



**Evaluation of the Shared Decision Making (SDM)  
Health Care Innovation Awardees  
Third Annual Report  
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## EXECUTIVE SUMMARY

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Acumen, LLC (“Acumen”) and its partner, Westat, Inc., are contracted by the Centers for Medicare & Medicaid Services (CMS) to conduct a mixed-methods evaluation of the three shared decision making (SDM) programs that received the Health Care Innovation Awards (HCIA): Welvie LLC (Welvie), MedExpert International (MedExpert), and Trustees of Dartmouth College (Dartmouth). Awardees began enrolling participants for the CMS project in 2012 and concluded HCIA implementation activities in 2015. This Third Annual Report presents summative evaluation findings from August 2013 through August 2016.

The three SDM HCIA awardees aim to improve patient health, reduce health care resource use, and lower health care expenditures through novel patient-level care interventions. SDM encourages patients to become fully informed about the risks and benefits of available medical treatments and to participate in selecting the most appropriate treatments or care management options for their individual needs. SDM provides patients with decision aids and relevant information to encourage decision making based on the best scientific evidence available and on the patient’s values and preferences.

### ***Analytic Approach***

The mixed-methods evaluation of the SDM programs focused on addressing the following research questions: (i) which innovative approaches reduced health care costs while improving or maintaining the standard of care, patient health, and quality of life? (ii) what implementation and contextual factors contributed to an intervention’s success or challenges? Quantitative analyses were performed to assess program effects on health and resource use outcomes for each awardee, primarily using intervention data provided by the awardee and Medicare claims data from CMS sources, including Medicare enrollment data, FFS claims and MA inpatient encounter data in the Common Working File (CWF), as well as MA claims data provided by the awardee if available. Qualitative information from a variety of sources was used to understand each program’s components and address questions regarding implementation factors, workforce issues, patient satisfaction, and factors affecting program sustainability. These sources included awardee program documents, interviews with HCIA awardee leadership, awardee progress reports provided by the Lewin Group, site visits, patient experience surveys, and workforce surveys.

For the analyses of program effects, single difference and differences-in-differences (DiD) methods were used to estimate the impact of each program on health, resource utilization, and expenditure outcomes. Results are presented with p-values indicating statistical significance at the 1%, 5%, and 10% levels.

## ***Key Findings on Program Effects by Awardee***

A brief description of the core innovation components and findings on program effects for each of the three SDM awardees is provided below.

### **Welve**

Welve offers education, health information, and decision-making resources regarding preference-sensitive surgeries to beneficiaries to enhance patient experience, increase surgery literacy, improve surgical outcomes, and reduce inappropriate surgeries. The Welve intervention comprises outreach mailings, which include brief educational content, as well as an invitation to use an in-depth, six-step decision aid. The decision aid is available online, as a mailed paper booklet, or by phone, and it is designed to educate patients further about potential risks, benefits, treatment alternatives, and expectations related to surgery. The decision aid also covers topics related to preparing for surgery and recovering after surgery.

Welve randomized beneficiaries to be included in the intervention and control groups for each of its three cohorts: Ohio FFS, Ohio MA and Texas MA. The Welve intervention was the only SDM intervention implemented as a randomized controlled study. Acumen utilized this randomization to conduct DiD analyses comparing intervention group beneficiaries to controls for each of the three cohorts separately. While the analysis of the Ohio FFS cohort used Medicare FFS claims data from the CWF, the analyses of the Ohio MA and Texas MA cohorts utilized MA claims data obtained by Welve from its insurance partners (Anthem Ohio and Humana Texas).

For the FFS and MA cohorts in Ohio, the Welve intervention was associated with statistically significant decreases in mortality, utilization of some health services (including surgical services), and corresponding expenditure types. For the FFS cohort, most significant decreases in health service use and expenditures were in the first quarter or first year after initial program outreach, but cumulative effects on these outcomes across the eleven intervention quarters were not statistically significant. For the MA Ohio cohort, resource use and expenditures decreased mostly in the first year and third or fourth quarter after initial outreach, and were accompanied by a cumulative decrease in total surgery expenditures across the eleven intervention quarters. Additionally, there were cumulative decreases in mortality in both the FFS and MA Ohio cohorts.

Notable results of the Welve evaluation for the FFS cohort in Ohio include the following:

- Consistent with one of the program goals of improving surgical outcomes for patients who undergo surgery, there was a statistically significant decrease in the rate of inpatient surgery readmissions in the first year after program enrollment.

The estimated effect for the first year corresponds to about 103 fewer beneficiaries being readmitted (within 30 days of an inpatient surgery admission) per 1,000 beneficiaries who had at least one inpatient surgery admission (p-value: 0.002). This decrease was partly driven by a decrease in readmissions after inpatient preference-sensitive orthopedic surgeries in the first quarter.

- Decreases in ER visits observed in the first year after enrollment may also indicate potential improvements in post-surgery outcomes. There were 12 fewer ER visits per 1,000 intervened beneficiaries in the first year post-enrollment (p-value: 0.072).
- There were small first-quarter decreases in inpatient admissions (about 5 fewer admissions among 59,894 participant beneficiaries; p-value: 0.056), driven by statistically significant, but quantitatively small decreases in inpatient surgeries. These were, in turn, partially due to decreases in preference-sensitive cardiac surgeries. Consistent with this decrease, the intervention was associated with fewer hospital days in the first quarter post-enrollment (36 fewer hospital days among 59,894 participant beneficiaries; p-value: 0.099), which were mostly the result of fewer surgical hospital days in the same quarter.
- The reductions in utilization in the first quarter post-enrollment described above are also reflected in lower expenditures in corresponding categories for that quarter, resulting in a decrease of about \$103 per beneficiary per quarter in net total expenditures (p-value: 0.052).
- Expenditure decreases were also observed in other categories: in particular, hospice expenditures decreased during the first year (\$32 per beneficiary), and home health expenditures decreased during the second year (\$21 per beneficiary) after program enrollment. These effects were statistically significant at the 10% level and quantitatively small.
- The analysis also found statistically significant decreases in mortality for intervention participants, estimated at about 21 fewer deaths per 1,000 beneficiaries (p-value<0.001), cumulatively across the eleven quarters after program enrollment.

To the extent that the randomized intervention and control groups provided by Welvie were similar on unobservable pre-enrollment characteristics that influence outcomes, a potential interpretation of these findings is that the program, in addition to its effects on resource utilization, also had downstream effects on mortality. This may be due to avoidance of high-risk

surgeries or improvements in surgical outcomes, which may have also contributed to the observed decreases in inpatient readmissions, hospice expenditures, and ER visits.

Results for the MA Ohio cohort were generally similar to those for the FFS Ohio cohort; notable findings for the MA Ohio beneficiaries include the following:

- The Welvie intervention was associated with a cumulative decrease of \$138 per beneficiary (p-value: 0.049) in total surgery expenditures across the eleven quarters after program enrollment, which was driven by statistically significant decreases in surgeries and surgery-related expenditures in Year 1.
  - There were decreases in surgery-related resource use outcomes in Year 1, including 7 fewer surgeries per 1,000 beneficiaries and 28 fewer surgical hospital days per 1,000 beneficiaries in the intervention group relative to controls, driven by statistically significant decreases in inpatient surgeries and preference-sensitive cardiac surgeries also in Year 1.
- A decrease of 8 fewer ER visits per 1,000 beneficiaries in Year 2 was also observed, which may be a downstream effect of Year 1 decreases in surgery-related resource use or reflect improvements in surgery outcomes.
- A statistically significant decrease of \$39 per beneficiary (p-value: 0.019) in non-ER outpatient expenditures was also observed in Year 1.
- There was a statistically significant decrease of \$169 per beneficiary (p-value: 0.014) in total medical expenditures in Year 1, driven by statistically significant reductions in surgery-related expenditures and non-ER expenditures described above.
- There was also a small yet statistically significant cumulative decrease in mortality, with 3 fewer deaths per 1,000 beneficiaries (p-value: 0.084) estimated across the eleven quarters after program enrollment, although quarterly and yearly effects on mortality were not statistically significant.

For the MA Texas cohort, the Welvie intervention was associated with statistically significant decreases in some surgery-related resource use and expenditure categories and increases in others for the MA Texas cohort, but these findings should be interpreted with caution. The MA Texas cohort experienced a cumulative increase in inpatient surgeries, and decreases in outpatient preference-sensitive orthopedic surgeries and outpatient preference-sensitive cardiac surgeries across the six quarters after program enrollment. Similar statistically significant changes were observed in corresponding expenditure categories. The initially randomized control group in the MA Texas cohort was later exposed to the intervention by

Humana, which Welvie partnered with for the intervention, through outreach materials that were made available to the full Humana Texas population. Thus, the results should be interpreted as the additional effect of Welvie's outreach activities, over and above the effects of Humana's outreach to its full patient population. Further, the results were assessed for only six quarters following program enrollment for the MA Texas population because program outreach to the Humana membership only started in May 2014, and thus cumulative effects over a longer time period are still unknown.

In summary, the Welvie intervention was associated with statistically significant decreases in some utilization and cost measures, including those related to surgery. These effects are concentrated in the first few quarters or first year after initial program outreach for the FFS and MA cohorts in Ohio. The results differed for the MA Texas cohort, with increases observed in utilization of inpatient services (including surgeries) and related expenditures, and decreases observed for outpatient surgeries and related expenditures. There were also cumulative decreases in mortality for both the FFS and MA cohorts in Ohio but not for the MA cohort in Texas. While this may indicate differential effects of the program as administered to the Humana MA population in Texas, results for the Texas cohort should be interpreted in light of the program design issues described in the above paragraph.

### **MedExpert**

MedExpert offers Medicare beneficiaries educational information about their medical conditions and related clinical guidelines, as well as assistance interpreting health benefits and treatment options and scheduling appointments primarily over the phone—all with the goal of increasing transparency, improving health care quality, and reducing health care costs.

The original intent of the MedExpert program was a randomized study design consisting only of Medicare FFS beneficiaries identified by CMS. However, two separate events challenged Acumen's ability to carry out an evaluation based on this intended design. First, the data provided to MedExpert by CMS inadvertently included Medicare Advantage beneficiaries, resulting in a substantial number of beneficiaries in the treatment group for whom full claims data were not available. Second, due to a change in the interpretation of the rules about the nature of the data use agreement (DUA), CMS had to instruct MedExpert to purge all data received on Medicare beneficiaries and, instead, apply for a research DUA to receive the data. Unfortunately, MedExpert chose not to do this, so the original randomized control group could not be identified. As a result, CMS, in consultation with MedExpert, adopted the less robust but valid approach of propensity score matching in order to identify a comparison group for the evaluation of the MedExpert intervention with Medicare FFS and Medicare Advantage

beneficiaries. The evaluation findings based upon a matched comparison group are presented in this report.

Acumen conducted separate quantitative analyses for Medicare FFS and MA beneficiaries who participated in the MedExpert intervention, using FFS claims data and MA inpatient encounter data in the CWF, to assess program effects on health and service use outcomes. For outcomes available in both analyses, estimated effects for FFS beneficiaries did not always mirror the results for the MA cohort. For instance, the MedExpert intervention was associated with decreases in inpatient service utilization for MA beneficiaries, but not for those in the FFS cohort. These differences in estimated effects on utilization are likely driven by differences in demographic and health profiles across the two groups, as well as differences in the delivery of health care between FFS and MA beneficiaries.

For the Medicare FFS cohort, the program was generally associated with increases in health service utilization categories associated with lower intensity health issues. Notable results include the following:

- Statistically significant cumulative increases in physician and ancillary service expenditures of \$211 per beneficiary (p-value<0.001), along with increases in non-emergency outpatient service costs for the second year of the intervention in the order of \$76 per beneficiary (p-value: 0.005), suggest that Medicare FFS intervention beneficiaries are more likely than controls to visit doctors in either the hospital or the outpatient setting after the intervention.
- Statistically significant increases in ER visits in the second year after program enrollment were also observed (18 more visits per 1,000 beneficiaries), although there was no corresponding increase in outpatient-ER expenditures.
- Statistically significant and quantitatively small increases in home health expenditures (\$58 cumulatively per beneficiary) also suggest increased utilization of lower intensity services among home bound patients in the FFS cohort.

Contrary to the findings for the FFS population, there were statistically significant cumulative decreases in inpatient readmissions and in all available measures of health service use among MA intervention beneficiaries. Notable results for the MA cohort include decreases in inpatient readmissions (64 fewer inpatient readmissions per 1,000 beneficiaries, p-value: 0.003), unplanned readmissions (55 fewer unplanned readmissions per 1,000 beneficiaries, p-value: 0.009), inpatient admissions (31 fewer inpatient admissions per 1,000 beneficiaries, p-value<0.001), and hospital days (142 fewer hospital days per 1,000 beneficiaries, p-value<0.001) across the full intervention period. Because expenditure information is not available in the MA encounter data available to Acumen for this analysis, the effects of the program on costs could

not be analyzed for the MA cohort. In addition, program design issues may have also influenced findings. MedExpert reported identifying an initial cohort of beneficiaries through randomization using CMS files, but had to purge data on the corresponding comparison group due to changes in its data sharing arrangements with CMS. MedExpert later also added MA beneficiaries to the intervention group through its partnership with United HealthCare, and comparison beneficiaries were not identified for this group. Acumen thus constructed comparison groups by matching beneficiaries from the general Medicare population to MedExpert intervention beneficiaries based on important demographic and health characteristics. However, Acumen's ability to match a suitable comparison group to non-randomly selected UHC MA beneficiaries may be particularly limited as these beneficiaries are likely to differ from the general Medicare Advantage population in ways not observable in claims. As such, unobserved differences may have influenced results.

### **Dartmouth**

Dartmouth and the High Value Healthcare Collaborative (HVHC) implemented SDM interventions across 14<sup>1</sup> HVHC member organizations. Of the various patient engagement programs implemented at the HVHC member sites, three program types are characterized as SDM: health coaching, video decision aids, and other decision aids. These SDM programs varied widely in the size of the patient population served across sites, and focused on the management of various conditions including diabetes, congestive heart failure, hip and knee osteoarthritis, and spine conditions.

To evaluate the impact of the heterogeneous SDM programs implemented by Dartmouth, Acumen conducted individualized analyses of two sites. The first analysis evaluated the diabetes health coaching intervention implemented at the Virginia Mason Medical Center (VMMC), while the second evaluated the hip, knee, and spine shared decision making program at the Dartmouth-Hitchcock Medical Center (DHMC). The VMMC and DHMC sites were selected because they had an adequate number of participants to support a quantitative analysis of program effects.

The evaluation of the VMMC diabetes management health coaching intervention on Medicare FFS beneficiaries found mixed evidence on the overall effects of the program; however, the results appear to be primarily driven by unobserved differences in baseline health trajectories between the intervention and comparison groups. These results include:

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<sup>1</sup> In addition to the fourteen sites implementing HCIA-funded SDM and patient-engagement programs, the HVHC included four additional collaborative partners: Hawaii Pacific Health, Sinai Health System, The Dartmouth Institute, and UC San Diego Health System.



- Statistically significant decreases in mortality on the order of 22 fewer deaths per 1,000 beneficiaries (p-value: 0.024), and modest decreases in skilled nursing facility (SNF) expenditures (\$603 decrease per beneficiary, p-value: 0.001) for participants relative to controls in the first year following program enrollment, respectively.
- These decreases were accompanied by large and statistically significant increases in cumulative inpatient admissions (increase of 156 inpatient admissions per 1,000 beneficiaries, p-value: 0.078) and modest increases in hospital days (1,610 days per 1,000 beneficiaries, p-value: 0.079) cumulatively across nine intervention quarters.
- Additionally, the program was associated with increases in Medicare Parts A & B costs (\$2,548 per beneficiary, p-value: 0.018), inpatient costs (\$1,654 per beneficiary, p-value: 0.017), and physician and ancillary service costs (\$511 per beneficiary, p-value: 0.009) in Year 2. However, the program was also associated with a modest decrease in hospice expenditures (\$110 per beneficiary, p-value: 0.033.) in Year 1.

These results should be interpreted with caution. Given the non-randomized design of the intervention, self-selection of participants into the program may have influenced findings. Although Acumen matched a robust comparison group based on an extensive set of variables observable in Medicare claims data, patients who chose to participate in the health coaching intervention are likely to be different from control group members in terms of their health-seeking behavior and other unobservable characteristics that influence outcomes.

Acumen also evaluated the impact of Dartmouth's SDM intervention aimed at beneficiaries considering preference-sensitive hip, knee, and spine surgeries at the DHMC site. Due to challenges in characterizing this target population's propensity to undergo hip, knee, or spine surgery, and creating a suitable comparison group at the beneficiary level based on claims data, Acumen conducted this analysis at the geographic region level. Specifically, the DHMC analysis uses the geographic area served by DHMC, Lebanon, New Hampshire (NH) Hospital Referral Region (HRR), as the unit of analysis. The analysis compares outcomes, including surgery rates, of Medicare FFS beneficiaries located in the Lebanon, NH HRR to outcomes of Medicare FFS beneficiaries living in comparator regions with similar characteristics, using a DiD framework. By examining outcomes among all beneficiaries in the region served by DHMC, rather than only among those beneficiaries who opted into the intervention, the geographic region-level analysis eliminates the selection bias that would be present in a participant-level analysis. The geographic-region level analysis captures the effects of changes made to the broader suite of SDM services at DHMC due to the HCIA award, in addition to improvements made to the hip, knee, and spine surgery decision aid interventions during the HCIA implementation period.

The analysis of the DHMC SDM interventions found limited evidence that the HCIA-funded changes had a significant effect on resource use, health outcomes, or expenditures. Although there were statistically significant decreases in some resource use and expenditure outcomes in the outpatient setting (i.e., rates of outpatient preference-sensitive hip, knee, and spine surgeries and related expenditures and outpatient ER and non-ER expenditures), and statistically significant increases for outcomes in other settings (hospital readmissions, inpatient admissions, hospital days, inpatient and all hip surgeries, as well as related expenditures, Medicare Parts A & B expenditures, and expenditures for inpatient, hospice, DME, and physician and other non-institutional services), attributing these estimated effects to the program is problematic for many outcomes, given existing variation in those outcomes across the regions.

Interpretation of these findings for the DHMC site is subject to several limitations. First, while the analytic approach of using the intervention region as a unit of analysis for the DHMC site avoids bias resulting from patient self-selection into the intervention group, this analysis remains subject to potential bias introduced by any underlying unobservable differences between the intervention and comparator regions. Given the non-randomized design of the intervention, the results may be attributable to baseline differences and differential trends related to resource utilization and expenditures between the Lebanon HRR and comparison regions rather than to program effects. Second, potentially positive effects of the program may have been diluted by the inclusion of individuals who were in the Lebanon region but who did not receive the SDM interventions at DHMC. Finally, since many elements of the SDM interventions existed prior to the HCIA grant, these estimates of program effects only capture the effects of the marginal changes to the SDM program rather than the full program effect, potentially muting positive effects of the program. This implies that the estimates from this analysis cannot be used to predict the effect of implementing the full set of interventions that comprise the Dartmouth SDM program at a site that does not currently utilize SDM.

### ***Key Findings on Implementation, Workforce, Patient Satisfaction, Context and Sustainability***

Over the course of the three-year evaluation period, the evaluation team identified key findings for the HCIA SDM awardees related to program implementation factors, workforce issues, patient satisfaction, context and factors affecting sustainability and scale-up. These findings were based on qualitative information obtained from interviews with HCIA awardee leadership, awardee progress reports provided by the Lewin Group, site visits (MedExpert, Dartmouth), patient experience surveys (Welvie, MedExpert), workforce surveys (all three SDM programs) and meeting notes from awardees' monthly calls with their CMS Project Officer.

### **Cross-Awardee Qualitative Analysis Findings**

- SDM awardees made efforts to conduct patient outreach well in advance of treatment decisions with the aim of improving patient engagement in their interventions, to address the time-sensitive nature of treatment decisions that are often made shortly after initial diagnosis or consultation.
- The Welvie and MedExpert SDM models did not occur within the health care delivery system and thus experienced fewer implementation challenges. While MedExpert focused on supporting health care decision-making through mailed materials and telephonic support, Welvie primarily relied on use of mailed outreach materials and a decision aid available through an interactive website that included videos or a mailed paper booklet. Dartmouth’s more complex SDM model relied on existing health care systems to serve as individual sites for the intervention and enact major changes to clinical workflow, informatics infrastructure, and resource commitments.
- All SDM awardees offered varying levels of intervention intensity (e.g., high dose, low dose) with the goal of using different dosages to improve beneficiary satisfaction with the interventions and to improve efficiency by allocating resources to beneficiaries most in need.
- Welvie and MedExpert model participants who responded to Acumen’s patient experience survey described the information they received as helpful, trustworthy, and effective in informing them about alternatives to surgery. Dartmouth participants were not included in the patient experience survey, since the intervention was integrated into standard care practices and was not identifiable by name to participants.
- SDM staff gave very favorable ratings to their new roles in the HCIA program overall. More than 60 percent strongly agreed that their roles are improving patient care and satisfaction, helping patients make decisions, and adding value to the organization. Respondents with high levels of satisfaction were much more likely to report that decision aids and resources were “very good” and “extremely useful” to patients.

### **Qualitative Analysis Findings by Awardee**

- Welvie reported an increase in the use of its decision aid among cardiac patients after distributing outreach materials that focus on chronic disease management, rather than cardiac surgery, although Welvie initially experienced challenges with engaging this population.

- Welvie has tested and identified a number of effective direct outreach strategies in its randomized intervention groups for encouraging Medicare beneficiaries to participate in its SDM program, including (i) providing incentives; (ii) mailing outreach materials followed by a telephone reminder; (iii) mailing envelopes, as compared to postcards, with the CMS or Department of Health and Human Service logo; and (iv) delivering outreach materials to beneficiaries on Monday, as compared to later in the week.
- MedExpert found that the staff (i.e., Medical Information Coordinators (MICs), physicians) and computer (i.e., MedExpert International Guidance System (MIGS)) components of the innovation were complementary and necessary aspects to delivering health information to beneficiaries in a user-friendly manner. MedExpert's staff of MICs and physicians use the MIGS, which is an information-harvesting and report-generating system that incorporates clinical guidelines, medical research, and other health information resources, to provide evidence-based information to beneficiaries. MedExpert staff members use MIGS reports as reference information during encounters with beneficiaries and share copies of the reports with beneficiaries upon request.
- The Dartmouth team developed a robust data infrastructure used to provide data-driven feedback to SDM implementation sites on the impact of HVHC interventions on health care quality and costs. However, Dartmouth experienced early challenges in collecting clean, high-quality data from the implementation sites due to variations in electronic health records (EHR), data quality, and reporting priorities across sites. The Dartmouth Program Office provided one-on-one support to clarify the data specifications and overcome initial challenges.

Dartmouth has worked to leverage EHRs to facilitate enactment of SDM programs, though variations in EHRs across organizations have created implementation challenges. Sites that leveraged their EHR used it to support some, if not all of the following processes: 1) identification of eligible patients based on diagnosis codes or appointment types; 2) delivery of an invitation to use the decision aid through the patient portal; and 3) display of patient-reported health measures to the provider. Sites that leveraged their EHR reported that it was a major facilitator of implementation success.

# 1 INTRODUCTION

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Acumen, LLC (“Acumen”) and its partner, Westat, Inc., are contracted by the Centers for Medicare & Medicaid Services (CMS) to conduct a mixed-methods evaluation of three programs implementing shared decision making (SDM) innovations. The three programs are awardees of CMS’s Health Care Innovation Awards (HCIA) Round One funding. CMS provided the awards to organizations with compelling new ideas for improving health, delivering better care, and reducing expenditures for individuals enrolled in Medicare, Medicaid, and the Children’s Health Insurance Program (CHIP). Round One HCIA SDM awardees began enrolling participants for the CMS project in 2012 and concluded HCIA implementation activities in 2015. Acumen is evaluating the effects of the three SDM awardees’ innovations on beneficiaries’ health status, resource use, and health care expenditures, among other outcomes. As part of the evaluation, Acumen is also identifying factors that have contributed to awardee implementation successes and challenges. This third annual report presents summative findings for the three awardees based on analyses conducted from August 2013 through August 2016. Section 1.1 below provides an overview of the awardees, while Section 1.2 describes our data sources and evaluation methods.

## 1.1 Overview of Awardees

The three SDM HCIA awardees aim to improve patient health, reduce health care resource use, and lower health care expenditures through novel patient-level care interventions. SDM encourages patients to become fully informed about the risks and benefits of available medical treatments and to participate in selecting the most appropriate treatments or care management options for their individual needs. SDM provides patients with decision aids and other information to encourage decision making based on the best scientific evidence available and on the patient’s values and preferences. The HCIA SDM programs provide patients with advice on how to effectively communicate with their health care providers, as well as unbiased information on their medical conditions and treatment options, in an effort to reduce preference-sensitive procedures, reduce expenditures, and improve health outcomes and quality of care. The three SDM awardees are:

- (1) Welvie LLC (Welvie),
- (2) MedExpert International (MedExpert), and
- (3) Trustees of Dartmouth College (Dartmouth).

### **1.1.1 Core Components of the Innovations**

Welvie offers education, health information, and decision-making resources regarding preference-sensitive surgeries to Medicare beneficiaries with the goal of enhancing patient

experiences, increasing surgery literacy, improving surgical outcomes, and reducing the incidence of inappropriate surgeries. Surgery decision aids are primarily accessed through a web-based tool or paper equivalent format and are also available by phone. Section 2 provides further details.

MedExpert offers Medicare beneficiaries educational information about their medical conditions and related clinical guidelines, as well as assistance interpreting health benefits and treatment options and scheduling appointments primarily over the phone—all with the goal of increasing transparency, improving health care quality, and reducing health care costs. The program is described in more detail in Section 3.

Dartmouth offers decision aids and other support for patients considering hip, knee, or spine surgery and for complex patients with diabetes or congestive heart failure. The goal of the innovation is to improve patient engagement and decision-making and thereby increase care quality and align treatment choices with patients' preferences. Services related to the intervention's shared decision-making focus are offered primarily in person or over the phone by health coaches. The Dartmouth program has 14 different participating healthcare organizations that are also members of the High Value Healthcare Collaborative (HVHC). The implementation of Dartmouth's SDM program varies widely across these organizations, as detailed in Section 4.

### **1.1.2 Enrollment**

The SDM awardees have been enrolling patients since 2012. Table 1-1 lists each awardee's cumulative program enrollment and payer mix, based on participant-level program data provided by the awardees and linked to Medicare enrollment data. Welvie and MedExpert each have a large number of participants in their intervention group—252,792 and 353,663, respectively—and over 90% of them are either enrolled in Medicare Parts A and B or MA. Dartmouth's participant population was substantially smaller, with 19,125 SDM participants, and about 46% of these were enrolled in Medicare Parts A and B or MA. Nearly 60% of Dartmouth's participants were either not enrolled in Medicare on the day they entered the program or did not have sufficient identifiers to be linked to Medicare data. Note that this report only considers individuals in the Dartmouth intervention who specifically participated in SDM programs; over 90,000 Medicare beneficiaries participated in patient engagement and other activities funded through the grant but not in SDM programs, and these beneficiaries are not included in this report<sup>2</sup>.

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<sup>2</sup> Dartmouth's proposal and target savings estimates were based on both SDM and non-SDM patient engagement activities.

**Table 1-1: SDM Program Enrollment and Payer Mix**

Awardee	Earliest Enrollment Date	Latest Enrollment Date	Medicare Parts A and B (FFS)		Medicare Advantage		Other Medicare Enrolled		Not Medicare-Enrolled / Unknown		Total
<b>Dartmouth</b>	7/2/2012	6/30/2015	7,489	39%	1,383	7%	836	4%	9,417	49%	19,125
<b>MedExpert</b>	2/20/2013	6/17/2015	100,867	29%	224,497	63%	8,015	2%	20,284	6%	353,663
<b>Welvie (Total)</b>	9/7/2012	4/17/2015	67,003	27%	177,182	70%	6,037	2%	2,570	1%	252,792
<b>Welvie (Ohio)</b>	9/7/2012	2/20/2015	66,338	37%	106,449	59%	5,989	3%	2,396	1%	181,172
<b>Welvie (Texas)</b>	5/16/2014	4/17/2015	665	1%	70,733	99%	48	0%	174	0%	71,620

Source: Participant-level program data provided by awardees to Acumen.

Notes: “Medicare Parts A and B” and “Medicare Advantage” may include dual-eligible beneficiaries and beneficiaries enrolled in Medicare Part D.

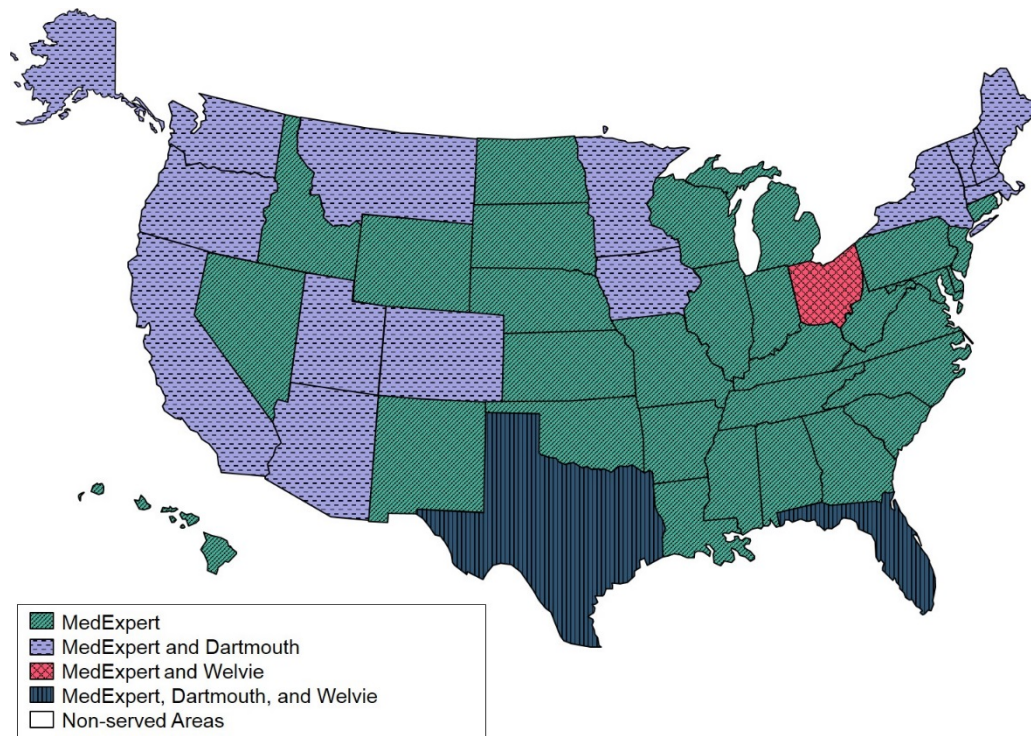
Most beneficiaries classified as “Other Medicare Enrolled” have Medicare Part A only, although other insurance statuses (e.g., Parts A and D) are rarely observed.

“Not Medicare-Enrolled/Unknown” includes beneficiaries who were not enrolled in Medicare on the day they entered the program or for whom the awardee did not provide sufficient personally identifiable information to link to Medicare claims.

### **1.1.3 Geographic Reach**

The geographic reach of SDM HCIA awardees is shown in Figure 1-1. During the HCIA program implementation period, Welvie served participants in Ohio and Texas. It also conducted a provider referral pilot program through Humana-owned practices in Florida from June 2015 through December 2015. MedExpert offered its services primarily to individuals in California, Nevada, Texas, Idaho, Kentucky, Washington, and a smaller number of individuals in other states. Dartmouth provides services in multiple states spread across the country through multiple implementation sites.

**Figure 1-1: Geographic Reach of SDM Awardees**



Source: Lewin Quarterly Awardee Progress Reports (January-March 2016) and quarterly awardee qualitative interviews

## 1.2 Data and Methods

The mixed methods evaluation of the SDM programs will focus on addressing the following overarching research questions:

- (1) Which innovative approaches reduced health care costs while improving or maintaining the standard of care, patient health, and quality of life?
- (2) Which contextual factors and mechanisms contributed to an intervention's success?

To comprehensively address these overarching research questions, Acumen is examining each awardee program across six evaluation categories: (i) innovation components, (ii) implementation effectiveness, (iii) program effectiveness, (iv) workforce issues, (v) context, and (vi) sustainability and spread. The first evaluation category, innovation components, provides a comprehensive description of the key components of the innovation, including the target population(s), theory of action, and theory of change driving the innovation. Implementation effectiveness focuses on identifying the factors associated with successful operation of the program and uptake by target populations, while program effectiveness examines the overall success of the intervention in improving patient health outcomes and quality of care and reducing resource use and medical expenditures. Workforce issues relate to the innovation's impact on



workforce training, staff size, skills development, and provider satisfaction. Context assesses the extent to which external policy and health system factors, and endogenous organizational factors influence program impacts. Finally, sustainability and spread refers to how successfully an innovation can be scaled and replicated in other settings. Table 1-2 details the key research questions that address each evaluation category.

**Table 1-2: Evaluation Framework and Key Research Questions**

Evaluation Category	Evaluation Dimension	Key Research Questions
Innovation Components	Target Complexity	<ul style="list-style-type: none"> <li>What are the key components of the innovation?</li> <li>How is the innovation designed to reduce expenditures or improve care quality?</li> <li>Who does the intervention target? Which priority population(s) does the intervention target? Does it target individuals, organizations, or both?</li> <li>To what extent is the innovation viewed as a “plug in” versus a fundamental and major change within the implementing organization?</li> </ul>
Implementation Effectiveness	Fidelity Reach Overall Effectiveness Implementation Process	<ul style="list-style-type: none"> <li>Was the intervention delivered as intended to the target population?</li> <li>What were key successes in implementing the innovation as designed and factors associated with success?</li> <li>What were the challenges in implementing the innovation as designed?</li> <li>What changes were made to the innovation to increase enrollment, improve care, or reduce expenditures?</li> <li>Did the innovation use internal evaluation findings to inform the implementation process, when necessary?</li> </ul>
Program Effectiveness	Health Cost Resource Use Care Quality	<ul style="list-style-type: none"> <li>What are the effects of the innovation on participants’ health outcomes?</li> <li>What are effects of the innovation on healthcare expenditures and health service resource utilization?</li> <li>What is the impact of the innovation on quality of care?</li> <li>If the innovation has positive effects with respect to health, cost, resource use, or care quality, how long are these changes sustained?</li> <li>If the innovation has positive effects, what are the innovation components that are driving the change?</li> </ul>
Workforce Issues	Development and Training Deployment Satisfaction	<ul style="list-style-type: none"> <li>Did the innovation contribute in filling health care workforce gaps?</li> <li>What type and level of workforce training does the innovation provide?</li> <li>What type of support structure is available for staff?</li> <li>What type of support structure is effective for staff deployment?</li> <li>How does the innovation affect staff satisfaction?</li> <li>Has the innovation experienced high staff turnaround? If so, what measures have been taken to remedy the problem?</li> </ul>
Context	Leadership Engagement Team Characteristics Organization Capacity	<ul style="list-style-type: none"> <li>What endogenous (e.g., organizational) and exogenous (policy and environmental) factors affect implementation?</li> <li>How is senior management structured, and how does it lead and communicate innovation changes to implementers? How does the innovation affect existing hospitals, medical practices, or other settings that provide health care to participants?</li> <li>Are there unintended negative consequences of the innovation? If so, how can they be mitigated in similar models in the future?</li> <li>To what extent does the innovation duplicate practices or programs that are already existent?</li> </ul>
Sustainability/Spread	Sustainability Scalability	<ul style="list-style-type: none"> <li>How can successful innovation components be scaled and replicated in other settings?</li> </ul>

Note: This evaluation framework is based on evaluation domains, dimensions, and research questions recommended in “CMS Innovation Center Health Care Center Innovation Awards: Evaluation Plan” (Rand, 2013) and CMS feedback during the evaluation process.

To address the research questions outlined above, Acumen synthesized findings from the qualitative and quantitative analyses described in the following sections to present a robust evaluation of each SDM program.

### ***1.2.1 Qualitative Analysis***

The Acumen team reviewed awardee program materials, conducted phone interviews and site visits, and implemented patient experience and workforce surveys to collect qualitative information on each of the SDM awardees for qualitative analysis. These data collection and analysis methods are described in turn below.

#### ***Review of Program Materials***

The Acumen team reviewed existing awardee program materials and documentation to obtain a foundational understanding of the innovation program components, implementation processes, and workforce. The Acumen team requested copies of relevant program materials from awardees, which included, but were not limited to: marketing and outreach materials; training materials; job descriptions; staff and/or participant surveys and results; project schedules and work plans; implementation guides; and dissemination plans. The Acumen team also reviewed narrative reports on program implementation, sustainability plans, and self-monitoring measurement dashboards prepared by each awardee and submitted to the Lewin Group, as well as quarterly progress reports on the implementation of awardees' programs developed by the Lewin Group.

#### ***Phone Interviews and Site Visits***

The Acumen team conducted quarterly telephone interviews to collect qualitative information on the following evaluation categories: innovation components, implementation effectiveness, workforce, and implementation context. The team developed a comprehensive interview protocol that was used to collect the qualitative information. Given the short length of the interviews and broad scope of research interests, for each quarterly interview, the Acumen team identified a subset of priority interview questions from the full interview protocol, as well as awardee-specific questions to follow up on information provided in awardees' narrative and progress reports. Interviewees included awardee program leaders, executive directors, and program managers. Interviews generally occurred on a quarterly basis and were approximately one hour in length.

During the second year of the contract, the Acumen team additionally conducted one- or two-day site visits with two SDM programs (MedExpert and Dartmouth). The site visits allowed the team to observe day-to-day implementation and management of the interventions. The site visits entailed semi-structured interviews with program staff, observations of selected care processes related to the innovation, and when available the collection of supplemental program

materials from the sites. When possible, the evaluation team spoke with physicians, other providers, and awardee leadership during the site visits to gain insight into provider and physician acceptance of the SDM interventions as well as the impact of the interventions on a wide range of health outcomes, including quality of care. Awardee leadership also provided information on institutional support for the intervention and other factors that affected program sustainability and scalability. For Dartmouth, which has a large number of implementation sites, the Acumen team visited the two sites with the largest number of SDM program enrollees (DHMC and VMMC) to get a better sense of the variation in SDM intervention implementation across sites.

One SDM awardee (Welvie) was not visited because information typically collected during a site visit was available through other means (e.g., demonstration accounts for the web-based intervention) and the majority of the project workforce, which consists of a small staff, already participated in the quarterly monitoring telephone interviews.

### ***Patient Experience Survey***

The Acumen team evaluated patient experience with SDM HCIA interventions using a comprehensive mixed-methods approach, including surveys and follow up telephone interviews to collect qualitative examples of patient experience with the interventions. The team developed a survey questionnaire to measure the specific aspects of health care appropriate to the HCIA interventions, with a focus on topics for which patients were the best or only source of information. The survey questions addressed the following topics: (i) awareness of the intervention, (ii) types of exposure to intervention, (iii) communication with participant; (iv) experience with intervention, (v) participant engagement, (vi) views about healthcare, and (vii) demographics.

Survey questions were derived from several validated survey item sets, including the Consumer Assessment of Healthcare Providers and Systems (CAHPS) surveys, the American short form Patient Activation Measure (PAM13) questionnaire, and the Purdue Pharmacy Directive Guidance Survey. Surveys and introductory letters were mailed to a sample of Medicare beneficiaries who participated in the Welvie or MedExpert interventions during the fourth quarter of 2014 through the first quarter of 2015. This included patients newly enrolled in the intervention on or after October 1, 2014, as well as those who received active follow-up services on or after October 1, 2014. For both MedExpert and Welvie, a random sample of 1,800 participants was drawn. The Welvie sample was restricted to individuals who requested or initiated access to the decision aid (e.g., created user credentials for the website, requested a paper booklet by phone). Table 1-3 provides sample sizes and response rates for each program and for the overall SDM portfolio. To further describe patient experience with the interventions,

qualitative data were collected from up to five survey respondents using an open-ended survey question (e.g., if you changed your treatment decision as a result of using the SDM program, please explain what changed your mind.) and in-depth telephone interviews.

**Table 1-3: Patient Experience Survey Response Rates for SDM Programs**

Program Name	Number of Sampled Patients	Number of Completes	Response Rate
MedExpert	1,800	806	44.8
Welvie	1,800	712	39.6
<b>Total</b>	<b>3,600</b>	<b>1,518</b>	<b>42.2</b>

<sup>a</sup>Dartmouth was excluded from the Patient Experience Survey, since the intervention was integrated into standard care practices and not readily identifiable by name to participants.

Survey results were analyzed by program to reflect the geographic, demographic, and health differences among the program populations, as well as the differences in intervention approaches. Limited comparisons are made across the interventions to reduce the possibility of highlighting variations that are due to population differences rather than differences in the outcomes of the interventions.

### **Workforce Survey**

The Acumen team designed and administered a one-time survey of program staff for all three SDM awardees. The workforce survey captured staff experience, perceptions, and level of satisfaction with the model. The survey was web-based with phone follow-up to non-respondents and was constructed using validated measures of job satisfaction and intent to leave or stay in the new role. Other survey items were adapted from staff surveys fielded by awardees or constructed specifically to answer key research questions. The survey contained core questions about staff experiences in the interventions as well as questions specific to SDM awardees.

The survey was sent to all staff with a role in program implementation, regardless of whether the position was funded through the HCIA grant (as opposed to a sample of the staff, since many awardees have a small number of staff in the target population). Program leaders compiled and submitted names, email addresses, and phone numbers for all individuals in the target population, and the Acumen team worked with program leaders to ensure the staff lists were comprehensive and accurate. The Acumen team fielded the survey and solicited the support of program leaders in publicizing the survey and encouraging staff members to complete it.

Table 1-4 provides response rates for each program and the SDM portfolio overall. A total of 91 workforce surveys were completed and an overall response rate of 37.1 percent was obtained. This overall rate masks much higher response rates among the small staffs of MedExpert (66.7%) and Welvie (100%). Workforce survey results are presented at the portfolio level in Section 5 because of the small staff sizes in these programs. Tests of statistical

significance are not provided as the data constitute a census rather than a random sample of program staff.

**Table 1-4: Workforce Survey Response Rates for SDM Programs**

Program Name	Number of Eligible Respondents <sup>a</sup>	Total Number of Surveys Received	Response Rate <sup>b</sup>
Dartmouth	191	49	25.7%
MedExpert	36	24	66.7%
Welvie	18	18	100.0%
<b>Shared Decision Making</b>	<b>245</b>	<b>91</b>	<b>37.1%</b>

<sup>a</sup>Individuals determined to be ineligible for the survey (e.g., brand new hire, recent retirees were excluded from the count of eligible respondents).

<sup>b</sup>Using the American Association for Public Opinion Research response rate equation #2.

## 1.2.2 Quantitative Analysis

This report presents quantitative analyses of program effects for the three SDM programs, Welvie, MedExpert, and Dartmouth through December 31, 2015. Acumen conducted single difference and difference-in-differences (DiD) analyses of mortality, inpatient readmissions, resource use, and medical expenditures for Medicare beneficiaries targeted by awardee innovations relative to non-participating Medicare beneficiaries. The analyses primarily used intervention data and Medicare claims data. For the DiD analyses, Acumen used a randomized control group provided by the awardee in the case of Welvie, and relied on matched comparison groups for the analyses of MedExpert and Dartmouth.

Acumen restricted SDM intervention cohorts to beneficiaries enrolled in their respective interventions on September 30, 2015 or earlier. For Welvie and MedExpert, Acumen conducted separate analyses on both Medicare Fee-for-Service (FFS) and Medicare Advantage (MA) beneficiaries. For Dartmouth, Acumen limited the analysis to the FFS population since the MA cohort did not have an adequate number of beneficiaries for analysis. Due to variations in program implementation across sites, the quantitative analysis of the Dartmouth intervention was restricted to two of several sites, Dartmouth's diabetes management health coaching intervention at the Virginia Mason Medical Center (VMMC) and the SDM programs at Dartmouth-Hitchcock Medical Center (DHMC), as these two sites had a sufficient number of participants with data available for analysis. The quantitative data sources, comparison group selection, study inclusion criteria, analytic method, and outcome measures for all evaluations except the supplementary instrumental variable (IV) analysis of Welvie and the geographic analysis of Dartmouth's SDM intervention at the DHMC site are further described below. The methodology for Welvie IV and DHMC analyses, which differ from the general evaluation approach, are described separately in Sections 2.5.1 and 4.5.1.

## **Data Sources**

Acumen's quantitative analyses primarily relied on participant-level intervention and claims data obtained directly from the awardees, as well as Medicare enrollment and claims data drawn from Acumen's CMS data holdings. The report relies on claims data with service dates from September 7, 2011 through December 31, 2015. Acumen used enrollment data provided by awardees to obtain identifiers, intervention dates, and other intervention-related information for participating beneficiaries. Using identifiers including Social Security number, gender, name, and date of birth, Acumen then linked program participants to Medicare enrollment and claims data files for analysis.

The claims data sources differed slightly by analytic cohort. Medicare claims data were obtained from CMS's Common Working Files (CWF), and included data on diagnoses, health care service use, and expenditures across care settings for Medicare FFS beneficiaries. These data were used to create beneficiary-level longitudinal health profiles for analyses of the Welvie, Dartmouth and MedExpert FFS cohorts. Acumen also used Medicare enrollment and inpatient encounter data (i.e., no-pay inpatient claims submitted by hospitals) available in the CWF, and diagnosis data from the Risk Adjustment and Payment System (RAPS) for the analysis of MA beneficiaries in the MedExpert intervention. MA data from CWF does not include information on beneficiaries' service use, diagnosis and procedure information in non-inpatient settings, or expenditures. For the analyses of MA beneficiaries in Welvie's program, Acumen thus used MA claims data that Welvie obtained from its insurance partners (Anthem Ohio and Humana Texas), which contained beneficiary-level data on service use, diagnoses, procedures as well as expenditures across multiple settings.<sup>3</sup> Acumen proceeded with using MA encounter data in the CWF for the analysis of the MedExpert MA cohort, because MA claims data were not provided by the awardee.<sup>4</sup> While Acumen's analyses used claims data with service dates through December 2015 for all awardees, the analysis of the Ohio MA cohort used only claims with service dates through October 20, 2015 since Welvie's partnership with Anthem Ohio ended by the end of June 2015.

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<sup>3</sup> Acumen also extracted MA encounter data from CMS's integrated data repository (IDR) and conducted an additional set of supplementary analyses on the Welvie MA cohorts to compare with results produced using Welvie-provided MA claims data for outcomes that were observable in both sources (see Appendix C for details). The IDR MA data accessible to Acumen contained service use, diagnosis and procedure information across settings but did not contain corresponding expenditure data in time for inclusion in the Third Annual Report.

<sup>4</sup> The decision to rely on CWF for the MedExpert analysis was based on investigations which showed that the MA encounter data available in CMS's Integrated Data Repository (IDR) were likely incomplete. Specifically, a comparison of available inpatient data in the IDR and CWF sources for MA beneficiaries showed significantly fewer inpatient claims in the IDR data for the MedExpert population. The inpatient IP claims match rate between the two data sources for the potential control population of the MedExpert analysis was between 29 to 36 percent compared to 77 to 84 percent for the Welvie MA Ohio cohort.

Acumen used these Medicare claims data sources to identify and observe the outcomes of interest for intervention beneficiaries and control group beneficiaries selected by Acumen as described in the following sections.

### ***Outcome Measures***

Acumen used CMS-recommended measures of health outcomes and quality-of-care indicators, health service use, and medical expenditures, and also constructed program-specific measures as relevant to evaluate program effects. The four meta-evaluation measures recommended by CMS include total Medicare expenditures per beneficiary, emergency room (ER) visit rate, inpatient admission rate, and a 30-day unplanned readmission rate. For Medicare FFS beneficiaries in the Welvie, MedExpert, and Dartmouth programs, Acumen analyzed these meta-evaluation measures as well as rates of mortality, 30-day all-cause readmissions, unplanned inpatient admissions, days spent in a hospital, and Medicare expenditures in the categories of inpatient, outpatient ER, outpatient non-ER, carrier/PB (physician and ancillary services), skilled nursing facility (SNF), durable medical equipment (DME), home health, and hospice. Acumen reports additional program-specific measures for Medicare FFS beneficiaries in Welvie and Dartmouth DHMC programs that focus on surgeries (e.g., preference-sensitive surgery rates and costs). Using MA claims data provided by Welvie, Acumen was able to assess the same outcomes for the Welvie MA Ohio and Welvie MA Texas cohorts as the Welvie FFS cohort, except for health service use and expenditures in the DME and hospice settings, which could not be assessed due to lack of reliable place of service information to identify service use and expenditures specific to these settings. For MedExpert MA beneficiaries, Acumen was able to only assess mortality, 30-day all-cause and unplanned readmissions, all-cause and unplanned inpatient admissions, and number of hospital days using MA data available from CWF. Detailed definitions of all outcomes measures, including the meta-evaluation measures, are provided in Appendix A.

### ***Comparison Groups***

To conduct quantitative analyses, Acumen used randomized intervention and control groups provided by Welvie and constructed matched comparison groups for MedExpert and Dartmouth. Welvie's intervention, uniquely, was run as a randomized controlled trial, and Welvie provided comparison groups constructed from its randomization. For MedExpert and Dartmouth VMMC, Acumen constructed comparison groups by matching beneficiaries participating in the intervention to beneficiaries who were not intervened upon, using a variety of observable characteristics derived from the datasets that were described in the previous section. For this propensity score matching, Acumen matched each intervention group beneficiary to a control using scores constructed to reflect the beneficiaries' propensity to receive the awardee's intervention. These scores were generally based on predictive Medicare claims data variables



including measures of sociodemographics, medical conditions, pre-enrollment health service use, prescription drug use, and medical expenditures and patterns. Acumen also leveraged program-specific information on intervention group characteristics and selection criteria to identify the appropriate set of variables to include in the propensity score matching model.

The matching model works by estimating the probability that a beneficiary will enroll in the intervention given observed covariates  $X$ . That is, if  $D = 1$  for beneficiaries in the intervention group, and  $D = 0$  for beneficiaries in the comparison group who do not receive an intervention,  $\Pr(D_i=1 \mid X_i)$  is calculated using logistic regression, as per the following formula:

$$\Pr(D_i = 1 \mid X_i) = \frac{e^{\lambda X_i}}{1 + e^{\lambda X_i}}$$

where  $X_i$  represents binary and continuous terms of the  $X$  covariates, and  $\lambda$  represents a vector of estimation parameters (including a constant). Once the propensity score is calculated for both intervention group beneficiaries and potential controls, Acumen's approach is to match beneficiaries using both the propensity score and the values of  $X$  variables believed to be particularly important for predicting analysis outcomes. This ensures that covariate balance is achieved over a large variety of health-related covariates while also ensuring particularly close matches on critical covariates like age, baseline Medicare costs, and hospitalizations. The exact variables used varied based on intervention characteristics and data available, but the general process was as follows. Each intervention group beneficiary was first matched to a set of control group beneficiaries using exact matching on highly important categorical variables, especially important health utilization covariates like the presence of a recent hospitalization, and sociodemographic characteristics such as gender, race, dual eligibility and disability status. Among control beneficiaries who exactly matched on these variables, caliper matching was used to select control beneficiaries with propensity scores within 0.2 standard deviations of the propensity score from the intervention beneficiary as potential matches. Finally, a Mahalanobis-metric matching process was used to select for each intervention beneficiary the control beneficiary who was closest on a variety of key continuous variables, such as age and inpatient cost. Thus, each intervention beneficiary was matched to a control beneficiary who was highly similar on a variety of important prognostic characteristics. Intervention group beneficiaries without a matched comparison group member were excluded from the analysis.

### ***Study Inclusion Criteria***

Program participants and comparison groups were generally included in the quantitative portion of the analysis only if they have complete claims or encounter data beginning with a one-year pre-enrollment period (pre-enrollment period) through at least one intervention quarter after entering the program (post-enrollment period). As such, Welvie, MedExpert and Dartmouth

program participants and comparison groups are included in the analysis only if they are continuously enrolled in Medicare over this period. Pre-enrollment information that goes back in time, as included in complete claims or encounter data, is necessary for the construction of appropriate comparison groups. Beneficiaries who are continuously enrolled in Medicare but switch between FFS and MA are included in Acumen's MA analyses; Acumen uses the lowest common denominator of available data (inpatient utilization data for the MA population) to make sound comparisons over time. Additional exclusion criteria are applied as appropriate to each analysis as described in the Program Effectiveness section of each awardee chapter.

It is worth noting that not all beneficiaries are observed for the same length of time post-enrollment. For example, beneficiaries who enrolled in the program later are observed for fewer quarters post-intervention. In addition, there is sample attrition due to mortality.

### ***Analytic Method***

Acumen evaluated program effects using single difference and differences-in-differences (DiD) estimators, measuring changes in the intervention groups relative to control from the pre-enrollment period to the quarter of interest in the post-enrollment period. Acumen generally conducted a single difference analysis of mortality and inpatient readmissions during the intervention period,<sup>5</sup> and estimated the effect of each intervention on these outcomes using logistic models. Program effects on resource use and medical expenditures were estimated using DiD methodology, and linear models were employed for this purpose. As awardees enrolled beneficiaries into their programs on a rolling basis since program launch, Acumen used each beneficiary's enrollment date as a reference for defining the pre- and post-enrollment periods.

For the DiD estimates, Acumen first calculated average changes in health outcomes, quality of care, health service use, and medical expenditures for intervention group beneficiaries in the period after program enrollment compared with the pre-enrollment period, and then calculated the corresponding changes for comparison groups over the same period. For each outcome measure, Acumen subtracted the average change in the comparison group from that in the intervention group to obtain the DiD estimate, and calculated heteroscedastic-robust standard errors for each estimate.

Acumen reports cumulative and yearly program effects for various outcomes of interest in the Program Effectiveness section for each awardee, while quarterly program effects are typically reported in the Appendix. Reported estimates of cumulative and quarterly effects are all based on the same DiD methodology, but they are calculated differently, so they are not

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<sup>5</sup> For the analysis of the Dartmouth program at the DHMC site, Acumen conducted a DiD analysis of inpatient readmissions to account for the fact that it was a geographic-level analysis that did not use propensity-score matching at the beneficiary level to account for factors affecting readmissions prior to the intervention.

directly comparable. In particular, the baseline (pre-enrollment) intervention and comparison groups used to compute changes in outcomes for cumulative (and yearly) estimates are different from those used for the calculation of quarterly estimates. Cumulative and yearly estimates of program effects, which are included in the main analysis, use baseline information for all beneficiaries ever included in the study, including those beneficiaries who were not observed in all post-intervention quarters. Quarterly program effects, included in the Appendix, compare outcomes for intervention and comparison groups in a given quarter to outcomes for those same individuals in the pre-enrollment period, omitting all other observations from the baseline sample. These quarterly estimates are referred to as “quarterly fixed effects” estimates.

Quarterly program effects are estimated independently in each quarter after program enrollment in a non-cumulative fashion. For example, the DiD estimate for Medicare expenditures in the first quarter after program enrollment (Q1) reflects the difference between the intervention group and the control group in Q1 compared with the difference in Medicare expenditures between the intervention group and the control group during the entire pre-enrollment year, scaled to one quarter (divided by four). Similarly, the DiD estimate for the second quarter after enrollment (Q2) reflects the difference between the intervention and control groups observed in Q2 (who will generally be subsets of the groups observed in Q1) compared to the difference between the same groups in the pre-enrollment year, scaled to one quarter. For example, if the Q2 DiD estimate for total inpatient expenditures was -\$100, this would indicate that enrollees who participated in the intervention and were observed in Q2 incurred, on average, \$100 less in inpatient expenditures, compared to the baseline period, relative to those beneficiaries to whom they had been initially matched (based on pre-enrollment information). Thus, quarterly fixed effects estimates truly represent a longitudinal study, where the same individuals are tracked over time, and comparisons are made, for each quarter, between participants and non-participants. Each quarterly fixed effect estimate, however, is calculated based on a slightly different baseline sample. Quarterly fixed effects estimates for a given quarter are expressed in a per-beneficiary format for expenditure measures (by dividing by the total number of beneficiaries in that quarter) and in a per-1,000 beneficiaries format for all other measures (by dividing by the total number of beneficiaries in that quarter and multiplying by 1,000).

Cumulative program effects represent the effect of the program from the start of the intervention through the final quarter of available data. Each cumulative estimate is generated by producing a linear sum of the coefficients from a regression which includes indicator variables for each post-intervention quarter (interacted with participation indicators), where each coefficient is weighted by the number of participant beneficiaries in each quarter. A test of the statistical significance of this weighted sum is then conducted. Acumen calculates the

cumulative estimates in accordance with methodologies specified by the team overseeing the HCIA meta-evaluation to ensure that the results are able to support the meta-evaluation. A statistically significant cumulative estimate for a given outcome would indicate that the intervention was associated with a change of that magnitude across all quarters of the intervention compared to the baseline period, relative to the comparison population. For example, if the cumulative DiD estimate for total inpatient expenditures was -\$450,000, this would indicate that enrollees who participated in the intervention incurred \$450,000 less in inpatient expenditures, compared to the baseline period, relative to the comparison population of the study.

In addition to cumulative program effects, Acumen calculates and reports annual program effects, so that the impact of the program in a particular year of the intervention can be observed. Annual estimates are calculated similarly to the cumulative estimates: they represent weighted sums of regression coefficients attached to quarterly indicator variables (interacted with participation indicators) corresponding to a specific post-intervention year (for example, Q1 through Q4 correspond to year 1). As described above, these estimates use the whole baseline population of intervention and comparison beneficiaries to calculate average changes in outcomes. For example, if the year 2 DiD estimate for total inpatient expenditures was -\$400,000, this would indicate that participant enrollees observed in year 2 incurred \$400,000 less in inpatient expenditures in year 2, compared to the baseline period, relative to beneficiaries observed in year 2, who belong to the comparison group. The baseline period includes all participant and control beneficiaries who were part of the study at any point in time, regardless of whether they were observed in year 2.

In addition to reporting aggregate cumulative and yearly results, as described above, Acumen also normalizes coefficients to correspond to estimated effects per 1,000 beneficiaries, cumulatively and by year. These normalized estimates are included in the Appendix. To calculate these estimates, the cumulative (or yearly) estimate is first divided by the number of beneficiary-quarters<sup>6</sup> and then multiplied by the number of quarters (4 quarters for a yearly normalized estimate, or all study quarters for a cumulative normalized estimate) and by 1,000.

Acumen assessed the statistical significance of estimated program effect on each outcome for all awardees at the 10% ( $p < 0.10$ ) level, as well as the 5% ( $p < 0.05$ ) and 1% ( $p < 0.01$ ) levels. Cumulative results for each outcome are presented in tables that also show 90% confidence intervals (CI) and p-values for each point estimate. Quarterly key results are illustrated in figures showing plots of single difference or DiD estimates along with their 90% CI for each quarter

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<sup>6</sup> Beneficiary-quarters correspond to the total number of observations across all quarters. For example, if we observe 5 beneficiaries for 2 quarters and 3 beneficiaries for 1 quarter, these count as 13 beneficiary-quarters.

after enrollment. In the figures showing quarterly differences and DiD estimates in this report, a statistically significant increase in an outcome is illustrated by a 90% CI that lies above the solid horizontal line representing null or zero effect, while a statistically significant decrease is depicted by a 90% CI that falls below this line. The point estimate itself is represented by the midpoint of the 90% CI interval.

The remainder of this report is structured as follows. Section 2, Section 3, and Section 4 provide awardee-specific findings from Acumen’s mixed-methods evaluation of the Welvie, MedExpert, and Dartmouth programs, respectively. Each of these sections includes a description of the program, evaluability issues, program effectiveness, implementation effectiveness, workforce issues, context as well as the program’s sustainability and spread after the conclusion of the HCIA award. Section 5 then discusses some key cross-awardee findings for the evaluation categories of participant experience, workforce issues and factors affecting sustainability and spread of the SDM programs, mostly based on the Patient Experience Survey, Workforce Survey and other qualitative information received from awardees.

## 2 EVALUATION OF THE WELVIE, LLC HEALTH CARE INNOVATION AWARD

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This section provides summative evaluation findings for the Welvie, LLC (“Welvie”) innovation through August 2016. The Welvie SDM innovation seeks to enable patients to make informed decisions about preference-sensitive procedures and their alternatives via outreach mailings, which include brief educational content, and an in-depth, six-step decision aid. The innovation aims to improve the quality of care by improving communication between patient and provider, enhancing patient experience, increasing patients’ surgical literacy, improving surgical outcomes, and reducing the incidence of inappropriate surgical procedures. Welvie provided SDM services to three randomized cohorts of beneficiaries (fee-for-service enrollees in Ohio, Medicare Advantage enrollees in Ohio, and Medicare Advantage enrollees in Texas).

Section 2.1 provides an overview of the key findings detailed in the remainder of the chapter. Section 2.2 describes the Welvie innovation components and Section 2.3 summarizes the primary factors affecting program evaluability. Sections 2.4 and 2.5 discuss quantitative findings on Welvie’s program effects. The former provides analysis results using an intent-to-treat (ITT) framework, while the latter presents results from instrumental variable (IV) estimation, designed to evaluate the effects of receipt of a high dose of the Welvie intervention (defined as the use of the decision aid component of the program) on outcomes of interest. Sections 2.6, 2.7, and 2.8 highlight, respectively, findings on the evaluation categories of implementation effectiveness, workforce, and context. Finally, Section 2.9 describes the sustainability and spread of the Welvie program after the end of the HCIA project.

### 2.1 Key Findings

The Welvie intervention was not associated with cumulative effects across the eleven quarters after program enrollment on resource use outcomes or expenditures for the Medicare FFS Ohio cohort; however, there were positive effects on some outcomes in the first quarter or first year after program enrollment. Consistent with one of the program goals of improving surgical outcomes for patients who undergo surgery, there were statistically significant decreases in the rate of readmissions among beneficiaries with an inpatient surgery in the first year after program enrollment, which was partly driven by a decrease in readmissions after inpatient preference-sensitive orthopedic surgeries. Decreases in ER visits observed in the first year after enrollment may also indicate potential improvements in post-surgery outcomes. There were also statistically significant decreases in inpatient admissions and hospital days in the first quarter after program enrollment, driven by declines in surgeries and specifically, preference-sensitive cardiac surgeries. These changes are reflected in lower expenditures in corresponding categories

for that quarter, with decreases in net total expenditures amounting to about \$103 per beneficiary in Q1.

Mortality also declined significantly in the Welvie FFS Ohio cohort relative to controls, estimated at about 21 fewer deaths per 1,000 beneficiaries cumulatively across the eleven quarters after program enrollment. To the extent that the randomized intervention and control groups provided by the awardee were similar in unobservable baseline characteristics that influence outcomes, a potential interpretation of this finding is that the program, in addition to its effects on resource utilization, also had downstream effects on mortality. This may be due to avoidance of high-risk surgeries or improvements in surgical outcomes, which would be consistent with the observed decreases in inpatient readmissions and ER visits described above. It appears that program effects are concentrated immediately after receipt of outreach, which would be consistent with a model in which effects are driven by participants who were actively considering surgery at the time of initial outreach.

For the MA Ohio cohort, the Welvie intervention was associated with cumulative decreases in total surgery expenditures and mortality across the eleven quarters after program enrollment; Year 1 decreases in total medical expenditures, non-ER expenditures, and surgery-related resource use categories; and Year 2 decreases in ER visits. The cumulative decrease in total surgery expenditures amounted to \$138 per beneficiary (p-value: 0.049), and was driven by statistically significant decreases in surgery-related resource use categories and surgery-related expenditure categories observed in Year 1. A statistically significant decrease in non-ER expenditures was also observed in Year 1. These expenditure decreases were drivers of a statistically significant Year 1 decrease of \$169 per beneficiary (p-value: 0.014) in total medical expenditures. A Year 2 decrease in ER visits was also observed and may be a downstream effect of Year 1 decreases in surgery-related health care utilization. There was also a statistically significant decrease of about 3 fewer deaths per 1,000 beneficiaries in the MA Ohio cohort relative to controls across the full intervention period (p-value: 0.084); however, yearly and quarterly decreases in mortality were not statistically significant.

The analysis of the MA Texas cohort yielded mixed results, and these findings should be interpreted in light of some program design issues. The MA Texas cohort experienced a cumulative increase in inpatient surgeries and decreases in outpatient preference-sensitive orthopedic surgeries and outpatient preference-sensitive cardiac surgeries. Similar statistically significant changes were observed in corresponding expenditure categories. The initially randomized control group in the MA Texas cohort was later exposed to the intervention by Humana, Welvie's insurance partner for the intervention in Texas, through outreach materials that were made available to the full Humana Texas population. Thus, the results should be interpreted as the additional effect of Welvie's outreach activities, over and above the effects of

Humana’s outreach to its full patient population. Further, results could only be assessed for six quarters following program enrollment for the Texas cohort, and thus effects of the program over a longer time horizon are not yet known.

The qualitative analysis found that the Welvie team was successful in recruiting beneficiaries to use a six-step decision aid, refining recruitment materials targeted at cardiac patients, and providing helpful information to intervention participants. Welvie served 15,897 decision aid users since HCIA project inception, which was 102.5% of the program’s projected target.<sup>7</sup> Decision aid participants were primarily recruited by direct mail outreach. After observing lower than expected participation rates among the subgroup of beneficiaries with cardiac conditions, Welvie revised its cardiac outreach materials to focus on chronic disease management rather than cardiac surgery, which resulted in increased response rates to the new outreach materials. Welvie participants who responded to a patient experience survey described the information they received through the program as helpful and effective in informing them about alternatives to surgery.

## **2.2 Program Description**

The Welvie SDM innovation seeks to enable patients to make informed decisions about preference-sensitive surgeries and procedures (e.g., surgeries of the knee, spine, heart, and eye) and their alternatives. The innovation aims to enhance patient experience, increase patients’ surgical literacy, improve surgical outcomes, and reduce the incidence of inappropriate surgical procedures. Welvie also helps patients obtain the right diagnosis by helping them communicate effectively with their health care providers, which may improve care quality.

The Welvie intervention comprises outreach mailings, which include brief educational content, and an in-depth, six-step decision aid. Beneficiaries typically received more than one outreach with varied content. Welvie considers beneficiaries who only receive outreach materials as the “low-dose intervention group,” and beneficiaries who also use the decision aid as the “high-dose intervention group.” Outreach mailings provide information related to surgery decision-making, patient safety, and clinical guidelines (e.g., when to get a second opinion, colonoscopy guidelines). The outreach mailings also provide information on how to access Welvie’s decision aid. Beneficiaries can then choose to use Welvie’s decision aid, which can be completed online, on paper, or by phone. The decision aid is designed to educate patients about potential risks, benefits, treatment alternatives, and expectations related to surgery. Steps 1-3 of the decision aid focus on getting the right diagnosis, finding the right doctor, and making a treatment decision. Steps 4-6 of the decision aid focus on learning about hospitals, preparing for

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<sup>7</sup> Source: Lewin Awardee Progress Report (October-December 2015)



surgery, and recovering at home. The decision aid also engages “friends and family buddies,” who are expected to play a key support role before, during, and after surgery. The decision aid also includes tools such as pre-surgery checklists and medication trackers.

Under the HCIA project, Welvie’s intervention was provided to Ohio Medicare FFS beneficiaries and Ohio Anthem BCBS and Texas Humana MA beneficiaries. Although the program materials were targeted at candidates for preference-sensitive surgery, Welvie used a limited number of eligibility criteria (e.g., insurance eligibility, age), which allowed it to reach a broad set of beneficiaries who may benefit from the intervention. Welvie’s implementation in Ohio included FFS and MA beneficiaries sixty-five years of age or older, whereas Welvie’s implementation in Texas with Humana included MA beneficiaries of all ages. Welvie randomized eligible beneficiaries into control and intervention groups. All beneficiaries in the randomized intervention group, regardless of health condition, received outreach materials and were offered the opportunity to use Welvie’s decision aid.

The HCIA intervention period began in September 2012 with Ohio Anthem MA beneficiaries and expanded to Texas Humana MA beneficiaries in May 2014. The HCIA implementation period ended for both MA populations at the conclusion of Welvie’s cooperating agreement with CMS in December 2015. Welvie delivered its HCIA intervention to Ohio Medicare FFS beneficiaries from February 2013 to January 2014. While outreach to Ohio Medicare FFS beneficiaries ended in late 2013, access to the Welvie decision aid remained available to beneficiaries who decided to engage in the program.

In early 2015, Welvie and Anthem collaborated to revise the information in the cardiac care decision aid to better align with the “Dr. Dean Ornish Program for Reversing Heart Disease” offered by Anthem in partnership with the Cleveland Clinic. These revisions placed a focus on disease management, rather than surgery, for beneficiaries with or at risk for cardiac conditions. Specifically, steps 3 and 5 of the cardiac care decision aid were revised to include additional information about preventing cardiac illness and managing chronic illness through diet, exercise, and stress management.

Although Welvie’s CMS contract initially ended on June 30, 2015, CMS awarded Welvie a no-cost extension from July 1, 2015 through December 31, 2015 to continue ongoing outreach and data collection and to test the feasibility of provider referrals to the online decision aid. The provider referral component was a part of the original Welvie program, but was delayed because of challenges recruiting an implementation site. During the no-cost extension period, Welvie worked closely with Humana-owned practices in Florida on the provider referral portion of the innovation project. As of the end of the no-cost extension period, Welvie continued to work with Humana practices in Florida on provider referrals and continued to serve the Ohio and Texas MA populations under separate contracts with Anthem and Humana.

## 2.3 Evaluability

This section summarizes the primary factors affecting the evaluability of Welvie, which include program enrollment and payer mix, program implementation factors, and comparison group data availability.

Table 2-1 and Table 2-2 provide detailed information on the enrollment and payer mix figures for the 181,172 beneficiaries in Ohio enrolled in the Welvie program through February 20, 2015, and 71,620 beneficiaries in Texas enrolled through April 17, 2015. Program enrollment was defined as the first date that outreach materials were sent to intervention group beneficiaries. The program enrollment patterns shown below are consistent with the timeline of Welvie’s outreach to new beneficiaries.<sup>8</sup> As the table shows, outreach to new beneficiaries concluded earlier for the Ohio Medicare FFS cohort than for the MA cohorts. Most Welvie participants were enrolled either in Medicare FFS or MA. The program effectiveness analyses presented in Sections 2.4 and 2.5 were conducted separately for Medicare FFS beneficiaries in Ohio, MA beneficiaries in Ohio, and MA beneficiaries in Texas.

**Table 2-1: Payer Mix of Welvie Program Enrollment by Calendar Quarter, Ohio**

Calendar Quarter	Medicare Parts A and B		Medicare Advantage		Other Medicare Enrolled		Not Medicare-Enrolled/Unknown		Total
Jul-Sep 2012	87	0%	78,749	99%	13	0%	501	1%	79,350
Oct-Dec 2012	*	*	1,359	93%	*	*	70	5%	1,463
Jan-Mar 2013	66,052	78%	10,705	13%	5,954	7%	1,470	2%	84,181
Apr-Jun 2013	*	*	1,088	85%	*	*	166	13%	1,281
Jul-Sep 2013	*	*	3,080	95%	*	*	123	4%	3,240
Oct-Dec 2013	0	0%	0	0%	0	0%	0	0%	0
Jan-Mar 2014	95	1%	7,159	98%	*	*	*	*	7,287
Apr-Jun 2014	0	0%	0	0%	0	0%	0	0%	0
Jul-Sep 2014	*	*	1,009	97%	*	*	25	2%	1,041
Oct-Dec 2014	0	0%	0	0%	0	0%	0	0%	0
Jan-Mar 2015	19	1%	3,300	99%	*	*	*	*	3,329
Apr-Jun 2015	0	0%	0	0%	0	0%	0	0%	0
<b>Total</b>	66,338	37%	106,449	59%	5,989	3%	2,396	1%	181,172

Notes: Most beneficiaries classified as “Other Medicare Enrolled” have Medicare Part A only, although other insurance statuses (e.g., Parts A and D) are rarely observed.

“Medicare Parts A and B”, “Medicare Advantage”, and “Other Medicare Enrolled” may include dual-eligible beneficiaries and beneficiaries enrolled in Medicare Part D.

<sup>8</sup> Welvie began enrolling beneficiaries in the Anthem MA Ohio population earlier than in the FFS Ohio population. Moreover, there were several periods when Welvie did not conduct outreach to any new Ohio beneficiaries, including between October and December 2013; between April and June 2014; between October and December 2014; and between March and June 2015. Welvie started enrolling Texas beneficiaries in May 2014, and did not conduct outreach to any new Texas beneficiaries between October and March 2015.

“Not Medicare-Enrolled/Unknown” includes beneficiaries who were not enrolled in Medicare on the day they entered the Welvie program or for whom the awardee did not provide sufficient personally identifiable information to link to Medicare claims.

\*All cell counts less than eleven have been suppressed to protect participant confidentiality

**Table 2-2: Payer Mix of Welvie Program Enrollment by Calendar Quarter, Texas**

Calendar Quarter	Medicare Parts A and B		Medicare Advantage		Other Medicare Enrolled		Not Medicare-Enrolled/Unknown		Total
<b>Apr-Jun 2014</b>	*	*	53,577	~100%	*	*	*	*	53,600
<b>Jul-Sep 2014</b>	*	*	112	99%	*	*	*	*	113
<b>Oct-Dec 2014</b>	0	0%	0	0%	0	0%	0	0%	0
<b>Jan-Mar 2015</b>	0	0%	0	0%	0	0%	0	0%	0
<b>Apr-Jun 2015</b>	649	4%	17,044	95%	44	0%	170	1%	17,907
<b>Total</b>	665	1%	70,733	99%	48	0%	174	0%	71,620

Notes: “Other Medicare Enrolled” includes beneficiaries enrolled in Medicare Part A only, Part B only, etc.

“Medicare Parts A and B”, “Medicare Advantage”, and “Other Medicare Enrolled” may include dual-eligible beneficiaries and beneficiaries enrolled in Medicare Part D.

“Not Medicare-Enrolled/Unknown” includes beneficiaries who were not enrolled in Medicare on the day they entered the Welvie program or for whom the awardee did not provide sufficient personally identifiable information to link to Medicare claims.

\*All cell counts less than eleven have been suppressed to protect participant confidentiality

Acumen used program data on intervention group beneficiaries randomly selected by Welvie and linked these beneficiaries to their Medicare records for program effectiveness analyses. The Medicare Parts A and B (“Medicare FFS”) Ohio intervention group was drawn from the general Ohio FFS population and excluded those under age sixty-five, nursing home residents, and those without verifiable addresses. The Anthem MA Ohio intervention group was drawn from Anthem BlueCross BlueShield MA beneficiaries in Ohio after applying the same exclusions as the Ohio FFS population. The Humana MA Texas intervention group was drawn from Humana MA beneficiaries in Texas and excluded nursing home residents and those without verifiable addresses, but included beneficiaries under age sixty-five.

Acumen used randomized control groups provided by Welvie for the quantitative analyses presented in this report. The control groups were drawn from the same Medicare beneficiary populations and applied the same exclusions as described above for the corresponding Ohio FFS, Anthem Ohio MA, and Humana Texas MA intervention groups. Analyses presented for the Welvie FFS Ohio cohort and Humana Texas MA cohort used claims data that extended into December 2015. However, as mentioned in Section 1.2.2, Welvie's partnership with Anthem Ohio ended earlier, and the Anthem data contained only MA claims with service dates through October 20, 2015.

While the core components of the awardee innovation were mature and generally stable for the duration of the HCIA project, certain features of implementation for the Humana MA

beneficiary population affect the interpretation of results for the Welvie program in Texas. Beneficiaries in all three randomized intervention groups in Ohio and Texas received outreach materials from Welvie that included information about the Welvie program and general health- and surgery-related information. However, Humana sent newsletters and email blasts to its broader Medicare membership—both treatment and control beneficiaries—in Texas that also included information about the Welvie program. Starting in December 2014, Humana began sending targeted outreach on a periodic basis to a large number of Humana MA members with musculoskeletal conditions, potentially including both the intervention and control group beneficiaries. Had Humana not conducted its own outreach about Welvie to its full population, the present analysis would have assessed the effect of exposure to the Welvie intervention on the beneficiary population, relative to the unexposed controls. As a result of this prior exposure the findings for the Humana Texas MA population presented in Sections 2.4 and 2.5 should instead be interpreted as the additional effect of the Welvie outreach activities over and above the effects of Humana’s outreach to its full patient population.

## **2.4 Program Effectiveness (ITT Analysis)**

This section provides findings from an intent-to-treat (ITT) analysis on health and resource use outcomes for Medicare FFS and MA beneficiaries in Ohio for eleven quarters, and MA beneficiaries in Texas for six quarters following program enrollment (“full intervention period”). The ITT analysis included randomly selected beneficiaries who received Welvie outreach materials with brief health information content and an invitation to use the six-step decision aid, but it did not distinguish between beneficiaries who did or did not use the decision aid. After applying the common set of cohort restrictions described in Section 1.2.2, there were a total of 59,894 Medicare Parts A and B beneficiaries, as well as 97,380 MA beneficiaries from Ohio and 63,979 MA beneficiaries from Texas available for analysis.

All analyses used the randomized comparison groups provided by Welvie. As shown in the tables in Appendix B.1, the intervention and control groups were well matched on important predictive characteristics observable in claims data for all three cohorts, consistent with randomization. Acumen used in-house Medicare claims data for analyzing the Medicare FFS cohort in Ohio. Anthem MA claims data provided by Welvie were used for the analysis of the Anthem MA cohort in Ohio and Humana MA claims data provided by Welvie were used for the analysis of the Humana MA cohort in Texas. Analysis specifications are detailed in Section 1.2.2. As mentioned in Section 2.3, results presented for the MA Texas cohort should be interpreted in the context of the broader outreach conducted to that group.

Acumen also conducted a supplemental investigation comparing results for the Ohio MA and Texas MA cohorts based on MA encounter data in CMS’s IDR relative to the main analysis

results based on Anthem and Humana MA claims data provided by Welvie (see Appendix C). The estimated effects on beneficiary outcomes from this supplemental analysis were largely similar to those from the main analysis for outcomes observable in both data sources.

The remainder of this section highlights key quantitative findings for the Welvie ITT analysis. Sections 2.4.1, 2.4.2, and 2.4.3 describe notable results for mortality and inpatient readmissions, resource use, and medical expenditures, respectively. The full set of outcomes, including mortality, readmissions, health service use and expenditures, including those related to preference-sensitive surgeries in both the OP and IP settings, are presented for the Medicare FFS cohort. With the exception of expenditures specific to the DME and hospice settings, as described in Section 1.2.2, all of these outcomes could also be assessed for the MA Ohio and MA Texas cohorts using MA claims data provided by Welvie. Single difference or DiD methodology was used to estimate the impact of the intervention at the cumulative level across the full intervention period, as well as for each specific year and each specific quarter after beneficiaries' enrollment in the Welvie program. Complete results of the quantitative analyses are provided in Appendix B.

#### **2.4.1 Mortality and Inpatient Readmissions**

The Welvie intervention was associated with statistically significant cumulative decreases in mortality for the Medicare FFS Ohio cohort and the MA Ohio cohort across the full intervention period, but not for the MA Texas cohort. The results are summarized in Table 2-3 below. Among the 59,894 Medicare FFS beneficiaries in Ohio, there was a statistically significant decrease of about 1,142 deaths (21 deaths per 1,000 beneficiaries) cumulatively over the eleven quarters after program enrollment, relative to controls. Mortality decreases were also significant in Year 1 and Year 2 for the FFS cohort. Among the 97,380 MA beneficiaries in Ohio, there was a statistically significant cumulative decrease of about 253 deaths (3 deaths per 1,000 beneficiaries). In the analysis of quarterly fixed effects, the Welvie intervention was also associated with statistically significant decreases in mortality in multiple quarters after program enrollment for the Medicare FFS Ohio cohort (see Figure 2-1), but no effects were detected for the MA Ohio and MA Texas cohorts (see Appendix B).

**Table 2-3: Aggregate Mortality: Cumulative and Yearly Differences After Welvie Enrollment, Medicare FFS and MA Cohorts**

Medicare Cohort	Full Intervention Period <sup>a</sup>	Year 1 <sup>b</sup>	Year 2
<b>Medicare FFS Ohio</b>			
<i>Number of Participants</i>	59,894	59,894	56,355
<i>Difference<sup>c</sup></i>	-1,142.18***	-585.97***	-352.26***

Medicare Cohort	Full Intervention Period <sup>a</sup>	Year 1 <sup>b</sup>	Year 2
<i>90% Confidence Interval</i>	(-1,384.8   -899.5)	(-736.0   -435.9)	(-500.8   -203.8)
<i>P-Value</i>	<0.001	<0.001	<0.001
<b>Medicare Advantage Ohio</b>			
<i>Number of Participants</i>	97,380	97,380	91,230
<i>Difference</i>	-252.97*	-92.83	-19.31
<i>90% Confidence Interval</i>	(-494.1   -11.9)	(-234.5   48.9)	(-164.1   125.5)
<i>P-Value</i>	0.084	0.281	0.826
<b>Medicare Advantage Texas</b>			
<i>Number of Participants</i>	63,979	63,979	
<i>Difference</i>	-19.21	-17.23	
<i>90% Confidence Interval</i>	(-127.1   88.7)	(-100.0   65.6)	
<i>P-Value</i>	0.770	0.732	

\* Statistically significant at the ten percent level.

\*\*\* Statistically significant at the one percent level.

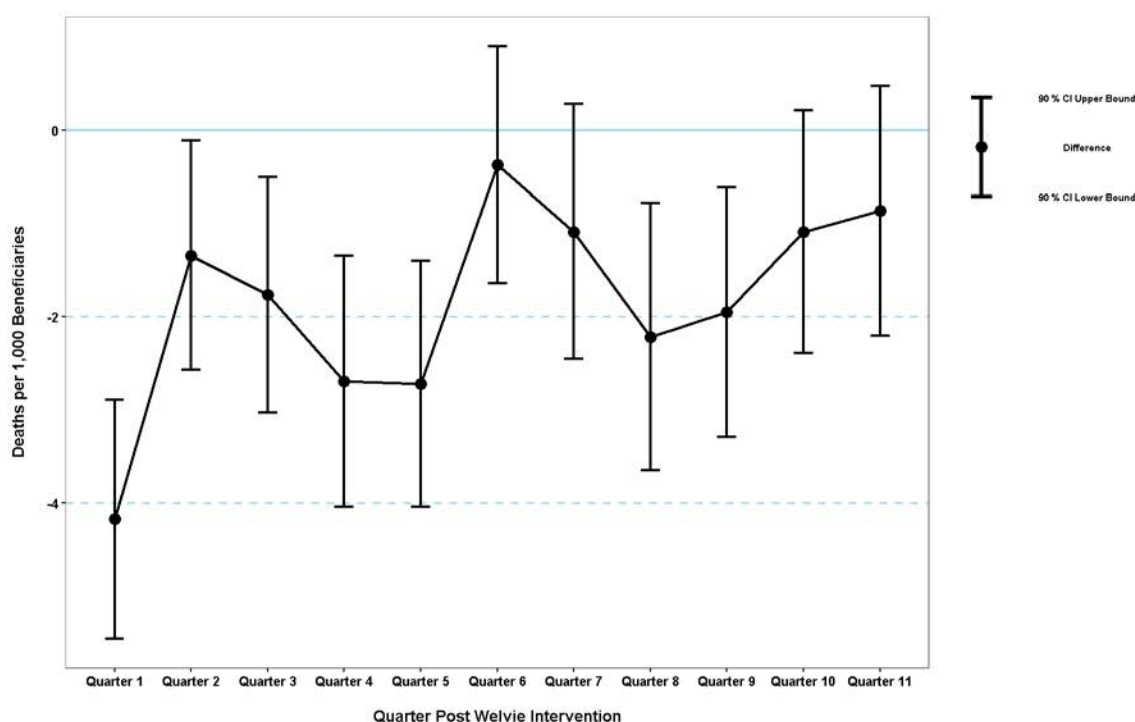
<sup>a</sup>Results are cumulative across all available quarters. The “full intervention period” refers to eleven quarters following program enrollment for Medicare FFS and MA beneficiaries in Ohio and six quarters following program enrollment for MA beneficiaries in Texas.

<sup>b</sup>Year 1 refers to the one-year period after a beneficiary's enrollment in the program, Year 2 refers to the subsequent one-year period.

<sup>c</sup>This estimate represents difference in the number of deaths between participants and controls during the intervention period.

Note: Welvie delivered its HCIA intervention to Ohio FFS beneficiaries from February 2013 to January 2014; Ohio MA beneficiaries from September 2012 to December 2015; and Texas MA beneficiaries from May 2014 to December 2015.

**Figure 2-1: Mortality per 1,000 Beneficiaries: Quarterly Differences, Welvie, Medicare FFS Ohio Cohort**



The intervention was not associated with statistically significant cumulative effects on any inpatient readmissions measures for the Medicare FFS Ohio cohort; however, there was a statistically significant decrease in readmissions after inpatient surgery in the first year after program enrollment. As shown in Table 2-4, there were 121 fewer beneficiaries with an inpatient surgery readmission among 59,894 Medicare FFS Ohio intervention beneficiaries (103 beneficiaries with a readmission per 1,000 beneficiaries with at least one inpatient surgery admission) in the first year after enrollment, which was statistically significant at the one percent level. The quarterly fixed effects analysis also showed statistically significant decreases in inpatient surgery readmissions in the first and third quarters after enrollment, along with decreases in all inpatient readmissions in the third quarter, and inpatient preference-sensitive orthopedic surgery readmissions in the first quarter after enrollment. Quarterly findings are presented in Appendix B.2.

The Welvie intervention was not associated with statistically significant cumulative or yearly changes in inpatient readmissions for the MA Ohio and MA Texas cohorts (see Table 2-5 and Table 2-6).

**Table 2-4: Aggregate Inpatient Readmissions: Cumulative and Yearly Differences After Welvie Enrollment, Medicare FFS Ohio Cohort**

Measures	Full Intervention Period <sup>a</sup> (11 quarters)	Year 1 <sup>b</sup>	Year 2
<i>Number of Participants</i>	59,894	59,894	56,355
<b>30-Day Hospital Readmissions Following All Inpatient Admissions:</b>			
<i>Difference<sup>c</sup></i>	-100.14	-95.07	-13.94
<i>90% Confidence Interval</i>	(-290.4   90.1)	(-213.9   23.7)	(-128.4   100.5)
<i>P-Value</i>	0.387	0.188	0.841
<b>Inpatient Surgery Admissions</b>			
<i>Difference</i>	-89.07	-121.41***	9.02
<i>90% Confidence Interval</i>	(-189.6   11.5)	(-184.4   -58.4)	(-52.0   70.0)
<i>P-Value</i>	0.145	0.002	0.808
<b>Inpatient Preference Sensitive Orthopedic Surgery Admissions</b>			
<i>Difference</i>	5.97	-15.00	3.31
<i>90% Confidence Interval</i>	(-30.0   42.0)	(-37.4   7.4)	(-17.9   24.6)
<i>P-Value</i>	0.785	0.270	0.798
<b>Inpatient Preference Sensitive Cardiac Surgery Admissions</b>			
<i>Difference</i>	-2.97	-11.72	3.30
<i>90% Confidence Interval</i>	(-41.8   35.9)	(-35.9   12.4)	(-19.9   26.5)
<i>P-Value</i>	0.900	0.424	0.815
<b>30-Day Hospital Unplanned Readmissions Following All Inpatient Admissions:</b>			
<i>Difference</i>	-67.54	-88.87	5.30
<i>90% Confidence Interval</i>	(-254.1   119.1)	(-205.4   27.7)	(-106.8   117.4)
<i>P-Value</i>	0.552	0.210	0.938

\*\*\* Statistically significant at the one percent level.

<sup>a</sup>Results are cumulative across all available quarters.

<sup>b</sup>Year 1 refers to the one-year period after a beneficiary's enrollment in the program, Year 2 refers to the subsequent one-year period.

<sup>c</sup>The estimate represents the difference in the number of beneficiaries with at least one readmission for every beneficiary who has an inpatient admission, as compared between the intervention and control groups during the relevant year in the intervention period.

Note: Welvie delivered its HCIA intervention to Ohio FFS beneficiaries from February 2013 to January 2014.



**Table 2-5: Aggregate Inpatient Readmissions: Cumulative and Yearly Differences After Welvie Enrollment, MA Ohio Cohort**

Measures	Full Intervention Period <sup>a</sup> (11 quarters)	Year 1 <sup>b</sup>	Year 2
<i>Number of Participants</i>	97,380	97,380	91,230
<b>30-Day Hospital Readmissions Following All Inpatient Admissions:</b>			
<i>Difference<sup>c</sup></i>	-95.08	-11.47	0.27
<i>90% Confidence Interval</i>	(-268.9   78.7)	(-127.2   104.3)	(-101.0   101.5)
<i>P-Value</i>	0.368	0.871	0.997
<b>Inpatient Surgery Admissions</b>			
<i>Difference</i>	-76.71	-44.11	-33.56
<i>90% Confidence Interval</i>	(-160.3   6.9)	(-106.5   18.3)	(-84.9   17.8)
<i>P-Value</i>	0.131	0.245	0.283
<b>Inpatient Preference Sensitive Orthopedic Surgery Admissions</b>			
<i>Difference</i>	-8.21	-8.70	-8.26
<i>90% Confidence Interval</i>	(-43.7   27.3)	(-34.8   17.4)	(-29.8   13.3)
<i>P-Value</i>	0.704	0.583	0.529
<b>Inpatient Preference Sensitive Cardiac Surgery Admissions</b>			
<i>Difference</i>	-11.81	-11.67	-0.26
<i>90% Confidence Interval</i>	(-46.1   22.4)	(-37.3   14.0)	(-20.5   20.0)
<i>P-Value</i>	0.571	0.454	0.983
<b>30-Day Hospital Unplanned Readmissions Following All Inpatient Admissions:</b>			
<i>Difference</i>	-116.57	0.87	-31.87
<i>90% Confidence Interval</i>	(-287.0   53.8)	(-112.7   114.4)	(-130.9   67.2)
<i>P-Value</i>	0.261	0.990	0.597

\* Statistically significant at the ten percent level.

\*\* Statistically significant at the five percent level.

\*\*\* Statistically significant at the one percent level.

<sup>a</sup>Results are cumulative across all available quarters.

<sup>b</sup>Year 1 refers to the one-year period after a beneficiary's enrollment in the program, Year 2 refers to the subsequent one-year period.

<sup>c</sup>The estimate represents the difference in the number of beneficiaries with at least one readmission for every beneficiary who has an inpatient admission, as compared between the intervention and control groups during the relevant year in the intervention period.

Note: Welvie delivered its HCIA intervention to Ohio MA beneficiaries from September 2012 to December 2015.

**Table 2-6: Aggregate Inpatient Readmissions: Cumulative and Yearly Differences After Welvie Enrollment, MA Texas Cohort**

Measures	Full Intervention Period <sup>a</sup> (6 quarters)	Year 1 <sup>b</sup>
<i>Number of Participants</i>	63,979	63,979
<b>30-Day Hospital Readmissions Following:</b>		
<b>All Inpatient Admissions</b>		
<i>Difference<sup>c</sup></i>	42.18	28.53
<i>90% Confidence Interval</i>	(-70.3   154.6)	(-66.0   123.1)
<i>P-Value</i>	0.537	0.620
<b>Inpatient Surgery Admissions</b>		
<i>Difference</i>	52.67	19.53
<i>90% Confidence Interval</i>	(-7.0   112.3)	(-31.5   70.6)
<i>P-Value</i>	0.146	0.529
<b>Inpatient Preference Sensitive Orthopedic Surgery Admissions</b>		
<i>Difference</i>	-4.08	8.72
<i>90% Confidence Interval</i>	(-27.8   19.6)	(-11.6   29.0)
<i>P-Value</i>	0.777	0.479
<b>Inpatient Preference Sensitive Cardiac Surgery Admissions</b>		
<i>Difference</i>	-0.20	-3.29
<i>90% Confidence Interval</i>	(-24.1   23.7)	(-24.0   17.4)
<i>P-Value</i>	0.989	0.793
<b>30-Day Hospital Unplanned Readmissions Following All Inpatient Admissions</b>		
<i>Difference</i>	33.88	22.96
<i>90% Confidence Interval</i>	(-76.4   144.2)	(-69.5   115.4)
<i>P-Value</i>	0.613	0.683

\* Statistically significant at the ten percent level.

\*\* Statistically significant at the five percent level.

\*\*\* Statistically significant at the one percent level.

<sup>a</sup>Results are cumulative across all available quarters.

<sup>b</sup>Year 1 refers to the one-year period after a beneficiary's enrollment in the program.

<sup>c</sup>The estimate represents the difference in the number of beneficiaries with at least one readmission for every beneficiary who has an inpatient admission, as compared between the intervention and control groups during the relevant year in the intervention period.

Note: Welvie delivered its HCIA intervention to Texas MA beneficiaries from May 2014 to December 2015.

## 2.4.2 Health Service Resource Use

As shown in Table 2-7, the Welvie intervention was not associated with cumulative or yearly statistically significant effects in surgery-related resource use categories for the Medicare

FFS Ohio cohort; however, there were statistically significant decreases in ER visits in the first year. As shown in Table 2-8, there were about 701 fewer ER visits among the 59,894 Medicare FFS Ohio beneficiaries (12 ER visits per 1,000 beneficiaries) relative to controls in Year 1. Quarterly fixed effects estimates also show statistically significant decreases in ER visits in Q2 and Q3 after enrollment for this cohort (see Appendix B.3). There were also statistically significant decreases in inpatient admissions and hospital days in the first quarter after program enrollment, which were driven by statistically significant decreases in inpatient surgeries, preference-sensitive cardiac surgeries, and surgical hospital days (see Appendix B.3).

**Table 2-7: Aggregate Surgery-Related Resource Use: Cumulative and Yearly DiD Estimates, Welvie Medicare FFS Ohio Cohort**

Measures	Full Intervention Period <sup>a</sup> (11 quarters)	Year 1 <sup>b</sup>	Year 2
<i>Number of Participants</i>	59,894	59,894	56,355
<b>All Surgeries</b>			
<i>Difference-in-Difference</i>	294.76	-187.24	562.38
<i>90% Confidence Interval</i>	(-1,524.2   2,113.7)	(-1,007.7   633.2)	(-250.1   1,374.8)
<i>P-Value</i>	0.790	0.707	0.255
<b>Inpatient Surgeries</b>			
<i>Difference-in-Difference</i>	-313.11	-201.92	33.98
<i>90% Confidence Interval</i>	(-862.8   236.6)	(-459.3   55.5)	(-210.2   278.1)
<i>P-Value</i>	0.349	0.197	0.819
<b>Surgical Hospital Days</b>			
<i>Difference-in-Difference</i>	667.37	-979.23	1,200.31
<i>90% Confidence Interval</i>	(-4,805.9   6,140.7)	(-3,567.1   1,608.7)	(-1,241.2   3,641.8)
<i>P-Value</i>	0.841	0.534	0.419
<b>Outpatient Surgeries</b>			
<i>Difference-in-Difference</i>	467.88	-75.07	440.60
<i>90% Confidence Interval</i>	(-1,081.4   2,017.2)	(-766.6   616.4)	(-254.1   1,135.3)
<i>P-Value</i>	0.619	0.858	0.297
<b>All Preference Sensitive Orthopedic Surgeries</b>			
<i>Difference-in-Difference</i>	-117.17	-3.93	8.85
<i>90% Confidence Interval</i>	(-407.1   172.7)	(-136.8   129.0)	(-117.0   134.7)
<i>P-Value</i>	0.506	0.961	0.908
<b>Inpatient Preference Sensitive Orthopedic Surgeries</b>			
<i>Difference-in-Difference</i>	-17.75	34.16	41.25
<i>90% Confidence Interval</i>	(-286.1   250.6)	(-88.7   157.0)	(-75.3   157.8)
<i>P-Value</i>	0.913	0.648	0.561

Measures	Full Intervention Period <sup>a</sup> (11 quarters)	Year 1 <sup>b</sup>	Year 2
<b>Preference Sensitive Orthopedic Surgery Hospital Days</b>			
<i>Difference-in-Difference</i>	-681.84	86.23	-109.41
<i>90% Confidence Interval</i>	(-2,242.8   879.1)	(-651.7   824.1)	(-806.4   587.6)
<i>P-Value</i>	0.472	0.848	0.796
<b>Outpatient Preference Sensitive Orthopedic Surgeries</b>			
<i>Difference-in-Difference</i>	-93.76	-31.20	-31.46
<i>90% Confidence Interval</i>	(-188.9   1.4)	(-74.9   12.5)	(-72.9   9.9)
<i>P-Value</i>	0.105	0.240	0.211
<b>All Preference Sensitive Cardiac Surgeries</b>			
<i>Difference-in-Difference</i>	-162.72	-74.70	-94.83
<i>90% Confidence Interval</i>	(-461.6   136.2)	(-212.7   63.3)	(-226.2   36.6)
<i>P-Value</i>	0.371	0.373	0.235
<b>Inpatient Preference Sensitive Cardiac Surgeries</b>			
<i>Difference-in-Difference</i>	-115.85	-29.74	-56.12
<i>90% Confidence Interval</i>	(-311.2   79.5)	(-120.1   60.6)	(-141.5   29.3)
<i>P-Value</i>	0.329	0.588	0.280
<b>Inpatient Preference Sensitive Cardiac Surgical Hospital Days</b>			
<i>Difference-in-Difference</i>	1,197.51	278.46	560.00
<i>90% Confidence Interval</i>	(-1,438.5   3,833.5)	(-780.9   1,337.8)	(-620.8   1,740.8)
<i>P-Value</i>	0.455	0.665	0.435
<b>Outpatient Preference Sensitive Cardiac Surgeries</b>			
<i>Difference-in-Difference</i>	-46.87	-44.96	-38.71
<i>90% Confidence Interval</i>	(-256.8   163.0)	(-141.2   51.3)	(-131.0   53.6)
<i>P-Value</i>	0.713	0.442	0.490

<sup>a</sup>Results are cumulative across all available quarters.

<sup>b</sup>Year 1 refers to the one-year period after a beneficiary's enrollment in the program, Year 2 refers to the subsequent one-year period.

Note: Welvie delivered its HCIA intervention to Ohio FFS beneficiaries from February 2013 to January 2014.

**Table 2-8: Aggregate Resource Use: Cumulative and Yearly DiD Estimates, Welvie Medicare FFS Ohio Cohort**

Measures	Full Intervention Period <sup>a</sup> (11 quarters)	Year 1 <sup>b</sup>	Year 2
<i>Number of Participant Beneficiaries</i>	59,894	59,894	56,355
<b>ER Visits</b>			

Measures	Full Intervention Period <sup>a</sup> (11 quarters)	Year 1 <sup>b</sup>	Year 2
<i>Difference-in-Difference</i>	-1,004.66	-700.59*	-264.40
<i>90% Confidence Interval</i>	(-2,388.3   379.0)	(-1,341.5   -59.7)	(-891.3   362.5)
<i>P-Value</i>	0.232	0.072	0.488
<b>Inpatient Admissions</b>			
<i>Difference-in-Difference</i>	-364.00	-385.90	45.03
<i>90% Confidence Interval</i>	(-1,641.5   913.5)	(-991.6   219.8)	(-530.8   620.8)
<i>P-Value</i>	0.639	0.295	0.898
<b>Unplanned Inpatient Admissions</b>			
<i>Difference-in-Difference</i>	64.45	-218.45	147.86
<i>90% Confidence Interval</i>	(-1,088.7   1,217.6)	(-766.2   329.3)	(-372.8   668.5)
<i>P-Value</i>	0.927	0.512	0.64
<b>Hospital Days</b>			
<i>Difference-in-Difference</i>	-1,220.42	-2,531.68	1,567.16
<i>90% Confidence Interval</i>	(-12,419.0   9,978.2)	(-7,898.6   2,835.2)	(-3,373.2   6,507.5)
<i>P-Value</i>	0.858	0.438	0.602

\* Statistically significant at the ten percent level.

<sup>a</sup>Results are cumulative across all available quarters.

<sup>b</sup>Year 1 refers to the one-year period after a beneficiary's enrollment in the program, Year 2 refers to the subsequent one-year period.

Note: Welvie delivered its HCIA intervention to Ohio FFS beneficiaries from February 2013 to January 2014.

For the MA Ohio cohort, the Welvie intervention was associated with statistically significant Year 1 decreases in many surgery-related resource use categories and a Year 2 decrease in ER visits. As shown in Table 2-9, there were about 670 fewer surgeries (7 surgeries per 1,000 beneficiaries) and 2,710 fewer surgical hospital days (28 surgical hospital days per 1,000 beneficiaries) among the 97,380 MA Ohio beneficiaries relative to controls in the first year after program enrollment. These decreases are driven by statistically significant decreases in inpatient surgeries and preference-sensitive cardiac surgeries also in Year 1. Appendix B.3, which presents quarterly estimates on resource use categories, further shows that statistically significant Year 1 decreases are driven by corresponding decreases in the third or fourth quarter after program enrollment. The Welvie intervention was also associated with 729 fewer ER visits in the second year after enrollment among 91,230 MA Ohio beneficiaries relative to controls (8 ER visits per 1,000 beneficiaries) (see Table 2-10). This Year 2 decrease in ER visits may be a downstream effect of the Year 1 decreases in surgery-related health care utilization.

**Table 2-9: Aggregate Surgery-Related Resource Use: Cumulative and Yearly DiD Estimates, Welvie MA Ohio Cohort**

Measures	Full Intervention Period <sup>a</sup> (11 quarters)	Year 1 <sup>b</sup>	Year 2
<i>Number of Participants</i>	97,380	97,380	91,230
<b>All Surgeries</b>			
<i>Difference-in-Difference</i>	-601.58	-670.36*	-23.73
<i>90% Confidence Interval</i>	(-1,797.3   594.2)	(-1,244.2   -96.5)	(-555.7   508.3)
<i>P-Value</i>	0.408	0.055	0.942
<b>Inpatient Surgeries</b>			
<i>Difference-in-Difference</i>	-518.45	-466.89**	-16.76
<i>90% Confidence Interval</i>	(-1,166.1   129.2)	(-792.0   -141.7)	(-305.8   272.3)
<i>P-Value</i>	0.188	0.018	0.924
<b>Surgical Hospital Days</b>			
<i>Difference-in-Difference</i>	-2,989.56	-2,710.20*	-1,046.84
<i>90% Confidence Interval</i>	(-7,917.1   1,938.0)	(-5,314.5   -105.9)	(-3,365.2   1,271.5)
<i>P-Value</i>	0.318	0.087	0.458
<b>Outpatient Surgeries</b>			
<i>Difference-in-Difference</i>	-83.13	-203.48	-6.97
<i>90% Confidence Interval</i>	(-1,062.3   896.0)	(-663.2   256.2)	(-440.9   426.9)
<i>P-Value</i>	0.889	0.467	0.979
<b>All Preference Sensitive Orthopedic Surgeries</b>			
<i>Difference-in-Difference</i>	15.55	-115.42	71.10
<i>90% Confidence Interval</i>	(-440.0   471.1)	(-335.9   105.0)	(-127.0   269.2)
<i>P-Value</i>	0.955	0.389	0.555
<b>Inpatient Preference Sensitive Orthopedic Surgeries</b>			
<i>Difference-in-Difference</i>	60.98	-63.72	84.87
<i>90% Confidence Interval</i>	(-381.1   503.1)	(-277.2   149.7)	(-107.5   277.2)
<i>P-Value</i>	0.821	0.623	0.468
<b>Preference Sensitive Orthopedic Surgery Hospital Days</b>			
<i>Difference-in-Difference</i>	1,383.40	44.33	383.41
<i>90% Confidence Interval</i>	(-1,334.7   4,101.5)	(-1,248.2   1,336.9)	(-915.7   1,682.5)
<i>P-Value</i>	0.403	0.955	0.627
<b>Outpatient Preference Sensitive Orthopedic Surgeries</b>			
<i>Difference-in-Difference</i>	-45.44	-51.70	-13.77
<i>90% Confidence Interval</i>	(-154.5   63.6)	(-106.5   3.1)	(-60.9   33.4)
<i>P-Value</i>	0.493	0.121	0.631

Measures	Full Intervention Period <sup>a</sup> (11 quarters)	Year 1 <sup>b</sup>	Year 2
<b>All Preference Sensitive Cardiac Surgeries</b>			
<i>Difference-in-Difference</i>	-346.74	-258.95**	-127.96
<i>90% Confidence Interval</i>	(-768.3   74.8)	(-463.2   -54.7)	(-311.2   55.3)
<i>P-Value</i>	0.176	0.037	0.251
<b>Inpatient Preference Sensitive Cardiac Surgeries</b>			
<i>Difference-in-Difference</i>	-276.71	-218.75**	-68.93
<i>90% Confidence Interval</i>	(-632.3   78.9)	(-389.8   -47.7)	(-222.2   84.4)
<i>P-Value</i>	0.201	0.035	0.46
<b>Inpatient Preference Sensitive Cardiac Surgical Hospital Days</b>			
<i>Difference-in-Difference</i>	-920.78	-1,160.98	-256.50
<i>90% Confidence Interval</i>	(-3,368.2   1,526.7)	(-2,357.0   35.0)	(-1,425.5   912.5)
<i>P-Value</i>	0.536	0.11	0.718
<b>Outpatient Preference Sensitive Cardiac Surgeries</b>			
<i>Difference-in-Difference</i>	-70.03	-40.21	-59.03
<i>90% Confidence Interval</i>	(-281.6   141.6)	(-144.3   63.9)	(-152.5   34.4)
<i>P-Value</i>	0.586	0.525	0.299

\* Statistically significant at the ten percent level.

\*\* Statistically significant at the five percent level.

\*\*\* Statistically significant at the one percent level.

<sup>a</sup>Results are cumulative across all available quarters.

<sup>b</sup>Year 1 refers to the one-year period after a beneficiary's enrollment in the program, Year 2 refers to the subsequent one-year period.

Note: Welvie delivered its HCIA intervention to Ohio MA beneficiaries from September 2012 to December 2015.

**Table 2-10: Aggregate Resource Use: Cumulative and Yearly DiD Estimates, Welvie MA Ohio Cohort**

Measures	Full Intervention Period <sup>a</sup> (11 quarters)	Year 1 <sup>b</sup>	Year 2
<i>Number of Participant Beneficiaries</i>	97,380	97,380	91,230
<b>ER Visits</b>			
<i>Difference-in-Difference</i>	-575.00	82.60	-729.03**
<i>90% Confidence Interval</i>	(-1,826.3   676.3)	(-557.7   722.9)	(-1,316.9   -141.2)
<i>P-Value</i>	0.45	0.832	0.041
<b>Inpatient Admissions</b>			
<i>Difference-in-Difference</i>	-689.90	-415.32	1.32
<i>90% Confidence Interval</i>	(-1,854.2   474.4)	(-1,007.1   176.5)	(-528.6   531.2)
<i>P-Value</i>	0.33	0.248	0.997

Measures	Full Intervention Period <sup>a</sup> (11 quarters)	Year 1 <sup>b</sup>	Year 2
<b>Unplanned Inpatient Admissions</b>			
<i>Difference-in-Difference</i>	-1,018.55	-435.59	-226.21
<i>90% Confidence Interval</i>	(-2,088.8   51.7)	(-979.8   108.6)	(-712.9   260.5)
<i>P-Value</i>	0.118	0.188	0.445
<b>Hospital Days</b>			
<i>Difference-in-Difference</i>	-4,191.40	-2,735.64	-411.22
<i>90% Confidence Interval</i>	(-12,635.0   4,252.2)	(-7,140.0   1,668.8)	(-4,353.7   3,531.3)
<i>P-Value</i>	0.414	0.307	0.864

\* Statistically significant at the ten percent level.

\*\* Statistically significant at the five percent level.

\*\*\* Statistically significant at the one percent level.

<sup>a</sup>Results are cumulative across all available quarters.

<sup>b</sup>Year 1 refers to the one-year period after a beneficiary's enrollment in the program, Year 2 refers to the subsequent one-year period.

Note: Welvie delivered its HCIA intervention to Ohio MA beneficiaries from September 2012 to December 2015.

The Welvie intervention was associated with mixed effects on surgery-related resource use categories for the MA Texas cohort, which must be interpreted in the light of the program design issues discussed in Section 2.3. There were 391 more inpatient surgeries among 63,979 beneficiaries (7 more inpatient surgeries per 1,000 beneficiaries) cumulatively over the six quarters after program enrollment for intervention beneficiaries relative to controls. In contrast, there were 64 fewer outpatient preference-sensitive orthopedic surgeries among 63,979 beneficiaries (1 fewer outpatient preference-sensitive orthopedic surgery per 1,000 beneficiaries) over the same period. The increase in inpatient preference sensitive cardiac surgeries, however, seems to have been offset by a decrease in the same in the outpatient setting. There was a total of 148 more inpatient preference-sensitive cardiac surgeries (3 more inpatient preference-sensitive cardiac surgeries per 1,000 beneficiaries) but 166 fewer outpatient preference-sensitive cardiac surgeries (3 fewer outpatient preference-sensitive cardiac surgeries per 1,000 beneficiaries) among the 63,979 MA Texas beneficiaries across the full intervention period. While it is possible that use of the decision aid encourages inpatient PS cardiac surgeries and discourages outpatient PS cardiac surgeries, these estimates are inconsistent with those observed for the FFS Ohio and MA Ohio cohorts, and more likely to be reflective of Humana practices in Texas, including the exposure via communication from Humana, as discussed in Section 2.3.



**Table 2-11: Aggregate Surgery-Related Resource Use: Cumulative and Yearly DiD Estimates, Welvie MA Texas Cohort**

Measures	Full Intervention Period <sup>a</sup> (6 quarters)	Year 1 <sup>b</sup>
<i>Number of Participants</i>	63,979	63,979
<b>All Surgeries</b>		
<i>Difference-in-Difference</i>	109.08	113.08
<i>90% Confidence Interval</i>	(-474.3   692.5)	(-323.2   549.4)
<i>P-Value</i>	0.758	0.67
<b>Inpatient Surgeries</b>		
<i>Difference-in-Difference</i>	391.25**	389.22**
<i>90% Confidence Interval</i>	(66.4   716.1)	(142.0   636.5)
<i>P-Value</i>	0.048	0.01
<b>Surgical Hospital Days</b>		
<i>Difference-in-Difference</i>	2,285.37	1,623.46
<i>90% Confidence Interval</i>	(-958.2   5,528.9)	(-899.0   4,145.9)
<i>P-Value</i>	0.246	0.29
<b>Outpatient Surgeries</b>		
<i>Difference-in-Difference</i>	-282.17	-276.14
<i>90% Confidence Interval</i>	(-753.2   188.8)	(-625.6   73.3)
<i>P-Value</i>	0.324	0.194
<b>All Preference Sensitive Orthopedic Surgeries</b>		
<i>Difference-in-Difference</i>	-32.11	-9.38
<i>90% Confidence Interval</i>	(-227.4   163.2)	(-155.9   137.2)
<i>P-Value</i>	0.787	0.916
<b>Inpatient Preference Sensitive Orthopedic Surgeries</b>		
<i>Difference-in-Difference</i>	32.26	41.74
<i>90% Confidence Interval</i>	(-154.5   219.0)	(-98.0   181.4)
<i>P-Value</i>	0.776	0.623
<b>Preference Sensitive Orthopedic Surgery Hospital Days</b>		
<i>Difference-in-Difference</i>	43.32	-14.69
<i>90% Confidence Interval</i>	(-1,226.0   1,312.7)	(-975.7   946.3)
<i>P-Value</i>	0.955	0.98
<b>Outpatient Preference Sensitive Orthopedic Surgeries</b>		
<i>Difference-in-Difference</i>	-64.37*	-51.12*
<i>90% Confidence Interval</i>	(-121.4   -7.3)	(-95.4   -6.9)
<i>P-Value</i>	0.063	0.057
<b>All Preference Sensitive Cardiac Surgeries</b>		

Measures	Full Intervention Period <sup>a</sup> (6 quarters)	Year 1 <sup>b</sup>
<i>Difference-in-Difference</i>	-17.35	16.57
<i>90% Confidence Interval</i>	(-208.0   173.3)	(-127.6   160.7)
<i>P-Value</i>	0.881	0.85
<b>Inpatient Preference Sensitive Cardiac Surgeries</b>		
<i>Difference-in-Difference</i>	148.27*	112.32*
<i>90% Confidence Interval</i>	(8.7   287.9)	(7.1   217.5)
<i>P-Value</i>	0.081	0.079
<b>Inpatient Preference Sensitive Cardiac Surgical Hospital Days</b>		
<i>Difference-in-Difference</i>	807.82	157.44
<i>90% Confidence Interval</i>	(-407.9   2,023.6)	(-801.8   1,116.6)
<i>P-Value</i>	0.274	0.787
<b>Outpatient Preference Sensitive Cardiac Surgeries</b>		
<i>Difference-in-Difference</i>	-165.62**	-95.75*
<i>90% Confidence Interval</i>	(-287.1   -44.1)	(-187.9   -3.6)
<i>P-Value</i>	0.025	0.088

\* Statistically significant at the ten percent level.

\*\* Statistically significant at the five percent level.

\*\*\* Statistically significant at the one percent level.

<sup>a</sup>Results are cumulative across all available quarters.

<sup>b</sup>Year 1 refers to the one-year period after a beneficiary's enrollment in the program.

Note: Welvie delivered its HCIA intervention to Texas MA beneficiaries from May 2014 to December 2015.

**Table 2-12: Aggregate Resource Use: Cumulative and Yearly DiD Estimates, Welvie MA Texas Cohort**

Measures	Full Intervention Period <sup>a</sup> (6 quarters)	Year 1 <sup>b</sup>
<i>Number of Participant Beneficiaries</i>	63,979	63,979
<b>ER Visits</b>		
<i>Difference-in-Difference</i>	258.25	-60.15
<i>90% Confidence Interval</i>	(-594.1   1,110.6)	(-716.5   596.2)
<i>P-Value</i>	0.618	0.88
<b>Inpatient Admissions</b>		
<i>Difference-in-Difference</i>	538.48	272.44
<i>90% Confidence Interval</i>	(-130.7   1,207.7)	(-251.0   795.9)
<i>P-Value</i>	0.186	0.392
<b>Unplanned Inpatient Admissions</b>		

Measures	Full Intervention Period <sup>a</sup> (6 quarters)	Year 1 <sup>b</sup>
<i>Difference-in-Difference</i>	490.59	227.64
<i>90% Confidence Interval</i>	(-130.9   1,112.1)	(-257.9   713.2)
<i>P-Value</i>	0.194	0.441
<b>Hospital Days</b>		
<i>Difference-in-Difference</i>	1,483.72	-1,099.40
<i>90% Confidence Interval</i>	(-3,861.8   6,829.3)	(-5,309.6   3,110.7)
<i>P-Value</i>	0.648	0.668

\* Statistically significant at the ten percent level.

\*\* Statistically significant at the five percent level.

\*\*\* Statistically significant at the one percent level.

<sup>a</sup>Results are cumulative across all available quarters.

<sup>b</sup>Year 1 refers to the one-year period after a beneficiary's enrollment in the program.

Note: Welvie delivered its HCIA intervention to Texas MA beneficiaries from May 2014 to December 2015.

### 2.4.3 Medical Expenditures

The Welvie intervention was not associated with statistically significant cumulative effects on surgery-related expenditures for the Medicare FFS cohort (see Table 2-13), but there were marginally significant yearly decreases in other expenditure categories (see Table 2-14). As shown in Table 2-14, there was a statistically significant decrease of \$1,180,518 in home health expenditures in Year 2 among 56,355 Medicare FFS Ohio beneficiaries (a decrease of \$21 in home health expenditures per beneficiary). There was also a statistically significant decrease of \$1,882,510 in hospice expenditures in Year 1 among 59,894 Medicare FFS Ohio beneficiaries (a decrease of \$32 in hospice expenditures per beneficiary). -These findings are - statistically significant at the ten percent level, and they are quantitatively small.

The quarterly fixed effect analysis, however, provides some evidence of decreases in total expenditure due to decreases in IP, surgery, and PS cardiac expenditure in the first quarter or year, consistent with results on utilization. For the Medicare FFS cohort, the quarterly fixed effects analysis found negative effects on total medical expenditures in most quarters, with statistically significant decreases in the first and eighth quarters after enrollment, due partly to statistically significant decreases in inpatient expenditures in the same quarters. The Q1 decrease in total medical expenditures was also due to decreases in total surgery expenditures and preference-sensitive cardiac surgery expenditures (see Appendix B.4). These findings are consistent with the statistically significant Q1 decreases in inpatient admissions and hospital days discussed in Section 2.4.2. A potential interpretation of these findings is that effects in early quarters are driven by participants who were actively considering surgery at the time of initial outreach, but the effects of outreach do not persist in later quarters because the materials are less effective when received well before the participant is engaged in relevant health care decisions.

**Table 2-13: Aggregate Surgery-Related Expenditures: Cumulative and Yearly DiD Estimates, Welvie Medicare FFS Ohio Cohort**

Measures (2011 USD per Beneficiary-Quarter)	Full Intervention Period <sup>a</sup> (11 quarters)	Year 1 <sup>b</sup>	Year 2
<i>Number of Participant Beneficiaries</i>	59,894	59,894	56,355
<b>Total Surgery Expenditures</b>			
<i>Difference-in-Difference</i>	-3,301,527	-3,611,585	-260,735
<i>90% Confidence Interval</i>	(-14,782,406   8,179,352)	(-9,134,274   1,911,104)	(-5,500,660   4,979,190)
<i>P-Value</i>	0.636	0.282	0.935
<b>Inpatient Surgery Expenditures</b>			
<i>Difference-in-Difference</i>	-3,832,131	-3,608,674	-311,621
<i>90% Confidence Interval</i>	(-14,618,275   6,954,012)	(-8,825,983   1,608,635)	(-5,244,244   4,621,002)
<i>P-Value</i>	0.559	0.255	0.917
<b>Episode-Based Inpatient Surgery Expenditures</b>			
<i>Difference-in-Difference</i>	-5,745,820	-4,276,808	-868,455
<i>90% Confidence Interval</i>	(-17,073,891   5,582,251)	(-9,740,889   1,187,273)	(-6,038,213   4,301,304)
<i>P-Value</i>	0.404	0.198	0.782
<b>Outpatient Surgery Expenditures</b>			
<i>Difference-in-Difference</i>	23,023	-16,261	-211,711
<i>90% Confidence Interval</i>	(-3,106,053   3,152,099)	(-1,449,075   1,416,553)	(-1,621,666   1,198,244)
<i>P-Value</i>	0.990	0.985	0.805
<b>Preference Sensitive Orthopedic Surgery Expenditures</b>			
<i>Difference-in-Difference</i>	-591,515	-283,899	677,216
<i>90% Confidence Interval</i>	(-4,773,307   3,590,277)	(-2,201,083   1,633,285)	(-1,119,542   2,473,973)
<i>P-Value</i>	0.816	0.808	0.535
<b>Inpatient Preference Sensitive Orthopedic Surgery Expenditures</b>			
<i>Difference-in-Difference</i>	-180,948	-130,425	673,330
<i>90% Confidence Interval</i>	(-3,780,852.7   3,418,956)	(-1,781,260.7   1,520,411)	(-872,025.5   2,218,685)
<i>P-Value</i>	0.934	0.897	0.474
<b>Outpatient Preference Sensitive Orthopedic Surgery Expenditures</b>			
<i>Difference-in-Difference</i>	-211,826	-92,698	-24,392
<i>90% Confidence Interval</i>	(-446,592.9   22,940.9)	(-194,460.8   9,065.8)	(-129,377.2   80,593.5)
<i>P-Value</i>	0.138	0.134	0.702

Measures (2011 USD per Beneficiary-Quarter)	Full Intervention Period <sup>a</sup> (11 quarters)	Year 1 <sup>b</sup>	Year 2
<b>Preference Sensitive Cardiac Surgery Expenditures</b>			
<i>Difference-in-Difference</i>	-2,879,560	-1,178,071	-1,442,816
<i>90% Confidence Interval</i>	(-7,988,265   2,229,144.3)	(-3,559,335   1,203,192.6)	(-3,724,403   838,770.9)
<i>P-Value</i>	0.354	0.416	0.298
<b>Inpatient Preference Sensitive Cardiac Surgery Expenditures</b>			
<i>Difference-in-Difference</i>	-2,309,860	-904,823	-1,161,577
<i>90% Confidence Interval</i>	(-6,820,277   2,200,556.6)	(-3,009,205   1,199,559.0)	(-3,176,124   852,970.5)
<i>P-Value</i>	0.400	0.479	0.343
<b>Outpatient Preference Sensitive Cardiac Surgery Expenditures</b>			
<i>Difference-in-Difference</i>	-373,372	-202,914	-165,859
<i>90% Confidence Interval</i>	(-1,136,343.5   389,599.1)	(-547,540.7   141,712.0)	(-493,257.9   161,540.3)
<i>P-Value</i>	0.421	0.333	0.405

<sup>a</sup>Results are cumulative across all available quarters.

<sup>b</sup>Year 1 refers to the one-year period after a beneficiary's enrollment in the program, Year 2 refers to the subsequent one-year period.

Note: Welvie delivered its HCIA intervention to Ohio FFS beneficiaries from February 2013 to January 2014.

**Table 2-14: Aggregate Expenditures: Cumulative and Yearly DiD Estimates, Welvie Medicare FFS Ohio Cohort**

Measures (2011 USD)	Full Intervention Period <sup>a</sup> (11 quarters)	Year 1 <sup>b</sup>	Year 2
<i>Number of Participant Beneficiaries</i>	59,894	59,894	56,355
<b>Total Medicare Parts A and B Expenditures</b>			
<i>Difference-in-Difference</i>	-1,736,263	-7,540,536	1,239,875
<i>90% Confidence Interval</i>	(-26,254,268   22,781,741)	(-19,293,982   4,212,910)	(-9,920,190   12,399,939)
<i>P-Value</i>	0.907	0.291	0.855
<b>Inpatient Expenditures</b>			
<i>Difference-in-Difference</i>	-6,023,719	-6,019,915	-434,475
<i>90% Confidence Interval</i>	(-21,149,013   9,101,575)	(-13,394,148   1,354,318)	(-7,357,622   6,488,673)
<i>P-Value</i>	0.512	0.179	0.918
<b>Outpatient ER Expenditures</b>			
<i>Difference-in-Difference</i>	-481,109	-555,537	19,021
<i>90% Confidence Interval</i>	(-1,819,981.0   857,762.1)	(-1,188,663.4   77,589.5)	(-622,738.8   660,781.0)

Measures (2011 USD)	Full Intervention Period <sup>a</sup> (11 quarters)	Year 1 <sup>b</sup>	Year 2
<i>P-Value</i>	0.554	0.149	0.961
<b>Outpatient Non-ER Expenditures</b>			
<i>Difference-in-Difference</i>	3,309,965	1,395,841	473,785
<i>90% Confidence Interval</i>	(-1,744,802.4   8,364,733)	(-956,764.9   3,748,448)	(-1,797,658.5   2,745,229)
<i>P-Value</i>	0.281	0.329	0.732
<b>Physician and Ancillary Expenditures</b>			
<i>Difference-in-Difference</i>	-554,056	-846,854	-42,126
<i>90% Confidence Interval</i>	(-5,348,625   4,240,513)	(-3,099,256   1,405,547)	(-2,182,908   2,098,656)
<i>P-Value</i>	0.849	0.536	0.974
<b>Skilled Nursing Facility Expenditures</b>			
<i>Difference-in-Difference</i>	4,664,378	236,850	2,305,119
<i>90% Confidence Interval</i>	(-3,263,537   12,592,294)	(-3,482,753   3,956,453)	(-1,313,242   5,923,480)
<i>P-Value</i>	0.333	0.917	0.295
<b>Durable Medical Equipment Expenditures</b>			
<i>Difference-in-Difference</i>	-823,400	18,282	-347,374
<i>90% Confidence Interval</i>	(-2,308,554.2   661,754.8)	(-648,087.7   684,652.5)	(-985,884.4   291,136.1)
<i>P-Value</i>	0.362	0.964	0.371
<b>Home Health Expenditures</b>			
<i>Difference-in-Difference</i>	-1,583,393	313,981	-1,180,518*
<i>90% Confidence Interval</i>	(-4,072,331.1   905,546.1)	(-843,485.8   1,471,447.6)	(-2,311,125.0   - 49,910.2)
<i>P-Value</i>	0.295	0.655	0.086
<b>Hospice Expenditures</b>			
<i>Difference-in-Difference</i>	65,950	-1,882,510*	503,623
<i>90% Confidence Interval</i>	(-3,703,515   3,835,414.8)	(-3,727,670   - 37,349.6)	(-1,215,468   2,222,713.6)
<i>P-Value</i>	0.977	0.093	0.630

\* Statistically significant at the ten percent level.

<sup>a</sup>Results are cumulative across all available quarters.

<sup>b</sup>Year 1 refers to the one-year period after a beneficiary's enrollment in the program, Year 2 refers to the subsequent one-year period.

Note: Welvie delivered its HCIA intervention to Ohio FFS beneficiaries from February 2013 to January 2014.

For the Ohio MA cohort, the Welvie intervention was associated with statistically significant cumulative and Year 1 decreases in total surgery expenditures, Year 1 decreases in non-OP ER expenditures, and Year 1 decreases in total medical expenditures. As shown in Table 2-15, there was a statistically significant decrease of \$12,212,260 in total surgery

expenditures (\$138 per beneficiary) across the full intervention period and a decrease of \$9,223,633 (\$97 per beneficiary) in Year 1 among the 97,380 MA Ohio beneficiaries relative to controls. Driving these effects were statistically significant decreases in inpatient surgery expenditures, episode-based inpatient surgery expenditures in Year 1 as well as cumulative and Year 1 decreases in outpatient surgery expenditures. A statistically significant decrease of \$3,717,799 in outpatient non-ER expenditures among 97,380 MA Ohio beneficiaries (\$39 per beneficiary) was also observed in Year 1 (see Table 2-16). These reductions contributed to the statistically significant decrease of \$16,166,817 in total medical expenditures (\$169 per beneficiary) in Year 1 among the 97,380 MA Ohio beneficiaries relative to controls (see Table 2-16).

Consistent with the cumulative and yearly findings, the quarterly fixed effects analysis presented in Appendix B.4 shows decreases in total medical expenditures, total surgery expenditures, and other surgery-related expenditure outcomes that were concentrated in the third and fourth quarters after program enrollment. These findings correspond to the statistically significant decreases found in similar resource use categories presented in Section 2.4.2.

**Table 2-15: Aggregate Surgery-Related Expenditures: Cumulative and Yearly DiD Estimates, Welvie MA Ohio Cohort**

Measures (2011 USD per Beneficiary-Quarter)	Full Intervention Period <sup>a</sup> (11 quarters)	Year 1 <sup>b</sup>	Year 2
<i>Number of Participant Beneficiaries</i>	97,380	97,380	91,230
<b>Total Surgery Expenditures</b>			
<i>Difference-in-Difference</i>	-12,212,260**	-9,223,633***	-3,405,209
<i>90% Confidence Interval</i>	(-22,410,498   - 2,014,022)	(-14,704,706   - 3,742,561)	(-8,124,071   1,313,652)
<i>P-Value</i>	0.049	0.006	0.235
<b>Inpatient Surgery Expenditures</b>			
<i>Difference-in-Difference</i>	-7,042,103	-5,242,757*	-2,360,034
<i>90% Confidence Interval</i>	(-16,349,149   2,264,942.7)	(-10,302,953   - 182,561.3)	(-6,680,187   1,960,117.6)
<i>P-Value</i>	0.213	0.088	0.369
<b>Episode-Based Inpatient Surgery Expenditures</b>			
<i>Difference-in-Difference</i>	-7,255,623	-5,343,410*	-2,340,953
<i>90% Confidence Interval</i>	(-16,609,281   2,098,035.6)	(-10,422,599   - 264,221.1)	(-6,687,463   2,005,556.6)
<i>P-Value</i>	0.202	0.084	0.376
<b>Outpatient Surgery Expenditures</b>			
<i>Difference-in-Difference</i>	-4,566,511.8**	-3,498,423.7***	-867,749.4
<i>90% Confidence Interval</i>	(-7,983,072   - 1,149,951.8)	(-5,205,812   - 1,791,035.7)	(-2,413,548   678,049.1)

Measures (2011 USD per Beneficiary-Quarter)	Full Intervention Period <sup>a</sup> (11 quarters)	Year 1 <sup>b</sup>	Year 2
<i>P-Value</i>	0.028	<0.001	0.356
<b>Preference Sensitive Orthopedic Surgery Expenditures</b>			
<i>Difference-in-Difference</i>	1,343,553.28	50,069.29	1,233,097.56
<i>90% Confidence Interval</i>	(-2,587,175.1   5,274,282)	(-1,985,858.8   2,085,997)	(-518,571.9   2,984,767)
<i>P-Value</i>	0.574	0.968	0.247
<b>Inpatient Preference Sensitive Orthopedic Surgery Expenditures</b>			
<i>Difference-in-Difference</i>	1,454,037	170,463	1,222,841
<i>90% Confidence Interval</i>	(-1,804,452.5   4,712,526)	(-1,519,019.1   1,859,945)	(-236,452.3   2,682,135)
<i>P-Value</i>	0.463	0.868	0.168
<b>Outpatient Preference Sensitive Orthopedic Surgery Expenditures</b>			
<i>Difference-in-Difference</i>	-185,179.89	-90,327.02	-114,924.13
<i>90% Confidence Interval</i>	(-454,101.2   83,741.4)	(-216,703.1   36,049.0)	(-248,590.7   18,742.4)
<i>P-Value</i>	0.257	0.24	0.157
<b>Preference Sensitive Cardiac Surgery Expenditures</b>			
<i>Difference-in-Difference</i>	-692,886.7	-1,017,127.1	-973,085.7
<i>90% Confidence Interval</i>	(-5,648,925   4,263,152)	(-3,572,262   1,538,007)	(-3,222,581   1,276,409)
<i>P-Value</i>	0.818	0.513	0.477
<b>Inpatient Preference Sensitive Cardiac Surgery Expenditures</b>			
<i>Difference-in-Difference</i>	-300,476.3	-583,730.4	-737,757.9
<i>90% Confidence Interval</i>	(-4,467,382   3,866,430)	(-2,734,716   1,567,255)	(-2,632,983   1,157,467)
<i>P-Value</i>	0.906	0.655	0.522
<b>Outpatient Preference Sensitive Cardiac Surgery Expenditures</b>			
<i>Difference-in-Difference</i>	-528,496.0	-366,104.9	-246,399.5
<i>90% Confidence Interval</i>	(-1,502,362.2   445,370.2)	(-834,720.5   102,510.7)	(-663,356.6   170,557.5)
<i>P-Value</i>	0.372	0.199	0.331

\* Statistically significant at the ten percent level.

\*\* Statistically significant at the five percent level.

\*\*\* Statistically significant at the one percent level.

<sup>a</sup>Results are cumulative across all available quarters.

<sup>b</sup>Year 1 refers to the one-year period after a beneficiary's enrollment in the program, Year 2 refers to the subsequent one-year period.

Note: Welvie delivered its HCIA intervention to Ohio MA beneficiaries from September 2012 to December 2015.



**Table 2-16: Aggregate Expenditures: Cumulative and Yearly DiD Estimates, Welvie MA Ohio Cohort**

Measures (2011 USD)	Full Intervention Period <sup>a</sup> (11 quarters)	Year 1 <sup>b</sup>	Year 2
<i>Number of Participant Beneficiaries</i>	97,380	97,380	91,230
<b>Total Medical Expenditures</b>			
<i>Difference-in-Difference</i>	-20,868,492	-16,166,817**	-2,717,823
<i>90% Confidence Interval</i>	(-41,754,311   17,327.7)	(-27,030,916   - 5,302,718.7)	(-12,412,531   6,976,884.4)
<i>P-Value</i>	0.100	0.014	0.645
<b>Inpatient Expenditures</b>			
<i>Difference-in-Difference</i>	-8,639,255.2	-7,000,662.1	943,355.3
<i>90% Confidence Interval</i>	(-22,330,017   5,051,506.7)	(-14,188,446   187,121.3)	(-5,363,497   7,250,207.6)
<i>P-Value</i>	0.299	0.109	0.806
<b>Outpatient ER Expenditures</b>			
<i>Difference-in-Difference</i>	-1,084,482.9	-661,685.0	-619,050.5
<i>90% Confidence Interval</i>	(-2,707,964   538,998.1)	(-1,484,685   161,315.0)	(-1,404,276   166,175.2)
<i>P-Value</i>	0.272	0.186	0.195
<b>Outpatient Non-ER Expenditures</b>			
<i>Difference-in-Difference</i>	-3,076,162.0	-3,717,798.6**	-195,393.6
<i>90% Confidence Interval</i>	(-8,199,182   2,046,858)	(-6,332,466   - 1,103,131)	(-2,511,227   2,120,440)
<i>P-Value</i>	0.323	0.019	0.890
<b>Physician and Ancillary Expenditures</b>			
<i>Difference-in-Difference</i>	-3,213,730	-2,677,473	-1,142,553
<i>90% Confidence Interval</i>	(-8,505,115   2,077,655.4)	(-5,411,322   56,374.9)	(-3,634,058   1,348,952.9)
<i>P-Value</i>	0.318	0.107	0.451
<b>Skilled Nursing Facility Expenditures</b>			
<i>Difference-in-Difference</i>	-4,348,065	-1,959,691	-1,676,843
<i>90% Confidence Interval</i>	(-8,835,585   139,455.5)	(-4,156,233   236,851.9)	(-3,714,167   360,479.9)
<i>P-Value</i>	0.111	0.142	0.176
<b>Home Health Expenditures</b>			
<i>Difference-in-Difference</i>	-616,288.66	-278,653.55	73,458.39
<i>90% Confidence Interval</i>	(-2,314,983   1,082,405.8)	(-1,123,322   566,014.6)	(-716,297   863,213.7)
<i>P-Value</i>	0.551	0.587	0.878

\*\* Statistically significant at the five percent level.

<sup>a</sup>Results are cumulative across all available quarters.

<sup>b</sup>Year 1 refers to the one-year period after a beneficiary's enrollment in the program, Year 2 refers to the subsequent one-year period.

Note: Welvie delivered its HCIA intervention to Ohio MA beneficiaries from September 2012 to December 2015.

For the MA Texas cohort, the Welvie intervention was associated with a statistically significant increase in inpatient surgery expenditures across the full intervention period and statistically significant decreases in outpatient preference-sensitive orthopedic surgery expenditures both across the full intervention period and in the first year after program enrollment. Table 2-17 shows a statistically significant increase of \$6,795,627 in inpatient surgery expenditures among 63,979 MA Texas beneficiaries relative to controls (\$125 per beneficiary) across the full intervention period. This finding was driven by statistically significant cumulative increases in episode-based inpatient surgery expenditures and inpatient preference-sensitive cardiac surgery expenditures across the six quarters after enrollment. Table 2-17 also shows a statistically significant decrease of \$166,147 in outpatient preference-sensitive orthopedic surgery expenditures among 63,979 MA Texas beneficiaries (\$3 per beneficiary) across the full intervention period and in Year 1 after program enrollment. A statistically significant decrease of \$1,822,131 in skilled nursing facility expenditures among 63,979 MA Texas beneficiaries (\$32 per beneficiary) in Year 2 after program enrollment was also observed (see Table 2-18). These findings were statistically significant at the ten percent level.

These effects are consistent with the findings on increases in inpatient resource utilization and decreases in outpatient resource utilization for the MA Texas cohort presented in Section 2.4.2. As discussed above, statistically significant effects found for the MA Texas cohort may not reflect true program effects due to the control group's exposure to the Welvie intervention through communications from Humana.

**Table 2-17: Aggregate Surgery-Related Expenditures: Cumulative and Yearly DiD Estimates, Welvie MA Texas Cohort**

Measures (2011 USD per Beneficiary-Quarter)	Full Intervention Period <sup>a</sup> (6 quarters)	Year 1 <sup>b</sup>
<i>Number of Participant Beneficiaries</i>	63,979	63,979
<b>Total Surgery Expenditures</b>		
<i>Difference-in-Difference</i>	6,507,650	3,503,438
<i>90% Confidence Interval</i>	(-295,111.8   13,310,412)	(-1,822,914.4   8,829,790)
<i>P-Value</i>	0.116	0.279
<b>Inpatient Surgery Expenditures</b>		
<i>Difference-in-Difference</i>	6,795,627*	4,107,930
<i>90% Confidence Interval</i>	(452,481.3   13,138,773)	(-866,393.4   9,082,254)
<i>P-Value</i>	0.078	0.174
<b>Episode-Based Inpatient Surgery Expenditures</b>		

Measures (2011 USD per Beneficiary-Quarter)	Full Intervention Period <sup>a</sup> (6 quarters)	Year 1 <sup>b</sup>
<i>Difference-in-Difference</i>	7,119,678*	4,277,738
<i>90% Confidence Interval</i>	(741,424.1   13,497,932)	(-718,950.5   9,274,427)
<i>P-Value</i>	0.066	0.159
<b>Outpatient Surgery Expenditures</b>		
<i>Difference-in-Difference</i>	-83,537.17	-453,334.31
<i>90% Confidence Interval</i>	(-2,136,431   1,969,356)	(-2,043,759   1,137,091)
<i>P-Value</i>	0.947	0.639
<b>Preference Sensitive Orthopedic Surgery Expenditures</b>		
<i>Difference-in-Difference</i>	-320,564.3	-291,141.4
<i>90% Confidence Interval</i>	(-2,864,095   2,222,966)	(-2,231,165   1,648,882)
<i>P-Value</i>	0.836	0.805
<b>Inpatient Preference Sensitive Orthopedic Surgery Expenditures</b>		
<i>Difference-in-Difference</i>	-177,713.6	-191,687.7
<i>90% Confidence Interval</i>	(-2,327,187   1,971,760)	(-1,828,108   1,444,732)
<i>P-Value</i>	0.892	0.847
<b>Outpatient Preference Sensitive Orthopedic Surgery Expenditures</b>		
<i>Difference-in-Difference</i>	-166,146.6*	-160,328.6**
<i>90% Confidence Interval</i>	(-310,192.9   -22,100.4)	(-270,691.0   -49,966.3)
<i>P-Value</i>	0.058	0.017
<b>Preference Sensitive Cardiac Surgery Expenditures</b>		
<i>Difference-in-Difference</i>	2,881,037	1,892,947
<i>90% Confidence Interval</i>	(-62,320.8   5,824,395)	(-457,838.8   4,243,733)
<i>P-Value</i>	0.107	0.185
<b>Inpatient Preference Sensitive Cardiac Surgery Expenditures</b>		
<i>Difference-in-Difference</i>	2,822,237*	1,820,667
<i>90% Confidence Interval</i>	(261,604.2   5,382,870)	(-240,244.9   3,881,579)
<i>P-Value</i>	0.070	0.146
<b>Outpatient Preference Sensitive Cardiac Surgery Expenditures</b>		
<i>Difference-in-Difference</i>	-464,085.2	-270,511.8
<i>90% Confidence Interval</i>	(-936,460.2   8,289.9)	(-628,708.5   87,684.9)
<i>P-Value</i>	0.106	0.214

\* Statistically significant at the ten percent level.

\*\* Statistically significant at the five percent level.

<sup>a</sup>Results are cumulative across all available quarters.

<sup>b</sup>Year 1 refers to the one-year period after a beneficiary's enrollment in the program.

Note: Welvie delivered its HCIA intervention to Texas MA beneficiaries from May 2014 to December 2015.

**Table 2-18: Aggregate Expenditures: Cumulative and Yearly DiD Estimates, Welvie MA Texas Cohort**

Measures (2011 USD)	Full Intervention Period <sup>a</sup> (6 quarters)	Year 1 <sup>b</sup>
<i>Number of Participant Beneficiaries</i>	63,979	63,979
<b>Total Medical Expenditures</b>		
<i>Difference-in-Difference</i>	4,588,852.4	-565,982.5
<i>90% Confidence Interval</i>	(-7,866,884   17,044,589)	(-10,331,261   9,199,296)
<i>P-Value</i>	0.545	0.924
<b>Inpatient Expenditures</b>		
<i>Difference-in-Difference</i>	6,459,599	1,165,251
<i>90% Confidence Interval</i>	(-2,333,897   15,253,096)	(-5,800,589   8,131,090)
<i>P-Value</i>	0.227	0.783
<b>Outpatient ER Expenditures</b>		
<i>Difference-in-Difference</i>	286,737.9	-164,426.0
<i>90% Confidence Interval</i>	(-718,152.3   1,291,628.1)	(-943,660.5   614,808.5)
<i>P-Value</i>	0.639	0.729
<b>Outpatient Non-ER Expenditures</b>		
<i>Difference-in-Difference</i>	827,096.4	214,320.0
<i>90% Confidence Interval</i>	(-2,055,066   3,709,259)	(-2,002,017   2,430,657)
<i>P-Value</i>	0.637	0.874
<b>Physician and Ancillary Expenditures</b>		
<i>Difference-in-Difference</i>	961,906.5	1,326,647.2
<i>90% Confidence Interval</i>	(-2,235,177   4,158,990)	(-1,143,352   3,796,646)
<i>P-Value</i>	0.621	0.377
<b>Skilled Nursing Facility Expenditures</b>		
<i>Difference-in-Difference</i>	-1,745,455	-1,822,131*
<i>90% Confidence Interval</i>	(-3,884,054   393,144.1)	(-3,475,107   -169,155.9)
<i>P-Value</i>	0.179	0.070
<b>Home Health Expenditures</b>		
<i>Difference-in-Difference</i>	-1,185,532.5	-778,776.7
<i>90% Confidence Interval</i>	(-3,103,641   732,575.5)	(-2,268,191   710,637.6)
<i>P-Value</i>	0.309	0.390

\* Statistically significant at the ten percent level.

<sup>a</sup>Results are cumulative across all available quarters.

<sup>b</sup>Year 1 refers to the one-year period after a beneficiary's enrollment in the program.

Note: Welvie delivered its HCIA intervention to Texas MA beneficiaries from May 2014 to December 2015.

## 2.5 Program Effectiveness (IV Analysis)

This section describes the instrumental variable (IV) analysis that Acumen conducted to assess the effects of the Welvie high-dose intervention, defined as use of the decision aid component of the program. Section 2.5.1 describes the analytic approach for the IV analysis, while Section 2.5.2 presents findings from this analysis for Medicare beneficiaries who completed at least one of the six steps of the decision aid.

### 2.5.1 Analytic Approach

An IV analysis was conducted to assess the effects of the use of the Welvie decision aid on health service utilization and expenditures for Medicare beneficiaries. While Welvie’s low-dose intervention group consists of randomly selected beneficiaries who received outreach materials with brief health information content and an invitation to use the six-step decision aid, the high-dose intervention group consists of a subset of these beneficiaries who completed at least one of the six steps of the decision aid. The same set of basic cohort restrictions used in the ITT analysis described in Section 2.4 was also applied in this IV analysis.

This IV analysis considers the six-step decision aid as the main treatment and focuses on assessing the average effect of this treatment. It estimates a local average treatment effect (LATE)<sup>9</sup> as the average effect of the Welvie intervention on outcomes for beneficiaries who actually received the treatment (i.e., used the decision aid) after their randomization into the treatment arm. In comparison, the ITT analysis presented in Section 2.4 aims to estimate the effect of offering the Welvie program to Medicare beneficiaries, or the effect of the intervention assignment on the outcomes of interest, without considering receipt of the decision aid program itself. Since beneficiaries accessed the decision aid by choice, not everyone assigned to the low-dose intervention group actually received “treatment” (i.e., used the decision aid).

The IV analysis uses the randomized nature of assignment to the low-dose intervention group as a proxy for a beneficiary’s propensity to enter the high-dose intervention program.<sup>10,11,12</sup> In the analysis of the use of the Welvie decision aid, assignment to the low-dose intervention group was used as the instrumental variable in a two-stage regression. The first stage was a logistic regression assessing the probability of being in the high-dose intervention program among the randomized low-dose intervention and control groups. The predicted probabilities were then used as an independent variable in the second stage, which assesses the

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<sup>9</sup> Joshua D. Angrist, Guido W. Imbens, and Donald B. Rubin, “Identification of Causal Effects Using Instrumental Variables,” *Journal of the American Statistical Association* 91 (1996): 444-72.

<sup>10</sup> Ibid.

<sup>11</sup> James J. Heckman, “Randomization as an Instrumental Variable,” *The Review of Economics and Statistics* 78 (1996): 336-41.

<sup>12</sup> Sander Greenland, “An Introduction to Instrumental Variables for Epidemiologists,” *International Journal of Epidemiology* 29 (2000): 722-29.

high dose intervention program's association with health, resource use and expenditure outcomes in the DiD framework described in Section 1.2.2.

The IV analysis of the high-dose intervention is based on four assumptions. The first is that the assignment to the low-dose intervention group is associated with entrance into the high-dose intervention group. The second is that the assignment to the low-dose intervention group is not affected by any confounding factors that may affect the association between entrance to the high-dose intervention and assessed health and cost outcomes. The third is that the only way that assignment to the low-dose intervention affects health and cost outcomes is through entrance to the high-dose intervention group. Finally, the fourth is that assignment to the low-dose intervention group did not discourage beneficiaries from entering the high-dose intervention group if those same beneficiaries would have otherwise entered the high-dose group had they been assigned to the control population. The first two assumptions are consistent with program construction and randomization. The third assumption is based on the assumption that simply receiving outreach materials with brief health information content and being invited to use the decision aid are unlikely to have substantial uniform behavioral effects on beneficiaries who do not choose to engage with the six-step decision aid. The fourth assumption ensures that the results of the analysis can be interpreted as the effect of Welvie's decision aid; this assumption is plausible, given that the number of control beneficiaries who used the tool is very low, and there is no clear mechanism through which receipt of the Welvie outreach materials would have discouraged use of the decision aid.

As noted in Section 2.3, beneficiaries in the Texas control group may have received information about Welvie's decision aid program through outreach materials sent by Humana to its broader MA membership in Texas. However, beneficiaries assigned to the low-dose Texas intervention group received more materials than those in the control group, and they are observed to be entering the high-dose intervention group at much higher rates than the control group, providing support for the first assumption that assignment to the low-dose intervention group is associated with entrance into the high-dose intervention group. Despite the potential exposure of the Humana MA Texas control group population to information about Welvie through the Humana mailings, the assumptions underlying the instrumental variable analysis still apply to the Humana MA Texas population.

### ***2.5.2 Effects of the Decision Aid on Resource Use and Expenditures***

This section presents IV analysis results on the effects of the use of the Welvie decision aid on health service use and medical expenditures for Medicare beneficiaries in individual quarters after their enrollment in the program. In the instrumental variable analysis, 1,167 Medicare FFS beneficiaries in Ohio, 4,294 MA beneficiaries in Ohio, and 2,439 MA

beneficiaries in Texas who completed at least one of the six steps of the decision aid were considered to have received the high-dose intervention. The analysis assumes that all observed effects can be attributed to the use of the Welvie decision aid, and thus estimates larger magnitudes of effects on health service utilization and expenditures among the high-dose intervention group relative to controls.

The use of the Welvie decision aid was associated with statistically significant decreases in a few health service use outcomes for the Medicare FFS Ohio high-dose intervention group relative to controls. There were statistically significant decreases in ER visits in Q2 and Q3. There were statistically significant decreases of 254 inpatient admissions and 1,914 hospital days per 1,000 decision aid users in Q1, which appear to be driven by statistically significant decreases in inpatient preference-sensitive cardiac surgeries and surgical hospital days in the same quarter (see Appendix B.3). Statistically significant decreases at the 10% level in outpatient preference-sensitive orthopedic surgeries were observed in three quarters with non-significant decreases generally observed in other quarters. These statistically significant decreases in outpatient preference-sensitive orthopedic surgeries may be attributed to the timing of Welvie's outreach inviting beneficiaries to use the decision aid.

There were statistically significant decreases in some expenditure categories for Medicare FFS Ohio decision aid users, similar to the ITT analysis. Total medical expenditures decreased in two quarters, driven by decreases in inpatient expenditures. The statistically significant Q1 decreases in total medical expenditures and inpatient expenditures appear to be driven by decreases in total surgery expenditures and preference-sensitive cardiac expenditures. As in the ITT analysis, these decreases are consistent with the statistically significant Q1 decreases in corresponding resource use categories. These findings are detailed in Appendix Table B-25 in Appendix B.4.

For the MA Ohio cohort, the use of the Welvie decision aid was associated with statistically significant decreases in surgery- and inpatient-related resource use outcomes, which were concentrated in either Q3 or Q4 (see Appendix Table B-24). As in the ITT analysis, statistically significant decreases of 88 surgeries and 375 surgical hospital days per 1,000 decision aid users were driven by statistically significant decreases in inpatient surgeries and preference-sensitive cardiac surgeries. Statistically significant decreases in ER visits among Welvie decision aid users were also observed in Q6, Q7, and Q8.

Similar to the ITT analysis, statistically significant decreases in total surgery and total medical expenditures were observed for MA Ohio decision aid users, and were consistent with the significant decreases in similar resource use categories (see Appendix Table B-45). These findings were also generally concentrated in Q3 or Q4.

For the MA Texas cohort, the use of the Welvie decision aid was associated with statistically significant increases in some service use outcomes, but these effects were limited to only one or two quarters after program enrollment and do not follow a consistent pattern across the intervention period (see Appendix Table B-25). There were statistically significant increases in inpatient admissions, hospital days, and ER visits, all in Q5.

Statistically significant increases in expenditure categories corresponding to the aforementioned resource use findings were also observed for MA Texas decision aid users and were limited to Q4 or Q5 (see Appendix Table B-46).

## **2.6 Implementation Effectiveness**

Welvie reported an increase in participation rates among cardiac patients after distributing outreach materials that focus on chronic disease management, rather than cardiac surgery. As part of the Ohio MA implementation, Welvie collaborated with Anthem to revise information in the cardiac care decision aid to better align with the “Dr. Dean Ornish Program for Reversing Heart Disease” offered by Anthem in partnership with the Cleveland Clinic. The Dean Ornish program is an evidence-based chronic disease management program designed to stop or reverse the progression of heart disease. The revised Welvie decision aid shifted focus away from cardiac surgery to include additional information about preventing cardiac illness and managing chronic illness through diet, exercise, and stress management. Cardiac patients who used the revised Welvie decision aid had the opportunity to qualify for and engage in ongoing chronic disease management through the Anthem-Dean Ornish Program-Cleveland Clinic partnership. Welvie also updated its outreach materials to complement the revised Welvie decision aid for Ohio Anthem MA patients with or at risk of a cardiac condition to increase program participation, and as a result, observed increased response rate in this population. Welvie thus also revised cardiac materials available to other non-Anthem populations.

Welvie participants who responded to Acumen’s patient experience survey described the information they received as helpful and effective in informing them about alternatives to surgery. Among respondents who recalled a recent health care decision, more than 70 percent felt the Welvie information was helpful in understanding the advantages of their health care options and deciding what was best for them personally. A slightly lower share (61.9%) reported that Welvie helped them understand the disadvantages of their health care options. Among the Welvie respondents who recently set a health care goal, more than two thirds (69.4%) found the Welvie information helpful in setting those health goals. Survey respondents commonly noted that Welvie materials made them aware of alternatives to surgery. Respondents specifically reported increased awareness of medical and non-medical alternatives to surgery, such as medications and lifestyle changes.



Welve primarily implemented a “plug-in” intervention that did not require extensive integration with established health care providers, and, as a result, program staff members experienced fewer implementation challenges than more complex SDM models under the HCIA project. The Welve innovation was primarily implemented in partnership with health insurance plans with mail outreach to beneficiaries. The major dependencies in the Welve mail implementation occurred early in the HCIA project and included: (i) establishing formal legal partnerships and (ii) obtaining data from insurance partners. Once these dependencies were met, Welve independently carried out major implementation tasks, including patient identification, outreach, and SDM service delivery. As part of its no-cost extension from CMS for the HCIA project, Welve pilot tested provider referrals to the online decision aid. During this portion of the project, Welve faced challenges common to interventions in healthcare delivery organizations such as provider buy-in, workflow redesign, and lower usage of the intervention compared to mail outreach.

Welve tested and identified a number of effective direct outreach strategies in its randomized intervention groups for encouraging Medicare beneficiaries to participate in its six-step decision aid program. Welve reported that the following outreach strategies were effective in engaging beneficiaries in the decision aid program and generating better response rates: (i) providing incentives; (ii) mailing outreach materials followed by a telephone reminder; (iii) mailing envelopes, as compared to postcards, with the CMS or Department of Health and Human Service logo; and (iv) delivering outreach materials to beneficiaries on Monday, as compared to later in the week. In January 2015, a CMS rule change allowed MA plans to offer incentives for health improvement programs, such as SDM programs. This motivated Welve and its health plan partners to co-brand outreach materials and plan incentives for beneficiary participation in the decision aid. These outreach strategies facilitated Welve’s recruitment of 15,897 decision aid users, which was 102.5% of the program’s projected target.

## **2.7 Workforce**

The Welve intervention utilized clinically-trained nurses to deliver the intervention by phone; however, there is not a significant need to develop this workforce to respond to phone calls because beneficiaries prefer to access the intervention online or in a paper booklet. The Welve decision aid is available in variety of modes, with online being the most popular (54.6%), followed by paper booklet (45%), and by phone with support from a Welve nurse (0.4%). Large usage rates of both the online and paper versions of the program suggest that shared decision making programs should strive to offer high-tech versions of their interventions but also continue to offer them in low-tech formats to Medicare beneficiaries. The limited popularity of the nurse-assisted phone version of the decision aid suggest that health care workforce requirements for scaling up program delivery to a national level would be minimal. However, although nurses

may not have a large role in delivering the decision aid, nurses and consultants with clinical training play important roles in developing and tailoring outreach and decision aid materials based on most recent guidelines and evidence.

## **2.8 Context**

The provider referral pilot of the Welvie program generated early insights on factors influencing health care providers' willingness to engage in SDM programs. Welvie reported that among health care organization leadership, one perceived risk of SDM is that it may reduce rates of surgery-related services, which in turn may reduce payments to providers in an FFS billing arrangement. Welvie reported that practices with capitated payments or participation in financial risk arrangements were more receptive to participating as Welvie provider referral sites. For example, Welvie found that practices in Florida, which participated in financial risk arrangements, perceived less financial risk from SDM than practices in Texas, and as a result, the pilot implementation was moved to Florida. Providers also expressed concerns that referrals to the Welvie program would result in more consults and second opinions. Welvie reported plans to leverage positive feedback from the first cohort of providers participating in the pilot (e.g., low time burden of Welvie referrals) in hopes that these early adopters will convince other providers of the value of the Welvie SDM intervention.

## **2.9 Sustainability and Spread**

As of the end of the HCIA cooperating agreement, Welvie successfully scaled up its intervention to include new MA beneficiaries in multiple regions of the country. Welvie is under contract with its HCIA partners Humana and Anthem to continue to deliver the intervention to existing MA beneficiaries after the HCIA cooperating agreement ended in December 2015. Welvie's contracts with Humana and Anthem also expand the intervention population beyond the Texas and Ohio MA populations in the HCIA implementation to Humana and Anthem MA beneficiaries nationwide. In 2014 and 2015, Welvie also added new MA partners, including but not limited to Wellcare, BCBS of Michigan, and BCBS of Tennessee. As of December 2015, Welvie scaled its innovation to 600,000 additional MA beneficiaries through these new partnerships with little to no changes in workforce or innovation components.

### 3 EVALUATION OF THE MEDEXPERT INTERNATIONAL HEALTH CARE INNOVATION AWARD

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This section provides summative evaluation findings for the MedExpert International (“MedExpert”) innovation through August 2016, unless noted otherwise. The MedExpert program aims to improve quality of care and reduce expenditures by providing beneficiaries with up-to-date information on treatment options and clinical guidelines, as well as patient advocacy and administrative services, including transferring medical records, scheduling health care appointments, coordinating health insurance benefits, and other services. These services are delivered primarily by phone.

Section 3.1 provides an overview of the key findings detailed in the remainder of the chapter. Section 3.2 describes MedExpert’s innovation components and Section 3.3 summarizes the primary factors affecting program evaluability. Section 3.4 provides quantitative analysis findings on MedExpert’s program effects. Sections 3.5, 3.6, and 3.7 highlight, respectively, findings on implementation effectiveness, workforce, and context. Finally, Section 3.8 describes the sustainability and spread of the MedExpert program after the end of the HCIA project.

#### 3.1 Key Findings

Acumen conducted separate quantitative analyses for Medicare Parts A and B (“Medicare FFS”) and MA beneficiaries who participated in the MedExpert intervention to assess program effects on health and service use outcomes. For outcomes available in both analyses, estimated effects for FFS beneficiaries do not always mirror the results for the MA cohort. For instance, the MedExpert intervention was associated with decreases in inpatient service utilization for MA beneficiaries, but not for those in the FFS cohort. These differences in estimated effects on utilization are likely driven by differences in demographic and health profiles, and differences in the context of health care provision. These differences are discussed in greater detail in Section 3.4.2.

For the Medicare FFS cohort, the program was generally associated with increases in health service categories associated with lower intensity health issues. There were statistically significant, though quantitatively small, cumulative increases in physician and ancillary service expenditures, along with increases in non-emergency outpatient service costs for the second year of the intervention for participants relative to controls (see Section 3.4.3), suggesting that Medicare FFS intervention beneficiaries are more likely than controls to visit doctors in either the hospital or the outpatient setting after the intervention. A statistically significant increase in ER visits in the second year after program enrollment was also observed, although there was no corresponding increase in outpatient-ER expenditures (see Section 3.4.2). Statistically significant and quantitatively small increases in home health expenditures also suggest increased

utilization of lower intensity services among home bound patients in the FFS cohort (see Section 3.4.3).

Among MA intervention beneficiaries, there were statistically significant cumulative decreases in inpatient readmissions, unplanned inpatient readmissions, and in all available measures of health service use (inpatient admissions, unplanned inpatient admissions, and hospital days) across the full intervention period. Because expenditure information is not available in the MA encounter data available to Acumen for this analysis, the effects of the program on costs could not be analyzed for the MA cohort. In addition, program design issues may have also influenced findings; MedExpert reported identifying an initial cohort of beneficiaries through randomized methods but later added MA beneficiaries selected by United HealthCare (UHC) to the intervention group, which may have introduced selection bias and influenced findings.

The MedExpert program was implemented in partnership with CMS and health insurance plans and did not require significant changes to the health care delivery system; thus the program experienced fewer implementation challenges and matured faster than more complex SDM models under the HCIA project. Throughout implementation, MedExpert successfully engaged beneficiaries by direct telephone and mail outreach, which MedExpert's leadership attributed to a natural-sounding, low-pressure approach during phone-based outreach and beneficiaries' ability to verify MedExpert as a legitimate Medicare service provider. MedExpert participants who responded to Acumen's patient experience survey reported that the information they received was helpful and easy to understand. While MedExpert's computer and telephone systems have the capacity to handle large volumes of patient encounters, MedExpert's experience with a high turnover of staff may present challenges in its capacity to scale the program nationwide.

## **3.2 Program Description**

The MedExpert innovation is designed to improve quality of care and reduce expenditures by providing beneficiaries with up-to-date information on treatment options and clinical guidelines, designed to prevent unnecessary utilization of health services such as emergency room visits and outpatient care. MedExpert's intervention also includes patient advocacy and administrative services, including transferring medical records, scheduling appointments, coordinating health insurance benefits, and other services, which may improve quality of care by helping beneficiaries obtain necessary services and by improving care coordination. The program does not target any particular medical condition, and it serves Medicare beneficiaries of all ages. MedExpert recruits beneficiaries into the intervention by mail and phone marketing campaigns. MedExpert staff communicates with beneficiaries by phone,

which is the most frequently used method, and also by fax, text message, or email. The staff of Medical Information Coordinators (MICs) and physicians use the MedExpert International Guidance System (MIGS), an information-harvesting and report-generating system that incorporates clinical guidelines, medical research, and other health information resources, to provide evidence-based information on around 22,000 medical conditions to beneficiaries. MedExpert staff members use MIGS reports as reference information during encounters with beneficiaries and share copies of the reports with beneficiaries upon request. MedExpert staff members consult with outside experts on complex cases that require additional professional judgment.

MedExpert defines two levels of beneficiary engagement in its intervention. An “encounter” is defined as a single discussion or contact between a MedExpert staff member and a beneficiary. The first outreach or contact between a beneficiary and a MedExpert staff member is considered the first encounter for the beneficiary. An “episode” is considered a higher level of engagement and often involves multiple discussions or encounters about the same health or care assistance topic.

MedExpert delivered the intervention to Medicare beneficiaries under the HCIA cooperating agreement from February 1, 2013 through June 30, 2015. The initial intervention population included beneficiaries randomly selected from a dataset of Medicare beneficiaries provided by CMS, and a cohort of United HealthCare (UHC) MA beneficiaries was added in June 2014. A cohort of beneficiaries recruited through the Segal Consulting Group was also added during the cooperative agreement period; however, beneficiaries in this cohort were exposed to the intervention prior to this period and received an additional suite of other services not offered to other HCIA intervention beneficiaries. After the HCIA award period, MedExpert continued to support UHC and Medicare FFS beneficiaries to complete existing beneficiary encounters but did not initiate any new encounters. As of the end of the cooperating agreement, MedExpert had planned to continue providing services to Medicare beneficiaries recruited through its partnership with Segal Consulting Group on a pro bono basis.

### **3.3 Evaluability**

This section summarizes the primary factors affecting the evaluability of MedExpert, which include program enrollment and payer mix and comparison group data availability.

Table 3-1 provides detailed information on the program’s enrollment and payer mix figures for the 353,663 MedExpert beneficiaries enrolled in the program on or before June 17, 2015. Acumen defines enrollment in the MedExpert intervention as at least one encounter with a MIC. Among these beneficiaries, 100,867 were enrolled in Medicare Parts A and B on the day they enrolled in the program, while 224,497 were enrolled in MA.

**Table 3-1: Payer Mix of MedExpert Program Enrollment by Calendar Quarter**

Calendar Quarter	Medicare Parts A and B		Medicare Advantage		Other Medicare Enrolled		Not Medicare-Enrolled/Unknown		Total
Jan-Mar 2013	1,205	43%	1,465	52%	93	3%	53	2%	2,816
Apr-Jun 2013	7,975	42%	9,305	49%	945	5%	672	4%	18,897
Jul-Sep 2013	21,773	38%	24,488	43%	1,524	3%	9,680	17%	57,465
Oct-Dec 2013	14	41%	15	44%	*	*	*	*	34
Jan-Mar 2014	22	46%	17	35%	*	*	*	*	48
Apr-Jun 2014	20,071	25%	56,985	71%	1,022	1%	2,331	3%	80,409
Jul-Sep 2014	2,971	4%	76,757	95%	154	0%	1,165	1%	81,047
Oct-Dec 2014	20,718	43%	24,113	49%	1,201	2%	2,705	6%	48,737
Jan-Mar 2015	12,219	34%	20,530	58%	1,106	3%	1,809	5%	35,664
Apr-Jun 17, 2015	13,899	49%	10,822	38%	1,962	7%	1,863	7%	28,546
<b>Total</b>	100,867	29%	224,497	63%	8,015	2%	20,284	6%	353,663

Notes: This table includes all beneficiaries who enrolled in the MedExpert program through June 17, 2015 based on participant-level program data provided by MedExpert on June 19, 2015.

Most beneficiaries classified as “Other Medicare Enrolled” have Medicare Part A only, although other insurance statuses (e.g., Parts A and D) are rarely observed.

“Medicare Parts A and B,” “Medicare Advantage,” and “Other Medicare Enrolled” may also include dual-eligible beneficiaries and beneficiaries enrolled in Medicare Part D.

“Not Medicare-Enrolled/Unknown” includes beneficiaries who were not enrolled in Medicare on the day they entered the MedExpert program including those with death dates occurring prior to program enrollment date, or for whom the awardee did not provide sufficient personally identifiable information to link to Medicare claims.

\*All cell counts less than eleven have been suppressed to protect participant confidentiality

The MedExpert intervention group consists of both randomly selected Medicare beneficiaries drawn from the data file MedExpert received from CMS, as well as non-randomly selected Medicare beneficiaries whom MedExpert recruited through its partnerships with United HealthCare (UHC) and the Segal Consulting Group. UHC selected a significant number of beneficiaries from 10 different regions to participate in the MedExpert intervention but Acumen did not receive information about the criteria used for their selection. As such, any selection factors that were used by UHC could not be used in constructing the comparison group matching model. Thus, UHC MA beneficiaries in the MedExpert intervention group may likely be different from non-participants in unobserved ways, potentially introducing selection bias in our results for the MA cohort. In addition, one of the 10 participating UHC MA plans also offered OptumHealth Care Solutions’ diabetes and CHF disease management programs during the HCIA study period and beneficiaries’ exposure to such programs may have also influenced health and resource use outcomes, making it challenging to disentangle the effects of these programs from those of the MedExpert intervention. However, only about 0.8% of the the total MA beneficiaries included in the analyses were enrolled in the UHC plan offering Optum’s disease management programs during the study period, and thus any potential impact from these

programs on our findings is likely to be negligible. Similarly, the other participating UHC MA plans also offered a home-based osteoporosis screening intervention during the HCIA study period for women 67 years of age or older who have had a bone fracture and not received osteoporosis medication or a bone density test within six months from the date of the fracture; however, given this is likely a very small proportion of the total MA beneficiaries included in our analysis, any potential influence of this intervention on our findings is also likely to be minimal.

As noted in Section 3.2, Medicare beneficiaries recruited through the Segal Consulting Group partnership were exposed to the intervention for several years prior to HCIA program launch, and these beneficiaries also received an additional suite of services not offered to other Medicare beneficiaries in MedExpert's intervention group for the HCIA project. Since the inclusion of Segal Consulting Group beneficiaries would not support a credible analysis and complicate the interpretation of program effects attributable to the HCIA program, this subgroup was not included in Acumen's quantitative analyses of program effects described in Section 3.4.

Since comparison groups were not available for any of the MedExpert intervention groups, Acumen constructed comparison groups by matching beneficiaries from the general Medicare population to MedExpert intervention beneficiaries based on important demographic and health characteristics. The original intent of the MedExpert program was a randomized study design consisting only of Medicare FFS beneficiaries identified by CMS. However, two separate events challenged Acumen's ability to carry out an evaluation based on this intended design. First, the data provided to MedExpert by CMS inadvertently included Medicare Advantage beneficiaries, resulting in a substantial number of beneficiaries in the treatment group for whom full claims data were not available. Second, due to a change in the interpretation of the rules about the nature of the data use agreement (DUA), CMS had to instruct MedExpert to purge all data received on Medicare beneficiaries and, instead, apply for a research DUA to receive the data. Unfortunately, MedExpert chose not to do this, so the original randomized control group could not be identified. As a result, CMS, in consultation with MedExpert, adopted the less robust but valid approach of propensity score matching in order to identify a comparison group for the evaluation of the MedExpert intervention with Medicare FFS and Medicare Advantage beneficiaries. MedExpert also did not identify a comparison group for the MA intervention group beneficiaries enrolled through its partnership with UHC, so Acumen used propensity score matching methods to identify suitable comparison groups for UHC beneficiaries included in the cohort as well. However, Acumen's ability to match a suitable comparison group to non-randomly selected UHC MA beneficiaries may be particularly limited as these beneficiaries are likely to differ from the general Medicare Advantage population in ways not observable in claims.

## 3.4 Program Effectiveness

This section describes findings from the quantitative evaluation of MedExpert program effects on health outcomes, service use, and expenditures for Medicare beneficiaries in the ten quarters following program enrollment (“full intervention period”). Beneficiaries with exposure to the MedExpert intervention include those who have received any outreach from MedExpert, regardless of their level of engagement with the program. In addition to the common cohort restrictions described in Section 1.2.2, the subgroup of beneficiaries who were recruited by MedExpert through its partnership with Segal Consulting Group were excluded from analysis, as noted in the previous section. There were a total of 87,317 Medicare FFS beneficiaries and 221,690 MA beneficiaries available for analysis after applying these restrictions. Acumen matched separate comparison groups to FFS and MA beneficiaries using a propensity score matching model described in Section 1.2.2. As shown in Appendix D.1, the intervention and comparison groups were generally well-matched on observed demographic and baseline health characteristics for both the Medicare FFS and MA cohorts.

The remainder of this section highlights key quantitative findings for MedExpert. Sections 3.4.1, 3.4.2, and 3.4.3 highlight notable results for mortality and inpatient readmissions, resource use, and medical expenditures, respectively. Information on ER visits and data on expenditure were not available for the MA beneficiaries, and, therefore, not presented in our findings for this cohort. Single difference or DiD estimates are used to estimate the effect of the intervention cumulatively, as well as for each specific year and quarter after beneficiaries’ enrollment in the MedExpert program. Complete results of our analyses, along with quarterly difference or DiD estimates, are provided in Appendix C.<sup>13</sup>

### 3.4.1 Mortality and Inpatient Readmissions

As shown in Table 3-2, MedExpert was not associated with cumulative or yearly statistically significant changes in mortality across the two years after program enrollment for the Medicare FFS cohort. On the contrary, for the MA cohort there was a small, statistically significant decrease in mortality in the second year after program enrollment. As Table 3-2 shows, a statistically significant decrease of about 195 deaths among 161,579 MA intervention beneficiaries (or about 2 deaths per 1,000 beneficiaries)<sup>14</sup> was observed in the second year after enrollment. In the analysis of quarterly fixed effects, there was also a statistically significant decrease in Q6 after program enrollment, significant at the ten percent level (see Appendix D.2).

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<sup>13</sup> Methodology on how difference and DiD estimates were calculated and how these estimates should be interpreted are presented in Section 1.2.2 under “Analytic Method.”

<sup>14</sup> Methodology on how normalized estimates were calculated and should be interpreted are also presented in Section 1.2.2 under “Analytic Method.”



**Table 3-2: Aggregate Mortality: Cumulative and Yearly Differences After MedExpert Enrollment, Medicare FFS and MA Cohorts**

Medicare Cohort	Full Intervention Period <sup>a</sup> (10 quarters)	Year 1 <sup>b</sup>	Year 2
<b>Medicare FFS</b>			
<i>Number of Participants</i>	87,317	87,317	42,505
<i>Difference<sup>c</sup></i>	-50.44	-48.33	18.99
<i>90% Confidence Interval</i>	(-241.1   140.2)	(-201.2   104.5)	(-83.9   121.9)
<i>P-Value</i>	0.663	0.603	0.761
<b>Medicare Advantage</b>			
<i>Number of Participants</i>	221,690	221,690	161,579
<i>Difference</i>	-190.22	19.10	-195.42**
<i>90% Confidence Interval</i>	(-449.4   69.0)	(-189.5   227.7)	(-336.9   -53.9)
<i>P-Value</i>	0.227	0.880	0.023

\*\* Statistically significant at the five percent level.

<sup>a</sup>Results are cumulative across all available quarters.

<sup>b</sup>Year 1 refers to the one-year period after a beneficiary's enrollment in the program, Year 2 refers to the subsequent one-year period.

<sup>c</sup>This estimate represents difference in the number of deaths between participants and controls during the intervention period.

Cumulative and yearly estimated effects on inpatient readmissions were quantitatively minimal and statistically insignificant for the Medicare FFS cohort (see Table 3-3). For the MA cohort, cumulative decreases in inpatient readmissions were statistically significant and amounted to 349 fewer beneficiaries with a readmission in the intervention population of 87,317 beneficiaries, relative to controls (see Table 3-4). This is equivalent to 64 fewer beneficiaries with a readmission per 1,000 beneficiaries with at least one admission (see Appendix Table D-3). These effects were driven by decreases in the first year after program enrollment. Figure 3-1 and Appendix Table D-7 show similar trends in quarterly fixed effects; with decreases observed in most quarters, although only the decrease in the first quarter after program enrollment was statistically significant. However, as noted in Section 3.3, these results may be influenced by program design issues and subject to unobserved differences between intervention and control groups.

**Table 3-3: Aggregate Inpatient Readmissions: Cumulative and Yearly Differences After MedExpert Enrollment, Medicare FFS Cohort**

Measures	Full Intervention Period <sup>a</sup> (10 quarters)	Year 1 <sup>b</sup>	Year 2
<i>Number of Participants</i>	87,317	87,317	42,505
<b>30-Day Hospital Readmissions Following All Inpatient Admissions</b>			

Measures	Full Intervention Period <sup>a</sup> (10 quarters)	Year 1 <sup>b</sup>	Year 2
<i>Difference<sup>c</sup></i>	0.00	-24.65	-16.51
<i>90% Confidence Interval</i>	(-157.1   157.1)	(-151.1   101.8)	(-100.8   67.8)
<i>P-Value</i>	1.000	0.749	0.747
<b>30-Day Hospital Unplanned Readmissions Following All Inpatient Admissions</b>			
<i>Difference</i>	-2.69	-20.45	-24.28
<i>90% Confidence Interval</i>	(-157.1   151.7)	(-144.6   103.7)	(-107.2   58.7)
<i>P-Value</i>	0.977	0.786	0.630

<sup>a</sup>Results are cumulative across all available quarters.

<sup>b</sup>Year 1 refers to the one-year period after a beneficiary's enrollment in the program, Year 2 refers to the subsequent one-year period.

<sup>c</sup>The estimate represents the difference in the number of beneficiaries with at least one readmission for every beneficiary who has an inpatient admission, as compared between the intervention and control groups during the relevant year in the intervention period.

**Table 3-4: Aggregate Inpatient Readmissions: Cumulative and Yearly Differences After MedExpert Enrollment, MA Cohort**

Measures	Full Intervention Period <sup>a</sup> (10 quarters)	Year 1 <sup>b</sup>	Year 2
<i>Number of Participants</i>	221,690	221,690	161,579
<b>30-Day Hospital Readmissions Following All Inpatient Admissions</b>			
<i>Difference<sup>c</sup></i>	-349.13***	-298.45***	-51.87
<i>90% Confidence Interval</i>	(-542.6   -155.6)	(-457.9   -139.0)	(-153.4   49.6)
<i>P-Value</i>	0.003	0.002	0.400
<b>30-Day Hospital Unplanned Readmissions Following All Inpatient Admissions</b>			
<i>Difference</i>	-301.63***	-246.82***	-55.80
<i>90% Confidence Interval</i>	(-491.0   -112.3)	(-402.8   -90.9)	(-155.1   43.5)
<i>P-Value</i>	0.009	0.009	0.355

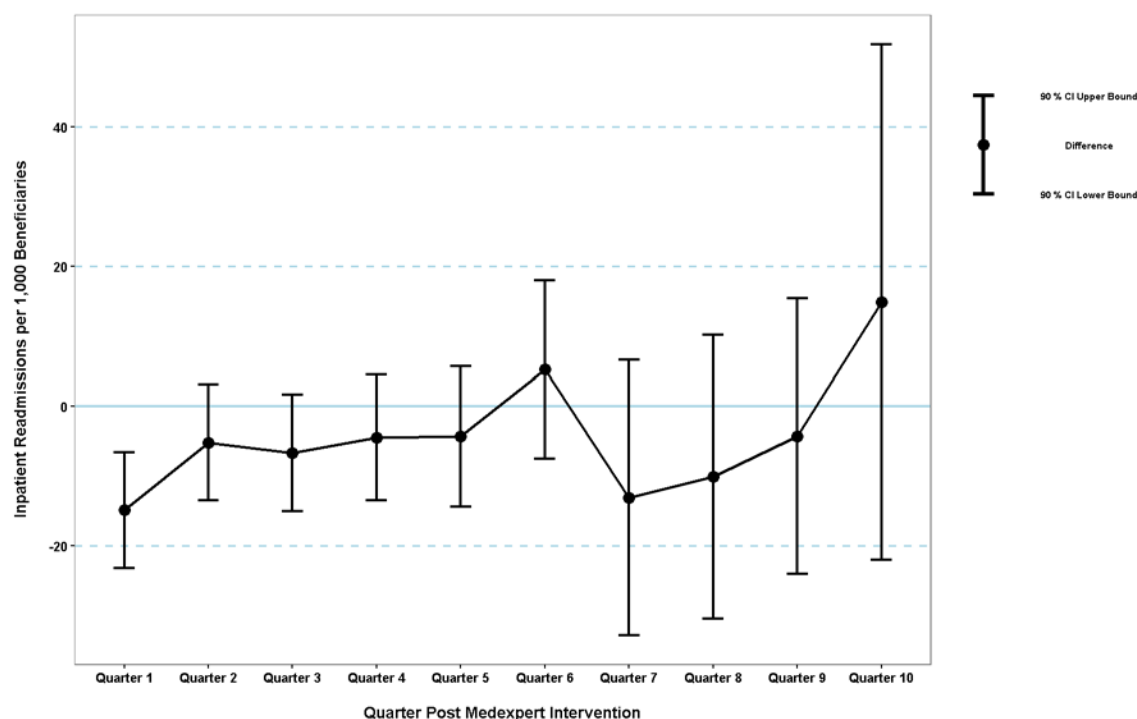
\*\*\* Statistically significant at the one percent level.

<sup>a</sup>Results are cumulative across all available quarters.

<sup>b</sup>Year 1 refers to the one-year period after a beneficiary's enrollment in the program, Year 2 refers to the subsequent one-year period.

<sup>c</sup>The estimate represents the difference in the number of beneficiaries with at least one readmission for every beneficiary who has an inpatient admission, as compared between the intervention and control groups during the relevant year in the intervention period.

**Figure 3-1: Inpatient Readmissions per 1,000 Beneficiaries: Quarterly DiD Estimates, MedExpert, MA Cohort**



### 3.4.2 Health Service Resource Use

Among Medicare FFS beneficiaries, there were no statistically significant cumulative effects for any of the resource use measures. Following a non-significant decrease in ER visits in the first year after program enrollment, there was a statistically significant increase in the number of ER visits in the second year after program enrollment, which corresponds roughly to a 5 percent increase compared to the baseline (pre-enrollment year) for the intervention group. Table 3-5 shows that there were 582 more ER visits among the 42,505 beneficiaries in the intervention group relative to controls (or about 18 more ER visits per 1,000 beneficiaries) in the second year. As discussed in further detail in Section 3.4.3, there is no evidence of increased outpatient-ER expenditure to accompany the increase in ER visits, but there were increases in physician and ancillary service expenditures. One potential explanation for this pattern is that Medicare FFS intervention beneficiaries tend to visit with doctors (in hospital or in outpatient settings) more often than control beneficiaries, and increased ER visits may reflect this increased contact with medical personnel. Furthermore, a non-significant decrease in the number of hospital days in the second year after program enrollment also suggests that the observed increase in ER visits does not result in heavy service utilization.

**Table 3-5: Aggregate Resource Use: Cumulative and Yearly DiD Estimates After MedExpert Enrollment, Medicare FFS Cohort**

Measures	Full Intervention Period <sup>a</sup> (10 quarters)	Year 1 <sup>b</sup>	Year 2
<i>Number of Participants</i>	87,317	87,317	42,505
<b>ER Visits</b>			
<i>Difference-in-Difference</i>	16.50	-702.91	582.39**
<i>90% Confidence Interval</i>	(-945.1   978.1)	(-1,416.7   10.9)	(204.7   960.1)
<i>P-Value</i>	0.977	0.105	0.011
<b>Inpatient Admissions</b>			
<i>Difference-in-Difference</i>	702.07	503.63	122.74
<i>90% Confidence Interval</i>	(-142.7   1,546.8)	(-122.0   1,129.2)	(-233.7   479.2)
<i>P-Value</i>	0.172	0.185	0.571
<b>Unplanned Inpatient Admissions</b>			
<i>Difference-in-Difference</i>	616.25	432.68	123.00
<i>90% Confidence Interval</i>	(-127.9   1,360.4)	(-117.8   983.1)	(-197.1   443.1)
<i>P-Value</i>	0.173	0.196	0.527
<b>Hospital Days</b>			
<i>Difference-in-Difference</i>	5,412.93	6,075.54	-218.34
<i>90% Confidence Interval</i>	(-3,074.3   13,900.2)	(-107.3   12,258.4)	(-3,675.7   3,239.0)
<i>P-Value</i>	0.294	0.106	0.917

\*\* Statistically significant at the five percent level.

<sup>a</sup>Results are cumulative across all available quarters.

<sup>b</sup>Year 1 refers to the one-year period after a beneficiary's enrollment in the program, Year 2 refers to the subsequent one-year period.

For the MA intervention cohort, there were statistically significant decreases in inpatient admissions, unplanned inpatient admissions, and hospital days in the cumulative and yearly measures, which are also reflected across most quarterly fixed effects estimates. As shown in Table 3-6, across 221,690 MA intervention beneficiaries relative to controls, there were decreases of 3,780 inpatient admissions (31 inpatient admissions per 1,000 beneficiaries), 3,371 unplanned inpatient admissions (28 unplanned inpatient admissions per 1,000 beneficiaries), and 17,231 hospital days (142 hospital days per 1,000 beneficiaries) cumulatively across the full intervention period. These decreases in resource use were statistically significant at the one percent level, and correspond to a 7 to 8 percent decrease from baseline figures for the intervention cohort. However, as noted in Section 3.1, these findings may reflect selection bias and potential exposure of MA beneficiaries to other programs.

**Table 3-6: Aggregate Resource Use: Cumulative and Yearly DiD Estimates After MedExpert Enrollment, MA Cohort**

Measures	Full Intervention Period <sup>a</sup> (10 quarters)	Year 1 <sup>b</sup>	Year 2
<i>Number of Participants</i>	221,690	221,690	161,579
<b>Inpatient Admissions</b>			
<i>Difference-in-Difference</i>	-3,779.71***	-2,930.77***	-961.57***
<i>90% Confidence Interval</i>	(-4,839.4   -2,720.1)	(-3,737.5   -2,124.0)	(-1,402.6   -520.6)
<i>P-Value</i>	<0.001	<0.001	<0.001
<b>Unplanned Inpatient Admissions</b>			
<i>Difference-in-Difference</i>	-3,371.20***	-2,420.58***	-1,010.35***
<i>90% Confidence Interval</i>	(-4,333.4   -2,409.0)	(-3,152.2   -1,689.0)	(-1,416.5   -604.2)
<i>P-Value</i>	<0.001	<0.001	<0.001
<b>Hospital Days</b>			
<i>Difference-in-Difference</i>	-17,231.45***	-11,331.99***	-5,997.02***
<i>90% Confidence Interval</i>	(-25,319.1   -9,143.7)	(-17,499.6   -5,164.4)	(-9,402.9   -2,591.1)
<i>P-Value</i>	<0.001	0.003	0.004

\*\*\* Statistically significant at the one percent level.

<sup>a</sup>Results are cumulative across all available quarters.

<sup>b</sup>Year 1 refers to the one-year period after a beneficiary's enrollment in the program, Year 2 refers to the subsequent one-year period.

### 3.4.3 Medical Expenditures

While there were no cumulative or yearly effects in total medical expenditures for the Medicare FFS cohort, there were statistically significant increases in some expenditure categories (see Table 3-7). It is worth noting that the expenditure categories for which increases were observed are not related to the observed increases in ER utilization, as described in Section 3.4.2. In fact, the point estimates for both inpatient and outpatient ER expenditure in year 2 are negative, though they are not statistically significant or quantitatively large. Quarterly fixed effects estimates for IP expenditure are also all negative for Q6 and later.

Statistically significant, but quantitatively small, increases in physician and ancillary service expenditures were observed cumulatively and in each year after program enrollment among Medicare FFS beneficiaries. Across the ten quarters after program enrollment, there was a statistically significant increase of \$9,884,394 in physician and ancillary service expenditures among 87,317 participants relative to controls. This corresponds to an increase of \$211 per beneficiary. On a yearly basis, estimates suggest an increase of \$91 to \$97 per beneficiary, which corresponds to an increase of about 3 percent from the baseline average for the intervention group. There was also a statistically significant increase in expenditure for non-emergency outpatient services on the order of \$2,439,282 among 42,505 participants relative to

controls in the second year after enrollment. This increase corresponds to a yearly increase of \$76 per beneficiary (7.2 percent increase from baseline for the intervention group). The cumulative increases in physician and ancillary service and non-emergency outpatient service expenditures suggest an increase in the use of lower-intensity services. This is expected among participants who may use MedExpert to obtain information on treatment options, and to schedule appointments.

It is noteworthy that the quarterly fixed effects analysis (See Appendix D.4) found non-significant decreases in physician and ancillary service and non-emergency outpatient expenditure categories in later quarters, suggesting that there is no evidence of increased expenditure if comparison before and after the intervention is limited to those beneficiaries and controls observed in later quarters of the intervention.

There was also a statistically significant cumulative increase in home health expenditures for the Medicare FFS cohort, which was driven by increases in the first year post-intervention. Home health expenditures among 87,317 Medicare FFS intervention beneficiaries increased by \$2,708,501 across the ten quarters after program enrollment for participants relative to controls. This corresponds to a cumulative increase of \$58 per beneficiary, or, for the first year, to an increase of 4.6 percent compared to baseline. Home health services typically consist of intermittent skilled nursing care, physical therapy, and speech-language pathology, or continued occupational therapy for home bound patients. This increase in home health services thus again suggests increases in low-intensity services among participants, consistent with MedExpert's phone-based intervention, which may be more convenient for beneficiaries who are confined to their homes.

Increases in physician and home health services do not necessarily indicate that the program was ineffective. Increases in expenditures for physician and ancillary service, non-emergency outpatient services, and home health were not large and may lead to reduced utilization of more expensive services in the future.

**Table 3-7: Aggregate Expenditures: Cumulative and Yearly DiD Estimates After MedExpert Enrollment, Medicare FFS Cohort**

Measures (2015 USD per Beneficiary-Quarter)	Full Intervention Period <sup>a</sup> (10 quarters)	Year 1 <sup>b</sup>	Year 2
<i>Number of Participants</i>	87,317	87,317	42,505
<b>Total Medicare Parts A and B Expenditures</b>			
<i>Difference-in-Difference</i>	15,642,035	11,381,982	5,336,689
<i>90% Confidence Interval</i>	(-1,507,319   32,791,389)	(-1,130,567   23,894,531)	(-2,516,756   13,190,135)

Measures (2015 USD per Beneficiary-Quarter)	Full Intervention Period <sup>a</sup> (10 quarters)	Year 1 <sup>b</sup>	Year 2
<i>P-Value</i>	0.134	0.135	0.264
<b>Inpatient Expenditures</b>			
<i>Difference-in-Difference</i>	528,750	2,711,799	-1,913,157
<i>90% Confidence Interval</i>	(-10,746,013   11,803,512)	(-5,458,842   10,882,441)	(-7,403,836   3,577,521)
<i>P-Value</i>	0.939	0.585	0.567
<b>Outpatient ER Expenditures</b>			
<i>Difference-in-Difference</i>	339,996	357,494	-18,196
<i>90% Confidence Interval</i>	(-595,319.2   1,275,310.5)	(-338,115.6   1,053,103.5)	(-374,024.7   337,632.8)
<i>P-Value</i>	0.550	0.398	0.933
<b>Outpatient Non-ER Expenditures</b>			
<i>Difference-in-Difference</i>	2,974,150	-284,063	2,439,282***
<i>90% Confidence Interval</i>	(-514,157.5   6,462,458)	(-2,834,840.9   2,266,714)	(998,585.8   3,879,979)
<i>P-Value</i>	0.161	0.855	0.005
<b>Physician and Ancillary Expenditures</b>			
<i>Difference-in-Difference</i>	9,884,394***	7,062,833***	3,091,997***
<i>90% Confidence Interval</i>	(5,504,137   14,264,651)	(3,880,535   10,245,132)	(1,221,743   4,962,251)
<i>P-Value</i>	<0.001	<0.001	0.007
<b>Skilled Nursing Facility Expenditures</b>			
<i>Difference-in-Difference</i>	435,670	205,187	834,412
<i>90% Confidence Interval</i>	(-4,207,403   5,078,744)	(-3,168,357   3,578,730)	(-1,238,921   2,907,745)
<i>P-Value</i>	0.877	0.920	0.508
<b>Durable Medical Equipment Expenditures</b>			
<i>Difference-in-Difference</i>	622,661	555,934	146,319
<i>90% Confidence Interval</i>	(-575,281.2   1,820,603)	(-299,124.0   1,410,991)	(-379,521.3   672,160)
<i>P-Value</i>	0.393	0.285	0.647
<b>Home Health Expenditures</b>			
<i>Difference-in-Difference</i>	2,708,501**	2,332,549***	644,253
<i>90% Confidence Interval</i>	(692,578.5   4,724,423)	(867,957.5   3,797,141)	(-224,660.3   1,513,166)
<i>P-Value</i>	0.027	0.009	0.223
<b>Hospice Expenditures</b>			
<i>Difference-in-Difference</i>	-1,772,733	-1,456,015	110,173
<i>90% Confidence Interval</i>	(-3,786,008   240,541.9)	(-2,913,135   1,104.6)	(-849,131   1,069,476.6)
<i>P-Value</i>	0.148	0.100	0.850

\*\* Statistically significant at the five percent level.

\*\*\* Statistically significant at the one percent level.

<sup>a</sup>Results are cumulative across all available quarters.

<sup>b</sup>Year 1 refers to the one-year period after a beneficiary's enrollment in the program, Year 2 refers to the subsequent one-year period.

### **3.4.4 Discussion of Results**

The estimated impact of the intervention on resource utilization is different across participating Medicare FFS and MA beneficiaries. One explanation for these findings is that MA beneficiaries have different health profiles and trajectories compared to FFS beneficiaries; they tend to be younger and healthier, with lower rates of health care utilization than Medicare FFS beneficiaries. The effect of the intervention may, therefore, be different for these two populations. Another potential explanation is that the context of health care provision is different for FFS and MA beneficiaries. Specifically, Medicare FFS beneficiaries' utilization of services tends to be more self-directed, whereas MA organizations use providers who act as gatekeepers to additional services. The differences in the context of health provision may imply that there is a different margin for decreases in utilization and expenditure in the MA setting, rather than in the traditional FFS sector, as a result of the intervention. Unfortunately, expenditure data is not available for MA beneficiaries, so it is not possible to say whether the observed decreases in service use were accompanied by decreased expenditures, or whether, similar to FFS beneficiaries, physician and ancillary service expenditures increased (see Section 3.4.3). Finally, as mentioned in Section 3.3, some UHC MA beneficiaries in MedExpert's intervention group were also exposed to Optum's disease management programs and a home-based osteoporosis intervention during the HCIA study period, and it is challenging to disentangle the effects of these programs from those of the MedExpert intervention on health and resource use outcomes. However, given the small proportion of the MA analytic cohort with potential exposure to these UHC programs, their influence on estimated effects of the MedExpert program is likely to be marginal.

## **3.5 Implementation Effectiveness**

MedExpert implemented a "plug-in" intervention that had fewer external dependencies, and, as a result, staff members experienced fewer implementation challenges and the program reached maturity faster than more complex SDM models under the HCIA project. The innovation did not require significant changes to the health care delivery system. The external dependencies necessary for the successful implementation of the MedExpert program occurred early in the HCIA project and included establishing formal legal partnerships and obtaining data from partners. Once these external dependencies were met, MedExpert independently carried out major implementation tasks, including beneficiary identification, outreach, and SDM service delivery.



MedExpert demonstrated the feasibility of direct phone outreach to Medicare beneficiaries by testing its outreach methods and materials with three sample populations of 200, 2,000, and 10,000 beneficiaries. During testing, beneficiaries demonstrated a willingness to participate, and CMS did not receive any complaints about MedExpert's services. As a result, MedExpert was approved to contact the remainder of the beneficiaries it had identified to receive the intervention in the direct outreach arm of the project. MedExpert leaders attributed the success of its direct outreach to a natural-sounding, low-pressure approach during phone-based outreach and to the fact that beneficiaries are able to verify MedExpert as a legitimate Medicare service provider.

The human (i.e., MICs, physicians) and computer (i.e., MIGS) components of the MedExpert innovation were complementary and necessary aspects of this health information service. MICs and physicians are responsible for listening to beneficiaries' reasons for calling, critically thinking about the information that should be provided, and delivering the information in a user-friendly way. The key benefits of the MIGS are that it (i) generates up-to-date reports on a wide range of health topics, (ii) provides MedExpert staff members and beneficiaries with health information in a timely way, and (iii) allows beneficiaries to easily access the information with the support of the MICs. However, a drawback is the readability of the MIGS reports, which typically exceed 100 pages in length and require a reading level well above the 12<sup>th</sup> grade. MIGS information is based on artificial intelligence processes and this information is aggregated directly from sources intended for audiences with health care expertise (e.g., peer-reviewed articles). As a result, MedExpert utilizes a professional staff of physicians, nurses, and information coordinators to interpret the reports and reports are only shared with beneficiaries upon request.

MedExpert participants who responded to Acumen's patient experience survey (n=806) described the information they received as easy to understand and helpful. Among respondents who recalled a recent health care decision, more than 80 percent used MedExpert information to understand the advantages of their health care options and what was best for them. Two thirds reported using the information to understand the disadvantages of their health care options. Among respondents who recently set a health care goal, 84 percent found the MedExpert information helpful in setting health goals.

### **3.6 Workforce**

The MedExpert staffing model may be challenging to scale on a national level to the extent that the hiring and retention of additional staff physicians and MICs are necessary to serve an increased number of participants. MICs have experience in administrative and navigation aspects of health care and are utilized for generating reports, securing records, ensuring HIPAA

compliance, research claims issues, and initiating repeated member outreach. Throughout 2013, MedExpert experienced frequent turnover of MICs. The stability of MedExpert's MIC workforce in particular appears dependent on the economic conditions of the geographic region surrounding MedExpert offices, which may change over time. The program originally sought to hire MICs with experience in health insurance customer service. Medexpert later revised the position's qualifications to include individuals with nursing training and experience. Program officials report that this change had positive results in hiring and retaining recent nursing school graduates.

### **3.7 Context**

There were no policy-level findings on contextual issues, such as organizational or environmental factors, related to the MedExpert intervention.

### **3.8 Sustainability and Spread**

As of the end of the HCIA cooperating agreement, MedExpert had not established contract agreements to continue delivering its services to UHC or Segal Consulting Group participants, although services to the Segal Consulting Group participants continued on a pro bono basis. MedExpert's technical infrastructure has the capacity to scale nationwide; however, as noted in the workforce section, scalability of the workforce may be more challenging because it would require recruitment and training of additional staff.

## 4 EVALUATION OF THE TRUSTEES OF DARTMOUTH COLLEGE HEALTH CARE INNOVATION AWARD

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Dartmouth and the High Value Healthcare Collaborative (HVHC) implemented SDM interventions across 14<sup>15</sup> HVHC member organizations. Of the various patient engagement programs implemented at the HVHC member sites, three program types are characterized as SDM: health coaching, video decision aids, and other decision aids. These SDM programs varied widely in the size of the patient population served across sites, and focused on the management of various conditions including diabetes, congestive heart failure, hip and knee osteoarthritis, and spine conditions. Thus, to evaluate the impact of the heterogeneous SDM programs implemented by Dartmouth, Acumen conducted two sets of analyses. The first analysis evaluated the diabetes health coaching intervention implemented at the Virginia Mason Medical Center (VMMC), while the second evaluated the hip, knee, and spine shared decision making program at the Dartmouth-Hitchcock Medical Center (DHMC). The VMMC and DHMC sites were selected because they had an adequate number of participants to support a quantitative analysis of program effects.

This section provides summative evaluation findings for the Dartmouth SDM innovation through August 2016, unless otherwise noted. Section 4.1 provides a high-level overview of the key findings detailed in the remainder of the chapter. Section 4.2 offers a description of the Dartmouth program, while Section 4.3 discusses evaluability issues. Sections 4.4 and Section 4.4.1 then describe our quantitative analysis of program effects at the VMMC and DHMC sites, respectively. Finally, Section 4.6 through Section 4.8 describe our qualitative analysis findings regarding program implementation effectiveness, workforce issues, context, and factors affecting program sustainability and scale-up, in turn.

### 4.1 Key Findings

The evaluation of the VMMC diabetes management health coaching intervention on Medicare FFS beneficiaries found mixed evidence of overall effects of the program; however, these appear to be primarily driven by unobserved differences in baseline health trajectories between the intervention and comparison groups. There were large and statistically significant decreases in mortality, and modest decreases in SNF expenditures and hospice expenditures for participants relative to controls mostly in the year following program enrollment. These decreases were accompanied by large and statistically significant large increases in inpatient admissions and modest increases in hospital days, total Medicare Parts A & B expenditures,

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<sup>15</sup> In addition to the fourteen sites implementing HCIA-funded SDM and patient-engagement programs, the HVHC included four additional collaborative partners: Hawaii Pacific Health, Sinai Health System, The Dartmouth Institute, and UC San Diego Health System.

inpatient costs, and physician and ancillary service costs mostly in the second year. However, given the non-randomized design of the intervention, self-selection of participants into the program may have influenced findings. Although Acumen matched a robust comparison group based on an extensive set of variables observable in Medicare claims data, patients who chose to participate in the health coaching intervention are likely to be different from control group members in terms of their health-seeking behavior and other unobservable characteristics that influence outcomes. The observed estimates are thus unlikely to represent actual program effects. Section 4.4 provides more details.

The analysis of the DHMC SDM interventions found limited evidence that the HCIA-funded changes had a significant effect on resource use, health outcomes, or expenditures. Although there were statistically significant decreases in some resource use and expenditure outcomes in the outpatient setting (i.e., rates of outpatient preference-sensitive hip, knee, and spine surgeries and related expenditures, and outpatient ER and non-ER expenditures), and statistically significant increases for outcomes in other settings (hospital readmissions, inpatient admissions, hospital days, inpatient and all hip surgeries, and related expenditures, as well as increases in total Medicare Parts A & B expenditures, and expenditures for inpatient, hospice, DME and physician and other non-institutional services), attributing the measured effects to the program is problematic for many outcomes given existing variations in those outcomes across the regions. Interpretation of these findings is subject to several limitations. First, while the analytic approach of using the intervention region as a unit of analysis for the DHMC site avoids bias resulting from patient self-selection into the intervention group, this analysis remains subject to potential bias introduced by any underlying unobservable differences between the intervention and comparator regions. Such underlying differences would have led, in the absence of the intervention, to differences in trends over time for the measured outcomes. That is, given the non-randomized design of the intervention, the results may be attributable to baseline differences and differential trends related to resource utilization and expenditures between the Lebanon HRR and comparison regions rather than to program effects. Second, potentially positive effects of the program may have been diluted by the inclusion of individuals who were in the Lebanon region but who did not receive the SDM interventions at DHMC. Finally, since many elements of the SDM interventions existed prior to the HCIA grant, these estimates of program effects only capture the effects of the marginal changes to the SDM program rather than the full program effect, potentially muting the positive effects of the program.

Dartmouth experienced a mix of successes and ongoing challenges with regard to program implementation. Notable implementation successes included developing a robust data infrastructure used to provide data-driven feedback to SDM implementation sites on health care quality and cost measures; optimizing the timing of its SDM interventions by moving them from

specialty care to primary care or physical therapy; and leveraging local EHR systems to bolster patient identification and recruitment. Dartmouth's implementation sites are also making efforts to address key issues in health coaching sustainability, such as dosage/intensity of the intervention, staffing, and funding streams. However, the Dartmouth innovation depended on existing health care organizations serving as implementation sites to enact major changes to clinical workflow, informatics infrastructure, and resource commitments, and sites reported challenges with capacity for implementation and sustainability. Specifically, sites experienced a range of challenges related to allocating funding across programs, including a lack of support for the SDM program from physicians. Additionally, sites experienced challenges associated with integrating the technical components of the program (e.g., survey data collection software) with local infrastructure. Sections 4.3 through 4.6 provide more details.

## **4.2 Program Description**

Dartmouth's HCIA award funded SDM activities across 14 HVHC member sites with the aim of helping patients make informed decisions about preference-sensitive surgery and manage chronic illnesses. Of the various programs implemented at the 14 sites, three program types are characterized as SDM: health coaching, video decision aids, and other decision aids.

Dartmouth's SDM program is available to Medicare beneficiaries, Medicaid beneficiaries, Medicare-Medicaid dual enrollees, and private-payer patients receiving care at HVHC member organizations who are considering preference-sensitive hip, knee, spine, or implantable cardio-defibrillator (ICD) surgery as well as patients diagnosed with diabetes or congestive heart failure (CHF). The Dartmouth SDM innovation aimed to: (i) improve preference-sensitive surgery decision making, which may reduce rates of inappropriate surgeries, and (ii) improve chronic disease management, which could reduce disease exacerbations or complications, thus lowering ER and hospital service use.

Dartmouth's SDM intervention included two core components:

- 1) Evidence-based decision aids: Dartmouth offered condition-specific decision aids that provided patients with evidence-based descriptions of conditions and treatment options. The decision aids generally consisted of videos, either web-based or DVDs, although other formats, including hard copies, were also used.
- 2) Health coaching: Patients had the opportunity to meet with a health coach to discuss treatment options. For patients who used the decision aids, health coaches were also available to review the content presented in those aids.

Participating beneficiaries may receive the decision aid only, health coaching only, or both, depending on their decision-making needs. Moreover, not all sites offer both components of the intervention, and implementation of the components varies substantially across sites.

After Dartmouth's HCIA award concluded in June 2015, CMS provided a no-cost extension to support the use of the intervention decision aids and health coach training from July through December 2015, and to provide the awardee with access to CMS data for self-evaluation purposes through June 2016. Enrollment of new participants in the HCIA-sponsored SDM innovation concluded on June 30, 2015; however, 12 member organizations reported the continued use of at least one of the SDM programs (i.e., decision aids, health coaching) for at least one health condition through local support at the implementation site.

Sections 4.2.1 and 4.2.2 describe in detail Dartmouth's SDM interventions, as implemented at the VMMC and DHMC sites, which had a sufficient number of participants to support an evaluation of program effects on health and resource use outcomes.

#### **4.2.1 VMMC Diabetes Health Coaching Intervention**

Beginning in 2013, VMMC implemented SDM health coaching and decision aids for all five health conditions (i.e., diabetes, CHF, hip, knee, spine) targeted by Dartmouth's HCIA project. Although VMMC enrolled patients in all of the SDM interventions, only the Medicare FFS population that participated in diabetes health coaching, consisting of 1,422 participants, was large enough to support a beneficiary-level analysis of the impact of the intervention for this report.<sup>16</sup> The diabetes health coaching intervention sub-components and patient identification and recruitment processes are detailed in the remainder of this section.

Prior to HCIA implementation, VMMC provided diabetes chronic care management, including outpatient visits with a care team (e.g., physician and nurse care manager), a patient-centered care plan for diabetes management, patient education on diabetes self-management, and remote monitoring of patient reported health data (e.g., HbA1c, blood pressure). Starting in March 2013, the HCIA diabetes health coaching intervention as implemented at VMMC was a multi-component care management program that included:

- *Complex patient management*: A 45-60 minute in-person consultation to assess patient risks and needs and the development of a care plan that documents the patient's long-term goals, near-term goals, actions required to achieve goals, confidence for achieving goals, medications, care team members, priority concerns, and contact frequency (e.g., two weeks, four weeks). The health coach provided patient education about disease management and medications and educated the patient and family about how to self-manage worsening symptoms. Coaches could also use a diabetes educational tool such as

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<sup>16</sup> This analysis used participant-level intervention data received from Dartmouth in December 2015.

one of the chronic condition-focused decision aids developed by Health Dialog (e.g., Diabetes, Congestive Heart Failure) in addition to any other patient-management tools already in use at VMMC prior to the HCIA award. VMMC's health coaches were all members of the internal medicine nursing staff.

- *Remote monitoring:* A telephone-based outreach program and monitoring of patient-reported health data (e.g., HbA1c, blood pressure). Patients worked with the health coaches to establish a self-management goal as it pertained to improving blood pressure, lipid, and/or glycemic control. During each telephone contact, the health coach and patient focused primarily on one topic (e.g., glucose control, lipid management, hypertension management).
- *Collaborative care for patients with diabetes and depression:* Depression screening (i.e., PHQ-9) and, if appropriate, linkage to additional resources for depression care management (e.g., visit with behavioral health providers, medication therapy).

The inclusion criteria for the HCIA intervention was similar to criteria VMMC had been using for diabetes care interventions prior to the HCIA project. The diabetes health coaching intervention targeted adult patients who had a diagnosis of type 2 diabetes mellitus based on the Healthcare Effectiveness Data and Information Set (HEDIS) criteria described in Dartmouth's Diabetes Implementation Guide. Patients also had to have a recent (within six months) measurement of HbA1c greater than 8%, or LDL greater than 100 mg/dL, or blood pressure greater than 140/90 mm/Hg and at least three chronic conditions in addition to uncontrolled diabetes. Patients were identified for the intervention based on diagnosis codes and health measures in their medical records. Many, but not all, patients who participated in health coaching also received decision aids for diabetes treatment.

#### **4.2.2 DHMC Site SDM Interventions**

During the HCIA award, DHMC sought to improve upon its existing SDM interventions by adding new intervention components (e.g., health coaching) and by making patient identification and intervention delivery processes more standardized. These improvements built on the existing work DHMC had undertaken prior to the HCIA award in offering SDM interventions for hip or knee joint replacement surgery and spinal surgery and chronic care management interventions for diabetes and CHF. Although the evaluation of the intervention at DHMC focuses on the hip, knee, and spine SDM programs, the methodology, detailed in Section 4.2, captures the collective effect of all programs implemented. Thus, DHMC's implementations of each of the SDM interventions and the changes made to each intervention as a result of the HCIA project are described below.

##### **4.2.2.1 Hip and Knee Joint Replacement Surgery SDM Intervention**

During the HCIA implementation period, DHMC continued to use the hip and knee joint replacement surgery decision aids that had been in use prior to the HCIA intervention period.

The hip and knee decision aids contained information on: (i) the physiology of the condition; (ii) non-surgical treatment options, such as lifestyle changes, physical therapies, medications, and alternative medicine; (iii) surgical treatment options and post-surgical recovery; and (iv) approaches for working with the patient's doctor regarding his or her medical care. Specifically, DHMC used two decision aids, "Treatment Choices for Hip Osteoarthritis" and "Treatment Choices for Knee Osteoarthritis," which were produced by Health Dialog and the Informed Medical Decisions Foundation. Both before and during the HCIA intervention period, patients who viewed a decision aid were then asked to complete a survey, and then again asked to complete follow-up surveys six and 12 months after viewing the decision aid. The survey included measures of decision quality, quality of life (QoL), medical history, depression screening, patient characteristics, and patient experience. Longitudinal reports on these surveys were available to care providers via the EHR both before and after the HCIA award.

DHMC began to implement health coaching for hip and knee surgery SDM in July 2013, at the start of the HCIA implementation period. At this time, health coaches directly reached out to patients considering hip and knee surgeries, reminding them to complete the decision aid, offering them decision support, and helping them prepare to discuss their treatment preference with a clinician. Health coaches were supportive but non-directive in the decision making process. Health coaching involved an iterative verbal exchange, using steps to assess decisional needs, provide information, verify understanding, clarify preferences, build patients' decision making skills, and facilitate progress in decision making. Decisions about hip or knee replacement are typically one-time decisions, and as such, the health coaching SDM intervention was a focused, time-limited intervention. This is in contrast to DHMC's health coaching SDM intervention for chronic conditions, which could occur over the course of months or years. DHMC's health coaches were non-clinical staff who had experience with health education in a clinical setting.

As part of the HCIA project, DHMC developed formal inclusion criteria to identify patients and implemented systematic processes to recruit patients into the intervention. Prior to the HCIA project, DHMC patients were invited to the SDM program by either provider- or self-referral. As a result of the HCIA project, DHMC began to systematically apply formal inclusion criteria to identify eligible SDM participants. Adult patients were eligible to receive the hip or knee decision aid if they had symptomatic osteoarthritis and were considering treatment options. Patients were identified for the intervention based on diagnosis codes in their medical records or through a referral for a surgical consultation. DHMC used its EHR system to identify and target eligible patients. Patients could view the video decision aids on a DHMC computer, or they could take home a decision aid that included both a DVD and hard-copy version of the information.



Enrollment approaches went through changes during the HCIA intervention period. From July 2013 to June 2015, eligible patients were mailed an invitation letter, a DVD decision aid, and a survey. Starting in July 2013, health coaches began actively contacting all eligible patients to remind them to participate in the hip and knee decision aid interventions and to offer them decision support with the goal of increasing their engagement in the decision aid interventions. However, since this process was time intensive, DHMC changed its approach later and simply invited eligible patients to call the health coaches if needed. In July 2014, DHMC began using its patient portal<sup>17</sup> to conduct outreach to patients. Only patients who had a DHMC patient portal user account could receive the decision aid and survey through the patient portal. Patients who received the decision aid through the DHMC patient portal accessed the video decision aid through a website link.

During the HCIA project, DHMC continued to offer two existing hip and knee patient education interventions for patients who elected to have surgery, including: pre-operative clinics, which provided risk assessment and patient education prior to surgery; and patient education materials about post-surgical discharge and self-care. DHMC added education materials about length of stay following surgery and how to return home safely as a part of the HCIA award.

#### **4.2.2.2. Spine Surgery SDM Intervention**

DHMC's spine surgery SDM intervention included the continued use of decision aids that had been in use prior to the HCIA award. DHMC continued to use the same spine surgery decision aids that had been in use prior to and during the HCIA intervention period. The spine decision aids contained information on: (i) the physiology of the condition; (ii) non-surgical treatment options, such as physical therapies, medications, and epidural injections; (iii) surgical treatment options and post-surgical recovery; and (iv) approaches for working with the patient's doctor regarding his or her medical care.<sup>18</sup> The spine SDM patient survey was similar to that of the hip and knee intervention, with the exception that the condition-specific QoL measures focused on the spine.

As a part of HCIA program implementation, DHMC added health coaching for spine surgery SDM in August 2013 through August 2014. The health coaching process for spine surgery SDM was similar to the approach used for hip and knee surgery and used the same type of staff. Due to resource constraints, DHMC concluded health coaching for spine surgery in

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<sup>17</sup> The DHMC patient portal allows patients to access their electronic health record through the secure "my D-H" portal. The patient portal includes secure messaging with providers and information about past medical appointments, test results, surgical procedures, hospitalizations, prescriptions, allergies, immunizations, and other information.

<sup>18</sup> During the HCIA project, DHMC used the decision aids "Herniated Disc," "Spinal Stenosis," "Acute Low Back Pain," and "Chronic Low Back Pain," which were produced by Health Dialog and the Informed Medical Decisions Foundation.

August 2014. This decision was informed by a small, exploratory analysis on how best to allocate resources to inform spine SDM health coach staffing and future sustainability plans. This analysis found that complex and/or elderly patients were more likely to have decisional conflict and were thus more likely to use health coaching. In many cases, the use of health coaching had an impact on the amount of time in which a patient made a decision about treatment options but did not impact the patient's treatment decision.

Both before and after the HCIA award, DHMC patients were invited to use the spine video decision aids by provider referral. However, as a result of the HCIA project, DHMC began to systematically apply formal inclusion criteria to identify eligible SDM participants. Adult patients were eligible to receive the spine decision aid if they had a qualifying diagnosis of lumbar herniated disc or lumbar spinal stenosis and if they had visited a health care provider for treatment of the qualifying condition. Patients were identified for the intervention based on diagnosis codes in their medical records and appointment history. A diagnosis of herniated disc or spinal stenosis is confirmed by specialist review of imaging tests (e.g., CT or MRI scan), and as a result, the spine intervention often occurs after an outpatient specialist visit. Starting in August 2013, health coaches began actively contacting patients to remind them to complete the spine decision aid and offer decision support, with the goal of increasing their engagement. However, since this process was time intensive, DHMC changed its approach later and simply invited patients to call the health coaches if needed. The formats in which spine decision aids were offered during the HCIA award period were similar to those described for the hip and knee surgery decision aids.

#### **4.2.2.3. *Diabetes and CHF SDM Interventions***

Similar to the surgery SDM interventions, DHMC's diabetes and CHF SDM interventions included the continued use of decision aids and chronic care management approaches that had been in use prior to the HCIA award, and added health coaching, and systematic patient identification and recruitment processes after the HCIA award. For both diabetes and CHF interventions, Dartmouth continued to use decision aids by Health Dialog and the Informed Medical Decisions Foundation. DHMC's health coaches were non-clinical staff who had experience with health education in a clinical setting.

At the start of the HCIA diabetes SDM implementation in July 2013, physicians and health coaches would review the list of eligible patients and agree upon which patients were the most appropriate for the diabetes SDM intervention. In November 2014, DHMC's approach transitioned to a "fast track" approach in which all patients who met the eligibility criteria and had a patient portal account were sent links to the web-based decision aids, a patient survey, and an invitation to speak to a health coach with the goal of increasing the number of participants.

The DHMC diabetes health coaching intervention included complex patient management and collaborative care for patient with diabetes and depression, described above for VMMC.

DHMC's CHF SDM implementation started in September 2014 and focused on CHF care transitions from inpatient to home. DHMC health coaches contacted and conducted in-person recruitment of patients who were receiving acute, inpatient care for CHF. DHMC's CHF health coaching intervention focused on post-discharge goals and CHF self-management, and included scheduled follow-ups. DHMC opted not to implement the CHF SDM for ICD surgery.

### **4.3 Evaluability**

This section provides information on the primary factors affecting the evaluability of the Dartmouth intervention, including heterogeneity across the SDM programs implemented by Dartmouth, small sample sizes, and the existence of SDM programs at the implementation sites prior to the receipt of the award. These are detailed below, in turn.

Heterogeneity across the three types of SDM interventions—as implemented at the 14 member sites and targeted towards different types of beneficiaries—creates challenges in conducting a single analysis of the Dartmouth SDM program as a whole. As described in Section 4.2, the decision aid interventions and the health coaching intervention differ substantially in their approach to partnering with patients to make decisions about their care. Moreover, the implementation of the SDM interventions differs depending on the type of beneficiaries who are targeted (i.e., those considering hip, knee, or spine surgery or participants with CHF or diabetes). There was also substantial variation in the administration of a given intervention type across the 14 sites where SDM interventions have been provided to date. Additionally, the SDM programs additionally varied widely in the size of the patient population served, from fewer than ten participants to more than 3,000. As a result, conducting a single analysis across Dartmouth's multiple interventions, sites, and targeted medical conditions is not feasible, and could lead Acumen to incorrectly attribute any observed effects.

To address these evaluability challenges, Acumen conducted two sets of analyses, one on the diabetes health coaching program at VMMC and the other on the suite of SDM interventions at DHMC for beneficiaries considering hip, knee, or spine-related preference-sensitive surgeries. The VMMC analysis was conducted at the participant level, while the DHMC analysis was conducted at the geographic region level, addressing the issue of bias arising from selecting participants that were already considering surgery. The programs at these two sites were selected because they were individually large enough to support a credible analysis, with more than 1,400 and 2,500 enrolled Medicare participants. While restricting the analyses to two sites decreases the available sample size and thus reduces statistical power, focusing on more homogeneous interventions as implemented at these two sites allows Acumen to draw stronger

conclusions about any observed significant program effects. The region-level design of the DHMC analysis addresses the lack of an appropriate beneficiary-level comparison group, but also limits the ability of the analysis to isolate the effects of specific, individual interventions such as the decision aid for hip and knee surgery candidates.

Table 4-1 provides counts of Medicare beneficiaries who received the health coaching, video decision aid, and other decision aid interventions across the 14 HVHC member sites implementing these SDM programs, based on participant-level program data provided by Dartmouth in June 2016. As shown below, the individual program with the highest number of enrolled Medicare beneficiaries is the diabetes health coaching intervention at VMMC, with a total of 1,422 participants. The next three interventions with the highest participant counts are the knee, spine, and hip video decision aid interventions at DHMC, with 1,080, 949, and 764 enrollees, respectively, with some patients participating in multiple interventions. In total, the number of unique enrolled Medicare participants in all three of these video decision aid interventions is 2,628.

**Table 4-1: Enrollment Counts for SDM Interventions by Organization and Targeted Condition**

Intervention by Organization	Targeted Conditions					
	CHF	Diabetes	Hip	Knee	Spine	Total Records*
<b>Video Decision Aids</b>	804	1,352	1,174	2,117	1,584	7,031
<i>Baylor Research Institute</i>	*	*	*	21	*	39
<i>Beth Israel Deaconess Medical Center</i>	41	0	20	30	77	168
<i>Dartmouth-Hitchcock Medical Center</i>	18	462	764	1,080	949	3,273
<i>Denver Health and Hospital Authority</i>	*	0	*	133	0	164
<i>Eastern Maine Healthcare System</i>	*	0	0	*	*	*
<i>IHC Health Services Inc.</i>	0	*	*	205	104	367
<i>MaineHealth</i>	*	*	0	18	0	*
<i>Mayo Clinic</i>	0	0	42	121	25	188
<i>Feinstein Institute for Medical Research</i>	*	0	*	*	27	48
<i>Providence Health and Services</i>	*	*	0	0	0	71
<i>Scott and White Memorial Hospital</i>	24	29	*	41	*	112
<i>UCLA Medical Center</i>	636	663	96	212	335	1,942
<i>Virginia Mason Medical Center</i>	62	117	143	239	54	615
<b>Health Coaching</b>	965	2,327	205	393	243	4,133
<i>Baylor Research Institute</i>	*	*	0	0	0	*
<i>Beth Israel Deaconess Medical Center</i>	37	53	*	*	39	151
<i>Dartmouth Hitchcock Medical Center</i>	20	157	58	73	36	344
<i>Denver Health and Hospital Authority</i>	*	0	*	132	0	163
<i>Eastern Maine Healthcare System</i>	12	0	0	*	*	*
<i>Scott and White Memorial Hospital</i>	*	61	*	0	0	81
<i>UCLA Medical Center</i>	639	611	93	161	162	1,666
<i>University of Iowa Hospitals and Clinics</i>	0	20	0	0	0	20
<i>Virginia Mason Medical Center</i>	241	1,422	*	*	*	1,686
<b>Other Decision Aids</b>	*	69	30	37	*	153
<i>Scott and White Memorial Hospital</i>	*	69	0	0	0	82

Intervention by Organization	Targeted Conditions					
	CHF	Diabetes	Hip	Knee	Spine	Total Records*
<i>University of Iowa Hospitals and Clinics</i>	0	0	*	37	*	71

\*Since participants may be included in multiple interventions, the total number of records does not reflect the total number of unique individuals.

\*All cell counts less than eleven have been suppressed to protect participant confidentiality

Table 4-2 provides information on Dartmouth's total SDM enrollment and payer mix across participating organizations, based on participant-level program data provided by Dartmouth in June 2016. Between July 2, 2012 and June 30, 2015, Dartmouth enrolled a total of 19,125 participants in the three SDM interventions across its 14 member sites, among whom only 8,872 (46%) were enrolled in Medicare on their SDM enrollment date. Note that Dartmouth also provided data on beneficiaries who participated in other non-SDM patient engagement activities implemented during the HCIA award period. These participants are not included in the table below.

**Table 4-2: Payer Mix of Dartmouth SDM Enrollment by Calendar Quarter**

Calendar Quarter	Medicare Parts A/B FFS		Medicare Advantage		Other Medicare Enrolled		Not Medicare-Enrolled/Unknown		Total
<b>Jul-Sep 2012</b>	264	42%	*	*	*	*	345	55%	*
<b>Oct-Dec 2012</b>	218	38%	*	*	*	*	324	57%	*
<b>Jan-Mar 2013</b>	224	39%	*	*	*	*	327	57%	*
<b>Apr-Jun 2013</b>	308	40%	41	5%	27	3%	396	51%	772
<b>Jul-Sep 2013</b>	918	42%	162	7%	100	5%	997	46%	2,177
<b>Oct-Dec 2013</b>	632	38%	132	8%	72	4%	813	49%	1,649
<b>Jan-Mar 2014</b>	631	36%	128	7%	84	5%	918	52%	1,761
<b>Apr-Jun 2014</b>	1,118	42%	237	9%	123	5%	1,156	44%	2,634
<b>Jul-Sep 2014</b>	1,057	41%	250	10%	123	5%	1,177	45%	2,607
<b>Oct-Dec 2014</b>	917	38%	191	8%	140	6%	1,195	49%	2,443
<b>Jan-Mar 2015</b>	617	35%	134	8%	60	3%	955	54%	1,766
<b>Apr-Jun 2015</b>	585	38%	98	6%	49	3%	814	53%	1,546
<b>Total</b>	7,489	39%	1,383	7%	836	4%	9,417	49%	19,125

Notes: Most beneficiaries classified as "Other Medicare Enrolled" have Medicare Part A only, although other insurance statuses (e.g., Parts A and D) are rarely observed.

"Medicare Parts A and B", "Medicare Advantage", and "Other Medicare Enrolled" may include dual-eligible beneficiaries and beneficiaries enrolled in Medicare Part D.

"Not Medicare-Enrolled/Unknown" includes beneficiaries who were not enrolled in Medicare on the day they entered the Dartmouth program or for whom the awardee did not provide sufficient personally identifiable information to link to Medicare claims.

\*All cell counts less than eleven have been suppressed to protect participant confidentiality

Another challenge to the evaluability of the Dartmouth HCIA program is the existence of SDM programs at HVHC member sites prior to implementation of the HCIA award. Prior to the

HCIA award, health coaching programs for diabetic patients already existed at VMMC, and video decision aid programs focusing on hip, knee, and spine were already being implemented at DHMC. As a result, DiD analyses of SDM program participants or affected regions during the HCIA award period captures marginal effects of the improvements made to the program due to the HCIA grant, relative to a comparison group or comparison region, rather than the full effect of newly implementing all elements of an SDM program.

## **4.4 Program Effectiveness: Diabetes Health Coaching Intervention at VMMC**

This section presents quantitative findings on the impact of Dartmouth's diabetes management health coaching intervention implemented at the VMMC site on health and resource use outcomes for Medicare FFS beneficiaries. The VMMC diabetes health coaching intervention analysis evaluates the impacts of the intervention at the beneficiary level for Medicare FFS health coaching recipients relative to a matched comparison group using a DiD framework, as described in Section 1.2.2. Both participants and controls were restricted to those with diabetes based on VMMC's targeting criteria for the health coaching intervention described in Section 4.2.1. Participants and controls were well matched on observable characteristics (see Appendix Table E-1). Effect estimates are presented cumulatively through the full intervention period (nine quarters following beneficiaries' enrollment in the HCIA diabetes health coaching program), as well as for each specific year and quarter after enrollment.

The analysis found mixed evidence of overall effects of the VMMC diabetes health coaching program, with decreases observed in some outcomes and increases observed in others; however, they appear to be primarily driven by unobserved differences in baseline health trajectories between the intervention and comparison groups. There were statistically significant decreases in mortality and skilled nursing facility expenditures for participants relative to controls mostly in Year 1 and Year 2, respectively. These decreases were accompanied by statistically significant increases in inpatient admissions and costs, and physician and ancillary service costs mostly in Year 2. However, given the non-randomized design of the intervention, self-selection of participants into the program may have influenced findings. Although Acumen matched a robust comparison group based on an extensive set of variables observable in Medicare claims data, patients who chose to participate in the health coaching intervention are likely to be different from control group members in terms of their health-seeking behavior and other unobservable characteristics that influence outcomes. The results may thus not represent actual program effects.

The remainder of this sections describe key quantitative analysis findings for the Dartmouth diabetes management health coaching intervention at VMMC in more detail by outcome. Section 4.4.1 describes findings related to mortality and inpatient readmissions, Section 4.4.3 describes health service resource use, and Section 4.4.4 details findings related to medical expenditures. Acumen provides complete results in Appendix E.

### **4.4.1 Methods and Data Sources**

This section presents quantitative findings on the impact of Dartmouth's diabetes management health coaching intervention implemented at the VMMC site on health and resource

use outcomes for Medicare FFS beneficiaries. The VMMC diabetes health coaching intervention analysis evaluates the impacts of the intervention at the beneficiary level for Medicare FFS health coaching recipients relative to a matched comparison group using a DiD framework, as described in Section 1.2.2. Both participants and controls were restricted to those with diabetes based on VMMC's targeting criteria for the health coaching intervention described in Section 4.2.1. Participants and controls were well matched on observable characteristics (see Appendix Table E-1). Effect estimates are presented cumulatively through the full intervention period (nine quarters following beneficiaries' enrollment in the HCIA diabetes health coaching program), as well as for each specific year and quarter after enrollment.

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#### ***4.4.2 Mortality and Inpatient Readmissions***

The VMMC diabetes health coaching intervention was associated with statistically significant decreases in mortality cumulatively across the full intervention period and in Year 1. Over the course of the intervention, there were 36 fewer deaths among 1,030 participants relative to controls (see Table 4-3 below and Appendix E.2). The quarterly fixed effects estimates in the first year also show lower rates of mortality for participants across most of the intervention quarters, including statistically significant decreases in Q1 and Q8 (see Figure 4-1).



However, these findings may be influenced by selection bias from participants choosing to participate in the intervention. Although Acumen used a robust matching algorithm to match intervention beneficiaries to controls, it is possible that diabetic beneficiaries who opt to participate in the intervention differ systematically from controls on unobservable characteristics during the pre-enrollment period related to overall health trajectories. Participants may be different from controls in their health seeking behavior, disease severity and other characteristics from controls which cannot be observed in claims data, but which may influence observed outcomes.

**Table 4-3: Aggregate Mortality: Cumulative and Yearly Differences after Dartmouth VMMC Enrollment, Medicare FFS Cohort**

Measure	Full Intervention Period <sup>a</sup> (9 quarters)	Year 1 <sup>b</sup>	Year 2
<i>Number of Participants</i>	1,030	1,030	802
<b>Mortality</b>			
<i>Difference<sup>c</sup></i>	-36.09***	-21.84**	-8.43
<i>90% Confidence Interval</i>	(-58.8   -13.4)	(-37.7   -5.9)	(-23.0   6.2)
<i>P-Value</i>	0.009	0.024	0.342

\*\* Statistically significant at the five percent level.

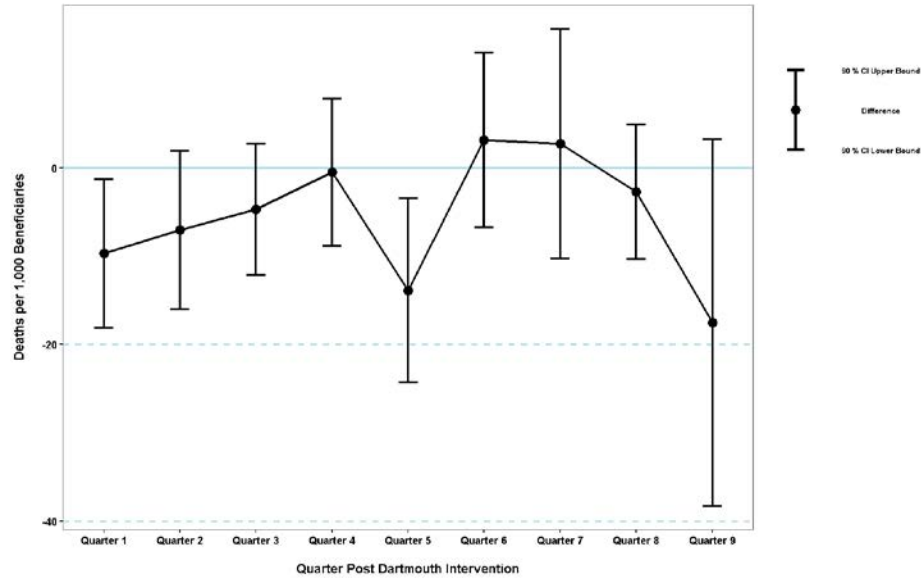
\*\*\* Statistically significant at the one percent level.

<sup>a</sup>Results are cumulative across all available quarters.

<sup>b</sup>Year 1 refers to the one-year period after a beneficiary's enrollment in the program, Year 2 refers to the subsequent one-year period.

<sup>c</sup>This estimate represents difference in the number of deaths between participants and controls during the intervention period.

**Figure 4-1: Mortality per 1,000 Beneficiaries: Quarterly Differences, Dartmouth VMMC Medicare FFS Cohort**



In the analysis of hospital readmissions measures, the intervention was not associated with any statistically significant decreases in readmissions at the cumulative or yearly level. Quarterly fixed effects readmissions estimates, detailed in Appendix Table E-4 in Appendix E, also do not follow a consistent pattern, and the magnitude and direction of the DiD estimates varied throughout the intervention period.

**Table 4-4: Aggregate Inpatient Readmissions: Cumulative and Yearly Differences after Dartmouth VMMC Enrollment, Medicare FFS Cohort**

Measure	Full Intervention Period <sup>a</sup> (9 quarters)	Year 1 <sup>b</sup>	Year 2
<i>Number of Participants</i>	1,030	1,030	802
<b>30-Day Hospital Readmissions Following All Inpatient Admissions</b>			
<i>Difference<sup>d</sup></i>	5.08	-2.87	8.95
<i>90% Confidence Interval</i>	(-16.8   27.0)	(-18.3   12.6)	(-5.7   23.6)
<i>P-Value</i>	0.703	0.760	0.316
<b>30-Day Hospital Readmissions Following All Inpatient Admissions</b>			
<i>Difference<sup>e</sup></i>	6.68	-1.37	9.04
<i>95% Confidence Interval</i>	(-14.6   27.9)	(-16.3   13.6)	(-5.2   23.3)
<i>P-Value</i>	0.606	0.880	0.297

<sup>a</sup>Results are cumulative across all available quarters.

<sup>b</sup>Year 1 refers to the one-year period after a beneficiary's enrollment in the program, Year 2 refers to the subsequent one-year period.

<sup>c</sup>The estimate represents the difference in the number of beneficiaries with at least one readmission for every beneficiary who has an inpatient admission, as compared between the intervention and control groups during the relevant year in the intervention period.

#### 4.4.3 Health Service Resource Use

Cumulatively over the full intervention period, and in Year 2, the Dartmouth VMMC intervention was associated with a statistically significant increase in inpatient admissions at the ten and five percent levels, respectively. Table 4-5 shows that there was a statistically significant cumulative increase of around 119 admissions among 1,030 beneficiaries that appears primarily driven by the increase observed in Year 2. This result represents a substantial increase and is consistent with significant expenditure increases in Year 2, analyzed in the following section. Additionally, the program was associated with modest increases of 1,227 hospital days cumulatively and 524 days in Year 2 among 1,030 beneficiaries at the ten percent significance level.

Because there is no clear mechanism through which the program is expected to increase inpatient admissions or hospital days, these estimates are unlikely to reflect program effects. As discussed in Section 4.4.1 in the context of estimated mortality decreases, these increases may instead reflect unobserved pre-enrollment differences between diabetic patients who chose to participate in the program and non-participants. Participants may have traits related to lower mortality but higher utilization and expenditures associated with their chronic condition and these traits cannot be fully captured using claims data. Similarly, it may be that the intervention beneficiaries have higher utilization and expenditure patterns, conditional on survival. These participant selection issues may have also driven the utilization increases in other resource use measures, including ER visits, unplanned inpatient admissions, and hospital days. However, inpatient admissions was the only utilization outcome with a statistically significant increase.

**Table 4-5: Aggregate Resource Use: Cumulative and Yearly DiD Estimates, Dartmouth VMMC, Medicare FFS Cohort**

Measure	Full Intervention Period <sup>a</sup> (9 quarters)	Year 1 <sup>b</sup>	Year 2
<i>Number of Participants</i>	1030	1030	802
<b>ER Visits</b>			
<i>Difference-in-Difference</i>	107.93	47.69	41.07
<i>90% Confidence Interval</i>	(-35.6   251.5)	(-44.5   139.9)	(-31.0   113.2)
<i>P-Value</i>	0.216	0.395	0.349
<b>Inpatient Admissions</b>			
<i>Difference-in-Difference</i>	118.64*	31.11	78.18**
<i>90% Confidence Interval</i>	(7.8   229.4)	(-40.4   102.6)	(21.5   134.8)

Measure	Full Intervention Period <sup>a</sup> (9 quarters)	Year 1 <sup>b</sup>	Year 2
<i>P-Value</i>	0.078	0.474	0.023
<b>Unplanned Inpatient Admissions</b>			
<i>Difference-in-Difference</i>	74.57	21.88	44.95
<i>90% Confidence Interval</i>	(-26.1   175.3)	(-43.1   86.9)	(-6.9   96.8)
<i>P-Value</i>	0.223	0.580	0.154
<b>Hospital Days</b>			
<i>Difference-in-Difference</i>	1,227.14*	645.49	523.80*
<i>90% Confidence Interval</i>	(79.1   2,375.1)	(-241.5   1,532.5)	(53.6   994.0)
<i>P-Value</i>	0.079	0.231	0.067

\* Statistically significant at the ten percent level.

\*\* Statistically significant at the five percent level.

<sup>a</sup>Results are cumulative across all available quarters.

<sup>b</sup>Year 1 refers to the one-year period after a beneficiary's enrollment in the program, Year 2 refers to the subsequent one-year period.

#### 4.4.4 Medical Expenditures

Analysis of the VMMC diabetes health coaching intervention found statistically significant decreases in some expenditure categories across the first year of the intervention, followed by offsetting increases in other expenditure categories in the second year. There was a statistically significant (five percent level) increase in Total Parts A and B expenditures in Year 2. Table 4-6 outlines expenditure estimates cumulatively and across both years of the program. Among 1,030 beneficiaries in Year 1 the program was associated with a statistically significant (five percent level) decrease of \$572,191 in total skilled nursing facility expenditures (which corresponds to a decrease of \$603 per beneficiary per year) and \$105,006 in total hospice expenditures (or a decrease of \$111 per beneficiary per year) relative to controls. However, this was followed by a statistically significant increase of \$1,129,539 in total inpatient expenditures in Year 2 (or an increase of \$1,654 per beneficiary per year) and an increase of total \$348,632 in physician and ancillary service costs (or an increase of \$510 per beneficiary per year) in Year 2 among 802 beneficiaries. The quarterly patterns were also largely similar (see Appendix E.4).

The estimated statistically significant changes in medical expenditures are unlikely to represent program effects, as there are limitations to the analysis and alternative explanations that may contribute to the observed results. Given the large number of outcomes evaluated, some results are expected to appear as statistically significant, and without accompanying evidence of other related decreases in resource use, reductions in expenditure outcomes, such as the decline in skilled nursing facility or hospice expenditures, cannot be definitively attributed to the program. The estimated increases in inpatient, physician and ancillary, and total Parts A and B

expenditures in Year 2, however, are consistent with the increases in inpatient admissions and other resource use measures discussed in Section 4.4.3. Yet, these increases in both resource use and expenditures are unlikely to be directly attributable to program effects, but rather may represent unobservable differences in the participant and control populations due to participant self-selection in the program, despite the populations being well-matched on an extensive list of observable demographic and health characteristics.

**Table 4-6: Aggregate Expenditures: Cumulative and Yearly DiD Estimates, Dartmouth VMMC, Medicare FFS Cohort**

Measures (2011 USD per Beneficiary-Quarter)	Full Intervention Period <sup>a</sup> (9 quarters)	Year 1 <sup>b</sup>	Year 2
<i>Number of Participants</i>	1,030	1,030	802
<b>Total Medicare Parts A and B Expenditures</b>			
<i>Difference-in-Difference</i>	1,700,732.4	-226,335.4	1,739,750.5**
<i>90% Confidence Interval</i>	(-598,595.3   4,000,060)	(-1,639,969.3   1,187,298)	(530,997.7   2,948,503)
<i>P-Value</i>	0.224	0.792	0.018
<b>Inpatient Expenditures</b>			
<i>Difference-in-Difference</i>	1,362,470.1	168,410.7	1,129,539.6**
<i>90% Confidence Interval</i>	(-186,203.3   2,911,144)	(-771,804.5   1,108,626)	(348,584.5   1,910,495)
<i>P-Value</i>	0.148	0.768	0.017
<b>Outpatient ER Expenditures</b>			
<i>Difference-in-Difference</i>	-11,139.33	1,830.44	-6,514.84
<i>90% Confidence Interval</i>	(-128,436.7   106,158.0)	(-71,570.2   75,231.0)	(-63,975.2   50,945.5)
<i>P-Value</i>	0.876	0.967	0.852
<b>Outpatient Non-ER Expenditures</b>			
<i>Difference-in-Difference</i>	513,216.8	318,021.9	131,292.3
<i>90% Confidence Interval</i>	(-152,171.2   1,178,604.8)	(-90,652.8   726,696.6)	(-201,128.8   463,713.4)
<i>P-Value</i>	0.205	0.201	0.516
<b>Physician and Ancillary Expenditures</b>			
<i>Difference-in-Difference</i>	283,376.91	-92,383.01	348,632.56**
<i>90% Confidence Interval</i>	(-149,744.1   716,497.9)	(-374,075.2   189,309.2)	(128,798.8   568,466.3)
<i>P-Value</i>	0.282	0.59	0.009
<b>Skilled Nursing Facility Expenditures</b>			
<i>Difference-in-Difference</i>	-432,024.42	-572,191.52**	76,402.41
<i>90% Confidence Interval</i>	(-1,052,512.1   188,463.3)	(-936,634.8   -207,748.2)	(-330,631.3   483,436.1)
<i>P-Value</i>	0.252	0.01	0.758
<b>Durable Medical Equipment Expenditures</b>			

Measures (2011 USD per Beneficiary-Quarter)	Full Intervention Period <sup>a</sup> (9 quarters)	Year 1 <sup>b</sup>	Year 2
<i>Difference-in-Difference</i>	36,813.18	29,874.78	9,661.31
<i>90% Confidence Interval</i>	(-76,630.1   150,256.5)	(-45,467.9   105,217.5)	(-42,418.0   61,740.7)
<i>P-Value</i>	0.594	0.514	0.76
<b>Home Health Expenditures</b>			
<i>Difference-in-Difference</i>	109,240.17	46,187.67	56,985.60
<i>90% Confidence Interval</i>	(-73,011.2   291,491.6)	(-69,476.6   161,851.9)	(-35,963.9   149,935.1)
<i>P-Value</i>	0.324	0.511	0.313
<b>Hospice Expenditures</b>			
<i>Difference-in-Difference</i>	-123,010.97	-105,006.41**	9,189.06
<i>90% Confidence Interval</i>	(-261,765.7   15,743.7)	(-185,954.6   -24,058.3)	(-84,781.8   103,159.9)
<i>P-Value</i>	0.145	0.033	0.872

\*\* Statistically significant at the five percent level.

<sup>a</sup>Results are cumulative across all available quarters.

<sup>b</sup>Year 1 refers to the one-year period after a beneficiary's enrollment in the program, Year 2 refers to the subsequent one-year period.

## 4.5 Program Effectiveness: SDM Interventions at DHMC

This section presents quantitative findings on the impact of Dartmouth's SDM intervention aimed at beneficiaries considering preference-sensitive hip, knee, and spine surgeries at the DHMC site. Due to challenges in characterizing this target population's propensity to undergo hip, knee, or spine surgery and creating a suitable comparison group at the beneficiary-level based on claims data, Acumen conducted this analysis at the geographic region level. Specifically, the DHMC analysis uses the geographic area served by DHMC, the Lebanon, NH HRR, as the unit of analysis. The analysis compares outcomes, including surgery rates, for Medicare FFS beneficiaries located in the Lebanon, NH HRR to those for Medicare FFS beneficiaries living in comparator regions with similar characteristics, using a DiD framework. By examining outcomes among all beneficiaries in the region served by DHMC, rather than only among those beneficiaries who opted into the intervention, the geographic region-level analysis eliminates the selection bias that would be present in a participant-level analysis. The geographic-region level analysis captures the effects of changes made to the broader suite of SDM services at DHMC due to the HCIA award, in addition to improvements made to the hip, knee, spine surgery decision aid interventions during the HCIA implementation period.

The analysis evaluates SDM program effects at the DHMC site on a broad range of health, service use, and cost outcomes, including rates of preference-sensitive surgeries of the

hip, knee, and spine. The remainder of this section details the analytic approach used, and describes key quantitative findings on the effects of the suite of SDM programs implemented at DHMC. Section 4.5.1 describes the methods and data sources developed for the analysis. Section 4.5.2 summarizes key findings related to mortality and inpatient readmissions. Next, Section 4.5.3 describes findings on the program's impact on health service resource use. Finally, Section 4.5.4 outlines key findings on medical expenditures.

#### **4.5.1 Methods and Data Sources**

Acumen conducted a region-level DiD analysis of the effect of SDM interventions at the DHMC site for Medicare FFS beneficiaries. While the program used electronic health records (EHR) and provider referrals that are not available for the present analysis to identify patients eligible for the site's hip, knee, and spine decision aid interventions, participants self-selected whether to access the decision aids. An individual patient's decision to do so will be highly correlated with the patient's unobservable propensity to elect surgery. A matching approach that attempts to create beneficiary-level comparison groups would therefore be subject to significant selection bias, as patients favoring surgery would be represented disproportionately in the treatment group. As a result, the treatment population would have a higher propensity to receive surgery, and likely appear to have higher utilization and costs than a comparison group matched on observable characteristics, biasing the findings.

To avoid selection bias at lower levels of aggregation, our analysis of SDM interventions at the DHMC site took an alternate approach and used the region where DHMC is located as the unit of analysis, assuming that there is limited, if any, selection on outcomes at the region level. Acumen thus evaluated SDM program effects on outcomes, including preference sensitive surgery rates, for all Medicare FFS beneficiaries located in the DHMC HRR relative to those of Medicare FFS beneficiaries living in comparator HRRs with similar characteristics. The approach assumes that regions with similar observable baseline demographic and health characteristics are highly likely to also be experiencing similar health outcome trends over time, in the absence of new programs to intervene on those trends. The remainder of this section describes the data sources, study inclusion criteria, comparison group methodology, analytic method, and outcome measures used to evaluate the DHMC hip, knee, and spine surgery decision aid interventions.

##### **4.5.1.1 Data Sources**

Acumen relied on several data sources to identify comparison regions. Acumen used data available for direct download from the *Dartmouth Atlas of Health Care*<sup>19</sup> to identify

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<sup>19</sup> Published by the Dartmouth Institute for Health Policy and Clinical Practice, through the support of a coalition of funders led by the Robert Wood Johnson Foundation. More information can be found at <http://www.dartmouthatlas.org/data/region/>.

candidate regions. Acumen supplemented these data with information from the Inpatient Prospective Payment System Provider Impact file, Occupational Employment Statistics/ Bureau of Labor Statistics Employment and Wage Estimates, U.S. Census data, Institute of Medicine data, and Certification and Survey Provider Enhanced Reporting (CASPER). To evaluate outcomes of interest, Acumen relied on Medicare claims and enrollment data; specifically Acumen used the Medicare Enrollment Database (EDB), Medicare Parts A and B claims, and RAPS data.

#### **4.5.1.2. Intervention and Comparison Region Selection**

To conduct the analysis of the SDM interventions at DHMC, Acumen first identified the geographic area of interest as the HRR served by DHMC. This definition of regional health care markets was developed by Dartmouth and published in the *Dartmouth Atlas of Health Care*.

Next, Acumen selected nine HRRs as comparator regions for the intervention region of Lebanon, NH. Using data on the 306 HRRs defined by the *Dartmouth Atlas of Health Care*, Acumen followed a three-step process to identify regions that were similar to Lebanon across variables relevant to the Medicare FFS population. In the first step, Acumen selected regions similar to Lebanon using a summary measure of differences in a limited set of variables. Acumen then removed regions that were substantially different from Lebanon on a set of key measures. Finally, Acumen checked for coherence in the regions selected by identifying the characteristics that defined the selected regions, and searched for any other candidate regions that fit those criteria.

In the first step of this section process, Acumen identified HRRs that were similar to Lebanon, NH based on a summary measure of differences created using the following variables:

- Total number of FFS beneficiaries
- Average age
- Percentage of female beneficiaries
- Percentage of white beneficiaries
- Median household income
- Percentage of population eligible for Medicaid for at least one month in the year
- Average hierarchical condition category (HCC) score
- Percentage of beneficiaries with an inpatient admission
- Inpatient costs per user, standardized
- Rate of emergency department visits per 1,000 beneficiaries
- Surgery rates for hip and knee preference sensitive surgeries per 1,000 beneficiaries



- Surgery rates for spine preference sensitive surgeries per 100,000 beneficiaries

To quantify how different each comparator HRR is from Lebanon, NH across all the selected variables, Acumen calculated the Mahalanobis distance. This measure is a multi-dimensional generalization of the concept of standardized distance from the mean, or the number of standard deviations an observation is from the mean. The Mahalanobis distance accounts for both the variance of each individual measure and the correlations between them by applying a transformation that produces a set of standardized, uncorrelated variables, which can then be weighted equally in the measure of distance. Regions with smaller Mahalanobis distance are more similar to the Lebanon region. Acumen restricted the set of candidate comparison regions to the 145 HRRs with a Mahalanobis distance of less than five. Next, Acumen eliminated regions that were substantially different from Lebanon, NH on at least one key measure. For example, Acumen excluded Texarkana, AR due to an exceptionally low hip surgery rate of 2.9 per 1,000 beneficiaries and Madison, WI because the largest hospital in the region only made up 23 percent of the total beds in the entire HRR. Acumen also excluded any regions that included another High Value Healthcare Collaborative (HVHC) member hospital implementing an HCIA funded intervention. This eliminated several potential candidate regions, including Rochester, MN, which includes the Mayo Clinic, an HVHC member.

At the end of this process, there were ten candidate comparator regions for the Lebanon, NH area. Acumen excluded an additional region, the Marshfield HRR, from the analysis, as it was adjacent to another comparator region and was an outlier in the localization index measuring the proportion of hip, knee, and spine surgeries performed within the HRR. Finally, Acumen conducted a brief literature review for the remaining regions to identify any contemporaneous policy changes that could potentially influence the analysis, and examined trends in key utilization outcomes for each region around the implementation dates. In that review, Acumen found that a coordinated care organization (CCO) pilot program, part of a statewide health care overhaul, was implemented at the St. Charles Health System in Bend, OR in 2012<sup>20</sup> and that there were substantial changes in resource utilization outcomes in Bend, relative to trends in other comparator regions, in that approximate timeframe. Acumen therefore excluded Bend from the analysis. The final list of eight HRRs included as comparator regions were Traverse City, MI; Asheville, NC; Fargo, ND/Moorhead, MN; Marquette, MI; Sayre, PA; Charlottesville, VA; Olympia, WA; and Wausau, WI. Table 4-7 below shows the final list of HRRs and the variables used to select them relative to the Lebanon HRR.

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<sup>20</sup>"St. Charles Primary Care Clinics Selected to Participate in CMS Pilot Program." St. Charles Health System. August 27, 2012. [https://www.stcharleshealthcare.org/sitecore/content/Home/About Us/News/2012 Press Releases/St Charles primary care clinics selected to participate in CMS pilot program](https://www.stcharleshealthcare.org/sitecore/content/Home/About%20Us/News/2012%20Press%20Releases/St%20Charles%20primary%20care%20clinics%20selected%20to%20participate%20in%20CMS%20pilot%20program).

**Table 4-7: Variables used to Select Comparison Regions Relative to Lebanon, NH, by HRR**

Key Variables	Comparison Regions								
	Lebanon, NH	Traverse City, MI	Asheville, NC	Fargo, ND/Moorhead, MN	Marquette, MI	Sayre, PA	Charlottesville, VA	Olympia, WA	Wausau, WI
<i>Mahalanobis Distance</i>	N/A	4.65	2.66	4.00	3.58	4.44	3.26	3.95	4.12
<i>Number Medicare FFS Beneficiaries</i>	79,010	42,941	12,7917	60,994	35,065	30,488	89,685	51,000	26,148
<i>Average Age</i>	71	71	71	72	71	71	72	70	71
<i>Sex: % Female</i>	53.96	52.25	55.58	53.61	51.41	53.51	55.27	52.18	53.23
<i>Race: % White</i>	0.97	0.97	0.94	0.93	0.96	0.97	0.89	0.91	0.96
<i>Median Household Income</i>	\$39,654	\$38,989	\$34,416	\$36,479	\$33,174	\$34,937	\$40,412	\$43,349	\$41,314
<i>Medicaid Eligible: % Population</i>	0.22	0.19	0.19	0.20	0.20	0.21	0.16	0.18	0.22
<i>Average HCC Score</i>	0.83	0.92	0.88	0.92	0.88	0.95	0.93	0.87	0.95
<i>Percentage of Beneficiaries With Inpatient Claims</i>	0.14	0.17	0.16	0.17	0.15	0.18	0.17	0.14	0.17
<i>Standardized Inpatient Costs per IP Service User</i>	\$13,218	\$14,166	\$13,480	\$14,042	\$13,218	\$13,982	\$14,418	\$14,240	\$13,754
<i>Emergency Department Visits (per 1,000)</i>	637	659	609	594	659	658	665	574	610
<i>Surgery Rates: Hip(per 1,000)</i>	4.85	4.69	4.13	5.51	5.04	5.51	3.93	5.19	5.74
<i>Surgery Rates: Knee (per 1,000)</i>	7.48	10.72	8.47	9.34	9.39	8.15	8.17	8.81	9.22
<i>Surgery Rates: Spine(per 1,000,000)</i>	32.27	54.61	47.24	33.68	19.60	37.51	48.51	57.53	33.77
<i>Proportion of Total Beds in HRR at Hospital</i>	70%	86%	53%	55%	87%	48%	43%	59%	59%
<i>Localization Index<sup>21</sup></i>	74.2%	70.4%	78.2%	76.3%	74.4%	66.0%	82.2%	67.4%	73.8%

<sup>21</sup> Localization is calculated as the number of local inpatient stays within the HRR divided by total number of inpatient stays.

To create the intervention cohort, Acumen used beneficiary residence information from the enrollment database to identify Medicare FFS beneficiaries residing in any of the 235 zip codes comprising the Lebanon HRR, as defined by the *Dartmouth Atlas of Health Care*. Similarly, Acumen defined the comparison cohort as beneficiaries residing in the zip codes for each of the comparison regions identified. Beneficiaries were included in each intervention quarter of the analysis if they were continuously enrolled in Medicare FFS in the full quarter and the full year prior to the HCIA intervention start date. The cohort was restricted to beneficiaries residing within the HRR for the full quarter, or until death. As in the VMMC analysis, Medicare Advantage beneficiaries were excluded from the analysis due to unavailability of encounter data to track their utilization and expenditure patterns.

#### **4.5.1.3. Analytic Method**

Acumen evaluated program effects using a DiD framework estimating changes in the intervention region relative to controls from the pre-HCIA intervention period to the ninth quarter in the HCIA intervention period at DHMC. Acumen used July 1, 2013<sup>22</sup> as the date to define the pre- and post-HCIA intervention period for the analysis, as this was the date that the DHMC site expanded the existing video decision aid program to include more personalized and intensive outreach through the participation of health coaches as part of HCIA implementation.

For the DiD estimates and associated standard errors, Acumen ran an Ordinary Least Squares (OLS) regression with indicator variables for every quarter and every HRR, along with interaction terms for each post-intervention quarter and HRR combination.<sup>23</sup> The Lebanon, NH HRR was the reference group, and the first baseline quarter was the reference quarter. To get each DiD quarterly estimate, Acumen used the weighted average of the coefficients on interaction terms for each post-intervention quarter of interest across all control HRRs.<sup>24</sup> Similarly, for yearly and cumulative estimates, Acumen used the weighted average of estimated coefficients on the interaction terms for all relevant post-intervention quarters, across all control HRRs.

Estimates of DHMC's effects are assessed cumulatively over the full intervention period (ten quarters following changes due to HCIA implementation), as well as for the specific year and quarter following changes due to HCIA implementation, as the methodology described in Section 1.2.2. These estimates are assessed at the one, five and ten percent significance levels.

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<sup>22</sup> This date was confirmed by Dartmouth via email on February 26, 2016. Although Dartmouth noted that health coaching for the spine decision aid intervention began on August 1, 2013, Acumen chose the July date for the analysis due to the larger cohort participating in the hip and knee decision aid interventions.

<sup>23</sup> The specification also included the following beneficiary-level covariates: age categories, diagnosis of hip arthritis, diagnosis of knee arthritis, diagnosis of spine condition, and surgery of the hip, knee, or spine in the year prior to implementation of the HCIA intervention.

<sup>24</sup> The weights were multiplied by -1 in order to give the effect of the intervention for Lebanon (since Lebanon was the reference group in the empirical specification).

90% confidence intervals and p-values are also reported with the results. Acumen analyzed the effect of the DHMC SDM interventions on the following outcomes:

- All-cause mortality per 1,000 beneficiaries
- Total, inpatient and outpatient preference-sensitive hip, knee, and spine surgery rate per 1,000 beneficiaries, combined for all three types of surgeries
- Total, inpatient and outpatient preference-sensitive hip, knee, and spine surgery rate per 1,000 beneficiaries, evaluated separately for each type of surgery
- Total, Inpatient, and outpatient hip, knee, and spine surgery expenditures per beneficiary, evaluated together as well as separately for each type of surgery
- 30-day hospital readmissions per 1,000 beneficiaries (all-cause and unplanned)
- Inpatient admission rate (all-cause and unplanned)
- Number of hospital days per 1,000 beneficiaries (overall and preference-sensitive hip, knee, and spine surgery related)
- Emergency room (ER) visits per 1,000 beneficiaries
- Total Medicare Parts A and B expenditures per beneficiary
- Medicare Parts expenditures per beneficiary for the categories of inpatient, outpatient ER, outpatient non-ER, physician and other non-institutional services, skilled nursing, durable medical equipment, home health, and hospice.

Detailed definitions of these measures are provided in Appendix A.

The following sections describe key findings for each of the outcomes measures. E.1 provides detailed results.

#### ***4.5.2 Mortality and Inpatient Readmissions***

SDM interventions at DHMC were not associated with a statistically significant cumulative or yearly effect on mortality (See Table 4-8). Table 4-8 below shows that mortality rate in the intervention HRR was relatively low in relation to the individual comparison regions both before and after the implementation of the HCIA intervention, and there were no notable changes following HCIA implementation. These results are not unexpected, however, as the DHMC SDM intervention is designed to reduce utilization and costs associated with unnecessary preference sensitive surgeries. As a downstream outcome, mortality could be unaffected even if these goals are attained, or any effect could be too small to measure, given the inclusion of individuals in the sample who resided in the Lebanon, NH region but who did not receive the SDM interventions at DHMC. In the remainder of this section, Acumen evaluates a range of measures that are more likely to be directly affected by the intervention.

**Table 4-8: Aggregate Mortality: Cumulative and Yearly Differences from DHMC SDM HCIA Program Implementation through December 2015, Medicare FFS Cohort**

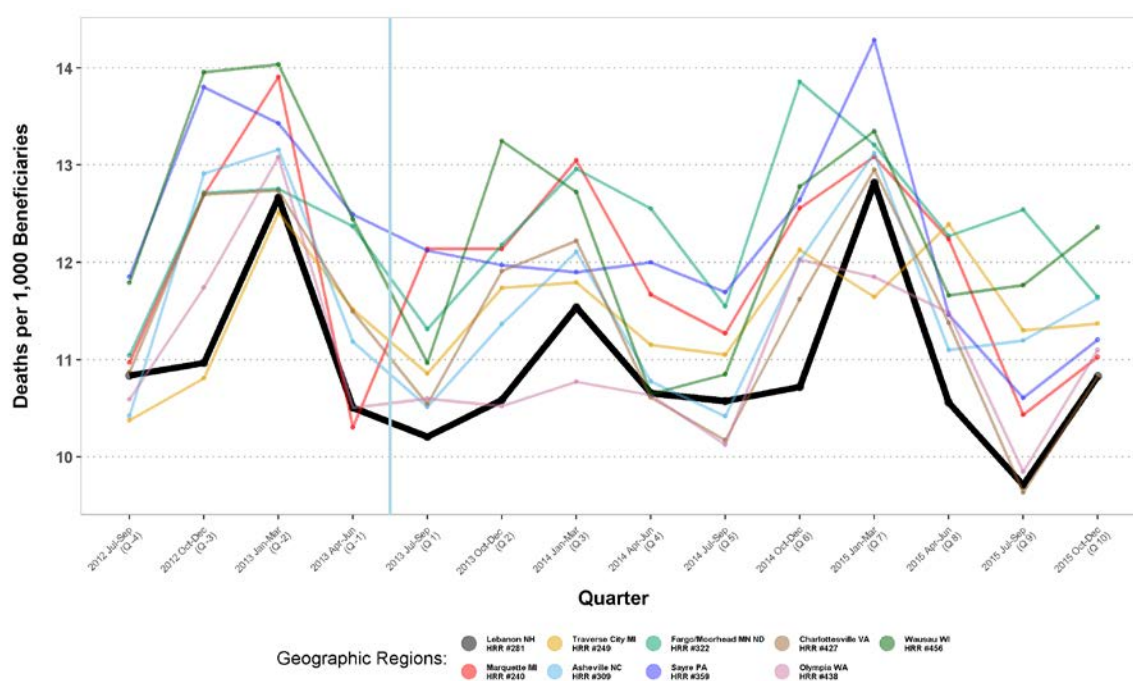
Measure	Full Intervention Period <sup>a</sup> (10 quarters)	Year 1 <sup>b</sup>	Year 2
<i>Number of Participants</i>	84,225	84,225	69,498
<b>Mortality</b>			
<i>Difference<sup>c</sup></i>	103.80	23.22	56.89
<i>90% Confidence Interval</i>	(-299.4   507.0)	(-155.5   201.9)	(-140.6   254.4)
<i>P-Value</i>	0.672	0.831	0.636

<sup>a</sup>Results are cumulative across all available quarters.

<sup>b</sup>Year 1 refers to the one-year period after a beneficiary's enrollment in the program, Year 2 refers to the subsequent one-year period.

<sup>c</sup>The estimate represents the difference in the number of beneficiaries with at least one readmission for every beneficiary who has an inpatient admission, as compared between the intervention and control groups during the relevant year in the intervention period.

**Figure 4-2: DHMC SDM Intervention: Mortality per 1,000 Beneficiaries, by HRR, Medicare FFS Cohort**



The DHMC SDM intervention was associated with statistically significant increases in inpatient readmissions for beneficiaries with at least one IP admission, relative to the comparison regions; however, this result likely reflects outlier trends in individual comparison regions rather than program effects. Table 4-9 shows that there was a statistically significant cumulative increase of around 444 readmissions among the 21,883 beneficiaries with an inpatient admission

for the intervention HRR relative to comparison regions (equivalent to 17.5 readmissions per 1,000 beneficiaries with an IP admission). The unplanned readmission increases were similar and appeared driven by statistically significant increases in Year 2 (equivalent to 9.08 readmissions per 1,000 beneficiaries with an IP admission). These results, however, are likely related to differences in unobservable characteristics between the Lebanon, NH region and comparator regions which may have influenced outcome trends over time. As Figure 4-3 shows, Lebanon had the lowest readmission rate prior to the HCIA intervention which largely stayed within its pre-intervention range in the post-intervention period as well. In comparison there were notable declines in readmissions for several of the comparison regions, including Sayre, PA, and Charlottesville, VA, which had the largest readmission rates in the pre-HCIA intervention period. This suggests that potential regression to the mean in comparator regions in the post-HCIA intervention period likely affected the estimates.

**Table 4-9: Aggregate Readmissions: Cumulative and Yearly DiDs from DHMC SDM HCIA Program Implementation through December 2015, Medicare FFS Cohort**

Measure	Full Intervention Period <sup>a</sup> (10 quarters)	Year 1 <sup>b</sup>	Year 2
<i>Number of Participants</i>	84,225	84,225	69,498
<b>30-Day Hospital Readmissions Following Any Inpatient Admission</b>			
<i>Difference-in-Difference<sup>c</sup></i>	443.97**	27.48	247.48***
<i>90% Confidence Interval</i>	(156.3   731.6)	(-103.5   158.5)	(111.7   383.3)
<i>P-Value</i>	0.011	0.730	0.003
<b>30-Day Hospital Unplanned Readmissions Following Any Inpatient Admission</b>			
<i>Difference-in-Difference</i>	419.37**	20.84	233.20***
<i>90% Confidence Interval</i>	(144.8   694.0)	(-105.4   147.1)	(103.1   363.3)
<i>P-Value</i>	0.012	0.786	0.003

\*\* Statistically significant at the five percent level.

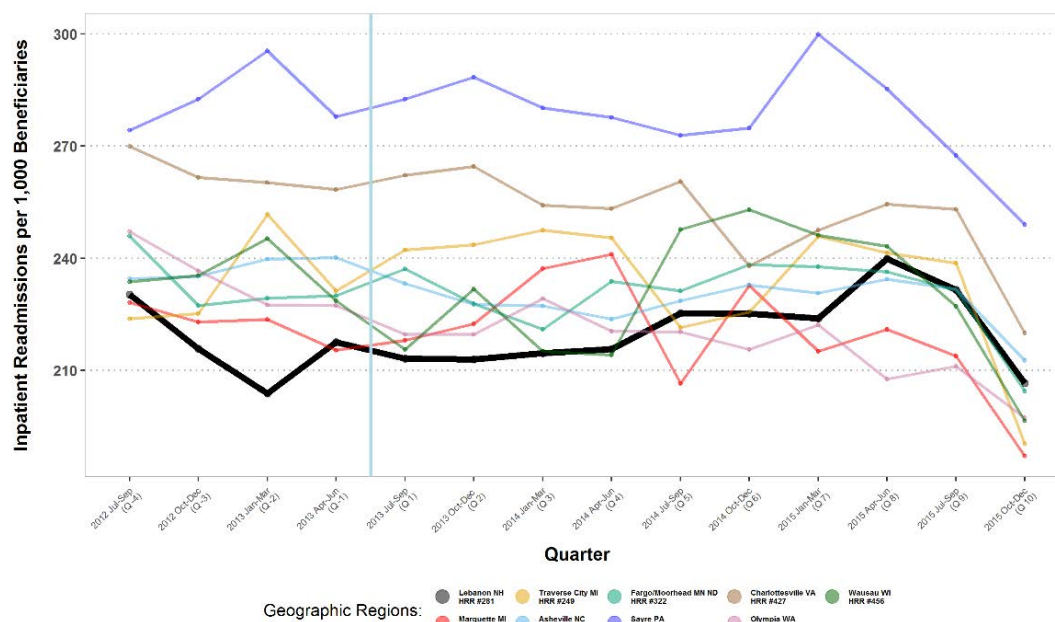
\*\*\* Statistically significant at the one percent level.

<sup>a</sup>Results are cumulative across all available quarters.

<sup>b</sup>Year 1 refers to the one-year period after a beneficiary's enrollment in the program, Year 2 refers to the subsequent one-year period.

<sup>c</sup>The estimate represents the difference in the number of beneficiaries with at least one readmission for every beneficiary who has an inpatient admission, as compared between the intervention and control groups during the relevant year in the intervention period compared to the baseline period.

**Figure 4-3: DHMC SDM Intervention: Inpatient Readmissions per 1,000 Beneficiaries, by HRR, Medicare FFS Cohort**



### 4.5.3 Health Service Resource Use

The program was associated with cumulative increases across some health service use categories, including inpatient admissions and hospital days, and with general decreases in preference-sensitive surgeries in the outpatient setting, and concurrent increases in the inpatient setting. However, total preference-sensitive hip, knee and spine surgeries were unaffected.

Specifically, the DHMC SDM intervention was associated with decreases of 239 preference-sensitive outpatient hip, knee, and spine surgeries among 84,225 beneficiaries cumulatively over the intervention period at the one percent significance level, but no significant effects were observed in the corresponding inpatient setting. The program was also associated with statistically significant cumulative decreases when looking individually at preference-sensitive outpatient hip, knee or spine surgeries of 36, 175, and 27 surgeries, respectively, across the 84,225 beneficiaries. However, the program was also associated with cumulative statistically significant increases in some surgery categories in the inpatient setting. For preference-sensitive hip surgeries, the cumulative increase of 196 surgeries in the inpatient setting offsets the cumulative decrease of 36 surgeries in the outpatient setting, producing a net increase in all preference-sensitive hip surgeries, at the ten percent significance level. These findings are presented in detail in Table 4-10 below, while quarterly findings are presented in Appendix Table F-10. Figure 4-4 and Figure 4-5 show rates of outpatient and inpatient preference-sensitive hip, knee and spine surgery over time for the intervention and comparison regions to provide additional context for these findings. Although there is substantial variation both within

and across regions in preference sensitive surgery outcomes, Lebanon, NH had one of the highest outpatient preference-sensitive surgery rates during the pre-HCIA intervention period, which generally declined over the post-intervention period. Conversely, Lebanon had low rates of inpatient preference-sensitive surgery rates, including rates for inpatient hip surgeries, consistently across the time period, relative to comparison regions. Thus, the estimated increases in inpatient hip surgeries may reflect regression to the mean rather than actual program effects.

**Table 4-10: Aggregate Surgery-Related Resource Use: Cumulative and Yearly DiDs from DHMC SDM HCIA Program Implementation through December 2015, Medicare FFS Cohort**

Measures	Full Intervention Period <sup>a</sup> (10 quarters)	Year 1 <sup>b</sup>	Year 2
<i>Number of Participants</i>	84,225	84,225	69,498
<b>All Preference Sensitive (PS) Hip/Knee/Spine Surgeries</b>			
<i>Difference-in-Difference</i>	221.80	56.61	68.76
<i>90% Confidence Interval</i>	(-246.4   690.0)	(-160.9   274.1)	(-156.1   293.6)
<i>P-Value</i>	0.436	0.669	0.615
<b>PS Hip/Knee/Spine Hospital Days</b>			
<i>Difference-in-Difference</i>	1,028.39	268.27	217.64
<i>90% Confidence Interval</i>	(-1,848.7   3,905.4)	(-1,068.4   1,604.9)	(-1,181.7   1,616.9)
<i>P-Value</i>	0.557	0.741	0.798
<b>Inpatient PS Hip/Knee/Spine Surgeries</b>			
<i>Difference-in-Difference</i>	380.69	111.16	149.24
<i>90% Confidence Interval</i>	(-36.2   797.6)	(-81.7   304.0)	(-50.0   348.4)
<i>P-Value</i>	0.133	0.343	0.218
<b>Outpatient PS Hip/Knee/Spine Surgeries</b>			
<i>Difference-in-Difference</i>	-239.08***	-69.97*	-122.36***
<i>90% Confidence Interval</i>	(-370.6   -107.6)	(-130.1   -9.9)	(-182.3   -62.4)
<i>P-Value</i>	0.003	0.055	<0.001
<b>All PS Hip Surgeries</b>			
<i>Difference-in-Difference</i>	184.23*	40.84	94.15*
<i>90% Confidence Interval</i>	(25.5   342.9)	(-31.9   113.6)	(12.6   175.7)
<i>P-Value</i>	0.056	0.356	0.058
<b>PS Hip Surgical Hospital Days</b>			
<i>Difference-in-Difference</i>	479.44	80.86	211.35
<i>90% Confidence Interval</i>	(-419.2   1,378.1)	(-341.0   502.8)	(-230.9   653.6)
<i>P-Value</i>	0.380	0.753	0.432



Measures	Full Intervention Period <sup>a</sup> (10 quarters)	Year 1 <sup>b</sup>	Year 2
<b>Inpatient PS Hip Surgeries</b>			
<i>Difference-in-Difference</i>	196.17**	44.82	98.95**
<i>90% Confidence Interval</i>	(38.2   354.1)	(-27.6   117.2)	(17.6   180.3)
<i>P-Value</i>	0.041	0.309	0.045
<b>Outpatient PS Hip Surgeries</b>			
<i>Difference-in-Difference</i>	-35.93**	-8.18	-17.96***
<i>90% Confidence Interval</i>	(-60.3   -11.6)	(-19.7   3.3)	(-27.8   -8.1)
<i>P-Value</i>	0.015	0.243	0.003
<b>All PS Knee Surgeries</b>			
<i>Difference-in-Difference</i>	-53.44	-10.61	-72.00
<i>90% Confidence Interval</i>	(-355.1   248.2)	(-151.8   130.5)	(-216.1   72.1)
<i>P-Value</i>	0.771	0.902	0.411
<b>PS Knee Surgical Hospital Days</b>			
<i>Difference-in-Difference</i>	525.88	158.05	90.84
<i>90% Confidence Interval</i>	(-1,103.6   2,155.4)	(-600.3   916.4)	(-689.1   870.8)
<i>P-Value</i>	0.596	0.732	0.848
<b>Inpatient PS Knee Surgeries</b>			
<i>Difference-in-Difference</i>	64.49	27.73	-6.34
<i>90% Confidence Interval</i>	(-184.0   313.0)	(-88.2   143.6)	(-124.0   111.3)
<i>P-Value</i>	0.669	0.694	0.929
<b>Outpatient PS Knee Surgeries</b>			
<i>Difference-in-Difference</i>	-175.38**	-50.73	-95.07***
<i>90% Confidence Interval</i>	(-293.6   -57.2)	(-105.5   4.0)	(-150.0   -40.2)
<i>P-Value</i>	0.015	0.128	0.004
<b>All PS Spine Surgeries</b>			
<i>Difference-in-Difference</i>	108.21	31.53	57.30
<i>90% Confidence Interval</i>	(-52.1   268.5)	(-45.7   108.8)	(-19.7   134.3)
<i>P-Value</i>	0.267	0.502	0.221
<b>PS Spine Surgical Hospital days</b>			
<i>Difference-in-Difference</i>	23.06	29.36	-84.55
<i>90% Confidence Interval</i>	(-1,084.2   1,130.4)	(-487.5   546.3)	(-622.1   453.0)
<i>P-Value</i>	0.973	0.926	0.796
<b>Inpatient PS Spine Surgeries</b>			
<i>Difference-in-Difference</i>	135.75	41.42	67.64
<i>90% Confidence Interval</i>	(-27.7   299.2)	(-36.9   119.8)	(-10.6   145.8)
<i>P-Value</i>	0.172	0.384	0.155
<b>Outpatient PS Spine Surgeries</b>			

Measures	Full Intervention Period <sup>a</sup> (10 quarters)	Year 1 <sup>b</sup>	Year 2
<i>Difference-in-Difference</i>	-26.76*	-10.06	-9.32
<i>90% Confidence Interval</i>	(-50.2   -3.3)	(-20.6   0.5)	(-19.7   1.0)
<i>P-Value</i>	0.061	0.116	0.139

\* Statistically significant at the ten percent level.

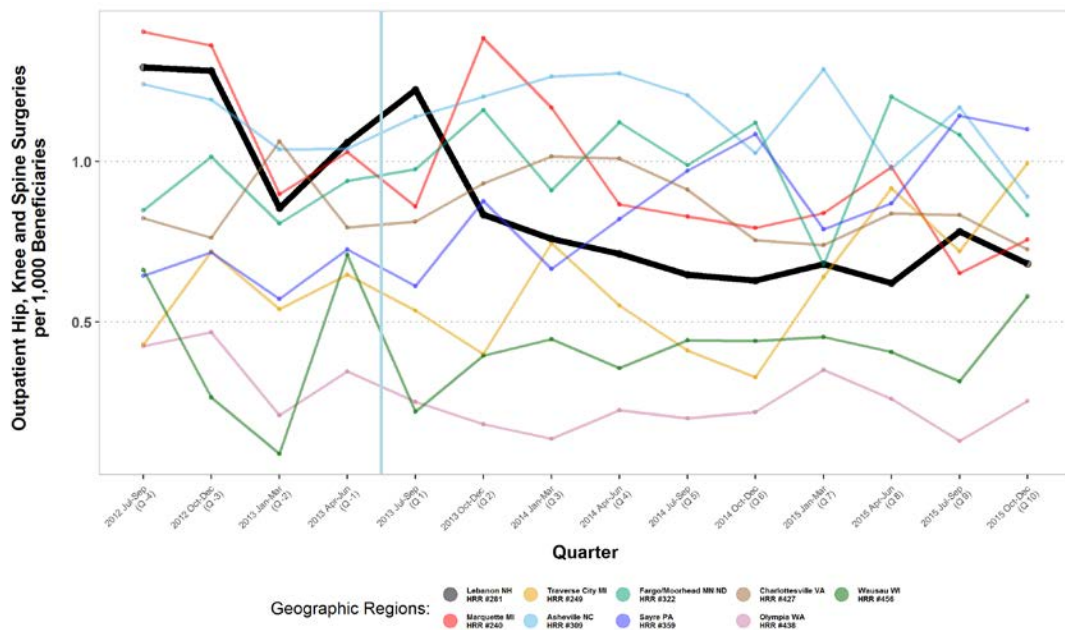
\*\* Statistically significant at the five percent level.

\*\*\* Statistically significant at the one percent level.

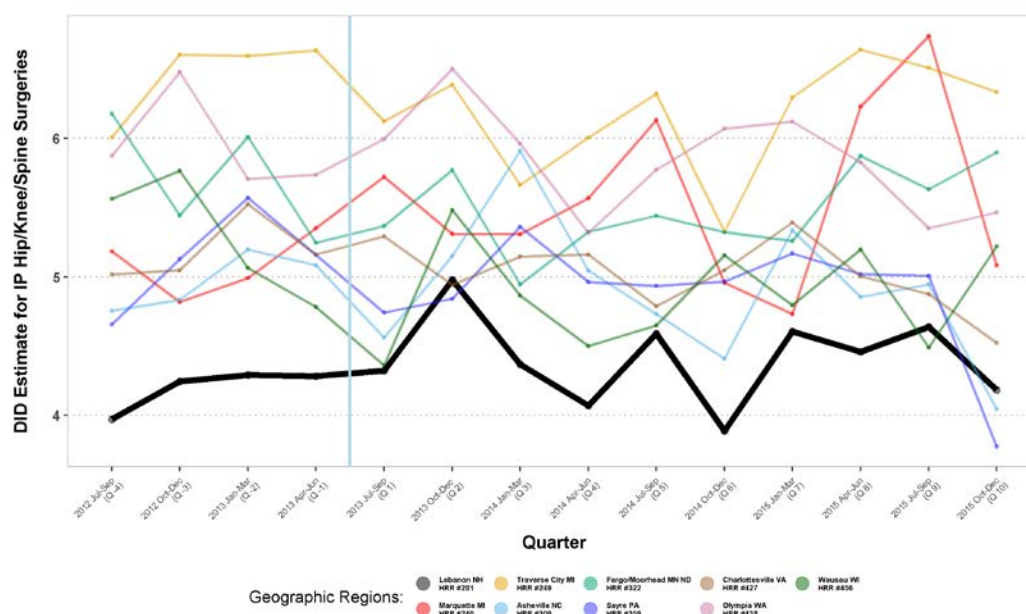
<sup>a</sup>Results are cumulative across all available quarters.

<sup>b</sup>Year 1 refers to the one-year period after a beneficiary's enrollment in the program, Year 2 refers to the subsequent one-year period.

**Figure 4-4: DHMC SDM Intervention: Outpatient Hip, Knee, and Spine Surgeries per 1,000 Beneficiaries, by HRR, Medicare FFS Cohort**



**Figure 4-5: DHMC SDM Intervention: Inpatient Hip, Knee, and Spine Surgeries per 1,000 Beneficiaries, by HRR, Medicare FFS Cohort**



The DHMC SDM intervention was also associated with effects on several broader categories of health service resource use for Medicare FFS beneficiaries, although in some cases, the results appear to be driven by differential trends reflecting unobservable baseline differences among comparator regions. There were statistically significant increases in inpatient service use outcomes among beneficiaries in the intervention region relative to comparison regions; however, as with similar findings discussed above for readmissions, these estimates appear to reflect unrelated differential trends in particular comparison regions. Cumulatively across the ten quarters of the HCIA intervention period, the DHMC SDM intervention was associated with statistically significant increases of 4,547 overall inpatient admissions, and 15,470 hospital days among the 84,225 beneficiaries in the intervention region, relative to controls (see Table 4-11 below). The cumulative estimates represent substantial increases in these resource use measures and are generally consistent with the trends in yearly and quarterly point estimates (see Appendix F.3). However, as shown in Figure 4-6, comparing IP admission trends in Lebanon, NH to each of the comparison regions before and after the HCIA intervention illustrates that Lebanon had the lowest rate of admissions relative to the individual comparison regions in the pre-intervention period and the second lowest in the post-intervention period. These changes for Lebanon were small compared to the existing variation across regions. The observed significant effects may thus be driven by unusual differential trends in a few specific comparison regions (e.g., Sayre, PA and Charlottesville, VA) rather than a broad-based difference between the intervention region and the controls.

**Table 4-11: Aggregate Resource Use: Cumulative and Yearly DiDs from DHMC SDM HCIA Program Implementation through December 2015, Medicare FFS Cohort**

Measure	Full Intervention Period <sup>a</sup> (10 quarters)	Year 1 <sup>b</sup>	Year 2
<i>Number of Participants</i>	84,225	84,225	69,498
<b>ER Visits</b>			
<i>Difference-in-Difference</i>	-3,711.08	-1,086.32	-1,578.95
<i>90% Confidence Interval</i>	(-7,666.2   244.0)	(-2,864.6   692.0)	(-3,479.9   322.0)
<i>P-Value</i>	0.123	0.315	0.172
<b>Inpatient Admissions</b>			
<i>Difference-in-Difference</i>	4,546.71***	1,349.79***	1,735.10***
<i>90% Confidence Interval</i>	(3,408.2   5,685.2)	(832.6   1,867.0)	(1,158.7   2,311.5)
<i>P-Value</i>	<0.001	<0.001	<0.001
<b>Unplanned Inpatient Admissions</b>			
<i>Difference-in-Difference</i>	3,668.60***	1,153.37***	1,350.36***
<i>90% Confidence Interval</i>	(2,505.6   4,831.6)	(624.5   1,682.2)	(774.6   1,926.1)
<i>P-Value</i>	<0.001	<0.001	<0.001
<b>Hospital Days</b>			
<i>Difference-in-Difference</i>	15,469.67***	3,445.55	6,605.79**
<i>90% Confidence Interval</i>	(6,610.7   24,328.6)	(-499.7   7,390.8)	(1,740.9   11,470.6)
<i>P-Value</i>	0.004	0.151	0.026

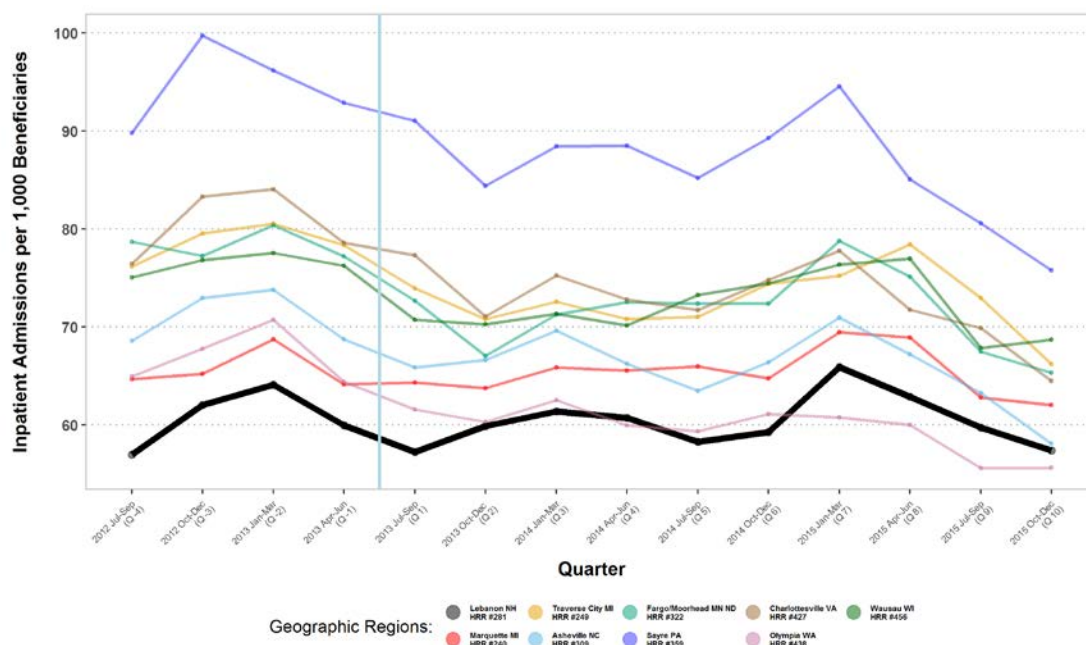
\*\* Statistically significant at the five percent level.

\*\*\* Statistically significant at the one percent level.

<sup>a</sup>Results are cumulative across all available quarters.

<sup>b</sup>Year 1 refers to the one-year period after a beneficiary's enrollment in the program, Year 2 refers to the subsequent one-year period.

**Figure 4-6: DHMC SDM Intervention: Inpatient Admissions per 1,000 Beneficiaries, by HRR, Medicare FFS Cohort**



#### 4.5.4 Medical Expenditures

Estimated effects on overall, by-setting, and surgery-specific expenditures are consistent with findings for the corresponding service utilization and outcomes discussed above. Consistent with the findings on OP preference-sensitive hip, knee and spine surgery utilization, the DHMC SDM intervention was associated with statistically significant cumulative decreases in preference-sensitive hip, knee and spine surgery expenditures in the outpatient setting, but significant increases across some surgery categories in the inpatient setting. Specifically, the program was associated with a cumulative decrease of \$790,580 in OP preference-sensitive hip, knee, and spine surgery expenditures among the 84,225 Medicare FFS beneficiaries in the intervention region relative to comparator regions, which amounts to less than \$2 per beneficiary (see Appendix F.4). This decline in OP preference-sensitive surgery expenses is partially driven by declines in OP preference-sensitive spine surgery expenditures, which were also associated with a cumulative statistically significant decrease of \$319,591 among 84,225 intervention region beneficiaries relative to controls, and declines in OP preference-sensitive hip surgery expenditures, which were associated with a decrease of \$85,384 among intervention region beneficiaries. Though statistically significant decreases were not observed in OP preference-sensitive knee surgeries, the quarterly point estimates also show consistent decreases in expenditures for OP preference-sensitive knee surgeries among beneficiaries in the intervention region in the 10 quarters following the implementation of the intervention (see Appendix F.4).

Figure 4-7 provides additional context for these results by showing trends in OP preference-sensitive hip, knee and spine surgery expenditures per beneficiary over time for Lebanon and the comparison regions. OP preference-sensitive hip, knee and spine surgery expenses per beneficiary in Lebanon were substantially higher than in comparison regions in the pre-intervention period, but were well within range of the other regions by the post intervention period. OP preference-sensitive hip, knee and spine surgery expenditures were relatively small across regions at less than \$5 per beneficiary per quarter across the pre- and post-HCIA implementation period.

However, similar to results in the corresponding resource use category, the program was also associated with small but statistically significant increases in preference sensitive hip surgery expenditures, driven by surgeries in the inpatient setting. Specifically, the program was associated with an increase of \$2,522,988 in total preference-sensitive hip surgery expenditures (\$5 per beneficiary) driven by an increase of \$2,213,152 in inpatient hip surgery expenditures (\$5 per beneficiary) cumulatively across ten intervention quarters among 84,255 beneficiaries in the intervention region relative to controls.

As reported above for the corresponding utilization outcomes, there were no statistically significant effects on overall PS hip, knee, and spine surgery-related expenditures nor on overall inpatient preference sensitive hip, knee, and spine surgery-related expenditures at the cumulative, yearly, or quarterly level (see Appendix Table F-16 and Appendix Table F-17). Figure 4-8 shows that compared to the individual comparison HRRs, Lebanon had the lowest rate of inpatient hip, knee, and spine surgery expenditures per beneficiary in the pre-intervention period, leaving a low margin for improvement after HCIA program implementation.

**Table 4-12: Aggregate Surgery-Related Expenditures: Cumulative and Yearly DiDs from DHMC SDM HCIA Program Implementation through December 2015, Medicare FFS Cohort**

Measures (2011 USD)	Full Intervention Period <sup>a</sup> (10 quarters)	Year 1 <sup>b</sup>	Year 2
<i>Number of Participants</i>	84,225	84,225	69,498
<b>All PS Hip/Knee/Spine Surgery Expenditures</b>			
<i>Difference-in-Difference</i>	2,912,918.17	1,043,484.83	1,075,687.06
<i>90% Confidence Interval</i>	(-3,599,059.8   9,424,896.2)	(-1,948,426.7   4,035,396.4)	(-2,034,016.2   4,185,390.3)
<i>P-Value</i>	0.462	0.566	0.569
<b>Inpatient PS Hip/Knee/Spine Surgery Expenditures</b>			
<i>Difference-in-Difference</i>	2,997,755.91	1,175,990.02	1,062,546.22

Measures (2011 USD)	Full Intervention Period <sup>a</sup> (10 quarters)	Year 1 <sup>b</sup>	Year 2
<i>90% Confidence Interval</i>	(-2,572,681.0   8,568,192.8)	(-1,378,808.6   3,730,788.6)	(-1,583,578.7   3,708,671.2)
<i>P-Value</i>	0.376	0.449	0.509
<b>Outpatient PS Hip/Knee/Spine Surgery Expenditures</b>			
<i>Difference-in-Difference</i>	-790,579.77***	-352,467.39***	-245,351.40
<i>90% Confidence Interval</i>	(-1,285,489.1   -295,670.4)	(-539,951.4   -164,983.4)	(-561,273.7   70,570.9)
<i>P-Value</i>	0.009	0.002	0.201
<b>All PS Hip Surgery Expenditures</b>			
<i>Difference-in-Difference</i>	2,522,987.78**	719,724.29	1,219,202.84**
<i>90% Confidence Interval</i>	(638,365.9   4,407,609.6)	(-149,635.6   1,589,084.2)	(255,500.9   2,182,904.8)
<i>P-Value</i>	0.028	0.173	0.037
<b>Inpatient PS Hip Surgery Expenditures</b>			
<i>Difference-in-Difference</i>	2,213,152.25**	643,776.11	1,059,828.42**
<i>90% Confidence Interval</i>	(561,271.4   3,865,033.0)	(-118,262.8   1,405,815.1)	(214,192.9   1,905,464.0)
<i>P-Value</i>	0.028	0.165	0.039
<b>Outpatient PS Hip Surgery Expenditures</b>			
<i>Difference-in-Difference</i>	-85,384.13**	-29,613.94	-35,328.53*
<i>90% Confidence Interval</i>	(-156,291.3   -14,476.9)	(-60,559.1   1,331.2)	(-65,121.0   -5,536.1)
<i>P-Value</i>	0.048	0.115	0.051
<b>All PS Knee Surgery Expenditures</b>			
<i>Difference-in-Difference</i>	153,463.71	100,976.21	-129,459.15
<i>90% Confidence Interval</i>	(-3,191,340.3   3,498,267.7)	(-1,461,268.2   1,663,220.6)	(-1,696,485.7   1,437,567.4)
<i>P-Value</i>	0.940	0.915	0.892
<b>Inpatient PS Knee Surgery Expenditures</b>			
<i>Difference-in-Difference</i>	443,601.58	263,596.31	-35,504.45
<i>90% Confidence Interval</i>	(-2,379,396.6   3,266,599.8)	(-1,060,120.4   1,587,313.0)	(-1,353,571.3   1,282,562.4)
<i>P-Value</i>	0.796	0.743	0.965
<b>Outpatient PS Knee Surgery Expenditures</b>			
<i>Difference-in-Difference</i>	-381,800.81	-198,361.44**	-97,592.24
<i>90% Confidence Interval</i>	(-778,831.0   15,229.4)	(-339,230.1   -57,492.7)	(-388,730.5   193,546.0)
<i>P-Value</i>	0.114	0.021	0.581



Measures (2011 USD)	Full Intervention Period <sup>a</sup> (10 quarters)	Year 1 <sup>b</sup>	Year 2
<b>All PS Spine Surgery Expenditures</b>			
<i>Difference-in-Difference</i>	457,503.00	276,387.23	160,603.78
<i>90% Confidence Interval</i>	(-3,405,928.7   4,320,934.7)	(-1,506,619.4   2,059,393.9)	(-1,689,793.7   2,011,001.3)
<i>P-Value</i>	0.846	0.799	0.886
<b>Inpatient PS Spine Surgery Expenditures</b>			
<i>Difference-in-Difference</i>	533,747.53	313,190.05	192,943.03
<i>90% Confidence Interval</i>	(-2,829,751.3   3,897,246.3)	(-1,230,797.1   1,857,177.2)	(-1,406,260.4   1,792,146.5)
<i>P-Value</i>	0.794	0.739	0.843
<b>Outpatient PS Spine Surgery Expenditures</b>			
<i>Difference-in-Difference</i>	-319,590.89**	-120,722.90**	-112,410.83*
<i>90% Confidence Interval</i>	(-561,359.8   -77,822.0)	(-221,101.8   -20,344.0)	(-218,902.5   -5,919.1)
<i>P-Value</i>	0.030	0.048	0.083

\* Statistically significant at the ten percent level.

\*\* Statistically significant at the five percent level.

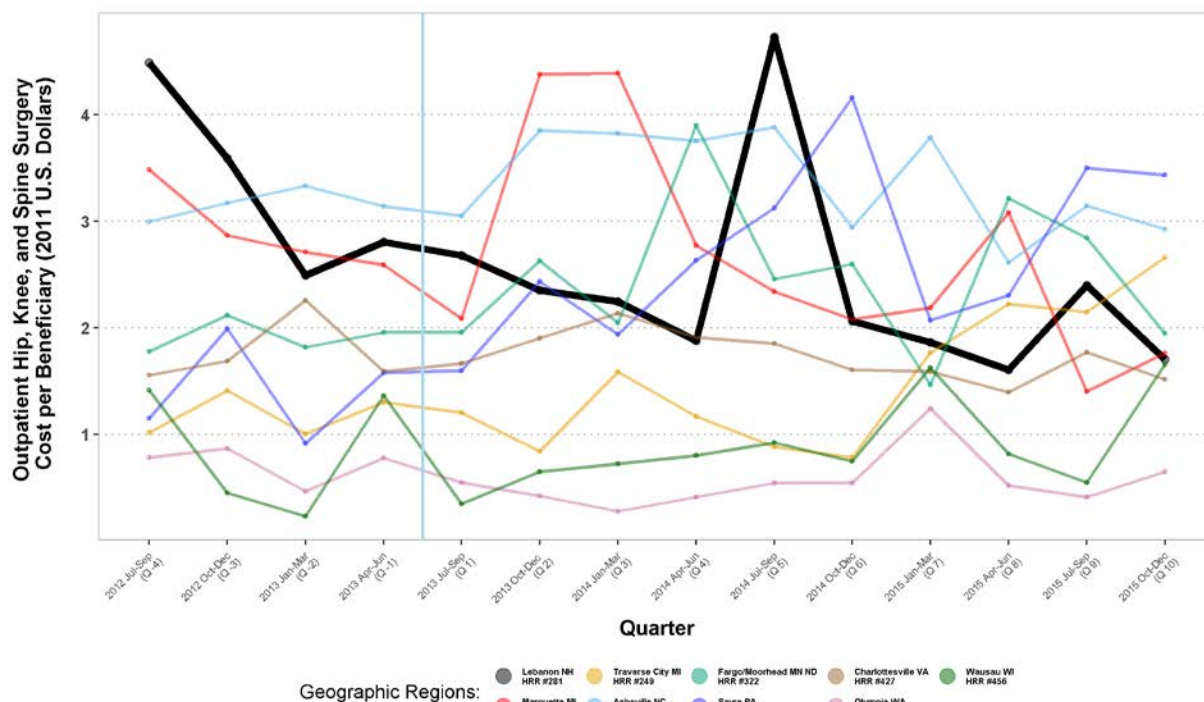
\*\*\* Statistically significant at the one percent level.

<sup>a</sup>Results are cumulative across all available quarters.

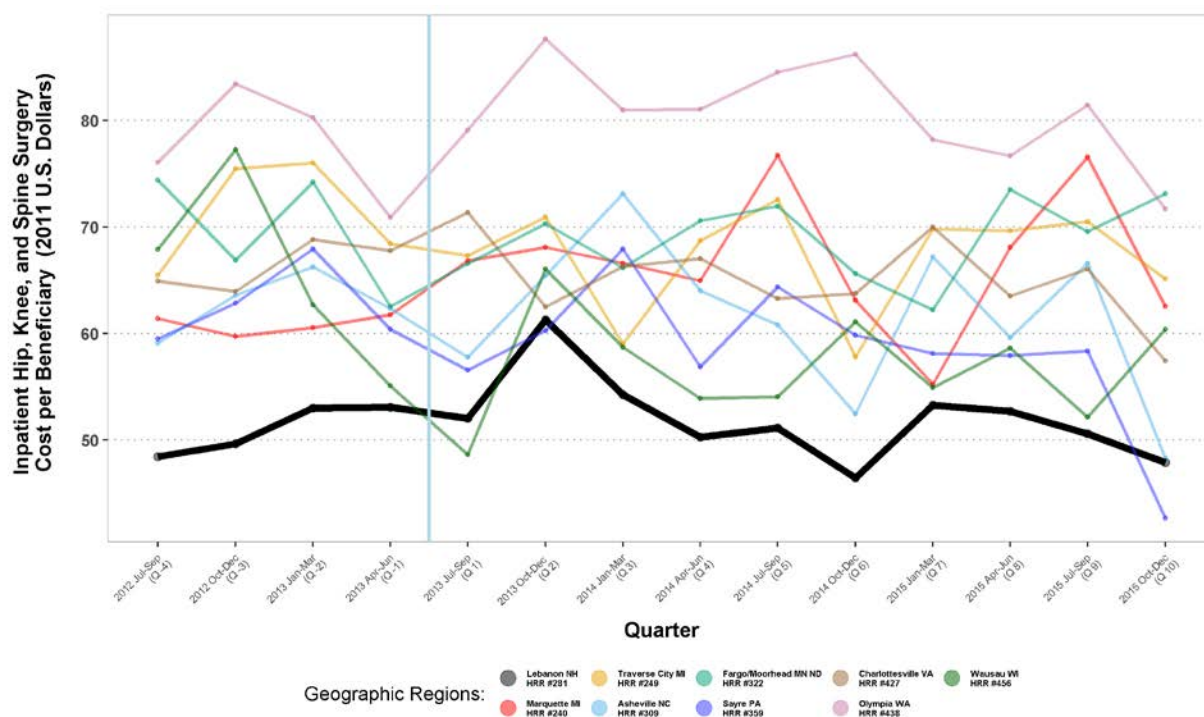
<sup>b</sup>Year 1 refers to the one-year period after a beneficiary's enrollment in the program, Year 2 refers to the subsequent one-year period.



**Figure 4-7: DHMC SDM Intervention: Outpatient Hip, Knee, and Spine Surgery Cost per Beneficiary, by HRR, Medicare FFS Cohort**



**Figure 4-8: DHMC SDM Intervention: Inpatient Hip, Knee, and Spine Surgery Cost per Beneficiary, by HRR, Medicare FFS Cohort**



Though the DHMC SDM program was associated with decreases in expenditures in the outpatient setting, there were offsetting increases in other settings that led to a statistically significant increase in total expenditures as shown in Table 4-13.

Consistent with utilization findings in the OP setting, the program was associated with a cumulative decrease of \$16,042,233 in OP non-ER expenditures among the 84,225 beneficiaries in the intervention region relative to controls. Figure 4-9 details the rate of OP non-ER expenditures per beneficiary in Lebanon, NH, relative to the individual HRRs that comprise the comparison region, and illustrates that OP expenditures per beneficiary in the pre-intervention period for the Lebanon HRR was higher than all other comparison regions. Similar trends are observed for OP ER expenditures.

**Table 4-13: Aggregate Expenditures: Cumulative and Yearly DiDs from DHMC SDM HCIA Program Implementation through December 2015, Medicare FFS Cohort**

Measure (2011 USD)	Full Intervention Period <sup>a</sup> (10 quarters)	Year 1 <sup>b</sup>	Year 2
<i>Number of Participants</i>	84,225	84,225	69,498
<b>Medicare Parts A and B Expenditures</b>			
<i>Difference-in-Difference</i>	32,219,696.52**	10,327,430.45	10,116,794.88
<i>90% Confidence Interval</i>	(9,963,290.6   54,476,102.5)	(-29,485.6   20,684,346.5)	(-1,040,312.6   21,273,902.4)
<i>P-Value</i>	0.017	0.101	0.136
<b>Inpatient Expenditures</b>			
<i>Difference-in-Difference</i>	25,679,426.51***	6,936,205.33**	9,518,685.04***
<i>90% Confidence Interval</i>	(14,381,973.7   36,976,879.3)	(1,612,691.4   12,259,719.2)	(3,803,979.0   15,233,391.1)
<i>P-Value</i>	<0.001	0.032	0.006
<b>Outpatient ER Expenditures</b>			
<i>Difference-in-Difference</i>	-994,220.49	-84,593.58	-1,001,574.05*
<i>90% Confidence Interval</i>	(-2,960,069.8   971,628.8)	(-988,744.4   819,557.2)	(-1,923,526.7   -79,621.4)
<i>P-Value</i>	0.405	0.878	0.074
<b>Outpatient Non-ER Expenditures</b>			
<i>Difference-in-Difference</i>	-16,042,233.15**	-6,960,691.69**	-6,887,005.40**
<i>90% Confidence Interval</i>	(-26,611,422.7   -5,473,043.6)	(-11,862,209.9   -2,059,173.5)	(-11,833,337.5   -1,940,673.3)
<i>P-Value</i>	0.013	0.019	0.022
<b>Physician and Other Non-Institutional Service Expenditures</b>			
<i>Difference-in-Difference</i>	10,473,149.42**	4,406,191.25**	3,980,928.67*

Measure (2011 USD)	Full Intervention Period <sup>a</sup> (10 quarters)	Year 1 <sup>b</sup>	Year 2
<i>90% Confidence Interval</i>	(2,778,640.8   18,167,658.0)	(984,448.8   7,827,933.7)	(388,703.2   7,573,154.2)
<i>P-Value</i>	0.025	0.034	0.068
<b>Skilled Nursing Facility Expenditures</b>			
<i>Difference-in-Difference</i>	4,109,159.61	2,926,610.72	1,022,585.38
<i>90% Confidence Interval</i>	(-7,630,541.2   15,848,860.5)	(-2,429,341.8   8,282,563.3)	(-4,419,033.1   6,464,203.8)
<i>P-Value</i>	0.565	0.369	0.757
<b>Durable Medical Equipment Expenditures</b>			
<i>Difference-in-Difference</i>	2,249,408.74**	451,686.87	724,144.34
<i>90% Confidence Interval</i>	(732,598.9   3,766,218.5)	(-342,377.3   1,245,751.0)	(-80,000.0   1,528,288.6)
<i>P-Value</i>	0.015	0.349	0.139
<b>Home Health Expenditures</b>			
<i>Difference-in-Difference</i>	573,213.68	595,162.63	328,136.70
<i>90% Confidence Interval</i>	(-2,929,818.1   4,076,245.5)	(-1,045,180.5   2,235,505.8)	(-1,258,928.4   1,915,201.8)
<i>P-Value</i>	0.788	0.551	0.734
<b>Hospice Expenditures</b>			
<i>Difference-in-Difference</i>	4,484,702.95*	1,692,220.26	1,625,725.75
<i>90% Confidence Interval</i>	(175,147.6   8,794,258.3)	(-247,788.5   3,632,229.1)	(-385,164.0   3,636,615.5)
<i>P-Value</i>	0.087	0.151	0.184

\* Statistically significant at the ten percent level.

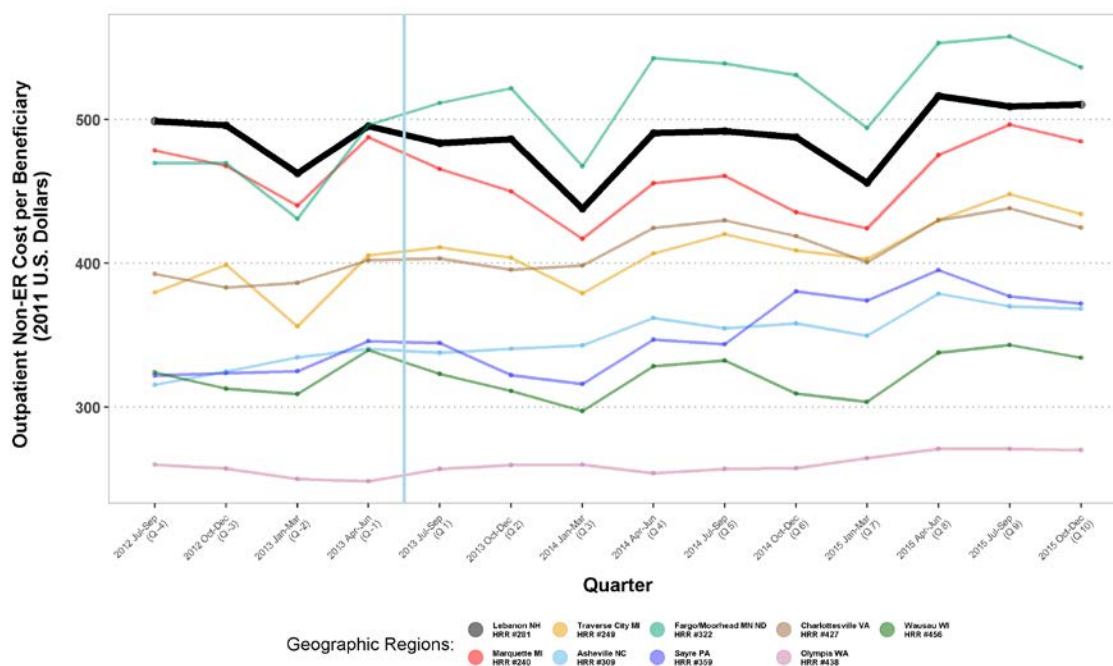
\*\* Statistically significant at the five percent level.

\*\*\* Statistically significant at the one percent level.

<sup>a</sup>Results are cumulative across all available quarters.

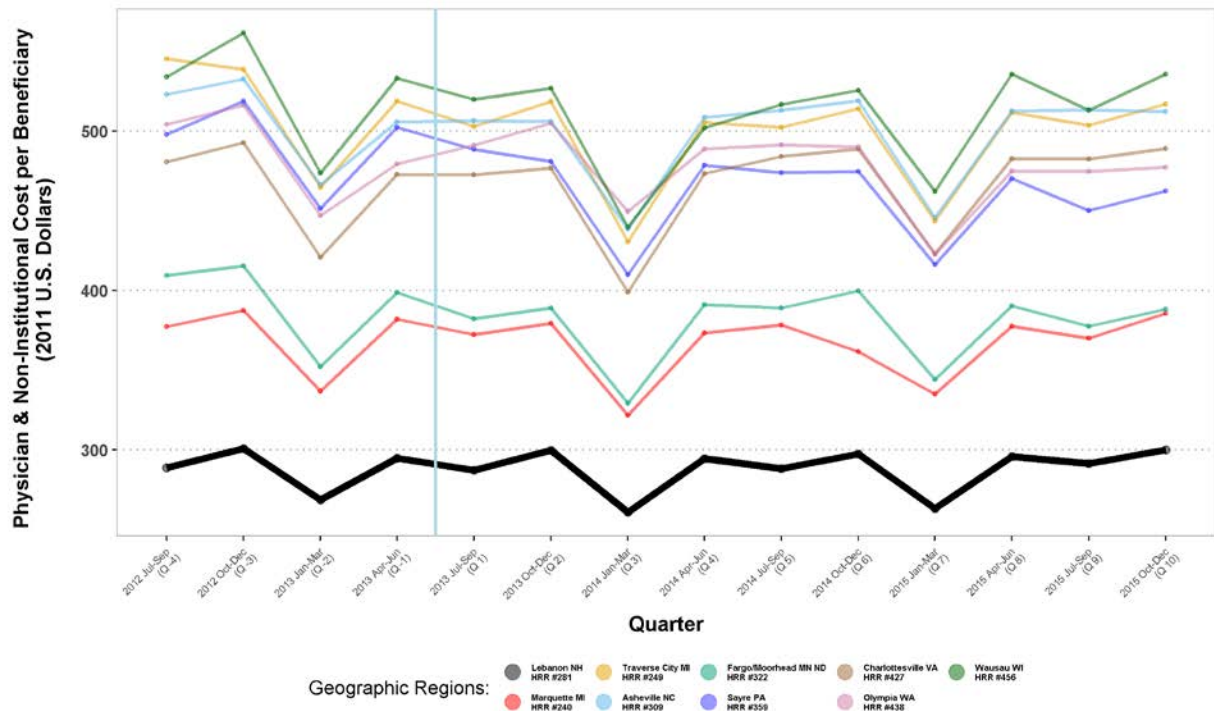
<sup>b</sup>Year 1 refers to the one-year period after a beneficiary's enrollment in the program, Year 2 refers to the subsequent one-year period.

**Figure 4-9: DHMC SDM Intervention: Outpatient Non-ER Costs per Beneficiary, by HRR, Medicare FFS Cohort**

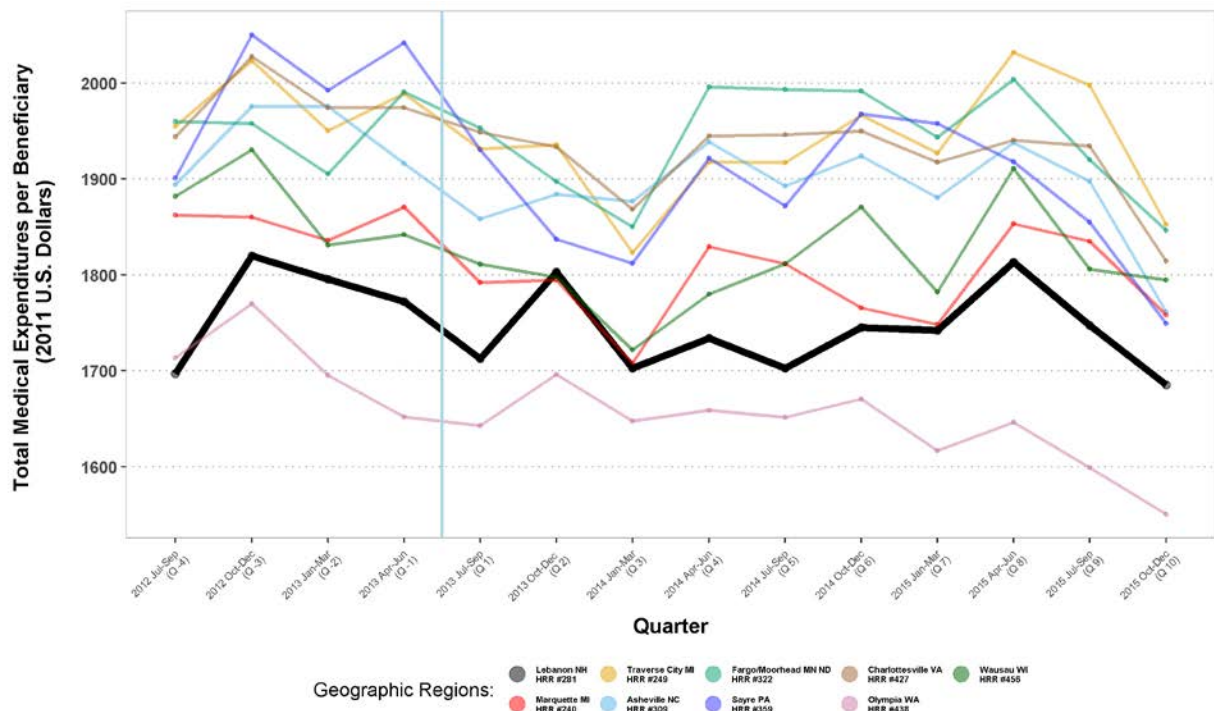


Statistically significant increases in other settings offset the declines in outpatient expenditures. Specifically, the DHMC SDM intervention was associated with statistically significant cumulative increases in inpatient expenditures, physician and ancillary service expenditures, DME expenditures, and hospice expenditures. As a result, cumulatively across the 10 quarters following HCIA implementation, there was an increase in total Medicare Parts A and B expenditures of \$32,219,697 among 84,225 beneficiaries in the intervention region compared to controls, which was statistically significant at the 5% level. This amounted to an increase of around \$69 per beneficiary. However, for most of the settings with estimated increases, the pre-intervention period expenditures were low in the Lebanon HRR relative to those in the comparison regions, as exemplified in Figure 4-10 displaying trends in per-beneficiary physician and ancillary service costs. Similarly, as Figure 4-11 shows, Medicare Parts A and B expenditures in Lebanon, NH were low at baseline relative to other regions and remained relatively steady following implementation of the HCIA program, while other regions, such as Sayre, PA and Marquette, MI experienced substantial decreases. Thus, it is possible that the estimated increases over time for the intervention region relative to controls represent convergence in expenditures rather than program effects.

**Figure 4-10: DHMC SDM Intervention: Physician and Ancillary Service Costs per Beneficiary, by HHR, Medicare FFS Cohort**



**Figure 4-11: DHMC SDM Intervention: Total Medicare Parts A and B Costs per Beneficiary, by HRR**





#### **4.5.5 Discussion**

Overall, the region-level analysis found limited evidence that the DHMC SDM intervention had a significant effect on evaluated outcomes. Evidence of statistically significant decreases in utilization and expenditure for outpatient preference-sensitive hip, knee, and spine surgeries suggest that the program may have reduced these surgeries, but the measured reductions are small relative to regional variation in these outcomes. In addition, the lack of evidence for effects on inpatient and total preference-sensitive hip, knee and spine surgeries implies that overall surgery rates may have been unchanged, either because the effect on outpatient surgeries is in fact small or because of offsetting increases in other settings. While there is a number of findings related to increases in utilization and expenditures in the inpatient setting that could support the latter interpretation, inspection of pre- and post-intervention trends in the selected comparison regions often reveals that these results are likely driven by trend movements specific to a few comparison regions.

This highlights a key contextualizing factor for interpreting these findings: all results from this geographic-level evaluation rely on the assumption that there are no unobservable differences in regions that lead to differential trends in outcomes. Acumen chose this region-based approach because self-selection into the decision aid intervention made conducting a beneficiary-level analysis, as for VMMC, inadvisable. While the region-based methodology avoids bias resulting from patient self-selection into the intervention group, this analysis remains subject to potential bias introduced by any underlying unobservable differences between the intervention and comparator regions that would have led, in the absence of the intervention, to differences in trends over time for the measured outcomes. That is, given the non-randomized design of the intervention, the results may be attributable to baseline differences and differential trends related to resource utilization and expenditures between the Lebanon HRR and comparison regions rather than to program effects. Although Acumen selected comparator regions through a rigorous process using an extensive list of relevant clinical, socioeconomic, and demographic variables, there is evidence of differential trends in several outcomes for specific comparison regions. This strongly suggests the influence of unobservable underlying factors on outcome trends, and it is crucial to account for this limitation in interpreting the findings.

Additionally, while the evaluation analyzes the effect of the hip, knee and spine SDM programs at DHMC attributable to the HCIA award, the implementation of hip, knee, and spine video decision aids prior to the award is likely to have muted potentially positive effects of the program on outcomes of interest. Any effects on outcomes attributable to the video decision aids prior to their inclusion in the HCIA SDM programming would not be reflected in the DiD estimates. That the Lebanon region performed better than comparison regions on some measures

of utilization and expenditures prior to HCIA implementation indicates that this factor likely influenced the results. This implies that the estimates from this analysis cannot be used to predict the effect of implementing the full set of interventions that comprise the Dartmouth SDM program at a site that does not currently utilize SDM.

Finally, these findings also incorporate an assumption that all observed changes in outcomes for Medicare FFS beneficiaries in the Lebanon, NH region can be attributed to the hip, knee, and spine SDM programs at DHMC. Although DHMC had larger participant counts for the hip, knee, and spine decision aid interventions than any other Dartmouth site, the 2,628 Medicare Parts A and B beneficiaries participating in these programs make up a relatively small proportion of the 84,225 Medicare Parts A and B beneficiaries in the Lebanon, NH HRR during the HCIA intervention period. As such, the analysis will only be able to capture large program effects, and measured effects may be driven by changes in other SDM and non-SDM programs implemented in the region during the HCIA period.

## **4.6 Implementation Effectiveness**

The qualitative analysis of implementation factors found that one of the important factors that optimized program implementation was shifting the timing of SDM interventions from the specialty care setting to primary care or physical therapy setting. SDM innovations are time-sensitive because beneficiaries' treatment decisions are often made shortly after initial diagnosis or physician recommendation. During the first year of implementation, Dartmouth decided to move the decision aids upstream in the patient care process (e.g., a physical therapy session or primary care visit instead of a surgical or non-surgical specialty visit) to engage patients before surgery-related decisions are made. However, Dartmouth reported that early outreach was not appropriate for its spine surgery SDM intervention, because eligibility was based on a consultation with a spine surgeon, and thus outreach could not be moved earlier in care.

Another factor that promoted implementation effectiveness was the development of a robust data infrastructure that the Dartmouth team used to provide data-driven feedback to implementation sites on health care quality and cost measures. CMS claims data, member-submitted data from local electronic health records (EHRs) and administrative systems, and patient-reported health measures were analyzed throughout the intervention to generate measures of health care quality and costs that could be compared across sites. The information was made available online through the HVHC Insight Tool. According to HVHC leadership, CMS HCIA funding significantly accelerated the resource-intensive development of the data infrastructure. Dartmouth and the HVHC are sustaining the data infrastructure after HCIA funding ends to provide data-driven feedback on future HVHC projects.

Additionally, Dartmouth leveraged EHRs to facilitate SDM implementation, despite challenges due to the variations in EHRs across organizations. VMMC and DHMC used EHR systems to identify eligible patients and send them links to the SDM innovation through their online patient portals. VMMC also worked with its EHR vendor to begin incorporating longitudinal displays of patient-reported measures into sections of the EHR. Yet some sites had limited ability to leverage the systems for SDM project implementation because providers independently own their EHR systems or own different brands of EHRs. As a result, EHR modifications were not easily scaled across all providers in the SDM project.

## **4.7 Workforce**

The key workforce factors that affected the Dartmouth innovation were related to health coaching sustainability, including identifying effective dosage/intensity of the intervention, staffing, and funding streams.

Eligible patients had differing needs for health coaching, reflecting their clinical factors and the extent to which they need help making care decisions. Consequently, implementation sites sought to appropriately allocate health coaching resources based on the level of need for such services at sites. For example, the DHMC site is developing draft plans to address differing patient needs by creating tiered levels of health coach services (i.e., high, medium, low) as part of an ongoing effort to develop sustainability plans for health coaching. Although the short-term goal of this work is to inform resource allocation after the HCIA award ends, it may also be useful in defining health coaching as a structured, reimbursable service in the future.

Starting in January 2015, implementation sites that used qualifying clinical staff (e.g., nurses) as health coaches were able to bill for diabetes and CHF health coaching under the new CMS chronic care management fee schedule, which helped sustain the health coach position after the HCIA project. Some organizations that hired non-clinical staff as health coaches expanded the health coaches' responsibilities to include other billable activities, such as Chronic Disease Self-Management Program (CDSMP) program leadership.

## **4.8 Context**

As of the end of HCIA-supported patient enrollment on June 30, 2015, implementation maturity varied across the organizations and sites involved in the Dartmouth SDM innovation, due in part to the organizations' capacity to implement major delivery system changes. Differences can be partially attributed to variations in the planned project timeline: four organizations began program implementation in year one of the award, and ten did so in year two.



Additionally, some Dartmouth intervention sites experienced a range of challenges that resulted in delays to implementation of individual programs. Sites reported challenges related to the allocation of resources across the fourteen member sites implementing SDM interventions through the Dartmouth program. For example, HVHC members found it challenging to procure sufficient funding and staff resources for EHR system modifications and health coach salaries, and the Dartmouth Project Management Office (PMO) reported that HVHC members were not allocating appropriate resources for HCIA project implementation.

Further, the required changes to the workflow and the culture of care teams, as well as the necessary enhancement to local infrastructure, led to further delays in program implementation across some sites. Sites also faced resistance from physicians, who perceived the interventions to be burdensome on patients and physicians. Some physicians were also reluctant to support the interventions, emphasizing the role of the physician as the primary source of information about treatment options. Finally, some sites experienced technical issues, such as challenges integrating the SAT into clinical workflow, and incorporating program measures into the sites' local EHRs. Given these implementation challenges, only some organizations had the capacity to manage local health coach training and local project improvement activities, while others continued to require support from the Dartmouth PMO for survey administration tool (SAT) implementation, compliance with data submission requirements, and health coach training. However, ultimately, only eight of 14 implementation sites reported enrolling patients in in one of the SDM interventions at their organization.

## **4.9 Sustainability and Spread**

A subset of implementation sites continues to provide the SDM innovation through local support at the implementation site. Some sites have integrated the decision aids into the local EHR system for long term use of the tools. These sites continue to refine the intervention workflows and participant recruitment strategies to optimize them for the local implementation environments. Dartmouth received support from the LJ Arnold Foundation for the ongoing dissemination of HCIA findings and continues to coordinate with the HVHC on other health care innovations and initiatives.

## 5 CROSS-AWARDEE EVALUATION FINDINGS

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This section provides an overview of group-level findings for the SDM HCIA awardees for the categories of participant experience, workforce issues, implementation successes and challenges, and factors affecting program sustainability and scale-up, through August 2016, unless noted otherwise.

### 5.1 Participant Experience

Welvie and MedExpert participants<sup>25</sup> who responded to the Patient Experience Survey, described in Section 1.2.1, reported largely positive experiences regarding interactions with the programs, providers, and SDM tools. While MedExpert focused on supporting health care decision-making through mailed materials and telephonic support, Welvie relied on the use of mailed outreach materials and a decision aid, which was available through an interactive website that included videos or a mailed paper booklet. Ratings related to the helpfulness and trustworthiness of materials were slightly higher for MedExpert than for Welvie.

Measures of patient engagement were high among both intervention groups, though Welvie respondents reported higher levels of activation and confidence in health care management and decision-making. Across both SDM interventions, more than 60 percent of survey respondents reported being aware that they were part of a program that supports health care decision-making.

Participants generally trusted the support and informational materials provided by Welvie and MedExpert, and suggested that the programs helped them understand the implications of their health care decisions. Survey respondents rated their trust in the information provided by Welvie and MedExpert as greater than 8 out of 10 on average, where 10 reflects the highest rating. Additionally, respondents strongly endorsed use of program support and materials for the specific elements related to shared decision-making, such as understanding the advantages and disadvantages of each health care choice based on clinical evidence as well as the patients' values and preferences.

### 5.2 Workforce Issues

This section highlights findings from the survey of SDM staff and other key cross-awardee findings related to workforce. Workforce survey results are presented at the aggregate level because of the small staff sizes in the two programs. In particular, the results focused on the impact of respondents' roles (leadership, patient care, or non-patient care staff) on their

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<sup>25</sup> Dartmouth participants, however, were not included in the Patient Experience Survey due to data challenges with identifying participants who received relevant components of its intervention.

experiences across SDM programs. Job titles of program staff were used to characterize the role of each staff member. Survey methods and response rates are reported in Section 1.2.1.

SDM staff gave very favorable ratings to their new roles in the HCIA programs overall; however, they were less certain that their roles were appreciated by other healthcare providers. More than 60 percent strongly agreed that their roles improved patient care and satisfaction, helped patients make decisions, and added value to the organization (Table 5-1). Respondents were less certain that their roles were appreciated by other healthcare professionals or if their role fit well within the flow of patient care, and this finding was particularly evident among patient care staff. Without exception, staff in leadership positions felt more positively about the impact of their roles than did patient care staff. Although non-patient care staff were generally less likely to perceive an impact of their role on patients, they were the most likely to strongly agree that their role is helping patients make decisions and adding value to the organization. Among respondents who agreed that their role reduced the workload of other health care professionals, SDM staff members in all roles were most likely to report that their role reduced the workload of physicians (94.4%), Registered Nurses (63.4%), and Advanced Practice Registered Nurses (59.2%).

**Table 5-1: Program Staff's Perceived Impact of Role in SDM Interventions**

Survey Response	Percent of Respondents who Indicated "Strongly Agree" by Role			
	Leadership	Patient Care	Non-Patient Care	All Roles
<b>Role in SDM program (N=91)</b>	29.7	57.1	13.2	100.0
Role is improving patient care (N=88)	80.8	56.9	36.4	61.4
Role is cost effective (N=86)	73.1	56.0	40.0	59.3
Role is increasing patient satisfaction (N=88)	69.2	67.3	30.0	63.6
Role is reducing HCP workload (N=82)	48.0	42.9	37.5	43.9
Other HCPs appreciate role (N=86)	48.0	26.0	36.4	33.7
Role fits in patient care flow (N=79)	42.9	32.0	37.5	35.4
Role is helping patients make decisions (N=85)	58.3	63.5	77.8	63.5
Role is increasing patient safety (N=85)	59.1	52.9	41.7	52.9
Role adds value to organization (N=91)	74.1	63.5	75.0	68.1

Note: Missing data are not included in the percentages reported. Valid N for each variable is reported in row labels. "Not applicable" responses to each item have been coded as missing.

The workforce of the SDM interventions generally reported being satisfied with their roles, including the training they received and the extent to which the role fully utilized their skill sets. More than half of respondents to the workforce survey strongly agreed that they received adequate training and that their role fully utilized their skills (Table 5-2). On a scale of 1-7, respondents' average rating of their job satisfaction was high at 5.8, and more than 80 percent reported that they "definitely" or "probably" would not leave if they had the opportunity to remain with the program. Patient care staff generally had lower levels of job satisfaction compared with other roles (e.g., management, IT staff); less than 40 percent agreed that their role

fully utilized their skills, and a lower percentage of staff reported that they would not leave their role.

**Table 5-2: Program Staff’s Perceptions of Role Fit, Training, and Job Satisfaction in SDM Interventions**

Survey Response	Percent of Respondents by Role			
	Leadership	Patient Care	Non-Patient Care	All Roles
<b>Role in SDM program (N=91)</b>	29.7	57.1	13.2	100.0
<b>“Strongly Agree” that s/he received needed training (N=85)</b>	58.3	51.0	50.0	52.9
<b>“Strongly Agree” that role fully utilizes skills (N=76)</b>	73.9	38.3	66.7	51.3
<b>Average satisfaction score* (N=91)</b>	6.1	5.5	6.4	5.8
<b>Intention to leave role after end of HCIA funding (N=91)</b>				
Definitely would not leave	66.7	48.1	50.0	53.8
Probably would not leave	22.2	30.8	50.0	30.8
Uncertain	3.7	15.4	0.0	9.9
Probably would leave	7.4	3.8	0.0	4.4
Definitely would leave	0.0	1.9	0.0	1.1

\*Respondents rated their satisfaction on a scale of 1=Extremely Dissatisfied to 7=Extremely Satisfied.

Note: Missing data are not included in the percentages reported. Valid N for each variable is reported in row labels.

Respondents who had favorable assessments of the performance of other program staff and the usefulness of program materials also reported higher levels of satisfaction with the program. While around 60 percent of respondents with high job satisfaction (scores of 6 or 7) rated their colleagues very positively in the areas of communication with patients and identifying patients for the program, less than one third of respondents with lower job satisfaction did so. Respondents with high levels of satisfaction were much more likely to report that decision aides and resources provided by the program were “very good” and “extremely useful” to patients. These results indicate that program staff are most satisfied when elements of the intervention are working as intended.

### 5.3 Implementation Successes and Challenges

SDM models that were implemented outside of the health care delivery system experienced fewer implementation challenges and reached maturity faster than more complex SDM models that entailed integration with existing health care systems. The Welvie and MedExpert innovations are “plug-in” innovations that were implemented in partnership with health insurance plans and are accessible to beneficiaries by telephone or internet. The major challenges in the Welvie and MedExpert implementations occurred early in the projects, such as establishing formal legal partnerships and obtaining data from partners. Once these early challenges were resolved, Welvie and MedExpert independently carried out major implementation tasks, including patient identification, outreach, and SDM service delivery. In

contrast, the Dartmouth innovation is the most complex of the SDM innovations, and as of the end of patient enrollment in June 30, 2015, eight of the fourteen<sup>26</sup> Dartmouth implementation sites had enrolled patients in the SDM innovation. The Dartmouth innovation depends on existing healthcare organizations to serve as implementation sites and enact major changes to clinical workflow, informatics infrastructure, and resource commitments, and sites reported challenges with many aspects of the implementation. The Dartmouth Project Management Office provided additional support to implementation sites, as needed, and successful implementation sites are beginning to share best practices on a variety of topics, including provider engagement and use of the local EHR to support SDM implementation at less mature sites.

SDM awardees found it effective to conduct outreach well in advance of treatment decisions to improve engagement in and, possibly, effectiveness of the interventions. SDM innovations are time-sensitive because beneficiaries' treatment decisions are often made shortly after initial diagnosis or consultation. Leadership from all three SDM awardees reported that early outreach improved implementation effectiveness, and as a result, each of the SDM awardees developed strategies to deliver timely SDM information. For example, some Dartmouth sites moved their decision aids upstream in the patient's experience (e.g., providing them incident to a physical therapy session or during a primary care clinic visits instead of a surgical specialty visit) to engage patients before surgery-related decisions were made. Additionally, MedExpert and Welvie conducted regularly scheduled, population-based outreach to build awareness of their services so that beneficiaries could access the SDM interventions when needed. Welvie also reviewed regional health care utilization patterns and scheduled mailed outreach to arrive before periods of increased surgery utilization. As part of its research activities, Welvie found that surgery-focused materials resonated with cardiac patients too late in disease progression (e.g., after an emergency room visit) to be optimally effective. As part of its Ohio implementation, Welvie revised its cardiac-related outreach materials to focus on disease management in efforts to increase early program participation among patients with or at risk of a cardiac condition.

Finally, SDM awardees sought to improve beneficiary satisfaction and resource allocation efficiency by offering varying levels of intervention intensity (e.g., high dose, low dose). Two of the SDM awardees, Welvie and MedExpert, allowed beneficiaries to opt into a more focused version of the intervention depending on their needs. For example, Welvie provided its low-dose intervention—educational outreach mailings with limited information on medical decision-making—to all beneficiaries, and those beneficiaries could choose to access the

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<sup>26</sup>In addition to the fourteen sites implementing HCIA-funded SDM and patient-engagement programs, the HVHC included four additional collaborative partners: Hawaii Pacific Health, Sinai Health System, The Dartmouth Institute, and UC San Diego Health System.

high-dose intervention, a six-step decision aid providing more comprehensive information. Similarly, beneficiaries could choose to continue engaging with MedExpert's intervention on a repeated basis, and MedExpert classified four or more discussions about the same medical topic as a high-intensity intervention. Dartmouth is in the process of defining high, medium, and low doses of SDM interventions, which will vary in educational content and in the extent of follow-up by a health coach. MedExpert and Dartmouth also varied the frequency of their follow-up efforts with participants, while Welvie allowed repeated use of its decision aid. All three awardees collected information on the value of different dosages to better meet the SDM needs of participants and to inform their sustainability plans.

## **5.4 Factors Affecting Sustainability and Scale Up**

Changes in Medicare policies implemented during the intervention period supported sustainability of the Dartmouth and Welvie interventions. Starting in January 2015, Dartmouth implementation sites that used qualifying clinical staff as health coaches were able to bill for diabetes and CHF health coaching under the new CMS Chronic Care Management fee schedule. Dartmouth reported that this rule change helped sites financially sustain health coaches with clinical backgrounds. A separate CMS rule change in January 2015 that allows MA plans to offer beneficiary incentives for health improvement programs facilitated Welvie's partnerships with additional MA plans beyond those involved in the HCIA project. Welvie successfully scaled up its intervention to include new MA beneficiaries in multiple regions of the country as of the end of the HCIA project period. Welvie is under contract with its HCIA partners Humana and Anthem to continue to deliver the intervention to existing MA beneficiaries after the HCIA cooperating agreement ended in December 2015. Welvie's contracts with Anthem and Humana expands the intervention population beyond the Ohio and Texas populations in the HCIA implementation to Anthem and Humana MA beneficiaries nationwide. In 2014 and 2015, Welvie also added new MA partners, including Wellcare, BCBS of Michigan, and BCBS of Rhode Island. As of December 2015, Welvie scaled its innovation to 600,000 additional MA beneficiaries through the new MA partnerships, with little to no changes in workforce or innovation components.

## APPENDIX A: OUTCOME MEASURE SPECIFICATIONS BY AWARDEE

The tables below define the outcome measures presented for the Welvie, MedExpert, and Dartmouth programs.

**Appendix Table A-1: Definitions of Terms Used in Outcome Measure Definitions**

Term	Definition	Relevant Awardees
Expenditure	All expenditure measures represent Medicare payments. Cost data are payment standardized using the CMS payment standardization methodology to remove differences due to geographic variation in Medicare payment rates and variation among classes of providers. All costs are adjusted monthly for inflation from a 2011 base year using the Bureau of Labor Statistics Consumer Price Index for medical care services. Cost data are not risk adjusted.	MedExpert, Dartmouth VMMC, Dartmouth DHMC Welvie
Beneficiary	Beneficiaries must be continuously enrolled in Medicare Parts A and B (Fee For Service, FFS) or C (Medicare Advantage, MA) for one year prior to the program's intervention date through the intervention quarter of interest. For USC and IHARP, beneficiaries must also be continuously enrolled in Medicare Part D for one year prior to the program's intervention date through the intervention quarter of interest. Beneficiaries who switch between FFS and MA are included in the MA analysis. If a beneficiary dies, the beneficiary will be included in the quarter in which he or she died and not in any subsequent quarters.	MedExpert, Dartmouth VMMC, Dartmouth DHMC Welvie
Inpatient Surgery	Inpatient surgery stays (hospital inpatient claim only). Includes inpatient stays billed with a surgical MS-DRG. Excludes stays with ICD-9-CM diagnosis codes indicating a trauma/accident. See supplementary <i>Surgery_Codes</i> Excel file for list of MS-DRGs and ICD-9-CM diagnosis codes.	Welvie
Inpatient Preference-Sensitive Surgery	Inpatient preference-sensitive surgery stays. Identified by ICD-9 procedure code on IP claim or CPT/HCPCS on PB claim that identifies a preference sensitive hip, knee, or spine surgery. Stay includes IP claim and all Part B carrier claims billed during the surgical stay. Excludes stays with ICD-9-CM diagnosis codes for trauma/accident or fracture.	Dartmouth DHMC
Outpatient Preference-Sensitive Surgery	Outpatient preference-sensitive surgery claims. Includes outpatient claims billed with a CPT/HCPCS code identifying preference sensitive surgery. <sup>a</sup> Excludes claims with ICD-9-CM diagnosis codes indicating a trauma/accident. Also excludes costs for ambulance services.	Dartmouth DHMC
Inpatient Preference-Sensitive Orthopedic Surgery	Inpatient preference-sensitive orthopedic surgery stays. Includes inpatient stays billed with a preference-sensitive orthopedic MS-DRG from major diagnostic category (MDC) 08: diseases and disorders of the musculoskeletal system and connective tissue. Also includes all Part B carrier claims billed during the surgical stay. Excludes stays with ICD-9-CM diagnosis codes for trauma/accident or fracture. See supplementary <i>Surgery_Codes</i> Excel file for list of MS-DRGs and ICD-9-CM diagnosis codes.	Welvie

Term	Definition	Relevant Awardees
Inpatient Preference-Sensitive Cardiac Surgery	Inpatient preference-sensitive cardiac surgery stays. Includes inpatient stays billed with a preference-sensitive cardiac MS-DRG from MDC 05: diseases and disorders of the circulatory system. Also includes all Part B carrier claims billed during the surgical stay. Excludes stays with ICD-9-CM diagnosis codes for trauma/accident or acute coronary syndrome. See supplementary <i>Surgery_Codes</i> Excel file for list of MS-DRGs and ICD-9-CM diagnosis codes.	Welve
Episode-Based Inpatient Surgery	Inpatient surgery stays and associated Part B carrier and post-acute care claims. Includes (a) inpatient stays billed with a surgical MS-DRG, (b) all Part B carrier claims billed during the surgical stays, (c) SNF stays linked to the surgical stays (i.e., the surgical stay qualified the beneficiary for SNF care), (d) home health claims beginning within 30 days of surgical stay discharge, and (e) inpatient rehabilitation facility claims beginning within 30 days of surgical stay discharge. <sup>b</sup> SNF, home health, and inpatient rehabilitation facility costs are prorated to include only costs incurred in the 30 days following surgical stay discharge; the average stay/claim cost per day is attributed to each day that falls in the 30 day post-discharge window. Excludes inpatient stays, inpatient rehabilitation facility stays, and home health claims with ICD-9-CM diagnosis codes indicating a trauma/ accident. Also excludes Part B Carrier ambulance claims. See supplementary <i>Surgery_Codes</i> Excel file for list of MS-DRGs, ICD-9-CM diagnosis codes, and HCPCS codes.	Welve
Outpatient Surgery	Outpatient surgery claims. Includes outpatient claims billed with a surgical HCPCS/CPT code and associated outpatient and Part B Carrier claims billed on the same date. <sup>c</sup> Excludes claims with ICD-9-CM diagnosis codes indicating a trauma/ accident. Also excludes costs for ambulance services. See supplementary <i>Surgery_Codes</i> Excel file for list of HCPCS/CPT codes, and ICD-9-CM diagnosis codes.	Welve
Outpatient Preference-Sensitive Orthopedic Surgery	Outpatient preference-sensitive orthopedic surgery claims. Includes outpatient claims billed with a preference-sensitive orthopedic HCPCS/CPT code. <sup>d</sup> Excludes claims with ICD-9-CM diagnosis codes indicating a trauma/ accident. Also excludes costs for ambulance services. See supplementary <i>Surgery_Codes</i> Excel file for list of HCPCS/CPT codes, and ICD-9-CM diagnosis codes.	Welve
Outpatient Preference-Sensitive Cardiac Surgery	Outpatient preference-sensitive cardiac surgery claims. Includes outpatient claims billed with a preference-sensitive cardiac HCPCS/CPT code <sup>e</sup> . Excludes claims with ICD-9-CM diagnosis codes indicating a trauma/ accident. Also excludes costs for ambulance services. See supplementary <i>Surgery_Codes</i> Excel file for list of HCPCS/CPT codes, and ICD-9-CM diagnosis codes.	Welve

<sup>a</sup>Outpatient preference-sensitive surgery HCPCS/CPT codes include selected HCPCS/CPTs in BETOS categories P3 (major procedure – orthopedic), P5B (ambulatory procedures – musculoskeletal), and P8A (endoscopy – arthroscopy).

<sup>b</sup>Inpatient rehabilitation facilities defined as inpatient claims with the last four digits of PROVIDER (CCN) in 3025-3099 OR third digit of “R” (CAH) or “T” (acute hospital)

<sup>c</sup>Outpatient surgical HCPCS/CPT codes include all HCPCS/CPTs in BETOS categories P1-P3 (major procedure), P4 (eye procedure), P5 (ambulatory procedure), P8 (endoscopy), and additional codes from the surgical CPT range 10000-70000



<sup>d</sup>Outpatient preference-sensitive orthopedic surgery HCPCS/CPT codes include selected HCPCS/CPTs in BETOS categories P3 (major procedure – orthopedic), P5B (ambulatory procedures – musculoskeletal), and P8A (endoscopy – arthroscopy)

<sup>e</sup>Outpatient preference-sensitive cardiac surgery HCPCS/CPT codes include selected HCPCS/CPTs in BETOS categories P2D (major procedure – cardiovascular – coronary angioplasty) and P2F (major procedure – cardiovascular – other)

**Appendix Table A-2: Definitions of Outcome Measures**

Measure	Relevant Population	Definition	Relevant Awardees
All-Cause Mortality per 1,000 Beneficiaries	FFS and MA	Numerator: Number of deaths * 1,000 Denominator: Total number of beneficiaries.	MedExpert, Dartmouth VMMC & DHMC, Welvie
Total Medicare Expenditures Per Beneficiary  (1 of 4 core meta-evaluation measures)	FFS	Numerator: Total Medicare Parts A and B claim costs. Part D costs are not included. Denominator: Total number of beneficiaries.	MedExpert, Dartmouth VMMC & DHMC, Welvie
Total Medicare Parts A, B, and D Expenditures Per Beneficiary	FFS	Numerator: Total Medicare Parts A, B, and D <sup>a</sup> claim costs. Denominator: Total number of beneficiaries.	MedExpert, Dartmouth VMMC & DHMC, Welvie
Inpatient Expenditures Per Beneficiary	FFS	Numerator: Total inpatient stay costs. Denominator: Total number of beneficiaries.	MedExpert, Dartmouth VMMC & DHMC, Welvie
Outpatient ER Expenditures Per Beneficiary	FFS	Numerator: Total emergency room (ER)-only outpatient claim costs. Denominator: Total number of beneficiaries.	MedExpert, Dartmouth VMMC & DHMC, Welvie
Outpatient Non-ER Expenditures Per Beneficiary	FFS	Numerator: Total non-ER outpatient claim costs. Denominator: Total number of beneficiaries.	MedExpert, Dartmouth VMMC & DHMC, Welvie
Physician and Ancillary Services Expenditures Per Beneficiary	FFS	Numerator: Total physician and ancillary services (Part B carrier) claim costs. Denominator: Total number of beneficiaries.	MedExpert, Dartmouth VMMC & DHMC, Welvie
Skilled Nursing Facility Expenditures Per Beneficiary	FFS	Numerator: Total skilled nursing facility claim costs. Denominator: Total number of beneficiaries.	MedExpert, Dartmouth VMMC & DHMC, Welvie
Home Health Expenditures Per Beneficiary	FFS	Numerator: Total home health claim costs. Denominator: Total number of beneficiaries.	MedExpert, Dartmouth VMMC & DHMC, Welvie
Hospice Expenditures Per Beneficiary	FFS	Numerator: Total hospice claim costs. Denominator: Total number of beneficiaries.	MedExpert, Dartmouth VMMC & DHMC, Welvie
Total Surgery Expenditures Per Beneficiary	FFS	Numerator: Total outpatient and inpatient surgery cost. Denominator: Total number of beneficiaries.	Welvie
Total Preference-Sensitive Orthopedic Surgery Expenditures Per Beneficiary	FFS	Numerator: Total outpatient and inpatient preference-sensitive orthopedic surgery cost. Denominator: Total number of beneficiaries.	Welvie
Total Preference-Sensitive Cardiac Surgery Expenditures Per Beneficiary	FFS	Numerator: Total outpatient and inpatient preference-sensitive cardiac surgery cost. Denominator: Total number of beneficiaries.	Welvie
Inpatient Surgery Cost Per Beneficiary	FFS	Numerator: Total inpatient surgery stay cost. Denominator: Total number of beneficiaries.	Welvie

Measure	Relevant Population	Definition	Relevant Awardees
Episode-Based Inpatient Surgery Expenditures Per Beneficiary	FFS	Numerator: Total episode-based inpatient surgery stay cost. Denominator: Total number of beneficiaries.	Welvie
Inpatient Preference-Sensitive Orthopedic Surgery Expenditures Per Beneficiary	FFS	Numerator: Total inpatient preference-sensitive orthopedic surgery stay cost. Denominator: Total number of beneficiaries.	Welvie
Inpatient Preference-Sensitive Cardiac Surgery Expenditures Per Beneficiary	FFS	Numerator: Total inpatient preference-sensitive cardiac surgery cost. Denominator: Total number of beneficiaries.	Welvie
Outpatient Surgery Expenditures Per Beneficiary	FFS	Numerator: Total outpatient surgery claim cost. Denominator: Total number of beneficiaries.	Welvie
Outpatient Preference-Sensitive Orthopedic Surgery Expenditures Per Beneficiary	FFS	Numerator: Total outpatient preference-sensitive orthopedic surgery claim cost. Denominator: Total number of beneficiaries.	Welvie
Outpatient Preference-Sensitive Cardiac Surgery Expenditures Per Beneficiary	FFS	Numerator: Total outpatient preference-sensitive cardiac surgery claim cost. Denominator: Total number of beneficiaries.	Welvie
Number of ER Visits Per 1,000 Beneficiaries (1 of 4 core meta-evaluation measures)	FFS	Numerator: Number of beneficiaries with at least one outpatient ER claim with no inpatient admission on the same day * 1,000. Denominator: Total number of beneficiaries.	MedExpert, Dartmouth VMMC & DHMC, Welvie
Number of ER Visits Per 1,000 Beneficiaries	FFS	Numerator: Number of days with an ER claim for beneficiaries with no inpatient admission on the same day * 1,000. Denominator: Total number of beneficiaries.	MedExpert, Dartmouth VMMC & DHMC, Welvie
Number of Inpatient Admissions Per 1,000 Beneficiaries (1 of 4 core meta-evaluation measures)	FFS and MA	Numerator: Number of beneficiaries with at least one inpatient stay * 1,000. Denominator: Total number of beneficiaries.	MedExpert, Dartmouth VMMC & DHMC, Welvie
Number of Inpatient Admissions Per 1,000 Beneficiaries	FFS and MA	Numerator: Number of inpatient stays * 1,000. Denominator: Total number of beneficiaries.	MedExpert, Dartmouth VMMC & DHMC, Welvie
Unplanned Inpatient Admission Rate Per 1,000 Beneficiaries	FFS and MA	Numerator: Number of beneficiaries with at least one unplanned inpatient stay * 1,000. Denominator: Total number of beneficiaries.	MedExpert, Dartmouth VMMC & DHMC, Welvie
Unplanned Inpatient Admissions Per 1,000 Beneficiaries	FFS and MA	Numerator: Number of unplanned inpatient stays * 1,000. Denominator: Total number of beneficiaries.	MedExpert, Dartmouth VMMC & DHMC, Welvie

Measure	Relevant Population	Definition	Relevant Awardees
30-Day Hospital Readmissions Per 1,000 Beneficiaries	FFS and MA	Numerator: Number of beneficiaries with an inpatient stay admission within 30 days of discharge from a previous inpatient stay * 1,000. Denominator: Number of beneficiaries with an inpatient stay.	MedExpert, Dartmouth VMMC & DHMC, Welvie
30-Day Hospital Readmissions Following Inpatient Surgery Per 1,000 Beneficiaries	FFS and MA	Numerator: Number of beneficiaries with an inpatient stay admission within 30 days of discharge from an inpatient surgery stay * 1,000. Denominator: Number of beneficiaries with an inpatient surgery stay.	Welvie
30-Day Hospital Readmissions Following Preference-Sensitive Orthopedic Surgery Per 1,000 Beneficiaries	FFS and MA	Numerator: Number of beneficiaries with an inpatient stay admission within 30 days of discharge from an inpatient preference-sensitive orthopedic surgery stay * 1,000. Denominator: Number of beneficiaries with an inpatient preference-sensitive orthopedic surgery stay.	Welvie
30-Day Hospital Readmissions Following Preference-Sensitive Cardiac Surgery Per 1,000 Beneficiaries	FFS and MA	Numerator: Number of beneficiaries with an inpatient stay admission within 30 days of discharge from an inpatient preference-sensitive cardiac surgery stay * 1,000. Denominator: Number of beneficiaries with an inpatient preference-sensitive cardiac surgery stay.	Welvie
30-Day Hospital Unplanned Readmissions Per 1,000 Beneficiaries  (1 of 4 core meta-evaluation measures)	FFS and MA	Numerator: Number of beneficiaries with an unplanned inpatient stay admission within 30 days of discharge from a previous inpatient stay * 1,000 Denominator: Number of beneficiaries with an inpatient stay.	MedExpert, Dartmouth VMMC & DHMC, Welvie
Number of Hospital Days Per 1,000 Beneficiaries	FFS and MA	Numerator: Total number of inpatient days * 1,000. Denominator: Total number of beneficiaries.	MedExpert, Dartmouth VMMC & DHMC, Welvie
Total Surgery Rate Per 1,000 Beneficiaries	FFS	Numerator: Number of beneficiaries with at least one inpatient surgery stay or outpatient surgery claim * 1,000. Denominator: Total number of beneficiaries.	Welvie
Number of All Surgeries Per 1,000 Beneficiaries	FFS	Numerator: Number of inpatient surgery stays and outpatient surgery claims * 1,000. Denominator: Total number of beneficiaries.	Welvie
Inpatient Surgery Rate Per 1,000 Beneficiaries	FFS and MA	Numerator: Number of beneficiaries with at least one inpatient surgery stay * 1,000. Denominator: Total number of beneficiaries.	Welvie
Number of Inpatient Surgeries Per 1,000 Beneficiaries	FFS and MA	Numerator: Number of inpatient surgery stays * 1,000. Denominator: Total number of beneficiaries.	Welvie
Outpatient Surgery Rate Per 1,000 Beneficiaries	FFS	Numerator: Number of beneficiaries with at least one outpatient surgery claim * 1,000. Denominator: Total number of beneficiaries.	Welvie

Measure	Relevant Population	Definition	Relevant Awardees
Number of Outpatient Surgeries Per 1,000 Beneficiaries	FFS and MA	Numerator: Number of outpatient surgery claims * 1,000. Denominator: Total number of beneficiaries.	Welvie
Number of Surgical Hospital Days Per 1,000 Beneficiaries	FFS and MA	Numerator: Number of inpatient surgery stay days * 1,000. Denominator: Total number of beneficiaries.	Welvie
Inpatient Preference-Sensitive Orthopedic Surgery Rate Per 1,000 Beneficiaries	FFS and MA	Numerator: Number of beneficiaries with at least one inpatient preference-sensitive orthopedic surgery stay * 1,000. Denominator: Total number of beneficiaries.	Welvie
Number of Inpatient Orthopedic Preference-Sensitive Surgeries Per 1,000 Beneficiaries	FFS and MA	Numerator: Number of inpatient preference-sensitive orthopedic surgery stays * 1,000. Denominator: Total number of beneficiaries.	Welvie
Number of Inpatient Preference-Sensitive Orthopedic Surgery Hospital Days Per 1,000 Beneficiaries	FFS and MA	Numerator: Number of inpatient preference-sensitive orthopedic surgery stay days * 1,000. Denominator: Total number of beneficiaries.	Welvie
Inpatient Preference-Sensitive Cardiac Surgery Rate Per 1,000 Beneficiaries	FFS and MA	Numerator: Number of beneficiaries with at least one inpatient preference-sensitive cardiac surgery stay * 1,000. Denominator: Total number of beneficiaries.	Welvie
Number of Inpatient Cardiac Preference-Sensitive Surgeries Per 1,000 Beneficiaries	FFS and MA	Numerator: Number of inpatient preference-sensitive cardiac surgery stays * 1,000. Denominator: Total number of beneficiaries.	Welvie
Number of Inpatient Preference-Sensitive Cardiac Surgery Hospital Days Per 1,000 Beneficiaries	FFS and MA	Numerator: Number of inpatient preference-sensitive cardiac surgery stay days * 1,000. Denominator: Total number of beneficiaries.	Welvie
Inpatient Preference-Sensitive Hip Surgery Rate Per 1,000 Beneficiaries	FFS	Numerator: Number of beneficiaries with at least one inpatient preference-sensitive hip surgery stay * 1,000. Denominator: Total number of beneficiaries.	Dartmouth DHMC
Inpatient Preference-Sensitive Knee Surgery Rate Per 1,000 Beneficiaries	FFS	Numerator: Number of beneficiaries with at least one inpatient preference-sensitive knee surgery stay * 1,000. Denominator: Total number of beneficiaries.	Dartmouth DHMC
Inpatient Preference-Sensitive Spine Surgery Rate Per 1,000 Beneficiaries	FFS	Numerator: Number of beneficiaries with at least one inpatient preference-sensitive spine surgery stay * 1,000. Denominator: Total number of beneficiaries.	Dartmouth DHMC
All Preference-Sensitive Hip Surgery Expenditures Per Beneficiary	FFS	Numerator: Total outpatient and inpatient preference-sensitive hip surgery cost. Denominator: Total number of beneficiaries.	Dartmouth DHMC

Measure	Relevant Population	Definition	Relevant Awardees
All Preference-Sensitive Knee Surgery Expenditures Per Beneficiary	FFS	Numerator: Total outpatient and inpatient preference-sensitive knee surgery cost. Denominator: Total number of beneficiaries.	Dartmouth DHMC
All Preference-Sensitive Spine Surgery Expenditures Per Beneficiary	FFS	Numerator: Total outpatient and inpatient preference-sensitive spine surgery cost. Denominator: Total number of beneficiaries.	Dartmouth DHMC
Inpatient Preference-Sensitive Hip Surgery Expenditures Per Beneficiary	FFS	Numerator: Total inpatient preference-sensitive hip surgery stay cost. Denominator: Total number of beneficiaries.	Dartmouth DHMC
Inpatient Preference-Sensitive Knee Surgery Expenditures Per Beneficiary	FFS	Numerator: Total inpatient preference-sensitive knee surgery stay cost. Denominator: Total number of beneficiaries.	Dartmouth DHMC

<sup>a</sup>(a) For beneficiaries without a low-income subsidy, Part D costs are estimated as  $(0.75 \times \text{Covered D Plan Paid prior to the catastrophic phase}) + [0.75 \times (\text{Covered D Plan Paid in the catastrophic phase} - 80\% \text{ Above Out of Pocket Threshold})] + 80\% \text{ Above Out of Pocket Threshold} + \text{Low Income Cost-Sharing Subsidy Amount}$ .

(b) For beneficiaries with a low-income subsidy, Part D costs are estimated as  $\text{Covered D Plan Paid} + \text{Low Income Cost-Sharing Subsidy Amount}$ .

## APPENDIX B: RESULTS FOR WELVIE

The following tables provide the baseline demographic and health characteristics for intervention and comparison group beneficiaries in the Welvie Medicare Parts A and B Ohio (using CWF data) and Medicare Advantage Ohio and Texas cohorts (using MA claims data provided by Welvie). Subsequent tables provide mortality and readmission rates; health service utilization; and medical costs results for these cohorts.

### B.1 Demographic and Health Characteristics

**Appendix Table B-1: Welvie Baseline Demographic and Health Characteristics, Ohio FFS ITT Analysis Cohort**

Characteristics	Intervention Group	Control Group	Percent Difference	Standardized Mean Difference <sup>a</sup>
<b>Number of Beneficiaries</b>	59,894	50,279		
<b>Average Age (Years)</b>	76.40	76.67	-0.26	0.03
<b>Age under 65</b>	0%	0%	0.00	0.00
<b>Gender</b>				
Male	43%	42%	1%	0.01
Female	57%	58%	-1%	0.01
<b>Race</b>				
White	92%	92%	0%	0.01
Black	6%	6%	0%	0.00
Other	2%	1%	0%	0.00
<b>Dual Eligible</b>	8%	10%	-2%	0.08
<b>Medicare Eligibility</b>				
Disabled	9%	10%	-1%	0.02
ESRD	0%	0%	0%	0.00
Aged	91%	90%	1%	0.02
<b>Potential Risk Indicators for Preference Sensitive Surgeries Targeted by Program Name</b>				
Any targeted diagnosis	92%	92%	0%	0.01
Knee diagnosis	25%	25%	-1%	0.02
Hip diagnosis	23%	23%	0%	0.01
Back diagnosis	35%	34%	1%	0.01
Heart diagnosis	41%	41%	-1%	0.01
<b>Evaluation and Management (E&amp;M) Visits</b>				
E&M Visits: 0	9%	10%	-1%	0.04
E&M Visits: 1-5	36%	36%	0%	0.01
E&M Visits: 6-10	28%	28%	0%	0.01
E&M Visits: 11-15	14%	14%	1%	0.02

Characteristics	Intervention Group	Control Group	Percent Difference	Standardized Mean Difference <sup>a</sup>
E&M Visits: 16+	13%	12%	0%	0.01
<b>Resource Use per Beneficiary (Pre-Enrollment Year)</b>				
0 SNF Stays (Prior Year)	94%	93%	1%	0.03
1 SNF Stay (Prior Year)	3%	3%	0%	0.01
2+ SNF Stays (Prior Year)	3%	4%	0%	0.03
0 IP Stays (1Q Prior)	93%	93%	0%	0.01
1 IP Stay (Prior Year)	5%	6%	0%	0.01
2+ IP Stays (Prior Year)	2%	2%	0%	0.01
0 IP Stays (Prior Year)	80%	80%	0%	0.00
1 IP Stay (Prior Year)	13%	13%	0%	0.01
2+ IP Stays (Prior Year)	7%	7%	0%	0.01
<b>ER Visits (Pre-Enrollment Quarter)</b>				
ER Visits: 0	92%	91%	0%	0.01
ER Visits: 1	7%	7%	0%	0.01
ER Visits: 2+	1%	1%	0%	0.00
<b>Medical Cost per Beneficiary</b>				
Cost (4Q Prior)	\$1,927	\$2,047	-120	0.02
Cost (3Q Prior)	\$1,946	\$1,986	-40	0.01
Cost (2Q Prior)	\$2,134	\$2,172	-38	0.01
Cost (1Q Prior)	\$2,225	\$2,351	-125	0.02
IP Cost (Prior Year)	\$2,501	\$2,561	-61	0.01
IP Cost (1Q Prior)	\$742	\$773	-30	0.01
<b>Frailty Measures</b>				
Home Oxygen	4%	4%	0%	0.00
Urinary Catheter	1%	1%	0%	0.01
Wheelchair Use	0%	1%	0%	0.02
Walker Use	1%	1%	0%	0.01
Charlson Score	0.29	0.30	-0.01	0.01
Area Deprivation Index (ADI)	101.13	101.17	-0.04	0.00
<b>Healthcare Cost and Utilization Project (HCUP) Diagnosis Categories (Pre-Enrollment Year)</b>				
Acute cerebrovascular disease (IP)	1%	1%	0%	0.01
Acute cerebrovascular disease (IP, 30 days prior)	0%	0%	0%	0.00
AMI (IP)	1%	1%	0%	0.01
AMI (IP, 30 days prior)	0%	0%	0%	0.00
Cerebrovascular disease	15%	16%	-1%	0.02
Parkinson's disease and multiple sclerosis	2%	2%	0%	0.02
Asthma	22%	23%	0%	0.01
Coagulation and hemorrhagic disorders	5%	5%	0%	0.01

Characteristics	Intervention Group	Control Group	Percent Difference	Standardized Mean Difference <sup>a</sup>
Congestive heart failure (All Settings)	12%	13%	-1%	0.03
Congestive heart failure (IP)	1%	1%	0%	0.01
Coronary atherosclerosis	28%	28%	0%	0.01
Dementia	9%	11%	-2%	0.06
Diabetes mellitus without complication	34%	35%	-1%	0.02
Diabetes mellitus with complications	15%	16%	0%	0.01
Cardiac dysrhythmias, arrest and ventricular fibrillation	27%	28%	0%	0.01
Fluid and electrolyte disorders	15%	15%	-1%	0.02
Gastrointestinal hemorrhage (All Settings)	5%	5%	0%	0.00
Gastrointestinal hemorrhage (IP)	1%	1%	0%	0.01
Other heart disease	48%	48%	0%	0.01
Heart valve disorder	14%	14%	0%	0.01
Hepatitis	1%	1%	0%	0.01
Hypertension with complications	12%	12%	0%	0.01
Stomach, pancreas and lung cancer	2%	1%	0%	0.01
Peri- endo- and myocarditis	5%	5%	0%	0.00
Disorders of nervous system	10%	11%	-1%	0.03
Other cancers	16%	16%	0%	0.01
Paralysis	1%	1%	0%	0.01
Pneumonia	11%	11%	0%	0.01
Pneumonia (IP, 30 days prior)	0%	0%	0%	0.01
Pulmonary heart disease	4%	4%	0%	0.00
Renal failure	14%	15%	0%	0.01
Respiratory failure (IP)	0%	0%	0.00	0.00
Respiratory failure (IP, 30 days prior)	0%	0%	0%	0.00
Rheumatoid arthritis and related disease	3%	3%	0%	0.01
Septicemia	2%	2%	0%	0.01
Shock	0%	1%	0%	0.01
Tuberculosis	0%	0%	0%	0.00
<b>Procedures (Pre-Enrollment Year)</b>				
Bypass and PTCA (IP)	1%	1%	0%	0.00
Heart valve procedures (IP)	0%	0%	0%	0.00
Hemodialysis	1%	1%	0%	0.00
Peritoneal dialysis	1%	1%	0%	0.00
Procedures on vessels of head and neck (IP)	3%	3%	0%	0.01
Radiology and chemotherapy	3%	3%	0%	0.01
Respiratory intubation and mechanical ventilation	1%	1%	0%	0.00
Blood transfusion	3%	3%	0%	0.01



Characteristics	Intervention Group	Control Group	Percent Difference	Standardized Mean Difference <sup>a</sup>
Blood transfusion (IP)	2%	3%	0%	0.01
Transportation	0.17	0.20	-0.02	0.06
HCC Risk Score	1.33	1.38	-0.05	0.04
<b>Comorbidity Categories (Pre-Enrollment Quarter)</b>				
Depression	3%	3%	0%	0.02
AIDS HIV	0%	0%	0%	0.00
Alcohol Abuse	0%	0%	0%	0.01
Cardiac Arrhythmias	15%	16%	-1%	0.02
Congestive Heart Failure	7%	8%	-1%	0.03
Chronic Pulmonary Disease	13%	13%	0%	0.01
Coagulopathy	2%	2%	0%	0.02
Deficiency Anemia	4%	4%	0%	0.00
Diabetes Complicated	6%	7%	0%	0.00
Diabetes Uncomplicated	20%	20%	-1%	0.02
Dementia	3%	3%	-1%	0.05
Drug Abuse	0%	0%	0%	0.00
Fluid and Electrolyte Disorders	6%	6%	0%	0.01
Hypothyroidism	11%	12%	0%	0.01
Hypertension Complicated	4%	4%	0%	0.00
Hypertension Uncomplicated	46%	47%	-1%	0.02
Liver Disease	1%	1%	0%	0.00
Lymphoma	1%	1%	0%	0.00
Metastatic Cancer	1%	1%	0%	0.00
Myocardial Infarction	3%	3%	0%	0.00
Obesity	3%	3%	0%	0.01
Other Neurological Disorders	3%	4%	-1%	0.03
Paralysis	0%	1%	0%	0.01
Peptic Ulcer Disease Excluding Bleeding	1%	1%	0%	0.00
Peripheral Vascular Disorders	8%	9%	-1%	0.03
Psychosis	2%	2%	-1%	0.04
Pulmonary Circulation Disorders	1%	1%	0%	0.00
Renal Failure	7%	7%	0%	0.00
Rheumatoid Arthritis Collagen Vascular Disease	3%	3%	0%	0.01
Solid Tumor Without Metastasis	7%	7%	0%	0.01
Valvular Disease	5%	5%	0%	0.01
Weight Loss	2%	2%	0%	0.02

<sup>a</sup>Standardized mean difference is an effect size measure used in the above table to identify substantial differences between the intervention and control groups; a standardized mean difference of 0.1 or greater is treated as an indicator of a substantial difference between the two groups.

**Appendix Table B-2: Welvie Baseline Demographic and Health Characteristics, Ohio MA  
ITT Analysis Cohort**

Characteristics	Intervention Group	Control Group	Percent Difference	Standardized Mean Difference <sup>a</sup>
<i>Number of Beneficiaries</i>	97,380	94,915		
<b>Average Age (Years)</b>	74.83	74.92	-0.08	0.01
<b>Age under 65</b>	0%	0%	0%	0.01
<b>Gender</b>				
Male	43%	43%	0%	0.00
Female	57%	57%	0%	0.00
<b>Race</b>				
White	90%	90%	0%	0.01
Black	8%	8%	0%	0.01
Other	2%	2%	0%	0.00
<b>Dual Eligible</b>	7%	7%	0%	0.00
<b>Medicare Eligibility</b>				
Disabled	11%	12%	-1%	0.02
ESRD	0%	0%	0%	0.00
Aged	89%	88%	1%	0.02
<b>Potential Risk Indicators for Preference Sensitive Surgeries Targeted by Program Name</b>				
Any targeted diagnosis	83%	83%	0%	0.01
Knee diagnosis	17%	17%	0%	0.00
Hip diagnosis	15%	15%	0%	0.00
Back diagnosis	24%	24%	0%	0.00
Heart diagnosis	30%	30%	0%	0.00
<b>Evaluation and Management (E&amp;M) Visits</b>				
E&M Visits: 0	16%	16%	0%	0.01
E&M Visits: 1-5	52%	53%	-1%	0.02
E&M Visits: 6-10	22%	21%	0%	0.01
E&M Visits: 11-15	7%	7%	0%	0.01
E&M Visits: 16+	4%	3%	0%	0.00
<b>Resource Use per Beneficiary (Pre-Enrollment Year)</b>				
0 SNF Stays (Prior Year)	97%	96%	0%	0.01
1 SNF Stay (Prior Year)	2%	2%	0%	0.00
2+ SNF Stays (Prior Year)	1%	1%	0%	0.01
<i>IP Stay before study enrollment</i>				
0 IP Stays (1Q Prior)	95%	95%	0%	0.00
1 IP Stay (Prior Year)	4%	4%	0%	0.00
2+ IP Stays (Prior Year)	1%	1%	0%	0.00

Characteristics	Intervention Group	Control Group	Percent Difference	Standardized Mean Difference <sup>a</sup>
0 IP Stays (Prior Year)	88%	88%	0%	0.01
1 IP Stay (Prior Year)	8%	9%	0%	0.01
2+ IP Stays (Prior Year)	3%	4%	0%	0.01
<b>ER Visits (Pre-Enrollment Quarter)</b>				
ER Visits: 0	93%	93%	0%	0.01
ER Visits: 1	6%	6%	0%	0.01
ER Visits: 2+	1%	1%	0%	0.01
<b>Medical Cost per Beneficiary</b>				
Cost (4Q Prior)	\$222	\$217	5	0.00
Cost (3Q Prior)	\$1,105	\$1,143	-38	0.01
Cost (2Q Prior)	\$1,392	\$1,451	-59	0.01
Cost (1Q Prior)	\$1,478	\$1,509	-31	0.01
IP Cost (Prior Year)	\$1,382	\$1,431	-49	0.01
IP Cost (1Q Prior)	\$500	\$500	0	0.00
<b>Frailty Measures</b>				
Home Oxygen	3%	3%	0%	0.00
Urinary Catheter	0%	0%	0%	0.00
Wheelchair Use	0%	0%	0%	0.01
Walker Use	1%	0%	0%	0.01
Charlson Score	0.11	0.12	-0.01	0.01
Area Deprivation Index (ADI)	100.50	100.62	-0.13	0.01
<b>Healthcare Cost and Utilization Project (HCUP) Diagnosis Categories (Pre-Enrollment Year)</b>				
Acute cerebrovascular disease (IP)	0%	0%	0%	0.01
Acute cerebrovascular disease (IP, 30 days prior)	0%	0%	0%	0.00
AMI (IP)	0%	0%	0%	0.00
AMI (IP, 30 days prior)	0%	0%	0%	0.00
Cerebrovascular disease	10%	10%	0%	0.01
Parkinson's disease and multiple sclerosis	1%	1%	0%	0.00
Asthma	16%	16%	0%	0.00
Coagulation and hemorrhagic disorders	3%	3%	0%	0.01
Congestive heart failure (All Settings)	8%	8%	0%	0.00
Congestive heart failure (IP)	1%	1%	0%	0.00
Coronary atherosclerosis	19%	19%	0%	0.01
Dementia	5%	5%	0%	0.01
Diabetes mellitus without complication	28%	28%	0%	0.00
Diabetes mellitus with complications	12%	12%	0%	0.00
Cardiac dysrhythmias, arrest and ventricular fibrillation	19%	19%	0%	0.00
Fluid and electrolyte disorders	8%	8%	0%	0.00
Gastrointestinal hemorrhage (All Settings)	3%	3%	0%	0.01
Gastrointestinal hemorrhage (IP)	0%	0%	0%	0.01

Characteristics	Intervention Group	Control Group	Percent Difference	Standardized Mean Difference <sup>a</sup>
Other heart disease	35%	35%	0%	0.00
Heart valve disorders	9%	9%	0%	0.00
Hepatitis	0%	0%	0%	0.00
Hypertension with complications	7%	7%	0%	0.00
Stomach, pancreas and lung cancer	1%	1%	0%	0.00
Peri- endo- and myocarditis	3%	3%	0%	0.01
Disorders of nervous system	6%	6%	0%	0.01
Other cancers	10%	10%	0%	0.00
Paralysis	1%	1%	0%	0.01
Pneumonia	6%	6%	0%	0.00
Pneumonia (IP, 30 days prior)	0%	0%	0%	0.00
Pulmonary heart disease	2%	2%	0%	0.00
Renal failure	9%	9%	0%	0.00
Respiratory failure (IP)	0%	0%	0%	0.00
Respiratory failure (IP, 30 days prior)	0%	0%	0%	0.01
Rheumatoid arthritis and related disease	2%	2%	0%	0.00
Septicemia	1%	1%	0%	0.01
Shock	0%	0%	0%	0.00
Tuberculosis	0%	0%	0%	0.01
<b>Procedures (2Q Pre-Enrollment)</b>				
Bypass and PTCA (IP)	1%	1%	0%	0.00
Heart valve procedures (IP)	0%	0%	0%	0.01
Hemodialysis	0%	0%	0%	0.00
Peritoneal dialysis	0%	0%	0%	0.00
Procedures on vessels of head and neck (IP)	1%	1%	0%	0.00
Radiology and chemotherapy	2%	2%	0%	0.00
Respiratory intubation and mechanical ventilation	1%	1%	0%	0.00
Blood transfusion	2%	2%	0%	0.01
Blood transfusion (IP)	1%	1%	0%	0.01
Transportation	0.10	0.11	0.00	0.02
<b>HCC Risk Score</b>	1.14	1.16	-0.02	0.02
<b>Risk Adjustment Processing System (RAPS) V21 Hierarchical Condition Categories</b>				
HCC1 HIV/AIDS	0%	0%	0%	0.01
HCC2 SEPTICEMIA, SEPSIS, SYSTEMIC INFLAM RESPONSE SYNDROME/SHOCK	2%	2%	0%	0.00
HCC6 OPPORTUNISTIC INFECTIONS	0%	0%	0%	0.00
HCC8 METASTATIC CANCER AND ACUTE LEUKEMIA	1%	1%	0%	0.00

Characteristics	Intervention Group	Control Group	Percent Difference	Standardized Mean Difference <sup>a</sup>
HCC9 LUNG AND OTHER SEVERE CANCERS	1%	1%	0%	0.01
HCC10 LYMPHOMA AND OTHER CANCERS	1%	1%	0%	0.00
HCC11 COLORECTAL, BLADDER, AND OTHER CANCERS	2%	2%	0%	0.01
HCC12 BREAST, PROSTATE, AND OTHER CANCERS AND TUMORS	6%	6%	0%	0.00
HCC17 DIABETES WITH ACUTE COMPLICATIONS	0%	0%	0%	0.00
HCC18 DIABETES WITH CHRONIC COMPLICATIONS	10%	10%	0%	0.00
HCC19 DIABETES WITHOUT COMPLICATION	17%	17%	0%	0.00
HCC21 PROTEIN-CALORIE MALNUTRITION	2%	2%	0%	0.01
HCC22 MORBID OBESITY	3%	3%	0%	0.01
HCC23 OTHER SIGNIFICANT ENDOCRINE AND METABOLIC DISORDERS	3%	3%	0%	0.00
HCC27 END-STAGE LIVER DISEASE	0%	0%	0%	0.01
HCC28 CIRRHOSIS OF LIVER	0%	0%	0%	0.00
HCC29 CHRONIC HEPATITIS	0%	0%	0%	0.00
HCC33 INTESTINAL OBSTRUCTION/PERFORATION	1%	2%	0%	0.01
HCC34 CHRONIC PANCREATITIS	0%	0%	0%	0.00
HCC35 INFLAMMATORY BOWEL DISEASE	1%	1%	0%	0.01
HCC39 BONE/JOINT/MUSCLE INFECTIONS/NECROSIS	1%	1%	0%	0.00
HCC40 RHEUMATOID ARTHRITIS AND INFLAM CONNECTIVE TISSUE DISEASE	5%	5%	0%	0.01
HCC46 SEVERE HEMATOLOGICAL DISORDERS	0%	0%	0%	0.01
HCC47 DISORDERS OF IMMUNITY	1%	1%	0%	0.01
HCC48 COAGULATION DEFECTS & OTH SPECIFIED HEMATOLOGICAL DISORDRS	4%	4%	0%	0.01
HCC51 DEMENTIA WITH COMPLICATIONS	1%	1%	0%	0.01
HCC52 DEMENTIA WITHOUT COMPLICATION	5%	6%	0%	0.01
HCC54 DRUG/ALCOHOL PSYCHOSIS	0%	0%	0%	0.00
HCC55 DRUG/ALCOHOL DEPENDENCE	0%	1%	0%	0.00
HCC57 SCHIZOPHRENIA	0%	0%	0%	0.02
HCC58 MAJOR DEPRESSIVE, BIPOLAR, AND PARANOID DISORDERS	3%	3%	0%	0.00
HCC70 QUADRIPLÉGIA	0%	0%	0%	0.01
HCC71 PARAPLEGIA	0%	0%	0%	0.00
HCC72 SPINAL CORD DISORDERS/INJURIES	0%	0%	0%	0.01

Characteristics	Intervention Group	Control Group	Percent Difference	Standardized Mean Difference <sup>a</sup>
HCC73 AMYOTROPHIC LATERAL SCLEROSIS & OTH MOTOR NEURON DISEASE	0%	0%	0%	0.00
HCC74 CEREBRAL PALSY	0%	0%	0%	0.01
HCC75 POLYNEUROPATHY	6%	6%	0%	0.00
HCC76 MUSCULAR DYSTROPHY	0%	0%	0%	0.00
HCC77 MULTIPLE SCLEROSIS	0%	0%	0%	0.00
HCC78 PARKINSONS AND HUNTINGTONS DISEASES	1%	1%	0%	0.00
HCC79 SEIZURE DISORDERS AND CONVULSIONS <sup>+</sup>	2%	2%	0%	0.00
HCC80 COMA, BRAIN COMPRESSION/ANOXIC DAMAGE	0%	0%	0%	0.00
HCC82 RESPIRATOR DEPENDENCE/TRACHEOSTOMY STATUS	0%	0%	0%	0.00
HCC83 RESPIRATORY ARREST	0%	0%	0%	0.00
HCC84 CARDIO-RESPIRATORY FAILURE AND SHOCK	3%	3%	0%	0.00
HCC85 CONGESTIVE HEART FAILURE	12%	12%	0%	0.01
HCC86 ACUTE MYOCARDIAL INFARCTION	1%	1%	0%	0.00
HCC87 UNSTABLE ANGINA & OTH ACUTE ISCHEMIC HEART DISEASE	2%	2%	0%	0.00
HCC88 ANGINA PECTORIS	2%	2%	0%	0.00
HCC96 SPECIFIED HEART ARRHYTHMIAS	14%	14%	0%	0.00
HCC99 CEREBRAL HEMORRHAGE	0%	0%	0%	0.00
HCC100 ISCHEMIC OR UNSPECIFIED STROKE	3%	3%	0%	0.01
HCC103 HEMIPLEGIA/HEMIPARESIS	1%	1%	0%	0.00
HCC104 MONOPLÉGIA, OTHER PARALYTIC SYNDROMES	0%	0%	0%	0.00
HCC106 ATHEROSCLEROSIS OF EXTREMITIES W/ULCERATION OR GANGRENE	0%	0%	0%	0.01
HCC107 VASCULAR DISEASE WITH COMPLICATIONS	2%	2%	0%	0.00
HCC108 VASCULAR DISEASE	13%	13%	0%	0.01
HCC110 CYSTIC FIBROSIS	0%	0%	0%	0.00
HCC111 CHRONIC OBSTRUCTIVE PULMONARY DISEASE	15%	15%	0%	0.00
HCC112 FIBROSIS OF LUNG AND OTHER CHRONIC LUNG DISORDERS	1%	1%	0%	0.00
HCC114 ASPIRATION AND SPECIFIED BACTERIAL PNEUMONIAS	1%	1%	0%	0.01
HCC115 PNEUMOCOCCAL PNEUMONIA, EMPYEMA, LUNG ABSCESS	0%	0%	0%	0.01

Characteristics	Intervention Group	Control Group	Percent Difference	Standardized Mean Difference <sup>a</sup>
HCC122 PROLIFERATIVE DIABTIC RETINOPATHY & VITREOUS HEMORR	1%	1%	0%	0.00
HCC124 EXUDATIVE MACULAR DEGENERATION	2%	2%	0%	0.01
HCC134 DIALYSIS STATUS	0%	0%	0%	0.01
HCC135 ACUTE RENAL FAILURE	4%	4%	0%	0.00
HCC136 CHRONIC KIDNEY DISEASE, STAGE 5	0%	0%	0%	0.01
HCC137 CHRONIC KIDNEY DISEASE, SEVERE (STAGE 4)	1%	1%	0%	0.00
HCC138 CHRONIC KIDNEY DISEASE, MODERATE (STAGE 3)	3%	3%	0%	0.00
HCC139 CHRONIC KIDNEY DIS, MILD OR UNSPEC (STG 1-2 OR UNSPEC)	3%	3%	0%	0.00
HCC140 UNSPECIFIED RENAL FAILURE	0%	0%	0%	0.00
HCC141 NEPHRITIS	0%	0%	0%	0.00
HCC157 PRESS ULCER OF SKN W/NECROSIS THR TO MUSCLE,TENDON, BONE	0%	0%	0%	0.01
HCC158 PRESSURE ULCER OF SKIN WITH FULL THICKNESS SKIN LOSS	0%	0%	0%	0.01
HCC159 PRESSURE ULCER OF SKIN WITH PARTIAL THICKNESS SKIN LOSS	0%	0%	0%	0.01
HCC160 PRESSURE PRE-ULCER SKIN CHANGES OR UNSPECIFIED STAGE	1%	1%	0%	0.00
HCC161 CHRONIC ULCER OF SKIN, EXCEPT PRESSURE	2%	2%	0%	0.00
HCC162 SEVERE SKIN BURN OR CONDITION	0%	0%	0%	0.00
HCC166 SEVERE HEAD INJURY	0%	0%	0%	0.01
HCC167 MAJOR HEAD INJURY	0%	0%	0%	0.00
HCC169 VERTEBRAL FRACTURES WITHOUT SPINAL CORD INJURY	1%	1%	0%	0.01
HCC170 HIP FRACTURE/DISLOCATION	1%	1%	0%	0.00
HCC173 TRAUMATIC AMPUTATIONS AND COMPLICATIONS	0%	0%	0%	0.00
HCC176 COMPLICATIONS OF SPECIFIED IMPLANTED DEVICE OR GRAFT	1%	1%	0%	0.01
HCC186 MAJOR ORGAN TRANSPLANT OR REPLACEMENT STATUS	0%	0%	0%	0.00
HCC188 ARTIFICIAL OPENINGS FOR FEEDING OR ELIMINATION	1%	1%	0%	0.01
HCC189 AMPUTATION STATUS, LOWER LIMB/AMPUTATION COMPLICATIONS	0%	0%	0%	0.00
<b>Comorbidity Categories (Pre-Enrollment Quarter)</b>				
Depression	1%	1%	0%	0.00

Characteristics	Intervention Group	Control Group	Percent Difference	Standardized Mean Difference <sup>a</sup>
AIDS HIV	0%	0%	0%	0.00
Alcohol Abuse	0%	0%	0%	0.00
Cardiac Arrhythmias	11%	11%	0%	0.00
Congestive heart failure	5%	5%	0%	0.00
Chronic pulmonary disease	10%	10%	0%	0.00
Coagulopathy	1%	1%	0%	0.00
Deficiency Anemia	3%	3%	0%	0.01
Diabetes complicated	5%	5%	0%	0.00
Diabetes uncomplicated	18%	18%	0%	0.01
Dementia	1%	1%	0%	0.01
Drug Abuse	0%	0%	0%	0.01
Fluid and Electrolyte Disorders	3%	3%	0%	0.00
Hypothyroidism	9%	9%	0%	0.01
Hypertension complicated	2%	2%	0%	0.00
Hypertension uncomplicated	40%	40%	0%	0.01
Liver Disease	1%	1%	0%	0.01
Lymphoma	0%	1%	0%	0.01
Metastatic Cancer	1%	1%	0%	0.00
Myocardial infraction	1%	1%	0%	0.01
Obesity	2%	2%	0%	0.00
Other neurological disorders	2%	2%	0%	0.01
Paralysis	0%	0%	0%	0.01
Peptic Ulcer Disease excluding bleeding	0%	0%	0%	0.01
Peripheral vascular disorders	5%	5%	0%	0.01
Psychosis	1%	1%	0%	0.01
Pulmonary Circulation Disorders	1%	1%	0%	0.01
Renal Failure	5%	5%	0%	0.00
Rheumatoid arthritis collagen vascular disease	2%	2%	0%	0.00
Solid Tumor without metastasis	5%	5%	0%	0.00
Valvular Disease	4%	4%	0%	0.01
Weight loss	2%	2%	0%	0.00

<sup>a</sup>Standardized mean difference is an effect size measure used in the above table to identify substantial differences between the intervention and control groups; a standardized mean difference of 0.1 or greater is treated as an indicator of a substantial difference between the two groups.

**Appendix Table B-3: Welvie Baseline Demographic and Health Characteristics, Texas MA ITT Analysis Cohort**

Characteristics	Intervention Group	Control Group	Percent Difference	Standardized Mean Difference <sup>a</sup>
<i>Number of Beneficiaries</i>	63,979	63,759		



Characteristics	Intervention Group	Control Group	Percent Difference	Standardized Mean Difference <sup>a</sup>
<b>Average Age (Years)</b>	70.01	70.02	-0.01	0.00
<b>Age under 65</b>	19%	19%	0%	0.00
<b>Gender</b>				
Male	47%	46%	1%	0.01
Female	53%	54%	-1%	0.01
<b>Race</b>				
White	83%	83%	0%	0.00
Black	11%	11%	0%	0.00
Other	6%	6%	0%	0.00
<b>Dual Eligible</b>	8%	7%	0%	0.00
<b>Medicare Eligibility</b>				
Disabled	30%	30%	0%	0.00
ESRD	0%	0%	0%	0.01
Aged	70%	70%	0%	0.00
<b>Potential Risk Indicators for Preference Sensitive Surgeries Targeted by Program Name</b>				
Any targeted diagnosis	87%	87%	0%	0.00
Knee diagnosis	17%	17%	0%	0.00
Hip diagnosis	16%	16%	0%	0.01
Back diagnosis	31%	30%	0%	0.00
Heart diagnosis	30%	30%	0%	0.01
<b>Evaluation and Management (E&amp;M) Visits</b>				
E&M Visits: 0	11%	11%	0%	0.00
E&M Visits: 1-5	45%	45%	0%	0.00
E&M Visits: 6-10	25%	25%	0%	0.00
E&M Visits: 11-15	11%	11%	0%	0.01
E&M Visits: 16+	7%	8%	0%	0.00
<b>Resource Use per Beneficiary (Pre-Enrollment Year)</b>				
0 SNF Stays (Prior Year)	98%	98%	0%	0.00
1 SNF Stay (Prior Year)	2%	2%	0%	0.00
2+ SNF Stays (Prior Year)	1%	1%	0%	0.01
<i>IP Stay before study enrollment</i>				
0 IP Stays (1Q Prior)	95%	95%	0%	0.01
1 IP Stay (Prior Year)	4%	4%	0%	0.01
2+ IP Stays (Prior Year)	1%	1%	0%	0.01
0 IP Stays (Prior Year)	86%	86%	0%	0.00
1 IP Stay (Prior Year)	10%	9%	0%	0.00
2+ IP Stays (Prior Year)	4%	4%	0%	0.01
<b>ER Visits (Pre-Enrollment Quarter)</b>				
ER Visits: 0	92%	92%	0%	0.01

Characteristics	Intervention Group	Control Group	Percent Difference	Standardized Mean Difference <sup>a</sup>
ER Visits: 1	7%	7%	0%	0.00
ER Visits: 2+	1%	2%	0%	0.01
<b>Medical Cost per Beneficiary</b>				
Cost (4Q Prior)	\$1,261	\$1,296	-35	0.01
Cost (3Q Prior)	\$1,311	\$1,358	-47	0.01
Cost (2Q Prior)	\$1,362	\$1,343	19	0.00
Cost (1Q Prior)	\$1,637	\$1,662	-25	0.00
IP Cost (Prior Year)	\$1,786	\$1,855	-69	0.01
IP Cost (1Q Prior)	\$540	\$564	-24	0.01
<b>Frailty Measures</b>				
Home Oxygen	0%	0%	0%	0.01
Urinary Catheter	0%	0%	0%	0.00
Wheelchair Use	0%	0%	0%	0.00
Walker Use	0%	0%	0%	0.01
Charlson Score	0.09	0.09	0.00	0.01
Area Deprivation Index (ADI)	103.36	103.45	-0.09	0.01
<b>Healthcare Cost and Utilization Project (HCUP) Diagnosis Categories (Pre-Enrollment Year)</b>				
Acute cerebrovascular disease (IP)	1%	0%	0%	0.01
Acute cerebrovascular disease (IP, 30 days prior)	0%	0%	0%	0.00
AMI (IP)	1%	1%	0%	0.00
AMI (IP, 30 days prior)	0%	0%	0%	0.01
Cerebrovascular disease	11%	11%	0%	0.00
Parkinson's disease and multiple sclerosis	1%	1%	0%	0.01
Asthma	17%	18%	0%	0.01
Coagulation and hemorrhagic disorders	2%	2%	0%	0.01
Congestive heart failure (All Settings)	8%	8%	0%	0.00
Congestive heart failure (IP)	1%	1%	0%	0.00
Coronary atherosclerosis	19%	19%	0%	0.00
Dementia	4%	4%	0%	0.01
Diabetes mellitus without complication	32%	32%	0%	0.00
Diabetes mellitus with complications	16%	16%	0%	0.00
Cardiac dysrhythmias, arrest and ventricular fibrillation	18%	18%	0%	0.00
Fluid and electrolyte disorders	9%	9%	0%	0.00
Gastrointestinal hemorrhage (All Settings)	3%	3%	0%	0.00
Gastrointestinal hemorrhage (IP)	0%	0%	0%	0.00
Other heart disease	37%	36%	0%	0.00
Heart valve disorders	8%	8%	0%	0.00
Hepatitis	1%	1%	0%	0.00
Hypertension with complications	12%	12%	0%	0.00

Characteristics	Intervention Group	Control Group	Percent Difference	Standardized Mean Difference <sup>a</sup>
Stomach, pancreas and lung cancer	1%	1%	0%	0.01
Peri- endo- and myocarditis	3%	3%	0%	0.01
Disorders of nervous system	9%	9%	0%	0.00
Other cancers	9%	9%	0%	0.01
Paralysis	1%	1%	0%	0.00
Pneumonia	7%	7%	0%	0.01
Pneumonia (IP, 30 days prior)	0%	0%	0%	0.00
Pulmonary heart disease	2%	2%	0%	0.00
Renal failure	10%	10%	0%	0.00
Respiratory failure (IP)	0%	0%	0%	0.01
Respiratory failure (IP, 30 days prior)	0%	0%	0%	0.01
Rheumatoid arthritis and related disease	3%	3%	0%	0.01
Septicemia	1%	1%	0%	0.01
Shock	0%	0%	0%	0.01
Tuberculosis	0%	0%	0%	0.01
<b>Procedures (Pre-Enrollment Year)</b>				
Bypass and PTCA (IP)	1%	1%	0%	0.00
Heart valve procedures (IP)	0%	0%	0%	0.01
Hemodialysis	0%	0%	0%	0.00
Peritoneal dialysis	0%	0%	0%	0.00
Procedures on vessels of head and neck (IP)	2%	2%	0%	0.01
Radiology and chemotherapy	2%	2%	0%	0.00
Respiratory intubation and mechanical ventilation	1%	1%	0%	0.01
Blood transfusion	2%	2%	0%	0.01
Blood transfusion (IP)	1%	2%	0%	0.01
Transportation	0.10	0.10	0.00	0.00
HCC Risk Score	0.89	0.90	0.00	0.01
<b>Risk Adjustment Processing System (RAPS) V21 Hierarchical Condition Categories</b>				
HCC1 HIV/AIDS	0%	0%	0%	0.00
HCC2 SEPTICEMIA, SEPSIS, SYSTEMIC INFLAM RESPONSE SYNDROME/SHOCK	1%	1%	0%	0.00
HCC6 OPPORTUNISTIC INFECTIONS	0%	0%	0%	0.01
HCC8 METASTATIC CANCER AND ACUTE LEUKEMIA	0%	0%	0%	0.00
HCC9 LUNG AND OTHER SEVERE CANCERS	0%	1%	0%	0.01
HCC10 LYMPHOMA AND OTHER CANCERS	1%	1%	0%	0.01
HCC11 COLORECTAL, BLADDER, AND OTHER CANCERS	1%	1%	0%	0.00

Characteristics	Intervention Group	Control Group	Percent Difference	Standardized Mean Difference <sup>a</sup>
HCC12 BREAST, PROSTATE, AND OTHER CANCERS AND TUMORS	4%	4%	0%	0.00
HCC17 DIABETES WITH ACUTE COMPLICATIONS	0%	0%	0%	0.00
HCC18 DIABETES WITH CHRONIC COMPLICATIONS	10%	10%	0%	0.00
HCC19 DIABETES WITHOUT COMPLICATION	16%	16%	0%	0.01
HCC21 PROTEIN-CALORIE MALNUTRITION	1%	1%	0%	0.01
HCC22 MORBID OBESITY	4%	4%	0%	0.00
HCC23 OTHER SIGNIFICANT ENDOCRINE AND METABOLIC DISORDERS	2%	2%	0%	0.00
HCC27 END-STAGE LIVER DISEASE	0%	0%	0%	0.00
HCC28 CIRRHOSIS OF LIVER	0%	0%	0%	0.00
HCC29 CHRONIC HEPATITIS	0%	0%	0%	0.01
HCC33 INTESTINAL OBSTRUCTION/PERFORATION	1%	1%	0%	0.01
HCC34 CHRONIC PANCREATITIS	0%	0%	0%	0.00
HCC35 INFLAMMATORY BOWEL DISEASE	1%	1%	0%	0.00
HCC39 BONE/JOINT/MUSCLE INFECTIONS/NECROSIS	1%	1%	0%	0.00
HCC40 RHEUMATOID ARTHRITIS AND INFLAM CONNECTIVE TISSUE DISEASE	5%	5%	0%	0.01
HCC46 SEVERE HEMATOLOGICAL DISORDERS	0%	0%	0%	0.00
HCC47 DISORDERS OF IMMUNITY	1%	1%	0%	0.00
HCC48 COAGULATION DEFECTS & OTH SPECIFIED HEMATOLOGICAL DISORDRS	2%	2%	0%	0.00
HCC51 DEMENTIA WITH COMPLICATIONS	0%	0%	0%	0.00
HCC52 DEMENTIA WITHOUT COMPLICATION	3%	3%	0%	0.01
HCC54 DRUG/ALCOHOL PSYCHOSIS	0%	0%	0%	0.01
HCC55 DRUG/ALCOHOL DEPENDENCE	1%	1%	0%	0.01
HCC57 SCHIZOPHRENIA	1%	1%	0%	0.00
HCC58 MAJOR DEPRESSIVE, BIPOLAR, AND PARANOID DISORDERS	5%	5%	0%	0.00
HCC70 QUADRIPLÉGIA	0%	0%	0%	0.00
HCC71 PARAPLEGIA	0%	0%	0%	0.00
HCC72 SPINAL CORD DISORDERS/INJURIES	0%	0%	0%	0.00
HCC73 AMYOTROPHIC LATERAL SCLEROSIS & OTH MOTOR NEURON DISEASE	0%	0%	0%	0.00
HCC74 CEREBRAL PALSY	0%	0%	0%	0.01
HCC75 POLYNEUROPATHY	8%	8%	0%	0.00

Characteristics	Intervention Group	Control Group	Percent Difference	Standardized Mean Difference <sup>a</sup>
HCC76 MUSCULAR DYSTROPHY	0%	0%	0%	0.01
HCC77 MULTIPLE SCLEROSIS	0%	1%	0%	0.01
HCC78 PARKINSONS AND HUNTINGTONS DISEASES	1%	1%	0%	0.01
HCC79 SEIZURE DISORDERS AND CONVULSIONS <sup>+</sup>	2%	2%	0%	0.01
HCC80 COMA, BRAIN COMPRESSION/ANOXIC DAMAGE	0%	0%	0%	0.00
HCC82 RESPIRATOR DEPENDENCE/TRACHEOSTOMY STATUS	0%	0%	0%	0.00
HCC83 RESPIRATORY ARREST	0%	0%	0%	0.01
HCC84 CARDIO-RESPIRATORY FAILURE AND SHOCK	2%	2%	0%	0.00
HCC85 CONGESTIVE HEART FAILURE	9%	9%	0%	0.00
HCC86 ACUTE MYOCARDIAL INFARCTION	1%	1%	0%	0.00
HCC87 UNSTABLE ANGINA & OTH ACUTE ISCHEMIC HEART DISEASE	2%	2%	0%	0.01
HCC88 ANGINA PECTORIS	3%	3%	0%	0.00
HCC96 SPECIFIED HEART ARRHYTHMIAS	9%	9%	0%	0.00
HCC99 CEREBRAL HEMORRHAGE	0%	0%	0%	0.00
HCC100 ISCHEMIC OR UNSPECIFIED STROKE	3%	3%	0%	0.00
HCC103 HEMIPLEGIA/HEMIPARESIS	1%	1%	0%	0.00
HCC104 MONOPLÉGIA, OTHER PARALYTIC SYNDROMES	0%	0%	0%	0.00
HCC106 ATHEROSCLEROSIS OF EXTREMITIES W/ULCERATION OR GANGRENE	0%	0%	0%	0.00
HCC107 VASCULAR DISEASE WITH COMPLICATIONS	1%	1%	0%	0.01
HCC108 VASCULAR DISEASE	10%	10%	0%	0.00
HCC110 CYSTIC FIBROSIS	0%	0%	0%	0.00
HCC111 CHRONIC OBSTRUCTIVE PULMONARY DISEASE	12%	12%	0%	0.01
HCC112 FIBROSIS OF LUNG AND OTHER CHRONIC LUNG DISORDERS	1%	1%	0%	0.00
HCC114 ASPIRATION AND SPECIFIED BACTERIAL PNEUMONIAS	0%	0%	0%	0.00
HCC115 PNEUMOCOCCAL PNEUMONIA, EMPYEMA, LUNG ABSCESS	0%	0%	0%	0.01
HCC122 PROLIFERATIVE DIABTIC RETINOPATHY & VITREOUS HEMORR	1%	1%	0%	0.01
HCC124 EXUDATIVE MACULAR DEGENERATION	1%	1%	0%	0.01
HCC134 DIALYSIS STATUS	0%	0%	0%	0.00

Characteristics	Intervention Group	Control Group	Percent Difference	Standardized Mean Difference <sup>a</sup>
HCC135 ACUTE RENAL FAILURE	2%	2%	0%	0.01
HCC136 CHRONIC KIDNEY DISEASE, STAGE 5	0%	0%	0%	0.00
HCC137 CHRONIC KIDNEY DISEASE, SEVERE (STAGE 4)	0%	0%	0%	0.01
HCC138 CHRONIC KIDNEY DISEASE, MODERATE (STAGE 3)	3%	2%	0%	0.00
HCC139 CHRONIC KIDNEY DIS, MILD OR UNSPEC (STG 1-2 OR UNSPEC)	3%	3%	0%	0.01
HCC140 UNSPECIFIED RENAL FAILURE	0%	0%	0%	0.00
HCC141 NEPHRITIS	0%	0%	0%	0.00
HCC157 PRESS ULCER OF SKN W/NECROSIS THR TO MUSCLE,TENDON, BONE	0%	0%	0%	0.00
HCC158 PRESSURE ULCER OF SKIN WITH FULL THICKNESS SKIN LOSS	0%	0%	0%	0.00
HCC159 PRESSURE ULCER OF SKIN WITH PARTIAL THICKNESS SKIN LOSS	0%	0%	0%	0.01
HCC160 PRESSURE PRE-ULCER SKIN CHANGES OR UNSPECIFIED STAGE	0%	0%	0%	0.00
HCC161 CHRONIC ULCER OF SKIN, EXCEPT PRESSURE	1%	1%	0%	0.00
HCC162 SEVERE SKIN BURN OR CONDITION	0%	0%	0%	0.00
HCC166 SEVERE HEAD INJURY	0%	0%	0%	0.00
HCC167 MAJOR HEAD INJURY	0%	0%	0%	0.01
HCC169 VERTEBRAL FRACTURES WITHOUT SPINAL CORD INJURY	1%	1%	0%	0.00
HCC170 HIP FRACTURE/DISLOCATION	1%	1%	0%	0.01
HCC173 TRAUMATIC AMPUTATIONS AND COMPLICATIONS	0%	0%	0%	0.00
HCC176 COMPLICATIONS OF SPECIFIED IMPLANTED DEVICE OR GRAFT	1%	1%	0%	0.00
HCC186 MAJOR ORGAN TRANSPLANT OR REPLACEMENT STATUS	0%	0%	0%	0.00
HCC188 ARTIFICIAL OPENINGS FOR FEEDING OR ELIMINATION	0%	0%	0%	0.00
HCC189 AMPUTATION STATUS, LOWER LIMB/AMPUTATION COMPLICATIONS	0%	0%	0%	0.01
<b>Comorbidity Categories (Pre-Enrollment Quarter)</b>				
Depression	3%	3%	0%	0.00
AIDS HIV	0%	0%	0%	0.00
Alcohol Abuse	0%	0%	0%	0.00
Cardiac Arrhythmias	9%	9%	0%	0.00
Congestive heart failure	5%	5%	0%	0.01

Characteristics	Intervention Group	Control Group	Percent Difference	Standardized Mean Difference <sup>a</sup>
Chronic pulmonary disease	9%	9%	0%	0.01
Coagulopathy	1%	1%	0%	0.00
Deficiency Anemia	3%	3%	0%	0.00
Diabetes complicated	6%	6%	0%	0.00
Diabetes uncomplicated	20%	19%	0%	0.01
Dementia	1%	1%	0%	0.01
Drug Abuse	1%	1%	0%	0.01
Fluid and Electrolyte Disorders	3%	3%	0%	0.00
Hypothyroidism	9%	10%	0%	0.00
Hypertension complicated	4%	4%	0%	0.00
Hypertension uncomplicated	40%	40%	0%	0.01
Liver Disease	2%	2%	0%	0.00
Lymphoma	0%	0%	0%	0.00
Metastatic Cancer	1%	1%	0%	0.00
Myocardial infraction	1%	1%	0%	0.01
Obesity	3%	3%	0%	0.00
Other neurological disorders	3%	3%	0%	0.01
Paralysis	0%	0%	0%	0.01
Peptic Ulcer Disease excluding bleeding	0%	0%	0%	0.01
Peripheral vascular disorders	4%	4%	0%	0.00
Psychosis	1%	1%	0%	0.00
Pulmonary Circulation Disorders	0%	0%	0%	0.00
Renal Failure	5%	5%	0%	0.00
Rheumatoid arthritis collagen vascular disease	3%	3%	0%	0.01
Solid Tumor without metastasis	4%	4%	0%	0.00
Valvular Disease	3%	3%	0%	0.00
Weight loss	1%	1%	0%	0.01

<sup>a</sup>Standardized mean difference is an effect size measure used in the above table to identify substantial differences between the intervention and control groups; a standardized mean difference of 0.1 or greater is treated as an indicator of a substantial difference between the two groups.

**Appendix Table B-4: Welvie Baseline Demographic and Health Characteristics, IV Analysis Cohorts**

Characteristics	Ohio FFS	Ohio MA	Texas MA
<i>Number of Beneficiaries</i>	1,167	4,294	2,439
<i>Average Age (Years)</i>	73.43	72.55	66.28
<i>Age under 65</i>	0%	1%	32%
<b>Gender</b>			
Male	48%	47%	44%

Characteristics	Ohio FFS	Ohio MA	Texas MA
Female	52%	53%	56%
<b>Race</b>			
White	93%	91%	83%
Black	5%	6%	13%
Other	2%	3%	5%
<b>Dual Eligible</b>	7%	7%	10%
<b>Medicare Eligibility</b>			
Disabled	11%	11%	42%
ESRD	0%	0%	0%
Aged	88%	89%	58%
<b>Potential Risk Indicators for Preference Sensitive Surgeries Targeted by Program Name</b>			
Any targeted diagnosis	96%	89%	91%
Knee diagnosis	30%	20%	22%
Hip diagnosis	25%	18%	21%
Back diagnosis	41%	32%	39%
Heart diagnosis	41%	31%	28%
<b>Evaluation and Management (E&amp;M) Visits</b>			
E&M Visits: 0	5%	9%	9%
E&M Visits: 1-5	33%	45%	39%
E&M Visits: 6-10	30%	27%	29%
E&M Visits: 11-15	17%	11%	13%
E&M Visits: 16+	16%	7%	11%
<b>Resource Use per Beneficiary (Pre-Enrollment Year)</b>			
0 SNF Stays (Prior Year)	96%	98%	98%
1 SNF Stay (Prior Year)	2%	2%	1%
2+ SNF Stays (Prior Year)	2%	1%	0%
0 IP Stays (1Q Prior)	95%	96%	97%
1 IP Stay (Prior Year)	4%	3%	2%
2+ IP Stays (Prior Year)	1%	1%	1%
0 IP Stays (Prior Year)	85%	89%	87%
1 IP Stay (Prior Year)	11%	8%	10%
2+ IP Stays (Prior Year)	5%	3%	4%
<b>ER Visits (Pre-Enrollment Quarter)</b>			
ER Visits: 0	93%	94%	92%
ER Visits: 1	5%	5%	6%
ER Visits: 2+	1%	1%	2%
<b>Medical Cost per Beneficiary</b>			



Characteristics	Ohio FFS	Ohio MA	Texas MA
Cost (4Q Prior)	\$1,780	\$1,001	\$1,389
Cost (3Q Prior)	\$1,965	\$1,175	\$1,390
Cost (2Q Prior)	\$1,717	\$1,151	\$1,499
Cost (1Q Prior)	\$1,686	\$1,176	\$1,496
IP Cost (Prior Year)	\$1,962	\$1,287	\$1,577
IP Cost (1Q Prior)	\$437	\$329	\$375
<b>Frailty Measures</b>			
Home Oxygen	3%	2%	0%
Urinary Catheter	0%	0%	0%
Wheelchair Use	0%	0%	0%
Walker Use	1%	0%	0%
Charlson Score	0.15	0.169	1.88
Area Deprivation Index (ADI)	100.26		
<b>Healthcare Cost and Utilization Project (HCUP) Diagnosis Categories (Pre-Enrollment Year)</b>			
Acute cerebrovascular disease (IP)	1%	0%	0%
Acute cerebrovascular disease (IP, 30 days prior)	0%	0%	0%
AMI (IP)	0%	0%	0%
AMI (IP, 30 days prior)	0%	0%	0%
Cerebrovascular disease	13%	10%	10%
Parkinson's disease and multiple sclerosis	1%	1%	2%
Asthma	23%	18%	18%
Coagulation and hemorrhagic disorders	5%	3%	2%
Congestive heart failure (All Settings)	7%	6%	7%
Congestive heart failure (IP)	1%	0%	0%
Coronary atherosclerosis	28%	21%	17%
Dementia	4%	2%	2%
Diabetes mellitus without complication	32%	31%	32%
Diabetes mellitus with complications	14%	12%	16%
Cardiac dysrhythmias, arrest and ventricular fibrillation	26%	22%	19%
Fluid and electrolyte disorders	11%	8%	9%
Gastrointestinal hemorrhage (All Settings)	5%	3%	4%
Gastrointestinal hemorrhage (IP)	0%	0%	0%
Other heart disease	47%	40%	38%
Heart valve disorder	14%	10%	9%
Hepatitis	0%	1%	2%
Hypertension with complications	11%	7%	10%
Stomach, pancreas and lung cancer	1%	1%	1%
Peri- endo- and myocarditis	4%	3%	3%

Characteristics	Ohio FFS	Ohio MA	Texas MA
Disorders of nervous system	9%	6%	11%
Other cancers	17%	13%	10%
Paralysis	1%	1%	1%
Pneumonia	7%	6%	7%
Pneumonia (IP, 30 days prior)	0%	0%	0%
Pulmonary heart disease	4%	2%	2%
Renal failure	13%	9%	9%
Respiratory failure (IP)	0%	0%	0%
Respiratory failure (IP, 30 days prior)	0%	0%	0%
Rheumatoid arthritis and related disease	4%	2%	5%
Septicemia	1%	1%	1%
Shock	1%	0%	0%
Tuberculosis	0%	0%	0%
<b>Procedures (Pre-Enrollment Year)</b>			
Bypass and PTCA (IP)	0%	9%	6%
Heart valve procedures (IP)	0%	3%	3%
Hemodialysis	1%	0%	0%
Peritoneal dialysis	1%	0%	0%
Procedures on vessels of head and neck (IP)	2%	16%	16%
Radiology and chemotherapy	3%	2%	1%
Respiratory intubation and mechanical ventilation	1%	1%	1%
Blood transfusion	2%	1%	2%
Blood transfusion (IP)	2%	12%	15%
Transportation	0.11	0.10	0.09
HCC Risk Score	1.15		
<b>Comorbidity Categories (Pre-Enrollment Quarter)</b>			
Depression	3%	1%	4%
AIDS HIV	0%	0%	0%
Alcohol Abuse	0%	0%	0%
Cardiac Arrhythmias	14%	10%	8%
Congestive Heart Failure	6%	4%	4%
Chronic Pulmonary Disease	12%	9%	10%
Coagulopathy	1%	1%	1%
Deficiency Anemia	4%	2%	3%
Diabetes Complicated	8%	4%	5%
Diabetes Uncomplicated	20%	16%	19%
Dementia	1%	0%	0%
Drug Abuse	0%	0%	1%

Characteristics	Ohio FFS	Ohio MA	Texas MA
Fluid and Electrolyte Disorders	5%	3%	2%
Hypothyroidism	11%	9%	11%
Hypertension Complicated	4%	2%	3%
Hypertension Uncomplicated	45%	40%	36%
Liver Disease	1%	1%	2%
Lymphoma	1%	1%	0%
Metastatic Cancer	1%	0%	0%
Myocardial Infarction	2%	1%	0%
Obesity	4%	3%	4%
Other Neurological Disorders	2%	1%	3%
Paralysis	0%	0%	0%
Peptic Ulcer Disease Excluding Bleeding	1%	0%	0%
Peripheral Vascular Disorders	8%	4%	4%
Psychosis	1%	0%	1%
Pulmonary Circulation Disorders	1%	1%	1%
Renal Failure	6%	4%	4%
Rheumatoid Arthritis Collagen Vascular Disease	4%	3%	5%
Solid Tumor Without Metastasis	7%	5%	5%
Valvular Disease	5%	4%	3%
Weight Loss	1%	1%	1%

## B.2 Mortality and Readmissions

**Appendix Table B-5: Cumulative and Yearly Mortality and Readmissions per 1,000 Beneficiaries, Differences after Welvie Enrollment, Ohio FFS ITT Analysis Cohort**

Measures	Full Intervention Period <sup>a</sup>	Total Year 1 <sup>b</sup>	Total Year 2
Number of Participants	59,894	59,894	56,355
<b>Mortality</b>			
<i>Difference<sup>c</sup></i>	-20.58***	-10.00***	-6.40***
<i>90% Confidence Interval</i>	(-24.9   -16.2)	(-12.6   -7.4)	(-9.1   -3.7)
<i>P-Value</i>	<0.001	<0.001	<0.001
<b>30-Day Hospital Readmissions Following:</b>			
All Inpatient Admissions			
<i>Difference</i>	-26.53	-23.83	-3.71
<i>90% Confidence Interval</i>	(-76.9   23.9)	(-53.6   5.9)	(-34.2   26.8)
<i>P-Value</i>	0.387	0.188	0.841
Inpatient Surgery Admissions			
<i>Difference</i>	-80.81	-103.13***	8.19
<i>90% Confidence Interval</i>	(-172.0   10.4)	(-156.6   -49.6)	(-47.2   63.6)
<i>P-Value</i>	0.145	0.002	0.808
Inpatient PS <sup>d</sup> Orthopedic Surgery Admissions			
<i>Difference</i>	21.70	-51.59	12.18
<i>90% Confidence Interval</i>	(-109.3   152.7)	(-128.5   25.3)	(-66.0   90.4)
<i>P-Value</i>	0.785	0.270	0.798
Inpatient PS Cardiac Surgery Admissions			
<i>Difference</i>	-20.09	-72.70	23.84
<i>90% Confidence Interval</i>	(-283.0   242.8)	(-222.3   76.9)	(-143.8   191.5)
<i>P-Value</i>	0.900	0.424	0.815
<b>30-Day Hospital Unplanned Readmissions Following All Inpatient Admission</b>			
<i>Difference</i>	-17.89	-22.28	1.41
<i>90% Confidence Interval</i>	(-67.3   31.5)	(-51.5   6.9)	(-28.4   31.3)
<i>P-Value</i>	0.552	0.210	0.938

\*\*\* Statistically significant at the one percent level.

<sup>a</sup>Results are cumulative across all available quarters.

<sup>b</sup>Year 1 refers to the one-year period after a beneficiary's enrollment in the program, Year 2 refers to the subsequent one-year periods for a given beneficiary. Since beneficiaries enroll in the SDM programs on a rolling basis, the intervention period is defined at the beneficiary-level and not based on calendar quarters or years.

<sup>c</sup>The “difference” estimate represents the difference in the number of deaths per 1,000 beneficiaries or the difference in the number of beneficiaries with at least one readmission for every 1,000 beneficiaries who have at least one inpatient admission, as compared between the intervention and control groups during the relevant quarter in the intervention period.

<sup>d</sup>PS = Preference Sensitive.

**Appendix Table B-6: Cumulative and Yearly Mortality and Readmissions per 1,000 Beneficiaries, Differences after Welvie Enrollment, Ohio MA ITT Analysis Cohort**

Measures	Full Intervention Period <sup>a</sup>	Total Year 1 <sup>b</sup>	Total Year 2
Number of Participants	97,380	97,380	91,230
<b>Mortality</b>			
<i>Difference<sup>c</sup></i>	-2.86*	-0.97	-0.22
<i>90% Confidence Interval</i>	(-5.6   -0.1)	(-2.5   0.5)	(-1.9   1.4)
<i>P-Value</i>	0.084	0.281	0.826
<b>30-Day Hospital Readmissions Following:</b>			
All Inpatient Admissions			
<i>Difference</i>	-25.75	-2.55	0.08
<i>90% Confidence Interval</i>	(-72.8   21.3)	(-28.3   23.2)	(-29.6   29.7)
<i>P-Value</i>	0.368	0.871	0.997
Inpatient Surgery Admissions			
<i>Difference</i>	-78.52	-29.94	-32.57
<i>90% Confidence Interval</i>	(-164.1   7.0)	(-72.3   12.4)	(-82.4   17.3)
<i>P-Value</i>	0.131	0.245	0.283
Inpatient PS <sup>d</sup> Orthopedic Surgery Admissions			
<i>Difference</i>	-28.61	-19.93	-28.87
<i>90% Confidence Interval</i>	(-152.3   95.1)	(-79.6   39.8)	(-104.3   46.5)
<i>P-Value</i>	0.704	0.583	0.529
Inpatient PS Cardiac Surgery Admissions			
<i>Difference</i>	-81.24	-52.47	-1.82
<i>90% Confidence Interval</i>	(-316.9   154.4)	(-167.7   62.7)	(-142.8   139.2)
<i>P-Value</i>	0.571	0.454	0.983
<b>30-Day Hospital Unplanned Readmissions Following All Inpatient Admission</b>			
<i>Difference</i>	-31.57	0.19	-9.33
<i>90% Confidence Interval</i>	(-77.7   14.6)	(-25.1   25.5)	(-38.3   19.7)
<i>P-Value</i>	0.261	0.990	0.597

\* Statistically significant at the ten percent level.

<sup>a</sup>Results are cumulative across all available quarters.

<sup>b</sup>Year 1 refers to the one-year period after a beneficiary's enrollment in the program, Year 2 refers to the subsequent one-year periods for a given beneficiary. Since beneficiaries enroll in the SDM programs on a rolling basis, the intervention period is defined at the beneficiary-level and not based on calendar quarters or years.

<sup>c</sup>The “difference” estimate represents the difference in the number of deaths per 1,000 beneficiaries or the difference in the number of beneficiaries with at least one readmission for every 1,000 beneficiaries who have at least one inpatient admission, as compared between the intervention and control groups during the relevant quarter in the intervention period.

<sup>d</sup>PS = Preference Sensitive.

**Appendix Table B-7: Cumulative and Yearly Mortality and Readmissions per 1,000 Beneficiaries, Differences after Welvie Enrollment, Texas MA ITT Analysis Cohort**

Measures	Full Intervention Period <sup>a</sup>	Total Year 1 <sup>b</sup>
Number of Participants	63,979	63,979
<b>Mortality</b>		
<i>Difference<sup>c</sup></i>	-0.35	-0.30
<i>90% Confidence Interval</i>	(-2.3   1.6)	(-1.8   1.2)
<i>P-Value</i>	0.770	0.732
<b>30-Day Hospital Readmissions Following:</b>		
All Inpatient Admissions		
<i>Difference</i>	15.45	9.86
<i>90% Confidence Interval</i>	(-25.7   56.6)	(-22.8   42.5)
<i>P-Value</i>	0.537	0.620
Inpatient Surgery Admissions		
<i>Difference</i>	56.39	19.45
<i>90% Confidence Interval</i>	(-7.5   120.3)	(-31.4   70.3)
<i>P-Value</i>	0.146	0.529
Inpatient PS <sup>d</sup> Orthopedic Surgery Admissions		
<i>Difference</i>	-17.15	34.87
<i>90% Confidence Interval</i>	(-116.7   82.4)	(-46.2   116.0)
<i>P-Value</i>	0.777	0.479
Inpatient PS Cardiac Surgery Admissions		
<i>Difference</i>	-1.46	-22.40
<i>90% Confidence Interval</i>	(-180.6   177.7)	(-163.0   118.2)
<i>P-Value</i>	0.989	0.793
<b>30-Day Hospital Unplanned Readmissions Following All Inpatient Admission</b>		
<i>Difference</i>	12.41	7.93
<i>90% Confidence Interval</i>	(-28   52.8)	(-24   39.9)
<i>P-Value</i>	0.613	0.683

<sup>a</sup>Results are cumulative across all available quarters.

<sup>b</sup>Year 1 refers to the one-year period after a beneficiary's enrollment in the program. Since beneficiaries enroll in the SDM programs on a rolling basis, the intervention period is defined at the beneficiary-level and not based on calendar quarters or years.

<sup>c</sup>The “difference” estimate represents the difference in the number of deaths per 1,000 beneficiaries or the difference in the number of beneficiaries with at least one readmission for every 1,000 beneficiaries who have at least one inpatient admission, as compared between the intervention and control groups during the relevant quarter in the intervention period.

<sup>d</sup>PS = Preference Sensitive.

**Appendix Table B-8: Quarterly Difference in Mortality per 1,000 Beneficiaries after Welvie Enrollment, Ohio FFS, Ohio MA, and Texas MA ITT Analysis Cohorts**

Medicare Cohort	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11
Ohio Medicare FFS											
<i>Number of Participant Beneficiaries</i>	59,894	59,023	58,163	57,294	56,355	55,487	54,652	53,729	52,781	51,987	51,238
<i>Difference<sup>a</sup></i>	-4.17***	-1.34*	-1.77**	-2.69***	-2.72***	-0.37	-1.09	-2.22**	-1.95**	-1.09	-0.86
<i>90% Confidence Interval</i>	(-5.5   -2.9)	(-2.6   -0.1)	(-3.0   -0.5)	(-4.0   -1.3)	(-4.0   -1.4)	(-1.6   0.9)	(-2.5   0.3)	(-3.6   -0.8)	(-3.3   -0.6)	(-2.4   0.2)	(-2.2   0.5)
<i>P-Value</i>	<0.001	0.073	0.021	0.001	<0.001	0.633	0.191	0.011	0.016	0.170	0.289
Ohio Medicare Advantage											
<i>Number of Participant Beneficiaries</i>	97,380	96,492	95,477	92,080	91,230	90,076	89,069	82,860	81,907	79,501	78,171
<i>Difference<sup>a</sup></i>	0.10	-0.26	-0.51	-0.31	-0.08	0.19	-0.16	-0.18	-0.16	-0.87	-0.75
<i>90% Confidence Interval</i>	(-0.6   0.8)	(-1.0   0.5)	(-1.3   0.2)	(-1.1   0.4)	(-0.9   0.7)	(-0.6   1.0)	(-1.0   0.7)	(-1.0   0.7)	(-1.1   0.7)	(-1.9   0.1)	(-1.7   0.2)
<i>P-Value</i>	0.817	0.578	0.254	0.498	0.859	0.706	0.754	0.739	0.768	0.145	0.194
Texas Medicare Advantage											
<i>Number of Participant Beneficiaries</i>	63,979	63,885	50,346	49,822	49,356	48,797					
<i>Difference<sup>a</sup></i>	-0.18	0.45	0.11	-0.80	0.12	-0.16					
<i>90% Confidence Interval</i>	(-0.5   0.2)	(0.0   0.9)	(-0.9   1.2)	(-1.8   0.2)	(-0.9   1.1)	(-1.2   0.8)					
<i>P-Value</i>	0.421	0.125	0.868	0.201	0.844	0.793					

\* Statistically significant at the ten percent level.

\*\* Statistically significant at the five percent level.

\*\*\* Statistically significant at the one percent level.

<sup>a</sup>The “difference” estimate represents the difference in the number of deaths per 1,000 beneficiaries between the intervention group and control group in the relevant quarter of the intervention period. There were no deaths in the intervention or control groups prior to program enrollment as beneficiaries were required to be alive on program start date to be included in the study.



**Appendix Table B-9: Quarterly Difference in Readmissions per 1,000 IP Admissions after Welvie Enrollment, Ohio FFS ITT Analysis Cohort**

Measures	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11
<i>Number of Participant Beneficiaries</i>	59,894	59,023	58,163	57,294	56,355	55,487	54,652	53,729	52,781	51,987	51,238
<b>30-Day Hospital Readmissions per 1,000 Beneficiaries Following:</b>											
All Inpatient Admissions	4177	3933	3943	3905	3963	3573	3676	3811	3694	3476	3369
<i>Difference<sup>a</sup></i>	-6.29	8.56	-25.10***	-0.90	11.75	-5.20	-14.26	2.75	-6.48	8.45	1.02
<i>90% Confidence Interval</i>	(-20.5   8.0)	(-6.5   23.6)	(-40.1   -10.1)	(-16.2   14.4)	(-3.4   26.9)	(-20.6   10.2)	(-29.5   1.0)	(-12.3   17.8)	(-21.8   8.8)	(-7.2   24.2)	(-14.7   16.7)
<i>P-Value</i>	0.468	0.349	0.006	0.923	0.203	0.579	0.124	0.764	0.486	0.376	0.915
Inpatient Surgery Admissions	1171	1160	1224	1154	1120	1097	1114	1076	1062	997	950
<i>Difference</i>	-27.02*	-9.13	-52.57***	-12.86	5.11	4.09	5.95	-7.26	0.54	25.01	-2.31
<i>90% Confidence Interval</i>	(-53.4   -0.6)	(-35.6   17.4)	(-79.1   -26.0)	(-40.4   14.7)	(-22.4   32.6)	(-23.9   32.0)	(-21.2   33.1)	(-35.5   20.9)	(-28.1   29.2)	(-3.0   53.1)	(-30.3   25.7)
<i>P-Value</i>	0.092	0.571	0.001	0.442	0.760	0.810	0.718	0.672	0.975	0.143	0.892
Inpatient PS <sup>b</sup> Orthopedic Surgery Admissions	284	269	339	271	269	276	284	258	228	261	285
<i>Difference</i>	-49.07**	5.67	7.77	-19.28	1.53	12.28	-17.46	17.31	37.92	41.23	-6.14
<i>90% Confidence Interval</i>	(-86.6   -11.5)	(-33.7   45.0)	(-26.8   42.4)	(-62.4   23.9)	(-38.2   41.3)	(-24.7   49.3)	(-56.6   21.7)	(-23.3   57.9)	(-3.0   78.8)	(-4.5   87.0)	(-43.9   31.6)
<i>P-Value</i>	0.032	0.813	0.712	0.462	0.949	0.585	0.463	0.483	0.128	0.138	0.789
Inpatient PS Cardiac Surgery Admissions	167	168	164	146	137	142	132	143	133	135	159
<i>Difference</i>	-51.51	2.52	24.61	-51.91	-2.26	18.61	34.61	-25.17	-27.72	-4.23	61.07
<i>90% Confidence Interval</i>	(-125.3   22.3)	(-69.1   74.1)	(-46.1   95.3)	(-136.1   32.2)	(-88.9   84.4)	(-65.3   102.5)	(-51.8   121.0)	(-103.9   53.5)	(-114.8   59.4)	(-81.2   72.8)	(-15.0   137.1)
<i>P-Value</i>	0.251	0.954	0.567	0.310	0.966	0.715	0.510	0.599	0.601	0.928	0.187
<b>30-Day Hospital Unplanned Readmissions per 1,000 Beneficiaries Following:</b>											
All Inpatient Admissions	4177	3933	3943	3905	3963	3573	3676	3811	3694	3476	3369

Measures	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11
<i>Difference</i>	-4.42	5.47	-20.11**	-3.23	11.80	-2.98	-12.27	3.75	-3.85	8.33	0.38
<i>90% Confidence Interval</i>	(-18.4   9.6)	(-9.3   20.2)	(-34.8   -5.4)	(-18.2   11.8)	(-3.1   26.6)	(-18.1   12.2)	(-27.1   2.6)	(-11.1   18.6)	(-18.9   11.2)	(-7.1   23.8)	(-15.1   15.9)
<i>P-Value</i>	0.603	0.542	0.024	0.723	0.191	0.746	0.174	0.677	0.673	0.374	0.968

\* Statistically significant at the ten percent level.

\*\* Statistically significant at the five percent level.

\*\*\* Statistically significant at the one percent level.

<sup>a</sup>The “difference” estimate represents the difference in the number of beneficiaries with at least one readmission for every 1,000 beneficiaries who have at least one inpatient admission, as compared between the intervention and control groups during the relevant quarter in the intervention period.

<sup>b</sup>PS = Preference Sensitive.

**Appendix Table B-10: Quarterly Difference in Readmissions per 1,000 IP Admissions after Welvie Enrollment, Ohio MA ITT Analysis Cohort**

Measures	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11
<i>Number of Participant Beneficiaries</i>	97,380	96,492	95,477	92,080	91,230	90,076	89,069	82,860	81,907	79,501	78,171
<b>30-Day Hospital Readmissions per 1,000 Beneficiaries Following:</b>											
All Inpatient Admissions	5027	4876	4225	3835	3760	3534	3254	3114	3076	3197	2724
<i>Difference<sup>a</sup></i>	-0.86	9.39	-9.13	-3.74	-4.86	3.68	-2.07	3.94	-8.19	-9.32	-10.60
<i>90% Confidence Interval</i>	(-13.0   11.2)	(-3.1   21.9)	(-22.4   4.2)	(-17.6   10.1)	(-18.8   9.0)	(-11.0   18.4)	(-17.2   13.0)	(-11.8   19.7)	(-23.4   7.0)	(-24.6   6.0)	(-26.9   5.7)
<i>P-Value</i>	0.906	0.216	0.259	0.657	0.566	0.681	0.821	0.681	0.376	0.317	0.285
Inpatient Surgery Admissions	1727	1569	1348	1249	861	1164	1096	1001	593	56	83
<i>Difference</i>	-0.25	2.36	-21.75	-14.46	-1.88	4.46	-6.59	-29.88*	-2.22	60.15	-13.14
<i>90% Confidence Interval</i>	(-19.6   19.1)	(-18.9   23.6)	(-44.0   0.5)	(-36.7   7.8)	(-27.8   24.0)	(-19.0   27.9)	(-30.7   17.6)	(-56.2   -3.5)	(-33.6   29.2)	(-43.8   164.1)	(-112.1   85.8)
<i>P-Value</i>	0.983	0.855	0.108	0.285	0.905	0.755	0.653	0.062	0.907	0.341	0.827
Inpatient PS <sup>b</sup> Orthopedic Surgery Admissions	544	450	420	332	257	317	307	264	205	21	41
<i>Difference</i>	-1.42	-2.21	-10.55	-7.53	-2.40	11.10	-15.31	-24.49	38.28	26.27	8.61
<i>90% Confidence Interval</i>	(-29.5   26.7)	(-33.3   28.9)	(-40.7   19.6)	(-36.1   21.0)	(-39.1   34.3)	(-24.8   47.0)	(-53.3   22.7)	(-64.4   15.4)	(-0.9   77.5)	(-104.5   157.0)	(-154.1   171.4)

Measures	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11
<i>P-Value</i>	0.934	0.907	0.564	0.664	0.914	0.611	0.508	0.312	0.108	0.741	0.931
Inpatient PS Cardiac Surgery Admissions	271	256	214	149	141	150	139	145	85	23	26
<i>Difference</i>	-16.30	30.24	-41.91	-40.47	50.27	-2.65	-38.17	-11.35	-32.74	165.63	-34.62
<i>90% Confidence Interval</i>	(-71.0   38.4)	(-25.0   85.5)	(-97.3   13.5)	(-106.3   25.3)	(-24.0   124.5)	(-70.8   65.5)	(-104.9   28.6)	(-83.9   61.1)	(-130.2   64.7)	(-18.2   349.4)	(-201.6   132.3)
<i>P-Value</i>	0.624	0.368	0.214	0.312	0.266	0.949	0.347	0.797	0.580	0.138	0.733
<b>30-Day Hospital Unplanned Readmissions per 1,000 Beneficiaries Following:</b>											
All Inpatient Admissions	5027	4876	4225	3835	3760	3534	3254	3114	3076	3197	2724
<i>Difference</i>	-2.14	11.21	-9.05	-1.25	-7.56	1.74	-4.44	1.56	-8.15	-9.03	-11.61
<i>90% Confidence Interval</i>	(-14.0   9.7)	(-1.1   23.5)	(-22.1   4.0)	(-14.8   12.3)	(-21.1   6.0)	(-12.6   16.1)	(-19.2   10.3)	(-14.0   17.1)	(-23.1   6.8)	(-24.1   6.0)	(-27.6   4.4)
<i>P-Value</i>	0.767	0.133	0.255	0.880	0.359	0.842	0.621	0.868	0.371	0.323	0.233

\* Statistically significant at the ten percent level.

\*\* Statistically significant at the five percent level.

\*\*\* Statistically significant at the one percent level

<sup>a</sup>The “difference” estimate represents the difference in the number of beneficiaries with at least one readmission for every 1,000 beneficiaries who have at least one inpatient admission, as compared between the intervention and control groups during the relevant quarter in the intervention period.

<sup>b</sup>PS = Preference Sensitive.

**Appendix Table B-11: Quarterly Difference in Readmissions per 1,000 IP Admissions after Welvie Enrollment, Texas MA ITT Analysis Cohort**

Measures	Q1	Q2	Q3	Q4	Q5	Q6
<i>Number of Participant Beneficiaries</i>	63,979	63,885	50,346	49,822	49,356	48,797
<b>30-Day Hospital Readmissions per 1,000 Beneficiaries Following:</b>						
All Inpatient Admissions	3030	3146	2694	2708	2489	2311
<i>Difference<sup>a</sup></i>	17.19*	2.49	-13.81	2.15	6.49	-1.08
<i>90% Confidence Interval</i>	(1.8   32.6)	(-13.1   18.1)	(-31.1   3.5)	(-15.1   19.5)	(-11.3   24.3)	(-19.1   17.0)
<i>P-Value</i>	0.066	0.793	0.190	0.838	0.548	0.921
Inpatient Surgery Admissions	1126	1134	852	904	799	789
<i>Difference</i>	11.51	0.70	-4.21	10.36	37.56**	3.97
<i>90% Confidence Interval</i>	(-11.5   34.5)	(-22.7   24.1)	(-32.8   24.4)	(-17.5   38.3)	(10.4   64.8)	(-23.9   31.8)
<i>P-Value</i>	0.410	0.961	0.809	0.541	0.023	0.815
Inpatient PS <sup>b</sup> Orthopedic Surgery Admissions	276	319	182	223	192	236
<i>Difference</i>	16.53	22.40	-17.68	1.02	-59.66** *	-5.70
<i>90% Confidence Interval</i>	(-21.7   54.8)	(-13.1   57.9)	(-63.2   27.9)	(-44.5   46.5)	(-97.0   -22.3)	(-47.7   36.3)
<i>P-Value</i>	0.477	0.299	0.523	0.971	0.009	0.824
Inpatient PS Cardiac Surgery Admissions	159	174	118	137	93	120
<i>Difference</i>	-30.81	-23.79	-14.27	54.22	10.38	17.77
<i>90% Confidence Interval</i>	(-90.4   28.8)	(-92.3   44.7)	(-90.6   62.1)	(-23.8   132.2)	(-77.2   98.0)	(-56.0   91.5)
<i>P-Value</i>	0.395	0.568	0.759	0.253	0.845	0.692
<b>30-Day Hospital Unplanned Readmissions per 1,000 Beneficiaries Following:</b>						
All Inpatient Admissions	3030	3146	2694	2708	2489	2311
<i>Difference</i>	17.90**	2.82	-14.17	-0.72	5.79	-1.51
<i>90% Confidence Interval</i>	(3.0   32.8)	(-12.5   18.1)	(-31.2   2.9)	(-17.6   16.2)	(-11.7   23.3)	(-19.5   16.5)
<i>P-Value</i>	0.048	0.761	0.171	0.944	0.586	0.890

\* Statistically significant at the ten percent level.

\*\* Statistically significant at the five percent level.

\*\*\* Statistically significant at the one percent level.

<sup>a</sup>The “difference” estimate represents the difference in the number of beneficiaries with at least one readmission for every 1,000 beneficiaries who have at least one inpatient admission, as compared between the intervention and control groups during the relevant quarter in the intervention period.

<sup>b</sup>PS = Preference Sensitive.

**Appendix Table B-12: Quarterly Mortality and Readmission per 1,000 Beneficiaries for Participants and Controls, Welvie Ohio FFS ITT Analysis Cohort, Q1 to Q6**

Measures	Q1		Q2		Q3		Q4		Q5		Q6	
	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls
<i>Number of Participant Beneficiaries</i>	59,894	50,279	59,023	49,338	58,163	48,553	57,294	47,745	56,355	46,834	55,487	45,985
<b>All-Cause Mortality per 1,000 Beneficiaries</b>	14.5	18.7	14.6	15.9	14.9	16.6	16.4	19.1	15.4	18.1	15.0	15.4
<b>30-Day Hospital Readmission per 1,000 Beneficiaries Following:</b>												
All Inpatient Admissions	177.2	183.4	193.0	184.4	170.4	195.5	190.3	191.2	192.8	181.0	171.6	176.8
Inpatient Surgery Admissions	155.4	182.4	163.8	172.9	145.4	198.0	172.4	185.3	172.3	167.2	174.1	170.0
Inpatient PS <sup>a</sup> Orthopedic Surgery Admissions	42.3	91.3	78.1	72.4	70.8	63.0	81.2	100.5	74.3	72.8	72.5	60.2
Inpatient PS Cardiac Surgery Admissions	173.7	225.2	178.6	176.1	158.5	133.9	184.9	236.8	219.0	221.2	211.3	192.7
<b>30-day Hospital Unplanned Readmission per 1,000 Beneficiaries, Following Any Inpatient Admission</b>	170.5	174.9	182.3	176.8	163.3	183.4	180	183.3	182.9	171.1	164.8	167.8

<sup>a</sup>PS = Preference Sensitive.

**Appendix Table B-13: Quarterly Mortality and Readmission per 1,000 Beneficiaries for Participants and Controls, Welvie Ohio FFS ITT Analysis Cohort, Q7 to Q11**

Measures	Q7		Q8		Q9		Q10		Q11	
	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls
<i>Number of Participant Beneficiaries</i>	54,652	45,276	53,729	44,462	52,781	43,579	51,987	42,837	51,238	42,174
<b>All-Cause Mortality per 1,000 Beneficiaries</b>	16.8	17.8	17.6	19.9	15.0	17.0	14.4	15.5	15.2	16.0
<b>30-Day Hospital Readmission per 1,000 Beneficiaries Following:</b>										
All Inpatient Admissions	170.6	184.8	183.4	180.7	176.2	182.7	176.1	167.6	173.9	172.9

Measures	Q7		Q8		Q9		Q10		Q11	
	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls
Inpatient Surgery Admissions	160.7	154.7	169.1	176.4	174.2	173.7	175.5	150.5	148.4	150.7
Inpatient PS <sup>a</sup> Orthopedic Surgery Admissions	59.9	77.3	85.3	68.0	92.1	54.2	126.4	85.2	77.2	83.3
Inpatient PS Cardiac Surgery Admissions	227.3	192.7	174.8	200.0	188.0	215.7	170.4	174.6	201.3	140.2
<b>30-day Hospital Unplanned Readmission per 1,000 Beneficiaries, Following Any Inpatient Admission</b>	160	172.2	176.6	172.8	168.4	172.2	168.9	160.5	166.8	166.4

<sup>a</sup>PS = Preference Sensitive.

**Appendix Table B-14: Quarterly Mortality and Readmission per 1,000 Beneficiaries for Participants and Controls, Welvie Ohio MA ITT Analysis Cohort, Q1 to Q6**

Measures	Q1		Q2		Q3		Q4		Q5		Q6	
	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls
<i>Number of Participant Beneficiaries</i>	97,380	94,915	96,492	94,059	95,477	93,045	92,080	89,750	91,230	88,894	90,076	87,518
<b>All-Cause Mortality per 1,000 Beneficiaries</b>	9.1	9.0	10.5	10.8	9.4	9.9	9.2	9.5	10.0	10.1	11.2	11.0
<b>30-Day Hospital Readmission per 1,000 Beneficiaries Following:</b>												
All Inpatient Admissions	159.9	160.8	174.3	164.9	163.8	172.9	162.5	166.2	158.0	162.8	170.9	167.2
Inpatient Surgery Admissions	137.2	137.5	156.8	154.4	140.9	162.7	125.7	140.2	126.6	128.5	136.6	132.1
Inpatient PS <sup>a</sup> Orthopedic Surgery Admissions	80.9	82.3	84.4	86.7	69.0	79.6	48.2	55.7	66.1	68.5	85.2	74.1
Inpatient PS Cardiac Surgery Admissions	169.7	186.0	187.5	157.3	135.5	177.4	147.7	188.1	212.8	162.5	160.0	162.7
<b>30-day Hospital Unplanned Readmission per 1,000 Beneficiaries, Following Any Inpatient Admission</b>	151.4	153.5	167.6	156.3	156.7	165.7	155.4	156.7	147.1	154.6	160.2	158.4

<sup>a</sup>PS = Preference Sensitive.

**Appendix Table B-15: Quarterly Mortality and Readmission per 1,000 Beneficiaries for Participants and Controls, Welvie Ohio MA ITT Analysis Cohort, Q7 to Q11**

Measures	Q7		Q8		Q9		Q10		Q11	
	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls
<i>Number of Participant Beneficiaries</i>	89,069	86,556	82,860	80,581	81,907	79,640	79,501	77,232	78,171	75,732
<b>All-Cause Mortality per 1,000 Beneficiaries</b>	11.0	11.1	11.5	11.7	12.3	12.5	13.7	14.6	12.5	13.3
<b>30-Day Hospital Readmission per 1,000 Beneficiaries Following:</b>										
All Inpatient Admissions	165.6	167.7	171.2	167.2	151.5	159.7	161.7	171.0	158.6	169.2
Inpatient Surgery Admissions	132.3	138.9	128.9	158.7	119.7	122.0	178.6	118.4	168.7	181.8
Inpatient PS <sup>a</sup> Orthopedic Surgery Admissions	74.9	90.2	64.4	88.9	78.0	39.8	95.2	69.0	243.9	235.3
Inpatient PS Cardiac Surgery Admissions	129.5	167.7	165.5	176.9	141.2	173.9	260.9	95.2	115.4	150.0
<b>30-day Hospital Unplanned Readmission per 1,000 Beneficiaries, Following Any Inpatient Admission</b>	155.5	159.9	163.5	161.9	145.3	153.5	154.5	163.5	150.9	162.5

<sup>a</sup>PS = Preference Sensitive.

**Appendix Table B-16: Quarterly Mortality and Readmission per 1,000 Beneficiaries for Participants and Controls, Welvie Texas MA ITT Analysis Cohort, Q1 to Q6**

Measures	Q1		Q2		Q3		Q4		Q5		Q6	
	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls
<i>Number of Participant Beneficiaries</i>	63,979	63,759	63,885	63,654	50,346	50,476	49,822	49,956	49,356	49,449	48,797	48,926
<b>All-Cause Mortality per 1,000 Beneficiaries</b>	1.5	1.6	2.9	2.5	10.4	10.3	9.4	10.1	9.1	9.0	9.1	9.2
<b>30-Day Hospital Readmission per 1,000 Beneficiaries Following:</b>												
All Inpatient Admissions	165.3	148.2	171.0	168.5	181.5	195.3	183.5	181.4	178.4	171.9	166.2	167.2
Inpatient Surgery Admissions	128.8	117.3	133.2	132.5	147.9	152.1	154.9	144.5	150.2	112.6	134.3	130.4
Inpatient PS <sup>a</sup> Orthopedic Surgery Admissions	94.2	77.7	94.0	71.6	71.4	89.1	89.7	88.7	31.2	90.9	80.5	86.2
Inpatient PS Cardiac Surgery Admissions	106.9	137.7	160.9	184.7	144.1	158.3	197.1	142.9	182.8	172.4	150.0	132.2
<b>30-day Hospital Unplanned Readmission per 1,000 Beneficiaries, Following Any Inpatient Admission</b>	154.5	136.6	163.1	160.2	173.3	187.5	171.3	172.1	170.3	164.6	164	165.5

<sup>a</sup>PS = Preference Sensitive.



## B.3 Health Service Resource Use

**Appendix Table B-17: Cumulative and Yearly DiD Estimates of Resource Use per 1,000 Beneficiaries, Welvie Ohio FFS ITT Analysis Cohort**

Measures (Number of Events or Days)	Full Intervention Period <sup>a</sup>	Total Year 1 <sup>b</sup>	Total Year 2
<i>Number of Participant Beneficiaries</i>	59,894	59,894	56,355
<b>ER Visits</b>			
<i>Difference</i>	-18.10	-11.96*	-4.80
<i>90% Confidence Interval</i>	(-43.0   6.8)	(-22.9   -1.0)	(-16.2   6.6)
<i>P-Value</i>	0.232	0.072	0.488
<b>Inpatient Admissions</b>			
<i>Difference</i>	-6.56	-6.59	0.82
<i>90% Confidence Interval</i>	(-29.6   16.5)	(-16.9   3.8)	(-9.6   11.3)
<i>P-Value</i>	0.639	0.295	0.898
<b>Unplanned Inpatient Admissions</b>			
<i>Difference</i>	1.16	-3.73	2.69
<i>90% Confidence Interval</i>	(-19.6   21.9)	(-13.1   5.6)	(-6.8   12.1)
<i>P-Value</i>	0.927	0.512	0.64
<b>Hospital Days</b>			
<i>Difference</i>	-21.99	-43.21	28.47
<i>90% Confidence Interval</i>	(-223.7   179.8)	(-134.8   48.4)	(-61.3   118.2)
<i>P-Value</i>	0.858	0.438	0.602
<b>All Surgeries</b>			
<i>Difference</i>	5.31	-3.20	10.21
<i>90% Confidence Interval</i>	(-27.5   38.1)	(-17.2   10.8)	(-4.5   25.0)
<i>P-Value</i>	0.790	0.707	0.255
<b>Inpatient Surgeries</b>			
<i>Difference</i>	-5.64	-3.45	0.62
<i>90% Confidence Interval</i>	(-15.5   4.3)	(-7.8   0.9)	(-3.8   5.1)
<i>P-Value</i>	0.349	0.197	0.819
<b>Surgical Hospital Days</b>			
<i>Difference</i>	12.02	-16.71	21.80
<i>90% Confidence Interval</i>	(-86.6   110.6)	(-60.9   27.5)	(-22.5   66.1)
<i>P-Value</i>	0.841	0.534	0.419
<b>Outpatient Surgeries</b>			
<i>Difference</i>	8.43	-1.28	8.00
<i>90% Confidence Interval</i>	(-19.5   36.3)	(-13.1   10.5)	(-4.6   20.6)
<i>P-Value</i>	0.619	0.858	0.297
<b>All PS<sup>c</sup> Orthopedic Surgeries</b>			

<b>Measures (Number of Events or Days)</b>	<b>Full Intervention Period<sup>a</sup></b>	<b>Total Year 1<sup>b</sup></b>	<b>Total Year 2</b>
<i>Difference</i>	-2.11	-0.07	0.16
<i>90% Confidence Interval</i>	(-7.3   3.1)	(-2.3   2.2)	(-2.1   2.4)
<i>P-Value</i>	0.506	0.961	0.908
<b>Inpatient PS Orthopedic Surgeries</b>			
<i>Difference</i>	-0.32	0.58	0.75
<i>90% Confidence Interval</i>	(-5.2   4.5)	(-1.5   2.7)	(-1.4   2.9)
<i>P-Value</i>	0.913	0.648	0.561
<b>PS Orthopedic Surgery Hospital Days</b>			
<i>Difference</i>	-12.28	1.47	-1.99
<i>90% Confidence Interval</i>	(-40.4   15.8)	(-11.1   14.1)	(-14.6   10.7)
<i>P-Value</i>	0.472	0.848	0.796
<b>Outpatient PS Orthopedic Surgeries</b>			
<i>Difference</i>	-1.69	-0.53	-0.57
<i>90% Confidence Interval</i>	(-3.4   0.0)	(-1.3   0.2)	(-1.3   0.2)
<i>P-Value</i>	0.105	0.24	0.211
<b>All PS Cardiac Surgeries</b>			
<i>Difference</i>	-2.93	-1.27	-1.72
<i>90% Confidence Interval</i>	(-8.3   2.5)	(-3.6   1.1)	(-4.1   0.7)
<i>P-Value</i>	0.371	0.373	0.235
<b>Inpatient PS Cardiac Surgeries</b>			
<i>Difference</i>	-2.09	-0.51	-1.02
<i>90% Confidence Interval</i>	(-5.6   1.4)	(-2.0   1.0)	(-2.6   0.5)
<i>P-Value</i>	0.329	0.588	0.28
<b>Inpatient PS Cardiac Surgical Hospital Days</b>			
<i>Difference</i>	21.57	4.75	10.17
<i>90% Confidence Interval</i>	(-25.9   69.1)	(-13.3   22.8)	(-11.3   31.6)
<i>P-Value</i>	0.455	0.665	0.435
<b>Outpatient PS Cardiac Surgeries</b>			
<i>Difference</i>	-0.84	-0.77	-0.70
<i>90% Confidence Interval</i>	(-4.6   2.9)	(-2.4   0.9)	(-2.4   1.0)
<i>P-Value</i>	0.713	0.442	0.49

\* Statistically significant at the ten percent level.

<sup>a</sup>Results are cumulative across all available quarters.

<sup>b</sup>Year 1 refers to the one-year period after a beneficiary's enrollment in the program, Year 2 refers to the subsequent one-year periods for a given beneficiary. Since beneficiaries enroll in the SDM programs on a rolling basis, the intervention period is defined at the beneficiary-level and not based on calendar quarters or years.

<sup>c</sup>PS = Preference Sensitive.

**Appendix Table B-18: Cumulative and Yearly DiD Estimates of Resource Use per 1,000 Beneficiaries, Welvie Ohio MA ITT Analysis Cohort**

Measures (Number of Events or Days)	Full Intervention Period <sup>a</sup>	Total Year 1 <sup>b</sup>	Total Year 2
<i>Number of Participant Beneficiaries</i>	97,380	97,380	91,230
<b>ER Visits</b>			
<i>Difference</i>	-6.49	0.87	-8.26**
<i>90% Confidence Interval</i>	(-20.6   7.6)	(-5.8   7.6)	(-14.9   -1.6)
<i>P-Value</i>	0.450	0.832	0.041
<b>Inpatient Admissions</b>			
<i>Difference</i>	-7.79	-4.36	0.01
<i>90% Confidence Interval</i>	(-20.9   5.4)	(-10.6   1.9)	(-6.0   6.0)
<i>P-Value</i>	0.330	0.248	0.997
<b>Unplanned Inpatient Admissions</b>			
<i>Difference</i>	-11.50	-4.57	-2.56
<i>90% Confidence Interval</i>	(-23.6   0.6)	(-10.3   1.1)	(-8.1   2.9)
<i>P-Value</i>	0.118	0.188	0.445
<b>Hospital Days</b>			
<i>Difference</i>	-47.32	-28.69	-4.66
<i>90% Confidence Interval</i>	(-142.7   48.0)	(-74.9   17.5)	(-49.3   40.0)
<i>P-Value</i>	0.414	0.307	0.864
<b>All Surgeries</b>			
<i>Difference</i>	-6.79	-7.03*	-0.27
<i>90% Confidence Interval</i>	(-20.3   6.7)	(-13.0   -1.0)	(-6.3   5.8)
<i>P-Value</i>	0.408	0.055	0.942
<b>Inpatient Surgeries</b>			
<i>Difference</i>	-5.85	-4.90**	-0.19
<i>90% Confidence Interval</i>	(-13.2   1.5)	(-8.3   -1.5)	(-3.5   3.1)
<i>P-Value</i>	0.188	0.018	0.924
<b>Surgical Hospital Days</b>			
<i>Difference</i>	-33.75	-28.42*	-11.85
<i>90% Confidence Interval</i>	(-89.4   21.9)	(-55.7   -1.1)	(-38.1   14.4)
<i>P-Value</i>	0.318	0.087	0.458
<b>Outpatient Surgeries</b>			
<i>Difference</i>	-0.94	-2.13	-0.08
<i>90% Confidence Interval</i>	(-12   10.1)	(-7   2.7)	(-5   4.8)
<i>P-Value</i>	0.889	0.467	0.979
<b>All PS<sup>c</sup> Orthopedic Surgeries</b>			
<i>Difference</i>	0.18	-1.21	0.81

Measures (Number of Events or Days)	Full Intervention Period <sup>a</sup>	Total Year 1 <sup>b</sup>	Total Year 2
<i>90% Confidence Interval</i>	(-5.0   5.3)	(-3.5   1.1)	(-1.4   3.0)
<i>P-Value</i>	0.955	0.389	0.555
<b>Inpatient PS Orthopedic Surgeries</b>			
<i>Difference</i>	0.69	-0.67	0.96
<i>90% Confidence Interval</i>	(-4.3   5.7)	(-2.9   1.6)	(-1.2   3.1)
<i>P-Value</i>	0.821	0.623	0.468
<b>PS Orthopedic Surgery Hospital Days</b>			
<i>Difference</i>	15.62	0.46	4.34
<i>90% Confidence Interval</i>	(-15.1   46.3)	(-13.1   14.0)	(-10.4   19.1)
<i>P-Value</i>	0.403	0.955	0.627
<b>Outpatient PS Orthopedic Surgeries</b>			
<i>Difference</i>	-0.51	-0.54	-0.16
<i>90% Confidence Interval</i>	(-1.7   0.7)	(-1.1   0.0)	(-0.7   0.4)
<i>P-Value</i>	0.493	0.121	0.631
<b>All PS Cardiac Surgeries</b>			
<i>Difference</i>	-3.91	-2.72**	-1.45
<i>90% Confidence Interval</i>	(-8.7   0.8)	(-4.9   -0.6)	(-3.5   0.6)
<i>P-Value</i>	0.176	0.037	0.251
<b>Inpatient PS Cardiac Surgeries</b>			
<i>Difference</i>	-3.12	-2.29**	-0.78
<i>90% Confidence Interval</i>	(-7.1   0.9)	(-4.1   -0.5)	(-2.5   1.0)
<i>P-Value</i>	0.201	0.035	0.460
<b>Inpatient PS Cardiac Surgical Hospital Days</b>			
<i>Difference</i>	-10.40	-12.18	-2.90
<i>90% Confidence Interval</i>	(-38.0   17.2)	(-24.7   0.4)	(-16.1   10.3)
<i>P-Value</i>	0.536	0.110	0.718
<b>Outpatient PS Cardiac Surgeries</b>			
<i>Difference</i>	-0.79	-0.42	-0.67
<i>90% Confidence Interval</i>	(-3.2   1.6)	(-1.5   0.7)	(-1.7   0.4)
<i>P-Value</i>	0.586	0.525	0.299

\* Statistically significant at the ten percent level.

\*\* Statistically significant at the five percent level.

<sup>a</sup>Results are cumulative across all available quarters.

<sup>b</sup>Year 1 refers to the one-year period after a beneficiary's enrollment in the program, Year 2 refers to the subsequent one-year periods for a given beneficiary. Since beneficiaries enroll in the SDM programs on a rolling basis, the intervention period is defined at the beneficiary-level and not based on calendar quarters or years.

<sup>c</sup>PS = Preference Sensitive.

**Appendix Table B-19: Cumulative and Yearly DiD Estimates of Resource Use per 1,000 Beneficiaries, Welvie Texas MA ITT Analysis Cohort**

Measures (Number of Events or Days)	Full Intervention Period <sup>a</sup>	Total Year 1 <sup>b</sup>
<i>Number of Participant Beneficiaries</i>	63,979	63,979
<b>ER Visits</b>		
<i>Difference</i>	4.75	-1.06
<i>90% Confidence Interval</i>	(-10.9   20.4)	(-12.6   10.5)
<i>P-Value</i>	0.618	0.880
<b>Inpatient Admissions</b>		
<i>Difference</i>	9.91	4.78
<i>90% Confidence Interval</i>	(-2.4   22.2)	(-4.4   14.0)
<i>P-Value</i>	0.186	0.392
<b>Unplanned Inpatient Admissions</b>		
<i>Difference</i>	9.02	3.99
<i>90% Confidence Interval</i>	(-2.4   20.5)	(-4.5   12.5)
<i>P-Value</i>	0.194	0.441
<b>Hospital Days</b>		
<i>Difference</i>	27.29	-19.29
<i>90% Confidence Interval</i>	(-71.0   125.6)	(-93.1   54.6)
<i>P-Value</i>	0.648	0.668
<b>All Surgeries</b>		
<i>Difference</i>	2.01	1.98
<i>90% Confidence Interval</i>	(-8.7   12.7)	(-5.7   9.6)
<i>P-Value</i>	0.758	0.670
<b>Inpatient Surgeries</b>		
<i>Difference</i>	7.20**	6.83***
<i>90% Confidence Interval</i>	(1.2   13.2)	(2.5   11.2)
<i>P-Value</i>	0.048	0.010
<b>Surgical Hospital Days</b>		
<i>Difference</i>	42.04	28.48
<i>90% Confidence Interval</i>	(-17.6   101.7)	(-15.8   72.7)
<i>P-Value</i>	0.246	0.290
<b>Outpatient Surgeries</b>		
<i>Difference</i>	-5.19	-4.84
<i>90% Confidence Interval</i>	(-13.9   3.5)	(-11.0   1.3)
<i>P-Value</i>	0.324	0.194
<b>All PS<sup>c</sup> Orthopedic Surgeries</b>		
<i>Difference</i>	-0.59	-0.16

Measures (Number of Events or Days)	Full Intervention Period <sup>a</sup>	Total Year 1 <sup>b</sup>
<i>90% Confidence Interval</i>	(-4.2   3.0)	(-2.7   2.4)
<i>P-Value</i>	0.787	0.916
<b>Inpatient PS Orthopedic Surgeries</b>		
<i>Difference</i>	0.59	0.73
<i>90% Confidence Interval</i>	(-2.8   4.0)	(-1.7   3.2)
<i>P-Value</i>	0.776	0.623
<b>PS Orthopedic Surgery Hospital Days</b>		
<i>Difference</i>	0.80	-0.26
<i>90% Confidence Interval</i>	(-22.6   24.1)	(-17.1   16.6)
<i>P-Value</i>	0.955	0.980
<b>Outpatient PS Orthopedic Surgeries</b>		
<i>Difference</i>	-1.18*	-0.90*
<i>90% Confidence Interval</i>	(-2.2   -0.1)	(-1.7   -0.1)
<i>P-Value</i>	0.063	0.057
<b>All PS Cardiac Surgeries</b>		
<i>Difference</i>	-0.32	0.29
<i>90% Confidence Interval</i>	(-3.8   3.2)	(-2.2   2.8)
<i>P-Value</i>	0.881	0.850
<b>Inpatient PS Cardiac Surgeries</b>		
<i>Difference</i>	2.73*	1.97*
<i>90% Confidence Interval</i>	(0.2   5.3)	(0.1   3.8)
<i>P-Value</i>	0.081	0.079
<b>Inpatient PS Cardiac Surgical Hospital Days</b>		
<i>Difference</i>	14.86	2.76
<i>90% Confidence Interval</i>	(-7.5   37.2)	(-14.1   19.6)
<i>P-Value</i>	0.274	0.787
<b>Outpatient PS Cardiac Surgeries</b>		
<i>Difference</i>	-3.05**	-1.68*
<i>90% Confidence Interval</i>	(-5.3   -0.8)	(-3.3   -0.1)
<i>P-Value</i>	0.025	0.088

\* Statistically significant at the ten percent level.

\*\* Statistically significant at the five percent level.

<sup>a</sup>Results are cumulative across all available quarters.

<sup>b</sup>Year 1 refers to the one-year period after a beneficiary's enrollment in the program. Since beneficiaries enroll in the SDM programs on a rolling basis, the intervention period is defined at the beneficiary-level and not based on calendar quarters or years.

<sup>c</sup>PS = Preference Sensitive.

**Appendix Table B-20: Quarterly DiD Estimates of Resource Use (Number of Events or Days per 1,000 Beneficiaries), Welvie Ohio FFS ITT Analysis Cohort**

<b>Measures (Number of Events or Days per 1,000 Beneficiaries)</b>	<b>Q1</b>	<b>Q2</b>	<b>Q3</b>	<b>Q4</b>	<b>Q5</b>	<b>Q6</b>	<b>Q7</b>	<b>Q8</b>	<b>Q9</b>	<b>Q10</b>	<b>Q11</b>
<i>Number of Participant Beneficiaries</i>	59,894	59,023	58,163	57,294	56,355	55,487	54,652	53,729	52,781	51,987	51,238
ER Visits	0.11	-4.76*	-6.89**	0.35	-2.96	-1.10	-1.43	-0.92	-0.54	-2.51	-0.42
<i>90% Confidence Interval</i>	(-4,5)	(-9,0)	(-11,-2)	(-4,5)	(-8,2)	(-6,4)	(-6,3)	(-6,4)	(-6,4)	(-8,3)	(-5,5)
<i>P-Value</i>	0.968	0.097	0.013	0.901	0.312	0.715	0.624	0.756	0.86	0.417	0.890
Inpatient Admissions	-5.11*	-2.78	-1.67	0.80	3.98	0.57	-4.01	-3.39	-1.38	2.05	-4.05
<i>90% Confidence Interval</i>	(-10,-1)	(-7,2)	(-6,3)	(-4,5)	(0,8)	(-4,5)	(-8,0)	(-8,1)	(-6,3)	(-2,6)	(-8,0)
<i>P-Value</i>	0.056	0.290	0.521	0.763	0.136	0.826	0.131	0.214	0.612	0.435	0.131
Unplanned Inpatient Admissions	-4.22*	-1.82	-1.26	1.57	4.68*	0.28	-3.80	-2.11	-1.12	3.47	-3.00
<i>90% Confidence Interval</i>	(-8,0)	(-6,2)	(-5,3)	(-2,6)	(1,9)	(-4,4)	(-8,0)	(-6,2)	(-5,3)	(0,7)	(-7,1)
<i>P-Value</i>	0.085	0.446	0.594	0.514	0.054	0.903	0.112	0.394	0.651	0.143	0.228
Hospital Days	-35.96*	3.18	-10.61	-28.76	22.18	20.12	-30.84	-29.63	-24.92	-2.35	-16.79
<i>90% Confidence Interval</i>	(-72,0)	(-31,38)	(-45,24)	(-73,16)	(-16,60)	(-15,55)	(-64,3)	(-67,8)	(-61,11)	(-36,31)	(-51,17)
<i>P-Value</i>	0.099	0.88	0.616	0.29	0.335	0.341	0.13	0.19	0.253	0.908	0.413
All Surgeries	-0.28	-3.42	1.61	-2.25	2.69	0.71	4.42	-0.11	-1.00	-1.71	0.84
<i>90% Confidence Interval</i>	(-6,5)	(-9,2)	(-4,8)	(-8,3)	(-4,9)	(-5,7)	(-2,11)	(-6,6)	(-7,5)	(-8,5)	(-6,8)
<i>P-Value</i>	0.934	0.33	0.657	0.515	0.483	0.845	0.262	0.975	0.797	0.676	0.839
Inpatient Surgeries	-1.82*	-1.70	-0.16	-0.30	0.00	0.12	0.29	-0.41	0.06	-1.61	-1.12
<i>90% Confidence Interval</i>	(-4,0)	(-3,0)	(-2,2)	(-2,2)	(-2,2)	(-2,2)	(-2,2)	(-2,1)	(-2,2)	(-3,0)	(-3,1)
<i>P-Value</i>	0.088	0.116	0.885	0.783	0.997	0.913	0.792	0.715	0.960	0.155	0.322
Surgical Hospital Days	-19.49*	-2.41	-0.92	-4.61	5.55	2.23	2.81	-4.18	-0.11	-5.82	8.90
<i>90% Confidence Interval</i>	(-38,-1)	(-19,14)	(-18,16)	(-23,14)	(-14,25)	(-14,18)	(-14,19)	(-21,13)	(-16,16)	(-21,10)	(-7,25)
<i>P-Value</i>	0.089	0.808	0.929	0.676	0.638	0.816	0.780	0.690	0.991	0.539	0.362
Outpatient Surgeries	1.45	-0.67	-1.45	-2.06	1.40	0.09	3.55	-0.32	-1.11	-0.37	1.89
<i>90% Confidence Interval</i>	(-3,6)	(-6,4)	(-7,4)	(-7,3)	(-4,7)	(-5,5)	(-2,9)	(-5,5)	(-7,4)	(-6,5)	(-4,8)
<i>P-Value</i>	0.613	0.821	0.636	0.479	0.674	0.977	0.297	0.915	0.741	0.917	0.599

Measures (Number of Events or Days per 1,000 Beneficiaries)	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11
All PS <sup>a</sup> Orthopedic Surgeries	0.34	-0.51	0.31	-0.21	0.16	-0.22	0.20	0.07	-0.72	-0.25	-1.35**
<i>90% Confidence Interval</i>	(-1,1)	(-1,0)	(-1,1)	(-1,1)	(-1,1)	(-1,1)	(-1,1)	(-1,1)	(-2,0)	(-1,1)	(-2,0)
<i>P-Value</i>	0.525	0.345	0.593	0.709	0.766	0.691	0.718	0.901	0.209	0.679	0.04
Inpatient PS Orthopedic Surgeries	0.21	-0.19	0.67	-0.09	0.30	0.04	0.54	-0.05	-0.38	-0.20	-1.17*
<i>90% Confidence Interval</i>	(-1,1)	(-1,1)	(0,2)	(-1,1)	(-1,1)	(-1,1)	(0,1)	(-1,1)	(-1,0)	(-1,1)	(-2,0)
<i>P-Value</i>	0.667	0.704	0.21	0.865	0.557	0.934	0.304	0.928	0.473	0.724	0.054
PS Orthopedic Surgery Hospital Days	-0.43	-0.92	5.73	-3.66	2.17	-1.54	-0.81	-2.87	-4.27	-6.06*	-3.36
<i>90% Confidence Interval</i>	(-5,4)	(-6,4)	(0,12)	(-9,2)	(-3,7)	(-7,4)	(-7,5)	(-8,2)	(-10,1)	(-12,0)	(-9,3)
<i>P-Value</i>	0.876	0.751	0.112	0.267	0.457	0.629	0.815	0.377	0.184	0.085	0.355
Outpatient PS Orthopedic Surgeries	0.13	-0.23	-0.32*	-0.16	-0.12	-0.34*	-0.22	0.05	-0.40**	0.03	-0.29
<i>90% Confidence Interval</i>	(0,0)	(-1,0)	(-1,0)	(0,0)	(0,0)	(-1,0)	(-1,0)	(0,0)	(-1,0)	(0,0)	(-1,0)
<i>P-Value</i>	0.416	0.237	0.083	0.369	0.528	0.066	0.228	0.777	0.046	0.857	0.205
All PS Cardiac Surgeries	-1.03*	-0.31	0.43	-0.18	-0.54	-0.21	0.08	-0.77	-0.11	0.11	0.60
<i>90% Confidence Interval</i>	(-2,0)	(-1,1)	(-1,1)	(-1,1)	(-1,0)	(-1,1)	(-1,1)	(-2,0)	(-1,1)	(-1,1)	(0,2)
<i>P-Value</i>	0.071	0.592	0.447	0.744	0.355	0.727	0.887	0.195	0.853	0.854	0.338
Inpatient PS Cardiac Surgeries	-0.57	-0.23	0.31	-0.03	-0.33	-0.13	-0.17	-0.50	-0.22	-0.75*	0.33
<i>90% Confidence Interval</i>	(-1,0)	(-1,0)	(0,1)	(-1,1)	(-1,0)	(-1,0)	(-1,0)	(-1,0)	(-1,0)	(-1,0)	(0,1)
<i>P-Value</i>	0.135	0.554	0.383	0.933	0.372	0.725	0.652	0.198	0.567	0.062	0.42
Inpatient PS Cardiac Surgical Hospital Days	-0.61	-2.24	2.63	-0.58	3.15	-0.01	0.15	-5.86*	-3.26	-2.44	3.23
<i>90% Confidence Interval</i>	(-6,5)	(-7,3)	(-2,8)	(-6,5)	(-9,15)	(-5,5)	(-5,5)	(-11,0)	(-8,2)	(-7,2)	(-2,9)
<i>P-Value</i>	0.861	0.478	0.379	0.856	0.665	0.997	0.958	0.077	0.289	0.408	0.319
Outpatient PS Cardiac Surgeries	-0.46	-0.08	0.12	-0.15	-0.21	-0.08	0.25	-0.27	0.11	0.86**	0.27
<i>90% Confidence Interval</i>	(-1,0)	(-1,1)	(-1,1)	(-1,0)	(-1,0)	(-1,1)	(0,1)	(-1,0)	(-1,1)	(0,2)	(0,1)
<i>P-Value</i>	0.244	0.83	0.765	0.694	0.616	0.856	0.536	0.504	0.793	0.044	0.536

\* Statistically significant at the ten percent level.



\*\* Statistically significant at the five percent level.

<sup>a</sup>PS = Preference-sensitive.

**Appendix Table B-21: Quarterly DiD Estimates of Resource Use (Number of Events or Days per 1,000 Beneficiaries), Welvie Ohio MA ITT Analysis Cohort**

Measures (Number of Events or Days per 1,000 Beneficiaries)	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11
<i>Number of Participant Beneficiaries</i>	97,380	96,492	95,477	92,080	91,230	90,076	89,069	82,860	81,907	79,501	78,171
ER Visits	0.40	1.21	-0.63	-0.05	-0.57	-1.37	-3.16*	-2.60	0.60	0.34	0.90
<i>90% Confidence Interval</i>	(-2,3)	(-2,4)	(-3,2)	(-3,3)	(-3,2)	(-4,1)	(-6,0)	(-6,0)	(-2,3)	(-2,2)	(-1,2)
<i>P-Value</i>	0.811	0.478	0.714	0.975	0.739	0.389	0.067	0.145	0.727	0.775	0.300
Inpatient Admissions	-0.43	-0.97	-2.45	-1.16	-0.38	0.07	-2.14	2.26	-0.21	-1.37	-2.95*
<i>90% Confidence Interval</i>	(-3,2)	(-4,2)	(-5,0)	(-4,1)	(-3,2)	(-2,3)	(-5,0)	(0,5)	(-3,2)	(-4,1)	(-6,0)
<i>P-Value</i>	0.796	0.558	0.123	0.455	0.810	0.965	0.156	0.147	0.895	0.390	0.057
Unplanned Inpatient Admissions	-0.94	-0.52	-2.35	-1.39	0.05	-1.29	-2.52*	0.91	-0.61	-2.08	-2.87**
<i>90% Confidence Interval</i>	(-3,2)	(-3,2)	(-5,0)	(-4,1)	(-2,2)	(-4,1)	(-5,0)	(-1,3)	(-3,2)	(-5,0)	(-5,0)
<i>P-Value</i>	0.539	0.737	0.110	0.329	0.971	0.360	0.069	0.523	0.673	0.164	0.047
Hospital Days	-4.25	5.71	-26.82**	-9.56	-9.88	4.27	-6.61	2.80	2.83	-6.55	-21.42*
<i>90% Confidence Interval</i>	(-25,16)	(-14,26)	(-48,-6)	(-29,10)	(-29,9)	(-15,23)	(-25,12)	(-17,23)	(-17,22)	(-26,13)	(-41,-2)
<i>P-Value</i>	0.734	0.638	0.035	0.413	0.395	0.709	0.561	0.819	0.810	0.572	0.073
All Surgeries	-1.18	0.03	-3.78**	-1.65	0.18	0.42	-1.18	0.93	-0.28	0.28	-0.30
<i>90% Confidence Interval</i>	(-4,1)	(-3,3)	(-6,-1)	(-4,1)	(-3,3)	(-2,3)	(-4,1)	(-2,3)	(-3,2)	(-3,3)	(-3,3)
<i>P-Value</i>	0.452	0.984	0.014	0.294	0.913	0.784	0.441	0.537	0.856	0.877	0.875
Inpatient Surgeries	-0.71	-1.16	-2.25***	-0.72	-0.63	0.34	-0.10	0.61	-0.09	-0.60	-0.34
<i>90% Confidence Interval</i>	(-2,1)	(-3,0)	(-4,-1)	(-2,1)	(-2,1)	(-1,2)	(-1,1)	(-1,2)	(-1,1)	(-2,0)	(-1,1)
<i>P-Value</i>	0.429	0.187	0.008	0.391	0.414	0.685	0.909	0.463	0.902	0.301	0.576
Surgical Hospital Days	-4.53	-2.30	-14.22*	-7.16	-8.31	4.64	0.62	-6.52	2.28	1.39	0.24
<i>90% Confidence Interval</i>	(-17,7)	(-14,9)	(-27,-2)	(-18,4)	(-19,2)	(-7,16)	(-11,12)	(-17,4)	(-6,11)	(-6,9)	(-8,8)
<i>P-Value</i>	0.535	0.736	0.064	0.290	0.201	0.502	0.929	0.324	0.663	0.749	0.960

Measures (Number of Events or Days per 1,000 Beneficiaries)	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11
Outpatient Surgeries	-0.47	1.19	-1.53	-0.93	0.81	0.08	-1.09	0.32	-0.19	0.88	0.04
90% Confidence Interval	(-3,2)	(-1,3)	(-4,1)	(-3,1)	(-1,3)	(-2,2)	(-3,1)	(-2,2)	(-2,2)	(-2,4)	(-3,3)
P-Value	0.705	0.333	0.215	0.471	0.562	0.948	0.377	0.790	0.885	0.599	0.980
All PS <sup>a</sup> Orthopedic Surgeries	-0.18	-0.30	-0.76	-0.13	0.50	-0.17	0.07	0.02	0.13	-0.21	-0.12
90% Confidence Interval	(-1,1)	(-1,1)	(-2,0)	(-1,1)	(0,1)	(-1,1)	(-1,1)	(-1,1)	(-1,1)	(-1,1)	(-1,1)
P-Value	0.761	0.603	0.180	0.814	0.366	0.753	0.906	0.975	0.797	0.630	0.814
Inpatient PS Orthopedic Surgeries	0.05	-0.15	-0.64	-0.09	0.40	-0.10	0.13	0.19	0.12	-0.27	-0.24
90% Confidence Interval	(-1,1)	(-1,1)	(-2,0)	(-1,1)	(0,1)	(-1,1)	(-1,1)	(-1,1)	(-1,1)	(-1,0)	(-1,1)
P-Value	0.932	0.784	0.247	0.874	0.450	0.856	0.812	0.712	0.807	0.524	0.618
PS Orthopedic Surgery Hospital Days	1.66	1.46	-1.45	-2.28	0.72	1.42	1.98	-2.43	1.07	2.39	1.63
90% Confidence Interval	(-4,7)	(-4,7)	(-7,4)	(-8,3)	(-6,7)	(-5,8)	(-4,8)	(-8,3)	(-4,6)	(-3,8)	(-5,8)
P-Value	0.635	0.661	0.684	0.491	0.859	0.728	0.604	0.460	0.746	0.456	0.683
Outpatient PS Orthopedic Surgeries	-0.23	-0.15	-0.13	-0.05	0.10	-0.08	-0.06	-0.17	0.01	0.06	0.12
90% Confidence Interval	(0,0)	(0,0)	(0,0)	(0,0)	(0,0)	(0,0)	(0,0)	(0,0)	(0,0)	(0,0)	(0,0)
P-Value	0.119	0.294	0.385	0.746	0.501	0.539	0.592	0.175	0.932	0.630	0.277
All PS Cardiac Surgeries	-0.27	0.01	-1.61***	-0.98**	-0.43	-0.36	-0.73	0.01	-0.17	0.07	0.05
90% Confidence Interval	(-1,1)	(-1,1)	(-2,-1)	(-2,0)	(-1,0)	(-1,0)	(-2,0)	(-1,1)	(-1,1)	(-1,1)	(-1,1)
P-Value	0.629	0.985	0.002	0.049	0.395	0.480	0.156	0.977	0.718	0.871	0.916
Inpatient PS Cardiac Surgeries	-0.21	-0.32	-1.05**	-0.83**	0.03	-0.35	-0.54	-0.01	-0.16	-0.09	-0.09
90% Confidence Interval	(-1,1)	(-1,0)	(-2,0)	(-1,0)	(-1,1)	(-1,0)	(-1,0)	(-1,1)	(-1,0)	(-1,0)	(-1,1)
P-Value	0.653	0.473	0.018	0.041	0.935	0.405	0.212	0.975	0.692	0.806	0.816
Inpatient PS Cardiac Surgical Hospital Days	-4.24	2.66	-5.81**	-6.12**	-1.00	-0.16	-3.31	-0.10	1.85	1.41	-1.30
90% Confidence Interval	(-10,2)	(-2,8)	(-11,-1)	(-11,-1)	(-7,5)	(-6,5)	(-9,2)	(-5,5)	(-3,7)	(-3,6)	(-6,3)
P-Value	0.243	0.394	0.049	0.032	0.783	0.963	0.339	0.974	0.529	0.592	0.641
Outpatient PS Cardiac Surgeries	-0.06	0.33	-0.56**	-0.15	-0.46*	-0.01	-0.19	0.03	-0.02	0.16	0.14

Measures (Number of Events or Days per 1,000 Beneficiaries)	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11
<i>90% Confidence Interval</i>	(-1,0)	(0,1)	(-1,0)	(-1,0)	(-1,0)	(0,0)	(-1,0)	(0,0)	(0,0)	(0,1)	(0,1)
<i>P-Value</i>	0.833	0.213	0.034	0.571	0.090	0.975	0.462	0.918	0.952	0.539	0.615

\* Statistically significant at the ten percent level.  
 \*\* Statistically significant at the five percent level.  
 \*\*\* Statistically significant at the one percent level.  
<sup>a</sup>PS = Preference-sensitive.

**Appendix Table B-22: Quarterly DiD Estimates of Resource Use (Number of Events or Days per 1,000 Beneficiaries), Welvie Texas MA ITT Analysis Cohort**

<b>Measures (Number of Events or Days per 1,000 Beneficiaries)</b>	<b>Q1</b>	<b>Q2</b>	<b>Q3</b>	<b>Q4</b>	<b>Q5</b>	<b>Q6</b>
<i>Number of Participant Beneficiaries</i>	63,979	63,885	50,346	49,822	49,356	48,797
ER Visits	1.52	-0.59	-3.35	0.22	3.73	2.17
<i>90% Confidence Interval</i>	(-3,6)	(-5,4)	(-9,2)	(-5,5)	(-2,9)	(-3,8)
<i>P-Value</i>	0.602	0.838	0.293	0.946	0.248	0.509
Inpatient Admissions	2.36	2.58	-3.33	2.54	5.76**	0.65
<i>90% Confidence Interval</i>	(-1,6)	(-1,6)	(-8,1)	(-2,7)	(2,10)	(-3,5)
<i>P-Value</i>	0.283	0.259	0.231	0.355	0.025	0.787
Unplanned Inpatient Admissions	1.97	2.85	-2.90	1.44	6.17***	0.32
<i>90% Confidence Interval</i>	(-1,5)	(-1,6)	(-7,1)	(-3,6)	(2,10)	(-3,4)
<i>P-Value</i>	0.335	0.179	0.266	0.569	0.010	0.890
Hospital Days	-5.22	4.95	-46.44**	26.13	49.01**	13.34
<i>90% Confidence Interval</i>	(-34,23)	(-26,36)	(-84,-9)	(-10,62)	(16,83)	(-19,46)
<i>P-Value</i>	0.765	0.793	0.040	0.237	0.016	0.495
All Surgeries	0.07	0.95	0.07	0.46	0.80	-0.41
<i>90% Confidence Interval</i>	(-3,3)	(-2,4)	(-3,3)	(-3,4)	(-3,4)	(-4,3)
<i>P-Value</i>	0.967	0.615	0.971	0.822	0.709	0.848
Inpatient Surgeries	2.25**	1.36	0.95	2.21*	0.62	-0.20
<i>90% Confidence Interval</i>	(1,4)	(0,3)	(-1,3)	(0,4)	(-1,3)	(-2,2)
<i>P-Value</i>	0.030	0.198	0.388	0.056	0.589	0.862
Surgical Hospital Days	2.40	8.23	-5.42	21.33*	16.43	4.76
<i>90% Confidence Interval</i>	(-16,20)	(-9,26)	(-27,16)	(1,42)	(-2,35)	(-14,24)
<i>P-Value</i>	0.826	0.435	0.675	0.086	0.153	0.679
Outpatient Surgeries	-2.17	-0.41	-0.88	-1.75	0.18	-0.21
<i>90% Confidence Interval</i>	(-4,0)	(-3,2)	(-3,2)	(-4,1)	(-3,3)	(-3,3)
<i>P-Value</i>	0.114	0.788	0.558	0.289	0.919	0.904
All PS <sup>a</sup> Orthopedic Surgeries	-0.19	0.38	-0.91	0.55	-0.37	0.14
<i>90% Confidence Interval</i>	(-1,1)	(-1,1)	(-2,0)	(0,2)	(-1,1)	(-1,1)
<i>P-Value</i>	0.758	0.547	0.115	0.380	0.562	0.834
Inpatient PS Orthopedic Surgeries	-0.01	0.56	-0.64	0.94	-0.12	0.24
<i>90% Confidence Interval</i>	(-1,1)	(0,2)	(-2,0)	(0,2)	(-1,1)	(-1,1)
<i>P-Value</i>	0.987	0.356	0.240	0.113	0.839	0.704
PS Orthopedic Surgery Hospital Days	-1.64	3.41	-9.86***	5.85	1.67	-0.05
<i>90% Confidence Interval</i>	(-8,5)	(-4,11)	(-16,-4)	(0,12)	(-5,9)	(-7,7)
<i>P-Value</i>	0.670	0.456	0.010	0.124	0.696	0.991

<b>Measures (Number of Events or Days per 1,000 Beneficiaries)</b>	<b>Q1</b>	<b>Q2</b>	<b>Q3</b>	<b>Q4</b>	<b>Q5</b>	<b>Q6</b>
Outpatient PS Orthopedic Surgeries	-0.18	-0.18	-0.27	-0.39**	-0.24	-0.10
<i>90% Confidence Interval</i>	(-1,0)	(0,0)	(-1,0)	(-1,0)	(-1,0)	(0,0)
<i>P-Value</i>	0.389	0.352	0.152	0.041	0.162	0.641
All PS Cardiac Surgeries	0.09	0.11	-0.25	0.44	-0.83	0.31
<i>90% Confidence Interval</i>	(-1,1)	(-1,1)	(-1,1)	(-1,2)	(-2,0)	(-1,1)
<i>P-Value</i>	0.880	0.851	0.680	0.497	0.190	0.641
Inpatient PS Cardiac Surgeries	0.37	0.57	0.24	0.90**	0.33	0.55
<i>90% Confidence Interval</i>	(0,1)	(0,1)	(0,1)	(0,2)	(0,1)	(0,1)
<i>P-Value</i>	0.388	0.195	0.572	0.042	0.436	0.227
Inpatient PS Cardiac Surgical Hospital Days	-1.70	4.57	-9.60	9.23**	7.60*	6.69*
<i>90% Confidence Interval</i>	(-8,4)	(-1,11)	(-20,1)	(3,16)	(1,15)	(0,13)
<i>P-Value</i>	0.648	0.205	0.121	0.021	0.075	0.094
Outpatient PS Cardiac Surgeries	-0.28	-0.46	-0.49	-0.46	-1.16***	-0.23
<i>90% Confidence Interval</i>	(-1,0)	(-1,0)	(-1,0)	(-1,0)	(-2,0)	(-1,1)
<i>P-Value</i>	0.460	0.235	0.231	0.303	0.008	0.609

\* Statistically significant at the ten percent level.

\*\* Statistically significant at the five percent level.

\*\*\* Statistically significant at the one percent level.

<sup>a</sup>PS = Preference-sensitive.

**Appendix Table B-23: Quarterly DiD Estimates of Resource Use (Number of Events or Days per 1,000 Beneficiaries), Welvie Ohio FFS IV Analysis Cohort**

<b>Measures (Number of Events or Days per 1,000 Beneficiaries)</b>	<b>Q1</b>	<b>Q2</b>	<b>Q3</b>	<b>Q4</b>	<b>Q5</b>	<b>Q6</b>	<b>Q7</b>	<b>Q8</b>	<b>Q9</b>	<b>Q10</b>
<i>Number of Participant Beneficiaries</i>	1166	1162	1153	1141	1137	1120	1103	1041	887	267
ER Visits	24.75	-257.73*	-356.51**	39.65	-135.55	-40.47	-83.65	-40.55	-28.34	-420.20
<i>90% Confidence Interval</i>	(-216,265)	(-503,-13)	(-592,-121)	(-197,277)	(-381,110)	(-294,213)	(-327,160)	(-299,217)	(-333,277)	(-1434,594)
<i>P-Value</i>	0.866	0.084	0.013	0.783	0.363	0.793	0.573	0.796	0.879	0.495
Inpatient Admissions	-254.45*	-140.60	-80.65	56.39	165.61	54.32	-197.24	-158.72	-78.06	447.02
<i>90% Confidence Interval</i>	(-486,-23)	(-366,85)	(-302,141)	(-168,281)	(-57,388)	(-160,269)	(-419,25)	(-396,78)	(-350,194)	(-415,1309)
<i>P-Value</i>	0.071	0.305	0.55	0.68	0.221	0.677	0.144	0.271	0.637	0.393
Unplanned Inpatient Admissions	-226.77*	-91.87	-48.44	94.24	204.32*	40.97	-185.14	-89.95	-61.13	706.40
<i>90% Confidence Interval</i>	(-439,-15)	(-296,112)	(-249,152)	(-109,298)	(2,406)	(-153,235)	(-385,15)	(-306,126)	(-309,187)	(-71,1483)
<i>P-Value</i>	0.078	0.46	0.691	0.446	0.096	0.728	0.127	0.493	0.685	0.135
Hospital Days	-1,914.49*	192.43	-513.95	-1,360.83	903.80	1,118.35	-1,510.04	-1,471.98	-1,413.66	-306.02
<i>90% Confidence Interval</i>	(-3799,-30)	(-1606,1991)	(-2313,1285)	(-3661,939)	(-1016,2823)	(-645,2881)	(-3214,194)	(-3436,492)	(-3597,770)	(-7037,6425)
<i>P-Value</i>	0.095	0.86	0.638	0.331	0.439	0.297	0.145	0.218	0.287	0.940
All Surgeries	15.08	-179.75	46.39	-88.58	129.83	39.50	200.76	21.94	-69.74	-412.39
<i>90% Confidence Interval</i>	(-281,311)	(-480,121)	(-263,355)	(-382,204)	(-192,451)	(-266,345)	(-129,531)	(-290,334)	(-460,321)	(-1749,925)
<i>P-Value</i>	0.933	0.325	0.805	0.619	0.507	0.832	0.317	0.908	0.769	0.612
Inpatient Surgeries	-78.20	-86.81	-11.95	-10.95	-6.28	1.29	13.37	-21.27	10.27	-326.16
<i>90% Confidence Interval</i>	(-171,14)	(-179,6)	(-104,80)	(-104,82)	(-98,85)	(-90,92)	(-79,105)	(-118,76)	(-102,122)	(-698,45)
<i>P-Value</i>	0.164	0.123	0.832	0.847	0.910	0.981	0.811	0.718	0.880	0.149
Surgical Hospital Days	-971.77	-140.00	-52.29	-201.41	201.83	91.54	153.67	-232.85	83.13	-1,315.47

Measures (Number of Events or Days per 1,000 Beneficiaries)	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10
<i>90% Confidence Interval</i>	(-1961,17)	(-987,707)	(-923,818)	(-1133,731)	(-782,1186)	(-710,893)	(-690,997)	(-1143,677)	(-883,1049)	(-4407,1776)
<i>P-Value</i>	0.106	0.786	0.921	0.722	0.736	0.851	0.764	0.674	0.887	0.484
Outpatient Surgeries	80.26	-47.21	-87.82	-102.79	75.29	9.44	154.29	21.26	-83.99	-133.31
<i>90% Confidence Interval</i>	(-168,329)	(-300,206)	(-349,173)	(-349,144)	(-203,354)	(-251,270)	(-131,439)	(-241,283)	(-420,252)	(-1298,1032)
<i>P-Value</i>	0.595	0.759	0.58	0.493	0.656	0.953	0.373	0.894	0.681	0.851
All PS <sup>a</sup> Orthopedic Surgeries	36.76	-30.66	8.74	-9.88	7.80	-13.45	7.16	-0.71	-40.36	-25.58
<i>90% Confidence Interval</i>	(-9,83)	(-77,16)	(-40,57)	(-56,37)	(-38,53)	(-60,34)	(-40,54)	(-51,49)	(-98,17)	(-221,170)
<i>P-Value</i>	0.19	0.278	0.767	0.726	0.778	0.638	0.803	0.981	0.25	0.829
Inpatient PS Orthopedic Surgeries	28.35	-12.79	29.27	-3.82	15.49	0.15	25.17	-7.95	-20.80	-19.69
<i>90% Confidence Interval</i>	(-14,71)	(-55,29)	(-16,74)	(-47,39)	(-27,58)	(-44,44)	(-19,69)	(-54,38)	(-74,32)	(-203,164)
<i>P-Value</i>	0.274	0.618	0.287	0.884	0.545	0.996	0.346	0.775	0.519	0.860
PS Orthopedic Surgery Hospital Days	62.86	-60.64	289.59	-196.83	127.98	-90.66	-45.33	-165.21	-231.94	-1,154.35*
<i>90% Confidence Interval</i>	(-178,304)	(-308,187)	(-16,595)	(-474,80)	(-116,372)	(-355,174)	(-334,243)	(-448,117)	(-554,90)	(-2307,-2)
<i>P-Value</i>	0.668	0.687	0.119	0.243	0.389	0.573	0.796	0.336	0.236	0.1
Outpatient PS Orthopedic Surgeries	9.66	-14.84	-17.17*	-8.03	-6.80	-17.11*	-12.06	3.82	-23.00*	9.65
<i>90% Confidence Interval</i>	(-5,24)	(-32,2)	(-33,-2)	(-23,7)	(-22,9)	(-32,-2)	(-27,3)	(-13,20)	(-43,-3)	(-49,68)
<i>P-Value</i>	0.271	0.146	0.066	0.369	0.465	0.066	0.189	0.705	0.057	0.786
All PS Cardiac Surgeries	-58.86*	-13.41	24.36	-13.69	-27.94	-10.27	4.44	-40.58	-3.94	7.75
<i>90% Confidence Interval</i>	(-108,-9)	(-63,37)	(-24,73)	(-61,34)	(-76,21)	(-60,39)	(-44,53)	(-93,11)	(-65,57)	(-192,208)
<i>P-Value</i>	0.051	0.659	0.409	0.635	0.344	0.732	0.881	0.199	0.915	0.949
Inpatient PS Cardiac Surgeries	-29.69	-7.90	15.77	-0.23	-18.06	-6.17	-9.09	-25.84	-10.99	-154.01*
<i>90% Confidence Interval</i>	(-63,3)	(-41,25)	(-15,46)	(-31,31)	(-49,13)	(-37,25)	(-41,22)	(-60,8)	(-50,28)	(-285,-23)
<i>P-Value</i>	0.139	0.695	0.396	0.99	0.333	0.743	0.635	0.211	0.644	0.054

Measures (Number of Events or Days per 1,000 Beneficiaries)	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10
Inpatient PS Cardiac Surgical Hospital Days	-8.39	-126.19	139.75	-1.99	128.03	19.46	-10.93	-303.88*	-184.24	-510.54
90% Confidence Interval	(-312,295)	(-393,140)	(-114,394)	(-273,269)	(-477,733)	(-214,253)	(-254,232)	(-592,-16)	(-493,124)	(-1480,459)
P-Value	0.964	0.436	0.365	0.99	0.728	0.891	0.941	0.082	0.326	0.386
Outpatient PS Cardiac Surgeries	-29.17	-5.51	8.59	-13.46	-9.88	-4.10	13.53	-14.75	7.04	161.76*
90% Confidence Interval	(-64,5)	(-39,28)	(-25,43)	(-46,19)	(-45,25)	(-39,31)	(-21,48)	(-50,21)	(-35,49)	(23,301)
P-Value	0.163	0.789	0.678	0.497	0.639	0.848	0.515	0.492	0.785	0.056

\* Statistically significant at the ten percent level.

\*\* Statistically significant at the five percent level.

<sup>a</sup>PS = Preference-sensitive.

**Appendix Table B-24: Quarterly DiD Estimates of Resource Use (Number of Events or Days per 1,000 Beneficiaries), Welvie Ohio MA IV Analysis Cohort**

Measures (Number of Events or Days per 1,000 Beneficiaries)	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11
Number of Participant Beneficiaries	4294	4281	4260	4126	3647	3307	2759	2584	2295	2169	1694
ER Visits	-6.40	-2.79	-57.34	-46.88	-56.00	-83.20*	-152.76**	-146.79**	-44.52	-30.12	-7.30
90% Confidence Interval	(-74,62)	(-71,65)	(-125,11)	(-116,22)	(-131,19)	(-160,-7)	(-249,-56)	(-246,-48)	(-150,61)	(-108,48)	(-83,69)
P-Value	0.877	0.946	0.165	0.264	0.218	0.073	0.009	0.015	0.486	0.525	0.874
Inpatient Admissions	-1.09	-29.02	-70.57*	-49.97	-32.17	-12.32	-75.51	56.32	-27.29	-77.56	-135.40*
90% Confidence Interval	(-66,64)	(-93,35)	(-131,-10)	(-109,9)	(-99,34)	(-83,58)	(-157,6)	(-28,140)	(-120,65)	(-175,20)	(-254,-17)
P-Value	0.978	0.457	0.056	0.163	0.427	0.774	0.127	0.270	0.628	0.190	0.060
Unplanned Inpatient Admissions	-23.45	-19.85	-67.74**	-49.80	-15.97	-42.86	-88.56*	20.61	-32.62	-97.26*	-126.86*



<b>Measures (Number of Events or Days per 1,000 Beneficiaries)</b>	<b>Q1</b>	<b>Q2</b>	<b>Q3</b>	<b>Q4</b>	<b>Q5</b>	<b>Q6</b>	<b>Q7</b>	<b>Q8</b>	<b>Q9</b>	<b>Q10</b>	<b>Q11</b>
<i>90% Confidence Interval</i>	(-83,36)	(-79,39)	(-124,-12)	(-104,4)	(-77,45)	(-108,22)	(-164,-13)	(-56,98)	(-118,53)	(-188,-7)	(-237,-17)
<i>P-Value</i>	0.517	0.582	0.047	0.130	0.667	0.278	0.052	0.660	0.529	0.078	0.058
Hospital Days	-17.58	100.89	-695.71**	-293.99	-355.24	85.21	-216.18	41.49	73.29	-302.80	-991.86*
<i>90% Confidence Interval</i>	(-503,468)	(-367,569)	(-1183,-208)	(-739,151)	(-849,138)	(-442,612)	(-831,399)	(-615,698)	(-625,772)	(-1010,404)	(-1900,-84)
<i>P-Value</i>	0.952	0.723	0.019	0.277	0.236	0.790	0.563	0.917	0.863	0.481	0.072
All Surgeries	-10.84	-3.04	-88.31**	-49.62	-1.92	-5.91	-43.39	17.74	-21.70	-14.70	-36.69
<i>90% Confidence Interval</i>	(-72,50)	(-62,56)	(-147,-29)	(-109,10)	(-72,68)	(-76,64)	(-127,40)	(-63,98)	(-114,71)	(-124,94)	(-182,109)
<i>P-Value</i>	0.770	0.933	0.014	0.172	0.964	0.890	0.391	0.718	0.700	0.825	0.679
Inpatient Surgeries	-6.80	-29.11	-59.60***	-27.84	-19.03	-0.07	-6.17	6.22	-16.06	-25.68	-18.39
<i>90% Confidence Interval</i>	(-42,28)	(-63,5)	(-92,-27)	(-60,4)	(-52,14)	(-38,38)	(-51,39)	(-38,51)	(-59,27)	(-61,10)	(-65,28)
<i>P-Value</i>	0.748	0.156	0.003	0.149	0.344	0.998	0.823	0.818	0.537	0.235	0.518
Surgical Hospital Days	-72.75	-61.18	-374.75**	-221.24	-217.53	89.47	28.30	-265.29	50.83	59.30	-12.57
<i>90% Confidence Interval</i>	(-356,211)	(-324,202)	(-668,-81)	(-478,36)	(-494,59)	(-228,407)	(-352,409)	(-621,91)	(-260,361)	(-207,325)	(-389,364)
<i>P-Value</i>	0.673	0.702	0.036	0.157	0.196	0.643	0.903	0.220	0.788	0.714	0.956
Outpatient Surgeries	-4.04	26.07	-28.71	-21.78	17.11	-5.84	-37.23	11.52	-5.63	10.98	-18.30
<i>90% Confidence Interval</i>	(-52,44)	(-21,73)	(-76,19)	(-71,27)	(-43,77)	(-62,51)	(-104,30)	(-54,77)	(-86,75)	(-91,113)	(-154,118)
<i>P-Value</i>	0.891	0.363	0.319	0.466	0.637	0.865	0.359	0.771	0.908	0.859	0.825
All PS <sup>a</sup> Orthopedic Surgeries	4.67	-7.41	-20.20	-10.26	11.35	-10.80	4.28	-5.95	-2.04	-7.18	-7.05
<i>90% Confidence Interval</i>	(-18,28)	(-30,15)	(-42,1)	(-31,11)	(-12,35)	(-36,15)	(-26,35)	(-35,23)	(-32,28)	(-34,20)	(-45,31)
<i>P-Value</i>	0.739	0.585	0.126	0.425	0.429	0.484	0.818	0.733	0.912	0.664	0.759
Inpatient PS Orthopedic Surgeries	10.27	-4.55	-17.57	-8.49	9.03	-8.49	4.91	0.23	-2.40	-11.13	-13.29

<b>Measures (Number of Events or Days per 1,000 Beneficiaries)</b>	<b>Q1</b>	<b>Q2</b>	<b>Q3</b>	<b>Q4</b>	<b>Q5</b>	<b>Q6</b>	<b>Q7</b>	<b>Q8</b>	<b>Q9</b>	<b>Q10</b>	<b>Q11</b>
<i>90% Confidence Interval</i>	(-12,33)	(-26,17)	(-39,3)	(-29,12)	(-14,32)	(-33,16)	(-25,35)	(-28,28)	(-32,27)	(-37,15)	(-50,24)
<i>P-Value</i>	0.450	0.729	0.168	0.494	0.514	0.572	0.786	0.989	0.893	0.484	0.552
PS Orthopedic Surgery Hospital Days	67.42	31.67	-39.01	-80.68	17.53	22.25	70.01	-90.32	24.95	105.85	50.05
<i>90% Confidence Interval</i>	(-68,203)	(-96,160)	(-175,97)	(-206,44)	(-154,189)	(-166,210)	(-137,277)	(-268,87)	(-171,221)	(-91,303)	(-254,354)
<i>P-Value</i>	0.413	0.684	0.637	0.289	0.867	0.846	0.578	0.402	0.834	0.377	0.787
Outpatient PS Orthopedic Surgeries	-5.60	-2.86	-2.62	-1.77	2.32	-2.32	-0.63	-6.19	0.35	3.95	6.24
<i>90% Confidence Interval</i>	(-11,0)	(-8,3)	(-8,3)	(-7,4)	(-4,8)	(-8,3)	(-7,6)	(-13,1)	(-7,8)	(-3,11)	(-2,15)
<i>P-Value</i>	0.105	0.388	0.436	0.591	0.535	0.502	0.875	0.135	0.938	0.381	0.237
All PS Cardiac Surgeries	-6.73	0.85	-39.15***	-25.17**	-10.14	-8.93	-25.30	-1.68	-8.54	-3.22	-2.82
<i>90% Confidence Interval</i>	(-28,15)	(-20,21)	(-59,-19)	(-44,-6)	(-32,11)	(-32,14)	(-53,2)	(-29,25)	(-37,20)	(-30,24)	(-38,33)
<i>P-Value</i>	0.606	0.946	0.001	0.028	0.439	0.530	0.132	0.918	0.617	0.844	0.896
Inpatient PS Cardiac Surgeries	-4.93	-8.72	-26.23**	-19.89**	1.04	-10.19	-17.99	-3.49	-7.30	-5.95	-5.50
<i>90% Confidence Interval</i>	(-23,13)	(-26,8)	(-43,-9)	(-35,-5)	(-17,19)	(-30,9)	(-41,5)	(-26,19)	(-31,16)	(-27,16)	(-34,23)
<i>P-Value</i>	0.651	0.403	0.011	0.033	0.922	0.387	0.206	0.795	0.605	0.649	0.751
Inpatient PS Cardiac Surgical Hospital Days	-99.20	61.31	-146.23**	-152.68**	-22.19	-3.35	-105.69	-17.46	53.61	49.23	-66.18
<i>90% Confidence Interval</i>	(-240,42)	(-59,182)	(-259,-34)	(-261,-44)	(-177,133)	(-158,151)	(-294,82)	(-187,152)	(-120,227)	(-112,211)	(-278,145)
<i>P-Value</i>	0.248	0.402	0.033	0.020	0.814	0.972	0.355	0.865	0.611	0.616	0.607
Outpatient PS Cardiac Surgeries	-1.80	9.57	-12.92**	-5.28	-11.18	1.26	-7.31	1.82	-1.24	2.73	2.68
<i>90% Confidence Interval</i>	(-13,9)	(-1,20)	(-23,-3)	(-16,5)	(-23,0)	(-11,13)	(-21,6)	(-12,16)	(-16,14)	(-13,18)	(-18,23)

<b>Measures (Number of Events or Days per 1,000 Beneficiaries)</b>	<b>Q1</b>	<b>Q2</b>	<b>Q3</b>	<b>Q4</b>	<b>Q5</b>	<b>Q6</b>	<b>Q7</b>	<b>Q8</b>	<b>Q9</b>	<b>Q10</b>	<b>Q11</b>
<i>P-Value</i>	0.789	0.126	0.037	0.400	0.115	0.861	0.378	0.834	0.893	0.774	0.830

\* Statistically significant at the ten percent level.

\*\* Statistically significant at the five percent level.

\*\*\* Statistically significant at the one percent level.

<sup>a</sup>PS = Preference-sensitive.

**Appendix Table B-25: Quarterly DiD Estimates of Resource Use (Number of Events or Days per 1,000 Beneficiaries), Welvie Texas MA IV Analysis Cohort**

<b>Measures (Number of Events or Days per 1,000 Beneficiaries)</b>	<b>Q1</b>	<b>Q2</b>	<b>Q3</b>	<b>Q4</b>	<b>Q5</b>	<b>Q6</b>
<i>Number of Participant Beneficiaries</i>	2439	2219	1764	1677	1319	902
ER Visits	29.19	-1.59	-47.17	12.97	217.35*	181.20
<i>90% Confidence Interval</i>	(-115,174)	(-149,145)	(-206,112)	(-152,178)	(6,429)	(-125,488)
<i>P-Value</i>	0.740	0.986	0.626	0.897	0.090	0.331
Inpatient Admissions	86.26	90.61	-102.62	78.66	240.57**	12.72
<i>90% Confidence Interval</i>	(-19,192)	(-22,203)	(-238,33)	(-61,218)	(76,406)	(-208,233)
<i>P-Value</i>	0.178	0.185	0.212	0.353	0.016	0.924
Unplanned Inpatient Admissions	64.98	99.45	-80.01	49.32	262.06***	-2.87
<i>90% Confidence Interval</i>	(-33,163)	(-5,204)	(-207,47)	(-80,178)	(109,415)	(-214,208)
<i>P-Value</i>	0.274	0.117	0.299	0.530	0.005	0.982
Hospital Days	-13.94	244.91	-1,386.21**	727.26	2,025.34**	634.30
<i>90% Confidence Interval</i>	(-851,823)	(-687,1177)	(-2485,-288)	(-392,1847)	(725,3326)	(-1155,2424)
<i>P-Value</i>	0.978	0.665	0.038	0.285	0.010	0.560
All Surgeries	37.45	36.33	6.10	14.25	20.42	-38.75
<i>90% Confidence Interval</i>	(-47,122)	(-56,129)	(-87,99)	(-90,119)	(-116,156)	(-234,156)
<i>P-Value</i>	0.467	0.519	0.914	0.822	0.805	0.744
Inpatient Surgeries	80.11***	39.50	25.59	67.82*	24.59	-19.66
<i>90% Confidence Interval</i>	(30,130)	(-12,91)	(-28,79)	(9,127)	(-49,98)	(-123,84)
<i>P-Value</i>	0.008	0.208	0.432	0.057	0.581	0.754
Surgical Hospital Days	164.84	241.72	-141.53	586.50	662.32	214.17
<i>90% Confidence Interval</i>	(-361,691)	(-277,761)	(-768,485)	(-41,1214)	(-74,1399)	(-839,1268)
<i>P-Value</i>	0.606	0.443	0.710	0.124	0.139	0.738
Outpatient Surgeries	-42.66	-3.17	-19.49	-53.57	-4.17	-19.09
<i>90% Confidence Interval</i>	(-109,23)	(-77,71)	(-93,54)	(-137,30)	(-115,106)	(-179,141)
<i>P-Value</i>	0.287	0.944	0.663	0.292	0.951	0.844
All PS <sup>a</sup> Orthopedic Surgeries	1.45	13.72	-25.74	16.18	-16.34	0.08
<i>90% Confidence Interval</i>	(-28,31)	(-17,45)	(-54,2)	(-15,48)	(-57,24)	(-61,62)
<i>P-Value</i>	0.935	0.469	0.132	0.400	0.506	0.998
Inpatient PS Orthopedic Surgeries	8.41	20.63	-19.51	27.54	-6.29	8.62
<i>90% Confidence Interval</i>	(-19,36)	(-9,50)	(-46,7)	(-2,58)	(-45,33)	(-50,67)
<i>P-Value</i>	0.615	0.254	0.226	0.131	0.790	0.807
PS Orthopedic Surgery Hospital Days	-16.15	134.82	-276.21**	144.75	54.99	-13.26
<i>90% Confidence Interval</i>	(-201,169)	(-91,361)	(-465,-88)	(-44,333)	(-218,328)	(-389,363)

Measures (Number of Events or Days per 1,000 Beneficiaries)	Q1	Q2	Q3	Q4	Q5	Q6
<i>P-Value</i>	0.886	0.326	0.016	0.206	0.741	0.954
Outpatient PS Orthopedic Surgeries	-6.96	-6.91	-6.23	-11.36*	-10.05	-8.54
<i>90% Confidence Interval</i>	(-17,3)	(-16,2)	(-16,3)	(-21,-2)	(-21,1)	(-28,11)
<i>P-Value</i>	0.241	0.218	0.271	0.056	0.135	0.477
All PS Cardiac Surgeries	11.10	3.78	-3.24	12.76	-32.04	17.99
<i>90% Confidence Interval</i>	(-18,40)	(-26,33)	(-33,27)	(-20,46)	(-72,8)	(-43,79)
<i>P-Value</i>	0.525	0.833	0.858	0.522	0.190	0.627
Inpatient PS Cardiac Surgeries	15.66	17.35	6.32	29.20**	14.57	31.73
<i>90% Confidence Interval</i>	(-5,36)	(-4,39)	(-14,27)	(7,52)	(-13,42)	(-9,73)
<i>P-Value</i>	0.213	0.183	0.616	0.032	0.379	0.205
Inpatient PS Cardiac Surgical Hospital Days	-10.16	119.63	-298.49	278.25**	293.29*	381.32*
<i>90% Confidence Interval</i>	(-190,170)	(-57,296)	(-601,4)	(76,480)	(21,566)	(14,749)
<i>P-Value</i>	0.926	0.264	0.104	0.024	0.077	0.088
Outpatient PS Cardiac Surgeries	-4.56	-13.57	-9.56	-16.44	-46.61***	-13.74
<i>90% Confidence Interval</i>	(-23,14)	(-32,5)	(-30,11)	(-39,6)	(-74,-19)	(-56,28)
<i>P-Value</i>	0.683	0.234	0.437	0.225	0.006	0.589

\* Statistically significant at the ten percent level.

\*\* Statistically significant at the five percent level.

\*\*\* Statistically significant at the one percent level.

<sup>a</sup>PS = Preference-sensitive.

**Appendix Table B-26: Quarterly Resource Use Rate (Number of Beneficiaries with Events per 1,000 Beneficiaries) for Participants and Controls, Welvie Ohio FFS ITT Analysis Cohort, Q1 to Q5**

Measures	Baseline Period (Year Prior to Enrollment)		Q1		Q2		Q3		Q4		Q5	
	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls
<i>Number of Beneficiaries</i>	59,894	50,279	59,894	50,279	59,023	49,338	58,163	48,553	57,294	47,745	56,355	46,834
<b>Health Service Use Rate per 1,000 Beneficiaries</b>												
ER Visits	248.4	249.9	85.9	85.9	88.1	91.7	83.8	88.8	83.5	84.1	91.5	93.9
All Inpatient Admissions	195.3	196.9	71.9	77.3	68.8	71.9	70.0	70.7	70.9	71.6	72.9	71.9
Unplanned Inpatient Admissions	164.2	168.3	62.6	68.5	59.9	63.1	59.2	61.3	62.0	63.0	64.1	62.9
All Surgeries	309.5	303.8	106.1	105.8	104.6	104.6	112.4	109.9	100.2	99.4	109.1	105.3
Inpatient Surgeries	75.8	74.3	21.0	22.3	21.4	22.1	22.6	22.1	22.0	22.2	21.6	21.2
Outpatient Surgeries	196.2	194.6	66.3	65.7	65.5	65.4	68.6	68.6	60.9	60.2	68.4	66.0
All PS Orthopedic Surgeries <sup>a</sup>	25.1	23.5	6.0	5.4	5.8	6.0	7.0	6.3	5.9	5.8	5.9	5.5
Inpatient PS Orthopedic Surgeries	21.6	20.6	5.1	4.7	4.9	4.9	6.2	5.4	5.1	5.1	5.1	4.7
Outpatient PS Orthopedic Surgeries	2.9	2.4	0.7	0.4	0.7	0.9	0.6	0.7	0.6	0.6	0.7	0.7
All PS Cardiac Surgeries	22.5	22.0	5.9	6.5	5.9	5.9	5.8	5.2	5.2	5.3	5.5	5.9
Inpatient PS Cardiac Surgeries	11.4	10.7	2.9	3.2	3.1	3.0	2.9	2.4	2.7	2.6	2.6	2.6
Outpatient PS Cardiac Surgeries	12.8	12.8	3.2	3.6	3.2	3.2	3.2	3.2	2.9	3.0	3.3	3.5

<sup>a</sup>PS= Preference-sensitive

**Appendix Table B-27: Quarterly Resource Use Rate (Number of Beneficiaries with Events per 1,000 Beneficiaries) for Participants and Controls, Welvie Ohio FFS ITT Analysis Cohort, Q6 to Q11**

Measures	Q6		Q7		Q8		Q9		Q10		Q11	
	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls
<i>Number of Beneficiaries</i>	55,487	45,985	54,652	45,276	53,729	44,462	52,781	43,579	51,987	42,837	51,238	42,174
<b>Health Service Use Rate per 1,000 Beneficiaries</b>												
ER Visits	92.9	93.4	88.4	88.8	92.0	92.8	95.8	95.8	96.6	98.7	91.5	91.8
All Inpatient Admissions	66.4	67.6	69.8	72.6	73.8	77.4	72.2	74.4	68.8	68.1	67.9	71.8
Unplanned Inpatient Admissions	56.6	58.8	59.9	63.8	64.9	68.5	63.2	65.8	60.6	59.1	60.1	63.9
All Surgeries	106.6	103.8	114.0	108.0	99.6	97.5	108.0	106.4	109.6	109.6	108.0	108.2
Inpatient Surgeries	21.3	20.7	21.8	21.0	21.6	21.6	21.8	21.3	20.6	22.3	20.1	21.2
Outpatient Surgeries	66.3	65.8	71.3	68.0	61.3	61.4	68.4	68.0	69.4	68.4	69.4	68.8
All PS Orthopedic Surgeries <sup>a</sup>	5.9	5.7	6.1	5.6	6.0	5.6	5.5	5.9	6.1	6.1	7.3	8.2
Inpatient PS Orthopedic Surgeries	5.2	4.9	5.5	4.8	5.1	4.9	4.7	5.0	5.3	5.4	6.2	7.2
Outpatient PS Orthopedic Surgeries	0.5	0.7	0.5	0.6	0.8	0.5	0.6	0.8	0.7	0.5	0.9	1.0
All PS Cardiac Surgeries	5.6	5.7	5.6	5.3	5.4	5.8	5.6	5.5	6.0	5.8	6.5	5.7
Inpatient PS Cardiac Surgeries	2.6	2.5	2.6	2.6	2.8	3.0	2.7	2.5	2.7	3.1	3.4	2.8
Outpatient PS Cardiac Surgeries	3.4	3.5	3.2	3.0	2.9	3.2	3.3	3.3	3.6	2.8	3.4	3.2

<sup>a</sup>PS= Preference-sensitive

**Appendix Table B-28: Quarterly Resource Use Rate (Number of Beneficiaries with Events per 1,000 Beneficiaries) for Participants and Controls, Welvie Ohio MA ITT Analysis Cohort, Q1 to Q5**

Measures	Baseline Period (Year Prior to Enrollment)		Q1		Q2		Q3		Q4		Q5	
	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls
<i>Number of Beneficiaries</i>	97,380	94,915	97,380	94,915	96,492	94,059	95,477	93,045	92,080	89,750	91,230	88,894
<b>Health Service Use Rate per 1,000 Beneficiaries</b>												
ER Visits	160.4	160.7	67.5	67.6	67.3	67.8	66.3	67.2	65.6	67.0	61.5	62.9
All Inpatient Admissions	117.8	121.2	56.9	57.7	55.9	57.7	49.5	52.0	46.4	48.0	46.6	47.9
Unplanned Inpatient Admissions	102.5	105.1	49.1	50.1	49.4	51.1	43.3	45.5	40.4	42.0	40.1	40.9
All Surgeries	122.8	124.6	49.7	51.4	46.1	46.3	44.3	46.9	43.0	44.2	40.8	41.3
Inpatient Surgeries	58.7	59.8	22.8	23.4	21.4	22.3	19.0	21.0	17.9	18.4	14.1	15.0
Outpatient Surgeries	73.9	75.5	28.7	29.8	26.0	25.8	26.6	27.5	26.5	27.2	27.7	27.5
All PS Orthopedic Surgeries <sup>a</sup>	29.6	29.7	10.0	10.0	9.1	9.2	8.5	8.9	7.5	7.6	7.1	6.7
Inpatient PS Orthopedic Surgeries	27.2	27.4	9.2	9.1	8.4	8.4	7.8	8.1	6.7	6.8	6.3	6.0
Outpatient PS Orthopedic Surgeries	2.6	2.5	0.8	0.9	0.7	0.8	0.7	0.8	0.8	0.8	0.8	0.7
All PS Cardiac Surgeries	26.4	26.4	8.4	8.8	7.9	7.8	7.1	8.4	6.1	7.1	6.3	6.9
Inpatient PS Cardiac Surgeries	18.8	18.8	5.5	5.8	5.4	5.4	4.9	5.7	3.6	4.4	4.0	4.2
Outpatient PS Cardiac Surgeries	8.6	9.0	3.1	3.2	2.8	2.6	2.4	3.0	2.6	2.9	2.4	3.0

<sup>a</sup>PS= Preference-sensitive



**Appendix Table B-29: Quarterly Resource Use Rate (Number of Beneficiaries with Events per 1,000 Beneficiaries) for Participants and Controls, Welvie Ohio MA ITT Analysis Cohort, Q6 to Q11**

Measures	Q6		Q7		Q8		Q9		Q10		Q11	
	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls
<i>Number of Beneficiaries</i>	90,076	87,518	89,069	86,556	82,860	80,581	81,907	79,640	79,501	77,232	78,171	75,732
<b>Health Service Use Rate per 1,000 Beneficiaries</b>												
ER Visits	57.3	58.4	59.2	62.4	60.1	62.3	55.1	56.5	25.1	25.3	5.8	5.8
All Inpatient Admissions	44.2	45.4	41.9	44.1	42.3	41.6	41.7	42.6	44.6	45.7	39.0	41.6
Unplanned Inpatient Admissions	38.3	40.2	36.6	39.0	36.5	36.7	36.4	37.4	40.1	41.3	34.7	36.9
All Surgeries	39.9	40.1	38.3	39.5	37.9	37.8	41.1	41.0	51.6	50.7	54.4	54.7
Inpatient Surgeries	17.3	17.6	17.3	17.4	16.1	15.6	10.4	10.4	3.7	3.9	3.9	3.8
Outpatient Surgeries	24.0	23.9	22.6	23.6	23.0	23.2	31.5	31.3	48.3	47.4	51.0	51.5
All PS Orthopedic Surgeries <sup>a</sup>	7.0	7.4	7.6	7.1	6.3	6.1	5.3	4.8	3.1	2.8	3.5	2.9
Inpatient PS Orthopedic Surgeries	6.6	6.9	7.1	6.6	5.9	5.5	4.8	4.4	2.6	2.5	3.1	2.7
Outpatient PS Orthopedic Surgeries	0.5	0.5	0.5	0.5	0.4	0.5	0.5	0.4	0.4	0.3	0.4	0.2
All PS Cardiac Surgeries	5.9	6.3	6.0	6.6	5.7	5.7	4.6	4.7	3.9	3.6	4.3	3.9
Inpatient PS Cardiac Surgeries	3.8	4.3	4.1	4.5	3.8	3.7	2.8	2.8	1.9	1.9	2.2	1.9
Outpatient PS Cardiac Surgeries	2.3	2.3	2.0	2.3	2.1	2.2	1.9	2.0	2.0	1.8	2.2	2.1

<sup>a</sup>PS= Preference-sensitive

**Appendix Table B-30: Quarterly Resource Use Rate (Number of Beneficiaries with Events per 1,000 Beneficiaries) for Participants and Controls, Welvie Texas MA ITT Analysis Cohort, Q1 to Q3**

Measures	Baseline Period (Year Prior to Enrollment)		Q1		Q2		Q3	
	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls
<i>Number of Beneficiaries</i>	63,979	63,759	63,979	63,759	63,885	63,654	50,346	50,476
<b>Health Service Use Rate per 1,000 Beneficiaries</b>								
ER Visits	214.6	217.1	85.4	85.7	83.8	84.8	85.6	88.1
All Inpatient Admissions	137.9	137.9	50.2	49.6	52.1	51.9	56.6	58.8
Unplanned Inpatient Admissions	116.1	116.1	42.4	41.7	44.4	44.1	49.4	51.5
All Surgeries	147.1	145.0	44.1	44.7	47.0	47.6	41.7	42.0
Inpatient Surgeries	70.9	71.1	21.1	20.0	21.1	21.0	19.6	18.9
Outpatient Surgeries	89.6	87.3	24.4	26.0	27.6	28.2	23.2	24.2
All PS Orthopedic Surgeries <sup>a</sup>	30.6	30.1	7.2	7.7	7.8	7.9	4.9	5.9
Inpatient PS Orthopedic Surgeries	27.5	27.5	6.1	6.6	6.8	6.9	4.3	5.2
Outpatient PS Orthopedic Surgeries	3.3	2.8	1.1	1.2	0.9	1.0	0.6	0.7
All PS Cardiac Surgeries	28.9	28.1	7.0	6.8	7.2	7.1	5.9	6.0
Inpatient PS Cardiac Surgeries	16.1	16.8	3.7	3.6	3.8	3.6	3.0	3.1
Outpatient PS Cardiac Surgeries	14.6	13.1	3.7	3.5	3.7	3.7	3.1	3.2

<sup>a</sup>PS= Preference-sensitive

**Appendix Table B-31: Quarterly Resource Use Rate (Number of Beneficiaries with Events per 1,000 Beneficiaries) for Participants and Controls, Welvie Texas MA ITT Analysis Cohort, Q4 to Q6**

Measures	Q4		Q5		Q6	
	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls
<i>Number of Beneficiaries</i>	49,822	49,956	49,356	49,449	48,797	48,926
<b>Health Service Use Rate per 1,000 Beneficiaries</b>						
ER Visits	86.4	85.5	85.4	85.0	82.7	83.1
All Inpatient Admissions	57.6	57.2	54.0	52.9	50.1	50.1
Unplanned Inpatient Admissions	49.6	49.8	46.9	44.7	46.7	46.9
All Surgeries	46.5	46.1	43.8	44.7	45.7	46.3
Inpatient Surgeries	21.2	20.0	19.6	20.5	18.6	19.4
Outpatient Surgeries	26.7	27.6	25.6	26.1	28.6	28.3
All PS Orthopedic Surgeries <sup>a</sup>	6.2	5.9	5.7	6.5	7.1	7.2
Inpatient PS Orthopedic Surgeries	5.6	5.1	5.2	5.9	6.1	6.4
Outpatient PS Orthopedic Surgeries	0.6	0.8	0.5	0.6	0.9	0.9

Measures	Q4		Q5		Q6	
	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls
All PS Cardiac Surgeries	7.1	6.5	5.9	6.8	6.8	6.7
Inpatient PS Cardiac Surgeries	3.6	3.0	2.8	3.0	3.1	3.0
Outpatient PS Cardiac Surgeries	3.8	3.9	3.3	4.0	4.1	3.9

<sup>a</sup>PS= Preference-sensitive

**Appendix Table B-32: Quarterly Resource Use (Number of Events per 1,000 Beneficiaries) for Participants and Controls,  
Welve Ohio FFS ITT Analysis Cohort, Q1 to Q5**

Measures	Baseline Period (Year Prior to Enrollment)		Q1		Q2		Q3		Q4		Q5	
	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls
<i>Number of Beneficiaries</i>	59,894	50,279	59,894	50,279	59,023	49,338	58,163	48,553	57,294	47,745	56,355	46,834
<b>Mean Number of Events per 1,000 Beneficiaries</b>												
ER Visits	391.0	396.6	104.6	105.9	107.6	114.0	101.0	109.6	102.2	103.5	111.4	115.6
All Inpatient Admissions	318.5	327.1	94.0	101.2	90.8	94.8	90.1	93.3	93.5	94.1	96.1	93.5
Unplanned Inpatient Admissions	261.2	273.4	80.2	87.5	77.0	81.1	75.0	78.7	79.9	80.6	82.5	80.1
Hospital Days	1,620.0	1,691.3	501.9	555.7	500.4	504.8	510.5	530.6	541.7	577.6	531.4	517.3
All Surgeries	528.1	525.1	136.6	136.1	134.2	136.5	146.6	143.8	128.4	129.4	143.2	139.0
Inpatient Surgeries	86.1	85.5	21.9	23.5	22.3	23.6	23.6	23.3	23.2	23.4	22.7	22.5
Surgical Hospital Days	497.4	513.5	134.9	158.4	139.9	142.2	153.1	153.2	154.7	161.2	148.6	143.9
Outpatient Surgeries	319.0	321.4	85.4	84.5	84.0	84.9	88.6	90.4	78.0	79.9	89.8	88.0
All PS <sup>a</sup> Orthopedic Surgeries	26.8	25.3	6.1	5.4	5.9	6.1	7.1	6.4	6.0	5.8	6.0	5.5
Inpatient PS Orthopedic Surgeries	22.8	22.1	5.1	4.8	4.9	4.9	6.3	5.5	5.2	5.1	5.1	4.7
PS Orthopedic Surgery Hospital Days	94.0	85.7	20.6	19.0	21.5	20.1	30.7	22.6	21.5	22.7	22.4	17.9
Outpatient PS Orthopedic Surgeries	3.0	2.5	0.7	0.4	0.8	0.9	0.6	0.7	0.6	0.6	0.7	0.7
All PS Cardiac Surgeries	25.5	24.3	6.1	6.9	6.4	6.4	6.3	5.6	5.6	5.6	5.9	6.2
Inpatient PS Cardiac Surgeries	12.0	11.1	2.9	3.2	3.1	3.1	2.9	2.4	2.7	2.6	2.6	2.7
PS Cardiac Surgery Hospital Days	66.2	73.2	14.7	17.1	16.9	18.6	17.6	15.0	16.7	17.5	22.8	18.6
Outpatient PS Cardiac Surgeries	13.5	13.2	3.2	3.6	3.2	3.3	3.3	3.2	2.9	3.0	3.3	3.5

<sup>a</sup>PS= Preference-sensitive

**Appendix Table B-33: Quarterly Resource Use (Number of Events per 1,000 Beneficiaries) for Participants and Controls, Welvie Ohio FFS ITT Analysis Cohort, Q6 to Q11**

Measures	Q6		Q7		Q8		Q9		Q10		Q11	
	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls
<i>Number of Beneficiaries</i>	55,487	45,985	54,652	45,276	53,729	44,462	52,781	43,579	51,987	42,837	51,238	42,174
<b>Mean Number of Events per 1,000 Beneficiaries</b>												
ER Visits	115.2	117.3	107.8	110.5	112.8	114.2	117.6	118.8	120.5	123.4	113.2	114.1
All Inpatient Admissions	86.1	86.9	89.7	94.9	95.9	100.4	94.3	96.8	88.8	87.8	87.9	93.3
Unplanned Inpatient Admissions	71.8	73.8	75.2	81.1	82.5	86.7	80.5	83.6	76.0	74.4	77.4	82.4
Hospital Days	488.2	475.5	485.3	521.6	538.2	573.1	510.7	539.8	480.1	486.8	484.1	506.5
All Surgeries	138.0	135.8	150.0	144.3	129.1	128.0	142.8	142.7	145.4	146.1	144.5	143.1
Inpatient Surgeries	22.3	21.9	22.7	22.1	22.6	22.7	22.7	22.4	21.9	23.3	21.2	22.4
Surgical Hospital Days	140.7	138.5	142.9	139.2	149.8	154.8	139.0	140.0	133.8	141.4	140.7	135.4
Outpatient Surgeries	86.6	86.1	94.7	91.0	80.1	80.4	91.2	92.2	93.2	93.5	93.7	92.0
All PS <sup>a</sup> Orthopedic Surgeries	6.0	5.8	6.2	5.7	6.1	5.7	5.6	6.0	6.3	6.1	7.3	8.3
Inpatient PS Orthopedic Surgeries	5.3	5.1	5.5	4.9	5.1	5.0	4.8	5.0	5.5	5.5	6.2	7.3
PS Orthopedic Surgery Hospital Days	23.3	22.4	23.3	21.9	21.7	22.2	19.3	21.1	21.5	25.1	29.1	30.0
Outpatient PS Orthopedic Surgeries	0.5	0.7	0.5	0.6	0.8	0.6	0.6	0.8	0.7	0.5	0.9	1.0
All PS Cardiac Surgeries	6.1	6.1	6.0	5.7	5.7	6.3	6.0	6.0	6.4	6.1	6.9	6.2
Inpatient PS Cardiac Surgeries	2.7	2.6	2.7	2.6	2.8	3.1	2.7	2.7	2.7	3.2	3.5	2.9
PS Cardiac Surgery Hospital Days	16.9	15.7	17.2	15.4	17.9	22.1	16.4	18.2	16.5	17.6	21.6	17.0
Outpatient PS Cardiac Surgeries	3.4	3.5	3.2	3.0	2.9	3.2	3.3	3.3	3.7	2.9	3.4	3.3

<sup>a</sup>PS= Preference-sensitive

**Appendix Table B-34: Quarterly Resource Use (Number of Events per 1,000 Beneficiaries) for Participants and Controls, Welvie Ohio MA ITT Analysis Cohort, Q1 to Q5**

Measures	Baseline Period (Year Prior to Enrollment)		Q1		Q2		Q3		Q4		Q5	
	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls
<i>Number of Beneficiaries</i>	97,380	94,915	97,380	94,915	96,492	94,059	95,477	93,045	92,080	89,750	91,230	88,894
<b>Mean Number of Events per 1,000 Beneficiaries</b>												
ER Visits	165.4	167.9	81.6	81.9	81.6	81.1	80.7	82.0	80.3	81.1	75.3	76.6
All Inpatient Admissions	174.9	180.3	73.0	74.8	72.1	74.2	63.5	67.0	59.0	61.3	59.8	61.3
Unplanned Inpatient Admissions	150.4	154.5	62.0	64.0	63.1	64.4	55.0	58.1	50.7	52.9	51.0	51.7
Hospital Days	857.2	894.7	386.9	400.5	381.9	384.1	349.0	382.7	322.9	339.8	322.6	340.0
All Surgeries	172.8	174.4	59.0	60.6	55.2	55.6	52.0	56.2	51.2	53.6	49.8	50.4
Inpatient Surgeries	73.7	74.1	25.3	26.1	23.6	24.8	21.1	23.5	19.8	20.7	15.9	16.7
Surgical Hospital Days	377.8	385.7	146.4	152.9	138.1	141.9	126.4	142.9	116.2	125.9	92.9	103.9
Outpatient Surgeries	99.1	100.4	33.7	34.5	31.6	30.8	30.9	32.8	31.4	32.9	33.9	33.7
All PS <sup>a</sup> Orthopedic Surgeries	37.7	37.4	10.9	11.0	9.9	10.1	9.2	9.8	8.3	8.4	8.1	7.5
Inpatient PS Orthopedic Surgeries	35.0	34.9	10.1	10.0	9.2	9.3	8.5	9.0	7.6	7.6	7.3	6.8
PS Orthopedic Surgery Hospital Days	147.4	150.5	44.7	43.8	40.6	39.6	37.5	39.4	33.2	36.1	35.2	35.0
Outpatient PS Orthopedic Surgeries	2.6	2.5	0.8	1.0	0.7	0.8	0.7	0.8	0.8	0.8	0.8	0.7
All PS Cardiac Surgeries	32.3	32.6	9.4	9.7	8.7	8.7	7.7	9.4	6.6	7.7	7.0	7.5
Inpatient PS Cardiac Surgeries	23.4	23.4	6.2	6.4	5.8	6.1	5.4	6.4	4.0	4.8	4.5	4.5
PS Cardiac Surgery Hospital Days	114.3	117.6	32.7	37.8	33.9	31.5	28.5	34.8	21.6	28.2	26.7	28.1
Outpatient PS Cardiac Surgeries	8.9	9.3	3.1	3.3	2.8	2.6	2.4	3.0	2.6	2.9	2.4	3.0

<sup>a</sup>PS= Preference-sensitive

**Appendix Table B-35: Quarterly Resource Use (Number of Events per 1,000 Beneficiaries) for Participants and Controls, Welvie Ohio MA ITT Analysis Cohort, Q6 to Q11**

Measures	Q6		Q7		Q8		Q9		Q10		Q11	
	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls
<i>Number of Beneficiaries</i>	90,076	87,518	89,069	86,556	82,860	80,581	81,907	79,640	79,501	77,232	78,171	75,732
<b>Mean Number of Events per 1,000 Beneficiaries</b>												
ER Visits	68.4	70.5	73.2	77.3	73.3	77.0	68.2	68.7	28.4	29.0	7.3	7.3
All Inpatient Admissions	56.7	57.9	53.1	56.6	54.1	53.2	53.1	54.6	55.8	58.2	49.2	52.9
Unplanned Inpatient Admissions	48.5	50.6	45.8	49.4	46.2	46.3	45.8	47.3	49.4	52.2	43.5	46.8
Hospital Days	312.5	317.1	301.3	316.2	304.8	309.6	301.6	306.4	302.7	314.6	278.8	303.8
All Surgeries	48.3	48.5	46.7	48.4	45.6	44.8	49.2	49.5	64.3	63.9	69.2	69.2
Inpatient Surgeries	19.5	19.4	19.3	19.6	17.8	17.3	11.6	11.7	4.5	5.0	5.1	5.1
Surgical Hospital Days	116.2	115.3	116.6	118.5	103.9	111.7	65.2	64.2	28.9	27.7	31.0	29.6
Outpatient Surgeries	28.8	29.0	27.4	28.8	27.8	27.5	37.6	37.8	59.8	58.9	64.1	64.1
All PS <sup>a</sup> Orthopedic Surgeries	8.0	8.1	8.3	8.1	6.9	6.6	5.9	5.4	3.4	3.3	4.2	3.8
Inpatient PS Orthopedic Surgeries	7.5	7.5	7.9	7.6	6.4	6.0	5.4	5.0	3.0	3.0	3.8	3.6
PS Orthopedic Surgery Hospital Days	37.6	36.8	38.3	36.5	28.8	30.5	26.5	24.4	20.1	16.3	24.0	20.2
Outpatient PS Orthopedic Surgeries	0.5	0.5	0.5	0.5	0.4	0.5	0.5	0.4	0.4	0.3	0.4	0.2
All PS Cardiac Surgeries	6.6	7.1	6.6	7.4	6.3	6.3	5.1	5.2	4.3	4.1	4.8	4.5
Inpatient PS Cardiac Surgeries	4.4	4.7	4.6	5.1	4.1	4.0	3.2	3.2	2.3	2.2	2.6	2.4
PS Cardiac Surgery Hospital Days	28.0	28.8	28.3	32.0	24.7	25.0	20.5	18.7	14.2	12.4	14.2	14.2
Outpatient PS Cardiac Surgeries	2.3	2.3	2.0	2.3	2.2	2.2	1.9	2.0	2.0	1.9	2.2	2.1

<sup>a</sup>PS= Preference-sensitive

**Appendix Table B-36: Quarterly Resource Use (Number of Events per 1,000 Beneficiaries)  
for Participants and Controls, Welvie Texas MA ITT Analysis Cohort, Q1 to Q3**

Measures	Baseline Period (Year Prior to Enrollment)		Q1		Q2		Q3	
	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls
<i>Number of Beneficiaries</i>	63,979	63,759	63,979	63,759	63,885	63,654	50,346	50,476
<b>Mean Number of Events per 1,000 Beneficiaries</b>								
ER Visits	268.0	273.6	112.1	112.0	109.9	111.9	109.4	114.0
All Inpatient Admissions	218.6	221.2	66.2	64.5	70.0	68.1	76.0	80.0
Unplanned Inpatient Admissions	183.3	185.3	55.7	54.2	59.8	57.4	66.2	69.7
Hospital Days	1,164.7	1,185.6	364.7	375.1	407.8	406.9	443.9	495.1
All Surgeries	205.4	206.8	50.5	50.8	55.3	54.6	47.7	47.7
Inpatient Surgeries	87.9	90.7	22.9	21.4	23.2	22.5	20.7	20.4
Surgical Hospital Days	507.2	524.0	150.0	151.8	155.1	150.3	148.2	155.4
Outpatient Surgeries	117.5	116.1	27.6	29.4	32.1	32.2	27.0	27.3
All PS <sup>a</sup> Orthopedic Surgeries	36.6	37.4	7.5	7.9	8.4	8.2	4.9	6.0
Inpatient PS Orthopedic Surgeries	33.2	34.5	6.4	6.8	7.5	7.2	4.3	5.3
PS Orthopedic Surgery Hospital Days	153.7	157.5	29.4	32.0	37.3	34.7	17.4	27.0
Outpatient PS Orthopedic Surgeries	3.4	2.9	1.1	1.2	0.9	1.0	0.6	0.7
All PS Cardiac Surgeries	34.0	33.9	7.5	7.4	7.7	7.6	6.1	6.4
Inpatient PS Cardiac Surgeries	19.0	20.5	3.8	3.8	4.0	3.8	3.0	3.2
PS Cardiac Surgery Hospital Days	106.0	115.8	23.7	27.9	26.4	24.3	19.4	31.1
Outpatient PS Cardiac Surgeries	15.0	13.4	3.7	3.6	3.7	3.8	3.1	3.2

<sup>a</sup>PS= Preference-sensitive



**Appendix Table B-37: Quarterly Resource Use (Number of Events per 1,000 Beneficiaries)  
for Participants and Controls, Welvie Texas MA ITT Analysis Cohort, Q4 to Q6**

Measures	Q4		Q5		Q6	
	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls
<i>Number of Beneficiaries</i>	49,822	49,956	49,356	49,449	48,797	48,926
<b>Mean Number of Events per 1,000 Beneficiaries</b>						
ER Visits	110.1	111.2	112.1	109.6	108.3	107.4
All Inpatient Admissions	78.3	76.5	73.1	68.6	65.5	66.0
Unplanned Inpatient Admissions	66.6	65.7	62.8	57.7	61.0	61.7
Hospital Days	486.5	468.5	445.2	407.2	397.4	393.5
All Surgeries	53.5	53.4	52.1	51.9	53.9	54.9
Inpatient Surgeries	23.2	21.7	21.6	21.9	20.2	21.3
Surgical Hospital Days	175.2	158.5	159.9	151.7	147.1	150.3
Outpatient Surgeries	30.4	31.7	30.5	30.0	33.7	33.6
All PS <sup>a</sup> Orthopedic Surgeries	6.5	6.2	6.1	6.7	7.5	7.7
Inpatient PS Orthopedic Surgeries	5.9	5.4	5.6	6.2	6.6	6.8
PS Orthopedic Surgery Hospital Days	28.7	23.7	30.0	29.3	31.9	33.3
Outpatient PS Orthopedic Surgeries	0.6	0.8	0.5	0.6	0.9	0.9
All PS Cardiac Surgeries	7.4	7.0	6.3	7.1	7.4	7.2
Inpatient PS Cardiac Surgeries	3.6	3.1	3.0	3.1	3.3	3.2
PS Cardiac Surgery Hospital Days	27.4	21.0	24.7	20.2	24.1	20.3
Outpatient PS Cardiac Surgeries	3.8	3.9	3.3	4.1	4.1	4.0

<sup>a</sup>PS= Preference-sensitive

## B.4 Medical Expenditures

**Appendix Table B-38: Cumulative and Yearly DiD Estimates of Expenditures per 1,000 Beneficiaries, Welvie Ohio FFS ITT Analysis Cohort**

Measures (2011 USD)	Full Intervention Period <sup>a</sup>	Total Year 1 <sup>b</sup>	Total Year 2
<i>Number of Participant Beneficiaries</i>	59,894	59,894	56,355
Total Medicare Parts A and B Expenditures	-31,278.75	-128,692.36	22,520.35
<i>90% Confidence Interval</i>	(-472,970.1   410,412.6)	(-329,285.4   71,900.6)	(-180,184.4   225,225.1)
<i>P-Value</i>	0.907	0.291	0.855
Inpatient Expenditures	-108,517.17	-102,740.32	-7,891.54
<i>90% Confidence Interval</i>	(-380,999.0   163,964.7)	(-228,594.4   23,113.8)	(-133,639.5   117,856.4)
<i>P-Value</i>	0.512	0.179	0.918
Outpatient ER Expenditures	-8,667.18	-9,481.20	345.49
<i>90% Confidence Interval</i>	(-32,786.9   15,452.6)	(-20,286.6   1,324.2)	(-11,311.1   12,002.0)
<i>P-Value</i>	0.554	0.149	0.961
Outpatient Non-ER Expenditures	59,628.96	23,822.46	8,605.55
<i>90% Confidence Interval</i>	(-31,432.6   150,690.5)	(-16,328.9   63,973.8)	(-32,651.6   49,862.7)
<i>P-Value</i>	0.281	0.329	0.732
Physician and Ancillary Service Expenditures	-9,981.31	-14,453.04	-765.15
<i>90% Confidence Interval</i>	(-96,355.4   76,392.7)	(-52,894.2   23,988.1)	(-39,649.0   38,118.7)
<i>P-Value</i>	0.849	0.536	0.974
Skilled Nursing Facility Expenditures	84,028.68	4,042.26	41,868.81
<i>90% Confidence Interval</i>	(-58,792.5   226,849.9)	(-59,439.2   67,523.7)	(-23,853.0   107,590.6)
<i>P-Value</i>	0.333	0.917	0.295
Durable Medical Equipment Expenditures	-14,833.53	312.02	-6,309.50
<i>90% Confidence Interval</i>	(-41,588.6   11,921.5)	(-11,060.7   11,684.8)	(-17,907.0   5,288.0)
<i>P-Value</i>	0.362	0.964	0.371
Home Health Expenditures	-28,524.78	5,358.63	-21,442.22*
<i>90% Confidence Interval</i>	(-73,363.0   16,313.4)	(-14,395.6   25,112.8)	(-41,977.9   -906.5)
<i>P-Value</i>	0.295	0.655	0.086
Hospice Expenditures	1,188.08	-32,128.31*	9,147.50
<i>90% Confidence Interval</i>	(-66,718.8   69,094.9)	(-63,619.2   -637.4)	(-22,077.0   40,372.1)
<i>P-Value</i>	0.977	0.093	0.63
Total Surgery Expenditures	-59,476.94	-61,637.97	-4,735.84
<i>90% Confidence Interval</i>	(-266,304.7   147,350.8)	(-155,892.3   32,616.3)	(-100,186.2   90,714.6)
<i>P-Value</i>	0.636	0.282	0.935
Inpatient Surgery Expenditures	-69,035.76	-61,588.30	-5,660.09

Measures (2011 USD)	Full Intervention Period <sup>a</sup>	Total Year 1 <sup>b</sup>	Total Year 2
<i>90% Confidence Interval</i>	(-263,347.9   125,276.4)	(-150,630.8   27,454.2)	(-95,253.3   83,933.1)
<i>P-Value</i>	0.559	0.255	0.917
Episode-Based Inpatient Surgery Expenditures	-103,510.82	-72,991.17	-15,774.10
<i>90% Confidence Interval</i>	(-307,585.8   100,564.1)	(-166,245.2   20,262.9)	(-109,674.5   78,126.3)
<i>P-Value</i>	0.404	0.198	0.782
Outpatient Surgery Expenditures	414.76	-277.52	-3,845.39
<i>90% Confidence Interval</i>	(-56,457.9   57,287.4)	(-25,194.7   24,639.6)	(-29,455.0   21,764.2)
<i>P-Value</i>	0.99	0.985	0.805
PS <sup>d</sup> Orthopedic Surgery Expenditures	-10,656.14	-4,845.23	12,300.54
<i>90% Confidence Interval</i>	(-85,991.0   64,678.8)	(-37,565.3   27,874.8)	(-20,334.7   44,935.8)
<i>P-Value</i>	0.816	0.808	0.535
Inpatient PS Orthopedic Surgery Expenditures	-3,259.78	-2,225.92	12,229.96
<i>90% Confidence Interval</i>	(-68,112.0   61,592.4)	(-30,400.3   25,948.5)	(-15,839.0   40,298.9)
<i>P-Value</i>	0.934	0.897	0.474
Outpatient PS Orthopedic Surgery Expenditures	-3,816.04	-1,582.04	-443.04
<i>90% Confidence Interval</i>	(-8,045.4   413.3)	(-3,318.8   154.7)	(-2,349.9   1,463.9)
<i>P-Value</i>	0.138	0.134	0.702
PS Cardiac Surgery Expenditures	-51,875.22	-20,105.83	-26,206.45
<i>90% Confidence Interval</i>	(-143,908.4   40,158.0)	(-60,746.2   20,534.6)	(-67,647.8   15,234.9)
<i>P-Value</i>	0.354	0.416	0.298
Inpatient PS Cardiac Surgery Expenditures	-41,612.08	-15,442.37	-21,098.19
<i>90% Confidence Interval</i>	(-122,867.1   39,643.0)	(-51,357.3   20,472.6)	(-57,689.2   15,492.9)
<i>P-Value</i>	0.400	0.479	0.343
Outpatient PS Cardiac Surgery Expenditures	-6,726.29	-3,463.09	-3,012.56
<i>90% Confidence Interval</i>	(-20,471.2   7,018.6)	(-9,344.7   2,418.6)	(-8,959.2   2,934.1)
<i>P-Value</i>	0.421	0.333	0.405

\* Statistically significant at the ten percent level.

<sup>a</sup>Results are cumulative across all available quarters.

<sup>b</sup>Year 1 refers to the one-year period after a beneficiary's enrollment in the program, Year 2 refers to the subsequent one-year periods for a given beneficiary. Since beneficiaries enroll in the SDM programs on a rolling basis, the intervention period is defined at the beneficiary-level and not based on calendar quarters or years.

<sup>c</sup>Denominator is subset to beneficiaries enrolled in Medicare Part D.

<sup>d</sup>PS = Preference Sensitive.

**Appendix Table B-39: Cumulative and Yearly DiD Estimates of Expenditures per 1,000 Beneficiaries, Welvie Ohio MA ITT Analysis Cohort**

Measures (2011 USD)	Full Intervention Period <sup>a</sup>	Total Year 1 <sup>b</sup>	Total Year 2
<i>Number of Participant Beneficiaries</i>	97,380	97,380	91,230
Total Medical Expenditures	-235,622.33*	-169,539.47**	-30,776.37
<i>90% Confidence Interval</i>	(-471,440.3   195.6)	(-283,470.0   -55,609.0)	(-140,558.3   79,005.6)
<i>P-Value</i>	0.100	0.014	0.645
Inpatient Expenditures	-97,544.25	-73,415.10	10,682.47
<i>90% Confidence Interval</i>	(-252,124.2   57,035.6)	(-148,792.5   1,962.3)	(-60,735.7   82,100.7)
<i>P-Value</i>	0.299	0.109	0.806
Outpatient ER Expenditures	-12,244.70	-6,939.01	-7,010.07
<i>90% Confidence Interval</i>	(-30,575.1   6,085.7)	(-15,569.7   1,691.7)	(-15,901.9   1,881.8)
<i>P-Value</i>	0.272	0.186	0.195
Outpatient Non-ER Expenditures	-34,732.38	-38,988.11**	-2,212.62
<i>90% Confidence Interval</i>	(-92,575.5   23,110.7)	(-66,407.8   -11,568.4)	(-28,436.9   24,011.7)
<i>P-Value</i>	0.323	0.019	0.890
Physician and Ancillary Service Expenditures	-36,285.64	-28,078.34	-12,938.16
<i>90% Confidence Interval</i>	(-96,029.7   23,458.4)	(-56,747.9   591.2)	(-41,151.7   15,275.4)
<i>P-Value</i>	0.318	0.107	0.451
Skilled Nursing Facility Expenditures	-49,093.21	-20,551.04	-18,988.42
<i>90% Confidence Interval</i>	(-99,761.0   1,574.6)	(-43,585.9   2,483.8)	(-42,058.9   4,082.0)
<i>P-Value</i>	0.111	0.142	0.176
Home Health Expenditures	-6,958.40	-2,922.21	831.84
<i>90% Confidence Interval</i>	(-26,138.1   12,221.2)	(-11,780.1   5,935.7)	(-8,111.3   9,775.0)
<i>P-Value</i>	0.551	0.587	0.878
Total Surgery Expenditures	-137,886.40**	-96,727.13***	-38,560.27
<i>90% Confidence Interval</i>	(-253,032.8   -22,740.0)	(-154,206.5   -39,247.8)	(-91,996.2   14,875.7)
<i>P-Value</i>	0.049	0.006	0.235
Inpatient Surgery Expenditures	-79,511.10	-54,980.16*	-26,724.81
<i>90% Confidence Interval</i>	(-184,595.3   25,573.1)	(-108,045.8   -1,914.5)	(-75,645.8   22,196.2)
<i>P-Value</i>	0.213	0.088	0.369
Episode-Based Inpatient Surgery Expenditures	-81,921.91	-56,035.70*	-26,508.73
<i>90% Confidence Interval</i>	(-187,532.4   23,688.5)	(-109,300.5   -2,770.9)	(-75,728.2   22,710.7)
<i>P-Value</i>	0.202	0.084	0.376
Outpatient Surgery Expenditures	-51,559.65**	-36,687.55**	-9,826.31
<i>90% Confidence Interval</i>	(-90,135.4   -12,983.9)	(-54,592.7   -18,782.4)	(-27,330.8   7,678.2)

Measures (2011 USD)	Full Intervention Period <sup>a</sup>	Total Year 1 <sup>b</sup>	Total Year 2
<i>P-Value</i>	0.028	<0.001	0.356
PS <sup>d</sup> Orthopedic Surgery Expenditures	15,169.82	525.07	13,963.48
<i>90% Confidence Interval</i>	(-29,211.3   59,551.0)	(-20,825.5   21,875.6)	(-5,872.3   33,799.2)
<i>P-Value</i>	0.574	0.968	0.247
Inpatient PS Orthopedic Surgery Expenditures	16,417.26	1,787.62	13,847.34
<i>90% Confidence Interval</i>	(-20,373.7   53,208.3)	(-15,929.8   19,505.0)	(-2,677.6   30,372.2)
<i>P-Value</i>	0.463	0.868	0.168
Outpatient PS Orthopedic Surgery Expenditures	-2,090.83	-947.25	-1,301.39
<i>90% Confidence Interval</i>	(-5,127.2   945.5)	(-2,272.5   378.0)	(-2,815.0   212.2)
<i>P-Value</i>	0.257	0.240	0.157
PS Cardiac Surgery Expenditures	-7,823.26	-10,666.49	-11,019.13
<i>90% Confidence Interval</i>	(-63,781.0   48,134.5)	(-37,461.9   16,128.9)	(-36,492.2   14,453.9)
<i>P-Value</i>	0.818	0.513	0.477
Inpatient PS Cardiac Surgery Expenditures	-3,392.62	-6,121.51	-8,354.30
<i>90% Confidence Interval</i>	(-50,440.4   43,655.2)	(-28,678.6   16,435.6)	(-29,815.6   13,107.0)
<i>P-Value</i>	0.906	0.655	0.522
Outpatient PS Cardiac Surgery Expenditures	-5,967.15	-3,839.30	-2,790.20
<i>90% Confidence Interval</i>	(-16,962.9   5,028.6)	(-8,753.6   1,075.0)	(-7,511.8   1,931.4)
<i>P-Value</i>	0.372	0.199	0.331

\* Statistically significant at the ten percent level.

\*\* Statistically significant at the five percent level.

\*\*\* Statistically significant at the one percent level.

<sup>a</sup>Results are cumulative across all available quarters.

<sup>b</sup>Year 1 refers to the one-year period after a beneficiary's enrollment in the program, Year 2 refers to the subsequent one-year periods for a given beneficiary. Since beneficiaries enroll in the SDM programs on a rolling basis, the intervention period is defined at the beneficiary-level and not based on calendar quarters or years.

<sup>c</sup>Denominator is subset to beneficiaries enrolled in Medicare Part D.

<sup>d</sup>PS = Preference Sensitive.

**Appendix Table B-40: Cumulative and Yearly DiD Estimates of Expenditures per 1,000 Beneficiaries, Welvie Texas MA ITT Analysis Cohort**

Measures (2011 USD)	Full Intervention Period <sup>a</sup>	Total Year 1 <sup>b</sup>
<i>Number of Participant Beneficiaries</i>	63,979	63,979
Total Medical Expenditures	84,409.51	-9,928.12
<i>90% Confidence Interval</i>	(-144,707.2   313,526.2)	(-181,224.8   161,368.5)
<i>P-Value</i>	0.545	0.924
Inpatient Expenditures	118,820.90	20,440.13
<i>90% Confidence Interval</i>	(-42,930.8   280,572.6)	(-101,750.4   142,630.7)
<i>P-Value</i>	0.227	0.783
Outpatient ER Expenditures	5,274.39	-2,884.26
<i>90% Confidence Interval</i>	(-13,210.0   23,758.8)	(-16,553.1   10,784.6)
<i>P-Value</i>	0.639	0.729
Outpatient Non-ER Expenditures	15,214.00	3,759.47
<i>90% Confidence Interval</i>	(-37,801.8   68,229.8)	(-35,118.2   42,637.1)
<i>P-Value</i>	0.637	0.874
Physician and Ancillary Service Expenditures	17,693.76	23,271.25
<i>90% Confidence Interval</i>	(-41,114.9   76,502.4)	(-20,056.0   66,598.5)
<i>P-Value</i>	0.621	0.377
Skilled Nursing Facility Expenditures	-32,106.72	-31,962.73*
<i>90% Confidence Interval</i>	(-71,445.1   7,231.7)	(-60,958.2   -2,967.2)
<i>P-Value</i>	0.179	0.070
Home Health Expenditures	-21,807.24	-13,660.83
<i>90% Confidence Interval</i>	(-57,089.8   13,475.3)	(-39,787.2   12,465.6)
<i>P-Value</i>	0.309	0.390
Total Surgery Expenditures	-7,215.58**	-2,314.87
<i>90% Confidence Interval</i>	(-12,636.9   -1,794.2)	(-5,610.4   980.6)
<i>P-Value</i>	0.029	0.248
Inpatient Surgery Expenditures	119,704.8	61,455.2
<i>90% Confidence Interval</i>	(-5,428.4   244,838.0)	(-31,976.5   154,886.9)
<i>P-Value</i>	0.116	0.279
Episode-Based Inpatient Surgery Expenditures	125,001.96*	72,058.83
<i>90% Confidence Interval</i>	(8,323.2   241,680.8)	(-15,197.8   159,315.4)
<i>P-Value</i>	0.078	0.174
Outpatient Surgery Expenditures	130,962.7*	75,037.5
<i>90% Confidence Interval</i>	(13,638.1   248,287.3)	(-12,611.4   162,686.4)

Measures (2011 USD)	Full Intervention Period <sup>a</sup>	Total Year 1 <sup>b</sup>
<i>P-Value</i>	0.066	0.159
PS <sup>d</sup> Orthopedic Surgery Expenditures	-1,536.62	-7,952.12
<i>90% Confidence Interval</i>	(-39,298.5   36,225.3)	(-35,850.4   19,946.2)
<i>P-Value</i>	0.947	0.639
Inpatient PS Orthopedic Surgery Expenditures	-5,896.61	-5,107.03
<i>90% Confidence Interval</i>	(-52,683.5   40,890.3)	(-39,137.8   28,923.7)
<i>P-Value</i>	0.836	0.805
Outpatient PS Orthopedic Surgery Expenditures	-3,268.95	-3,362.47
<i>90% Confidence Interval</i>	(-42,807.4   36,269.5)	(-32,067.6   25,342.6)
<i>P-Value</i>	0.892	0.847
PS Cardiac Surgery Expenditures	-3,056.18*	-2,812.39**
<i>90% Confidence Interval</i>	(-5,705.8   -406.5)	(-4,748.3   -876.5)
<i>P-Value</i>	0.058	0.017
Inpatient PS Cardiac Surgery Expenditures	52,995.15	33,204.94
<i>90% Confidence Interval</i>	(-1,146.4   107,136.7)	(-8,031.1   74,441.0)
<i>P-Value</i>	0.107	0.185
Outpatient PS Cardiac Surgery Expenditures	51,913.55*	31,937.05
<i>90% Confidence Interval</i>	(4,812.1   99,015.0)	(-4,214.2   68,088.3)
<i>P-Value</i>	0.070	0.146

\* Statistically significant at the ten percent level.

\*\* Statistically significant at the five percent level.

<sup>a</sup>Results are cumulative across all available quarters.

<sup>b</sup>Year 1 refers to the one-year period after a beneficiary's enrollment in the program, Year 2 refers to the subsequent one-year periods for a given beneficiary. Since beneficiaries enroll in the SDM programs on a rolling basis, the intervention period is defined at the beneficiary-level and not based on calendar quarters or years.

<sup>c</sup>Denominator is subset to beneficiaries enrolled in Medicare Part D.

<sup>d</sup>PS = Preference Sensitive.

**Appendix Table B-41: Quarterly DiD Estimates of Expenditures per Beneficiary, Welvie Ohio FFS ITT Analysis Cohort**

Measures (2011 USD per Person)	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11
<i>Number of Participant Beneficiaries</i>	59894	59023	58163	57294	56355	55487	54652	53729	52781	51987	51238
Total Medicare Parts A and B Expenditures	-102.71**	-53.51	-68.58	23.62	27.30	5.51	-35.61	-102.96*	-4.15	10.94	-33.89
<i>90% Confidence Interval</i>	(-190,-16)	(-139,32)	(-155,18)	(-63,110)	(-59,114)	(-78,89)	(-120,49)	(-192,-14)	(-88,80)	(-73,95)	(-118,50)
<i>P-Value</i>	0.052	0.303	0.19	0.654	0.603	0.914	0.489	0.058	0.935	0.83	0.505
Inpatient Expenditures	-84.64***	-29.36	-39.94	21.93	26.14	19.50	-34.87	-57.13*	-1.19	5.97	-28.40
<i>90% Confidence Interval</i>	(-138,-31)	(-82,24)	(-93,13)	(-31,75)	(-26,78)	(-31,70)	(-86,16)	(-113,-1)	(-51,48)	(-44,56)	(-79,22)
<i>P-Value</i>	0.009	0.362	0.214	0.495	0.41	0.525	0.26	0.092	0.968	0.844	0.356
Outpatient ER Expenditures	-3.55	-3.50	-0.74	-1.73	1.14	-2.49	-2.56	1.57	-2.84	0.59	1.94
<i>90% Confidence Interval</i>	(-8,1)	(-8,1)	(-5,4)	(-7,3)	(-4,6)	(-8,3)	(-7,2)	(-4,7)	(-8,2)	(-4,5)	(-3,7)
<i>P-Value</i>	0.171	0.163	0.795	0.578	0.717	0.417	0.392	0.611	0.342	0.837	0.499
Outpatient Non-ER Expenditures	11.08	6.41	-4.99	7.45	0.40	-5.41	18.34*	-12.07	5.34	10.79	0.93
<i>90% Confidence Interval</i>	(-6,28)	(-11,24)	(-23,13)	(-10,25)	(-18,19)	(-23,12)	(0,37)	(-29,5)	(-13,23)	(-8,29)	(-17,19)
<i>P-Value</i>	0.293	0.548	0.647	0.491	0.972	0.617	0.099	0.247	0.624	0.334	0.933
Physician and Ancillary Service Expenditures	-11.92	-8.14	-6.71	2.74	1.64	4.72	-9.84	-10.23	-4.77	5.01	-4.51
<i>90% Confidence Interval</i>	(-29,6)	(-25,9)	(-23,10)	(-14,19)	(-16,19)	(-12,21)	(-27,7)	(-27,7)	(-21,12)	(-12,22)	(-21,12)
<i>P-Value</i>	0.261	0.425	0.511	0.787	0.875	0.639	0.337	0.315	0.637	0.623	0.653
Skilled Nursing Facility Expenditures	-15.92	-2.38	-6.51	17.25	12.05	2.48	8.44	-4.13	15.89	-3.10	5.36
<i>90% Confidence Interval</i>	(-42,10)	(-28,23)	(-33,20)	(-9,44)	(-15,39)	(-24,29)	(-18,35)	(-33,25)	(-11,43)	(-30,24)	(-21,32)
<i>P-Value</i>	0.319	0.878	0.686	0.284	0.462	0.877	0.602	0.813	0.328	0.849	0.741
Durable Medical Equipment Expenditures	2.44	-1.21	0.67	-2.96	-2.02	-2.58	-4.31	-4.26	-4.80	-4.64	-3.94
<i>90% Confidence Interval</i>	(-3,8)	(-6,4)	(-5,6)	(-8,2)	(-7,3)	(-7,2)	(-9,1)	(-9,1)	(-10,0)	(-9,0)	(-9,1)
<i>P-Value</i>	0.441	0.702	0.83	0.326	0.504	0.384	0.16	0.156	0.119	0.115	0.169
Home Health Expenditures	3.96	0.34	7.51	-4.46	-4.82	-8.21	-5.77	-1.90	-5.97	-4.74	-1.75



Measures (2011 USD per Person)	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11
<i>90% Confidence Interval</i>	(-4,12)	(-8,9)	(-1,16)	(-13,4)	(-14,4)	(-17,1)	(-15,3)	(-11,7)	(-15,3)	(-14,4)	(-10,6)
<i>P-Value</i>	0.438	0.947	0.14	0.401	0.361	0.121	0.282	0.728	0.286	0.388	0.715
Hospice Expenditures	-3.39	-14.63*	-17.32**	-15.63*	-7.47	-2.87	-4.00	-14.26*	-5.13	1.23	-3.43
<i>90% Confidence Interval</i>	(-19,12)	(-29,0)	(-32,-3)	(-29,-2)	(-21,6)	(-16,11)	(-18,10)	(-27,-1)	(-18,8)	(-12,14)	(-17,10)
<i>P-Value</i>	0.714	0.099	0.047	0.059	0.36	0.73	0.627	0.071	0.511	0.878	0.67
Total Surgery Expenditures	-56.54**	-14.86	-11.43	9.53	18.74	-3.87	6.77	-33.64	7.96	-1.62	11.51
<i>90% Confidence Interval</i>	(-97,-16)	(-53,23)	(-50,27)	(-29,48)	(-20,58)	(-41,33)	(-32,45)	(-76,9)	(-28,44)	(-39,36)	(-26,49)
<i>P-Value</i>	0.021	0.521	0.626	0.684	0.431	0.864	0.772	0.193	0.715	0.944	0.609
Inpatient Surgery Expenditures	-56.65**	-16.27	-12.88	11.59	7.95	2.17	-1.80	-25.96	8.09	-8.38	3.33
<i>90% Confidence Interval</i>	(-95,-18)	(-52,20)	(-49,23)	(-25,48)	(-29,45)	(-33,37)	(-38,34)	(-66,14)	(-25,41)	(-43,26)	(-31,38)
<i>P-Value</i>	0.015	0.457	0.559	0.599	0.722	0.918	0.934	0.289	0.687	0.693	0.874
Episode-Based Inpatient Surgery Expenditures	-56.23**	-19.41	-21.21	10.39	9.04	4.38	-13.07	-30.15	6.01	-12.85	-4.89
<i>90% Confidence Interval</i>	(-96,-16)	(-57,18)	(-59,17)	(-28,49)	(-29,48)	(-32,41)	(-51,25)	(-72,12)	(-29,41)	(-50,24)	(-42,32)
<i>P-Value</i>	0.02	0.395	0.358	0.657	0.699	0.844	0.567	0.238	0.779	0.568	0.827
Outpatient Surgery Expenditures	1.08	2.54	-0.84	-3.28	8.82	-6.68	5.44	-9.74	-1.73	4.35	5.03
<i>90% Confidence Interval</i>	(-8,11)	(-7,12)	(-11,9)	(-14,7)	(-2,19)	(-17,4)	(-5,16)	(-20,1)	(-12,9)	(-7,15)	(-6,16)
<i>P-Value</i>	0.851	0.658	0.893	0.601	0.17	0.295	0.411	0.12	0.787	0.516	0.433
PS <sup>a</sup> Orthopedic Surgery Expenditures	1.68	-3.54	3.85	-7.36	7.84	2.02	5.28	-2.42	-1.82	1.77	-17.30*
<i>90% Confidence Interval</i>	(-10,13)	(-16,9)	(-10,18)	(-22,7)	(-5,20)	(-11,15)	(-8,18)	(-16,11)	(-15,11)	(-12,16)	(-33,-2)
<i>P-Value</i>	0.810	0.632	0.648	0.396	0.305	0.799	0.497	0.772	0.819	0.832	0.062
Inpatient PS Orthopedic Surgery Expenditures	1.64	-2.56	4.15	-5.79	7.48	2.23	5.80	-2.60	-0.44	1.86	-13.59*
<i>90% Confidence Interval</i>	(-8,11)	(-13,8)	(-8,16)	(-18,7)	(-3,18)	(-9,13)	(-5,17)	(-14,9)	(-12,11)	(-10,14)	(-27,-1)
<i>P-Value</i>	0.783	0.686	0.567	0.441	0.254	0.744	0.383	0.719	0.948	0.795	0.087
Outpatient PS Orthopedic Surgery Expenditures	0.33	-0.47	-0.89**	-0.67*	-0.16	-0.08	-0.23	-0.11	-0.95*	0.13	-1.16
<i>90% Confidence Interval</i>	(0,1)	(-1,0)	(-2,0)	(-1,0)	(-1,1)	(-1,1)	(-1,1)	(-1,1)	(-2,0)	(-1,1)	(-2,0)

Measures (2011 USD per Person)	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11
<i>P-Value</i>	0.332	0.302	0.054	0.095	0.721	0.852	0.608	0.85	0.086	0.797	0.148
PS Cardiac Surgery Expenditures	-22.36**	-1.07	10.67	-6.59	-7.50	0.31	-2.26	-20.91*	-10.44	-6.19	8.25
<i>90% Confidence Interval</i>	(-39,-6)	(-18,16)	(-5,26)	(-23,10)	(-25,10)	(-16,16)	(-18,14)	(-39,-3)	(-28,7)	(-23,10)	(-10,26)
<i>P-Value</i>	0.024	0.917	0.263	0.509	0.469	0.975	0.816	0.055	0.317	0.537	0.454
Inpatient PS Cardiac Surgery Expenditures	-18.58**	-0.36	8.62	-4.70	-5.36	0.47	-2.57	-17.99*	-9.55	-7.14	7.92
<i>90% Confidence Interval</i>	(-33,-4)	(-15,15)	(-5,22)	(-19,10)	(-20,10)	(-14,15)	(-17,12)	(-34,-2)	(-25,6)	(-22,7)	(-8,24)
<i>P-Value</i>	0.035	0.968	0.301	0.591	0.557	0.957	0.764	0.061	0.299	0.421	0.415
Outpatient PS Cardiac Surgery Expenditures	-2.08	-0.39	1.04	-1.64	-1.23	-0.89	0.90	-0.99	-0.09	1.37	-0.22
<i>90% Confidence Interval</i>	(-4,0)	(-3,2)	(-1,3)	(-4,1)	(-4,1)	(-3,2)	(-1,3)	(-3,1)	(-3,2)	(-1,4)	(-3,3)
<i>P-Value</i>	0.131	0.763	0.456	0.283	0.397	0.553	0.515	0.483	0.955	0.417	0.899

\* Statistically significant at the ten percent level.  
 \*\* Statistically significant at the five percent level.  
 \*\*\* Statistically significant at the one percent level.  
<sup>a</sup>PS = Preference-sensitive.

**Appendix Table B-42: Quarterly DiD Estimates of Expenditures per Beneficiary, Welvie Ohio MA ITT Analysis Cohort**

Measures (2011 USD per Person)	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11
<i>Number of Participant Beneficiaries</i>	97,380	96,492	95,477	92,080	91,230	90,076	89,069	82,860	81,907	79,501	78,171
Total Medical Expenditures	-17.27	-23.70	-71.81**	-55.82*	-28.26	3.18	-14.14	22.18	-9.94	7.56	-35.92
<i>90% Confidence Interval</i>	(-68,34)	(-75,27)	(-121,-23)	(-105,-7)	(-76,20)	(-44,51)	(-60,32)	(-26,70)	(-56,37)	(-34,49)	(-78,6)
<i>P-Value</i>	0.579	0.444	0.017	0.059	0.332	0.913	0.613	0.444	0.725	0.765	0.158
Inpatient Expenditures	-2.74	-9.93	-44.90**	-15.79	-2.09	3.92	-4.92	21.68	-3.11	-6.40	-30.68*
<i>90% Confidence Interval</i>	(-36,30)	(-44,24)	(-77,-12)	(-47,16)	(-33,29)	(-27,35)	(-34,24)	(-9,52)	(-35,29)	(-37,24)	(-61,-1)
<i>P-Value</i>	0.892	0.633	0.023	0.410	0.911	0.837	0.778	0.246	0.872	0.728	0.093
Outpatient ER Expenditures	-3.75*	0.29	-0.93	-1.89	-3.83	1.05	-2.13	-0.24	0.12	1.73	2.06
<i>90% Confidence Interval</i>	(-7,0)	(-3,4)	(-4,3)	(-6,2)	(-8,0)	(-3,5)	(-6,2)	(-4,4)	(-4,4)	(-2,5)	(-1,5)
<i>P-Value</i>	0.095	0.892	0.666	0.440	0.101	0.635	0.374	0.924	0.961	0.406	0.298
Outpatient Non-ER Expenditures	-14.10*	-4.29	-6.59	-11.28	-7.03	1.33	3.20	1.39	1.23	5.09	-0.15
<i>90% Confidence Interval</i>	(-26,-2)	(-16,7)	(-19,5)	(-24,1)	(-19,5)	(-9,12)	(-8,14)	(-11,13)	(-10,13)	(-5,15)	(-10,10)
<i>P-Value</i>	0.057	0.541	0.368	0.136	0.322	0.838	0.629	0.848	0.863	0.410	0.981
Physician and Ancillary Service Expenditures	-2.79	-8.72	-8.89	-11.38	-9.11	-0.92	-5.91	-3.55	-4.56	-0.32	1.68
<i>90% Confidence Interval</i>	(-16,11)	(-21,4)	(-21,3)	(-24,1)	(-22,4)	(-13,11)	(-18,6)	(-16,8)	(-15,6)	(-9,8)	(-7,11)
<i>P-Value</i>	0.734	0.248	0.237	0.132	0.238	0.899	0.433	0.627	0.486	0.952	0.761
Skilled Nursing Facility Expenditures	4.91	0.02	-11.24**	-13.74**	-5.06	-3.96	-1.53	-2.75	-1.27	4.91	-8.74
<i>90% Confidence Interval</i>	(-5,15)	(-10,10)	(-21,-2)	(-23,-4)	(-15,4)	(-14,6)	(-11,8)	(-12,7)	(-10,8)	(-4,14)	(-17,0)
<i>P-Value</i>	0.422	0.997	0.046	0.017	0.384	0.500	0.796	0.626	0.813	0.363	0.101
Home Health Expenditures	0.39	-1.95	-0.13	-0.75	-0.09	1.45	-2.08	3.15	-2.53	0.33	-1.12
<i>90% Confidence Interval</i>	(-3,4)	(-6,2)	(-4,4)	(-5,3)	(-4,4)	(-3,5)	(-6,2)	(-1,7)	(-6,1)	(-4,4)	(-5,3)
<i>P-Value</i>	0.867	0.416	0.956	0.752	0.969	0.550	0.374	0.181	0.293	0.888	0.655
Total Surgery Expenditures	-24.34	-3.57	-35.23**	-23.73	-17.52	-0.20	2.02	-1.91	9.19	0.26	4.20
<i>90% Confidence Interval</i>	(-50,1)	(-28,21)	(-59,-11)	(-48,1)	(-39,4)	(-24,24)	(-20,24)	(-24,21)	(-8,26)	(-12,13)	(-9,17)

Measures (2011 USD per Person)	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11
<i>P-Value</i>	0.121	0.809	0.016	0.114	0.172	0.989	0.879	0.888	0.382	0.972	0.595
Inpatient Surgery Expenditures	-12.22	0.71	-26.55*	-10.64	-13.16	-5.23	1.57	3.79	8.69	-2.62	4.61
<i>90% Confidence Interval</i>	(-36,12)	(-22,23)	(-49,-4)	(-33,12)	(-32,6)	(-28,17)	(-18,21)	(-17,24)	(-6,24)	(-12,7)	(-6,15)
<i>P-Value</i>	0.398	0.959	0.051	0.443	0.254	0.701	0.897	0.760	0.341	0.659	0.481
Episode-Based Inpatient Surgery Expenditures	-12.71	0.79	-26.21*	-11.59	-13.17	-5.83	2.50	3.81	8.14	-2.69	3.92
<i>90% Confidence Interval</i>	(-37,11)	(-22,23)	(-49,-4)	(-34,11)	(-32,6)	(-28,17)	(-17,23)	(-17,24)	(-7,23)	(-13,7)	(-7,15)
<i>P-Value</i>	0.381	0.954	0.055	0.405	0.258	0.672	0.837	0.759	0.374	0.656	0.553
Outpatient Surgery Expenditures	-10.74**	-4.01	-7.74*	-10.84**	-3.01	4.15	0.22	-4.06	0.20	2.55	-0.36
<i>90% Confidence Interval</i>	(-19,-3)	(-11,3)	(-15,-1)	(-18,-3)	(-10,4)	(-3,11)	(-7,7)	(-12,3)	(-7,8)	(-4,9)	(-7,6)
<i>P-Value</i>	0.025	0.364	0.077	0.019	0.508	0.331	0.960	0.373	0.966	0.536	0.927
PS <sup>a</sup> Orthopedic Surgery Expenditures	4.09	-0.52	-2.66	-0.12	3.76	1.64	3.40	6.31	4.16	-2.06	-0.57
<i>90% Confidence Interval</i>	(-6,14)	(-9,8)	(-11,6)	(-9,8)	(-4,11)	(-7,10)	(-5,12)	(-2,15)	(-3,11)	(-7,3)	(-5,4)
<i>P-Value</i>	0.489	0.923	0.611	0.981	0.412	0.747	0.500	0.209	0.330	0.487	0.844
Inpatient PS Orthopedic Surgery Expenditures	3.90	0.24	-2.23	0.14	3.55	2.39	3.36	5.67	4.00	-1.83	-0.57
<i>90% Confidence Interval</i>	(-4,12)	(-7,8)	(-9,5)	(-7,7)	(-3,10)	(-5,9)	(-4,10)	(-1,13)	(-2,10)	(-6,2)	(-5,3)
<i>P-Value</i>	0.429	0.957	0.606	0.974	0.354	0.574	0.426	0.178	0.272	0.460	0.811
Outpatient PS Orthopedic Surgery Expenditures	-0.56*	-0.32	0.10	-0.18	-0.21	-0.64	-0.39	-0.17	-0.36	0.20	0.23
<i>90% Confidence Interval</i>	(-1,0)	(-1,0)	(-1,1)	(-1,0)	(-1,0)	(-2,0)	(-1,0)	(-1,0)	(-1,0)	(0,1)	(0,1)
<i>P-Value</i>	0.074	0.270	0.799	0.552	0.542	0.241	0.161	0.653	0.343	0.509	0.440
PS Cardiac Surgery Expenditures	-1.73	11.65	-4.94	-16.51***	-2.71	-1.94	-13.41**	7.84	9.71**	1.98	4.71
<i>90% Confidence Interval</i>	(-13,10)	(0,23)	(-16,6)	(-27,-6)	(-13,7)	(-13,9)	(-23,-4)	(-3,19)	(2,17)	(-3,7)	(-1,11)
<i>P-Value</i>	0.803	0.102	0.453	0.010	0.658	0.773	0.023	0.231	0.036	0.548	0.195
Inpatient PS Cardiac Surgery Expenditures	-0.21	10.27*	-3.13	-13.82**	-0.49	-2.89	-11.19**	6.43	7.75*	1.26	3.76
<i>90% Confidence Interval</i>	(-10,9)	(0,20)	(-12,6)	(-23,-5)	(-9,8)	(-12,6)	(-19,-3)	(-3,15)	(1,14)	(-3,6)	(-1,9)

Measures (2011 USD per Person)	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11
<i>P-Value</i>	0.971	0.090	0.570	0.010	0.924	0.611	0.024	0.243	0.052	0.636	0.208
Outpatient PS Cardiac Surgery Expenditures	-1.45	-0.26	-1.33	-0.80	-2.39**	0.29	-0.35	0.14	0.75	-0.02	0.22
<i>90% Confidence Interval</i>	(-4,1)	(-2,2)	(-3,0)	(-3,1)	(-4,-1)	(-2,2)	(-2,1)	(-2,2)	(-1,2)	(-2,2)	(-2,2)
<i>P-Value</i>	0.275	0.827	0.226	0.473	0.028	0.788	0.753	0.903	0.475	0.987	0.835

\* Statistically significant at the ten percent level.  
 \*\* Statistically significant at the five percent level.  
<sup>a</sup>PS = Preference-sensitive.

**Appendix Table B-43: Quarterly DiD Estimates of Expenditures per Beneficiary, Welvie Texas MA ITT Analysis Cohort**

<b>Measures (2011 USD per Person)</b>	<b>Q1</b>	<b>Q2</b>	<b>Q3</b>	<b>Q4</b>	<b>Q5</b>	<b>Q6</b>
<i>Number of Participant Beneficiaries</i>	63,979	63,885	50,346	49,822	49,356	48,797
Total Medical Expenditures	13.88	15.80	-68.30	42.32	118.29**	27.67
<i>90% Confidence Interval</i>	(-55,83)	(-54,85)	(-161,24)	(-40,125)	(37,199)	(-49,105)
<i>P-Value</i>	0.741	0.709	0.223	0.398	0.016	0.555
Inpatient Expenditures	5.60	14.37	-49.50	59.54*	112.39**	22.95
<i>90% Confidence Interval</i>	(-42,53)	(-31,60)	(-119,20)	(4,115)	(58,167)	(-27,73)
<i>P-Value</i>	0.847	0.604	0.240	0.080	<0.001	0.448
Outpatient ER Expenditures	1.00	-0.33	-2.51	0.01	5.00	6.37*
<i>90% Confidence Interval</i>	(-5,7)	(-6,5)	(-9,4)	(-6,6)	(-1,11)	(0,13)
<i>P-Value</i>	0.767	0.923	0.521	0.997	0.173	0.099
Outpatient Non-ER Expenditures	3.87	8.91	-3.66	-4.92	6.41	9.13
<i>90% Confidence Interval</i>	(-13,21)	(-8,26)	(-22,15)	(-24,14)	(-13,26)	(-10,29)
<i>P-Value</i>	0.707	0.397	0.744	0.666	0.582	0.439
Physician and Ancillary Service Expenditures	12.08	2.24	0.39	11.93	1.40	-2.45
<i>90% Confidence Interval</i>	(-6,30)	(-17,21)	(-21,22)	(-10,34)	(-21,24)	(-25,20)
<i>P-Value</i>	0.280	0.847	0.977	0.370	0.917	0.858
Skilled Nursing Facility Expenditures	-8.66	-2.00	-6.12	-15.98*	5.23	-3.58
<i>90% Confidence Interval</i>	(-20,2)	(-15,11)	(-20,8)	(-30,-2)	(-10,21)	(-18,11)
<i>P-Value</i>	0.199	0.799	0.477	0.065	0.579	0.680
Home Health Expenditures	1.93	-5.47	-4.87	-6.36	-7.00	-1.11
<i>90% Confidence Interval</i>	(-9,13)	(-17,6)	(-19,9)	(-21,8)	(-21,7)	(-15,13)
<i>P-Value</i>	0.780	0.448	0.562	0.464	0.407	0.893
Total Surgery Expenditures	14.37	17.28	3.31	39.49	71.68**	16.80
<i>90% Confidence Interval</i>	(-22,51)	(-19,53)	(-45,52)	(-2,81)	(30,113)	(-22,56)
<i>P-Value</i>	0.515	0.431	0.911	0.121	0.004	0.481
Inpatient Surgery Expenditures	14.10	15.00	10.12	45.88*	65.55***	13.92
<i>90% Confidence Interval</i>	(-19,48)	(-18,48)	(-36,57)	(7,85)	(27,104)	(-22,50)
<i>P-Value</i>	0.488	0.459	0.720	0.053	0.005	0.528
Episode-Based Inpatient Surgery Expenditures	15.17	16.64	10.07	45.41*	66.31***	15.94
<i>90% Confidence Interval</i>	(-18,49)	(-17,50)	(-36,57)	(6,85)	(28,105)	(-20,52)
<i>P-Value</i>	0.457	0.413	0.722	0.056	0.005	0.472
Outpatient Surgery Expenditures	2.25	1.29	-6.89	-5.16	6.84	2.53
<i>90% Confidence Interval</i>	(-9,14)	(-10,13)	(-19,5)	(-18,7)	(-5,19)	(-10,15)
<i>P-Value</i>	0.746	0.850	0.353	0.495	0.354	0.734

Measures (2011 USD per Person)	Q1	Q2	Q3	Q4	Q5	Q6
PS <sup>a</sup> Orthopedic Surgery Expenditures	-5.35	-6.18	-5.06	18.02*	-9.68	13.73
90% Confidence Interval	(-18,7)	(-20,8)	(-20,10)	(3,33)	(-24,5)	(-2,30)
P-Value	0.475	0.469	0.577	0.055	0.277	0.160
Inpatient PS Orthopedic Surgery Expenditures	-4.57	-5.06	-3.67	15.79**	-6.99	11.29
90% Confidence Interval	(-15,6)	(-17,7)	(-16,9)	(3,29)	(-19,5)	(-3,25)
P-Value	0.469	0.481	0.632	0.048	0.356	0.180
Outpatient PS Orthopedic Surgery Expenditures	-0.59	-0.31	-0.89**	-1.26**	-0.48	0.43
90% Confidence Interval	(-1,0)	(-1,0)	(-2,0)	(-2,0)	(-1,0)	(0,1)
P-Value	0.230	0.518	0.037	0.031	0.377	0.444
PS Cardiac Surgery Expenditures	-2.74	18.02**	-6.57	28.00***	9.87	12.34
90% Confidence Interval	(-17,12)	(3,33)	(-33,20)	(11,45)	(-7,27)	(-4,29)
P-Value	0.752	0.044	0.684	0.006	0.340	0.227
Inpatient PS Cardiac Surgery Expenditures	-1.68	16.32**	-5.55	26.30***	11.19	11.62
90% Confidence Interval	(-14,10)	(4,29)	(-30,19)	(12,40)	(-3,26)	(-3,26)
P-Value	0.819	0.032	0.710	0.002	0.207	0.181
Outpatient PS Cardiac Surgery Expenditures	-0.07	-1.33	-1.66	-2.13	-3.03*	-1.36
90% Confidence Interval	(-3,2)	(-4,1)	(-4,1)	(-5,1)	(-6,0)	(-5,2)
P-Value	0.962	0.363	0.312	0.211	0.062	0.491

\* Statistically significant at the ten percent level.

\*\* Statistically significant at the five percent level.

\*\*\* Statistically significant at the one percent level.

<sup>a</sup>PS = Preference-sensitive.

**Appendix Table B-44: Quarterly DiD Estimates of Expenditures per Beneficiary, Welvie Ohio FFS IV Analysis Cohort**

<b>Measures (2011 USD per Person)</b>	<b>Q1</b>	<b>Q2</b>	<b>Q3</b>	<b>Q4</b>	<b>Q5</b>	<b>Q6</b>	<b>Q7</b>	<b>Q8</b>	<b>Q9</b>	<b>Q10</b>
<i>Number of Participant Beneficiaries</i>	1166	1162	1153	1141	1137	1120	1103	1041	887	267
Total Medicare Parts A and B Expenditures	-5,199.96*	-2,867.51	-3,591.36	1,716.56	877.60	454.14	-1,724.26	-5,097.26*	-61.05	2,126.92
<i>90% Confidence Interval</i>	(-9763,-637)	(-7312,1577)	(-8039,856)	(-2753,6186)	(-3496,5251)	(-3781,4689)	(-6029,2581)	(-9825,-369)	(-5166,5044)	(-14563,18817)
<i>P-Value</i>	0.061	0.289	0.184	0.528	0.741	0.86	0.51	0.076	0.984	0.834
Inpatient Expenditures	-4,405.27***	-1,496.84	-2,048.50	1,386.58	1,005.82	1,027.51	-1,683.62	-2,954.71*	47.26	1,076.94
<i>90% Confidence Interval</i>	(-7212,-1598)	(-4256,1262)	(-4776,679)	(-1341,4114)	(-1637,3649)	(-1525,3580)	(-4274,907)	(-5899,-10)	(-2962,3057)	(-8876,11030)
<i>P-Value</i>	0.01	0.372	0.217	0.403	0.531	0.508	0.285	0.099	0.979	0.859
Outpatient ER Expenditures	-141.60	-193.57	-71.78	-82.13	59.64	-114.76	-154.93	93.21	-154.44	93.28
<i>90% Confidence Interval</i>	(-368,85)	(-409,21)	(-309,165)	(-345,181)	(-202,321)	(-371,142)	(-404,95)	(-175,361)	(-454,145)	(-843,1030)
<i>P-Value</i>	0.304	0.139	0.619	0.607	0.708	0.462	0.307	0.567	0.397	0.870
Outpatient Non-ER Expenditures	623.15	268.29	-236.30	375.53	-16.48	-293.72	880.13	-594.63	305.61	2,085.25
<i>90% Confidence Interval</i>	(-289,1535)	(-643,1180)	(-1164,691)	(-538,1289)	(-960,927)	(-1197,610)	(-48,1808)	(-1500,311)	(-785,1396)	(-1573,5744)
<i>P-Value</i>	0.261	0.628	0.675	0.499	0.977	0.593	0.119	0.28	0.645	0.349
Physician and Ancillary Service Expenditures	-530.44	-413.83	-381.10	313.93	87.89	318.68	-505.11	-467.25	-193.51	1,091.83
<i>90% Confidence Interval</i>	(-1446,386)	(-1284,456)	(-1246,484)	(-545,1173)	(-783,959)	(-521,1158)	(-1361,351)	(-1350,416)	(-1206,819)	(-2253,4437)
<i>P-Value</i>	0.341	0.434	0.469	0.548	0.868	0.532	0.332	0.384	0.753	0.591
Skilled Nursing Facility Expenditures	-844.17	-160.94	-363.38	924.25	432.98	155.82	527.11	-139.11	931.58	-792.81
<i>90% Confidence Interval</i>	(-2228,540)	(-1491,1169)	(-1730,1003)	(-438,2286)	(-936,1802)	(-1185,1496)	(-825,1879)	(-1655,1377)	(-699,2562)	(-6136,4551)
<i>P-Value</i>	0.316	0.842	0.662	0.264	0.603	0.848	0.521	0.88	0.347	0.807
Durable Medical Equipment Expenditures	116.84	-79.67	35.74	-146.49	-94.26	-119.56	-247.49	-201.51	-304.78	-930.38
<i>90% Confidence Interval</i>	(-156,390)	(-350,191)	(-232,303)	(-401,108)	(-348,159)	(-367,128)	(-501,6)	(-464,61)	(-612,2)	(-1892,31)



Measures (2011 USD per Person)	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10
<i>P-Value</i>	0.481	0.628	0.826	0.344	0.541	0.427	0.109	0.207	0.102	0.111
Home Health Expenditures	206.21	42.26	391.42	-207.23	-252.85	-384.43	-285.78	-62.57	-323.38	-944.13
<i>90% Confidence Interval</i>	(-236,649)	(-398,482)	(-41,824)	(-658,243)	(-694,189)	(-827,58)	(-734,163)	(-539,414)	(-885,239)	(-2745,857)
<i>P-Value</i>	0.443	0.874	0.136	0.449	0.346	0.153	0.294	0.829	0.344	0.389
Hospice Expenditures	-181.34	-778.80*	-889.71**	-804.65*	-350.88	-155.36	-195.02	-742.30*	-325.05	474.72
<i>90% Confidence Interval</i>	(-981,619)	(-1537,-20)	(-1628,-151)	(-1504,-105)	(-1032,331)	(-847,536)	(-881,491)	(-1427,-57)	(-1105,455)	(-2154,3104)
<i>P-Value</i>	0.709	0.091	0.048	0.058	0.397	0.712	0.64	0.075	0.493	0.766
Total Surgery Expenditures	-2,814.46**	-836.06	-815.77	632.51	643.57	-281.84	211.07	-1,969.67	482.68	-1,404.01
<i>90% Confidence Interval</i>	(-4934,-695)	(-2808,1135)	(-2804,1173)	(-1351,2616)	(-1330,2617)	(-2163,1600)	(-1735,2157)	(-4206,267)	(-1694,2659)	(-8837,6029)
<i>P-Value</i>	0.029	0.485	0.5	0.6	0.592	0.805	0.858	0.147	0.715	0.756
Inpatient Surgery Expenditures	-2,823.97**	-879.71	-696.54	780.97	187.75	68.18	-83.98	-1,407.38	634.71	-2,109.31
<i>90% Confidence Interval</i>	(-4844,-804)	(-2747,987)	(-2570,1177)	(-1091,2653)	(-1668,2044)	(-1695,1832)	(-1903,1735)	(-3535,720)	(-1387,2656)	(-9027,4808)
<i>P-Value</i>	0.021	0.438	0.541	0.493	0.868	0.949	0.939	0.277	0.606	0.616
Episode-Based Inpatient Surgery Expenditures	-2,800.19**	-1,009.78	-1,145.68	710.52	261.21	152.37	-587.99	-1,689.41	472.08	-2,964.89
<i>90% Confidence Interval</i>	(-4896,-704)	(-2961,942)	(-3106,814)	(-1272,2693)	(-1685,2208)	(-1704,2009)	(-2502,1326)	(-3908,530)	(-1676,2620)	(-10293,4363)
<i>P-Value</i>	0.028	0.395	0.336	0.555	0.825	0.893	0.613	0.21	0.718	0.506
Outpatient Surgery Expenditures	51.89	87.31	-79.16	-201.00	408.86	-332.76	227.69	-495.15	-116.64	702.71
<i>90% Confidence Interval</i>	(-447,551)	(-402,577)	(-606,448)	(-731,329)	(-128,945)	(-866,201)	(-326,781)	(-1039,49)	(-760,527)	(-1491,2896)
<i>P-Value</i>	0.864	0.769	0.805	0.533	0.21	0.305	0.498	0.134	0.766	0.598
PS <sup>a</sup> Orthopedic Surgery Expenditures	299.86	-209.29	138.97	-362.38	376.51	89.96	216.84	-218.97	-72.52	572.06
<i>90% Confidence Interval</i>	(-307,907)	(-840,422)	(-575,853)	(-1095,370)	(-260,1013)	(-571,751)	(-432,865)	(-949,511)	(-871,726)	(-2167,3311)
<i>P-Value</i>	0.417	0.585	0.749	0.416	0.331	0.823	0.582	0.622	0.881	0.731
Inpatient PS Orthopedic Surgery Expenditures	263.85	-163.48	168.94	-283.80	362.87	102.70	250.98	-207.56	6.19	565.47

Measures (2011 USD per Person)	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10
<i>90% Confidence Interval</i>	(-255,783)	(-704,377)	(-446,784)	(-919,352)	(-183,909)	(-465,671)	(-304,806)	(-837,422)	(-682,695)	(-1785,2916)
<i>P-Value</i>	0.403	0.619	0.651	0.463	0.275	0.766	0.457	0.588	0.988	0.692
Outpatient PS Orthopedic Surgery Expenditures	22.14	-21.73	-49.68**	-34.39*	-14.82	-3.47	-14.06	-4.36	-53.11	39.16
<i>90% Confidence Interval</i>	(-8,52)	(-62,19)	(-88,-11)	(-68,-1)	(-51,21)	(-40,33)	(-52,24)	(-55,46)	(-108,2)	(-120,198)
<i>P-Value</i>	0.222	0.376	0.034	0.095	0.502	0.877	0.544	0.887	0.113	0.686
PS Cardiac Surgery Expenditures	-1,117.39**	-78.18	559.59	-247.82	-474.14	71.52	-158.56	-1,094.08*	-572.33	-1,321.88
<i>90% Confidence Interval</i>	(-1985,-249)	(-945,788)	(-250,1370)	(-1100,604)	(-1328,380)	(-755,898)	(-965,647)	(-2040,-148)	(-1617,473)	(-4609,1965)
<i>P-Value</i>	0.034	0.882	0.256	0.632	0.361	0.887	0.746	0.057	0.368	0.508
Inpatient PS Cardiac Surgery Expenditures	-911.44*	-39.52	445.80	-149.58	-353.64	72.96	-176.29	-936.19*	-534.12	-1,444.01
<i>90% Confidence Interval</i>	(-1686,-137)	(-806,727)	(-262,1154)	(-898,598)	(-1107,400)	(-653,799)	(-885,532)	(-1772,-101)	(-1456,388)	(-4351,1463)
<i>P-Value</i>	0.053	0.932	0.3	0.742	0.44	0.869	0.682	0.065	0.341	0.414
Outpatient PS Cardiac Surgery Expenditures	-117.91	-22.58	58.32	-94.26	-61.25	-45.82	48.32	-49.90	5.05	213.81
<i>90% Confidence Interval</i>	(-236,1)	(-134,89)	(-60,177)	(-223,35)	(-183,60)	(-171,80)	(-67,164)	(-173,73)	(-150,161)	(-333,761)
<i>P-Value</i>	0.102	0.74	0.418	0.23	0.407	0.548	0.491	0.505	0.957	0.52

\* Statistically significant at the ten percent level.

\*\* Statistically significant at the five percent level.

\*\*\* Statistically significant at the one percent level.

<sup>a</sup>PS = Preference-sensitive.

**Appendix Table B-45: Quarterly DiD Estimates of Expenditures per Beneficiary, Welvie Ohio MA IV Analysis Cohort**

<b>Measures (2011 USD per Person)</b>	<b>Q1</b>	<b>Q2</b>	<b>Q3</b>	<b>Q4</b>	<b>Q5</b>	<b>Q6</b>	<b>Q7</b>	<b>Q8</b>	<b>Q9</b>	<b>Q10</b>	<b>Q11</b>
<i>Number of Participant Beneficiaries</i>	4294	4281	4260	4126	3647	3307	2759	2584	2295	2169	1694
Total Medical Expenditures	-324.47	-764.90	- 2,177.34** *	- 1,780.52** *	-1,278.98*	-440.83	-680.61	236.16	-888.76	-97.85	-1,928.43
<i>90% Confidence Interval</i>	(- 1534,885)	(- 1959,429)	(-3322,- 1032)	(-2909,- 652)	(-2519,-39)	(- 1772,891)	(- 2194,832)	(- 1322,1794)	(- 2564,787)	(- 1635,1440)	(-3861,4)
<i>P-Value</i>	0.659	0.292	0.002	0.009	0.090	0.586	0.459	0.803	0.383	0.917	0.101
Inpatient Expenditures	135.37	-242.69	- 1,200.83** *	-526.64	-230.48	-15.70	-137.93	542.83	-290.10	-431.13	-1,396.98*
<i>90% Confidence Interval</i>	(-649,920)	(- 1046,560)	(-1957,- 445)	(- 1257,204)	(- 1023,562)	(-891,860)	(- 1085,809)	(- 462,1548)	(- 1434,854)	(- 1549,687)	(-2789,-5)
<i>P-Value</i>	0.776	0.619	0.009	0.236	0.632	0.976	0.811	0.374	0.677	0.526	0.099
Outpatient ER Expenditures	-79.46	-11.18	-34.28	-75.34	-111.32*	8.10	-91.65	-30.92	-15.11	83.65	72.40
<i>90% Confidence Interval</i>	(-168,9)	(-94,71)	(-117,49)	(-168,18)	(-211,-12)	(-94,110)	(-220,37)	(-164,102)	(-157,127)	(-44,211)	(-78,222)
<i>P-Value</i>	0.140	0.823	0.496	0.183	0.065	0.896	0.241	0.702	0.861	0.280	0.427
Outpatient Non-ER Expenditures	-361.17**	-138.18	-233.18	-349.87**	-256.33	-81.28	50.27	-31.46	-28.79	92.41	-110.91
<i>90% Confidence Interval</i>	(-649,-73)	(-409,133)	(-514,47)	(-638,-62)	(-559,46)	(-381,218)	(-308,409)	(-421,358)	(-452,394)	(-283,468)	(-582,360)
<i>P-Value</i>	0.039	0.402	0.171	0.045	0.163	0.656	0.817	0.894	0.911	0.686	0.699
Physician and Ancillary Service Expenditures	-177.00	-357.56**	-426.26**	-425.12**	-473.42**	-235.97	-348.20	-306.60	-387.53	-102.55	-97.23
<i>90% Confidence Interval</i>	(-495,141)	(-648,-67)	(-714,-139)	(-715,-135)	(-802,-145)	(-569,97)	(-757,61)	(-700,87)	(-777,1)	(-424,219)	(-508,313)
<i>P-Value</i>	0.360	0.043	0.015	0.016	0.018	0.244	0.161	0.200	0.101	0.600	0.697
Skilled Nursing Facility Expenditures	120.73	15.80	-288.26**	-338.52**	-151.17	-149.35	-40.61	-106.59	-51.95	171.10	-395.70
<i>90% Confidence Interval</i>	(-116,358)	(-208,239)	(-504,-73)	(-558,-119)	(-398,96)	(-419,120)	(-361,280)	(-410,197)	(-372,268)	(-158,500)	(-802,10)
<i>P-Value</i>	0.402	0.908	0.028	0.011	0.314	0.362	0.835	0.564	0.789	0.393	0.109
Home Health Expenditures	15.81	-53.93	-16.50	-43.04	-30.20	21.33	-90.66	87.27	-121.08	3.02	-55.74

Measures (2011 USD per Person)	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11
<i>90% Confidence Interval</i>	(-75,107)	(-146,38)	(-107,74)	(-134,47)	(-133,73)	(-90,133)	(-217,36)	(-39,214)	(-264,21)	(-140,146)	(-247,135)
<i>P-Value</i>	0.775	0.337	0.764	0.434	0.631	0.753	0.239	0.256	0.162	0.972	0.631
Total Surgery Expenditures	-464.22	-175.02	- 1,046.75** *	-794.61**	-542.08	-250.80	-52.19	-287.71	80.50	-66.63	150.80
<i>90% Confidence Interval</i>	(- 1074,145)	(-747,397)	(-1606,- 487)	(-1365,- 225)	(-1089,5)	(-922,420)	(-770,666)	(- 1018,443)	(-540,701)	(-521,388)	(-450,751)
<i>P-Value</i>	0.210	0.614	0.002	0.022	0.103	0.539	0.905	0.517	0.831	0.810	0.680
Inpatient Surgery Expenditures	-181.64	-0.57	-774.17**	-397.73	-375.16	-269.99	2.18	-45.75	137.41	-141.24	224.39
<i>90% Confidence Interval</i>	(-744,381)	(-531,530)	(-1293,- 256)	(-924,129)	(-867,117)	(-895,355)	(-653,657)	(-711,619)	(-400,675)	(-502,220)	(-276,724)
<i>P-Value</i>	0.595	0.999	0.014	0.214	0.210	0.477	0.996	0.910	0.674	0.520	0.460
Episode-Based Inpatient Surgery Expenditures	-193.15	4.24	-769.30**	-419.81	-375.33	-286.66	33.11	-45.42	124.82	-152.02	191.95
<i>90% Confidence Interval</i>	(-757,371)	(-528,537)	(-1290,- 249)	(-948,108)	(-871,120)	(-918,345)	(-625,692)	(-712,621)	(-416,665)	(-519,215)	(-313,697)
<i>P-Value</i>	0.573	0.990	0.015	0.191	0.213	0.455	0.934	0.911	0.704	0.496	0.532
Outpatient Surgery Expenditures	-244.52**	-141.12	-222.01**	-320.40***	-104.37	28.23	-36.38	-164.82	-37.98	61.69	-68.48
<i>90% Confidence Interval</i>	(-431,-58)	(-311,29)	(-389,-55)	(-496,-145)	(-298,90)	(-167,224)	(-268,195)	(-409,80)	(-306,231)	(-188,312)	(-366,229)
<i>P-Value</i>	0.031	0.171	0.029	0.003	0.376	0.812	0.796	0.268	0.816	0.685	0.705
PS <sup>a</sup> Orthopedic Surgery Expenditures	198.36	-26.44	-134.15	-98.06	65.06	-49.64	115.90	129.93	51.47	-99.87	-50.95
<i>90% Confidence Interval</i>	(-33,430)	(-233,180)	(-333,64)	(-294,97)	(-130,260)	(-282,183)	(-157,388)	(-138,398)	(-199,302)	(-280,80)	(-270,168)
<i>P-Value</i>	0.158	0.833	0.266	0.409	0.583	0.725	0.484	0.426	0.736	0.361	0.701
Inpatient PS Orthopedic Surgery Expenditures	179.51	-7.88	-110.81	-74.28	66.20	-12.82	112.76	123.12	58.21	-92.03	-49.35
<i>90% Confidence Interval</i>	(-14,373)	(-179,164)	(-276,54)	(-237,88)	(-96,229)	(-207,182)	(-115,341)	(-102,348)	(-155,272)	(-242,58)	(-230,131)
<i>P-Value</i>	0.127	0.940	0.269	0.451	0.503	0.914	0.416	0.368	0.654	0.314	0.653
Outpatient PS Orthopedic Surgery Expenditures	-14.00*	-7.50	3.21	-5.17	-5.53	-18.19	-10.47	-6.19	-12.61	12.83	11.94

Measures (2011 USD per Person)	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11
<i>90% Confidence Interval</i>	(-26,-2)	(-19,4)	(-12,18)	(-17,6)	(-20,9)	(-43,7)	(-26,5)	(-26,14)	(-35,10)	(-6,32)	(-11,35)
<i>P-Value</i>	0.056	0.271	0.724	0.462	0.543	0.230	0.261	0.608	0.359	0.265	0.392
PS Cardiac Surgery Expenditures	-49.89	271.92	-182.68	-408.10***	-66.38	-54.23	-456.64**	180.55	309.11*	53.77	227.08
<i>90% Confidence Interval</i>	(-320,220)	(-3,547)	(-431,66)	(-652,-165)	(-327,195)	(-363,255)	(-775,-138)	(-167,528)	(36,582)	(-146,254)	(-52,506)
<i>P-Value</i>	0.761	0.104	0.227	0.006	0.676	0.773	0.018	0.393	0.062	0.658	0.180
Inpatient PS Cardiac Surgery Expenditures	-12.29	235.20*	-132.04	-341.34***	-15.10	-81.70	-381.39**	142.37	242.97*	38.01	186.19
<i>90% Confidence Interval</i>	(-239,214)	(1,469)	(-340,76)	(-546,-137)	(-234,204)	(-343,180)	(-649,-114)	(-151,435)	(8,478)	(-124,201)	(-43,415)
<i>P-Value</i>	0.929	0.098	0.297	0.006	0.910	0.607	0.019	0.424	0.088	0.700	0.181
Outpatient PS Cardiac Surgery Expenditures	-35.70	1.48	-29.70	-20.14	-56.88**	9.64	-10.47	10.08	24.94	-7.62	5.22
<i>90% Confidence Interval</i>	(-87,16)	(-44,47)	(-72,12)	(-62,22)	(-103,-11)	(-40,60)	(-71,50)	(-53,73)	(-37,87)	(-71,55)	(-76,86)
<i>P-Value</i>	0.252	0.957	0.245	0.433	0.043	0.751	0.778	0.793	0.511	0.842	0.916

\* Statistically significant at the ten percent level.

\*\* Statistically significant at the five percent level.

\*\*\* Statistically significant at the one percent level.

<sup>a</sup>PS = Preference-sensitive.

**Appendix Table B-46: Quarterly DiD Estimates of Expenditures per Beneficiary, Welvie  
Texas MA IV Analysis Cohort**

<b>Measures (2011 USD per Person)</b>	<b>Q1</b>	<b>Q2</b>	<b>Q3</b>	<b>Q4</b>	<b>Q5</b>	<b>Q6</b>
<i>Number of Participant Beneficiaries</i>	2439	2219	1764	1677	1319	902
Total Medical Expenditures	939.22	440.00	-2,056.01	1,140.60	4,826.65**	1,505.88
<i>90% Confidence Interval</i>	(-1079,2958)	(-1631,2511)	(-4781,669)	(-1388,3669)	(1684,7969)	(-2773,5785)
<i>P-Value</i>	0.444	0.727	0.215	0.458	0.012	0.563
Inpatient Expenditures	564.73	452.07	-1,498.87	1,677.20	4,398.02***	1,151.18
<i>90% Confidence Interval</i>	(-831,1961)	(-912,1816)	(-3547,549)	(-39,3393)	(2293,6503)	(-1615,3918)
<i>P-Value</i>	0.506	0.586	0.229	0.108	<0.001	0.494
Outpatient ER Expenditures	15.91	-15.82	-42.36	-19.79	209.92	342.86
<i>90% Confidence Interval</i>	(-145,177)	(-181,149)	(-234,149)	(-207,168)	(-24,444)	(-10,695)
<i>P-Value</i>	0.871	0.875	0.716	0.862	0.139	0.110
Outpatient Non-ER Expenditures	166.73	235.49	-153.67	-165.29	243.15	522.50
<i>90% Confidence Interval</i>	(-328,661)	(-278,749)	(-700,393)	(-741,411)	(-497,984)	(-552,1597)
<i>P-Value</i>	0.579	0.451	0.644	0.637	0.589	0.424
Physician and Ancillary Service Expenditures	393.33	-18.04	7.61	339.46	229.71	-106.56
<i>90% Confidence Interval</i>	(-124,911)	(-566,530)	(-619,634)	(-317,996)	(-615,1074)	(-1331,1117)
<i>P-Value</i>	0.211	0.957	0.984	0.395	0.655	0.886
Skilled Nursing Facility Expenditures	-212.37	-22.89	-126.26	-499.31*	211.29	-171.51
<i>90% Confidence Interval</i>	(-536,111)	(-408,363)	(-548,296)	(-937,-61)	(-389,811)	(-966,623)
<i>P-Value</i>	0.280	0.922	0.623	0.061	0.563	0.723
Home Health Expenditures	62.98	-136.11	-191.13	-141.72	-259.58	-24.40
<i>90% Confidence Interval</i>	(-267,393)	(-491,219)	(-594,212)	(-588,305)	(-796,277)	(-793,745)
<i>P-Value</i>	0.754	0.528	0.436	0.602	0.426	0.958
Total Surgery Expenditures	799.31	317.92	113.91	1,079.24	2,719.44***	746.86
<i>90% Confidence Interval</i>	(-265,1864)	(-756,1391)	(-1328,1556)	(-208,2366)	(1119,4320)	(-1433,2927)
<i>P-Value</i>	0.217	0.626	0.897	0.168	0.005	0.573
Inpatient Surgery Expenditures	719.05	283.55	328.56	1,332.26*	2,513.34***	645.47
<i>90% Confidence Interval</i>	(-264,1702)	(-707,1274)	(-1044,1701)	(136,2528)	(1021,4005)	(-1368,2659)
<i>P-Value</i>	0.229	0.638	0.694	0.067	0.006	0.598
Episode-Based Inpatient Surgery Expenditures	750.25	332.11	326.99	1,317.95*	2,543.04***	758.14
<i>90% Confidence Interval</i>	(-235,1736)	(-662,1327)	(-1049,1703)	(118,2518)	(1043,4044)	(-1265,2781)
<i>P-Value</i>	0.210	0.583	0.696	0.071	0.005	0.538
Outpatient Surgery Expenditures	123.31	17.83	-210.62	-202.35	241.52	105.06

<b>Measures (2011 USD per Person)</b>	<b>Q1</b>	<b>Q2</b>	<b>Q3</b>	<b>Q4</b>	<b>Q5</b>	<b>Q6</b>
<i>90% Confidence Interval</i>	(-210,456)	(-317,353)	(-574,153)	(-587,182)	(-229,712)	(-577,787)
<i>P-Value</i>	0.542	0.930	0.340	0.387	0.398	0.800
PS <sup>a</sup> Orthopedic Surgery Expenditures	-29.21	-144.78	-185.81	540.97*	-397.07	663.78
<i>90% Confidence Interval</i>	(-395,336)	(-562,272)	(-626,254)	(65,1017)	(-964,170)	(-221,1548)
<i>P-Value</i>	0.895	0.568	0.488	0.062	0.249	0.217
Inpatient PS Orthopedic Surgery Expenditures	-25.47	-119.28	-140.67	476.83*	-297.87	554.85
<i>90% Confidence Interval</i>	(-334,283)	(-470,232)	(-512,231)	(72,882)	(-779,184)	(-208,1318)
<i>P-Value</i>	0.892	0.576	0.534	0.053	0.309	0.232
Outpatient PS Orthopedic Surgery Expenditures	-16.57	-11.72	-19.98	-42.18**	-16.24	21.39
<i>90% Confidence Interval</i>	(-41,8)	(-35,11)	(-42,2)	(-70,-14)	(-51,19)	(-30,73)
<i>P-Value</i>	0.265	0.405	0.144	0.014	0.447	0.496
PS Cardiac Surgery Expenditures	34.55	498.17*	-230.24	848.43**	375.96	706.30
<i>90% Confidence Interval</i>	(-387,456)	(63,933)	(-1019,558)	(338,1359)	(-283,1035)	(-229,1642)
<i>P-Value</i>	0.893	0.060	0.631	0.006	0.348	0.214
Inpatient PS Cardiac Surgery Expenditures	43.19	445.20**	-205.46	805.45***	420.67	654.95
<i>90% Confidence Interval</i>	(-314,401)	(76,815)	(-932,521)	(371,1240)	(-144,986)	(-140,1450)
<i>P-Value</i>	0.843	0.047	0.642	0.002	0.221	0.175
Outpatient PS Cardiac Surgery Expenditures	6.66	-35.28	-30.77	-71.63	-106.87*	-72.47
<i>90% Confidence Interval</i>	(-68,81)	(-107,36)	(-112,50)	(-157,14)	(-208,-6)	(-253,108)
<i>P-Value</i>	0.883	0.417	0.531	0.170	0.082	0.509

\* Statistically significant at the ten percent level.

\*\* Statistically significant at the five percent level.

\*\*\* Statistically significant at the one percent level.

<sup>a</sup>PS = Preference-sensitive.

**Appendix Table B-47: Welvie Total Medicare Expenditures in the Baseline Period and by Quarter Following Enrollment, Ohio FFS ITT Analysis Cohort, Q1 to Q5**

Measures (2011 USD)	Baseline Period (Year Prior to Enrollment)		Q1		Q2		Q3		Q4		Q5	
	Intervention	Controls	Intervention	Controls	Intervention	Controls	Intervention	Controls	Intervention	Controls	Intervention	Controls
<i>Number of Beneficiaries</i>	59,894	50,279	59,894	50,279	59,023	49,338	58,163	48,553	57,294	47,745	56,355	46,834
<b>Total Medicare Parts A and B Expenditures</b>												
Mean	\$8,232	\$8,556	\$2,362	\$2,546	\$2,324	\$2,431	\$2,415	\$2,541	\$2,353	\$2,384	\$2,459	\$2,484
Median	\$2,140	\$2,224	\$325	\$341	\$323	\$335	\$377	\$384	\$213	\$220	\$325	\$341
90th percentile	\$23,409	\$24,684	\$5,365	\$5,905	\$5,034	\$5,468	\$5,286	\$5,553	\$5,174	\$5,462	\$5,566	\$5,722
99th percentile	\$81,173	\$84,911	\$35,012	\$36,368	\$35,155	\$35,383	\$35,480	\$36,580	\$37,288	\$36,614	\$36,125	\$35,510

**Appendix Table B-48: Welvie Total Medicare Expenditures by Quarter Following Enrollment, Ohio FFS ITT Analysis Cohort, Q6 to Q11**

Measures (2011 USD)	Q6		Q7		Q8		Q9		Q10		Q11	
	Intervention	Controls	Intervention	Controls	Intervention	Controls	Intervention	Controls	Intervention	Controls	Intervention	Controls
<i>Number of Beneficiaries</i>	55,487	45,985	54,652	45,276	53,729	44,462	52,781	43,579	51,987	42,837	51,238	42,174
<b>Total Medicare Parts A and B Expenditures</b>												
Mean	\$2,343	\$2,390	\$2,429	\$2,512	\$2,336	\$2,485	\$2,403	\$2,452	\$2,378	\$2,408	\$2,361	\$2,439
Median	\$336	\$341	\$395	\$398	\$236	\$243	\$348	\$358	\$363	\$369	\$408	\$421
90th percentile	\$5,083	\$5,314	\$5,478	\$5,796	\$5,415	\$5,937	\$5,531	\$5,813	\$5,314	\$5,457	\$5,103	\$5,518
99th percentile	\$35,679	\$34,609	\$34,961	\$34,717	\$35,591	\$37,247	\$35,609	\$35,489	\$34,819	\$34,081	\$35,405	\$34,371



**Appendix Table B-49: Welvie Total Medicare Expenditures in the Baseline Period and by Quarter Following Enrollment, Ohio MA ITT Analysis Cohort, Q1 to Q5**

Measures (2011 USD)	Baseline Period (Year Prior to Enrollment)		Q1		Q2		Q3		Q4		Q5	
	Intervention	Controls	Intervention	Controls	Intervention	Controls	Intervention	Controls	Intervention	Controls	Intervention	Controls
<i>Number of Beneficiaries</i>	97,380	94,915	97,380	94,915	96,492	94,059	95,477	93,045	92,080	89,750	91,230	88,894
<b>Total Medical Expenditures</b>												
Mean	\$4,197	\$4,320	\$1,723	\$1,771	\$1,593	\$1,647	\$1,496	\$1,599	\$1,427	\$1,516	\$1,494	\$1,555
Median	\$832	\$837	\$228	\$230	\$152	\$156	\$155	\$157	\$134	\$136	\$161	\$168
90th percentile	\$10,579	\$10,958	\$3,154	\$3,311	\$2,837	\$3,004	\$2,647	\$2,787	\$2,450	\$2,624	\$2,540	\$2,715
99th percentile	\$52,653	\$54,880	\$28,670	\$29,149	\$27,554	\$28,674	\$26,212	\$27,969	\$25,743	\$26,655	\$26,298	\$27,407

**Appendix Table B-50: Welvie Total Medicare Expenditures by Quarter Following Enrollment, Ohio MA ITT Analysis Cohort, Q6 to Q11**

Measures (2011 USD)	Q6		Q7		Q8		Q9		Q10		Q11	
	Intervention	Controls	Intervention	Controls	Intervention	Controls	Intervention	Controls	Intervention	Controls	Intervention	Controls
<i>Number of Beneficiaries</i>	90,076	87,518	89,069	86,556	82,860	80,581	81,907	79,640	79,501	77,232	78,171	75,732
<b>Total Medicare Parts A and B Expenditures</b>												
Mean	\$1,356	\$1,388	\$1,326	\$1,374	\$1,309	\$1,321	\$1,232	\$1,275	\$1,019	\$1,038	\$967	\$1,022
Median	\$97	\$100	\$97	\$100	\$90	\$94	\$94	\$101	\$49	\$54	\$56	\$59
90th percentile	\$2,204	\$2,252	\$2,182	\$2,294	\$2,068	\$2,130	\$1,919	\$1,974	\$1,465	\$1,465	\$1,390	\$1,454
99th percentile	\$25,012	\$26,107	\$24,513	\$25,085	\$24,454	\$24,817	\$23,142	\$24,024	\$20,004	\$20,460	\$18,880	\$19,958

**Appendix Table B-51: Welvie Total Medicare Expenditures in the Baseline Period and by Quarter Following Enrollment, Texas MA ITT Analysis Cohort, Q1 to Q3**

Measures (2011 USD)	Baseline Period (Year Prior to Enrollment)		Q1		Q2		Q3	
	Intervention	Controls	Intervention	Controls	Intervention	Controls	Intervention	Controls
<i>Number of Beneficiaries</i>	63,979	63,759	63,979	63,759	63,885	63,654	50,346	50,476
<b>Total Medical Expenditures</b>								
Mean	\$5,571	\$5,659	\$1,704	\$1,712	\$1,832	\$1,835	\$1,846	\$1,945
Median	\$1,336	\$1,338	\$225	\$227	\$255	\$261	\$224	\$232
90th percentile	\$14,091	\$14,436	\$3,162	\$3,139	\$3,366	\$3,423	\$3,389	\$3,621
99th percentile	\$63,458	\$64,775	\$27,725	\$27,755	\$29,842	\$29,913	\$30,156	\$30,326

**Appendix Table B-52: Welvie Total Medicare Expenditures by Quarter Following Enrollment, Texas MA ITT Analysis Cohort, Q4 to Q6**

Measures (2011 USD)	Q4		Q5		Q6	
	Intervention	Controls	Intervention	Controls	Intervention	Controls
<i>Number of Beneficiaries</i>	49,822	49,956	49,356	49,449	48,797	48,926
<b>Total Medical Expenditures</b>						
Mean	\$1,941	\$1,937	\$1,911	\$1,835	\$1,808	\$1,824
Median	\$233	\$241	\$217	\$224	\$244	\$248
90th percentile	\$3,725	\$3,790	\$3,561	\$3,446	\$3,390	\$3,358
99th percentile	\$30,947	\$31,039	\$30,754	\$30,232	\$29,062	\$28,854

**Appendix Table B-53: Welvie Inpatient and Outpatient Expenditures in the Baseline Period and by Quarter Following Enrollment, Ohio FFS ITT Analysis Cohort, Q1 to Q5**

Measures (2011 USD)	Baseline Period (Year Prior to Enrollment)		Q1		Q2		Q3		Q4		Q5	
	Intervention	Controls	Intervention	Controls	Intervention	Controls	Intervention	Controls	Intervention	Controls	Intervention	Controls
<i>Number of Beneficiaries</i>	59,894	50,279	59,894	50,279	59,023	49,338	58,163	48,553	57,294	47,745	56,355	46,834
<b>Inpatient Expenditures</b>												
Mean	\$2,501	\$2,561	\$747	\$846	\$752	\$784	\$768	\$813	\$815	\$799	\$792	\$773
Median	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
90th percentile	\$7,949	\$7,937	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
99th percentile	\$39,337	\$40,153	\$17,731	\$19,478	\$18,523	\$18,654	\$18,992	\$19,196	\$19,865	\$19,449	\$18,743	\$18,222
<b>Outpatient ER Expenditures</b>												
Mean	\$207	\$209	\$56	\$60	\$58	\$62	\$62	\$63	\$65	\$67	\$73	\$72
Median	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
90th percentile	\$569	\$579	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
99th percentile	\$2,998	\$3,064	\$1,301	\$1,429	\$1,348	\$1,424	\$1,419	\$1,459	\$1,538	\$1,620	\$1,697	\$1,655
<b>Outpatient Non-ER Expenditures</b>												
Mean	\$1,317	\$1,359	\$349	\$349	\$344	\$346	\$355	\$370	\$331	\$333	\$365	\$372
Median	\$260	\$264	\$11	\$13	\$7	\$9	\$24	\$26	\$0	\$0	\$18	\$20
90th percentile	\$2,815	\$2,992	\$697	\$719	\$654	\$698	\$695	\$734	\$597	\$620	\$721	\$751
99th percentile	\$20,363	\$20,163	\$6,698	\$6,470	\$6,604	\$6,538	\$6,669	\$6,777	\$6,481	\$6,549	\$6,681	\$6,742

**Appendix Table B-54: Welvie Inpatient and Outpatient Expenditures in the Baseline Period and by Quarter Following Enrollment, Ohio FFS ITT Analysis Cohort, Q6 to Q11**

Measures (2011 USD)	Q6		Q7		Q8		Q9		Q10		Q11	
	Intervention	Controls	Intervention	Controls	Intervention	Controls	Intervention	Controls	Intervention	Controls	Intervention	Controls
<i>Number of Beneficiaries</i>	55,487	45,985	54,652	45,276	53,729	44,462	52,781	43,579	51,987	42,837	51,238	42,174
<b>Inpatient Expenditures</b>												
Mean	\$729	\$716	\$736	\$775	\$779	\$843	\$751	\$755	\$718	\$716	\$726	\$761
Median	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
90th percentile	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
99th percentile	\$18,580	\$17,768	\$18,051	\$17,937	\$18,149	\$19,458	\$18,586	\$18,435	\$17,279	\$17,503	\$18,500	\$18,956
<b>Outpatient ER Expenditures</b>												
Mean	\$70	\$72	\$67	\$69	\$70	\$68	\$68	\$71	\$70	\$70	\$68	\$66
Median	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
90th percentile	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
99th percentile	\$1,631	\$1,646	\$1,604	\$1,654	\$1,633	\$1,559	\$1,585	\$1,681	\$1,658	\$1,563	\$1,554	\$1,528
<b>Outpatient Non-ER Expenditures</b>												
Mean	\$356	\$370	\$380	\$371	\$315	\$336	\$364	\$366	\$374	\$370	\$364	\$369
Median	\$14	\$15	\$26	\$25	\$0	\$0	\$22	\$22	\$20	\$22	\$29	\$31
90th percentile	\$710	\$740	\$757	\$766	\$593	\$651	\$730	\$759	\$747	\$778	\$736	\$749
99th percentile	\$6,706	\$6,900	\$6,963	\$6,683	\$6,280	\$6,408	\$6,701	\$6,660	\$6,570	\$6,565	\$6,603	\$6,700

**Appendix Table B-55: Welvie Inpatient and Outpatient Expenditures in the Baseline Period and by Quarter Following Enrollment, Ohio MA ITT Analysis Cohort, Q1 to Q5**

Measures (2011 USD)	Baseline Period (Year Prior to Enrollment)		Q1		Q2		Q3		Q4		Q5	
	Intervention	Controls	Intervention	Controls	Intervention	Controls	Intervention	Controls	Intervention	Controls	Intervention	Controls
<i>Number of Beneficiaries</i>	97,380	94,915	97,380	94,915	96,492	94,059	95,477	93,045	92,080	89,750	91,230	88,894
<b>Inpatient Expenditures</b>												
Mean	\$1,382	\$1,431	\$624	\$639	\$620	\$642	\$539	\$596	\$507	\$536	\$526	\$542
Median	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
90th percentile	\$3,268	\$3,444	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
99th percentile	\$26,644	\$28,025	\$15,682	\$16,102	\$15,508	\$15,804	\$13,844	\$15,338	\$13,500	\$13,938	\$13,874	\$14,515
<b>Outpatient ER Expenditures</b>												
Mean	\$149	\$151	\$57	\$61	\$57	\$57	\$58	\$59	\$60	\$63	\$59	\$64
Median	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
90th percentile	\$333	\$338	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
99th percentile	\$2,749	\$2,769	\$1,484	\$1,550	\$1,480	\$1,515	\$1,594	\$1,631	\$1,620	\$1,674	\$1,620	\$1,732
<b>Outpatient Non-ER Expenditures</b>												
Mean	\$727	\$756	\$271	\$292	\$239	\$251	\$245	\$260	\$241	\$261	\$249	\$264
Median	\$81	\$81	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
90th percentile	\$1,518	\$1,575	\$514	\$544	\$422	\$436	\$446	\$462	\$426	\$445	\$455	\$482
99th percentile	\$11,143	\$11,646	\$4,828	\$5,456	\$4,569	\$4,690	\$4,455	\$4,902	\$4,244	\$4,913	\$4,614	\$5,122

**Appendix Table B-56: Welvie Inpatient and Outpatient Expenditures in the Baseline Period and by Quarter Following Enrollment, Ohio MA ITT Analysis Cohort, Q6 to Q11**

Measures (2011 USD)	Q6		Q7		Q8		Q9		Q10		Q11	
	Intervention	Controls	Intervention	Controls	Intervention	Controls	Intervention	Controls	Intervention	Controls	Intervention	Controls
<i>Number of Beneficiaries</i>	90,076	87,518	89,069	86,556	82,860	80,581	81,907	79,640	79,501	77,232	78,171	75,732
<b>Inpatient Expenditures</b>												
Mean	\$500	\$512	\$458	\$477	\$474	\$465	\$472	\$488	\$462	\$478	\$407	\$444
Median	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
90th percentile	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
99th percentile	\$13,627	\$13,367	\$12,328	\$13,385	\$12,947	\$12,786	\$13,346	\$12,922	\$12,367	\$12,569	\$11,193	\$12,005
<b>Outpatient ER Expenditures</b>												
Mean	\$59	\$59	\$63	\$66	\$61	\$63	\$57	\$58	\$40	\$40	\$34	\$32
Median	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
90th percentile	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
99th percentile	\$1,757	\$1,750	\$1,879	\$1,947	\$1,753	\$1,855	\$1,727	\$1,754	\$1,473	\$1,400	\$1,369	\$1,341
<b>Outpatient Non-ER Expenditures</b>												
Mean	\$210	\$215	\$217	\$222	\$220	\$226	\$218	\$223	\$187	\$187	\$195	\$200
Median	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
90th percentile	\$327	\$339	\$350	\$367	\$346	\$356	\$338	\$346	\$315	\$314	\$377	\$384
99th percentile	\$4,163	\$4,239	\$4,210	\$4,323	\$4,269	\$4,523	\$4,207	\$4,272	\$3,721	\$3,661	\$3,536	\$3,570

**Appendix Table B-57: Welvie Inpatient and Outpatient Expenditures in the Baseline Period and by Quarter Following Enrollment, Texas MA ITT Analysis Cohort, Q1 to Q3**

Measures (2011 USD)	Baseline Period (Year Prior to Enrollment)		Q1		Q2		Q3	
	Intervention	Controls	Intervention	Controls	Intervention	Controls	Intervention	Controls
<i>Number of Beneficiaries</i>	63,979	63,759	63,979	63,759	63,885	63,654	50,346	50,476
<b>Inpatient Expenditures</b>								
Mean	\$1,786	\$1,855	\$565	\$577	\$606	\$607	\$683	\$754
Median	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
90th percentile	\$4,343	\$4,408	\$0	\$0	\$0	\$0	\$0	\$0
99th percentile	\$32,895	\$35,000	\$14,423	\$13,945	\$15,476	\$15,477	\$17,082	\$17,414
<b>Outpatient ER Expenditures</b>								
Mean	\$235	\$239	\$76	\$76	\$76	\$78	\$73	\$78
Median	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
90th percentile	\$542	\$559	\$0	\$0	\$0	\$0	\$0	\$0
99th percentile	\$3,859	\$3,999	\$1,806	\$1,774	\$1,837	\$1,855	\$1,696	\$1,824
<b>Outpatient Non-ER Expenditures</b>								
Mean	\$854	\$855	\$263	\$259	\$279	\$270	\$243	\$248
Median	\$2	\$4	\$0	\$0	\$0	\$0	\$0	\$0
90th percentile	\$1,692	\$1,695	\$327	\$331	\$353	\$361	\$292	\$298
99th percentile	\$14,389	\$14,216	\$6,434	\$5,866	\$6,508	\$6,036	\$6,390	\$6,344

**Appendix Table B-58: Welvie Inpatient and Outpatient Expenditures in the Baseline Period and by Quarter Following Enrollment, Texas MA ITT Analysis Cohort, Q4 to Q6**

Measures (2011 USD)	Q4		Q5		Q6	
	Intervention	Controls	Intervention	Controls	Intervention	Controls
<i>Number of Beneficiaries</i>	49,822	49,956	49,356	49,449	48,797	48,926
<b>Inpatient Expenditures</b>						
Mean	\$719	\$686	\$701	\$620	\$598	\$606
Median	\$0	\$0	\$0	\$0	\$0	\$0
90th percentile	\$0	\$0	\$0	\$0	\$0	\$0
99th percentile	\$18,109	\$17,250	\$17,029	\$16,429	\$15,682	\$15,133
<b>Outpatient ER Expenditures</b>						
Mean	\$76	\$78	\$77	\$74	\$80	\$76
Median	\$0	\$0	\$0	\$0	\$0	\$0
90th percentile	\$0	\$0	\$0	\$0	\$0	\$0
99th percentile	\$1,817	\$1,854	\$1,857	\$1,756	\$1,901	\$1,878
<b>Outpatient Non-ER Expenditures</b>						
Mean	\$259	\$266	\$266	\$262	\$283	\$275
Median	\$0	\$0	\$0	\$0	\$0	\$0
90th percentile	\$330	\$337	\$327	\$323	\$352	\$365
99th percentile	\$7,025	\$7,155	\$7,181	\$6,757	\$7,382	\$7,134



**Appendix Table B-59: Welvie Expenditures for Other Settings in the Baseline Period and by Quarter Following Enrollment,  
Ohio FFS ITT Analysis, Q1 to Q5**

Measures (2011 USD)	Baseline Period (Year Prior to Enrollment)		Q1		Q2		Q3		Q4		Q5	
	Intervention	Controls	Intervention	Controls	Intervention	Controls	Intervention	Controls	Intervention	Controls	Intervention	Controls
<i>Number of Beneficiaries</i>	59,894	50,279	59,894	50,279	59,023	49,338	58,163	48,553	57,294	47,745	56,355	46,834
<b>Physician and Ancillary Service Expenditures</b>												
Mean	\$2,239	\$2,267	\$598	\$617	\$586	\$598	\$630	\$640	\$524	\$525	\$603	\$603
Median	\$1,169	\$1,190	\$194	\$202	\$201	\$207	\$244	\$246	\$120	\$123	\$194	\$201
90th percentile	\$5,064	\$5,103	\$1,483	\$1,537	\$1,461	\$1,473	\$1,547	\$1,538	\$1,368	\$1,377	\$1,538	\$1,494
99th percentile	\$16,922	\$16,740	\$5,997	\$6,326	\$5,814	\$5,906	\$5,777	\$6,072	\$5,853	\$5,816	\$6,022	\$5,987
<b>Skilled Nursing Facility Expenditures</b>												
Mean	\$974	\$1,084	\$285	\$329	\$276	\$301	\$296	\$326	\$318	\$325	\$316	\$328
Median	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
90th percentile	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
99th percentile	\$26,764	\$28,189	\$12,104	\$13,627	\$11,779	\$12,616	\$12,028	\$13,431	\$13,250	\$12,930	\$13,150	\$13,565
<b>Durable Medical Equipment Expenditures</b>												
Mean	\$238	\$242	\$60	\$59	\$54	\$56	\$51	\$52	\$47	\$49	\$51	\$52
Median	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
90th percentile	\$571	\$584	\$145	\$140	\$119	\$116	\$91	\$87	\$67	\$67	\$81	\$80
99th percentile	\$3,412	\$3,397	\$894	\$894	\$792	\$859	\$826	\$838	\$762	\$783	\$811	\$856
<b>Home Health Expenditures</b>												
Mean	\$465	\$465	\$131	\$127	\$128	\$128	\$131	\$125	\$135	\$141	\$136	\$141
Median	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
90th percentile	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
99th percentile	\$9,812	\$10,097	\$4,052	\$3,917	\$3,996	\$3,957	\$3,908	\$3,828	\$4,170	\$4,220	\$4,011	\$4,200
<b>Hospice Expenditures</b>												
Mean	\$277	\$353	\$131	\$153	\$121	\$150	\$118	\$148	\$113	\$139	\$117	\$136

Measures (2011 USD)	Baseline Period (Year Prior to Enrollment)		Q1		Q2		Q3		Q4		Q5	
	Intervention	Controls	Intervention	Controls	Intervention	Controls	Intervention	Controls	Intervention	Controls	Intervention	Controls
Median	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
90th percentile	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
99th percentile	\$3,985	\$8,991	\$5,589	\$7,839	\$4,444	\$7,661	\$4,118	\$7,064	\$4,198	\$6,418	\$4,566	\$6,367

**Appendix Table B-60: Welvie Expenditures for Other Settings in the Baseline Period and by Quarter Following Enrollment, Ohio FFS ITT Analysis, Q6 to Q11**

Measures (2011 USD)	Q6		Q7		Q8		Q9		Q10		Q11	
	Intervention	Controls	Intervention	Controls	Intervention	Controls	Intervention	Controls	Intervention	Controls	Intervention	Controls
<i>Number of Beneficiaries</i>	55,487	45,985	54,652	45,276	53,729	44,462	52,781	43,579	51,987	42,837	51,238	42,174
<b>Physician and Ancillary Service Expenditures</b>												
Mean	\$586	\$585	\$632	\$646	\$524	\$539	\$591	\$601	\$603	\$601	\$625	\$631
Median	\$204	\$206	\$251	\$251	\$131	\$135	\$204	\$209	\$217	\$219	\$261	\$266
90th percentile	\$1,453	\$1,454	\$1,539	\$1,576	\$1,368	\$1,401	\$1,490	\$1,490	\$1,485	\$1,495	\$1,515	\$1,509
99th percentile	\$5,818	\$5,486	\$5,721	\$5,897	\$5,761	\$5,819	\$5,789	\$5,829	\$5,882	\$5,606	\$5,701	\$5,790
<b>Skilled Nursing Facility Expenditures</b>												
Mean	\$294	\$315	\$302	\$314	\$341	\$364	\$312	\$316	\$295	\$317	\$292	\$307
Median	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
90th percentile	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
99th percentile	\$12,421	\$12,996	\$12,839	\$12,948	\$13,945	\$14,361	\$12,843	\$13,095	\$12,327	\$13,044	\$12,368	\$12,683
<b>Durable Medical Equipment Expenditures</b>												
Mean	\$50	\$51	\$50	\$54	\$45	\$49	\$50	\$54	\$49	\$54	\$48	\$52
Median	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
90th percentile	\$84	\$80	\$88	\$88	\$68	\$73	\$85	\$82	\$88	\$89	\$80	\$86
99th percentile	\$844	\$863	\$848	\$855	\$777	\$790	\$825	\$906	\$826	\$906	\$788	\$837
<b>Home Health Expenditures</b>												

Measures (2011 USD)	Q6		Q7		Q8		Q9		Q10		Q11	
	Intervention	Controls	Intervention	Controls	Intervention	Controls	Intervention	Controls	Intervention	Controls	Intervention	Controls
Mean	\$131	\$140	\$135	\$141	\$144	\$146	\$146	\$153	\$139	\$144	\$114	\$117
Median	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
90th percentile	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
99th percentile	\$4,114	\$4,149	\$4,092	\$4,180	\$4,246	\$4,121	\$4,145	\$4,328	\$4,184	\$4,367	\$3,513	\$3,590
<b>Hospice Expenditures</b>												
Mean	\$122	\$136	\$122	\$136	\$113	\$134	\$116	\$129	\$124	\$130	\$120	\$129
Median	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
90th percentile	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
99th percentile	\$4,913	\$6,081	\$5,006	\$6,043	\$4,045	\$5,582	\$4,134	\$5,647	\$5,089	\$5,576	\$4,302	\$5,139

**Appendix Table B-61: Welvie Expenditures for Other Settings in the Baseline Period and by Quarter Following Enrollment, Ohio MA ITT Analysis, Q1 to Q5**

Measures (2011 USD)	Baseline Period (Year Prior to Enrollment)		Q1		Q2		Q3		Q4		Q5	
	Intervention	Controls	Intervention	Controls	Intervention	Controls	Intervention	Controls	Intervention	Controls	Intervention	Controls
<i>Number of Beneficiaries</i>	97,380	94,915	97,380	94,915	96,492	94,059	95,477	93,045	92,080	89,750	91,230	88,894
<b>Physician and Ancillary Service Expenditures</b>												
Mean	\$1,368	\$1,402	\$556	\$567	\$477	\$493	\$468	\$485	\$440	\$458	\$470	\$486
Median	\$558	\$562	\$173	\$176	\$114	\$118	\$117	\$117	\$98	\$100	\$119	\$126
90th percentile	\$3,224	\$3,234	\$1,261	\$1,286	\$1,103	\$1,124	\$1,074	\$1,104	\$1,000	\$1,036	\$1,073	\$1,101
99th percentile	\$11,737	\$12,132	\$6,087	\$6,456	\$5,887	\$6,113	\$5,656	\$5,956	\$5,627	\$5,709	\$5,723	\$5,841
<b>Skilled Nursing Facility Expenditures</b>												
Mean	\$349	\$357	\$136	\$133	\$119	\$121	\$106	\$120	\$101	\$117	\$107	\$115
Median	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
90th percentile	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
99th percentile	\$11,326	\$11,545	\$5,649	\$5,645	\$4,526	\$4,805	\$3,906	\$4,590	\$3,708	\$4,377	\$3,989	\$4,417

Measures (2011 USD)	Baseline Period (Year Prior to Enrollment)		Q1		Q2		Q3		Q4		Q5	
	Intervention	Controls	Intervention	Controls	Intervention	Controls	Intervention	Controls	Intervention	Controls	Intervention	Controls
<b>Home Health Expenditures</b>												
Mean	\$176	\$174	\$68	\$67	\$69	\$70	\$66	\$66	\$65	\$66	\$68	\$68
Median	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
90th percentile	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
99th percentile	\$4,569	\$4,497	\$2,346	\$2,330	\$2,426	\$2,421	\$2,335	\$2,304	\$2,330	\$2,335	\$2,348	\$2,344

**Appendix Table B-62: Welvie Expenditures for Other Settings in the Baseline Period and by Quarter Following Enrollment, Ohio MA ITT Analysis, Q6 to Q11**

Measures (2011 USD)	Q6		Q7		Q8		Q9		Q10		Q11	
	Intervention	Controls	Intervention	Controls	Intervention	Controls	Intervention	Controls	Intervention	Controls	Intervention	Controls
<i>Number of Beneficiaries</i>	90,076	87,518	89,069	86,556	82,860	80,581	81,907	79,640	79,501	77,232	78,171	75,732
<b>Physician and Ancillary Service Expenditures</b>												
Mean	\$397	\$404	\$403	\$416	\$385	\$396	\$327	\$338	\$167	\$173	\$178	\$179
Median	\$74	\$76	\$73	\$76	\$69	\$70	\$67	\$73	\$2	\$5	\$10	\$20
90th percentile	\$903	\$906	\$930	\$956	\$879	\$893	\$735	\$750	\$349	\$353	\$370	\$376
99th percentile	\$5,329	\$5,311	\$5,221	\$5,353	\$5,080	\$5,199	\$3,959	\$4,077	\$1,978	\$2,087	\$1,993	\$2,033
<b>Skilled Nursing Facility Expenditures</b>												
Mean	\$107	\$114	\$104	\$108	\$94	\$101	\$87	\$92	\$92	\$90	\$80	\$90
Median	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
90th percentile	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
99th percentile	\$4,023	\$4,470	\$3,851	\$3,999	\$3,524	\$3,899	\$3,179	\$3,470	\$3,695	\$3,731	\$2,821	\$3,508
<b>Home Health Expenditures</b>												
Mean	\$67	\$66	\$62	\$64	\$61	\$57	\$59	\$62	\$58	\$58	\$61	\$62
Median	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
90th percentile	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0

Measures (2011 USD)	Q6		Q7		Q8		Q9		Q10		Q11	
	Intervention	Controls	Intervention	Controls	Intervention	Controls	Intervention	Controls	Intervention	Controls	Intervention	Controls
99th percentile	\$2,362	\$2,329	\$2,240	\$2,276	\$2,202	\$2,186	\$2,129	\$2,239	\$2,129	\$2,122	\$2,204	\$2,212

**Appendix Table B-63: Welvie Expenditures for Other Settings in the Baseline Period and by Quarter Following Enrollment, Texas MA ITT Analysis, Q1 to Q3**

Measures (2011 USD)	Baseline Period (Year Prior to Enrollment)		Q1		Q2		Q3	
	Intervention	Controls	Intervention	Controls	Intervention	Controls	Intervention	Controls
<i>Number of Beneficiaries</i>	63,979	63,759	63,979	63,759	63,885	63,654	50,346	50,476
<b>Physician and Ancillary Service Expenditures</b>								
Mean	\$1,949	\$1,961	\$573	\$564	\$616	\$617	\$589	\$593
Median	\$925	\$923	\$171	\$171	\$194	\$196	\$170	\$174
90th percentile	\$4,386	\$4,486	\$1,323	\$1,325	\$1,412	\$1,406	\$1,329	\$1,347
99th percentile	\$15,770	\$16,737	\$6,293	\$6,041	\$6,946	\$6,699	\$6,758	\$6,827
<b>Skilled Nursing Facility Expenditures</b>								
Mean	\$237	\$237	\$84	\$92	\$108	\$110	\$112	\$118
Median	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
90th percentile	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
99th percentile	\$8,801	\$8,306	\$1,028	\$1,474	\$2,707	\$2,983	\$3,165	\$4,661
<b>Home Health Expenditures</b>								
Mean	\$461	\$468	\$137	\$137	\$140	\$147	\$138	\$146
Median	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
90th percentile	\$747	\$831	\$96	\$107	\$126	\$144	\$113	\$138
99th percentile	\$9,178	\$8,841	\$3,190	\$3,082	\$3,156	\$3,209	\$3,086	\$3,279

**Appendix Table B-64: Welvie Expenditures for Other Settings in the Baseline Period and by Quarter Following Enrollment, Texas MA ITT Analysis, Q4 to Q6**

Measures (2011 USD)	Q4		Q5		Q6	
	Intervention	Controls	Intervention	Controls	Intervention	Controls
<i>Number of Beneficiaries</i>	49,822	49,956	49,356	49,449	48,797	48,926
<b>Physician and Ancillary Service Expenditures</b>						
Mean	\$622	\$616	\$593	\$597	\$602	\$611
Median	\$177	\$181	\$162	\$167	\$186	\$187
90th percentile	\$1,436	\$1,410	\$1,361	\$1,349	\$1,364	\$1,365
99th percentile	\$7,178	\$7,177	\$6,923	\$6,949	\$6,653	\$7,019
<b>Skilled Nursing Facility Expenditures</b>						
Mean	\$112	\$129	\$123	\$118	\$104	\$108
Median	\$0	\$0	\$0	\$0	\$0	\$0
90th percentile	\$0	\$0	\$0	\$0	\$0	\$0
99th percentile	\$3,498	\$5,192	\$4,220	\$3,957	\$2,222	\$2,378
<b>Home Health Expenditures</b>						
Mean	\$141	\$149	\$140	\$148	\$129	\$132
Median	\$0	\$0	\$0	\$0	\$0	\$0
90th percentile	\$110	\$143	\$117	\$142	\$110	\$119
99th percentile	\$3,224	\$3,250	\$3,164	\$3,287	\$2,858	\$2,903

**Appendix Table B-65: Welvie Total Inpatient, Outpatient, and Episode Based Surgery Expenditures in the Baseline Period  
and by Quarter Following Enrollment, Ohio FFS ITT Analysis Cohort, Q1 to Q5**

Measures (2011 USD)	Baseline Period (Year Prior to Enrollment)		Q1		Q2		Q3		Q4		Q5	
	Intervention	Controls	Intervention	Controls	Intervention	Controls	Intervention	Controls	Intervention	Controls	Intervention	Controls
<i>Number of Beneficiaries</i>	59,894	50,279	59,894	50,279	59,023	49,338	58,163	48,553	57,294	47,745	56,355	46,834
<b>Total Surgery Expenditures</b>												
Mean	\$1,940	\$1,939	\$499	\$555	\$509	\$519	\$548	\$553	\$543	\$531	\$549	\$528
Median	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
90th percentile	\$5,081	\$4,818	\$355	\$369	\$270	\$295	\$498	\$458	\$0	\$0	\$405	\$303
99th percentile	\$29,411	\$29,266	\$11,931	\$13,533	\$12,430	\$12,688	\$13,285	\$13,567	\$13,857	\$13,344	\$13,470	\$13,190
<b>Inpatient Surgery Expenditures</b>												
Mean	\$1,232	\$1,227	\$320	\$375	\$334	\$344	\$355	\$360	\$370	\$354	\$352	\$340
Median	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
90th percentile	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
99th percentile	\$27,194	\$27,140	\$10,135	\$12,159	\$10,940	\$11,339	\$12,095	\$11,893	\$12,251	\$11,808	\$11,871	\$11,531
<b>Episode-Based Inpatient Surgery Expenditures</b>												
Mean	\$1,307	\$1,291	\$341	\$394	\$353	\$363	\$372	\$383	\$394	\$377	\$373	\$357
Median	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
90th percentile	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
99th percentile	\$28,350	\$28,350	\$10,734	\$12,697	\$11,846	\$12,233	\$12,324	\$12,576	\$13,048	\$12,475	\$12,239	\$12,139
<b>Outpatient Surgery Expenditures</b>												
Mean	\$469	\$476	\$119	\$120	\$119	\$117	\$128	\$130	\$120	\$125	\$136	\$128
Median	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
90th percentile	\$1,208	\$1,229	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
99th percentile	\$7,976	\$8,401	\$2,801	\$2,904	\$2,876	\$2,810	\$3,004	\$3,054	\$2,926	\$3,064	\$3,215	\$3,090

**Appendix Table B-66: Welvie Total Inpatient, Outpatient, and Episode Based Surgery Expenditures in the Baseline Period  
and by Quarter Following Enrollment, Ohio FFS ITT Analysis Cohort, Q6 to Q11**

Measures (2011 USD)	Q6		Q7		Q8		Q9		Q10		Q11	
	Intervention	Controls	Intervention	Controls	Intervention	Controls	Intervention	Controls	Intervention	Controls	Intervention	Controls
<i>Number of Beneficiaries</i>	55,487	45,985	54,652	45,276	53,729	44,462	52,781	43,579	51,987	42,837	51,238	42,174
<b>Total Surgery Expenditures</b>												
Mean	\$516	\$517	\$536	\$526	\$508	\$542	\$511	\$503	\$518	\$521	\$506	\$500
Median	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
90th percentile	\$360	\$227	\$517	\$384	\$0	\$0	\$353	\$325	\$401	\$408	\$374	\$339
99th percentile	\$12,529	\$13,063	\$12,849	\$12,417	\$12,564	\$14,062	\$12,922	\$12,533	\$12,560	\$12,470	\$12,689	\$11,979
<b>Inpatient Surgery Expenditures</b>												
Mean	\$332	\$325	\$335	\$331	\$342	\$365	\$326	\$315	\$319	\$326	\$320	\$319
Median	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
90th percentile	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
99th percentile	\$11,029	\$11,022	\$11,469	\$10,976	\$11,340	\$12,001	\$11,205	\$11,181	\$10,961	\$11,192	\$11,023	\$11,046
<b>Episode-Based Inpatient Surgery Expenditures</b>												
Mean	\$356	\$344	\$348	\$353	\$359	\$383	\$347	\$335	\$340	\$348	\$338	\$342
Median	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
90th percentile	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
99th percentile	\$12,078	\$11,849	\$11,887	\$11,481	\$11,657	\$12,209	\$11,848	\$11,368	\$11,386	\$11,851	\$11,448	\$11,392
<b>Outpatient Surgery Expenditures</b>												
Mean	\$125	\$134	\$136	\$133	\$114	\$126	\$126	\$130	\$137	\$135	\$128	\$125
Median	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
90th percentile	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
99th percentile	\$3,160	\$3,168	\$3,116	\$3,201	\$2,917	\$3,073	\$3,037	\$3,106	\$3,179	\$3,209	\$2,981	\$3,037



**Appendix Table B-67: Welvie Total Inpatient, Outpatient, and Episode Based Surgery Expenditures in the Baseline Period  
and by Quarter Following Enrollment, Ohio MA ITT Analysis Cohort, Q1 to Q5**

Measures (2011 USD)	Baseline Period (Year Prior to Enrollment)		Q1		Q2		Q3		Q4		Q5	
	Intervention	Controls	Intervention	Controls	Intervention	Controls	Intervention	Controls	Intervention	Controls	Intervention	Controls
<i>Number of Beneficiaries</i>	97,380	94,915	97,380	94,915	96,492	94,059	95,477	93,045	92,080	89,750	91,230	88,894
<b>Total Surgery Expenditures</b>												
Mean	\$1,170	\$1,181	\$473	\$500	\$441	\$449	\$393	\$435	\$377	\$408	\$324	\$349
Median	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
90th percentile	\$2,396	\$2,439	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
99th percentile	\$22,363	\$22,661	\$11,819	\$12,387	\$11,554	\$11,767	\$10,684	\$11,432	\$10,440	\$10,862	\$9,391	\$9,810
<b>Inpatient Surgery Expenditures</b>												
Mean	\$706	\$711	\$297	\$310	\$289	\$289	\$247	\$277	\$232	\$247	\$170	\$187
Median	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
90th percentile	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
99th percentile	\$19,327	\$19,641	\$10,731	\$10,932	\$10,644	\$10,623	\$10,154	\$10,424	\$9,723	\$9,826	\$5,108	\$7,450
<b>Episode-Based Inpatient Surgery Expenditures</b>												
Mean	\$711	\$714	\$298	\$312	\$290	\$290	\$249	\$278	\$233	\$249	\$171	\$188
Median	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
90th percentile	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
99th percentile	\$19,529	\$19,770	\$10,740	\$10,961	\$10,659	\$10,629	\$10,156	\$10,433	\$9,724	\$9,832	\$5,199	\$7,515
<b>Outpatient Surgery Expenditures</b>												
Mean	\$347	\$354	\$131	\$143	\$115	\$122	\$112	\$122	\$111	\$125	\$119	\$125
Median	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
90th percentile	\$720	\$744	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
99th percentile	\$6,526	\$6,732	\$2,887	\$3,179	\$2,782	\$2,830	\$2,583	\$2,801	\$2,604	\$2,840	\$2,764	\$2,845

**Appendix Table B-68: Welvie Total Inpatient, Outpatient, and Episode Based Surgery Expenditures in the Baseline Period  
and by Quarter Following Enrollment, Ohio MA ITT Analysis Cohort, Q6 to Q11**

Measures (2011 USD)	Q6		Q7		Q8		Q9		Q10		Q11	
	Intervention	Controls	Intervention	Controls	Intervention	Controls	Intervention	Controls	Intervention	Controls	Intervention	Controls
<i>Number of Beneficiaries</i>	90,076	87,518	89,069	86,556	82,860	80,581	81,907	79,640	79,501	77,232	78,171	75,732
<b>Total Surgery Expenditures</b>												
Mean	\$356	\$365	\$342	\$348	\$328	\$337	\$236	\$234	\$102	\$108	\$109	\$108
Median	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
90th percentile	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
99th percentile	\$10,248	\$10,455	\$10,106	\$10,437	\$10,102	\$9,842	\$6,996	\$6,774	\$2,430	\$2,497	\$2,453	\$2,495
<b>Inpatient Surgery Expenditures</b>												
Mean	\$225	\$236	\$209	\$211	\$201	\$200	\$115	\$110	\$15	\$21	\$24	\$20
Median	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
90th percentile	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
99th percentile	\$9,697	\$9,770	\$9,275	\$9,581	\$9,247	\$8,409	\$0	\$0	\$0	\$0	\$0	\$0
<b>Episode-Based Inpatient Surgery Expenditures</b>												
Mean	\$225	\$237	\$211	\$212	\$202	\$200	\$115	\$110	\$16	\$21	\$24	\$20
Median	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
90th percentile	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
99th percentile	\$9,697	\$9,793	\$9,303	\$9,584	\$9,262	\$8,409	\$0	\$0	\$0	\$0	\$0	\$0
<b>Outpatient Surgery Expenditures</b>												
Mean	\$102	\$101	\$103	\$106	\$100	\$108	\$101	\$104	\$83	\$84	\$82	\$85
Median	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
90th percentile	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
99th percentile	\$2,585	\$2,474	\$2,592	\$2,569	\$2,417	\$2,588	\$2,405	\$2,558	\$2,157	\$2,178	\$2,110	\$2,261

**Appendix Table B-69: Welvie Total Inpatient, Outpatient, and Episode Based Surgery Expenditures in the Baseline Period and by Quarter Following Enrollment, Texas MA ITT Analysis Cohort, Q1 to Q3**

Measures (2011 USD)	Baseline Period (Year Prior to Enrollment)		Q1		Q2		Q3	
	Intervention	Controls	Intervention	Controls	Intervention	Controls	Intervention	Controls
<i>Number of Beneficiaries</i>	63,979	63,759	63,979	63,759	63,885	63,654	50,346	50,476
<b>Total Surgery Expenditures</b>								
Mean	\$1,548	\$1,603	\$472	\$471	\$486	\$483	\$483	\$498
Median	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
90th percentile	\$3,243	\$3,338	\$0	\$0	\$0	\$0	\$0	\$0
99th percentile	\$27,601	\$28,226	\$12,419	\$11,859	\$12,642	\$12,204	\$13,431	\$12,714
<b>Inpatient Surgery Expenditures</b>								
Mean	\$959	\$1,013	\$295	\$294	\$307	\$305	\$326	\$333
Median	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
90th percentile	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
99th percentile	\$23,805	\$25,082	\$10,810	\$10,515	\$11,130	\$10,774	\$11,411	\$10,732
<b>Episode-Based Inpatient Surgery Expenditures</b>								
Mean	\$970	\$1,027	\$295	\$295	\$308	\$305	\$326	\$334
Median	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
90th percentile	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
99th percentile	\$24,600	\$25,488	\$10,828	\$10,518	\$11,134	\$10,774	\$11,424	\$10,746
<b>Outpatient Surgery Expenditures</b>								
Mean	\$468	\$471	\$141	\$140	\$141	\$141	\$124	\$132
Median	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
90th percentile	\$988	\$969	\$0	\$0	\$0	\$0	\$0	\$0
99th percentile	\$9,107	\$9,392	\$3,337	\$3,283	\$3,398	\$3,305	\$3,046	\$3,217

**Appendix Table B-70: Welvie Total Inpatient, Outpatient, and Episode Based Surgery Expenditures in the Baseline Period and by Quarter Following Enrollment, Texas MA ITT Analysis Cohort, Q4 to Q6**

Measures (2011 USD)	Q4		Q5		Q6	
	Intervention	Controls	Intervention	Controls	Intervention	Controls
<i>Number of Beneficiaries</i>	49,822	49,956	49,356	49,449	48,797	48,926
<b>Total Surgery Expenditures</b>						
Mean	\$515	\$498	\$507	\$463	\$462	\$473
Median	\$0	\$0	\$0	\$0	\$0	\$0
90th percentile	\$0	\$0	\$0	\$0	\$0	\$0
99th percentile	\$13,467	\$13,140	\$12,615	\$13,078	\$12,712	\$12,740
<b>Inpatient Surgery Expenditures</b>						
Mean	\$345	\$320	\$341	\$301	\$289	\$301
Median	\$0	\$0	\$0	\$0	\$0	\$0
90th percentile	\$0	\$0	\$0	\$0	\$0	\$0
99th percentile	\$11,229	\$10,964	\$10,805	\$11,083	\$10,623	\$10,410
<b>Episode-Based Inpatient Surgery Expenditures</b>						
Mean	\$346	\$322	\$343	\$303	\$291	\$302
Median	\$0	\$0	\$0	\$0	\$0	\$0
90th percentile	\$0	\$0	\$0	\$0	\$0	\$0
99th percentile	\$11,262	\$10,971	\$10,870	\$11,150	\$10,673	\$10,420
<b>Outpatient Surgery Expenditures</b>						
Mean	\$136	\$142	\$133	\$128	\$139	\$138
Median	\$0	\$0	\$0	\$0	\$0	\$0
90th percentile	\$0	\$0	\$0	\$0	\$0	\$0
99th percentile	\$3,312	\$3,488	\$3,271	\$3,002	\$3,332	\$3,287

**Appendix Table B-71: Welvie Orthopedic Surgery Expenditures in the Baseline Period and by Quarter Following Enrollment, Ohio FFS ITT Analysis Cohort, Q1 to Q5**

Measures (2011 USD)	Baseline Period (Year Prior to Enrollment)		Q1		Q2		Q3		Q4		Q5	
	Intervention	Controls	Intervention	Controls	Intervention	Controls	Intervention	Controls	Intervention	Controls	Intervention	Controls
<i>Number of Beneficiaries</i>	59,894	50,279	59,894	50,279	59,023	49,338	58,163	48,553	57,294	47,745	56,355	46,834
<b>Total PS<sup>a</sup> Orthopedic Surgery Expenditures</b>												
Mean	\$327	\$315	\$68	\$63	\$69	\$69	\$88	\$81	\$73	\$78	\$74	\$63
Median	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
90th percentile	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
99th percentile	\$11,994	\$11,954	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
<b>Inpatient PS Orthopedic Surgery Expenditures</b>												
Mean	\$273	\$265	\$57	\$53	\$57	\$57	\$74	\$68	\$62	\$66	\$62	\$53
Median	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
90th percentile	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
99th percentile	\$10,219	\$10,219	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
<b>Outpatient PS Orthopedic Surgery Expenditures</b>												
Mean	\$6	\$5	\$1	\$1	\$2	\$2	\$1	\$2	\$1	\$1	\$2	\$1
Median	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
90th percentile	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
99th percentile	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0

<sup>a</sup>PS = Preference-sensitive

**Appendix Table B-72: Welvie Orthopedic Surgery Expenditures in the Baseline Period and by Quarter Following Enrollment, Ohio FFS ITT Analysis Cohort, Q6 to Q11**

Measures (2011 USD)	Q6		Q7		Q8		Q9		Q10		Q11	
	Intervention	Controls	Intervention	Controls	Intervention	Controls	Intervention	Controls	Intervention	Controls	Intervention	Controls
<i>Number of Beneficiaries</i>	55,487	45,985	54,652	45,276	53,729	44,462	52,781	43,579	51,987	42,837	51,238	42,174
<b>Total PS<sup>a</sup> Orthopedic Surgery Expenditures</b>												
Mean	\$76	\$71	\$75	\$68	\$73	\$73	\$66	\$66	\$75	\$71	\$88	\$103
Median	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
90th percentile	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
99th percentile	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
<b>Inpatient PS Orthopedic Surgery Expenditures</b>												
Mean	\$64	\$59	\$64	\$56	\$61	\$62	\$55	\$54	\$62	\$59	\$72	\$85
Median	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
90th percentile	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
99th percentile	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
<b>Outpatient PS Orthopedic Surgery Expenditures</b>												
Mean	\$1	\$1	\$1	\$1	\$2	\$1	\$1	\$2	\$2	\$1	\$3	\$3
Median	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
90th percentile	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
99th percentile	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0

<sup>a</sup>PS = Preference-sensitive

**Appendix Table B-73: Welvie Orthopedic Surgery Expenditures in the Baseline Period and by Quarter Following Enrollment, Ohio MA ITT Analysis Cohort, Q1 to Q5**

Measures (2011 USD)	Baseline Period (Year Prior to Enrollment)		Q1		Q2		Q3		Q4		Q5	
	Intervention	Controls	Intervention	Controls	Intervention	Controls	Intervention	Controls	Intervention	Controls	Intervention	Controls
<i>Number of Beneficiaries</i>	97,380	94,915	97,380	94,915	96,492	94,059	95,477	93,045	92,080	89,750	91,230	88,894
<b>Total PS<sup>a</sup> Orthopedic Surgery Expenditures</b>												
Mean	\$189	\$187	\$82	\$77	\$66	\$66	\$61	\$63	\$56	\$55	\$42	\$38
Median	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
90th percentile	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
99th percentile	\$11,454	\$11,459	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
<b>Inpatient PS Orthopedic Surgery Expenditures</b>												
Mean	\$151	\$151	\$67	\$63	\$53	\$53	\$49	\$51	\$45	\$45	\$34	\$30
Median	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
90th percentile	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
99th percentile	\$9,560	\$9,546	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
<b>Outpatient PS Orthopedic Surgery Expenditures</b>												
Mean	\$5	\$4	\$1	\$2	\$1	\$1	\$2	\$1	\$1	\$1	\$1	\$1
Median	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
90th percentile	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
99th percentile	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0

<sup>a</sup>PS = Preference-sensitive

**Appendix Table B-74: Welvie Orthopedic Surgery Expenditures in the Baseline Period and by Quarter Following Enrollment,  
Ohio MA ITT Analysis Cohort, Q6 to Q11**

Measures (2011 USD)	Q6		Q7		Q8		Q9		Q10		Q11	
	Intervention	Controls	Intervention	Controls	Intervention	Controls	Intervention	Controls	Intervention	Controls	Intervention	Controls
<i>Number of Beneficiaries</i>	90,076	87,518	89,069	86,556	82,860	80,581	81,907	79,640	79,501	77,232	78,171	75,732
<b>Total PS<sup>a</sup> Orthopedic Surgery Expenditures</b>												
Mean	\$53	\$51	\$51	\$47	\$48	\$41	\$34	\$30	\$4	\$6	\$5	\$5
Median	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
90th percentile	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
99th percentile	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
<b>Inpatient PS Orthopedic Surgery Expenditures</b>												
Mean	\$44	\$42	\$42	\$39	\$39	\$34	\$29	\$25	\$3	\$5	\$4	\$4
Median	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
90th percentile	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
99th percentile	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
<b>Outpatient PS Orthopedic Surgery Expenditures</b>												
Mean	\$1	\$1	\$1	\$1	\$1	\$1	\$1	\$1	\$1	\$1	\$1	\$0
Median	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
90th percentile	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
99th percentile	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0

<sup>a</sup>PS = Preference-sensitive



**Appendix Table B-75: Welvie Orthopedic Surgery Expenditures in the Baseline Period and by Quarter Following Enrollment, Texas MA ITT Analysis Cohort, Q1 to Q3**

Measures (2011 USD)	Baseline Period (Year Prior to Enrollment)		Q1		Q2		Q3	
	Intervention	Controls	Intervention	Controls	Intervention	Controls	Intervention	Controls
<i>Number of Beneficiaries</i>	63,979	63,759	63,979	63,759	63,885	63,654	50,346	50,476
<b>Total PS<sup>a</sup> Orthopedic Surgery Expenditures</b>								
Mean	\$281	\$289	\$67	\$74	\$80	\$88	\$64	\$73
Median	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
90th percentile	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
99th percentile	\$12,616	\$12,602	\$0	\$0	\$0	\$0	\$0	\$0
<b>Inpatient PS Orthopedic Surgery Expenditures</b>								
Mean	\$228	\$236	\$53	\$60	\$65	\$72	\$53	\$60
Median	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
90th percentile	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
99th percentile	\$10,468	\$10,470	\$0	\$0	\$0	\$0	\$0	\$0
<b>Outpatient PS Orthopedic Surgery Expenditures</b>								
Mean	\$6	\$5	\$2	\$2	\$2	\$2	\$1	\$1
Median	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
90th percentile	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
99th percentile	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0

<sup>a</sup>PS = Preference-sensitive

**Appendix Table B-76: Welvie Orthopedic Surgery Expenditures in the Baseline Period and by Quarter Following Enrollment, Texas MA ITT Analysis Cohort, Q4 to Q6**

Measures (2011 USD)	Q4		Q5		Q6	
	Intervention	Controls	Intervention	Controls	Intervention	Controls
<i>Number of Beneficiaries</i>	49,822	49,956	49,356	49,449	48,797	48,926
<b>Total PS<sup>a</sup> Orthopedic Surgery Expenditures</b>						
Mean	\$79	\$65	\$63	\$76	\$82	\$73
Median	\$0	\$0	\$0	\$0	\$0	\$0
90th percentile	\$0	\$0	\$0	\$0	\$0	\$0
99th percentile	\$0	\$0	\$0	\$0	\$0	\$0
<b>Inpatient PS Orthopedic Surgery Expenditures</b>						
Mean	\$65	\$52	\$53	\$63	\$68	\$61
Median	\$0	\$0	\$0	\$0	\$0	\$0
90th percentile	\$0	\$0	\$0	\$0	\$0	\$0
99th percentile	\$0	\$0	\$0	\$0	\$0	\$0
<b>Outpatient PS Orthopedic Surgery Expenditures</b>						
Mean	\$1	\$2	\$1	\$1	\$2	\$2
Median	\$0	\$0	\$0	\$0	\$0	\$0
90th percentile	\$0	\$0	\$0	\$0	\$0	\$0
99th percentile	\$0	\$0	\$0	\$0	\$0	\$0

<sup>a</sup>PS = Preference-sensitive

**Appendix Table B-77: Welvie Cardiac Surgery Expenditures in the Baseline Period and by Quarter Following Enrollment,  
Ohio FFS ITT Analysis Cohort, Q1 to Q5**

Measures (2011 USD)	Baseline Period (Year Prior to Enrollment)		Q1		Q2		Q3		Q4		Q5	
	Intervention	Controls	Intervention	Controls	Intervention	Controls	Intervention	Controls	Intervention	Controls	Intervention	Controls
<i>Number of Beneficiaries</i>	59,894	50,279	59,894	50,279	59,023	49,338	58,163	48,553	57,294	47,745	56,355	46,834
<b>Total PS<sup>a</sup> Cardiac Surgery Expenditures</b>												
Mean	\$299	\$280	\$66	\$84	\$81	\$76	\$77	\$62	\$71	\$73	\$71	\$74
Median	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
90th percentile	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
99th percentile	\$10,923	\$10,667	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
<b>Inpatient PS Cardiac Surgery Expenditures</b>												
Mean	\$232	\$216	\$52	\$66	\$65	\$61	\$60	\$48	\$56	\$57	\$56	\$57
Median	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
90th percentile	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
99th percentile	\$9,729	\$9,492	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
<b>Outpatient PS Cardiac Surgery Expenditures</b>												
Mean	\$40	\$38	\$9	\$10	\$8	\$8	\$10	\$8	\$9	\$10	\$9	\$10
Median	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
90th percentile	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
99th percentile	\$1,791	\$1,790	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0

<sup>a</sup>PS = Preference-sensitive

**Appendix Table B-78: Welvie Cardiac Surgery Expenditures in the Baseline Period and by Quarter Following Enrollment,  
Ohio FFS ITT Analysis Cohort, Q6 to Q11**

Measures (2011 USD)	Q6		Q7		Q8		Q9		Q10		Q11	
	Intervention	Controls	Intervention	Controls	Intervention	Controls	Intervention	Controls	Intervention	Controls	Intervention	Controls
<i>Number of Beneficiaries</i>	55,487	45,985	54,652	45,276	53,729	44,462	52,781	43,579	51,987	42,837	51,238	42,174
<b>Total PS<sup>a</sup> Cardiac Surgery Expenditures</b>												
Mean	\$75	\$69	\$69	\$64	\$71	\$86	\$69	\$73	\$72	\$72	\$89	\$75
Median	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
90th percentile	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
99th percentile	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
<b>Inpatient PS Cardiac Surgery Expenditures</b>												
Mean	\$58	\$53	\$54	\$51	\$56	\$69	\$53	\$57	\$56	\$57	\$71	\$58
Median	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
90th percentile	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
99th percentile	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
<b>Outpatient PS Cardiac Surgery Expenditures</b>												
Mean	\$10	\$10	\$9	\$7	\$8	\$9	\$10	\$9	\$10	\$9	\$10	\$10
Median	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
90th percentile	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
99th percentile	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0

<sup>a</sup>PS = Preference-sensitive

**Appendix Table B-79: Welvie Cardiac Surgery Expenditures in the Baseline Period and by Quarter Following Enrollment,  
Ohio MA ITT Analysis Cohort, Q1 to Q5**

Measures (2011 USD)	Baseline Period (Year Prior to Enrollment)		Q1		Q2		Q3		Q4		Q5	
	Intervention	Controls	Intervention	Controls	Intervention	Controls	Intervention	Controls	Intervention	Controls	Intervention	Controls
<i>Number of Beneficiaries</i>	97,380	94,915	97,380	94,915	96,492	94,059	95,477	93,045	92,080	89,750	91,230	88,894
<b>Total PS<sup>a</sup> Cardiac Surgery Expenditures</b>												
Mean	\$191	\$205	\$68	\$73	\$73	\$65	\$55	\$63	\$40	\$60	\$43	\$49
Median	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
90th percentile	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
99th percentile	\$2,585	\$2,833	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
<b>Inpatient PS Cardiac Surgery Expenditures</b>												
Mean	\$136	\$147	\$50	\$53	\$56	\$48	\$41	\$47	\$28	\$45	\$31	\$34
Median	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
90th percentile	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
99th percentile	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
<b>Outpatient PS Cardiac Surgery Expenditures</b>												
Mean	\$34	\$34	\$10	\$12	\$9	\$9	\$7	\$9	\$7	\$8	\$7	\$9
Median	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
90th percentile	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
99th percentile	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0

<sup>a</sup>PS = Preference-sensitive

**Appendix Table B-80: Welvie Cardiac Surgery Expenditures in the Baseline Period and by Quarter Following Enrollment,  
Ohio MA ITT Analysis Cohort, Q6 to Q11**

Measures (2011 USD)	Q6		Q7		Q8		Q9		Q10		Q11	
	Intervention	Controls	Intervention	Controls	Intervention	Controls	Intervention	Controls	Intervention	Controls	Intervention	Controls
<i>Number of Beneficiaries</i>	90,076	87,518	89,069	86,556	82,860	80,581	81,907	79,640	79,501	77,232	78,171	75,732
<b>Total PS<sup>a</sup> Cardiac Surgery Expenditures</b>												
Mean	\$50	\$56	\$37	\$53	\$53	\$48	\$27	\$21	\$8	\$9	\$11	\$10
Median	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
90th percentile	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
99th percentile	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
<b>Inpatient PS Cardiac Surgery Expenditures</b>												
Mean	\$36	\$42	\$26	\$39	\$39	\$35	\$18	\$14	\$2	\$3	\$5	\$3
Median	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
90th percentile	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
99th percentile	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
<b>Outpatient PS Cardiac Surgery Expenditures</b>												
Mean	\$7	\$7	\$7	\$8	\$8	\$8	\$7	\$6	\$6	\$6	\$6	\$6
Median	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
90th percentile	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
99th percentile	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0

<sup>a</sup>PS = Preference-sensitive

**Appendix Table B-81: Welvie Cardiac Surgery Expenditures in the Baseline Period and by Quarter Following Enrollment, Texas MA ITT Analysis Cohort, Q1 to Q3**

Measures (2011 USD)	Baseline Period (Year Prior to Enrollment)		Q1		Q2		Q3	
	Intervention	Controls	Intervention	Controls	Intervention	Controls	Intervention	Controls
<i>Number of Beneficiaries</i>	63,979	63,759	63,979	63,759	63,885	63,654	50,346	50,476
<b>Total PS<sup>a</sup> Cardiac Surgery Expenditures</b>								
Mean	\$232	\$262	\$64	\$74	\$77	\$67	\$67	\$82
Median	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
90th percentile	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
99th percentile	\$4,458	\$6,044	\$0	\$0	\$0	\$0	\$0	\$0
<b>Inpatient PS Cardiac Surgery Expenditures</b>								
Mean	\$161	\$192	\$46	\$55	\$57	\$49	\$49	\$64
Median	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
90th percentile	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
99th percentile	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
<b>Outpatient PS Cardiac Surgery Expenditures</b>								
Mean	\$46	\$40	\$12	\$10	\$11	\$11	\$10	\$10
Median	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
90th percentile	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
99th percentile	\$1,957	\$1,886	\$0	\$0	\$0	\$0	\$0	\$0

<sup>a</sup>PS = Preference-sensitive

**Appendix Table B-82: Welvie Cardiac Surgery Expenditures in the Baseline Period and by Quarter Following Enrollment, Texas MA ITT Analysis Cohort, Q4 to Q6**

Measures (2011 USD)	Q4		Q5		Q6	
	Intervention	Controls	Intervention	Controls	Intervention	Controls
<i>Number of Beneficiaries</i>	49,822	49,956	49,356	49,449	48,797	48,926
<b>Total PS<sup>a</sup> Cardiac Surgery Expenditures</b>						
Mean	\$82	\$63	\$66	\$65	\$72	\$68
Median	\$0	\$0	\$0	\$0	\$0	\$0
90th percentile	\$0	\$0	\$0	\$0	\$0	\$0
99th percentile	\$0	\$0	\$0	\$0	\$0	\$0
<b>Inpatient PS Cardiac Surgery Expenditures</b>						
Mean	\$61	\$44	\$48	\$46	\$51	\$49
Median	\$0	\$0	\$0	\$0	\$0	\$0
90th percentile	\$0	\$0	\$0	\$0	\$0	\$0
99th percentile	\$0	\$0	\$0	\$0	\$0	\$0
<b>Outpatient PS Cardiac Surgery Expenditures</b>						
Mean	\$11	\$11	\$10	\$11	\$13	\$13
Median	\$0	\$0	\$0	\$0	\$0	\$0
90th percentile	\$0	\$0	\$0	\$0	\$0	\$0
99th percentile	\$0	\$0	\$0	\$0	\$0	\$0

<sup>a</sup>PS = Preference-sensitive



## APPENDIX C: RESULTS FOR WELVIE (MA IDR DATA AND WELVIE PROVIDED MA DATA COMPARISON)

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The following tables provide the baseline demographic and health characteristics for intervention and comparison group beneficiaries in the Welvie Medicare Advantage (MA) Ohio and Texas cohorts. Subsequent tables provide mortality, readmissions, and health service utilization results for these cohorts. Results were derived from MA encounter data in CMS's Integrated Data Repository (IDR) and Welvie-provided MA data. Findings from these respective data sources are presented in separate tables so they can be compared.

Due to limitations of the MA IDR data, additional cohort restrictions were applied to the MA Ohio and MA Texas cohorts for comparison purposes. First, due to insufficient data in the pre-enrollment period, the MA Ohio analytic cohorts were only required to have two quarters of complete claims data in this period to be included in the analyses. Second, analyses of MA Ohio and MA Texas cohorts using MA IDR data do not include beneficiaries who switched between Medicare FFS and MA to account for potential discrepancies between the IDR data used for MA beneficiaries and the Common Working File (CWF) data used for FFS beneficiaries. To ensure results from the MA IDR data and the Welvie-provided MA data are comparable, these restrictions were also applied to the MA Ohio and MA Texas analytic cohorts for analyses using Welvie-provided MA data. Thus, the results from the analysis using Welvie-provided MA data presented in this Appendix differ from results presented in Section 2 as well as Appendix B. Furthermore, due to the limitations of the MA data in the IDR, results for ER visits, outpatient surgeries, and expenditures are not available for the MA IDR cohorts and thus not reported below for either analysis.

### C.1 Demographic and Health Characteristics

As expected, the tables below show that the randomized intervention and control groups had similar demographic and health characteristics prior to Welvie program enrollment.

**Appendix Table C-1: Welvie Baseline Demographic and Health Characteristics, Ohio MA ITT Analysis Cohort**

Characteristics	Intervention Group	Control Group	Percent Difference	Standardized Mean Difference <sup>a</sup>
<i>Number of Beneficiaries</i>	82,709	80,971		
<i>Average Age (Years)</i>	74.65	74.72	-0.07	0.01
<i>Age under 65</i>	0%	0%	0%	0.01
<i>Gender</i>				
Male	43%	43%	0%	0.00
Female	57%	57%	0%	0.00

Characteristics	Intervention Group	Control Group	Percent Difference	Standardized Mean Difference <sup>a</sup>
<b>Race</b>				
White	91%	91%	0%	0.01
Black	7%	7%	0%	0.01
Other	2%	2%	0%	0.00
<b>Dual Eligible</b>	6%	6%	0%	0.00
<b>Medicare Eligibility</b>				
Disabled	10%	11%	-1%	0.02
ESRD	0%	0%	0%	0.00
Aged	90%	89%	1%	0.02
<b>Potential Risk Indicators for Preference Sensitive Surgeries Targeted by Program Name</b>				
Any targeted diagnosis	81%	81%	0%	0.01
Knee diagnosis	14%	14%	0%	0.01
Hip diagnosis	12%	12%	0%	0.00
Back diagnosis	20%	20%	0%	0.00
Heart diagnosis	27%	27%	0%	0.01
<b>Evaluation and Management (E&amp;M) Visits</b>				
E&M Visits: 0	17%	17%	0%	0.01
E&M Visits: 1-5	64%	64%	0%	0.01
E&M Visits: 6-10	16%	16%	0%	0.00
E&M Visits: 11-15	3%	3%	0%	0.00
E&M Visits: 16+	1%	1%	0%	0.00
<b>Resource Use per Beneficiary (Pre-Enrollment Year)</b>				
0 SNF Stays (Prior Year)	98%	98%	0%	0.00
1 SNF Stay (Prior Year)	1%	1%	0%	0.00
2+ SNF Stays (Prior Year)	1%	1%	0%	0.00
<i>IP Stay before study enrollment</i>				
0 IP Stays (1Q Prior)	95%	95%	0%	0.00
1 IP Stay (Prior Year)	4%	4%	0%	0.00
2+ IP Stays (Prior Year)	1%	1%	0%	0.00
0 IP Stays (Prior Year)	92%	91%	0%	0.01
1 IP Stay (Prior Year)	6%	7%	0%	0.01
2+ IP Stays (Prior Year)	2%	2%	0%	0.01
<b>Frailty Measures</b>				
Charlson Score	0.18	0.19	-0.01	0.01
Area Deprivation Index (ADI)	100.42	100.49	-0.07	0.00
<b>Healthcare Cost and Utilization Project (HCUP) Diagnosis Categories (Pre-Enrollment Year)</b>				
Acute cerebrovascular disease (IP)	0%	0%	0%	0.01
Acute cerebrovascular disease (IP, 30 days prior)	0%	0%	0%	0.00

Characteristics	Intervention Group	Control Group	Percent Difference	Standardized Mean Difference <sup>a</sup>
AMI (IP)	0%	0%	0%	0.01
AMI (IP, 30 days prior)	0%	0%	0%	0.01
Cerebrovascular disease	10%	10%	0%	0.01
Parkinson's disease and multiple sclerosis	1%	1%	0%	0.00
Asthma	16%	16%	0%	0.00
Coagulation and hemorrhagic disorders	3%	3%	0%	0.00
Congestive heart failure (All Settings)	8%	8%	0%	0.00
Congestive heart failure (IP)	1%	1%	0%	0.00
Coronary atherosclerosis	20%	20%	0%	0.01
Dementia	5%	5%	0%	0.01
Diabetes mellitus without complication	29%	29%	0%	0.00
Diabetes mellitus with complications	12%	12%	0%	0.00
Cardiac dysrhythmias, arrest and ventricular fibrillation	20%	20%	0%	0.00
Fluid and electrolyte disorders	9%	9%	0%	0.00
Gastrointestinal hemorrhage (All Settings)	3%	3%	0%	0.01
Gastrointestinal hemorrhage (IP)	0%	0%	0%	0.01
Other heart disease	37%	37%	0%	0.00
Heart valve disorders	10%	9%	0%	0.01
Hepatitis	0%	0%	0%	0.00
Hypertension with complications	8%	8%	0%	0.00
Stomach, pancreas and lung cancer	1%	1%	0%	0.00
Peri- endo- and myocarditis	3%	3%	0%	0.00
Disorders of nervous system	6%	6%	0%	0.00
Other cancers	11%	12%	0%	0.00
Paralysis	1%	1%	0%	0.01
Pneumonia	6%	6%	0%	0.00
Pneumonia (IP, 30 days prior)	0%	0%	0%	0.01
Pulmonary heart disease	3%	3%	0%	0.00
Renal failure	9%	9%	0%	0.00
Respiratory failure (IP)	0%	0%	0%	0.00
Respiratory failure (IP, 30 days prior)	0%	0%	0%	0.01
Rheumatoid arthritis and related disease	2%	2%	0%	0.00
Septicemia	1%	1%	0%	0.01
Shock	0%	0%	0%	0.00
Tuberculosis	0%	0%	0%	0.00
<b>Procedures (2Q Pre-Enrollment)</b>				
Bypass and PTCA (IP)	1%	1%	0%	0.00
Heart valve procedures (IP)	0%	0%	0%	0.00

Characteristics	Intervention Group	Control Group	Percent Difference	Standardized Mean Difference <sup>a</sup>
Hemodialysis	0%	0%	0%	0.00
Peritoneal dialysis	0%	0%	0%	0.00
Procedures on vessels of head and neck (IP)	2%	2%	0%	0.00
Radiology and chemotherapy	2%	2%	0%	0.00
Respiratory intubation and mechanical ventilation	1%	1%	0%	0.00
Blood transfusion	2%	2%	0%	0.02
Blood transfusion (IP)	1%	1%	0%	0.01
Transportation	0.05	0.05	0.00	0.00
<b>Risk Adjustment Processing System (RAPS) V21 Hierarchical Condition Categories</b>				
HCC1 HIV/AIDS	0%	0%	0%	0.00
HCC2 SEPTICEMIA, SEPSIS, SYSTEMIC INFLAM RESPONSE SYNDROME/SHOCK	1%	1%	0%	0.01
HCC6 OPPORTUNISTIC INFECTIONS	0%	0%	0%	0.00
HCC8 METASTATIC CANCER AND ACUTE LEUKEMIA	1%	1%	0%	0.00
HCC9 LUNG AND OTHER SEVERE CANCERS	1%	1%	0%	0.00
HCC10 LYMPHOMA AND OTHER CANCERS	1%	1%	0%	0.00
HCC11 COLORECTAL, BLADDER, AND OTHER CANCERS	2%	2%	0%	0.01
HCC12 BREAST, PROSTATE, AND OTHER CANCERS AND TUMORS	6%	5%	0%	0.00
HCC17 DIABETES WITH ACUTE COMPLICATIONS	0%	0%	0%	0.00
HCC18 DIABETES WITH CHRONIC COMPLICATIONS	8%	8%	0%	0.00
HCC19 DIABETES WITHOUT COMPLICATION	18%	18%	0%	0.00
HCC21 PROTEIN-CALORIE MALNUTRITION	1%	1%	0%	0.00
HCC22 MORBID OBESITY	2%	2%	0%	0.00
HCC23 OTHER SIGNIFICANT ENDOCRINE AND METABOLIC DISORDERS	2%	2%	0%	0.00
HCC27 END-STAGE LIVER DISEASE	0%	0%	0%	0.01
HCC28 CIRRHOSIS OF LIVER	0%	0%	0%	0.00
HCC29 CHRONIC HEPATITIS	0%	0%	0%	0.00
HCC33 INTESTINAL OBSTRUCTION/PERFORATION	1%	1%	0%	0.01
HCC34 CHRONIC PANCREATITIS	0%	0%	0%	0.00
HCC35 INFLAMMATORY BOWEL DISEASE	1%	1%	0%	0.00
HCC39 BONE/JOINT/MUSCLE INFECTIONS/NECROSIS	1%	1%	0%	0.00

Characteristics	Intervention Group	Control Group	Percent Difference	Standardized Mean Difference <sup>a</sup>
HCC40 RHEUMATOID ARTHRITIS AND INFLAM CONNECTIVE TISSUE DISEASE	4%	4%	0%	0.01
HCC46 SEVERE HEMATOLOGICAL DISORDERS	0%	0%	0%	0.00
HCC47 DISORDERS OF IMMUNITY	1%	1%	0%	0.01
HCC48 COAGULATION DEFECTS & OTH SPECIFIED HEMATOLOGICAL DISORDRS	3%	3%	0%	0.00
HCC51 DEMENTIA WITH COMPLICATIONS	1%	1%	0%	0.01
HCC52 DEMENTIA WITHOUT COMPLICATION	4%	4%	0%	0.01
HCC54 DRUG/ALCOHOL PSYCHOSIS	0%	0%	0%	0.00
HCC55 DRUG/ALCOHOL DEPENDENCE	0%	0%	0%	0.00
HCC57 SCHIZOPHRENIA	0%	0%	0%	0.00
HCC58 MAJOR DEPRESSIVE, BIPOLAR, AND PARANOID DISORDERS	2%	2%	0%	0.00
HCC70 QUADRIPLÉGIA	0%	0%	0%	0.00
HCC71 PARAPLEGIA	0%	0%	0%	0.01
HCC72 SPINAL CORD DISORDERS/INJURIES	0%	0%	0%	0.00
HCC73 AMYOTROPHIC LATERAL SCLEROSIS & OTH MOTOR NEURON DISEASE	0%	0%	0%	0.00
HCC74 CEREBRAL PALSY	0%	0%	0%	0.01
HCC75 POLYNEUROPATHY	4%	4%	0%	0.00
HCC76 MUSCULAR DYSTROPHY	0%	0%	0%	0.00
HCC77 MULTIPLE SCLEROSIS	0%	0%	0%	0.00
HCC78 PARKINSONS AND HUNTINGTONS DISEASES	1%	1%	0%	0.00
HCC79 SEIZURE DISORDERS AND CONVULSIONS <sup>+</sup>	1%	1%	0%	0.00
HCC80 COMA, BRAIN COMPRESSION/ANOXIC DAMAGE	0%	0%	0%	0.00
HCC82 RESPIRATOR DEPENDENCE/TRACHEOSTOMY STATUS	0%	0%	0%	0.01
HCC83 RESPIRATORY ARREST	0%	0%	0%	0.00
HCC84 CARDIO-RESPIRATORY FAILURE AND SHOCK	2%	2%	0%	0.00
HCC85 CONGESTIVE HEART FAILURE	10%	10%	0%	0.01
HCC86 ACUTE MYOCARDIAL INFARCTION	1%	1%	0%	0.00
HCC87 UNSTABLE ANGINA & OTH ACUTE ISCHEMIC HEART DISEASE	2%	2%	0%	0.00
HCC88 ANGINA PECTORIS	2%	1%	0%	0.01
HCC96 SPECIFIED HEART ARRHYTHMIAS	12%	12%	0%	0.00
HCC99 CEREBRAL HEMORRHAGE	0%	0%	0%	0.00
HCC100 ISCHEMIC OR UNSPECIFIED STROKE	3%	3%	0%	0.01

Characteristics	Intervention Group	Control Group	Percent Difference	Standardized Mean Difference <sup>a</sup>
HCC103 HEMIPLEGIA/HEMIPARESIS	1%	1%	0%	0.01
HCC104 MONOPLÉGIA, OTHER PARALYTIC SYNDROMES	0%	0%	0%	0.00
HCC106 ATHEROSCLEROSIS OF EXTREMITIES W/ULCERATION OR GANGRENE	0%	0%	0%	0.01
HCC107 VASCULAR DISEASE WITH COMPLICATIONS	2%	2%	0%	0.00
HCC108 VASCULAR DISEASE	10%	11%	0%	0.00
HCC110 CYSTIC FIBROSIS	0%	0%	0%	0.00
HCC111 CHRONIC OBSTRUCTIVE PULMONARY DISEASE	12%	12%	0%	0.00
HCC112 FIBROSIS OF LUNG AND OTHER CHRONIC LUNG DISORDERS	1%	1%	0%	0.00
HCC114 ASPIRATION AND SPECIFIED BACTERIAL PNEUMONIAS	1%	1%	0%	0.01
HCC115 PNEUMOCOCCAL PNEUMONIA, EMPYEMA, LUNG ABSCESS	0%	0%	0%	0.00
HCC122 PROLIFERATIVE DIABTIC RETINOPATHY & VITREOUS HEMORR	0%	1%	0%	0.00
HCC124 EXUDATIVE MACULAR DEGENERATION	2%	2%	0%	0.00
HCC134 DIALYSIS STATUS	0%	0%	0%	0.00
HCC135 ACUTE RENAL FAILURE	3%	3%	0%	0.00
HCC136 CHRONIC KIDNEY DISEASE, STAGE 5	0%	0%	0%	0.00
HCC137 CHRONIC KIDNEY DISEASE, SEVERE (STAGE 4)	1%	1%	0%	0.01
HCC138 CHRONIC KIDNEY DISEASE, MODERATE (STAGE 3)	3%	3%	0%	0.00
HCC139 CHRONIC KIDNEY DIS, MILD OR UNSPEC (STG 1-2 OR UNSPEC)	2%	2%	0%	0.00
HCC140 UNSPECIFIED RENAL FAILURE	0%	0%	0%	0.00
HCC141 NEPHRITIS	0%	0%	0%	0.01
HCC157 PRESS ULCER OF SKN W/NECROSIS THR TO MUSCLE,TENDON, BONE	0%	0%	0%	0.00
HCC158 PRESSURE ULCER OF SKIN WITH FULL THICKNESS SKIN LOSS	0%	0%	0%	0.00
HCC159 PRESSURE ULCER OF SKIN WITH PARTIAL THICKNESS SKIN LOSS	0%	0%	0%	0.00
HCC160 PRESSURE PRE-ULCER SKIN CHANGES OR UNSPECIFIED STAGE	0%	0%	0%	0.00
HCC161 CHRONIC ULCER OF SKIN, EXCEPT PRESSURE	1%	1%	0%	0.00

Characteristics	Intervention Group	Control Group	Percent Difference	Standardized Mean Difference <sup>a</sup>
HCC162 SEVERE SKIN BURN OR CONDITION	0%	0%	0%	0.00
HCC166 SEVERE HEAD INJURY	0%	0%	0%	0.01
HCC167 MAJOR HEAD INJURY	0%	0%	0%	0.00
HCC169 VERTEBRAL FRACTURES WITHOUT SPINAL CORD INJURY	1%	1%	0%	0.01
HCC170 HIP FRACTURE/DISLOCATION	1%	1%	0%	0.00
HCC173 TRAUMATIC AMPUTATIONS AND COMPLICATIONS	0%	0%	0%	0.00
HCC176 COMPLICATIONS OF SPECIFIED IMPLANTED DEVICE OR GRAFT	1%	1%	0%	0.00
HCC186 MAJOR ORGAN TRANSPLANT OR REPLACEMENT STATUS	0%	0%	0%	0.00
HCC188 ARTIFICIAL OPENINGS FOR FEEDING OR ELIMINATION	0%	1%	0%	0.00
HCC189 AMPUTATION STATUS, LOWER LIMB/AMPUTATION COMPLICATIONS	0%	0%	0%	0.01
<b>Comorbidity Categories (Pre-Enrollment Quarter)</b>				
Depression	2%	2%	0%	0.00
AIDS HIV	0%	0%	0%	0.00
Alcohol Abuse	0%	0%	0%	0.01
Cardiac Arrhythmias	11%	11%	0%	0.00
Congestive heart failure	5%	5%	0%	0.00
Chronic pulmonary disease	9%	9%	0%	0.00
Coagulopathy	1%	1%	0%	0.00
Deficiency Anemia	3%	3%	0%	0.00
Diabetes complicated	5%	4%	0%	0.01
Diabetes uncomplicated	18%	18%	0%	0.00
Dementia	1%	1%	0%	0.01
Drug Abuse	0%	0%	0%	0.00
Fluid and Electrolyte Disorders	4%	4%	0%	0.00
Hypothyroidism	10%	10%	0%	0.01
Hypertension complicated	3%	3%	0%	0.00
Hypertension uncomplicated	42%	42%	0%	0.01
Liver Disease	1%	1%	0%	0.00
Lymphoma	1%	1%	0%	0.01
Metastatic Cancer	1%	1%	0%	0.00
Myocardial infraction	2%	2%	0%	0.01
Obesity	2%	2%	0%	0.00
Other neurological disorders	2%	2%	0%	0.01
Paralysis	0%	0%	0%	0.01
Peptic Ulcer Disease excluding bleeding	0%	0%	0%	0.00

Characteristics	Intervention Group	Control Group	Percent Difference	Standardized Mean Difference <sup>a</sup>
Peripheral vascular disorders	5%	6%	0%	0.01
Psychosis	1%	1%	0%	0.01
Pulmonary Circulation Disorders	1%	1%	0%	0.01
Renal Failure	5%	5%	0%	0.00
Rheumatoid arthritis collagen vascular disease	2%	2%	0%	0.00
Solid Tumor without metastasis	5%	5%	0%	0.00
Valvular Disease	4%	4%	0%	0.01
Weight loss	2%	2%	0%	0.01

<sup>a</sup>Standardized mean difference is an effect size measure used in the above table to identify substantial differences between the intervention and control groups; a standardized mean difference of 0.1 or greater is treated as an indicator of a substantial difference between the two groups.

**Appendix Table C-2: Welvie Baseline Demographic and Health Characteristics, Texas MA ITT Analysis Cohort**

Characteristics	Intervention Group	Control Group	Percent Difference	Standardized Mean Difference <sup>a</sup>
<b><i>Number of Beneficiaries</i></b>	48,933	48,947		
<b>Average Age (Years)</b>	70.50	70.51	-0.01	0.00
<b>Age under 65</b>	18%	18%	0%	0.00
<b>Gender</b>				
Male	46%	46%	1%	0.01
Female	54%	54%	-1%	0.01
<b>Race</b>				
White	84%	84%	0%	0.00
Black	10%	10%	0%	0.00
Other	6%	6%	0%	0.01
<b>Dual Eligible</b>	7%	7%	0%	0.00
<b>Medicare Eligibility</b>				
Disabled	28%	28%	0%	0.00
ESRD	0%	0%	0%	0.00
Aged	72%	72%	0%	0.00
<b>Potential Risk Indicators for Preference Sensitive Surgeries Targeted by Program Name</b>				
Any targeted diagnosis	91%	91%	0%	0.01
Knee diagnosis	21%	21%	0%	0.00
Hip diagnosis	20%	20%	0%	0.00
Back diagnosis	35%	34%	0%	0.01
Heart diagnosis	34%	34%	0%	0.01
<b>Evaluation and Management (E&amp;M) Visits</b>				



Characteristics	Intervention Group	Control Group	Percent Difference	Standardized Mean Difference <sup>a</sup>
E&M Visits: 0	8%	8%	0%	0.01
E&M Visits: 1-5	41%	41%	0%	0.00
E&M Visits: 6-10	28%	29%	0%	0.01
E&M Visits: 11-15	13%	13%	0%	0.00
E&M Visits: 16+	9%	9%	0%	0.00
<b>Resource Use per Beneficiary (Pre-Enrollment Year)</b>				
0 SNF Stays (Prior Year)	99%	99%	0%	0.00
1 SNF Stay (Prior Year)	1%	1%	0%	0.00
2+ SNF Stays (Prior Year)	0%	0%	0%	0.01
<i>IP Stay before study enrollment</i>				
0 IP Stays (1Q Prior)	96%	96%	0%	0.01
1 IP Stay (Prior Year)	4%	4%	0%	0.01
2+ IP Stays (Prior Year)	1%	1%	0%	0.01
0 IP Stays (Prior Year)	88%	88%	0%	0.00
1 IP Stay (Prior Year)	9%	9%	0%	0.00
2+ IP Stays (Prior Year)	3%	3%	0%	0.00
<b>ER Visits (Pre-Enrollment Quarter)</b>				
ER Visits: 0	98%	99%	0%	0.01
ER Visits: 1	1%	1%	0%	0.01
ER Visits: 2+	0%	0%	0%	0.00
<b>Frailty Measures</b>				
Charlson Score	2.81	2.80	0.01	0.01
Area Deprivation Index (ADI)	103.26	103.28	-0.02	0.00
<b>Healthcare Cost and Utilization Project (HCUP) Diagnosis Categories (Pre-Enrollment Year)</b>				
Acute cerebrovascular disease (IP)	0%	0%	0%	0.01
Acute cerebrovascular disease (IP, 30 days prior)	0%	0%	0%	0.01
AMI (IP)	1%	0%	0%	0.01
AMI (IP, 30 days prior)	0%	0%	0%	0.00
Cerebrovascular disease	13%	14%	0%	0.01
Parkinson's disease and multiple sclerosis	2%	2%	0%	0.01
Asthma	22%	22%	0%	0.00
Coagulation and hemorrhagic disorders	4%	4%	0%	0.00
Congestive heart failure (All Settings)	11%	10%	0%	0.01
Congestive heart failure (IP)	1%	1%	0%	0.01
Coronary atherosclerosis	24%	24%	0%	0.01
Dementia	5%	5%	0%	0.01
Diabetes mellitus without complication	38%	38%	0%	0.00
Diabetes mellitus with complications	19%	19%	0%	0.01
Cardiac dysrhythmias, arrest and ventricular fibrillation	22%	22%	0%	0.00

Characteristics	Intervention Group	Control Group	Percent Difference	Standardized Mean Difference <sup>a</sup>
Fluid and electrolyte disorders	11%	12%	0%	0.00
Gastrointestinal hemorrhage (All Settings)	4%	4%	0%	0.00
Gastrointestinal hemorrhage (IP)	0%	0%	0%	0.01
Other heart disease	44%	44%	0%	0.00
Heart valve disorders	12%	11%	0%	0.00
Hepatitis	1%	2%	0%	0.00
Hypertension with complications	16%	16%	0%	0.00
Stomach, pancreas and lung cancer	1%	1%	0%	0.01
Peri- endo- and myocarditis	4%	4%	0%	0.02
Disorders of nervous system	12%	12%	0%	0.01
Other cancers	11%	11%	0%	0.00
Paralysis	1%	1%	0%	0.01
Pneumonia	8%	9%	0%	0.01
Pneumonia (IP, 30 days prior)	0%	0%	0%	0.01
Pulmonary heart disease	3%	3%	0%	0.01
Renal failure	13%	13%	0%	0.01
Respiratory failure (IP)	0%	0%	0%	0.00
Respiratory failure (IP, 30 days prior)	0%	0%	0%	0.01
Rheumatoid arthritis and related disease	4%	4%	0%	0.01
Septicemia	2%	2%	0%	0.01
Shock	0%	0%	0%	0.00
Tuberculosis	0%	0%	0%	0.00
<b>Risk Adjustment Processing System (RAPS) V21 Hierarchical Condition Categories</b>				
HCC1 HIV/AIDS	0%	0%	0%	0.00
HCC2 SEPTICEMIA, SEPSIS, SYSTEMIC INFLAM RESPONSE SYNDROME/SHOCK	2%	2%	0%	0.00
HCC6 OPPORTUNISTIC INFECTIONS	0%	0%	0%	0.01
HCC8 METASTATIC CANCER AND ACUTE LEUKEMIA	1%	1%	0%	0.00
HCC9 LUNG AND OTHER SEVERE CANCERS	1%	1%	0%	0.00
HCC10 LYMPHOMA AND OTHER CANCERS	1%	1%	0%	0.00
HCC11 COLORECTAL, BLADDER, AND OTHER CANCERS	2%	2%	0%	0.01
HCC12 BREAST, PROSTATE, AND OTHER CANCERS AND TUMORS	5%	5%	0%	0.01
HCC17 DIABETES WITH ACUTE COMPLICATIONS	1%	1%	0%	0.01
HCC18 DIABETES WITH CHRONIC COMPLICATIONS	12%	13%	0%	0.00

Characteristics	Intervention Group	Control Group	Percent Difference	Standardized Mean Difference <sup>a</sup>
HCC19 DIABETES WITHOUT COMPLICATION	20%	19%	0%	0.01
HCC21 PROTEIN-CALORIE MALNUTRITION	1%	1%	0%	0.01
HCC22 MORBID OBESITY	6%	6%	0%	0.00
HCC23 OTHER SIGNIFICANT ENDOCRINE AND METABOLIC DISORDERS	3%	3%	0%	0.00
HCC27 END-STAGE LIVER DISEASE	0%	0%	0%	0.01
HCC28 CIRRHOSIS OF LIVER	1%	1%	0%	0.00
HCC29 CHRONIC HEPATITIS	1%	1%	0%	0.00
HCC33 INTESTINAL OBSTRUCTION/PERFORATION	1%	1%	0%	0.00
HCC34 CHRONIC PANCREATITIS	0%	0%	0%	0.00
HCC35 INFLAMMATORY BOWEL DISEASE	1%	1%	0%	0.01
HCC39 BONE/JOINT/MUSCLE INFECTIONS/NECROSIS	1%	1%	0%	0.01
HCC40 RHEUMATOID ARTHRITIS AND INFLAM CONNECTIVE TISSUE DISEASE	6%	6%	0%	0.01
HCC46 SEVERE HEMATOLOGICAL DISORDERS	0%	0%	0%	0.01
HCC47 DISORDERS OF IMMUNITY	1%	1%	0%	0.00
HCC48 COAGULATION DEFECTS & OTH SPECIFIED HEMATOLOGICAL DISORDERS	4%	4%	0%	0.00
HCC51 DEMENTIA WITH COMPLICATIONS	1%	1%	0%	0.01
HCC52 DEMENTIA WITHOUT COMPLICATION	5%	5%	0%	0.01
HCC54 DRUG/ALCOHOL PSYCHOSIS	0%	0%	0%	0.00
HCC55 DRUG/ALCOHOL DEPENDENCE	2%	2%	0%	0.00
HCC57 SCHIZOPHRENIA	1%	1%	0%	0.02
HCC58 MAJOR DEPRESSIVE, BIPOLAR, AND PARANOID DISORDERS	6%	6%	0%	0.00
HCC70 QUADRIPLEGIA	0%	0%	0%	0.00
HCC71 PARAPLEGIA	0%	0%	0%	0.01
HCC72 SPINAL CORD DISORDERS/INJURIES	1%	1%	0%	0.00
HCC73 AMYOTROPHIC LATERAL SCLEROSIS & OTH MOTOR NEURON DISEASE	0%	0%	0%	0.00
HCC74 CEREBRAL PALSY	0%	0%	0%	0.00
HCC75 POLYNEUROPATHY	11%	11%	0%	0.01
HCC76 MUSCULAR DYSTROPHY	0%	0%	0%	0.01
HCC77 MULTIPLE SCLEROSIS	1%	1%	0%	0.01
HCC78 PARKINSONS AND HUNTINGTONS DISEASES	1%	1%	0%	0.00
HCC79 SEIZURE DISORDERS AND CONVULSIONS <sup>+</sup>	3%	3%	0%	0.01

Characteristics	Intervention Group	Control Group	Percent Difference	Standardized Mean Difference <sup>a</sup>
HCC80 COMA, BRAIN COMPRESSION/ANOXIC DAMAGE	0%	0%	0%	0.01
HCC82 RESPIRATOR DEPENDENCE/TRACHEOSTOMY STATUS	0%	0%	0%	0.01
HCC83 RESPIRATORY ARREST	0%	0%	0%	0.00
HCC84 CARDIO-RESPIRATORY FAILURE AND SHOCK	2%	2%	0%	0.00
HCC85 CONGESTIVE HEART FAILURE	12%	12%	0%	0.01
HCC86 ACUTE MYOCARDIAL INFARCTION	1%	1%	0%	0.00
HCC87 UNSTABLE ANGINA & OTH ACUTE ISCHEMIC HEART DISEASE	2%	2%	0%	0.01
HCC88 ANGINA PECTORIS	3%	3%	0%	0.00
HCC96 SPECIFIED HEART ARRHYTHMIAS	12%	12%	0%	0.00
HCC99 CEREBRAL HEMORRHAGE	0%	0%	0%	0.01
HCC100 ISCHEMIC OR UNSPECIFIED STROKE	4%	4%	0%	0.00
HCC103 HEMIPLEGIA/HEMIPARESIS	1%	1%	0%	0.00
HCC104 MONOPLÉGIA, OTHER PARALYTIC SYNDROMES	0%	0%	0%	0.01
HCC106 ATHEROSCLEROSIS OF EXTREMITIES W/ULCERATION OR GANGRENE	1%	1%	0%	0.00
HCC107 VASCULAR DISEASE WITH COMPLICATIONS	2%	2%	0%	0.01
HCC108 VASCULAR DISEASE	13%	13%	0%	0.01
HCC110 CYSTIC FIBROSIS	0%	0%	0%	0.00
HCC111 CHRONIC OBSTRUCTIVE PULMONARY DISEASE	15%	15%	0%	0.00
HCC112 FIBROSIS OF LUNG AND OTHER CHRONIC LUNG DISORDERS	1%	1%	0%	0.01
HCC114 ASPIRATION AND SPECIFIED BACTERIAL PNEUMONIAS	1%	1%	0%	0.01
HCC115 PNEUMOCOCCAL PNEUMONIA, EMPYEMA, LUNG ABSCESS	0%	0%	0%	0.01
HCC122 PROLIFERATIVE DIABTIC RETINOPATHY & VITREOUS HEMORR	1%	1%	0%	0.00
HCC124 EXUDATIVE MACULAR DEGENERATION	1%	1%	0%	0.00
HCC134 DIALYSIS STATUS	0%	0%	0%	0.01
HCC135 ACUTE RENAL FAILURE	4%	3%	0%	0.01
HCC136 CHRONIC KIDNEY DISEASE, STAGE 5	0%	0%	0%	0.00
HCC137 CHRONIC KIDNEY DISEASE, SEVERE (STAGE 4)	1%	1%	0%	0.01

Characteristics	Intervention Group	Control Group	Percent Difference	Standardized Mean Difference <sup>a</sup>
HCC138 CHRONIC KIDNEY DISEASE, MODERATE (STAGE 3)	4%	4%	0%	0.00
HCC139 CHRONIC KIDNEY DIS, MILD OR UNSPEC (STG 1-2 OR UNSPEC)	4%	3%	0%	0.01
HCC140 UNSPECIFIED RENAL FAILURE	0%	0%	0%	0.01
HCC141 NEPHRITIS	0%	0%	0%	0.01
HCC157 PRESS ULCER OF SKN W/NECROSIS THR TO MUSCLE,TENDON, BONE	0%	0%	0%	0.00
HCC158 PRESSURE ULCER OF SKIN WITH FULL THICKNESS SKIN LOSS	0%	0%	0%	0.01
HCC159 PRESSURE ULCER OF SKIN WITH PARTIAL THICKNESS SKIN LOSS	0%	0%	0%	0.03
HCC160 PRESSURE PRE-ULCER SKIN CHANGES OR UNSPECIFIED STAGE	0%	0%	0%	0.00
HCC161 CHRONIC ULCER OF SKIN, EXCEPT PRESSURE	2%	2%	0%	0.00
HCC162 SEVERE SKIN BURN OR CONDITION	0%	0%	0%	0.00
HCC166 SEVERE HEAD INJURY	0%	0%	0%	0.00
HCC167 MAJOR HEAD INJURY	0%	1%	0%	0.01
HCC169 VERTEBRAL FRACTURES WITHOUT SPINAL CORD INJURY	1%	1%	0%	0.01
HCC170 HIP FRACTURE/DISLOCATION	1%	1%	0%	0.00
HCC173 TRAUMATIC AMPUTATIONS AND COMPLICATIONS	0%	0%	0%	0.00
HCC176 COMPLICATIONS OF SPECIFIED IMPLANTED DEVICE OR GRAFT	2%	2%	0%	0.00
HCC186 MAJOR ORGAN TRANSPLANT OR REPLACEMENT STATUS	0%	0%	0%	0.00
HCC188 ARTIFICIAL OPENINGS FOR FEEDING OR ELIMINATION	1%	1%	0%	0.00
HCC189 AMPUTATION STATUS, LOWER LIMB/AMPUTATION COMPLICATIONS	0%	1%	0%	0.00
<b>Comorbidity Categories (Pre-Enrollment Quarter)</b>				
Depression	3%	4%	0%	0.01
AIDS HIV	0%	0%	0%	0.00
Alcohol Abuse	1%	1%	0%	0.00
Cardiac Arrhythmias	10%	10%	0%	0.00
Congestive heart failure	6%	6%	0%	0.01
Chronic pulmonary disease	12%	12%	0%	0.00
Coagulopathy	1%	1%	0%	0.00
Deficiency Anemia	4%	4%	0%	0.00
Diabetes complicated	7%	7%	0%	0.00

Characteristics	Intervention Group	Control Group	Percent Difference	Standardized Mean Difference <sup>a</sup>
Diabetes uncomplicated	22%	21%	0%	0.01
Dementia	1%	1%	0%	0.01
Drug Abuse	1%	1%	0%	0.00
Fluid and Electrolyte Disorders	4%	4%	0%	0.00
Hypothyroidism	12%	12%	0%	0.01
Hypertension complicated	5%	5%	0%	0.00
Hypertension uncomplicated	44%	44%	0%	0.00
Liver Disease	2%	2%	0%	0.00
Lymphoma	0%	0%	0%	0.00
Metastatic Cancer	1%	1%	0%	0.01
Myocardial infraction	2%	2%	0%	0.01
Obesity	6%	5%	0%	0.01
Other neurological disorders	3%	3%	0%	0.01
Paralysis	0%	0%	0%	0.01
Peptic Ulcer Disease excluding bleeding	0%	0%	0%	0.01
Peripheral vascular disorders	6%	6%	0%	0.00
Psychosis	1%	1%	0%	0.00
Pulmonary Circulation Disorders	1%	1%	0%	0.00
Renal Failure	6%	6%	0%	0.00
Rheumatoid arthritis collagen vascular disease	4%	4%	0%	0.01
Solid Tumor without metastasis	5%	5%	0%	0.00
Valvular Disease	4%	4%	0%	0.00
Weight loss	1%	1%	0%	0.01

<sup>a</sup>Standardized mean difference is an effect size measure used in the above table to identify substantial differences between the intervention and control groups; a standardized mean difference of 0.1 or greater is treated as an indicator of a substantial difference between the two groups.

The following tables provide pre-enrollment demographic and health characteristics of the Welvie decision aid users in the Ohio MA and Texas MA cohorts who were included in the IV analyses of program effects.

**Appendix Table C-3: Welvie Baseline Demographic and Health Characteristics, IV Analysis Cohorts**

Characteristics	Ohio MA	Texas MA
<i>Number of Beneficiaries</i>	4,030	2,004
<b>Average Age (Years)</b>	72.27	66.70
<b>Age under 65</b>	1%	31%

Characteristics	Ohio MA	Texas MA
<b>Gender</b>		
Male	46%	44%
Female	54%	56%
<b>Race</b>		
White	91%	83%
Black	6%	12%
Other	3%	5%
<b>Dual Eligible</b>	6%	10%
<b>Medicare Eligibility</b>		
Disabled	10%	41%
ESRD	0%	0%
Aged	90%	59%
<b>Potential Risk Indicators for Preference Sensitive Surgeries Targeted by Program Name</b>		
Any targeted diagnosis	84%	95%
Knee diagnosis	16%	29%
Hip diagnosis	13%	28%
Back diagnosis	24%	45%
Heart diagnosis	26%	33%
<b>Evaluation and Management (E&amp;M) Visits</b>		
E&M Visits: 0	14%	5%
E&M Visits: 1-5	65%	36%
E&M Visits: 6-10	17%	31%
E&M Visits: 11-15	4%	15%
E&M Visits: 16+	1%	13%
<b>Resource Use per Beneficiary (Pre-Enrollment Year)</b>		
0 SNF Stays (Prior Year)	99%	99%
1 SNF Stay (Prior Year)	1%	1%
2+ SNF Stays (Prior Year)	0%	0%
0 IP Stays (1Q Prior)	96%	97%
1 IP Stay (Prior Year)	3%	2%
2+ IP Stays (Prior Year)	1%	0%
0 IP Stays (Prior Year)	93%	88%
1 IP Stay (Prior Year)	5%	9%
2+ IP Stays (Prior Year)	1%	3%
<b>ER Visits (Pre-Enrollment Quarter)</b>		
ER Visits: 0		99%
ER Visits: 1		1%
ER Visits: 2+		0%

Characteristics	Ohio MA	Texas MA
<b>Frailty Measures</b>		
Home Oxygen		0%
Urinary Catheter		0%
Wheelchair Use		0%
Walker Use		0%
Charlson Score	0.11	0.00
Area Deprivation Index (ADI)	99.55	102.48
<b>Healthcare Cost and Utilization Project (HCUP) Diagnosis Categories (Pre-Enrollment Year)</b>		
Acute cerebrovascular disease (IP)	0%	0%
Acute cerebrovascular disease (IP, 30 days prior)	0%	0%
AMI (IP)	0%	0%
AMI (IP, 30 days prior)	0%	0%
Cerebrovascular disease	9%	12%
Parkinson's disease and multiple sclerosis	1%	2%
Asthma	17%	22%
Coagulation and hemorrhagic disorders	3%	3%
Congestive heart failure (All Settings)	6%	9%
Congestive heart failure (IP)	0%	0%
Coronary atherosclerosis	21%	20%
Dementia	2%	3%
Diabetes mellitus without complication	30%	36%
Diabetes mellitus with complications	12%	18%
Cardiac dysrhythmias, arrest and ventricular fibrillation	22%	21%
Fluid and electrolyte disorders	8%	11%
Gastrointestinal hemorrhage (All Settings)	3%	4%
Gastrointestinal hemorrhage (IP)	0%	0%
Other heart disease	40%	43%
Heart valve disorder	11%	11%
Hepatitis	1%	2%
Hypertension with complications	8%	12%
Stomach, pancreas and lung cancer	1%	1%
Peri- endo- and myocarditis	3%	4%
Disorders of nervous system	6%	13%
Other cancers	13%	12%
Paralysis	0%	1%
Pneumonia	5%	8%
Pneumonia (IP, 30 days prior)	0%	0%
Pulmonary heart disease	2%	3%



Characteristics	Ohio MA	Texas MA
Renal failure	9%	12%
Respiratory failure (IP)	0%	0%
Respiratory failure (IP, 30 days prior)	0%	0%
Rheumatoid arthritis and related disease	2%	6%
Septicemia	1%	1%
Shock	0%	1%
Tuberculosis	0%	0%
<b>Procedures (Pre-Enrollment Year)</b>		
Bypass and PTCA (IP)	1%	6%
Heart valve procedures (IP)	0%	2%
Hemodialysis	0%	0%
Peritoneal dialysis	0%	0%
Procedures on vessels of head and neck (IP)	2%	17%
Radiology and chemotherapy	2%	1%
Respiratory intubation and mechanical ventilation	1%	1%
Blood transfusion	1%	2%
Blood transfusion (IP)	1%	13%
Transportation	0.07	0.08
HCC Risk Score	0.92	1.14
<b>Comorbidity Categories (Pre-Enrollment Quarter)</b>		
Depression	2%	5%
AIDS HIV	0%	0%
Alcohol Abuse	0%	1%
Cardiac Arrhythmias	11%	10%
Congestive Heart Failure	4%	5%
Chronic Pulmonary Disease	9%	12%
Coagulopathy	1%	1%
Deficiency Anemia	3%	4%
Diabetes Complicated	4%	6%
Diabetes Uncomplicated	17%	21%
Dementia	0%	0%
Drug Abuse	0%	1%
Fluid and Electrolyte Disorders	3%	3%
Hypothyroidism	10%	14%
Hypertension Complicated	3%	4%
Hypertension Uncomplicated	42%	42%
Liver Disease	1%	3%
Lymphoma	1%	0%
Metastatic Cancer	0%	0%

Characteristics	Ohio MA	Texas MA
Myocardial Infarction	2%	2%
Obesity	5%	8%
Other Neurological Disorders	1%	3%
Paralysis	0%	0%
Peptic Ulcer Disease Excluding Bleeding	0%	1%
Peripheral Vascular Disorders	5%	5%
Psychosis	0%	1%
Pulmonary Circulation Disorders	1%	1%
Renal Failure	4%	6%
Rheumatoid Arthritis Collagen Vascular Disease	3%	6%
Solid Tumor Without Metastasis	6%	5%
Valvular Disease	4%	3%
Weight Loss	1%	1%
<b>Risk Adjustment Processing System (RAPS) V21 Hierarchical Condition Categories</b>		
HCC1 HIV/AIDS	0%	1%
HCC2 SEPTICEMIA, SEPSIS, SYSTEMIC INFLAM RESPONSE SYNDROME/SHOCK	1%	2%
HCC6 OPPORTUNISTIC INFECTIONS	0%	0%
HCC8 METASTATIC CANCER AND ACUTE LEUKEMIA	1%	1%
HCC9 LUNG AND OTHER SEVERE CANCERS	1%	1%
HCC10 LYMPHOMA AND OTHER CANCERS	1%	1%
HCC11 COLORECTAL, BLADDER, AND OTHER CANCERS	2%	2%
HCC12 BREAST, PROSTATE, AND OTHER CANCERS AND TUMORS	7%	6%
HCC17 DIABETES WITH ACUTE COMPLICATIONS	0%	1%
HCC18 DIABETES WITH CHRONIC COMPLICATIONS	8%	12%
HCC19 DIABETES WITHOUT COMPLICATION	16%	19%
HCC21 PROTEIN-CALORIE MALNUTRITION	1%	1%
HCC22 MORBID OBESITY	4%	11%
HCC23 OTHER SIGNIFICANT ENDOCRINE AND METABOLIC DISORDERS	3%	5%
HCC27 END-STAGE LIVER DISEASE	0%	0%
HCC28 CIRRHOSIS OF LIVER	0%	0%
HCC29 CHRONIC HEPATITIS	0%	1%
HCC33 INTESTINAL OBSTRUCTION/PERFORATION	1%	1%
HCC34 CHRONIC PANCREATITIS	0%	0%
HCC35 INFLAMMATORY BOWEL DISEASE	1%	1%
HCC39 BONE/JOINT/MUSCLE INFECTIONS/NECROSIS	1%	1%

Characteristics	Ohio MA	Texas MA
HCC40 RHEUMATOID ARTHRITIS AND INFLAM CONNECTIVE TISSUE DISEASE	5%	10%
HCC46 SEVERE HEMATOLOGICAL DISORDERS	0%	0%
HCC47 DISORDERS OF IMMUNITY	1%	1%
HCC48 COAGULATION DEFECTS & OTH SPECIFIED HEMATOLOGICAL DISORDRS	3%	3%
HCC51 DEMENTIA WITH COMPLICATIONS	0%	0%
HCC52 DEMENTIA WITHOUT COMPLICATION	2%	2%
HCC54 DRUG/ALCOHOL PSYCHOSIS	0%	0%
HCC55 DRUG/ALCOHOL DEPENDENCE	1%	2%
HCC57 SCHIZOPHRENIA	0%	1%
HCC58 MAJOR DEPRESSIVE, BIPOLAR, AND PARANOID DISORDERS	3%	9%
HCC70 QUADRIPLÉGIA	0%	0%
HCC71 PARAPLEGIA	0%	1%
HCC72 SPINAL CORD DISORDERS/INJURIES	0%	1%
HCC73 AMYOTROPHIC LATERAL SCLEROSIS & OTH MOTOR NEURON DISEASE	0%	0%
HCC74 CEREBRAL PALSY	0%	0%
HCC75 POLYNEUROPATHY	5%	14%
HCC76 MUSCULAR DYSTROPHY	0%	0%
HCC77 MULTIPLE SCLEROSIS	0%	1%
HCC78 PARKINSONS AND HUNTINGTONS DISEASES	1%	1%
HCC79 SEIZURE DISORDERS AND CONVULSIONS	1%	3%
HCC80 COMA, BRAIN COMPRESSION/ANOXIC DAMAGE	0%	0%
HCC82 RESPIRATOR DEPENDENCE/TRACHEOSTOMY STATUS	0%	0%
HCC83 RESPIRATORY ARREST	0%	0%
HCC84 CARDIO-RESPIRATORY FAILURE AND SHOCK	2%	2%
HCC85 CONGESTIVE HEART FAILURE	8%	11%
HCC86 ACUTE MYOCARDIAL INFARCTION	1%	0%
HCC87 UNSTABLE ANGINA & OTH ACUTE ISCHEMIC HEART DISEASE	2%	1%
HCC88 ANGINA PECTORIS	2%	3%
HCC96 SPECIFIED HEART ARRHYTHMIAS	13%	10%
HCC99 CEREBRAL HEMORRHAGE	0%	0%
HCC100 ISCHEMIC OR UNSPECIFIED STROKE	2%	3%
HCC103 HEMIPLEGIA/HEMIPARESIS	0%	1%
HCC104 MONOPLÉGIA, OTHER PARALYTIC SYNDROMES	0%	0%
HCC106 ATHEROSCLEROSIS OF EXTREMITIES W/ULCERATION OR GANGRENE	0%	0%

Characteristics	Ohio MA	Texas MA
HCC107 VASCULAR DISEASE WITH COMPLICATIONS	2%	2%
HCC108 VASCULAR DISEASE	11%	12%
HCC110 CYSTIC FIBROSIS	0%	0%
HCC111 CHRONIC OBSTRUCTIVE PULMONARY DISEASE	12%	14%
HCC112 FIBROSIS OF LUNG AND OTHER CHRONIC LUNG DISORDERS	1%	1%
HCC114 ASPIRATION AND SPECIFIED BACTERIAL PNEUMONIAS	0%	1%
HCC115 PNEUMOCOCCAL PNEUMONIA, EMPYEMA, LUNG ABSCESS	0%	0%
HCC122 PROLIFERATIVE DIABTIC RETINOPATHY & VITREOUS HEMORR	0%	1%
HCC124 EXUDATIVE MACULAR DEGENERATION	1%	0%
HCC134 DIALYSIS STATUS	0%	0%
HCC135 ACUTE RENAL FAILURE	2%	4%
HCC136 CHRONIC KIDNEY DISEASE, STAGE 5	0%	0%
HCC137 CHRONIC KIDNEY DISEASE, SEVERE (STAGE 4)	0%	0%
HCC138 CHRONIC KIDNEY DISEASE, MODERATE (STAGE 3)	3%	4%
HCC139 CHRONIC KIDNEY DIS, MILD OR UNSPEC (STG 1-2 OR UNSPEC)	2%	3%
HCC140 UNSPECIFIED RENAL FAILURE	0%	0%
HCC141 NEPHRITIS	0%	0%
HCC157 PRESS ULCER OF SKN W/NECROSIS THR TO MUSCLE,TENDON, BONE	0%	0%
HCC158 PRESSURE ULCER OF SKIN WITH FULL THICKNESS SKIN LOSS	0%	0%
HCC159 PRESSURE ULCER OF SKIN WITH PARTIAL THICKNESS SKIN LOSS	0%	0%
HCC160 PRESSURE PRE-ULCER SKIN CHANGES OR UNSPECIFIED STAGE	0%	0%
HCC161 CHRONIC ULCER OF SKIN, EXCEPT PRESSURE	2%	1%
HCC162 SEVERE SKIN BURN OR CONDITION	0%	0%
HCC166 SEVERE HEAD INJURY	0%	0%
HCC167 MAJOR HEAD INJURY	0%	0%
HCC169 VERTEBRAL FRACTURES WITHOUT SPINAL CORD INJURY	1%	1%
HCC170 HIP FRACTURE/DISLOCATION	1%	1%
HCC173 TRAUMATIC AMPUTATIONS AND COMPLICATIONS	0%	0%
HCC176 COMPLICATIONS OF SPECIFIED IMPLANTED DEVICE OR GRAFT	1%	2%
HCC186 MAJOR ORGAN TRANSPLANT OR REPLACEMENT STATUS	0%	0%

Characteristics	Ohio MA	Texas MA
HCC188 ARTIFICIAL OPENINGS FOR FEEDING OR ELIMINATION	1%	1%
HCC189 AMPUTATION STATUS, LOWER LIMB/AMPUTATION COMPLICATIONS	0%	1%

## C.2 Mortality and Readmissions

Mortality and readmissions results for MA Ohio and MA Texas beneficiaries derived from MA IDR data and Welvie-provided MA data are presented in the tables below. There were no statistically significant mortality differences at the cumulative or yearly level for either the MA Ohio or MA Texas cohorts using the MA IDR data or the Welvie-provided MA data. The estimated effects on readmissions measures were generally similar between the two data sources; however, these two data sources do not identify hospital admissions in the same manner and thus the estimated readmissions rates may not be directly comparable. For the MA Ohio cohort, the estimated effects of the Welvie intervention using Welvie-provided MA data were smaller in magnitude and less significant than results from MA IDR data for several readmissions categories, including 30-day readmissions following all inpatient admissions and inpatient surgery admissions and 30-day unplanned readmissions. These slight discrepancies existed for quarterly, yearly, and cumulative estimates. Results for the MA Texas cohort showed only minor differences between the two data sources.

**Appendix Table C-4: Aggregate Mortality: Cumulative and Yearly Differences After Welvie Enrollment, Ohio and Texas MA Cohorts, IDR MA Data**

Medicare Cohort	Full Intervention Period <sup>a</sup>	Year 1 <sup>b</sup>	Year 2
<b>Medicare Advantage Ohio</b>			
<i>Number of Participants</i>	82,709	82,709	77,652
<i>Difference<sup>c</sup></i>	-129.21	-66.39	9.04
<i>90% Confidence Interval</i>	(-350.1   91.7)	(-200.4   67.6)	(-122.8   140.9)
<i>P-Value</i>	0.336	0.415	0.910
<b>Medicare Advantage Texas</b>			
<i>Number of Participants</i>	48,933	48,933	
<i>Difference</i>	11.83	-17.23	
<i>90% Confidence Interval</i>	(-85.7   109.4)	(-91.1   56.6)	
<i>P-Value</i>	0.842	0.701	

<sup>a</sup>Results are cumulative across all available quarters. The “full intervention period” refers to eleven quarters following program enrollment for Medicare FFS and MA beneficiaries in Ohio and six quarters following program enrollment for MA beneficiaries in Texas.

<sup>b</sup>Year 1 refers to the one-year period after a beneficiary's enrollment in the program, Year 2 refers to the subsequent one-year period.

<sup>c</sup>This estimate represents difference in the number of deaths between participants and controls during the intervention period.

Note: Welvie delivered its HCIA intervention to Ohio FFS beneficiaries from February 2013 to January 2014; Ohio MA beneficiaries from September 2012 to December 2015; and Texas MA beneficiaries from May 2014 to December 2015.

**Appendix Table C-5: Aggregate Mortality: Cumulative and Yearly Differences After Welvie Enrollment, Ohio and Texas MA Cohorts, Welvie-Provided MA Data**

Medicare Cohort	Full Intervention Period <sup>a</sup>	Year 1 <sup>b</sup>	Year 2
<b>Medicare Advantage Ohio</b>			
<i>Number of Participants</i>	82,709	82,709	77,652
<i>Difference<sup>c</sup></i>	-129.21	-66.39	9.04
<i>90% Confidence Interval</i>	(-350.1   91.7)	(-200.4   67.6)	(-122.8   140.9)
<i>P-Value</i>	0.336	0.415	0.910
<b>Medicare Advantage Texas</b>			
<i>Number of Participants</i>	48,933	48,933	
<i>Difference</i>	11.83	-17.23	
<i>90% Confidence Interval</i>	(-85.7   109.4)	(-91.1   56.6)	
<i>P-Value</i>	0.842	0.701	

<sup>a</sup>Results are cumulative across all available quarters. The “full intervention period” refers to eleven quarters following program enrollment for Medicare FFS and MA beneficiaries in Ohio and six quarters following program enrollment for MA beneficiaries in Texas.

<sup>b</sup>Year 1 refers to the one-year period after a beneficiary's enrollment in the program, Year 2 refers to the subsequent one-year period.

<sup>c</sup>This estimate represents difference in the number of deaths between participants and controls during the intervention period.

Note: Welvie delivered its HCIA intervention to Ohio FFS beneficiaries from February 2013 to January 2014; Ohio MA beneficiaries from September 2012 to December 2015; and Texas MA beneficiaries from May 2014 to December 2015.

**Appendix Table C-6: Aggregate Inpatient Readmissions: Cumulative and Yearly Differences After Welvie Enrollment, MA Ohio Cohort, IDR MA Data**

Measures	Full Intervention Period <sup>a</sup> (11 quarters)	Year 1 <sup>b</sup>	Year 2
<i>Number of Participants</i>	82,709	82,709	77,652
<b>30-Day Hospital Readmissions Following All Inpatient Admissions:</b>			
<i>Difference<sup>c</sup></i>	-161.01	-17.58	-63.73
<i>90% Confidence Interval</i>	(-342.5   20.4)	(-129.2   94.1)	(-172.7   45.2)
<i>P-Value</i>	0.144	0.796	0.336
<b>Inpatient Surgery Admissions</b>			
<i>Difference</i>	-75.12	-2.79	-68.18*
<i>90% Confidence Interval</i>	(-171.9   21.6)	(-62.8   57.3)	(-125.8   -10.6)
<i>P-Value</i>	0.202	0.939	0.051
<b>Inpatient Preference Sensitive Orthopedic Surgery Admissions</b>			
<i>Difference</i>	-32.60	-0.98	-20.95

Measures	Full Intervention Period <sup>a</sup> (11 quarters)	Year 1 <sup>b</sup>	Year 2
<i>90% Confidence Interval</i>	(-68.6   3.4)	(-23.3   21.4)	(-42.5   0.6)
<i>P-Value</i>	0.137	0.942	0.109
<b>Inpatient Preference Sensitive Cardiac Surgery Admissions</b>			
<i>Difference</i>	-18.32	-12.42	-4.90
<i>90% Confidence Interval</i>	(-54.9   18.2)	(-35.8   11.0)	(-26.7   16.9)
<i>P-Value</i>	0.410	0.382	0.712
<b>30-Day Hospital Unplanned Readmissions Following All Inpatient Admissions:</b>			
<i>Difference</i>	-189.01*	-29.73	-76.80
<i>90% Confidence Interval</i>	(-366.0   -12.0)	(-138.7   79.2)	(-182.9   29.3)
<i>P-Value</i>	0.079	0.654	0.234

\* Statistically significant at the ten percent level.

<sup>a</sup>Results are cumulative across all available quarters.

<sup>b</sup>Year 1 refers to the one-year period after a beneficiary's enrollment in the program, Year 2 refers to the subsequent one-year period.

<sup>c</sup>The estimate represents the difference in the number of beneficiaries with at least one readmission for every beneficiary who has an inpatient admission, as compared between the intervention and control groups during the relevant year in the intervention period.

Note: Welvie delivered its HCIA intervention to Ohio MA beneficiaries from September 2012 to December 2015.

**Appendix Table C-7: Aggregate Inpatient Readmissions: Cumulative and Yearly Differences After Welvie Enrollment, MA Ohio Cohort, Welvie-Provided MA Data**

Measures	Full Intervention Period <sup>a</sup> (11 quarters)	Year 1 <sup>b</sup>	Year 2
<i>Number of Participants</i>	82,709	82,709	77,652
<b>30-Day Hospital Readmissions Following All Inpatient Admissions:</b>			
<i>Difference<sup>c</sup></i>	-134.24	-42.11	-0.49
<i>90% Confidence Interval</i>	(-298.4   29.9)	(-150.7   66.5)	(-95.6   94.6)
<i>P-Value</i>	0.178	0.524	0.993
<b>Inpatient Surgery Admissions</b>			
<i>Difference</i>	-74.22	-38.79	-27.78
<i>90% Confidence Interval</i>	(-149.2   0.8)	(-95.5   17.9)	(-74.1   18.5)
<i>P-Value</i>	0.104	0.261	0.324
<b>Inpatient Preference Sensitive Orthopedic Surgery Admissions</b>			
<i>Difference</i>	-25.31	-14.82	-10.62
<i>90% Confidence Interval</i>	(-51.2   0.6)	(-34.5   4.9)	(-26.7   5.5)
<i>P-Value</i>	0.108	0.216	0.278



Measures	Full Intervention Period <sup>a</sup> (11 quarters)	Year 1 <sup>b</sup>	Year 2
<b>Inpatient Preference Sensitive Cardiac Surgery Admissions</b>			
<i>Difference</i>	-19.35	-14.53	-0.95
<i>90% Confidence Interval</i>	(-48.7   10.0)	(-36.6   7.5)	(-18.9   17.0)
<i>P-Value</i>	0.278	0.279	0.930
<b>30-Day Hospital Unplanned Readmissions Following All Inpatient Admissions:</b>			
<i>Difference</i>	-157.42	-33.84	-28.18
<i>90% Confidence Interval</i>	(-318.1   3.3)	(-140.3   72.6)	(-121.0   64.7)
<i>P-Value</i>	0.107	0.601	0.618

<sup>a</sup>Results are cumulative across all available quarters.

<sup>b</sup>Year 1 refers to the one-year period after a beneficiary's enrollment in the program, Year 2 refers to the subsequent one-year period.

<sup>c</sup>The estimate represents the difference in the number of beneficiaries with at least one readmission for every beneficiary who has an inpatient admission, as compared between the intervention and control groups during the relevant year in the intervention period.

Note: Welvie delivered its HCIA intervention to Ohio MA beneficiaries from September 2012 to December 2015.

**Appendix Table C-8: Aggregate Inpatient Readmissions: Cumulative and Yearly Differences After Welvie Enrollment, MA Texas Cohort, IDR MA Data**

Measures	Full Intervention Period <sup>a</sup> (6 quarters)	Year 1 <sup>b</sup>
<i>Number of Participants</i>	48,933	48,933
<b>30-Day Hospital Readmissions Following:</b>		
<b>All Inpatient Admissions</b>		
<i>Difference<sup>c</sup></i>	45.14	32.86
<i>90% Confidence Interval</i>	(-50.8   141.1)	(-46.6   112.3)
<i>P-Value</i>	0.439	0.496
<b>Inpatient Surgery Admissions</b>		
<i>Difference</i>	60.85*	32.38
<i>90% Confidence Interval</i>	(9.7   112.0)	(-10.4   75.2)
<i>P-Value</i>	0.050	0.213
<b>Inpatient Preference Sensitive Orthopedic Surgery Admissions</b>		
<i>Difference</i>	11.09	10.39
<i>90% Confidence Interval</i>	(-7.8   30.0)	(-6.0   26.8)
<i>P-Value</i>	0.335	0.298
<b>Inpatient Preference Sensitive Cardiac Surgery Admissions</b>		
<i>Difference</i>	-3.60	-7.49

Measures	Full Intervention Period <sup>a</sup> (6 quarters)	Year 1 <sup>b</sup>
<i>90% Confidence Interval</i>	(-22.2   15.0)	(-23.7   8.7)
<i>P-Value</i>	0.750	0.446
<b>30-Day Hospital Unplanned Readmissions Following:</b>		
<b>All Inpatient Admissions</b>		
<i>Difference</i>	33.70	23.47
<i>90% Confidence Interval</i>	(-59.8   127.2)	(-53.8   100.7)
<i>P-Value</i>	0.553	0.617

\* Statistically significant at the ten percent level.

<sup>a</sup>Results are cumulative across all available quarters.

<sup>b</sup>Year 1 refers to the one-year period after a beneficiary's enrollment in the program.

<sup>c</sup>The estimate represents the difference in the number of beneficiaries with at least one readmission for every beneficiary who has an inpatient admission, as compared between the intervention and control groups during the relevant year in the intervention period.

Note: Welvie delivered its HCIA intervention to Texas MA beneficiaries from May 2014 to December 2015.

**Appendix Table C-9: Aggregate Inpatient Readmissions: Cumulative and Yearly Differences After Welvie Enrollment, MA Texas Cohort, Welvie-Provided MA Data**

Measures	Full Intervention Period <sup>a</sup> (6 quarters)	Year 1 <sup>b</sup>
<i>Number of Participants</i>	48,933	48,933
<b>30-Day Hospital Readmissions Following:</b>		
<b>All Inpatient Admissions</b>		
<i>Difference<sup>c</sup></i>	98.46	64.38
<i>90% Confidence Interval</i>	(-3.4   200.3)	(-20.7   149.5)
<i>P-Value</i>	0.112	0.213
<b>Inpatient Surgery Admissions</b>		
<i>Difference</i>	57.06*	25.86
<i>90% Confidence Interval</i>	(4.1   110.0)	(-19.2   70.9)
<i>P-Value</i>	0.076	0.345
<b>Inpatient Preference Sensitive Orthopedic Surgery Admissions</b>		
<i>Difference</i>	2.35	6.36
<i>90% Confidence Interval</i>	(-17.3   22.0)	(-10.8   23.5)
<i>P-Value</i>	0.844	0.543
<b>Inpatient Preference Sensitive Cardiac Surgery Admissions</b>		
<i>Difference</i>	-1.63	-8.15
<i>90% Confidence Interval</i>	(-23.2   20.0)	(-27.0   10.7)

Measures	Full Intervention Period <sup>a</sup> (6 quarters)	Year 1 <sup>b</sup>
<i>P-Value</i>	0.901	0.477
<b>30-Day Hospital Unplanned Readmissions Following:</b>		
<b>All Inpatient Admissions</b>		
<i>Difference</i>	89.68	60.10
<i>90% Confidence Interval</i>	(-10.2   189.6)	(-23.0   143.2)
<i>P-Value</i>	0.140	0.234

\* Statistically significant at the ten percent level.

<sup>a</sup>Results are cumulative across all available quarters.

<sup>b</sup>Year 1 refers to the one-year period after a beneficiary's enrollment in the program.

<sup>c</sup>The estimate represents the difference in the number of beneficiaries with at least one readmission for every beneficiary who has an inpatient admission, as compared between the intervention and control groups during the relevant year in the intervention period.

Note: Welvie delivered its HCIA intervention to Texas MA beneficiaries from May 2014 to December 2015.

**Appendix Table C-10: Quarterly Difference in Mortality per 1,000 Beneficiaries after Welvie Enrollment, Ohio MA, and Texas MA ITT Analysis Cohorts, IDR MA Data**

Medicare Cohort	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11
Ohio Medicare Advantage											
<i>Number of Participant Beneficiaries</i>	82,709	81,890	80,965	78,386	77,652	76,733	75,868	71,140	70,401	68,487	67,534
<i>Difference<sup>a</sup></i>	0.05	-0.23	-0.37	-0.28	0.09	0.29	-0.28	0.02	0.11	-0.80	-0.36
<i>90% Confidence Interval</i>	(-0.8   0.9)	(-1.1   0.6)	(-1.2   0.5)	(-1.1   0.5)	(-0.8   0.9)	(-0.6   1.2)	(-1.2   0.6)	(-0.9   0.9)	(-0.8   1.0)	(-1.8   0.2)	(-1.3   0.6)
<i>P-Value</i>	0.924	0.664	0.464	0.573	0.861	0.595	0.596	0.971	0.850	0.196	0.543
Texas Medicare Advantage											
<i>Number of Participant Beneficiaries</i>	48,933	48,884	42,661	42,206	41,813	41,334					
<i>Difference<sup>a</sup></i>	-0.04	0.23	0.08	-0.70	0.81	-0.11					
<i>90% Confidence Interval</i>	(-0.4   0.3)	(-0.3   0.7)	(-1.1   1.2)	(-1.8   0.4)	(-0.3   1.9)	(-1.2   1.0)					
<i>P-Value</i>	0.843	0.454	0.909	0.295	0.219	0.865					

<sup>a</sup>The “difference” estimate represents the difference in the number of deaths per 1,000 beneficiaries between the intervention group and control group in the relevant quarter of the intervention period. There were no deaths in the intervention or control groups prior to program enrollment as beneficiaries were required to be alive on program start date to be included in the study.

**Appendix Table C-11: Quarterly Difference in Mortality per 1,000 Beneficiaries after Welvie Enrollment, Ohio MA, and Texas MA ITT Analysis Cohorts, Welvie-Provided MA Data**

Medicare Cohort	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11
Ohio Medicare Advantage											
<i>Number of Participant Beneficiaries</i>	82,709	81,890	80,965	78,386	77,652	76,733	75,868	71,140	70,401	68,487	67,534
<i>Difference<sup>a</sup></i>	0.05	-0.23	-0.37	-0.28	0.09	0.29	-0.28	0.02	0.11	-0.80	-0.36
<i>90% Confidence Interval</i>	(-0.8   0.9)	(-1.1   0.6)	(-1.2   0.5)	(-1.1   0.5)	(-0.8   0.9)	(-0.6   1.2)	(-1.2   0.6)	(-0.9   0.9)	(-0.8   1.0)	(-1.8   0.2)	(-1.3   0.6)
<i>P-Value</i>	0.924	0.664	0.464	0.573	0.861	0.595	0.596	0.971	0.850	0.196	0.543
Texas Medicare Advantage											
<i>Number of Participant Beneficiaries</i>	48,933	48,884	42,661	42,206	41,813	41,334					
<i>Difference<sup>a</sup></i>	-0.04	0.23	0.08	-0.70	0.81	-0.11					

Medicare Cohort	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11
90% Confidence Interval	(-0.4   0.3)	(-0.3   0.7)	(-1.1   1.2)	(-1.8   0.4)	(-0.3   1.9)	(-1.2   1.0)					
P-Value	0.843	0.454	0.909	0.295	0.219	0.865					

<sup>a</sup>The “difference” estimate represents the difference in the number of deaths per 1,000 beneficiaries between the intervention group and control group in the relevant quarter of the intervention period. There were no deaths in the intervention or control groups prior to program enrollment as beneficiaries were required to be alive on program start date to be included in the study.

**Appendix Table C-12: Quarterly Difference in Readmissions per 1,000 IP Admissions after Welvie Enrollment, Ohio MA ITT Analysis Cohort, IDR MA Data**

Measures	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11
Number of Participant Beneficiaries	82,709	81,890	80,965	78,386	77,652	76,733	75,868	71,140	70,401	68,487	67,534
<b>30-Day Hospital Readmissions per 1,000 Beneficiaries Following:</b>											
All Inpatient Admissions	3997	4366	4397	4038	3905	3977	4030	3696	3765	4028	3773
Difference <sup>a</sup>	1.21	8.23	-14.29*	1.11	-13.96*	6.41	-5.00	-3.94	-7.02	-9.17	-4.33
90% Confidence Interval	(-12.0   14.4)	(-5.0   21.5)	(-27.5   -1.1)	(-12.3   14.6)	(-27.5   -0.4)	(-7.5   20.4)	(-18.6   8.6)	(-18.7   10.8)	(-20.8   6.8)	(-22.9   4.6)	(-18.4   9.7)
P-Value	0.881	0.306	0.075	0.892	0.091	0.450	0.546	0.660	0.404	0.272	0.613
Inpatient Surgery Admissions	1367	1385	1409	1330	1322	1313	1339	1243	1249	1253	1155
Difference	7.39	1.67	-13.27	2.63	-1.34	4.06	-15.98	-40.51***	-4.48	14.25	-14.21
90% Confidence Interval	(-13.8   28.6)	(-21.0   24.4)	(-35.4   8.9)	(-18.7   24.0)	(-22.4   19.7)	(-17.6   25.7)	(-37.8   5.9)	(-64.4   -16.7)	(-27.2   18.2)	(-9.2   37.7)	(-38.3   9.9)
P-Value	0.567	0.903	0.324	0.839	0.917	0.757	0.229	0.005	0.745	0.317	0.333
Inpatient PS <sup>b</sup> Orthopedic Surgery Admissions	411	393	406	339	384	358	353	326	332	325	293
Difference	2.40	-0.48	4.45	-10.58	-14.24	5.59	-26.47	-24.98	-10.98	7.44	-32.23
90% Confidence Interval	(-26.1   30.9)	(-31.5   30.6)	(-25.0   33.9)	(-35.3   14.2)	(-40.6   12.1)	(-24.3   35.5)	(-56.6   3.7)	(-60.3   10.3)	(-42.5   20.5)	(-21.9   36.7)	(-72.1   7.6)
P-Value	0.890	0.980	0.804	0.482	0.374	0.758	0.149	0.244	0.567	0.676	0.184
Inpatient PS Cardiac Surgery Admissions	187	197	194	134	164	158	166	171	160	145	165
Difference	-36.28	-20.38	7.51	-22.97	-1.14	13.57	-57.41	15.64	-49.59	5.99	36.77

Measures	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11
<i>90% Confidence Interval</i>	(-103.2   30.7)	(-86.2   45.4)	(-52.9   67.9)	(-91.6   45.6)	(-66.5   64.2)	(-52.7   79.8)	(-122.2   7.4)	(-52.5   83.8)	(-112.2   13.0)	(-60.1   72.1)	(-30.2   103.7)
<i>P-Value</i>	0.373	0.610	0.838	0.582	0.977	0.736	0.145	0.706	0.192	0.882	0.366
<b>30-Day Hospital Unplanned Readmissions per 1,000 Beneficiaries Following:</b>											
All Inpatient Admissions	3997	4366	4397	4038	3905	3977	4030	3696	3765	4028	3773
<i>Difference</i>	-1.25	8.73	-14.85*	0.61	-15.28*	5.40	-6.00	-3.90	-6.18	-10.16	-4.86
<i>90% Confidence Interval</i>	(-14.1   11.6)	(-4.2   21.6)	(-27.8   -1.9)	(-12.6   13.8)	(-28.5   -2.1)	(-8.2   19.0)	(-19.2   7.2)	(-18.3   10.5)	(-19.6   7.3)	(-23.6   3.3)	(-18.7   8.9)
<i>P-Value</i>	0.873	0.265	0.059	0.939	0.057	0.514	0.456	0.655	0.450	0.214	0.563

\* Statistically significant at the ten percent level.

\*\*\* Statistically significant at the one percent level.

<sup>a</sup>The “difference” estimate represents the difference in the number of beneficiaries with at least one readmission for every 1,000 beneficiaries who have at least one inpatient admission, as compared between the intervention and control groups during the relevant quarter in the intervention period.

<sup>b</sup>PS = Preference Sensitive.

**Appendix Table C-13: Quarterly Difference in Readmissions per 1,000 IP Admissions after Welvie Enrollment, Ohio MA ITT Analysis Cohort, Welvie-Provided MA Data**

Measures	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11
<i>Number of Participant Beneficiaries</i>	82,709	81,890	80,965	78,386	77,652	76,733	75,868	71,140	70,401	68,487	67,534
<b>30-Day Hospital Readmissions per 1,000 Beneficiaries Following:</b>											
All Inpatient Admissions	4470	4324	3728	3381	3353	3139	2919	2816	2781	2982	2584
<i>Difference<sup>a</sup></i>	-2.67	8.39	-12.30	-6.09	-7.88	3.45	-3.36	8.84	-11.35	-13.01	-8.23
<i>90% Confidence Interval</i>	(-15.5   10.2)	(-4.9   21.6)	(-26.4   1.8)	(-20.7   8.5)	(-22.4   6.7)	(-12.1   19.0)	(-19.1   12.4)	(-7.7   25.4)	(-27.2   4.5)	(-29.0   2.9)	(-25.0   8.6)
<i>P-Value</i>	0.732	0.298	0.153	0.493	0.373	0.715	0.726	0.379	0.239	0.180	0.420
Inpatient Surgery Admissions <sup>+</sup>	1479	1317	1161	1070	710	988	943	898	489		
<i>Difference</i>	-2.29	2.46	-20.69	-13.66	-6.77	8.67	-2.71	-32.28*	-15.66		
<i>90% Confidence Interval</i>	(-23.0   18.4)	(-20.2   25.2)	(-44.6   3.2)	(-36.7   9.4)	(-34.4   20.8)	(-16.0   33.3)	(-27.8   22.4)	(-59.7   -4.9)	(-48.9   17.6)		

Measures	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11
<i>P-Value</i>	0.856	0.858	0.155	0.330	0.687	0.563	0.860	0.053	0.438		
Inpatient PS <sup>b</sup> Orthopedic Surgery Admissions <sup>+</sup>	427	353	326	268	188	262	237	225	147		
<i>Difference</i>	-11.13	-9.06	-9.17	-14.47	-27.76	7.27	-3.44	-28.85	0.90		
<i>90% Confidence Interval</i>	(-38.7   16.4)	(-38.8   20.7)	(-38.6   20.3)	(-39.9   10.9)	(-56.8   1.3)	(-27.8   42.4)	(-38.9   32.0)	(-67.2   9.5)	(-33.4   35.2)		
<i>P-Value</i>	0.507	0.616	0.609	0.349	0.116	0.733	0.873	0.216	0.966		
Inpatient PS Cardiac Surgery Admissions <sup>+</sup>	207	190	154	105	102	123	102	133	62		
<i>Difference</i>	-25.49	15.56	-30.42	-71.61	-1.40	6.86	-37.96	16.68	-62.46		
<i>90% Confidence Interval</i>	(-88.2   37.2)	(-50.0   81.1)	(-97.3   36.5)	(-144.0   0.7)	(-84.2   81.4)	(-70.0   83.7)	(-113.8   37.9)	(-58.8   92.2)	(-180.0   55.1)		
<i>P-Value</i>	0.503	0.696	0.454	0.103	0.978	0.883	0.411	0.716	0.382		
<b>30-Day Hospital Unplanned Readmissions per 1,000 Beneficiaries Following:</b>											
All Inpatient Admissions	4470	4324	3728	3381	3353	3139	2919	2816	2781	2982	2584
<i>Difference</i>	-3.65	10.62	-11.96	-5.57	-9.99	1.82	-6.09	6.16	-11.07	-12.97	-10.04
<i>90% Confidence Interval</i>	(-16.2   8.9)	(-2.4   23.6)	(-25.8   1.9)	(-19.9   8.7)	(-24.1   4.1)	(-13.3   17.0)	(-21.5   9.3)	(-10.1   22.4)	(-26.7   4.5)	(-28.6   2.7)	(-26.5   6.5)
<i>P-Value</i>	0.632	0.179	0.156	0.522	0.245	0.843	0.515	0.533	0.243	0.173	0.317

\* Statistically significant at the ten percent level.

<sup>+</sup> Estimates are not reported for Q10 and Q11 due to an insufficient number of qualifying admissions for this measure.

<sup>a</sup>The “difference” estimate represents the difference in the number of beneficiaries with at least one readmission for every 1,000 beneficiaries who have at least one inpatient admission, as compared between the intervention and control groups during the relevant quarter in the intervention period.

<sup>b</sup>PS = Preference Sensitive

**Appendix Table C-14: Quarterly Difference in Readmissions per 1,000 IP Admissions after Welvie Enrollment, Texas MA ITT Analysis Cohort, IDR MA Data**

Measures	Q1	Q2	Q3	Q4	Q5	Q6
<i>Number of Participant Beneficiaries</i>	48,933	48,884	42,661	42,206	41,813	41,334
<b>30-Day Hospital Readmissions per 1,000 Beneficiaries Following:</b>						
All Inpatient Admissions	2068	2172	2137	2302	2137	1913
<i>Difference<sup>a</sup></i>	22.34**	-4.72	-9.68	7.64	2.28	3.88
<i>90% Confidence Interval</i>	(4.5   40.2)	(-23.0   13.6)	(-28.5   9.1)	(-10.5   25.8)	(-16.5   21.0)	(-14.9   22.7)
<i>P-Value</i>	0.039	0.671	0.397	0.489	0.842	0.734
Inpatient Surgery Admissions	711	723	681	754	684	656
<i>Difference</i>	15.23	14.16	3.36	11.97	33.23*	8.76
<i>90% Confidence Interval</i>	(-13.5   44.0)	(-14.4   42.7)	(-28.8   35.5)	(-17.9   41.9)	(3.7   62.8)	(-20.9   38.4)
<i>P-Value</i>	0.384	0.414	0.863	0.510	0.064	0.627
Inpatient PS <sup>b</sup> Orthopedic Surgery Admissions	157	176	170	194	169	189
<i>Difference</i>	16.50	9.19	12.91	20.56	-12.97	15.31
<i>90% Confidence Interval</i>	(-30.8   63.8)	(-35.7   54.1)	(-36.3   62.1)	(-26.1   67.3)	(-45.3   19.4)	(-25.3   55.9)
<i>P-Value</i>	0.566	0.736	0.666	0.469	0.510	0.535
Inpatient PS Cardiac Surgery Admissions	95	108	80	93	65	83
<i>Difference</i>	-37.74	9.26	-75.00	11.74	0.16	46.74
<i>90% Confidence Interval</i>	(-113.4   37.9)	(-65.7   84.2)	(-174.4   24.4)	(-85.2   108.7)	(-91.5   91.8)	(-38.2   131.7)
<i>P-Value</i>	0.412	0.839	0.215	0.842	0.998	0.365
<b>30-Day Hospital Unplanned Readmissions per 1,000 Beneficiaries Following:</b>						
All Inpatient Admissions	2068	2172	2137	2302	2137	1913
<i>Difference</i>	22.57**	-4.08	-11.82	4.75	3.62	1.30
<i>90% Confidence Interval</i>	(5.4   39.7)	(-21.9   13.7)	(-30.3   6.6)	(-12.9   22.4)	(-14.7   22.0)	(-17.1   19.7)
<i>P-Value</i>	0.030	0.706	0.291	0.659	0.745	0.907

\* Statistically significant at the ten percent level.

\*\* Statistically significant at the five percent level.

<sup>a</sup>The “difference” estimate represents the difference in the number of beneficiaries with at least one readmission for every 1,000 beneficiaries who have at least one inpatient admission, as compared between the intervention and control groups during the relevant quarter in the intervention period.

<sup>b</sup>PS = Preference Sensitive.



**Appendix Table C-15: Quarterly Difference in Readmissions per 1,000 IP Admissions after Welvie Enrollment, Texas MA ITT Analysis Cohort, Welvie-Provided MA Data**

Measures	Q1	Q2	Q3	Q4	Q5	Q6
<i>Number of Participant Beneficiaries</i>	48,933	48,884	42,661	42,206	41,813	41,334
<b>30-Day Hospital Readmissions per 1,000 Beneficiaries Following:</b>						
All Inpatient Admissions	2331	2463	2301	2308	2134	1969
<i>Difference<sup>a</sup></i>	21.31**	1.62	-5.02	9.65	11.16	5.21
<i>90% Confidence Interval</i>	(3.8   38.8)	(-16.0   19.3)	(-23.7   13.7)	(-8.9   28.2)	(-8.0   30.3)	(-14.2   24.7)
<i>P-Value</i>	0.045	0.880	0.659	0.393	0.338	0.660
Inpatient Surgery Admissions	842	860	729	746	666	657
<i>Difference</i>	14.35	-4.24	1.89	21.49	40.94**	6.00
<i>90% Confidence Interval</i>	(-12.2   40.9)	(-30.7   22.2)	(-29.2   33.0)	(-8.4   51.4)	(11.5   70.3)	(-24.4   36.4)
<i>P-Value</i>	0.373	0.792	0.920	0.237	0.022	0.745
Inpatient PS <sup>b</sup> Orthopedic Surgery Admissions	192	220	169	184	156	187
<i>Difference</i>	18.37	-5.29	-13.84	34.41	-28.64	2.48
<i>90% Confidence Interval</i>	(-25.4   62.1)	(-44.4   33.9)	(-62.1   34.4)	(-15.5   84.3)	(-60.0   2.7)	(-40.9   45.9)
<i>P-Value</i>	0.490	0.824	0.637	0.256	0.133	0.925
Inpatient PS Cardiac Surgery Admissions	113	137	98	115	72	97
<i>Difference</i>	-46.96	-31.01	-31.56	39.13	31.62	43.74
<i>90% Confidence Interval</i>	(-120.7   26.8)	(-108.1   46.1)	(-120.5   57.4)	(-47.1   125.4)	(-64.3   127.6)	(-38.4   125.9)
<i>P-Value</i>	0.295	0.508	0.559	0.455	0.588	0.381
<b>30-Day Hospital Unplanned Readmissions per 1,000 Beneficiaries Following:</b>						
All Inpatient Admissions	2331	2463	2301	2308	2134	1969
<i>Difference</i>	22.25**	1.22	-6.14	8.39	10.45	3.69
<i>90% Confidence Interval</i>	(5.3   39.2)	(-16.1   18.5)	(-24.5   12.3)	(-9.7   26.5)	(-8.4   29.3)	(-15.7   23.1)
<i>P-Value</i>	0.031	0.908	0.583	0.446	0.361	0.754

\*\* Statistically significant at the five percent level.

<sup>a</sup>The “difference” estimate represents the difference in the number of beneficiaries with at least one readmission for every 1,000 beneficiaries who have at least one inpatient admission, as compared between the intervention and control groups during the relevant quarter in the intervention period.

<sup>b</sup>PS = Preference Sensitive.

**Appendix Table C-16: Quarterly Mortality and Readmission per 1,000 Beneficiaries for Participants and Controls, Welvie Ohio MA ITT Analysis Cohort, Q1 to Q6, IDR MA Data**

Measures	Q1		Q2		Q3		Q4		Q5		Q6	
	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls
<i>Number of Participant Beneficiaries</i>	82,709	80,971	81,890	80,173	80,965	79,249	78,386	76,749	77,652	76,009	76,733	75,000
<b>All-Cause Mortality per 1,000 Beneficiaries</b>	9.9	9.9	11.3	11.5	9.9	10.3	9.4	9.6	10.4	10.3	11.3	11.0
<b>30-Day Hospital Readmission per 1,000 Beneficiaries Following:</b>												
All Inpatient Admissions	152.4	151.2	176.4	168.1	165.6	179.9	161.7	160.6	151.6	165.6	176.5	170.1
Inpatient Surgery Admissions	133.9	126.5	159.6	157.9	147.6	160.9	129.3	126.7	125.6	126.9	130.2	126.2
Inpatient PS <sup>a</sup> Orthopedic Surgery Admissions	65.7	63.3	73.8	74.3	69.0	64.5	35.4	46.0	44.3	58.5	64.2	58.7
Inpatient PS Cardiac Surgery Admissions	155.1	191.4	182.7	203.1	159.8	152.3	149.3	172.2	164.6	165.8	158.2	144.7
<b>30-day Hospital Unplanned Readmission per 1,000 Beneficiaries, Following Any Inpatient Admission</b>	141.6	142.9	165.1	156.4	155.8	170.6	153.5	152.9	139.8	155.1	165.2	159.8

<sup>a</sup>PS = Preference Sensitive.

**Appendix Table C-17: Quarterly Mortality and Readmission per 1,000 Beneficiaries for Participants and Controls, Welvie Ohio MA ITT Analysis Cohort, Q7 to Q11, IDR MA Data**

Measures	Q7		Q8		Q9		Q10		Q11	
	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls
<i>Number of Participant Beneficiaries</i>	75,868	74,176	71,140	69,636	70,401	68,914	68,487	67,018	67,534	66,006
<b>All-Cause Mortality per 1,000 Beneficiaries</b>	10.6	10.9	10.4	10.4	11.2	11.1	12.9	13.7	11.6	12.0
<b>30-Day Hospital Readmission per 1,000 Beneficiaries Following:</b>										
All Inpatient Admissions	165.3	170.3	176.4	180.4	154.1	161.1	161.1	170.3	163.3	167.6

Measures	Q7		Q8		Q9		Q10		Q11	
	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls
Inpatient Surgery Admissions	129.9	145.9	128.7	169.2	136.1	140.6	147.6	133.4	141.1	155.3
Inpatient PS <sup>a</sup> Orthopedic Surgery Admissions	48.2	74.6	61.3	86.3	60.2	71.2	55.4	47.9	78.5	110.7
Inpatient PS Cardiac Surgery Admissions	132.5	189.9	181.3	165.6	106.2	155.8	137.9	131.9	163.6	126.9
<b>30-day Hospital Unplanned Readmission per 1,000 Beneficiaries, Following Any Inpatient Admission</b>	153.8	159.8	165.3	169.2	144	150.1	151.7	161.8	155.3	160.2

<sup>a</sup>PS = Preference Sensitive

**Appendix Table C-18: Quarterly Mortality and Readmission per 1,000 Beneficiaries for Participants and Controls, Welvie Ohio MA ITT Analysis Cohort, Q1 to Q6, Welvie-Provided MA Data**

Measures	Q1		Q2		Q3		Q4		Q5		Q6	
	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls
<i>Number of Participant Beneficiaries</i>	82,709	80,971	81,890	80,173	80,965	79,249	78,386	76,749	77,652	76,009	76,733	75,000
<b>All-Cause Mortality per 1,000 Beneficiaries</b>	9.9	9.9	11.3	11.5	9.9	10.3	9.4	9.6	10.4	10.3	11.3	11.0
<b>30-Day Hospital Readmission per 1,000 Beneficiaries Following:</b>												
All Inpatient Admissions	159.3	162.0	174.1	165.8	161.5	173.8	156.8	162.9	151.2	159.1	170.8	167.3
Inpatient Surgery Admissions	133.2	135.5	151.1	148.6	139.5	160.2	113.1	126.7	115.5	122.3	128.5	119.9
Inpatient PS <sup>a</sup> Orthopedic Surgery Admissions	56.2	67.3	56.7	65.7	49.1	58.3	26.1	40.6	16.0	43.7	64.9	57.6
Inpatient PS Cardiac Surgery Admissions	164.3	189.7	189.5	173.9	149.4	179.8	114.3	185.9	166.7	168.1	162.6	155.7
<b>30-day Hospital Unplanned Readmission per 1,000 Beneficiaries, Following Any Inpatient Admission</b>	150.6	154.2	167.4	156.8	154.0	165.9	148.8	154.3	140.2	150.2	159	157.1

<sup>a</sup>PS = Preference Sensitive.

**Appendix Table C-19: Quarterly Mortality and Readmission per 1,000 Beneficiaries for Participants and Controls, Welvie Ohio MA ITT Analysis Cohort, Q7 to Q11, IDR MA Data**

Measures	Q7		Q8		Q9		Q10		Q11	
	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls
<i>Number of Participant Beneficiaries</i>	75,868	74,176	71,140	69,636	70,401	68,914	68,487	67,018	67,534	66,006
<b>All-Cause Mortality per 1,000 Beneficiaries</b>	10.6	10.9	10.4	10.4	11.2	11.1	12.9	13.7	11.6	12.0
<b>30-Day Hospital Readmission per 1,000 Beneficiaries Following:</b>										
All Inpatient Admissions	162.0	165.4	172.9	164.1	148.1	159.5	161.6	174.6	160.6	168.8
Inpatient Surgery Admissions <sup>+</sup>	126.2	128.9	121.4	153.7	106.3	122.0	No data		No data	
Inpatient PS <sup>a</sup> Orthopedic Surgery Admissions <sup>+</sup>	54.9	58.3	44.4	73.3	34.0	33.1	No data		No data	
Inpatient PS Cardiac Surgery Admissions <sup>+</sup>	127.5	165.4	172.9	156.2	129.0	191.5	No data		No data	
<b>30-day Hospital Unplanned Readmission per 1,000 Beneficiaries, Following Any Inpatient Admission</b>	151.1	157.2	164.8	158.6	142	153.1	153.9	166.9	152.5	162.5

<sup>a</sup>PS = Preference Sensitive.

<sup>+</sup> Estimates are not reported for Q10 and Q11 due to an insufficient number of qualifying admissions for this measure.

**Appendix Table C-20: Quarterly Mortality and Readmission per 1,000 Beneficiaries for Participants and Controls, Welvie Texas MA ITT Analysis Cohort, Q1 to Q6, IDR MA Data**

Measures	Q1		Q2		Q3		Q4		Q5		Q6	
	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls
<i>Number of Participant Beneficiaries</i>	48,933	48,947	48,884	48,896	42,661	42,890	42,206	42,436	41,813	42,011	41,334	41,589
<b>All-Cause Mortality per 1,000 Beneficiaries</b>	1.0	1.0	2.3	2.1	10.7	10.6	9.3	10.0	9.5	8.7	9.1	9.2
<b>30-Day Hospital Readmission per 1,000 Beneficiaries Following:</b>												
All Inpatient Admissions	151.8	129.5	155.6	160.3	167.1	176.7	171.6	163.9	163.3	161.0	147.4	143.5

Measures	Q1		Q2		Q3		Q4		Q5		Q6	
	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls
Inpatient Surgery Admissions	128.0	112.8	131.4	117.2	149.8	146.4	151.2	139.2	146.2	113.0	128.0	119.3
Inpatient PS <sup>a</sup> Orthopedic Surgery Admissions	82.8	66.3	79.5	70.4	82.4	69.4	92.8	72.2	29.6	42.6	68.8	53.5
Inpatient PS Cardiac Surgery Admissions	84.2	122.0	120.4	111.1	125.0	200.0	182.8	171.1	138.5	138.3	156.6	109.9
<b>30-day Hospital Unplanned Readmission per 1,000 Beneficiaries, Following Any Inpatient Admission</b>	139.3	116.7	146.4	150.5	157.7	169.5	158.6	153.8	155.4	151.7	138.5	137.2

<sup>a</sup>PS = Preference Sensitive.

**Appendix Table C-21: Quarterly Mortality and Readmission per 1,000 Beneficiaries for Participants and Controls, Welvie Texas MA ITT Analysis Cohort, Q1 to Q6, Welvie-Provided MA Data**

Measures	Q1		Q2		Q3		Q4		Q5		Q6	
	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls
<i>Number of Participant Beneficiaries</i>	48,933	48,947	48,884	48,896	42,661	42,890	42,206	42,436	41,813	42,011	41,334	41,589
<b>All-Cause Mortality per 1,000 Beneficiaries</b>	1.0	1.0	2.3	2.1	10.7	10.6	9.3	10.0	9.5	8.7	9.1	9.2
<b>30-Day Hospital Readmission per 1,000 Beneficiaries Following:</b>												
All Inpatient Admissions	166.9	145.6	171.3	169.7	183.4	188.4	183.3	173.6	178.1	166.9	166.6	161.4
Inpatient Surgery Admissions	129.5	115.1	126.7	131.0	150.9	149.0	152.8	131.3	147.1	106.2	133.9	127.9
Inpatient PS <sup>a</sup> Orthopedic Surgery Admissions	88.5	70.2	68.2	73.5	71.0	84.8	108.7	74.3	19.2	47.9	69.5	67.0
Inpatient PS Cardiac Surgery Admissions	106.2	153.2	146.0	177.0	142.9	174.4	191.3	152.2	180.6	148.9	164.9	121.2
<b>30-day Hospital Unplanned Readmission per 1,000 Beneficiaries, Following Any Inpatient Admission</b>	155.3	133.0	163.2	162.0	175.1	181.3	172	163.6	170.1	159.7	164	160.3

<sup>a</sup>PS = Preference Sensitive.

### C.3 Health Service Resource Use

Resource use results for MA Ohio and MA Texas beneficiaries derived from MA IDR data and Welvie-provided MA data are presented in the tables below. The overall conclusions derived from analyses using each of the two data sources were generally similar, but statistical significance and estimated effect sizes differed by measure.

Two notable differences were the estimated effects of the MA Ohio Welvie intervention on inpatient surgeries and surgical hospital days, both in Q10 (Appendix Table C-30 and Appendix Table C-31). First, an increase of about 2 inpatient surgeries per 1,000 MA Ohio beneficiaries (p-value: 0.043) in Q10 was observed in the analysis using MA IDR data; however, in the analysis using Welvie-provided MA data there was a very small and nonsignificant decrease in inpatient surgeries in Q10. Second, in the analysis using MA IDR data, there was a statistically significant increase of about 17 surgical hospital days per 1,000 MA Ohio beneficiaries (p-value: 0.023) in Q10. Using Welvie-provided MA data, this outcome was not significant in Q10 and the magnitude of the effect was decreased. Similar differences were also observed in the IV analysis.

**Appendix Table C-22: Aggregate Surgery-Related Resource Use: Cumulative and Yearly DiD Estimates, Welvie MA Ohio Cohort, IDR MA Data**

Measures	Full Intervention Period <sup>a</sup> (11 quarters)	Year 1 <sup>b</sup>	Year 2
<i>Number of Participants</i>	82,709	82,709	77,652
<b>Inpatient Surgeries</b>			
<i>Difference-in-Difference</i>	-361.45	-263.46	-89.52
<i>90% Confidence Interval</i>	(-1,067.6   344.7)	(-575.2   48.3)	(-383.7   204.6)
<i>P-Value</i>	0.400	0.164	0.617
<b>Surgical Hospital Days</b>			
<i>Difference-in-Difference</i>	-2,346.22	-1,531.14	-1,016.18
<i>90% Confidence Interval</i>	(-7,902.7   3,210.3)	(-4,206.2   1,143.9)	(-3,304.9   1,272.6)
<i>P-Value</i>	0.487	0.346	0.465
<b>Inpatient Preference Sensitive Orthopedic Surgeries</b>			
<i>Difference-in-Difference</i>	130.03	27.48	77.79

Measures	Full Intervention Period <sup>a</sup> (11 quarters)	Year 1 <sup>b</sup>	Year 2
<i>90% Confidence Interval</i>	(-217.7   477.8)	(-126.9   181.8)	(-66.9   222.4)
<i>P-Value</i>	0.539	0.770	0.376
<b>Preference Sensitive Orthopedic Surgery Hospital Days</b>			
<i>Difference-in-Difference</i>	167.94	146.16	123.02
<i>90% Confidence Interval</i>	(-1,200.5   1,536.4)	(-462.7   755.0)	(-443.5   689.6)
<i>P-Value</i>	0.840	0.693	0.721
<b>Inpatient Preference Sensitive Cardiac Surgeries</b>			
<i>Difference-in-Difference</i>	200.01	59.41	50.40
<i>90% Confidence Interval</i>	(-53.6   453.6)	(-51.9   170.8)	(-54.8   155.6)
<i>P-Value</i>	0.194	0.380	0.431
<b>Inpatient Preference Sensitive Cardiac Surgical Hospital Days</b>			
<i>Difference-in-Difference</i>	1,323.28	309.05	333.81
<i>90% Confidence Interval</i>	(-596.9   3,243.4)	(-542.6   1,160.7)	(-471.4   1,139.0)
<i>P-Value</i>	0.257	0.551	0.495

<sup>a</sup>Results are cumulative across all available quarters.

<sup>b</sup>Year 1 refers to the one-year period after a beneficiary's enrollment in the program, Year 2 refers to the subsequent one-year period.

Note: Welvie delivered its HCIA intervention to Ohio MA beneficiaries from September 2012 to December 2015.

**Appendix Table C-23: Aggregate Surgery-Related Resource Use: Cumulative and Yearly DiD Estimates, Welvie MA Ohio Cohort, Welvie-Provided MA Data**

Measures	Full Intervention Period <sup>a</sup> (11 quarters)	Year 1 <sup>b</sup>	Year 2
<i>Number of Participants</i>	82,709	82,709	77,652
<b>Inpatient Surgeries</b>			
<i>Difference-in-Difference</i>	-497.06	-290.82*	-126.41
<i>90% Confidence Interval</i>	(-1,137.0   142.9)	(-540.6   -41.0)	(-412.9   160.1)

Measures	Full Intervention Period <sup>a</sup> (11 quarters)	Year 1 <sup>b</sup>	Year 2
<i>P-Value</i>	0.201	0.055	0.468
<b>Surgical Hospital Days</b>			
<i>Difference-in-Difference</i>	-3,369.11	-1,822.71	-1,373.63
<i>90% Confidence Interval</i>	(-8,625.7   1,887.5)	(-3,976.0   330.6)	(-3,745.6   998.3)
<i>P-Value</i>	0.292	0.164	0.341
<b>Inpatient Preference Sensitive Orthopedic Surgeries</b>			
<i>Difference-in-Difference</i>	40.95	-7.96	59.53
<i>90% Confidence Interval</i>	(-259.3   341.3)	(-125.3   109.4)	(-74.4   193.5)
<i>P-Value</i>	0.823	0.911	0.465
<b>Preference Sensitive Orthopedic Surgery Hospital Days</b>			
<i>Difference-in-Difference</i>	-512.36	-184.89	-135.48
<i>90% Confidence Interval</i>	(-1,688.3   663.6)	(-650.5   280.7)	(-659.5   388.5)
<i>P-Value</i>	0.474	0.514	0.671
<b>Inpatient Preference Sensitive Cardiac Surgeries</b>			
<i>Difference-in-Difference</i>	93.18	-7.89	26.26
<i>90% Confidence Interval</i>	(-139.4   325.7)	(-97.1   81.3)	(-77.5   130.0)
<i>P-Value</i>	0.510	0.884	0.677
<b>Inpatient Preference Sensitive Cardiac Surgical Hospital Days</b>			
<i>Difference-in-Difference</i>	1,074.46	189.26	305.95
<i>90% Confidence Interval</i>	(-665.9   2,814.8)	(-498.1   876.6)	(-496.7   1,108.6)
<i>P-Value</i>	0.310	0.651	0.531

\* Statistically significant at the ten percent level.

<sup>a</sup>Results are cumulative across all available quarters.

<sup>b</sup>Year 1 refers to the one-year period after a beneficiary's enrollment in the program, Year 2 refers to the subsequent one-year period.

Note: Welvie delivered its HCIA intervention to Ohio MA beneficiaries from September 2012 to December 2015.



**Appendix Table C-24: Aggregate Resource Use: Cumulative and Yearly DiD Estimates, Welvie MA Ohio Cohort, IDR MA Data**

Measures	Full Intervention Period <sup>a</sup> (11 quarters)	Year 1 <sup>b</sup>	Year 2
<i>Number of Participant Beneficiaries</i>	82,709	82,709	77,652
<b>Inpatient Admissions</b>			
<i>Difference-in-Difference</i>	-109.48	-107.23	-113.11
<i>90% Confidence Interval</i>	(-1,639.6   1,420.6)	(-785.8   571.3)	(-754.4   528.1)
<i>P-Value</i>	0.906	0.795	0.772
<b>Unplanned Inpatient Admissions</b>			
<i>Difference-in-Difference</i>	-380.02	-89.30	-264.18
<i>90% Confidence Interval</i>	(-1,765.9   1,005.8)	(-704.5   525.9)	(-845.5   317.1)
<i>P-Value</i>	0.652	0.811	0.455
<b>Hospital Days</b>			
<i>Difference-in-Difference</i>	-2,372.16	-1,021.23	-1,541.21
<i>90% Confidence Interval</i>	(-13,320.2   8,575.9)	(-6,037.7   3,995.3)	(-6,176.6   3,094.1)
<i>P-Value</i>	0.722	0.738	0.584

<sup>a</sup>Results are cumulative across all available quarters.

<sup>b</sup>Year 1 refers to the one-year period after a beneficiary's enrollment in the program, Year 2 refers to the subsequent one-year period.

Note: Welvie delivered its HCIA intervention to Ohio MA beneficiaries from September 2012 to December 2015

**Appendix Table C-25: Aggregate Resource Use: Cumulative and Yearly DiD Estimates, Welvie MA Ohio Cohort, Welvie-Provided MA Data**

Measures	Full Intervention Period <sup>a</sup> (11 quarters)	Year 1 <sup>b</sup>	Year 2
<i>Number of Participant Beneficiaries</i>	82,709	82,709	77,652
<b>Inpatient Admissions</b>			
<i>Difference-in-Difference</i>	-286.84	-122.47	-19.27

Measures	Full Intervention Period <sup>a</sup> (11 quarters)	Year 1 <sup>b</sup>	Year 2
<i>90% Confidence Interval</i>	(-1,681.3   1,107.6)	(-663.2   418.3)	(-645.8   607.2)
<i>P-Value</i>	0.735	0.710	0.960
<b>Unplanned Inpatient Admissions</b>			
<i>Difference-in-Difference</i>	-527.61	-102.14	-190.06
<i>90% Confidence Interval</i>	(-1,782.6   727.4)	(-590.9   386.6)	(-753.9   373.8)
<i>P-Value</i>	0.489	0.731	0.579
<b>Hospital Days</b>			
<i>Difference-in-Difference</i>	-1,338.08	-221.00	-102.38
<i>90% Confidence Interval</i>	(-11,458.7   8,782.6)	(-4,253.3   3,811.3)	(-4,688.6   4,483.9)
<i>P-Value</i>	0.828	0.928	0.971

<sup>a</sup>Results are cumulative across all available quarters.

<sup>b</sup>Year 1 refers to the one-year period after a beneficiary's enrollment in the program, Year 2 refers to the subsequent one-year period.

Note: Welvie delivered its HCIA intervention to Ohio MA beneficiaries from September 2012 to December 2015

**Appendix Table C-26: Aggregate Surgery-Related Resource Use: Cumulative and Yearly DiD Estimates, Welvie MA Texas Cohort, IDR MA Data**

Measures	Full Intervention Period <sup>a</sup> (6 quarters)	Year 1 <sup>b</sup>
<i>Number of Participants</i>	48,933	48,933
<b>Inpatient Surgeries</b>		
<i>Difference-in-Difference</i>	114.21	134.16
<i>90% Confidence Interval</i>	(-116.3   344.7)	(-39.9   308.2)
<i>P-Value</i>	0.415	0.205
<b>Surgical Hospital Days</b>		
<i>Difference-in-Difference</i>	655.75	445.92
<i>90% Confidence Interval</i>	(-1,410.2   2,721.7)	(-1,127.7   2,019.6)

Measures	Full Intervention Period <sup>a</sup> (6 quarters)	Year 1 <sup>b</sup>
<i>P-Value</i>	0.602	0.641
<b>Inpatient Preference Sensitive Orthopedic Surgeries</b>		
<i>Difference-in-Difference</i>	6.64	9.98
<i>90% Confidence Interval</i>	(-104.2   117.5)	(-73.2   93.1)
<i>P-Value</i>	0.922	0.843
<b>Preference Sensitive Orthopedic Surgery Hospital Days</b>		
<i>Difference-in-Difference</i>	-236.84	-117.79
<i>90% Confidence Interval</i>	(-814.7   341.0)	(-547.0   311.5)
<i>P-Value</i>	0.500	0.652
<b>Inpatient Preference Sensitive Cardiac Surgeries</b>		
<i>Difference-in-Difference</i>	69.52	86.79**
<i>90% Confidence Interval</i>	(-9.6   148.6)	(27.3   146.3)
<i>P-Value</i>	0.148	0.016
<b>Inpatient Preference Sensitive Cardiac Surgical Hospital Days</b>		
<i>Difference-in-Difference</i>	279.53	329.28
<i>90% Confidence Interval</i>	(-429.5   988.5)	(-251.5   910.1)
<i>P-Value</i>	0.517	0.351

\*\* Statistically significant at the five percent level.

<sup>a</sup>Results are cumulative across all available quarters.

<sup>b</sup>Year 1 refers to the one-year period after a beneficiary's enrollment in the program.

Note: Welvie delivered its HCIA intervention to Texas MA beneficiaries from May 2014 to December 2015.

**Appendix Table C-27: Aggregate Surgery-Related Resource Use: Cumulative and Yearly DiD Estimates, Welvie MA Texas Cohort, Welvie-Provided MA Data**

Measures	Full Intervention Period <sup>a</sup> (6 quarters)	Year 1 <sup>b</sup>
<i>Number of Participants</i>	48,933	48,933
<b>Inpatient Surgeries</b>		
<i>Difference-in-Difference</i>	157.68	183.75
<i>90% Confidence Interval</i>	(-99.2   414.5)	(-10.8   378.3)
<i>P-Value</i>	0.313	0.120
<b>Surgical Hospital Days</b>		
<i>Difference-in-Difference</i>	719.81	726.53
<i>90% Confidence Interval</i>	(-1,967.6   3,407.2)	(-1,321.2   2,774.3)
<i>P-Value</i>	0.660	0.560
<b>Inpatient Preference Sensitive Orthopedic Surgeries</b>		
<i>Difference-in-Difference</i>	-48.90	-36.21
<i>90% Confidence Interval</i>	(-172.4   74.6)	(-129.2   56.7)
<i>P-Value</i>	0.515	0.522
<b>Preference Sensitive Orthopedic Surgery Hospital Days</b>		
<i>Difference-in-Difference</i>	-522.23	-348.80
<i>90% Confidence Interval</i>	(-1,170.7   126.3)	(-841.2   143.6)
<i>P-Value</i>	0.185	0.244
<b>Inpatient Preference Sensitive Cardiac Surgeries</b>		
<i>Difference-in-Difference</i>	108.95*	103.65**
<i>90% Confidence Interval</i>	(17.2   200.6)	(34.3   173.0)
<i>P-Value</i>	0.051	0.014
<b>Inpatient Preference Sensitive Cardiac Surgical Hospital Days</b>		
<i>Difference-in-Difference</i>	729.29	528.38
<i>90% Confidence Interval</i>	(-115.1   1,573.6)	(-139.7   1,196.5)
<i>P-Value</i>	0.155	0.193

\* Statistically significant at the ten percent level.

\*\* Statistically significant at the five percent level.

<sup>a</sup>Results are cumulative across all available quarters.

<sup>b</sup>Year 1 refers to the one-year period after a beneficiary's enrollment in the program.

Note: Welvie delivered its HCIA intervention to Texas MA beneficiaries from May 2014 to December 2015.

**Appendix Table C-28: Aggregate Resource Use: Cumulative and Yearly DiD Estimates, Welvie MA Texas Cohort, IDR MA Data**

Measures	Full Intervention Period <sup>a</sup> (6 quarters)	Year 1 <sup>b</sup>
<i>Number of Participant Beneficiaries</i>	48,933	48,933
<b>Inpatient Admissions</b>		
<i>Difference-in-Difference</i>	237.12	25.31
<i>90% Confidence Interval</i>	(-252.8   727.0)	(-349.0   399.7)
<i>P-Value</i>	0.426	0.911
<b>Unplanned Inpatient Admissions</b>		
<i>Difference-in-Difference</i>	113.77	-57.00
<i>90% Confidence Interval</i>	(-329.0   556.5)	(-395.6   281.6)
<i>P-Value</i>	0.673	0.782
<b>Hospital Days</b>		
<i>Difference-in-Difference</i>	1,412.09	-492.28
<i>90% Confidence Interval</i>	(-2,481.9   5,306.0)	(-3,503.0   2,518.4)
<i>P-Value</i>	0.551	0.788

<sup>a</sup>Results are cumulative across all available quarters.

<sup>b</sup>Year 1 refers to the one-year period after a beneficiary's enrollment in the program.

Note: Welvie delivered its HCIA intervention to Texas MA beneficiaries from May 2014 to December 2015.

**Appendix Table C-29: Aggregate Resource Use: Cumulative and Yearly DiD Estimates, Welvie MA Texas Cohort, Welvie-Provided MA Data**

Measures	Full Intervention Period <sup>a</sup> (6 quarters)	Year 1 <sup>b</sup>
<i>Number of Participant Beneficiaries</i>	48,933	48,933
<b>Inpatient Admissions</b>		
<i>Difference-in-Difference</i>	496.54	239.39
<i>90% Confidence Interval</i>	(-114.5   1,107.6)	(-231.7   710.4)
<i>P-Value</i>	0.181	0.403
<b>Unplanned Inpatient Admissions</b>		
<i>Difference-in-Difference</i>	472.91	220.87
<i>90% Confidence Interval</i>	(-89.8   1,035.6)	(-212.7   654.5)
<i>P-Value</i>	0.167	0.402
<b>Hospital Days</b>		
<i>Difference-in-Difference</i>	904.80	-1,331.98
<i>90% Confidence Interval</i>	(-3,882.7   5,692.3)	(-5,037.5   2,373.5)
<i>P-Value</i>	0.756	0.554

<sup>a</sup>Results are cumulative across all available quarters.

<sup>b</sup>Year 1 refers to the one-year period after a beneficiary's enrollment in the program.

Note: Welvie delivered its HCIA intervention to Texas MA beneficiaries from May 2014 to December 2015.

**Appendix Table C-30: Quarterly DiD Estimates of Resource Use (Number of Events or Days per 1,000 Beneficiaries), Welvie Ohio MA ITT Analysis Cohort, IDR MA Data**

<b>Measures (Number of Events or Days per 1,000 Beneficiaries)</b>	<b>Q1</b>	<b>Q2</b>	<b>Q3</b>	<b>Q4</b>	<b>Q5</b>	<b>Q6</b>	<b>Q7</b>	<b>Q8</b>	<b>Q9</b>	<b>Q10</b>	<b>Q11</b>
<i>Number of Participant Beneficiaries</i>	82,709	81,890	80,965	78,386	77,652	76,733	75,868	71,140	70,401	68,487	67,534
Inpatient Admissions	0.18	-0.67	-1.51	1.04	-0.25	0.34	-2.03	2.67	0.69	2.13	-0.15
<i>90% Confidence Interval</i>	(-3,3)	(-4,2)	(-5,2)	(-2,4)	(-3,3)	(-3,3)	(-5,1)	(-1,6)	(-3,4)	(-1,6)	(-3,3)
<i>P-Value</i>	0.920	0.724	0.432	0.579	0.894	0.857	0.290	0.174	0.726	0.301	0.943
Unplanned Inpatient Admissions	-0.04	-0.49	-1.33	1.18	0.20	-1.03	-2.28	1.86	-0.02	0.79	0.22
<i>90% Confidence Interval</i>	(-3,3)	(-3,2)	(-4,2)	(-2,4)	(-3,3)	(-4,2)	(-5,1)	(-1,5)	(-3,3)	(-2,4)	(-3,3)
<i>P-Value</i>	0.981	0.777	0.447	0.488	0.904	0.551	0.191	0.298	0.992	0.675	0.904
Hospital Days	5.72	3.15	-16.21	-0.64	-1.91	0.37	-7.91	10.04	8.52	7.10	-2.14
<i>90% Confidence Interval</i>	(-16,28)	(-19,25)	(-44,11)	(-23,22)	(-23,20)	(-23,24)	(-31,15)	(-14,34)	(-15,32)	(-17,31)	(-26,22)
<i>P-Value</i>	0.670	0.816	0.330	0.962	0.884	0.979	0.567	0.491	0.554	0.631	0.884
Inpatient Surgeries	-0.46	-1.05	-1.04	-0.15	-1.03	0.66	-0.23	0.84	-0.40	1.86**	-1.34
<i>90% Confidence Interval</i>	(-2,1)	(-2,0)	(-2,0)	(-2,1)	(-2,0)	(-1,2)	(-2,1)	(-1,2)	(-2,1)	(0,3)	(-3,0)
<i>P-Value</i>	0.581	0.214	0.226	0.863	0.232	0.443	0.792	0.349	0.662	0.043	0.148
Surgical Hospital Days	-1.15	-6.85	-4.80	1.96	-5.16	6.72	1.51	1.35	0.38	17.36**	-6.37
<i>90% Confidence Interval</i>	(-12,10)	(-18,4)	(-22,13)	(-9,13)	(-16,6)	(-4,17)	(-10,13)	(-10,13)	(-12,12)	(5,30)	(-19,6)
<i>P-Value</i>	0.860	0.308	0.654	0.776	0.426	0.296	0.832	0.849	0.959	0.023	0.408
Inpatient PS <sup>a</sup> Orthopedic Surgeries	0.14	0.10	0.27	-0.25	-0.03	0.19	0.25	0.41	-0.20	0.44	-0.01
<i>90% Confidence Interval</i>	(-1,1)	(-1,1)	(0,1)	(-1,0)	(-1,1)	(-1,1)	(0,1)	(0,1)	(-1,1)	(0,1)	(-1,1)
<i>P-Value</i>	0.741	0.813	0.526	0.552	0.948	0.658	0.560	0.355	0.666	0.334	0.977
PS Orthopedic Surgery Hospital Days	1.30	0.92	0.61	-0.97	0.20	0.01	1.14	-0.10	-1.44	0.90	-0.88
<i>90% Confidence Interval</i>	(-1,4)	(-2,4)	(-2,3)	(-4,2)	(-2,3)	(-3,3)	(-2,4)	(-3,3)	(-5,2)	(-2,4)	(-4,2)
<i>P-Value</i>	0.431	0.578	0.718	0.575	0.905	0.994	0.491	0.957	0.481	0.628	0.638
Inpatient PS Cardiac Surgeries	0.50*	0.30	0.27	-0.32	0.03	0.24	-0.05	0.43	0.33	0.31	0.65**

Measures (Number of Events or Days per 1,000 Beneficiaries)	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11
<i>90% Confidence Interval</i>	(0,1)	(0,1)	(0,1)	(-1,0)	(0,1)	(0,1)	(-1,0)	(0,1)	(0,1)	(0,1)	(0,1)
<i>P-Value</i>	0.084	0.327	0.390	0.278	0.912	0.429	0.862	0.184	0.305	0.333	0.044
Inpatient PS Cardiac Surgical Hospital Days	2.22	2.82	0.74	-1.71	-0.48	3.07	-1.15	4.01	2.38	2.44	5.83**
<i>90% Confidence Interval</i>	(-1,6)	(-1,7)	(-3,5)	(-5,2)	(-4,3)	(-1,7)	(-5,3)	(0,8)	(-2,7)	(-2,7)	(1,10)
<i>P-Value</i>	0.320	0.233	0.768	0.445	0.833	0.182	0.643	0.128	0.386	0.363	0.030

\*\* Statistically significant at the five percent level.

<sup>a</sup>PS = Preference-sensitive.

**Appendix Table C-31: Quarterly DiD Estimates of Resource Use (Number of Events or Days per 1,000 Beneficiaries), Welvie  
Ohio MA ITT Analysis Cohort, Welvie-Provided MA Data**

Measures (Number of Events or Days per 1,000 Beneficiaries)	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11
<i>Number of Participant Beneficiaries</i>	82,709	81,890	80,965	78,386	77,652	76,733	75,868	71,140	70,401	68,487	67,534
Inpatient Admissions	0.47	-0.30	-1.31	0.42	-0.03	0.38	-2.05	3.21*	0.10	0.41	-1.40
<i>90% Confidence Interval</i>	(-3,4)	(-4,3)	(-4,2)	(-3,3)	(-3,3)	(-3,3)	(-5,1)	(0,6)	(-3,3)	(-3,4)	(-4,2)
<i>P-Value</i>	0.811	0.877	0.482	0.815	0.987	0.833	0.242	0.079	0.957	0.830	0.446
Unplanned Inpatient Admissions	0.07	0.21	-1.29	0.12	0.54	-0.96	-2.45	2.01	-0.21	-0.59	-1.50
<i>90% Confidence Interval</i>	(-3,3)	(-3,3)	(-4,1)	(-3,3)	(-2,3)	(-4,2)	(-5,0)	(-1,5)	(-3,3)	(-3,2)	(-4,1)
<i>P-Value</i>	0.971	0.905	0.446	0.940	0.740	0.551	0.121	0.221	0.897	0.733	0.368
Hospital Days	9.70	8.91	-16.55	6.13	-2.70	7.11	-6.44	10.70	1.49	2.34	-15.09
<i>90% Confidence Interval</i>	(-14,34)	(-14,32)	(-41,8)	(-16,28)	(-24,19)	(-14,28)	(-27,15)	(-12,34)	(-21,24)	(-20,24)	(-38,7)
<i>P-Value</i>	0.508	0.530	0.260	0.646	0.837	0.578	0.614	0.447	0.912	0.861	0.269
Inpatient Surgeries	-0.58	-1.30	-1.38	-0.34	-1.16	0.38	-0.41	0.72	-0.38	-0.12	-0.29
<i>90% Confidence Interval</i>	(-2,1)	(-3,0)	(-3,0)	(-2,1)	(-2,0)	(-1,2)	(-2,1)	(-1,2)	(-2,1)	(-1,1)	(-1,1)
<i>P-Value</i>	0.525	0.135	0.102	0.681	0.120	0.644	0.621	0.390	0.591	0.828	0.589
Surgical Hospital Days	0.43	-6.80	-7.55	-1.63	-7.62	5.46	0.18	-1.64	0.27	2.56	1.36



Measures (Number of Events or Days per 1,000 Beneficiaries)	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11
<i>90% Confidence Interval</i>	(-12,13)	(-19,5)	(-21,6)	(-13,10)	(-18,3)	(-5,16)	(-11,11)	(-13,10)	(-8,8)	(-4,9)	(-5,8)
<i>P-Value</i>	0.955	0.343	0.355	0.816	0.222	0.390	0.979	0.813	0.957	0.500	0.716
Inpatient PS <sup>a</sup> Orthopedic Surgeries	0.18	-0.07	0.11	-0.12	0.06	0.31	0.13	0.36	-0.10	0.05	0.06
<i>90% Confidence Interval</i>	(-1,1)	(-1,1)	(-1,1)	(-1,1)	(-1,1)	(0,1)	(-1,1)	(0,1)	(-1,0)	(0,0)	(0,1)
<i>P-Value</i>	0.676	0.875	0.793	0.755	0.860	0.430	0.732	0.364	0.780	0.855	0.817
PS Orthopedic Surgery Hospital Days	0.58	-0.51	-0.02	-0.88	-0.02	0.67	-0.96	-0.23	-0.63	-0.47	-0.23
<i>90% Confidence Interval</i>	(-2,3)	(-3,2)	(-3,3)	(-3,2)	(-2,2)	(-2,3)	(-3,1)	(-3,2)	(-3,2)	(-2,1)	(-2,1)
<i>P-Value</i>	0.734	0.751	0.989	0.580	0.986	0.655	0.517	0.884	0.652	0.641	0.818
Inpatient PS Cardiac Surgeries	0.40	0.36	-0.03	-0.39	0.01	0.16	-0.23	0.37	0.49**	0.26	0.27
<i>90% Confidence Interval</i>	(0,1)	(0,1)	(-1,0)	(-1,0)	(0,0)	(0,1)	(-1,0)	(0,1)	(0,1)	(0,1)	(0,1)
<i>P-Value</i>	0.201	0.237	0.921	0.174	0.971	0.568	0.420	0.235	0.044	0.188	0.161
Inpatient PS Cardiac Surgical Hospital Days	2.34	4.26*	0.38	-1.97	0.48	2.28	-1.79	3.39	3.43**	2.35*	2.36*
<i>90% Confidence Interval</i>	(-2,6)	(0,8)	(-4,4)	(-6,2)	(-3,4)	(-1,6)	(-6,2)	(-1,8)	(1,6)	(0,5)	(0,5)
<i>P-Value</i>	0.339	0.070	0.875	0.376	0.824	0.319	0.431	0.185	0.045	0.093	0.090

\* Statistically significant at the ten percent level.  
 \*\* Statistically significant at the five percent level.  
<sup>a</sup>PS = Preference-sensitive

**Appendix Table C-32: Quarterly DiD Estimates of Resource Use (Number of Events or Days per 1,000 Beneficiaries), Welvie Texas MA ITT Analysis Cohort, IDR MA Data**

<b>Measures (Number of Events or Days per 1,000 Beneficiaries)</b>	<b>Q1</b>	<b>Q2</b>	<b>Q3</b>	<b>Q4</b>	<b>Q5</b>	<b>Q6</b>
<i>Number of Participant Beneficiaries</i>	48,933	48,884	42,661	42,206	41,813	41,334
Inpatient Admissions	1.70	0.24	-2.67	1.57	4.18*	1.34
<i>90% Confidence Interval</i>	(-2,5)	(-3,4)	(-6,1)	(-2,6)	(0,8)	(-2,5)
<i>P-Value</i>	0.387	0.905	0.247	0.510	0.069	0.539
Unplanned Inpatient Admissions	1.05	0.24	-2.61	0.75	4.28**	0.77
<i>90% Confidence Interval</i>	(-2,4)	(-3,3)	(-6,1)	(-3,4)	(1,8)	(-3,4)
<i>P-Value</i>	0.556	0.898	0.217	0.727	0.039	0.700
Hospital Days	3.55	3.67	-32.45	17.81	37.39*	14.61
<i>90% Confidence Interval</i>	(-21,28)	(-24,32)	(-65,0)	(-15,51)	(5,69)	(-15,44)
<i>P-Value</i>	0.810	0.829	0.104	0.378	0.055	0.421
Inpatient Surgeries	1.26	0.22	1.02	0.44	0.05	-0.36
<i>90% Confidence Interval</i>	(0,3)	(-1,2)	(-1,3)	(-1,2)	(-2,2)	(-2,1)
<i>P-Value</i>	0.162	0.810	0.309	0.686	0.962	0.730
Surgical Hospital Days	3.17	-2.74	0.88	9.89	9.85	-1.44
<i>90% Confidence Interval</i>	(-10,16)	(-15,10)	(-17,19)	(-8,28)	(-7,27)	(-19,16)
<i>P-Value</i>	0.694	0.716	0.934	0.366	0.342	0.892
Inpatient PS <sup>a</sup> Orthopedic Surgeries	-0.37	-0.32	0.48	0.29	-0.50	0.13
<i>90% Confidence Interval</i>	(-1,0)	(-1,0)	(0,1)	(-1,1)	(-1,0)	(-1,1)
<i>P-Value</i>	0.384	0.474	0.307	0.566	0.318	0.803
PS Orthopedic Surgery Hospital Days	-0.83	-4.20*	0.76	1.67	-3.02	-0.22
<i>90% Confidence Interval</i>	(-4,2)	(-8,0)	(-4,5)	(-3,6)	(-7,1)	(-5,5)
<i>P-Value</i>	0.675	0.071	0.785	0.525	0.241	0.945
Inpatient PS Cardiac Surgeries	0.42	0.50	0.45	0.79**	-0.32	0.13
<i>90% Confidence Interval</i>	(0,1)	(0,1)	(0,1)	(0,1)	(-1,0)	(0,1)
<i>P-Value</i>	0.171	0.130	0.168	0.023	0.353	0.719
Inpatient PS Cardiac Surgical Hospital Days	1.21	3.55	-2.23	5.81*	-0.02	0.00
<i>90% Confidence Interval</i>	(-3,5)	(-1,8)	(-11,7)	(0,11)	(-5,5)	(-5,5)
<i>P-Value</i>	0.629	0.150	0.681	0.080	0.994	1.000

\* Statistically significant at the ten percent level.

\*\* Statistically significant at the five percent level.

<sup>a</sup>PS = Preference-sensitive.

**Appendix Table C-33: Quarterly DiD Estimates of Resource Use (Number of Events or Days per 1,000 Beneficiaries), Welvie Texas MA ITT Analysis Cohort, Welvie-Provided MA Data**

<b>Measures (Number of Events or Days per 1,000 Beneficiaries)</b>	<b>Q1</b>	<b>Q2</b>	<b>Q3</b>	<b>Q4</b>	<b>Q5</b>	<b>Q6</b>
<i>Number of Participant Beneficiaries</i>	48,933	48,884	42,661	42,206	41,813	41,334
Inpatient Admissions	2.47	1.71	-1.18	2.33	6.29**	1.13
<i>90% Confidence Interval</i>	(-2,7)	(-3,6)	(-6,4)	(-3,7)	(2,11)	(-3,5)
<i>P-Value</i>	0.318	0.514	0.692	0.434	0.023	0.663
Unplanned Inpatient Admissions	2.45	1.89	-1.00	1.57	6.83***	0.59
<i>90% Confidence Interval</i>	(-1,6)	(-2,6)	(-6,4)	(-3,6)	(3,11)	(-3,5)
<i>P-Value</i>	0.281	0.434	0.721	0.567	0.008	0.812
Hospital Days	-3.99	-4.05	-36.10	17.53	48.87**	15.48
<i>90% Confidence Interval</i>	(-35,27)	(-39,31)	(-75,3)	(-21,56)	(14,84)	(-19,50)
<i>P-Value</i>	0.831	0.850	0.130	0.457	0.023	0.467
Inpatient Surgeries	1.27	0.34	1.62	1.01	-0.01	-0.25
<i>90% Confidence Interval</i>	(0,3)	(-1,2)	(0,3)	(-1,3)	(-2,2)	(-2,2)
<i>P-Value</i>	0.214	0.748	0.142	0.374	0.990	0.824
Surgical Hospital Days	0.84	-2.61	3.44	17.95	10.48	0.76
<i>90% Confidence Interval</i>	(-17,18)	(-20,15)	(-18,25)	(-3,39)	(-8,29)	(-19,21)
<i>P-Value</i>	0.936	0.810	0.789	0.153	0.347	0.95
Inpatient PS <sup>a</sup> Orthopedic Surgeries	-0.72	-0.45	0.14	0.42	-0.58	0.34
<i>90% Confidence Interval</i>	(-2,0)	(-1,0)	(-1,1)	(0,1)	(-1,0)	(-1,1)
<i>P-Value</i>	0.138	0.375	0.788	0.421	0.267	0.531
PS Orthopedic Surgery Hospital Days	-3.18	-4.54	-1.23	2.56	-3.27	0.35
<i>90% Confidence Interval</i>	(-7,1)	(-9,0)	(-6,4)	(-2,7)	(-8,1)	(-5,5)
<i>P-Value</i>	0.180	0.108	0.691	0.348	0.217	0.911
Inpatient PS Cardiac Surgeries	0.19	0.74*	0.71*	0.84**	-0.05	0.34
<i>90% Confidence Interval</i>	(0,1)	(0,1)	(0,1)	(0,1)	(-1,1)	(0,1)
<i>P-Value</i>	0.588	0.052	0.061	0.035	0.884	0.402
Inpatient PS Cardiac Surgical Hospital Days	-1.11	7.45**	-1.24	7.39**	3.86	1.87
<i>90% Confidence Interval</i>	(-6,4)	(2,13)	(-11,8)	(2,13)	(-2,10)	(-4,8)
<i>P-Value</i>	0.707	0.020	0.831	0.038	0.318	0.611

\* Statistically significant at the ten percent level.

\*\* Statistically significant at the five percent level.

\*\*\* Statistically significant at the one percent level.

<sup>a</sup>PS = Preference-sensitive.

**Appendix Table C-34: Quarterly DiD Estimates of Resource Use (Number of Events or Days per 1,000 Beneficiaries), Welvie Ohio MA IV Analysis Cohort, IDR MA Data**

<b>Measures (Number of Events or Days per 1,000 Beneficiaries)</b>	<b>Q1</b>	<b>Q2</b>	<b>Q3</b>	<b>Q4</b>	<b>Q5</b>	<b>Q6</b>	<b>Q7</b>	<b>Q8</b>	<b>Q9</b>	<b>Q10</b>	<b>Q11</b>
<i>Number of Participant Beneficiaries</i>	4,030	4,016	3,997	3,871	3,395	3,048	2,501	2,337	2,058	1,953	1,593
Inpatient Admissions	27.53	-3.86	-31.93	17.23	-4.51	13.44	-53.50	84.32	21.57	68.81	30.87
<i>90% Confidence Interval</i>	(-37,92)	(-70,62)	(-99,35)	(-48,82)	(-77,68)	(-68,95)	(-151,44)	(-16,185)	(-90,134)	(-52,189)	(-111,172)
<i>P-Value</i>	0.485	0.923	0.431	0.663	0.919	0.785	0.368	0.168	0.751	0.348	0.720
Unplanned Inpatient Admissions	6.85	-5.09	-31.64	22.53	3.79	-19.43	-65.69	62.38	6.07	22.54	44.65
<i>90% Confidence Interval</i>	(-52,65)	(-65,55)	(-92,29)	(-36,81)	(-62,69)	(-93,54)	(-154,23)	(-29,154)	(-95,107)	(-88,133)	(-85,175)
<i>P-Value</i>	0.847	0.889	0.392	0.530	0.924	0.664	0.224	0.260	0.921	0.737	0.572
Hospital Days	263.96	145.98	-329.89	14.06	-12.18	82.80	-174.70	366.67	327.63	337.00	160.05
<i>90% Confidence Interval</i>	(-210,738)	(-327,619)	(-907,247)	(-455,483)	(-523,498)	(-521,687)	(-878,529)	(-379,1113)	(-494,1149)	(-528,1202)	(-865,1185)
<i>P-Value</i>	0.359	0.612	0.347	0.961	0.969	0.822	0.683	0.419	0.512	0.522	0.797
Inpatient Surgeries	10.17	-11.21	-20.57	-1.89	-22.28	14.75	0.91	26.85	-23.68	63.89*	-43.91
<i>90% Confidence Interval</i>	(-19,40)	(-41,19)	(-50,9)	(-32,28)	(-56,11)	(-22,51)	(-44,46)	(-19,73)	(-76,28)	(10,118)	(-109,21)
<i>P-Value</i>	0.571	0.535	0.258	0.917	0.277	0.506	0.973	0.335	0.454	0.050	0.264
Surgical Hospital Days	66.64	-71.79	-96.58	61.26	-99.81	183.09	119.11	56.05	-2.36	668.47**	-173.64
<i>90% Confidence Interval</i>	(-165,298)	(-308,165)	(-468,275)	(-180,302)	(-353,154)	(-91,457)	(-246,484)	(-306,418)	(-417,412)	(222,1115)	(-713,366)
<i>P-Value</i>	0.636	0.617	0.669	0.676	0.517	0.271	0.591	0.799	0.993	0.014	0.596
Inpatient PS <sup>a</sup> Orthopedic Surgeries	15.29*	4.90	7.46	-5.96	-1.58	3.62	12.51	8.88	-15.57	10.52	0.64
<i>90% Confidence Interval</i>	(0,31)	(-10,20)	(-7,22)	(-20,9)	(-19,16)	(-15,22)	(-10,35)	(-13,31)	(-42,10)	(-16,37)	(-31,32)
<i>P-Value</i>	0.100	0.585	0.410	0.500	0.879	0.744	0.353	0.511	0.324	0.513	0.974
PS Orthopedic Surgery Hospital Days	65.38*	26.45	19.90	-17.98	3.47	0.81	59.87	-8.20	-74.41	25.50	-27.87
<i>90% Confidence Interval</i>	(7,124)	(-31,84)	(-38,78)	(-78,42)	(-60,67)	(-72,74)	(-25,145)	(-100,84)	(-189,40)	(-82,133)	(-157,102)
<i>P-Value</i>	0.067	0.450	0.574	0.621	0.928	0.986	0.245	0.883	0.286	0.695	0.723

<b>Measures (Number of Events or Days per 1,000 Beneficiaries)</b>	<b>Q1</b>	<b>Q2</b>	<b>Q3</b>	<b>Q4</b>	<b>Q5</b>	<b>Q6</b>	<b>Q7</b>	<b>Q8</b>	<b>Q9</b>	<b>Q10</b>	<b>Q11</b>
Inpatient PS Cardiac Surgeries	10.37*	6.79	3.21	-7.85	0.81	5.27	-2.58	11.87	10.21	10.50	24.98*
<i>90% Confidence Interval</i>	(0,21)	(-4,17)	(-8,14)	(-18,2)	(-11,13)	(-7,18)	(-18,13)	(-5,28)	(-8,28)	(-8,29)	(3,47)
<i>P-Value</i>	0.094	0.294	0.622	0.210	0.911	0.496	0.788	0.240	0.354	0.350	0.067
Inpatient PS Cardiac Surgical Hospital Days	51.29	67.18	5.55	-36.86	-8.70	81.21	-35.67	112.88	98.70	95.54	237.34**
<i>90% Confidence Interval</i>	(-28,131)	(-16,151)	(-81,93)	(-115,41)	(-98,80)	(-17,179)	(-162,91)	(-21,247)	(-59,257)	(-62,253)	(50,424)
<i>P-Value</i>	0.287	0.185	0.916	0.437	0.872	0.172	0.642	0.165	0.304	0.318	0.037

\* Statistically significant at the ten percent level.

\*\* Statistically significant at the five percent level.

<sup>a</sup>PS = Preference-sensitive.

**Appendix Table C-35: Quarterly DiD Estimates of Resource Use (Number of Events or Days per 1,000 Beneficiaries), Welvie Ohio MA IV Analysis Cohort, Welvie-Provided MA Data**

<b>Measures (Number of Events or Days per 1,000 Beneficiaries)</b>	<b>Q1</b>	<b>Q2</b>	<b>Q3</b>	<b>Q4</b>	<b>Q5</b>	<b>Q6</b>	<b>Q7</b>	<b>Q8</b>	<b>Q9</b>	<b>Q10</b>	<b>Q11</b>
<i>Number of Participant Beneficiaries</i>	4,030	4,016	3,997	3,871	3,395	3,048	2,501	2,337	2,058	1,953	1,593
Inpatient Admissions	27.10	-1.93	-29.63	-2.56	-13.80	3.84	-60.63	94.67*	-9.97	-5.76	-50.65
<i>90% Confidence Interval</i>	(-43,97)	(-70,66)	(-94,35)	(-65,60)	(-85,57)	(-72,80)	(-150,29)	(1,188)	(-115,95)	(-116,105)	(-180,78)
<i>P-Value</i>	0.524	0.963	0.449	0.946	0.750	0.934	0.264	0.096	0.876	0.932	0.518
Unplanned Inpatient Admissions	4.65	4.64	-32.56	-6.55	1.17	-26.42	-78.72	61.84	-14.75	-38.05	-52.92
<i>90% Confidence Interval</i>	(-58,68)	(-57,67)	(-91,26)	(-63,50)	(-63,65)	(-95,42)	(-159,2)	(-22,146)	(-109,80)	(-139,63)	(-170,64)
<i>P-Value</i>	0.903	0.902	0.360	0.848	0.976	0.526	0.107	0.226	0.798	0.534	0.458
Hospital Days	350.95	231.75	-363.43	145.22	-107.06	200.59	-148.32	361.47	58.91	53.04	-553.20
<i>90% Confidence Interval</i>	(-166,868)	(-264,728)	(-872,145)	(-318,608)	(-617,403)	(-344,745)	(-798,501)	(-357,1080)	(-711,829)	(-728,835)	(-1509,403)
<i>P-Value</i>	0.264	0.442	0.240	0.606	0.730	0.544	0.707	0.408	0.900	0.911	0.341
Inpatient Surgeries	-0.58	-24.79	-32.22*	-12.98	-27.42	4.27	-13.56	14.04	-23.04	-1.19	-8.85
<i>90% Confidence Interval</i>	(-33,31)	(-55,6)	(-62,-3)	(-42,16)	(-56,2)	(-30,39)	(-55,28)	(-29,57)	(-64,17)	(-32,30)	(-46,28)
<i>P-Value</i>	0.976	0.181	0.071	0.457	0.119	0.839	0.593	0.590	0.350	0.949	0.693
Surgical Hospital Days	63.15	-116.75	-180.71	-45.83	-164.02	123.43	28.37	-76.23	-3.48	116.09	86.10
<i>90% Confidence Interval</i>	(-203,330)	(-368,134)	(-463,101)	(-290,198)	(-408,80)	(-146,393)	(-319,376)	(-430,277)	(-284,277)	(-105,338)	(-176,348)
<i>P-Value</i>	0.697	0.444	0.292	0.757	0.268	0.451	0.893	0.723	0.984	0.389	0.589
Inpatient PS <sup>a</sup> Orthopedic Surgeries	12.80	-1.43	1.18	-6.94	0.69	3.68	4.31	7.27	-8.11	2.80	3.56
<i>90% Confidence Interval</i>	(-3,28)	(-16,13)	(-13,15)	(-20,7)	(-13,15)	(-13,20)	(-15,24)	(-13,27)	(-29,13)	(-13,18)	(-15,22)
<i>P-Value</i>	0.179	0.870	0.889	0.396	0.935	0.715	0.718	0.550	0.519	0.767	0.753
PS Orthopedic Surgery Hospital Days	41.73	-10.45	-2.26	-28.14	0.54	6.67	-22.99	-12.30	-29.00	-7.52	-0.86
<i>90% Confidence Interval</i>	(-19,103)	(-67,46)	(-56,52)	(-83,26)	(-52,53)	(-57,70)	(-98,52)	(-91,67)	(-107,49)	(-65,50)	(-69,68)
<i>P-Value</i>	0.260	0.759	0.945	0.396	0.987	0.863	0.614	0.797	0.541	0.831	0.984

Measures (Number of Events or Days per 1,000 Beneficiaries)	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11
Inpatient PS Cardiac Surgeries	7.32	6.39	-3.23	-9.75	-0.70	3.32	-9.12	7.86	15.25*	7.98	9.95
<i>90% Confidence Interval</i>	(-4,18)	(-4,17)	(-14,7)	(-20,0)	(-11,10)	(-9,16)	(-23,5)	(-8,24)	(1,29)	(-3,19)	(-3,23)
<i>P-Value</i>	0.279	0.327	0.611	0.105	0.914	0.656	0.294	0.414	0.071	0.250	0.223
Inpatient PS Cardiac Surgical Hospital Days	50.36	87.77*	-7.65	-47.05	13.76	62.53	-62.47	90.52	121.60**	85.34*	100.68*
<i>90% Confidence Interval</i>	(-36,137)	(5,170)	(-92,76)	(-124,30)	(-72,99)	(-35,160)	(-178,53)	(-39,220)	(24,219)	(4,167)	(4,198)
<i>P-Value</i>	0.340	0.080	0.881	0.317	0.791	0.291	0.373	0.251	0.040	0.085	0.088

\* Statistically significant at the ten percent level.

\*\* Statistically significant at the five percent level.

<sup>a</sup>PS = Preference-sensitive.

**Appendix Table C-36: Quarterly DiD Estimates of Resource Use (Number of Events or Days per 1,000 Beneficiaries), Welvie Texas MA IV Analysis Cohort, IDR MA Data**

<b>Measures (Number of Events or Days per 1,000 Beneficiaries)</b>	<b>Q1</b>	<b>Q2</b>	<b>Q3</b>	<b>Q4</b>	<b>Q5</b>	<b>Q6</b>
<i>Number of Participant Beneficiaries</i>	2,004	1,812	1,475	1,391	1,093	749
Inpatient Admissions	59.18	26.46	-82.05	60.64	179.00*	51.43
<i>90% Confidence Interval</i>	(-30,149)	(-68,121)	(-197,33)	(-64,186)	(28,330)	(-152,255)
<i>P-Value</i>	0.277	0.646	0.240	0.425	0.051	0.678
Unplanned Inpatient Admissions	32.33	19.15	-75.42	35.90	185.78**	23.34
<i>90% Confidence Interval</i>	(-49,113)	(-67,105)	(-181,30)	(-77,149)	(49,322)	(-164,210)
<i>P-Value</i>	0.511	0.714	0.240	0.601	0.025	0.837
Hospital Days	171.57	215.80	-1,026.38*	585.34	1,607.29**	741.99
<i>90% Confidence Interval</i>	(-502,846)	(-578,1009)	(-2014,-39)	(-470,1640)	(327,2887)	(-965,2449)
<i>P-Value</i>	0.675	0.655	0.087	0.361	0.039	0.475
Inpatient Surgeries	44.69*	11.59	27.13	14.82	4.79	-31.35
<i>90% Confidence Interval</i>	(3,86)	(-31,54)	(-23,77)	(-41,71)	(-65,74)	(-128,65)
<i>P-Value</i>	0.075	0.655	0.369	0.665	0.910	0.593
Surgical Hospital Days	164.99	-64.37	15.05	279.91	442.37	-123.94
<i>90% Confidence Interval</i>	(-208,538)	(-414,285)	(-516,546)	(-288,848)	(-242,1127)	(-1116,868)
<i>P-Value</i>	0.467	0.762	0.963	0.418	0.288	0.837
Inpatient PS <sup>a</sup> Orthopedic Surgeries	-4.12	-3.62	12.00	6.03	-25.06	3.19
<i>90% Confidence Interval</i>	(-24,16)	(-25,17)	(-11,35)	(-20,32)	(-58,8)	(-45,51)
<i>P-Value</i>	0.737	0.777	0.392	0.705	0.213	0.913
PS Orthopedic Surgery Hospital Days	-3.32	-100.40	21.11	29.58	-130.77	-29.27
<i>90% Confidence Interval</i>	(-94,87)	(-210,9)	(-118,161)	(-106,165)	(-301,39)	(-325,267)
<i>P-Value</i>	0.952	0.132	0.803	0.719	0.205	0.871
Inpatient PS Cardiac Surgeries	14.78*	14.54	11.74	25.74**	-10.71	4.96
<i>90% Confidence Interval</i>	(1,29)	(-1,30)	(-4,28)	(7,44)	(-33,12)	(-29,39)
<i>P-Value</i>	0.084	0.116	0.233	0.021	0.438	0.808
Inpatient PS Cardiac Surgical Hospital Days	67.63	93.69	-83.78	176.39*	2.64	3.56
<i>90% Confidence Interval</i>	(-49,184)	(-20,208)	(-354,186)	(5,348)	(-202,207)	(-264,271)
<i>P-Value</i>	0.340	0.176	0.610	0.091	0.983	0.983

\* Statistically significant at the ten percent level.

\*\* Statistically significant at the five percent level.

<sup>a</sup>PS = Preference-sensitive.



**Appendix Table C-37: Quarterly DiD Estimates of Resource Use (Number of Events or Days per 1,000 Beneficiaries), Welvie Texas MA IV Analysis Cohort, Welvie-Provided MA Data**

<b>Measures (Number of Events or Days per 1,000 Beneficiaries)</b>	<b>Q1</b>	<b>Q2</b>	<b>Q3</b>	<b>Q4</b>	<b>Q5</b>	<b>Q6</b>
<i>Number of Participant Beneficiaries</i>	2,004	1,812	1,475	1,391	1,093	749
Inpatient Admissions	86.13	65.04	-42.04	73.60	271.87**	47.10
<i>90% Confidence Interval</i>	(-26,199)	(-57,187)	(-190,106)	(-82,229)	(89,455)	(-196,291)
<i>P-Value</i>	0.208	0.379	0.640	0.436	0.014	0.750
Unplanned Inpatient Admissions	74.16	67.16	-26.23	54.29	294.75***	16.40
<i>90% Confidence Interval</i>	(-29,177)	(-45,179)	(-164,112)	(-89,198)	(126,463)	(-216,249)
<i>P-Value</i>	0.238	0.325	0.755	0.534	0.004	0.907
Hospital Days	30.82	-36.51	-1,098.20	491.59	2,114.57**	818.04
<i>90% Confidence Interval</i>	(-821,882)	(-1028,955)	(-2279,82)	(-738,1721)	(705,3524)	(-1181,2817)
<i>P-Value</i>	0.953	0.952	0.126	0.511	0.014	0.501
Inpatient Surgeries	47.88*	7.16	44.80	29.04	4.62	-19.81
<i>90% Confidence Interval</i>	(1,94)	(-41,56)	(-10,99)	(-30,88)	(-68,78)	(-123,83)
<i>P-Value</i>	0.091	0.808	0.177	0.421	0.917	0.751
Surgical Hospital Days	118.15	-114.90	119.24	507.73	480.00	2.28
<i>90% Confidence Interval</i>	(-366,602)	(-617,387)	(-511,749)	(-146,1161)	(-254,1214)	(-1132,1137)
<i>P-Value</i>	0.688	0.707	0.756	0.201	0.282	0.997
Inpatient PS <sup>a</sup> Orthopedic Surgeries	-12.10	-9.04	1.57	10.74	-24.15	16.81
<i>90% Confidence Interval</i>	(-35,10)	(-33,15)	(-23,27)	(-16,38)	(-58,10)	(-33,66)
<i>P-Value</i>	0.376	0.532	0.918	0.510	0.244	0.576
PS Orthopedic Surgery Hospital Days	-62.32	-102.16	-42.36	61.92	-125.63	13.32
<i>90% Confidence Interval</i>	(-171,46)	(-233,28)	(-196,111)	(-79,203)	(-300,49)	(-277,303)
<i>P-Value</i>	0.344	0.198	0.650	0.469	0.236	0.940
Inpatient PS Cardiac Surgeries	8.87	19.59*	18.92*	27.14**	-1.34	19.24
<i>90% Confidence Interval</i>	(-8,25)	(2,37)	(0,38)	(6,48)	(-26,23)	(-18,57)
<i>P-Value</i>	0.375	0.065	0.098	0.033	0.929	0.400
Inpatient PS Cardiac Surgical Hospital Days	6.93	190.40**	-56.18	226.56**	150.43	115.56
<i>90% Confidence Interval</i>	(-131,144)	(43,338)	(-344,232)	(42,411)	(-104,405)	(-230,461)
<i>P-Value</i>	0.934	0.033	0.748	0.043	0.330	0.582

\* Statistically significant at the ten percent level.

\*\* Statistically significant at the five percent level.

\*\*\* Statistically significant at the one percent level.

<sup>a</sup>PS = Preference-sensitive.

**Appendix Table C-38: Quarterly Resource Use Rate (Number of Beneficiaries with Events per 1,000 Beneficiaries) for Participants and Controls, Welvie Ohio MA ITT Analysis Cohort, Q1 to Q5, IDR MA Data**

Measures	Baseline Period (Year Prior to Enrollment)		Q1		Q2		Q3		Q4		Q5	
	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls
<i>Number of Beneficiaries</i>	82,709	80,971	82,709	80,971	81,890	80,173	80,965	79,249	78,386	76,749	77,652	76,009
<b>Health Service Use Rate per 1,000 Beneficiaries</b>												
All Inpatient Admissions	83.6	85.7	49.8	50.5	54.7	57.0	55.8	57.6	53.1	54.1	51.9	53.3
Unplanned Inpatient Admissions	69.5	71.9	41.6	42.3	46.4	48.6	47.6	49.0	45.2	45.8	43.1	44.4
All Surgeries												
Inpatient Surgeries	31.8	31.4	17.3	17.5	17.6	18.4	18.2	19.4	17.8	18.0	17.7	18.8
All PS Orthopedic Surgeries <sup>a</sup>												
Inpatient PS Orthopedic Surgeries	8.5	8.5	5.2	5.0	4.9	4.8	5.2	4.9	4.5	4.7	5.1	5.1
All PS Cardiac Surgeries												
Inpatient PS Cardiac Surgeries	4.2	4.7	2.3	2.1	2.5	2.4	2.5	2.6	1.8	2.4	2.2	2.5

<sup>a</sup>PS= Preference-sensitive

**Appendix Table C-39: Quarterly Resource Use Rate (Number of Beneficiaries with Events per 1,000 Beneficiaries) for Participants and Controls, Welvie Ohio MA ITT Analysis Cohort, Q6 to Q11, IDR MA Data**

Measures	Q6		Q7		Q8		Q9		Q10		Q11	
	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls
<i>Number of Beneficiaries</i>	76,733	75,000	75,868	74,176	71,140	69,636	70,401	68,914	68,487	67,018	67,534	66,006
<b>Health Service Use Rate per 1,000 Beneficiaries</b>												
All Inpatient Admissions	53.4	54.8	54.8	57.5	53.5	53.0	55.2	56.1	60.5	60.0	57.1	58.7
Unplanned Inpatient Admissions	45.2	47.2	46.7	49.6	45.4	45.6	46.7	47.9	52.7	52.9	49.9	50.9
All Surgeries												
Inpatient Surgeries	17.9	17.8	18.6	19.1	18.2	17.4	18.7	19.1	19.0	17.4	17.7	18.7
All PS Orthopedic Surgeries <sup>a</sup>												
Inpatient PS Orthopedic Surgeries	4.8	4.6	4.9	4.6	4.6	4.2	4.9	5.1	4.8	4.4	4.4	4.4
All PS Cardiac Surgeries												
Inpatient PS Cardiac Surgeries	2.1	2.2	2.2	2.5	2.5	2.4	2.3	2.3	2.2	2.2	2.5	2.1

<sup>a</sup>PS= Preference-sensitive

**Appendix Table C-40: Quarterly Resource Use Rate (Number of Beneficiaries with Events per 1,000 Beneficiaries) for Participants and Controls, Welvie Ohio MA ITT Analysis Cohort, Q1 to Q5, Welvie-Provided MA Data**

Measures	Baseline Period (Year Prior to Enrollment)		Q1		Q2		Q3		Q4		Q5	
	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls
<i>Number of Beneficiaries</i>	82,709	80,971	82,709	80,971	81,890	80,173	80,965	79,249	78,386	76,749	77,652	76,009
<b>Health Service Use Rate per 1,000 Beneficiaries</b>												
All Inpatient Admissions	82.3	84.2	55.9	56.2	54.5	56.3	47.7	49.8	44.7	45.9	45.1	46.2
Unplanned Inpatient Admissions	68.9	70.9	47.3	47.7	47.1	48.8	40.8	42.7	37.9	39.1	37.6	38.2
All Surgeries												
Inpatient Surgeries	31.8	31.7	19.4	19.6	17.5	18.4	15.5	16.9	14.8	14.9	10.2	11.2
All PS Orthopedic Surgeries <sup>a</sup>												
Inpatient PS Orthopedic Surgeries	8.3	8.3	5.6	5.4	4.6	4.6	4.3	4.2	3.6	3.8	2.7	2.6
All PS Cardiac Surgeries												
Inpatient PS Cardiac Surgeries	4.4	5.1	2.7	2.6	2.5	2.4	2.0	2.4	1.4	2.1	1.4	1.7

<sup>a</sup>PS= Preference-sensitive

**Appendix Table C-41: Quarterly Resource Use Rate (Number of Beneficiaries with Events per 1,000 Beneficiaries) for Participants and Controls, Welvie Ohio MA ITT Analysis Cohort, Q6 to Q11, Welvie-Provided MA Data**

Measures	Q6		Q7		Q8		Q9		Q10		Q11	
	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls
<i>Number of Beneficiaries</i>	76,733	75,000	75,868	74,176	71,140	69,636	70,401	68,914	68,487	67,018	67,534	66,006
<b>Health Service Use Rate per 1,000 Beneficiaries</b>												
All Inpatient Admissions	42.6	43.6	40.0	42.6	41.1	40.5	41.1	42.4	45.1	45.7	39.7	42.2
Unplanned Inpatient Admissions	36.0	37.7	34.1	36.9	34.7	34.9	35.1	36.4	39.8	40.8	34.8	37.0
All Surgeries												
Inpatient Surgeries	13.8	13.8	13.5	14.1	13.6	12.7	7.6	7.9	0.0	0.0	0.0	0.0
All PS Orthopedic Surgeries <sup>a</sup>												
Inpatient PS Orthopedic Surgeries	3.6	3.4	3.3	3.2	3.3	2.9	2.3	2.4	0.0	0.0	0.0	0.0
All PS Cardiac Surgeries												
Inpatient PS Cardiac Surgeries	1.7	1.8	1.4	1.9	2.0	1.9	0.9	0.7	0.0	0.0	0.0	0.0

<sup>a</sup>PS= Preference-sensitive

**Appendix Table C-42: Quarterly Resource Use Rate (Number of Beneficiaries with Events per 1,000 Beneficiaries) for Participants and Controls, Welvie Texas MA ITT Analysis Cohort, Q1 to Q3, IDR MA Data**

Measures	Baseline Period (Year Prior to Enrollment)		Q1		Q2		Q3	
	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls
<i>Number of Beneficiaries</i>	48,933	48,947	48,933	48,947	48,884	48,896	42,661	42,890
<b>Health Service Use Rate per 1,000 Beneficiaries</b>								
All Inpatient Admissions	120.1	119.6	42.8	41.9	45.1	44.3	52.0	53.3
Unplanned Inpatient Admissions	98.8	98.1	35.9	35.1	37.8	37.0	44.7	46.1
All Surgeries								
Inpatient Surgeries	47.8	47.2	14.9	14.0	15.2	15.3	16.7	15.6
All PS Orthopedic Surgeries <sup>a</sup>								
Inpatient PS Orthopedic Surgeries	12.0	12.3	3.2	3.7	3.7	4.2	4.0	3.4
All PS Cardiac Surgeries								
Inpatient PS Cardiac Surgeries	6.2	6.6	2.0	1.7	2.3	1.9	1.9	1.7

<sup>a</sup>PS= Preference-sensitive

**Appendix Table C-43: Quarterly Resource Use Rate (Number of Beneficiaries with Events per 1,000 Beneficiaries) for Participants and Controls, Welvie Texas MA ITT Analysis Cohort, Q4 to Q6, IDR MA Data**

Measures	Q4		Q5		Q6	
	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls
<i>Number of Beneficiaries</i>	42,206	42,436	41,813	42,011	41,334	41,589
<b>Health Service Use Rate per 1,000 Beneficiaries</b>						
All Inpatient Admissions	56.2	55.5	53.0	50.0	47.7	47.1
Unplanned Inpatient Admissions	48.0	47.6	45.4	42.3	40.2	39.9
All Surgeries						
Inpatient Surgeries	18.6	18.3	17.3	17.6	16.4	16.8
All PS Orthopedic Surgeries <sup>a</sup>						
Inpatient PS Orthopedic Surgeries	4.6	4.3	4.1	4.5	4.7	4.5
All PS Cardiac Surgeries						
Inpatient PS Cardiac Surgeries	2.4	1.9	1.7	2.3	2.0	2.2

<sup>a</sup>PS= Preference-sensitive

**Appendix Table C-44: Quarterly Resource Use Rate (Number of Beneficiaries with Events per 1,000 Beneficiaries) for Participants and Controls, Welvie Texas MA ITT Analysis Cohort, Q1 to Q3, Welvie-Provided MA Data**

Measures	Baseline Period (Year Prior to Enrollment)		Q1		Q2		Q3	
	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls
<i>Number of Beneficiaries</i>	48,933	48,947	48,933	48,947	48,884	48,896	42,661	42,890
<b>Health Service Use Rate per 1,000 Beneficiaries</b>								
All Inpatient Admissions	134.1	134.9	48.1	47.7	51.1	51.2	56.1	57.4
Unplanned Inpatient Admissions	108.9	110.2	40.2	39.4	42.8	42.8	48.3	49.8
All Surgeries								
Inpatient Surgeries	59.7	60.0	18.1	17.4	18.8	19.1	18.7	17.4
All PS Orthopedic Surgeries <sup>a</sup>								
Inpatient PS Orthopedic Surgeries	12.0	12.3	3.2	3.7	3.7	4.2	4.0	3.4
All PS Cardiac Surgeries								
Inpatient PS Cardiac Surgeries	16.2	16.4	4.0	4.8	4.7	5.3	4.1	4.0

<sup>a</sup>PS= Preference-sensitive

**Appendix Table C-45: Quarterly Resource Use Rate (Number of Beneficiaries with Events per 1,000 Beneficiaries) for Participants and Controls, Welvie Texas MA ITT Analysis Cohort, Q4 to Q6, Welvie-Provided MA Data**

Measures	Q4		Q5		Q6	
	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls
<i>Number of Beneficiaries</i>	42,206	42,436	41,813	42,011	41,334	41,589
<b>Health Service Use Rate per 1,000 Beneficiaries</b>						
All Inpatient Admissions	56.5	56.4	53.0	50.7	48.8	48.5
Unplanned Inpatient Admissions	48.1	48.5	45.7	42.5	45.2	45.1
All Surgeries						
Inpatient Surgeries	19.0	18.5	17.4	18.2	16.7	17.4
All PS Orthopedic Surgeries <sup>a</sup>						
Inpatient PS Orthopedic Surgeries	4.6	4.3	4.1	4.5	4.7	4.5
All PS Cardiac Surgeries						
Inpatient PS Cardiac Surgeries	4.4	4.2	3.9	4.5	4.6	4.4

<sup>a</sup>PS= Preference-sensitive

**Appendix Table C-46: Quarterly Resource Use (Number of Events per 1,000 Beneficiaries) for Participants and Controls,  
Welve Ohio MA ITT Analysis Cohort, Q1 to Q5, IDR MA Data**

Measures	Baseline Period (Year Prior to Enrollment)		Q1		Q2		Q3		Q4		Q5	
	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls
<i>Number of Beneficiaries</i>	82,709	80,971	82,709	80,971	81,890	80,173	80,965	79,249	78,386	76,749	77,652	76,009
<b>Mean Number of Events per 1,000 Beneficiaries</b>												
All Inpatient Admissions	113.0	116.4	61.5	63.0	68.4	70.8	70.1	73.3	66.4	67.4	64.0	66.3
Unplanned Inpatient Admissions	93.4	96.4	50.6	52.1	57.7	59.7	59.3	62.1	55.9	56.5	53.0	54.7
Hospital Days	552.6	570.8	325.0	328.4	360.3	367.3	380.3	405.7	345.0	358.6	331.9	348.4
All Surgeries												
Inpatient Surgeries	33.8	33.5	17.9	18.2	18.3	19.2	19.1	20.2	18.5	18.8	18.4	19.6
Surgical Hospital Days	179.6	179.6	101.0	102.2	104.6	112.9	117.0	124.8	108.1	109.8	101.3	110.6
All PS <sup>a</sup> Orthopedic Surgeries												
Inpatient PS Orthopedic Surgeries	8.6	8.6	5.2	5.1	4.9	4.8	5.2	4.9	4.5	4.7	5.2	5.1
PS Orthopedic Surgery Hospital Days	28.5	28.1	17.6	16.1	16.7	15.7	17.7	17.0	15.7	16.4	16.8	16.3
All PS Cardiac Surgeries												
Inpatient PS Cardiac Surgeries	4.3	4.8	2.3	2.1	2.5	2.5	2.6	2.6	1.8	2.5	2.3	2.5
PS Cardiac Surgery Hospital Days	23.4	28.0	12.8	12.9	15.4	14.8	15.3	17.0	10.7	15.0	12.4	15.2

<sup>a</sup>PS= Preference-sensitive



**Appendix Table C-47: Quarterly Resource Use (Number of Events per 1,000 Beneficiaries) for Participants and Controls,  
Welve Ohio MA ITT Analysis Cohort, Q6 to Q11, IDR MA Data**

Measures	Q6		Q7		Q8		Q9		Q10		Q11	
	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls
<i>Number of Beneficiaries</i>	76,733	75,000	75,868	74,176	71,140	69,636	70,401	68,914	68,487	67,018	67,534	66,006
<b>Mean Number of Events per 1,000 Beneficiaries</b>												
All Inpatient Admissions	67.2	69.0	68.3	72.6	67.6	67.3	68.4	70.0	75.3	75.3	71.1	73.0
Unplanned Inpatient Admissions	56.1	59.0	57.4	61.8	56.8	57.2	57.0	59.2	65.0	66.1	61.7	63.1
Hospital Days	356.1	370.7	370.5	391.6	365.4	369.4	377.2	383.2	400.9	406.5	385.9	398.9
All Surgeries												
Inpatient Surgeries	18.6	18.3	19.3	19.8	19.0	18.2	19.5	19.9	20.0	18.1	18.4	19.6
Surgical Hospital Days	105.8	104.7	115.3	118.4	109.8	111.9	117.0	120.5	123.3	108.7	114.9	123.2
All PS <sup>a</sup> Orthopedic Surgeries												
Inpatient PS Orthopedic Surgeries	4.9	4.7	4.9	4.6	4.7	4.2	5.0	5.1	4.9	4.4	4.5	4.5
PS Orthopedic Surgery Hospital Days	15.9	15.6	16.1	14.6	15.4	15.3	17.0	18.2	15.5	14.3	14.3	15.1
All PS Cardiac Surgeries												
Inpatient PS Cardiac Surgeries	2.2	2.2	2.2	2.6	2.6	2.4	2.4	2.3	2.2	2.2	2.5	2.1
PS Cardiac Surgery Hospital Days	13.9	13.4	13.7	17.4	16.3	14.9	15.8	16.0	14.6	14.7	17.1	13.8

<sup>a</sup>PS= Preference-sensitive

**Appendix Table C-48: Quarterly Resource Use (Number of Events per 1,000 Beneficiaries) for Participants and Controls, Welvie Ohio MA ITT Analysis Cohort, Q1 to Q5, Welvie-Provided MA Data**

Measures	Baseline Period (Year Prior to Enrollment)		Q1		Q2		Q3		Q4		Q5	
	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls
<i>Number of Beneficiaries</i>	82,709	80,971	82,709	80,971	81,890	80,173	80,965	79,249	78,386	76,749	77,652	76,009
<b>Mean Number of Events per 1,000 Beneficiaries</b>												
All Inpatient Admissions	113.8	116.9	71.6	72.7	70.1	72.1	61.0	64.0	56.7	58.0	57.2	58.9
Unplanned Inpatient Admissions	94.0	96.6	59.5	60.7	60.0	61.3	51.6	54.2	47.4	48.7	47.2	48.1
Hospital Days	552.6	570.8	325.0	328.4	360.3	367.3	380.3	405.7	345.0	358.6	331.9	348.4
All Surgeries												
Inpatient Surgeries	34.9	34.4	20.7	21.1	18.5	19.6	16.6	17.9	15.5	15.8	10.5	11.7
Surgical Hospital Days	193.3	194.2	123.4	123.5	109.2	117.7	104.6	115.0	94.5	99.5	63.2	74.6
All PS <sup>a</sup> Orthopedic Surgeries												
Inpatient PS Orthopedic Surgeries	8.4	8.4	5.7	5.5	4.6	4.7	4.3	4.2	3.6	3.8	2.7	2.6
PS Orthopedic Surgery Hospital Days	28.2	26.6	19.4	18.0	15.6	15.6	14.9	14.4	13.0	13.4	9.0	8.5
All PS Cardiac Surgeries												
Inpatient PS Cardiac Surgeries	4.6	5.2	2.8	2.6	2.5	2.4	2.1	2.4	1.5	2.2	1.4	1.7
PS Cardiac Surgery Hospital Days	25.5	30.8	15.9	16.2	15.7	14.2	13.0	15.5	9.3	14.0	9.1	11.1

<sup>a</sup>PS= Preference-sensitive

**Appendix Table C-49: Quarterly Resource Use (Number of Events per 1,000 Beneficiaries) for Participants and Controls, Welvie Ohio MA ITT Analysis Cohort, Q6 to Q11, Welvie-Provided MA Data**

Measures	Q6		Q7		Q8		Q9		Q10		Q11	
	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls
<i>Number of Beneficiaries</i>	76,733	75,000	75,868	74,176	71,140	69,636	70,401	68,914	68,487	67,018	67,534	66,006
<b>Mean Number of Events per 1,000 Beneficiaries</b>												
All Inpatient Admissions	54.1	55.5	50.2	54.4	52.5	51.5	52.3	54.4	56.4	58.1	50.2	53.3
Unplanned Inpatient Admissions	44.9	47.4	42.0	46.3	43.7	43.8	43.9	46.1	49.0	51.4	43.5	46.4
Hospital Days	292.8	300.7	281.9	302.0	296.2	299.0	291.8	304.5	300.2	311.3	280.9	307.1
All Surgeries												
Inpatient Surgeries	14.6	14.4	14.4	14.8	14.4	13.5	7.8	8.1	0.0	0.0	0.0	0.0
Surgical Hospital Days	85.2	85.3	87.7	91.5	85.2	89.8	38.9	42.3	0.1	0.2	0.0	0.3
All PS <sup>a</sup> Orthopedic Surgeries												
Inpatient PS Orthopedic Surgeries	3.7	3.4	3.4	3.2	3.3	2.9	2.3	2.4	0.0	0.0	0.0	0.0
PS Orthopedic Surgery Hospital Days	12.3	11.2	10.7	11.1	11.0	10.8	7.2	7.4	0.1	0.2	0.0	0.0
All PS Cardiac Surgeries												
Inpatient PS Cardiac Surgeries	1.7	1.8	1.5	2.0	2.1	2.0	0.9	0.7	0.0	0.0	0.0	0.0
PS Cardiac Surgery Hospital Days	11.4	11.9	9.2	13.6	13.2	12.5	4.9	4.3	0.1	0.2	0.0	0.0

<sup>a</sup>PS= Preference-sensitive

**Appendix Table C-50: Quarterly Resource Use (Number of Events per 1,000 Beneficiaries) for Participants and Controls, Welvie Texas MA ITT Analysis Cohort, Q1 to Q3, IDR MA Data**

Measures	Baseline Period (Year Prior to Enrollment)		Q1		Q2		Q3	
	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls
<i>Number of Beneficiaries</i>	48,933	48,947	48,933	48,947	48,884	48,896	42,661	42,890
<b>Mean Number of Events per 1,000 Beneficiaries</b>								
All Inpatient Admissions	173.1	173.0	52.5	50.8	55.4	55.3	63.8	66.6
Unplanned Inpatient Admissions	141.5	140.5	43.5	42.2	46.2	45.8	54.5	57.3
Hospital Days	870.0	872.6	276.8	273.9	307.9	305.2	373.0	407.7
All Surgeries								
Inpatient Surgeries	52.3	52.5	15.6	14.4	15.9	15.8	17.2	16.2
Surgical Hospital Days	282.8	284.0	93.2	90.3	94.0	97.2	116.9	116.0
All PS <sup>a</sup> Orthopedic Surgeries								
Inpatient PS Orthopedic Surgeries	12.7	12.9	3.3	3.7	3.8	4.2	4.0	3.5
PS Orthopedic Surgery Hospital Days	50.4	46.5	13.0	12.8	14.3	17.6	16.2	14.1
All PS Cardiac Surgeries								
Inpatient PS Cardiac Surgeries	6.3	6.9	2.0	1.7	2.3	2.0	1.9	1.7
PS Cardiac Surgery Hospital Days	33.2	39.5	11.3	11.7	14.0	12.1	12.3	16.5

<sup>a</sup>PS= Preference-sensitive

**Appendix Table C-51: Quarterly Resource Use (Number of Events per 1,000 Beneficiaries) for Participants and Controls, Welvie Texas MA ITT Analysis Cohort, Q4 to Q6, IDR MA Data**

Measures	Q4		Q5		Q6	
	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls
<i>Number of Beneficiaries</i>	42,206	42,436	41,813	42,011	41,334	41,589
<b>Mean Number of Events per 1,000 Beneficiaries</b>						
All Inpatient Admissions	70.7	69.3	65.8	61.9	58.4	57.2
Unplanned Inpatient Admissions	59.0	58.4	55.6	51.6	49.1	48.5
Hospital Days	434.1	420.0	401.1	367.4	353.1	342.5
All Surgeries						
Inpatient Surgeries	19.6	19.2	18.2	18.3	17.1	17.6
Surgical Hospital Days	142.0	133.2	132.1	124.1	119.8	123.4
All PS <sup>a</sup> Orthopedic Surgeries						
Inpatient PS Orthopedic Surgeries	4.7	4.3	4.2	4.6	4.7	4.5
PS Orthopedic Surgery Hospital Days	18.3	15.4	16.7	18.4	21.6	20.8
All PS Cardiac Surgeries						
Inpatient PS Cardiac Surgeries	2.4	1.9	1.7	2.3	2.1	2.2
PS Cardiac Surgery Hospital Days	17.6	14.0	12.9	15.1	12.2	14.3

<sup>a</sup>PS= Preference-sensitive

**Appendix Table C-52: Quarterly Resource Use (Number of Events per 1,000 Beneficiaries) for Participants and Controls, Welvie Texas MA ITT Analysis Cohort, Q1 to Q3, Welvie-Provided MA Data**

Measures	Baseline Period (Year Prior to Enrollment)		Q1		Q2		Q3	
	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls
<i>Number of Beneficiaries</i>	48,933	48,947	48,933	48,947	48,884	48,896	42,661	42,890
<b>Mean Number of Events per 1,000 Beneficiaries</b>								
All Inpatient Admissions	212.7	212.7	63.6	61.2	68.6	67.0	75.4	76.6
Unplanned Inpatient Admissions	172.2	171.9	52.9	50.4	57.4	55.5	65.1	66.1
Hospital Days	1,114.7	1,122.0	337.4	343.2	388.7	394.5	430.7	469.5
All Surgeries								
Inpatient Surgeries	67.8	69.2	19.1	18.2	20.0	20.0	19.5	18.2
Surgical Hospital Days	400.2	407.1	121.3	122.2	131.4	135.6	137.2	136.3
All PS <sup>a</sup> Orthopedic Surgeries								
Inpatient PS Orthopedic Surgeries	17.4	17.7	4.1	4.9	4.8	5.3	4.1	4.1

Measures	Baseline Period (Year Prior to Enrollment)		Q1		Q2		Q3	
	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls
PS Orthopedic Surgery Hospital Days	68.9	66.7	15.9	18.5	18.8	22.8	16.2	17.2
All PS Cardiac Surgeries								
Inpatient PS Cardiac Surgeries	8.8	9.8	2.4	2.5	3.0	2.5	2.6	2.2
PS Cardiac Surgery Hospital Days	52.0	60.6	14.2	17.4	21.0	15.8	17.2	20.9

<sup>a</sup>PS= Preference-sensitive

**Appendix Table C-53: Quarterly Resource Use (Number of Events per 1,000 Beneficiaries) for Participants and Controls, Welvie Texas MA ITT Analysis Cohort, Q4 to Q6, Welvie-Provided MA Data**

Measures	Q4		Q5		Q6	
	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls
<i>Number of Beneficiaries</i>	42,206	42,436	41,813	42,011	41,334	41,589
<b>Mean Number of Events per 1,000 Beneficiaries</b>						
All Inpatient Admissions	76.8	74.7	71.2	65.6	63.9	63.3
Unplanned Inpatient Admissions	64.7	63.2	60.8	54.6	59.1	59.0
Hospital Days	467.4	454.0	425.7	384.5	390.4	381.6
All Surgeries						
Inpatient Surgeries	20.2	19.6	18.4	19.0	17.7	18.4
Surgical Hospital Days	154.8	140.1	135.6	132.4	131.9	138.6
All PS <sup>a</sup> Orthopedic Surgeries						
Inpatient PS Orthopedic Surgeries	4.5	4.2	3.9	4.6	4.7	4.4
PS Orthopedic Surgery Hospital Days	18.1	15.4	15.6	18.7	20.8	20.7
All PS Cardiac Surgeries						
Inpatient PS Cardiac Surgeries	2.9	2.4	2.0	2.4	2.5	2.5
PS Cardiac Surgery Hospital Days	21.3	16.6	17.5	16.4	17.0	17.5

<sup>a</sup>PS= Preference-sensitive

## APPENDIX D: RESULTS FOR MEDEXPERT

The following tables provide the baseline demographic and health characteristics; mortality, and readmission rates; health service utilization, and medical costs results for intervention and comparison group beneficiaries in the MedExpert FFS and MA cohorts.

### D.1 Demographic and Health Characteristics

**Appendix Table D-1: MedExpert Baseline Demographic and Health Characteristics, Medicare FFS Cohort**

Characteristics	Intervention Group	Control Group	Percent Difference	Standardized Mean Difference <sup>a</sup>
<i>Number of Beneficiaries</i>	87,317	87,317		
<b>Average Age (Years)</b>	75.75	75.73	0.02	0.00
<b>Age under 65<sup>+</sup></b>	9%	9%	0%	0.00
<b>Gender</b>				
Male <sup>+</sup>	46%	46%	0%	0.00
Female <sup>+</sup>	54%	54%	0%	0.00
<b>Race</b>				
White <sup>+</sup>	85%	85%	0%	0.00
Black <sup>+</sup>	6%	6%	0%	0.00
Other <sup>+</sup>	9%	9%	0%	0.00
<b>Dual Eligible<sup>+</sup></b>	13%	13%	0%	0.00
<b>Medicare Eligibility</b>				
Disabled <sup>+</sup>	17%	17%	0%	0.00
ESRD	0%	0%	0%	0.00
Aged <sup>+</sup>	83%	83%	0%	0.00
<b>Evaluation and Management (E&amp;M) Visits</b>				
E&M Visits: 0 <sup>+</sup>	8%	8%	0%	0.00
E&M Visits: 1-5 <sup>+</sup>	30%	30%	0%	0.01
E&M Visits: 6-10 <sup>+</sup>	27%	27%	0%	0.01
E&M Visits: 11-15 <sup>+</sup>	16%	16%	0%	0.01
E&M Visits: 16 <sup>+</sup>	19%	18%	0%	0.01
<b>Resource Use per Beneficiary (Pre-Enrollment Year)</b>				
0 SNF Stays (Prior Year)	96%	95%	0%	0.02
1 SNF Stay (Prior Year) <sup>+</sup>	2%	3%	0%	0.01
2+ SNF Stays (Prior Year) <sup>+</sup>	2%	2%	0%	0.02
0 IP Stays (1Q Prior)	94%	94%	0%	0.00
1 IP Stay (Prior Year) <sup>+</sup>	5%	5%	0%	0.00
2+ IP Stays (Prior Year) <sup>+</sup>	1%	1%	0%	0.00
0 IP Stays (Prior Year)	83%	83%	0%	0.01

Characteristics	Intervention Group	Control Group	Percent Difference	Standardized Mean Difference <sup>a</sup>
1 IP Stay (Prior Year) <sup>+</sup>	11%	11%	0%	0.01
2+ IP Stays (Prior Year) <sup>+</sup>	6%	6%	0%	0.01
<b>ER Visits (Pre-Enrollment Quarter)</b>				
ER Visits: 0	92%	92%	0%	0.00
ER Visits: 1 <sup>+</sup>	6%	6%	0%	0.00
ER Visits: 2 <sup>+</sup>	1%	1%	0%	0.00
<b>Medical Cost per Beneficiary</b>				
Cost (4Q Prior) <sup>+</sup>	\$1,935	\$1,976	-41	0.01
Cost (3Q Prior) <sup>+</sup>	\$2,036	\$2,112	-76	0.01
Cost (2Q Prior) <sup>+</sup>	\$2,095	\$2,110	-14	0.00
Cost (1Q Prior) <sup>+</sup>	\$2,272	\$2,231	40	0.01
IP Cost (Prior Year)	\$2,376	\$2,360	17	0.00
IP Cost (1Q Prior) <sup>+</sup>	\$666	\$617	49	0.01
<b>Frailty Measures</b>				
Home Oxygen <sup>+</sup>	4%	4%	0%	0.01
Urinary Catheter <sup>+</sup>	1%	1%	0%	0.00
Wheelchair Use <sup>+</sup>	0%	0%	0%	0.00
Walker Use <sup>+</sup>	1%	1%	0%	0.01
Charlson Score <sup>+</sup>	0.23	0.24	-0.01	0.01
Area Deprivation Index (ADI) <sup>+</sup>	94.81	95.14	-0.33	0.01
<b>Healthcare Cost and Utilization Project (HCUP) Diagnosis Categories (Pre-Enrollment Year)</b>				
Acute cerebrovascular disease (IP) <sup>+</sup>	1%	1%	0%	0.01
Acute cerebrovascular disease (IP, 30 days prior) <sup>+</sup>	0%	0%	0%	0.00
AMI (IP) <sup>+</sup>	1%	1%	0%	0.00
AMI (IP, 30 days prior) <sup>+</sup>	0%	0%	0%	0.01
Cerebrovascular disease <sup>+</sup>	16%	17%	-1%	0.03
Parkinson's disease and multiple sclerosis <sup>+</sup>	2%	2%	0%	0.00
Asthma <sup>+</sup>	22%	22%	0%	0.00
Coagulation and hemorrhagic disorders <sup>+</sup>	6%	6%	0%	0.01
Congestive heart failure (All Settings) <sup>+</sup>	11%	11%	-1%	0.02
Congestive heart failure (IP) <sup>+</sup>	1%	1%	0%	0.01
Coronary atherosclerosis <sup>+</sup>	26%	27%	-1%	0.02
Dementia <sup>+</sup>	8%	9%	-1%	0.04
Diabetes mellitus without complication <sup>+</sup>	36%	36%	0%	0.00
Diabetes mellitus with complications <sup>+</sup>	16%	16%	0%	0.00
Cardiac dysrhythmias, arrest and ventricular fibrillation <sup>+</sup>	29%	31%	-1%	0.03
Fluid and electrolyte disorders <sup>+</sup>	14%	14%	0%	0.01



Characteristics	Intervention Group	Control Group	Percent Difference	Standardized Mean Difference <sup>a</sup>
Gastrointestinal hemorrhage (All Settings) <sup>+</sup>	5%	5%	0%	0.00
Gastrointestinal hemorrhage (IP) <sup>+</sup>	0%	0%	0%	0.00
Other heart disease <sup>+</sup>	49%	50%	-1%	0.03
Heart valve disorder <sup>+</sup>	19%	19%	0%	0.01
Hepatitis <sup>+</sup>	1%	1%	0%	0.01
Hypertension with complications <sup>+</sup>	15%	16%	0%	0.01
Stomach, pancreas and lung cancer <sup>+</sup>	2%	2%	0%	0.00
Peri- endo- and myocarditis <sup>+</sup>	5%	5%	0%	0.00
Disorders of nervous system <sup>+</sup>	13%	13%	0%	0.00
Other cancers <sup>+</sup>	17%	18%	-1%	0.02
Paralysis <sup>+</sup>	2%	2%	0%	0.01
Pneumonia <sup>+</sup>	11%	11%	0%	0.01
Pneumonia (IP, 30 days prior) <sup>+</sup>	0%	0%	0%	0.00
Pulmonary heart disease <sup>+</sup>	4%	4%	0%	0.01
Renal failure <sup>+</sup>	17%	18%	0%	0.01
Respiratory failure (IP) <sup>+</sup>	0%	0%	0%	0.01
Respiratory failure (IP, 30 days prior)	0%	0%	0%	0.01
Rheumatoid arthritis and related disease <sup>+</sup>	4%	4%	0%	0.00
Septicemia <sup>+</sup>	3%	3%	0%	0.00
Shock <sup>+</sup>	1%	1%	0%	0.01
Tuberculosis <sup>+</sup>	0%	0%	0%	0.01
<b>Procedures (Pre-Enrollment Year)</b>				
Bypass and PTCA (IP) <sup>+</sup>	1%	1%	0%	0.00
Heart valve procedures (IP) <sup>+</sup>	0%	0%	0%	0.00
Hemodialysis <sup>+</sup>	1%	1%	0%	0.01
Peritoneal dialysis <sup>+</sup>	1%	1%	0%	0.01
Procedures on vessels of head and neck (IP)	2%	2%	0%	0.00
Radiology and chemotherapy	3%	3%	0%	0.00
Respiratory intubation and mechanical ventilation <sup>+</sup>	1%	1%	0%	0.00
Blood transfusion <sup>+</sup>	2%	2%	0%	0.00
Blood transfusion (IP) <sup>+</sup>	2%	2%	0%	0.00
Transportation <sup>+</sup>	15%	16%	-1%	0.02
HCC Risk Score	1.40	1.43	-3%	0.02
<b>Comorbidity Categories (Pre-Enrollment Quarter)</b>				
Depression <sup>+</sup>	3%	3%	0%	0.03
AIDS HIV	0%	0%	0%	
Alcohol Abuse <sup>+</sup>	0%	0%	0%	0.00
Cardiac Arrhythmias	16%	16%	0%	0.01

Characteristics	Intervention Group	Control Group	Percent Difference	Standardized Mean Difference <sup>a</sup>
Congestive Heart Failure	7%	7%	0%	0.01
Chronic Pulmonary Disease	12%	12%	0%	0.00
Coagulopathy	2%	2%	0%	0.00
Deficiency Anemia <sup>+</sup>	5%	5%	0%	0.00
Diabetes Complicated	7%	7%	0%	0.00
Diabetes Uncomplicated	19%	20%	0%	0.01
Dementia	2%	2%	0%	0.02
Drug Abuse <sup>+</sup>	1%	1%	0%	0.01
Fluid and Electrolyte Disorders	5%	5%	0%	0.00
Hypothyroidism	13%	13%	0%	0.01
Hypertension Complicated	6%	6%	0%	0.00
Hypertension Uncomplicated	45%	45%	0%	0.00
Liver Disease	2%	2%	0%	0.01
Lymphoma	1%	1%	0%	0.00
Metastatic Cancer	1%	1%	0%	0.01
Myocardial Infarction	2%	2%	0%	0.01
Obesity <sup>+</sup>	4%	3%	0%	0.02
Other Neurological Disorders	4%	4%	0%	0.00
Paralysis	1%	1%	0%	0.01
Peptic Ulcer Disease Excluding Bleeding	1%	1%	0%	0.00
Peripheral Vascular Disorders	8%	9%	0%	0.01
Psychosis <sup>+</sup>	2%	2%	0%	0.00
Pulmonary Circulation Disorders	1%	1%	0%	0.00
Renal Failure	10%	10%	0%	0.00
Rheumatoid Arthritis Collagen Vascular Disease	4%	4%	0%	0.01
Solid Tumor Without Metastasis	8%	8%	0%	0.00
Valvular Disease <sup>+</sup>	7%	7%	0%	0.01
Weight Loss <sup>+</sup>	2%	2%	0%	0.01

<sup>+</sup>Denotes characteristic used for matching.

<sup>a</sup>Standardized mean difference is an effect size measure used in the above table to identify substantial differences between the intervention and control groups; a standardized mean difference of 0.1 or greater is treated as an indicator of a substantial difference between the two groups.

**Appendix Table D-2: MedExpert Baseline Demographic and Health Characteristics, MA Cohort**

Characteristics	Intervention Group	Control Group	Percent Difference	Standardized Mean Difference <sup>a</sup>
<i>Number of Beneficiaries</i>	221,690	221,690		
<b>Average Age (Years)</b>	73.25	73.24	0.01	0.00
<b>Age under 65<sup>+</sup></b>	11%	11%	0%	0.00
<b>Gender</b>				
Male <sup>+</sup>	45%	45%	0%	0.00
Female <sup>+</sup>	55%	55%	0%	0.00
<b>Race</b>				
White <sup>+</sup>	83%	83%	0%	0.00
Black <sup>+</sup>	9%	9%	0%	0.00
Other	8%	8%	0%	0.00
<b>Dual Eligible<sup>+</sup></b>	12%	12%	0%	0.00
<b>Medicare Eligibility</b>				
Disabled <sup>+</sup>	21%	21%	0%	0.00
ESRD	0%	0%	0%	0.00
Aged <sup>+</sup>	79%	79%	0%	0.00
<b>Resource Use per Beneficiary (Pre-Enrollment Year)</b>				
0 IP Stays (1Q Prior)	96%	96%	0%	0.00
1 IP Stay (Prior Year) <sup>+</sup>	3%	3%	0%	0.00
2+ IP Stays (Prior Year) <sup>+</sup>	1%	1%	0%	0.00
0 IP Stays (Prior Year) <sup>+</sup>	87%	87%	0%	0.00
1 IP Stay (Prior Year) <sup>+</sup>	9%	9%	0%	0.00
2+ IP Stays (Prior Year)	3%	3%	0%	0.00
<b>Frailty Measures</b>				
Area Deprivation Index (ADI) <sup>+</sup>	98.27	98.51	-0.24	0.01
<b>Risk Adjustment Processing System (RAPS) V21 Hierarchical Condition Categories</b>				
HCC1 HIV/AIDS	0%	0%	0%	0.00
HCC2 SEPTICEMIA, SEPSIS, SYSTEMIC INFLAM RESPONSE SYNDROME/SHOCK <sup>+</sup>	1%	1%	0%	0.00
HCC6 OPPORTUNISTIC INFECTIONS	0%	0%	0%	0.00
HCC8 METASTATIC CANCER AND ACUTE <sup>+</sup> LEUKEMIA	0%	0%	0%	0.00
HCC9 LUNG AND OTHER SEVERE CANCERS <sup>+</sup>	1%	1%	0%	0.00
HCC10 LYMPHOMA AND OTHER CANCERS <sup>+</sup>	1%	1%	0%	0.00
HCC11 COLORECTAL, BLADDER, AND OTHER CANCERS <sup>+</sup>	1%	1%	0%	0.00
HCC12 BREAST, PROSTATE, AND OTHER CANCERS AND TUMORS <sup>+</sup>	5%	5%	0%	0.01

Characteristics	Intervention Group	Control Group	Percent Difference	Standardized Mean Difference <sup>a</sup>
HCC17 DIABETES WITH ACUTE COMPLICATIONS <sup>+</sup>	0%	0%	0%	0.00
HCC18 DIABETES WITH CHRONIC COMPLICATIONS <sup>+</sup>	12%	12%	0%	0.01
HCC19 DIABETES WITHOUT COMPLICATION <sup>+</sup>	13%	14%	0%	0.01
HCC21 PROTEIN-CALORIE MALNUTRITION	1%	1%	0%	0.00
HCC22 MORBID OBESITY	4%	4%	0%	0.02
HCC23 OTHER SIGNIFICANT ENDOCRINE AND METABOLIC DISORDERS	2%	2%	0%	0.00
HCC27 END-STAGE LIVER DISEASE	0%	0%	0%	0.00
HCC28 CIRRHOSIS OF LIVER	0%	0%	0%	0.00
HCC29 CHRONIC HEPATITIS <sup>+</sup>	0%	0%	0%	0.00
HCC33 INTESTINAL OBSTRUCTION/PERFORATION	1%	1%	0%	0.00
HCC34 CHRONIC PANCREATITIS	0%	0%	0%	0.01
HCC35 INFLAMMATORY BOWEL DISEASE	1%	1%	0%	0.00
HCC39 BONE/JOINT/MUSCLE INFECTIONS/NECROSIS	1%	1%	0%	0.00
HCC40 RHEUMATOID ARTHRITIS AND INFLAM CONNECTIVE TISSUE DISEASE <sup>+</sup>	5%	5%	0%	0.00
HCC46 SEVERE HEMATOLOGICAL DISORDERS	0%	0%	0%	0.00
HCC47 DISORDERS OF IMMUNITY	1%	1%	0%	0.00
HCC48 COAGULATION DEFECTS & OTH SPECIFIED HEMATOLOGICAL DISORDERS <sup>+</sup>	3%	3%	0%	0.00
HCC51 DEMENTIA WITH COMPLICATIONS <sup>+</sup>	1%	1%	0%	0.01
HCC52 DEMENTIA WITHOUT COMPLICATION <sup>+</sup>	4%	4%	0%	0.00
HCC54 DRUG/ALCOHOL PSYCHOSIS	0%	0%	0%	0.01
HCC55 DRUG/ALCOHOL DEPENDENCE	2%	2%	0%	0.00
HCC57 SCHIZOPHRENIA	1%	1%	0%	0.02
HCC58 MAJOR DEPRESSIVE, BIPOLAR, AND PARANOID DISORDERS <sup>+</sup>	7%	7%	0%	0.00
HCC70 QUADRIPLEGIA	0%	0%	0%	0.01
HCC71 PARAPLEGIA	0%	0%	0%	0.00
HCC72 SPINAL CORD DISORDERS/INJURIES	0%	0%	0%	0.00
HCC73 AMYOTROPHIC LATERAL SCLEROSIS & OTH MOTOR NEURON DISEASE	0%	0%	0%	0.00
HCC74 CEREBRAL PALSY	0%	0%	0%	0.00
HCC75 POLYNEUROPATHY	9%	10%	0%	0.01
HCC76 MUSCULAR DYSTROPHY	0%	0%	0%	0.00
HCC77 MULTIPLE SCLEROSIS <sup>+</sup>	0%	0%	0%	0.00

Characteristics	Intervention Group	Control Group	Percent Difference	Standardized Mean Difference <sup>a</sup>
HCC78 PARKINSONS AND HUNTINGTONS DISEASES <sup>+</sup>	1%	1%	0%	0.00
HCC79 SEIZURE DISORDERS AND CONVULSIONS <sup>+</sup>	2%	2%	0%	0.01
HCC80 COMA, BRAIN COMPRESSION/ANOXIC DAMAGE <sup>+</sup>	0%	0%	0%	0.00
HCC82 RESPIRATOR DEPENDENCE/TRACHEOSTOMY STATUS <sup>+</sup>	0%	0%	0%	0.00
HCC83 RESPIRATORY ARREST <sup>+</sup>	0%	0%	0%	0.00
HCC84 CARDIO-RESPIRATORY FAILURE AND SHOCK <sup>+</sup>	2%	2%	0%	0.00
HCC85 CONGESTIVE HEART FAILURE <sup>+</sup>	9%	9%	0%	0.00
HCC86 ACUTE MYOCARDIAL INFARCTION <sup>+</sup>	1%	1%	0%	0.00
HCC87 UNSTABLE ANGINA & OTH ACUTE ISCHEMIC HEART DISEASE <sup>+</sup>	1%	1%	0%	0.00
HCC88 ANGINA PECTORIS <sup>+</sup>	3%	2%	0%	0.00
HCC96 SPECIFIED HEART ARRHYTHMIAS <sup>+</sup>	10%	10%	0%	0.00
HCC99 CEREBRAL HEMORRHAGE <sup>+</sup>	0%	0%	0%	0.00
HCC100 ISCHEMIC OR UNSPECIFIED STROKE <sup>+</sup>	2%	2%	0%	0.00
HCC103 HEMIPLEGIA/HEMIPARESIS	1%	1%	0%	0.01
HCC104 MONOPLÉGIA, OTHER PARALYTIC SYNDROMES	0%	0%	0%	0.00
HCC106 ATHEROSCLEROSIS OF EXTREMITIES W/ULCERATION OR GANGRENE	0%	0%	0%	0.00
HCC107 VASCULAR DISEASE WITH COMPLICATIONS	1%	1%	0%	0.00
HCC108 VASCULAR DISEASE	14%	14%	0%	0.00
HCC110 CYSTIC FIBROSIS	0%	0%	0%	0.01
HCC111 CHRONIC OBSTRUCTIVE PULMONARY DISEASE <sup>+</sup>	13%	13%	0%	0.00
HCC112 FIBROSIS OF LUNG AND OTHER CHRONIC LUNG DISORDERS	1%	1%	0%	0.00
HCC114 ASPIRATION AND SPECIFIED BACTERIAL PNEUMONIAS <sup>+</sup>	0%	0%	0%	0.00
HCC115 PNEUMOCOCCAL PNEUMONIA, EMPYEMA, LUNG ABSCESS <sup>+</sup>	0%	0%	0%	0.00
HCC122 PROLIFERATIVE DIABTIC RETINOPATHY & VITREOUS HEMORR	1%	1%	0%	0.00
HCC124 EXUDATIVE MACULAR DEGENERATION	1%	1%	0%	0.00
HCC134 DIALYSIS STATUS <sup>+</sup>	0%	0%	0%	0.00
HCC135 ACUTE RENAL FAILURE <sup>+</sup>	2%	2%	0%	0.00

Characteristics	Intervention Group	Control Group	Percent Difference	Standardized Mean Difference <sup>a</sup>
HCC136 CHRONIC KIDNEY DISEASE, STAGE 5 <sup>+</sup>	0%	0%	0%	0.00
HCC137 CHRONIC KIDNEY DISEASE, SEVERE (STAGE 4) <sup>+</sup>	1%	1%	0%	0.00
HCC138 CHRONIC KIDNEY DISEASE, MODERATE (STAGE 3) <sup>+</sup>	7%	7%	0%	0.00
HCC139 CHRONIC KIDNEY DIS, MILD OR UNSPEC (STG 1-2 OR UNSPEC) <sup>+</sup>	4%	4%	0%	0.00
HCC140 UNSPECIFIED RENAL FAILURE	0%	0%	0%	0.00
HCC141 NEPHRITIS	0%	0%	0%	0.00
HCC157 PRESS ULCER OF SKN W/NECROSIS THR TO MUSCLE, TENDON, BONE	0%	0%	0%	0.00
HCC158 PRESSURE ULCER OF SKIN WITH FULL THICKNESS SKIN LOSS	0%	0%	0%	0.01
HCC159 PRESSURE ULCER OF SKIN WITH PARTIAL THICKNESS SKIN LOSS	0%	0%	0%	0.01
HCC160 PRESSURE PRE-ULCER SKIN CHANGES OR UNSPECIFIED STAGE	0%	0%	0%	0.00
HCC161 CHRONIC ULCER OF SKIN, EXCEPT PRESSURE	1%	1%	0%	0.00
HCC162 SEVERE SKIN BURN OR CONDITION	0%	0%	0%	0.01
HCC166 SEVERE HEAD INJURY	0%	0%	0%	0.00
HCC167 MAJOR HEAD INJURY	0%	0%	0%	0.00
HCC169 VERTEBRAL FRACTURES WITHOUT SPINAL CORD INJURY	1%	1%	0%	0.00
HCC170 HIP FRACTURE/DISLOCATION	1%	1%	0%	0.00
HCC173 TRAUMATIC AMPUTATIONS AND COMPLICATIONS	0%	0%	0%	0.00
HCC176 COMPLICATIONS OF SPECIFIED IMPLANTED DEVICE OR GRAFT	1%	1%	0%	0.01
HCC186 MAJOR ORGAN TRANSPLANT OR REPLACEMENT STATUS	0%	0%	0%	0.01
HCC188 ARTIFICIAL OPENINGS FOR FEEDING OR ELIMINATION	1%	1%	0%	0.00
HCC189 AMPUTATION STATUS, LOWER LIMB/AMPUTATION COMPLICATIONS	0%	0%	0%	0.00

<sup>+</sup>Denotes characteristic used for matching.

<sup>a</sup>Standardized mean difference is an effect size measure used in the above table to identify substantial differences between the intervention and control groups; a standardized mean difference of 0.1 or greater is treated as an indicator of a substantial difference between the two groups.

## D.2 Mortality and Readmissions

**Appendix Table D-3: Cumulative and Yearly Mortality and Readmissions per 1,000 Beneficiaries, Differences after MedExpert Enrollment, Medicare FFS Cohort**

Measures	Full Intervention Period <sup>a</sup>	Total Year 1 <sup>b</sup>	Total Year 2
Number of Participants	87,317	87,317	42,505
<b>Mortality</b>			
<i>Difference<sup>c</sup></i>	-1.07	-0.62	0.59
<i>90% Confidence Interval</i>	(-5.1   3.0)	(-2.6   1.3)	(-2.6   3.8)
<i>P-Value</i>	0.663	0.603	0.761
<b>30-Day Hospital Readmissions Following All Inpatient Admissions</b>			
<i>Difference</i>	0.00	-4.93	-7.57
<i>90% Confidence Interval</i>	(-51.2   51.2)	(-30.2   20.4)	(-46.2   31.1)
<i>P-Value</i>	1.000	0.749	0.747
<b>30-Day Hospital Unplanned Readmissions Following All Inpatient Admission</b>			
<i>Difference</i>	-0.88	-4.09	-11.13
<i>90% Confidence Interval</i>	(-51.1   49.4)	(-28.9   20.7)	(-49.2   26.9)
<i>P-Value</i>	0.977	0.786	0.630

<sup>a</sup>Results are cumulative across all available quarters.

<sup>b</sup>Year 1 refers to the one-year period after a beneficiary's enrollment in the program, Year 2 refers to the subsequent one-year periods for a given beneficiary. Since beneficiaries enroll in the SDM programs on a rolling basis, the intervention period is defined at the beneficiary-level and not based on calendar quarters or years.

<sup>c</sup>The “difference” estimate represents the difference in the number of deaths per 1,000 beneficiaries or the difference in the number of beneficiaries with at least one readmission for every 1,000 beneficiaries who have at least one inpatient admission, as compared between the intervention and control groups during the relevant quarter in the intervention period.

**Appendix Table D-4: Cumulative and Yearly Mortality and Readmissions per 1,000 Beneficiaries, Differences after MedExpert Enrollment, MA Cohort**

Measures	Full Intervention Period <sup>a</sup>	Total Year 1 <sup>b</sup>	Total Year 2
Number of Participants	221,690	221,690	221,690
<b>Mortality</b>			
<i>Difference<sup>c</sup></i>	-1.57	0.09	-2.41 **
<i>90% Confidence Interval</i>	(-3.7   0.6)	(-0.9   1.1)	(-4.2   -0.7)
<i>P-Value</i>	0.227	0.880	0.023
<b>30-Day Hospital Readmissions Following All Inpatient Admissions</b>			
<i>Difference</i>	-63.79***	-31.72***	-14.10
<i>90% Confidence Interval</i>	(-99.1   -28.4)	(-48.7   -14.8)	(-41.7   13.5)
<i>P-Value</i>	0.003	0.002	0.400
<b>30-Day Hospital Unplanned Readmissions Following All Inpatient Admission</b>			
<i>Difference</i>	-55.11***	-26.23***	-15.17
<i>90% Confidence Interval</i>	(-89.7   -20.5)	(-42.8   -9.7)	(-42.2   11.8)
<i>P-Value</i>	0.009	0.009	0.355

\*\* Statistically significant at the five percent level.

\*\*\* Statistically significant at the one percent level.

<sup>a</sup>Results are cumulative across all available quarters.

<sup>b</sup>Year 1 refers to the one-year period after a beneficiary's enrollment in the program, Year 2 refers to the subsequent one-year periods for a given beneficiary. Since beneficiaries enroll in the SDM programs on a rolling basis, the intervention period is defined at the beneficiary-level and not based on calendar quarters or years.

<sup>c</sup>The "difference" estimate represents the difference in the number of deaths per 1,000 beneficiaries or the difference in the number of beneficiaries with at least one readmission for every 1,000 beneficiaries who have at least one inpatient admission, as compared between the intervention and control groups during the relevant quarter in the intervention period.



**Appendix Table D-5: Quarterly Difference in Mortality per 1,000 Beneficiaries after MedExpert Enrollment, Medicare FFS and MA Cohorts**

Medicare Cohort	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10
Medicare FFS										
<i>Number of Participant Beneficiaries</i>	87,317	86,153	77,301	60,415	42,505	39,576	23,351	22,965	22,611	7,320
<i>Difference<sup>a</sup></i>	-0.42	-1.27**	-0.45	2.19***	0.36	0.31	-0.99	0.64	-0.05	-2.73
<i>90% Confidence Interval</i>	(-1.3   0.5)	(-2.2   -0.4)	(-1.4   0.5)	(1.0   3.4)	(-1.0   1.7)	(-1.2   1.8)	(-2.9   0.9)	(-1.2   2.5)	(-1.9   1.8)	(-6.2   0.7)
<i>P-Value</i>	0.444	0.023	0.460	0.002	0.665	0.730	0.396	0.570	0.965	0.195
Medicare Advantage										
<i>Number of Participant Beneficiaries</i>	221,690	219,721	211,076	186,786	161,579	90,203	36,766	36,207	35,673	11,605
<i>Difference<sup>a</sup></i>	0.03	-0.22	-0.09	0.43	-0.47	-0.86*	-1.10	-0.06	0.28	-2.06
<i>90% Confidence Interval</i>	(-0.4   0.5)	(-0.7   0.3)	(-0.6   0.4)	(-0.1   1.0)	(-1.0   0.1)	(-1.7   0.0)	(-2.6   0.4)	(-1.5   1.4)	(-1.2   1.7)	(-4.7   0.5)
<i>P-Value</i>	0.911	0.463	0.762	0.187	0.181	0.091	0.225	0.950	0.752	0.193

\* Statistically significant at the ten percent level.

\*\* Statistically significant at the five percent level.

\*\*\* Statistically significant at the one percent level.

<sup>a</sup>The “difference” estimate represents the difference in the number of deaths per 1,000 beneficiaries between the intervention group and control group in the relevant quarter of the intervention period. There were no deaths in the intervention or control groups prior to program enrollment as beneficiaries were required to be alive on program start date to be included in the study.

**Appendix Table D-6: Quarterly Difference in Readmissions per 1,000 IP Admissions after MedExpert Enrollment, Medicare FFS Cohort**

Measures	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10
<i>Number of Participant Beneficiaries</i>	87,317	86,153	77,301	60,415	42,505	39,576	23,351	22,965	22,611	7,320
<b>30-Day Hospital Readmissions per 1,000 Beneficiaries Following:</b>										
All Inpatient Admissions	5316	5451	5156	4066	2824	2733	1618	1549	1534	467
<i>Difference<sup>a</sup></i>	-11.50	-4.71	1.29	13.67	20.14**	-7.00	-31.40**	-2.22	32.40**	-18.28
<i>90% Confidence Interval</i>	(-23.8   0.8)	(-16.8   7.3)	(-11.2   13.8)	(-0.4   27.7)	(3.2   37.0)	(-24.2   10.2)	(-54.2   -8.6)	(-25.0   20.6)	(10.2   54.6)	(-62.3   25.8)
<i>P-Value</i>	0.123	0.520	0.866	0.110	0.050	0.504	0.023	0.873	0.016	0.495
<b>30-Day Hospital Unplanned Readmissions per 1,000 Beneficiaries Following:</b>										
All Inpatient Admissions	5316	5451	5156	4066	2824	2733	1618	1549	1534	467
<i>Difference</i>	-10.88	-3.41	0.05	13.70	17.69*	-6.23	-31.84**	-3.68	32.94**	-18.18
<i>90% Confidence Interval</i>	(-22.9   1.1)	(-15.2   8.4)	(-12.3   12.4)	(-0.1   27.5)	(1.0   34.4)	(-23.2   10.7)	(-54.2   -9.4)	(-26.0   18.7)	(11.1   54.8)	(-61.7   25.3)
<i>P-Value</i>	0.137	0.635	0.995	0.102	0.081	0.546	0.019	0.786	0.013	0.492

\* Statistically significant at the ten percent level.

\*\* Statistically significant at the five percent level.

<sup>a</sup>The “difference” estimate represents the difference in the number of beneficiaries with at least one readmission for every 1,000 beneficiaries who have at least one inpatient admission, as compared between the intervention and control groups during the relevant quarter in the intervention period.

**Appendix Table D-7: Quarterly Difference in Readmissions per 1,000 IP Admissions after MedExpert Enrollment, MA Cohort**

Measures	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10
<i>Number of Participant Beneficiaries</i>	221,690	219,721	211,076	186,786	161,579	90,203	36,766	36,207	35,673	11,605
<b>30-Day Hospital Readmissions per 1,000 Beneficiaries Following:</b>										
All Inpatient Admissions	9708	9800	9684	8441	6979	4066	1880	1793	1778	599
<i>Difference<sup>a</sup></i>	-14.90***	-5.20	-6.71	-4.49	-4.34	5.23	-13.12	-10.14	-4.34	14.87
<i>90% Confidence Interval</i>	(-23.2   -6.6)	(-13.5   3.1)	(-15.1   1.7)	(-13.5   4.5)	(-14.4   5.7)	(-7.5   18.0)	(-32.8   6.6)	(-30.5   10.2)	(-24.1   15.4)	(-22.0   51.8)
<i>P-Value</i>	0.003	0.302	0.188	0.412	0.477	0.501	0.273	0.412	0.718	0.507
<b>30-Day Hospital Unplanned Readmissions per 1,000 Beneficiaries Following:</b>										
All Inpatient Admissions	9708	9800	9684	8441	6979	4066	1880	1793	1778	599
<i>Difference</i>	-13.93***	-3.28	-5.50	-3.11	-6.21	5.01	-12.08	-5.63	-3.02	10.62
<i>90% Confidence Interval</i>	(-22.0   -5.9)	(-11.4   4.9)	(-13.7   2.7)	(-11.9   5.7)	(-16.0   3.6)	(-7.5   17.5)	(-31.4   7.3)	(-25.5   14.2)	(-22.5   16.5)	(-25.5   46.7)
<i>P-Value</i>	0.005	0.507	0.271	0.561	0.298	0.509	0.305	0.641	0.799	0.628

\*\*\* Statistically significant at the one percent level.

<sup>a</sup>The “difference” estimate represents the difference in the number of beneficiaries with at least one readmission for every 1,000 beneficiaries who have at least one inpatient admission, as compared between the intervention and control groups during the relevant quarter in the intervention period.

**Appendix Table D-8: Quarterly Mortality and Readmission per 1,000 Beneficiaries for Participants and Controls, MedExpert Medicare FFS Cohort, Q1 to Q5**

Measures	Q1		Q2		Q3		Q4		Q5	
	Intervention	Controls	Intervention	Controls	Intervention	Controls	Intervention	Controls	Intervention	Controls
<i>Number of Participant Beneficiaries</i>	87,317	87,317	86,153	86,116	77,301	77,687	60,415	60,316	42,505	45,896
All-Cause Mortality per 1,000 Beneficiaries	13.3	13.8	13.1	14.3	14.0	14.5	16.3	14.1	15.5	15.1
30-Day Hospital Readmission per 1,000 Beneficiaries Following Any Inpatient Admissions	181.0	192.5	177.4	182.1	181.1	179.9	184.7	171.0	199.7	179.6
30-day Hospital Unplanned Readmission per 1,000 Beneficiaries, Following Any Inpatient Admission	172.1	183.0	169.3	172.7	173.0	173.0	176.3	162.6	192.3	174.6

**Appendix Table D-9: Quarterly Mortality and Readmission per 1,000 Beneficiaries for Participants and Controls, MedExpert Medicare FFS Cohort, Q6 to Q10**

Measures	Q6		Q7		Q8		Q9		Q10	
	Intervention	Controls	Intervention	Controls	Intervention	Controls	Intervention	Controls	Intervention	Controls
<i>Number of Participant Beneficiaries</i>	39,576	40,579	23,351	23,218	22,965	22,810	22,611	22,464	7,320	6,736
All-Cause Mortality per 1,000 Beneficiaries	16.5	16.2	15.8	16.8	15.2	14.5	14.4	14.5	14.3	17.1
30-Day Hospital Readmission per 1,000 Beneficiaries Following Any Inpatient Admissions	184.8	191.8	183.6	215.0	183.3	185.6	186.4	154.0	201.3	219.6
30-day Hospital Unplanned Readmission per 1,000 Beneficiaries, Following Any Inpatient Admission	177.8	184.1	174.3	206.1	173	176.7	179.9	147	194.9	213

**Appendix Table D-10: Quarterly Mortality and Readmission per 1,000 Beneficiaries for Participants and Controls,  
MedExpert MA Cohort, Q1 to Q5**

Measures	Q1		Q2		Q3		Q4		Q5	
	Intervention	Controls	Intervention	Controls	Intervention	Controls	Intervention	Controls	Intervention	Controls
<i>Number of Participant Beneficiaries</i>	221,690	221,690	219,721	219,728	211,076	209,731	186,786	184,684	161,579	154,768
All-Cause Mortality per 1,000 Beneficiaries	8.9	8.9	9.7	9.9	10.1	10.2	10.0	9.6	9.4	9.9
30-Day Hospital Readmission per 1,000 Beneficiaries Following Any Inpatient Admissions	140.6	155.5	148.9	154.1	146.9	153.7	147.6	152.1	151.5	155.8
30-day Hospital Unplanned Readmission per 1,000 Beneficiaries, Following Any Inpatient Admission	132.1	146.0	142.9	146.1	140.4	145.9	140.1	143.3	142.4	148.6

**Appendix Table D-11: Quarterly Mortality and Readmission per 1,000 Beneficiaries for Participants and Controls,  
MedExpert MA Cohort, Q6 to Q10**

Measures	Q6		Q7		Q8		Q9		Q10	
	Intervention	Controls	Intervention	Controls	Intervention	Controls	Intervention	Controls	Intervention	Controls
<i>Number of Participant Beneficiaries</i>	90,203	87,746	36,766	36,675	36,207	36,068	35,673	35,533	11,605	10,476
All-Cause Mortality per 1,000 Beneficiaries	11.3	12.1	14.7	15.8	14.3	14.4	14.4	14.2	12.9	15.0
30-Day Hospital Readmission per 1,000 Beneficiaries Following Any Inpatient Admissions	147.8	142.6	154.3	167.4	158.4	168.5	145.1	149.4	180.3	165.4
30-day Hospital Unplanned Readmission per 1,000 Beneficiaries, Following Any Inpatient Admission	139.9	134.9	148.4	160.5	151.7	157.3	141.2	144.2	168.6	158

### D.3 Health Service Resource Use

**Appendix Table D-12: Cumulative and Yearly DiD Estimates of Resource Use per 1,000 Beneficiaries, MedExpert Medicare FFS Cohort**

Measures (Number of Events or Days)	Full Intervention Period <sup>a</sup>	Total Year 1 <sup>b</sup>	Total Year 2
<i>Number of Participant Beneficiaries</i>	87,317	87,317	42,505
ER Visits	0.35	-9.04	18.14**
<i>90% Confidence Interval</i>	(-20.1   20.8)	(-18.2   0.1)	(6.4   29.9)
<i>P-Value</i>	0.977	0.105	0.011
Inpatient Admissions	14.95	6.47	3.82
<i>90% Confidence Interval</i>	(-3.0   32.9)	(-1.6   14.5)	(-7.3   14.9)
<i>P-Value</i>	0.172	0.185	0.571
Unplanned Inpatient Admissions	13.13	5.56	3.83
<i>90% Confidence Interval</i>	(-2.7   29.0)	(-1.5   12.6)	(-6.1   13.8)
<i>P-Value</i>	0.173	0.196	0.527
Hospital Days	115.29	78.10	-6.80
<i>90% Confidence Interval</i>	(-65.5   296.1)	(-1.4   157.6)	(-114.5   100.9)
<i>P-Value</i>	0.294	0.106	0.917

\*\* Statistically significant at the five percent level.

<sup>a</sup>Results are cumulative across all available quarters.

<sup>b</sup>Year 1 refers to the one-year period after a beneficiary's enrollment in the program, Year 2 refers to the subsequent one-year periods for a given beneficiary. Since beneficiaries enroll in the SDM programs on a rolling basis, the intervention period is defined at the beneficiary-level and not based on calendar quarters or years.

**Appendix Table D-13: Cumulative and Yearly DiD Estimates of Resource Use per 1,000 Beneficiaries, MedExpert MA Cohort**

Measures (Number of Events or Days)	Full Intervention Period <sup>a</sup>	Total Year 1 <sup>b</sup>	Total Year 2
<i>Number of Participant Beneficiaries</i>	221,690	221,690	221,690
Inpatient Admissions	-31.20***	-13.97***	-11.84***
<i>90% Confidence Interval</i>	(-40.0   -22.5)	(-17.8   -10.1)	(-17.3   -6.4)
<i>P-Value</i>	<0.001	<0.001	<0.001
Unplanned Inpatient Admissions	-27.83***	-11.54***	-12.44***
<i>90% Confidence Interval</i>	(-35.8   -19.9)	(-15.0   -8.0)	(-17.4   -7.4)
<i>P-Value</i>	<0.001	<0.001	<0.001
Hospital Days	-142.26***	-54.01***	-73.87***
<i>90% Confidence Interval</i>	(-209.0   -75.5)	(-83.4   -24.6)	(-115.8   -31.9)
<i>P-Value</i>	<0.001	0.003	0.004

\*\*\* Statistically significant at the one percent level.

<sup>a</sup>Results are cumulative across all available quarters.

<sup>b</sup>Year 1 refers to the one-year period after a beneficiary's enrollment in the program, Year 2 refers to the subsequent one-year periods for a given beneficiary. Since beneficiaries enroll in the SDM programs on a rolling basis, the intervention period is defined at the beneficiary-level and not based on calendar quarters or years.

**Appendix Table D-14: Quarterly DiD Estimates of Resource Use (Number of Events or Days per 1,000 Beneficiaries), MedExpert Medicare FFS Cohort**

<b>Measures (Number of Events or Days per 1,000 Beneficiaries)</b>	<b>Q1</b>	<b>Q2</b>	<b>Q3</b>	<b>Q4</b>	<b>Q5</b>	<b>Q6</b>	<b>Q7</b>	<b>Q8</b>	<b>Q9</b>	<b>Q10</b>
<i>Number of Participant Beneficiaries</i>	87,317	86,153	77,301	60,415	42,505	39,576	23,351	22,965	22,611	7,320
ER Visits	-4.29*	-4.42*	0.36	-2.31	1.31	4.90	4.36	3.82	1.36	7.90
<i>90% Confidence Interval</i>	(-8,0)	(-8,-1)	(-4,4)	(-7,2)	(-4,7)	(-1,10)	(-2,11)	(-3,10)	(-5,8)	(-4,20)
<i>P-Value</i>	0.064	0.056	0.883	0.406	0.682	0.137	0.254	0.328	0.735	0.283
Inpatient Admissions	-2.45	0.79	1.88	2.98	1.69	-1.65	-6.08	0.87	4.20	-0.60
<i>90% Confidence Interval</i>	(-6,1)	(-3,4)	(-2,5)	(-1,7)	(-3,6)	(-7,3)	(-13,0)	(-6,7)	(-2,11)	(-13,11)
<i>P-Value</i>	0.224	0.692	0.378	0.215	0.552	0.585	0.128	0.824	0.280	0.934
Unplanned Inpatient Admissions	-2.18	0.25	1.04	4.21**	2.82	-0.11	-6.82*	-0.47	4.31	-1.38
<i>90% Confidence Interval</i>	(-5,1)	(-3,3)	(-2,4)	(1,8)	(-1,7)	(-5,4)	(-13,-1)	(-6,5)	(-2,10)	(-13,10)
<i>P-Value</i>	0.219	0.890	0.585	0.050	0.266	0.969	0.060	0.893	0.232	0.842
Hospital Days	-16.04	18.38	26.95	40.33*	45.68*	-15.05	-84.31**	-13.11	6.83	-35.38
<i>90% Confidence Interval</i>	(-47,15)	(-13,49)	(-7,61)	(4,77)	(0,91)	(-63,33)	(-151,-18)	(-77,51)	(-53,66)	(-173,102)
<i>P-Value</i>	0.393	0.331	0.190	0.070	0.098	0.607	0.038	0.736	0.851	0.672

\* Statistically significant at the ten percent level.

\*\* Statistically significant at the five percent level.



**Appendix Table D-15: Quarterly DiD Estimates of Resource Use (Number of Events or Days per 1,000 Beneficiaries),  
MedExpert MA Cohort**

<b>Measures (Number of Events or Days per 1,000 Beneficiaries)</b>	<b>Q1</b>	<b>Q2</b>	<b>Q3</b>	<b>Q4</b>	<b>Q5</b>	<b>Q6</b>	<b>Q7</b>	<b>Q8</b>	<b>Q9</b>	<b>Q10</b>
<i>Number of Participant Beneficiaries</i>	221,690	219,721	211,076	186,786	161,579	90,203	36,766	36,207	35,673	11,605
Inpatient Admissions	-3.98***	-4.50***	-2.88***	-2.13**	-2.39**	-2.65*	-2.46	-0.90	2.22	3.63
<i>90% Confidence Interval</i>	(-6,-2)	(-6,-3)	(-5,-1)	(-4,0)	(-4,-1)	(-5,0)	(-7,2)	(-5,3)	(-2,6)	(-4,11)
<i>P-Value</i>	<0.001	<0.001	0.004	0.043	0.034	0.084	0.336	0.719	0.375	0.426
Unplanned Inpatient Admissions	-3.50***	-3.58***	-2.56***	-1.56	-2.32**	-2.18	-3.70	-1.16	1.60	2.55
<i>90% Confidence Interval</i>	(-5,-2)	(-5,-2)	(-4,-1)	(-3,0)	(-4,-1)	(-5,0)	(-8,0)	(-5,3)	(-2,5)	(-4,10)
<i>P-Value</i>	<0.001	<0.001	0.005	0.105	0.025	0.123	0.123	0.622	0.498	0.550
Hospital Days	-19.53***	-15.91**	-13.23*	-4.92	-14.55*	-6.50	-43.51**	-17.35	0.64	20.02
<i>90% Confidence Interval</i>	(-32,-7)	(-28,-4)	(-26,-1)	(-18,8)	(-28,-1)	(-29,-1)	(-77,-10)	(-48,13)	(-26,28)	(-33,73)
<i>P-Value</i>	0.008	0.033	0.085	0.534	0.086	0.581	0.032	0.347	0.969	0.532

\* Statistically significant at the ten percent level.

\*\* Statistically significant at the five percent level.

\*\*\* Statistically significant at the one percent level.

**Appendix Table D-16: Quarterly Resource Use Rate (Number of Beneficiaries with Events per 1,000 Beneficiaries) for Participants and Controls, MedExpert Medicare FFS Cohort, Q1 to Q5**

Measures	Baseline Period (Year Prior to Enrollment)		Q1		Q2		Q3		Q4		Q5	
	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls
<i>Number of Beneficiaries</i>	87,317	87,317	87,317	87,317	86,153	86,116	77,301	77,687	60,415	60,316	42,505	45,896
<b>Health Service Use Rate per 1,000 Beneficiaries</b>												
ER Visits	222.1	237.8	75.7	84.5	77.7	86.0	81.4	85.3	82.6	88.9	80.2	85.4
All Inpatient Admissions	169.4	173.9	64.1	67.5	66.5	67.8	69.7	68.3	70.6	68.6	70.2	68.6
Unplanned Inpatient Admissions	140.5	146.4	54.9	58.9	57.4	59.0	60.6	59.9	62.3	59.6	62.2	60.5

**Appendix Table D-17: Quarterly Resource Use Rate (Number of Beneficiaries with Events per 1,000 Beneficiaries) for Participants and Controls, MedExpert Medicare FFS Cohort, Q6 to Q10**

Measures	Q6		Q7		Q8		Q9		Q10	
	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls
<i>Number of Beneficiaries</i>	39,576	40,579	23,351	23,218	22,965	22,810	22,611	22,464	7,320	6,736
<b>Health Service Use Rate per 1,000 Beneficiaries</b>										
ER Visits	81.6	83.7	75.9	74.7	76.4	77.4	76.2	77.4	78.7	80.5
All Inpatient Admissions	72.4	74.2	72.6	76.4	70.9	72.9	70.9	72.5	67.2	71.9
Unplanned Inpatient Admissions	64.8	65.6	63.7	69.1	62.7	65.6	63.3	65.3	60.1	65.2

**Appendix Table D-18: Quarterly Resource Use Rate (Number of Beneficiaries with Events per 1,000 Beneficiaries) for Participants and Controls, MedExpert MA Cohort, Q1 to Q5**

Measures	Baseline Period (Year Prior to Enrollment)		Q1		Q2		Q3		Q4		Q5	
	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls
<i>Number of Beneficiaries</i>	221,690	221,690	221,690	221,690	219,721	219,728	211,076	209,731	186,786	184,684	161,579	154,768
<b>Health Service Use Rate per 1,000 Beneficiaries</b>												
All Inpatient Admissions	125.5	125.0	45.4	47.5	46.3	49.3	47.7	49.4	47.0	48.2	44.8	47.0
Unplanned Inpatient Admissions	103.3	101.6	38.5	40.2	39.6	41.8	40.7	42.1	40.2	40.7	37.9	40.0

**Appendix Table D-19: Quarterly Resource Use Rate (Number of Beneficiaries with Events per 1,000 Beneficiaries) for Participants and Controls, MedExpert MA Cohort, Q6 to Q10**

Measures	Q6		Q7		Q8		Q9		Q10	
	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls
<i>Number of Beneficiaries</i>	90,203	87,746	36,766	36,675	36,207	36,068	35,673	35,533	11,605	10,476
<b>Health Service Use Rate per 1,000 Beneficiaries</b>										
All Inpatient Admissions	46.9	49.8	53.7	54.1	51.9	52.4	52.4	50.7	54.2	53.9
Unplanned Inpatient Admissions	40.2	42.9	47.5	48.9	46.1	46.7	46.5	45.2	47.7	48.3

**Appendix Table D-20: Quarterly Resource Use (Number of Events per 1,000 Beneficiaries) for Participants and Controls, MedExpert Medicare FFS Cohort, Q1 to Q5**

Measures	Baseline Period (Year Prior to Enrollment)		Q1		Q2		Q3		Q4		Q5	
	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls
<i>Number of Beneficiaries</i>	87,317	87,317	87,317	87,317	86,153	86,116	77,301	77,687	60,415	60,316	42,505	45,896
<b>Mean Number of Events per 1,000 Beneficiaries</b>												
ER Visits	354.9	389.0	95.1	107.9	96.5	109.5	101.6	109.0	103.3	112.3	100.2	107.7
All Inpatient Admissions	273.2	282.6	84.7	89.6	87.5	89.1	91.8	90.6	93.2	89.5	93.4	90.9
Unplanned Inpatient Admissions	215.9	227.0	69.7	74.6	72.3	74.8	77.2	77.5	79.3	75.4	79.6	76.9
Hospital Days	1,581.2	1,612.4	521.5	545.3	547.3	540.5	576.9	549.7	585.3	535.1	600.8	553.4

**Appendix Table D-21: Quarterly Resource Use (Number of Events per 1,000 Beneficiaries) for Participants and Controls, MedExpert Medicare FFS Cohort, Q6 to Q10**

Measures	Q6		Q7		Q8		Q9		Q10	
	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls
<i>Number of Beneficiaries</i>	39,576	40,579	23,351	23,218	22,965	22,810	22,611	22,464	7,320	6,736
<b>Mean Number of Events per 1,000 Beneficiaries</b>										
ER Visits	101.6	105.6	91.4	91.9	93.1	94.2	93.0	96.8	96.6	101.1
All Inpatient Admissions	95.6	97.3	94.1	102.5	92.7	93.7	93.5	90.8	91.5	99.0
Unplanned Inpatient Admissions	83.0	84.3	79.9	89.6	78.9	82.1	82.6	80.6	81.4	90.6
Hospital Days	599.8	614.7	561.0	655.6	559.2	578.2	530.3	530.0	522.1	615.6

**Appendix Table D-22: Quarterly Resource Use (Number of Events per 1,000 Beneficiaries) for Participants and Controls, MedExpert MA Cohort, Q1 to Q5**

Measures	Baseline Period (Year Prior to Enrollment)		Q1		Q2		Q3		Q4		Q5	
	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls
<i>Number of Beneficiaries</i>	221,690	221,690	221,690	221,690	219,721	219,728	211,076	209,731	186,786	184,684	161,579	154,768
<b>Mean Number of Events per 1,000 Beneficiaries</b>												
All Inpatient Admissions	183.2	183.2	55.2	59.2	56.4	61.0	58.3	61.2	57.3	59.6	54.9	58.3
Unplanned Inpatient Admissions	149.3	148.2	46.3	49.5	47.8	51.3	49.5	51.8	48.7	50.0	46.3	49.4
Hospital Days	883.3	897.4	288.1	311.2	300.9	320.7	309.5	324.8	300.5	309.2	286.5	307.6

**Appendix Table D-23: Quarterly Resource Use (Number of Events per 1,000 Beneficiaries) for Participants and Controls, MedExpert MA Cohort, Q6 to Q10**

Measures	Q6		Q7		Q8		Q9		Q10	
	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls
<i>Number of Beneficiaries</i>	90,203	87,746	36,766	36,675	36,207	36,068	35,673	35,533	11,605	10,476
<b>Mean Number of Events per 1,000 Beneficiaries</b>										
All Inpatient Admissions	57.8	61.2	66.1	68.5	64.8	65.5	64.9	62.5	68.1	65.9
Unplanned Inpatient Admissions	49.5	52.5	58.2	61.8	57.3	58.2	57.7	55.9	59.6	59.1
Hospital Days	299.5	313.2	310.0	357.8	314.2	334.7	298.9	302.0	323.3	319.7

## D.4 Medical Expenditures

**Appendix Table D-24: Cumulative and Yearly DiD Estimates of Expenditures per 1,000 Beneficiaries, MedExpert Medicare FFS Cohort**

Measures (2011 USD)	Full Intervention Period <sup>a</sup>	Total Year 1 <sup>b</sup>	Total Year 2
<i>Number of Participant Beneficiaries</i>	87,317	87,317	42,505
Total Medicare Parts A and B Expenditures	333,153.8	146,304.5	166,255.9
<i>90% Confidence Interval</i>	(-32,103.8   698,411.3)	(-14,532.4   307,141.5)	(-78,405.4   410,917.2)
<i>P-Value</i>	0.134	0.135	0.264
Inpatient Expenditures	11,261.64	34,857.60	-59,601.31
<i>90% Confidence Interval</i>	(-228,875.2   251,398.5)	(-70,168.2   139,883.4)	(-230,654.5   111,451.9)
<i>P-Value</i>	0.939	0.585	0.567
Outpatient ER Expenditures	7,241.44	4,595.24	-566.86
<i>90% Confidence Interval</i>	(-12,679.5   27,162.4)	(-4,346.2   13,536.6)	(-11,652.1   10,518.4)
<i>P-Value</i>	0.550	0.398	0.933
Outpatient Non-ER Expenditures	63,345.29	-3,651.36	75,991.88**
<i>90% Confidence Interval</i>	(-10,950.8   137,641.4)	(-36,439.2   29,136.5)	(31,109.3   120,874.4)
<i>P-Value</i>	0.161	0.855	0.005
Physician and Ancillary Service Expenditures	210,523.94***	90,786.00***	96,326.15***
<i>90% Confidence Interval</i>	(117,230.5   303,817.4)	(49,880.6   131,691.4)	(38,061.4   154,590.9)
<i>P-Value</i>	<0.001	<0.001	0.007
Skilled Nursing Facility Expenditures	9,279.18	2,637.48	25,994.75
<i>90% Confidence Interval</i>	(-89,611.9   108,170.2)	(-40,726.2   46,001.2)	(-38,596.6   90,586.1)
<i>P-Value</i>	0.877	0.920	0.508
Durable Medical Equipment Expenditures	13,261.81	7,146.00	4,558.34
<i>90% Confidence Interval</i>	(-12,252.7   38,776.3)	(-3,845.0   18,137.0)	(-11,823.4   20,940.1)
<i>P-Value</i>	0.393	0.285	0.647
Home Health Expenditures	57,687.32**	29,982.70***	20,070.65
<i>90% Confidence Interval</i>	(14,751.0   100,623.7)	(11,156.8   48,808.6)	(-6,998.9   47,140.2)
<i>P-Value</i>	0.027	0.009	0.223
Hospice Expenditures	-37,756.77	-18,715.69	3,432.25
<i>90% Confidence Interval</i>	(-80,636.8   5,123.2)	(-37,445.6   14.2)	(-26,453.3   33,317.8)
<i>P-Value</i>	0.148	0.100	0.850

\*\* Statistically significant at the five percent level.

\*\*\* Statistically significant at the one percent level.

<sup>a</sup>Results are cumulative across all available quarters.

<sup>b</sup>Year 1 refers to the one-year period after a beneficiary's enrollment in the program, Year 2 refers to the subsequent one-year periods for a given beneficiary. Since beneficiaries enroll in the SDM programs on a rolling basis, the intervention period is defined at the beneficiary-level and not based on calendar quarters or years.

**Appendix Table D-25: Quarterly DiD Estimates of Expenditures per Beneficiary, MedExpert Medicare FFS Cohort**

Measures (2011 USD per Person)	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10
<i>Number of Participant Beneficiaries</i>	87,317	86,153	77,301	60,415	42,505	39,576	23,351	22,965	22,611	7,320
Total Medicare Parts A and B Expenditures	-46.11	10.26	47.45	76.82	96.01	-11.65	-160.37*	-119.69	-20.07	-149.30
<i>90% Confidence Interval</i>	(-114,22)	(-58,78)	(-24,119)	(-4,158)	(-7,199)	(-116,92)	(-303,-17)	(-293,53)	(-154,114)	(-389,90)
<i>P-Value</i>	0.267	0.804	0.278	0.120	0.124	0.854	0.065	0.255	0.806	0.305
Inpatient Expenditures	-47.00*	7.27	34.39	32.26	55.19	-44.68	-141.95***	-63.03	-3.88	-49.53
<i>90% Confidence Interval</i>	(-91,-3)	(-36,51)	(-12,81)	(-18,83)	(-13,124)	(-111,22)	(-233,-51)	(-196,70)	(-85,77)	(-193,93)
<i>P-Value</i>	0.078	0.783	0.222	0.292	0.185	0.269	0.010	0.436	0.937	0.569
Outpatient ER Expenditures	2.14	-1.57	2.93	-0.28	-0.99	1.03	1.90	-1.74	-2.54	7.66
<i>90% Confidence Interval</i>	(-1,6)	(-5,2)	(-1,7)	(-4,4)	(-6,4)	(-4,6)	(-4,8)	(-8,4)	(-8,3)	(-3,18)
<i>P-Value</i>	0.319	0.471	0.187	0.910	0.719	0.717	0.602	0.639	0.460	0.225
Outpatient Non-ER Expenditures	1.23	-2.89	-7.18	-0.16	3.53	-4.76	-8.37	-11.98	-9.76	-15.50
<i>90% Confidence Interval</i>	(-13,16)	(-17,12)	(-22,8)	(-17,17)	(-17,24)	(-26,16)	(-39,22)	(-41,17)	(-38,19)	(-70,39)
<i>P-Value</i>	0.888	0.743	0.430	0.988	0.773	0.707	0.652	0.502	0.575	0.641
Physician and Ancillary Service Expenditures	8.90	14.99	21.12*	30.99**	22.56	11.16	-10.44	-5.11	-8.62	-10.92
<i>90% Confidence Interval</i>	(-9,27)	(-3,33)	(3,40)	(10,52)	(-4,49)	(-16,38)	(-49,29)	(-44,34)	(-48,31)	(-91,69)
<i>P-Value</i>	0.413	0.168	0.060	0.017	0.154	0.501	0.659	0.830	0.719	0.823
Skilled Nursing Facility Expenditures	-3.61	-2.22	-7.25	-0.50	20.65	25.92	-12.61	-32.83	9.61	-37.91
<i>90% Confidence Interval</i>	(-21,14)	(-19,15)	(-26,12)	(-24,23)	(-6,47)	(-3,54)	(-52,27)	(-72,6)	(-29,49)	(-105,30)
<i>P-Value</i>	0.729	0.832	0.528	0.971	0.206	0.134	0.600	0.164	0.684	0.356
Durable Medical Equipment Expenditures	-0.79	0.33	1.23	4.58	1.68	-2.45	2.72	0.97	-5.46	-1.05
<i>90% Confidence Interval</i>	(-6,4)	(-5,5)	(-4,6)	(-1,10)	(-6,9)	(-10,5)	(-8,14)	(-11,13)	(-16,5)	(-17,15)
<i>P-Value</i>	0.796	0.913	0.698	0.192	0.701	0.599	0.681	0.892	0.408	0.913
Home Health Expenditures	3.02	3.82	9.38*	2.20	-5.58	-2.97	10.63	-1.04	6.11	7.51

Measures (2011 USD per Person)	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10
<i>90% Confidence Interval</i>	(-5,11)	(-4,12)	(1,18)	(-8,12)	(-18,7)	(-16,10)	(-6,27)	(-18,16)	(-9,21)	(-18,33)
<i>P-Value</i>	0.537	0.441	0.067	0.721	0.460	0.712	0.288	0.918	0.511	0.631
Hospice Expenditures	-10.15**	-8.63*	-6.64	8.73	0.49	5.45	-1.43	-4.02	-4.72	-49.69**
<i>90% Confidence Interval</i>	(-19,-2)	(-17,0)	(-15,2)	(-2,19)	(-12,13)	(-8,19)	(-20,17)	(-23,15)	(-24,14)	(-84,-16)
<i>P-Value</i>	0.047	0.083	0.213	0.163	0.949	0.500	0.899	0.726	0.68	0.016

\* Statistically significant at the ten percent level.

\*\* Statistically significant at the five percent level.

\*\*\* Statistically significant at the one percent level.



**Appendix Table D-26: MedExpert Total Medicare Expenditures in the Baseline Period and by Quarter Following Enrollment, Medicare FFS Cohort, Q1 to Q5**

Measures (2011 USD)	Baseline Period (Year Prior to Enrollment)		Q1		Q2		Q3		Q4		Q5	
	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls
<i>Number of Beneficiaries</i>	87,317	87,317	87,317	87,317	86,153	86,116	77,301	77,687	60,415	60,316	42,505	45,896
<b>Total Medicare Parts A and B Expenditures</b>												
Mean	\$8,338	\$8,429	\$2,428	\$2,497	\$2,497	\$2,512	\$2,560	\$2,504	\$2,694	\$2,573	\$2,811	\$2,660
Median	\$2,506	\$2,589	\$407	\$419	\$426	\$419	\$434	\$419	\$480	\$456	\$525	\$487
90th percentile	\$22,371	\$23,038	\$5,307	\$5,556	\$5,550	\$5,767	\$5,757	\$5,660	\$6,219	\$5,874	\$6,440	\$6,175
99th percentile	\$82,542	\$80,981	\$34,977	\$35,797	\$35,801	\$35,046	\$36,262	\$35,528	\$37,500	\$36,309	\$37,567	\$37,138

**Appendix Table D-27: MedExpert Total Medicare Expenditures by Quarter Following Enrollment, Medicare FFS Cohort, Q6 to Q10**

Measures (2011 USD)	Q6		Q7		Q8		Q9		Q10	
	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls
<i>Number of Beneficiaries</i>	39,576	40,579	23,351	23,218	22,965	22,810	22,611	22,464	7,320	6,736
<b>Total Medicare Parts A and B Expenditures</b>										
Mean	\$2,806	\$2,779	\$2,864	\$3,000	\$2,861	\$2,945	\$2,766	\$2,759	\$2,626	\$2,889
Median	\$515	\$482	\$561	\$539	\$571	\$547	\$568	\$564	\$566	\$574
90th percentile	\$6,649	\$6,679	\$6,903	\$6,958	\$6,754	\$6,914	\$6,334	\$6,697	\$5,704	\$6,781
99th percentile	\$37,231	\$37,203	\$38,351	\$40,091	\$36,764	\$39,017	\$36,885	\$35,395	\$35,747	\$39,181

**Appendix Table D-28: MedExpert Inpatient and Outpatient Expenditures in the Baseline Period and by Quarter Following Enrollment, Medicare FFS Cohort, Q1 to Q5**

Measures (2011 USD)	Baseline Period (Year Prior to Enrollment)		Q1		Q2		Q3		Q4		Q5	
	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls
<i>Number of Beneficiaries</i>	87,317	87,317	87,317	87,317	86,153	86,116	77,301	77,687	60,415	60,316	42,505	45,896
<b>Inpatient Expenditures</b>												
Mean	\$2,376	\$2,360	\$775	\$818	\$808	\$802	\$853	\$806	\$844	\$784	\$884	\$804
Median	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
90th percentile	\$6,609	\$6,736	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
99th percentile	\$42,527	\$41,214	\$20,661	\$20,504	\$21,086	\$19,870	\$21,593	\$20,219	\$21,785	\$19,708	\$22,347	\$20,871
<b>Outpatient ER Expenditures</b>												
Mean	\$205	\$220	\$56	\$58	\$56	\$62	\$59	\$59	\$58	\$61	\$53	\$58
Median	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
90th percentile	\$514	\$559	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
99th percentile	\$3,154	\$3,232	\$1,339	\$1,361	\$1,335	\$1,437	\$1,387	\$1,385	\$1,371	\$1,383	\$1,222	\$1,342
<b>Outpatient Non-ER Expenditures</b>												
Mean	\$1,045	\$1,179	\$272	\$304	\$282	\$316	\$279	\$317	\$283	\$315	\$292	\$312
Median	\$57	\$117	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
90th percentile	\$2,066	\$2,399	\$385	\$478	\$408	\$506	\$408	\$511	\$419	\$525	\$406	\$473
99th percentile	\$22,818	\$22,948	\$6,626	\$6,762	\$6,658	\$6,791	\$6,606	\$6,749	\$6,612	\$6,686	\$6,767	\$6,671

**Appendix Table D-29: MedExpert Inpatient and Outpatient Expenditures by Quarter Following Enrollment, Medicare FFS Cohort, Q6 to Q10**

Measures (2011 USD)	Q6		Q7		Q8		Q9		Q10	
	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls
<i>Number of Beneficiaries</i>	39,576	40,579	23,351	23,218	22,965	22,810	22,611	22,464	7,320	6,736
<b>Inpatient Expenditures</b>										
Mean	\$861	\$886	\$828	\$953	\$848	\$887	\$798	\$779	\$773	\$851
Median	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
90th percentile	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
99th percentile	\$22,089	\$23,085	\$20,866	\$23,637	\$19,580	\$20,222	\$19,758	\$18,910	\$20,702	\$21,720
<b>Outpatient ER Expenditures</b>										
Mean	\$55	\$58	\$48	\$50	\$46	\$51	\$48	\$54	\$52	\$50
Median	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
90th percentile	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
99th percentile	\$1,341	\$1,354	\$1,193	\$1,234	\$1,186	\$1,185	\$1,217	\$1,360	\$1,230	\$1,106
<b>Outpatient Non-ER Expenditures</b>										
Mean	\$285	\$308	\$304	\$304	\$300	\$306	\$290	\$292	\$275	\$293
Median	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
90th percentile	\$385	\$482	\$424	\$393	\$404	\$413	\$393	\$379	\$330	\$386
99th percentile	\$6,661	\$6,753	\$6,624	\$6,805	\$6,642	\$6,729	\$6,553	\$6,748	\$6,552	\$6,647

**Appendix Table D-30: MedExpert Expenditures for Other Settings in the Baseline Period and by Quarter Following Enrollment, Medicare FFS Cohort, Q1 to Q5**

Measures (2011 USD)	Baseline Period (Year Prior to Enrollment)		Q1		Q2		Q3		Q4		Q5	
	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls
<i>Number of Beneficiaries</i>	87,317	87,317	87,317	87,317	86,153	86,116	77,301	77,687	60,415	60,316	42,505	45,896
<b>Physician and Ancillary Service Expenditures</b>												
Mean	\$3,004	\$2,879	\$806	\$766	\$814	\$767	\$812	\$752	\$871	\$793	\$914	\$833
Median	\$1,632	\$1,555	\$290	\$271	\$305	\$273	\$310	\$272	\$340	\$300	\$379	\$329
90th percentile	\$6,589	\$6,371	\$1,927	\$1,843	\$1,935	\$1,854	\$1,953	\$1,816	\$2,078	\$1,914	\$2,181	\$1,968
99th percentile	\$22,935	\$21,541	\$7,562	\$7,455	\$7,750	\$7,339	\$7,433	\$7,075	\$7,979	\$7,359	\$8,139	\$7,667
<b>Skilled Nursing Facility Expenditures</b>												
Mean	\$657	\$720	\$205	\$224	\$215	\$231	\$230	\$247	\$265	\$269	\$267	\$259
Median	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
90th percentile	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
99th percentile	\$21,919	\$23,697	\$8,864	\$9,829	\$9,474	\$10,126	\$9,920	\$10,488	\$11,137	\$11,202	\$11,222	\$10,805
<b>Durable Medical Equipment Expenditures</b>												
Mean	\$248	\$253	\$63	\$65	\$64	\$65	\$64	\$63	\$67	\$61	\$65	\$65
Median	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
90th percentile	\$561	\$583	\$105	\$108	\$99	\$109	\$103	\$103	\$98	\$94	\$85	\$91
99th percentile	\$3,732	\$3,705	\$1,046	\$1,032	\$1,063	\$1,054	\$1,044	\$1,027	\$1,100	\$1,068	\$1,104	\$1,068
<b>Home Health Expenditures</b>												
Mean	\$643	\$628	\$178	\$172	\$184	\$178	\$180	\$163	\$207	\$190	\$231	\$215
Median	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
90th percentile	\$2,152	\$2,054	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
99th percentile	\$11,939	\$11,869	\$4,272	\$4,336	\$4,432	\$4,358	\$4,262	\$4,121	\$4,604	\$4,478	\$4,535	\$4,625
<b>Hospice Expenditures</b>												
Mean	\$149	\$175	\$69	\$86	\$71	\$86	\$80	\$92	\$97	\$95	\$103	\$108
Median	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
90th percentile	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
99th percentile	\$0	\$0	\$418	\$1,687	\$596	\$1,765	\$1,522	\$2,063	\$2,771	\$2,470	\$3,239	\$3,603

**Appendix Table D-31: MedExpert Expenditures for Other Settings by Quarter Following Enrollment, Medicare FFS Cohort, Q6 to Q10**

Measures (2011 USD)	Q6		Q7		Q8		Q9		Q10	
	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls
<i>Number of Beneficiaries</i>	39,576	40,579	23,351	23,218	22,965	22,810	22,611	22,464	7,320	6,736
<b>Physician and Ancillary Service Expenditures</b>										
Mean	\$908	\$849	\$962	\$938	\$970	\$937	\$962	\$938	\$958	\$942
Median	\$373	\$327	\$396	\$379	\$408	\$395	\$419	\$410	\$425	\$416
90th percentile	\$2,170	\$2,055	\$2,282	\$2,221	\$2,239	\$2,234	\$2,207	\$2,202	\$2,213	\$2,149
99th percentile	\$7,871	\$7,644	\$8,295	\$8,403	\$8,385	\$8,301	\$8,070	\$7,704	\$7,596	\$8,172
<b>Skilled Nursing Facility Expenditures</b>										
Mean	\$285	\$273	\$301	\$337	\$274	\$326	\$297	\$309	\$232	\$343
Median	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
90th percentile	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
99th percentile	\$12,385	\$11,222	\$12,933	\$14,625	\$12,242	\$13,476	\$13,441	\$13,371	\$10,155	\$14,293
<b>Durable Medical Equipment Expenditures</b>										
Mean	\$63	\$66	\$65	\$61	\$66	\$64	\$59	\$64	\$61	\$63
Median	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
90th percentile	\$80	\$80	\$54	\$44	\$61	\$47	\$51	\$47	\$40	\$50
99th percentile	\$1,122	\$1,118	\$1,143	\$1,211	\$1,171	\$1,192	\$1,090	\$1,171	\$1,107	\$1,282
<b>Home Health Expenditures</b>										
Mean	\$238	\$226	\$234	\$230	\$233	\$240	\$188	\$190	\$169	\$183
Median	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
90th percentile	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
99th percentile	\$4,673	\$4,684	\$4,604	\$4,470	\$4,579	\$4,645	\$3,924	\$3,973	\$3,853	\$3,853
<b>Hospice Expenditures</b>										
Mean	\$108	\$109	\$119	\$127	\$122	\$132	\$124	\$132	\$105	\$162
Median	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
90th percentile	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
99th percentile	\$3,774	\$3,463	\$4,005	\$5,060	\$4,544	\$5,969	\$4,857	\$5,627	\$2,825	\$8,435

## APPENDIX E: RESULTS FOR DARTMOUTH: VMMC HEALTH COACHING INTERVENTION

### E.1 Demographic and Health Characteristics

Appendix Table E-1: Dartmouth VMMC Baseline Demographic and Health Characteristics, Medicare FFS Cohort

Characteristics	Intervention Group	Control Group	Percent Difference	Standardized Mean Difference <sup>a</sup>
<i>Number of Beneficiaries</i>	1,030	1,030		
<b>Average Age (Years)<sup>+</sup></b>	74.00	73.90	0.09	0.01
<b>Age under 65<sup>+</sup></b>	9%	9%	0%	0.00
<b>Gender</b>				
Male <sup>+</sup>	52%	51%	0%	0.00
Female	48%	49%	0%	0.00
<b>Race</b>				
White <sup>+</sup>	74%	74%	0%	0.00
Black <sup>+</sup>	8%	9%	-1%	0.05
Other	18%	17%	1%	0.04
<b>Dual Eligible<sup>+</sup></b>	13%	13%	0%	0.00
<b>Medicare Eligibility</b>				
Disabled <sup>+</sup>	16%	16%	0%	0.00
ESRD	1%	1%	0%	0.00
Aged <sup>+</sup>	83%	83%	0%	0.00
<b>Evaluation and Management (E&amp;M) Visits</b>				
E&M Visits: 0	1%	1%	0%	0.04
E&M Visits: 1-5 <sup>+</sup>	24%	23%	2%	0.04
E&M Visits: 6-10 <sup>+</sup>	31%	32%	-1%	0.03
E&M Visits: 11-15 <sup>+</sup>	20%	21%	-2%	0.05
E&M Visits: 16 <sup>+</sup>	25%	23%	2%	0.05
<b>Resource Use per Beneficiary (Pre-Enrollment Year)</b>				
0 SNF Stays (Prior Year)	96%	95%	1%	0.04
1 SNF Stay (Prior Year) <sup>+</sup>	3%	4%	-1%	0.04
2+ SNF Stays (Prior Year) <sup>+</sup>	2%	2%	0%	0.00
0 IP Stays (1Q Prior)	91%	90%	1%	0.03
1 IP Stay (1Q Prior) <sup>+</sup>	7%	8%	-1%	0.03
2+ IP Stays (1Q Prior) <sup>+</sup>	1%	1%	0%	0.00
0 IP Stays (Prior Year)	80%	79%	1%	0.02
1 IP Stay (Prior Year) <sup>+</sup>	13%	13%	0%	0.01
2+ IP Stays (Prior Year) <sup>+</sup>	7%	7%	0%	0.02

Characteristics	Intervention Group	Control Group	Percent Difference	Standardized Mean Difference <sup>a</sup>
<b>ER Visits (Pre-Enrollment Quarter)</b>				
ER Visits: 0	89%	89%	0%	0.02
ER Visits: 1 <sup>+</sup>	9%	9%	0%	0.00
ER Visits: 2 <sup>++</sup>	2%	2%	0%	0.03
<b>Medical Cost per Beneficiary</b>				
Cost (4Q Prior) <sup>+</sup>	\$2,162	\$2,462	-299	0.04
Cost (3Q Prior) <sup>+</sup>	\$2,187	\$2,393	-206	0.03
Cost (2Q Prior) <sup>+</sup>	\$2,466	\$2,317	149	0.02
Cost (1Q Prior) <sup>+</sup>	\$2,708	\$2,927	-219	0.03
IP Cost (Prior Year)	\$2,720	\$3,420	-700	0.06
IP Cost (1Q Prior) <sup>+</sup>	\$785	\$991	-206	0.05
<b>Frailty Measures</b>				
Home Oxygen <sup>+</sup>	2%	2%	0%	0.00
Urinary Catheter	0%	1%	-1%	0.09
Wheelchair Use	0%	0%	0%	0.00
Walker Use <sup>+</sup>	1%	1%	0%	0.03
DME	54%	54%	0%	0.00
Charlson Score <sup>+</sup>	0.44	0.47	-0.03	0.02
Area Deprivation Index (ADI) <sup>+</sup>	100.41	100.30	0.11	0.01
<b>Healthcare Cost and Utilization Project (HCUP) Diagnosis Categories (Pre-Enrollment Year)</b>				
Acute cerebrovascular disease (IP) <sup>+</sup>	1%	1%	-1%	0.06
Acute cerebrovascular disease (IP, 30 days prior)	0%	1%	0%	0.06
AMI (IP)	1%	1%	0%	0.03
AMI (IP, 30 days prior)	0%	0%	0%	0.02
Cerebrovascular disease <sup>+</sup>	12%	13%	-1%	0.03
Parkinson's disease and multiple sclerosis	2%	2%	0%	0.01
Asthma	15%	14%	0%	0.01
Coagulation and hemorrhagic disorders <sup>+</sup>	5%	6%	-1%	0.03
Congestive heart failure (All Settings) <sup>+</sup>	13%	15%	-1%	0.04
Congestive heart failure (IP)	2%	2%	0%	0.01
Coronary atherosclerosis <sup>+</sup>	27%	28%	-1%	0.03
Dementia <sup>+</sup>	7%	7%	0%	0.01
Diabetes mellitus without complication <sup>+</sup>	100%	100%	0%	0.00
Diabetes mellitus with complications <sup>+</sup>	64%	64%	0%	0.00
Cardiac dysrhythmias, arrest and ventricular fibrillation <sup>+</sup>	28%	29%	-1%	0.03
Fluid and electrolyte disorders <sup>+</sup>	24%	23%	1%	0.03
Gastrointestinal hemorrhage (All Settings) <sup>+</sup>	5%	5%	-1%	0.03
Gastrointestinal hemorrhage (IP)	0%	1%	0%	0.07

Characteristics	Intervention Group	Control Group	Percent Difference	Standardized Mean Difference <sup>a</sup>
Other heart disease <sup>+</sup>	48%	51%	-3%	0.06
Heart valve disorders <sup>+</sup>	11%	12%	-2%	0.05
Hepatitis <sup>+</sup>	2%	2%	0%	0.01
Hypertension with complications <sup>+</sup>	12%	14%	-2%	0.05
Stomach, pancreas and lung cancer <sup>+</sup>	2%	2%	0%	0.02
Peri- endo- and myocarditis <sup>+</sup>	5%	6%	0%	0.01
Disorders of nervous system <sup>+</sup>	13%	13%	-1%	0.02
Other cancers <sup>+</sup>	19%	21%	-2%	0.06
Paralysis <sup>+</sup>	2%	2%	0%	0.03
Pneumonia <sup>+</sup>	10%	10%	0%	0.01
Pneumonia (IP, 30 days prior)	0%	0%	0%	0.03
Pulmonary heart disease <sup>+</sup>	3%	4%	-1%	0.04
Renal failure <sup>+</sup>	20%	21%	-1%	0.02
Respiratory failure (IP)	0%	0%	0%	0.02
Respiratory failure (IP, 30 days prior)	0%	0%	0%	0.00
Rheumatoid arthritis and related disease <sup>+</sup>	3%	3%	0%	0.01
Septicemia <sup>+</sup>	3%	4%	0%	0.02
Shock	1%	1%	0%	0.02
Tuberculosis	1%	0%	0%	0.06
<b>Procedures (Pre-Enrollment Year)</b>				
Bypass and PTCA (IP) <sup>+</sup>	1%	1%	0%	0.01
Heart valve procedures (IP)	0%	0%	0%	0.04
Hemodialysis <sup>+</sup>	2%	1%	0%	0.01
Peritoneal dialysis <sup>+</sup>	2%	2%	0%	0.01
Procedures on vessels of head and neck (IP) <sup>+</sup>	3%	3%	0%	0.01
Radiology and chemotherapy <sup>+</sup>	3%	4%	-1%	0.07
Respiratory intubation and mechanical ventilation <sup>+</sup>	2%	2%	0%	0.03
Blood transfusion <sup>+</sup>	2%	2%	0%	0.03
Blood transfusion (IP) <sup>+</sup>	1%	2%	0%	0.02
Transportation <sup>+</sup>	15%	14%	1%	0.02
HCC Risk Score	1.59	1.65	-5%	0.04
<b>Comorbidity Categories (Pre-Enrollment Quarter)</b>				
Depression <sup>+</sup>	5%	4%	1%	0.06
AIDS HIV	0%	0%	0%	0.00
Alcohol Abuse <sup>+</sup>	1%	1%	0%	0.03
Cardiac Arrhythmias	19%	18%	1%	0.03
Congestive Heart Failure	9%	10%	-1%	0.04
Chronic Pulmonary Disease	7%	9%	-2%	0.06



Characteristics	Intervention Group	Control Group	Percent Difference	Standardized Mean Difference <sup>a</sup>
Coagulopathy	1%	2%	0%	0.04
Deficiency Anemia <sup>+</sup>	3%	4%	0%	0.02
Diabetes Complicated	23%	23%	0%	0.00
Diabetes Uncomplicated	99%	99%	0%	0.02
Dementia	1%	1%	-1%	0.07
Drug Abuse <sup>+</sup>	1%	0%	0%	0.06
Fluid and Electrolyte Disorders	12%	10%	2%	0.06
Hypothyroidism	9%	9%	0%	0.01
Hypertension Complicated	3%	5%	-2%	0.08
Hypertension Uncomplicated	83%	82%	1%	0.03
Liver Disease	3%	3%	0%	0.01
Lymphoma	1%	1%	0%	0.02
Metastatic Cancer	1%	1%	0%	0.04
Myocardial Infarction	2%	3%	-2%	0.11
Obesity <sup>+</sup>	5%	5%	0%	0.02
Other Neurological Disorders	2%	4%	-1%	0.08
Paralysis	1%	1%	0%	0.04
Peptic Ulcer Disease excluding Bleeding	0%	0%	0%	0.06
Peripheral Vascular Disorders	7%	7%	0%	0.00
Psychosis <sup>+</sup>	1%	2%	0%	0.03
Pulmonary Circulation Disorders	1%	1%	0%	0.03
Renal Failure	10%	14%	-4%	0.11
Rheumatoid Arthritis Collagen Vascular Disease	5%	4%	0%	0.02
Solid Tumor without Metastasis	8%	9%	-1%	0.04
Valvular Disease <sup>+</sup>	6%	7%	0%	0.02
Weight Loss <sup>+</sup>	2%	1%	0%	0.04

<sup>+</sup> Denotes characteristic used for matching.

<sup>a</sup>Standardized mean difference is an effect size measure used in the above table to identify substantial differences between the intervention and control groups; a standardized mean difference of 0.1 or greater is treated as an indicator of a substantial difference between the two groups.

## E.2 Mortality and Readmissions

**Appendix Table E-2: Cumulative and Yearly Mortality and Readmissions per 1,000 Beneficiaries, Differences after Dartmouth VMMC Enrollment, Medicare FFS Cohort**

Measures	Full Intervention Period <sup>a</sup>	Total Year 1 <sup>b</sup>	Total Year 2
Number of Participants	1,030	1,030	802
<b>Mortality</b>			
<i>Difference<sup>c</sup></i>	-47.36***	-23.01**	-12.35
<i>90% Confidence Interval</i>	(-77.1   -17.6)	(-39.8   -6.3)	(-33.7   9.0)
<i>P-Value</i>	0.009	0.024	0.342
<b>30-Day Hospital Readmissions Following All Inpatient Admissions</b>			
<i>Difference</i>	87.46	-40.79	165.70
<i>90% Confidence Interval</i>	(-289.4   464.3)	(-260.6   179.0)	(-106.2   437.6)
<i>P-Value</i>	0.703	0.760	0.316
<b>30-Day Hospital Unplanned Readmissions Following All Inpatient Admission</b>			
<i>Difference</i>	114.88	-19.48	167.49
<i>90% Confidence Interval</i>	(-251.2   480.9)	(-232.4   193.5)	(-96.5   431.5)
<i>P-Value</i>	0.606	0.880	0.297

\*\* Statistically significant at the five percent level.

\*\*\* Statistically significant at the one percent level.

<sup>a</sup>Results are cumulative across all available quarters.

<sup>b</sup>Year 1 refers to the one-year period after a beneficiary's enrollment in the program, Year 2 refers to the subsequent one-year periods for a given beneficiary. Since beneficiaries enroll in the SDM programs on a rolling basis, the intervention period is defined at the beneficiary-level and not based on calendar quarters or years.

<sup>c</sup>The “difference” estimate represents the difference in the number of deaths per 1,000 beneficiaries or the difference in the number of beneficiaries with at least one readmission for every 1,000 beneficiaries who have at least one inpatient admission, as compared between the intervention and control groups during the relevant quarter in the intervention period.

**Appendix Table E-3: Quarterly Difference in Mortality per 1,000 Beneficiaries after  
Dartmouth VMMC Enrollment, Medicare FFS Cohort**

Medicare Cohort	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9
Medicare FFS									
<i>Number of Participant Beneficiaries</i>	1,030	1,021	893	852	802	746	658	525	332
<i>Difference<sup>a</sup></i>	-9.71*	-7.04	-4.71	-0.52	-13.88**	3.13	2.73	-2.73	-17.55
<i>90% Confidence Interval</i>	(-18.1   -1.3)	(-16.0   1.9)	(-12.1   2.7)	(-8.9   7.8)	(-24.3   -3.5)	(-6.8   13.0)	(-10.3   15.7)	(-10.3   4.9)	(-38.3   3.2)
<i>P-Value</i>	0.057	0.196	0.297	0.918	0.029	0.602	0.730	0.555	0.164

\* Statistically significant at the ten percent level.

\*\* Statistically significant at the five percent level.

<sup>a</sup>The “difference” estimate represents the difference in the number of deaths per 1,000 beneficiaries between the intervention group and control group in the relevant quarter of the intervention period. There were no deaths in the intervention or control groups prior to program enrollment as beneficiaries were required to be alive on program start date to be included in the study.

**Appendix Table E-4: Quarterly Difference in Readmissions per 1,000 IP Admissions after  
Dartmouth VMMC Enrollment, Medicare FFS Cohort**

Measures	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9
<i>Number of Participant Beneficiaries</i>	1,030	1,021	893	852	802	746	658	525	332
<b>30-Day Hospital Readmissions per 1,000 Beneficiaries Following:</b>									
All Inpatient Admissions	73	65	78	65	65	58	48	45	26
<i>Difference<sup>a</sup></i>	49.00	28.37	-113.88	9.18	89.38	-44.33	-70.56	202.15**	-38.46
<i>90% Confidence Interval</i>	(-43.9   141.9)	(-80.4   137.2)	(-233.4   5.6)	(-105.4   123.8)	(-19.3   198.1)	(-191.6   102.9)	(-229.6   88.5)	(71.7   332.6)	(-232.7   155.7)
<i>P-Value</i>	0.386	0.668	0.117	0.895	0.176	0.620	0.466	0.011	0.745
<b>30-Day Hospital Unplanned Readmissions per 1,000 Beneficiaries Following:</b>									
All Inpatient Admissions	73	65	78	65	65	58	48	45	26
<i>Difference</i>	61.82	44.23	-107.09	-6.21	58.61	-44.33	-26.88	202.15**	-38.46
<i>90% Confidence Interval</i>	(-29.2   152.8)	(-58.1   146.6)	(-222.9   8.8)	(-119.0   106.6)	(-46.1   163.3)	(-191.6   102.9)	(-173.3   119.6)	(71.7   332.6)	(-232.7   155.7)
<i>P-Value</i>	0.264	0.477	0.128	0.928	0.357	0.620	0.763	0.011	0.745

\*\* Statistically significant at the five percent level.

<sup>a</sup>The “difference” estimate represents the difference in the number of beneficiaries with at least one readmission for every 1,000 beneficiaries who have at least one inpatient admission, as compared between the intervention and control groups during the relevant quarter in the intervention period.

**Appendix Table E-5: Quarterly Mortality and Readmission per 1,000 Beneficiaries for Participants and Controls, Dartmouth VMMC Medicare FFS Cohort, Q1 to Q5**

Measures	Q1		Q2		Q3		Q4		Q5	
	Intervention	Controls	Intervention	Controls	Intervention	Controls	Intervention	Controls	Intervention	Controls
<i>Number of Beneficiaries</i>	1,030	1,030	1,021	1,011	893	875	852	812	802	752
All-Cause Mortality per 1,000 Beneficiaries	8.7	18.4	11.8	18.8	6.7	11.4	10.6	11.1	8.7	22.6
30-Day Hospital Readmission per 1,000 Beneficiaries Following any Inpatient Admissions	164.4	115.4	184.6	156.2	141.0	254.9	184.6	175.4	184.6	95.2
30-day Hospital Unplanned Readmission per 1,000 Beneficiaries, Following any Inpatient Admission	164.4	102.6	169.2	125.0	128.2	235.3	169.2	175.4	153.8	95.2

**Appendix Table E-6: Quarterly Mortality and Readmission per 1,000 Beneficiaries for Participants and Controls, Dartmouth VMMC Medicare FFS Cohort, Q6 to Q9**

Measures	Q6		Q7		Q8		Q9	
	Intervention	Controls	Intervention	Controls	Intervention	Controls	Intervention	Controls
<i>Number of Beneficiaries</i>	746	689	658	593	525	459	332	276
All-Cause Mortality per 1,000 Beneficiaries	14.7	11.6	21.3	18.5	3.8	6.5	15.1	32.6
30-Day Hospital Readmission per 1,000 Beneficiaries Following any Inpatient Admissions	241.4	285.7	187.5	258.1	266.7	64.5	115.4	153.8
30-day Hospital Unplanned Readmission per 1,000 Beneficiaries, Following any Inpatient Admission	241.4	285.7	166.7	193.5	266.7	64.5	115.4	153.8

### E.3 Health Service Resource Use

**Appendix Table E-7: Cumulative and Yearly DiD Estimates of Resource Use per 1,000 Beneficiaries, Dartmouth VMMC Medicare FFS Cohort**

Measures (Number of Events or Days)	Full Intervention Period <sup>a</sup>	Total Year 1 <sup>b</sup>	Total Year 2
<i>Number of Participant Beneficiaries</i>	1,030	1,030	802
ER Visits	141.62	50.25	60.15
<i>90% Confidence Interval</i>	(-46.7   330.0)	(-46.9   147.4)	(-45.5   165.8)
<i>P-Value</i>	0.216	0.395	0.349
Inpatient Admissions	155.67*	32.78	114.50**
<i>90% Confidence Interval</i>	(10.3   301.1)	(-42.6   108.1)	(31.5   197.5)
<i>P-Value</i>	0.078	0.474	0.023
Unplanned Inpatient Admissions	97.85	23.06	65.84
<i>90% Confidence Interval</i>	(-34.3   230.0)	(-45.5   91.6)	(-10.1   141.8)
<i>P-Value</i>	0.223	0.580	0.154
Hospital Days	1,610.18*	680.17	767.19*
<i>90% Confidence Interval</i>	(103.8   3,116.5)	(-254.5   1,614.8)	(78.5   1,455.9)
<i>P-Value</i>	0.079	0.231	0.067

\* Statistically significant at the ten percent level.

<sup>a</sup>Results are cumulative across all available quarters.

<sup>b</sup>Year 1 refers to the one-year period after a beneficiary's enrollment in the program, Year 2 refers to the subsequent one-year periods for a given beneficiary. Since beneficiaries enroll in the SDM programs on a rolling basis, the intervention period is defined at the beneficiary-level and not based on calendar quarters or years.

**Appendix Table E-8: Quarterly DiD Estimates of Resource Use (Number of Events or Days per 1,000 Beneficiaries),  
Dartmouth VMMC Medicare FFS Cohort**

<b>Measures (Number of Events or Days per 1,000 Beneficiaries)</b>	<b>Q1</b>	<b>Q2</b>	<b>Q3</b>	<b>Q4</b>	<b>Q5</b>	<b>Q6</b>	<b>Q7</b>	<b>Q8</b>	<b>Q9</b>
<i>Number of Participant Beneficiaries</i>	1,030	1,021	893	852	802	746	658	525	332
ER Visits	19.17	-12.25	14.58	-1.37	-15.37	14.26	19.00	-17.32	53.94
<i>90% Confidence Interval</i>	(-25,63)	(-52,27)	(-26,55)	(-42,39)	(-62,31)	(-31,59)	(-24,62)	(-73,38)	(-16,124)
<i>P-Value</i>	0.470	0.611	0.556	0.955	0.584	0.601	0.463	0.607	0.208
Inpatient Admissions	-5.83	1.90	19.91	0.62	27.08	16.52	6.96	44.82*	37.22
<i>90% Confidence Interval</i>	(-38,27)	(-30,33)	(-12,52)	(-33,34)	(-5,59)	(-20,53)	(-33,47)	(3,87)	(-11,85)
<i>P-Value</i>	0.768	0.921	0.308	0.976	0.164	0.453	0.775	0.078	0.203
Unplanned Inpatient Admissions	0.73	-3.50	10.57	1.12	13.55	-1.74	-4.81	44.01*	30.27
<i>90% Confidence Interval</i>	(-29,30)	(-32,25)	(-19,40)	(-31,33)	(-16,43)	(-36,32)	(-41,31)	(6,82)	(-15,76)
<i>P-Value</i>	0.968	0.837	0.558	0.954	0.449	0.933	0.825	0.058	0.271
Hospital Days	-104.13	15.72	146.94	535.44	225.54	158.74	-41.86	268.54	229.12
<i>90% Confidence Interval</i>	(-392,184)	(-230,261)	(-106,400)	(-278,1349)	(-12,463)	(-99,416)	(-420,336)	(-85,622)	(-362,820)
<i>P-Value</i>	0.552	0.916	0.339	0.279	0.118	0.311	0.855	0.211	0.524

\* Statistically significant at the ten percent level.

**Appendix Table E-9: Quarterly Resource Use Rate (Number of Beneficiaries with Events per 1,000 Beneficiaries) for Participants and Controls, Dartmouth VMMC Medicare FFS Cohort, Q1 to Q4**

Measures	Baseline Period (Year Prior to Enrollment)		Q1		Q2		Q3		Q4	
	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls
<i>Number of Beneficiaries</i>	1,030	1,030	1,030	1,030	1,021	1,011	893	875	852	812
<b>Health Service Use Rate per 1,000 Beneficiaries</b>										
ER Visits	274.8	292.2	110.7	91.3	100.9	109.8	98.5	97.1	103.3	98.5
All Inpatient Admissions	198.1	205.8	71.8	78.6	66.6	66.3	87.3	60.6	78.6	71.4
Unplanned Inpatient Admissions	179.6	170.9	60.2	62.1	58.8	54.4	77.3	54.9	73.9	61.6

**Appendix Table E-10: Quarterly Resource Use Rate (Number of Beneficiaries with Events per 1,000 Beneficiaries) for Participants and Controls, Dartmouth VMMC Medicare FFS Cohort, Q5 to Q9**

Measures	Q5		Q6		Q7		Q8		Q9	
	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls
<i>Number of Beneficiaries</i>	802	752	746	689	658	593	525	459	332	276
<b>Health Service Use Rate per 1,000 Beneficiaries</b>										
ER Visits	102.2	98.4	115.3	101.6	106.4	96.1	97.1	132.9	108.4	72.5
All Inpatient Admissions	82.3	59.8	79.1	63.9	79.0	59.0	85.7	71.9	81.3	58.0
Unplanned Inpatient Admissions	69.8	53.2	65.7	59.5	74.5	57.3	78.1	56.6	75.3	50.7

**Appendix Table E-11: Quarterly Resource Use (Number of Events per 1,000 Beneficiaries) for Participants and Controls, Dartmouth VMMC Medicare FFS Cohort, Q1 to Q4**

Measures	Baseline Period (Year Prior to Enrollment)		Q1		Q2		Q3		Q4	
	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls
<i>Number of Beneficiaries</i>	1,030	1,030	1,030	1,030	1,021	1,011	893	875	852	812
<b>Mean Number of Events per 1,000 Beneficiaries</b>										
ER Visits	476.7	499.0	140.8	127.2	131.2	148.4	144.5	118.9	130.3	121.9
All Inpatient Admissions	327.2	327.2	95.1	101.0	89.1	83.1	106.4	81.1	99.8	89.9
Unplanned Inpatient Admissions	284.5	260.2	83.5	76.7	74.4	68.2	92.9	72.0	92.7	77.6
Hospital Days	1,667.0	1,899.0	454.4	616.5	472.1	453.0	556.6	425.1	973.0	438.4

**Appendix Table E-12: Quarterly Resource Use (Number of Events per 1,000 Beneficiaries) for Participants and Controls, Dartmouth VMMC Medicare FFS Cohort, Q5 to Q9**

Measures	Q5		Q6		Q7		Q8		Q9	
	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls
<i>Number of Beneficiaries</i>	802	752	746	689	658	593	525	459	332	276
<b>Mean Number of Events per 1,000 Beneficiaries</b>										
ER Visits	134.7	139.6	151.5	124.8	135.3	107.9	137.1	152.5	153.6	101.4
All Inpatient Admissions	103.5	69.1	107.2	81.3	101.8	87.7	118.1	76.3	93.4	65.2
Unplanned Inpatient Admissions	87.3	61.2	89.8	76.9	88.1	79.3	106.7	58.8	87.3	58.0
Hospital Days	561.1	347.1	552.3	387.5	560.8	610.5	704.8	507.6	623.5	507.2



## E.4 Medical Expenditures

**Appendix Table E-13: Cumulative and Yearly DiD Estimates of Expenditures per 1,000 Beneficiaries, Dartmouth VMMC Medicare FFS Cohort**

Measures (2011 USD)	Full Intervention Period <sup>a</sup>	Total Year 1 <sup>b</sup>	Total Year 2
<i>Number of Participant Beneficiaries</i>	1,030	1,030	802
Total Medicare Parts A and B Expenditures	2,231,607.0	-238,498.9	2,548,151.6**
<i>90% Confidence Interval</i>	(-785,443.6   5,248,658)	(-1,728,102.6   1,251,105)	(777,733.7   4,318,570)
<i>P-Value</i>	0.224	0.792	0.018
Inpatient Expenditures	1,787,757.8	177,461.2	1,654,397.1**
<i>90% Confidence Interval</i>	(-244,325.7   3,819,841)	(-813,281.9   1,168,204)	(510,559.4   2,798,235)
<i>P-Value</i>	0.148	0.768	0.017
Outpatient ER Expenditures	-14,616.41	1,928.81	-9,542.05
<i>90% Confidence Interval</i>	(-168,527.5   139,294.7)	(-75,416.4   79,274.0)	(-93,702.2   74,618.1)
<i>P-Value</i>	0.876	0.967	0.852
Outpatient Non-ER Expenditures	673,414.7	335,112.7	192,299.3
<i>90% Confidence Interval</i>	(-199,670.6   1,546,500.0)	(-95,524.5   765,749.9)	(-294,586.3   679,184.8)
<i>P-Value</i>	0.205	0.201	0.516
Physician and Ancillary Service Expenditures	371,831.49	-97,347.75	510,629.89**
<i>90% Confidence Interval</i>	(-196,485.9   940,148.9)	(-394,178.3   199,482.8)	(188,647.1   832,612.7)
<i>P-Value</i>	0.282	0.590	0.009
Skilled Nursing Facility Expenditures	-566,878.5	-602,941.5**	111,903.9
<i>90% Confidence Interval</i>	(-1,381,048.1   247,291.1)	(-986,970.3   -218,912.8)	(-484,264.0   708,071.9)
<i>P-Value</i>	0.252	0.010	0.758
Durable Medical Equipment Expenditures	48,304.21	31,480.27	14,150.58
<i>90% Confidence Interval</i>	(-100,549.8   197,158.2)	(-47,911.4   110,872.0)	(-62,128.2   90,429.4)
<i>P-Value</i>	0.594	0.514	0.760
Home Health Expenditures	143,338.91	48,669.83	83,464.81
<i>90% Confidence Interval</i>	(-95,801.3   382,479.1)	(-73,210.3   170,549.9)	(-52,675.1   219,604.7)
<i>P-Value</i>	0.324	0.511	0.313
Hospice Expenditures	-161,408.19	-110,649.54**	13,458.89
<i>90% Confidence Interval</i>	(-343,474.4   20,658.0)	(-195,947.9   -25,351.2)	(-124,176.9   151,094.7)
<i>P-Value</i>	0.145	0.033	0.872

\* Statistically significant at the ten percent level.

\*\* Statistically significant at the five percent level.

\*\*\* Statistically significant at the one percent level.

<sup>a</sup>Results are cumulative across all available quarters.

<sup>b</sup>Year 1 refers to the one-year period after a beneficiary's enrollment in the program, Year 2 refers to the subsequent one-year periods for a given beneficiary. Since beneficiaries enroll in the SDM programs on a rolling basis, the intervention period is defined at the beneficiary-level and not based on calendar quarters or years.

**Appendix Table E-14: Quarterly DiD Estimates of Expenditures per Beneficiary, Dartmouth VMMC Medicare FFS Cohort**

<b>Measures (2011 USD per Person)</b>	<b>Q1</b>	<b>Q2</b>	<b>Q3</b>	<b>Q4</b>	<b>Q5</b>	<b>Q6</b>	<b>Q7</b>	<b>Q8</b>	<b>Q9</b>
<i>Number of Participant Beneficiaries</i>	1,030	1,021	893	852	802	746	658	525	332
Total Medicare Parts A and B Expenditures	-596.62	4.01	-20.62	-24.23	767.12*	593.29	192.56	714.42	1,002.07
<i>90% Confidence Interval</i>	(-1201,8)	(-640,648)	(-630,589)	(-661,613)	(74,1460)	(-51,1237)	(-775,1160)	(-262,1691)	(-78,2083)
<i>P-Value</i>	0.104	0.992	0.956	0.95	0.069	0.130	0.743	0.229	0.127
Inpatient Expenditures	-245.05	-68.95	113.94	86.65	396.29	259.29	222.31	445.57	316.52
<i>90% Confidence Interval</i>	(-622,132)	(-473,336)	(-265,493)	(-279,452)	(-33,825)	(-112,630)	(-391,835)	(-154,1046)	(-301,934)
<i>P-Value</i>	0.286	0.779	0.621	0.697	0.129	0.251	0.551	0.222	0.399
Outpatient ER Expenditures	-12.32	-11.37	0.49	13.32	-28.06	11.28	-6.96	2.33	-25.10
<i>90% Confidence Interval</i>	(-42,17)	(-41,18)	(-27,27)	(-26,52)	(-68,12)	(-17,40)	(-34,20)	(-42,47)	(-97,47)
<i>P-Value</i>	0.490	0.531	0.976	0.573	0.249	0.515	0.670	0.932	0.566
Outpatient Non-ER Expenditures	47.87	184.93	17.56	4.46	120.33	-35.99	-2.48	-4.55	330.11
<i>90% Confidence Interval</i>	(-126,222)	(-2,372)	(-167,202)	(-193,202)	(-121,362)	(-240,168)	(-212,207)	(-249,240)	(-76,736)
<i>P-Value</i>	0.651	0.104	0.875	0.970	0.412	0.772	0.984	0.976	0.181
Physician and Ancillary Service Expenditures	-86.52	-16.59	-53.29	-36.43	87.84	27.24	131.88*	103.71	55.61
<i>90% Confidence Interval</i>	(-212,39)	(-149,116)	(-192,85)	(-178,105)	(-56,232)	(-130,185)	(0,264)	(-53,260)	(-133,244)
<i>P-Value</i>	0.256	0.836	0.528	0.673	0.316	0.776	0.099	0.276	0.628
Skilled Nursing Facility Expenditures	-276.90**	-70.80	-159.22	-29.05	172.44	209.44*	-180.29	158.77	343.13**
<i>90% Confidence Interval</i>	(-434,-120)	(-214,73)	(-325,7)	(-242,184)	(-14,359)	(27,392)	(-650,290)	(-77,394)	(60,626)
<i>P-Value</i>	0.004	0.417	0.114	0.822	0.128	0.059	0.528	0.267	0.046
Durable Medical Equipment Expenditures	-4.71	3.73	39.34	-14.60	-15.57	-3.18	17.90	7.33	3.65
<i>90% Confidence Interval</i>	(-31,21)	(-25,33)	(-4,83)	(-56,26)	(-43,12)	(-40,34)	(-19,54)	(-29,44)	(-50,57)
<i>P-Value</i>	0.767	0.833	0.137	0.558	0.355	0.887	0.419	0.739	0.910
Home Health Expenditures	20.96	24.24	36.83	-20.87	43.53	56.81*	20.12	64.62	67.91
<i>90% Confidence Interval</i>	(-30,72)	(-21,69)	(-9,83)	(-86,44)	(-12,99)	(6,108)	(-49,89)	(-9,138)	(-35,171)

Measures (2011 USD per Person)	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9
<i>P-Value</i>	0.503	0.376	0.185	0.598	0.199	0.067	0.631	0.150	0.277
Hospice Expenditures	-34.50	-29.61	-9.66	-30.49	-15.68	98.93**	-8.07	-59.22	-80.02
<i>90% Confidence Interval</i>	(-76,7)	(-63,3)	(-43,24)	(-84,23)	(-71,39)	(27,171)	(-76,60)	(-135,17)	(-217,57)
<i>P-Value</i>	0.167	0.141	0.632	0.348	0.638	0.023	0.844	0.199	0.336

\* Statistically significant at the ten percent level.

\*\* Statistically significant at the five percent level.

\*\*\* Statistically significant at the one percent level.

**Appendix Table E-15: Dartmouth VMMC Total Medicare Expenditures in the Baseline Period and by Quarter Following Enrollment, Medicare FFS Cohort, Q1 to Q4**

Measures (2011 USD)	Baseline Period (Year Prior to Enrollment)		Q1		Q2		Q3		Q4	
	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls
<i>Number of Beneficiaries</i>	1,030	1,030	1,030	1,030	1,021	1,011	893	875	852	812
<b>Total Medicare Parts A and B Expenditures</b>										
Mean	\$9,523	\$10,098	\$2,367	\$3,108	\$2,637	\$2,635	\$2,501	\$2,495	\$2,674	\$2,694
Median	\$3,710	\$3,415	\$594	\$547	\$571	\$491	\$580	\$478	\$572	\$515
90th percentile	\$24,038	\$27,071	\$6,608	\$7,742	\$6,994	\$5,864	\$7,334	\$6,002	\$6,657	\$6,889
99th percentile	\$87,921	\$93,048	\$28,303	\$43,698	\$27,176	\$36,477	\$26,195	\$34,520	\$30,980	\$34,504

**Appendix Table E-16: Dartmouth VMMC Total Medicare Expenditures by Quarter Following Enrollment, Medicare FFS Cohort, Q5 to Q9**

Measures (2011 USD)	Q5		Q6		Q7		Q8		Q9	
	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls
<i>Number of Beneficiaries</i>	802	752	746	689	658	593	525	459	332	276
<b>Total Medicare Parts A and B Expenditures</b>										
Mean	\$3,043	\$2,325	\$2,790	\$2,217	\$2,933	\$2,800	\$3,136	\$2,648	\$2,876	\$2,455
Median	\$599	\$461	\$533	\$512	\$634	\$568	\$629	\$514	\$563	\$563
90th percentile	\$8,171	\$6,569	\$7,224	\$5,813	\$6,938	\$5,424	\$7,347	\$7,290	\$7,980	\$5,788
99th percentile	\$35,846	\$29,651	\$41,316	\$26,637	\$41,633	\$42,390	\$40,378	\$38,620	\$30,506	\$36,437

**Appendix Table E-17: Dartmouth VMMC Inpatient and Outpatient Expenditures in the Baseline Period and by Quarter Following Enrollment, Medicare FFS Cohort, Q1 to Q4**

Measures (2011 USD)	Baseline Period (Year Prior to Enrollment)		Q1		Q2		Q3		Q4	
	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls
<i>Number of Beneficiaries</i>	1,030	1,030	1,030	1,030	1,021	1,011	893	875	852	812
<b>Inpatient Expenditures</b>										
Mean	\$2,720	\$3,420	\$642	\$1,062	\$729	\$865	\$769	\$720	\$773	\$736
Median	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
90th percentile	\$8,426	\$8,633	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
99th percentile	\$47,490	\$50,432	\$18,333	\$25,979	\$15,387	\$21,128	\$14,216	\$16,715	\$16,826	\$16,152
<b>Outpatient ER Expenditures</b>										
Mean	\$267	\$255	\$66	\$76	\$68	\$75	\$71	\$58	\$89	\$67
Median	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
90th percentile	\$715	\$718	\$122	\$0	\$67	\$159	\$0	\$0	\$71	\$0
99th percentile	\$3,564	\$2,943	\$1,425	\$1,814	\$1,776	\$1,416	\$1,462	\$1,254	\$1,867	\$1,542
<b>Outpatient Non-ER Expenditures</b>										
Mean	\$2,646	\$2,030	\$744	\$542	\$820	\$465	\$706	\$506	\$676	\$495
Median	\$953	\$472	\$117	\$46	\$130	\$40	\$132	\$40	\$131	\$65
90th percentile	\$5,580	\$3,956	\$1,412	\$896	\$1,531	\$811	\$1,437	\$870	\$1,262	\$813
99th percentile	\$29,206	\$29,438	\$9,211	\$8,596	\$12,625	\$7,635	\$9,027	\$8,871	\$7,773	\$7,752

**Appendix Table E-18: Dartmouth VMMC Inpatient and Outpatient Expenditures by Quarter Following Enrollment, Medicare FFS Cohort, Q5 to Q9**

Measures (2011 USD)	Q5		Q6		Q7		Q8		Q9	
	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls
<i>Number of Beneficiaries</i>	802	752	746	689	658	593	525	459	332	276
<b>Inpatient Expenditures</b>										
Mean	\$926	\$595	\$815	\$600	\$1,012	\$863	\$1,087	\$842	\$648	\$628
Median	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0

Measures (2011 USD)	Q5		Q6		Q7		Q8		Q9	
	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls
90th percentile	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
99th percentile	\$18,439	\$16,142	\$17,258	\$16,274	\$25,608	\$18,695	\$20,215	\$23,438	\$16,303	\$13,447
<b>Outpatient ER Expenditures</b>										
Mean	\$67	\$88	\$76	\$56	\$54	\$53	\$81	\$75	\$59	\$75
Median	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
90th percentile	\$88	\$0	\$153	\$57	\$78	\$0	\$0	\$186	\$78	\$0
99th percentile	\$1,357	\$2,213	\$1,467	\$1,669	\$1,217	\$1,120	\$1,758	\$1,728	\$1,250	\$1,099
<b>Outpatient Non-ER Expenditures</b>										
Mean	\$834	\$531	\$656	\$512	\$644	\$466	\$688	\$529	\$897	\$550
Median	\$134	\$40	\$98	\$66	\$134	\$64	\$145	\$47	\$144	\$52
90th percentile	\$1,431	\$814	\$1,115	\$986	\$1,271	\$710	\$1,420	\$930	\$1,470	\$779
99th percentile	\$12,080	\$7,710	\$9,163	\$7,375	\$9,395	\$7,386	\$7,426	\$9,609	\$15,824	\$7,701

**Appendix Table E-19: Dartmouth VMMC Expenditures for Other Settings in the Baseline Period and by Quarter Following Enrollment, Medicare FFS Cohort, Q1 to Q4**

Measures (2011 USD)	Baseline Period (Year Prior to Enrollment)		Q1		Q2		Q3		Q4	
	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls
<i>Number of Beneficiaries</i>	1,030	1,030	1,030	1,030	1,021	1,011	893	875	852	812
<b>Physician and Ancillary Service Expenditures</b>										
Mean	\$2,467	\$3,023	\$603	\$828	\$645	\$788	\$617	\$761	\$656	\$789
Median	\$1,492	\$1,733	\$261	\$307	\$262	\$279	\$257	\$270	\$264	\$288
90th percentile	\$5,273	\$5,993	\$1,547	\$2,055	\$1,582	\$1,694	\$1,546	\$1,714	\$1,654	\$1,781
99th percentile	\$16,013	\$22,963	\$4,880	\$7,728	\$5,398	\$8,942	\$5,799	\$6,868	\$6,563	\$6,059
<b>Skilled Nursing Facility Expenditures</b>										
Mean	\$637	\$666	\$81	\$365	\$171	\$250	\$117	\$305	\$247	\$316
Median	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0

Measures (2011 USD)	Baseline Period (Year Prior to Enrollment)		Q1		Q2		Q3		Q4	
	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls
90th percentile	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
99th percentile	\$15,996	\$18,167	\$0	\$12,664	\$8,272	\$9,886	\$3,548	\$12,820	\$10,691	\$11,817
<b>Durable Medical Equipment Expenditures</b>										
Mean	\$413	\$360	\$92	\$84	\$94	\$75	\$112	\$56	\$91	\$89
Median	\$90	\$63	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
90th percentile	\$1,164	\$790	\$295	\$250	\$291	\$262	\$299	\$172	\$279	\$229
99th percentile	\$4,432	\$4,635	\$1,222	\$1,206	\$1,120	\$1,004	\$1,240	\$795	\$1,157	\$1,245
<b>Home Health Expenditures</b>										
Mean	\$318	\$319	\$115	\$94	\$87	\$61	\$83	\$54	\$102	\$137
Median	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
90th percentile	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
99th percentile	\$6,787	\$7,626	\$3,736	\$3,361	\$3,403	\$2,551	\$2,917	\$2,294	\$3,915	\$4,711
<b>Hospice Expenditures</b>										
Mean	\$40	\$3	\$22	\$48	\$18	\$37	\$21	\$21	\$32	\$59
Median	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
90th percentile	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
99th percentile	\$0	\$0	\$0	\$297	\$0	\$500	\$0	\$0	\$0	\$250

**Appendix Table E-20: Dartmouth VMMC Expenditures for Other Settings by Quarter Following Enrollment, Medicare FFS Cohort, Q5 to Q9**

Measures (2011 USD)	Q5		Q6		Q7		Q8		Q9	
	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls
<i>Number of Beneficiaries</i>	802	752	746	689	658	593	525	459	332	276
<b>Physician and Ancillary Service Expenditures</b>										
Mean	\$691	\$726	\$636	\$709	\$703	\$652	\$744	\$708	\$623	\$680
Median	\$267	\$298	\$238	\$297	\$289	\$314	\$315	\$285	\$286	\$301
90th percentile	\$1,721	\$1,653	\$1,588	\$1,549	\$1,599	\$1,608	\$1,640	\$1,856	\$1,621	\$1,489

Measures (2011 USD)	Q5		Q6		Q7		Q8		Q9	
	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls
99th percentile	\$6,130	\$7,593	\$5,666	\$4,924	\$6,641	\$5,097	\$7,250	\$6,239	\$4,513	\$6,202
<b>Skilled Nursing Facility Expenditures</b>										
Mean	\$267	\$147	\$282	\$137	\$259	\$530	\$308	\$251	\$333	\$148
Median	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
90th percentile	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
99th percentile	\$9,864	\$0	\$12,486	\$2,728	\$11,981	\$13,933	\$10,982	\$8,040	\$11,831	\$780
<b>Durable Medical Equipment Expenditures</b>										
Mean	\$80	\$79	\$93	\$77	\$103	\$66	\$87	\$71	\$93	\$88
Median	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
90th percentile	\$283	\$218	\$290	\$194	\$301	\$195	\$289	\$182	\$280	\$246
99th percentile	\$1,160	\$1,283	\$1,343	\$1,110	\$1,032	\$1,020	\$1,005	\$752	\$1,162	\$2,053
<b>Home Health Expenditures</b>										
Mean	\$112	\$87	\$97	\$60	\$98	\$107	\$106	\$80	\$136	\$118
Median	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
90th percentile	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
99th percentile	\$3,442	\$2,923	\$3,278	\$2,614	\$3,459	\$3,613	\$3,322	\$2,957	\$4,721	\$3,215
<b>Hospice Expenditures</b>										
Mean	\$52	\$65	\$132	\$30	\$54	\$58	\$29	\$84	\$86	\$159
Median	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
90th percentile	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
99th percentile	\$0	\$1,232	\$6,615	\$0	\$0	\$133	\$0	\$1,099	\$4,123	\$6,125



## APPENDIX F: RESULTS FOR DARTMOUTH: SDM INTERVENTIONS AT DHMC

### F.1 Demographic and Health Characteristics

**Appendix Table F-1: DHMC SDM Intervention Baseline Demographic and Health Characteristics, Medicare FFS Cohort, Aggregated Comparison Region**

Characteristics	Intervention Group	Control Group	Percent Difference	Standardized Mean Difference
<i>Number of Beneficiaries</i>	71,000	429,317		
<b>Average Age</b>	70.95	71.29	-0.34	0.03
<b>Age Categories</b>				
0 to 64	18%	17%	1%	0.02
65 to 69	23%	23%	-1%	0.01
70 to 74	19%	19%	0%	0.00
75 to 79	15%	15%	-1%	0.01
80 +	25%	25%	0%	0.01
<b>Gender</b>				
Male	45%	45%	0%	0.00
Female	55%	55%	0%	0.00
<b>Race</b>				
White	98%	94%	4%	0.17
Black	0%	3%	-2%	0.16
Other	2%	3%	-1%	0.08
<b>Dual Eligible</b>	22%	17%	5%	0.13
<b>Medicare Eligibility</b>				
Disabled	25%	25%	0%	0.00
ESRD	0%	0%	0%	0.03
Aged	75%	75%	0%	0.00
<b>Frailty Measures</b>				
Charlson Score	2.71	2.81	-0.11	0.07
HCC Risk Score	1.76	1.92	-0.16	0.09
<b>Potential Risk Indicators for Preference Sensitive Surgeries</b>				
Hip Arthritis Diagnosis	4%	3%	0%	0.02
Hip Pain Stiffness Diagnosis	7%	8%	0%	0.01
Knee Arthritis Diagnosis	8%	8%	0%	0.01
Knee Pain Stiffness Diagnosis	9%	9%	0%	0.00
Spinal Diagnosis	22%	25%	-3%	0.06
Hip Surgery	0%	0%	0%	0.00
Knee Surgery	1%	1%	0%	0.01

Characteristics	Intervention Group	Control Group	Percent Difference	Standardized Mean Difference
Spine Surgery	0%	1%	0%	0.03
<b>Medical Cost Per Beneficiary (Baseline Year)</b>				
Total Cost	\$6,625	\$7,130	-\$505	\$0
Total IP Cost	\$1,840	\$2,302	-\$462	\$0
Total Hip Surgery Cost	\$61	\$67	-\$6	\$0
Total Knee Surgery Cost	\$115	\$125	-\$10	\$0
Total Spine Surgery Cost	\$58	\$107	-\$49	\$0
<b>Resource Use Per Beneficiary (Baseline Year)</b>				
0 IP Stays	85%	82%	3%	0.07
1 IP Stays	10%	12%	-2%	0.05
2+ IP Stays	5%	6%	-1%	0.05
0 ER Visits	72%	75%	-3%	0.07
1 ER Visits	17%	16%	1%	0.03
2+ ER Visits	11%	9%	2%	0.06

**Appendix Table F-2: DHMC SDM Intervention Baseline Demographic and Health Characteristics, Medicare FFS Cohort, Individual Comparison Regions**

Characteristics	NH - Lebanon HRR 281	MI - Marquette HRR 240	MI - Traverse City HRR 249	NC - Asheville HRR 309	ND - Fargo/Moorhead MN HRR 322
<i>Number of Beneficiaries</i>	71,000	32,015	40,077	118,063	58,041
<i>Average Age</i>	70.95	71.08	71.13	71.17	71.98
<b>Age Categories</b>					
0 to 64	18%	19%	18%	17%	18%
65 to 69	23%	23%	22%	25%	20%
70 to 74	19%	19%	20%	20%	17%
75 to 79	15%	15%	16%	15%	16%
80 +	25%	25%	24%	24%	30%
<b>Gender</b>					
Male	45%	48%	47%	44%	45%
Female	55%	52%	53%	56%	55%
<b>Race</b>					
White	98%	97%	98%	95%	94%
Black	0%	0%	0%	3%	0%
Other	2%	3%	2%	2%	6%

Characteristics	NH - Lebanon HRR 281	MI - Marquette HRR 240	MI - Traverse City HRR 249	NC - Asheville HRR 309	ND - Fargo/Moorhead MN HRR 322
<b>Dual Eligible</b>	22%	18%	15%	18%	17%
<b>Medicare Eligibility</b>					
Disabled	25%	29%	25%	25%	24%
ESRD	0%	0%	0%	0%	0%
Aged	75%	71%	75%	75%	76%
<b>Frailty Measures</b>					
Charlson Score	2.71	2.76	2.84	2.78	2.83
HCC Risk Score	1.76	1.96	1.98	1.85	1.86
<b>Potential Risk Indicators for Preference Sensitive Surgeries</b>					
Hip Arthritis Diagnosis	4%	3%	3%	3%	4%
Hip Pain Stiffness Diagnosis	7%	8%	7%	8%	8%
Knee Arthritis Diagnosis	8%	7%	8%	8%	8%
Knee Pain Stiffness Diagnosis	9%	9%	8%	9%	9%
Spinal Diagnosis	22%	25%	27%	25%	23%
Hip Surgery	0%	0%	1%	0%	1%
Knee Surgery	1%	1%	1%	1%	1%
Spine Surgery	0%	0%	1%	0%	0%
<b>Medical Cost Per Beneficiary (Baseline Year)</b>					
Total Cost	\$6,625	\$6,969	\$7,356	\$7,182	\$7,231
Total IP Cost	\$1,840	\$1,997	\$2,394	\$2,188	\$2,364
Total Hip Surgery Cost	\$61	\$65	\$67	\$63	\$75
Total Knee Surgery Cost	\$115	\$130	\$131	\$119	\$140
Total Spine Surgery Cost	\$58	\$84	\$123	\$103	\$96
<b>Resource Use Per Beneficiary (Baseline Year)</b>					
0 IP Stays	85%	84%	81%	83%	82%
1 IP Stays	10%	10%	13%	11%	12%
2+ IP Stays	5%	5%	6%	6%	6%
0 ER Visits	72%	72%	75%	75%	75%
1 ER Visits	17%	18%	17%	16%	16%
2+ ER Visits	11%	11%	9%	9%	9%

**Appendix Table F-3: DHMC SDM Intervention Baseline Demographic and Health Characteristics, Medicare FFS Cohort, Individual Comparison Regions Continued**

Characteristics	NH - Lebanon HRR 281	PA - Sayre HRR 359	VA - Charlottesville HRR 427	WA - Olympia HRR 438	WI - Wausau HRR 456
<i>Number of Beneficiaries</i>	71,000	28,502	81,350	46,875	24,441
<i>Average Age</i>	70.95	70.71	71.93	70.20	71.45
<b>Age Categories</b>					
0 to 64	18%	20%	14%	19%	17%
65 to 69	23%	22%	24%	25%	23%
70 to 74	19%	19%	21%	20%	20%
75 to 79	15%	15%	16%	14%	15%
80 +	25%	24%	25%	22%	26%
<b>Gender</b>					
Male	45%	46%	44%	47%	46%
Female	55%	54%	56%	53%	54%
<b>Race</b>					
White	98%	98%	90%	93%	97%
Black	0%	1%	8%	1%	0%
Other	2%	1%	2%	6%	3%
<b>Dual Eligible</b>	22%	20%	14%	16%	19%
<b>Medicare Eligibility</b>					
Disabled	25%	28%	21%	27%	23%
ESRD	0%	0%	0%	0%	0%
Aged	75%	72%	79%	72%	77%
<b>Frailty Measures</b>					
Charlson Score	2.71	2.83	2.90	2.70	2.85
HCC Risk Score	1.76	2.02	1.99	1.85	1.96
<b>Potential Risk Indicators for Preference Sensitive Surgeries</b>					
Hip Arthritis Diagnosis	4%	3%	3%	4%	3%
Hip Pain Stiffness Diagnosis	7%	8%	8%	6%	8%
Knee Arthritis Diagnosis	8%	8%	8%	7%	9%
Knee Pain Stiffness Diagnosis	9%	9%	9%	7%	9%
Spinal Diagnosis	22%	25%	25%	25%	25%
Hip Surgery	0%	1%	0%	1%	1%
Knee Surgery	1%	1%	1%	1%	1%
Spine Surgery	0%	0%	1%	1%	0%
<b>Medical Cost Per Beneficiary (Baseline Year)</b>					

Characteristics	NH - Lebanon HRR 281	PA - Sayre HRR 359	VA - Charlottesville HRR 427	WA - Olympia HRR 438	WI - Wausau HRR 456
Total Cost	\$6,625	\$7,377	\$7,408	\$6,253	\$6,927
Total IP Cost	\$1,840	\$2,709	\$2,485	\$2,099	\$2,262
Total Hip Surgery Cost	\$61	\$71	\$60	\$78	\$72
Total Knee Surgery Cost	\$115	\$124	\$123	\$112	\$132
Total Spine Surgery Cost	\$58	\$83	\$113	\$148	\$82
<b>Resource Use Per Beneficiary (Baseline Year)</b>					
0 IP Stays	85%	80%	82%	84%	82%
1 IP Stays	10%	13%	12%	11%	12%
2+ IP Stays	5%	8%	6%	5%	6%
0 ER Visits	72%	74%	74%	76%	75%
1 ER Visits	17%	17%	16%	15%	16%
2+ ER Visits	11%	9%	9%	8%	9%

## F.2 Mortality and Readmissions

**Appendix Table F-4: Cumulative and Yearly Mortality and Readmissions per 1,000 Beneficiaries, Differences after Dartmouth DHMC Enrollment, Medicare FFS Cohort**

Measures	Full Intervention Period <sup>a</sup>	Total Year 1 <sup>b</sup>	Total Year 2
Number of Participants	84,225	84,225	69,498
<b>Mortality</b>			
<i>Difference<sup>c</sup></i>	0.22	0.05	0.12
<i>90% Confidence Interval</i>	(-0.6   1.1)	(-0.3   0.4)	(-0.3   0.5)
<i>P-Value</i>	0.672	0.831	0.636
<b>30-Day Hospital Readmissions Following All Inpatient Admissions</b>			
<i>Difference</i>	17.45**	1.08	9.63***
<i>90% Confidence Interval</i>	(6.1   28.8)	(-4.1   6.2)	(4.3   14.9)
<i>P-Value</i>	0.011	0.730	0.003
<b>30-Day Hospital Unplanned Readmissions Following All Inpatient Admission</b>			
<i>Difference</i>	16.48**	0.82	9.08***
<i>90% Confidence Interval</i>	(5.7   27.3)	(-4.1   5.8)	(4.0   14.1)
<i>P-Value</i>	0.012	0.786	0.003

\*\* Statistically significant at the five percent level.

\*\*\* Statistically significant at the one percent level.

<sup>a</sup>Results are cumulative across all available quarters.

<sup>b</sup>Year 1 refers to the one-year period after a beneficiary's enrollment in the program, Year 2 refers to the subsequent one-year periods for a given beneficiary. Since beneficiaries enroll in the SDM programs on a rolling basis, the intervention period is defined at the beneficiary-level and not based on calendar quarters or years.

<sup>c</sup>The “difference” estimate represents the difference in the number of deaths per 1,000 beneficiaries or the difference in the number of beneficiaries with at least one readmission for every 1,000 beneficiaries who have at least one inpatient admission, as compared between the intervention and control groups during the relevant quarter in the intervention period.

**Appendix Table F-5: Quarterly Difference in Mortality per 1,000 Beneficiaries after  
Dartmouth DHMC Enrollment, Medicare FFS Cohort**

Medicare Cohort	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10
Medicare FFS	67,804	68,294	68,463	68,790	69,498	69,970	70,587	70,856	71,572	71,946
<i>Number of Participant Beneficiaries</i>										
<i>Difference<sup>a</sup></i>	0.08	-0.34	0.21	0.38	0.72	-0.71	0.86	-0.07	-0.14	0.47
<i>90% Confidence Interval</i>	(-0.9   1.1)	(-1.5   0.8)	(-0.7   1.1)	(-0.4   1.2)	(-0.3   1.7)	(-1.6   0.2)	(-0.7   2.4)	(-0.9   0.8)	(-1.2   1.0)	(-0.3   1.3)
<i>P-Value</i>	0.896	0.624	0.706	0.438	0.237	0.175	0.362	0.896	0.829	0.344

<sup>a</sup>The “difference” estimate represents the difference in the number of deaths per 1,000 beneficiaries between the intervention group and control group in the relevant quarter of the intervention period. There were no deaths in the intervention or control groups prior to program enrollment as beneficiaries were required to be alive on program start date to be included in the study.

**Appendix Table F-6: Quarterly Difference in Readmissions per 1,000 IP Admissions after  
Dartmouth DHMC Enrollment, Medicare FFS Cohort**

Measures	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10
<i>Number of Participant Beneficiaries</i>	67,804	68,294	68,463	68,790	69,498	69,970	70,587	70,856	71,572	71,946
<b>30-Day Hospital Readmissions per 1,000 Beneficiaries Following:</b>										
All Inpatient Admissions	3069	3245	3356	3316	3223	3327	3703	3469	3369	3322
<i>Difference<sup>a</sup></i>	-1.58	0.08	4.05	5.57	14.98*	17.17	11.72	28.45** *	23.00** *	27.55** *
<i>90% Confidence Interval</i>	(-15.9   12.7)	(-15.4   15.6)	(-12.8   20.9)	(-9.0   20.2)	(2.1   27.8)	(-0.5   34.9)	(-2.7   26.1)	(14.2   42.7)	(8.5   37.5)	(10.6   44.5)
<i>P-Value</i>	0.855	0.993	0.693	0.531	0.055	0.111	0.181	<0.001	0.009	0.007
<b>30-Day Hospital Unplanned Readmissions per 1,000 Beneficiaries Following:</b>										
Any Inpatient Admission	3069	3245	3356	3316	3223	3327	3703	3469	3369	3322
<i>Difference</i>	-2.64	-2.58	4.71	6.49	11.86	16.40	12.51	27.12** *	20.88**	28.59** *
<i>90% Confidence Interval</i>	(-16.1   10.8)	(-17.4   12.2)	(-12.1   21.5)	(-7.8   20.8)	(-0.8   24.5)	(-1.1   33.9)	(-1.3   26.3)	(14.1   40.1)	(7.1   34.7)	(13.4   43.8)
<i>P-Value</i>	0.747	0.774	0.645	0.454	0.122	0.123	0.136	<0.001	0.013	0.002

\* Statistically significant at the ten percent level.

\*\* Statistically significant at the five percent level.

\*\*\* Statistically significant at the one percent level.

<sup>a</sup>The “difference” estimate represents the difference in the number of beneficiaries with at least one readmission for every 1,000 beneficiaries who have at least one inpatient admission, as compared between the intervention and control groups during the relevant quarter in the intervention period.

**Appendix Table F-7: Quarterly Mortality and Readmission per 1,000 Beneficiaries for Participants and Controls, Dartmouth VMMC Medicare FFS Cohort, Q1 to Q5**

Measures	Q1		Q2		Q3		Q4		Q5	
	Intervention	Controls	Intervention	Controls	Intervention	Controls	Intervention	Controls	Intervention	Controls
<i>Number of Beneficiaries</i>	67,804	401,668	68,294	404,364	68,463	392,626	68,790	394,197	69,498	397,073
All-Cause Mortality per 1,000 Beneficiaries	10.2	10.9	10.6	11.7	11.5	12.2	10.7	11.1	10.6	10.7
30-Day Hospital Readmission per 1,000 Beneficiaries Following any Inpatient Admissions	213.1	241.2	212.9	240.4	214.5	238.2	215.6	237.9	225.3	237.0
30-day Hospital Unplanned Readmission per 1,000 Beneficiaries, Following any Inpatient Admission	198.1	229.8	197.5	230.2	201.7	227.3	202.7	226.6	208.8	226.2

**Appendix Table F-8: Quarterly Mortality and Readmission per 1,000 Beneficiaries for Participants and Controls, Dartmouth VMMC Medicare FFS Cohort, Q6 to Q9**

Measures	Q6		Q7		Q8		Q9		Q10	
	Intervention	Controls	Intervention	Controls	Intervention	Controls	Intervention	Controls	Intervention	Controls
<i>Number of Beneficiaries</i>	69,970	397,085	70,587	393,057	70,856	391,774	71,572	394,048	71,946	396,257
All-Cause Mortality per 1,000 Beneficiaries	10.7	12.3	12.8	12.9	10.6	11.6	9.7	10.8	10.8	11.4
30-Day Hospital Readmission per 1,000 Beneficiaries Following any Inpatient Admissions	225.1	236.6	223.9	241.0	239.8	240.1	231.5	235.9	206.5	209.1
30-day Hospital Unplanned Readmission per 1,000 Beneficiaries, Following any Inpatient Admission	211.9	226.9	211.7	230.6	226	230.2	217.6	226.6	197.2	201.3



### F.3 Health Service Resource Use

**Appendix Table F-9: Cumulative and Yearly DiD Estimates of Resource Use per 1,000 Beneficiaries, Dartmouth DHMC Medicare FFS Cohort**

Measures (Number of Events or Days)	Full Intervention Period <sup>a</sup>	Total Year 1 <sup>b</sup>	Total Year 2
<i>Number of Participant Beneficiaries</i>	84,225	84,225	69,498
ER Visits	-7.95	-2.33	-3.40
<i>90% Confidence Interval</i>	(-16.4   0.5)	(-6.1   1.5)	(-7.5   0.7)
<i>P-Value</i>	0.123	0.315	0.172
Inpatient Admissions	9.75***	2.89***	3.73***
<i>90% Confidence Interval</i>	(7.3   12.2)	(1.8   4.0)	(2.5   5.0)
<i>P-Value</i>	<0.001	<0.001	<0.001
Unplanned Inpatient Admissions	7.86***	2.47***	2.90***
<i>90% Confidence Interval</i>	(5.4   10.4)	(1.3   3.6)	(1.7   4.1)
<i>P-Value</i>	<0.001	<0.001	<0.001
Hospital Days	33.16***	7.39	14.21**
<i>90% Confidence Interval</i>	(14.2   52.1)	(-1.1   15.8)	(3.7   24.7)
<i>P-Value</i>	0.004	0.151	0.026
All PS <sup>c</sup> Hip/Knee/Spine Surgeries	0.48	0.12	0.15
<i>90% Confidence Interval</i>	(-0.5   1.5)	(-0.3   0.6)	(-0.3   0.6)
<i>P-Value</i>	0.436	0.669	0.615
PS Hip/Knee/Spine Surgical Hospital Days	2.20	0.58	0.47
<i>90% Confidence Interval</i>	(-4.0   8.4)	(-2.3   3.4)	(-2.5   3.5)
<i>P-Value</i>	0.557	0.741	0.798
Inpatient PS Hip/Knee/Spine Surgeries	0.82	0.24	0.32
<i>90% Confidence Interval</i>	(-0.1   1.7)	(-0.2   0.7)	(-0.1   0.7)
<i>P-Value</i>	0.133	0.343	0.218
Outpatient PS Hip/Knee/Spine Surgeries	-0.51***	-0.15*	-0.26***
<i>90% Confidence Interval</i>	(-0.8   -0.2)	(-0.3   0.0)	(-0.4   -0.1)
<i>P-Value</i>	0.003	0.055	<0.001
All PS Hip Surgeries	0.39*	0.09	0.20*
<i>90% Confidence Interval</i>	(0.1   0.7)	(-0.1   0.2)	(0.0   0.4)
<i>P-Value</i>	0.056	0.356	0.058
PS Hip Surgical Hospital Days	1.03	0.17	0.45
<i>90% Confidence Interval</i>	(-0.9   3.0)	(-0.7   1.1)	(-0.5   1.4)
<i>P-Value</i>	0.380	0.753	0.432

Measures (Number of Events or Days)	Full Intervention Period <sup>a</sup>	Total Year 1 <sup>b</sup>	Total Year 2
Inpatient PS Hip Surgeries	0.42**	0.10	0.21**
90% Confidence Interval	(0.1   0.8)	(-0.1   0.3)	(0.0   0.4)
P-Value	0.041	0.309	0.045
Outpatient PS Hip Surgeries	-0.08**	-0.02	-0.04***
90% Confidence Interval	(-0.1   0.0)	(0.0   0.0)	(-0.1   0.0)
P-Value	0.015	0.243	0.003
All PS Knee Surgeries	-0.11	-0.02	-0.15
90% Confidence Interval	(-0.8   0.5)	(-0.3   0.3)	(-0.5   0.2)
P-Value	0.771	0.902	0.411
PS Knee Surgical Hospital Days	1.13	0.34	0.20
90% Confidence Interval	(-2.4   4.6)	(-1.3   2.0)	(-1.5   1.9)
P-Value	0.596	0.732	0.848
Inpatient PS Knee Surgeries	0.14	0.06	-0.01
90% Confidence Interval	(-0.4   0.7)	(-0.2   0.3)	(-0.3   0.2)
P-Value	0.669	0.694	0.929
Outpatient PS Knee Surgeries	-0.38**	-0.11	-0.20***
90% Confidence Interval	(-0.6   -0.1)	(-0.2   0.0)	(-0.3   -0.1)
P-Value	0.015	0.128	0.004
All PS Spine Surgeries	0.23	0.07	0.12
90% Confidence Interval	(-0.1   0.6)	(-0.1   0.2)	(0.0   0.3)
P-Value	0.267	0.502	0.221
PS Spine Surgical Hospital Days	0.05	0.06	-0.18
90% Confidence Interval	(-2.3   2.4)	(-1.0   1.2)	(-1.3   1.0)
P-Value	0.973	0.926	0.796
Inpatient PS Spine Surgeries	0.29	0.09	0.15
90% Confidence Interval	(-0.1   0.6)	(-0.1   0.3)	(0.0   0.3)
P-Value	0.172	0.384	0.155
Outpatient PS Spine Surgeries	-0.06*	-0.02	-0.02
90% Confidence Interval	(-0.1   0.0)	(0.0   0.0)	(0.0   0.0)
P-Value	0.061	0.116	0.139

\*\* Statistically significant at the five percent level.

\*\*\* Statistically significant at the one percent level.

<sup>a</sup>Results are cumulative across all available quarters.

<sup>b</sup>Year 1 refers to the one-year period after a beneficiary's enrollment in the program, Year 2 refers to the subsequent one-year periods for a given beneficiary. Since beneficiaries enroll in the SDM programs on a rolling basis, the intervention period is defined at the beneficiary-level and not based on calendar quarters or years.

<sup>c</sup>PS = Preference Sensitive.

**Appendix Table F-10: Quarterly DiD Estimates of Effects on Surgery-Related Health Service Resource Use (Number of Events or Days per 1,000 Beneficiaries), Dartmouth DHMC Medicare FFS Cohort**

Measures (Number of Events or Days per 1,000 Beneficiaries)	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10
<i>Number of Participant Beneficiaries</i>	67,804	68,294	68,463	68,790	69,498	69,970	70,587	70,856	71,572	71,946
All PS <sup>a</sup> Hip/Knee/Spine Surgeries	0.53	0.55	-0.16	-0.09	0.42	-0.03	0.39	0.21	0.73	0.61
<i>90% Confidence Interval</i>	(-0.7   1.7)	(-0.7   1.8)	(-1.4   1.1)	(-1.4   1.2)	(-0.8   1.6)	(-1.4   1.3)	(-0.9   1.6)	(-1.0   1.5)	(-0.5   2.0)	(-0.8   2.0)
<i>P-Value</i>	0.469	0.470	0.842	0.903	0.558	0.970	0.611	0.786	0.324	0.465
PS Hip/Knee/Spine Surgical Hospital Days	3.20	2.14	-0.89	-0.50	0.07	1.12	0.48	1.41	2.35	5.20
<i>90% Confidence Interval</i>	(-4.0   10.4)	(-5.2   9.5)	(-9.2   7.4)	(-8.5   7.5)	(-7.4   7.6)	(-7.6   9.8)	(-7.5   8.5)	(-6.3   9.1)	(-5.1   9.8)	(-3.5   13.9)
<i>P-Value</i>	0.465	0.631	0.861	0.918	0.987	0.832	0.921	0.762	0.601	0.325
Inpatient PS Hip/Knee/Spine Surgeries	0.39	0.83	0.21	0.20	0.74	0.23	0.62	0.53	0.88	0.80
<i>90% Confidence Interval</i>	(-0.7   1.5)	(-0.2   1.9)	(-0.9   1.3)	(-0.9   1.3)	(-0.3   1.8)	(-0.9   1.4)	(-0.5   1.7)	(-0.6   1.6)	(-0.2   2.0)	(-0.4   2.0)
<i>P-Value</i>	0.558	0.198	0.761	0.772	0.245	0.746	0.355	0.433	0.180	0.286
Outpatient PS Hip/Knee/Spine Surgeries	0.16	-0.33	-0.40**	-0.45***	-0.46**	-0.41**	-0.39*	-0.49***	-0.31	-0.35*
<i>90% Confidence Interval</i>	(-0.2   0.5)	(-0.7   0.0)	(-0.7   - 0.1)	(-0.7   - 0.2)	(-0.7   - 0.2)	(-0.7   - 0.1)	(-0.7   - 0.1)	(-0.8   - 0.2)	(-0.6   0.0)	(-0.6   - 0.1)
<i>P-Value</i>	0.474	0.110	0.042	0.007	0.010	0.028	0.059	0.009	0.114	0.052
All PS Hip Surgeries	0.25	0.24	0.17	-0.05	0.31	0.18	0.38	0.46	0.40	0.28
<i>90% Confidence Interval</i>	(-0.1   0.6)	(-0.2   0.7)	(-0.3   0.6)	(-0.4   0.3)	(-0.1   0.8)	(-0.2   0.6)	(-0.1   0.9)	(-0.1   1.0)	(0.0   0.9)	(-0.2   0.7)
<i>P-Value</i>	0.293	0.383	0.555	0.813	0.258	0.478	0.232	0.143	0.138	0.296
PS Hip Surgical Hospital Days	1.12	0.70	0.24	-0.87	-0.17	1.37	1.39	0.41	0.85	1.76
<i>90% Confidence Interval</i>	(-1.2   3.4)	(-1.7   3.1)	(-2.3   2.7)	(-3.5   1.8)	(-2.6   2.2)	(-1.6   4.3)	(-1.0   3.8)	(-2.0   2.8)	(-1.5   3.2)	(-1.0   4.5)
<i>P-Value</i>	0.422	0.633	0.873	0.593	0.908	0.441	0.347	0.782	0.560	0.299
Inpatient PS Hip Surgeries	0.27	0.24	0.17	-0.02	0.33	0.21	0.41	0.46	0.43	0.30
<i>90% Confidence Interval</i>	(-0.1   0.7)	(-0.2   0.7)	(-0.3   0.6)	(-0.4   0.4)	(-0.1   0.8)	(-0.2   0.6)	(-0.1   0.9)	(-0.1   1.0)	(0.0   0.9)	(-0.1   0.7)
<i>P-Value</i>	0.245	0.382	0.554	0.928	0.224	0.418	0.207	0.145	0.114	0.260

Measures (Number of Events or Days per 1,000 Beneficiaries)	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10
Outpatient PS Hip Surgeries	-0.02	0.01	-0.02	-0.09***	-0.07***	-0.07***	-0.07**	-0.04	-0.07***	-0.06**
90% Confidence Interval	(-0.1   0.0)	(-0.1   0.1)	(-0.1   0.1)	(-0.1   -0.1)	(-0.1   0.0)	(-0.1   0.0)	(-0.1   0.0)	(-0.1   0.0)	(-0.1   0.0)	(-0.1   0.0)
P-Value	0.477	0.771	0.685	<0.001	0.001	<0.001	0.010	0.123	<0.001	0.014
All PS Knee Surgeries	0.32	-0.20	-0.16	-0.12	-0.25	-0.27	-0.11	-0.39	0.12	0.29
90% Confidence Interval	(-0.5   1.1)	(-1.1   0.7)	(-1.0   0.7)	(-0.9   0.7)	(-1.0   0.5)	(-1.2   0.6)	(-0.9   0.7)	(-1.2   0.4)	(-0.7   0.9)	(-0.5   1.1)
P-Value	0.497	0.702	0.752	0.807	0.589	0.610	0.820	0.417	0.805	0.569
PS Knee Surgical Hospital Days	1.24	0.21	0.07	0.79	-0.03	0.26	0.12	0.94	0.41	3.44
90% Confidence Interval	(-2.8   5.3)	(-4.3   4.7)	(-4.5   4.6)	(-3.5   5.1)	(-4.3   4.2)	(-4.2   4.8)	(-4.4   4.7)	(-3.3   5.2)	(-4.0   4.9)	(-1.3   8.1)
P-Value	0.613	0.938	0.979	0.764	0.990	0.925	0.965	0.716	0.878	0.230
Inpatient PS Knee Surgeries	0.12	0.04	0.15	0.10	0.01	-0.07	0.08	-0.12	0.20	0.40
90% Confidence Interval	(-0.5   0.8)	(-0.7   0.7)	(-0.5   0.8)	(-0.5   0.7)	(-0.6   0.6)	(-0.8   0.6)	(-0.6   0.7)	(-0.8   0.5)	(-0.4   0.9)	(-0.3   1.1)
P-Value	0.771	0.922	0.717	0.794	0.974	0.876	0.834	0.761	0.604	0.343
Outpatient PS Knee Surgeries	0.23	-0.32*	-0.33*	-0.32**	-0.36**	-0.30*	-0.30	-0.39**	-0.19	-0.22
90% Confidence Interval	(-0.1   0.6)	(-0.6   0.0)	(-0.6   0.0)	(-0.6   -0.1)	(-0.6   -0.1)	(-0.6   0.0)	(-0.6   0.0)	(-0.7   -0.1)	(-0.5   0.1)	(-0.5   0.1)
P-Value	0.270	0.093	0.080	0.043	0.033	0.087	0.125	0.025	0.299	0.184
All PS Spine Surgeries	-0.04	0.55**	-0.13	0.08	0.38	0.10	0.18	0.16	0.23	0.04
90% Confidence Interval	(-0.5   0.5)	(0.1   1.0)	(-0.6   0.4)	(-0.4   0.5)	(0.0   0.8)	(-0.4   0.6)	(-0.2   0.6)	(-0.3   0.6)	(-0.1   0.6)	(-0.5   0.6)
P-Value	0.894	0.027	0.667	0.765	0.134	0.740	0.465	0.564	0.313	0.907
PS Spine Surgical Hospital Days	0.83	1.23	-1.20	-0.42	0.28	-0.51	-1.03	0.06	1.09	0.00
90% Confidence Interval	(-2.1   3.8)	(-1.2   3.7)	(-4.7   2.3)	(-3.4   2.5)	(-2.5   3.0)	(-3.7   2.7)	(-4.2   2.1)	(-3.0   3.1)	(-1.7   3.9)	(-3.1   3.1)
P-Value	0.641	0.410	0.570	0.815	0.868	0.794	0.592	0.972	0.516	0.999
Inpatient PS Spine Surgeries	0.00	0.57**	-0.09	0.12	0.42	0.13	0.21	0.21	0.27	0.10
90% Confidence Interval	(-0.5   0.5)	(0.2   1.0)	(-0.6   0.4)	(-0.3   0.6)	(0.0   0.8)	(-0.4   0.6)	(-0.2   0.6)	(-0.2   0.7)	(-0.1   0.7)	(-0.4   0.6)
P-Value	0.991	0.020	0.763	0.658	0.104	0.659	0.403	0.448	0.238	0.758
Outpatient PS Spine Surgeries	-0.04	-0.03	-0.04	-0.04	-0.02	-0.03	-0.03	-0.05**	-0.04	-0.06**
90% Confidence Interval	(-0.1   0.0)	(-0.1   0.0)	(-0.1   0.0)	(-0.1   0.0)	(-0.1   0.0)	(-0.1   0.0)	(-0.1   0.0)	(-0.1   0.0)	(-0.1   0.0)	(-0.1   0.0)

Measures (Number of Events or Days per 1,000 Beneficiaries)	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10
<i>P-Value</i>	0.207	0.515	0.233	0.135	0.517	0.228	0.494	0.027	0.140	0.021

\* Statistically significant at the ten percent level.

\*\* Statistically significant at the five percent level.

\*\*\* Statistically significant at the one percent level.

<sup>a</sup>PS = Preference Sensitive.

**Appendix Table F-11: Quarterly DiD Estimates of Resource Use (Number of Events or Days per 1,000 Beneficiaries),  
Dartmouth DHMC Medicare FFS Cohort**

Measures (Number of Events or Days per 1,000 Beneficiaries)	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10
<i>Number of Participant Beneficiaries</i>	67,804	68,294	68,463	68,790	69,498	69,970	70,587	70,856	71,572	71,946
ER Visits	3.18	-6.04	-8.27	-4.70	-6.84	-7.93	-3.12	-4.63	-4.58	-9.98
<i>90% Confidence Interval</i>	(-5.6   12.0)	(-16.4   4.3)	(-18.9   2.4)	(-14.4   5.0)	(-17.5   3.8)	(-16.8   0.9)	(-13.6   7.4)	(-16.7   7.4)	(-14.5   5.4)	(-21.8   1.8)
<i>P-Value</i>	0.553	0.337	0.201	0.426	0.292	0.142	0.624	0.528	0.448	0.163
Inpatient Admissions	1.20	6.69***	5.29***	6.53***	5.18***	4.13**	7.54***	7.82***	9.55***	10.82***
<i>90% Confidence Interval</i>	(-1.3   3.7)	(3.4   10.0)	(2.3   8.2)	(3.6   9.5)	(2.4   8.0)	(1.2   7.0)	(4.0   11.1)	(3.9   11.7)	(7.0   12.1)	(7.7   13.9)
<i>P-Value</i>	0.431	<0.001	0.003	<0.001	0.003	0.019	<0.001	0.001	<0.001	<0.001
Unplanned Inpatient Admissions	0.66	5.27***	5.12***	5.79***	3.86*	3.07*	5.84***	6.43***	7.36***	8.87***
<i>90% Confidence Interval</i>	(-2.2   3.5)	(2.1   8.5)	(2.1   8.2)	(3.0   8.6)	(0.4   7.3)	(0.2   5.9)	(2.6   9.1)	(3.0   9.9)	(4.6   10.2)	(6.2   11.6)
<i>P-Value</i>	0.701	0.007	0.005	<0.001	0.066	0.079	0.003	0.002	<0.001	<0.001
Hospital Days	14.00	23.69	14.62	-1.78	22.99	17.61	19.30	34.05**	35.84***	39.66**
<i>90% Confidence Interval</i>	(-11.1   39.1)	(-2.5   49.9)	(-4.8   34.0)	(-23.2   19.6)	(-16.1   62.1)	(-5.0   40.3)	(-9.1   47.7)	(6.1   62.0)	(13.4   58.3)	(9.2   70.1)
<i>P-Value</i>	0.358	0.137	0.215	0.891	0.333	0.201	0.263	0.045	0.009	0.032

\*\* Statistically significant at the five percent level.

\*\*\* Statistically significant at the one percent level.

**Appendix Table F-12: Quarterly Resource Use Rate (Number of Beneficiaries with Events per 1,000 Beneficiaries) for Participants and Controls, Dartmouth DHMC Medicare FFS Cohort, Q1 to Q5**

Measures	Baseline Period (Year Prior to Enrollment)		Q1		Q2		Q3		Q4		Q5	
	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls
<i>Number of Beneficiaries</i>	71,000	429,317	67,804	401,668	68,294	404,364	68,463	392,626	68,790	394,197	69,498	397,073
<b>Health Service Use Rate per 1,000 Beneficiaries</b>												
ER Visits	280.2	250.7	106.3	92.4	96.3	88.6	92.8	87.8	102.4	95.7	102.8	96.4
All Inpatient Admissions	148.0	175.9	45.3	56.1	47.5	54.5	49.0	57.0	48.2	55.3	46.4	54.3
Unplanned Inpatient Admissions	125.9	149.3	38.1	47.4	39.7	45.8	41.8	48.2	41.5	47.1	39.1	46.1
All Hip/Knee/Spine Surgeries	18.6	21.9	5.4	6.0	5.7	6.4	5.0	6.4	4.8	6.1	5.2	6.0
Inpatient PS Orthopedic Surgeries	15.3	19.0	4.3	5.2	5.0	5.5	4.4	5.5	4.1	5.2	4.6	5.2
Outpatient Hip/Knee/Spine Surgeries	4.1	3.1	1.2	0.8	0.8	0.9	0.8	0.9	0.7	0.9	0.6	0.8
All Hip Surgeries	4.8	5.0	1.4	1.3	1.6	1.4	1.5	1.4	1.3	1.5	1.6	1.4
Inpatient Hip Surgeries	4.7	5.0	1.4	1.3	1.5	1.4	1.5	1.4	1.3	1.4	1.6	1.4
Outpatient Hip Surgeries	0.3	0.0	0.0	0.0	0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.0
All Knee Surgeries	10.7	11.7	3.1	3.2	2.9	3.6	2.8	3.5	2.6	3.2	2.5	3.3
Inpatient PS Orthopedic Surgeries	7.6	9.0	2.1	2.5	2.3	2.8	2.2	2.6	1.9	2.4	2.0	2.5
Outpatient Knee Surgeries	3.6	3.0	1.2	0.8	0.7	0.9	0.7	0.8	0.7	0.8	0.6	0.8
All Spine Surgeries	3.3	5.4	0.8	1.5	1.3	1.3	0.7	1.5	0.9	1.4	1.1	1.4
Inpatient Spine Surgeries	3.0	5.3	0.8	1.4	1.2	1.3	0.7	1.4	0.9	1.4	1.1	1.4
Outpatient Spine Surgeries	0.3	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

**Appendix Table F-13: Quarterly Resource Use Rate (Number of Beneficiaries with Events per 1,000 Beneficiaries) for Participants and Controls, Dartmouth DHMC Medicare FFS Cohort, Q6 to Q10**

Measures	Q6		Q7		Q8		Q9		Q10	
	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls
<i>Number of Beneficiaries</i>	69,970	397,085	70,587	393,057	70,856	391,774	71,572	394,048	71,946	396,257
<b>Health Service Use Rate per 1,000 Beneficiaries</b>										
ER Visits	97.0	91.9	100.7	92.4	103.5	96.6	103.4	96.6	95.5	91.7
All Inpatient Admissions	47.5	56.1	52.5	59.0	49.0	56.2	47.1	52.7	46.2	50.8
Unplanned Inpatient Admissions	40.7	48.0	44.8	50.5	41.5	47.8	39.4	44.5	39.8	43.7
All Hip/Knee/Spine Surgeries	4.5	5.8	5.3	6.2	5.1	6.3	5.4	6.1	4.9	5.6
Inpatient PS Orthopedic Surgeries	3.9	5.1	4.6	5.4	4.5	5.4	4.6	5.3	4.2	4.9
Outpatient Hip/Knee/Spine Surgeries	0.6	0.8	0.7	0.8	0.6	0.8	0.8	0.8	0.7	0.8
All Hip Surgeries	1.3	1.3	1.7	1.5	1.8	1.5	1.7	1.5	1.3	1.2
Inpatient Hip Surgeries	1.3	1.3	1.7	1.4	1.8	1.5	1.7	1.5	1.3	1.2
Outpatient Hip Surgeries	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
All Knee Surgeries	2.4	3.2	2.7	3.4	2.5	3.5	2.8	3.3	2.8	3.0
Inpatient PS Orthopedic Surgeries	1.8	2.5	2.1	2.7	1.9	2.7	2.0	2.5	2.1	2.3
Outpatient Knee Surgeries	0.6	0.8	0.6	0.8	0.6	0.8	0.8	0.8	0.7	0.7
All Spine Surgeries	0.8	1.3	0.9	1.4	0.8	1.3	1.0	1.4	0.8	1.4
Inpatient Spine Surgeries	0.8	1.3	0.9	1.3	0.8	1.3	1.0	1.4	0.8	1.4
Outpatient Spine Surgeries	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0

**Appendix Table F-14: Quarterly Resource Use (Number of Events per 1,000 Beneficiaries) for Participants and Controls,  
Dartmouth DHMC Medicare FFS Cohort, Q1 to Q5**

Measures	Baseline Period (Year Prior to Enrollment)		Q1		Q2		Q3		Q4		Q5	
	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls
<i>Number of Beneficiaries</i>	71,000	429,317	67,804	401,668	68,294	404,364	68,463	392,626	68,790	394,197	69,498	397,073
<b>Mean Number of Events per 1,000 Beneficiaries</b>												
ER Visits	507.1	444.3	142.4	123.5	126.1	116.7	122.2	115.6	138.6	128.5	138.3	130.7
All Inpatient Admissions	227.3	280.4	57.2	71.1	59.9	68.4	61.4	71.5	60.7	69.7	58.3	68.7
Unplanned Inpatient Admissions	190.8	235.2	47.5	59.3	49.5	56.9	51.9	59.6	51.3	58.5	48.3	57.4
Hospital Days	1,277.6	1,512.5	330.6	383.5	337.2	381.2	352.0	405.5	324.2	394.7	339.0	385.1
All Hip/Knee/Spine Surgeries	20.1	23.5	5.6	6.1	5.9	6.5	5.2	6.5	4.9	6.2	5.3	6.2
Inpatient Hip/Knee/Spine Surgeries	15.9	20.3	4.4	5.3	5.1	5.6	4.4	5.6	4.2	5.3	4.7	5.3
Hip/Knee/Spine Surgery Hospital Days	56.6	104.2	15.7	25.8	16.1	27.5	15.4	29.4	14.2	28.1	14.4	27.8
Outpatient Hip/Knee/Spine Surgeries	4.2	3.2	1.2	0.8	0.8	0.9	0.8	0.9	0.7	0.9	0.6	0.8
All Hip Surgeries	5.1	5.3	1.5	1.3	1.7	1.4	1.5	1.5	1.3	1.5	1.6	1.4
Inpatient Hip Surgeries	4.8	5.2	1.5	1.3	1.6	1.4	1.5	1.4	1.3	1.5	1.6	1.4
Hip Surgery Hospital Days	15.7	26.9	4.5	6.6	4.6	7.0	4.8	7.5	4.3	8.3	4.3	7.5
Outpatient Hip Surgeries	0.3	0.1	0.0	0.0	0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.0
All Knee Surgeries	11.5	12.5	3.3	3.3	3.0	3.7	2.9	3.5	2.6	3.3	2.6	3.4
Inpatient Knee Surgeries	7.9	9.5	2.1	2.5	2.3	2.8	2.2	2.7	1.9	2.4	2.0	2.6
Knee Surgery Hospital Days	29.6	50.9	7.2	12.0	8.2	14.2	8.1	14.2	6.8	12.2	6.7	12.9
Outpatient Knee Surgeries	3.7	3.0	1.2	0.8	0.7	0.9	0.7	0.8	0.7	0.8	0.6	0.8
All Spine Surgeries	3.4	5.7	0.8	1.5	1.3	1.4	0.7	1.5	0.9	1.5	1.2	1.4
Inpatient Spine Surgeries	3.2	5.6	0.8	1.5	1.2	1.3	0.7	1.5	0.9	1.4	1.1	1.4
Spine Surgery Hospital Days	11.3	26.3	3.9	7.2	3.3	6.2	2.5	7.7	3.1	7.6	3.5	7.3
Outpatient Spine Surgeries	0.3	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0



**Appendix Table F-15: Quarterly Resource Use (Number of Events per 1,000 Beneficiaries) for Participants and Controls, Dartmouth DHMC Medicare FFS Cohort, Q6 to Q10**

Measures	Q6		Q7		Q8		Q9		Q10	
	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls
<i>Number of Beneficiaries</i>	69,970	397,085	70,587	393,057	70,856	391,774	71,572	394,048	71,946	396,257
<b>Mean Number of Events per 1,000 Beneficiaries</b>										
ER Visits	128.8	122.1	133.7	122.6	138.4	128.7	139.5	130.0	126.6	122.6
All Inpatient Admissions	59.3	70.8	65.9	74.3	62.9	71.2	59.7	66.5	57.4	62.8
Unplanned Inpatient Admissions	50.0	59.9	55.4	62.8	52.6	59.5	49.6	55.6	49.7	54.2
Hospital Days	340.0	391.6	355.5	406.7	348.7	386.1	319.0	355.5	279.7	312.1
All Hip/Knee/Spine Surgeries	4.6	5.9	5.4	6.3	5.2	6.4	5.5	6.2	4.9	5.7
Inpatient Hip/Knee/Spine Surgeries	4.0	5.1	4.7	5.5	4.5	5.5	4.8	5.4	4.2	4.9
Hip/Knee/Spine Surgery Hospital Days	12.7	25.3	15.2	28.6	14.7	27.4	15.1	27.2	14.5	23.5
Outpatient Hip/Knee/Spine Surgeries	0.6	0.8	0.7	0.8	0.6	0.9	0.8	0.8	0.7	0.8
All Hip Surgeries	1.4	1.3	1.7	1.5	1.8	1.5	1.7	1.5	1.3	1.2
Inpatient Hip Surgeries	1.4	1.3	1.7	1.5	1.8	1.5	1.7	1.5	1.3	1.2
Hip Surgery Hospital Days	4.9	6.7	5.7	7.6	4.5	7.6	4.4	7.0	3.6	5.2
Outpatient Hip Surgeries	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
All Knee Surgeries	2.5	3.2	2.8	3.4	2.6	3.5	2.8	3.3	2.8	3.1
Inpatient Knee Surgeries	1.9	2.5	2.2	2.7	1.9	2.7	2.0	2.5	2.2	2.3
Knee Surgery Hospital Days	6.0	12.0	7.1	13.4	7.6	13.1	6.1	12.3	7.6	10.5
Outpatient Knee Surgeries	0.6	0.8	0.6	0.8	0.6	0.8	0.8	0.8	0.7	0.7
All Spine Surgeries	0.8	1.4	0.9	1.4	0.8	1.3	1.0	1.4	0.8	1.4
Inpatient Spine Surgeries	0.8	1.4	0.9	1.4	0.8	1.3	1.0	1.4	0.8	1.4
Spine Surgery Hospital Days	1.9	6.5	2.4	7.6	2.6	6.8	4.5	7.8	3.4	7.8
Outpatient Spine Surgeries	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0

## F.4 Medical Expenditures

**Appendix Table F-16: Cumulative and Yearly DiD Estimates of Expenditures per 1,000 Beneficiaries, Dartmouth DHMC Medicare FFS Cohort**

Measures (2011 USD)	Full Intervention Period <sup>a</sup>	Total Year 1 <sup>b</sup>	Total Year 2
<i>Number of Participant Beneficiaries</i>	84,225	84,225	69,498
Total Medicare Parts A and B Expenditures	69,059.25**	22,135.67	21,757.72
<i>90% Confidence Interval</i>	(21,355.2   116,763.3)	(-63.2   44,334.5)	(-2,237.4   45,752.8)
<i>P-Value</i>	0.017	0.101	0.136
Inpatient Expenditures	55,040.93***	14,866.97**	20,471.39***
<i>90% Confidence Interval</i>	(30,826.1   79,255.7)	(3,456.6   26,277.3)	(8,181.0   32,761.7)
<i>P-Value</i>	<0.001	0.032	0.006
Outpatient ER Expenditures	-2,131.00	-181.32	-2,154.04*
<i>90% Confidence Interval</i>	(-6,344.6   2,082.6)	(-2,119.3   1,756.6)	(-4,136.8   -171.2)
<i>P-Value</i>	0.405	0.878	0.074
Outpatient Non-ER Expenditures	-34,384.70**	-14,919.45**	-14,811.56**
<i>90% Confidence Interval</i>	(-57,038.6   -11,730.8)	(-25,425.3   -4,413.6)	(-25,449.4   -4,173.7)
<i>P-Value</i>	0.013	0.019	0.022
Physician and Ancillary Service Expenditures	22,448.00**	9,444.17**	8,561.60*
<i>90% Confidence Interval</i>	(5,955.7   38,940.3)	(2,110.1   16,778.3)	(836.0   16,287.2)
<i>P-Value</i>	0.025	0.034	0.068
Skilled Nursing Facility Expenditures	8,807.52	6,272.86	2,199.23
<i>90% Confidence Interval</i>	(-16,355.2   33,970.2)	(-5,207.0   17,752.7)	(-9,503.8   13,902.3)
<i>P-Value</i>	0.565	0.369	0.757
Durable Medical Equipment Expenditures	4,821.35**	968.14	1,557.38
<i>90% Confidence Interval</i>	(1,570.2   8,072.5)	(-733.8   2,670.1)	(-172.1   3,286.8)
<i>P-Value</i>	0.015	0.349	0.139
Home Health Expenditures	1,228.62	1,275.66	705.71
<i>90% Confidence Interval</i>	(-6,279.7   8,737.0)	(-2,240.2   4,791.6)	(-2,707.5   4,118.9)
<i>P-Value</i>	0.788	0.551	0.734
Hospice Expenditures	9,612.45*	3,627.08	3,496.37
<i>90% Confidence Interval</i>	(375.4   18,849.5)	(-531.1   7,785.3)	(-828.4   7,821.1)
<i>P-Value</i>	0.087	0.151	0.184
Hip/Knee/Spine Surgery Expenditures	6,243.51	2,236.59	2,313.43
<i>90% Confidence Interval</i>	(-7,714.2   20,201.2)	(-4,176.2   8,649.4)	(-4,374.5   9,001.3)
<i>P-Value</i>	0.462	0.566	0.569
Inpatient Hip/Knee/Spine Surgery Expenditures	6,425.35	2,520.60	2,285.17
<i>90% Confidence Interval</i>	(-5,514.2   18,364.9)	(-2,955.3   7,996.5)	(-3,405.7   7,976.1)
<i>P-Value</i>	0.376	0.449	0.509

Measures (2011 USD)	Full Intervention Period <sup>a</sup>	Total Year 1 <sup>b</sup>	Total Year 2
Outpatient Hip/Knee/Spine Surgery Expenditures	-1,694.52***	-755.47***	-527.67
90% Confidence Interval	(-2,755.3   -633.7)	(-1,157.3   -353.6)	(-1,207.1   151.8)
P-Value	0.009	0.002	0.201
Hip Surgery Expenditures	5,407.74**	1,542.65	2,622.08**
90% Confidence Interval	(1,368.3   9,447.2)	(-320.7   3,406.0)	(549.5   4,694.7)
P-Value	0.028	0.173	0.037
Inpatient Hip Surgery Expenditures	4,743.64**	1,379.86	2,279.32**
90% Confidence Interval	(1,203.0   8,284.3)	(-253.5   3,013.2)	(460.7   4,098.0)
P-Value	0.028	0.165	0.039
Outpatient Hip Surgery Expenditures	-183.01**	-63.47	-75.98*
90% Confidence Interval	(-335.0   -31.0)	(-129.8   2.9)	(-140.1   -11.9)
P-Value	0.048	0.115	0.051
Knee Surgery Expenditures	328.93	216.43	-278.42
90% Confidence Interval	(-6,840.3   7,498.1)	(-3,132.1   3,564.9)	(-3,648.6   3,091.7)
P-Value	0.940	0.915	0.892
Inpatient Knee Surgery Expenditures	950.81	564.99	-76.36
90% Confidence Interval	(-5,100.0   7,001.6)	(-2,272.2   3,402.2)	(-2,911.1   2,758.3)
P-Value	0.796	0.743	0.965
Outpatient Knee Surgery Expenditures	-818.35	-425.17**	-209.89
90% Confidence Interval	(-1,669.3   32.6)	(-727.1   -123.2)	(-836.0   416.3)
P-Value	0.114	0.021	0.581
Spine Surgery Expenditures	980.61	592.40	345.40
90% Confidence Interval	(-7,300.2   9,261.4)	(-3,229.3   4,414.1)	(-3,634.2   4,325.0)
P-Value	0.846	0.799	0.886
Inpatient Spine Surgery Expenditures	1,144.03	671.29	414.95
90% Confidence Interval	(-6,065.2   8,353.3)	(-2,638.1   3,980.6)	(-3,024.4   3,854.3)
P-Value	0.794	0.739	0.843
Outpatient Spine Surgery Expenditures	-685.01**	-258.76**	-241.76*
90% Confidence Interval	(-1,203.2   -166.8)	(-473.9   -43.6)	(-470.8   -12.7)
P-Value	0.030	0.048	0.083

\* Statistically significant at the ten percent level.

\*\* Statistically significant at the five percent level.

\*\*\* Statistically significant at the one percent level.

<sup>a</sup>Results are cumulative across all available quarters.

<sup>b</sup>Year 1 refers to the one-year period after a beneficiary's enrollment in the program, Year 2 refers to the subsequent one-year periods for a given beneficiary. Since beneficiaries enroll in the SDM programs on a rolling basis, the intervention period is defined at the beneficiary-level and not based on calendar quarters or years.

**Appendix Table F-17: Quarterly DiD Estimates of Effects on Surgery-Related Expenditures per Beneficiary, Dartmouth DHMC Medicare FFS Cohort**

<b>Measures (2011 USD per Person)</b>	<b>Q1</b>	<b>Q2</b>	<b>Q3</b>	<b>Q4</b>	<b>Q5</b>	<b>Q6</b>	<b>Q7</b>	<b>Q8</b>	<b>Q9</b>	<b>Q10</b>
<i>Number of Participant Beneficiaries</i>	67,804	68,294	68,463	68,790	69,498	69,970	70,587	70,856	71,572	71,946
PS <sup>a</sup> Hip/Knee/Spine Surgery Expenditures	3.73	10.21	1.51	-0.14	3.12	1.03	5.02	6.11	3.04	8.01
<i>90% Confidence Interval</i>	(-13.3   20.8)	(-6.0   26.4)	(-15.9   18.9)	(-17.7   17.4)	(-12.9   19.1)	(-18.7   20.7)	(-11.5   21.5)	(-11.0   23.2)	(-14.1   20.1)	(-12.0   28.1)
<i>P-Value</i>	0.719	0.300	0.887	0.990	0.748	0.931	0.618	0.558	0.770	0.511
Inpatient PS Hip/Knee/Spine Surgery Expenditures	3.69	10.06	2.56	0.92	1.19	1.91	5.58	6.39	2.24	8.33
<i>90% Confidence Interval</i>	(-10.9   18.2)	(-3.6   23.7)	(-12.4   17.5)	(-14.0   15.8)	(-12.2   14.6)	(-14.7   18.5)	(-8.5   19.6)	(-8.2   21.0)	(-12.4   16.9)	(-8.6   25.3)
<i>P-Value</i>	0.677	0.226	0.778	0.919	0.884	0.850	0.513	0.471	0.802	0.419
Outpatient PS Hip/Knee/Spine Surgery Expenditures	-0.50	-1.35**	-1.43**	-1.88***	1.15	-1.26**	-1.61***	-1.74***	-1.02	-1.67***
<i>90% Confidence Interval</i>	(-1.4   0.4)	(-2.4   -0.3)	(-2.5   -0.4)	(-2.8   -1.0)	(-2.6   4.9)	(-2.2   -0.3)	(-2.6   -0.6)	(-2.6   -0.8)	(-2.1   0.1)	(-2.5   -0.8)
<i>P-Value</i>	0.372	0.034	0.024	<0.001	0.612	0.036	0.010	0.002	0.120	0.002
PS Hip Surgery Expenditures	3.03	3.18	3.03	1.29	2.51	4.04	5.63	5.15	4.54	3.60
<i>90% Confidence Interval</i>	(-1.5   7.6)	(-2.0   8.4)	(-2.6   8.7)	(-3.5   6.0)	(-2.6   7.6)	(-1.4   9.5)	(-0.8   12.0)	(-0.5   10.8)	(-0.4   9.5)	(-1.7   8.9)
<i>P-Value</i>	0.274	0.315	0.378	0.654	0.419	0.226	0.148	0.132	0.134	0.265
Inpatient PS Hip Surgery Expenditures	2.74	2.76	2.62	1.31	2.29	3.54	4.92	4.31	3.99	3.12
<i>90% Confidence Interval</i>	(-1.2   6.7)	(-1.8   7.3)	(-2.4   7.6)	(-2.9   5.5)	(-2.2   6.8)	(-1.3   8.3)	(-0.7   10.6)	(-0.6   9.2)	(-0.4   8.4)	(-1.5   7.8)
<i>P-Value</i>	0.255	0.318	0.388	0.607	0.403	0.225	0.151	0.150	0.133	0.269
Outpatient PS Hip Surgery Expenditures	-0.10	-0.07	-0.04	-0.22***	-0.16**	-0.15**	-0.12	-0.07	-0.17**	-0.12
<i>90% Confidence Interval</i>	(-0.2   0.0)	(-0.2   0.0)	(-0.3   0.2)	(-0.3   -0.1)	(-0.3   0.0)	(-0.3   0.0)	(-0.3   0.0)	(-0.2   0.1)	(-0.3   -0.1)	(-0.3   0.0)
<i>P-Value</i>	0.164	0.319	0.753	0.003	0.018	0.023	0.202	0.416	0.012	0.208
PS Knee Surgery Expenditures	0.42	0.82	1.47	-1.23	-0.07	-1.58	-0.83	0.62	-0.94	3.46
<i>90% Confidence Interval</i>	(-8.2   9.0)	(-8.7   10.3)	(-7.5   10.5)	(-10.0   7.5)	(-8.5   8.4)	(-10.9   7.7)	(-9.0   7.3)	(-7.9   9.2)	(-9.7   7.9)	(-6.3   13.2)

Measures (2011 USD per Person)	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10
<i>P-Value</i>	0.936	0.887	0.788	0.818	0.990	0.780	0.867	0.905	0.861	0.559
Inpatient PS Knee Surgery Expenditures	0.22	1.68	2.15	-0.19	-1.56	-0.64	-0.03	1.69	-0.80	3.79
<i>90% Confidence Interval</i>	(-7.2   7.6)	(-6.3   9.7)	(-5.6   9.9)	(-7.5   7.1)	(-8.6   5.4)	(-8.4   7.1)	(-6.9   6.9)	(-5.6   9.0)	(-8.1   6.5)	(-4.5   12.0)
<i>P-Value</i>	0.961	0.730	0.648	0.965	0.714	0.891	0.994	0.701	0.857	0.449
Outpatient PS Knee Surgery Expenditures	0.11	-0.81	-1.00*	-1.19***	1.46	-0.79	-0.93*	-1.10**	-0.38	-0.81*
<i>90% Confidence Interval</i>	(-0.6   0.8)	(-1.7   0.1)	(-1.8   -0.2)	(-1.9   -0.5)	(-2.2   5.2)	(-1.6   0.1)	(-1.8   0.0)	(-1.9   -0.3)	(-1.3   0.5)	(-1.6   -0.1)
<i>P-Value</i>	0.799	0.132	0.050	0.008	0.517	0.126	0.084	0.017	0.496	0.071
Spine PS Surgery Expenditures	0.29	6.67	-2.64	-0.27	0.99	-1.28	1.10	1.46	-0.64	0.92
<i>90% Confidence Interval</i>	(-10.3   10.9)	(-2.5   15.8)	(-13.5   8.2)	(-10.4   9.8)	(-8.7   10.7)	(-12.5   9.9)	(-8.7   10.9)	(-9.1   12.0)	(-10.6   9.4)	(-10.4   12.2)
<i>P-Value</i>	0.964	0.230	0.689	0.964	0.867	0.851	0.854	0.821	0.916	0.893
Inpatient PS Spine Surgery Expenditures	0.75	6.04	-1.94	-0.26	0.74	-0.85	1.48	1.37	-1.02	1.40
<i>90% Confidence Interval</i>	(-8.3   9.8)	(-1.8   13.9)	(-11.3   7.4)	(-9.0   8.4)	(-7.6   9.1)	(-10.5   8.8)	(-6.9   9.8)	(-7.7   10.4)	(-9.8   7.8)	(-8.1   10.9)
<i>P-Value</i>	0.892	0.205	0.732	0.961	0.885	0.884	0.771	0.803	0.849	0.809
Outpatient PS Spine Surgery Expenditures	-0.51*	-0.46	-0.33	-0.47*	-0.14	-0.32	-0.56**	-0.58***	-0.47	-0.74***
<i>90% Confidence Interval</i>	(-1.0   0.0)	(-0.9   0.0)	(-0.8   0.2)	(-0.9   -0.1)	(-0.8   0.5)	(-0.8   0.2)	(-1.0   -0.1)	(-0.9   -0.2)	(-0.9   0.0)	(-1.1   -0.4)
<i>P-Value</i>	0.074	0.113	0.261	0.061	0.720	0.311	0.025	0.008	0.111	<0.001

\* Statistically significant at the ten percent level.

\*\* Statistically significant at the five percent level.

\*\*\* Statistically significant at the one percent level.

\*PS = Preference Sensitive.

**Appendix Table F-18: Quarterly DiD Estimates of Expenditures per Beneficiary, Dartmouth DHMC Medicare FFS Cohort**

Measures (2011 USD per Person)	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10
<i>Number of Participant Beneficiaries</i>	67,804	68,294	68,463	68,790	69,498	69,970	70,587	70,856	71,572	71,946
Total Medicare Parts A and B Expenditures	-0.44	97.86**	49.81	3.84	-9.90	14.08	58.17	80.64	62.43	101.57***
<i>90% Confidence Interval</i>	(-48.4   47.5)	(21.6   174.1)	(-7.3   106.9)	(-52.3   60.0)	(-56.2   36.4)	(-42.1   70.2)	(-11.2   127.6)	(-0.7   162.0)	(-0.3   125.2)	(44.2   158.9)
<i>P-Value</i>	0.988	0.035	0.151	0.910	0.725	0.680	0.168	0.103	0.102	0.004
Inpatient Expenditures	12.76	51.68**	26.99	10.08	25.77	20.34	35.33	53.78**	57.45***	71.06***
<i>90% Confidence Interval</i>	(-14.0   39.5)	(13.9   89.5)	(-1.4   55.4)	(-21.6   41.8)	(-0.3   51.9)	(-11.6   52.3)	(-2.3   73.0)	(16.8   90.8)	(28.8   86.1)	(38.3   103.8)
<i>P-Value</i>	0.432	0.024	0.118	0.601	0.105	0.295	0.123	0.017	<0.001	<0.001
Outpatient ER Expenditures	3.93	0.84	-2.82	-3.13	-6.56**	-4.64*	-2.91	-0.22	0.56	0.72
<i>90% Confidence Interval</i>	(-0.4   8.3)	(-5.1   6.8)	(-7.7   2.0)	(-8.4   2.1)	(-11.4   -1.7)	(-8.6   -0.7)	(-8.0   2.2)	(-6.4   5.9)	(-5.2   6.3)	(-4.6   6.1)
<i>P-Value</i>	0.139	0.816	0.340	0.326	0.025	0.051	0.346	0.953	0.873	0.825
Outpatient Non-ER Expenditures	-18.49	-11.69	-47.81***	-23.77	-22.48	-22.29	-41.17***	-12.12	-20.47	-10.14
<i>90% Confidence Interval</i>	(-47.1   10.1)	(-42.3   18.9)	(-74.3   -21.3)	(-49.9   2.3)	(-48.4   3.4)	(-48.3   3.7)	(-65.3   -17.0)	(-44.0   19.7)	(-52.2   11.3)	(-37.8   17.5)
<i>P-Value</i>	0.287	0.529	0.003	0.134	0.153	0.159	0.005	0.532	0.289	0.546
Physician and Ancillary Service Expenditures	1.82	10.36	41.40***	10.76	0.91	6.65	36.98***	11.88	13.84	15.23
<i>90% Confidence Interval</i>	(-17.4   21.1)	(-8.0   28.7)	(22.5   60.3)	(-7.1   28.6)	(-17.7   19.5)	(-12.7   26.0)	(15.7   58.2)	(-6.0   29.7)	(-5.5   33.2)	(-6.3   36.7)
<i>P-Value</i>	0.876	0.353	<0.001	0.321	0.936	0.571	0.004	0.273	0.238	0.244
Skilled Nursing Facility Expenditures	-3.98	31.42	18.37	-3.00	-13.25	-1.79	15.50	13.76	-4.82	7.02
<i>90% Confidence Interval</i>	(-30.2   22.2)	(-2.9   65.7)	(-14.0   50.7)	(-25.8   19.8)	(-36.2   9.7)	(-32.3   28.7)	(-13.0   44.0)	(-18.0   45.5)	(-28.3   18.7)	(-19.5   33.5)
<i>P-Value</i>	0.803	0.132	0.351	0.828	0.343	0.923	0.372	0.476	0.736	0.663
Durable Medical Equipment Expenditures	1.40	2.02	2.84	0.35	0.76	2.90	3.95	2.67	6.87**	8.09***
<i>90% Confidence Interval</i>	(-3.7   6.5)	(-2.7   6.7)	(-2.6   8.2)	(-4.6   5.3)	(-4.5   6.0)	(-2.8   8.6)	(-0.4   8.4)	(-1.9   7.2)	(2.4   11.3)	(4.9   11.3)

Measures (2011 USD per Person)	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10
<i>P-Value</i>	0.653	0.482	0.387	0.908	0.811	0.399	0.140	0.331	0.011	<0.001
Home Health Expenditures	-0.38	6.10	1.13	1.85	-3.24	5.02	0.42	2.44	-1.99	-2.88
<i>90% Confidence Interval</i>	(-8.4   7.6)	(-4.9   17.1)	(-7.8   10.0)	(-7.4   11.0)	(-10.9   4.4)	(-3.5   13.6)	(-8.2   9.0)	(-6.4   11.3)	(-9.1   5.1)	(-14.4   8.6)
<i>P-Value</i>	0.938	0.361	0.835	0.741	0.485	0.334	0.936	0.650	0.643	0.680
Hospice Expenditures	3.85	5.84	6.71	8.32	7.43	5.69	5.20	4.85	7.53	8.72*
<i>90% Confidence Interval</i>	(-7.3   15.0)	(-4.4   16.1)	(-3.8   17.2)	(-1.2   17.8)	(-3.0   17.8)	(-5.1   16.5)	(-5.5   15.9)	(-5.4   15.1)	(-0.4   15.4)	(0.8   16.6)
<i>P-Value</i>	0.569	0.349	0.293	0.149	0.240	0.386	0.425	0.434	0.117	0.069

\* Statistically significant at the ten percent level.

\*\* Statistically significant at the five percent level.

\*\*\* Statistically significant at the one percent level.

**Appendix Table F-19: Dartmouth DHMC Total Medicare Expenditures in the Baseline Period and by Quarter Following Enrollment, Medicare FFS Cohort, Q1 to Q5**

Measures (2011 USD)	Baseline Period (Year Prior to Enrollment)		Q1		Q2		Q3		Q4		Q5	
	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls
<i>Number of Beneficiaries</i>	71,000	429,317	67,804	401,668	68,294	404,364	68,463	392,626	68,790	394,197	69,498	397,073
<b>Total Medicare Parts A and B Expenditures</b>												
Mean	\$6,625	\$7,130	\$1,713	\$1,869	\$1,803	\$1,865	\$1,703	\$1,815	\$1,734	\$1,895	\$1,703	\$1,880
Median	\$1,714	\$1,777	\$309	\$308	\$319	\$318	\$196	\$188	\$297	\$302	\$298	\$311
90th percentile	\$17,343	\$19,936	\$3,186	\$3,833	\$3,307	\$3,802	\$3,286	\$3,877	\$3,439	\$3,959	\$3,186	\$3,899
99th percentile	\$71,978	\$72,467	\$27,436	\$28,434	\$29,027	\$28,665	\$28,976	\$28,926	\$27,160	\$28,593	\$27,385	\$28,301

**Appendix Table F-20: Dartmouth DHMC Total Medicare Expenditures by Quarter Following Enrollment, Medicare FFS Cohort, Q6 to Q10**

Measures (2011 USD)	Q6		Q7		Q8		Q9		Q10	
	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls
<i>Number of Beneficiaries</i>	69,970	397,085	70,587	393,057	70,856	391,774	71,572	394,048	71,946	396,257
<b>Total Medicare Parts A and B Expenditures</b>										
Mean	\$1,745	\$1,901	\$1,742	\$1,859	\$1,813	\$1,913	\$1,747	\$1,869	\$1,685	\$1,767
Median	\$314	\$326	\$210	\$209	\$321	\$322	\$325	\$326	\$342	\$342
90th percentile	\$3,304	\$3,934	\$3,450	\$4,061	\$3,447	\$4,054	\$3,315	\$3,875	\$3,168	\$3,621
99th percentile	\$27,619	\$28,533	\$29,087	\$29,035	\$29,399	\$28,412	\$27,805	\$28,064	\$26,118	\$26,568



**Appendix Table F-21: Dartmouth DHMC Surgery-Related Expenditures in the Baseline Period and by Quarter Following Enrollment, Medicare FFS Cohort, Q1 to Q5**

Measures (2011 USD)	Baseline Period (Year Prior to Enrollment)		Q1		Q2		Q3		Q4		Q5	
	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls
<i>Number of Beneficiaries</i>	71,000	429,317	67,804	401,668	68,294	404,364	68,463	392,626	68,790	394,197	69,498	397,073
<b>Total Hip/Knee/Spine Surgery Expenditures</b>												
Mean	\$234	\$298	\$63	\$78	\$73	\$82	\$64	\$82	\$60	\$80	\$64	\$81
Median	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
90th percentile	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
99th percentile	\$11,532	\$11,772	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
<b>Inpatient Hip/Knee/Spine Surgery Expenditures</b>												
Mean	\$191	\$248	\$52	\$65	\$61	\$68	\$54	\$69	\$50	\$67	\$51	\$68
Median	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
90th percentile	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
99th percentile	\$9,981	\$10,158	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
<b>Outpatient Hip/Knee/Spine Surgery Expenditures</b>												
Mean	\$12	\$7	\$3	\$2	\$2	\$2	\$2	\$2	\$2	\$2	\$5	\$2
Median	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
90th percentile	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
99th percentile	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
<b>Total Hip Surgery Expenditures</b>												
Mean	\$61	\$67	\$17	\$16	\$19	\$18	\$19	\$18	\$17	\$18	\$18	\$17
Median	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
90th percentile	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
99th percentile	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
<b>Inpatient Hip Surgery Expenditures</b>												
Mean	\$53	\$58	\$15	\$14	\$17	\$16	\$16	\$15	\$15	\$16	\$16	\$15

Measures (2011 USD)	Baseline Period (Year Prior to Enrollment)		Q1		Q2		Q3		Q4		Q5	
	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls
Median	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
90th percentile	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
99th percentile	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
<b>Outpatient Hip Surgery Expenditures</b>												
Mean	\$1	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Median	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
90th percentile	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
99th percentile	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
<b>Total Knee Surgery Expenditures</b>												
Mean	\$115	\$125	\$29	\$32	\$34	\$37	\$31	\$34	\$26	\$32	\$29	\$33
Median	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
90th percentile	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
99th percentile	\$2,124	\$2,371	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
<b>Inpatient Knee Surgery Expenditures</b>												
Mean	\$91	\$101	\$23	\$26	\$28	\$30	\$26	\$28	\$21	\$25	\$21	\$27
Median	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
90th percentile	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
99th percentile	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
<b>Outpatient Knee Surgery Expenditures</b>												
Mean	\$9	\$7	\$2	\$2	\$2	\$2	\$2	\$2	\$2	\$2	\$4	\$2
Median	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
90th percentile	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
99th percentile	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
<b>Total Spine Surgery Expenditures</b>												
Mean	\$58	\$107	\$17	\$30	\$20	\$27	\$14	\$31	\$16	\$30	\$18	\$30
Median	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
90th percentile	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0

Measures (2011 USD)	Baseline Period (Year Prior to Enrollment)		Q1		Q2		Q3		Q4		Q5	
	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls
99th percentile	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
<b>Inpatient Spine Surgery Expenditures</b>												
Mean	\$47	\$89	\$14	\$25	\$17	\$23	\$12	\$26	\$14	\$26	\$14	\$26
Median	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
90th percentile	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
99th percentile	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
<b>Outpatient Spine Surgery Expenditures</b>												
Mean	\$3	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$1	\$0
Median	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
90th percentile	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
99th percentile	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0

**Appendix Table F-22: Dartmouth DHMC Surgery-Related Expenditures in the Baseline Period and by Quarter Following Enrollment, Medicare FFS Cohort, Q6 to Q10**

Measures (2011 USD)	Q6		Q7		Q8		Q9		Q10	
	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls
<i>Number of Beneficiaries</i>	69,970	397,085	70,587	393,057	70,856	391,774	71,572	394,048	71,946	396,257
<b>Outpatient Surgery Expenditures</b>										
Mean	\$136	\$124	\$135	\$126	\$147	\$131	\$139	\$129	\$142	\$124
Median	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
90th percentile	\$0	\$0	\$0	\$0	\$36	\$0	\$36	\$0	\$0	\$0
99th percentile	\$3,386	\$3,068	\$3,407	\$3,166	\$3,361	\$3,141	\$3,361	\$3,139	\$3,440	\$3,091
<b>Total Hip/Knee/Spine Surgery Expenditures</b>										
Mean	\$55	\$75	\$63	\$79	\$62	\$78	\$58	\$73	\$2	\$2
Median	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
90th percentile	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0

Measures (2011 USD)	Q6		Q7		Q8		Q9		Q10	
	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls
99th percentile	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
<b>Inpatient Hip/Knee/Spine Surgery Expenditures</b>										
Mean	\$46	\$63	\$53	\$66	\$53	\$66	\$48	\$61	\$0	\$0
Median	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
90th percentile	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
99th percentile	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
<b>Outpatient Hip/Knee/Spine Surgery Expenditures</b>										
Mean	\$2	\$2	\$2	\$2	\$2	\$2	\$2	\$2	\$2	\$2
Median	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
90th percentile	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
99th percentile	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
<b>Total Hip Surgery Expenditures</b>										
Mean	\$17	\$15	\$21	\$18	\$20	\$18	\$18	\$16	\$0	\$0
Median	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
90th percentile	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
99th percentile	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
<b>Inpatient Hip Surgery Expenditures</b>										
Mean	\$15	\$13	\$18	\$16	\$18	\$16	\$16	\$14	\$0	\$0
Median	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
90th percentile	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
99th percentile	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
<b>Outpatient Hip Surgery Expenditures</b>										
Mean	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Median	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
90th percentile	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
99th percentile	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
<b>Total Knee Surgery Expenditures</b>										

Measures (2011 USD)	Q6		Q7		Q8		Q9		Q10	
	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls
Mean	\$26	\$32	\$28	\$33	\$29	\$33	\$25	\$29	\$2	\$2
Median	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
90th percentile	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
99th percentile	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
<b>Inpatient Knee Surgery Expenditures</b>										
Mean	\$21	\$26	\$23	\$27	\$24	\$27	\$20	\$23	\$0	\$0
Median	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
90th percentile	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
99th percentile	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
<b>Outpatient Knee Surgery Expenditures</b>										
Mean	\$2	\$2	\$2	\$2	\$1	\$2	\$2	\$2	\$2	\$2
Median	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
90th percentile	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
99th percentile	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
<b>Total Spine Surgery Expenditures</b>										
Mean	\$13	\$28	\$15	\$28	\$14	\$27	\$15	\$27	\$0	\$0
Median	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
90th percentile	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
99th percentile	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
<b>Inpatient Spine Surgery Expenditures</b>										
Mean	\$11	\$24	\$13	\$24	\$12	\$23	\$13	\$23	\$0	\$0
Median	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
90th percentile	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
99th percentile	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
<b>Outpatient Spine Surgery Expenditures</b>										
Mean	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Median	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0

Measures (2011 USD)	Q6		Q7		Q8		Q9		Q10	
	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls
90th percentile	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
99th percentile	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0

**Appendix Table F-23: Dartmouth DHMC Inpatient and Outpatient Expenditures in the Baseline Period and by Quarter Following Enrollment, Medicare FFS Cohort, Q1 to Q5**

Measures (2011 USD)	Baseline Period (Year Prior to Enrollment)		Q1		Q2		Q3		Q4		Q5	
	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls
<i>Number of Beneficiaries</i>	71,000	429,317	67,804	401,668	68,294	404,364	68,463	392,626	68,790	394,197	69,498	397,073
<b>Inpatient Expenditures</b>	\$1,840	\$2,302	\$467	\$584	\$500	\$580	\$496	\$602	\$459	\$583	\$463	\$571
Mean	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Median	\$4,684	\$7,312	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
90th percentile	\$33,387	\$37,406	\$12,268	\$14,864	\$13,378	\$14,907	\$12,729	\$15,204	\$12,085	\$15,016	\$12,525	\$14,889
99th percentile												
<b>Outpatient ER Expenditures</b>	\$244	\$199	\$71	\$55	\$68	\$56	\$69	\$61	\$73	\$66	\$70	\$66
Mean	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Median	\$710	\$575	\$85	\$0	\$0	\$0	\$0	\$0	\$39	\$0	\$58	\$0
90th percentile	\$3,454	\$2,865	\$1,468	\$1,256	\$1,528	\$1,303	\$1,561	\$1,479	\$1,654	\$1,493	\$1,535	\$1,535
99th percentile												
<b>Outpatient Non-ER Expenditures</b>	\$1,826	\$1,360	\$483	\$381	\$486	\$378	\$438	\$366	\$490	\$395	\$492	\$395
Mean	\$682	\$285	\$127	\$23	\$133	\$29	\$76	\$0	\$123	\$26	\$120	\$25
Median	\$4,013	\$2,910	\$1,013	\$725	\$1,006	\$703	\$939	\$675	\$1,045	\$766	\$1,032	\$755
90th percentile	\$20,328	\$20,944	\$6,690	\$6,993	\$6,718	\$6,983	\$6,534	\$6,917	\$6,840	\$7,010	\$6,970	\$7,148
99th percentile	\$1,840	\$2,302	\$467	\$584	\$500	\$580	\$496	\$602	\$459	\$583	\$463	\$571

**Appendix Table F-24: Dartmouth DHMC Inpatient and Outpatient Expenditures by Quarter Following Enrollment, Medicare FFS Cohort, Q6 to Q10**

Measures (2011 USD)	Q6		Q7		Q8		Q9		Q10	
	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls
<i>Number of Beneficiaries</i>	69,970	397,085	70,587	393,057	70,856	391,774	71,572	394,048	71,946	396,257
<b>Inpatient Expenditures</b>										
Mean	\$474	\$589	\$511	\$613	\$498	\$583	\$467	\$550	\$432	\$501
Median	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
90th percentile	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
99th percentile	\$12,720	\$15,099	\$13,275	\$15,472	\$14,085	\$14,862	\$12,673	\$14,295	\$11,827	\$13,430
<b>Outpatient ER Expenditures</b>										
Mean	\$69	\$62	\$70	\$62	\$74	\$63	\$74	\$63	\$71	\$60
Median	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
90th percentile	\$0	\$0	\$1	\$0	\$71	\$0	\$78	\$0	\$0	\$0
99th percentile	\$1,559	\$1,472	\$1,553	\$1,484	\$1,591	\$1,458	\$1,607	\$1,442	\$1,569	\$1,399
<b>Outpatient Non-ER Expenditures</b>										
Mean	\$488	\$391	\$456	\$378	\$516	\$410	\$509	\$412	\$510	\$402
Median	\$126	\$28	\$76	\$0	\$132	\$31	\$132	\$25	\$139	\$33
90th percentile	\$990	\$727	\$945	\$706	\$1,064	\$786	\$1,051	\$778	\$1,037	\$753
99th percentile	\$6,973	\$7,100	\$6,693	\$7,005	\$7,031	\$7,101	\$6,965	\$7,238	\$6,933	\$7,144

**Appendix Table F-25: Dartmouth DHMC Expenditures for Other Settings in the Baseline Period and by Quarter Following Enrollment, Medicare FFS Cohort, Q1 to Q5**

Measures (2011 USD)	Baseline Period (Year Prior to Enrollment)		Q1		Q2		Q3		Q4		Q5	
	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls
<i>Number of Beneficiaries</i>	71,000	429,317	67,804	401,668	68,294	404,364	68,463	392,626	68,790	394,197	69,498	397,073
<b>Physician and Ancillary Service Expenditures</b>												
Mean	\$1,078	\$1,754	\$287	\$471	\$300	\$476	\$261	\$406	\$295	\$471	\$288	\$475
Median	\$466	\$838	\$86	\$162	\$91	\$174	\$29	\$77	\$77	\$154	\$86	\$163
90th percentile	\$2,786	\$4,144	\$739	\$1,171	\$760	\$1,171	\$700	\$1,083	\$775	\$1,198	\$730	\$1,189
99th percentile	\$7,819	\$13,470	\$2,939	\$4,583	\$3,091	\$4,584	\$3,162	\$4,541	\$3,036	\$4,660	\$3,049	\$4,665
<b>Skilled Nursing Facility Expenditures</b>												
Mean	\$871	\$716	\$211	\$176	\$247	\$177	\$242	\$186	\$217	\$183	\$198	\$174
Median	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
90th percentile	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
99th percentile	\$27,211	\$21,726	\$7,728	\$6,979	\$8,735	\$6,929	\$9,341	\$7,543	\$7,973	\$7,370	\$6,906	\$7,002
<b>Durable Medical Equipment Expenditures</b>												
Mean	\$186	\$241	\$45	\$59	\$45	\$58	\$39	\$52	\$43	\$58	\$43	\$58
Median	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
90th percentile	\$390	\$566	\$52	\$101	\$41	\$95	\$30	\$68	\$41	\$89	\$44	\$93
99th percentile	\$2,985	\$3,523	\$745	\$918	\$731	\$911	\$690	\$852	\$745	\$914	\$764	\$930
<b>Home Health Expenditures</b>												
Mean	\$331	\$273	\$84	\$69	\$89	\$69	\$88	\$73	\$86	\$70	\$79	\$69
Median	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
90th percentile	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
99th percentile	\$7,463	\$6,383	\$3,034	\$2,789	\$3,108	\$2,768	\$3,084	\$2,839	\$3,056	\$2,725	\$2,969	\$2,738
<b>Hospice Expenditures</b>												
Mean	\$173	\$252	\$46	\$64	\$47	\$63	\$46	\$61	\$48	\$62	\$47	\$61
Median	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
90th percentile	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
99th percentile	\$3,467	\$6,947	\$0	\$138	\$0	\$141	\$0	\$139	\$0	\$139	\$0	\$0



**Appendix Table F-26: Dartmouth DHMC Expenditures for Other Settings by Quarter Following Enrollment, Medicare FFS Cohort, Q6 to Q10**

Measures (2011 USD)	Q6		Q7		Q8		Q9		Q10	
	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls	Intervent.	Controls
<i>Number of Beneficiaries</i>	69,970	397,085	70,587	393,057	70,856	391,774	71,572	394,048	71,946	396,257
<b>Physician and Ancillary Service Expenditures</b>										
Mean	\$297	\$479	\$263	\$416	\$296	\$475	\$291	\$470	\$300	\$477
Median	\$92	\$178	\$29	\$83	\$83	\$161	\$86	\$166	\$98	\$184
90th percentile	\$744	\$1,183	\$712	\$1,111	\$765	\$1,205	\$738	\$1,176	\$748	\$1,173
99th percentile	\$3,037	\$4,585	\$3,090	\$4,544	\$3,142	\$4,601	\$3,095	\$4,549	\$3,049	\$4,470
<b>Skilled Nursing Facility Expenditures</b>										
Mean	\$218	\$183	\$244	\$193	\$226	\$178	\$203	\$175	\$205	\$164
Median	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
90th percentile	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
99th percentile	\$8,371	\$7,600	\$9,001	\$7,850	\$8,612	\$7,290	\$7,586	\$7,210	\$7,702	\$6,666
<b>Durable Medical Equipment Expenditures</b>										
Mean	\$45	\$57	\$40	\$52	\$45	\$58	\$49	\$57	\$47	\$54
Median	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
90th percentile	\$35	\$88	\$29	\$67	\$43	\$89	\$44	\$89	\$29	\$79
99th percentile	\$770	\$917	\$726	\$885	\$777	\$955	\$801	\$944	\$765	\$895
<b>Home Health Expenditures</b>										
Mean	\$87	\$68	\$89	\$75	\$87	\$71	\$82	\$71	\$48	\$37
Median	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
90th percentile	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
99th percentile	\$3,032	\$2,694	\$3,129	\$2,911	\$3,082	\$2,811	\$2,955	\$2,841	\$2,302	\$2,028
<b>Hospice Expenditures</b>										
Mean	\$44	\$61	\$43	\$60	\$46	\$64	\$48	\$63	\$47	\$62
Median	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
90th percentile	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
99th percentile	\$0	\$140	\$0	\$278	\$0	\$413	\$0	\$275	\$0	\$139

## Appendix G: Meta-Evaluation Measures

### G.1 Quarterly Baseline and Intervention Period Trends

**Appendix Table G-1: Baseline and Intervention Meta-Evaluation Measure Trends: Total Medicare Expenditures per Patient for Medicare FFS Beneficiaries**

Description	Baseline Period (Year Prior to Enrollment)				Intervention Period										
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11
<b>Intervention Group</b>															
Dartmouth DHMC (1C1CMS331029PE)															
Spending Rate	\$1,697	\$1,820	\$1,795	\$1,772	\$1,713	\$1,803	\$1,703	\$1,734	\$1,703	\$1,745	\$1,742	\$1,813	\$1,747	\$1,685	
Standard Deviation	\$5,622	\$6,241	\$6,349	\$5,883	\$5,892	\$6,393	\$6,108	\$5,744	\$5,842	\$5,846	\$6,060	\$5,878	\$5,770	\$5,355	
Unique Patients	65,706	66,203	66,637	66,998	67,804	68,294	68,463	68,790	69,498	69,970	70,587	70,856	71,572	71,946	
Dartmouth VMMC (1C1CMS331029PE)															
Spending Rate	\$2,162	\$2,187	\$2,466	\$2,708	\$2,367	\$2,637	\$2,501	\$2,674	\$3,043	\$2,790	\$2,933	\$3,136	\$2,876		
Standard Deviation	\$5,697	\$5,737	\$7,582	\$6,414	\$5,006	\$7,266	\$6,080	\$6,496	\$8,378	\$7,096	\$8,549	\$9,482	\$6,486		
Unique Patients	1,030	1,030	1,030	1,030	1,030	1,021	893	852	802	746	658	525	332		
MedExpert (1C1CMS331038)															
Spending Rate	\$1,935	\$2,036	\$2,095	\$2,272	\$2,428	\$2,497	\$2,560	\$2,694	\$2,811	\$2,806	\$2,864	\$2,861	\$2,766	\$2,626	
Standard Deviation	\$5,846	\$6,154	\$6,557	\$6,973	\$7,438	\$7,565	\$7,731	\$7,803	\$8,853	\$7,854	\$7,855	\$8,834	\$7,814	\$7,345	
Unique Patients	87,317	87,317	87,317	87,317	87,317	86,153	77,301	60,415	42,505	39,576	23,351	22,965	22,611	7,320	
Welvie Ohio (1C1CMS330984)															
Spending Rate	\$1,927	\$1,946	\$2,134	\$2,225	\$2,362	\$2,324	\$2,415	\$2,353	\$2,459	\$2,343	\$2,429	\$2,336	\$2,403	\$2,378	\$2,361
Standard Deviation	\$5,897	\$6,091	\$6,645	\$7,360	\$7,127	\$7,394	\$7,171	\$7,661	\$7,540	\$7,133	\$7,053	\$7,310	\$7,092	\$7,062	\$6,876
Unique Patients	59,894	59,894	59,894	59,894	59,894	59,023	58,163	57,294	56,355	55,487	54,652	53,729	52,781	51,987	51,238
<b>Control Group</b>															

Description	Baseline Period (Year Prior to Enrollment)				Intervention Period										
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11
Dartmouth DHMC (1C1CMS331029PE)															
Spending Rate	\$1,896	\$1,959	\$1,916	\$1,916	\$1,869	\$1,865	\$1,815	\$1,895	\$1,880	\$1,901	\$1,859	\$1,913	\$1,869	\$1,767	
Standard Deviation	\$6,034	\$6,167	\$6,313	\$6,035	\$5,989	\$5,955	\$5,993	\$6,076	\$5,969	\$6,069	\$6,054	\$6,033	\$6,010	\$5,389	
Unique Patients	396,947	399,735	397,276	398,762	401,668	404,364	392,626	394,197	397,073	397,085	393,057	391,774	394,048	396,257	
Dartmouth VMMC (1C1CMS331029PE)															
Spending Rate	\$2,462	\$2,393	\$2,317	\$2,927	\$3,108	\$2,635	\$2,495	\$2,694	\$2,325	\$2,217	\$2,800	\$2,648	\$2,455		
Standard Deviation	\$8,689	\$8,823	\$7,217	\$7,296	\$8,091	\$7,833	\$7,114	\$6,973	\$5,928	\$5,305	\$10,274	\$7,052	\$6,261		
Unique Patients	1,030	1,030	1,030	1,030	1,030	1,011	875	812	752	689	593	459	276		
MedExpert (1C1CMS331038)															
Spending Rate	\$1,976	\$2,112	\$2,110	\$2,231	\$2,497	\$2,512	\$2,504	\$2,573	\$2,660	\$2,779	\$3,000	\$2,945	\$2,759	\$2,889	
Standard Deviation	\$5,975	\$6,332	\$6,207	\$6,407	\$7,664	\$7,550	\$7,516	\$7,392	\$7,725	\$8,111	\$8,914	\$11,896	\$7,553	\$7,941	
Unique Patients	87,317	87,317	87,317	87,317	87,317	86,116	77,687	60,316	45,896	40,579	23,218	22,810	22,464	6,736	
Welvie Ohio (1C1CMS330984)															
Spending Rate	\$2,047	\$1,986	\$2,172	\$2,351	\$2,546	\$2,431	\$2,541	\$2,384	\$2,484	\$2,390	\$2,512	\$2,485	\$2,452	\$2,408	\$2,439
Standard Deviation	\$6,376	\$6,135	\$6,656	\$7,562	\$7,860	\$7,470	\$7,765	\$7,489	\$7,424	\$7,159	\$7,399	\$8,029	\$7,043	\$7,003	\$7,060
Unique Patients	50,279	50,279	50,279	50,279	50,279	49,338	48,553	47,745	46,834	45,985	45,276	44,462	43,579	42,837	42,174

Note: Measures with 10 or fewer beneficiaries in the numerator are suppressed.

**Appendix Table G-2: Baseline and Intervention Meta-Evaluation Measure Trends: Total Medicare Expenditures per Patient for MA Beneficiaries**

Description	Baseline Period (Year Prior to Enrollment)				Intervention Period										
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11
<b>Intervention Group</b>															
Welvie Ohio (1C1CMS330984)															
Spending Rate	\$222	\$1,105	\$1,392	\$1,478	\$1,723	\$1,593	\$1,496	\$1,427	\$1,494	\$1,356	\$1,326	\$1,309	\$1,232	\$1,019	\$967
Standard Deviation	\$2,049	\$4,353	\$5,066	\$5,488	\$6,153	\$6,043	\$5,709	\$5,525	\$5,594	\$5,423	\$5,345	\$5,262	\$4,902	\$4,360	\$4,288
Unique Patients	97,380	97,380	97,380	97,380	97,380	96,492	95,477	92,080	91,230	90,076	89,069	82,860	81,907	79,501	78,171
Welvie Texas (1C1CMS330984)															
Spending Rate	\$1,261	\$1,311	\$1,362	\$1,637	\$1,704	\$1,832	\$1,846	\$1,941	\$1,911	\$1,808					
Standard Deviation	\$5,027	\$5,655	\$5,400	\$6,171	\$6,386	\$6,468	\$7,085	\$7,027	\$7,456	\$6,350					
Unique Patients	63,979	63,979	63,979	63,979	63,979	63,885	50,346	49,822	49,356	48,797					
<b>Control Group</b>															
Welvie Ohio (1C1CMS330984)															
Spending Rate	\$217	\$1,143	\$1,451	\$1,509	\$1,771	\$1,647	\$1,599	\$1,516	\$1,555	\$1,388	\$1,374	\$1,321	\$1,275	\$1,038	\$1,022
Standard Deviation	\$2,082	\$4,493	\$5,613	\$5,358	\$6,256	\$6,330	\$6,185	\$5,981	\$5,684	\$5,708	\$5,315	\$5,392	\$5,377	\$4,429	\$4,510
Unique Patients	94,915	94,915	94,915	94,915	94,915	94,059	93,045	89,750	88,894	87,518	86,556	80,581	79,640	77,232	75,732
Welvie Texas (1C1CMS330984)															
Spending Rate	\$1,296	\$1,358	\$1,343	\$1,662	\$1,712	\$1,835	\$1,945	\$1,937	\$1,835	\$1,824					
Standard Deviation	\$5,509	\$5,502	\$5,285	\$6,211	\$6,704	\$6,720	\$8,916	\$6,950	\$6,262	\$6,504					
Unique Patients	63,759	63,759	63,759	63,759	63,759	63,654	50,476	49,956	49,449	48,926					

Note: Measures with 10 or fewer beneficiaries in the numerator are suppressed.

**Appendix Table G-3: Baseline & Intervention Meta-Evaluation Measure Trends: Inpatient Admissions per 1,000 Medicare FFS Beneficiaries**

Description	Baseline Period (Year Prior to Enrollment)				Intervention Period										
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11
<b>Intervention Group</b>															
Dartmouth DHMC (1C1CMS331029PE)															
Admit Rate	45.4	49.6	51.8	47.8	45.3	47.5	49.0	48.2	46.4	47.5	52.5	49	47.1	46.2	
Standard Deviation	0.8	0.8	0.9	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	
Unique Patients	65,706	66,203	66,637	66,998	67,804	68,294	68,463	68,790	69,498	69,970	70,587	70,856	71,572	71,946	
Dartmouth VMMC (1C1CMS331029PE)															
Admit Rate	50.5	56.3	69.9	86.4	71.8	66.6	87.3	78.6	82.3	79.1	79.0	85.7	81.3		
Standard Deviation	6.8	7.2	7.9	8.8	8.0	7.8	9.4	9.2	9.7	9.9	10.5	12.2	15.0		
Unique Patients	1,030	1,030	1,030	1,030	1,030	1,021	893	852	802	746	658	525	332		
MedExpert (1C1CMS331038)															
Admit Rate	49.1	54.0	53.9	58.9	64.1	66.5	69.7	70.6	70.2	72.4	72.6	70.9	70.9	67.2	
Standard Deviation	0.7	0.8	0.8	0.8	0.8	0.8	0.9	1.0	1.2	1.3	1.7	1.7	1.7	2.9	
Unique Patients	87,317	87,317	87,317	87,317	87,317	86,153	77,301	60,415	42,505	39,576	23,351	22,965	22,611	7,320	
Welvie Ohio (1C1CMS330984)															
Admit Rate	59.9	58.2	63.6	70.1	71.9	68.8	70.0	70.9	72.9	66.4	69.8	73.8	72.2	68.8	67.9
Standard Deviation	1.0	1.0	1.0	1.0	1.1	1.0	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1
Unique Patients	59,894	59,894	59,894	59,894	59,894	59,023	58,163	57,294	56,355	55,487	54,652	53,729	52,781	51,987	51,238
<b>Control Group</b>															
Dartmouth DHMC (1C1CMS331029PE)															
Admit Rate	58.0	61.0	62.0	58.7	56.1	54.5	57.0	55.3	54.3	56.1	59	56.2	52.7	50.8	
Standard Deviation	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.3	

Description	Baseline Period (Year Prior to Enrollment)				Intervention Period										
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11
Unique Patients	396,947	399,735	397,276	398,762	401,668	404,364	392,626	394,197	397,073	397,085	393,057	391,774	394,048	396,257	
Dartmouth VMMC (1C1CMS331029PE)															
Admit Rate	50.5	54.4	63.1	95.1	78.6	66.3	60.6	71.4	59.8	63.9	59.0	71.9	58.0		
Standard Deviation	6.8	7.1	7.6	9.1	8.4	7.8	8.1	9.0	8.6	9.3	9.7	12.1	14.1		
Unique Patients	1,030	1,030	1,030	1,030	1,030	1,011	875	812	752	689	593	459	276		
MedExpert (1C1CMS331038)															
Admit Rate	52.0	55.9	55.9	58.9	67.5	67.8	68.3	68.6	68.6	74.2	76.4	72.9	72.5	71.9	
Standard Deviation	0.8	0.8	0.8	0.8	0.8	0.9	0.9	1.0	1.2	1.3	1.7	1.7	1.7	3.1	
Unique Patients	87,317	87,317	87,317	87,317	87,317	86,116	77,687	60,316	45,896	40,579	23,218	22,810	22,464	6,736	
Welvie Ohio (1C1CMS330984)															
Admit Rate	62.2	58.8	63.1	73.3	77.3	71.9	70.7	71.6	71.9	67.6	72.6	77.4	74.4	68.1	71.8
Standard Deviation	1.1	1.0	1.1	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.3	1.3	1.2	1.3
Unique Patients	50,279	50,279	50,279	50,279	50,279	49,338	48,553	47,745	46,834	45,985	45,276	44,462	43,579	42,837	42,174

Note: Measures with 10 or fewer beneficiaries in the numerator are suppressed.

**Appendix Table G-4: Baseline & Intervention Meta-Evaluation Measure Trends: Inpatient Admissions per 1,000 MA Beneficiaries**

Description	Baseline Period (Year Prior to Enrollment)				Intervention Period										
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11
<b>Intervention Group</b>															
MedExpert (1C1CMS331038)															
Admit Rate	36.5	37.4	39.8	39.6	45.4	46.3	47.7	47.0	44.8	46.9	53.7	51.9	52.4	54.2	
Standard Deviation	0.4	0.4	0.4	0.4	0.4	0.4	0.5	0.5	0.5	0.7	1.2	1.2	1.2	2.1	
Unique Patients	221,690	221,690	221,690	221,690	221,690	219,721	211,076	186,786	161,579	90,203	36,766	36,207	35,673	11,605	
Welve Ohio (1C1CMS330984)															
Admit Rate	8.0	38.2	46.1	49.1	56.9	55.9	49.5	46.4	46.6	44.2	41.9	42.3	41.7	44.6	39.0
Standard Deviation	0.3	0.6	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7
Unique Patients	97,380	97,380	97,380	97,380	97,380	96,492	95,477	92,080	91,230	90,076	89,069	82,860	81,907	79,501	78,171
Welve Texas (1C1CMS330984)															
Admit Rate	39.1	38.3	43.9	50.3	50.2	52.1	56.6	57.6	54.0	50.1					
Standard Deviation	0.8	0.8	0.8	0.9	0.9	0.9	1.0	1.0	1.0	1.0					
Unique Patients	63,979	63,979	63,979	63,979	63,979	63,885	50,346	49,822	49,356	48,797					
<b>Control Group</b>															
MedExpert (1C1CMS331038)															
Admit Rate	36.4	37.6	39.3	39.6	47.5	49.3	49.4	48.2	47.0	49.8	54.1	52.4	50.7	53.9	
Standard Deviation	0.4	0.4	0.4	0.4	0.5	0.5	0.5	0.5	0.5	0.7	1.2	1.2	1.2	2.2	
Unique Patients	221,690	221,690	221,690	221,690	221,690	219,728	209,731	184,684	154,768	87,746	36,675	36,068	35,533	10,476	
Welve Ohio (1C1CMS330984)															
Admit Rate	6.9	40.1	48.5	49.0	57.7	57.7	52.0	48.0	47.9	45.4	44.1	41.6	42.6	45.7	41.6
Standard Deviation	0.3	0.6	0.7	0.7	0.8	0.8	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.8	0.7

Description	Baseline Period (Year Prior to Enrollment)				Intervention Period										
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11
Unique Patients	94,915	94,915	94,915	94,915	94,915	94,059	93,045	89,750	88,894	87,518	86,556	80,581	79,640	77,232	75,732
Welvie Texas (1C1CMS330984)															
Admit Rate	41.0	40.2	42.5	49.2	49.6	51.9	58.8	57.2	52.9	50.1					
Standard Deviation	0.8	0.8	0.8	0.9	0.9	0.9	1.0	1.0	1.0	1.0					
Unique Patients	63,759	63,759	63,759	63,759	63,759	63,654	50,476	49,956	49,449	48,926					

Note: Measures with 10 or fewer beneficiaries in the numerator are suppressed.

**Appendix Table G-5: Baseline & Intervention Meta-Evaluation Measure Trends: 30-Day Hospital Readmissions per 1,000 Admissions for Medicare FFS Beneficiaries**

Description	Baseline Period (Year Prior to Enrollment)				Intervention Period										
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11
<b>Intervention Group</b>															
Dartmouth DHMC (1C1CMS331029PE)															
Readmit Rate	230.2	215.7	203.8	217.5	213.1	212.9	214.5	215.6	225.3	225.1	223.9	239.8	231.5	206.5	
Standard Deviation	7.7	7.2	6.9	7.3	7.4	7.2	7.1	7.1	7.4	7.2	6.8	7.2	7.3	7.0	
Total Admissions	2,980	3,282	3,450	3,205	3,069	3,245	3,356	3,316	3,223	3,327	3,703	3,469	3,369	3,322	
Dartmouth VMMC (1C1CMS331029PE)															
Readmit Rate	250.0	206.9	128.6	89.9	164.4	184.6	141.0	184.6	184.6	241.4	187.5	266.7	115.4		
Standard Deviation	60.0	53.2	40.0	30.3	43.4	48.1	39.4	48.1	48.1	56.2	56.3	65.9	62.7		
Total Admissions	52	58	70	89	73	65	78	65	65	58	48	45	26		
MedExpert (1C1CMS331038)															
Readmit Rate	138.1	125.3	144.2	155.4	181.0	177.4	181.1	184.7	199.7	184.8	183.6	183.3	186.4	201.3	
Standard Deviation	5.3	4.9	5.2	5.1	5.3	5.2	5.4	6.1	7.5	7.4	9.6	9.8	9.9	18.6	



Description	Baseline Period (Year Prior to Enrollment)				Intervention Period										
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11
Total Admissions	4,252	4,654	4,652	5,070	5,316	5,451	5,156	4,066	2,824	2,733	1,618	1,549	1,534	467	
Welvie Ohio (1C1CMS330984)															
Readmit Rate	137.0	153.0	140.6	163.4	177.2	193.0	170.4	190.3	192.8	171.6	170.6	183.4	176.2	176.1	173.9
Standard Deviation	5.8	6.1	5.6	5.7	5.9	6.3	6.0	6.3	6.3	6.3	6.2	6.3	6.3	6.5	6.5
Total Admissions	3,563	3,470	3,792	4,174	4,177	3,933	3,943	3,905	3,963	3,573	3,676	3,811	3,694	3,476	3,369
<b>Control Group</b>															
Dartmouth DHMC (1C1CMS331029PE)															
Readmit Rate	245.9	241.7	246.1	241.0	241.2	240.4	238.2	237.9	237.0	236.6	241.0	240.1	235.9	209.1	
Standard Deviation	2.8	2.7	2.7	2.8	2.9	2.9	2.8	2.9	2.9	2.8	2.8	2.9	2.9	2.9	
Total Admissions	23,031	24,383	24,612	23,391	22,522	22,050	22,396	21,809	21,580	22,265	23,178	22,036	20,762	20,122	
Dartmouth VMMC (1C1CMS331029PE)															
Readmit Rate	196.1	267.9	153.8	168.4	115.4	156.2	254.9	175.4	95.2	285.7	258.1	64.5	153.8		
Standard Deviation	55.6	59.2	44.8	38.4	36.2	45.4	61.0	50.4	45.3	69.7	78.6	44.1	100.1		
Total Admissions	51	56	65	95	78	64	51	57	42	42	31	31	13		
MedExpert (1C1CMS331038)															
Readmit Rate	131.0	146.8	129.7	157.8	192.5	182.1	179.9	171.0	179.6	191.8	215.0	185.6	154.0	219.6	
Standard Deviation	5.0	5.1	4.8	5.1	5.3	5.2	5.4	6.0	7.0	7.4	10.0	9.8	9.1	19.3	
Total Admissions	4,495	4,837	4,833	5,082	5,601	5,546	5,065	3,929	3,007	2,847	1,698	1,579	1,558	460	
Welvie Ohio (1C1CMS330984)															
Readmit Rate	149.1	142.9	147.5	180.9	183.4	184.4	195.5	191.2	181.0	176.8	184.8	180.7	182.7	167.6	172.9
Standard Deviation	6.4	6.4	6.3	6.4	6.3	6.6	6.9	6.9	6.8	6.9	6.9	6.7	6.9	7.0	7.0
Total Admissions	3,111	2,946	3,152	3,671	3,734	3,427	3,309	3,285	3,237	3,021	3,176	3,321	3,147	2,828	2,932

Note: Measures with 10 or fewer beneficiaries in the numerator are suppressed.

**Appendix Table G-6: Baseline & Intervention Meta-Evaluation Measure Trends: 30-Day Hospital Readmissions per 1,000 Admissions for MA Beneficiaries**

Description	Baseline Period (Year Prior to Enrollment)				Intervention Period										
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11
<b>Intervention Group</b>															
MedExpert (1C1CMS331038)															
Readmit Rate	117.0	120.0	123.1	134.2	140.6	148.9	146.9	147.6	151.5	147.8	154.3	158.4	145.1	180.3	
Standard Deviation	3.6	3.6	3.5	3.7	3.5	3.6	3.6	3.9	4.3	5.6	8.3	8.6	8.4	15.7	
Total Admissions	8,037	8,240	8,770	8,710	9,708	9,800	9,684	8,441	6,979	4,066	1,880	1,793	1,778	599	
Welve Ohio (1C1CMS330984)															
Readmit Rate	102.8	137.2	133.4	159.9	159.9	174.3	163.8	162.5	158.0	170.9	165.6	171.2	151.5	161.7	158.6
Standard Deviation	16.0	6.1	5.3	5.6	5.2	5.4	5.7	6.0	5.9	6.3	6.5	6.7	6.5	6.5	7.0
Total Admissions	360	3,222	4,056	4,360	5,027	4,876	4,225	3,835	3,760	3,534	3,254	3,114	3,076	3,197	2,724
Welve Texas (1C1CMS330984)															
Readmit Rate	127.2	128.8	145.8	142.0	165.3	171.0	181.5	183.5	178.4	166.2					
Standard Deviation	7.2	7.3	6.9	6.3	6.7	6.7	7.4	7.4	7.7	7.7					
Total Admissions	2,138	2,128	2,585	3,078	3,030	3,146	2,694	2,708	2,489	2,311					
<b>Control Group</b>															
MedExpert (1C1CMS331038)															
Readmit Rate	116.5	127.6	118.4	136.7	155.5	154.1	153.7	152.1	155.8	142.6	167.4	168.5	149.4	165.4	
Standard Deviation	3.6	3.7	3.5	3.7	3.6	3.5	3.6	3.9	4.3	5.4	8.6	8.9	8.6	16.0	
Total Admissions	8,002	8,274	8,635	8,703	10,186	10,456	9,977	8,593	6,990	4,180	1,888	1,786	1,713	538	
Welve Ohio (1C1CMS330984)															
Readmit Rate	160.0	137.6	140.0	164.0	160.8	164.9	172.9	166.2	162.8	167.2	167.7	167.2	159.7	171.0	169.2
Standard Deviation	21.2	6.0	5.4	5.7	5.2	5.3	5.8	6.0	6.0	6.3	6.5	6.8	6.6	6.7	7.0

Description	Baseline Period (Year Prior to Enrollment)				Intervention Period										
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11
Total Admissions	300	3,335	4,165	4,262	4,944	4,893	4,320	3,881	3,783	3,516	3,345	3,002	3,056	3,204	2,837
Welve Texas (1C1CMS330984)															
Readmit Rate	137.4	127.6	143.0	165.8	148.2	168.5	195.3	181.4	171.9	167.2					
Standard Deviation	7.3	7.0	7.0	6.8	6.5	6.7	7.5	7.4	7.6	7.8					
Total Admissions	2,241	2,249	2,483	2,997	3,017	3,139	2,821	2,685	2,455	2,302					

Note: Measures with 10 or fewer beneficiaries in the numerator are suppressed.

**Appendix Table G-7: Baseline & Intervention Meta-Evaluation Measure Trends: ER Visits per 1,000 Medicare FFS Beneficiaries**

Description	Baseline Period (Year Prior to Enrollment)				Intervention Period										
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11
<b>Intervention Group</b>															
Dartmouth DHMC (1C1CMS331029PE)															
ER Rate	104.9	101.7	98.1	104.3	106.3	96.3	92.8	102.4	102.8	97.0	100.7	103.5	103.4	95.5	
Standard Deviation	1.2	1.2	1.2	1.2	1.2	1.1	1.1	1.2	1.2	1.1	1.1	1.1	1.1	1.1	
Unique Patients	65,706	66,203	66,637	66,998	67,804	68,294	68,463	68,790	69,498	69,970	70,587	70,856	71,572	71,946	
Dartmouth VMMC (1C1CMS331029PE)															
ER Rate	106.8	83.5	83.5	107.8	110.7	100.9	98.5	103.3	102.2	115.3	106.4	97.1	108.4		
Standard Deviation	9.6	8.6	8.6	9.7	9.8	9.4	10.0	10.4	10.7	11.7	12.0	12.9	17.1		
Unique Patients	1,030	1,030	1,030	1,030	1,030	1,021	893	852	802	746	658	525	332		
MedExpert (1C1CMS331038)															
ER Rate	69.0	70.5	71.2	75.1	75.7	77.7	81.4	82.6	80.2	81.6	75.9	76.4	76.2	78.7	
Standard Deviation	0.9	0.9	0.9	0.9	0.9	0.9	1.0	1.1	1.3	1.4	1.7	1.8	1.8	3.1	
Unique Patients	87,317	87,317	87,317	87,317	87,317	86,153	77,301	60,415	42,505	39,576	23,351	22,965	22,611	7,320	
Welvie Ohio (1C1CMS330984)															
ER Rate	79.2	81.7	79.1	83.5	85.9	88.1	83.8	83.5	91.5	92.9	88.4	92.0	95.8	96.6	91.5
Standard Deviation	1.1	1.1	1.1	1.1	1.1	1.2	1.1	1.2	1.2	1.2	1.2	1.2	1.3	1.3	1.3
Unique Patients	59,894	59,894	59,894	59,894	59,894	59,023	58,163	57,294	56,355	55,487	54,652	53,729	52,781	51,987	51,238
<b>Control Group</b>															
Dartmouth DHMC (1C1CMS331029PE)															
ER Rate	93.3	91.0	87.9	90.4	92.4	88.6	87.8	95.7	96.4	91.9	92.4	96.6	96.6	91.7	
Standard Deviation	0.5	0.5	0.4	0.5	0.5	0.4	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	

Description	Baseline Period (Year Prior to Enrollment)				Intervention Period										
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11
Unique Patients	396,947	399,735	397,276	398,762	401,668	404,364	392,626	394,197	397,073	397,085	393,057	391,774	394,048	396,257	
Dartmouth VMMC (1C1CMS331029PE)															
ER Rate	87.4	80.6	100.0	112.6	91.3	109.8	97.1	98.5	98.4	101.6	96.1	132.9	72.5		
Standard Deviation	8.8	8.5	9.3	9.9	9.0	9.8	10.0	10.5	10.9	11.5	12.1	15.8	15.6		
Unique Patients	1,030	1,030	1,030	1,030	1,030	1,011	875	812	752	689	593	459	276		
MedExpert (1C1CMS331038)															
ER Rate	77.4	78.3	79.5	76.0	84.5	86.0	85.3	88.9	85.4	83.7	74.7	77.4	77.4	80.5	
Standard Deviation	0.9	0.9	0.9	0.9	0.9	1.0	1.0	1.2	1.3	1.4	1.7	1.8	1.8	3.3	
Unique Patients	87,317	87,317	87,317	87,317	87,317	86,116	77,687	60,316	45,896	40,579	23,218	22,810	22,464	6,736	
Welvie Ohio (1C1CMS330984)															
ER Rate	79.5	83.4	77.6	85.1	85.9	91.7	88.8	84.1	93.9	93.4	88.8	92.8	95.8	98.7	91.8
Standard Deviation	1.2	1.2	1.2	1.2	1.2	1.3	1.3	1.3	1.3	1.4	1.3	1.4	1.4	1.4	1.4
Unique Patients	50,279	50,279	50,279	50,279	50,279	49,338	48,553	47,745	46,834	45,985	45,276	44,462	43,579	42,837	42,174

Note: Measures with 10 or fewer beneficiaries in the numerator are suppressed.

**Appendix Table G-8: Baseline & Intervention Meta-Evaluation Measure Trends: ER Visits per 1,000 Medicare FFS Beneficiaries**

Description	Baseline Period (Year Prior to Enrollment)				Intervention Period										
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11
<b>Intervention Group</b>															
Welvie Ohio (1C1CMS330984)															
ER Rate	11.7	49.4	64.2	66.7	67.5	67.3	66.3	65.6	61.5	57.3	59.2	60.1	55.1	25.1	5.8
Standard Deviation	0.3	0.7	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.6	0.3
Unique Patients	97,380	97,380	97,380	97,380	97,380	96,492	95,477	92,080	91,230	90,076	89,069	82,860	81,907	79,501	78,171
Welvie Texas (1C1CMS330984)															
ER Rate	66.4	66.2	71.6	80.4	85.4	83.8	85.6	86.4	85.4	82.7					
Standard Deviation	1.0	1.0	1.0	1.1	1.1	1.1	1.2	1.3	1.3	1.2					
Unique Patients	63,979	63,979	63,979	63,979	63,979	63,885	50,346	49,822	49,356	48,797					
<b>Control Group</b>															
Welvie Ohio (1C1CMS330984)															
ER Rate	10.8	48.4	63.6	70.1	67.6	67.8	67.2	67.0	62.9	58.4	62.4	62.3	56.5	25.3	5.8
Standard Deviation	0.3	0.7	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.9	0.8	0.6	0.3
Unique Patients	94,915	94,915	94,915	94,915	94,915	94,059	93,045	89,750	88,894	87,518	86,556	80,581	79,640	77,232	75,732
Welvie Texas (1C1CMS330984)															
ER Rate	66.9	66.9	72.3	82.2	85.7	84.8	88.1	85.5	85	83.1					
Standard Deviation	1.0	1.0	1.0	1.1	1.1	1.1	1.3	1.3	1.3	1.2					
Unique Patients	63,759	63,759	63,759	63,759	63,759	63,654	50,476	49,956	49,449	48,926					

Note: Measures with 10 or fewer beneficiaries in the numerator are suppressed.

## G.2 Difference-in-Difference Estimates

### G.2.1 Quarterly Results

**Appendix Table G-9: DiD Meta-Evaluation Measure Estimates: Effects on Total Medicare Expenditures, Medicare FFS Beneficiaries**

Description	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11
<b>Intervention Group</b>											
Dartmouth DHMC (1C1CMS331029PE)	-0.44	97.86**	49.81	3.84	-9.90	14.08	58.17	80.64	62.43	101.57***	
<i>90% Confidence Interval</i>	(-48.4   47.5)	(21.6   174.1)	(-7.3   106.9)	(-52.3   60.0)	(-56.2   36.4)	(-42.1   70.2)	(-11.2   127.6)	(-0.7   162.0)	(-0.3   125.2)	(44.2   158.9)	
<i>P-Value</i>	0.988	0.035	0.151	0.91	0.725	0.68	0.168	0.103	0.102	0.004	
Dartmouth VMMC (1C1CMS331029PE)	-596.62	4.01	-20.62	-24.23	767.12*	593.29	192.56	714.42	1,002.07		
<i>90% Confidence Interval</i>	(-1201,8)	(-640,648)	(-630,589)	(-661,613)	(74,1460)	(-51,1237)	(-775,1160)	(-262,1691)	(-78,2083)		
<i>P-Value</i>	0.104	0.992	0.956	0.95	0.069	0.13	0.743	0.229	0.127		
MedExpert (1C1CMS331038)	-46.11	10.26	47.45	76.82	96.01	-11.65	-160.37*	-119.69	-20.07	-149.30	
<i>90% Confidence Interval</i>	(-114,22)	(-58,78)	(-24,119)	(-4,158)	(-7,199)	(-116,92)	(-303,-17)	(-293,53)	(-154,114)	(-389,90)	
<i>P-Value</i>	0.267	0.804	0.278	0.120	0.124	0.854	0.065	0.255	0.806	0.305	
Welvie Ohio (1C1CMS330984)	-102.71*	-53.51	-68.58	23.62	27.30	5.51	-35.61	-102.96*	-4.15	10.94	-33.89
<i>90% Confidence Interval</i>	(-190,-16)	(-139,32)	(-155,18)	(-63,110)	(-59,114)	(-78,89)	(-120,49)	(-192,-14)	(-88,80)	(-73,95)	(-118,50)
<i>P-Value</i>	0.052	0.303	0.19	0.654	0.603	0.914	0.489	0.058	0.935	0.83	0.505

\* Statistically significant at the ten percent level.

\*\* Statistically significant at the five percent level.

\*\*\* Statistically significant at the one percent level.

**Appendix Table G-10: DiD Meta-Evaluation Measure Estimates: Effects on Total Medicare Expenditures, MA Beneficiaries**

Description	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11
<b>Intervention Group</b>											
Welve Ohio (1C1CMS330984)	-17.27	-23.70	-71.81**	-55.82*	-28.26	3.18	-14.14	22.18	-9.94	7.56	-35.92
<i>95% Confidence Interval</i>	(-68,34)	(-75,27)	(-121,-23)	(-105,-7)	(-76,20)	(-44,51)	(-60,32)	(-26,70)	(-56,37)	(-34,49)	(-78,6)
<i>P-Value</i>	0.579	0.444	0.017	0.059	0.332	0.913	0.613	0.444	0.725	0.765	0.158
Welve Texas (1C1CMS330984)	13.88	15.80	-68.30	42.32	118.29**	27.67					
<i>95% Confidence Interval</i>	(-55,83)	(-54,85)	(-161,24)	(-40,125)	(37,199)	(-49,105)					
<i>P-Value</i>	0.741	0.709	0.223	0.398	0.016	0.555					

\* Statistically significant at the ten percent level.

\*\* Statistically significant at the five percent level.



**Appendix Table G-11: DiD Meta-Evaluation Measure Estimates: Inpatient Admissions per 1,000 Medicare FFS Beneficiaries**

Description	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11
<b>Intervention Group</b>											
Dartmouth DHMC (1C1CMS331029PE)	1.20	6.69***	5.29***	6.53***	5.18***	4.13**	7.54***	7.82***	9.55***	10.82***	
<i>90% Confidence Interval</i>	(-1.3   3.7)	(3.4   10.0)	(2.3   8.2)	(3.6   9.5)	(2.4   8.0)	(1.2   7.0)	(4.0   11.1)	(3.9   11.7)	(7.0   12.1)	(7.7   13.9)	
<i>P-Value</i>	0.431	<0.001	0.003	<0.001	0.003	0.019	<0.001	0.001	<0.001	<0.001	
Dartmouth VMMC (1C1CMS331029PE)	-5.83	1.90	19.91	0.62	27.08	16.52	6.96	44.82*	37.22		
<i>90% Confidence Interval</i>	(-38,27)	(-30,33)	(-12,52)	(-33,34)	(-5,59)	(-20,53)	(-33,47)	(3,87)	(-11,85)		
<i>P-Value</i>	0.768	0.921	0.308	0.976	0.164	0.453	0.775	0.078	0.203		
MedExpert (1C1CMS331038)	-2.45	0.79	1.88	2.98	1.69	-1.65	-6.08	0.87	4.20	-0.60	
<i>90% Confidence Interval</i>	(-6,1)	(-3,4)	(-2,5)	(-1,7)	(-3,6)	(-7,3)	(-13,0)	(-6,7)	(-2,11)	(-13,11)	
<i>P-Value</i>	0.224	0.692	0.378	0.215	0.552	0.585	0.128	0.824	0.280	0.934	
Welve Ohio (1C1CMS330984)	-5.11*	-2.78	-1.67	0.80	3.98	0.57	-4.01	-3.39	-1.38	2.05	-4.05
<i>90% Confidence Interval</i>	(-10,-1)	(-7,2)	(-6,3)	(-4,5)	(0,8)	(-4,5)	(-8,0)	(-8,1)	(-6,3)	(-2,6)	(-8,0)
<i>P-Value</i>	0.056	0.29	0.521	0.763	0.136	0.826	0.131	0.214	0.612	0.435	0.131

\* Statistically significant at the ten percent level.

\*\* Statistically significant at the five percent level.

\*\*\* Statistically significant at the one percent level.

**Appendix Table G-12: DiD Meta-Evaluation Measure Estimates: Inpatient Admissions per 1,000 MA Beneficiaries**

Description	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11
<b>Intervention Group</b>											
MedExpert (1C1CMS331038)	-3.98***	-4.50***	-2.88***	-2.13**	-2.39**	-2.65*	-2.46	-0.90	2.22	3.63	
<i>90% Confidence Interval</i>	(-6,-2)	(-6,-3)	(-5,-1)	(-4,0)	(-4,-1)	(-5,0)	(-7,2)	(-5,3)	(-2,6)	(-4,11)	
<i>P-Value</i>	<0.001	<0.001	0.004	0.043	0.034	0.084	0.336	0.719	0.375	0.426	
Welvie Ohio (1C1CMS330984)	-0.43	-0.97	-2.45	-1.16	-0.38	0.07	-2.14	2.26	-0.21	-1.37	-2.95*
<i>90% Confidence Interval</i>	(-3,2)	(-4,2)	(-5,0)	(-4,1)	(-3,2)	(-2,3)	(-5,0)	(0,5)	(-3,2)	(-4,1)	(-6,0)
<i>P-Value</i>	0.796	0.558	0.123	0.455	0.81	0.965	0.156	0.147	0.895	0.39	0.057
Welvie Texas (1C1CMS330984)	2.36	2.58	-3.33	2.54	5.76**	0.65					
<i>90% Confidence Interval</i>	(-1,6)	(-1,6)	(-8,1)	(-2,7)	(2,10)	(-3,5)					
<i>P-Value</i>	0.283	0.259	0.231	0.355	0.025	0.787					

\* Statistically significant at the ten percent level.

\*\* Statistically significant at the five percent level.

\*\*\* Statistically significant at the one percent level.

**Appendix Table G-13: DiD Meta-Evaluation Measure Estimates: 30-Day Hospital Readmissions per 1,000 Admissions  
Medicare FFS Beneficiaries**

Description	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11
<b>Intervention Group</b>											
Dartmouth DHMC (1C1CMS331029PE)	-1.58	0.08	4.05	5.57	14.98*	17.17	11.72	28.45***	23.00***	27.55***	
<i>90% Confidence Interval</i>	(-15.9   12.7)	(-15.4   15.6)	(-12.8   20.9)	(-9.0   20.2)	(2.1   27.8)	(-0.5   34.9)	(-2.7   26.1)	(14.2   42.7)	(8.5   37.5)	(10.6   44.5)	
<i>P-Value</i>	0.855	0.993	0.693	0.531	0.055	0.111	0.181	<0.001	0.009	0.007	
Dartmouth VMMC (1C1CMS331029PE)	49.00	28.37	-113.88	9.18	89.38	-44.33	-70.56	202.15**	-38.46		
<i>90% Confidence Interval</i>	(-43.9   141.9)	(-80.4   137.2)	(-233.4   5.6)	(-105.4   123.8)	(-19.3   198.1)	(-191.6   102.9)	(-229.6   88.5)	(71.7   332.6)	(-232.7   155.7)		
<i>P-Value</i>	0.386	0.668	0.117	0.895	0.176	0.620	0.466	0.011	0.745		
MedExpert (1C1CMS331038)	-11.50	-4.71	1.29	13.67	20.14*	-7.00	-31.40**	-2.22	32.40**	-18.28	
<i>90% Confidence Interval</i>	(-23.8   0.8)	(-16.8   7.3)	(-11.2   13.8)	(-0.4   27.7)	(3.2   37.0)	(-24.2   10.2)	(-54.2   -8.6)	(-25.0   20.6)	(10.2   54.6)	(-62.3   25.8)	
<i>P-Value</i>	0.123	0.520	0.866	0.110	0.050	0.504	0.023	0.873	0.016	0.495	
Welvie Ohio (1C1CMS330984)	-6.29	8.56	-25.10***	-0.90	11.75	-5.20	-14.26	2.75	-6.48	8.45	1.02
<i>90% Confidence Interval</i>	(-20.5   8.0)	(-6.5   23.6)	(-40.1   -10.1)	(-16.2   14.4)	(-3.4   26.9)	(-20.6   10.2)	(-29.5   1.0)	(-12.3   17.8)	(-21.8   8.8)	(-7.2   24.2)	(-14.7   16.7)
<i>P-Value</i>	0.468	0.349	0.006	0.923	0.203	0.579	0.124	0.764	0.486	0.376	0.915

\* Statistically significant at the ten percent level.

\*\* Statistically significant at the five percent level.

\*\*\* Statistically significant at the one percent level.

**Appendix Table G-14: DiD Meta-Evaluation Measure Estimates: 30-Day Hospital Readmissions per 1,000 Admissions MA Beneficiaries**

Description	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11
<b>Intervention Group</b>											
MedExpert (1C1CMS331038)	-14.90***	-5.20	-6.71	-4.49	-4.34	5.23	-13.12	-10.14	-4.34	14.87	
<i>90% Confidence Interval</i>	(-23.2   -6.6)	(-13.5   3.1)	(-15.1   1.7)	(-13.5   4.5)	(-14.4   5.7)	(-7.5   18.0)	(-32.8   6.6)	(-30.5   10.2)	(-24.1   15.4)	(-22.0   51.8)	
<i>P-Value</i>	0.003	0.302	0.188	0.412	0.477	0.501	0.273	0.412	0.718	0.507	
Welvie Ohio (1C1CMS330984)	-0.86	9.39	-9.13	-3.74	-4.86	3.68	-2.07	3.94	-8.19	-9.32	-10.60
<i>90% Confidence Interval</i>	(-13.0   11.2)	(-3.1   21.9)	(-22.4   4.2)	(-17.6   10.1)	(-18.8   9.0)	(-11.0   18.4)	(-17.2   13.0)	(-11.8   19.7)	(-23.4   7.0)	(-24.6   6.0)	(-26.9   5.7)
<i>P-Value</i>	0.906	0.216	0.259	0.657	0.566	0.681	0.821	0.681	0.376	0.317	0.285
Welvie Texas (1C1CMS330984)	17.19*	2.49	-13.81	2.15	6.49	-1.08					
<i>90% Confidence Interval</i>	(1.8   32.6)	(-13.1   18.1)	(-31.1   3.5)	(-15.1   19.5)	(-11.3   24.3)	(-19.1   17.0)					
<i>P-Value</i>	0.066	0.793	0.190	0.838	0.548	0.921					

\* Statistically significant at the ten percent level.

\*\*\* Statistically significant at the one percent level.

**Appendix Table G-15: DiD Meta-Evaluation Measure Estimates: ER Visits per 1,000 Medicare FFS Beneficiaries**

Description	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11
<b>Intervention Group</b>											
Dartmouth DHMC (1C1CMS331029PE)	3.18	-6.04	-8.27	-4.70	-6.84	-7.93	-3.12	-4.63	-4.58	-9.98	
<i>90% Confidence Interval</i>	(-5.6   12.0)	(-16.4   4.3)	(-18.9   2.4)	(-14.4   5.0)	(-17.5   3.8)	(-16.8   0.9)	(-13.6   7.4)	(-16.7   7.4)	(-14.5   5.4)	(-21.8   1.8)	
<i>P-Value</i>	0.553	0.337	0.201	0.426	0.292	0.142	0.624	0.528	0.448	0.163	
Dartmouth VMMC (1C1CMS331029PE)	19.17	-12.25	14.58	-1.37	-15.37	14.26	19.00	-17.32	53.94		
<i>90% Confidence Interval</i>	(-25,63)	(-52,27)	(-26,55)	(-42,39)	(-62,31)	(-31,59)	(-24,62)	(-73,38)	(-16,124)		
<i>P-Value</i>	0.47	0.611	0.556	0.955	0.584	0.601	0.463	0.607	0.208		
MedExpert (1C1CMS331038)	-4.29*	-4.42*	0.36	-2.31	1.31	4.90	4.36	3.82	1.36	7.90	
<i>90% Confidence Interval</i>	(-8,0)	(-8,-1)	(-4,4)	(-7,2)	(-4,7)	(-1,10)	(-2,11)	(-3,10)	(-5,8)	(-4,20)	
<i>P-Value</i>	0.064	0.056	0.883	0.406	0.682	0.137	0.254	0.328	0.735	0.283	
Welvie Ohio (1C1CMS330984)	0.11	-4.76*	-6.89**	0.35	-2.96	-1.10	-1.43	-0.92	-0.54	-2.51	-0.42
<i>90% Confidence Interval</i>	(-4,5)	(-9,0)	(-11,-2)	(-4,5)	(-8,2)	(-6,4)	(-6,3)	(-6,4)	(-6,4)	(-8,3)	(-5,5)
<i>P-Value</i>	0.968	0.097	0.013	0.901	0.312	0.715	0.624	0.756	0.86	0.417	0.89

\* Statistically significant at the ten percent level.

\*\* Statistically significant at the five percent level.

\*\*\* Statistically significant at the one percent level.

**Appendix Table G-16: DiD Meta-Evaluation Measure Estimates: ER Visits per 1,000 MA Beneficiaries**

Description	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11
<b>Intervention Group</b>											
Welve Ohio (1C1CMS330984)	0.40	1.21	-0.63	-0.05	-0.57	-1.37	-3.16*	-2.60	0.60	0.34	0.90
<i>95% Confidence Interval</i>	(-2,3)	(-2,4)	(-3,2)	(-3,3)	(-3,2)	(-4,1)	(-6,0)	(-6,0)	(-2,3)	(-2,2)	(-1,2)
<i>P-Value</i>	0.811	0.478	0.714	0.975	0.739	0.389	0.067	0.145	0.727	0.775	0.3
Welve Texas (1C1CMS330984)	1.52	-0.59	-3.35	0.22	3.73	2.17					
<i>95% Confidence Interval</i>	(-3,6)	(-5,4)	(-9,2)	(-5,5)	(-2,9)	(-3,8)					
<i>P-Value</i>	0.602	0.838	0.293	0.946	0.248	0.509					

\* Statistically significant at the ten percent level.

## G.2.2 Cumulative Results

Appendix Table G-17: Meta-Measures: Summative Effect Sizes

ID	Awardee	Measure	Effect Size	90% Confidence Interval	Number of Baseline Quarters	Number of Intervention Quarters	Unique IG Benes	Unique CG Benes	Estimation Method <sup>a</sup>	Calendar or Program Exposure Based Quarter? <sup>b</sup>
1C1CMS331029	Trustees of Dartmouth College - Patient Engagement, DHMC FFS <sup>c</sup>	Total Medical Costs (Per 1,000 Beneficiaries)	\$69,059.25**	(21,355.2   116,763.3)	4	10	84,225	429,317	DiD (matched controls)	Calendar-Based (after HCIA implementation)
		IP Admissions (Per 1,000 Beneficiaries)	9.75***	(7.3   12.2)	4	10	84,225	429,317		
		IP Readmissions (Per 1,000 Beneficiaries)	17.45***	(6.1   28.8)	4	10	84,225	429,317		
		ED Visits (Per 1,000 Beneficiaries)	-7.95**	(-16.4   0.5)	4	10	84,225	429,317		
1C1CMS331029	Trustees of Dartmouth College - Patient Engagement, VMMC FFS	Total Medical Costs (Per 1,000 Beneficiaries)	\$2,231,607.0	(-785,443.6   5,248,658)	4	9	1,030	1,030	DiD (matched controls)	Program Exposure-Based
		IP Admissions (Per 1,000 Beneficiaries)	155.67*	(10.3   301.1)	4	9	1,030	1,030		
		IP Readmissions (Per 1,000 Beneficiaries)	87.46	(-289.4   464.3)	4	9	1,030	1,030		
		ED Visits (Per 1,000 Beneficiaries)	141.62	(-46.7   330.0)	4	9	1,030	1,030		
1C1CMS331038	MedExpert International, Inc., FFS	Total Medical Costs (Per 1,000 Beneficiaries)	\$333,153.8	(-32,103.8   698,411.3)	4	10	87,317	87,317	DiD (matched controls)	Program Exposure-Based
		IP Admissions (Per 1,000 Beneficiaries)	14.95	(-3.0   32.9)	4	10	87,317	87,317		

ID	Awardee	Measure	Effect Size	90% Confidence Interval	Number of Baseline Quarters	Number of Intervention Quarters	Unique IG Benes	Unique CG Benes	Estimation Method <sup>a</sup>	Calendar or Program Exposure Based Quarter? <sup>b</sup>
1C1CMS331038	MedExpert International, Inc., FFS	IP Readmissions (Per 1,000 Beneficiaries)	0.00	(-51.2   51.2)	4	10	87,317	87,317	DiD (matched controls)	Program Exposure-Based
		ED Visits (Per 1,000 Beneficiaries)	0.35	(-20.1   20.8)	4	10	87,317	87,317		
1C1CMS331038	MedExpert International, Inc., MA	IP Admissions (Per 1,000 Beneficiaries)	-31.20***	(-40.0   -22.5)	4	10	221,690	221,690	DiD (matched controls)	Program Exposure-Based
		IP Readmissions (Per 1,000 Beneficiaries)	-63.79***	(-99.1   -28.4)	4	10	221,690	221,690		
1C1CMS330984	Welvie LLC, Ohio FFS	Total Medical Costs (Per 1,000 Beneficiaries)	-\$31,278.75	(-472,970.1   410,412.6)	4	11	59,894	50,279	DiD (matched controls)	Program Exposure-Based
		IP Admissions (Per 1,000 Beneficiaries)	-6.56	(-29.6   16.5)	4	11	59,894	50,279		
		IP Readmissions (Per 1,000 Beneficiaries)	-26.53	(-76.9   23.9)	4	11	59,894	50,279		
		ED Visits (Per 1,000 Beneficiaries)	-18.10	(-43.0   6.8)	4	11	59,894	50,279		
1C1CMS330984	Welvie LLC, Ohio MA	Total Medical Costs (Per 1,000 Beneficiaries)	-\$235,622.33	(-471,440.3   195.6)	4	11	97,380	94,915	DiD (matched controls)	Program Exposure-Based
		IP Admissions (Per 1,000 Beneficiaries)	-7.79	(-20.9   5.4)	4	11	97,380	94,915		
		IP Readmissions (Per 1,000 Beneficiaries)	-25.75	(-72.8   21.3)	4	11	97,380	94,915		



ID	Awardee	Measure	Effect Size	90% Confidence Interval	Number of Baseline Quarters	Number of Intervention Quarters	Unique IG Benes	Unique CG Benes	Estimation Method <sup>a</sup>	Calendar or Program Exposure Based Quarter? <sup>b</sup>
1C1CMS330984	Welvie LLC, Ohio MA	ED Visits (Per 1,000 Beneficiaries)	-6.49	(-20.6   7.6)	4	11	97,380	94,915	DiD (matched controls)	Program Exposure-Based
1C1CMS330984	Welvie LLC, Texas MA	Total Medical Costs (Per 1,000 Beneficiaries)	\$84,409.51	(-144,707.2   313,526.2)	4	6	63,979	63,759	DiD (matched controls)	Program Exposure-Based
		IP Admissions (Per 1,000 Beneficiaries)	9.91	(-2.4   22.2)	4	6	63,979	63,759		
		IP Readmissions (Per 1,000 Beneficiaries)	15.45	(-25.7   56.6)	4	6	63,979	63,759		
		ED Visits (Per 1,000 Beneficiaries)	4.75	(-10.9   20.4)	4	6	63,979	63,759		

\* Statistically significant at the ten percent level.

\*\* Statistically significant at the five percent level.

\*\*\* Statistically significant at the one percent level.

<sup>a</sup>Acumen first calculated average changes in health outcomes, quality of care, health service use, and medical expenditures for intervention group beneficiaries in the period after program enrollment compared with the pre-enrollment period, and then calculated the corresponding changes for comparison groups over the same period. For each outcome measure, Acumen subtracted the average change in the comparison group from that in the intervention group to obtain the DiD estimate.

<sup>b</sup>This column denotes whether the quarterly results were compiled using calendar time, where all patients were present during the same chronological period, or a program exposure-based time, where program exposure begins when a patient first becomes eligible for care or enrolls.

<sup>c</sup>The DHMC analysis used the intervention region as the unit of analysis and compared outcome changes for Medicare FFS beneficiaries in the intervention region to average outcomes changes across multiple comparison regions who were matched to the intervention region on observable variables.

## Appendix H: 508 Compliant Tables Corresponding to Colored Results Plots for Dartmouth SDM Interventions at DHMC

**Appendix Table H-1: DHMC SDM Intervention: Mortality per 1,000 Beneficiaries, by HRR, Medicare FFS Cohort**

Hospital Referral Region (HRR)	HRR Location	Quarter Before HCIA Program Launch				Quarter After HCIA Program Launch									
		Q4	Q3	Q2	Q1	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10
281	Lebanon NH	10.84	10.97	12.67	10.51	10.21	10.59	11.54	10.66	10.58	10.72	12.82	10.56	9.71	10.83
240	Marquette MI	10.97	12.69	13.91	10.31	12.14	12.14	13.05	11.67	11.27	12.56	13.09	12.24	10.43	11.03
249	Traverse City MI	10.38	10.81	12.51	11.52	10.86	11.74	11.79	11.15	11.05	12.13	11.65	12.39	11.30	11.37
309	Asheville NC	10.42	12.91	13.16	11.18	10.51	11.37	12.11	10.78	10.42	12.02	13.12	11.10	11.19	11.63
322	Fargo MN / Moorhead ND	11.04	12.72	12.75	12.37	11.31	12.18	12.96	12.55	11.55	13.86	13.21	12.27	12.54	11.65
359	Sayre PA	11.85	13.80	13.43	12.49	12.12	11.97	11.90	12.00	11.69	12.64	14.29	11.46	10.61	11.21
427	Charlottesville VA	10.87	12.70	12.74	11.50	10.54	11.91	12.22	10.61	10.17	11.62	12.95	11.38	9.63	10.82
438	Olympia WA	10.59	11.74	13.08	10.51	10.60	10.52	10.77	10.63	10.13	12.03	11.85	11.48	9.85	11.10
456	Wausau WI	11.79	13.95	14.03	12.44	10.97	13.25	12.72	10.65	10.85	12.78	13.35	11.66	11.77	12.36

**Appendix Table H-2: DHMC SDM Intervention: Inpatient Readmissions per 1,000 Beneficiaries, by HRR, Medicare FFS Cohort**

Hospital Referral Region (HRR)	HRR Location	Quarter Before HCIA Program Launch				Quarter After HCIA Program Launch									
		Q4	Q3	Q2	Q1	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10
281	Lebanon NH	230.20	215.72	203.77	217.47	213.10	212.94	214.54	215.62	225.26	225.13	223.87	239.84	231.52	206.50
240	Marquette MI	228.05	222.94	223.60	215.36	218.02	222.37	237.25	241.06	206.46	232.66	215.02	220.95	213.82	187.05
249	Traverse City MI	223.80	225.12	251.76	231.19	242.22	243.58	247.54	245.45	221.38	225.59	245.86	241.41	238.64	190.24
309	Asheville NC	234.50	235.16	239.80	240.15	233.22	227.63	227.26	223.71	228.59	232.79	230.67	234.37	231.72	212.61
322	Fargo MN / Moorhead ND	245.95	227.31	229.23	229.95	237.10	227.76	220.90	233.81	231.21	238.32	237.65	236.28	231.46	204.38
359	Sayre PA	274.23	282.63	295.55	277.93	282.62	288.52	280.25	277.71	272.89	274.86	299.95	285.37	267.52	249.01
427	Charlottesville VA	269.91	261.64	260.29	258.37	262.17	264.53	254.20	253.27	260.58	237.89	247.54	254.44	253.06	220.00
438	Olympia WA	247.14	236.61	227.52	227.35	219.57	219.60	229.16	220.49	220.30	215.50	222.07	207.60	211.05	197.20
456	Wausau WI	233.70	235.38	245.22	228.59	215.55	231.74	215.05	214.12	247.67	252.99	246.11	243.18	227.16	196.43

**Appendix Table H-3: DHMC SDM Intervention: Outpatient Hip, Knee, and Spine Surgeries per 1,000 Beneficiaries, by HRR, Medicare FFS Cohort**

Hospital Referral Region (HRR)	HRR Location	Quarter Before HCIA Program Launch				Quarter After HCIA Program Launch									
		Q4	Q3	Q2	Q1	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10
281	Lebanon NH	1.29	1.28	0.86	1.06	1.22	0.83	0.76	0.71	0.65	0.63	0.68	0.62	0.78	0.68
240	Marquette MI	1.40	1.36	0.90	1.03	0.86	1.39	1.17	0.87	0.83	0.79	0.84	0.98	0.65	0.76
249	Traverse City MI	0.43	0.72	0.54	0.65	0.53	0.40	0.75	0.55	0.41	0.33	0.64	0.92	0.72	1.00
309	Asheville NC	1.24	1.19	1.04	1.04	1.14	1.20	1.27	1.28	1.21	1.03	1.29	0.98	1.17	0.89
322	Fargo MN / Moorhead ND	0.85	1.02	0.81	0.94	0.98	1.16	0.91	1.12	0.99	1.12	0.68	1.20	1.08	0.83
359	Sayre PA	0.64	0.72	0.57	0.73	0.61	0.88	0.67	0.82	0.97	1.09	0.79	0.87	1.14	1.10
427	Charlottesville VA	0.82	0.76	1.06	0.80	0.81	0.93	1.02	1.01	0.91	0.75	0.74	0.84	0.83	0.73
438	Olympia WA	0.42	0.47	0.21	0.35	0.25	0.18	0.14	0.22	0.20	0.22	0.35	0.26	0.13	0.25
456	Wausau WI	0.66	0.26	0.09	0.71	0.22	0.39	0.45	0.36	0.44	0.44	0.45	0.41	0.31	0.58

**Appendix Table H-4: DHMC SDM Intervention: Inpatient Hip, Knee, and Spine Surgeries per 1,000 Beneficiaries, by HRR, Medicare FFS Cohort**

Hospital Referral Region (HRR)	HRR Location	Quarter Before HCIA Program Launch				Quarter After HCIA Program Launch									
		Q4	Q3	Q2	Q1	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10
281	Lebanon NH	3.97	4.24	4.29	4.28	4.32	4.98	4.37	4.07	4.59	3.89	4.60	4.46	4.64	4.18
240	Marquette MI	5.18	4.82	4.99	5.35	5.72	5.31	5.31	5.57	6.13	4.96	4.73	6.23	6.74	5.08
249	Traverse City MI	6.01	6.60	6.59	6.63	6.12	6.39	5.66	6.00	6.32	5.33	6.30	6.64	6.51	6.33
309	Asheville NC	4.75	4.84	5.20	5.08	4.56	5.15	5.91	5.05	4.73	4.41	5.34	4.86	4.95	4.04
322	Fargo MN / Moorhead ND	6.18	5.44	6.01	5.25	5.37	5.77	4.95	5.33	5.44	5.32	5.26	5.87	5.63	5.90
359	Sayre PA	4.66	5.13	5.57	5.16	4.74	4.84	5.36	4.96	4.93	4.96	5.17	5.02	5.01	3.77
427	Charlottesville VA	5.02	5.05	5.52	5.16	5.29	4.94	5.15	5.16	4.79	5.05	5.39	5.00	4.87	4.52
438	Olympia WA	5.87	6.48	5.71	5.74	6.00	6.50	5.96	5.32	5.77	6.07	6.12	5.83	5.35	5.47
456	Wausau WI	5.56	5.77	5.06	4.78	4.36	5.48	4.87	4.50	4.65	5.16	4.80	5.20	4.49	5.22

**Appendix Table H-5: DHMC SDM Intervention: Inpatient Admissions per 1,000 Beneficiaries, by HRR, Medicare FFS Cohort**

Hospital Referral Region (HRR)	HRR Location	Quarter Before HCIA Program Launch				Quarter After HCIA Program Launch									
		Q4	Q3	Q2	Q1	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10
281	Lebanon NH	56.97	62.02	64.09	59.97	57.24	59.89	61.38	60.74	58.29	59.28	65.90	62.89	59.73	57.39
240	Marquette MI	64.69	65.23	68.73	64.16	64.35	63.76	65.89	65.58	65.99	64.77	69.46	68.95	62.82	62.05
249	Traverse City MI	76.19	79.53	80.52	78.38	73.96	70.80	72.56	70.83	71.05	74.40	75.23	78.42	72.94	66.22
309	Asheville NC	68.61	72.96	73.78	68.75	65.86	66.62	69.62	66.25	63.49	66.39	70.98	67.22	63.26	58.11
322	Fargo MN / Moorhead ND	78.69	77.24	80.40	77.20	72.69	67.07	71.28	72.53	72.39	72.39	78.77	75.14	67.47	65.33
359	Sayre PA	89.79	99.74	96.17	92.87	91.03	84.41	88.41	88.52	85.23	89.28	94.55	85.05	80.58	75.81
427	Charlottesville VA	76.43	83.32	84.05	78.59	77.31	71.08	75.26	72.80	71.72	74.79	77.80	71.78	69.91	64.51
438	Olympia WA	64.94	67.78	70.75	64.42	61.57	60.32	62.55	59.99	59.34	61.13	60.76	60.01	55.61	55.63
456	Wausau WI	75.06	76.81	77.54	76.25	70.74	70.27	71.34	70.17	73.25	74.46	76.38	76.96	67.85	68.70

**Appendix Table H-6: DHMC SDM Intervention: Outpatient Hip, Knee, and Spine Surgery Cost per Beneficiary, by HRR, Medicare FFS Cohort**

Hospital Referral Region (HRR)	HRR Location	Quarter Before HCIA Program Launch				Quarter After HCIA Program Launch									
		Q4	Q3	Q2	Q1	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10
281	Lebanon NH	4.49	3.59	2.49	2.81	2.68	2.35	2.25	1.88	4.73	2.06	1.86	1.61	2.40	1.70
240	Marquette MI	3.49	2.87	2.71	2.59	2.09	4.38	4.39	2.77	2.34	2.08	2.19	3.08	1.40	1.76
249	Traverse City MI	1.02	1.41	1.00	1.30	1.20	0.84	1.58	1.17	0.88	0.78	1.77	2.22	2.15	2.66
309	Asheville NC	3.00	3.17	3.33	3.14	3.05	3.85	3.82	3.76	3.88	2.94	3.78	2.61	3.15	2.93
322	Fargo MN / Moorhead ND	1.78	2.12	1.81	1.96	1.96	2.63	2.05	3.90	2.46	2.60	1.47	3.22	2.84	1.95
359	Sayre PA	1.15	1.99	0.91	1.58	1.60	2.43	1.94	2.63	3.13	4.16	2.07	2.30	3.50	3.43
427	Charlottesville VA	1.55	1.69	2.26	1.59	1.66	1.90	2.14	1.91	1.85	1.60	1.59	1.40	1.77	1.52
438	Olympia WA	0.78	0.87	0.47	0.78	0.55	0.42	0.28	0.41	0.54	0.54	1.24	0.52	0.41	0.65
456	Wausau WI	1.41	0.45	0.23	1.36	0.35	0.65	0.72	0.80	0.92	0.75	1.62	0.82	0.55	1.66

**Appendix Table H-7: DHMC SDM Intervention: Inpatient Hip, Knee, and Spine Surgery Cost per Beneficiary, by HRR, Medicare FFS Cohort**

Hospital Referral Region (HRR)	HRR Location	Quarter Before HCIA Program Launch				Quarter After HCIA Program Launch									
		Q4	Q3	Q2	Q1	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10
281	Lebanon NH	48.41	49.65	53.01	53.08	52.02	61.27	54.25	50.26	51.11	46.44	53.27	52.69	50.59	47.87
240	Marquette MI	61.41	59.72	60.55	61.76	66.83	68.07	66.59	64.96	76.73	63.12	55.24	68.08	76.56	62.53
249	Traverse City MI	65.47	75.47	76.02	68.44	67.29	70.94	59.00	68.69	72.59	57.80	69.81	69.63	70.52	65.10
309	Asheville NC	59.10	63.60	66.26	62.34	57.75	65.44	73.11	64.02	60.83	52.47	67.18	59.62	66.59	48.25
322	Fargo MN / Moorhead ND	74.43	66.85	74.23	62.52	66.56	70.32	66.18	70.58	71.95	65.62	62.23	73.51	69.55	73.11
359	Sayre PA	59.49	62.84	67.93	60.40	56.54	60.26	67.92	56.87	64.35	59.83	58.12	57.91	58.37	42.65
427	Charlottesville VA	64.90	63.93	68.84	67.75	71.38	62.49	66.29	67.03	63.26	63.74	69.99	63.52	66.06	57.43
438	Olympia WA	76.06	83.43	80.27	70.87	79.11	87.66	80.99	81.04	84.51	86.23	78.22	76.69	81.43	71.67
456	Wausau WI	67.90	77.24	62.68	55.07	48.63	66.06	58.69	53.88	54.07	61.07	54.90	58.62	52.15	60.40

**Appendix Table H-8: DHMC SDM Intervention: Outpatient Non-ER Costs per Beneficiary, by HRR, Medicare FFS Cohort**

Hospital Referral Region (HRR)	HRR Location	Quarter Before HCIA Program Launch				Quarter After HCIA Program Launch									
		Q4	Q3	Q2	Q1	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10
281	Lebanon NH	498.76	495.73	462.68	495.41	483.48	486.31	437.85	490.49	491.90	487.62	455.82	516.25	509.13	510.40
240	Marquette MI	478.40	467.67	440.10	487.50	465.49	449.95	416.88	455.76	460.62	435.46	424.34	475.14	496.47	484.69
249	Traverse City MI	379.61	399.06	356.18	405.36	411.16	403.81	379.16	406.80	420.13	409.02	403.17	430.08	448.21	434.08
309	Asheville NC	315.63	324.65	334.69	340.54	338.02	340.48	343.09	362.07	354.70	358.34	349.69	379.03	370.20	368.49
322	Fargo MN / Moorhead ND	469.46	469.50	431.03	496.06	511.33	521.50	467.44	542.59	538.67	530.84	493.91	553.02	557.57	536.06
359	Sayre PA	322.18	323.79	325.04	345.90	344.56	322.40	316.26	346.92	343.87	380.63	374.14	395.18	377.12	371.95
427	Charlottesville VA	392.65	383.27	386.55	402.33	403.29	395.62	398.43	424.64	429.99	419.01	400.62	429.90	438.18	424.66
438	Olympia WA	260.24	257.32	250.17	248.63	257.11	259.88	260.13	254.27	257.22	257.77	264.71	270.99	271.09	270.19
456	Wausau WI	324.18	312.96	309.10	339.67	323.26	311.45	297.52	328.49	332.55	309.47	303.73	337.98	343.14	334.29

**Appendix Table H-9: DHMC SDM Intervention: Physician and Ancillary Service Costs per Beneficiary, by HRR, Medicare FFS Cohort**

Hospital Referral Region (HRR)	HRR Location	Quarter Before HCIA Program Launch				Quarter After HCIA Program Launch									
		Q4	Q3	Q2	Q1	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10
281	Lebanon NH	288.84	300.89	268.91	294.78	287.38	299.80	261.03	294.70	288.32	297.46	263.22	296.01	291.42	300.15
240	Marquette MI	377.44	387.63	336.90	382.13	372.31	379.33	321.84	373.55	378.53	361.81	335.00	377.59	370.06	385.64
249	Traverse City MI	545.49	538.66	464.67	518.83	502.96	518.46	430.52	505.35	502.36	514.01	443.72	511.68	503.54	517.02
309	Asheville NC	522.95	532.66	466.38	505.65	506.61	506.06	438.66	508.73	512.93	518.99	445.59	512.58	513.43	512.30
322	Fargo MN / Moorhead ND	409.33	415.54	352.43	398.76	382.42	389.13	329.26	391.18	389.00	399.74	344.16	390.50	377.69	388.40
359	Sayre PA	498.00	518.83	451.37	502.24	488.58	481.02	410.04	478.66	473.89	474.69	416.23	470.22	450.06	462.49
427	Charlottesville VA	480.61	492.74	420.89	472.97	472.58	476.80	399.13	473.44	484.20	488.68	423.03	482.70	482.48	489.06
438	Olympia WA	504.11	516.30	446.97	479.29	491.10	505.00	449.54	488.74	491.29	489.96	422.84	475.05	474.58	477.29
456	Wausau WI	533.93	561.60	473.54	533.16	519.79	526.96	439.60	502.13	516.58	525.53	462.07	535.67	513.02	535.77

**Appendix Table H-10: DHMC SDM Intervention: Total Medicare Parts A and B Costs per Beneficiary, by HRR**

Hospital Referral Region (HRR)	HRR Location	Quarter Before HCIA Program Launch				Quarter After HCIA Program Launch									
		Q4	Q3	Q2	Q1	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10
281	Lebanon NH	1697.26	1819.62	1795.32	1772.33	1712.67	1802.84	1702.53	1734.10	1702.57	1745.36	1742.02	1813.32	1747.19	1685.37
240	Marquette MI	1862.13	1860.18	1835.85	1870.71	1792.16	1794.81	1707.72	1829.51	1811.63	1765.45	1748.40	1853.33	1835.22	1758.29
249	Traverse City MI	1954.76	2023.19	1950.44	1989.10	1931.10	1935.83	1823.11	1917.88	1917.15	1966.30	1926.91	2031.80	1997.89	1852.56
309	Asheville NC	1894.03	1975.49	1975.51	1915.94	1858.41	1884.14	1876.83	1938.50	1892.54	1923.81	1880.63	1937.86	1897.30	1761.28
322	Fargo MN / Moorhead ND	1959.91	1957.57	1905.48	1990.87	1953.16	1897.38	1850.18	1995.90	1993.21	1991.47	1943.55	2003.87	1920.02	1846.23
359	Sayre PA	1900.90	2050.20	1992.62	2041.95	1930.29	1837.01	1811.91	1921.62	1871.81	1967.61	1957.84	1917.90	1854.91	1749.01
427	Charlottesville VA	1944.01	2027.75	1974.10	1974.35	1948.87	1933.53	1868.21	1944.73	1946.14	1950.00	1917.40	1940.40	1934.43	1814.39
438	Olympia WA	1713.59	1770.05	1695.37	1651.82	1642.98	1696.11	1647.62	1658.74	1651.45	1670.78	1616.99	1646.17	1599.19	1550.54
456	Wausau WI	1881.86	1930.49	1831.30	1841.95	1810.99	1797.87	1721.80	1779.97	1811.75	1870.78	1782.24	1910.86	1805.73	1794.77