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A Midpoint Evaluation of the New Jersey DSRIP Program: Findings from Stakeholder Interviews, Hospital Survey, Medicaid Claims Data, and Reported Quality Metrics

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Executive Summary

The Delivery System Reform Incentive Payment (DSRIP) Program was approved as part of the New Jersey Medicaid Comprehensive Waiver Demonstration in October 2012. The hospital-based DSRIP program uses resources transitioned from the previously existing Hospital Relief Subsidy Fund to establish a pay-for-performance and pay-for-reporting system to achieve specific health improvement goals for the state's low income population.

Over the course of this program participating hospitals receive payments for developing, implementing, and monitoring specific disease management projects; for reporting/verifying two sets of metrics: specific quality metrics related to their adopted projects (Stage 3 metrics) and also a universal set of metrics (known as Stage 4 metrics); for improving performance assessed on the basis of the project-specific Stage 3 metrics; and for improving or maintaining performance on a core set of metrics relating to inpatient care through funding available from a Universal Performance Pool.

The Rutgers Center for State Health Policy (CSHP) was engaged to evaluate the effectiveness of New Jersey's DSRIP program in achieving its goals. We formulated specific testable hypotheses to examine the following six research questions from the DSRIP Planning Protocol (detailed in the Waiver Special Terms and Conditions document) that determine the scope of the evaluation:

1. To what extent does the DSRIP program achieve better care?
2. To what extent does the DSRIP program achieve better health?
3. To what extent does the DSRIP program lower costs?
4. To what extent did the DSRIP program affect hospital finances?
5. To what extent did stakeholders report improvement in consumer care and population health?
6. How do key stakeholders perceive the strengths and weaknesses of the DSRIP program?

This report, the DSRIP midpoint evaluation, presents qualitative and quantitative assessments of the impact of DSRIP program activities during the planning and early implementation period as well as stakeholder perceptions relating to implementation activities and future program potential. It is comprised of four distinct chapters each covering one analytic component of the evaluation plan. These specific components covered different time periods of the program depending on data availability and implementation of the specific evaluation activity, and range from the first DSRIP program year, which was calendar year 2013, through the spring of 2015.

The table below summarizes the content, assessment period, and research questions addressed by each chapter in this report.

Chapter	Evaluation Activity/ Study Period	Assessment Period	Research Question
1. Key informant interviews	10/2014–2/2015	1/2013–2/2015	5, 6
2. Hospital survey	3/2015–4/2015	1/2013–4/2015	5, 6
3. Analysis of Medicaid claims data	1/2011–12/2013	1/2013–12/2013	1, 2, 3, 4
4. Analysis of Stage 4 metrics	1/2013–3/2015	1/2013–12/2014	2

Key Informant Interviews

Chapter 1 reports findings from the key informant interviews that examined stakeholder perceptions of strengths and weaknesses of the program, whether stakeholders reported any improvements in consumer care and population health, and also their impressions relating to program potential to achieve such gains in the future. The findings from these interviews address the hypotheses associated with research questions 5 and 6, assisted in designing the hospital web survey, and will inform the second round of stakeholder interviews that will be a part of the summative evaluation due in March 2018.

Twelve key informants were interviewed between mid-October of 2014 and mid-February of 2015. These included staff members from DSRIP-participating and non-participating hospitals, and individuals involved in DSRIP committees and the Learning Collaboratives. We included safety net providers as well as those serving more income-secure populations, outpatient partners, state officials, and industry association representatives who have participated as stakeholders in program discussions.

Eight themes were distilled from the interviews.

- Theme 1: Hospitals are enthusiastic about chronic disease management and population health improvement, though uncertain about which specific interventions are best.
- Theme 2: The program's evolving nature and delays in the finalization of approvals and details have caused anxiety and confusion.

- Theme 3: Reporting requirements are a significant burden that is unevenly distributed across hospitals and reporting partners due to differences in the level of technology and the number of low-income patients between hospitals.
- Theme 4: Reporting is an important component of the program tied to payments, yet many participants are unsure of the value of measures to be reported.
- Theme 5: It is too early to determine definite outcomes from the program, either positively or negatively.
- Theme 6: Participants spoke very positively of the Learning Collaboratives.
- Theme 7: The effect of concurrent policy developments on DSRIP program objectives is uncertain.
- Theme 8: Suggestions for future rounds of DSRIP (included more advance knowledge of program requirements prior to rollout, a smaller set of measures with a clearly defined purpose, more involvement of outpatient partners and careful monitoring of the attribution model).

In general, hospitals were enthusiastic about interventions to improve chronic disease management and population health, but had concerns about the burdens of reporting, which fell most heavily on safety-net hospitals. The evolving nature of the program created uncertainty for participants.

Hospital Survey

Chapter 2 reports findings from a web survey of DSRIP-eligible hospitals in New Jersey that was conducted in the spring of 2015. The survey was designed to explore issues relevant to answering research questions 5 and 6 related to stakeholder perceptions. Accordingly, it included questions relating to hospitals' motivations for applying to the program; their experiences while implementing preparatory activities based on program requirements; and whether the hospitals felt that the program improved access to care, quality of care, and population health.

Key findings include:

- Support for the disease management goals of the DSRIP program was cited as the most important reason for applying.
- Hospitals with higher shares of Medicaid beneficiaries were much more likely to need the DSRIP funds to finance existing operations.
- The hospitals did not feel that any of the program specifications/requirements were clear from the beginning. While most of these were clarified over time, requirements related to reporting activities, outpatient partners, and the attribution model continued to remain unclear.

- Over 2/3 of the hospitals felt that the requirements related to the collection/verification of the universal Stage 4 metrics increased over time.
- The hospitals reported that only 42.7% of the Stage 4 hospital inpatient/ED chart-based metrics were obtainable from their electronic health record (EHR). For the hospitals' data reporting partners, an even lower percentage (27.4%) of their outpatient chart-based metrics were obtainable from an EHR.
- On average, the hospitals estimated that just under half (45.9%) of the attributed patients are or will be included in their DSRIP program intervention.
- The chronic disease management programs were rated as having the most positive impact while reporting of the Stage 4 universal metrics was rated as having the lowest impact on quality of care and population health.
- Overall, the hospitals gave a slightly negative rating to the financial impact of DSRIP on their own hospital's finances.
- Hospitals found useful the Learning Collaborative activities such as networking with other hospitals, DSRIP training webinars, and Frequently Asked Questions (FAQs) on the DSRIP website.

In summary, most of the hospitals felt that the DSRIP program had the potential to improve quality of care and population health and that the Stage 3 care management programs aligned well with these population health improvement goals. However, the reporting requirements were too onerous and resource-intensive, especially the Stage 4 universal metrics. The hospitals were concerned about the increase in program requirements and delays in receiving key information. EHR interoperability with program partners was also cited as a major issue, particularly for obtaining the outpatient metrics required for Stage 3 and Stage 4 reporting. Networking with other hospitals and being able to share challenges were rated as the most useful aspects of the Learning Collaborative.

Analysis of Medicaid Claims Data

Chapter 3 examines the very early impact of the DSRIP program on patient care, patient health, costs of care, and hospital finances through quantitative analysis of quality metrics calculated primarily from Medicaid fee-for-service claims and encounter data, and an analysis of hospital-level financial information. Multiple metrics were used to test the first four evaluation hypotheses aligned with research questions 1 through 4 that were the focus of this chapter. We compared changes in outcomes from a baseline period of 2011–2012 to the first program year, 2013, between DSRIP-participating hospitals (or areas with such hospitals) and appropriate comparison groups. It is important to note that no hospital projects had formally launched in 2013 and the program was in transition at this time. Our methods thus identify effects of DSRIP hospitals' activities on chronic disease outcomes, health outcomes, ambulatory care quality,

disparities, and costs, as well as on hospital financial margins during the first program year as they prepared their DSRIP applications and planned for the potential implementation of chronic disease management projects.

Findings relevant to each hypothesis were as follows:

Hypothesis 1: DSRIP hospital projects improve related care and outcomes.

- There were statistically significant improvements reflected in decreasing rates of avoidable asthma and diabetes hospitalizations attributable to the respective disease management programs, but also a worsening in other areas reflected in increasing rates of emergency department visits for asthma among adults. Quality indicators for other chronic diseases showed no significant changes attributable to DSRIP activities.

Hypothesis 2: The DSRIP program improves the quality of ambulatory care, both recommended and preventive, with positive effects on population health.

- As a geographic area's exposure to DSRIP-participating hospitals increased, rates of avoidable inpatient hospitalizations improved (decreased in magnitude) from baseline to the first DSRIP program year, and this change was statistically significant. At the same time, there was a significant worsening (i.e., an increase) of costs associated with avoidable emergency department (ED) visits, although the corresponding negative impact on avoidable ED visits (reflected in an increase in rates) was not statistically significant. Results for readmission rates and inpatient mental health utilization were mixed and none were statistically significant.

Hypothesis 3: The DSRIP program will reduce racial/ethnic and gender disparities in avoidable hospital admissions, treat-and-release ED visits, and hospital readmissions.

- Changes in racial/ethnic disparities in 30-day readmissions or avoidable hospital use that could be attributed to DSRIP generally showed a reduction in disparities, but most of these improvements were not statistically significant. There was a statistically significant ($p<0.05$) worsening of disparities in readmissions for COPD for minority populations (as a group) compared to whites attributable to DSRIP activities. There were no significant changes in gender disparities for any of the quality metrics examined.

Hypothesis 4: Hospitals receiving incentive payments do not experience adverse financial impacts.

- There was no evidence of an adverse impact of DSRIP activities on hospitals' total or operating margins through the first program year.

In general, reductions in rates of avoidable inpatient hospital use among Medicaid beneficiaries was the most consistent outcome attributable to DSRIP-participating hospitals' activities in 2013. No other statistically significant positive or negative trends were notable at this early point in

implementation. As we incorporate data pertaining to later demonstration years when hospitals fully implement their chronic disease management projects, these same statistical techniques applied on additional years of data will allow measurement of full DSRIP program effects.

Analysis of Stage 4 Metrics

Chapter 4 presents results from an analysis of several Stage 4 reported metrics for all DSRIP-participating hospitals in New Jersey. Derived from Medicaid administrative claims data and provided to CSHP by the State, these measures reflect changes in preventive and recommended care over 2013–2014 for hospitals' attributed patients. These metrics provide additional data for evaluating the hypothesis aligned with research question 2 regarding DSRIP's success in achieving better health. Specific metrics that we analyze include rates of: screening, child and adolescent access to primary care practitioners, potentially preventable hospitalizations relating to chronic obstructive pulmonary disease (COPD) and heart failure, and childhood vaccination rates and well-child visits for infants. Paired t-tests assessed statistical significance of change over time for each of the metrics across all 50 New Jersey hospitals participating in the DSRIP program.

Key findings include:

- Significant improvements over time in access to primary care practitioners were reported for children ages 7 years to 11 years and adolescents ages 12 years to 19 years.
- Hospital admission rates for COPD and heart failure significantly improved (decreased in magnitude) from 2013 to 2014. The percentage of HIV patients with 2+ CD4 T-cell count taken during the year significantly improved from 2013 to 2014. Preventive screening rates for both cervical cancer and chlamydia improved slightly from 2013 to 2014, but the changes were not statistically significant.
- There was a slight improvement in the metric measuring percentage of newborns with low birth weight from 2013 to 2014, but the change was not statistically significant.
- Rates for the Hepatitis B vaccination improved significantly from 2013 to 2014. The Rota virus vaccination rate improved slightly from 2013 to 2014, but it was not a statistically significant increase. Rates of all remaining vaccinations significantly decreased from 2013 to 2014.
- Although well-child visits in the first 15 months of life increased slightly, it was not statistically significant.

Discussion

This report examines various sources of information to identify the effects of the NJ DSRIP program using a combination of qualitative and quantitative research techniques. The assessment periods differ across the different components, but collectively span the time from the first DSRIP program year (calendar year 2013) until the spring of 2015. All of these findings

thus relate to the period prior to the full implementation of the DSRIP hospital projects that occurs in Demonstration Year 4, and will not capture the effects (or lack thereof) of these specific disease management activities on access, quality and efficiency of care, and more generally overall population health.

The primary value of the findings in this report lies in documenting stakeholder experiences during the application and early implementation phases and in examining their perceptions relating to the potential of the program to achieve its stated objectives. In addition, detailed analyses of DSRIP quality metrics based on Medicaid fee-for-service claims and managed care encounter data provide useful baseline estimates for the summative evaluation and also estimates of any first-year program effects that may arise from preparatory/anticipatory activities by the hospitals.

Some common themes emerged across the different components of this evaluation exercise. Both the hospital survey and stakeholder interviews identified common issues and challenges that included lack of clarity on program specifications (many of these issues were subsequently resolved); enthusiasm relating to the chronic disease management programs; the significant burden of the reporting requirements that increased over time; and program requirements that did not take into account differing capabilities across hospitals such as EHR capability or lack of interoperability with reporting partners that caused disproportionate burden on some.

The findings from our quantitative analyses offer some insights into which programs offered the greatest opportunity, an issue articulated by some interviewees. We found some evidence of improvements in diabetes care reflected in decreasing rates of ambulatory care sensitive diabetes-related hospitalizations, but based on similar metrics we found mixed results in the case of asthma care in areas where hospitals were planning to implement programs in this chronic disease area. These were the only two conditions for which there was some evidence for an early and significant impact attributable to DSRIP in areas where hospitals planned on these activities. There were improvements in several metrics for preventive and recommended care over 2013–2014 that reflected stakeholder expectations that the program will improve care.

In summary, the range of methods and related findings from this report vary in the nature of their contribution to the assessment of the DSRIP program. Many are valuable in their own right such as those that detail stakeholder and hospital experiences in the early phases of the DSRIP program which can guide continued implementation. Others such as the results from the quantitative analysis, in addition to assessing very early impacts from the first program year, provide valuable information relating to baseline year estimates and measurement techniques that will guide analyses conducted in the summative evaluation.

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Introduction

The Delivery System Reform Incentive Payment (DSRIP) Program was approved as part of the New Jersey Medicaid Comprehensive Waiver Demonstration in October 2012. The hospital-based DSRIP program uses resources transitioned from the previously existing Hospital Relief Subsidy Fund to establish a pay-for-performance and pay-for-reporting system to achieve specific health improvement goals for the state's low income population.

The objective of the DSRIP program is aligned to a large extent with the Healthy New Jersey 2020 (HNJ 2020) plan that sets the pathway for comprehensive disease prevention and health promotion for New Jersey residents. Under DSRIP, implementation of specific disease management projects relate to three of the five leading health indicators in HNJ 2020 (NJDOH 2013, 6). Specifically, the eight focus areas including a) asthma b) behavioral health c) cardiac care d) chemical addiction/substance abuse e) diabetes f) HIV/AIDS g) obesity and h) pneumonia may potentially impact three areas of HNJ 2020 health promotion or disease prevention namely, access to primary care; heart disease related outcomes; and obesity prevention. The focus of performance improvement and measurement in the DSRIP program is however, restricted to the low income population group that includes Medicaid, CHIP (Children's Health insurance Program) and the charity care population.

The incentive payment structure of the DSRIP program is based on both hospital performance as well as hospital reporting. Over the course of five demonstration years (DYs), participating hospitals receive payments for developing, implementing, and monitoring specific disease management projects; for reporting/verifying two sets of metrics: specific quality metrics related to their adopted projects (Stage 3 metrics), and also a universal set of metrics (known as Stage 4 metrics); for improving performance assessed on the basis of the project-specific Stage 3 metrics;

and for improving or maintaining performance on a core set of metrics relating to inpatient care through funding available from a Universal Performance Pool.

The Rutgers Center for State Health Policy (CSHP) was engaged to evaluate the effectiveness of New Jersey's DSRIP program in achieving its goals. We formulated specific testable hypotheses to examine the following six research questions from the DSRIP Planning Protocol (detailed in the Waiver Special Terms and Conditions document) that determine the scope of the evaluation:

1. To what extent does the DSRIP program achieve better care?
2. To what extent does the DSRIP program achieve better health?
3. To what extent does the DSRIP program lower costs?
4. To what extent did the DSRIP program affect hospital finances?
5. To what extent did stakeholders report improvement in consumer care and population health?
6. How do key stakeholders perceive the strengths and weaknesses of the DSRIP program?

The hypotheses were tested utilizing a mix of quantitative and qualitative methods. The findings would be presented in two reports: a midpoint evaluation focusing on the DSRIP planning and early implementation period (through the first half of DY3), and a summative evaluation covering the full implementation period (through the end of DY5).

This report, the DSRIP midpoint evaluation, presents qualitative and quantitative assessments of the impact of DSRIP program activities during the planning and early implementation periods as well as stakeholder perceptions relating to implementation activities and future program potential. It is comprised of four distinct chapters each covering one analytic component of our evaluation plan. These specific components covered different time periods of the program depending on data availability and implementation of the specific evaluation activity, and range from the first DSRIP program year (administrative data analysis for calendar year 2013) to approximately one and half years after the start of the implementation period (hospital web survey fielded during March–April 2015).

Fielded during the third demonstration year, the key informant interview and the hospital web survey components assess stakeholder experiences with DSRIP program implementation and perceptions relating to future potential by examining individual stakeholder and hospital-level responses to structured questions relating to research questions 5 and 6. To examine specific hypotheses related to research questions 1-4, we conduct a quantitative analysis of independently-calculated metrics related to patient access to care, quality of care, patient health, and costs of providing care using Medicaid claims and managed care encounter data,. Due to lags in data availability, we are restricted to an analysis period of 2011–2013 comprising a baseline

period of 2011–2012 and the first DSRIP program year of 2013. The results from this specific analysis thus capture the early impact of planning/preparatory activities for the DSRIP program on changes in outcomes that are reflected in administrative data. We also examine for any program effect on hospital finances based on Medicare Cost Reports over the period 2011–2013. Finally, we use hospital reported data through the end of the first half of DY3 to examine whether specific trends existed in metrics reported by all hospitals that indicated a positive or negative impact of the program.

The table below summarizes the content, assessment period, and research questions addressed by each chapter in this report.

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1. Key informant interviews	10/2014–2/2015	1/2013–2/2015	5, 6
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4. Analysis of Stage 4 metrics	1/2013–3/2015	1/2013–12/2014	2

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Chapter 1: Key Informant Interviews: Examining Stakeholder Perceptions Relating to the DSRIP Program

Introduction

Key informant interviews are part of the qualitative evaluation of the DSRIP program. They are designed to 1) directly address research questions specified in the Waiver Special Terms and Conditions document related to stakeholder perceptions of improvements in consumer care and population health as well as stakeholder perceptions of strengths and weaknesses of the program, 2) assist in designing other components of the evaluation, such as the web survey and 3) inform the final, summative evaluation of the program by querying stakeholders for program issues some of which may not have been anticipated at the time of the initial research design.

Methods

Subject Recruitment

The research protocol was approved by the Institutional Review Board at Rutgers. Telephone interviews with twelve key informants were conducted from mid-October of 2014 through mid-February of 2015. Interviewees included hospital staff members participating in the various DSRIP Program committees and collaboratives, hospital staff from hospitals that decided not to participate or withdrew from the program, outpatient partners, officials from the New Jersey Department of Health, and industry association representatives who have participated as stakeholders in program discussions and facilitated communications among hospitals and the New Jersey Department of Health, Myers and Stauffer, and CMS. Our candidate list included Quality and Measures Subcommittee members since they could speak to the program's development as well as their individual hospital's experience and Learning Collaborative leaders, who organized group discussions providing information and support to hospitals selecting similar chronic disease projects. We included safety net providers as well as those serving more income-secure populations.

Question Development

The interview questions (available in the Appendix) were constructed so as to address the research questions detailed in DSRIP Planning Protocol based on the Waiver Special Terms and Conditions. Question formulation was informed by knowledge gained by CSHP researchers through participation in various meetings, conference calls, and printed materials distributed

regarding the DSRIP program. An initial draft of questions was piloted in the summer of 2014 in three informal telephone interviews conducted with stakeholders knowledgeable about program operations. These pilots facilitated refinements to the initial draft resulting in the final version of questions.

Questioning Strategy

Interviewers used a semi-structured list of basic questions with detailed potential follow-up questions noted in advance and also created new follow-up questions at the time of the interview if appropriate.

Documentation and Analysis

One CSHP researcher participated in all interviews and created a preliminary summary of each interview that was reviewed and edited by the other two research team members to ensure agreement across the team on the content of each interview. The interviews were audio-recorded and the recordings were consulted in any case where the researchers' notes were unclear. Each research team member independently analyzed the interviews to identify what they believed to be the themes that emerged from the interviews. The team then met as a group to discuss their individual analyses and any differences were discussed. There were no basic disagreements about themes, though there were a few minor differences in emphasis.

Findings

In this section we discuss the themes that emerged in our discussions with stakeholders regarding various elements of the DSRIP program. In brief, participants were generally enthusiastic about chronic disease management interventions and the Learning Collaboratives, where they were able to discuss their intervention programs. They were generally unsatisfied with reporting requirements, because most stakeholders found them to be a significant burden and also questioned the purpose or value of the metrics. Participants generally thought it was too early to determine outcomes from the DSRIP program and were uncertain about the effects of concurrent policy developments. Finally, participants offered suggestions for future rounds of DSRIP.

Theme 1: Hospitals are enthusiastic about chronic disease management and population health improvement, though uncertain about which specific interventions are best

Most hospitals are moving forward with some kind of chronic disease management and/or population health initiatives with or without the DSRIP program (i.e., even those who withdrew or did not participate still engaged in such programs). Many were not able to single out one or more of the project types (asthma, diabetes, heart disease, etc.) as more potentially

transformative than others. When interviewees noted distinctions, their thinking was based on the hospital's target population and related prevalence of specific conditions, or on existing health needs and return on investment from healthcare programs. For instance, one interviewee felt that some conditions had already been targeted for some time (asthma, diabetes, heart disease) and that more gains could be achieved from those that had not been targeted in the past (e.g., obesity, behavioral health). Another interviewee agreed on the need for behavioral health-related projects, but questioned the capacity of the current health system infrastructure to adequately treat such needs because of a lack of available support services, particularly regarding substance abuse treatment. One framed the issue of comparability between disease-specific DSRIP projects in terms of the time that would be necessary to show clinical outcomes and cost reduction. This interviewee felt that asthma interventions offered the best hope for a quick improvement in clinical outcomes through reduced asthma attacks and in cost reduction through reduced visits to the emergency department. From this perspective, cardiac interventions ranked second and diabetes-improvement projects lagged because of the necessity for ongoing monitoring and treatment and the extended time horizon needed to show improvements in clinical outcomes such as reduced amputations.

Theme 2: The program's evolving nature and delays in the finalization of approvals and details have caused anxiety and confusion

Because the program's design was not complete at the beginning of the application process, all involved have dealt with uncertainty. For safety-net hospitals with already tight budgets standing to lose significant financial resources, the anxiety has been significant. Some of the specific factors cited causing anxiety or confusion included:

- The fast turnaround time required to submit complicated DSRIP applications left hospitals scrambling to complete the applications.
- Difficulty getting answers about program requirements led to the involvement of a hospital advocacy group to resolve confusion.
- Significant delays in notification of project awards caused uncertainty regarding whether hospitals should move ahead with planned projects. Hospitals worried that if they did not move forward they might face future penalties by not meeting targets if timelines were not adjusted. On the other hand, if they moved ahead with an unapproved project, they might have to change it significantly in a way that could cause a loss of scarce resources.
- There was a significant increase (perception was at least a tenfold increase) in the number of measures to be reported. In cases where measures have to be manually abstracted from medical charts, this involves significant costs for hospitals. Many interviewees felt that the character of the program changed as it was implemented from a chronic disease management intervention focus to a heavy reporting focus. As will be discussed in more detail later, many stakeholders are dubious about the value of the measures to be

reported, and reporting requirements create a burden that is uneven across hospitals due to their differing capabilities.

- The delay in design and notification to hospitals of their attributed populations caused uncertainty and anxiety about whether their intervention populations were different from the populations based on whom the performance payments would be calculated. Some interviewees were dubious about the use of attribution modeling for a low income population that may move around and get care from different places, making it difficult to assign them with certainty.
- Uncertainty about requirements for project partners led some to go without any, despite seeing the value of partnerships. There was concern that the requirement that a reporting project partner only participate with one hospital could disrupt existing relationships.

Theme 3: Reporting requirements are a significant burden that is unevenly distributed across hospitals and reporting partners

Some hospitals are much further along in the implementation of electronic records than others, and some have interoperable systems with outpatient partners. For these hospitals and their partners, chart-based measures pose a smaller burden than for others lacking such systems. Other hospitals and their reporting partners for whom the measures in question are not recorded electronically have to hire abstractors to extract the metrics from paper-based charts. This is a significant cost for these hospitals and partners. In addition, the program did not set aside resources for reporting partners, so these requirements discouraged the formation of reporting partner relationships. Though no definitive data was available, it seems likely that safety net hospitals are more adversely affected by the reporting requirements since they have the largest low-income populations to report on and also tend to have tight budgets.

Theme 4: Reporting is an important component of the program tied to payments, yet many participants are unsure of the value of measures to be reported

Most interviewees were unsure of the reasons for reporting measures beyond those related to their specific interventions, and also the selection process for such measures. Many claimed they had asked and had not received an answer. In some cases the measures are collected for other purposes such as accreditation or hospital reports to CMS, but in other cases the measures required by the DSRIP program have been dropped by other reporting stewards, leading interviewees to question why they are required to report them for this program.

Theme 5: It is too early to determine definite outcomes from the program, either positively or negatively

Most chronic disease projects had only been operating for a few months at the time of our interviews, so there was not yet definitive data as to their outcomes. Many reported positive

preliminary results for the patients in their programs. There was also concern that the cost burden of reporting and the uncertainties of dealing with patient attribution lists would sap hospital resources that could otherwise be used to improve care.

Theme 6: Participants spoke very positively of the Learning Collaboratives

The Learning Collaboratives give participants a chance to network with others working on similar projects, sharing information and knowledge, and also providing peer support. Interviewees felt that the knowledge exchanged through the Learning Collaboratives would help participants improve their chronic disease management programs and improve consumer health. State-official interviewees noted that Learning Collaboratives have been well-attended.

Theme 7: The effect of concurrent policy developments on DSRIP program objectives is uncertain

In many ways, concurrent policy developments such as the expansion of Medicaid, Medicare penalties for readmission, and the formation of accountable care organizations, reinforce similar principles as DSRIP.

Medicaid Expansion: Interviewees were uncertain as to the effect of the Medicaid expansion on hospital patient care and available resources. While formerly uninsured people will gain coverage with the expansion, it is unclear whether this will make up for decrease in availability of funds formerly dedicated to the uninsured. Interviewees believe that Medicaid not paying for the full cost of care, and some low-income individuals not being eligible for the expansion due to immigration status means that there will be continuing shortfalls in financing care; interviewees are also unsure how these shortfalls will be met.

Readmission Penalties: Medicare penalties for readmissions, while attempting to encourage quality of care, will decrease available resources for hospitals. One interviewee noted that these penalties do not adjust for the socio-economic status of the patient population served by hospitals, which affects the potential for readmission independent of the care received at the hospital.

Other Policies: Several existing quality and reimbursement related programs require measures reporting, and interviewees hoped that these requirements could be aligned across programs to reduce the reporting burden faced by hospitals.

Theme 8: Suggestions for future rounds of DSRIP

- It would be preferable to have the program requirements finalized before the rollout for the next round.

- Most interviewees would like a smaller set of measures (that need to be reported) with a clearly defined rationale and purpose for each measure collected (i.e., how will the data from these measures be used to improve care).
- A few interviewees mentioned the need to involve outpatient partners during the development of the program in the future, and to set aside resources for outpatient partners in addition to hospitals.
- The attribution model should be carefully monitored given the complexities of the patient population. Lower-income populations tend to be more geographically mobile and may have changes in insurance coverage as income levels fluctuate, leading to utilization and payment patterns that make them harder to track than higher-income populations.

Appendix: Interview Question Guides

DSRIP Interview Question Guide, Participating Hospitals

As you know, the NJ DSRIP program introduces a hospital incentive payment system based on pay-for-reporting and pay-for-performance. The program's objective is to improve access and quality of care in communities served by hospitals participating in the DSRIP program, resulting in better health and lower costs. Our questions relate to the experience of hospitals participating in these programs and perceptions of the program's potential to improve access, healthcare and health.

1. **What are the hospital experiences to date in understanding the DSRIP program requirements?**
2. **What are the hospital experiences to date in implementing the initial requirements of the DSRIP program relating to application, approval, planning and other early implementation processes?**
3. **Do the hospitals feel that the DSRIP program will facilitate their ability to improve access and quality of care? If so, do they feel these improvements will result in positive effects on population health?**
4. **What specific components of the program, if any, will make the greatest contribution to promoting one or more of the triple aims: better care, better health, and lower costs? Which of the triple aim(s) will the program promote? Can you give some specific examples of program components that will promote the aims?**
5. **Similarly, what program requirements/characteristics, if any, pose challenges to participating hospitals in terms of implementation and consequently achieving the desired outcomes?**
6. **Among the eight chronic disease project areas, are there some that offer the greatest potential for improvement through this program? Which ones?**
7. **What improvements in care and health, if any, have already been noted in your communities as a result of the DSRIP activities?**
8. **What problems in care and health, if any, have already been noted in your communities as a result of the DSRIP activities?**
9. **Will other concurrent policy changes (e.g., Medicaid expansion, readmission penalties, ACOs) impact DSRIP activities or outcomes? If so, in what ways?**

10. **What has been the experience of the hospitals related to the learning collaborative and rapid cycle improvement tools? Have these program features aided in the process of project implementation and advanced DSRIP health improvement goals? If so, in what ways?**
11. **Is there anything else that we should know about hospital experiences and potential of the DSRIP but have not asked about?**

DSRIP Interview Question Guide, Nonparticipating Hospitals

As you know, the NJ DSRIP program introduces a hospital incentive payment system based on pay-for-reporting and pay-for-performance. The program's objective is to improve access and quality of care in communities served by hospitals participating in the DSRIP program, resulting in better health and lower costs. Our questions relate the experience of hospitals and other stakeholders participating in these programs and perceptions on the program's potential to improve access, improve health and lower costs.

1. **Our understanding is that your hospital, along with several others, chose not to participate in DSRIP. What factors would you say led to your decision not to participate?**
2. **How involved did you get in the process before deciding not to submit an application?**
3. **What do you think about the potential of the DSRIP program to improve access and quality of care in the state as a whole? Do you think it could improve population health? How relevant is this to your own patient population?**
4. **What specific components of the program, if any, will make the greatest contribution to promoting one or more of the triple aims: better care, better health, and lower costs? Which of the triple aim(s) will the program promote? Can you give some specific examples of program components that will promote the aims?**
5. **Similarly, what program requirements/characteristics, if any, pose challenges to participating hospitals in terms of implementation and consequently achieving the desired outcomes?**
6. **Among the eight project areas, are there some that offer the greatest potential for improvement through this program? Which ones?**
7. **What improvements in care and health, if any, have already been noted as a result of the DSRIP activities?**
8. **What problems in care and health, if any, have already been noted as a result of the DSRIP activities?**
9. **Will other concurrent policy changes (e.g., Medicaid expansion, readmission penalties, ACOs) impact DSRIP activities or outcomes? If so, in what ways?**
10. **In terms of future program design, what kinds of changes would make you more likely to participate?**
11. **Is there anything else that we should know about hospital experiences and potential of the DSRIP but have not asked about?**

DSRIP Interview Question Guide, Nonparticipating Hospitals (Withdrawn)

As you know, the NJ DSRIP program introduces a hospital incentive payment system based on pay-for-reporting and pay-for-performance. The program's objective is to improve access and quality of care in communities served by hospitals participating in the DSRIP program, resulting in better health and lower costs. Our questions relate the experience of hospitals and other stakeholders participating in these programs and perceptions on the program's potential to improve access, improve health and lower costs.

1. **Our understanding is that your hospital initially participated but then withdrew from the program. What factors would you say led to your decision to withdraw?**
2. **How involved did you get in the process before deciding to withdraw? How difficult was it to arrive at that decision?**
3. **What do you think about the potential of the DSRIP program to improve access and quality of care in the state as a whole? Do you think it could improve population health? How relevant is this to your own patient population?**
4. **What specific components of the program, if any, will make the greatest contribution to promoting one or more of the triple aims: better care, better health, and lower costs? Which of the triple aim(s) will the program promote? Can you give some specific examples of program components that will promote the aims?**
5. **Similarly, what program requirements/characteristics, if any, pose challenges to participating hospitals in terms of implementation and consequently achieving the desired outcomes?**
6. **Among the eight project areas, are there some that offer the greatest potential for improvement through this program? Which ones?**
7. **What improvements in care and health, if any, have already been noted as a result of the DSRIP activities?**
8. **What problems in care and health, if any, have already been noted as a result of the DSRIP activities?**
9. **Will other concurrent policy changes (e.g., Medicaid expansion, readmission penalties, ACOs) impact DSRIP activities or outcomes? If so, in what ways?**
10. **In terms of future program design, what kinds of changes would make you more likely to participate?**
11. **Is there anything else that we should know about hospital experiences and potential of the DSRIP but have not asked about?**

DSRIP Interview Question Guide, FQHCs

As you know, the NJ DSRIP program introduces a hospital incentive payment system based on pay-for-reporting and pay-for-performance. The program's objective is to improve access and quality of care in communities served by hospitals participating in the DSRIP program, resulting in better health and lower costs. Our questions relate the experience of hospitals and other stakeholders participating in these programs and perceptions on the program's potential to improve access, improve health and lower costs.

1. **What are the FQHC experiences to date with the DSRIP program?**
2. **Do the FQHCs feel that the DSRIP program will improve access and quality of care with positive effects on population health? How would the hospitals and the outpatient partners contribute to achieving these aims?**
3. **What specific components of the program, if any, will make the greatest contribution to promoting one or more of the triple aims: better care, better health, and lower costs? Which of the triple aim(s) will the program promote? Can you give some specific examples of program components that will promote the aims?**
4. **Similarly, what program requirements/characteristics, if any, pose challenges to participating hospitals/FQHCs/partnerships in terms of implementation and consequently achieving the desired outcomes?**
5. **Among the project areas (asthma/pneumonia, behavioral health/chemical addiction/substance abuse, cardiac care, diabetes and obesity) are there some that offer the greatest potential for improvement through this program? Which ones?**
6. **What improvements in care and health, if any, have already been noted in your communities as a result of the DSRIP activities?**
7. **What problems in care and health, if any, have already been noted in your communities as a result of the DSRIP activities?**
8. **Will other concurrent policy changes (e.g., Medicaid expansion, readmission penalties, ACOs) impact DSRIP activities or outcomes? If so, in what ways?**
9. **As a part of the DSRIP process hospitals are involved in learning collaboratives and rapid cycle improvement tools. Are FQHCs involved in these hospital-related activities in any way?**
10. **Is there anything else that we should know about FQHC experiences related to the DSRIP program, but have not asked about?**

Chapter 2: Hospital Survey on Experiences and Perceptions Relating to DSRIP Application Process, Implementation, and Program Potential

Introduction

In this chapter, we examine the results from the web survey of DSRIP-eligible hospitals in New Jersey. This survey evaluates the DSRIP program implementation and potential impact based on hospital perceptions and experiences. It examines whether the hospitals faced any barriers in implementing the program's requirements and whether the hospitals felt that the program was beneficial and contributed to the Triple Aim of better care, better health, and lower cost through improvement. A copy of the web survey questionnaire can be found in Appendix A.

Methods

The hospital midpoint web survey was designed by CSHP staff in January and February, 2015, and included feedback from the key informant telephone interviews conducted earlier and information from the Learning Collaboratives. The final version of the questionnaire was programmed into Survey Monkey and pretested by CSHP staff. The DSRIP contact persons at all DSRIP-eligible hospitals in New Jersey were provided to CSHP by the New Jersey Department of Health. These hospitals were emailed an advance endorsement letter on State letterhead from an official at the New Jersey Department of Health on March 3, 2015. This advance letter described the survey and its purpose, encouraged the hospitals to provide feedback on the program via the survey, and indicated that Rutgers Center for State Health Policy researchers would be conducting the survey. DSRIP participating and non-participating hospitals (including hospitals that withdrew from the program) received slightly tailored versions of the advance letter. The email accompanying the advance letter requested that the hospitals contact CSHP staff if the survey should be sent to a different hospital representative, and CSHP followed up on these contact person changes.

The fieldwork for the web survey of DSRIP-eligible hospitals (N=63) was conducted from March 12, 2015, to April 24, 2015. The first email sent on March 12 described the survey and contained informed consent information and a link to the web survey. Reminder emails with the consent

information and survey link were sent on March 23, April 1, and April 15. The survey fieldwork closed on April 24. The advance letter and email reminders can be found in Appendix B.

There were 41 responses to the web survey for a response rate of 65%. Of these, 35 were from hospitals participating in the DSRIP program, 4 were from non-participating hospitals, and 2 were from hospitals who initially signed up for the DSRIP program but then withdrew. Eight additional hospitals started the survey but did not complete it and we did not receive any response from 14 hospitals. Most of the hospital officials who responded to the survey were either vice presidents, department directors, or program managers.

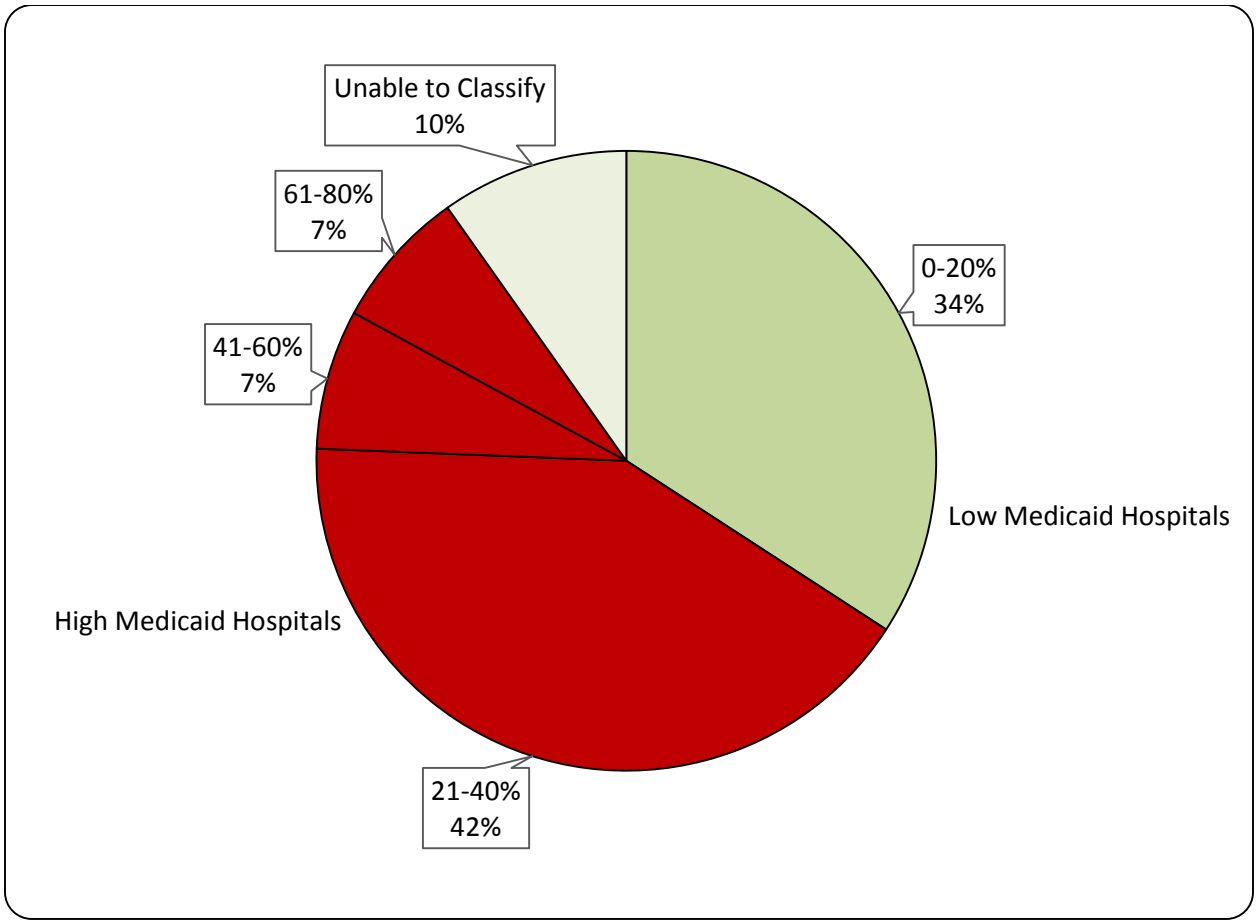
Survey topics included hospital characteristics such as percent of patients on Medicaid/CHIP or charity care, factors in the decision to apply/not apply for the DSRIP program, perceptions regarding DSRIP program requirements, number and selection of DSRIP project partners, metrics obtainable from EHRs, percent of attributed patients in the DSRIP intervention, experience with Stage 1 and Stage 2 activities, experience with preparing Stage 3 and Stage 4 metrics, hospital perceptions relating to the effect of the DSRIP program on health outcomes, changes in community health and hospital finances due to the DSRIP program, perceptions of Learning Collaborative activities, use of rapid-cycle evaluation tools, and difficulty with accomplishing DSRIP activities. The hospital respondents were also given the opportunity to provide open-ended comments on DSRIP project best practices, recommended future changes to the DSRIP program, and any other comments.

To understand whether the DSRIP program had a differential impact on safety net versus non-safety net hospitals, the responding hospitals were divided into two "Medicaid groups" based on the percent of their patients who were Medicaid/CHIP or charity care (see Figure 2.1). The "Low Medicaid" hospitals reported 0-20% of their patients were Medicaid/CHIP or charity care (n=14), and the "High Medicaid" hospitals reported more than 20% of their patients were Medicaid/CHIP or charity care (n=22). This group division correlated well with a report from the Hospital Alliance of New Jersey as to which NJ hospitals are considered safety net hospitals (Ianni 2006).

Frequencies of all measures are presented at the end of the chapter (see Table 2.1). In the Findings section, p-values for significant differences ($p<.05$) between the Low and High Medicaid hospital groups are presented. Due to low sample size, marginally significant differences ($p<.10$) are also mentioned as tending to differ, but p-values are not presented. Charts for selected measures are presented in the text.

Most survey questions had item non-response below 5%. For these variables, missing values are excluded from the analysis.

Figure 2.1: Percent of Medicaid/CHIP/Charity Care Patients in DSRIP Hospitals, n=41



Source: 2015 New Jersey DSRIP Midpoint Hospital Survey, Rutgers Center for State Health Policy.

Findings

Reasons Hospitals Did Not Apply/Withdrew for the DSRIP Program

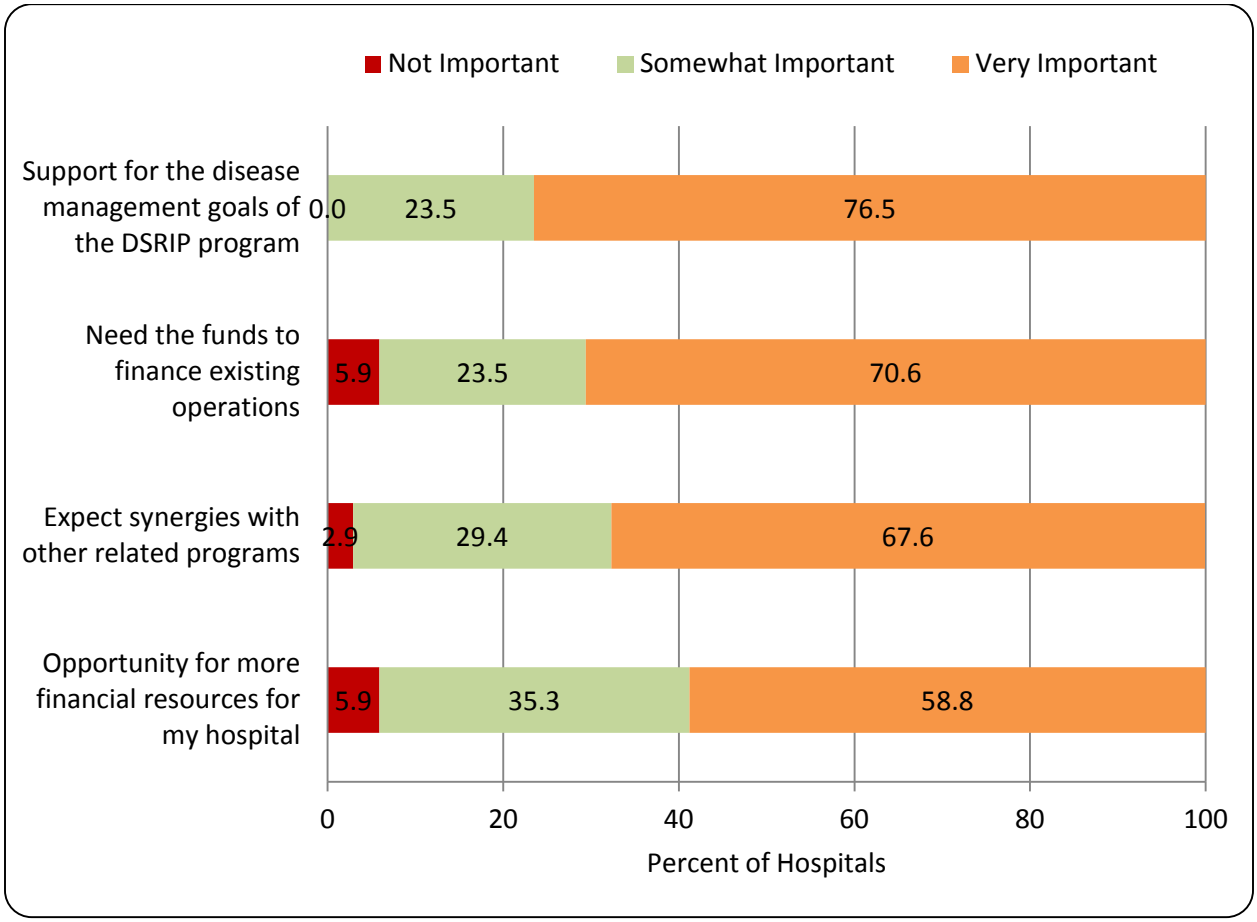
For the responding hospitals that did not apply for or withdrew from the DSRIP program reported, among the reasons cited for not applying or withdrawing included that they did not have enough Medicaid/CHIP/charity care patients, the infrastructure requirements for the program were too expensive, the incentive payment was not enough to justify costs, and the implementation process was too burdensome (the question allowed them to select all applicable responses).

Reasons Hospitals Applied for the DSRIP Program

Most of the responding hospitals applied for the DSRIP program (89.7% applied) (see Table 2.1). High Medicaid hospitals tended to be more likely to apply.

For those responding hospitals that did apply for the DSRIP program, support for the disease management goals of the DSRIP program was cited as the most important reason for applying (76.5% rated this reason as very important in the decision to apply) (see Figure 2.2). This was followed by needing the DSRIP funds to finance existing operations (70.6% rated this very important) and expecting synergies with other related programs such as hospital readmissions, ACOs, and value-based purchasing programs (67.6% rated this very important). Seeing the DSRIP program as an opportunity for more financial resources was cited as very important less often (58.8%).

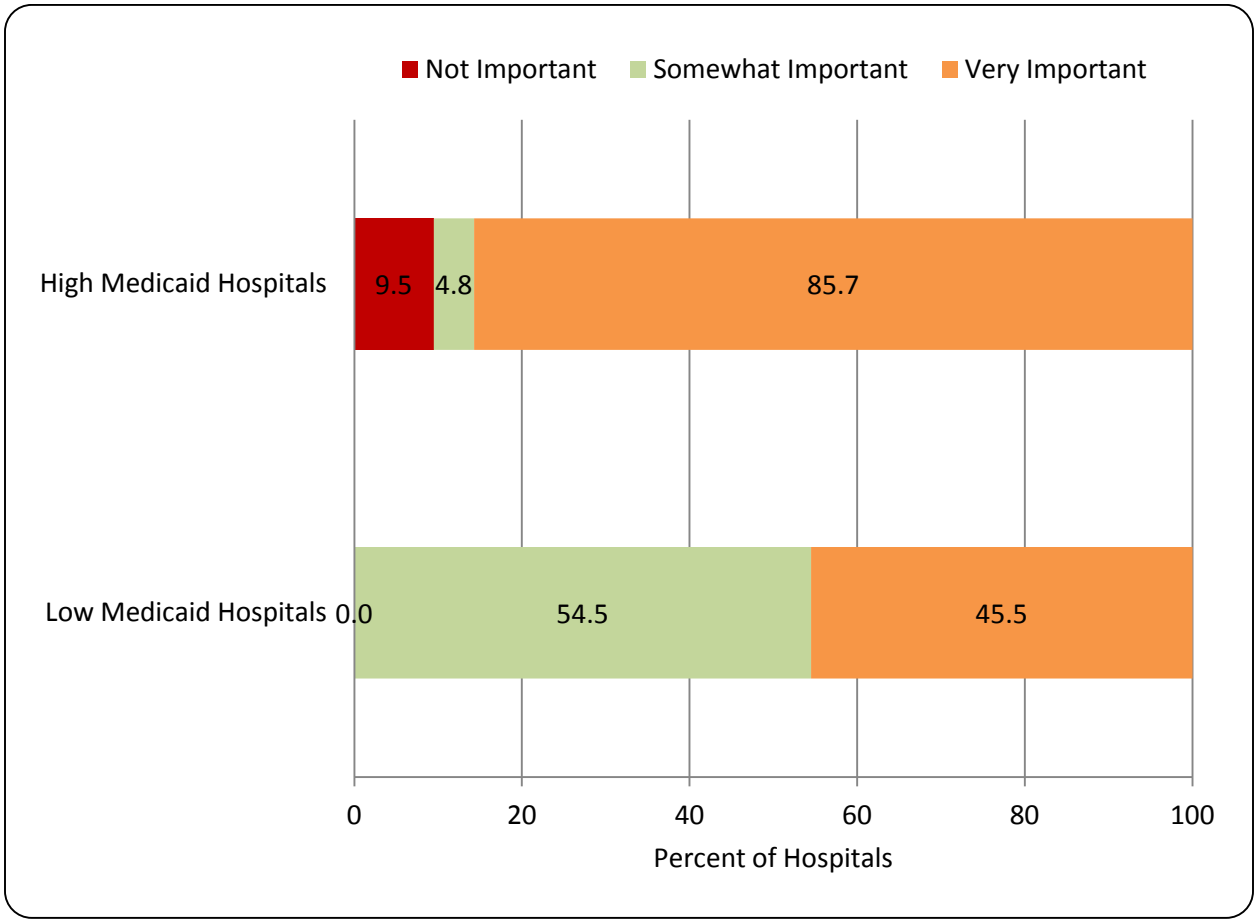
Figure 2.2: Importance of Factors in Decision to Apply for DSRIP



Source: 2015 New Jersey DSRIP Midpoint Hospital Survey, Rutgers Center for State Health Policy.

High Medicaid hospitals were much more likely than Low Medicaid hospitals to rate as very important needing the DSRIP funds to finance existing operations (High Medicaid: 85.7%, Low Medicaid: 45.5%, p<.004) (see Figure 2.3).

Figure 2.3: Importance of Factors in Decision to Apply for DSRIP: Need the Funds to Finance Existing Operations by Medicaid Hospital Group, p<.004



Source: 2015 New Jersey DSRIP Midpoint Hospital Survey, Rutgers Center for State Health Policy.

Perceptions about the DSRIP Program Specifications/Requirements

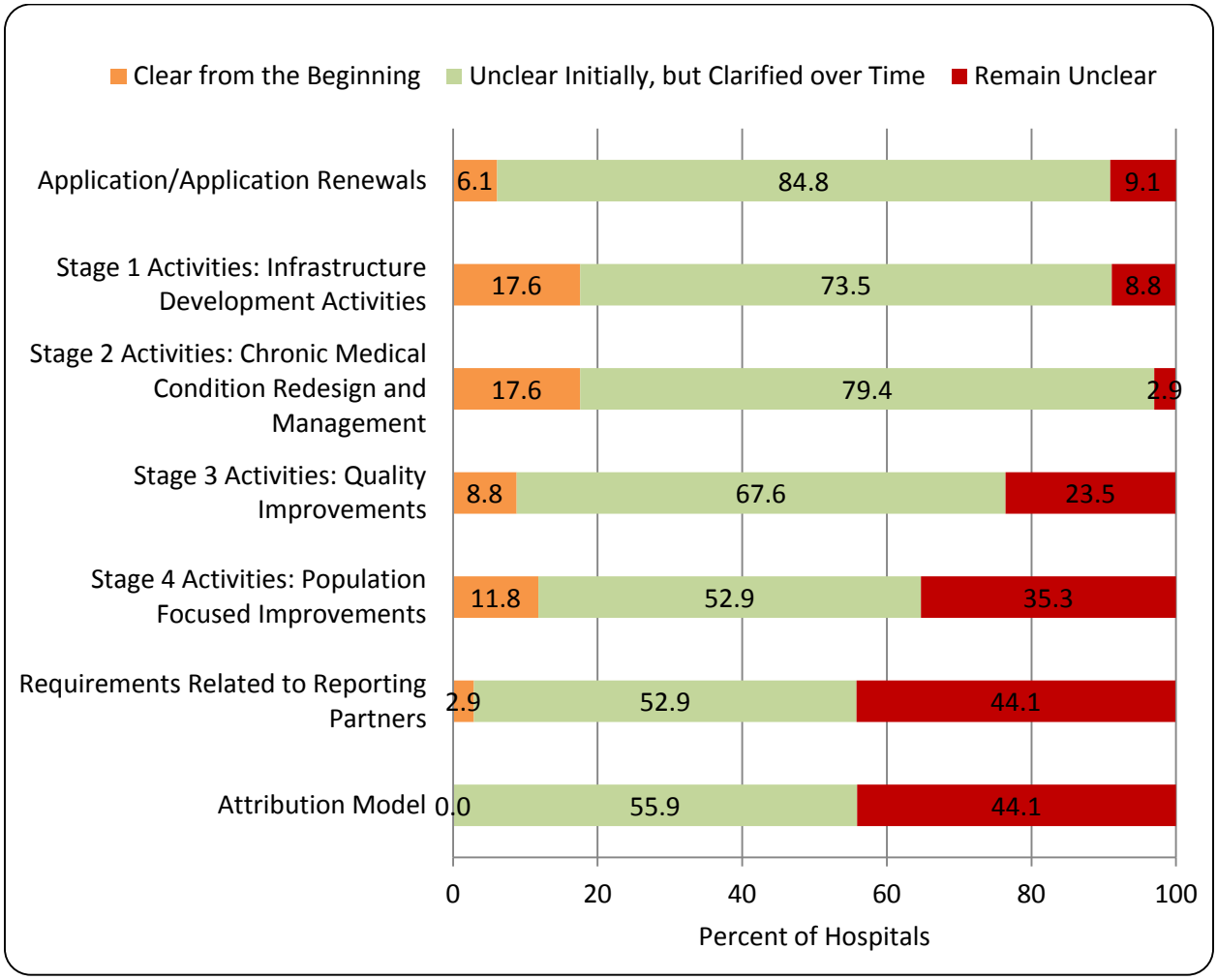
The hospitals were asked their perceptions regarding the following DSRIP program specifications/requirements, and whether they were clear from the beginning, they were unclear initially but clarified over time, or they remained unclear:

- Application and application renewals
- Stage 1 Activities: Infrastructure Development
- Stage 2 Activities: Chronic Medical Condition Redesign and Management
- Stage 3 Activities: Quality Improvements
- Stage 4 Activities: Population Focused Improvements

- Requirements related to reporting Partners
- Attribution model

In general, the hospitals did not feel that any of these program specifications/requirements were clear from the beginning (see Figure 2.4). However, most hospitals felt that the application and renewals, Stage 1 Activities, Stage 2 Activities, and Stage 3 Activities clarified over time (84.8%, 73.5%, 79.4%, and 67.6% of the hospitals, respectively, reported improved clarification over time). The hospitals rated the Stage 4 Activities, Reporting Partner Requirements, and Attribution Model as less clear, with 35.3%, 44.1%, and 44.1% of the hospitals, respectively, reporting that these requirements remain unclear. These perceptions did not differ between the High and Low Medicaid hospitals.

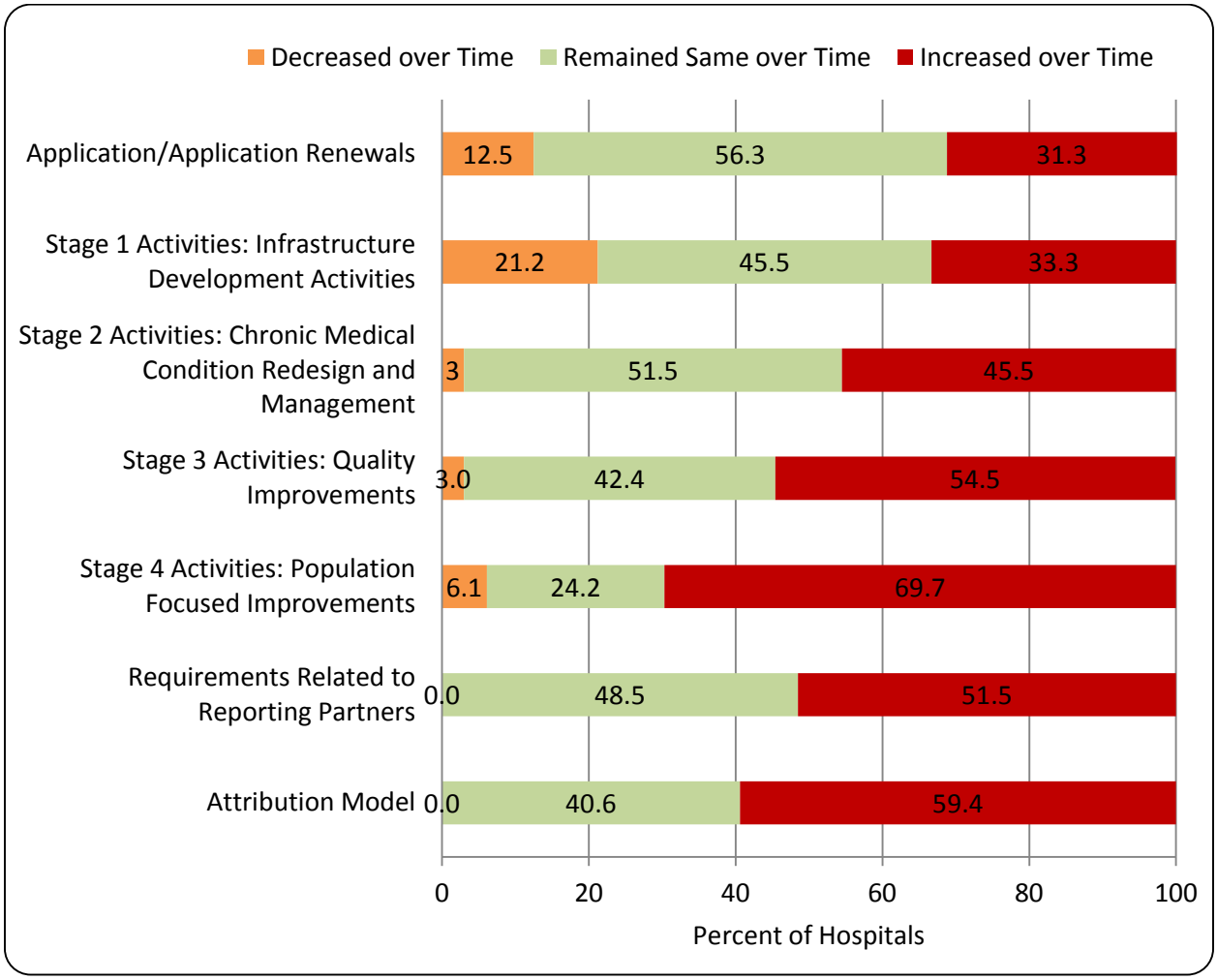
Figure 2.4: Perceptions of DSRIP Specifications/Requirements over Time, Part 1: Clarity



Source: 2015 New Jersey DSRIP Midpoint Hospital Survey, Rutgers Center for State Health Policy.

The hospitals were then asked to rate these same program requirements as to whether they increased, decreased, or remained the same over time (see Figure 2.5). Over 2/3 (69.7%) of the hospitals felt that the requirements for the Stage 4 Activities increased over time, 59.4% felt that the requirements for the Attribution Model increased, and 54.5% felt that the requirements for the Stage 3 Activities had increased. These perceptions also did not differ between the High and Low Medicaid hospitals.

Figure 2.5: Perceptions of DSRIP Specifications/Requirements over Time, Part 2: Volume

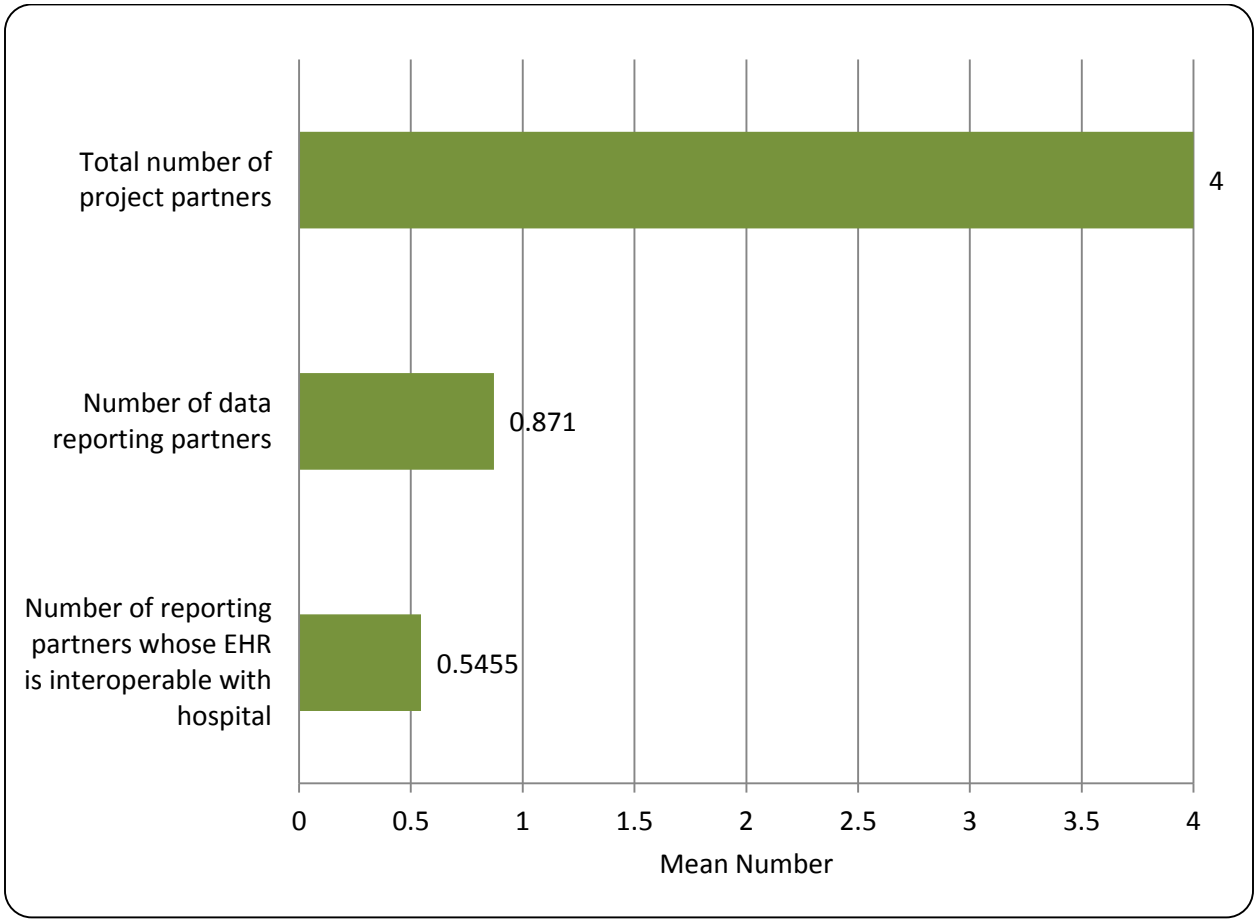


Source: 2015 New Jersey DSRIP Midpoint Hospital Survey, Rutgers Center for State Health Policy.

Project Partners

The hospitals were asked about their DSRIP project partners, how many of these were data reporting partners, and whether these partners had an interoperable electronic health record (EHR) with the hospital (see Figure 2.6). The participating hospitals average 4.0 project partners. Of those with partners, about 1/3 (32.7%, average=0.87 partners) of these partners are data reporting partners and ¼ (25.0%, average=0.55 partners) have an interoperable EHR with the hospital. There was no differences between the Medicaid hospital groups for these measures.

Figure 2.6: Number of Project Partners – Overall, Data Reporting, EHR Interoperable with Hospital

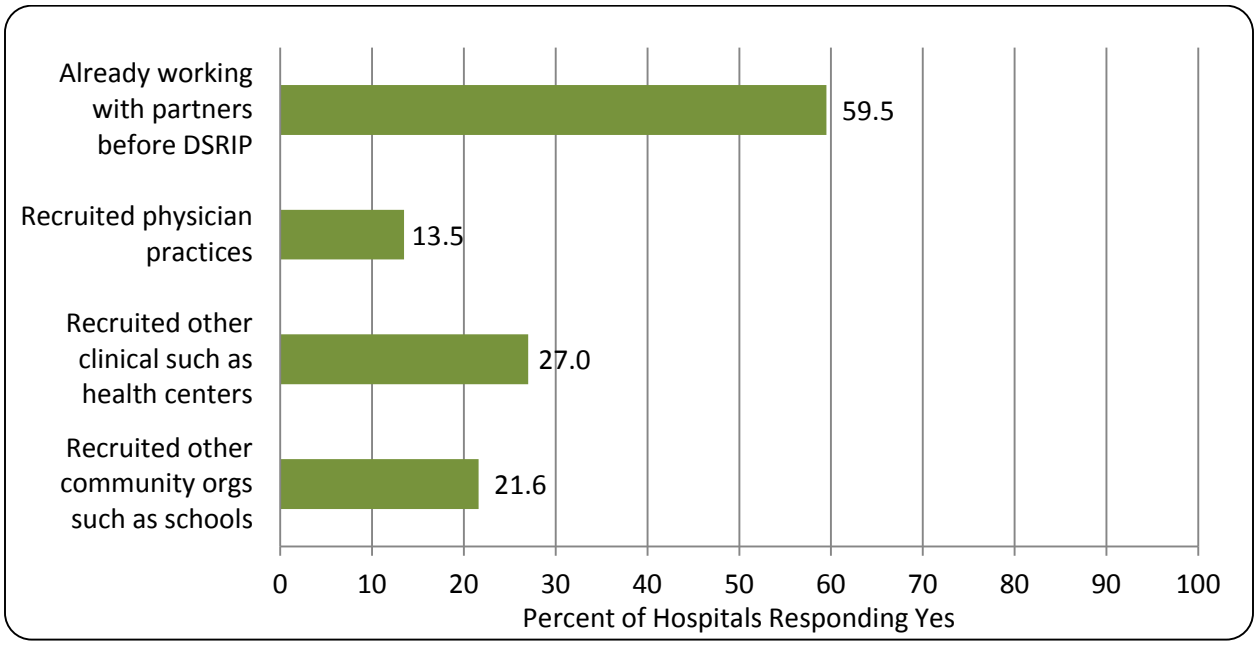


Source: 2015 New Jersey DSRIP Midpoint Hospital Survey, Rutgers Center for State Health Policy.

The hospitals were asked how they identified these partners and if they were unable to recruit some partners because the organizations were unable to share the necessary data or were already participating in the DSRIP program with a different hospital (see Figure 2.7). A majority of the hospitals (59.5%) reported that they were already working with the partners before DSRIP was implemented. High Medicaid hospitals were much more likely than Low Medicaid hospitals to report that they were already working with the partners before DSRIP (73.9% vs. 35.7%,

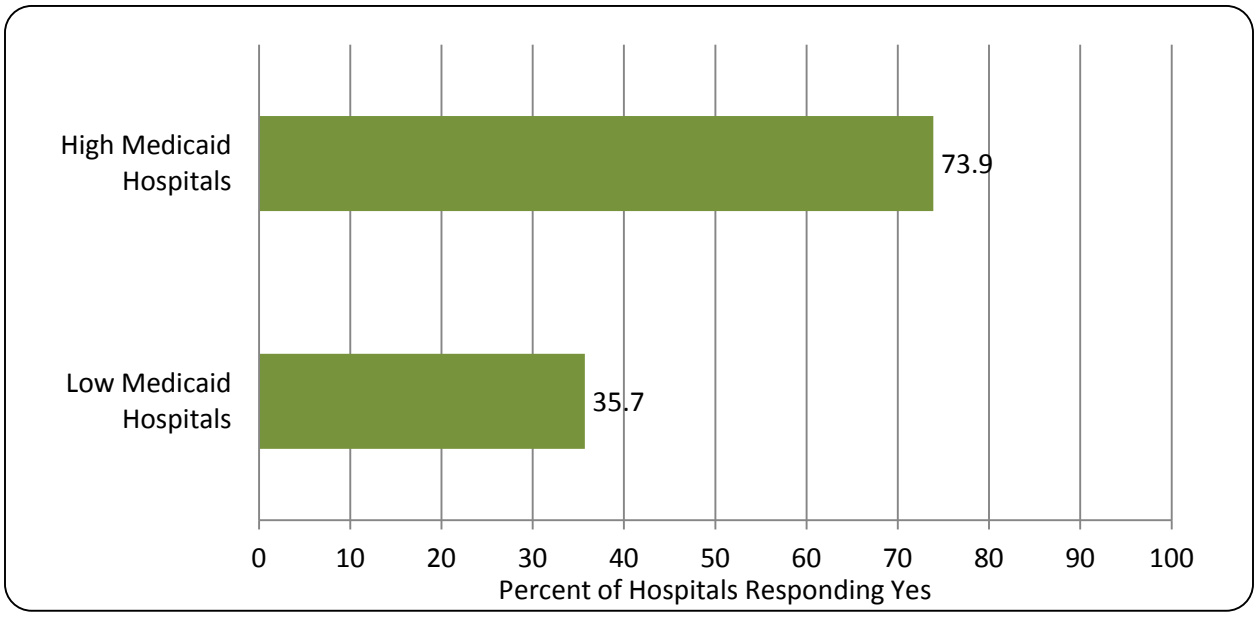
p<.022) (see Figure 2.8). Just over ¼ (27.0%) of the hospitals recruited other clinical partners such as community health centers and 21.6% recruited other community organizations such as schools to be partners. Only 13.5% recruited physician practices as partners. These did not differ between the Medicaid hospital groups.

Figure 2.7: Hospital Identification of Project Partners (select all that apply)



Source: 2015 New Jersey DSRIP Midpoint Hospital Survey, Rutgers Center for State Health Policy.

Figure 2.8: Identification of Project Partners,
Already Working with Partners before DSRIP by Medicaid Hospital Group, p<.022



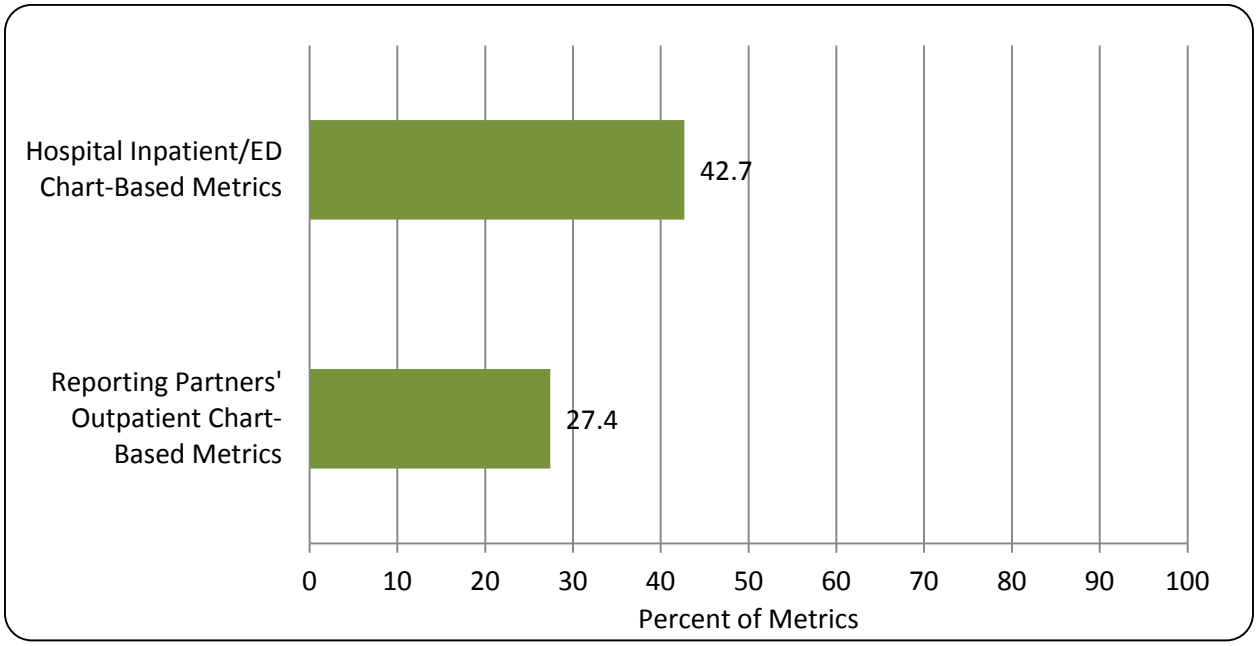
Source: 2015 New Jersey DSRIP Midpoint Hospital Survey, Rutgers Center for State Health Policy.

About one in six hospitals (17.2%) reported that they were unable to recruit at least one partner because the organization was not able to share the necessary data. Only a few hospitals (6.9%) reported that they were unable to recruit a partner because the organization was already participating in the DSRIP program with a different hospital (see Table 2.1). Neither of these recruiting issues differed between the High and Low Medicaid hospitals.

EHR Interoperability with DSRIP Metrics

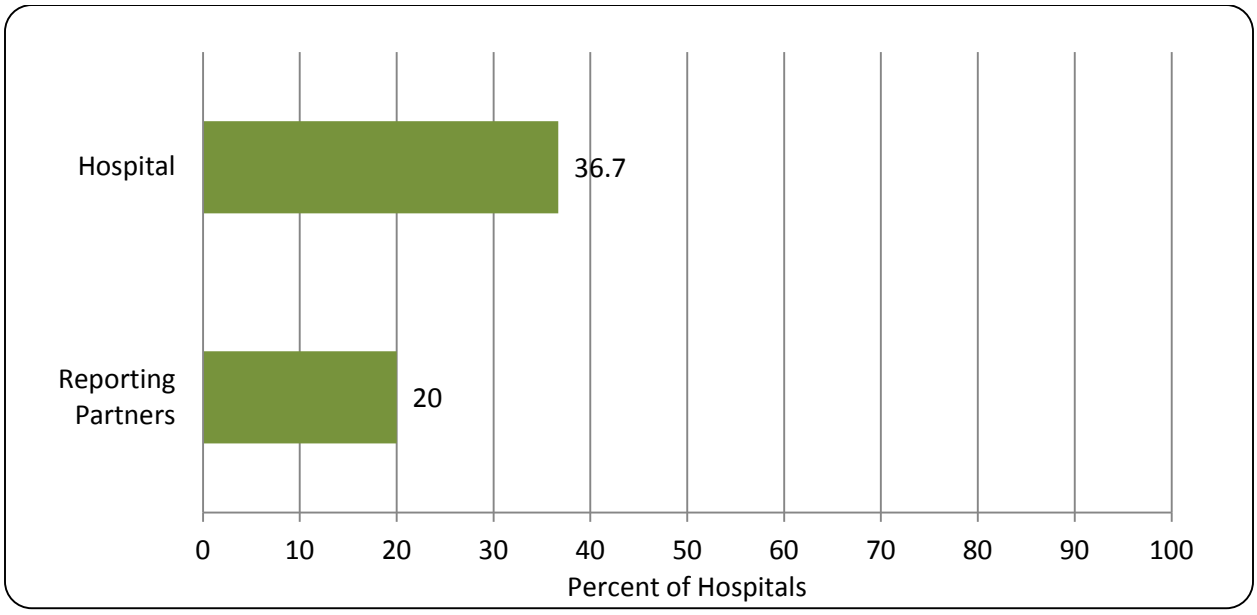
The hospitals reported that only 42.7% of the Stage 4 hospital inpatient/ED chart-based metrics were obtainable from their EHR (see Figure 2.9), and this did not differ between the High and Low Medicaid hospitals (the midpoint value of the response category chosen was assigned to each hospital). For the hospitals' data reporting partners, an even lower percentage (27.4%) of their outpatient chart-based metrics were obtainable from an EHR, and this also did not differ between the Medicaid hospital groups. Just over 1/3 (36.7%) of the hospitals reported an increase in their EHR capability since the time of their DSRIP application, and about 1/5 (20.0%) of the reporting partners had increased their EHR capability (see Figure 2.10). This did not differ between the Medicaid hospital groups.

Figure 2.9: Percent of Required Metrics Obtainable from Electronic Health Record (EHR)



Source: 2015 New Jersey DSRIP Midpoint Hospital Survey, Rutgers Center for State Health Policy.

Figure 2.10: Percent Reporting an Increase in EHR Capability since DSRIP Application

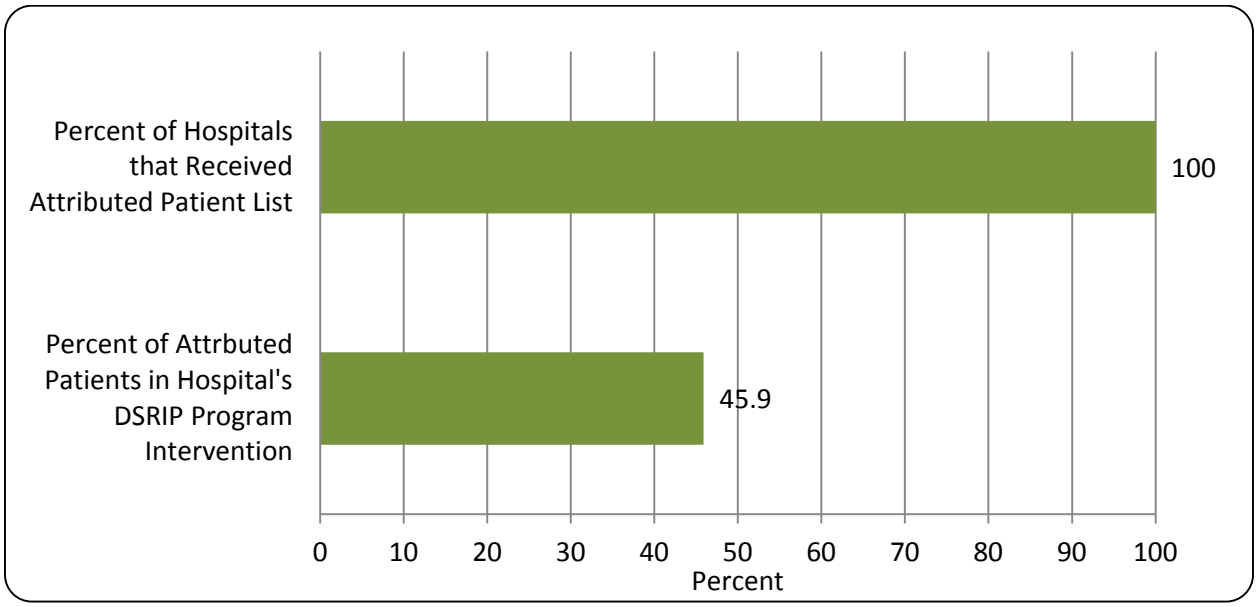


Source: 2015 New Jersey DSRIP Midpoint Hospital Survey, Rutgers Center for State Health Policy.

Attribution Model

All of the hospitals reported that they had received their list of attributed patients at the time of the survey (see Figure 2.11). On average, the hospitals estimated that just under half (45.9%) of the attributed patients are or will be included in their DSRIP program intervention. This did not differ between High and Low Medicaid hospitals.

Figure 2.11: Attributed Patient List



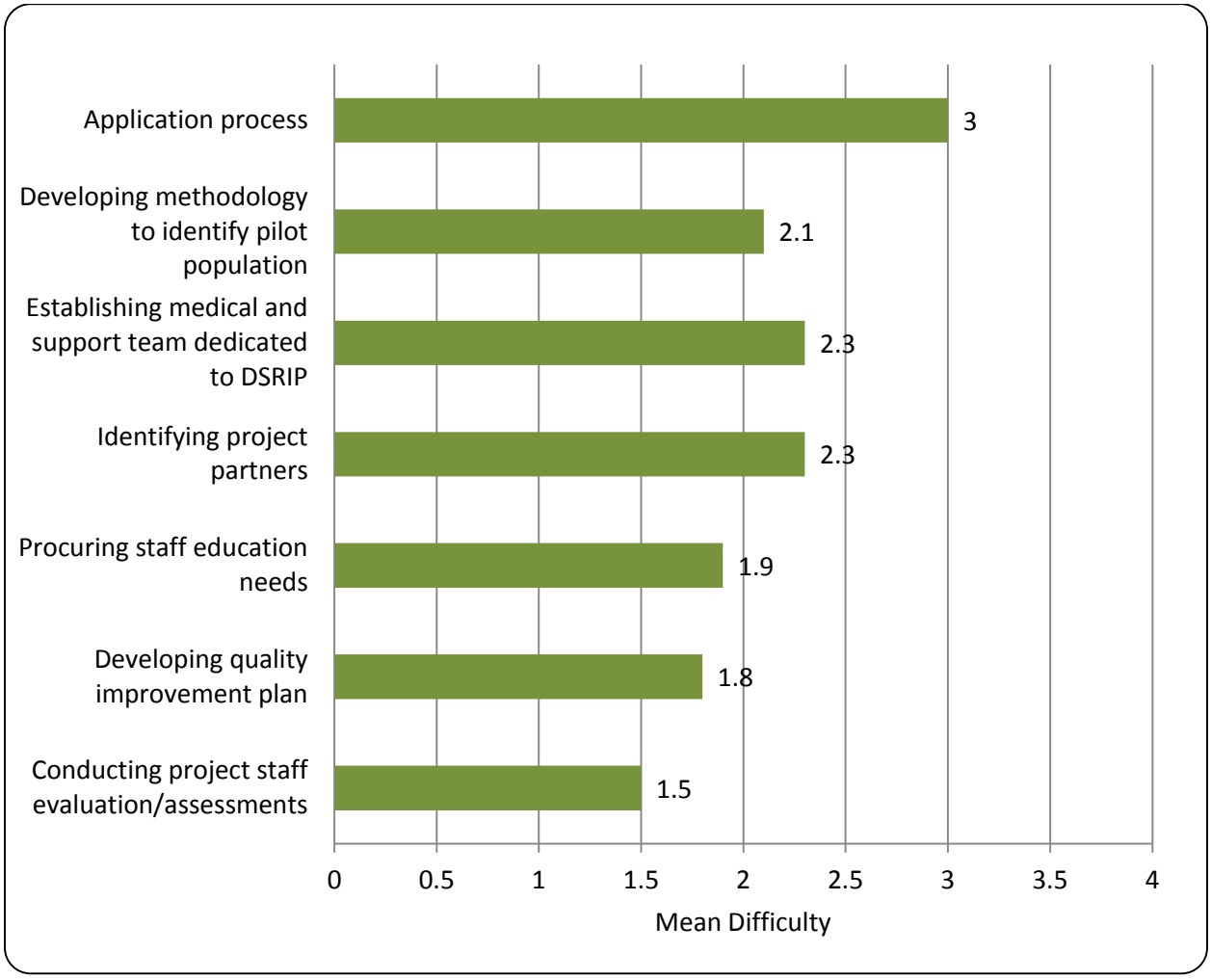
Source: 2015 New Jersey DSRIP Midpoint Hospital Survey, Rutgers Center for State Health Policy.

Perceptions about Specific Aspects of the DSRIP Program

The hospitals were asked to rate the level of difficulty experienced on a four-point scale (no difficulty=1, minor difficulty=2, moderate difficulty=3, major difficulty=4) in dealing with the following different aspects of the DSRIP program: application process, Stage 1 activities, Stage 2 activities, Stage 3 project-specific metrics, and Stage 4 universal metrics.

The application process was rated by the hospitals as moderately difficult (average rating=3.0) and this did not differ between the High and Low Medicaid hospitals (see Figure 2.12).

Figure 2.12: Difficulty with Application & DSRIP Stage 1 Activities (1=none, 4=major difficulty)



Source: 2015 New Jersey DSRIP Midpoint Hospital Survey, Rutgers Center for State Health Policy.

The following Stage 1 activities were rated:

- Developing methodology to identify pilot population
- Establishing multi-therapeutic medical and support team dedicated to DSRIP
- Identifying project partners

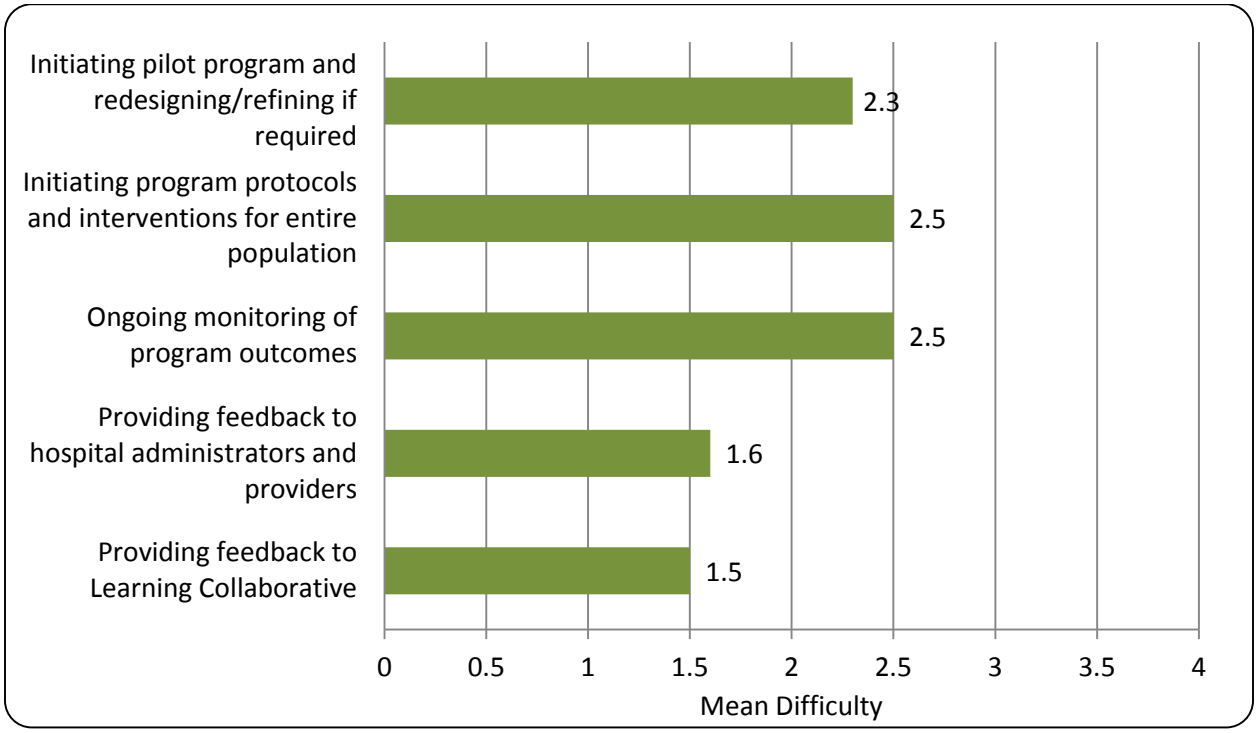
- Procuring staff education needs
- Developing quality improvement plan
- Conduct project staff evaluations/assessments

All the Stage 1 activities combined were given a minor difficulty rating (average rating=2.0) by the hospitals. Among these activities, establishing a medical and support team dedicated to DSRIP and identifying project partners were rated as slightly more difficult (both ratings=2.3) (also see Figure 2.12). Conducting project staff evaluations/assessments was rated as least difficult (rating=1.5), followed by developing a quality improvement plan (rating=1.8). High Medicaid hospitals tended to rate conducting project staff evaluations/assessments as somewhat more difficult than the Low Medicaid hospitals. Difficulty ratings for the other Stage 1 activities did not differ between the High and Low Medicaid hospitals.

The following Stage 2 activities were rated:

- Initiating pilot program redesigning/refining if needed
- Initiating program protocols and intervention for entire population
- Ongoing monitoring of program outcomes
- Providing feedback to hospital administrators and participating providers
- Providing feedback to Learning Collaborative

Figure 2.13: Difficulty with DSRIP Stage 2 Activities (1=none, 4=major difficulty)



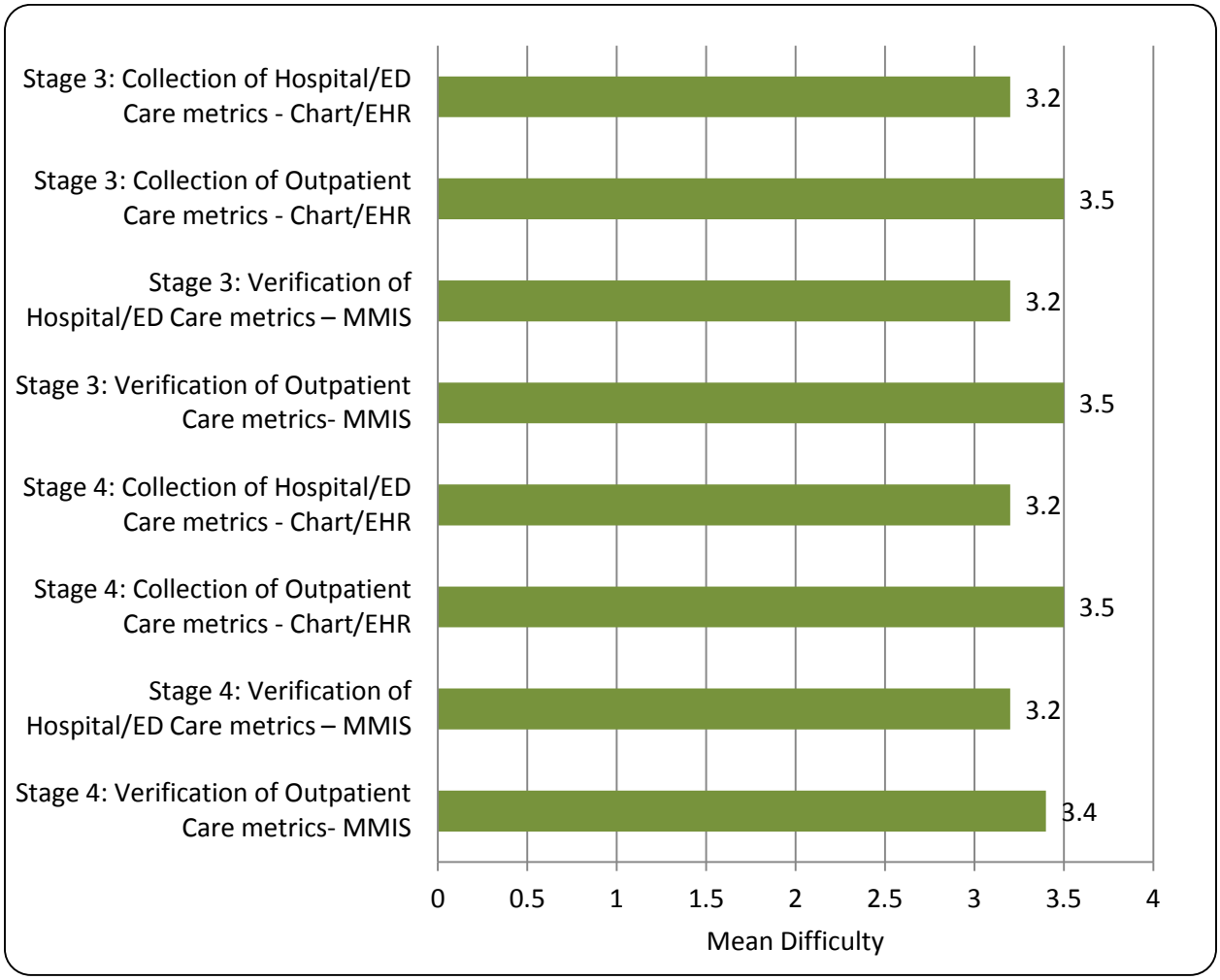
Source: 2015 New Jersey DSRIP Midpoint Hospital Survey, Rutgers Center for State Health Policy.

All the Stage 2 activities combined were given a minor difficulty rating (average rating=2.1) by the hospitals (see Figure 2.13). Among these Stage 2 activities, initiating program protocols/intervention for the entire population and ongoing monitoring of program outcomes were rated as slightly more difficult (both ratings=2.5). Providing feedback to the Learning Collaborative was rated as least difficult (rating=1.5), followed by providing feedback to hospital administrators and participating providers (rating=1.6). None of the difficulty ratings for the Stage 2 activities differed between High and Low Medicaid hospitals.

The following Stage 3 project-specific metrics were rated:

- Collection of hospital/inpatient or ED care metrics from chart/EHR
- Collection of outpatient care metrics from chart/EHR
- Verification of hospital/inpatient or ED care metrics from MMIS
- Verification of outpatient care or multi-setting care metrics from MMIS

Figure 2.14: Difficulty with DSRIP Data Requirements (1=none, 4=major difficulty)



Source: 2015 New Jersey DSRIP Midpoint Hospital Survey, Rutgers Center for State Health Policy.

All of the Stage 3 project-specific metrics combined were rated as higher than moderate difficulty (average rating=3.3) (see Figure 2.14). Collection and verification of the outpatient project-specific metrics (both ratings=3.5) were rated by the hospitals as more difficult than collection and verification of the hospital/ED project-specific metrics (both ratings=3.2). High Medicaid hospitals tended to rate collection of the hospital/ED project-specific metrics as more difficult than the Low Medicaid hospitals. The others did not differ between the High and Low Medicaid hospitals.

The following Stage 4 universal metrics were rated:

- Collection of hospital/inpatient or ED care metrics from chart/EHR
- Collection of outpatient care metrics from chart/EHR
- Verification of hospital/inpatient or ED care metrics from MMIS
- Verification of outpatient care or multi-setting care metrics from MMIS

All of the Stage 4 universal metrics combined were also rated as higher than moderate difficulty (average rating=3.4) (also see Figure 2.14). Likewise, collection and verification of the outpatient universal metrics (ratings=3.5 and 3.4, respectively) were rated by the hospitals as more difficult than collection and verification of the hospital/ED universal metrics (both ratings=3.2). High Medicaid hospitals tended to rate collection of the hospital/ED universal metrics as more difficult than the Low Medicaid hospitals. The other measures did not differ between the High and Low Medicaid hospitals.

Overall Impact of DSRIP Components on Quality of Care and Population Health

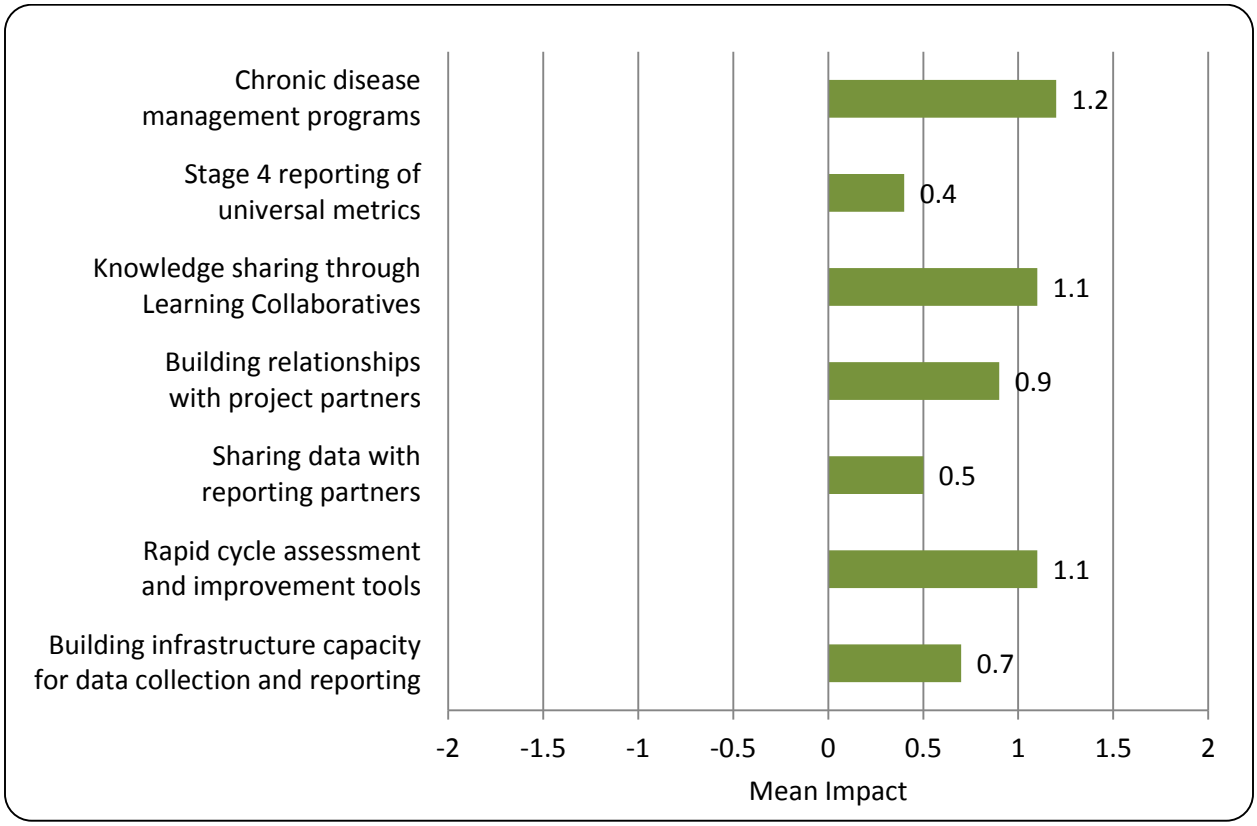
The hospitals were asked to rate on a five-point scale (-2=substantially negative, -1=moderately negative, 0=little or no impact, 1=moderately positive, 2=substantially positive) the following aspects of the DSRIP program for their impact on quality of care and population health (or health outcomes):

- Chronic disease management programs
- Stage 4 reporting of universal metrics
- Knowledge sharing through Learning Collaboratives
- Building relationships with project partners
- Sharing data with reporting partners
- Rapid cycle assessment and improvement tools
- Building infrastructure capacity for data collection and reporting

Impact ratings for all of the program aspects were positive (average impact rating=0.8) (see Figure 2.15). The chronic disease management programs were rated as having the most positive impact on quality of care and population health (impact rating=1.2), followed by knowledge sharing through the Learning Collaboratives and rapid cycle assessment/improvement tools (both ratings=1.1). The Stage 4 reporting of universal metrics was rated as having the lowest

impact on quality of care and population health, although it was still rated as positive on average (impact rating=0.4). This was followed by sharing data with reporting partners (impact rating=0.5). None of these program aspects differed between the High and Low Medicaid hospitals.

Figure 2.15: Impact of DSRIP Components on Quality of Care and Population Health (-2=very negative, 2=very positive)



Source: 2015 New Jersey DSRIP Midpoint Hospital Survey, Rutgers Center for State Health Policy.

Overall Impact of DSRIP Program on Hospital Finances

The hospitals were asked to also rate on a five-point scale (-2=very negative, -1=negative, 0=no impact, 1=positive, 2=very positive) the impact of the DSRIP program on their hospital's finances. Overall, the hospitals gave a slightly negative rating (rating=-0.1) to the financial impact of DSRIP on their own hospital's finances, and this did not differ between the High and Low Medicaid hospitals.

Community Health-Related Changes as a Result of DSRIP Activities

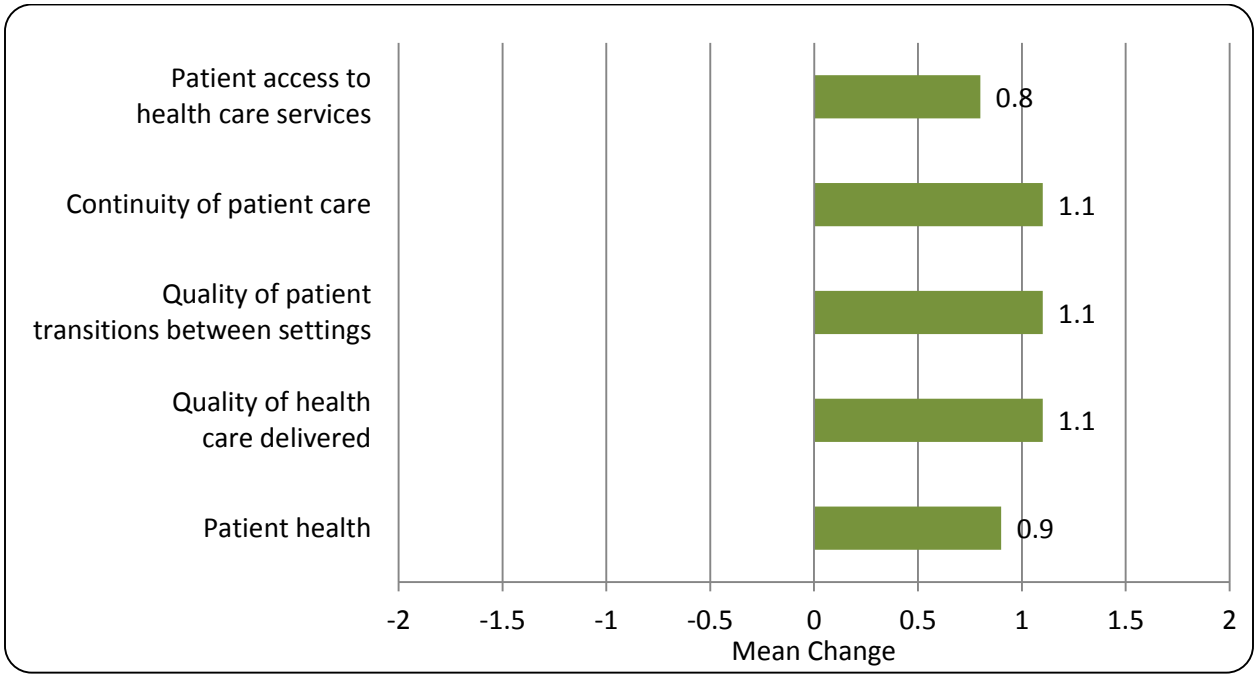
The hospitals were asked to rate on a five-point scale (-2=substantial worsening, -1=some worsening, 0=little or no impact/too early to assess, 1=some improvement, 2=substantial

improvement) changes in the following health-related aspects of their community as a result of DSRIP activities:

- Patient access to health care services
- Continuity of patient care
- Quality of patient transitions between settings
- Quality of health care delivered
- Patient health

All of these measures of change were rated positively by the hospitals and as some improvement (average rating=1.0) (see Figure 2.16). Changes in the continuity of patient care, quality of patient transitions between settings, and quality of health care delivered were rated slightly more positively (all three ratings=1.1) than changes in patient access to health care services (rating=0.8) and patient health (rating=0.9) as a result of DSRIP activities. None of these change ratings differed between the High and Low Medicaid hospitals.

Figure 2.16: Changes in Community Health Due to DSRIP (-2=very worse, 2=very better)



Source: 2015 New Jersey DSRIP Midpoint Hospital Survey, Rutgers Center for State Health Policy.

Usefulness of Learning Collaborative Activities and Other DSRIP Resources

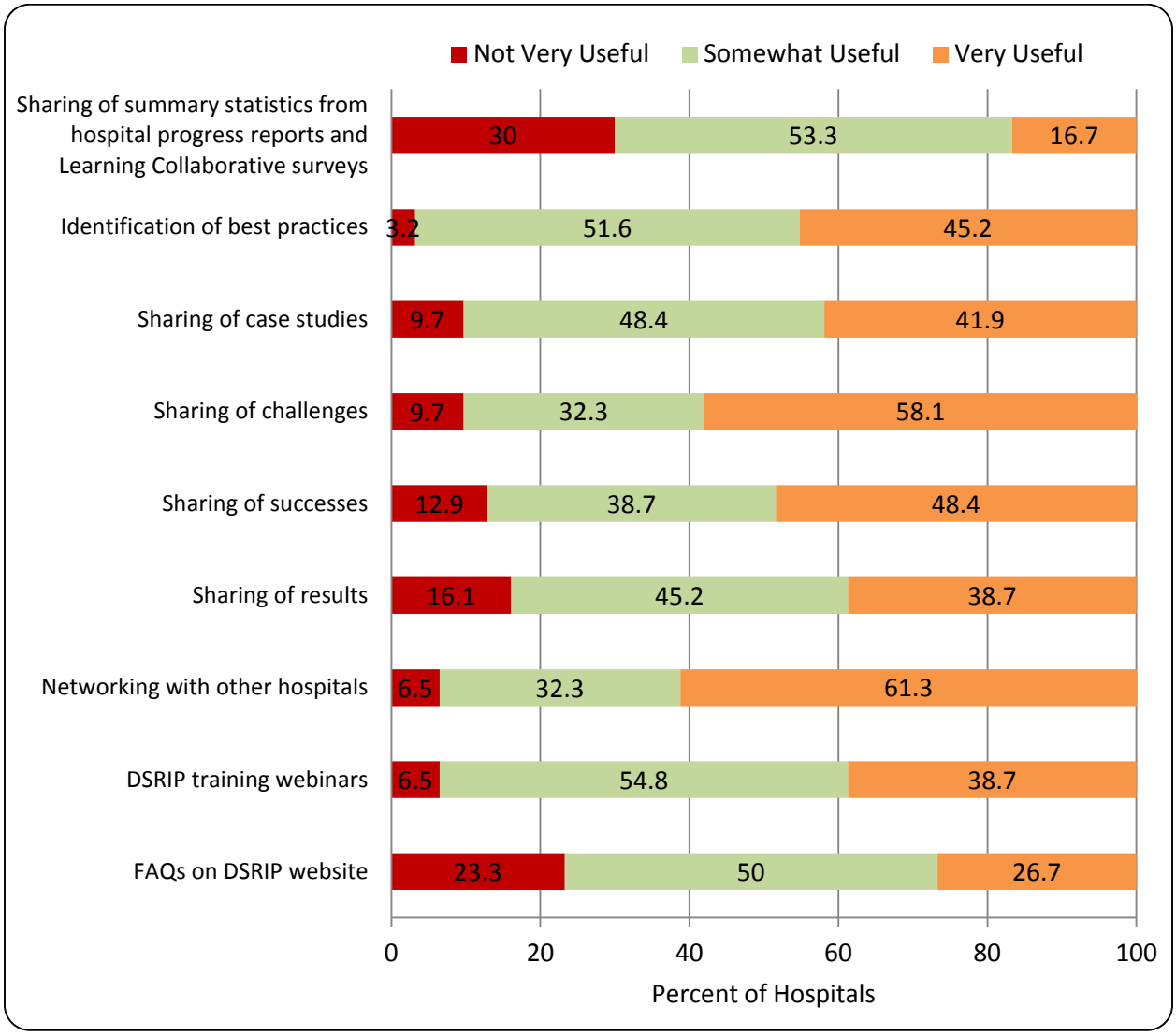
The hospitals were then asked to rate how useful the following Learning Collaborative activities were to their hospital:

- Sharing of summary statistics based on data from hospitals' progress reports and monthly Learning Collaborative surveys
- Identification of best practices

- Sharing of case studies
- Sharing of challenges
- Sharing of successes
- Sharing of results
- Networking with other hospitals

Networking with other hospitals was rated as most useful (61.3% of the hospitals rated this as very useful), followed by sharing of challenges (58.1% rated this as very useful) (see Figure 2.17). Only 16.7% of the hospitals rated as very useful the sharing of summary statistics from hospital progress reports and Learning Collaborative surveys. None of these measures differed between High and Low Medicaid hospitals.

Figure 2.17: Usefulness of Learning Collaborative Activities and Other DSRIP Resources



Source: 2015 New Jersey DSRIP Midpoint Hospital Survey, Rutgers Center for State Health Policy.

The hospitals rated the usefulness to their hospital of two other DSRIP resources:

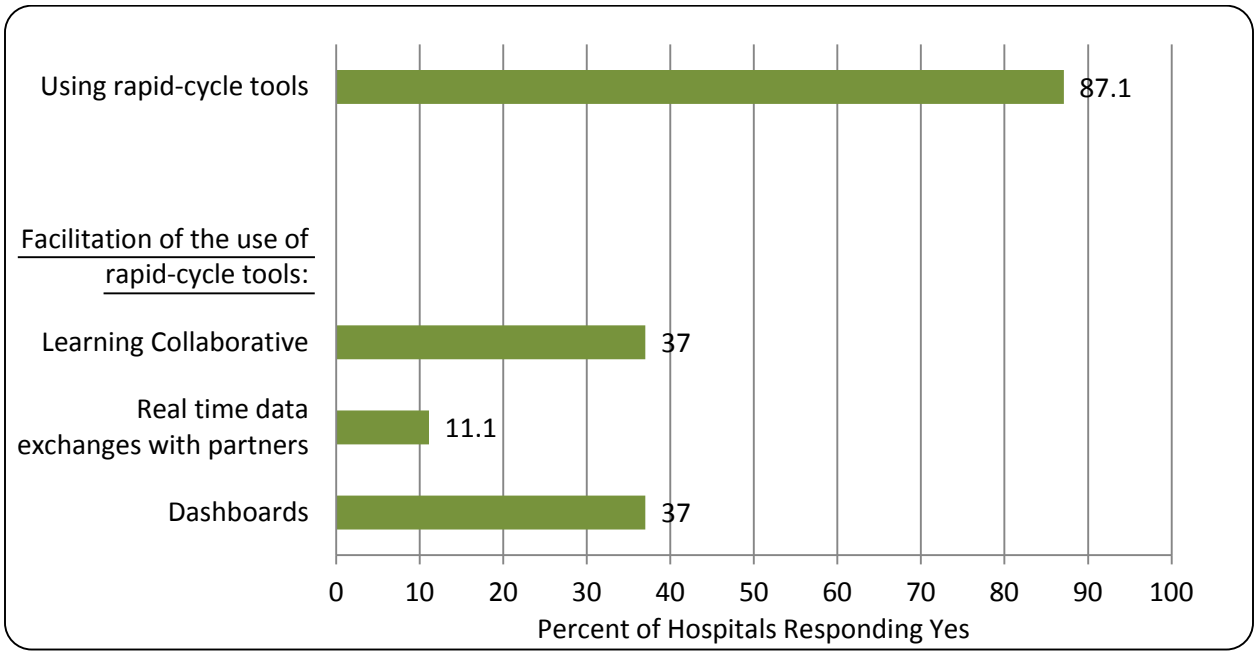
- DSRIP Training Webinars
- Frequently Asked Questions (FAQs)on DSRIP website

These resources were rated moderately useful, with 38.7% rating the webinars as very useful and 26.7% rating the FAQs as very useful (also see Figure 2.17). Neither measure differed between the High and Low Medicaid hospitals.

Rapid-Cycle Evaluation Tools

Almost all (87.1%) of the hospitals were using rapid-cycle evaluation tools, and this did not differ between the High and Low Medicaid hospitals (see Figure 2.18).

Figure 2.18: Percent Reporting Use of Rapid-Cycle Evaluation Tools and Factors Facilitating the Use of Rapid-Cycle Tools



Source: 2015 New Jersey DSRIP Midpoint Hospital Survey, Rutgers Center for State Health Policy.

The hospitals were then asked if the following facilitated their use of rapid-cycle tools:

- Learning Collaborative
- Real time data exchanges with partners
- Dashboards

The Learning Collaborative facilitated the use of rapid-cycle tools for 37.0% of the hospitals, and dashboards also facilitated the use of rapid-cycle tools for 37.0% of the hospitals (also see Figure 2.18). Only 11.1% of the hospitals reported that real time data exchanges with their project partners facilitated the use of rapid-cycle tools. None of these measures differed between High and Low Medicaid hospitals.

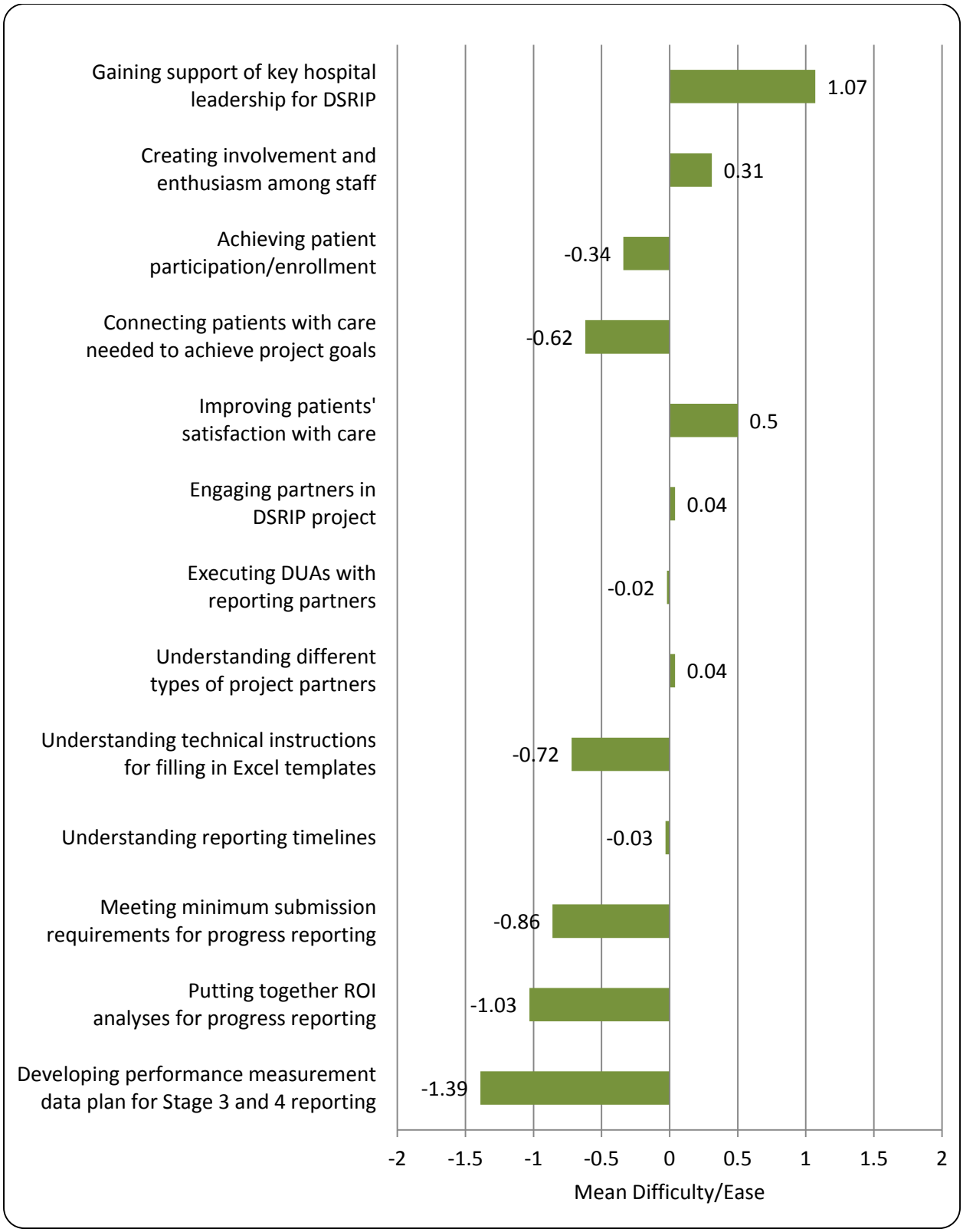
Level of Ease/Difficulty in Accomplishing DSRIP Activities

The hospitals were asked to rate on a four-point scale (-2=very difficult, -1=somewhat difficult, 1=somewhat easy, 2=very easy) how easy or difficult it had been for their hospital to accomplish the following DSRIP activities:

- Gaining support of key hospital leadership for DSRIP
- Creating involvement and enthusiasm among staff
- Achieving patient participation/enrollment
- Connecting patients with care needed to achieve project goals
- Improving patients' satisfaction with care
- Engaging partners in your DSRIP project
- Executing DUAs with reporting partners
- Understanding different types of project partners
- Understanding technical instructions for filling in Excel templates
- Understanding reporting timelines
- Meeting minimum submission requirements for progress reporting
- Putting together return on investment (economic value) analyses as part of progress reporting
- Developing a performance measurement data plan for Stage 3 and 4 reporting

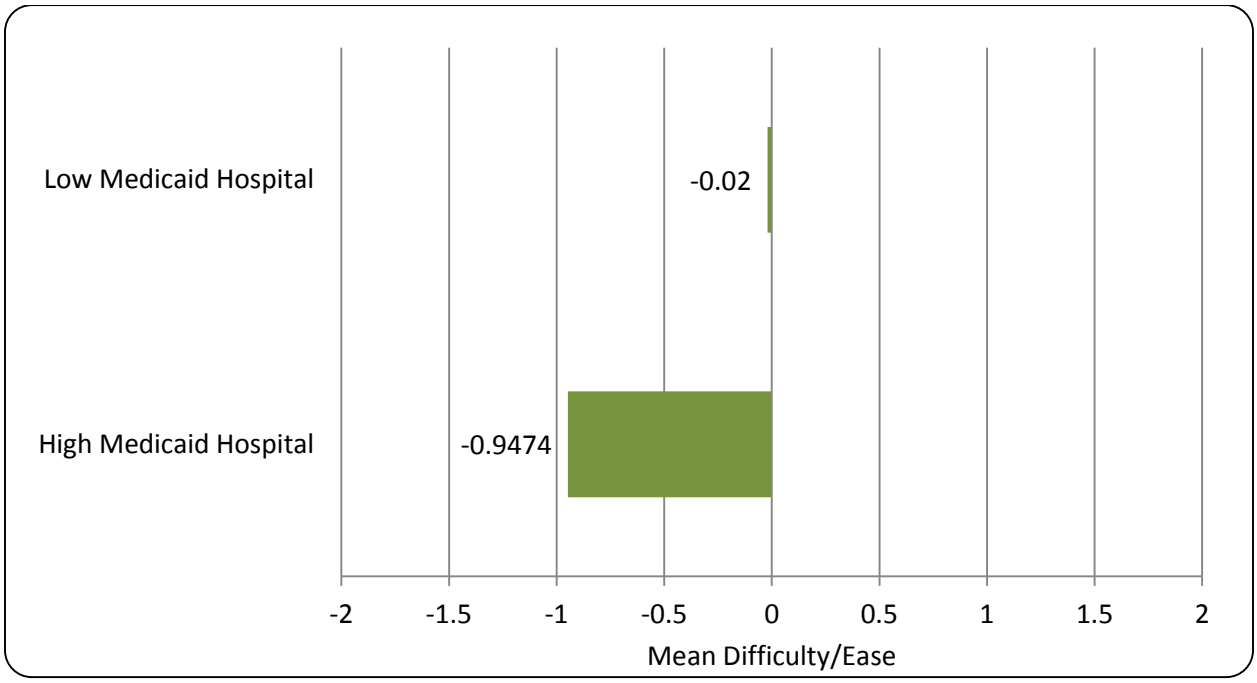
The average rating across all measures was slightly difficult (average rating=-0.2). Gaining support of key hospital leadership for DSRIP was rated as the easiest to accomplish (rating=1.1), followed by improving patients' satisfaction with care (rating=0.5) and creating involvement and enthusiasm among staff (rating=0.3). Developing a performance measurement data plan for Stage 3 and 4 reporting was rated as most difficult to accomplish with a rating of -1.39, followed by putting together return on investment analyses for progress reporting (rating =-1.03), meeting minimum submission requirements for progress reporting (rating=-0.86), and understanding technical instructions for filling in Excel templates (rating=-0.7) (see Figure 2.19). High Medicaid hospitals rated connecting patients with care needed to achieve project goals as more difficult than Low Medicaid hospitals (High Medicaid hospital rating: -0.9, Low Medicaid hospital rating: 0.0, $p<.037$) (see Figure 2.20), but Low Medicaid hospitals rated executing DUAs with reporting partners as more difficult than High Medicaid hospitals (Low Medicaid hospital rating: -1.0, High Medicaid hospital rating: 0.5, $p<.044$) (see Figure 2.21). None of the other measures differed between High and Low Medicaid hospitals.

Figure 2.19: Difficulty/Ease of Accomplishing DSRIP Activities (-2=very difficult, 2=very easy)



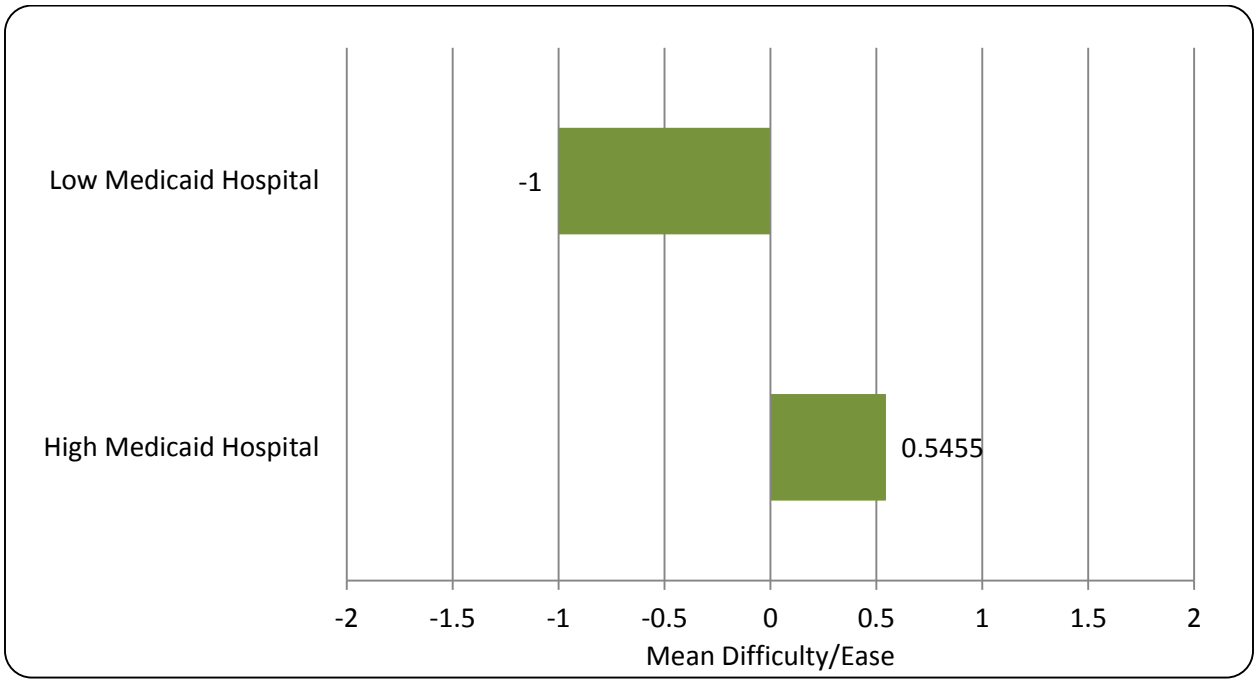
Source: 2015 New Jersey DSRIP Midpoint Hospital Survey, Rutgers Center for State Health Policy.

Figure 2.20: Difficulty/Ease of Accomplishing DSRIP Activities (-2=very difficult, 2=very easy): Connecting Patients with Care Needed to Achieve Project Goals by Medicaid Hospital Group, p<.037



Source: 2015 New Jersey DSRIP Midpoint Hospital Survey, Rutgers Center for State Health Policy.

Figure 2.21: Difficulty/Ease of Accomplishing DSRIP Activities (-2=very difficult, 2=very easy): Executing DUAs with Reporting Partners by Medicaid Hospital Group, p<.044



Source: 2015 New Jersey DSRIP Midpoint Hospital Survey, Rutgers Center for State Health Policy.

Additional Comments about the DSRIP Program

The hospitals were asked the following three open-ended questions about the DSRIP program:

- Please detail any lessons learned or best practices identified to date by your project team.
- Other comments including those relating to the implementation or impact of the DSRIP project on your hospital.
- What changes would you like to see in future implementations of DSRIP?

About 1/3 of the hospitals provided comments for each of these open-ended questions. For summary purposes, the comments were grouped into themes as reported below.

For lessons learned, the comments were grouped into the following themes:

- Communication
- Staff and partner issues
- Specific care management strategies
- Patients make or break the program
- Need to address social and access issues of patients
- Patient recruitment
- Challenges with data collection and the attribution list

For other comments related to DSRIP implementation or impact on hospital, the following themes were identified:

- Data collection issues/reporting is overly burdensome
- DSRIP delays, unclear direction
- Resource intensive
- Positive impact of DSRIP program
- DSRIP program reorganization

For suggestions as to future implementations of DSRIP, the following themes were identified:

- Fewer data metrics/less onerous reporting/Excel template issues
- Better or clearer directions and requirements/better management from State and consultant
- Need attribution list and data templates earlier/timely communication from DSRIP
- Need to restructure communication/interaction forums
- Re-organization of DSRIP programs/hospital burdens/collaborations

Conclusions

Most of the hospitals who responded to the survey felt that the DSRIP program had the potential to improve quality of care and population health. They felt that the Stage 3 care management

programs aligned well with the population health improvement objectives. However, the reporting requirements were too onerous and resource intensive, especially the metrics required for Stage 4, the reporting partner requirements, and the attribution model. The hospitals were concerned about shifting requirements and information not being provided to them early enough for the reporting requirements. Networking with other hospitals and being able to share challenges were rated as the most useful aspects of the Learning Collaboratives.

EHR interoperability with program partners was also cited as a major issue, particularly for obtaining the outpatient metrics required for Stage 3 and Stage 4 reporting. There has been some increase in EHR capability over time, but more for the hospitals than for the partners.

There were only a few statistically significant differences between hospitals based on the share of Medicaid patients; however this could be due to small sample sizes. High Medicaid hospitals were more likely than Low Medicaid hospitals to report needing DSRIP funds to finance existing programs and that they were already working with their programs partners before DSRIP was implemented. High Medicaid hospitals also reported more difficulty connecting patients with the care needed to achieve project goals. However, High Medicaid hospitals reported less difficulty executing DUAs with their project reporting partners.

References

Ianni S. 2006. *Examining the State of Our Healthcare System: The Unique Challenges Facing Urban Hospitals and Their Importance in Our State*. Trenton: Hospital Alliance of New Jersey. http://www.nj.gov/health/rhc/documents/hospital_alliance.pdf.

Table 2.1: Item Frequencies and Means

	N	%
Total	**41**	**100.0**
Percentage of hospital's patients on Medicaid/CHIP or charity care		
0-20%	14	34.2
21-40%	17	41.5
41-60%	3	7.3
61-80%	3	7.3
Unable to classify	4	9.8
Did your hospital apply for the DSRIP program?		
Yes	35	89.7
No	4	10.3
Importance to decision to apply for DSRIP		
Support for the disease management goals of the DSRIP program		
Very Important	26	76.5
Somewhat Important	8	23.5
Not Important	0	0.0
Need the funds to finance existing operations		
Very Important	24	70.6
Somewhat Important	8	23.5
Not Important	2	5.9
Expect synergies with other related programs, e.g., hosp readmissions, ACOs, value-based purchasing		
Very Important	23	67.6
Somewhat Important	10	29.4
Not Important	1	2.9
Opportunity for more financial resources for my hospital		
Very Important	20	58.8
Somewhat Important	12	35.3
Not Important	2	5.9
Perceptions of DSRIP specifications/requirements over time		
Application/Application Renewals		
Specs/Reqs clear from the beginning	2	6.1
Specs/Reqs unclear initially but clarified over time	28	84.8
Specs/Reqs remain unclear	3	9.1
Stage 1 Activities: Infrastructure Development Activities		
Specs/Reqs clear from the beginning	6	17.6
Specs/Reqs unclear initially but clarified over time	25	73.5
Specs/Reqs remain unclear	3	8.8

Source: 2015 New Jersey DSRIP Midpoint Hospital Survey, Rutgers Center for State Health Policy.

Table 2.1: Item Frequencies and Means (continued)

	N	%
Total	**41**	**100.0**
Stage 2 Activities: Chronic Medical Condition Redesign and Management		
Specs/Reqs clear from the beginning	6	17.6
Specs/Reqs unclear initially but clarified over time	27	79.4
Specs/Reqs remain unclear	1	2.9
Stage 3 Activities: Quality Improvements		
Specs/Reqs clear from the beginning	3	8.8
Specs/Reqs unclear initially but clarified over time	23	67.6
Specs/Reqs remain unclear	8	23.5
Stage 4 Activities: Population Focused Improvements		
Specs/Reqs clear from the beginning	4	11.8
Specs/Reqs unclear initially but clarified over time	18	52.9
Specs/Reqs remain unclear	12	35.3
Perceptions of DSRIP specifications/requirements over time (continued)		
Requirements related to Reporting Partners		
Specs/Reqs clear from the beginning	1	2.9
Specs/Reqs unclear initially but clarified over time	18	52.9
Specs/Reqs remain unclear	15	44.1
Attribution Model		
Specs/Reqs clear from the beginning	0	0.0
Specs/Reqs unclear initially but clarified over time	19	55.9
Specs/Reqs remain unclear	15	44.1
Perceptions of DSRIP specifications/requirements over time		
Application/Application Renewals		
Specs/Reqs decreased over time	4	12.5
Specs/Reqs remained same over time	18	56.3
Specs/Reqs increased over time	10	31.3
Stage 1 Activities: Infrastructure Development Activities		
Specs/Reqs decreased over time	7	21.2
Specs/Reqs remained same over time	15	45.5
Specs/Reqs increased over time	11	33.3
Stage 2 Activities: Chronic Medical Condition Redesign and Management		
Specs/Reqs decreased over time	1	3.0
Specs/Reqs remained same over time	17	51.5
Specs/Reqs increased over time	15	45.5
Stage 3 Activities: Quality Improvements		
Specs/Reqs decreased over time	1	3.0
Specs/Reqs remained same over time	14	42.4
Specs/Reqs increased over time	18	54.5

Source: 2015 New Jersey DSRIP Midpoint Hospital Survey, Rutgers Center for State Health Policy.

Table 2.1: Item Frequencies and Means (continued)

	N	%
Total	**41**	**100.0**
Stage 4 Activities: Population Focused Improvements		
Specs/Reqs decreased over time	2	6.1
Specs/Reqs remained same over time	8	24.2
Specs/Reqs increased over time	23	69.7
Requirements related to Reporting Partners		
Specs/Reqs decreased over time	0	0.0
Specs/Reqs remained same over time	16	48.5
Specs/Reqs increased over time	17	51.5
Attribution Model		
Specs/Reqs decreased over time	0	0.0
Specs/Reqs remained same over time	13	40.6
Specs/Reqs increased over time	19	59.4
Is your hospital still participating in the DSRIP program?		
Yes	33	94.3
No	2	5.7
# of project partners	31	4.0 (mean)
# of data reporting partners	31	0.9 (mean)
# of data reporting partners with interoperable EHR with hospital	22	0.5 (mean)
How did your hospital identify project partners? (Select all that apply)		
Already working with partners before DSRIP was implemented	23	59.5
Recruited physician practices as partners	6	13.5
Recruited other clinical partners such as community health centers	10	27.0
Recruited other community organizations as partners	9	21.6
# of organizations not partner because unable to share necessary data		
None	24	82.8
One	2	6.9
Two	3	10.3
# of organizations not partner because working with another hospital		
None	27	93.1
One	2	6.9
Two		
		(Mean)
% hospital's inpatient/ED chart-based metrics obtainable from EHR	30	42.7
% reporting partners' outpatient chart-based metrics from EHR	23	27.4
Increase in hospital's EHR capability since DSRIP application	11	36.7
Increase in reporting partner's EHR capability since DSRIP application	4	20.0

Source: 2015 New Jersey DSRIP Midpoint Hospital Survey, Rutgers Center for State Health Policy.

Table 2.1: Item Frequencies and Means (continued)

	N	%
Total	**41**	**100.0**
Have you received your attributed patient list?	32	100.0
% attributed patients included in DSRIP program intervention (Mean %)	29	45.9
Difficulty dealing with DSRIP program (1=none, 4=major diffic)		(Mean)
Application process	29	3.0
Stage 1: Developing methodology to identify pilot population	29	2.1
Stage 1: Establishing medical and support team dedicated to DSRIP	29	2.3
Stage 1: Identifying project partners	29	2.3
Stage 1: Procuring staff education needs	29	1.9
Stage 1: Developing quality improvement plan	29	1.8
Stage 1: Conducting project staff evaluation/assessments	29	1.5
Stage 2: Initiating pilot program and redesigning/refining if required	29	2.3
Stage 2: Initiating program protocols and interventions for entire population	27	2.5
Stage 2: Ongoing monitoring of program outcomes	29	2.5
Stage 2: Providing feedback to hospital administrators and providers	29	1.6
Stage 2: Providing feedback to Learning Collaborative	29	1.5
Difficulty with DSRIP data requirements (1=none, 4=major diffic)		(Mean)
Stage 3: Collection of Hospital/ED Care metrics - Chart/EHR	29	3.2
Stage 3: Collection of Outpatient Care metrics - Chart/EHR	29	3.5
Stage 3: Verification of Hospital/ED Care metrics – MMIS	28	3.2
Stage 3: Verification of Outpatient Care metrics- MMIS	28	3.5
Stage 4: Collection of Hospital/ED Care metrics - Chart/EHR	29	3.2
Stage 4: Collection of Outpatient Care metrics - Chart/EHR	29	3.5
Stage 4: Verification of Hospital/ED Care metrics – MMIS	28	3.2
Stage 4: Verification of Outpatient Care metrics- MMIS	27	3.4
Impact of DSRIP on quality of care, pop health (-2=v. neg, 2=v.pos)		(Mean)
Chronic disease management programs	29	1.2
Stage 4 reporting of universal metrics	29	0.4
Knowledge sharing through Learning Collaboratives	29	1.1
Building relationships with project partners	29	0.9
Sharing data with reporting partners	25	0.5
Rapid cycle assessment and improvement tools	29	1.1
Building infrastructure capacity for data collection and reporting	29	0.7

Source: 2015 New Jersey DSRIP Midpoint Hospital Survey, Rutgers Center for State Health Policy.

Table 2.1: Item Frequencies and Means (continued)

	N	%
Total	**41**	**100.0**
Changes in community health due to DSRIP (-2=v. worse, 2=v.better)		(Mean)
Patient access to health care services	29	0.8
Continuity of patient care	29	1.1
Quality of patient transitions between settings	29	1.1
Quality of health care delivered	29	1.1
Patient health	29	0.9
Mean impact of DSRIP on hospital's finances (-2=v. neg, 2=v. pos)	29	-0.1
Usefulness of DSRIP to Hospitals (% reporting very useful)		(%)
Sharing of summary stats from hosp prog repts, learning collab surveys	5	16.7
Identification of best practices	14	45.2
Sharing of case studies	13	41.9
Sharing of challenges	18	58.1
Sharing of successes	15	48.4
Sharing of results	12	38.7
Networking with other hospitals	19	61.3
DSRIP training webinars	12	38.7
FAQs on DSRIP website	8	26.7
Using rapid-cycle evaluation tools (% yes)	27	87.1
Facilitated use of rapid cycle tools (% yes)		
Learning collaborative	10	37
Real time data exchanges with partners	3	11.1
Dashboards	10	37
Ease/difficulty accomplishing DSRIP activities (-2=v. diffic, 2=v. easy)		(Mean)
Gaining support of key hospital leadership for DSRIP	29	1.1
Creating involvement and enthusiasm among staff	29	0.3
Achieving patient participation/enrollment	29	-0.3
Connecting patients with care needed to achieve project goals	29	-0.6
Improving patients' satisfaction with care	28	0.5
Engaging partners in DSRIP project	27	0.0
Executing DUAs with reporting partners	17	0.0
Understanding different types of project partners	24	0.0
Understanding technical instructions for filling in Excel templates	29	-0.7
Understanding reporting timelines	29	0.0
Meeting minimum submission requirements for progress reporting	29	-0.9
Putting together ROI analyses for progress reporting	29	-1.0
Developing performance measurement data plan for Stage 3, 4 reporting	28	-1.4

Source: 2015 New Jersey DSRIP Midpoint Hospital Survey, Rutgers Center for State Health Policy.

Appendix A: Hospital Midpoint Web Survey, Questionnaire

***1. Introduction and Consent:**

This hospital-based survey aims to provide feedback about the planning and implementation of the DSRIP program. Please complete this survey on the basis of your hospital's experience with the DSRIP application, approval, planning and implementation process. All information will remain confidential, and only summary data will be released from survey responses.

If you are 18 years of age or older, understand the statements in the email containing this survey link, and will consent to participate in the study, click on the "I Agree" button to begin the survey. If not, please click on the "I Do Not Agree" button after which you will exit this program.

- ◯ I Agree
- ◯ I Do Not Agree

2. Survey Respondent
Your Work Title:

3. Hospital Name

Hospital Name

Select your hospital name from the drop-down box to the right:

Other (please specify)

4. Please estimate the overall percentage of your hospital's patients who are on Medicaid/CHIP or charity care.

- ◯ 0-20%
- ◯ 21-40%
- ◯ 41-60%
- ◯ 61-80%
- ◯ 81-100%

5. Did your hospital apply for the DSRIP program?

- ◯ Yes
- ◯ No

6. Which of the following are reasons your hospital did not apply? (Select all that apply)

- ☐ Not enough Medicaid/CHIP/charity care patients
- ☐ Application process too burdensome
- ☐ Infrastructure requirements too expensive

Other (please specify)

7. Please rate each of the following with regard to their importance to your hospital's decision to apply:

	Very Important	Somewhat Important	Not Important
Support for the disease management goals of the DSRIP program	◯	◯	◯
Need the funds to finance existing operations	◯	◯	◯
Expect synergies with other related programs, such as hospital readmissions, ACOs, Hospital Value-Based Purchasing Program	◯	◯	◯
Opportunity for more financial resources for my hospital	◯	◯	◯
Other (specify below)	◯	◯	◯

Specify other here

8. How would you characterize the DSRIP program specifications/requirements over time?

	Specs/Reqs clear from the beginning	Specs/Reqs unclear initially but clarified over time	Specs/Reqs remain unclear
Application/Application Renewals	◯	◯	◯
Stage 1 Activities: Infrastructure Development Activities	◯	◯	◯
Stage 2 Activities: Chronic Medical Condition Redesign and Management	◯	◯	◯
Stage 3 Activities: Quality Improvements	◯	◯	◯
Stage 4 Activities: Population Focused Improvements	◯	◯	◯
Requirements related to reporting Partners	◯	◯	◯
Attribution model	◯	◯	◯

9. Part 2 to "How would you characterize the DSRIP program specifications/requirements over time?"

	Specs/Reqs decreased over time	Specs/Reqs remained same over time	Specs/Reqs increased over time
Application/Application Renewals	◯	◯	◯
Stage 1 Activities: Infrastructure Development Activities	◯	◯	◯
Stage 2 Activities: Chronic Medical Condition Redesign and Management	◯	◯	◯
Stage 3 Activities: Quality Improvements	◯	◯	◯
Stage 4 Activities: Population Focused Improvements	◯	◯	◯
Requirements related to reporting Partners	◯	◯	◯
Attribution model	◯	◯	◯

10. What project area did your hospital select?

- ◯ Asthma
- ◯ Behavioral Health
- ◯ Substance Abuse
- ◯ Pneumonia
- ◯ Obesity
- ◯ Diabetes
- ◯ Cardiac

11. Is your hospital still participating in the DSRIP program?

- ◯ Yes
- ◯ No

12. Which of the following are reasons your hospital withdrew from the program? (Select all that apply)

- ☐ Not enough Medicaid/CHIP/charity care patients
- ☐ Incentive payment was not enough to justify costs
- ☐ Too difficult to find project partners or fulfill project partner requirements
- ☐ Implementation process too burdensome
- ☐ Change in hospital ownership
- ☐ Reorganization as a result of mergers and acquisitions

Other (please specify)

13. A project partner is any organization helping your hospital and your patients achieve the aims of the DSRIP program (e.g., schools, clinics, physician practices, etc.).

How many project partners does your hospital have?

# of project partners:

14. A reporting partner is a project partner included in the attribution model and required to collect and report outpatient data.

Out of your project partners, how many are data reporting partners?

# of data reporting partners:

15. With how many of these reporting partners does your hospital have an interoperable EHR? (Skip if your hospital does not have any reporting partners)

# of reporting partners:

16. How did your hospital identify project partners? (Select all that apply)

- ☐ Already working with partners before DSRIP was implemented
- ☐ Recruited physician practices as partners
- ☐ Recruited other clinical partners such as community health centers/FQHCs
- ☐ Recruited other community organizations as partners (for example, schools)

17. In addition to your reporting partners, with how many other organizations did you want to establish a reporting partner relationship but could not because they were unable to share the necessary data?

- ◯ None
- ◯ One
- ◯ Two
- ◯ Three or more

18. With how many organizations did you want to establish a reporting partner relationship but could not because they were participating in the DSRIP program with a different hospital?

- ◯ None
- ◯ One
- ◯ Two
- ◯ Three or more

19. At the time of your DSRIP application, what percent of Stage 4 metrics were obtainable from EHRs?

	No EHR	1-20%	21-40%	41-60%	61-80%	81-100%
Your hospital's inpatient/ED chart-based metrics from EHR	◯	◯	◯	◯	◯	◯
Your outpatient reporting partners' outpatient chart-based metrics from EHR	◯	◯	◯	◯	◯	◯

20. Has there been a change in EHR capability since the time of application?

	Decrease in capability	No change	Increase in capability
Your hospital's EHR	◯	◯	◯
Reporting partners' EHR	◯	◯	◯

21. Have you received your attributed patient list?

- ◯ Yes
- ◯ No

22. Please estimate the percentage of the attributed patients that are or will be included in your DSRIP program intervention.

- ◯ 0-20%
- ◯ 21-40%
- ◯ 41-60%
- ◯ 61-80%
- ◯ 81-100%

23. Please rate your hospital's experience in dealing with the following aspects of the DSRIP program:

	No difficulty	Minor difficulty	Moderate difficulty	Major difficulty
Application Process	◯	◯	◯	◯

24. Please rate your hospital's experience in dealing with the following aspects of the DSRIP program:

Stage 1 Activities: Infrastructure Development

	No difficulty	Minor difficulty	Moderate difficulty	Major difficulty
Developing methodology to identify pilot population	◯	◯	◯	◯
Establishing multi-therapeutic medical and support team dedicated to DSRIP	◯	◯	◯	◯
Identifying project partners	◯	◯	◯	◯
Procuring staff education needs	◯	◯	◯	◯
Developing quality improvement plan	◯	◯	◯	◯
Conducting project staff evaluation/assessments	◯	◯	◯	◯

25. Please rate your hospital's experience in dealing with the following aspects of the DSRIP program:

Stage 2 Activities: Chronic Medical Condition Redesign and Management

	No difficulty	Minor difficulty	Moderate difficulty	Major difficulty
Initiating pilot program and redesigning/refining if required	◯	◯	◯	◯
Initiating program protocols and interventions for entire population	◯	◯	◯	◯
Ongoing monitoring of program outcomes	◯	◯	◯	◯
Providing feedback to hospital administrators and participating providers	◯	◯	◯	◯
Providing feedback to Learning Collaborative	◯	◯	◯	◯

26. Please rate your hospital's experience in preparing for the data-related aspects of the DSRIP program:

Stage 3 Project-Specific Metrics (Chart/EHR or MMIS-based):

	No difficulty	Minor difficulty	Moderate difficulty	Major difficulty
Collection of Hospital/Inpatient or ED Care metrics - Chart/EHR	◯	◯	◯	◯
Collection of Outpatient Care metrics - Chart/EHR	◯	◯	◯	◯
Verification of Hospital/Inpatient or ED Care metrics – MMIS	◯	◯	◯	◯
Verification of Outpatient Care or Multi-Setting Care metrics- MMIS	◯	◯	◯	◯

27. Please rate your hospital's experience in preparing for the data-related aspects of the DSRIP program:

Stage 4 Universal Metrics (Chart/EHR or MMIS-based):

	No difficulty	Minor difficulty	Moderate difficulty	Major difficulty
Collection of Hospital/Inpatient or ED Care metrics - Chart/EHR	◯	◯	◯	◯
Collection of Outpatient Care - Chart/EHR metrics	◯	◯	◯	◯
Verification of Hospital/Inpatient or ED Care metrics – MMIS	◯	◯	◯	◯
Verification of Outpatient Care or Multi-Setting Care metrics- MMIS	◯	◯	◯	◯

28. What overall impact do you think the following aspects of the DSRIP program have on quality of care and population health (or health outcomes)?

	Substantially positive	Moderately positive	Little or no impact	Moderately negative	Substantially negative
Chronic disease management programs	◯	◯	◯	◯	◯
Stage 4 reporting of universal metrics	◯	◯	◯	◯	◯
Knowledge sharing through Learning Collaboratives	◯	◯	◯	◯	◯
Building relationships with project partners	◯	◯	◯	◯	◯
Sharing data with reporting partners	◯	◯	◯	◯	◯
Rapid cycle assessment and improvement tools	◯	◯	◯	◯	◯
Building infrastructure capacity for data collection and reporting	◯	◯	◯	◯	◯

29. How would you characterize changes in the following health-related aspects of your community as a result of DSRIP activities?

	Substantial improvement	Some improvement	Little or no impact	Some worsening	Substantial worsening	Too early to assess
Patient access to health care services	◯	◯	◯	◯	◯	◯
Continuity of patient care	◯	◯	◯	◯	◯	◯
Quality of patient transitions between settings	◯	◯	◯	◯	◯	◯
Quality of health care delivered	◯	◯	◯	◯	◯	◯
Patient health	◯	◯	◯	◯	◯	◯

30. What impact, if any, has the DSRIP program had on your hospital's finances?

- ◯ Very positive
- ◯ Positive
- ◯ No impact
- ◯ Negative
- ◯ Very negative

31. How useful were the following Learning Collaborative activities to your hospital?

	Very useful	Somewhat useful	Not very useful
Sharing of summary statistics based on data from hospitals' progress reports and monthly Learning Collaborative surveys	◯	◯	◯
Identification of best practices	◯	◯	◯
Sharing of case studies	◯	◯	◯
Sharing of challenges	◯	◯	◯
Sharing of successes	◯	◯	◯
Sharing of results	◯	◯	◯
Networking with other hospitals	◯	◯	◯

32. How useful were the following other activities to your hospital?

	Very useful	Somewhat useful	Not very useful
DSRIP Training Webinars	◯	◯	◯
Frequently Asked Questions on DSRIP website	◯	◯	◯

33. Are you using any rapid-cycle evaluation tools?

◯ Yes

◯ No

34. Have the following facilitated your use of rapid cycle tools?

	Yes	No	Not applicable
Learning Collaborative	◯	◯	◯
Real time data exchanges with partners	◯	◯	◯
Dashboards	◯	◯	◯
Other (specify below)	◯	◯	◯

Specify other here

35. How easy or difficult has it been for your hospital to accomplish each of the following DSRIP activities?

	Very Easy	Somewhat Easy	Somewhat Difficult	Very Difficult	N/A
Gaining support of key hospital leadership for DSRIP	◯	◯	◯	◯	◯
Creating involvement and enthusiasm among staff	◯	◯	◯	◯	◯
Achieving patient participation/enrollment	◯	◯	◯	◯	◯
Connecting patients with care needed to achieve project goals	◯	◯	◯	◯	◯
Improving patients' satisfaction with care	◯	◯	◯	◯	◯
Engaging partners in your DSRIP project	◯	◯	◯	◯	◯
Executing DUAs with reporting partners	◯	◯	◯	◯	◯
Understanding different types of project partners	◯	◯	◯	◯	◯
Understanding technical instructions for filling in Excel templates	◯	◯	◯	◯	◯
Understanding reporting timelines	◯	◯	◯	◯	◯
Meeting minimum submission requirements for progress reporting	◯	◯	◯	◯	◯
Putting together return on investment (economic value) analyses as part of progress reporting	◯	◯	◯	◯	◯
Developing a performance measurement data plan for Stage 3 and 4 reporting	◯	◯	◯	◯	◯

36. Please detail any lessons learned or best practices identified to date by your project team:

1.
2.
3.

37. Other comments including those relating to the implementation or impact of the DSRIP project on your hospital:

1.
2.
3.

38. What changes would you like to see in future implementations of DSRIP?

1.
2.
3.

THANK YOU!!

Appendix B: Hospital Midpoint Web Survey, Advance Letters and Email Reminders

Continued on next page.

Advance Letter from State for Participating Hospitals

State of New Jersey
DEPARTMENT OF HEALTH
PO BOX 360
TRENTON, N.J. 08625-0360

www.nj.gov/health

CHRIS CHRISTIE
Governor

KIM GUADAGNO
Lt. Governor

MARY E. O'DOWD, M.P.H.
Commissioner

Dear DSRIP Participant:

Thank you for your participation in the New Jersey Delivery System Reform Incentive Payment (NJ DSRIP) program, a program of the New Jersey Comprehensive Waiver (NJCW). As you may know, and referenced in section XX of Centers for Medicare & Medicaid Services (CMS) Special Terms and Conditions (STCs) and in section X.c. of the NJ DSRIP program Planning Protocol, one requirement of the waiver is submission of an evaluation of the NJ DSRIP program to the Centers for Medicare & Medicaid Services (CMS).

In the coming weeks, the Rutgers Center for State Health Policy (CSHP) will proceed with the evaluation, reaching out to you for interviews and/or web surveys. The Rutgers Institutional Review Board requires any comment or information you provide to the CSHP evaluators remain confidential. No specific comment or data will be attributed to an individual hospital or interviewee.

Please find additional information about the evaluation in the NJ DSRIP program Planning Protocol. The protocol is available under the Resources tab of the NJ DSRIP website, http://dsrip.nj.gov.

If you have any questions about the evaluation, please contact me at 609-292-7874 or by email at michael.conca@doh.state.nj.us. Thank you again for your participation in transforming the health care delivery system through the NJ DSRIP program.

Sincerely,

Michael D. Conca
Hospital Consultant

Advance Letter from State for Non-Participating Hospitals

State of New Jersey
DEPARTMENT OF HEALTH
PO BOX 360
TRENTON, N.J. 08625-0360

www.nj.gov/health

CHRIS CHRISTIE
Governor

KIM GUADAGNO
Lt. Governor

MARY E. O'DOWD, M.P.H.
Commissioner

January 14, 2015

Dear NJ Hospital Official:

Although your hospital is not participating in the New Jersey Delivery System Reform Incentive Payment (NJ DSRIP) program that is part of the NJ Comprehensive Waiver (NJCW) from the Centers of Medicare & Medicaid Services (CMS), we would like to understand more about your views on the program and how it could be improved should CMS offer the program again in the future. We plan to include suggestions from both participating and non-participating hospitals in the program evaluation required by CMS.

In the coming weeks, the Rutgers Center for State Health Policy (CSHP) will proceed with the evaluation, reaching out to you for interviews and/or web surveys. The Rutgers Institutional Review Board requires any comment or information you provide to the CSHP evaluators remain confidential. No specific comment or data will be attributed to an individual hospital or interviewee.

Please find additional information about the evaluation in the NJ DSRIP program Planning Protocol. The protocol is available under the Resources tab of the NJ DSRIP website, http://dsrip.nj.gov.

If you have any questions about the evaluation, please contact me at 609-292-7874 or by email at michael.conca@doh.state.nj.us. Thank you again for your participation in this program evaluation.

Sincerely,

Michael D. Conca
Hospital Consultant

Advance Letter from State for Withdrawn Hospitals

State of New Jersey
DEPARTMENT OF HEALTH
PO BOX 360
TRENTON, N.J. 08625-0360

www.nj.gov/health

CHRIS CHRISTIE
Governor

KIM GUADAGNO
Lt. Governor

MARY E. O'DOWD, M.P.H.
Commissioner

January 14, 2015

Dear NJ Hospital Official:

Although your hospital is no longer participating in the New Jersey Delivery System Reform Incentive Payment (NJ DSRIP) program that is part of the NJ Comprehensive Waiver (NJCW) from the Centers of Medicare & Medicaid Services (CMS), we would like to understand more about your views on the program and how it could be improved should CMS offer the program again in the future. We plan to include suggestions from both participating and non-participating hospitals in the program evaluation required by CMS.

In the coming weeks, the Rutgers Center for State Health Policy (CSHP) will proceed with the evaluation, reaching out to you for interviews and/or web surveys. The Rutgers Institutional Review Board requires any comment or information you provide to the CSHP evaluators remain confidential. No specific comment or data will be attributed to an individual hospital or interviewee.

Please find additional information about the evaluation in the NJ DSRIP program Planning Protocol. The protocol is available under the Resources tab of the NJ DSRIP website, http://dsrip.nj.gov.

If you have any questions about the evaluation, please contact me at 609-292-7874 or by email at michael.conca@doh.state.nj.us. Thank you again for your participation in this program evaluation.

Sincerely,

Michael D. Conca
Hospital Consultant

Advance Email Accompanying Advance Letter from State

Dear Hospital Official,

Attached is a letter from Michael Conca at the New Jersey Department of Health inviting you to participate in an online survey relating to the evaluation of the New Jersey Delivery System Reform Incentive Payment (NJ DSRIP) program that is part of the NJ Comprehensive Waiver (NJCW). This evaluation is being conducted by the Center for State Health Policy at Rutgers University for the NJ Department of Health. The purpose of this evaluation is to understand your hospital's experiences and perceptions with implementation of the DSRIP program.

We will be sending you another email in the coming weeks with a link to the online evaluation survey. Your feedback is vital to understanding the benefits and challenges to DSRIP implementation in your hospital. We thank you in advance for your time and input.

Sincerely,
Susan Brownlee, PhD
Senior Research Manager
Rutgers Center for State Health Policy

Email with Survey Link and Consent Information

Dear hospital official,

You recently received an email from the Center of State Health Policy at Rutgers University with an attached letter from Michael Conca at the New Jersey Department of Health inviting you to participate in an online survey relating to the evaluation of the New Jersey Delivery System Reform Incentive Payment (NJ DSRIP) program that is part of the NJ Comprehensive Waiver (NJCW). This evaluation is being conducted by the Center for State Health Policy at Rutgers University and the purpose of this web survey is to understand your hospital's experiences with implementation of the DSRIP program.

This research is confidential. Confidential means that the research records will include some information about you and your hospital and this information will be stored in such a manner that some linkage between your identity and the response in the research exists. Some of the information collected about you includes the name and address of your hospital and your title. Please note that we will keep this information confidential by limiting access to the research team and keeping it in a secure location. The data gathered in this study are confidential with respect to your personal identity unless you specify otherwise. The survey should take about 15 minutes to complete and is being sent to all 64 DSRIP-eligible New Jersey hospitals.

The research team and the Institutional Review Board at Rutgers University are the only parties that will be allowed to see the data, except as may be required by law. If a report of this evaluation is published, or the results are presented at a professional conference, only group results will be stated. All study data will be kept for a minimum of three years.

There are no foreseeable risks to participation in this evaluation. In addition, you may receive no direct benefit from taking part in this evaluation. Participation in this evaluation is voluntary. You may choose not to participate, and you may withdraw at any time during the survey without any penalty to you. In addition, you may choose not to answer any questions with which you are not comfortable.

If you have any questions about the evaluation or survey, you may contact Susan Brownlee at Rutgers Center for State Health Policy, 112 Paterson St, New Brunswick, NJ 08901, 848-932-4666, sbrownlee@ifh.rutgers.edu.

If you have any questions about your rights as a research subject, please contact an IRB Administrator at the Rutgers University, Arts and Sciences IRB:

Institutional Review Board, Rutgers University, the State University of New Jersey
Liberty Plaza / Suite 3200, 335 George Street, 3rd Floor, New Brunswick, NJ 08901
Phone: 732-235-9806, Email: humansubjects@orsp.rutgers.edu

Please retain a copy of this form for your records. By participating in the above stated procedures, then you agree to participation in this evaluation.

**Click on this link to access the survey: [insert survey hyperlink]

Thank you in advance for your assistance,
Susan Brownlee, PhD
Senior Research Manager
Rutgers Center for State Health Policy

Chapter 3: Analysis of Medicaid Claims Data to Examine Early DSRIP Impact on Patient Care, Health, Costs, and Hospital Finances

Introduction

This chapter examines four DSRIP program-related research questions detailed below using analysis, primarily based on Medicaid fee-for-service claims and managed care encounter data over the period 2011–2013.

1. To what extent does the DSRIP program achieve better care?
2. To what extent does the DSRIP program achieve better health?
3. To what extent does the DSRIP program lower costs?
4. To what extent did the DSRIP program affect hospital finances?

These research questions are addressed through four specific testable hypotheses related to DSRIP hospital programs, patient access and quality of care, cost of care, patient health, and hospital finances. Each hypothesis may shed light on multiple research questions. These four hypotheses are:

Hypothesis 1: The adoption of hospital projects in a specific focus area will result in greater improvements in related care and outcomes for patients from hospitals adopting these interventions compared to hospitals which do not adopt these interventions e.g., rates of 30-day heart failure/acute myocardial infarction readmissions will decrease in hospitals adopting cardiac care projects during the DSRIP program compared to hospitals not adopting cardiac care projects.
Hypothesis 2: The DSRIP program improves the quality of ambulatory care, both recommended and preventive, with positive effects on access to care, quality and efficiency of care, and population health. These improvements would be reflected in a decrease in rates of avoidable inpatient hospitalizations and avoidable/preventable treat-and-release emergency department (ED) visits.
Hypothesis 3: The DSRIP program will reduce racial/ethnic and gender disparities in avoidable hospital admissions, treat-and-release ED visits, and hospital readmissions.
Hypothesis 4: Hospitals receiving incentive payments do not experience adverse financial impacts.

Table A below is excerpted from our evaluation plan and presents the quality metrics examined in this report cross-walked to the one or more hypotheses that they serve to evaluate. The metrics are grouped to indicate those independently calculated by our study team and metrics calculated for hospitals by the state or by the hospitals themselves. In this chapter we present our analysis of evaluator-calculated metrics. Metrics provided to us by the state that were calculated by hospitals (for chart-based metrics) or a third-party contractor (for claims-based metrics) are presented in Chapter 4.[1]

Table A: Metrics for the Quantitative Evaluation of the NJ DSRIP Program

	Program Focus of Evaluation	Metric	Chronic Disease Outcomes	Health Outcomes	Care	Disparities	Hospital Finances
			Hypothesis				
			1	2		3	4
Evaluator-Calculated Metrics							
1	Behavioral Health	Follow-up after Hospitalization for Mental Illness 7 Days Post Discharge	X				
2	Behavioral Health	Follow-up after Hospitalization for Mental Illness 30 Days Post Discharge	X				
3	Chemical Addiction/ Substance Abuse	Initiation of Alcohol and Other Drug Treatment	X				
4	Chemical Addiction/ Substance Abuse	Engagement of Alcohol and Other Drug Treatment	X				
5	DSRIP Overall & Cardiac Care	30-Day All-Cause Readmission Rate Following Heart Failure (HF) Hospitalization	X	X		X	

PQI=Prevention Quality Indicator relating to ambulatory care sensitive hospitalizations.

[1] The analysis in Chapter 4 is distinct since it is based on data aggregated at the hospital level, on metrics that are not independently calculated by the evaluator, on hospitals' attributed Medicaid and charity care patients, and relates to a different time period: calendar years 2013 and 2014. While these reported metrics shed light on hypothesis 2, specifically the overall impact of the DSRIP program on access to care and outcomes, one of these state-provided metrics, Children and Adolescents' Access to Primary Care Practitioners, is also used to evaluate hypothesis 1 related to the obesity project. That analysis is presented in this chapter.

Table A: Metrics for the Quantitative Evaluation of the NJ DSRIP Program (continued)

	Program Focus of Evaluation	Metric	Chronic Disease Outcomes	Health Outcomes	Care	Disparities	Hospital Finances
			Hypothesis				
			1	2		3	4
6	DSRIP Overall & Cardiac Care	30-Day All-Cause Readmission Rate Following Acute Myocardial Infarction (AMI) Hospitalization	X	X		X	
7	DSRIP Overall & Pneumonia	30-Day All-Cause Readmission Rate Following Pneumonia (PN) Hospitalization	X	X		X	
8	DSRIP Overall	30-Day All-Cause Readmission Rate Following Chronic Obstructive Pulmonary Disease (COPD) Hospitalization		X		X	
9	Asthma	Emergency Department (ED) Visits for Asthma	X				
10	DSRIP Overall	Mental Health Utilization - Inpatient			X		
11	Asthma	Young Adult Asthma Admission Rate (PQI-15)	X				
12	Diabetes	Diabetes Short-Term Complications Admission Rate (PQI-01)	X				
13	DSRIP Overall	Preventable Hospitalizations (PQI-90)		X	X	X	
14	DSRIP Overall	Preventable/Avoidable Treat-and-Release ED Visits		X	X	X	
15	DSRIP Overall	Hospital Costs Related to Avoidable Inpatient Stays and Treat-and-Release ED Visits			X		
16	DSRIP Overall	Hospital Total and Operating Margins					X
Hospital and State-Reported Metrics							
17	DSRIP Overall & Obesity	Children and Adolescents' Access to Primary Care Practitioners	X		X		

PQI=Prevention Quality Indicator relating to ambulatory care sensitive hospitalizations.

Table A: Metrics for the Quantitative Evaluation of the NJ DSRIP Program (continued)

	Program Focus of Evaluation	Metric	Chronic Disease Outcomes	Health Outcomes	Care	Disparities	Hospital Finances
			Hypothesis				
			1	2		3	4
18	DSRIP Overall	COPD Admission Rate		X	X		
19	DSRIP Overall	Heart Failure Admission Rate		X	X		
20	DSRIP Overall	CD4 T-Cell Count			X		
21	DSRIP Overall	Hospital Acquired Potentially-Preventable Venous Thromboembolism (VTE)		X	X		
22	DSRIP Overall	Cervical Cancer Screening			X		
23	DSRIP Overall	Chlamydia Screening in Women Ages 21-24			X		
24	DSRIP Overall	Percentage of Live Births Weighing Less than 2,500 Grams		X	X		
25	DSRIP Overall	Pneumococcal Immunization (PPV 23)			X		
26	DSRIP Overall	Childhood Immunization Status			X		
27	DSRIP Overall	Well-Child Visits in the First 15 Months of Life			X		

PQI=Prevention Quality Indicator relating to ambulatory care sensitive hospitalizations.

Methods

Data Sources

We use Medicaid fee-for-service claims and managed care encounter data for calendar years 2011–2013 and also uniform billing (UB) all-payer hospital discharge data over the same period. The 2008–2012 American Community Survey (ACS) was our source for defining the list of populated zip codes in New Jersey and creating population denominators for all-payer rates in 2011–2012. The 2009–2013 ACS was used for population denominators for all-payer rates for 2013. Finally, we used 2011–2013 CMS hospital-level cost reports for data on hospital finances and one state-reported hospital performance metric for 2013–2014.

Study Period

The baseline years for evaluation of the DSRIP program are 2011–2012. Year 2013, which spans Demonstration Years 1 and 2, is the first DSRIP program year, although it is important to note that no hospital projects had formally launched in 2013 and the program was in transition at this time. Therefore, this midpoint assessment comparing outcomes in 2013 to 2011–2012 describes only the very early impact of DSRIP program activities as hospitals prepared their DSRIP applications and planned for the potential implementation of chronic disease management projects.

Selection and Calculation of Outcome Variables

Table B below presents the 17 quality metrics examined in this chapter of the report. We selected validated metrics such as those developed by the National Committee on Quality Assurance (NCQA) and National Quality Forum (NQF)-endorsed metrics that could be calculated from available data. We chose metrics that would reflect the effect of DSRIP program on the overall delivery system, both inpatient and ambulatory care, instead of narrower inpatient process-based measures. We focused on metrics that are being used to assess similar delivery system-related pay-for-performance efforts e.g., all-cause readmissions from initial hospitalizations of heart failure, acute myocardial infarction, and pneumonia. Appendix A provides additional information on these metrics and their relevance in assessing delivery system changes.

We followed the specifications of the measure steward for each metric as closely as possible given the data available. The set of metrics from the Healthcare Effectiveness Data and Information Set (HEDIS) were calculated using the 2014 HEDIS specifications. For calculating hospital readmissions we adapted the 2014 Centers for Medicare & Medicaid Services' 30-day readmission measures criteria for the Medicaid claims data. We used the August 2014 version 4.5A of the Agency for Healthcare Research and Quality's (AHRQ) Prevention Quality Indicators (PQI) program for analyzing avoidable/preventable inpatient hospitalizations and algorithms by Professor John Billings of New York University to calculate primary care preventable ED visits.

If not already part of the metric specification, an additional inclusion criteria imposed on all metrics was the requirement that a claim was only counted if the beneficiary had been continuously enrolled in Medicaid for at least 30 days preceding the claim date. As stated in our evaluation plan, this criterion eliminates events which might precipitate Medicaid enrollment and confound the effect of the DSRIP program.

Table B organizes the metrics used in our evaluation of chronic disease outcomes, access and quality of care, and racial/ethnic and gender disparities into three categories: index-event-based, population-based, and hospital-level metrics.

Index Event and Population-Based Metrics: The first category of *Index Event-Based Metrics* comprises outcomes related to an initial *index* event (an initial hospital stay or provider visit) experienced by the patient. Examples include whether the patient had a readmission within 30 days of an initial index hospitalization; had a follow up visit within 7 days of an index hospitalization for mental illness, or initiated and engaged in alcohol treatment shortly after an index diagnosis of alcohol or other drug dependence. The second category of *Population-Based Metrics* relates to outcome events where the relevant denominator is a population of Medicaid beneficiaries. This metric type could be assessed at an individual level (e.g., ED visit for asthma by any person) or aggregated at a geographic level (rate of avoidable hospitalizations per unit population in a zip code). When calculating zip code-level rates, we used the sum of enrollment periods for all Medicaid beneficiaries in that zip code for a particular year as the denominator. This accounts for differing lengths of enrollment time across zip codes that would influence the likelihood of the outcome event in Medicaid data. When calculating costs associated with avoidable inpatient and ED use, we put estimates for all years in 2012 dollars using consumer price indices (CPI) for medical care to adjust for medical care inflation over the study period (Crawford and Church 2014, 165; Crawford, Church, and Rippy 2013, 164).

Table B shows that the outcome variables may be binary (e.g., readmissions) or continuous (e.g., number of avoidable hospitalizations per unit population). It also includes provider or Medicaid beneficiary-related inclusion criteria that are adopted for calculating each of these metrics.

Hospital-Level Metrics: We utilized two sets of hospital-level metrics. The first relates to hospital financial performance and includes hospital total and operating margin. This assesses the financial impact of the DSRIP program on hospitals.

The second set of metrics relate to children and adolescents' access to primary care practitioners stratified by specific age groups. This metric belongs to both Stage 3 category (they are reported for hospitals in the obesity program) and Stage 4 category (reported for all hospitals). This outcome is used to assess the effect of the obesity program on improvement in access to primary care.

Table B: Metric Descriptions

	Program Focus of Evaluation	Metric Abbreviation	Metric	Inclusion Criteria	Outcome	DSRIP Exposure Assignment
Index Event-Based Metrics						
1	Behavioral Health	FUH-7	Follow-up after Hospitalization for Mental Illness 7 Days Post Discharge	Ages 6+ at any NJ DSRIP-participating hospital	0/1	by hospital
2	Behavioral Health	FUH-30	Follow-up after Hospitalization for Mental Illness 30 Days Post Discharge	Ages 6+ at any NJ DSRIP-participating hospital	0/1	by hospital
3	Chemical Addiction/ Substance Abuse	IT-AOD	Initiation of Alcohol and Other Drug Treatment	NJ residents[2] ages 13+ at any NJ provider	0/1	by zip
4	Chemical Addiction/ Substance Abuse	ET-AOD	Engagement of Alcohol and Other Drug Treatment	NJ residents[2] ages 13+ at any NJ provider	0/1	by zip
5	DSRIP Overall & Cardiac Care	RSRR-HF	30-Day All-Cause Readmission Rate Following Heart Failure (HF) Hospitalization	Ages 18+ at any NJ hospital[1]	0/1	by hospital

[1] For analysis of readmission metrics assessing DSRIP programs related to chronic conditions, only DSRIP participating hospitals are included.

[2] For population-based metrics assessing DSRIP programs related to chronic conditions, only NJ residents in zips with non-zero DSRIP exposure are included in analyses.

Notes: With the exception of the hospital financial metrics (#16) and Children and Adolescents' Access to Primary Care Practitioners metric (#17), all metrics are calculated using Medicaid claims and encounter data. Comparisons using uniform billing hospital discharge data are also conducted for preventable hospital use metrics (#13 and #14).

Table B: Metric Descriptions (continued)

	Program Focus of Evaluation	Metric Abbreviation	Metric	Inclusion Criteria	Outcome	DSRIP Exposure Assignment
6	DSRIP Overall & Cardiac Care	RSRR-AMI	30-Day All-Cause Readmission Rate Following Acute Myocardial Infarction (AMI) Hospitalization	Ages 18+ at any NJ hospital[1]	0/1	by hospital
7	DSRIP Overall & Pneumonia	RSRR-PN	30-Day All-Cause Readmission Rate Following Pneumonia (PN) Hospitalization	Ages 18+ at any NJ hospital[1]	0/1	by hospital
8	DSRIP Overall	RSRR-COPD	30-Day All-Cause Readmission Rate Following Chronic Obstructive Pulmonary Disease (COPD) Hospitalization	Ages 18+ at any NJ hospital	0/1	by hospital
Population-Based Metrics						
Person-Level						
9	Asthma	HDC-AC	Emergency Department (ED) Visits for Asthma	NJ residents[2]	0/1	by zip
10	DSRIP Overall	MPT	Mental Health Utilization – Inpatient	NJ residents	0/1	by zip
Zip-Level						
11	Asthma	PQI-15	Younger Adult Asthma Admission Rate (PQI-15)	NJ residents[2] ages 18+	count per 10K beneficiary years	by zip

[1] For analysis of readmission metrics assessing DSRIP programs related to chronic conditions, only DSRIP participating hospitals are included.

[2] For population-based metrics assessing DSRIP programs related to chronic conditions, only NJ residents in zips with non-zero DSRIP exposure are included in analyses.

Notes: With the exception of the hospital financial metrics (#16) and Children and Adolescents' Access to Primary Care Practitioners metric (#17), all metrics are calculated using Medicaid claims and encounter data. Comparisons using uniform billing hospital discharge data are also conducted for preventable hospital use metrics (#13 and #14).

Table B: Metric Descriptions (continued)

	Program Focus of Evaluation	Metric Abbreviation	Metric	Inclusion Criteria	Outcome	DSRIP Exposure Assignment
12	Diabetes	PQI-01	Diabetes Short-Term Complications Admission Rate (PQI-01)	NJ residents[2] ages 18+	count per 10K beneficiary years	by zip
13	DSRIP Overall	PQI-90	Preventable Inpatient Hospitalizations (PQI 90)	NJ residents ages 18+	count per 10K beneficiary years	by zip
14	DSRIP Overall	AVED	Preventable/Avoidable Treat-and-Release ED Visits	NJ residents ages 18+	count per 10K beneficiary years	by zip
15	DSRIP Overall	AV$	Hospital Costs Related to Avoidable Inpatient Stays and Treat-and-Release ED Visits	NJ residents ages 18+	costs per 10K beneficiary years	by zip
Hospital-Level Metrics						
16	DSRIP Overall	MGN	Hospital Total and Operating Margin	All NJ hospitals	percentage	by hospital
17	DSRIP Overall & Obesity	CAP	Children and Adolescents' Access to Primary Care Practitioners	NJ DSRIP-participating hospitals	percentage	by hospital

[1] For analysis of readmission metrics assessing DSRIP programs related to chronic conditions, only DSRIP participating hospitals are included.
[2] For population-based metrics assessing DSRIP programs related to chronic conditions, only NJ residents in zips with non-zero DSRIP exposure are included in analyses.
Notes: With the exception of the hospital financial metrics (#16) and Children and Adolescents' Access to Primary Care Practitioners metric (#17), all metrics are calculated using Medicaid claims and encounter data. Comparisons using uniform billing hospital discharge data are also conducted for preventable hospital use metrics (#13 and #14).

Defining Exposure to DSRIP Program

For all index event-based metrics, except initiation/engagement of AOD, the index event occurs in an inpatient hospital setting, and the patient was considered exposed to the DSRIP program overall (or a particular chronic disease management program) if the hospital where the index admission occurred was participating in the DSRIP program in 2013 (or participating in a chronic disease management program). Over the course of the DSRIP program, hospitals may discontinue participation and our analysis will incorporate such changes.

Assignment of DSRIP exposure for all population-based metrics and for initiation/engagement of AOD, (where the qualifying index event could occur at an outpatient provider setting) is based on the extent to which zip codes where the patients resided had DSRIP-participating hospitals. This was operationalized using a "choice set" methodology previously developed at CSHP (DeLia et al. 2009). Using 2011–2012 UB hospital discharge data for both inpatient stays and emergency department treat-and-release visits from 591 NJ zip codes (see Appendix G for details relating to zip code identification and selection), we created a "choice set" (or relevant set) of hospitals for each NJ zip code based on the volume of Medicaid discharges from area hospitals. The hospital choice set for a particular zip code is the smallest set of hospitals that accounts for at least 75% of all hospital discharges relating to Medicaid beneficiaries in that zip code. The purpose of the choice set thus, is to focus on those hospitals that individually account for the highest number of Medicaid-paid discharges relating to patients residing in a zip code, and also as a group account for the majority of Medicaid discharges relating to that zip code.

Based on the choice set hospitals, we considered three alternative measures of the zip code population's (or a patient's, in case of AOD metrics) exposure to DSRIP.

Exposure Measure 1: Equals 1 if any hospital in the choice set took part in the program, 0 otherwise
Exposure Measure 2: Equals the number of hospitals in the choice set that took part in the program
Exposure Measure 3: Percent of discharges relating to all hospitals in the choice set that belong to hospitals taking part in the program

Exposure Measure 3 was our primary indicator of DSRIP exposure at the zip code level. We also created an additional measure based on this to classify zip codes as having high or low exposure to DSRIP. Specifically, if for any zip code the DSRIP-participating hospitals in the choice set accounted for more than 50% of Medicaid discharges from all choice set hospitals, that zip code was considered a high DSRIP exposure zip code. If the percentage was less than or equal to 50%, that zip code was considered low exposure.

We conducted robustness checks where appropriate, alternatively defining the hospital choice set based on 90% of Medicaid discharges to a zip code.

Analytic Strategy

The effect of the DSRIP program is assessed by identifying its impact on individual patient outcomes as well as population-based outcomes that are aggregated across zip codes. The effect on patient outcomes that are related to hospital events (index event based metrics) is measured by the change in outcomes over time for hospitals that participated in the DSRIP program relative to comparison hospitals that did not participate in the program. Similarly the effect of specific disease management programs is examined by comparing hospitals that took part in the program to other DSRIP-participating hospitals that did not take part in the program. For instance, the effectiveness of the cardiac care program is examined by comparing related patient outcomes in DSRIP-participating hospitals adopting that program to those that did not adopt that program at two points of time-before and after the start of the DSRIP program.

For metrics that are population-based, we examine how patient outcomes vary across NJ zip codes and over time, as the DSRIP program is implemented. The zip codes are distinguished by their differing exposure to the DSRIP program based on the exposure measures defined above.

The statistical method utilized to identify the program effect is a difference-in-differences (DD) estimation technique that examines changes in selected outcomes in the study group, from pre- to post-program implementation, relative to a comparison group. Such an estimation strategy is able to identify changes in outcomes that are due to program impact, and distinct from secular trends. It further accounts for the effect of unobserved factors, as long as their impact on one of the groups relative to the other do not change over time.

$$Y_{it} = \beta_0 + \beta_1(program)_i + \beta_2(post)_t + \beta_3(program_i * post_t) + \gamma X_{it} + \varepsilon_{it} \qquad (1)$$

Equation (1) illustrates the general DD specification. The variable Y_{it} represents the outcome for the i^{th} patient or zip code[2], depending on the metric, at year t. *Post*= 0 for years 2011–2012 and =1 for year 2013 when the DSRIP program began in New Jersey[3]. *Program* equals 0 or 1 (depending on hospital participation) when the outcome is a hospital-based metric, or equals the DSRIP exposure variable when the program effect operates based on the zip code where the

[2] For the obesity-related metrics or hospital financial margin the unit of analysis is the hospital.

[3] 30-day readmissions metrics require a full year of retrospective data for risk adjustment and are therefore calculated only for years 2012 and 2013. Therefore, *post*=0 for year 2012 and =1 for year 2013 in models using readmissions outcomes.

patient resides. In this model, β_3 measures the program impact. X_{it} is a vector of other control variables relating to the patient, and ε_{it} represents the random error term.

Depending on the specific metric, Y_{it} can be modelled as a rate or a binary variable. Details relating to the unit of analysis which may be a patient, a hospital discharge, or zip code, and statistical modelling are detailed in Table C. The basic model in equation (1) is augmented with year, zip code or hospital fixed effects as applicable. For analysis of outcomes that have zip code Medicaid population-based denominators (adjusted by differing enrollment periods), regressions were weighted by total beneficiary-years in each zip code. This ensured that each zip code contributed to the estimation of DSRIP effects in proportion to the volume and enrollment duration of its Medicaid beneficiaries who met the inclusion criteria for the metric.

The model was also augmented to examine the effect of the DSRIP program on racial/ethnic and gender disparities. For readmission metrics, we introduced additional terms that included the interaction between the indicators for program, post period and race/ethnicity along with other related main and interaction effects.

When there was insufficient sample size for each of the individual racial/ethnic groups, we created a minority indicator variable that combined Blacks, Hispanics, and patients belonging to other-race/ethnicity into a single group. This variable was then used in models to estimate whether there was any differential effect of DSRIP on minorities as a group compared to Whites.

For assessing disparities based on avoidable hospitalizations and ED visits, we examined the effect of the program on the difference in the rate of these events between each racial/ethnic minority group and whites, and also between females and males. When assessing disparities based on these zip-code based metrics, the total beneficiary-years of the specific minority group, or females, were used as analytic weights to account for variability in these populations across zip codes.

The final two metrics that we analyze relate to hospital financial performance and assessment of the obesity program and the unit of analysis is the hospital. The outcome variables are hospital operating margin, hospital total margin, and percentage of hospital attributed population that had access to primary care physician. Within the previously described DD framework, the estimated coefficient of the interaction term between program and post measures the effect of the DSRIP program on the relevant outcome.

Results relating to event-based metrics are not reported when estimates are based on denominators are less than 30. Our estimation procedures were conducted using STATA MP 14 or SAS 9.2 software.

Explanatory Variables

Table C lists details on explanatory variables used in the multivariate regression analysis relating to the 15 metrics. For modelling outcomes related to the index-event based metrics, we used individual-level control variables such as beneficiary age and sex, and diagnosis-based Chronic Illness and Disability Payment System (CDPS) risk score that measures disease diagnoses and burden of illness with higher values indicating greater disease burden. For the FUH and AOD metrics, we used the individual's CDPS risk score category (<=1, 1-2, 2-3, 3-5, and >5) during baseline and the post-implementation year to adjust for health status changes. For readmission metrics we used the full set of risk-adjustment variables that are defined by the CMS methodology related to Risk Standardized Readmission Rates (RSRR) (QualityNet 2015). Appendix E lists all the risk-adjustment variables for each of the readmission outcomes. For all of these metrics, except IT-AOD and ET-AOD, we utilize hospital fixed effects to adjust for the effect on outcomes of time-invariant differences across hospitals.

For population-based metrics and the IT-AOD and ET-AOD metrics where DSRIP exposure is assigned based on zip codes where patients reside, zip code fixed effects account for time-invariant differences across zip codes such as socio-demographic composition and disease prevalence. As before, we account for the change in disease diagnoses and burden of illness over time by adjusting for the CDPS risk score category for each individual for person-level metrics. For metrics that are averages based on zip-populations, such as avoidable hospitalizations or those relating to asthma or diabetes hospitalizations, we use the average CDPS score in the zip code for each year.

For all metrics, year fixed effects adjust for changes in outcomes over time that are common across all patients.[4]

[4] 30-day readmissions metrics require a full year of retrospective data for risk adjustment and are therefore calculated only for years 2012 and 2013. For these, the *post* indicator for calendar year 2013 is the year fixed effect.

Table C: Modeling Details

	Program Focus of Evaluation	Metric	Unit of Analysis	Outcome	Model Specification[1]	Control Variables
Index Event-Based Metrics						
1	Behavioral Health	Follow-up after Hospitalization for Mental Illness 7 Days Post Discharge	index hospitalization	0/1	Linear Probability Model	gender, age, CDPS risk category, hospital and year FE
2	Behavioral Health	Follow-up after Hospitalization for Mental Illness 30 Days Post Discharge	index hospitalization	0/1	Linear Probability Model	gender, age, CDPS risk category, hospital and year FE
3	Chemical Addiction/ Substance Abuse	Initiation of Alcohol and Other Drug Treatment	index event	0/1	Linear Probability Model[2]	gender, CDPS risk category, zip and year FE
4	Chemical Addiction/ Substance Abuse	Engagement of Alcohol and Other Drug Treatment	index event	0/1	Linear Probability Model[2]	gender, CDPS risk category, zip and year FE
5	DSRIP Overall & Cardiac Care	30-Day All-Cause Readmission Rate Following Heart Failure (HF) Hospitalization	index hospitalization	0/1	Linear Probability Model	age, gender, clinical risk factors, hospital FE
6	DSRIP Overall & Cardiac Care	30-Day All-Cause Readmission Rate Following Acute Myocardial Infarction (AMI) Hospitalization	index hospitalization	0/1	Linear Probability Model	age, gender, clinical risk factors, hospital FE
7	DSRIP Overall & Pneumonia	30-Day All-Cause Readmission Rate Following Pneumonia (PN) Hospitalization	Index hospitalization	0/1	Linear Probability Model	age, gender, clinical risk factors, hospital FE

CDPS=Chronic Illness and Disability Payment System; FE=Fixed Effects.

[1] All models use robust standard errors.

[2] Models are stratified by age (13-17, and 18+) as per HEDIS specifications for this metric.

[3] Models are stratified by age (0-17, and 18+).

Table C: Modeling Details (continued)

	Program Focus of Evaluation	Metric	Unit of Analysis	Outcome	Model Specification[1]	Control Variables
8	DSRIP Overall	30-Day All-Cause Readmission Rate Following Chronic Obstructive Pulmonary Disease (COPD) Hospitalization	Index hospitalization	0/1	Linear Probability Model	age, clinical risk factors, hospital FE
Population-Based Metrics						
Person-Level						
9	Asthma	Emergency Department (ED) Visits for Asthma	beneficiary	0/1	Linear Probability Model[3]	gender, CDPS risk category zip and year FE
10	DSRIP Overall	Mental Health Utilization - Inpatient	beneficiary	0/1	Linear Probability Model	age, gender, CDPS risk category zip and year FE
Zip-Level						
11	Asthma	Younger Adult Asthma Admission Rate (PQI-15)	zip code	count per 10K beneficiary years	Weighted linear regression	CDPS average, zip and year FE
12	Diabetes	Diabetes Short-Term Complications Admission Rate (PQI-01)	zip code	count per 10K beneficiary years	Weighted linear regression	CDPS average, zip and year FE
13	DSRIP Overall	Preventable Inpatient Hospitalizations (PQI-90)	zip code	count per 10K beneficiary years	Weighted linear regression	CDPS average, zip and year FE
14	DSRIP Overall	Preventable/Avoidable Treat-and-Release ED Visits	zip code	count per 10K beneficiary years	Weighted linear regression	CDPS average, zip and year FE

CDPS=Chronic Illness and Disability Payment System; FE=Fixed Effects.

[1] All models use robust standard errors.

[2] Models are stratified by age (13-17, and 18+) as per HEDIS specifications for this metric.

[3] Models are stratified by age (0-17, and 18+).

Table C: Modeling Details (continued)

	Program Focus of Evaluation	Metric	Unit of Analysis	Outcome	Model Specification[1]	Control Variables
15	DSRIP Overall	Hospital Costs Related to Avoidable Inpatient Stays and Treat-and-Release ED Visits	zip code	costs per 10K beneficiary years	Weighted, generalized linear model with gamma log link	CDPS average, year FE
Hospital-level Metrics						
16	DSRIP Overall	Hospital Total and Operating Margin	hospital	percentage	Linear regression	—
17	DSRIP Overall & Obesity	Children and Adolescents' Access to Primary Care Practitioners	hospital	percentage	Weighted linear regression	—

CDPS=Chronic Illness and Disability Payment System; FE=Fixed Effects.

[1] All models use robust standard errors.

[2] Models are stratified by age (13-17, and 18+) as per HEDIS specifications for this metric.

[3] Models are stratified by age (0-17, and 18+).

Results

In this section we report findings from quantitative analyses that capture the very early effects of the DSRIP program. It is important to remember that we compare outcomes between the pre-DSRIP baseline period comprising 2011–2012 and the first year of the DSRIP program which is 2013. This year precedes the official DSRIP implementation period that starts in January 2014 (Myers and Stauffer LC 2015), but we characterize and refer to hospitals by their participation status (including selected program area) effective in 2014. As additional data become available relating to periods of active implementation of the DSRIP projects, analyses based on that data could potentially yield substantively different findings from those found here. With that caveat, our estimates of program impact in this specific report will be based on the baseline period and first DSRIP program year. Finally, unless otherwise noted, findings reported do not differ substantively when sensitivity analyses are done using an alternative specification of the hospital choice set used to define DSRIP exposure (as discussed in the Methods section).

Impact of DSRIP Programs by Focus Area

Behavioral Health Program: Figures 3.1 and 3.2 report 7-day and 30-day follow up rates after a hospitalization for mental illness. These rates are shown separately for the group of hospitals

that are participating in the BH program and the comparison group of DSRIP hospitals that is not, for the baseline period spanning 2011–2012 and calendar year 2013 which is the first DSRIP program year.

Thirty-day follow up rates are expectedly higher than 7-day rates and this difference is higher for DSRIP hospitals participating in the BH programs (for these hospitals rates are twice as high). For both metrics, the follow up rates are higher among the hospitals not participating in the BH program.

Table 3.1 reports the findings based on a regression analysis examining the effect of the BH program on these outcomes by comparing hospitals that participated in the program to those that did not, for the baseline and the first year of the DSRIP program. We find that the effect of the BH program is reflected in a 1.5 percentage point decrease in both follow up rates, but these estimates are not statistically significant.

Chemical Addiction/Substance Abuse Program: Figures 3.3 reports rates of initiation in alcohol and other drug (AOD) treatment for two groups of patients classified based on whether at least one hospital in their zip codes was taking part in a chemical addiction/substance abuse program. These are reported for the baseline period spanning 2011–2012 and calendar year 2013 which is the first DSRIP program year. Figure 3.4 reports the corresponding rates for engagement in AOD.

We see that both groups of patients experienced an increase in both initiation and engagement rates from baseline to the first DSRIP program year. Rates for initiation for any group of patient during any year(s) were higher than the corresponding rates of engagement.

Table 3.2 reports the findings based on a regression analysis examining the effect of the chemical addiction and substance abuse program on these outcomes. The results are reported overall and separately for age stratifications 13-17 and 18+. The estimates reflect the average increase in the likelihood (ranging between 0 and 1) of initiation and engagement, due to a 1% increase in DSRIP exposure.

Compared to a zip code with zero exposure to the program (i.e. where none of the hospitals took part in the program), a patient in a zip code with 100% exposure to the program (where all hospitals took part in the program) had 1.3 percentage point higher likelihood of initiation in AOD.

The corresponding increase in engagement was by less than 1 percentage point. Neither of these effects were statistically significant. The pattern was similar for both age stratifications, although still not statistically significant.

Asthma Program: Figure 3.5 reports rates of ED visits for asthma among patients classified by whether their zip code had at least one hospital participating in the asthma program. Rates of ED visits for asthma decreased from the baseline to the first DSRIP program year for patients in both types of zip code.

Table 3.3 reports the results from a regression analysis stratifying patients by age. The effect of the program on the likelihood of ED visit for asthma was close to zero. Specifically, as a child's exposure to DSRIP asthma programs increased from 0% to 100%, the probability of an ED visit for asthma increased by 2/10 of a percentage point For adults it increased by 3/10 of a percentage point and was significant at the 5% level.

Figures 3.6 and 3.7 report rates of population-based, younger adult hospital admission rates for asthma in zip codes distinguished by hospitals' participation in an asthma intervention project. Figure 3.6 classifies zip codes based on whether they had participation by at least one hospital and Figure 3.7 classifies zip codes on the extent of area hospital participation. We see that asthma admission rates were higher for both periods in zip codes that had greater hospital participation. Additionally, for every category of zip code, the admission rates decreased from the baseline to the first DSRIP program year.

Table 3.4 reports the results from a regression analysis examining the effect of the asthma program. We see a very small but statistically significant decrease in preventable asthma admissions due to the asthma program. The estimate indicates that compared to a zip code that had no exposure to the program, a zip code where all hospitals participated in the asthma program had 8.3 fewer preventable asthma hospitalizations per 10,000 Medicaid beneficiary-years (for ages 18-39).

Diabetes Program: Figures 3.8 and 3.9 report rates of population-based, diabetes short-term complications admission rates in zip codes distinguished by hospitals' participation in a diabetes intervention project. Figure 3.8 classifies zip codes based on whether they had participation by at least one hospital and Figure 3.9 classifies zip codes on the extent of area hospital participation. We see that diabetes short-term complications admission rates were higher for both periods in zip codes that had greater hospital participation. However, zips with the higher exposure to DSRIP hospitals in the diabetes program had a decrease in this preventable

admission rate from the baseline to the first DSRIP program year. Zips with no or low area hospital participation had an increase in the rate over this time period.

Table 3.5 reports the results from a regression analysis examining the effect of the diabetes program. We see a very small but statistically significant decrease in preventable diabetes admissions for short-term complications due to the diabetes DSRIP program. The estimate indicates that compared to a zip code that had no exposure to the program, a zip code where all hospitals participated in the diabetes program had 4.8 fewer of these preventable diabetes hospitalizations per 10,000 Medicaid beneficiary-years (for ages 18 and above).

Cardiac Care Program: Figures 3.10 and 3.11 report HF and AMI readmission rates in 2012 and 2013 for patients in hospitals classified by participation in the cardiac care program. Average HF readmission rates improved (decreased in magnitude) for patients in 2013 for both categories of hospitals; AMI readmission rates worsened slightly for hospitals taking part in the program but improved slightly for hospitals not taking part. All the AMI readmission-related changes were less than 0.5 percentage point.

Table 3.6 reports results from regression analyses examining the effect of the cardiac care program. The program effect is reflected in a 3.1 percentage point decrease in HF readmissions and a 1.6 percentage point increase in AMI readmissions. None of these changes were statistically significant.

Pneumonia Program: Figures 3.12 reports pneumonia readmission rates in 2012 and 2013 for patients in hospitals classified by participation in the pneumonia program. Average pneumonia readmission rates improved (decreased in magnitude) in 2013 for both categories of hospitals, and the improvement was greater for DSRIP hospitals not taking part in the pneumonia program.

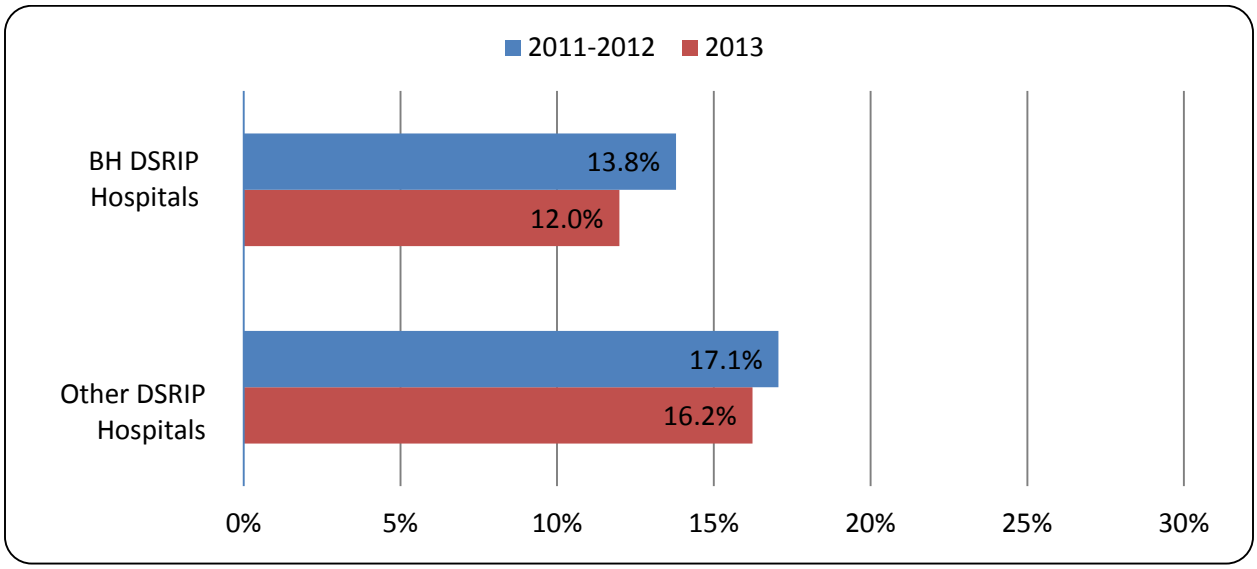
Table 3.7 reports results from regression analyses examining the effect of the pneumonia program. The program's effect is reflected in a 0.3 percentage point increase in pneumonia readmissions, but this change was not statistically significant.

Obesity Program: Figure 3.13 is an analysis of the hospital-level metric calculated and reported by the state on behalf of DSRIP-participating hospitals. It assesses the percentage of children ages 7-11 years old attributed to DSRIP hospitals with access to primary care physicians.

The hospital participating in the obesity program had slightly higher rates in both 2013 and 2014 than hospitals in DSRIP but participating in interventions for other chronic conditions. While both groups of hospitals had small increases in this metric from 2013 to 2014, the increase for the

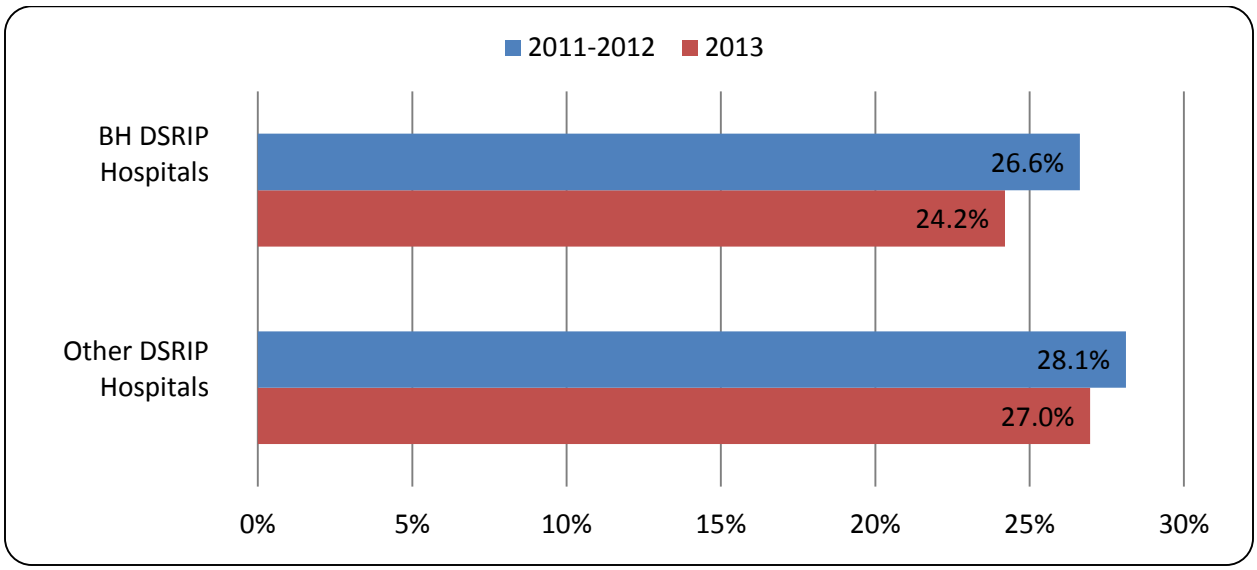
hospital with the obesity project was greater by 0.5 percentage points, though this was not statistically significant.

Figure 3.1: Rates of 7-Day Follow-up after Hospitalization for Mental Illness by DSRIP Hospital Participation in the Behavioral Health Program



Source: Medicaid Fee-for-Service Claims & Managed Care Encounter Data; Analysis by Rutgers Center for State Health Policy.
Notes: BH=Behavioral Health.
Discharge-level analysis.

Figure 3.2: Rates of 30-Day Follow-up after Hospitalization for Mental Illness by DSRIP Hospital Participation in the Behavioral Health Program



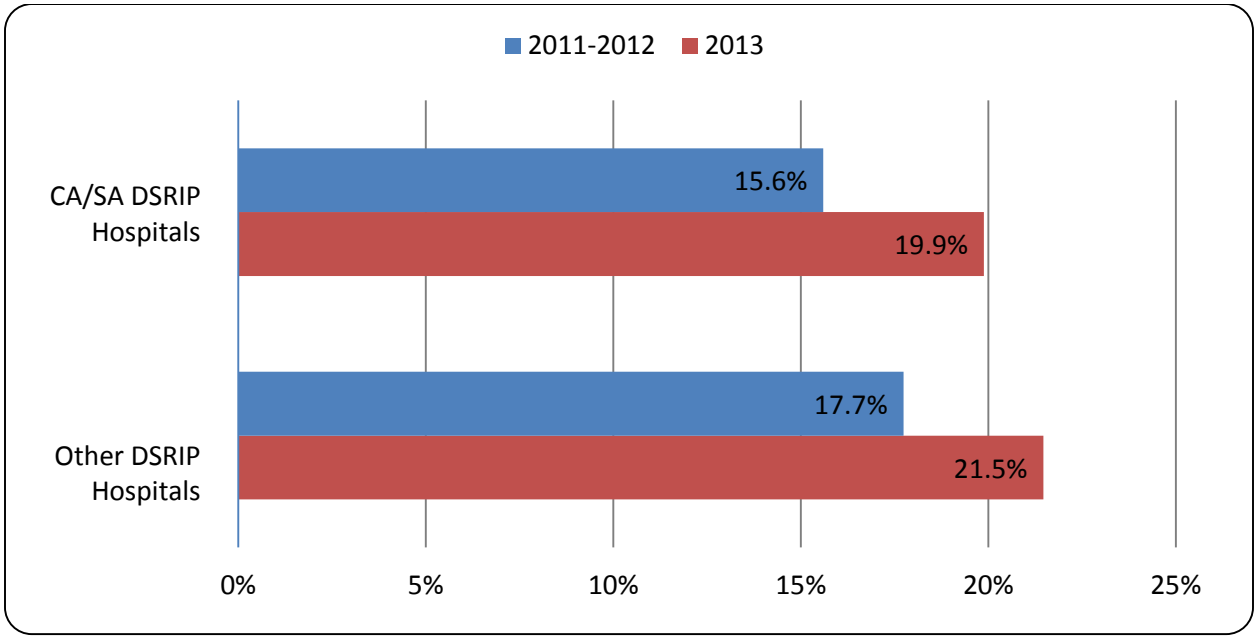
Source: Medicaid Fee-for-Service Claims & Managed Care Encounter Data; Analysis by Rutgers Center for State Health Policy.
Notes: BH=Behavioral Health.
Discharge-level analysis.

Table 3.1: DSRIP Behavioral Health Program's Impact on Follow-up after Hospitalization for Mental Illness

n=20,108	DSRIP BH Program Impact Estimate
7-Day Follow-up	-0.015
	(0.011)
30-Day Follow-up	-0.015
	(0.013)

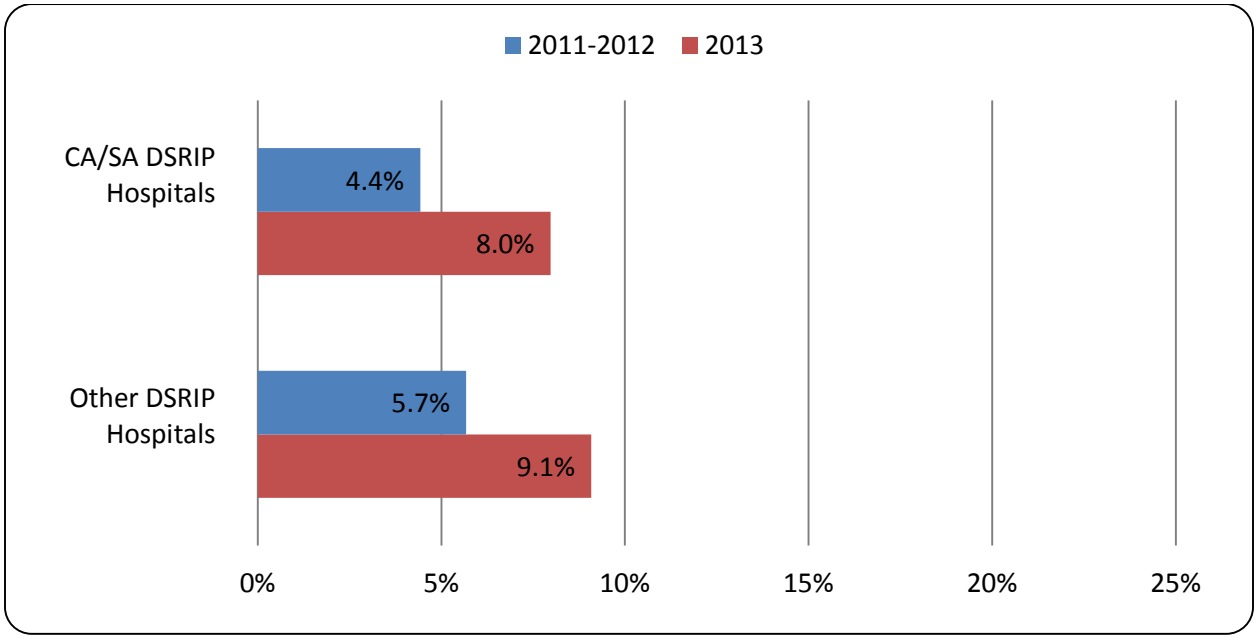
Source: Medicaid Fee-for-Service Claims & Managed Care Encounter Data; Analysis by Rutgers Center for State Health Policy.
Notes: BH=Behavioral Health.
Discharge-level regression analysis with hospital fixed effects.
Robust standard errors in parentheses.
*** p<0.01, ** p<0.05, * p<0.1
See Appendix G for full model results.

Figure 3.3: Rates of Initiation in Alcohol or Other Drug Treatment by DSRIP Hospital Participation in the Chemical Addiction/Substance Abuse Program



Source: Medicaid Fee-for-Service Claims & Managed Care Encounter Data; Analysis by Rutgers Center for State Health Policy.
Notes: CA/SA=Chemical Addiction/Substance Abuse.
Rates are reported for patients in zip codes with DSRIP hospitals participating in the CA/SA program, and also zip codes where hospitals did not take part in the program.

Figure 3.4: Rate of Engagement in Alcohol or Other Drug Treatment by DSRIP Hospital Participation in the Chemical Addiction/Substance Abuse Program



Source: Medicaid Fee-for-Service Claims & Managed Care Encounter Data; Analysis by Rutgers Center for State Health Policy.

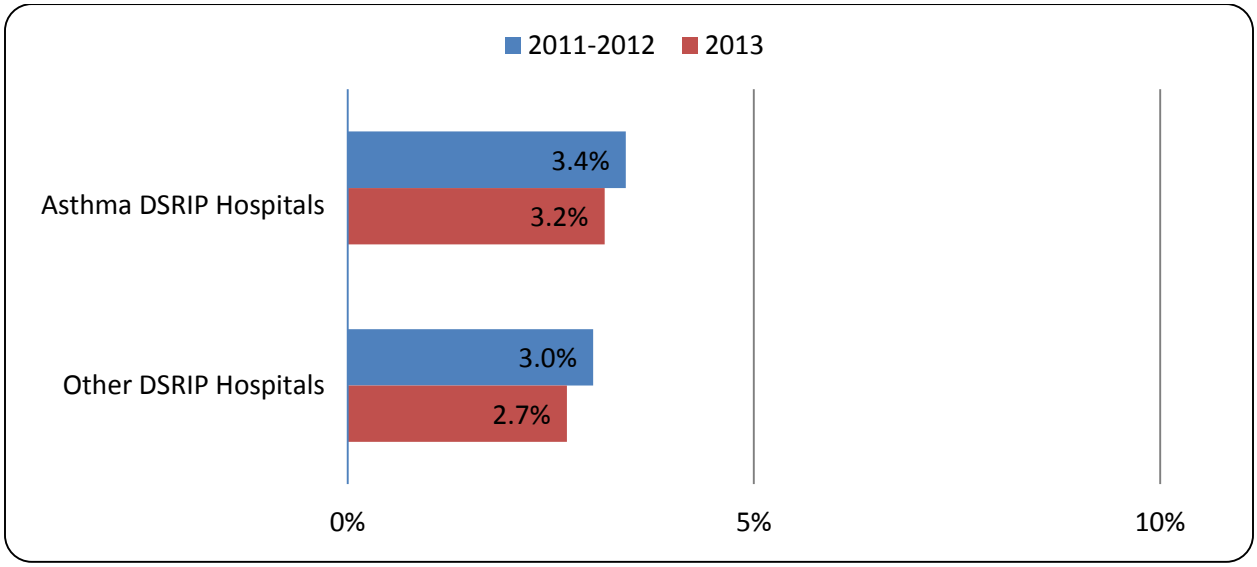
Notes: CA/SA=Chemical Addiction/Substance Abuse.
Rates are reported for patients in zip codes with DSRIP hospitals participating in the CA/SA program, and also zip codes where hospitals did not take part in the program.

Table 3.2: DSRIP Chemical Addiction/Substance Abuse Program's Impact on Initiation and Engagement in Alcohol and Other Drug Treatment

	DSRIP CA/SA Program Impact Estimate		
	Overall *(n=70,623)*	**Ages 13-17** *(n=5,902)*	**Ages 18+** *(n=64,721)*
Initiation of AOD Treatment	0.00013	0.00011	0.00009
	(0.00014)	(0.00048)	(0.00014)
Engagement in AOD Treatment	0.00004	-0.00001	0.00002
	(0.00008)	(0.00026)	(0.00008)

Source: Medicaid Fee-for-Service Claims & Managed Care Encounter Data; Analysis by Rutgers Center for State Health Policy.
Notes: CA/SA=Chemical Addiction/Substance Abuse.
Patient-level regression analysis with zip code fixed effects.
Robust standard errors in parentheses.
*** p<0.01, ** p<0.05, * p<0.1
See Appendix G for full model results.

Figure 3.5: Emergency Department Visit for Asthma by DSRIP Hospital Participation in the Asthma Program



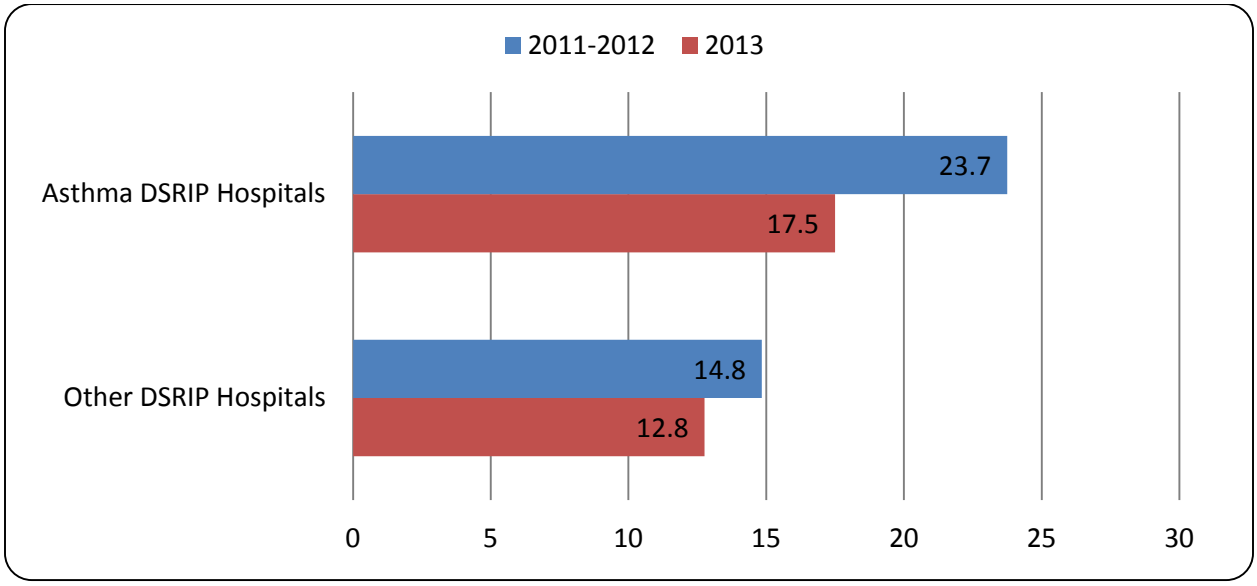
Source: Medicaid Fee-for-Service Claims & Managed Care Encounter Data; Analysis by Rutgers Center for State Health Policy.
Note: Bars reflect percentage of Medicaid beneficiaries with one or more ED visits for asthma during the year.
Percentages in the 'Asthma DSRIP Hospitals' category represent patients in zip code areas where hospitals took part in a DSRIP asthma program. The 'Other DSRIP Hospital' category represents patients in zip codes that have at least one hospital participating in DSRIP, but none participating in the DSRIP asthma program.

Table 3.3: DSRIP Asthma Program's Impact on Emergency Department Visits for Asthma

	DSRIP Asthma Program Impact Estimate	
	Ages 0-17 *(n=2,186,925)*	**Ages 18+** *(n=1,983,210)*
ED Visit for Asthma	0.00002	0.00003**
	(0.00001)	(0.00001)

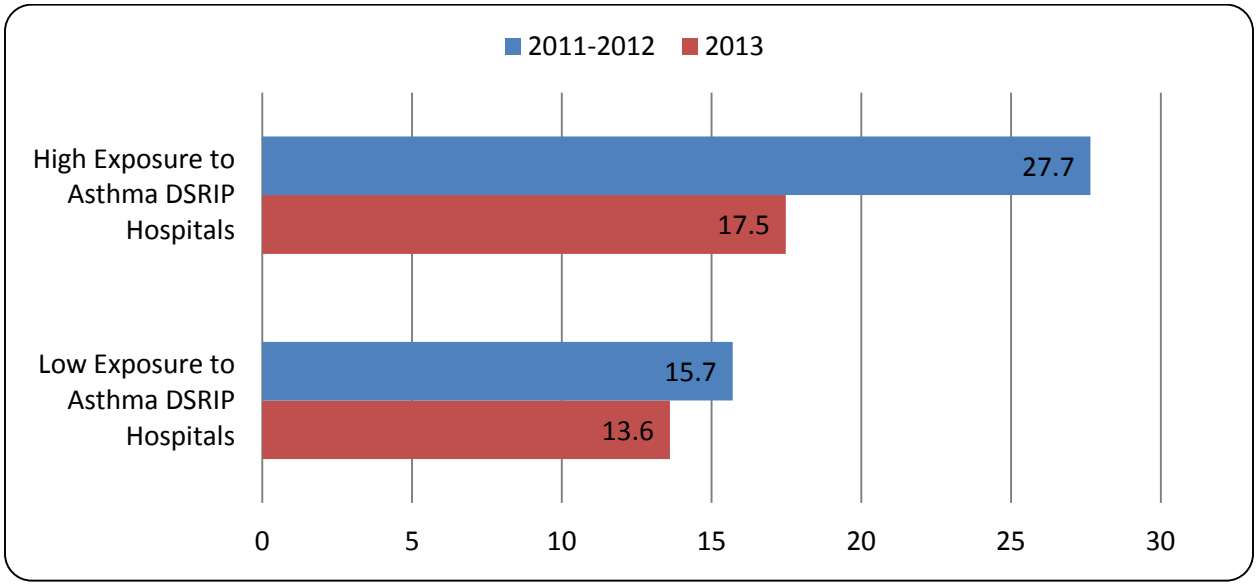
Source: Medicaid Fee-for-Service Claims & Managed Care Encounter Data; Analysis by Rutgers Center for State Health Policy.
Notes: ED=Emergency Department.
Person-level regression analysis with zip code fixed effects.
Robust standard errors in parentheses.
*** p<0.01, ** p<0.05, * p<0.1
See Appendix G for full model results.

Figure 3.6: Younger Adult Asthma Admission Rates by DSRIP Hospital Participation in the Asthma Program



Source: Medicaid Fee-for-Service Claims & Managed Care Encounter Data; Analysis by Rutgers Center for State Health Policy.
Notes: Each bar represents a weighted average of zip code-level rates of avoidable hospitalizations per 10,000 Medicaid beneficiary-years relating to beneficiaries of age 18-39. The 'Asthma DSRIP Hospital' category represents those zip codes that have at least one hospital participating in the DSRIP asthma program. The 'Other DSRIP Hospital' category represents those zip codes that have at least one hospital participating in DSRIP, but none participating in the DSRIP asthma program.

Figure 3.7: Younger Adult Asthma Admission Rates by DSRIP Hospital High/Low Participation in the Asthma Program



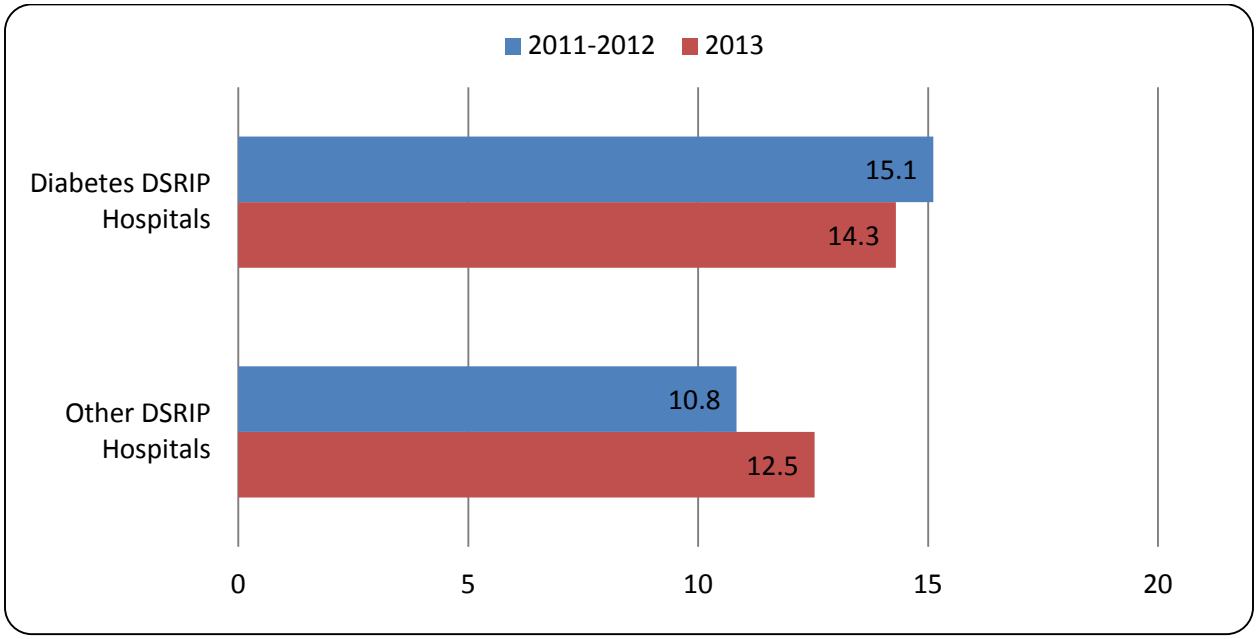
Source: Medicaid Fee-for-Service Claims & Managed Care Encounter Data; Analysis by Rutgers Center for State Health Policy.
Notes: Each bar represents a weighted average of zip code-level rates of avoidable hospitalizations per 10,000 Medicaid beneficiary-years relating to beneficiaries of age 18-39. Rates are reported separately for zip code areas with high and low exposure to the DSRIP asthma program (see Methods).

Table 3.4: DSRIP Asthma Program's Impact on Asthma in Younger Adults Admission Rate

(n=1,722)	DSRIP Asthma Program Impact Estimate
Younger Adults Asthma Admission Rate	-0.083**
	(0.039)

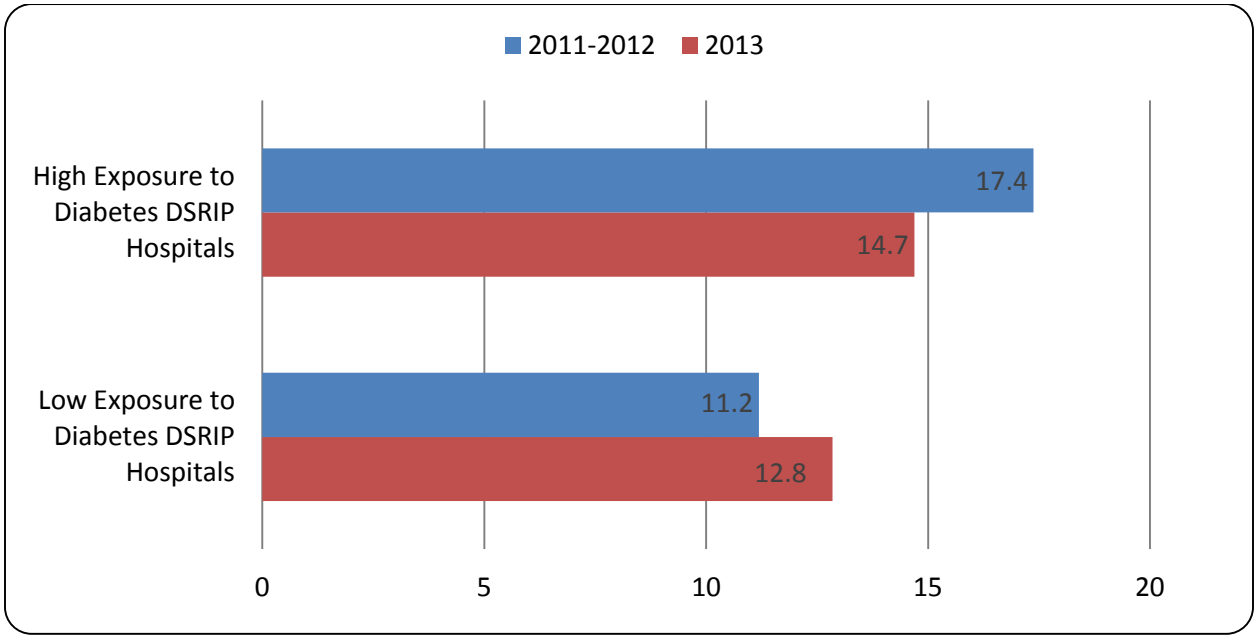
Source: Medicaid Fee-for-Service Claims & Managed Care Encounter Data; Analysis by Rutgers Center for State Health Policy.
Notes: Zip-level regression analysis with zip code fixed effects.
Rates are per 10,000 Medicaid beneficiary-years for beneficiaries ages 18-39.
Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1
See Appendix G for full model results.

Figure 3.8: Diabetes Short-Term Complications Admission Rates by DSRIP Hospital Participation in the Diabetes Program



Source: Medicaid Fee-for-Service Claims & Managed Care Encounter Data; Analysis by Rutgers Center for State Health Policy.
Notes: Each bar represents a weighted average of zip code-level rates of avoidable hospitalizations per 10,000 Medicaid beneficiary-years relating to beneficiaries of ages 18 and above. The 'Diabetes DSRIP Hospital' category represents those zip codes that have at least one hospital participating in the DSRIP diabetes program. The 'Other DSRIP Hospital' category represents those zip codes that have at least one hospital participating in DSRIP, but none participating in the DSRIP diabetes program.

Figure 3.9: Diabetes Short-Term Complications Admission Rates by DSRIP Hospital High/Low Participation in the Diabetes Program



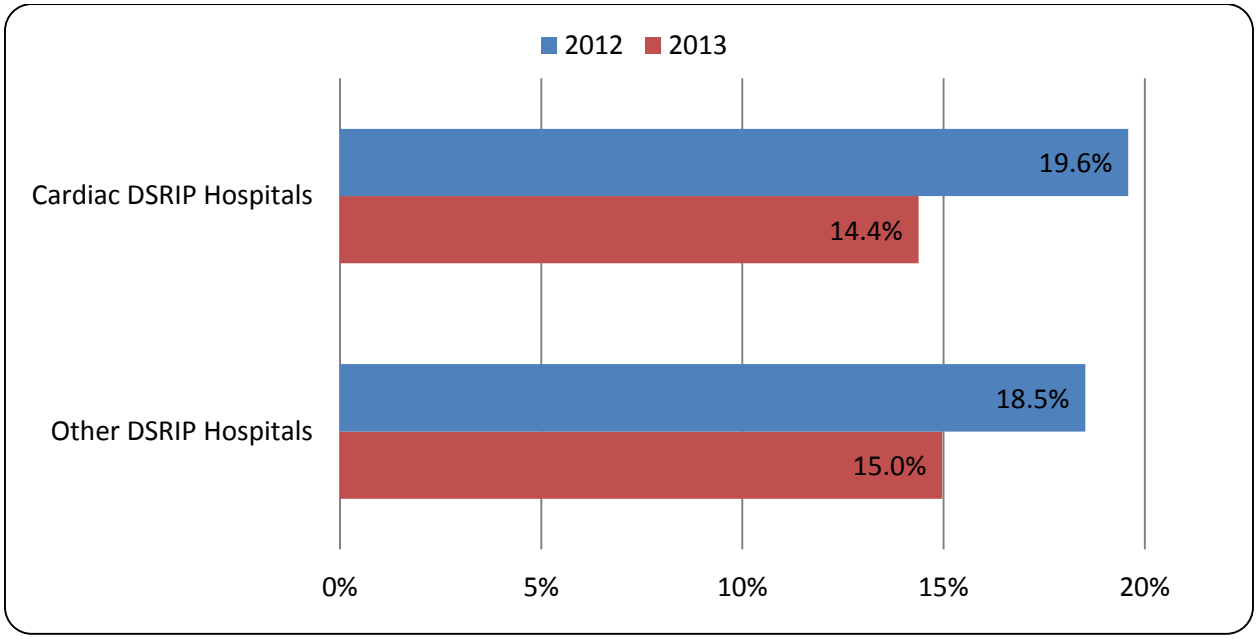
Source: Medicaid Fee-for-Service Claims & Managed Care Encounter Data; Analysis by Rutgers Center for State Health Policy.
Notes: Each bar represents a weighted average of zip code-level rates of avoidable hospitalizations per 10,000 Medicaid beneficiary-years relating to beneficiaries of ages 18 and above. Rates are reported separately for zip code areas with high and low exposure to the DSRIP diabetes program (see Methods).

Table 3.5: DSRIP Diabetes Program's Impact on Diabetes Short-Term Complications Admission Rate

(n=1,731)	**DSRIP Diabetes Program Impact Estimate**
Diabetes Short-term Complications Admission Rate	-0.048**
	(0.019)

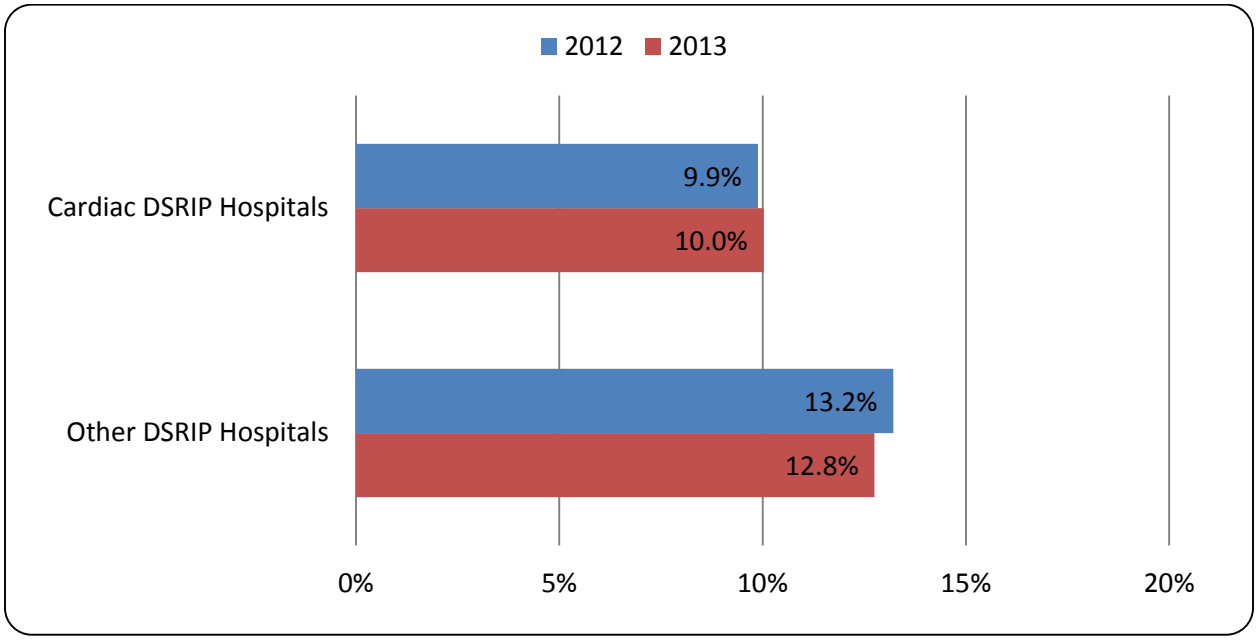
Source: Medicaid Fee-for-Service Claims & Managed Care Encounter Data; Analysis by Rutgers Center for State Health Policy.
Notes: Zip-level regression analysis with zip code fixed effects.
Rates are per 10,000 Medicaid beneficiary-years for beneficiaries ages 18+.
Robust standard errors in parentheses.
*** p<0.01, ** p<0.05, * p<0.1
See Appendix G for full model results.

Figure 3.10: Heart Failure Readmission Rates by DSRIP Hospital Participation in the Cardiac Care Program



Source: Medicaid Fee-for-Service Claims & Managed Care Encounter Data; Analysis by Rutgers Center for State Health Policy.
Notes: Discharge-level analysis.

Figure 3.11: Acute Myocardial Infarction (AMI) Readmission Rates by DSRIP Hospital Participation in the Cardiac Care Program



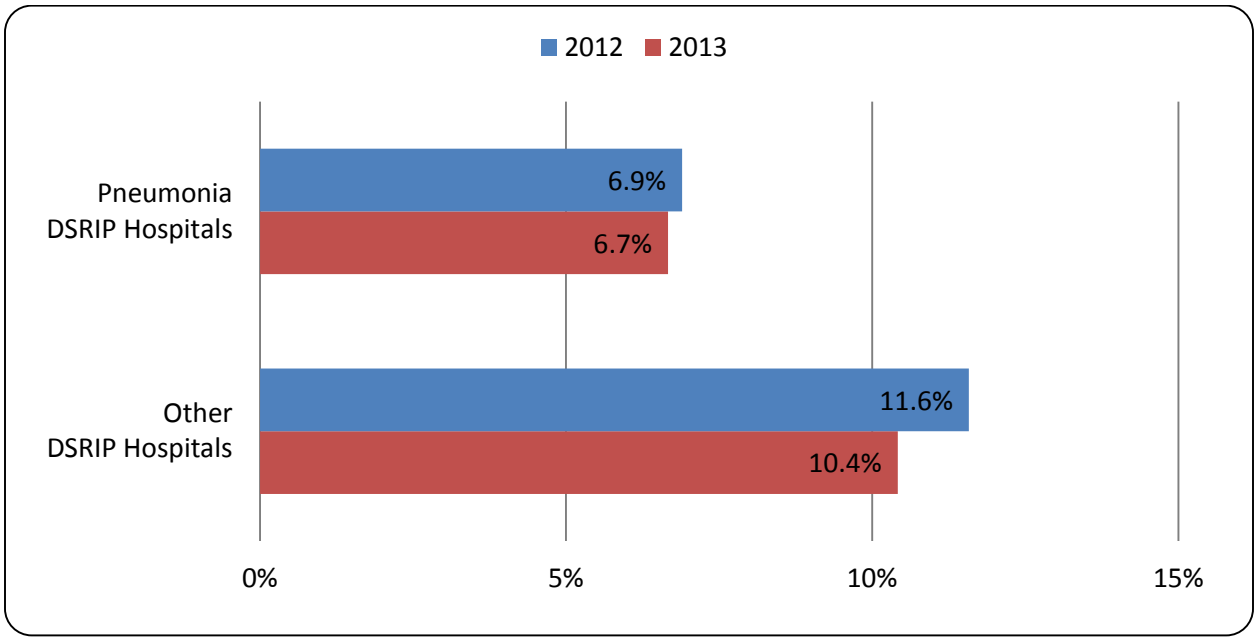
Source: Medicaid Fee-for-Service Claims & Managed Care Encounter Data; Analysis by Rutgers Center for State Health Policy.
Notes: Discharge-level analysis.

Table 3.6: DSRIP Cardiac Program's Impact on 30-Day Readmissions for Heart Failure and Acute Myocardial Infarction

	DSRIP Cardiac Program Impact Estimate
HF Readmissions *(n=4,526)*	-0.031
	(0.024)
AMI Readmissions *(n=1,685)*	0.016
	(0.024)

Source: Medicaid Fee-for-Service Claims & Managed Care Encounter Data; Analysis by Rutgers Center for State Health Policy.
Notes: Discharge-level regression analysis with hospital fixed effects.
Robust standard errors in parentheses.
*** p<0.01, ** p<0.05, * p<0.1
See Appendix G for full model results.

Figure 3.12: Pneumonia Readmission Rates by DSRIP Hospital Participation in the Pneumonia Program



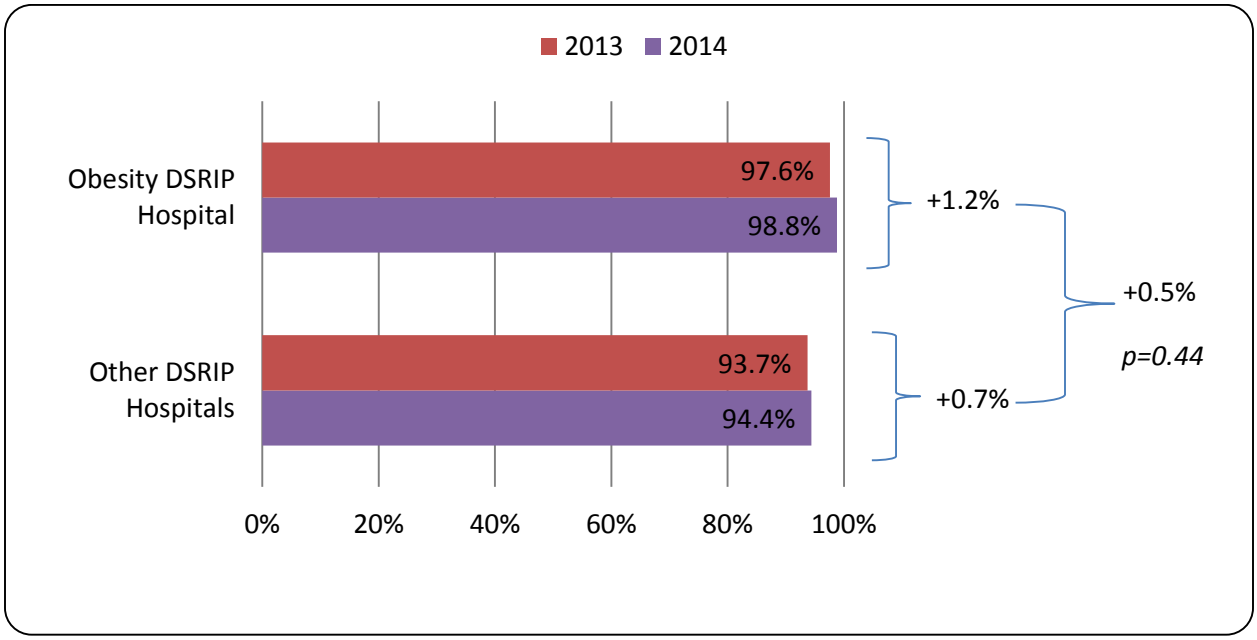
Source: Medicaid Fee-for-Service Claims & Managed Care Encounter Data; Analysis by Rutgers Center for State Health Policy.
Notes: Discharge-level analysis.

Table 3.7: DSRIP Pneumonia Program's Impact on 30-Day Readmissions for Pneumonia

(n=4,362)	DSRIP Pneumonia Project Impact Estimate
Pneumonia Readmissions	0.003
	(0.013)

Source: Medicaid Fee-for-Service Claims & Managed Care Encounter Data; Analysis by Rutgers Center for State Health Policy.
Notes: Discharge-level regression analysis with hospital fixed effects.
Robust standard errors in parentheses.
*** p<0.01, ** p<0.05, * p<0.1
See Appendix G for full model results.

Figure 3.13: Children and Adolescents' Access to Primary Care Physicians (Ages 7-11) by DSRIP Hospital Participation in the Obesity Program



Source: 2015 New Jersey DSRIP Metrics Analysis 2013 and 2014, Rutgers Center for State Health Policy.
Notes: Hospital-level analysis weighted by hospitals' attributed population ages 7-11 years.

Impact of DSRIP Program Overall

30-Day Readmissions: Figures 3.14-3.17 and Table 3.8 are based on 30-day readmission rates that are used to assess the overall effect of the DSRIP program. Figures 3.14-3.17 report average readmission rates for patients in hospitals distinguished by participation in the DSRIP program for the baseline 2012 calendar year and 2013, which is the first DSRIP program year. Readmission rates for pneumonia and COPD improved (decreased in magnitude) for both groups of hospitals from 2012 to 2013 (see Figures 3.16 and 3.17).

For HF and AMI, readmission rates decreased in magnitude (HF), or remained unchanged (AMI) for participating hospitals and worsened (increased in magnitude) for hospitals not participating in the DSRIP program (see Figures 3.14 and 3.15).

Regression analyses reveal that the overall effect of the DSRIP program measured in terms of changes in any of the four readmission rates was not statistically significant. In terms of magnitude the effect ranges from a 3.0 percentage point decrease in heart failure readmissions to a 2.0 percentage point increase in COPD readmissions.

Inpatient Mental Health Utilization: Figure 3.18 reports mental health utilization rates for beneficiaries in zip codes distinguished by whether the area hospitals participated in the DSRIP program. The utilization rates were less than 1%. Zip codes with DSRIP-participating hospitals had slightly lower rates in each year. The regression analysis shows a zero effect of DSRIP on inpatient mental health utilization (see Table 3.9).

Avoidable Hospital (Inpatient and ED) Utilization: Figures 3.19 and 3.20 report rates of avoidable hospitalizations aggregated across zip codes distinguished by their exposure to the DSRIP program. Rate of avoidable hospitalizations decreased over time in the zip codes where at least one hospital participated (see Figure 3.19) and zips where the hospitals accounting for the majority of discharges participated in DSRIP (See Figure 3.20). This trend was opposite to that in zip codes where area hospitals did not take part in the program where the rate of avoidable hospitalizations increased from the baseline period to 2013 (see Fig 3.19).

Figure 3.21 reveals that the rate of avoidable ED visits remained virtually unchanged in the group of zip codes which had at least one hospital participating in the DSRIP program. It increased in the remaining zip codes. The ED visit rate also remained unchanged in the zip codes that had high DSRIP exposure and decreased in those with low DSRIP exposure (see Figure 3.22).

Table 3.10 reports regression analyses examining the effect of the DSRIP program on avoidable inpatient hospitalizations and ED visits. The effect of the DSRIP program is reflected in a

statistically significant decrease in avoidable hospitalizations. On average, as a zip code goes from 0% to 100% exposure to DSRIP, rates of avoidable hospitalizations decreased by 36.8 per 10,000 Medicaid beneficiary years ($p<0.05$). The corresponding avoidable ED visit rate however increased by 97.2, but this was not statistically significant.[5]

Avoidable Hospital Costs: Figures 3.23-3.26 report rates of costs associated with avoidable hospital use, both inpatient and ED, aggregated across zip codes distinguished by their exposure to the DSRIP program. The costs are reported per 10,000 Medicaid beneficiary-years.

These costs are higher in both the baseline and first DSRIP program year for zip codes with some (compared to none) or high (compared to low) exposure to the DSRIP program.

Avoidable inpatient costs decrease from the baseline period to the first program year for all categories of zip codes except those with no participating hospitals in the DSRIP program. For avoidable ED costs, we see an increasing trend except for zip codes with no exposure to DSRIP. Table 3.11 reports regression analyses examining the effect of the DSRIP program on avoidable inpatient hospitalization and ED visit costs. The effect of the DSRIP program on costs (measured as the effect of a zip code going from zero to full DSRIP exposure) is not statistically significant and results in virtually no change (<$1 per 10,000 beneficiary-years) in avoidable hospitalization costs. The result for avoidable ED costs indicates that on average, as a zip code goes from 0% to 100% exposure to DSRIP, the costs increase by 7 cents per 10,000 beneficiary-years ($p<0.05$).

Table 3.12 shows avoidable hospital costs per 10,000 Medicaid beneficiary-year for DSRIP exposed and non-exposed zip codes stratified by race/ethnicity and gender. Costs associated with preventable inpatient hospitalizations decreased across all racial/ethnic and gender groups from the baseline to the first program year in DSRIP zips. In contrast, those same zips over the same time period and within each of these population subgroups experienced an increase in the costs associated with avoidable ED visits.

The highest costs for both avoidable inpatient hospitalizations and ED visits are for blacks, and this population subgroup shows different trends when examining non-DSRIP zips across the study period. Specifically, costs per beneficiary-year for avoidable hospitalizations decrease from the baseline to the first DSRIP program year for the black population in zips with no participating DSRIP. However, we see increases in their avoidable ED costs from the baseline to the first DSRIP program year (2013) in those zip codes.

[5] The impact estimate gets larger (125.6 avoidable ED visits per 10,000 Medicaid beneficiary-years) and is significant at the 10% level when basing DSRIP exposure on a choice set with a 90% threshold.

Racial/Ethnic Disparities in Hospital Readmissions: Figures 3.27-3.30 report changes in readmission rates for HF, AMI, pneumonia and COPD from the baseline to the first year of the DSRIP program separately for whites, blacks, Hispanics and other race/ethnicity. Rates are compared between hospitals participating in the DSRIP program and those that did not. Several of these estimates were not reported due to insufficient sample sizes that raise reliability as well as identifiability concerns.

We find that HF readmission rates decreased for whites and blacks in DSRIP-participating hospitals, and this decrease was greater than in the comparison group of non-participating hospitals.

AMI readmission rates in DSRIP-participating hospitals decreased over time for blacks and Hispanics, but increased for whites and patients belonging to the other race/ethnicity category. For both pneumonia and COPD, readmission rates in DSRIP-participating hospitals remained virtually unchanged for whites, decreased for patients who were black or belonged to the other race/ethnicity category, and increased for Hispanics.

Table 3.13 reports findings from analysis of racial disparities in readmission rates with separate estimates for patients belonging to each of the racial/ethnic categories (when sample size is adequate), and for minorities overall. The analysis compares changes in readmission rates over time for DSRIP participating hospitals relative to a comparison group of hospitals.

Considering minorities overall, racial/ethnic disparities based on HF, AMI and pneumonia readmission rates decreased, but the changes were not statistically significant. Based on COPD readmissions, there was a 7.9 percentage point increase in disparities which was statistically significant at the 5% level.

We also see that based on pneumonia readmissions, there was a substantial decrease in disparities for black patients reflected in a 13.7 percentage point reduction in readmission rates ($p<0.01$), but this result is based on insufficient sample size and cannot be deemed reliable. All other changes were not statistically significant.

Gender Disparities in Hospital Readmissions: The decrease in readmission rates for females in DSRIP participating hospitals was greater than the decrease for males when it came to HF (Figure 3.31), pneumonia (Figure 3.33), and COPD (Figure 3.34). For AMI readmissions, readmission rates for females increased by 1.6 percentage points in DSRIP-participating hospitals, but the increase was substantially higher (6.4 percentage points) for hospitals that did not participate in the program (see Figure 3.32).

Table 3.14 reports findings from the regression analysis. Genders-based disparities decreased when measured in AMI and pneumonia readmissions, and increased marginally based on heart failure and COPD readmissions. None of these estimates were statistically significant.

Racial/Ethnic and Gender Disparities in Avoidable Inpatient Hospitalizations: Figure 3.35 reveals that when we considered all zip codes with at least one hospital participating in the DSRIP program, the difference in avoidable inpatient hospitalizations per 10,000 Medicaid beneficiary-years between blacks and whites decreased by 26 from baseline to the first year of the DSRIP program. The difference in this rate between Hispanics and whites however, increased by 23 over the same period.

The difference in rates of avoidable hospitalizations between females and males for zip codes with DSRIP participating hospitals remained virtually unchanged – it decreased by 1 hospitalization per 10,000 beneficiary-years.

Table 3.15 reports the extent to which racial/ethnic and gender disparities in avoidable hospitalizations were impacted by the DSRIP program. The coefficient estimates reported here represent the average effect of a 1% increase in DSRIP exposure on the difference in rates of avoidable hospitalizations between any minority group and whites, or correspondingly, the difference in rates of avoidable hospitalizations between females and males. We see that compared to a zip code with zero exposure to DSRIP, a zip code with 100% exposure to DSRIP (100% exposure means that all hospitals, and zero exposure means none of the hospitals serving a zip code, took part in the DSRIP program) had 130 fewer hospitalizations by black patients relative to hospitalizations by white patients, per 10,000 Medicaid beneficiary-years. Similarly the difference in hospitalization rates between Hispanics and whites decreased by 85.1. However, neither of these two estimates were statistically significant. There was a marginally significant ($p<0.1$) decrease in the difference in hospitalization rates between Medicaid beneficiaries belonging to other racial/ethnic category and those who were whites amounting to 90.1 hospitalizations per 10,000 beneficiary-years.

We also found that females had higher rates of hospitalizations compared to males (difference in rates increased by 9.8 hospitalizations per 10,000 beneficiaries), but the magnitude of this change was not statistically significant.

Racial/Ethnic and Gender Disparities in Avoidable ED Visits: The difference in the rate of avoidable ED visits between each minority group and whites increased in zip codes where there was at least one DSRIP participating hospital from baseline to the first DSRIP program year (see

Figure 3.37). The corresponding difference in rates between females and males decreased by 70 hospitalizations over the same period (see Figure 3.38).

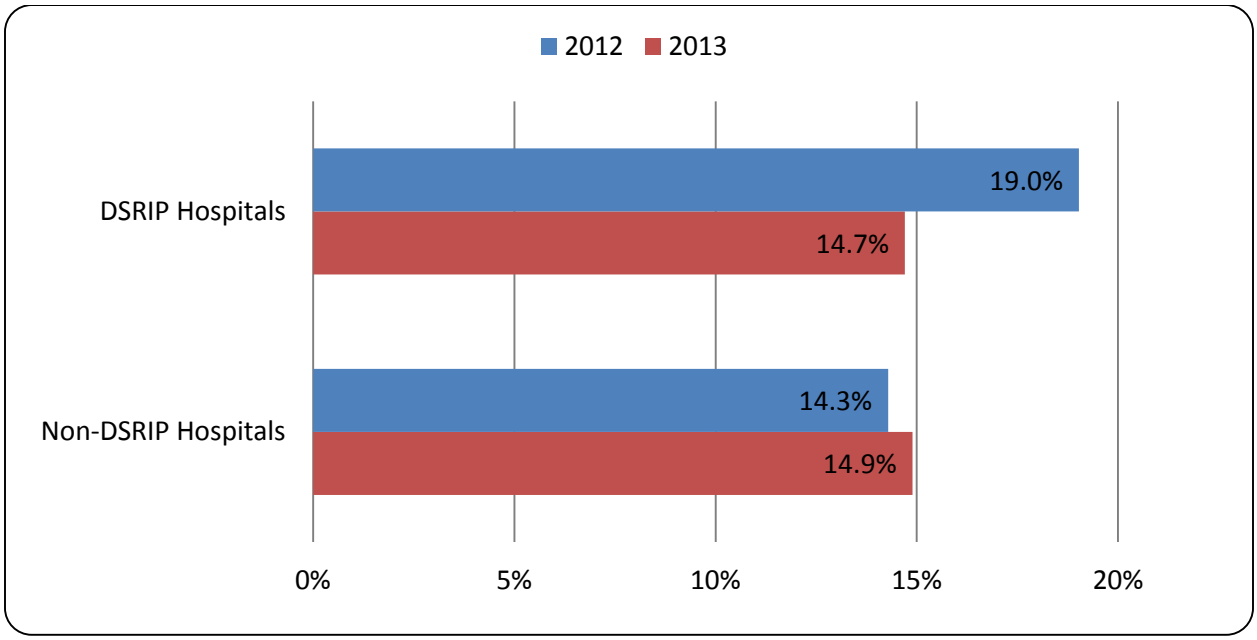
Table 3.16 reports the effect of the program on racial/ethnic and gender disparities in avoidable ED visits based on a regression analysis. The difference in rates of ED visits between blacks and whites decreased. Compared to a zip code with no DSRIP exposure, in a zip code with full DSRIP exposure, the difference in rates of avoidable ED visits (per 10,000 Medicaid beneficiary-years) between blacks and whites decreased by 86.5. Similarly, the difference indicating disparities increased for Hispanics, Medicaid beneficiaries belonging to other race/ethnicity groups, and females, but these changes were not statistically significant.

All-Payer Comparisons: Table 3.17 compares all-payer and Medicaid beneficiary rates of avoidable hospitalizations per 10,000 population. Statewide, both these rates decreased from the baseline period to the first year of the DSRIP program. The trends were also similar for zip codes where at least one hospital participated in the program, and also those zip codes which had high exposure to the program. Rates of avoidable hospitalizations were higher among Medicaid beneficiaries compared to all patients.

Table 3.18 reports similar comparisons based on rates of avoidable ED visits. In zip codes that had at least one hospital participating in the DSRIP program, the rate increased for the entire population, but went down marginally for the Medicaid population. The trends were similar for zip codes with high exposure to DSRIP.

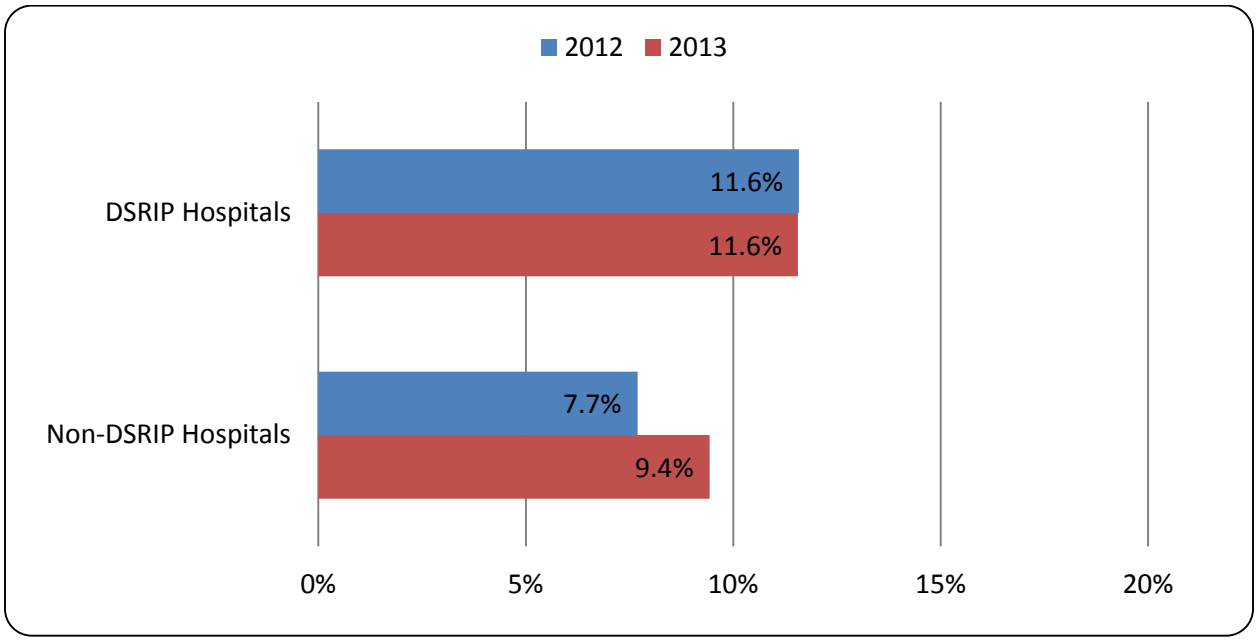
Hospital Finances: Figures 3.39 and 3.40 examine the effects of the DSRIP program on hospital financial performance measured by total margin and operating margin. Based on either metric, the effect after the first year of the program was positive, a 0.8 percentage point increase based on total margins and a 0.9 percentage point increase based on operating margins. It is worth noting that operating margins that reflect hospital financial performance that is directly related to patient care worsened for DSRIP participating hospitals. However the worsening was higher for the comparison group of hospitals that did not take part in the program.

Figure 3.14: Heart Failure Readmission Rates by Hospital Participation in the DSRIP Program



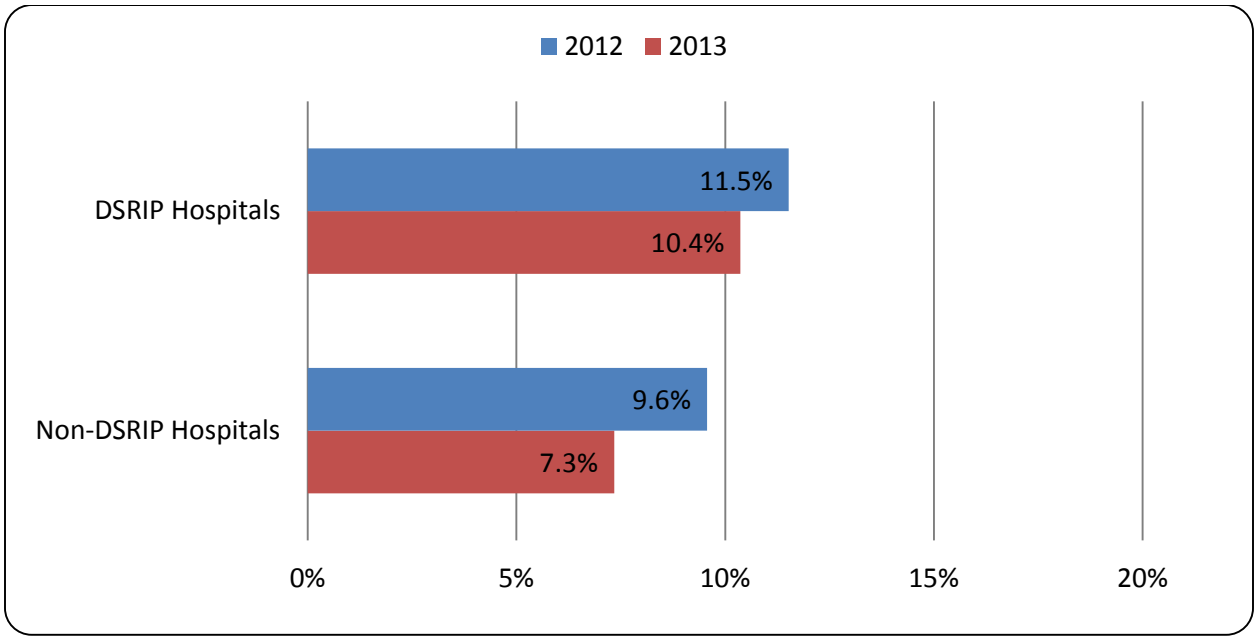
Source: Medicaid Fee-for-Service Claims & Managed Care Encounter Data; Analysis by Rutgers Center for State Health Policy.
Notes: Discharge-level analysis.

Figure 3.15: Acute Myocardial Infarction (AMI) Readmission Rates by Hospital Participation in the DSRIP Program



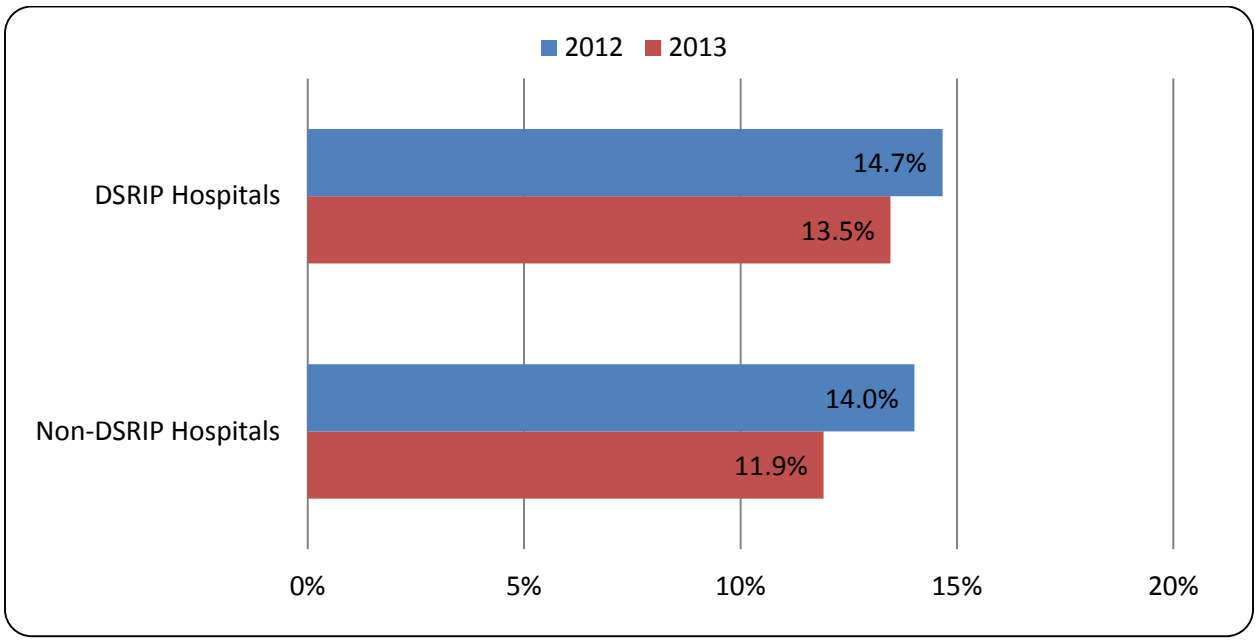
Source: Medicaid Fee-for-Service Claims & Managed Care Encounter Data; Analysis by Rutgers Center for State Health Policy.
Notes: Discharge-level analysis.

Figure 3.16: Pneumonia Readmission Rates by Hospital Participation in the DSRIP Program



Source: Medicaid Fee-for-Service Claims & Managed Care Encounter Data; Analysis by Rutgers Center for State Health Policy.
Notes: Discharge-level analysis.

Figure 3.17: Chronic Obstructive Pulmonary Disease (COPD) Readmission Rates by Hospital Participation in the DSRIP Program



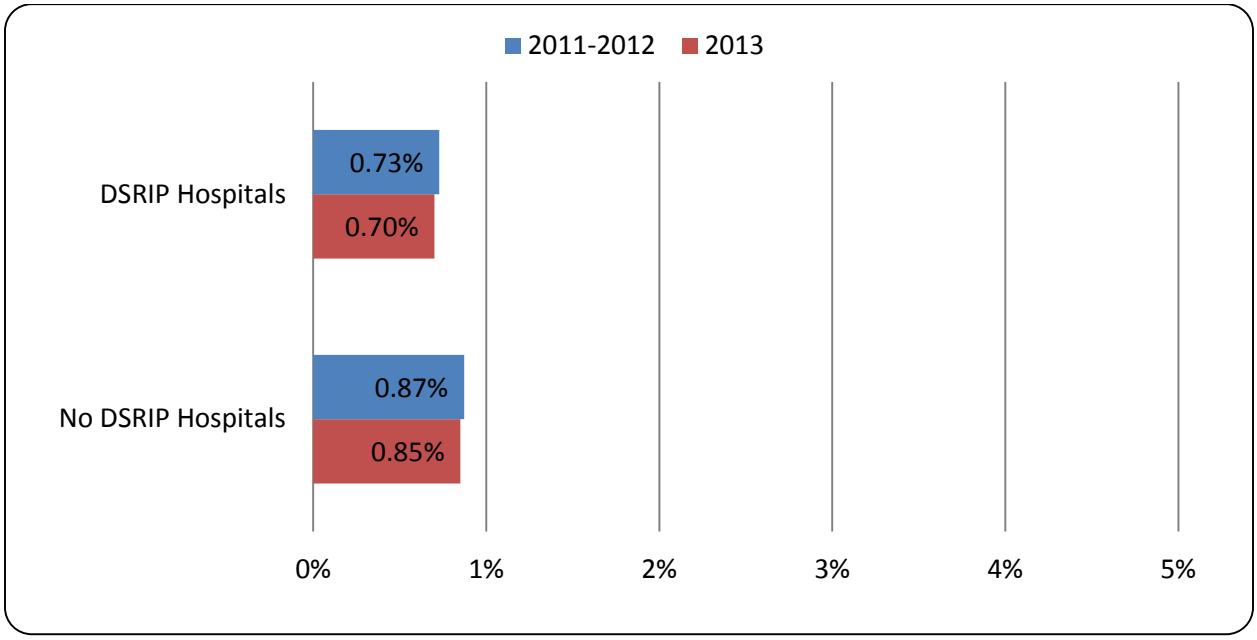
Source: Medicaid Fee-for-Service Claims & Managed Care Encounter Data; Analysis by Rutgers Center for State Health Policy.
Notes: Discharge-level analysis.

Table 3.8: Overall DSRIP Program Impact on 30-Day Readmissions for Heart Failure, Acute Myocardial Infarction, Pneumonia, and Chronic Obstructive Pulmonary Disease

	Overall DSRIP Impact Estimate
Heart Failure *(n=4,896)*	-0.030
	(0.030)
Acute Myocardial Infarction *(n=1,816)*	0.005
	(0.072)
Pneumonia *(n=4,810)*	0.019
	(0.037)
COPD *(n=6,475)*	0.020
	(0.026)

Source: Medicaid Fee-for-Service Claims & Managed Care Encounter Data; Analysis by Rutgers Center for State Health Policy.
Notes: COPD=Chronic Obstructive Pulmonary Disease.
Discharge-level regression analysis with hospital fixed effects.
Robust standard errors in parentheses.
*** p<0.01, ** p<0.05, * p<0.1
See Appendix G for full model results.

Figure 3.18: Inpatient Mental Health Utilization by Hospital Participation in the DSRIP Program



Source: Medicaid Fee-for-Service Claims & Managed Care Encounter Data; Analysis by Rutgers Center for State Health Policy.
Note: Bars reflect percentage of Medicaid beneficiaries with one or more inpatient mental health stays during the year. Percentages in the 'DSRIP Hospitals' category represent patients in zip code areas where at least one hospital took part in the DSRIP program.

Table 3.9: Overall DSRIP Program Impact on Inpatient Mental Health Utilization

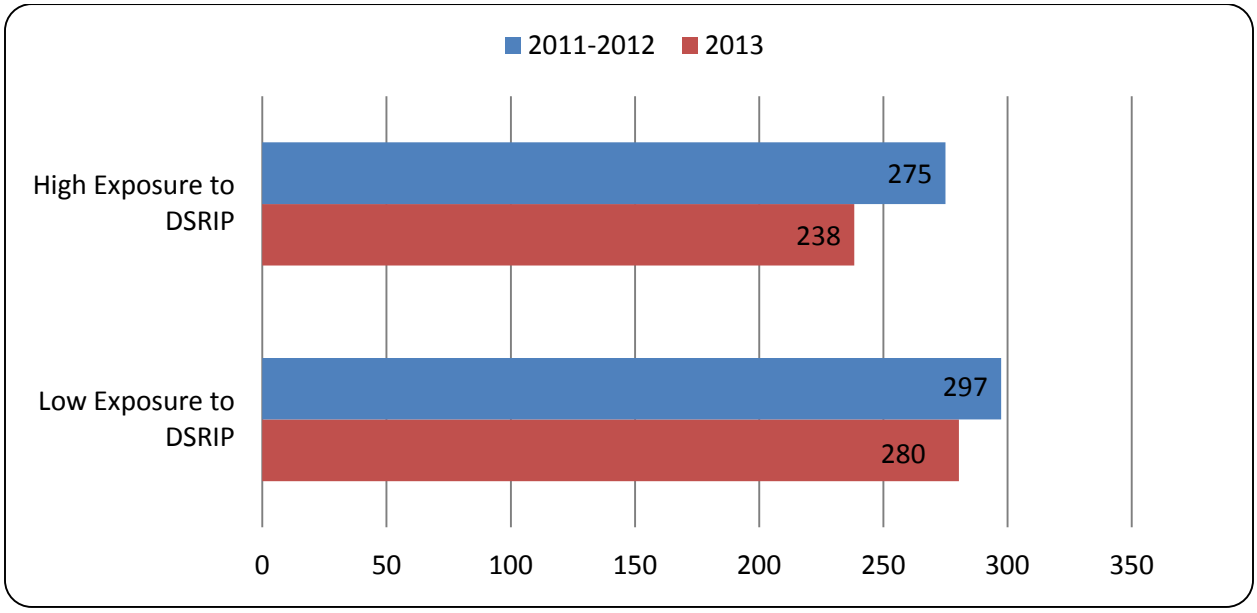
(n=4,199,977)	**Overall DSRIP Impact Estimate**
Mental Health Utilization - Inpatient	-0.00000
	(0.00000)

Source: Medicaid Fee-for-Service Claims & Managed Care Encounter Data, Analysis by Rutgers Center for State Health Policy.
Notes: Person-level regression analysis with zip code fixed effects.
Robust standard errors in parentheses.
*** p<0.01, ** p<0.05, * p<0.1
See Appendix G for full model results.

Figure 3.19: Rates of Avoidable Inpatient Hospitalizations by Hospital Participation in the DSRIP Program

Source: Medicaid Fee-for-Service Claims & Managed Care Encounter Data; Analysis by Rutgers Center for State Health Policy.
Notes: Each bar represents a weighted average of zip code-level rates of avoidable hospitalizations per 10,000 Medicaid beneficiary-years relating to beneficiaries of age 18 and above. The 'DSRIP Hospitals' category represents those zip codes that have at least one hospital participating in the DSRIP program.

Figure 3.20: Rates of Avoidable Inpatient Hospitalizations by Hospital High/Low Participation in the DSRIP Program



Source: Medicaid Fee-for-Service Claims & Managed Care Encounter Data; Analysis by Rutgers Center for State Health Policy.
Notes: Each bar represents a weighted average of zip code-level rates of avoidable hospitalizations per 10,000 Medicaid beneficiary-years relating to beneficiaries of age 18 and above. Rates are reported separately for zip code areas with high and low exposure to the DSRIP program (see Methods).

Figure 3.21: Rates of Avoidable Emergency Department Visits by Hospital Participation in the DSRIP Program

Source: Medicaid Fee-for-Service Claims & Managed Care Encounter Data; Analysis by Rutgers Center for State Health Policy.
Notes: Each bar represents a weighted average of zip code-level rates of avoidable ED visits per 10,000 Medicaid beneficiary-years relating to beneficiaries of all ages. The 'DSRIP Hospitals category represents those zip codes that have at least one hospital participating in the DSRIP program.

Figure 3.22: Rates of Avoidable Emergency Department Visits by Hospital High/Low Participation in the DSRIP Program

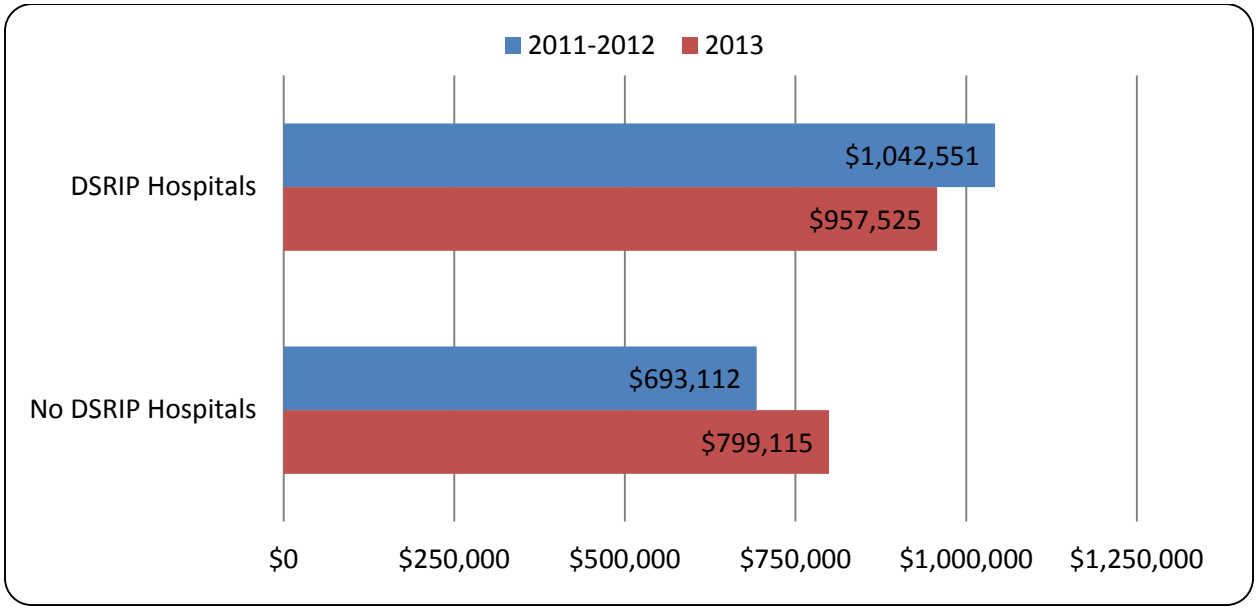
Source: Medicaid Fee-for-Service Claims & Managed Care Encounter Data; Analysis by Rutgers Center for State Health Policy.
Notes: Each bar represents a weighted average of zip code-level rates of avoidable ED visits per 10,000 Medicaid beneficiary-years relating to beneficiaries of all ages. Rates are reported separately for zip code areas with high and low exposure to the DSRIP program (see Methods).

Table 3.10: Overall DSRIP Program Impact on Rates of Avoidable Inpatient Hospitalizations and Emergency Department Visits

	DSRIP Overall Program Impact Estimate
Preventable IP Hospitalizations *(n=1,770)*	-0.368**
	(0.179)
Avoidable ED Visits *(n=1,773)*	0.972
	(0.615)

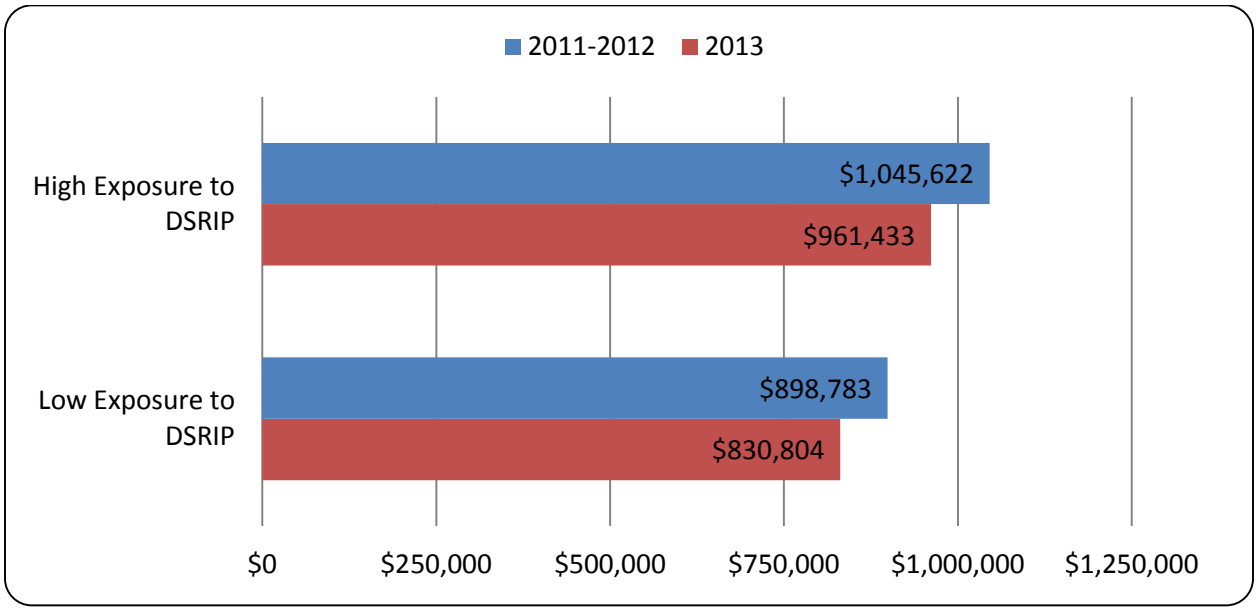
Source: Medicaid Fee-for-Service Claims & Managed Care Encounter Data; Analysis by Rutgers Center for State Health Policy.
Notes: IP=Inpatient; ED=Emergency Department.
Zip-level regression analysis with zip code fixed effects.
Rates are per 10,000 Medicaid beneficiary-years.
Robust standard errors in parentheses.
*** p<0.01, ** p<0.05, * p<0.1
See Appendix G for full model results.

Figure 3.23: Avoidable Inpatient Hospitalization Costs by Hospital Participation in the DSRIP Program



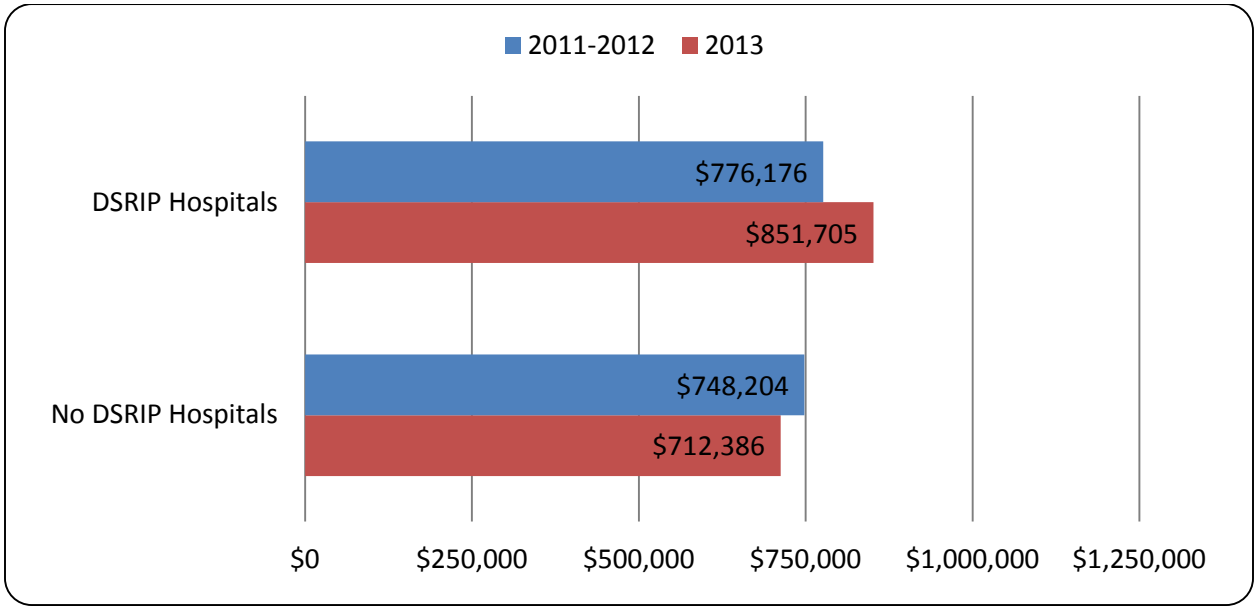
Source: Medicaid Fee-for-Service Claims & Managed Care Encounter Data; Analysis by Rutgers Center for State Health Policy.
Notes: Each bar represents a weighted average of zip code-level rates of avoidable hospitalization costs per 10,000 Medicaid beneficiary-years relating to beneficiaries of age 18 and above. The 'DSRIP Hospitals' category represents those zip codes that have at least one hospital participating in the DSRIP program.

Figure 3.24: Avoidable Inpatient Hospitalization Costs by Hospital High/Low Participation in the DSRIP Program



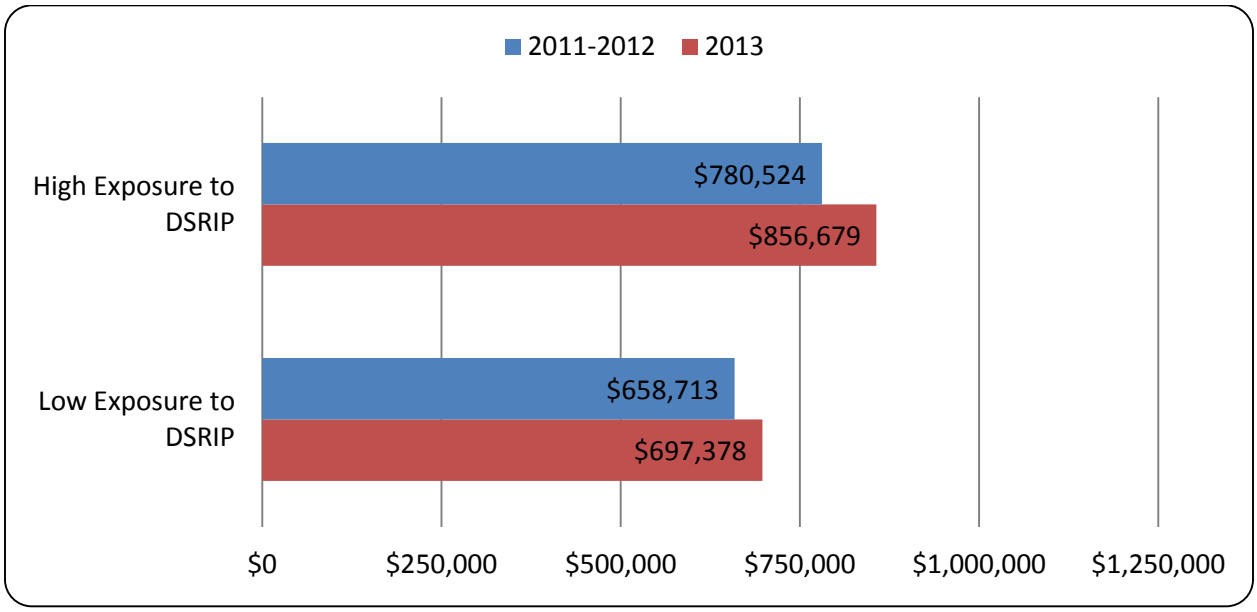
Source: Medicaid Fee-for-Service Claims & Managed Care Encounter Data; Analysis by Rutgers Center for State Health Policy.
Notes: Each bar represents a weighted average of zip code-level rates of avoidable hospitalization costs per 10,000 Medicaid beneficiary-years relating to beneficiaries of age 18 and above. Rates are reported separately for zip code areas with high and low exposure to the DSRIP program (see Methods).

Figure 3.25: Avoidable Emergency Department Visit Costs by Hospital Participation in the DSRIP Program



Source: Medicaid Fee-for-Service Claims & Managed Care Encounter Data; Analysis by Rutgers Center for State Health Policy.
Notes: Each bar represents a weighted average of zip code-level rates of avoidable ED costs per 10,000 Medicaid beneficiary-years relating to beneficiaries of all ages. The 'DSRIP Hospitals' category represents those zip codes that have at least one hospital participating in the DSRIP program.

Figure 3.26: Avoidable Emergency Department Visit Costs by Hospital High/Low Participation in the DSRIP Program



Source: Medicaid Fee-for-Service Claims & Managed Care Encounter Data; Analysis by Rutgers Center for State Health Policy.
Notes: Each bar represents a weighted average of zip code-level rates of avoidable ED costs per 10,000 Medicaid beneficiary-years relating to beneficiaries of all ages. Rates are reported separately for zip code areas with high and low exposure to the DSRIP program (see Methods).

Table 3.11: Overall DSRIP Impact on Avoidable Inpatient Hospitalization and Emergency Department Visit Costs

	DSRIP Overall Program Impact Estimate
Preventable IP Hospitalization Costs *(n=1,770)*	0.00042
	(0.00148)
Avoidable ED Visit Costs *(n=1,773)*	0.00072**
	(0.00032)

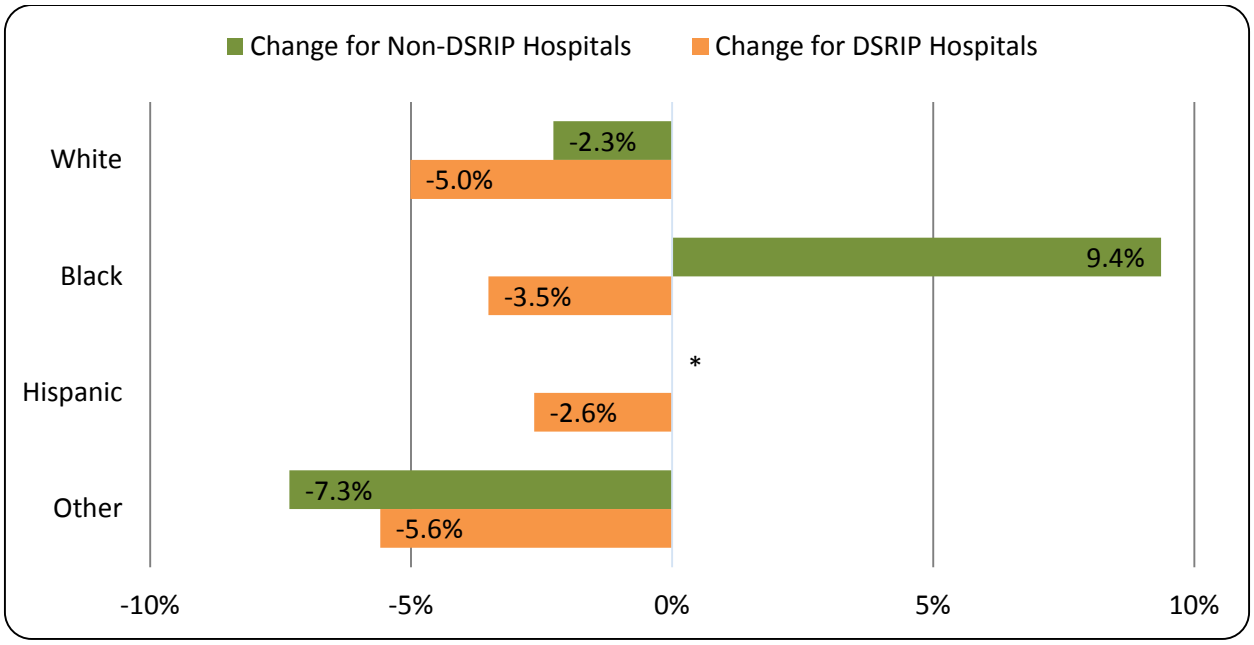
Source: Medicaid Fee-for-Service Claims & Managed Care Encounter Data; Analysis by Rutgers Center for State Health Policy.
Notes: IP=Inpatient; ED=Emergency Department.
Estimates based on a zip-level generalized linear model with gamma log link.
Costs are per 10,000 Medicaid beneficiary-years.
Standard errors in parentheses adjusted for clustering.
*** p<0.01, ** p<0.05, * p<0.1
See Appendix G for full model results.

Table 3.12: Avoidable Inpatient Hospitalization and Emergency Department Visit Costs by Race/Ethnicity, Gender, and Hospital Participation in the DSRIP Program

		White	Black	Hispanic	Other	Male	Female
Preventable IP Hospitalizations							
DSRIP	**2011-2012**	$826,849	$1,499,229	$676,881	$1,173,853	$1,126,216	$996,415
	2013	$774,424	$1,375,578	$626,753	$1,050,188	$1,048,611	$907,258
No DSRIP	**2011-2012**	$678,509	$1,022,556	$354,997	$588,347	$647,368	722,334
	2013	$794,233	$871,059	$321,623	$935,042	$1,122,353	$603,350
Avoidable ED Visits							
DSRIP	**2011-2012**	$706,793	$1,027,315	$777,437	$441,364	$621,686	$899,734
	2013	$770,607	$1,139,327	$860,171	$482,219	$692,130	$980,092
No DSRIP	**2011-2012**	$715,922	$1,231,877	$812,742	$323,128	$596,991	$780,038
	2013	$657,273	$1,353,459	$714,455	$362,626	$566,390	$812,007

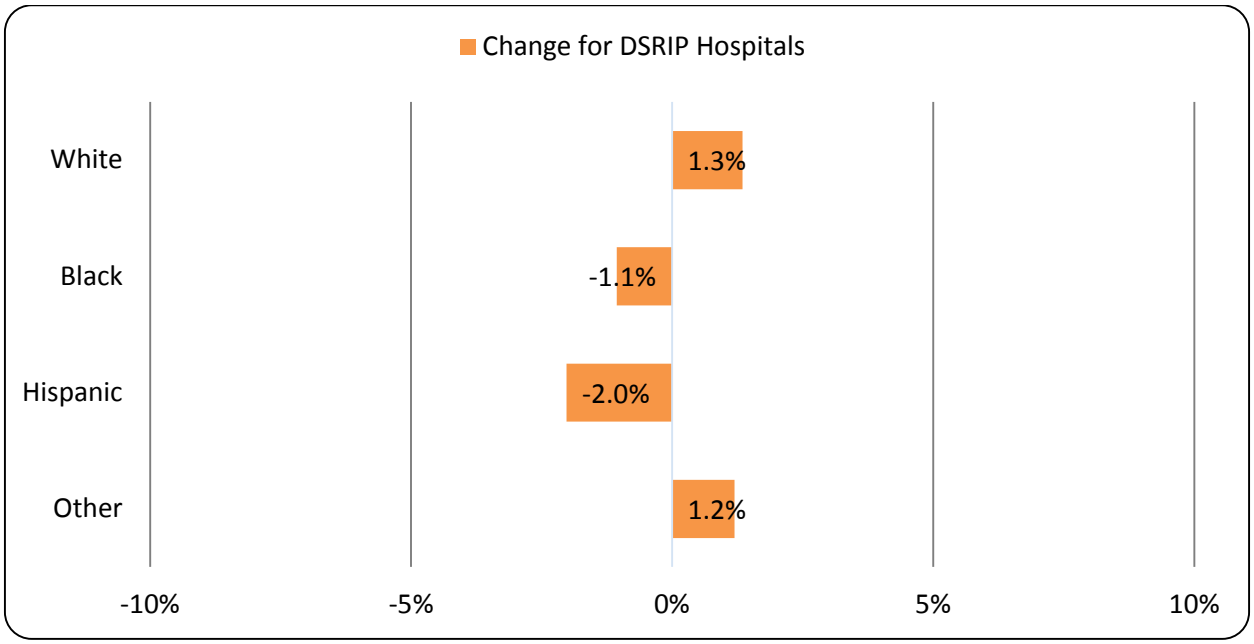
Source: Medicaid Fee-for-Service Claims & Managed Care Encounter Data; Analysis by Rutgers Center for State Health Policy.
Notes: IP=Inpatient; ED=Emergency Department.
Each estimate represents a weighted average of zip code-level rates of avoidable IP costs per 10,000 Medicaid beneficiary-years for the population ages 18+ or avoidable ED Costs per 10,000 Medicaid beneficiary years for the population of all ages. The DSRIP category represents zip codes with at least one hospital participating in the DSRIP program

Figure 3.27: Change in Heart Failure Readmission Rates by Race/Ethnicity over 2012-2013



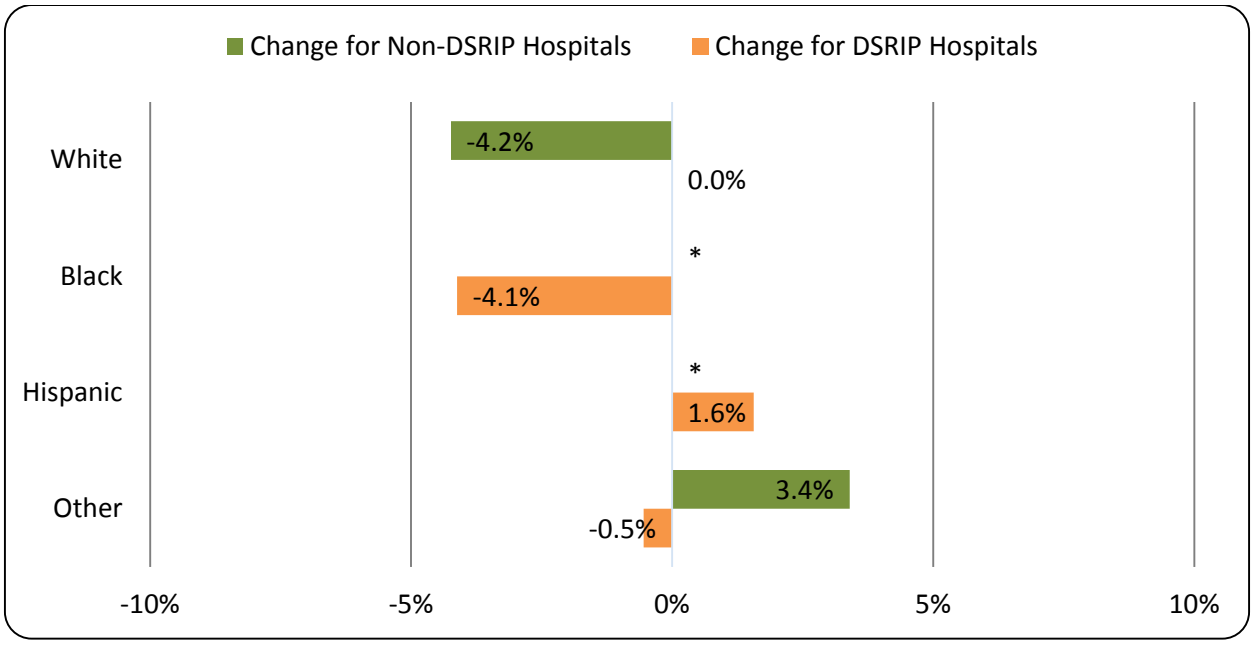
Source: Medicaid Fee-for-Service Claims & Managed Care Encounter Data; Analysis by Rutgers Center for State Health Policy.
Notes: Units of change are percentage points.
Discharge-level analysis.
*Estimate suppressed due to insufficient sample size.

Figure 3.28: Change in AMI Readmission Rates by Race/Ethnicity over 2012-2013



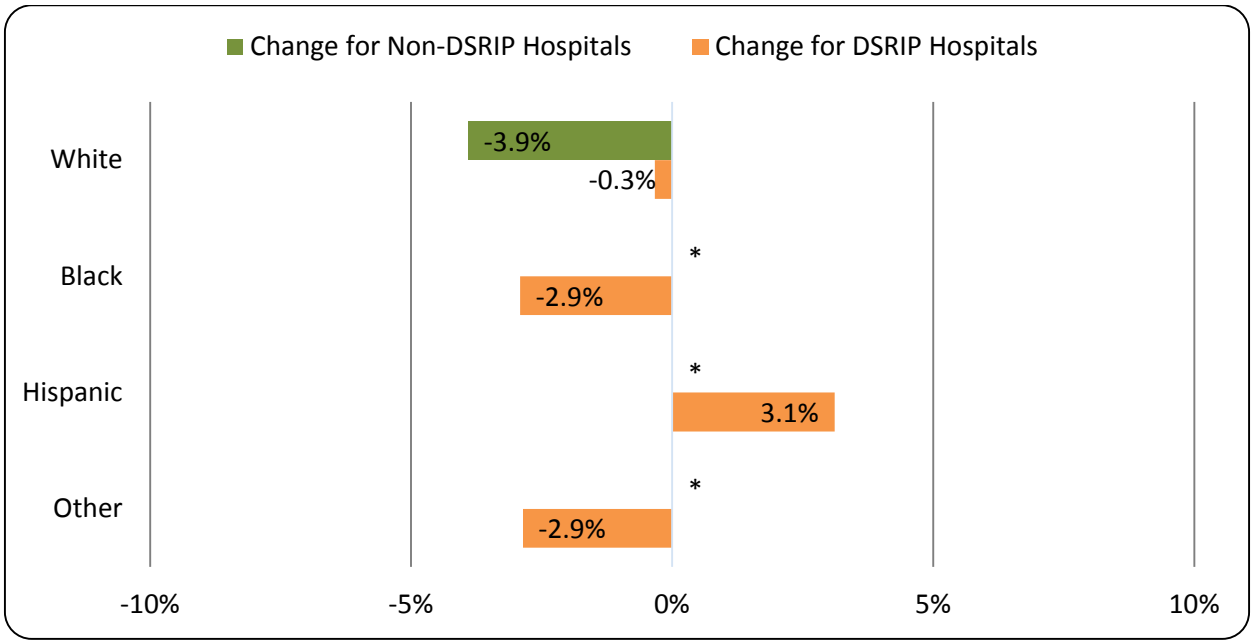
Source: Medicaid Fee-for-Service Claims & Managed Care Encounter Data; Analysis by Rutgers Center for State Health Policy.
Notes: Units of change are percentage points.
Discharge-level analysis.
Estimates for non-DSRIP hospitals suppressed due to insufficient sample size.

Figure 3.29: Change in Pneumonia Readmission Rates by Race/Ethnicity over 2012-2013



Source: Medicaid Fee-for-Service Claims & Managed Care Encounter Data; Analysis by Rutgers Center for State Health Policy.
Notes: Units of change are percentage points.
Discharge-level analysis.
*Estimate suppressed due to insufficient sample size.

Figure 3.30: Change in COPD Readmission Rates by Race/Ethnicity over 2012-2013



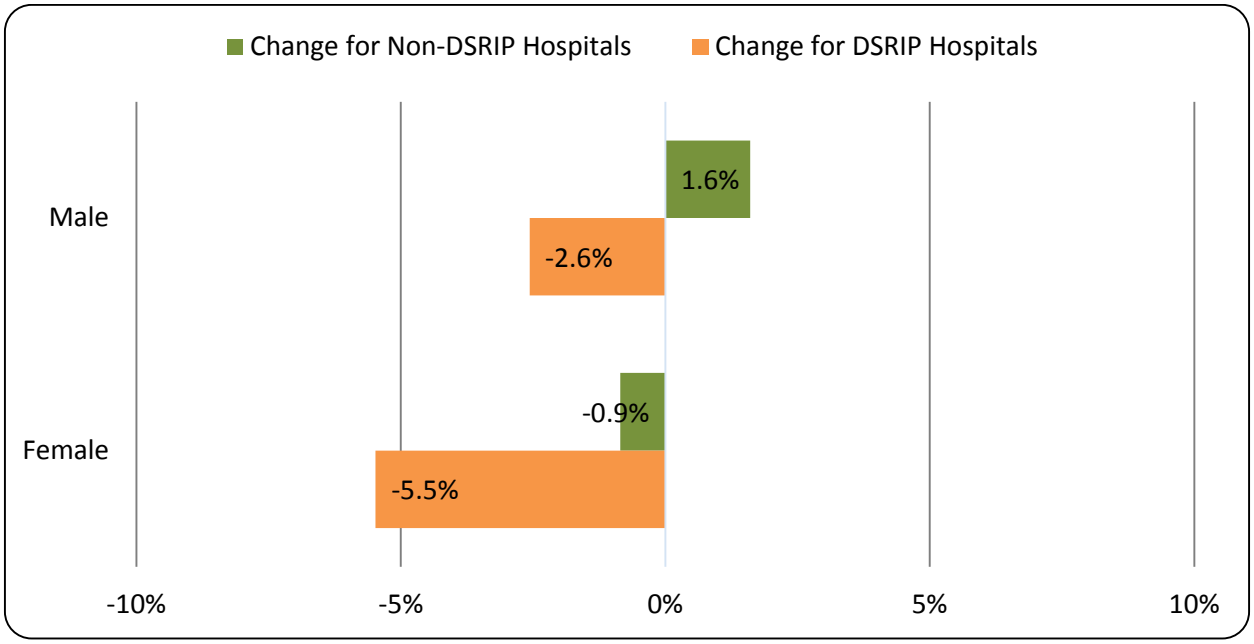
Source: Medicaid Fee-for-Service Claims & Managed Care Encounter Data; Analysis by Rutgers Center for State Health Policy.
Note: Units of change are percentage points.
Discharge-level analysis.
*Estimate suppressed due to insufficient sample size.

Table 3.13: Overall DSRIP Impact on Racial/Ethnic Disparities in 30-Day Readmission Rates for Heart Failure, Acute Myocardial Infarction, Pneumonia, and Chronic Obstructive Pulmonary Disease

	Combined Impact Estimate	Individual Impact Estimates		
	Minority Disparities	Black Disparities	Hispanic Disparities	Other Disparities
Heart Failure *(n=4,896)*	-0.031	-0.060	-0.055	0.002
	(0.061)	(0.096)	(0.146)	(0.050)
AMI *(n=1,816)*	-0.010			
	(0.080)			
Pneumonia *(n=4,810)*	-0.055	-0.137***	0.118	-0.089
	(0.057)	(0.042)	(0.132)	(0.063)
COPD *(n=6,475)*	0.079**			
	(0.032)			

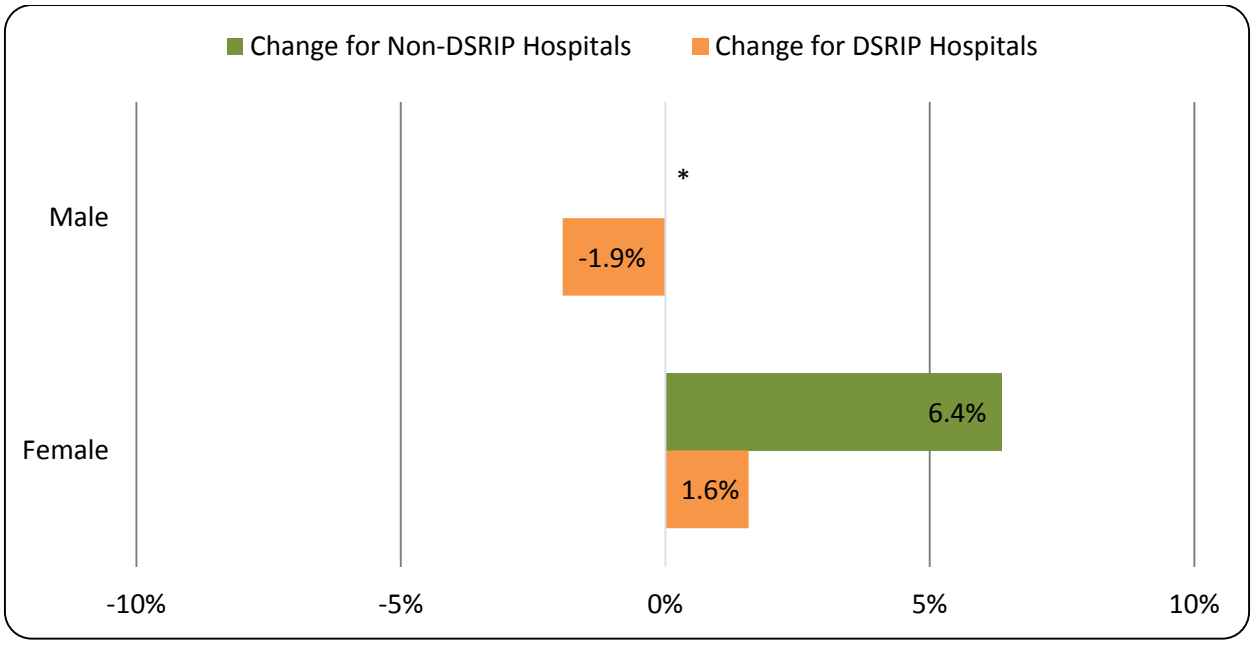
Source: Medicaid Fee-for-Service Claims & Managed Care Encounter Data; Analysis by Rutgers Center for State Health Policy.
Notes: AMI=Acute Myocardial Infarction; COPD=Chronic Obstructive Pulmonary Disease.
Discharge-level regression analysis with hospital fixed effects.
Shaded estimates are based on small sample sizes that may affect the reliability of these estimates.
Robust standard errors in parentheses.
*** p<0.01, ** p<0.05, * p<0.1
See Appendix G for full model results.

Figure 3.31: Change in Heart Failure Readmission Rates by Gender over 2012-2013



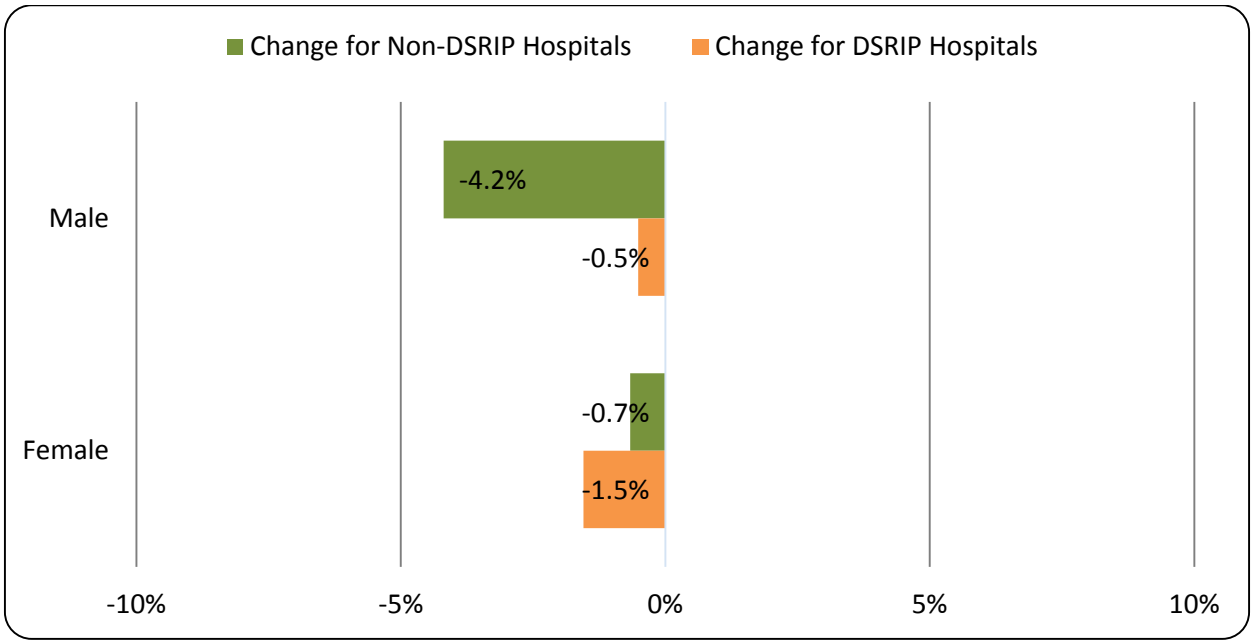
Source: Medicaid Fee-for-Service Claims & Managed Care Encounter Data; Analysis by Rutgers Center for State Health Policy.
Note: Units of change are percentage points.
Discharge-level analysis.

Figure 3.32: Change in AMI Readmission Rates by Gender over 2012-2013



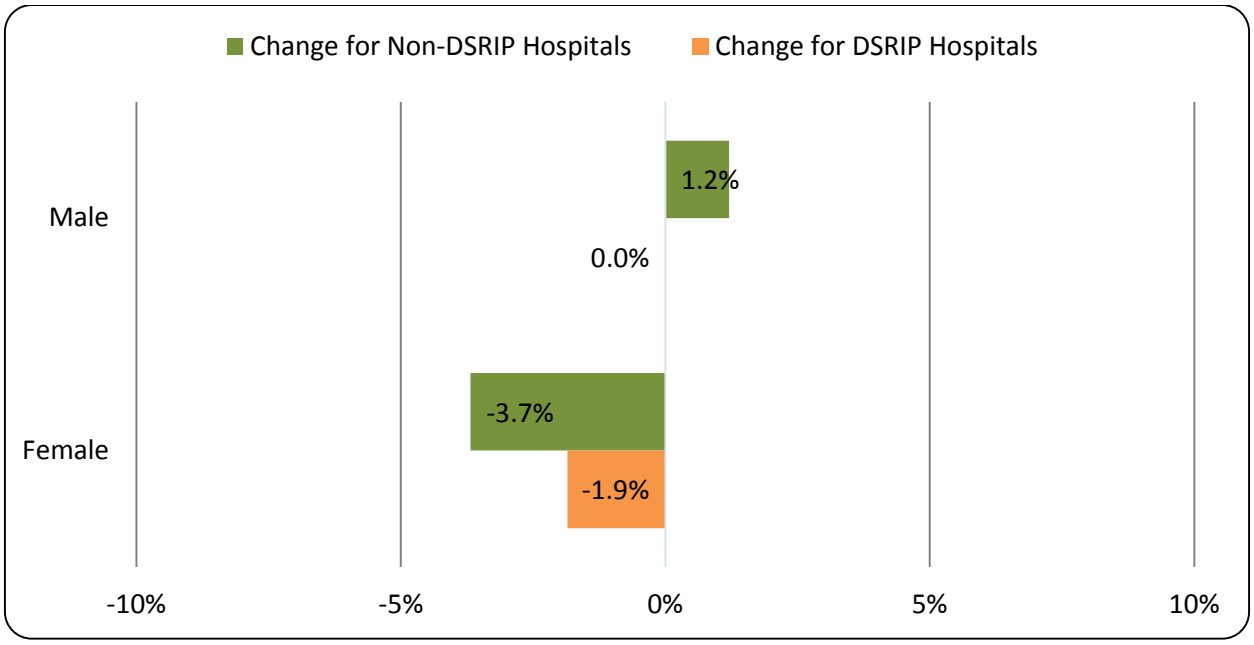
Source: Medicaid Fee-for-Service Claims & Managed Care Encounter Data; Analysis by Rutgers Center for State Health Policy.
Note: Units of change are percentage points.
Discharge-level analysis.
*Estimate suppressed due to insufficient sample size.

Figure 3.33: Change in Pneumonia Readmission Rates by Gender over 2012-2013



Source: Medicaid Fee-for-Service Claims & Managed Care Encounter Data; Analysis by Rutgers Center for State Health Policy.
Note: Units of change are percentage points.
Discharge-level analysis.

Figure 3.34: Change in COPD Readmission Rates by Gender over 2012-2013



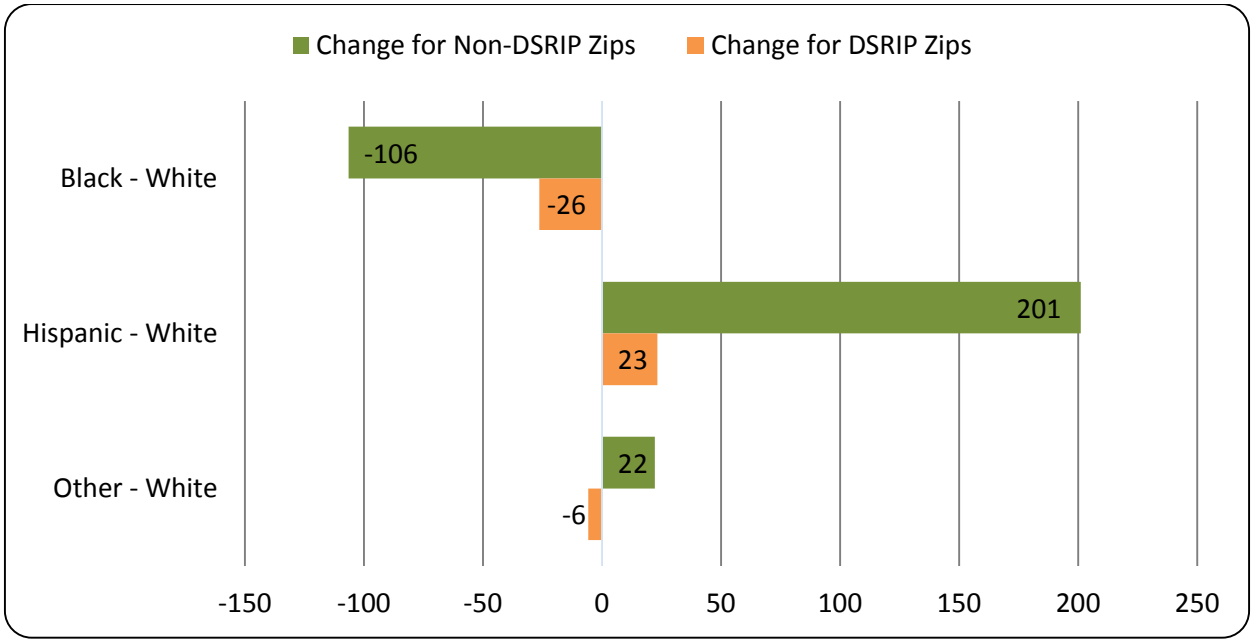
Source: Medicaid Fee-for-Service Claims & Managed Care Encounter Data; Analysis by Rutgers Center for State Health Policy.
Note: Units of change are percentage points.
Discharge-level analysis.

Table 3.14: Overall DSRIP Impact on Gender Disparities in 30-Day Readmission Rates for Heart Failure, Acute Myocardial Infarction, Pneumonia, and Chronic Obstructive Pulmonary Disease

	Gender Disparities Impact Estimate
Heart Failure *(n=4,896)*	0.010
	(0.048)
AMI *(n=1,816)*	-0.062
	(0.129)
Pneumonia *(n=4,810)*	-0.054
	(0.048)
COPD *(n=6,475)*	0.022
	(0.052)

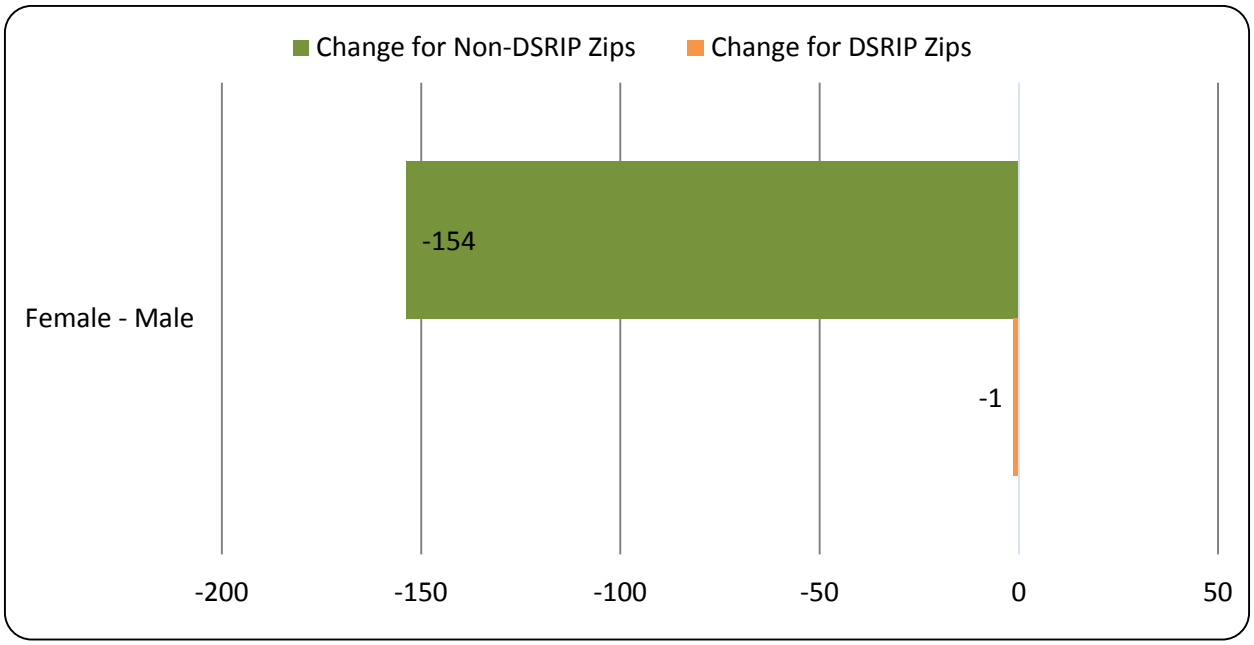
Source: Medicaid Fee-for-Service Claims & Managed Care Encounter Data; Analysis by Rutgers Center for State Health Policy.
Notes: AMI=Acute Myocardial Infarction; COPD=Chronic Obstructive Pulmonary Disease.
Discharge-level regression analysis with hospital fixed effects.
Robust standard errors in parentheses.
*** p<0.01, ** p<0.05, * p<0.1
Shaded estimates are based on small sample sizes that may affect the reliability of these estimates.
See Appendix G for full model results.

Figure 3.35: Change in Avoidable Inpatient Hospitalization Rate Differences between Minority Populations and Whites over 2011/2012-2013



Source: Medicaid Fee-for-Service Claims & Managed Care Encounter Data; Analysis by Rutgers Center for State Health Policy.
Note: Units of change are avoidable hospitalizations per 10,000 Medicaid beneficiary-years for the population age 18+. Zip-level analysis.

Figure 3.36: Change in Avoidable Inpatient Hospitalization Rate Differences between Females and Males over 2011/2012-2013



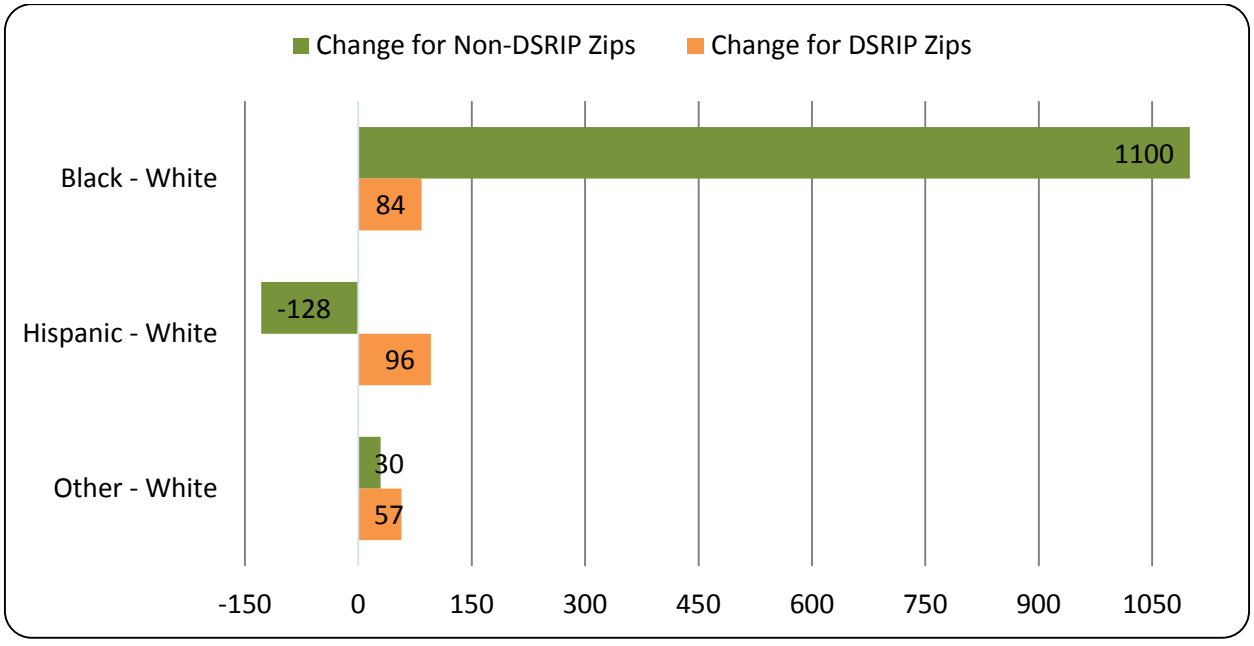
Source: Medicaid Fee-for-Service Claims & Managed Care Encounter Data; Analysis by Rutgers Center for State Health Policy.
Note: Units of change are avoidable hospitalizations per 10,000 Medicaid beneficiary-years for the population age 18+. Zip-level analysis.

Table 3.15: Overall DSRIP Impact on Racial/Ethnic and Gender Disparities in Preventable Inpatient Hospitalization Rates

	DSRIP Overall Impact Estimate
Black - White *(n=1,641)*	-1.303
	(0.861)
Hispanic - White *(n=1,611)*	-0.851
	(0.631)
Other - White *(n=1,704)*	-0.901*
	(0.490)
Female - Male *(n=,1764)*	0.098
	(0.337)

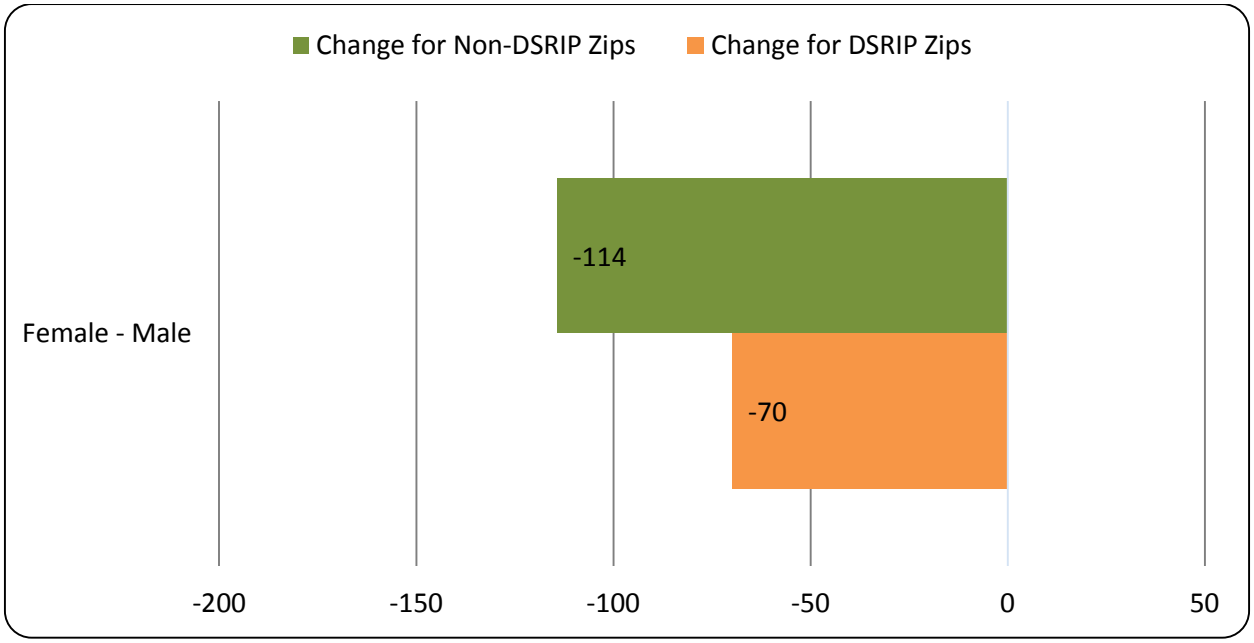
Source: Medicaid Fee-for-Service Claims & Managed Care Encounter Data, Analysis by Rutgers Center for State Health Policy.
Notes: Zip-level regression analysis with zip fixed effects.
Rates are per 10,000 Medicaid beneficiary-years for beneficiaries age 18 and up.
Robust standard errors in parentheses.
*** p<0.01, ** p<0.05, * p<0.1
See Appendix G for full model results.

Figure 3.37 Change in Avoidable Emergency Department Visit Rate Differences between Minority Populations and Whites over 2011/2012-2013



Source: Medicaid Fee-for-Service Claims & Managed Care Encounter Data; Analysis by Rutgers Center for State Health Policy.
Note: Units of change are avoidable ED visits per 10,000 Medicaid beneficiary-years.
Zip-level analysis.

Figure 3.38: Change in Emergency Department Visit Rate Differences between Females and Males over 2011/2012-2013



Source: Medicaid Fee-for-Service Claims & Managed Care Encounter Data; Analysis by Rutgers Center for State Health Policy.
Note: Units of change are avoidable ED visits per 10,000 Medicaid beneficiary-years.
Zip-level analysis.

Table 3.16: Overall DSRIP Impact on Racial/Ethnic and Gender Disparities in Avoidable Emergency Department Visit Rates

	DSRIP Overall Impact Estimate
Black - White *(n=1,695)*	-0.865
	(1.987)
Hispanic - White *(n=1,695)*	1.109
	(1.502)
Other - White *(n=1,725)*	1.498
	(1.386)
Female - Male *(n=,1773)*	0.348
	(0.865)

Source: Medicaid Fee-for-Service Claims & Managed Care Encounter Data, Analysis by Rutgers Center for State Health Policy.
Notes: Zip-level regression analysis with zip fixed effects.
Rates are per 10,000 Medicaid beneficiary-years.
Robust standard errors in parentheses.
*** p<0.01, ** p<0.05, * p<0.1
See Appendix G for full model results.

Table 3.17: All-Payer and Medicaid Rates of Avoidable Inpatient Hospitalizations by Hospital Participation in the DSRIP Program

	All Payers		Medicaid	
	2011-2012	**2013**	**2011-2012**	**2013**
No DSRIP Hospitals	147	141	282	295
DSRIP Hospitals	169	160	276	240
Low Exposure to DSRIP	143	140	297	280
High Exposure to DSRIP	171	161	275	238
NJ Overall	**169**	**160**	**276**	**240**

Source: Medicaid Fee-for-Service Claims & Managed Care Encounter Data and Uniform Billing Hospital Discharge Data; Analysis by Rutgers Center for State Health Policy.

Notes: Each estimate represents a weighted average of zip code-level rates of avoidable hospitalizations. All-payer rates are per 10,000 population age 18 and above. Medicaid rates are per 10,000 Medicaid beneficiary-years for beneficiaries age 18 and above. The 'DSRIP Hospitals' category represents those zip codes that have at least one hospital participating in the DSRIP program. Rates are also reported separately for zip code areas with high and low exposure to the DSRIP program (see Methods).

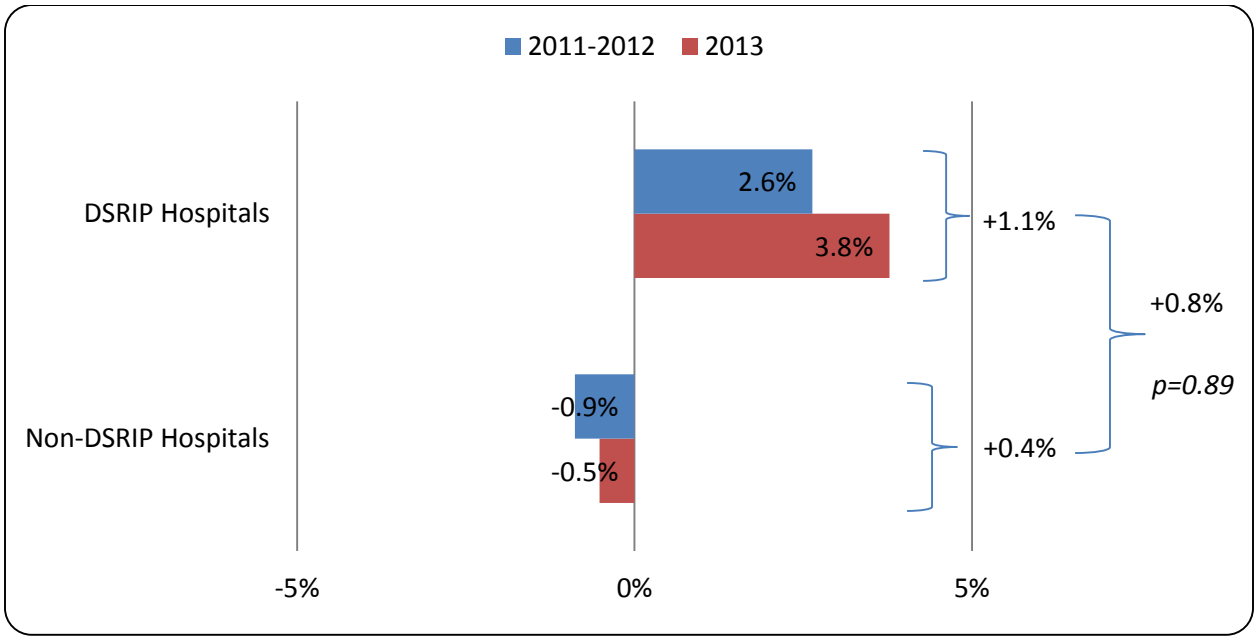
Table 3.18: All-Payer and Medicaid Rates of Avoidable Emergency Department Visits by Hospital Participation in the DSRIP Program

	All Payers		Medicaid	
	2011-2012	**2013**	**2011-2012**	**2013**
No DSRIP Hospitals	1,056	1,062	3,103	3,152
DSRIP Hospitals	1,535	1,565	3,151	3,149
Low Exposure to DSRIP	1,069	1,062	3,072	3,050
High Exposure to DSRIP	1,561	1,594	3,153	3,153
NJ Overall	**1,529**	**1,559**	**3,150**	**3,149**

Source: Medicaid Fee-for-Service Claims & Managed Care Encounter Data and Uniform Billing Hospital Discharge Data; Analysis by Rutgers Center for State Health Policy.

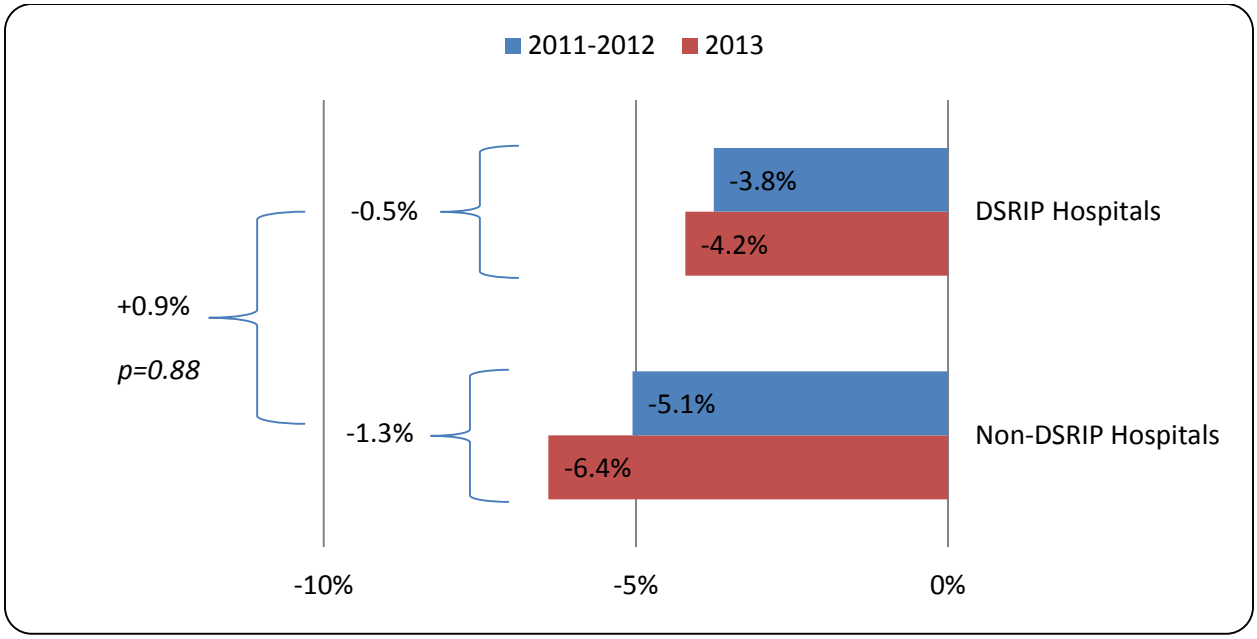
Notes: Each estimate represents a weighted average of zip code-level rates of avoidable ED visits. All-payer rates are per 10,000 population of all ages. Medicaid rates are per 10,000 Medicaid beneficiary-years for beneficiaries of all ages. The 'DSRIP Hospitals' category represents those zip codes that have at least one hospital participating in the DSRIP program. Rates are also reported separately for zip code areas with high and low exposure to the DSRIP program (see Methods).

Figure 3.39: Hospitals' Total Margin by DSRIP Participation



Source: CMS Hospital Cost Reports; Analysis by Rutgers Center for State Health Policy.
Notes: Units of change are percentage points.
Hospital-level analysis.

Figure 3.40: Hospitals' Operating Margin by DSRIP Participation



Source: CMS Hospital Cost Reports; Analysis by Rutgers Center for State Health Policy.
Notes: Units of change are percentage points.
Hospital-level analysis.

Table D summarizes the direction and statistical significance of computed DSRIP effects based on all of the metrics analyzed in this chapter. This representation of results organized by each hypothesis, helps determine the presence or absence of evidence in support of each hypothesis for the first DSRIP program year.

Hypothesis 1: DSRIP hospital projects improve related care and outcomes.

- There were statistically significant improvements reflected in decreasing rates of avoidable asthma and diabetes hospitalizations attributable to the respective disease management programs, but also a worsening in other areas reflected in increasing rates of emergency department visits for asthma among adults. Quality indicators for other chronic diseases showed no significant changes attributable to DSRIP activities.

Hypothesis 2: The DSRIP program improves the quality of ambulatory care, both recommended and preventive, with positive effects on population health.

- As a geographic area's exposure to DSRIP-participating hospitals increased, rates of avoidable inpatient hospitalizations improved (decreased in magnitude) from baseline to the first DSRIP program year, and this change was statistically significant. At the same time, there was a significant worsening (i.e., an increase) of costs associated with avoidable emergency department (ED) visits, although the corresponding negative impact on avoidable ED visits (reflected in an increase in rates) was not statistically significant. Results for readmission rates and inpatient mental health utilization were mixed and none were statistically significant.

Hypothesis 3: The DSRIP program will reduce racial/ethnic and gender disparities in avoidable hospital admissions, treat-and-release ED visits, and hospital readmissions.

- Changes in racial/ethnic disparities in 30-day readmissions or avoidable hospital use that could be attributed to DSRIP generally showed a reduction in disparities, but most of these improvements were not statistically significant. There was a statistically significant ($p<0.05$) worsening of disparities in readmissions for COPD for minority populations (as a group) compared to whites that could be attributable to DSRIP activities. There were no significant changes in gender disparities for any of the quality metrics examined.

Hypothesis 4: Hospitals receiving incentive payments do not experience adverse financial impacts.

- There was no evidence of an adverse impact of DSRIP activities on hospitals' total or operating margins through the first program year.

Table D: Summary of Results by Hypothesis

Hypothesis 1	
Metric	**+/-**
FU Hospitalization for MI – 7 days	-
FU Hospitalization for MI – 30 days	-
Initiation AOD	+
Age 13-17	+
Age 18+	+
Engagement AOD	+
Age 13-17	-
Age 18+	+
ED Asthma (0-17)	-
ED Asthma (18+)	-
Asthma Hospitalizations	+
Diabetes Hospitalizations	+
HF Readmissions	+
AMI Readmissions	-
PN Readmissions	-
Child Access to PCP	+

Hypothesis 2[1]	
Metric	**+/-**
HF Readmissions	+
AMI Readmissions	-
PN Readmissions	-
COPD Readmissions	-
MH IP Utilization	+
Avoidable IP	+
Avoidable ED	-
Avoidable IP $	-
Avoidable ED $	-

Hypothesis 3		
Metric	**Race/Eth.**	**Gender**
	+/-	**+/-**
HF Readmissions	+	-
AMI Readmissions	+	+
PN Readmissions	+	+
COPD Readmissions	-	-
Avoidable IP	+ [2]	-
Avoidable ED	+/- [3]	-

Hypothesis 4	
Metric	**+/-**
Financial Margins	+

Notes: "+" means direction of the estimated impact indicates either no effect or an improvement; "-" means direction of the estimated impact indicates a worsening; $p<0.1$; $p<0.05$

[1] Metrics pertaining to preventive care are reported in Chapter 4.

[2] $p<0.1$ for change in Other-White rate difference.

[3] Impact estimates indicate improvement in Black-White rate difference, but worsening of Hispanic-White and Other-White rate differences.

Conclusions

Our analysis of quality metrics related to patient care, health outcomes, costs, and hospital finances neither fully supports nor refutes any of our hypotheses regarding the success of the DSRIP program in achieving its stated goals. It is important to remember the program effects reported in this chapter are computed based on only the first year when none of the DSRIP activities had fully initiated and the hospitals were still in their application phase. As a result, these effectively reflect effects on outcomes as a result of potential DSRIP-preparatory activities by hospitals. As we incorporate data pertaining to later demonstration years when hospitals fully implement their chronic disease management projects, these same statistical techniques applied on additional years of data will allow measurement of full DSRIP program effect. As of now, the only patterns evident through the first program year are improvements in rates of avoidable inpatient hospitalizations (overall, and for asthma and diabetes short-term complications), and indication of increasing ED use and associated costs.

Our assessment is limited to examining DSRIP impact for the Medicaid population whose utilization is captured in the Medicaid claims and managed care encounter data. We do not include charity care patients, who are part of the DSRIP program low-income population and are included in the attributed population algorithm used for calculating pay-for-performance metrics. As we add later years of data to our evaluation, more of this low-income population will be captured in Medicaid claims and encounter data as they become newly eligible for Medicaid subsequent to the 2014 expansion. In the summative evaluation plan that is based on data through 2017, we will control for this change in the composition of the Medicaid beneficiary population compared to the baseline period.

We utilized CMS cost reports for the years 2011–2013 for examining hospital financial performance related to hypothesis 4. Since the pay for performance/reporting had not started in 2013, we could not yet assess whether hospital financial performance varied by performance in DSRIP program. The financial data are for universe of NJ hospitals (DSRIP-participating and non-participating) in the baseline and post-DSRIP periods. So the estimated effects reflect the impact of the first year of DSRIP program on hospital financial performance.

Limitations

The Medicaid data available to us contained beneficiaries' zip code of residence as of February 2015. We assumed this was the zip code of residence at the time of utilization in 2011–2013 as a criterion for restricting our cohorts to NJ residents for population-based metrics. Since we do not expect relocation across zip codes by Medicaid beneficiaries to be associated with hospitals' anticipated participation in DSRIP in 2011–2013, this potential misclassification creates no bias.

In future years of claims data, we will have information on beneficiaries' zip code of residence at more regular intervals for accurate assignment across time.

As described in detail in Appendix F, we use the ACS zip code tabulation areas (ZCTAs) as a source of NJ zip codes having non-zero population; however, this creates a problem when smaller zip codes are subsumed within the larger ZCTA and are not reported. As a result, for our analysis we are not able to include approximately 9000 Medicaid beneficiaries in these smaller zip codes amounting to 0.6% of the total number of Medicaid beneficiaries. We do not believe that this biases our findings since this exclusion is independent of the effects of the DSRIP program. For our summative evaluation, we will reconcile zip code changes over time, so we continue to capture and accurately characterize the NJ Medicaid population in our analyses.

The Medicaid claims and encounter data available to us for this assessment also present specific limitations related to the dual eligible population. Duals in managed care plans may not always have all of their utilization captured in the Medicaid claims data. Sometimes a claim related to specific utilization may not be generated depending on individual MCO policies and operations. This may underestimate utilization and also inaccurately measure health status and co-morbidities when these measures are derived from claims (e.g., as is done for the CDPS and hospital readmission risk factors). We believe that the effect of these factors on our findings should be minimal. First, the dual eligible population comprises only 20% of the overall Medicaid population (KFF 2015) and this mismeasurement is limited to services that are not paid for by Medicaid MCOs. In addition, the last expansion in the managed care dual population occurred in NJ in 2011 and 2012 (relating to acute care services), prior to the implementation period of our evaluation. As a result our pre-post analysis should mitigate these effects to a large extent. Finally, our summative evaluation report will explore ways to account for this by comparing hospital utilization by dual-eligibles in claims and all-payer data to assess the magnitude of under-reporting.

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Trudnak T, D Kelley, J Zerzan, K Griffith, HJ Jiang, and GL Fairbrother. 2014. "Medicaid Admissions and Readmissions: Understanding the Prevalence, Payment, and Most Common Diagnoses." *Health Affairs (Millwood)* 33 (8): 1337–44.

Appendix A: Description of Measures

Ambulatory Care Sensitive (ACS) Inpatient Hospitalizations and Avoidable/Preventable Emergency Department Visits: We calculate rates of ACS inpatient (IP) hospitalizations and avoidable treat-and-release ED visits that may occur due to inadequate ambulatory/primary care within communities. Avoidable hospitalizations have been widely used in previous research to measure access to primary care, and disparities in health outcomes (Basu, Friedman, and Burstin 2004; Billings et al. 1993; Bindman et al. 1995; Howard et al. 2007). The federal Agency for Healthcare Research and Quality (AHRQ) provides validated programming algorithms to calculate rates of avoidable ACS hospitalizations which are used in this analysis. These are known as the Prevention Quality Indicators (PQI) for adults (ages 18 and above) and Pediatric Quality Indicators for children (ages 6-17). Appendix B gives a list of ACS conditions that constitute a composite index that measures the overall rate of avoidable IP hospitalizations per unit of population. We also report two of the individual PQI rates that are specific to two of the chronic disease focus areas of the DSRIP program: PQI #01 Diabetes short-term complications admission rate and PQI #15 Adult asthma admissions rate. These two PQI component metrics are also part of the Medicaid Adult Core Set of Health Care Quality Measures.

We calculate avoidable treat-and-release ED visits based on the methodology provided by the New York University, Center for Health and Public Service Research (Billings, Parikh, and Mijanovich 2000), which are part of AHRQ's Safety Net Monitoring Toolkit. These comprise three categories of avoidable ED visits that could have been treated in an outpatient primary care setting or could have been prevented with timely access to primary care. Detailed definitions of these classifications are provided with examples in Appendix C.

Readmissions: Because hospital readmissions can result from poor quality of care or inadequate transitional care, 30-day readmissions metrics are used to broadly measure the quality of care delivered by hospitals (Benbassat and Taragin 2000; Jencks, Williams, and Coleman 2009). Such 'potentially preventable' readmissions are defined as readmission for any cause within 30 days of the discharge date for the index hospitalization, excluding a specified set of planned readmissions. While readmissions rates have been most heavily utilized to assess quality for the Medicare population, calculating these measures among the Medicaid population has received growing attention (Trudnak et al. 2014). The readmissions metrics we calculate (heart failure, pneumonia, acute myocardial infarction, and chronic obstructive pulmonary disease) are endorsed by the National Quality Forum (NQF) and are adapted from the federal Centers for Medicare and Medicaid Services methodology available at QualityNet (2015).

ED Visits for Asthma: Visits to the ED for asthma can result from inefficient or improper symptom management. This metric assesses the percent of patients who had a visit to an Emergency Department for asthma. It is based off a quality metric developed by the Health Resources and Services Administration's Asthma Collaborative which was designed to help providers improve the care they provide to people with asthma and is part of an effort to reduce disparities in the treatment of chronic diseases. In our calculation of this metric we look at whether individuals had any visit in the year (the HRSA metric looks at 6 months) and we do not include visits to urgent care offices since these cannot be identified in claims data. We use the National Committee of Quality Assurance's 2014 value sets to define ED visits and to define asthma diagnoses as done for the ED discharge component of the NCQA metric "Relative Resource Use for People with Asthma" (NCQA 2014).

Mental Health Utilization - Inpatient: This measure of inpatient utilization assess the extent to which individuals receive inpatient hospital treatment for a mental health condition. Like general measures of hospital utilization, this measure of service use gathers information about the provision of care to individuals and how organizations managing that care use and allocate resources. Use of inpatient services is affected by many member characteristics such as age, sex, health, and socioeconomic status. We followed the National Committee of Quality Assurance's specifications for the calculation of this metric (NCQA 2014).

Follow-up after Hospitalization for Mental Illness: Following a hospitalization for mental illness, it is recommended that patients have an outpatient visit with a mental health practitioner to ensure appropriate and regular follow-up therapy and medication monitoring (AHRQ 2015b). This measure is used to assess the percentage of discharges for members hospitalized for the treatment of selected mental health disorders that were followed by a qualifying visit with a mental health practitioner within 7 and 30 days. This measure is endorsed by the NQF and is part of the Medicaid Adult Core and Child Core Sets of Health Care Quality Measures. We followed the National Committee of Quality Assurance's specifications for the calculation of this metric (NCQA 2014).

Initiation and Engagement in Alcohol and Other Drug Treatment: After identification of alcohol or drug (AOD) dependence, initiation and engagement in treatment for the condition is important for reducing illness and disability from substance abuse (AHRQ 2015a). The AOD initiation metric assesses the percentage of individuals ages 13 and older with a new episode of alcohol or other drug dependence who have an inpatient AOD admission, outpatient visit, intensive outpatient encounter, or partial hospitalization within 14 days of their diagnosis. The engagement AOD metric taps an intermediate point in care after initiation, but prior to completion of a full course of treatment. It measures the percentage of individuals with an AOD diagnosis who initiated

treatment and also had two or more inpatient admissions, outpatient visits, intensive outpatient encounters, or partial hospitalizations with any AOD diagnosis within 30 days after the date of the initiation encounter. Both of these measures are endorsed by the NQF and are part of the Medicaid Adult Core Set of Health Care Quality Measures. We followed the National Committee of Quality Assurance's specifications for the calculation of this metric (NCQA 2014).

Table E enumerates the measure stewards, measure collections, and National Quality Forum numbers for all evaluator-calculated metrics used in this report.

Table E: Reference Information for Evaluator-Calculated Metrics

	Evaluation	Metric	Measure Steward; [1] Measure Collection(s)	NQF#[2] (if available)
1	Behavioral Health	Follow-up after Hospitalization for Mental Illness 7 Days Post Discharge	NCQA; HEDIS; Medicaid Adult Core #13; Medicaid Child Core	0576
2	Behavioral Health	Follow-up after Hospitalization for Mental Illness 30 Days Post Discharge		
3	Chemical Addiction/ Substance Abuse	Initiation of Alcohol and Other Drug Treatment	NCQA; HEDIS; Medicaid Adult Core #10	0004
4	Chemical Addiction/ Substance Abuse	Engagement of Alcohol and Other Drug Treatment		
5	DSRIP Overall & Cardiac Care	30-Day All-Cause Readmission Rate Following Heart Failure (HF) Hospitalization	CMS; Joint Commission National Hospital Inpatient Quality Measures	0330
6	DSRIP Overall & Cardiac Care	30-Day All-Cause Readmission Rate Following Acute Myocardial Infarction (AMI) Hospitalization		0505

[1] CMS = Center for Medicare & Medicaid Services; AHRQ = Agency for Healthcare Research and Quality; NCQA = National Committee for Quality Assurance; HEDIS=Healthcare Effectiveness Data and Information Set; NYU = New York University; HRSA = Health Resources and Services Administration.

[2] NQF=National Quality Forum (http://www.qualityforum.org/Home.aspx).

[3] HRSA metric includes visits to urgent care offices which cannot be identified in MC data.

Table D: Reference Information for Evaluator-Calculated Metrics (continued)

	Evaluation	Metric	Measure Steward;[1] Measure Collection(s)	NQF#[2] (if available)
7	DSRIP Overall & Pneumonia	30-Day All-Cause Readmission Rate Following Pneumonia (PN) Hospitalization	CMS; Joint Commission National Hospital Inpatient Quality Measures	0506
8	DSRIP Overall	30-Day All-Cause Readmission Rate Following Chronic Obstructive Pulmonary Disease (COPD) Hospitalization		1891
9	Asthma	Emergency Department (ED) Visits for Asthma	HRSA[3]	—
10	DSRIP Overall	Mental Health Utilization - Inpatient	NCQA; HEDIS	—
11	Asthma	Younger Adult Asthma Admission Rate (PQI-15)	AHRQ; Prevention Quality Indicators; PQI #15 and #1 also part of Medicaid Adult Core	0283
12	Diabetes	Diabetes Short-Term Complications Admission Rate (PQI-01)		0272
13	DSRIP Overall	Preventable Inpatient Hospitalizations (PQI-90)		
14	DSRIP Overall	Preventable/Avoidable Treat-and-Release ED Visits	NYU	—
15	DSRIP Overall	Hospital Costs Related to Avoidable Inpatient Stays and Treat-and-Release ED Visits	—	—
16	DSRIP Overall	Hospital Total and Operating Margin	—	—

[1] CMS = Center for Medicare & Medicaid Services; AHRQ = Agency for Healthcare Research and Quality; NCQA = National Committee for Quality Assurance; HEDIS=Healthcare Effectiveness Data and Information Set; NYU = New York University; HRSA = Health Resources and Services Administration.

[2] NQF=National Quality Forum (http://www.qualityforum.org/Home.aspx).

[3] HRSA metric includes visits to urgent care offices which cannot be identified in Medicaid claims data.

Appendix B: AHRQ Prevention Quality Indicators – Composites and Constituents

Overall Composite (PQI #90)	
PQI #01 Diabetes Short-Term Complications Admission Rate	PQI #11 Bacterial Pneumonia Admission Rate
PQI #03 Diabetes Long-Term Complications Admission Rate	PQI #12 Urinary Tract Infection Admission Rate
PQI #05 Chronic Obstructive Pulmonary Disease (COPD) or Asthma in Older Adults Admission Rate	PQI #13 Angina without Procedure Admission Rate
PQI #07 Hypertension Admission Rate	PQI #14 Uncontrolled Diabetes Admission Rate
PQI #08 Congestive Heart Failure (CHF) Admission Rate	PQI #15 Asthma in Younger Adults Admission Rate
PQI #10 Dehydration Admission Rate	PQI #16 Rate of Lower-Extremity Amputation Among Patients With Diabetes
Acute Composite (PQI #91)	
PQI #10 Dehydration Admission Rate	PQI #12 Urinary Tract Infection Admission Rate
PQI #11 Bacterial Pneumonia Admission Rate	
Chronic Composite (PQI #92)	
PQI #01 Diabetes Short-Term Complications Admission Rate	PQI #13 Angina without Procedure Admission Rate
PQI #03 Diabetes Long-Term Complications Admission Rate	PQI #14 Uncontrolled Diabetes Admission Rate
PQI #05 Chronic Obstructive Pulmonary Disease (COPD) or Asthma in Older Adults Admission Rate	PQI #15 Asthma in Younger Adults Admission Rate
PQI #07 Hypertension Admission Rate	PQI #16 Rate of Lower-Extremity Amputation Among Patients With Diabetes
PQI #08 Congestive Heart Failure (CHF) Admission Rate	

Source: Prevention Quality Indicators Technical Specifications - Version 4.4, March 2012; http://www.qualityindicators.ahrq.gov/Modules/PQI_TechSpec.aspx.

Appendix C: Classification of Emergency Department Visits

Type Description	Diagnoses
Non-Emergent: The patient's initial complaint, presenting symptoms, vital signs, medical history, and age indicated that immediate medical care was not required within 12 hours.	Headache, Dental disorder, Types of migraine
Emergent, Primary Care Treatable: Conditions for which treatment was required within 12 hours, but care could have been provided effectively and safely in a primary care setting. The complaint did not require continuous observation, and no procedures were performed or resources used that are not available in a primary care setting (e.g., CAT scan or certain lab tests)	Acute bronchitis, Painful respiration, etc.
Emergent, ED Care Needed, Preventable/Avoidable: Emergency department care was required based on the complaint or procedures performed/resources used, but the emergent nature of the condition was potentially preventable/avoidable if timely and effective ambulatory care had been received during the episode of illness	Flare-ups of asthma, diabetes, congestive heart failure, etc.
Emergent, ED Care Needed, Not Preventable/Avoidable: Emergency department care was required and ambulatory care treatment could not have prevented the condition	Trauma, appendicitis, myocardial infarction

The first three categories are considered to be avoidable/preventable.
Type descriptions taken from http://wagner.nyu.edu/faculty/billings/nyued-background.php.

Appendix D: Cost Report Data Elements and Calculations

Medicare-certified institutional providers are required to submit an annual cost report. The cost report information includes facility level utilization statistics, costs, charges, Medicare payments, and financial information. CMS maintains the cost report data in the Healthcare Provider Cost Reporting Information System (HCRIS). HCRIS includes subsystems for the Hospital Cost Report (CMS-2552-96 and CMS-2552-10), Skilled Nursing Facility Cost Report (CMS-2540-96), Home Health Agency Cost Report (CMS-1728-94), Renal Facility Cost Report (CMS-265-94), Health Clinic Cost Report (CMS-222-92) and Hospice Cost Report (CMS-1984-99). Detailed information on CMS cost reports and links to download the data by provider type and year are available at: http://www.cms.gov/Research-Statistics-Data-and-Systems/Files-for-Order/CostReports/index.html.

Hospitals' total margins and operating margins were extracted from CMS Hospital Cost Reports in order to evaluate whether participation in DSRIP has negatively affected hospital finances. Elements from Worksheet G-3: Statement of Revenues and Expenses were used to calculate total margin and operating margin for each general acute care hospital in NJ for years 2011–2013. The following are the CMS Cost Report items we used to produce estimates for hospitals' total and operating margins:

Total Margin			
Form	**Worksheet**	**Item Description(s)**	**Formula**
2552-10	**G-3** Statement of Revenues and Expenses	Line 3: Net patient revenues Line 25: Total other income Line 29: Net income (or loss) for the period	$\frac{\text{Net income (line 29)}}{\text{Total revenue (line 3 + line 25)}}$
Operating Margin			
2552-10	**G-3** Statement of Revenues and Expenses	Line 3: Net patient revenues Line 4: Total operating expenses	$\frac{\text{Total operating revenue (line 3) – operating expenses (line 4)}}{\text{Total operating revenue (line 3)}}$

Appendix E: Risk-Adjustment Variables for Readmissions Metrics

For the 30-day readmission metrics, control variables for health status come from a full year of data prior to the index admission date and encompass clinically relevant comorbidities (not complications) that have strong relationships with readmission for the specific condition being analyzed.

Heart Failure Readmissions

• Age • Sex • History of Coronary Artery Bypass Graft • History of Percutaneous Transluminal Coronary Angioplasty • Diabetes Mellitus (DM) or DM Complications • Disorders of Fluid/Electrolyte/Acid-Base • Iron Deficiency or Other Unspecified Anemias and Blood Disease • Cardio-Respiratory Failure or Shock • Congestive Heart Failure • Vascular or Circulatory Disease • Chronic obstructive pulmonary disease • Pneumonia • Renal Failure • Other Urinary Tract Disorders • Decubitus Ulcer or Chronic Skin Ulcer • Other Gastrointestinal Disorders • Acute Coronary Syndrome • Valvular or Rheumatic Heart Disease	• Specified Arrhythmias • Asthma • Peptic Ulcer, Hemorrhage, Other Specified Gastrointestinal Disorders • Cancer • Drug/Alcohol Abuse/Dependence/Psychosis • Major Psychiatric Disorders • End-Stage Renal Disease or Dialysis • Severe Hematological Disorders • Nephritis • Liver or Biliary Disease • Metastatic Cancer or Acute Leukemia • Stroke • Dementia or Other Specified Brain Disorders • Coronary Atherosclerosis or Angina • Other or Unspecified Heart Disease • Other Psychiatric Disorders • Fibrosis of Lung or Other Chronic Lung Disorders • Hemiplegia, Paraplegia, Paralysis, Functional Disability • Depression

Acute Myocardial Infarction (AMI) Readmissions

• Age • Sex • History of Coronary Artery Bypass Graft • History of Percutaneous Transluminal Coronary Angioplasty	• Vascular or Circulatory Disease • Disorders of Fluid/Electrolyte/Acid-Base Coronary Atherosclerosis • History of infection • Cerebrovascular Disease

Acute Myocardial Infarction (AMI) Readmissions (continued)

• Diabetes Mellitus (DM) or DM Complications • Iron Deficiency or Other Unspecified Anemias and Blood Disease • Congestive Heart Failure • Valvular or Rheumatic Heart Disease • Chronic obstructive pulmonary disease • End-Stage Renal Disease or Dialysis • Other Urinary Tract Disorders • Specified Arrhythmias • Pneumonia • Renal Failure	• Metastatic Cancer or Acute Leukemia • Cancer • Decubitus Ulcer or Chronic Skin Ulcer • Dementia or Other Specified Brain Disorders • Angina Pectoris/Old Myocardial Infarction • Stroke • Asthma • Acute Coronary Syndrome • Hemiplegia, Paraplegia, Paralysis, Functional Disability • 'Protein-Calorie Malnutrition; • Anterior Myocardial Infarction • Other Location of Myocardial Infarction

Pneumonia Readmissions

• Age • Sex • History of Coronary Artery Bypass Graft • History of Percutaneous Transluminal Coronary Angioplasty • History of infection • Septicemia/Shock • Metastatic Cancer or Acute Leukemia • Lung, Upper Digestive Tract, and Other Severe Cancers • Other Major Cancers • Diabetes Mellitus (DM) or DM Complications • Disorders of Fluid/Electrolyte/Acid-Base • Other Gastrointestinal Disorders • Severe Hematological Disorders • Iron Deficiency or Other Unspecified Anemias and Blood Disease • Dementia or Other Specified Brain Disorders • Drug/Alcohol Abuse/Dependence/Psychosis • Major Psychiatric Disorders • Other Psychiatric Disorders • Hemiplegia, Paraplegia, Paralysis, Functional Disability	• Protein-Calorie Malnutrition • Cardio-Respiratory Failure or Shock • Congestive Heart Failure • Acute Coronary Syndrome • Coronary Atherosclerosis or Angina • Valvular or Rheumatic Heart Disease • Specified Arrhythmias • Stroke • Vascular or Circulatory Disease • Chronic obstructive pulmonary disease • Fibrosis of Lung or Other Chronic Lung Disorders • Asthma • Pneumonia • Pleural Effusion/Pneumothorax • Other Lung Disorders • End-Stage Renal Disease or Dialysis • Renal Failure • Urinary Tract Infection • Other Urinary Tract Disorders • Decubitus Ulcer or Chronic Skin Ulcer • Vertebral fractures • Other Injuries

Chronic Obstructive Pulmonary Disease (COPD) Readmissions

• Age • Fibrosis of Lung or Other Chronic Lung Disorder • Other Digestive and Urinary Neoplasms • Renal Failure • Decubitus Ulcer or Chronic Skin Ulcer • Cellulitis, Local Skin Infection • Vertebral Fractures • Protein-Calorie Malnutrition • Other Endocrine/Metabolic/Nutritional Disorders • Pancreatic Disease • Peptic Ulcer, Hemorrhage, Other Specified Gastrointestinal Disorders • Other Gastrointestinal Disorders • Severe Hematological Disorders • Iron Deficiency or Other Unspecified Anemia and Blood Disease • Depression • Anxiety Disorders • Other Psychiatric Disorders • Metastatic Cancer or Acute Leukemia • Cardio-Respiratory Failure or Shock • Lung, Upper Digestive Tract, and Other Severe Cancers	• Polyneuropathy • Congestive Heart Failure • Hypertensive Heart and Renal Disease or Encephalopathy • Specified Arrhythmias • Other or Unspecified Heart Disease • History of Infection • Vascular or Circulatory Disease • Pneumonia • Diabetes Mellitus (DM) or DM Complications • Disorders of Fluid/Electrolyte/Acid-Base • Dementia or Other Specified Brain Disorders • Drug/Alcohol Abuse/Dependence/Psychosis • Major Psychiatric Disorders • Quadripelgia, Paraplegia, Functional Disability • Respirator Dependence/Respiratory Failure • Acute Coronary Syndrome • Chronic Atherosclerosis or Angina • Lymphatic, Head and Neck, Brain, and Other Major Cancers Breast, Colorectal and Other Cancers and Tumors; Other Respiratory and Heart Neoplasms • Stroke • Sleep Apnea • History of Mechanical Ventilation

Appendix F: Zip Code Identification Methods

All analyses by zip code are based on a 591 NJ zip universe. These 591 zips are an intersection of the zip codes present in our three data sources. They are non-zero population zips identified using the zip code tabulation areas (ZCTAs) in the 2008–2012 ACS data, they occur as zips of residence for Medicaid beneficiaries in the recipient file accompanying the claims data, and they are also zips of residence on Medicaid discharge records in the UB data, which was our source for creating the hospital choice sets and DSRIP exposure variables. Using this intersection of zips helps us discard erroneous zips present in either UB or Medicaid data and was necessary for assuring non-missing exposure variables in zip-level analyses and a consistent geography for all-payer comparisons. Nevertheless, the ZCTA definition in the ACS results is not identical to the postal zip code definition. The implications of this for our analysis are discussed in the limitations section.

Appendix G: Full Model Results

Appendix Table 3.G1: DSRIP Behavioral Health Program's Impact on Follow-up after Hospitalization for Mental Illness – Full Model Results

VARIABLES	7-Day Follow-up	30-Day Follow-up
DSRIP BH Program	-0.01468	-0.01491
	(0.011)	(0.013)
Male	-0.00829	-0.00910
	(0.007)	(0.007)
Age ≥ 65	-0.01274	-0.03952**
	(0.016)	(0.017)
CDPS Risk Category 2	-0.00113	0.00070
	(0.012)	(0.015)
CDPS Risk Category 3	-0.00243	0.00738
	(0.013)	(0.014)
CDPS Risk Category 4	0.00513	0.01809
	(0.011)	(0.016)
CDPS Risk Category 5	-0.01058	-0.01036
	(0.014)	(0.017)
Year 2012	-0.00329	-0.00600
	(0.005)	(0.008)
Year 2013	-0.00742	-0.01498*
	(0.007)	(0.008)
Constant	0.16939***	0.28243***
	(0.010)	(0.014)
Observations	*20,108*	*20,108*
R-squared	*0.00055*	*0.00102*
# of Hospital FE	*52*	*52*

Source: Medicaid Fee-for-Service Claims & Managed Care Encounter Data; Analysis by Rutgers Center for State Health Policy.
Notes: BH=Behavioral Health; CDPS=Chronic Illness and Disability Payment System; FE=Fixed Effects.
For CDPS risk categories, higher category numbers indicate higher health risk.
Discharge-level regression analysis with hospital fixed effects.
Robust standard errors in parentheses.
*** p<0.01, ** p<0.05, * p<0.1

Appendix Table 3.G2: DSRIP Chemical Addiction/Substance Abuse Program's Impact on Initiation and Engagement in Alcohol and Other Drug Treatment – Full Model Results

	Initiation			Engagement		
VARIABLES	**Ages 13-17**	**Ages 18+**	**Overall**	**Ages 13-17**	**Ages 18+**	**Overall**
DSRIP CA/SA						
Program Impact	0.00011	0.00009	0.00013	-0.00001	0.00002	0.00004
	(0.00048)	(0.00014)	(0.00014)	(0.00026)	(0.00008)	(0.00008)
Male	0.03998***	-0.01104***	-0.00620**	0.03474***	-0.02048***	-0.01414***
	(0.01409)	(0.00286)	(0.00315)	(0.01143)	(0.00206)	(0.00234)
CDPS Risk Category 2	-0.06145***	0.04261***	0.03851***	-0.03006**	-0.00283	-0.00377
	(0.01741)	(0.00445)	(0.00429)	(0.01415)	(0.00290)	(0.00293)
CDPS Risk Category 3	0.04742***	0.04780***	0.04846***	0.03221**	-0.00734**	-0.00346
	(0.01781)	(0.00582)	(0.00563)	(0.01399)	(0.00359)	(0.00354)
CDPS Risk Category 4	0.08035***	0.03851***	0.05156***	0.06184***	-0.01432***	0.00448
	(0.01980)	(0.00551)	(0.00572)	(0.01808)	(0.00323)	(0.00504)
CDPS Risk Category 5	0.10275***	0.03854***	0.05649***	0.04613***	-0.03350***	-0.01293***
	(0.01755)	(0.00671)	(0.00620)	(0.01457)	(0.00332)	(0.00420)
Year 2012	0.02120	0.00023	0.00468	0.01197	-0.00117	0.00317
	(0.01311)	(0.00372)	(0.00353)	(0.01000)	(0.00240)	(0.00236)
Year 2013	-0.02704*	0.04794***	0.04449***	-0.01732	0.03673***	0.03571***
	(0.01598)	(0.00469)	(0.00432)	(0.01322)	(0.00321)	(0.00302)
Constant	0.16719***	0.13989***	0.13843***	0.08438***	0.06588***	0.06263***
	(0.01568)	(0.00471)	(0.00460)	(0.01317)	(0.00323)	(0.00332)
Observations	*5,902*	*64,721*	*70,623*	*5,902*	*64,721*	*70,623*
R-squared	*0.022*	*0.006*	*0.005*	*0.013*	*0.010*	*0.006*
# of Zip Code FE	*466*	*557*	*559*	*466*	*557*	*559*

Source: Medicaid Fee-for-Service Claims & Managed Care Encounter Data; Analysis by Rutgers Center for State Health Policy.
Notes: CA/SA=Chemical Addiction/Substance Abuse; CDPS=Chronic Illness and Disability Payment System; FE=Fixed Effects.
For CDPS risk categories, higher category numbers indicate higher health risk.
Patient-level regression analysis with zip fixed effects.
Robust standard errors in parentheses.
*** p<0.01, ** p<0.05, * p<0.1

Appendix Table 3.G3: DSRIP Asthma Program's Impact on Emergency Department Visits for Asthma – Full Model Results

	ED Visit for Asthma	
VARIABLES	**Ages 0-17**	**Ages 18+**
DSRIP Asthma Program Impact	0.00002	0.00003**
	(0.00001)	(0.00001)
Male	0.00873***	-0.01524***
	(0.00053)	(0.00082)
CDPS Risk Category 2	0.04334***	0.02573***
	(0.00206)	(0.00111)
CDPS Risk Category 3	0.04473***	0.03676***
	(0.00248)	(0.00155)
CDPS Risk Category 4	0.03499***	0.03970***
	(0.00171)	(0.00166)
CDPS Risk Category 5	0.06857***	0.03308***
	(0.00271)	(0.00156)
Year 2012	0.00010	0.00521***
	(0.00045)	(0.00049)
Year 2013	-0.00308***	0.00244***
	(0.00049)	(0.00044)
Constant	0.01722***	0.01919***
	(0.00075)	(0.00053)
Observations	*2,186,925*	*1,983,210*
R-squared	*0.015*	*0.010*
# of Zip Code FE	*577*	*578*

Source: Medicaid Fee-for-Service Claims & Managed Care Encounter Data; Analysis by Rutgers Center for State Health Policy.
Notes: CDPS=Chronic Illness and Disability Payment System; FE=Fixed Effects.
For CDPS risk categories, higher category numbers indicate higher health risk.
Person-level regression analysis with zip code fixed effects.
Robust standard errors in parentheses.
*** p<0.01, ** p<0.05, * p<0.1

Appendix Table 3.G4: DSRIP Asthma Program's Impact on Asthma in Younger Adults Admission Rate – Full Model Results

VARIABLES	**Younger Adult Asthma Admission Rate**
DSRIP Asthma Program Impact	-0.08326**
	(0.039)
Average CDPS Risk Score in Zip Code	11.22458
	(9.353)
Year 2012	4.39072
	(4.779)
Year 2013	3.23118
	(4.693)
Constant	4.98199
	(10.892)
Observations	*1,722*
R-squared	*0.01915*
# of Zip Code FE	*575*

Source: Medicaid Fee-for-Service Claims & Managed Care Encounter Data; Analysis by Rutgers Center for State Health Policy.
Notes: CDPS=Chronic Illness and Disability Payment System; FE=Fixed Effects.
Increasing CDPS scores indicate increasing health risk.
Zip-level regression analysis with zip code fixed effects.
Rates are per 10,000 Medicaid beneficiary-years for beneficiaries ages 18-39.
Robust standard errors in parentheses.
*** p<0.01, ** p<0.05, * p<0.1

Appendix Table 3.G5: DSRIP Diabetes Program's Impact on Diabetes Short-term Complications Admission Rate - Full Model Results

VARIABLES	**Diabetes Short-term Complications Admission Rate**
DSRIP Diabetes Program Impact	-0.04752**
	(0.019)
Average CDPS Risk Score in Zip Code	5.54470*
	(3.295)
Year 2012	5.37119**
	(2.507)
Year 2013	6.57605**
	(2.684)
Constant	2.00572
	(5.972)
Observations	*1,731*
R-squared	*0.00948*
# of Zip Code FE	*577*

Source: Medicaid Fee-for-Service Claims & Managed Care Encounter Data; Analysis by Rutgers Center for State Health Policy.
Notes: CDPS=Chronic Illness and Disability Payment System; FE=Fixed Effects.
Increasing CDPS scores indicate increasing health risk.
Zip-level regression analysis with zip code fixed effects.
Rates are per 10,000 Medicaid beneficiary-years for beneficiaries ages 18+.
Robust standard errors in parentheses.
*** p<0.01, ** p<0.05, * p<0.1

Appendix Table 3.G6: DSRIP Cardiac Program's Impact on 30-Day Readmissions for Heart Failure and Acute Myocardial Infarction – Full Model Results

VARIABLES	30-Day HF Readmissions	30-Day AMI Readmissions
DSRIP Cardiac Program Impact	-0.031	0.016
	(0.024)	(0.024)
Year 2013	-0.027	-0.003
	(0.018)	(0.017)
Male	-0.010	-0.010
	(0.011)	(0.020)
Age 65-74	-0.080***	-0.056***
	(0.017)	(0.018)
Age 75-84	-0.051***	-0.041**
	(0.013)	(0.020)
Age 85+	-0.036*	-0.056*
	(0.020)	(0.030)
Constant	0.094**	0.039
	(0.039)	(0.027)
Observations	*4,526*	*1,685*
R-squared	*0.079*	*0.054*
# of Hospital FE	*55*	*55*

Source: Medicaid Fee-for-Service Claims & Managed Care Encounter Data; Analysis by Rutgers Center for State Health Policy.
Notes: HF=Heart Failure; AMI=Acute Myocardial Infarction; FE=Fixed Effects.
Discharge-level regression analysis with hospital fixed effects.
Models adjusted for all condition-specific risk factors listed in Appendix E.
Robust standard errors in parentheses.
*** p<0.01, ** p<0.05, * p<0.1

Appendix Table 3.G7: DSRIP Pneumonia Program's Impact on 30-Day Readmissions for Pneumonia – Full Model Results

VARIABLES	**30-Day Pneumonia Readmissions**
DSRIP Pneumonia Program Impact	0.003
	(0.013)
Year 2013	-0.010
	(0.011)
Male	-0.002
	(0.011)
Age 65-74	-0.058***
	(0.010)
Age 75-84	-0.062***
	(0.012)
Age 85+	-0.073***
	(0.017)
Constant	-0.001
	(0.013)
Observations	*4,362*
R-squared	*0.107*
# of Hospital FE	*55*

Source: Medicaid Fee-for-Service Claims & Managed Care Encounter Data; Analysis by Rutgers Center for State Health Policy.
Notes: FE=Fixed Effects.
Discharge-level regression analysis with hospital fixed effects.
Models adjusted for all condition-specific risk factors listed in Appendix E.
Robust standard errors in parentheses.
*** p<0.01, ** p<0.05, * p<0.1

Appendix Table 3.G8: Overall DSRIP Program Impact on 30-Day Readmissions for Heart Failure, Acute Myocardial Infarction, Pneumonia, and Chronic Obstructive Pulmonary Disease - Full Model Results

	30-Day Readmissions			
VARIABLES	**HF**	**AMI**	**PN**	**COPD**
DSRIP Overall Program Impact	-0.030	0.005	0.019	0.020
	(0.030)	(0.072)	(0.037)	(0.026)
Year 2013	-0.011	-0.001	-0.029	-0.033
	(0.027)	(0.070)	(0.035)	(0.025)
Male	-0.009	-0.018	-0.000	
	(0.010)	(0.020)	(0.011)	
Age 65-74	-0.083***	-0.062***	-0.058***	-0.059***
	(0.016)	(0.017)	(0.010)	(0.012)
Age 75-84	-0.054***	-0.046**	-0.059***	-0.049***
	(0.012)	(0.020)	(0.012)	(0.015)
Age 85+	-0.040**	-0.066**	-0.066***	-0.063***
	(0.019)	(0.030)	(0.016)	(0.015)
Constant	0.073**	0.043	-0.005	0.020
	(0.035)	(0.026)	(0.013)	(0.018)
Observations	*4,896*	*1,816*	*4,810*	*6,475*
R-squared	*0.082*	*0.060*	*0.104*	*0.078*
# of Hospital FE	*64*	*64*	*65*	*65*

Source: Medicaid Fee-for-Service Claims & Managed Care Encounter Data; Analysis by Rutgers Center for State Health Policy.

Notes: HF=Heart Failure; AMI=Acute Myocardial Infarction; PN=Pneumonia; COPD=Chronic Obstructive Pulmonary Disease; FE=Fixed Effects.

Discharge-level regression analysis with hospital fixed effects.

Models adjusted for all condition-specific risk factors listed in Appendix E.

Robust standard errors in parentheses.

*** p<0.01, ** p<0.05, * p<0.1

Appendix Table 3.G9: Overall DSRIP Program Impact on Inpatient Mental Health Utilization- Full Model Results

VARIABLES	**Mental Health Utilization - Inpatient**
DSRIP Overall Program Impact	-0.00000
	(0.00000)
Male	0.00053***
	(0.00015)
CDPS Risk Category 2	0.01850***
	(0.00070)
CDPS Risk Category 3	0.02126***
	(0.00083)
CDPS Risk Category 4	0.02768***
	(0.00106)
CDPS Risk Category 5	0.02764***
	(0.00089)
Age 65-74	-0.00703***
	(0.00041)
Age 75-84	-0.01270***
	(0.00054)
Age 85+	-0.01566***
	(0.00070)
Year 2012	0.00202***
	(0.00012)
Year 2013	0.00208***
	(0.00049)
Constant	-0.00004
	(0.00029)
Observations	*4,199,977*
R-squared	*0.014*
# of Zip FE	*591*

Source: Medicaid Fee-for-Service Claims & Managed Care Encounter Data; Analysis by Rutgers Center for State Health Policy.
Notes: CDPS=Chronic Illness and Disability Payment System; FE=Fixed Effects.
For CDPS risk categories, higher category numbers indicate higher health risk.
Person-level regression analysis with zip fixed effects.
Robust standard errors in parentheses.
*** p<0.01, ** p<0.05, * p<0.1

Appendix Table 3.G10: Overall DSRIP Program Impact on Rates of Avoidable Inpatient Hospitalizations and Emergency Department Visits - Full Model Results

VARIABLES	Preventable IP Hospitalizations	Avoidable ED Visits
DSRIP Overall Program Impact	-0.36838**	0.97202
	(0.179)	(0.615)
Average CDPS Risk Score in Zip Code	83.40510***	215.39122*
	(18.038)	(112.038)
Year 2012	58.42653***	152.86623***
	(12.587)	(50.746)
Year 2013	59.69625***	20.23152
	(21.662)	(64.113)
Constant	126.86524***	2,799.75156***
	(32.078)	(168.298)
Observations	*1,770*	*1,773*
R-squared	*0.14258*	*0.03293*
# of Zip Code FE	*590*	*591*

Source: Medicaid Fee-for-Service Claims & Managed Care Encounter Data; Analysis by Rutgers Center for State Health Policy.
Notes: IP=Inpatient; ED=Emergency Department; CDPS=Chronic Illness and Disability Payment System; FE=Fixed Effects.
Increasing CDPS scores indicate increasing health risk.
Zip-level regression analysis with zip code fixed effects.
Rates are per 10,000 Medicaid beneficiary-years.
Robust standard errors in parentheses.
*** p<0.01, ** p<0.05, * p<0.1

Appendix Table 3.G11: Overall DSRIP Impact on Avoidable Inpatient Hospitalization and Emergency Department Visit Costs - Full Model Results

VARIABLES	Preventable IP Hospitalizations	Avoidable ED Visits
DSRIP Overall Program Impact	0.00042	0.00072**
	(0.00148)	(0.00032)
Zip DSRIP Exposure	0.00391***	0.00377***
	(0.00138)	(0.00139)
Average CDPS Risk Score in Zip Code	0.58562***	-0.23980
	(0.14906)	(0.25045)
Year 2012	0.42556***	0.01776
	(0.10659)	(0.08385)
Year 2013	0.30322*	-0.00794
	(0.17647)	(0.08967)
Constant	12.41948***	13.49504***
	(0.28728)	(0.38479)
Observations	*1,770*	*1,773*

Source: Medicaid Fee-for-Service Claims & Managed Care Encounter Data; Analysis by Rutgers Center for State Health Policy.
Notes: IP=Inpatient; ED=Emergency Department.
Estimates based on a zip-level generalized linear model with gamma log link.
Costs are per 10,000 Medicaid beneficiary-years.
Standard errors in parentheses adjusted for clustering.
*** p<0.01, ** p<0.05, * p<0.1

Appendix Table 3.G12: Overall DSRIP Impact on Racial/Ethnic Disparities in 30-Day Readmission Rates for Heart Failure, Acute Myocardial Infarction, Pneumonia, and Chronic Obstructive Pulmonary Disease - Full Model Results for Combined Impact on Minorities

	30-Day Readmissions			
VARIABLES	**HF**	**AMI**	**PN**	**COPD**
DSRIP Overall Program Impact on Minority Disparities	-0.031	-0.010	-0.055	-0.053
	(0.061)	(0.080)	(0.057)	(0.059)
Minority*DSRIP Hospital	0.050	-0.002	0.059	0.079**
	(0.052)	(0.085)	(0.045)	(0.032)
Minority*Year 2013	0.051	-0.006	0.041	0.038
	(0.058)	(0.074)	(0.053)	(0.057)
Minority	-0.033	0.015	-0.023	-0.056*
	(0.050)	(0.080)	(0.043)	(0.029)
DSRIP Hospital* Year 2013	-0.017	0.013	0.044	0.044
	(0.048)	(0.078)	(0.030)	(0.039)
Year 2013	-0.037	0.000	-0.046*	-0.048
	(0.045)	(0.075)	(0.027)	(0.038)
Male	-0.008	-0.018	-0.001	
	(0.010)	(0.020)	(0.011)	
Age 65-74	-0.082***	-0.063***	-0.058***	-0.059***
	(0.017)	(0.017)	(0.010)	(0.012)
Age 75-84	-0.054***	-0.047**	-0.061***	-0.049***
	(0.012)	(0.020)	(0.012)	(0.015)
Age 85+	-0.037*	-0.067**	-0.066***	-0.062***
	(0.019)	(0.030)	(0.016)	(0.015)
Constant	0.063*	0.036	-0.020	0.008
	(0.034)	(0.032)	(0.015)	(0.021)
Observations	*4,896*	*1,816*	*4,810*	*6,475*
R-squared	*0.083*	*0.060*	*0.106*	*0.079*
# of Hospital FE	*64*	*64*	*65*	*65*

Source: Medicaid Fee-for-Service Claims & Managed Care Encounter Data; Analysis by Rutgers Center for State Health Policy.
Notes: HF=Heart Failure; AMI=Acute Myocardial Infarction; PN=Pneumonia; COPD=Chronic Obstructive Pulmonary Disease; FE=Fixed Effects.
Discharge-level regression analysis with hospital fixed effects.
Models adjusted for all condition-specific risk factors listed in Appendix E.
Robust standard errors in parentheses.
*** p<0.01, ** p<0.05, * p<0.1

Appendix Table 3.G13: Overall DSRIP Impact on Racial/Ethnic Disparities in 30-Day Readmission Rates for Heart Failure and Pneumonia - Full Model Results

	30-Day Readmissions	
VARIABLES	**HF**	**PN**
DSRIP Overall Program Impact on Black-White Disparities	-0.060	-0.137***
	(0.096)	(0.042)
DSRIP Overall Program Impact on Hispanic-White Disparities	-0.055	0.118
	(0.146)	(0.132)
DSRIP Overall Program Impact on Other-White Disparities	0.002	-0.089
	(0.050)	(0.063)
Black*DSRIP Hospital	0.044	0.168***
	(0.061)	(0.030)
Hispanic*DSRIP Hospital	0.088*	-0.057
	(0.046)	(0.102)
Other*DSRIP Hospital	0.058	0.057
	(0.077)	(0.044)
Black*Year 2013	0.087	0.104***
	(0.095)	(0.033)
Hispanic*Year 2013	0.081	-0.099
	(0.143)	(0.128)
Other*Year 2013	-0.003	0.090
	(0.037)	(0.057)
Black	-0.045	-0.133***
	(0.058)	(0.024)
Hispanic	-0.069	0.096
	(0.043)	(0.099)
Other	-0.011	-0.025
	(0.074)	(0.041)
DSRIP Hospital* Year 2013	-0.017	0.045
	(0.048)	(0.030)
Year 2013	-0.038	-0.047*
	(0.045)	(0.027)
Male	-0.009	-0.002
	(0.010)	(0.011)
Age 65-74	-0.085***	-0.061***
	(0.017)	(0.010)
Age 75-84	-0.059***	-0.065***
	(0.012)	(0.012)

Source: Medicaid Fee-for-Service Claims & Managed Care Encounter Data; Analysis by Rutgers Center for State Health Policy.
Notes: HF=Heart Failure; PN=Pneumonia; FE=Fixed Effects.
Discharge-level regression analysis with hospital fixed effects.
Models adjusted for all condition-specific risk factors listed in Appendix E.
Robust standard errors in parentheses.
*** p<0.01, ** p<0.05, * p<0.1

Appendix Table 3.G13: Overall DSRIP Impact on Racial/Ethnic Disparities in 30-Day Readmission Rates for Heart Failure and Pneumonia - Full Model Results (continued)

	30-Day Readmissions	
VARIABLES	**HF**	**PN**
Age 85+	-0.042**	-0.069***
	(0.020)	(0.016)
Constant	0.068*	-0.017
	(0.034)	(0.015)
Observations	*4,896*	*4,810*
R-squared	*0.084*	*0.108*
# of Hospital FE	*64*	*65*

Source: Medicaid Fee-for-Service Claims & Managed Care Encounter Data; Analysis by Rutgers Center for State Health Policy.
Notes: HF=Heart Failure; PN=Pneumonia; FE=Fixed Effects.
Discharge-level regression analysis with hospital fixed effects.
Models adjusted for all condition-specific risk factors listed in Appendix E.
Robust standard errors in parentheses.
*** p<0.01, ** p<0.05, * p<0.1

Appendix Table 3.G14: Overall DSRIP Impact on Gender Disparities in 30-Day Readmission Rates for Heart Failure, Acute Myocardial Infarction, Pneumonia, and Chronic Obstructive Pulmonary Disease - Full Model Results

	30-Day Readmissions			
VARIABLES	**HF**	**AMI**	**PN**	**COPD**
DSRIP Overall Program Impact on Gender Disparities	0.010	-0.062	-0.054	0.022
	(0.048)	(0.129)	(0.048)	(0.052)
Female*DSRIP Hospital	0.028	-0.088	0.040	-0.022
	(0.031)	(0.065)	(0.042)	(0.027)
Female*Year 2013	-0.029	0.107	0.041	-0.037
	(0.043)	(0.127)	(0.045)	(0.049)
Female	-0.009	0.077	-0.032	-0.000
	(0.028)	(0.063)	(0.040)	(0.023)
DSRIP Hospital* Year 2013	-0.033	0.044	0.050	0.004
	(0.043)	(0.044)	(0.038)	(0.053)
Year 2013	0.004	-0.066	-0.052	-0.007
	(0.039)	(0.041)	(0.035)	(0.051)
Age 65-74	-0.083***	-0.062***	-0.058***	-0.059***
	(0.017)	(0.017)	(0.010)	(0.012)
Age 75-84	-0.054***	-0.047**	-0.059***	-0.048***
	(0.012)	(0.019)	(0.012)	(0.015)
Age 85+	-0.040**	-0.066**	-0.067***	-0.059***
	(0.019)	(0.029)	(0.016)	(0.015)
Constant	0.059	0.038	-0.007	0.030
	(0.038)	(0.024)	(0.015)	(0.019)
Observations	*4,896*	*1,816*	*4,810*	*6,475*
R-squared	*0.082*	*0.064*	*0.104*	*0.080*
# of Hospital FE	*64*	*64*	*65*	*65*

Source: Medicaid Fee-for-Service Claims & Managed Care Encounter Data; Analysis by Rutgers Center for State Health Policy.
Notes: HF=Heart Failure; AMI=Acute Myocardial Infarction; PN=Pneumonia; COPD=Chronic Obstructive Pulmonary Disease; FE=Fixed Effects.
Discharge-level regression analysis with hospital fixed effects.
Models adjusted for all condition-specific risk factors listed in Appendix E.
Robust standard errors in parentheses.
*** p<0.01, ** p<0.05, * p<0.1

Appendix Table 3.G15: Overall DSRIP Impact on Racial/Ethnic and Gender Disparities in Preventable Inpatient Hospitalization Rates - Full Model Results

	Preventable IP Hospitalization Rate Differences			
VARIABLES	**Black-White**	**Hispanic-White**	**Other-White**	**Female-Male**
DSRIP Overall Program Impact on Disparities	-1.30328	-0.85100	-0.90087*	0.09804
	(0.861)	(0.631)	(0.490)	(0.337)
Average CDPS Risk Score in Zip Code	82.42129	-123.27266**	-32.28529	-41.04983
	(83.650)	(57.028)	(44.864)	(29.128)
Year 2012	69.46943	-79.03115**	-19.70580	-40.56900*
	(59.302)	(40.214)	(35.312)	(21.523)
Year 2013	163.96152*	19.81261	56.02259	-47.61264
	(99.501)	(73.771)	(58.752)	(39.310)
Constant	-117.56907	144.08573	112.12346	77.88152
	(147.492)	(100.343)	(82.576)	(52.149)
Observations	*1,641*	*1,611*	*1,704*	*1,764*
R-squared	*0.01878*	*0.01997*	*0.00395*	*0.00455*
# of Zip Code FE	*547*	*537*	*568*	*588*

Source: Medicaid Fee-for-Service Claims & Managed Care Encounter Data; Analysis by Rutgers Center for State Health Policy.
Notes: IP=Inpatient; FE=Fixed Effects.
Zip-level regression analysis with zip fixed effects.
Rates are per 10,000 Medicaid beneficiary-years for beneficiaries age 18 and up.
Robust standard errors in parentheses.
*** p<0.01, ** p<0.05, * p<0.1

Appendix Table 3.G16: Overall DSRIP Impact on Racial/Ethnic and Gender Disparities in Avoidable Emergency Department Visit Rates- Full Model Results

	Avoidable ED Visit Rate Differences			
VARIABLES	**Black-White**	**Hispanic-White**	**Other-White**	**Female-Male**
DSRIP Overall Program Impact on Disparities	-0.86482	1.10907	1.49758	0.34832
	(1.987)	(1.502)	(1.386)	(0.865)
Average CDPS Risk Score in Zip Code	417.93088*	-137.32082	-117.25448	121.59599
	(224.216)	(174.093)	(135.205)	(96.696)
Year 2012	127.81783	-21.72147	-40.44544	69.30448*
	(89.457)	(71.496)	(63.323)	(36.455)
Year 2013	306.32694	-45.78176	-126.82717	-47.34176
	(199.419)	(150.698)	(139.311)	(91.475)
Constant	-162.52	-133.23	-876.50***	809.82***
	(320.738)	(252.901)	(204.836)	(139.831)
Observations	*1,695*	*1,695*	*1,725*	*1,773*
R-squared	*0.01516*	*0.02434*	*0.00802*	*0.02358*
# of Zip Code FE	*565*	*565*	*575*	*591*

Source: Medicaid Fee-for-Service Claims & Managed Care Encounter Data; Analysis by Rutgers Center for State Health Policy.
Notes: ED=Emergency Department; FE=Fixed Effects.
Zip-level regression analysis with zip fixed effects.
Rates are per 10,000 Medicaid beneficiary-years.
Robust standard errors in parentheses.
*** p<0.01, ** p<0.05, * p<0.1

Chapter 4: Analysis of Stage 4 Hospital-level Reported Metrics to Examine Trends in Preventive Care

Introduction

In this chapter, we examine the results from an analysis of the 2013 and 2014 Stage 4 Metrics for all DSRIP participating hospitals in New Jersey. These Stage 4 Metrics are derived from Medicaid Management Information System (MMIS) administrative claims data and include measures such as child and adolescent access to primary care practitioners, hospital admission rates for COPD and heart failure, CD4 T-cell counts for HIV, preventive screenings for cervical cancer and chlamydia, a number of childhood vaccination combinations, and well-child visits for infants. One additional measure for hospital acquired potentially preventable venous thromboembolism is derived from each hospital's medical chart or electronic health record (EHR) and was available only for the year 2014. A general description of each metric is provided in the Findings section below; a detailed description of each metric including exclusions can be found in the *DSRIP Performance Measurement Databook* (Myers and Stauffer LC 2015).

Methods

In this analysis, paired t-tests to assess change over time from 2013 to 2014 were conducted for each of the metrics across all 50 New Jersey hospitals participating in the DSRIP program. Some measures are reported as percentages and others as rates per 1,000. Averages for each metric for both 2013 and 2014 are shown in Table 4.1 at the end of this chapter. Significant changes over time are indicated at the $p<.05$ level. Changes in mean levels from 2013 to 2014 are also marked as to whether the metric improved or worsened, and charts are displayed indicating what percentage of hospitals improved for each metric.

Findings

Children and Adolescents' Access to Primary Care Practitioners

These metrics indicate what percentage of each hospital's eligible attributed children or adolescents visited a primary care practitioner (PCP) during each measurement year (or prior year for the two older age groups) and are reported at four age levels:

- 12 to 24 months, percentage with 1+ visits during measurement year
- 25 months to 6 years, percentage with 1+ visits during measurement year

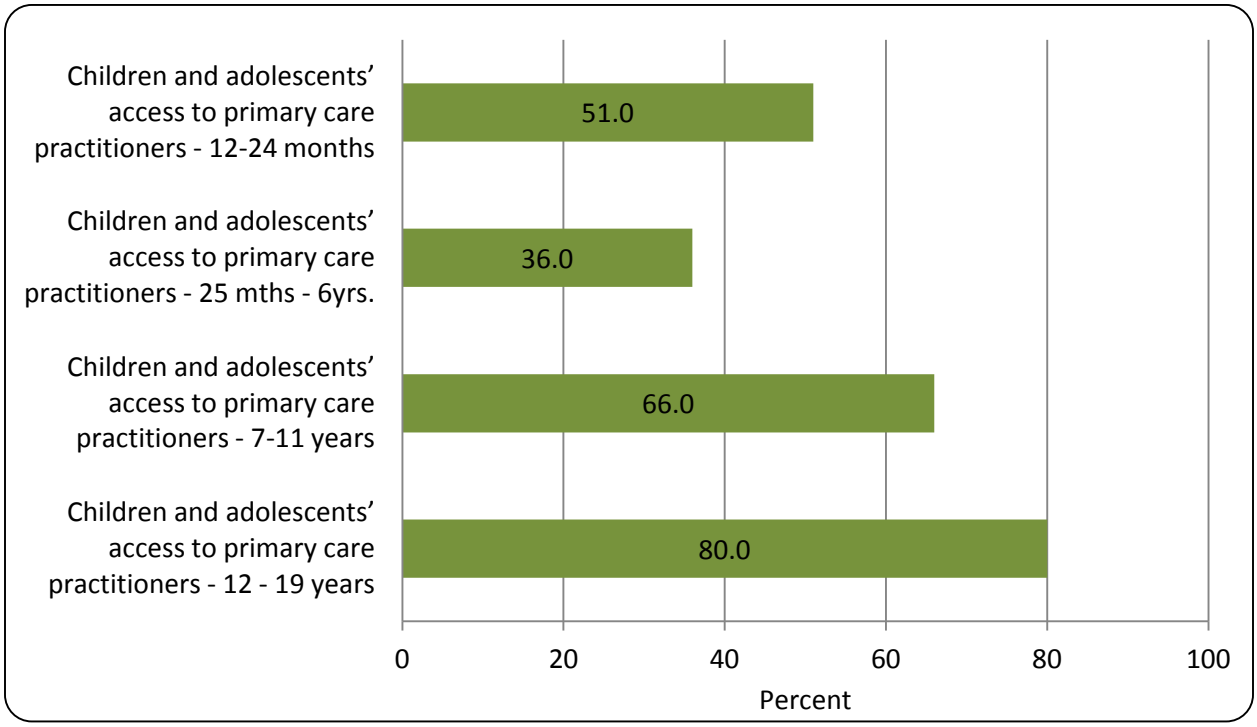
- 7 to 11 years, percentage with 1+ visits during measurement year or year prior
- 12 to 19 years, percentage with 1+ visits during measurement year or year prior

A PCP is defined to include physicians, nurse practitioners, or physician assistants in the following specialties:

- Family practice
- NP Family
- Internal Medicine
- Pediatrics
- NP Pediatric
- NP Community Health
- NP Adult Health

Significant improvements over time were reported for children ages 7 years to 11 years (2013 mean percentage: 93.37%, 2014 mean percentage: 94.45%, p=.010) and for adolescents ages 12 years to 19 years (2013 mean percentage: 89.74%, 2014 mean percentage: 91.16%, p=.000). Four out of every five hospitals (80%) showed improved PCP access from 2013 to 2014 for adolescents (ages 12 years to 19 years), whereas only 36% of hospitals showed improved PCP access for children ages 25 months to 6 years over the same time period (see Figure 4.1).

Figure 4.1: DSRIP Metrics, Percent of Hospitals That Improved from 2013 to 2014, Part 1



Source: 2015 New Jersey DSRIP Metrics Analysis 2013 and 2014, Rutgers Center for State Health Policy.

Hospital Admission Rates

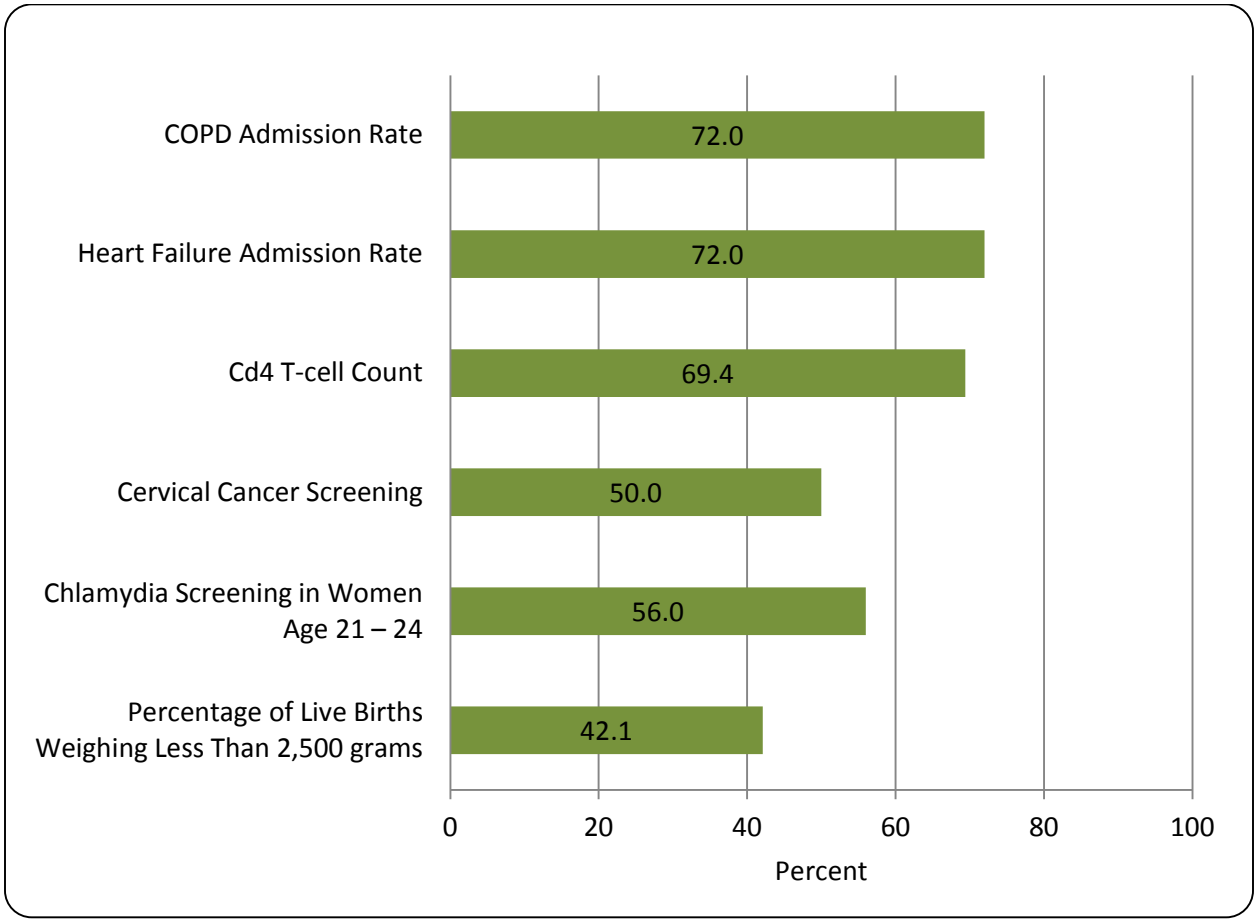
The Stage 4 Metrics included hospital admission rates for the following two conditions in each hospital's attributed patients ages 18 years and older:

- Chronic obstructive pulmonary disease (COPD)
- Heart failure

Both rates are expressed as number of admissions per 1,000 attributable population for each hospital. Certain exclusions such as transfers from other facilities apply.

Hospital admission rates for both conditions significantly improved (decreased in magnitude) from 2013 to 2014. For COPD, the average admission rate across hospitals decreased from 3.10 in 2013 to 2.37 in 2014 (p=.001). For heart failure, the admission rate decreased from 3.88 in 2013 to 3.10 in 2014 (p=.000). For both conditions, nearly 3 out of 4 hospitals (72% for both) showed improved admission rates (see Figure 4.2, top 2 bars).

Figure 4.2: DSRIP Metrics, Percent of Hospitals That Improved from 2013 to 2014, Part 2



Source: 2015 New Jersey DSRIP Metrics Analysis 2013 and 2014, Rutgers Center for State Health Policy.

CD4 T-cell Count for HIV-infected Patients

This metric assesses the percentage of each hospital's attributed patients who are infected with HIV that had two or more CD4 T-cell counts taken during each measurement year, and is calculated for all HIV-infected attributed patients who had at least one primary care visit with a physician or nurse practitioner during the year.

This metric significantly improved from 2013 to 2014. In 2013, 38.1% of HIV-infected patients had 2+ CD4 T-cell counts taken; that percentage improved to 46.9% in 2014 (P=.003). About seven in 10 hospitals (69.4%) showed an improvement in this metric from 2013 to 2014 (also see Figure 4.2, 3rd bar).

Preventive Screening

Preventive screening metrics were assessed for the following two conditions in women:

- Cervical cancer
- Chlamydia

For cervical cancer screening, the metric represents the percentage of women ages 24-64 years who received one or more PAP tests in the measurement year or the year prior, and is assessed as a percentage of all women ages 24-64 in each hospital's attributable population. The chlamydia screening metric represents the percentage of sexually active women ages 16-24 who had one or more chlamydia tests during the measurement year.

Both metrics improved slightly from 2013 to 2014, but the changes were not statistically significant. From 2013 to 2014, the cervical cancer screening percentage improved from 41.95% to 42.06%, and the chlamydia screening improved from 42.36% to 42.46%. Half of the hospitals showed an improvement in cervical cancer screening from 2013 to 2014, while 56% of hospitals showed an improvement in chlamydia screening (also see Figure 4.2, 4th and 5th bars).

Low Birth Weight Infants

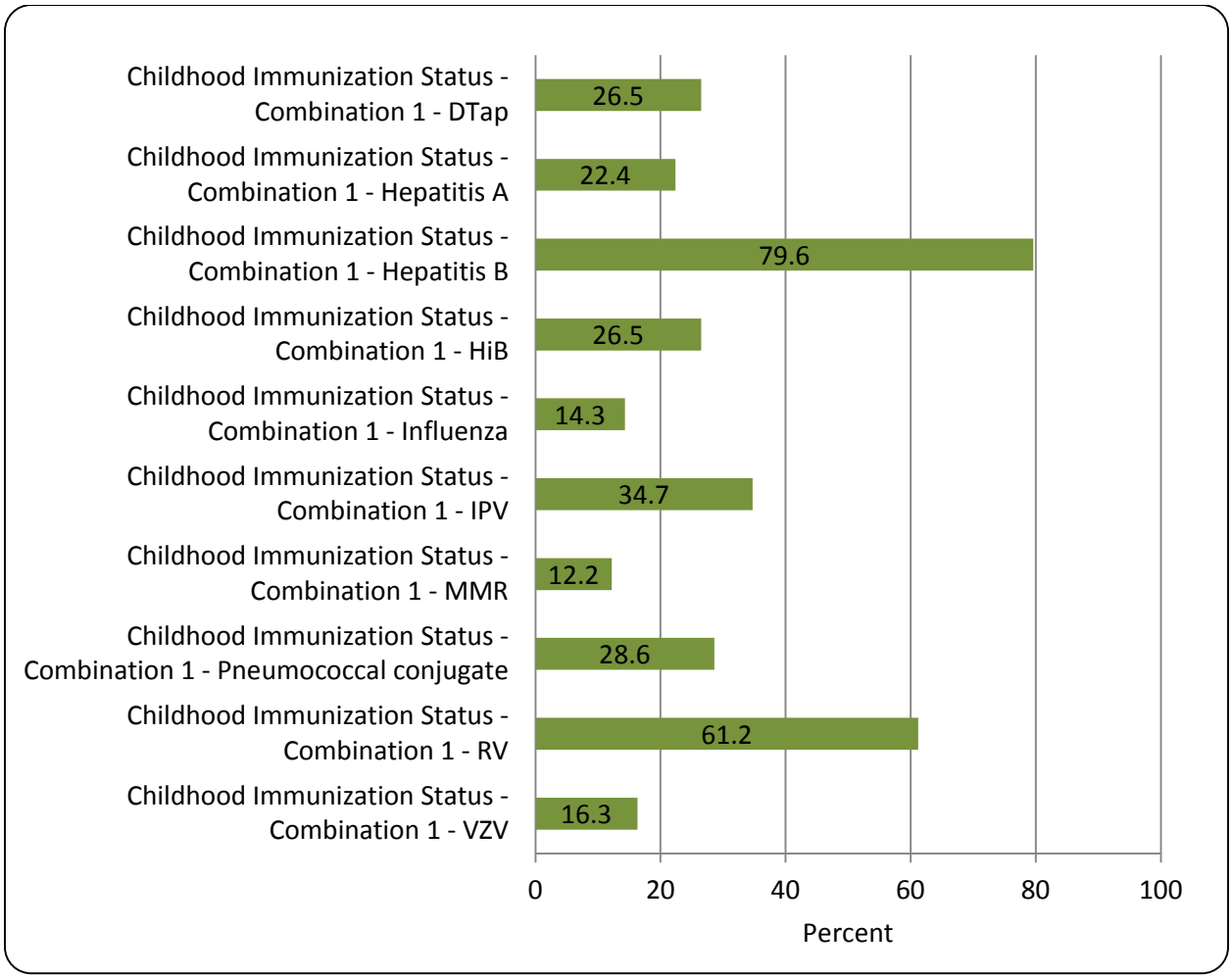
This metric represents the percentage of newborn infants attributed to each hospital who weigh less than 2,500 grams. There was a slight improvement in low birth weight from 2013 to 2014, but the change was not statistically significant. In 2013, 6.68% of newborns weighed less than 2,500 grams, while in 2014, 6.53% of newborns weighed less than 2,500 grams. Just over four in 10 hospitals (42.1%) showed an improvement in this metric from 2013 to 2014 (also see Figure 4.2, last bar).

Childhood Immunization Status

These metrics represent the percentage of two-year-old attributable children for each hospital who received each of the following vaccines:

- four diphtheria, tetanus and acellular pertussis (Dtap)
- three polio (IPV)
- one measles, mumps and rubella (MMR)
- three H influenza type B (HiB)
- three hepatitis B (HepB)
- one chicken pox (VZV)
- four pneumococcal conjugate (PCV)
- one hepatitis A (HepA)
- two or three rotavirus (RV)
- two influenza (flu)

Figure 4.3: DSRIP Metrics, Percent of Hospitals That Improved from 2013 to 2014, Part 3

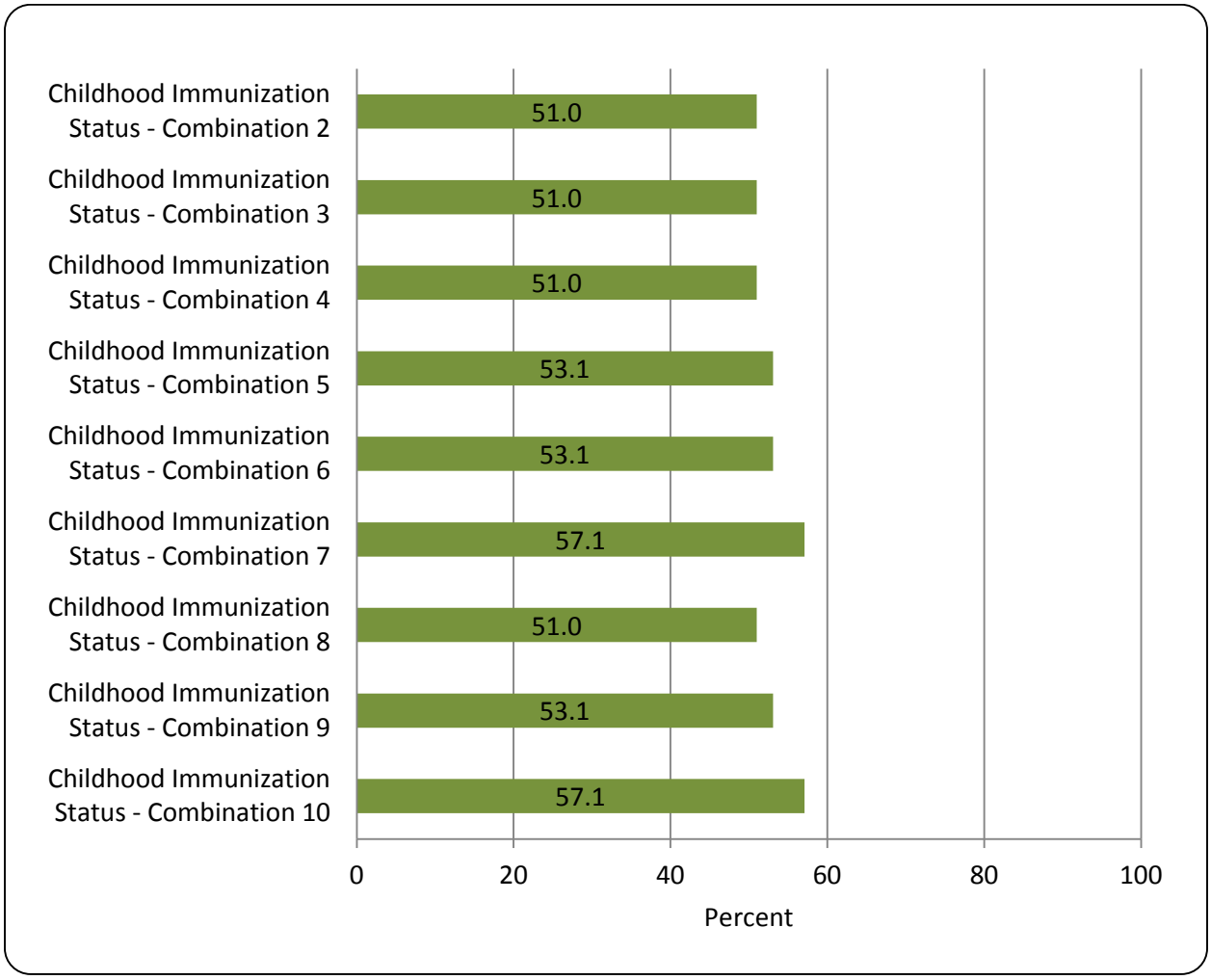


Source: 2015 New Jersey DSRIP Metrics Analysis 2013 and 2014, Rutgers Center for State Health Policy.

The rate for the HepB vaccines improved significantly from 2013 to 2014 (2013 average rate: 5.76, 2014 average rate, 8.21, p=.000). The RV vaccine rate improved slightly from 2013 to 2014, but it was not a statistically significant increase. About eight in 10 hospitals (79.6%) showed an improvement for the HepB vaccine rate from 2013 to 2014, and about six in 10 hospitals (61.2%) showed an improvement for the RV vaccine rate (see Figure 4.3).

Rates for all the remaining vaccines significantly decreased from 2013 to 2014. These decreases were particularly large for the MMR (2013 average rate: 35.09, 2014 average rate: 25.54, p=.000), VZV (2013 average rate: 35.08, 2014 average rate: 26.16, p=.000), and HepA vaccines (2013 average rate: 32.22, 2014 average rate: 24.92, p=.000). Only 12.2% of the hospitals showed an improvement for the MMR vaccine rate from 2013 to 2014. Also, only 14.3% of the hospitals showed an improvement for the influenza vaccine rate and only 16.3% of the hospitals showed an improvement for the VZV vaccine rate from 2013 to 2014 (see Figure 4.3).

Figure 4.4: DSRIP Metrics, Percent of Hospitals That Improved from 2013 to 2014, Part 4



Source: 2015 New Jersey DSRIP Metrics Analysis 2013 and 2014, Rutgers Center for State Health Policy.

The remaining vaccine metrics were different combinations of the above vaccines. For example, "Childhood Immunization Status – Combination 2" represents the rate for receiving all of the first six vaccines listed above, and "Childhood Immunization Status – Combination 10" represents the rate for receiving all 10 of the vaccines listed above. Combinations 3-9 represent the rate for receiving different combinations of seven to nine of the vaccines listed above. Five of these combination vaccine metrics decreased slightly from 2013 to 2014, two of these combination vaccine metrics increased slightly from 2013 to 2014, and two more remained at the same rate. However, none of these changes were statistically significant. For all the combination vaccine metrics, roughly half of the hospitals showed improved rates from 2013 to 2014 (see Figure 4.4).

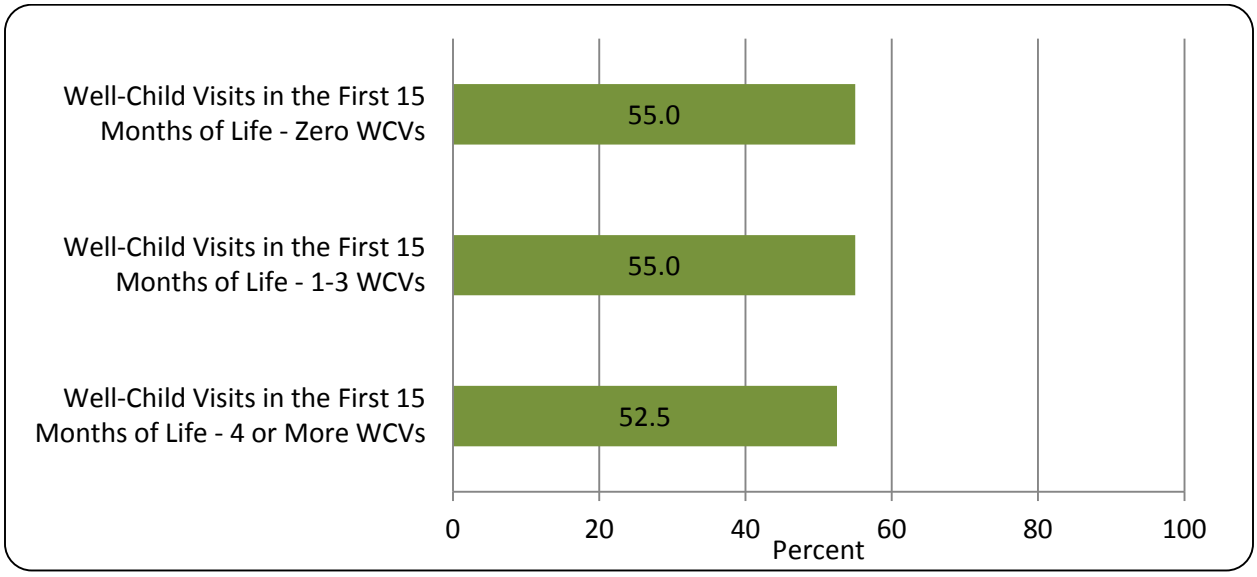
Well-Child Visits in the First 15 Months of Life

These metrics represent the percentage of children out of all of the hospital's attributable children who had a well-child visit with a primary care provider during their first 15 months of life during the measurement year. Three different metrics were calculated:

- Percentage of children with zero well-child visits
- Percentage of children with one to three well-child visits
- Percentage of children with four or more well-child visits

A primary care provider could be a physician, nurse practitioner, or physician assistant with a primary care specialty.

Figure 4.5: DSRIP Metrics, Percent of Hospitals That Improved from 2013 to 2014, Part 5



Source: 2015 New Jersey DSRIP Metrics Analysis 2013 and 2014, Rutgers Center for State Health Policy.

All three metrics improved slightly from 2013 to 2014 (i.e., during the first 15 months of life, the percentage of children with zero well-child visits decreased from 2013 to 2014, while the

percentage of children with one to three or four or more well-child visits increased from 2013 to 2014). However, none of these changes were statistically significant. Just over half of the hospitals showed improved rates from 2013 to 2014 (see Figure 4.5).

Hospital Acquired Potentially Preventable Venous Thromboembolism

This metric represents the percentage of each hospital's admitted patients who did not receive venous thromboembolism prophylaxis before being diagnosed with venous thromboembolism out of all of each hospital's attributable patients who developed venous thromboembolism following admission to the hospital. This is the only Stage 4 metric derived from the medical chart or EHR, and was collected by the hospitals for the year 2014 only. The mean percentage for this metric across the 29 DSRIP participating hospitals who reported it was 9.69%.

Conclusions

The hospitals showed improvement from 2013 to 2014 in many Stage 4 Metrics with the exception of the Combination 1 vaccination rates, which generally decreased, and the Combination 2-10 vaccination rates, which showed little change. About half of the improved metrics were statistically significant, as were the majority of the decreases in Combination 1 vaccine rates. None of the slight changes in Combination 2 vaccine rates were significant.

Specifically, from 2013 to 2014, access to primary care significantly improved for older children (ages 7-11 years) and adolescents (ages 12-19 years), hospital admission rates improved (decreased) for COPD and heart failure, and the percentage of HIV-infected patients receiving regular CD4 T-cell counts improved. Access to primary care for younger children (ages 12-24 months) and well-child visits for infants both improved from 2013 to 2014, but these were not statistically significant changes. For the Combination 1 vaccine rates, the only rate that showed a statistically significant improvement was for the HepB vaccines. The RV vaccine rate also improved slightly, but it was not statistically significant. The remaining Combination 1 vaccine rates showed statistically significant decreases from 2013 to 2014.

References

Myers and Stauffer LC. 2015. *DSRIP Performance Measurement Databook, v1.0*. Trenton: New Jersey Department of Health. https://dsrip.nj.gov/Documents/NJ%20DSRIP%20Databook_Standard%20Workbook_%20Jan%202015_v1.0.zip.

Table 4.1: Means of Reported Metrics, 2013 and 2014

	N	2013	2014	p-value	Sig.	Improved
Children and adolescents' access to primary care practitioners - 12-24 months						
Percentage	49	93.57	93.86	.532		Yes
Children and adolescents' access to primary care practitioners - 25 months - 6yrs.						
Percentage	50	88.93	88.59	.463		No
Children and adolescents' access to primary care practitioners - 7-11 years						
Percentage	50	93.37	94.45	.010	*	Yes
Children and adolescents' access to primary care practitioners - 12 - 19 years						
Percentage	50	89.74	91.16	.000	*	Yes
COPD admission rate						
Rate per 1,000	50	3.10	2.37	.001	*	Yes
Heart Failure Admission Rate						
Rate per 1,000	50	3.88	3.10	.000	*	Yes
Cd4 t-cell count						
Percentage	49	38.10	46.88	.003	*	Yes
Cervical cancer screening						
Percentage	50	41.95	42.06	.849		Yes
Chlamydia Screening in Women Age 21 – 24						
Percentage	50	42.36	42.46	.872		Yes
Percentage of Live Births Weighing Less Than 2,500 grams						
Percentage	38	6.68	6.53	.805		Yes
Childhood Immunization Status - Combination 1 - DTap						
Rate per 1,000	49	13.87	9.51	.000	*	No
Childhood Immunization Status - Combination 1 - Hepatitis A						
Rate per 1,000	49	32.22	24.92	.000	*	No
Childhood Immunization Status - Combination 1 - Hepatitis B						
Rate per 1,000	49	5.76	8.21	.000	*	Yes
Childhood Immunization Status - Combination 1 - HiB						
Rate per 1,000	49	27.11	22.05	.000	*	No
Childhood Immunization Status - Combination 1 - Influenza						
Rate per 1,000	49	20.32	14.62	.000	*	No
Childhood Immunization Status - Combination 1 - IPV						
Rate per 1,000	49	20.53	18.42	.029	*	No
Childhood Immunization Status - Combination 1 - MMR						
Rate per 1,000	49	35.09	25.54	.000	*	No
Childhood Immunization Status - Combination 1 - Pneumococcal conjugate						
Rate per 1,000	49	14.31	10.50	.000	*	No

Source: 2015 New Jersey DSRIP Metrics Analysis 2013 and 2014, Rutgers Center for State Health Policy.
Based on DSRIP-participating hospitals; * implies significance at p<0.05

Table 4.1: Means of Reported Metrics, 2013 and 2014 (continued)

	N	2013	2014	p-value	Sig.	Improved
Childhood Immunization Status - Combination 1 - RV						
Rate per 1,000	49	14.17	14.50	.667		Yes
Childhood Immunization Status - Combination 1 - VZV						
Rate per 1,000	49	35.08	26.16	.000	*	No
Childhood Immunization Status - Combination 2						
Rate per 1,000	49	3.01	3.14	.774		Yes
Childhood Immunization Status - Combination 3						
Rate per 1,000	49	2.45	2.45	.999		Same
Childhood Immunization Status - Combination 4						
Rate per 1,000	49	2.16	2.16	.988		Same
Childhood Immunization Status - Combination 5						
Rate per 1,000	49	1.81	1.72	.791		No
Childhood Immunization Status - Combination 6						
Rate per 1,000	49	1.55	1.43	.699		No
Childhood Immunization Status - Combination 7						
Rate per 1,000	49	1.60	1.59	.990		No
Childhood Immunization Status - Combination 8						
Rate per 1,000	49	1.38	1.28	.750		No
Childhood Immunization Status - Combination 9						
Rate per 1,000	49	1.14	1.06	.755		No
Childhood Immunization Status - Combination 10						
Rate per 1,000	49	1.00	1.01	.986		Yes
Well-Child Visits in the First 15 Months of Life - Zero WCVs						
Percentage	40	6.59	5.18	.107		Yes
Well-Child Visits in the First 15 Months of Life - 1-3 WCVs						
Percentage	40	5.40	6.51	.073		Yes
Well-Child Visits in the First 15 Months of Life - 4 or More WCVs						
Percentage	40	88.01	88.31	.701		Yes
A4Hospital acquired potentially-preventable venous thromboembolism						
Percentage	29	n/a	9.69	n/a		

Source: 2015 New Jersey DSRIP Metrics Analysis 2013 and 2014, Rutgers Center for State Health Policy.
Based on DSRIP-participating hospitals; * implies significance at p<0.05

Chapter 5: Discussion

This report examines various sources of information to identify the effects of the NJ DSRIP program using a combination of qualitative and quantitative research techniques. The study periods differ across the different components, but collectively span the period from the first DSRIP program year (calendar year 2013) until the spring of 2015.

All of these findings thus relate to the period prior to the full implementation of the DSRIP hospital projects that occurs in Demonstration Year 4, and will not capture the effects (or lack thereof) of these specific disease management activities on access, quality and efficiency of care, and more generally overall population health, which are the ultimate goals of the DSRIP program. Our summative evaluation that will be released in 2018 and based on analysis of information relating to future years will be able to identify these effects.

The primary value of the findings in this report, however, lies in documenting stakeholder experiences during the application and early implementation phases and in examining their perceptions relating to the potential of the program to achieve its stated objectives. In addition, detailed analyses of DSRIP quality metrics based on Medicaid fee-for-service claims and managed care encounter data provide useful baseline estimates for the summative evaluation and also estimates of any first-year program effects that may arise from preparatory/anticipatory activities by the hospitals. In that same vein, analysis of hospital reported metrics for the years 2013 and 2014 provide trends in preventive or recommended care that may be attributed to early DSRIP impact, but will provide more conclusive evidence when additional years of data become available.

While all of the findings have been discussed in detail in the individual chapters, we identify below some common themes across these different components.

The information from stakeholder interviews relating to specific hospital experiences in the initial years of the DSRIP program as well as emerging perceptions relating to program components and their potential were also echoed in the responses from the hospital survey. Both these sources identified common issues and challenges that included lack of clarity on program specifications (many of these issues were subsequently resolved); enthusiasm relating to the chronic disease management programs; the significant burden of the reporting requirements that increased over time; and program requirements that did not take into account differing capabilities across

hospitals such as EHR capability or lack of interoperability with reporting partners that caused disproportionate burden on some.

Stakeholders also highlighted the lack of planning and resource allocation to meaningfully engage and incorporate participation by outpatient partners who were crucial not only to fulfill the reporting requirements, but also with regard to the broader delivery system-related goal of treatment continuity and care coordination across providers in inpatient and outpatient settings.

Some of the interviewees were unsure as to which chronic disease programs offered the greatest opportunity for improvements in population health, and our quantitative analyses offer some insights into these issues. Based on the first program year there was some evidence of improvements in diabetes care reflected in decreasing rates of ambulatory care sensitive diabetes-related hospitalizations in areas where hospitals planned to implement diabetes programs. On similar metrics we found mixed results in the case of asthma care. There was a decrease in avoidable asthma inpatient admissions during 2013 reflecting an improvement in community-level care in areas where hospitals planned to implement DSRIP asthma projects, but a small, concurrent increase in ED visits for asthma. These two apparently contradictory findings may reflect differing impacts of hospital activities across the distinct patient groups that characterize the inpatient and ED treatment settings. Overall, these were the only two conditions for which there was some evidence for an early and significant impact attributable to DSRIP. These findings may foreshadow greater impact at the end of the DSRIP demonstration period for asthma and diabetes projects, or it may be that gains for other chronic diseases take a longer time to become apparent. There were improvements in several hospital reported metrics for preventive and recommended care over 2013-2014 that reflected stakeholder expectations that the program will improve care.

In summary, the range of methods and related findings from this report vary in the nature of their contribution to the assessment of the DSRIP program. Many are valuable in their own right such as those that detail stakeholder and hospital experiences in the early phase of the DSRIP program which can guide continued implementation. Others, such as the results from the quantitative analysis, in addition to assessing very early impacts from the first program year, provide valuable information relating to baseline year estimates and measurement techniques that will guide analyses conducted in the summative evaluation.

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