care among these different providers or services? Yes	61%	70%	70%	60%	65%
No	39%	30%	30%	40%	35%
F. Your Most Recent Hospital Stay					
Q38. In the last 6 months, were you admitted to a hospital overnight or longer?					
Yes	10%	9%	9%	10%	7%
No	90%	91%	91%	90%	93%
Q39. After your most recent hospital stay, did the provider you thought of in Question 2 or someone in his or her office contact you to see how you were doing?					
Yes	53%	58%	52%	58%	58%
No	47%	42%	48%	42%	42%

Survey Question	Weighted Percent					
Response	Arkansas	Maine	Massachusetts	Minnesota	Vermont	
Q40. After your most recent hospital stay, were you						
prescribed any medicines?						
Yes	90%	79%	84%	82%	75%	
No	10%	21%	16%	18%	25%	
Q41. After your most recent hospital stay, did the provider or someone in his or her office contact you to check if you were able to follow instructions about any medicines you were prescribed?						
Yes	46%	55%	46%	53%	48%	
No	54%	45%	54%	47%	52%	
Q42. After your most recent hospital stay, did the provider you thought of in Question 2 seem to know the important information about this hospital stay?						
Yes, definitely	54%	64%	50%	63%	61%	
Yes, somewhat	24%	21%	22%	26%	28%	
No	23%	15%	28%	12%	11%	

Survey Question	Weighted Percent						
Response	Arkansas	Maine	Massachusetts	Minnesota	Vermont		
G. Your Overall Experience							
Q43. Using any number from 0 to 10, where 0 is the worst health care possible and 10 is the best health care possible, what number would you use to rate all your health care from all providers in the last 6 months?							
0 Worst health care possible	0%	0%	0%	0%	0%		
1	0%	0%	0%	0%	0%		
2	1%	1%	1%	1%	1%		
3	1%	1%	1%	1%	1%		
4	2%	1%	1%	1%	1%		
5	6%	4%	3%	5%	3%		
6	6%	4%	4%	4%	4%		
7	11%	11%	11%	11%	10%		
8	18%	22%	22%	24%	24%		
9	16%	19%	18%	19%	22%		
10 Best health care possible	39%	36%	38%	34%	34%		

Survey Question			Weighted Percent		
Response	Arkansas	Maine	Massachusetts	Minnesota	Vermont
Q44. People sometimes need to manage their medical care by making appointments with multiple providers, following their instructions and taking medicines as prescribed. Using any number from 0 to 10, where 0 is hard and 10 is easy, what number would you use to rate how easy it was for you to manage your medical care in the last 6 months?					
0 Hard to manage	1%	1%	1%	1%	1%
1	0%	1%	1%	0%	1%
2	1%	1%	1%	1%	1%
3	1%	2%	2%	1%	1%
4	2%	2%	2%	2%	2%
5	7%	5%	5%	5%	4%
6	4%	3%	5%	5%	4%
7	7%	7%	6%	7%	7%
8	13%	16%	15%	15%	15%
9	12%	14%	16%	15%	15%
10 Easy to manage	52%	50%	48%	47%	49%
Q45. In the last 6 months, was there one provider who knew about all your medical care needs?					
Yes, definitely	60%	70%	64%	59%	65%
Yes, somewhat	29%	23%	25%	28%	26%
No	11%	7%	10%	13%	9%
Q46. In the last 6 months, how often have you been treated unfairly at the place named in Question 1 because of your race or ethnicity?					
Never	93%	97%	93%	94%	97%
Sometimes	4%	2%	4%	3%	2%
Usually	1%	1%	1%	1%	1%
Always	2%	1%	2%	2%	1%

Survey Question	Weighted Percent					
Response	Arkansas	Maine	Massachusetts	Minnesota	Vermont	
Q47. In the last 6 months, how often have you been treated						
unfairly at the place named in Question 1 because of the						
type of health insurance you have?						
Never	89%	91%	89%	89%	93%	
Sometimes	6%	6%	7%	8%	5%	
Usually	2%	1%	2%	2%	1%	
Always	2%	1%	1%	2%	1%	
[Minnesota only] In the last 6 months, have you received any services or help with needs related to your health from the						
community you live in?						
Yes				21%		
No				79%		
H. About You						
Q48. In general, how would you rate your overall health?						
Excellent	21%	21%	24%	21%	26%	
Very good	30%	30%	31%	32%	32%	
Good	26%	28%	29%	31%	25%	
Fair	17%	16%	13%	12%	13%	
Poor	6%	5%	3%	4%	4%	
In the last 6 months, how much of a problem were each of						
0492 Lack of information about your medical conditions						
Not a problem at all	76%	76%	76%	7/0/	70%	
	10%	1 / 9/	1 / 0 / 6	15%	12%	
A moderate problem	Q0/	70/	00/	70/	L0/	
	070	70	0%	770	%د /۵	
	3%	۷%	۷%	3%	Z%	
A very big problem	1%	1%	1%	1%	1%	

Survey Question			Weighted Percent		
Response	Arkansas	Maine	Massachusetts	Minnesota	Vermont
Q49b. Lack of information about treatment options.					
Not a problem at all	77%	78%	79%	76%	80%
A small problem	12%	12%	11%	12%	12%
A moderate problem	7%	7%	7%	7%	4%
A big problem	3%	3%	2%	3%	2%
A very big problem	2%	1%	1%	1%	1%
Q50. What is your age?					
Less than 1 year old	0%	0%	0%	1%	1%
1-4	15%	10%	8%	11%	10%
5-11	29%	18%	18%	16%	17%
12-17	23%	19%	13%	13%	18%
18-24	4%	6%	6%	5%	4%
25-34	6%	9%	13%	13%	12%
35-44	7%	12%	11%	11%	11%
45-54	6%	12%	13%	13%	13%
55-64	5%	8%	16%	11%	9%
65-74	3%	4%	2%	3%	2%
75 or older	3%	3%	0%	2%	2%
Q51. Are you male or female?					
Male	43%	40%	44%	41%	42%
Female	57%	60%	56%	59%	58%

Survey Question					
Response	Arkansas	Maine	Massachusetts	Minnesota	Vermont
Q52. [Adult version only] What is the highest grade or level					
of school that you have completed?					
8th grade or less	11%	7%	5%	5%	4%
Some high school, but did not graduate	18%	10%	10%	9%	8%
High school graduate or GED	41%	42%	34%	32%	34%
Some college or 2-year degree	26%	33%	32%	37%	31%
4-year college graduate	3%	6%	12%	11%	13%
More than 4-year college degree	1%	3%	8%	6%	10%
[Child version only] How are you related to the child?					
Mother or father	85%	91%	94%	92%	95%
Grandparent	11%	6%	4%	5%	3%
Aunt or uncle	1%	1%	1%	1%	0%
Older sibling	0%	0%		0%	0%
Other relative		0%			
Legal guardian	3%	2%	1%	3%	2%
[Child version only] Parent or guardian: What is your age?					
18-24	7%	5%	4%	4%	3%
25-34	38%	28%	25%	31%	28%
35-44	30%	36%	42%	41%	40%
45-54	14%	21%	20%	16%	21%
55-64	8%	6%	6%	7%	7%
65-74	4%	3%	2%	2%	1%
75 or older	1%	1%	0%	1%	0%
[Child version only] Parent or guardian: Are you male or female?					
Male	7%	14%	12%	13%	13%
Female	93%	86%	88%	87%	87%

Survey Question		Weighted Percent					
Response	Arkansas	Maine	Massachusetts	Minnesota	Vermont		
[Child version only] Parent or guardian: What is the highest							
grade or level of school that you have completed?							
8th grade or less	5%	2%	7%	7%	1%		
Some high school, but did not graduate	12%	6%	10%	8%	5%		
High school graduate or GED	39%	36%	28%	21%	30%		
Some college or 2-year degree	35%	38%	32%	41%	34%		
4-year college graduate	6%	12%	14%	14%	18%		
More than 4-year college degree	4%	7%	10%	9%	12%		
Q53. Are you of Hispanic or Latino origin or descent?							
Yes	11%	2%	25%	9%	3%		
No	89%	98%	75%	91%	97%		
Q54. What is your race? Please mark one or more.							
White	64%	91%	60%	70%	91%		
Black of African American	25%	4%	14%	13%	4%		
Asian	1%	1%	7%	8%	3%		
Native Hawaiian or Other Pacific Islander	1%	0%	0%	0%	1%		
American Indian or Alaska Native	3%	4%	1%	5%	5%		
Other	7%	4%	18%	6%	4%		
Q55. [Adult version only] Are you married or living with a significant other?							
Yes	32%	46%	42%	45%	46%		
No	68%	54%	58%	55%	54%		

Survey Question	Weighted Percent					
Response	Arkansas	Maine	Massachusetts	Minnesota	Vermont	
Q56. Do you use any of the following devices to access the						
internet? Check all that apply.						
Desktop or laptop computer	46%	66%	62%	68%	71%	
Smartphone (e.g., iPhone, Android, Blackberry)	57%	46%	57%	59%	57%	
Tablet (e.g., iPad, Samsung Galaxy Tab)	27%	32%	34%	37%	37%	
Other	4%	5%	3%	2%	4%	
Don't know	2%	1%	2%	2%	1%	
I do not access the Internet*	22%	18%	12%	14%	14%	
Q57. Did someone help you complete this survey?						
Yes	14%	9%	11%	10%	7%	
No	86%	91%	89%	90%	93%	
Q58. How did that person help you? Please mark one or						
more.						
Read the questions to me	48%	48%	46%	48%	49%	
Wrote down the answers I gave	34%	38%	34%	32%	39%	
Answered the questions for me	24%	33%	15%	26%	26%	
Translated the questions into my language	15%	12%	42%	34%	10%	
Helped in some other way	11%	17%	14%	8%	13%	

*This question was not asked of respondents who completed the survey via the web. Those respondents are counted as NO.

Table B.3-4. Oregon Consumer Survey Responses

Survey Question		
Response	Total	Sample Size
All respondents	100%	10,806
A. Your Provider: Some questions in this survey will ask you about the care you receive in the place you go most often to see a health care provider		
Q1. What kind of place do you go to most often to see a health care provider when you are sick or for advice about your health?		10,806
Doctor's office or private clinic	91%	
Community health center or public clinic	3%	
A hospital emergency department	0.2%	
Urgent care / walk-in (not at a hospital or health center)	4%	
Pharmacy-based clinic	0.2%	
Other	2%	
Q2. When you visit the place named in Question 1, is there a specific doctor, nurse, or other clinical staff member that you see when you are sick or for advice about your health?		10,806
Respondent sees specific clinician	87%	
Respondent sees whoever is available	13%	
Q3. How long have you been going to the place named in Question 1?		10,806
< 6 months	6%	
At least 6 months but <1 year	5%	
At least 1 year but <3 years	18%	
At least 3 years but <5 years	14%	
5 years or more	57%	
Q4. In the last 12 months, how many times have you called or gone to the place named in Question 1 because you were sick or needed advice about your health?		10,806
1 time	34%	
2 or more times	66%	

Table D.J-+. Oregon consumer Survey Responses (continued
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Survey Question		
Response	Total	Sample Size
B. Care from this Provider and this Provider's Office: These questions ask about the care you received from the provider (doctor, nurse, or other clinical staff) you thought of in Question 2, called 'this provider.'		
Q5. Some offices remind patients about appointments. Before your most recent visit with this provider did you get a		
reminder from this office about the appointment?		
Yes	82%	10,806
Q6. In the last 12 months, how often did this provider seem to know the important information about your medical history?		
Usually or always	84%	10,806
Q7. In the last 12 months, how often did this provider ask about things in your work or life at home that affect your health?		
Usually or always	63%	10,806
Q8. In the last 12 months, how often did this provider explain things in a way that was easy to understand?		
Usually or always	93%	10,806
Q9. In the last 12 months, how often did this provider listen carefully to you?		
Usually or always	89%	10,806
Q10. In the last 12 months, how often did this provider show respect for what you had to say?		
Usually or always	92%	10,806
Some health care providers have Web sites that let patients make appointments, send email to providers, or view lab test results. This might be called a 'patient portal.'		
Q11. In the last 12 months did the provider you thought of in Question 2 offer you the opportunity to send and receive information about your health care through a Web site?		
Yes	59%	10,806
C. Care from Other Staff at this Provider's Office: People often get instructions about their health from more than one person in the same office, such as other doctors, nurses, nutritionists, and social workers.		
Q12. In the last 12 months, did you get any instructions about your health from staff other than the provider you thought of in Question 2?		
Yes	42%	10,806
Q13. In the last 12 months, how often did these other staff seem to know the important information about your medical history?		
Lisually or always	67%	4 506
	0770	(

Survey Question		-
Response	Total	Sample Size
D. Care from Someone in this Provider's Office: These questions ask about the care you received from the provider you thought of in Question 2 or someone in his or her office.		
Q14. In the last 12 months, did this provider or someone in his or her office talk with you about specific goals for your health?		
Yes	56%	10,806
Q15. In the last 12 months, did this provider or someone in his or her office order a blood test, x-ray, mammogram, or other diagnostic test for you?		
Yes	81%	10,806
Q16. In the last 12 months, when this provider or someone in his or her office ordered a blood test, x-ray, mammogram or other diagnostic test for you, how often did this provider or someone from his or her office follow up to give you those results?		
Usually or always	87%	8,921
Q17. In the last 12 months, how often did you have to request your test results before you got them?		
Never	77%	8,921
Q18. In the last 12 months, how often were your test results easy to understand?		
Usually or always	84%	8,921
Q19. In the last 12 months, did you and this provider or someone in his or her office talk about having surgery or any type of procedure?		
Yes	26%	10,806
Q20. Did you and this provider or someone in his or her office talk about the reasons you might want to have the surgery or procedure?		
Yes	97%	2,860
Q21. Did you and this provider or someone in his or her office talk about the reasons you might not want to have the surgery or procedure?		
Yes	70%	2,860
Q22. When you and this provider or someone in his or her office talked about having surgery or a procedure, did this provider ask what you thought was best for you?		
Yes	79%	2,860
		/ N

B.3-45

Survey Question Response	Total	Sample Size
Some people receive care in their home, or services from organizations in the local community where they live, to help them manage health conditions. These services may include things like help with housing or food.	Total	Sample Size
Q23. In the last 12 months, did you need services at home or in the community to help you take care of your health?		
Yes	3%	10,806
Q24. In the last 12 months, how often did this provider or someone in his or her office help you get these services at home or in the community to take care of your health?		
Usually or always	52%	322
Q25. In the last 12 months, if you had any trouble taking care of your health at home, would you know who to ask for help? Yes	74%	10,806
Q26. In the last 12 months, did you take any prescription medicine?		
Yes	80%	10,806
Q27. You may get an explanation of a medication when a provider prescribes it for you. In the last 12 months, how often did this provider or someone in his or her office talk with you about how you were supposed to take your medicine?		
Usual provider explained how to take prescribed medication	80%	8,794
Q28. In the last 12 months, how often did this provider or someone in his or her office contact you between visits to see how you were doing?		
Usually or always	10%	10,806
Q29. Sometimes people need care when their provider's office is closed, like during evenings, weekends, or holidays. If you needed care during these times, were you able to get it from this provider's office?		
Yes	63%	4,441
E. Care from Specialists Outside this Provider's Office		
Q30. Many people have a need for mental or behavioral health services from time to time. In the last 12 months, did you make an appointment with a mental health or behavioral health provider?		
Yes	14%	10,806
Q31. In the last 12 months, how often was it easy to get appointments with a mental health or behavioral health provider?		
Usually or always	76%	1,451
Q32. In general, how often does the provider you thought of in Question 2 or someone in his or her office seem informed that you received care from a mental health or behavioral health provider?		
Usually or always	44%	1,451
		(continued)

Survey Question		-
Response	Total	Sample Size
Now think of specialists other than mental or behavioral health providers. These specialists are doctors like surgeons, heart doctors, allergy doctors, skin doctors, and other doctors who specialize in one area of health care.		
Q33. In the last 12 months, did you receive care from any of these kinds of specialists outside the office of the provider you thought of in Question 2?		
Yes	49%	10,806
Q34. In the last 12 months, how often was it easy to get appointments with specialists?		
Usually or always	79%	5,479
Q35. In general, how often does the provider you thought of in Question 2 or someone in his or her office seem informed and up-to-date about the care you get from specialists?		
Usually or always	66%	5,479
Q36. In the last 12 months, did you get care from more than one kind of health care provider or use more than one kind of health care service, other than from the provider you thought of in Question 2?		
Yes	50%	10,806
Q37. In the last 12 months, did the provider you thought of in Question 2 or someone in his or her office help coordinate your care among these different providers or services?		
Yes	49%	5,524
F. Your Most Recent Hospital Stay		
Q38. In the last 12 months, were you admitted to a hospital overnight or longer?		
Yes	6%	10,806
Q39. After your most recent hospital stay, did the provider you thought of in Question 2 or someone in his or her office contact you to see how you were doing?		
Yes	53%	672
Q40. After your most recent hospital stay, were you prescribed any medicines?		
Yes	86%	672
Q41. After your most recent hospital stay, did the provider or someone in his or her office contact you to check if you were able to follow instructions about any medicines you were prescribed?		
Usual provider followed up with patient regarding medication prescribed by hospital	43%	582
		(

Response	Total	Sampla Si-a
		Sample Size
Q42. After your most recent hospital stay, did the provider you thought of in Question 2 seem to know the important information about this hospital stay?		
Yes	85%	672
G. Your Overall Experience		-
Q43. Using any number from 0 to 10, where 0 is the worst health care possible and 10 is the best health care possible, what number would you use to rate all your health care from all providers in the last 12 months?		
7 to 10	82%	
Q44. People sometimes need to manage their medical care by making appointments with multiple providers, following their instructions and taking medicines as prescribed. Using any number from 0 to 10, where 0 is hard and 10 is easy, what number would you use to rate how easy it was for you to manage your medical care in the last 12 months?		
7 to 10	81%	
Q45. In the last 12 months, was there one provider who knew about all your medical care needs?		,
Yes	78%	10,806
Q47. In the last 12 months, how often have you been treated unfairly at the place named in Question 1 because of the type of health insurance you have? (Rating of ease of managing health care in past 12 months (1 to 10))		
Health care received in past 12 months was easy to manage	81%	10,806
H. About You		
Q49. In general, how would you rate your overall health?		
Excellent, Very Good, or Good	88%	10,806
In the last 12 months, how much of a problem were each of these for you?		
Q50a. Lack of information about your medical conditions.		
Not a problem at all	85%	10,806
Q50b. Lack of information about treatment options.		
Not a problem at all	83%	10,806

Survey Question		-
Response	Total	Sample Size
Q51. What is your age?		
18-29	4%	
30-39	19%	
40-49	29%	
50-54	16%	
55-64	29%	
65-79	4%	
Q52. Are you male or female?		
Missing	6%	
Male	32%	
Female	62%	
Q53. What is the highest grade or level of school that you have completed?		
Missing	6%	
High school degree or less	8%	
Some college or 2-year degree	27%	
4-year college degree	17%	
More than college degree	42%	
Q55. What is your race? Please mark one or more.		
Missing	7%	
White, non-Hispanic	78%	
non-White, non-Hispanic	9%	
Hispanic	6%	
Q56. Are you married or living with a significant other?		
Missing	6%	
Married or living with a significant other	74%	
Not living with a significant other	20%	

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Appendix C.1: Methods: Qualitative Data Collection and Analysis

The implementation analysis in the Year 3 annual report is based on a more restricted qualitative data collection than previous reports, which drew largely on interviews with state officials, payers, providers, and other health care stakeholders, as well as focus groups with providers and health care consumers—all conducted during in-person site visits. Qualitative data collection for this report occurred only during monthly state evaluation telephone conference calls and through document review.

C.1.1 State Evaluation Calls

We began monthly federal evaluation–specific calls with each Round 1 Test state in April 2014; they have continued through the analytic period of this report (until the end of March 2016). 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 in the document or still need clarification, we devote part of our monthly evaluation calls with the states to gathering the requisite information. We send the questions to the state ahead of the call and ask states to have knowledgeable state officials available to answer the questions during the call.

C.1.2 Document Review

We used states' quarterly and annual reports, operational plans and other state documents to obtain updated information on their implementation progress during the current analytic period of April 2015–March 2016. To supplement these documents, we collected relevant news articles on states' SIM Initiative activities and related initiatives, and we searched reformoriented 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.

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Appendix C.2: Methods: Statewide Comparison Groups

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 absent the intervention. The difference in the changes over time from the pretest 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.

For the statewide impact analysis of measures in claims data—and, in future reports, the BRFSS dataset—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. However, we continue to lack 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. We estimate propensity scores and weights for all years in which we have Medicaid data for the Test state and at least two comparison states.

C.2.1 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 (defined below) based on a broad array of statelevel characteristics to summarize the difference between each Test state and each potential comparison state
- Used a boosted regression (defined below) to identify any additional characteristics 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

C.2.1.1 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 Center for Medicare and Medicaid Innovation (Innovation Center) payment and delivery system initiatives

Table C.2-1 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 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.

	9	State group me	an	Effect size		
_		Potential	Final	Potential	Final	
	Test	comparison	comparison	comparison	comparison	
Dimension and measure	(N=6)	(N=44)	(N=10)	vs. Test	vs. 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	
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	

Table C.2-1. Group means and effect sizes for differences in group means, Test states vs.potential and final comparison states

(continued)

	:	State group me	Effect size		
-		Potential	Final	Potential	Final
	Test	comparison	comparison	comparison	comparison
Dimension and measure	(N=6)	(N=44)	(N=10)	vs. Test	vs. Test
Baseline population health measure					
Years of potential life lost before age 75 among adults ages 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
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

Table C.2-1. Group means and effect sizes for differences in group means, Test states vs. potential and final comparison states (continued)

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. <u>http://www.census.gov/2010census/</u>.

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.

(continued)

Table C.2-1. Group means and effect sizes for differences in group means, Test states vs. potential and final comparison states (continued)

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*. <u>http://ahrf.hrsa.gov/arfdashboard/ArfGeo.aspx</u>

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)*. <u>http://dashboard.healthealth IT.gov/HEALTH</u> ITAdoption/?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)*. <u>http://www.cdc.gov/brfss/</u>.

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*. <u>http://www.nschdata.org</u>. 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*. <u>http://www.cdc.gov/nchs/linked.htm</u>.

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. <u>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/</u>.

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.

As shown in Table C.2-1, 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.

C.2.1.2 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 C.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 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 C.2-2 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 were not part of the SIM Initiative in Round 1, but Kentucky and Oklahoma are Round 2 Design states as of December 2014. The remaining seven comparison states were all SIM Round 1 Design or Pre-Test states; as of December 2014, six of these states became Round 2 Test states and New Hampshire became a Round 2 Design state.

Test state	Comparison states	Distance function value
Arkansas		
	Kentucky	11.42
	Alabama	15.82
	Oklahoma	18.45
Maine		
	New Hampshire	20.74
	Rhode Island	35.70
	Connecticut	39.76
Massachusetts		
	Connecticut	25.24
	New Hampshire	31.30
	Rhode Island	34.42
Minnesota		
	Colorado	29.20
	lowa	33.83
	Washington	34.04
Oregon		
	Colorado	14.14
	Washington	18.66
	Michigan	19.41
Vermont		
	New Hampshire	20.44
	lowa	30.04
	Connecticut	44.15

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

Abbreviations: SIM = State Innovation Models.

C.2.2 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 for the claims-based analyses, 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-Initiative levels of the outcomes as well.

C.2.2.1 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 C.2-3* shows the characteristics used in each database grouped by whether they control for demographic, health plan, or health status characteristics.

	Medicaid	MarketScan	Medicare
Demographic characteristics			
Gender	Х	х	х
Age (age and age squared)	Х	х	х
Disabled (yes/no)	(a)	_	х
White race (yes/no)	Х	_	х
Resides in metropolitan area (yes/no)	_	х	х
Health plan characteristics			
Medicaid eligibility category (infant, child, nondisabled adult, blind/disabled)	Х	_	-
Continuous enrollment indicator (yes/no)	Х	_	—
Also enrolled in Medicaid (yes/no)	_	_	х
Employee relationship (employee/spouse/child-other)	_	х	_
Pharmaceutical claims (yes/no)	_	х	_
Mental health claims coverage (yes/no)	_	х	—
Health maintenance organization (yes/no)	_	х	—
Consumer-driven or high-deductible health plan (yes/no)	_	х	_
Individual vs. employer plan	_	х	_
Health status measures			
Hierarchical Condition Categories risk score	_	(b)	х
Chronic Illness and Disability Payment score (count of major comorbidities)	Х	_	—

Table C.2-3. Covariates for propensity score logistic regressions by payer type

(a) Blind/disabled is one of the eligibility categories we use for the Medicaid propensity score models.

(b) Hierarchical Condition Categories (HCCs) are calculated using three separate models: infants (0–1), children (2–20); adults (21+) (Kautter et al., 2014).

C.2.2.2 Estimation and weighting procedures

Using the characteristics listed in *Table C.2-3*, 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 2011, 2012, 2013, 2014, and 2015 data. We ran the Medicaid models for only years 2011, 2012, and 2013 for one state (VT). 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—where weight = p/(1-p), with p 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.

C.2.3 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 predemonstration 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 C.2-4* to *C.2-8* show unweighted and (propensity score) weighted means/proportions for each state and its pooled comparison group in 2011 for the Medicare population. The statistics for years 2012–2015 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 at least one covariate is near to 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.

		Unweighted		Weighted			
	Comparison Group	Arkansas	Standardized difference ¹	Comparison Group	Arkansas	Standardized difference ¹	
N	450,403	459,158		450,403	459,158		
Male	0.45	0.45	0.06	0.45	0.45	0.03	
Age	69.73	69.89	1.18	69.81	69.89	0.70	
Dual	0.23	0.24	3.07	0.24	0.24	0.57	
Urban	0.56	0.52	7.51	0.52	0.52	0.29	
White	0.85	0.87	4.70	0.87	0.87	0.29	
Disabled	0.24	0.23	1.38	0.23	0.23	0.66	
HCC Score	1.08	1.04	3.93	1.04	1.04	0.24	

Table C.2-4. Unweighted and weighted means and standardized differences, Medicare population, Arkansas 2011

¹Absolute standardized differences are expressed as percentages.

Table C.2-5. Unweighted and weighted means and standardized differences, Medicare population, Maine 2011

		Unweighted		Weighted			
	Comparison Group	Maine	Standardized difference ¹	Comparison Group	Maine	Standardized difference ¹	
Ν	678,183	228,695		678,183	228,695		
Male	0.44	0.46	4.15	0.46	0.46	0.31	
Age	72.19	70.30	13.73	70.76	70.30	4.13	
Dual	0.24	0.39	33.64	0.34	0.39	10.18	
Urban	0.82	0.54	63.74	0.60	0.54	13.17	
White	0.91	0.98	30.46	0.98	0.98	1.58	
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	

Table C.2-6. Unweighted and weighted means and standardized differences, Medicare population, Minnesota 2011

		Unweighted		Weighted			
	Comparison Group	Minnesota	Standardized difference ¹	Comparison Group	Minnesota	Standardized difference ¹	
N	466,031	451,970		466,031	451,970		
Male	0.46	0.46	1.20	0.46	0.46	0.04	
Age	71.65	70.87	5.76	70.93	70.87	0.56	
Dual	0.18	0.20	4.20	0.20	0.20	0.81	
Urban	0.70	0.64	12.74	0.63	0.64	2.02	
White	0.92	0.93	5.76	0.93	0.93	0.10	
Disabled	0.17	0.21	12.31	0.21	0.21	0.64	
HCC Score	1.00	1.00	0.08	1.00	1.00	0.23	

¹Absolute standardized differences are expressed as percentages.

Table C.2-7. Unweighted and weighted means and standardized differences, Medicare population, Oregon 2011

		Unweighted			Weighted	
	Comparison Group	Oregon	Standardized difference ¹	Comparison Group	Oregon	Standardized difference ¹
N	628,920	350,730		628,920	350,730	
Male	0.45	0.48	5.38	0.48	0.48	0.02
Age	71.07	70.85	1.69	70.83	70.85	0.22
Dual	0.19	0.18	3.10	0.18	0.18	0.45
Urban	0.77	0.61	36.12	0.61	0.61	0.15
White	0.87	0.94	24.19	0.94	0.94	0.63
Disabled	0.19	0.18	1.68	0.18	0.18	0.42
HCC Score	1.08	0.96	11.07	0.97	0.96	0.33

Table C.2-8. Unweighted and weighted means and standardized differences, Medicare population, Vermont 2011

		Unweighted			Weighted	
	Comparison Group	Vermont	Standardized difference ¹	Comparison Group	Vermont	Standardized difference ¹
N	816,112	104,819		816,112	104,819	
Male	0.44	0.45	3.57	0.46	0.45	0.10
Age	72.72	70.98	13.12	70.99	70.98	0.02
Dual	0.21	0.27	14.62	0.27	0.27	0.47
Urban	0.66	0.24	90.84	0.25	0.24	0.91
White	0.94	0.98	20.23	0.98	0.98	0.59
Disabled	0.15	0.18	8.42	0.18	0.18	0.10
HCC Score	1.06	0.96	9.95	0.96	0.96	0.18

¹Absolute standardized differences are expressed as percentages.

Tables C.2-9 to *C.2-13* show unweighted and (propensity score) weighted means/proportions for each state and its pooled comparison group in 2011 for the commercially insured population (i.e., MarketScan). The statistics for 2012–2015 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.

		Unweighted				Weighted			
	Overall	Comparison Group	Arkansas	Standardized difference ¹	Overall	Comparison Group	Arkansas	Standardized difference ¹	
Ν	1,970,933	1,622,719	348,214		2,761,968	2,453,693 (weighted 308,594)	308,275		
Prescription Drug Coverage	69.2	65.1	88.5	57.8	81.8	81.8	81.8	0.1	
Employer Sponsored Coverage	72.8	70.6	83	29.7	52.0	52.0	52.1	0.2	
MHSA Coverage	95.8	96	94.9	4.9	74.2	74.1	74.3	0.6	
Male	48.5	48.6	48	1.1	51.0	51.0	51.0	0.0	
Spouse	20.8	21.1	19.2	4.6	21.1	21.1	21.1	0.1	
Child	31.3	31.8	29.3	5.4	32.3	32.4	32.3	0.1	
Consumer Driven Health Plan	12.6	13.3	9.5	11.9	9.6	9.7	9.6	0.5	
Metro	86.8	91.8	63.5	72.2	59.9	59.9	59.9	0.1	
Age	35.8 (18.4)	35.5 (18.3)	37.1 (18.4)	8.5	33.2 (18.1)	33.2 (24.4)	33.2 (8.5)	0.0	
HCC score	1.3 (3.8)	1.3 (3.8)	1.4 (3.7)	0.7	1.2 (3.7)	1.2 (4.5)	1.2 (1.9)	0.1	

Table C.2-9. Unweighted and weighted means (standard deviations) and standardized differences, MarketScan population,Arkansas 2011

¹Absolute standardized differences are expressed as percentages.

MHSA = mental health and substance abuse.

		Unwe	ighted			Weig	ghted	
	Overall	Comparison Group	Maine	Standardized difference ¹	Overall	Comparison Group	Maine	Standardized difference ¹
Ν	1,970,933	1,622,719	348,214		1,970,933	1,622,719 (weighted 349,511)	348,214	
Prescription Drug Coverage	69.2	65.1	88.5	57.8	88.5	88.4	88.5	0.2
Employer Sponsored Coverage	72.8	70.6	83.0	29.7	83.3	83.7	83.0	2.0
MHSA Coverage	95.8	96.0	94.9	4.9	94.9	94.9	94.9	0.2
Male	48.5	48.6	48.0	1.1	48.1	48.1	48.1	0.3
Spouse	20.8	21.1	19.2	4.6	19.5	19.7	19.2	1.2
Child	31.3	31.8	29.3	5.4	29.4	29.5	29.3	0.5
Consumer Driven Health Plan	12.6	13.3	9.5	11.9	10.1	10.7	9.5	3.9
Metro	86.8	91.8	63.5	72.2	63.3	63.1	63.5	0.7
Age	35.8 (18.4)	35.5 (18.3)	37.1 (18.4)	8.5	36.9 (18.3)	36.8 (23.4)	37.1 (10.9)	1.4
HCC score	1.3 (3.8)	1.3 (3.8)	1.4 (3.7)	7.0	1.3 (3.6)	1.3 (4.4)	1.4 (2.2)	1.2

Table C.2-10. Unweighted and weighted means (standard deviations) and standardized differences, MarketScan population,Maine 2011

		Unwe	eighted		Weighted			
	Overall	Comparison Group	Minnesota	Standardized difference ¹	Overall	Comparison Group	Minnesota	Standardized difference ¹
Ν	2,427,747	1,897,346	530,401		2,427,747	1,897,346 (weighted 528,513)	530,401	
Prescription Drug Coverage	83.1	83.7	81	7.1	81.3	81.6	81	1.5
Employer Sponsored Coverage	50	51.2	45.6	11.1	45.5	45.3	45.6	0.6
MHSA Coverage	67.6	66.7	70.9	9.1	71.3	71.7	70.9	1.7
Male	49.9	49.8	50	0.3	50	50	50	0.0
Spouse	20.2	20.3	19.9	1.0	19.9	19.9	19.9	0.0
Child	34.5	34	36.3	4.9	36.4	36.4	36.3	0.1
Consumer Driven Health Plan	11.9	11.3	13.8	7.5	13.9	14	13.8	0.4
Metro	84.5	85	83	5.2	83.3	83.6	83	1.4
Age	32.7 (18.4)	33.1 (18.4)	31.5 (18.3)	8.7	31.5 (18.3)	31.5 (22.8)	31.5 (12.1)	0.0
HCC score	1.2 (3.8)	1.2 (3.7)	1.2 (4.0)	0.4	1.2 (4.2)	1.2 (5.6)	1.2 (2.6)	0.0

Table C.2-11. Unweighted and weighted means (standard deviations) and standardized differences, MarketScan population, Minnesota 2011

		Unweighted				Weighted			
	Overall	Comparison Group	Oregon	Standardized difference ¹	Overall	Comparison Group	Oregon	Standardized difference ¹	
Ν	3,560,748	3,090,505	470,243		3,560,748	3,090,505 (weighted 478,360)	470,243		
Prescription Drug Coverage	86.8	86.5	89.3	8.8	89	88.7	89.3	1.9	
Employer Sponsored Coverage	36.5	37.3	31.5	12.2	32.6	33.6	31.5	4.3	
MHSA Coverage	78.4	78.5	78.1	0.9	77.2	76.4	78.1	4.0	
Male	49	49.2	48.3	1.8	48.3	48.3	48.3	0.0	
Spouse	22.1	22.1	21.6	1.2	21.6	21.6	21.6	0.0	
Child	34.3	34.1	35.6	3.2	35.6	35.6	35.6	0.0	
Consumer Driven Health Plan	11.6	11.2	13.7	7.5	13.9	14.2	13.7	1.3	
Metro	86.7	87.7	80	21.1	78.4	76.7	80	7.9	
Age	34.4 (18.9)	34.5 (18.9)	33.7 (18.8)	4.5	33.6 (18.9)	33.6 (25.0)	33.7 (9.7)	0.7	
HCC score	1.3 (4.0)	1.3 (4.1)	1.3 (3.8)	1.0	1.3 (3.8)	1.3 (5.1)	1.3 (2.0)	0.3	

Table C.2-12. Unweighted and weighted means (standard deviations) and standardized differences, MarketScan population,Oregon 2011

		Unweighted				Weighted			
	Overall	Comparison Group	Vermont	Standardized difference ¹	Overall	Comparison Group	Vermont	Standardized difference ¹	
Ν	2,010,171	1,964,440	45,731		2,010,171	1,964,440 (weighted 45,640)	45,731		
Prescription Drug Coverage	68	67.8	77.2	21.1	76.9	76.6	77.2	1.3	
Employer Sponsored Coverage	71.1	71.2	64.9	13.7	65	65.2	64.9	0.7	
MHSA Coverage	88	87.9	89.6	5.4	89.6	89.5	89.6	0.4	
Male	48.9	48.8	50.2	2.8	50.3	50.3	50.2	0.2	
Spouse	20.9	20.8	22.9	5.0	22.9	22.9	22.9	0.0	
Child	32.5	32.6	29.1	7.6	29.1	29	29.1	0.3	
Consumer Driven Health Plan	12.8	12.8	15.7	8.4	15.7	15.6	15.7	0.3	
Metro	83.6	84.9	30.7	131	30.6	30.5	30.7	0.4	
Age	34.8 (18.4)	34.8 (18.4)	36.7 (18.3)	10.4	36.7 (18.3)	36.6 (25.7)	36.7 (3.9)	0.1	
HCC score	1.3 (3.7)	1.3 (3.7)	1.2(3.9)	0.5	1.2(3.7)	1.2 (4.9)	1.2 (0.8)	0.1	

Table C.2-13. Unweighted and weighted means (standard deviations) and standardized differences, MarketScan population,Vermont 2011

Tables C.2-14 to *C.2-19* show unweighted and (propensity score) weighted means/proportions for each state and its pooled comparison group in 2011 for the Medicaid population. The statistics for 2011 and subgroups (not shown here) 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.

		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	0.54	0.54	0.55	0.54	0.54	0.12
Age	14.36	13.46	6.61	13.46	13.46	0.02
Continuously enrolled	0.85	0.89	13.41	0.89	0.89	0.06
Infant	0.12	0.11	4.36	0.11	0.11	0.01
Blind/disabled	0.09	0.09	2.65	0.09	0.09	0.09
Nondisabled adult	0.11	0.09	8.88	0.09	0.09	0.15
White	0.47	0.55	15.54	0.55	0.55	0.05
CDPS score	1.00	0.95	4.38	0.94	0.95	0.24

Table C.2-14. Unweighted and weighted means and standardized differences, Medicaid population, Arkansas 2011

¹Absolute standardized differences are expressed as percentages.

CDPS = Chronic Illness and Disability Payment System.

Table C.2-15. Unweighted and weighted means and standardized differences, Medicaid population, Maine 2011

		Unweighted		Weighted			
	Comparison Group	Minnesota	Standardized difference ¹	Comparison Group	Minnesota	Standardized difference ¹	
Ν	1,446,693	686,878		1,446,693	686,878		
Female	0.55	0.53	4.03	0.53	0.53	1.11	
Age	21.48	22.45	5.89	22.27	22.45	1.37	
Continuously Enrolled	0.86	0.98	98.25	0.98	0.98	0.05	
Infant	0.07	0.06	3.02	0.07	0.06	1.11	
Blind/disabled	0.06	0.07	1.54	0.07	0.07	0.32	
Nondisabled adult	0.37	0.44	14.48	0.43	0.44	2.09	
White	0.46	0.79	78.99	0.79	0.79	0.64	
CDPS score	1.02	1.06	3.23	1.07	1.06	1.24	

		Unweighted		Weighted			
	Comparison Group	Minnesota	Standardized difference ¹	Comparison Group	Minnesota	Standardized difference ¹	
N	1,446,693	686 <i>,</i> 878		1,446,693	686,878		
Female	0.55	0.53	3.14	0.54	0.53	0.79	
Age	21.57	22.75	6.77	22.99	22.75	1.26	
Infant	0.05	0.06	6.06	0.06	0.06	0.89	
Nondisabled adult	0.45	0.48	6.25	0.49	0.48	1.65	
White	0.46	0.36	20.65	0.36	0.36	1.01	

Table C.2-16. Unweighted and weighted means and standardized differences, Medicaid population, Massachusetts 2011

¹Absolute standardized differences are expressed as percentages.

Table C.2-17. Unweighted and weighted means and standardized differences, Medicaidpopulation, Minnesota 2011

		Unweighted		Weighted			
	Comparison Group	Minnesota	Standardized difference ¹	Comparison Group	Minnesota	Standardized difference ¹	
Ν	1,446,693	686,878		1,446,693	686,878		
Female	0.55	0.54	1.42	0.54	0.54	1.28	
Age	16.72	20.84	26.07	20.71	20.84	0.93	
Continuously Enrolled	0.87	0.86	1.50	0.86	0.86	1.13	
Infant	0.10	0.09	4.49	0.09	0.09	0.25	
Blind/disabled	0.08	0.06	9.20	0.06	0.06	0.29	
Nondisabled adult	0.22	0.40	39.36	0.39	0.40	0.77	
White	0.47	0.55	15.81	0.54	0.55	0.68	
CDPS score	0.88	0.95	5.93	0.99	0.95	2.93	

		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	0.55	0.55	0.46	0.55	0.55	0.01
Age	17.06	16.04	6.84	16.03	16.04	0.08
Continuously Enrolled	0.86	0.86	1.26	0.86	0.86	0.03
Infant	0.10	0.12	7.75	0.12	0.12	0.13
Blind/disabled	0.09	0.09	0.66	0.09	0.09	0.15
Nondisabled adult	0.22	0.20	6.34	0.20	0.20	0.01
White	0.53	0.59	11.48	0.59	0.59	0.01
CDPS score	0.92	0.91	0.81	0.91	0.91	0.04

Table C.2-18. Unweighted and weighted means and standardized differences, Medicaid population, Oregon 2011

¹Absolute standardized differences are expressed as percentages.

Table C.2-19. Unweighted and weighted means and standardized differences, Medicaidpopulation, Vermont 2011

		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	0.55	0.53	3.88	0.53	0.53	0.14
Age	20.53	23.64	18.12	23.55	23.64	0.69
Continuously Enrolled	0.86	0.86	0.24	0.86	0.86	0.08
Infant	0.08	0.06	8.47	0.06	0.06	0.13
Blind/disabled	0.05	0.05	0.90	0.05	0.05	0.04
Nondisabled adult	0.37	0.45	18.19	0.45	0.45	0.52
White	0.49	0.68	39.60	0.68	0.68	0.40
CDPS score	0.99	0.93	5.39	0.93	0.93	0.12

Appendix C.3: Methods: Utilization and Expenditure Data Analysis

C.3.1 Data Sources

For the Year 3 Annual Report, we produced estimates of selected measures of health care utilization and expenditures for three populations—Medicaid beneficiaries, the commercially insured in MarketScan, and Medicare beneficiaries. We describe the data sources and methods used below.

C.3.1.1 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. 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. These 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 also obtained Medicaid claims data from the Massachusetts Medicaid program. In addition to monthly enrollment and demographic information, the Massachusetts data contain inpatient, outpatient, pharmacy, and capitation records for the traditional fee-for-service (FFS) plan beneficiaries as well as the managed-care plan enrollees.

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.3-1* shows the latest quarter meeting this criterion for each Test state and its comparison states.

Test state				
Comparison states	End quarter			
Arkansas	Q1 2014 ¹			
Alabama	Q2 2013			
Oklahoma	Q1 2014 ¹			
Maine	Q3 2014 ¹			
New Hampshire	Q4 2012			
Rhode Island	Q1 2012			
Connecticut	Q3 2014 ¹			
Massachusetts	Q3 2015 ¹			
New Hampshire	Q4 2012			
Rhode Island	Q1 2012			
Connecticut	Q3 2014 ¹			
Minnesota	Q1 2013			
lowa	Q3 2014 ¹			
Washington	Q2 2014 ¹			
Oregon	Q1 2013			
Washington	Q2 2014 ¹			
Michigan	Q3 2013			
Vermont	Q3 2014			
New Hampshire	Q4 2012			
lowa	Q3 2014			
Connecticut	Q3 2014			

Table C.3-1. Latest time periods for Medicaid measures reported in the Year 3 annual report

¹ Arkansas, Oklahoma, Maine, Connecticut, Massachusetts, Iowa and Washington Medicaid data include at least 1 quarter of test period data (Q4 2013 for all states except MA, Q1 2014 for MA). All other states include baseline data only. As such, no Test state had a complete baseline period or baseline and post period data for the Test state and all comparison states to run regression analyses.

C.3.1.2 MarketScan data

We used data from MarketScan Research Databases ([©]2016 from Truven Health Analytics Inc., an IBM Company), to calculate outcomes for the commercially insured population in SIM Round 1 Test and comparison states. In addition, we used data from the Maine and Vermont all-payer claims databases (APCDs). 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 fourth quarter 2010 through fourth 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 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 over-represents 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. In addition, we used the all-payer claims data from Vermont's and Maine's all-payer claims databases (APCDs) to obtain a more complete picture of the commercially insured in these two states.

The MarketScan and all-payer claims data include clinical, financial, and demographic fields to support calculation of the SIM Initiative evaluation core and state-specific measures. We created the following analytic files using the MarketScan and APCD data files:

- Annual enrollment file. The Annual Enrollment Summary Table for MarketScan and member enrollment files in the APCDs contain enrollment information for every person enrolled during the year, including a monthly indicator of enrollment. We used the enrollment files to calculate fraction of time each person was enrolled and total number of people enrolled per year in each state.
- Claims data. MarketScan and the APCDs include 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 the utilization and expenditure outcomes.

C.3.1.3 Medicare data

We used Medicare claims and enrollment data for fourth quarter 2010 through fourth 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.3.2 Population

For the statewide trend analyses, the target populations are all individuals included in the Medicaid, MarketScan, and Medicare databases for all states except Massachusetts and Oregon. In Massachusetts, we do not include any data for Medicare or MarketScan (commercially insured population), because activities funded under the SIM Initiative in that state reached providers who served primarily Medicaid beneficiaries and supported only payment reform under the state's Medicaid agency; therefore, it is not informative to analyze differences in Massachusetts and its comparison states between the pre- and post-SIM Initiative periods. In Oregon, we restricted the Medicare population in to Medicare-Medicaid beneficiaries, because over half of Medicare-Medicaid beneficiaries in Oregon are enrolled in a coordinated care organization. The complete inclusion and exclusion criteria are described in detail in Section C.3.2.1. In addition, because of the great variation in health care needs among select population subgroups, we conducted separate analyses of key subpopulations.

C.3.2.1 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 utilization measures for Medicaid-only beneficiaries. However, we do present descriptive statistics for total Medicaid payments made on behalf of Medicare-Medicaid beneficiaries. The regression models for total Medicaid payments in Maine, Vermont, and Massachusetts are restricted to Medicaid-only beneficiaries, however.

For the 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. Similarly, to calculate expenditures we restricted the Vermont and Maine APCD sample to the FFS population.

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. In addition, we restricted the Oregon Medicare population to Medicare-Medicaid beneficiaries.

C.3.2.2 Population subgroups

Health care use varies by eligibility category for Medicaid beneficiaries. Therefore, we report descriptive 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.3.2.3 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 2 months of a quarter has an eligibility fraction of 0.67 for that 3-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= [(sum of all eligible persons from all three comparison states)/3] / (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 unavailable data for the third, we revised the formula to:

BW_i= [(sum of all eligible persons from the two comparison states)/2] / (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 Arkansas's comparison states to limit the sample size for Arkansas and its comparison group to 33 million observations. This was not necessary for the other Test states. We used a SAS procedure to select the random sample for each state. Reducing the sample at random should eliminate any limitations to running the outcome models or biases introduced into the results. *Table C.3-2* 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.3-2. Existing and restricted Medicare sample for Arkansas and pooled comparison group sample

			Test state				Comparis	on group	
Test state	Total sample	Full	Sample rate	Restricted	Weight	Full	Sample rate	Restricted	Weight
Arkansas	37,447,410	7,474,793	100%	7,474,793	1.00	29,972,617	77.3%	25,501,385	1.29

C.3.3 Measures

We present estimates from claims data for two domains of performance: (1) health care utilization and (2) expenditures. For utilization and expenditure measures, we present graphical presentations of quarterly estimates for the utilization and expenditure measures. We also provide results of difference-in-differences (D-in-D) regression analyses of core utilization and expenditure outcomes for Vermont Medicaid beneficiaries, Medicare beneficiaries and the commercially insured in the MarketScan database. In addition, we provide results on an Interrupted Time Series Analysis (ITSA) with Maine and Massachusetts Medicaid beneficiaries. The Test (post-implementation) period is defined as October 2013 and onward. We therefore

present data for 5 test quarters for Medicare and MarketScan—fourth quarter 2013 through fourth quarter 2014 and 4 test quarters for Medicaid—fourth quarter 2013 through third quarter 2014.

C.3.3.1 Utilization measures

Utilization measures are reported as rates per 1,000 covered lives (or discharges for readmissions). For each measure, the numerator is the weighted sum of number of events (inpatient admissions, obstetric hospitalizations, readmissions, 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 the number of eligible plan members in the state enrolled during the period (for obstetric admissions and readmissions the denominator is adjusted to eligible females and hospital admissions accordingly).

- 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 older 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 the sum of number of readmissions within 30 days; the denominator is the total number of index hospital discharges.

C.3.3.4 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-adjusted⁵⁶ 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.

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 represent 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

⁵⁶ 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.

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 represent 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 represent 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; 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 represent 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.3.4 Statistical Methods

C.3.4.1 Difference-in-Differences Regression Analysis

To test for differences in expenditures and utilization estimates during the first five quarters of SIM implementation and the baseline period between the Round 1 Test states and their comparison groups, we use D-in-D regression analyses. We conduct all analyses at the individual beneficiary level with quarterly observations, so the unit of analysis is personquarters. For the utilization outcomes, we convert quarterly utilization counts into binary outcomes and use logistic regression models. Count models are not appropriate because of the low occurrence of multiple hospitalizations and ER visits for individual beneficiaries in any quarter; however, we multiplied the marginal effect from the logistic regression models by 1,000 to obtain approximate rates of utilization per 1,000 beneficiaries. Multiplying the marginal effect by 1,000 does not produce an exact rate of utilization per 1,000 beneficiaries because it assumes that no person has more than one visit or admission per quarter. However, we concluded that this is a reason approximation because the majority of the populations had zero or one ER visit or admission per quarter. Because the D-in-D coefficient of the logit model is an interaction term (Test*Post), it is not readily interpretable from a logistic regression model. We used recent literature on D-in-D non-linear models to transform the coefficient to a marginal effect (Dowd, Greene, & Norton, 2014; Puhani, 2008; Puhani, 2012). For expenditure outcomes, we use weighted ordinary least squares (OLS) regression models. For all outcomes, we calculated regression adjusted means for the baseline and Test periods for each Test state and its comparison group. For binary outcomes estimated using nonlinear models, the regressionadjusted D-in-Ds are calculated as the average treatment effect on the treated (ATET), whereas the D-in-D derived from the adjusted means represents the average treatment effect. As a result, the regression-adjusted D-in-D and the D-in-D calculated from the adjusted means will differ.

Regression model

The underlying assumption in D-in-D 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 only small statistically significant differences in the rates of change in the core utilization and expenditure measures for the MarketScan and Medicare populations. Even though the significant results are small, we decided to take the conservative approach and assume that the parallel paths assumption may be violated in the D-in-D 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 D-in-D model below in *Equation C.3.1*. 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; Time is a linear time trend ranging from 1 to 17, where Time=1 is the first calendar quarter (fourth quarter 2010) and 17 is the last calendar quarter (fourth quarter 2014). The term that interacts the Test state indicator and time variables (I_{ij} *Time) in *Equation C.3.1* measures differences in trends over time between a Test state and its comparison group over the entire observation period. In *Equation C.3.1*, POST is equal to 1 if Time is equal to 13, 14, 15, 16, or 17. The interaction of the test indicator and POST (I_{ij} *POST) measures the difference in the pre-post change between the Test state and its comparison group.

$$Y_{ijt} = \alpha_0 + \beta_1 I_{ij} + \alpha_1 Time + \beta_2 I_{ij} * Time + \alpha_2 POST + \gamma I_{ij} * POST + \lambda X_{ijt} + \varepsilon_{ijt}$$
(C.3.1)

The vector X_{iit} 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 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 population. The Vermont Medicaid model included age, gender, race, Medicaid eligibility category, continuous enrollment, Chronic Illness and Disability Payment System (CDPS) risk score as covariates. We chose to include the available covariates for each payer that could be associated with both the outcomes and residence in a Test State. The last variable ε_{iit} is a residual term that represents unobserved heterogeneity in the outcome unexplained by X_{iit} or being in a Round 1 Test state.

The coefficient β_1 in *Equation C.3.1* 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 α_1 *Time; for individuals in the intervention group, it is $(\alpha_1 + \beta_2)$ *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 $\alpha_0 + \alpha_1 * \text{Time} + \alpha_2$, whereas the Test state mean is captured by $(\alpha_0 + \beta_1) + (\alpha_1 + \beta_2) * \text{Time} + (\alpha_2 + \gamma))$. In other words, the between-group difference changes from $\beta_1 + \beta_2 * \text{Time}$ during the baseline years to $\beta_1 + \beta_2 * \text{Time} + \gamma$ during the SIM test period. The D-in-D parameter γ shows whether the between-group difference increased ($\gamma > 0$) or decreased ($\gamma < 0$) after the SIM Initiative was implemented (*Table C.3-3*). If the intervention is successful in reducing expenditures or utilization in the intervention group relative to the comparison group, then $\gamma < 0$.

	Pre Period	Post Period	Pre-Post Difference
Test	$(\alpha_0 + \beta_1) + (\alpha_1 + \beta_2)$ *Time	$(\alpha_0 + \beta_1) + (\alpha_1 + \beta_2)$ *Time + $(\alpha_2 + \gamma)$	$\alpha_2 + \gamma$
Comparison	$\alpha_0 + \alpha_1 * Time$	$\alpha_0 + \alpha_1 * Time + \alpha_2$	α2
Between Group	$\beta_1 + \beta_2 * Time$	$\beta_1 + \beta_2$ *Time + γ	γ

Table C.3-3. Estimates from equation C.3.1

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. This 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.3.1*). The ATET 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 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 coefficient is interpreted as the 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.

C.3.4.2 Interrupted Time Series Analysis and Simple Pre-Post Regressions

In this report, post period Medicaid data are available for Maine and Massachusetts, but not for their comparison states. Therefore we introduce an interrupted time series analysis (ITSA) using commercial payer data as a comparison group and simple pre-post regression analyses as a sensitivity analysis to provide early indications of SIM impact on Medicaid enrollees.

Regression model

In ITSA studies, data are collected at multiple time points before and after an intervention, to detect whether or not the intervention had a significantly greater effect than any underlying secular trend (Ramsay et al., 2003). A proper ITSA design can allow for statistical investigation of potential biases in the estimate of the intervention effect—such as secular trend, seasonal effects, intervention duration, random fluctuations, and autocorrelation. Ramsay et al. depict the two effect sizes to be estimated (see *Figure C.3-1*): (1) change in the level of outcome at the first point after introduction of the intervention, and (2) change in the slopes of the regression lines (calculated as post-intervention minus pre-intervention slope).



Figure C.3-1. Effect sizes estimated by times series regression analysis of an interrupted time series design

Source: Ramsay, C., Matowe, L., Grilli, R., Grimshaw, J., & Thomas, R. (2003). Interrupted time series designs in health technology assessment: Lessons from two systematic reviews of behavior change strategies. *International Journal of Technology Assessment in Health Care*, *19*(4), 613–623.

We will use the segmented regression framework proposed in Wagner et al. (2002) to perform the ITSA analysis. Segmented regression typically aggregates individual-level data by time point. Contrary to cross-sectional analysis methods, segmented regression analysis of time series data does not require individual-level covariates, since the dependent and independent variables are aggregated to the state level. Nevertheless, aggregated population variables can be utilized in the segmented regressions. We implement the segmented regression as follows:

 $Outcome_t = \alpha_0 + \alpha_1 Time_t + \alpha_2 Intervention_t + \alpha_3 Time after Intervention_t + \alpha_4 Treated + \alpha_5 Treated*Time + \alpha_6 Treated*Intervention_t + \alpha_7 Treated*Time after Intervention_t + e_t$ (C.3.2)

In *Equation C.3.2* above, *Outcome*_t is the aggregate outcome of interest in month *t*, on the assumption that the outcome is measured monthly. *Time* indicates number of months from the start of the series. *Intervention* is a binary variable taking the value 0 in the pre-intervention segment and 1 in the post-intervention segment. *Time after Intervention* is 0 in the pre-intervention segment and counts number of months in the post-intervention segment at time *t*. *Treated* identifies the treated group. The coefficient α_0 estimates the baseline level of the outcome at the beginning of the sample period. The coefficient α_1 estimates the baseline trend (i.e., the change in outcome per month in the pre-intervention segment). The coefficient α_2 estimates the level change in the mean outcome variable in the post-intervention segment. The

coefficient α_3 estimates the change in the linear trend in the post-intervention segment, and the sum of α_1 and α_3 is the post-intervention slope. The parameter of interest is α_7 , which is akin to a difference in differences of the slopes (i.e., trend) before and after the intervention period between the treatment and comparison groups.

We also use simple pre-post regression outcome models as a sensitivity analysis to the single difference of the pre-post trend change for the treated group in the ITSA approach. This equation has the form:

$$Y_{t} = \alpha_{0} + \alpha_{1} Time_{t} + \alpha_{2} POST + \gamma_{1} POST^{*} Time_{t} + \lambda X_{ijt} + \varepsilon_{ijt}$$
(C.3.3)

In *Equation C.3.3, Time* represents a simple count of the number of quarters since the beginning of the baseline period. *Post* represents an indicator variable for the demonstration time period, and the interaction between *Time* and *Post* represents the difference in slopes (i.e., trends) between pre and post periods. This estimate can be compared to similar ITSA estimates for confirmation or refutation of findings.

C.3.5 References

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