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Data Shows Reduction in Medicare Hospital Readmission Rates During 2012

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Objective: Descriptive analysis of 30-day, all-cause hospital readmission rate patterns from 2007–2012.
Population: Medicare FFS beneficiaries experiencing at least one acute inpatient hospital stay.
Methods: Using Chronic Condition Data Warehouse claims, we estimate unadjusted, monthly, readmission rates for the nation, within the Dartmouth Hospital Referral Regions (HRR), and compare participating and non-participating hospitals in the Partnership for Patients (P4P) program (overall and by number of inpatient beds at each facility).
Results: From 2007 through 2011, the national 30-day, all-cause, hospital readmission rate averaged 19 percent. During calendar year 2012, the readmission rate averaged 18.4 percent. Of the 306 HRRs, rates in 166 HRRs fell by between 1 and 5 percent, while rates dropped by more than 5 percent in 73 HRRs, with the largest reduction in Longview, Texas. Rates increased by more than 1 percent in only 30 HRRs, with the largest increase in Bloomington, Illinois. Readmission rates at hospitals participating in the P4P program have been, on average, consistently lower than the rates at non-participating hospitals within all size categories except for the very smallest and largest hospitals, but rates at both participant and non-participant hospitals fell in 2012.
Discussion: Although claims data are not yet final for 2012, our analysis indicates that hospital readmission rates for all Medicare FFS beneficiaries dropped noticeably during the year. The reasons behind the apparent reduction are not yet clear and merit further investigation.

Keywords: Health Policy, Politics, Law, Regulation, Medicare, Hospitals

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Introduction

Reducing re-hospitalizations among Medicare beneficiaries has become a high priority for policymakers and the Centers for Medicare & Medicaid Services (CMS). Hospital readmissions are seen as an important indicator of care quality and account for billions of dollars in annual Medicare spending (MedPAC, 2007). Over the last several years, CMS has undertaken several initiatives to reduce readmissions among the Medicare fee-for-service (FFS) population. These include reporting hospital readmission rates through Hospital Compare, funding hospital-level improvements through the Partnership for Patients program, changing payment policies through the Hospital Readmissions Reduction Program, and various shared savings initiatives (CMS, 2013a; DHHS, 2011; CMS, 2013b; CMS, 2013c). In turn, many hospitals and other organizations have employed strategies to reduce readmissions, such as enhanced patient education, more post-discharge follow-up care, and increased coordination with outpatient providers (Bradley et al., 2012).

The Partnership for Patients (P4P) program is a CMS-led, public-private partnership that launched in 2011 with the aims of improving patient care and reducing costs. Excluding children's hospitals, nearly 3,500 hospitals participate in the Partnership and account for approximately 700,000, about 75 percent, of the index admissions for FFS Medicare beneficiaries each month. One goal of the Partnership is to reduce the 30-day hospital readmission rate by 20 percent by the end of 2013 by improving transitions of care (DHHS, 2011).

In this analysis, we examine unadjusted, monthly, readmission rates for the nation, within the Dartmouth Hospital Referral Regions (HRR), and compare participating and non-participating hospitals in the P4P program (overall and by number of inpatient beds at each facility). We estimate the national readmission rates from 2007–2012 to examine the long term trends. We compute the rate within HRRs in order to examine the geographic patterns across the nation. And we compare rates for hospitals participating in the P4P program, where one goal is a reduction in the readmission rate for participating hospitals.

Data and Methods

To calculate the all-cause readmission rate, we used claims data from the Chronic Condition Data Warehouse which has 100 percent of Medicare claims for beneficiaries who are enrolled in the FFS program (CCW, 2013). The study population is all Medicare beneficiaries enrolled in Part A, including those under the age of 65, who were not enrolled in Medicare Advantage for any part of the year.

Our unit of observation was an inpatient admission stay at an acute care hospital, including critical access hospitals. Inpatient hospital stays that started within 30 days of discharge from an index admission were classified as readmissions. For our analysis,

readmission rates equal the number of stays classified as readmissions divided by the number of index stays for a given period (here, a month). We did not count inpatient stays where the beneficiary died as an index admission, but such stays could be counted as a readmission. We treated same-day transfers as part of a single stay and started the 30-day period at the end of the combined stay. Readmission stays were also treated as index admissions if the beneficiary did not die during that stay.

For this study, the readmission rate encompasses all clinical diagnoses and includes beneficiaries who were readmitted to a different hospital than the one where they were first discharged. Instances where a patient was discharged "against medical advice" were included as an index admission. The results also include readmissions that might have been planned in advance or may be considered unavoidable.

The data we are presenting are unadjusted for age or health status. We examined rates within age cohorts (unreported here). Standardizing by age did not change the results in a meaningful way.

Estimating Readmission Rates Based on Incomplete Information

It can take more than a year for all Medicare inpatient hospital claims for a given month to be processed and finalized, so rates presented for months after March 2012 are based on data that we have adjusted to compensate for the lack of complete information. In order to calculate readmission rates for months before all claims are considered final, we performed a detailed analysis of claim maturity patterns over the 2007 to 2011 period. Based on this analysis, we calculated weighting values for index stays, readmission stays, and readmission rates by comparing the ratio of final data to interim data for each metric for each month in which claims were still being processed (processing months). To estimate readmission rates in months with less-than-complete data, we multiplied our interim monthly data by the appropriate weighting values.

For the most recent two months for which we have claims data, we found there is not enough information to determine accurately and reliably the readmission rates for those months. With three months of submitted claims for a particular month, we can produce a reasonably reliable estimate of the readmission rate for that month by weighting the claims that have been processed to date using historical claims data. For instance, our analysis shows that during the third month following an index admission, information on roughly nine percent of readmission stays typically have not yet been processed, so we adjust the claims data we have at that point in time to reflect the expected shortfall.

Because there is variation in how quickly claims are submitted and finalized for a given processing month, our estimates of readmission rates in more recent months are subject to uncertainty. For these months, we compute a range around our estimates of readmission rates. This range is based on our analysis of claims maturity patterns for 2007 through 2011, and the final rate for the month should be within the range about 95 percent of the time. Following the

seventh processing month, more than 99 percent of the claims for inpatient stays have been submitted, and variation has declined to the point where we show the readmission rates without a range.

Results

As shown in Exhibit 1, from 2007 through 2011, the 30-day, all-cause, hospital readmission rate among FFS Medicare beneficiaries remained remarkably stable at 19 percent. But during 2012, the monthly readmission rate dropped to a low of 18 percent in October and averaged 18.4 percent for the year, or more than half a percentage point lower than the average rate for the previous five years. We estimate that this reduction translates to approximately 70,000 fewer readmissions during 2012 than if the rate had remained at 19 percent. Based on a t-test, we found that the average readmission rate in 2012 (assuming the estimated rates for September-December are accurate) was significantly lower than the average rate observed in 2011 ($P<.0001$). The same was not true when t-tests were used to compare rates on a year-to-year basis (e.g. 2008 to 2007) over the 2007 to 2011 period.

Drop in Number of Admissions and Readmissions

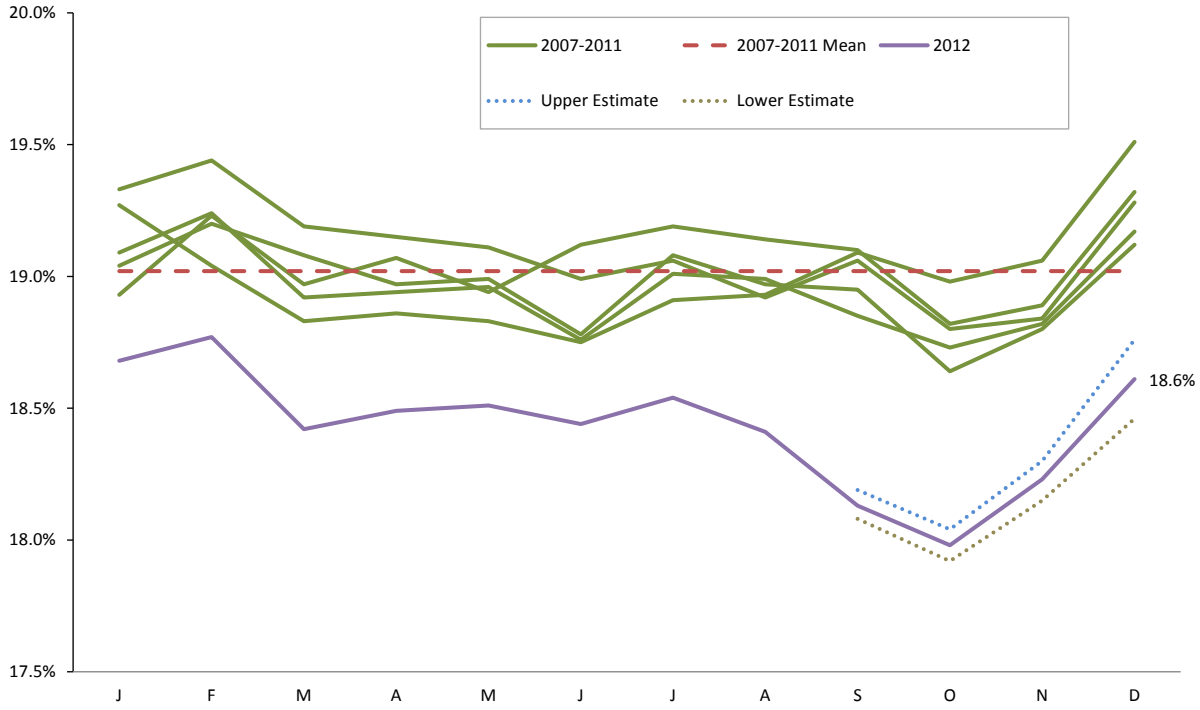
In 2007, there were roughly 940,000 index admissions and 178,000 readmissions each month. On a per-beneficiary basis, both numbers have been slowly dropping since 2007 (Exhibit 2). During a typical month in 2007, there were 26.7 index admissions and 5.1 readmissions per 1,000 FFS beneficiaries. In 2012, those rates stood at 23.7 and 4.4, respectively. Thus, the number of index admissions and readmissions on a per-beneficiary basis were 10 to 14 percent lower in 2012 than in 2007, with the number of readmissions falling somewhat faster than the corresponding index admissions, which helps explain the lower readmission rate.

Partnership for Patients Hospitals

On the whole, readmission rates at hospitals participating in the P4P program have been lower than the rates at non-participating hospitals (Exhibit 3). From January 2010 through December 2011, the average Medicare readmission rate among all P4P hospitals was 19 percent, while the average rate for non-participating hospitals was 19.2 percent. Based on claims processed to date, readmission rates among both groups of hospitals were lower during 2012, averaging 18.4 percent at participating hospitals and 18.6 percent at non-participating hospitals. Similarly to the national-level data, readmission rates fell by comparable levels among various age cohorts at both P4P and non-P4P hospitals.

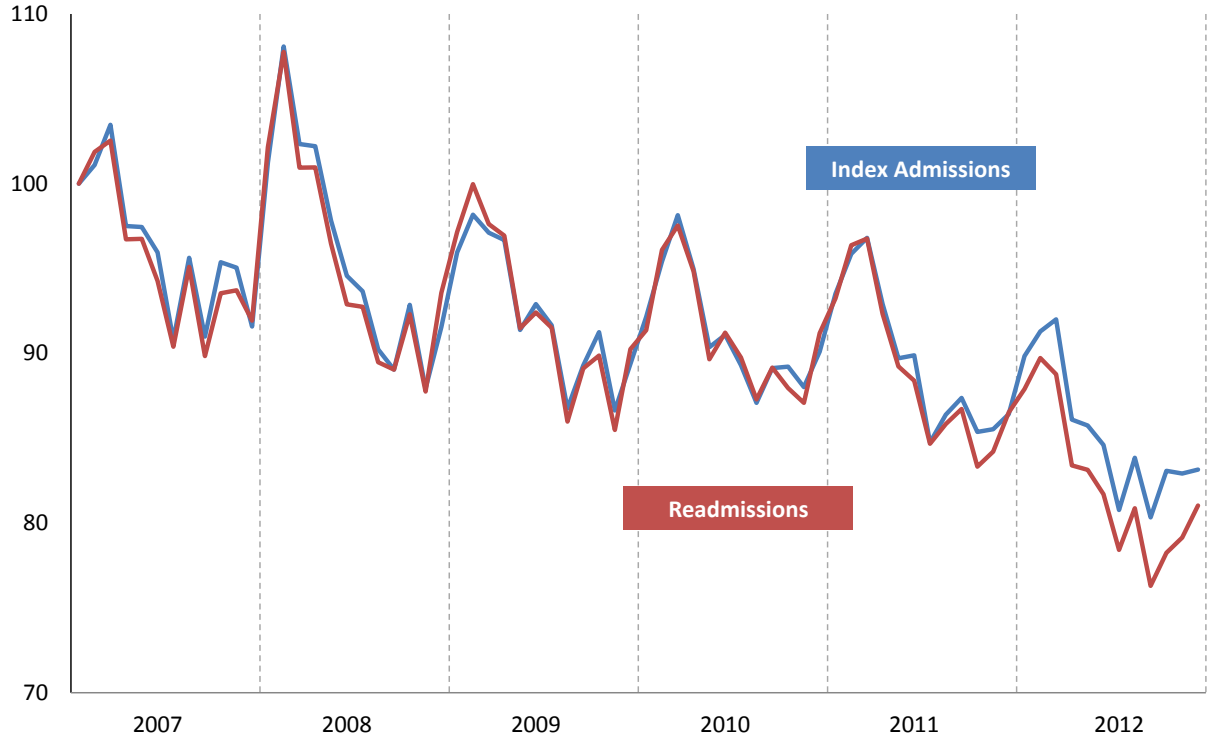
As measured by the number of inpatient beds at each facility, readmission rates are generally lower at smaller hospitals and higher at larger hospitals. When grouped by size of hospital, average readmission rates are lower at P4P hospitals compared to their non-participating counterparts, except at very small and very large hospitals (Exhibit 4).

Exhibit 1. 30-Day, All-Cause, Hospital Readmission Rates, January 2007–December 2012



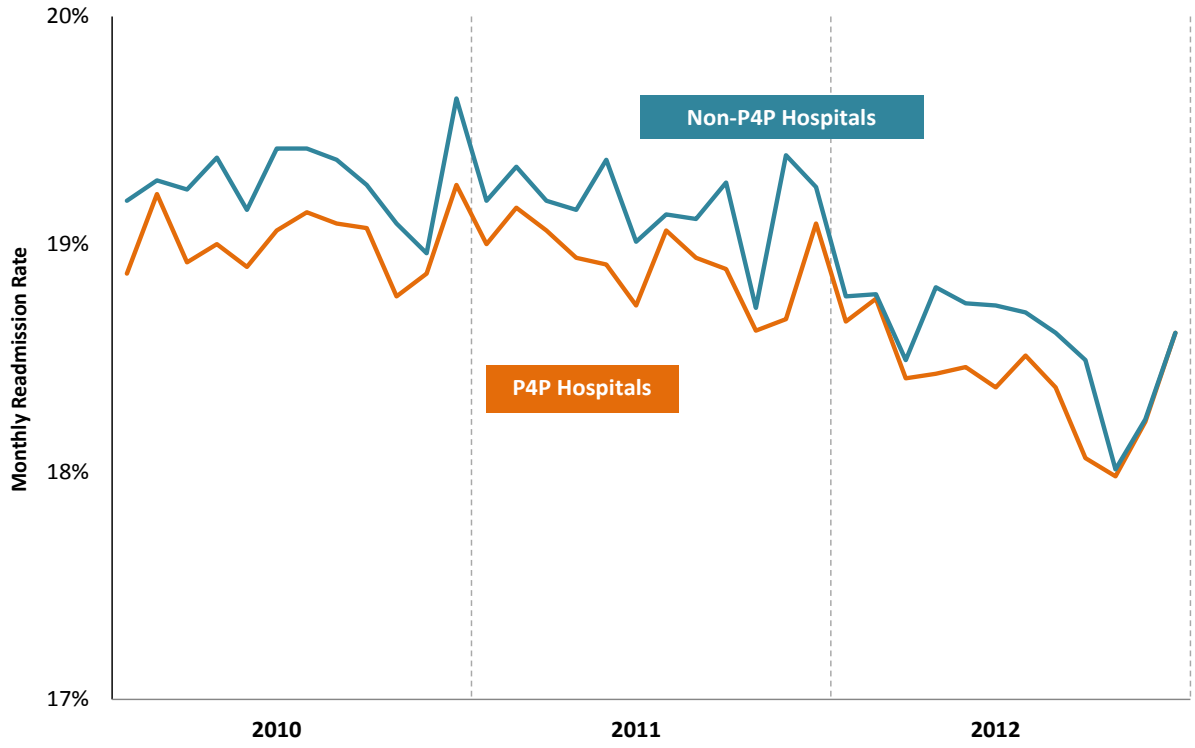
SOURCE: Chronic Conditions Data Warehouse 2007–2012.

Exhibit 2. Change in Per-Capita Index Admissions and Readmissions, 2007–2012 (Jan 2007–100)



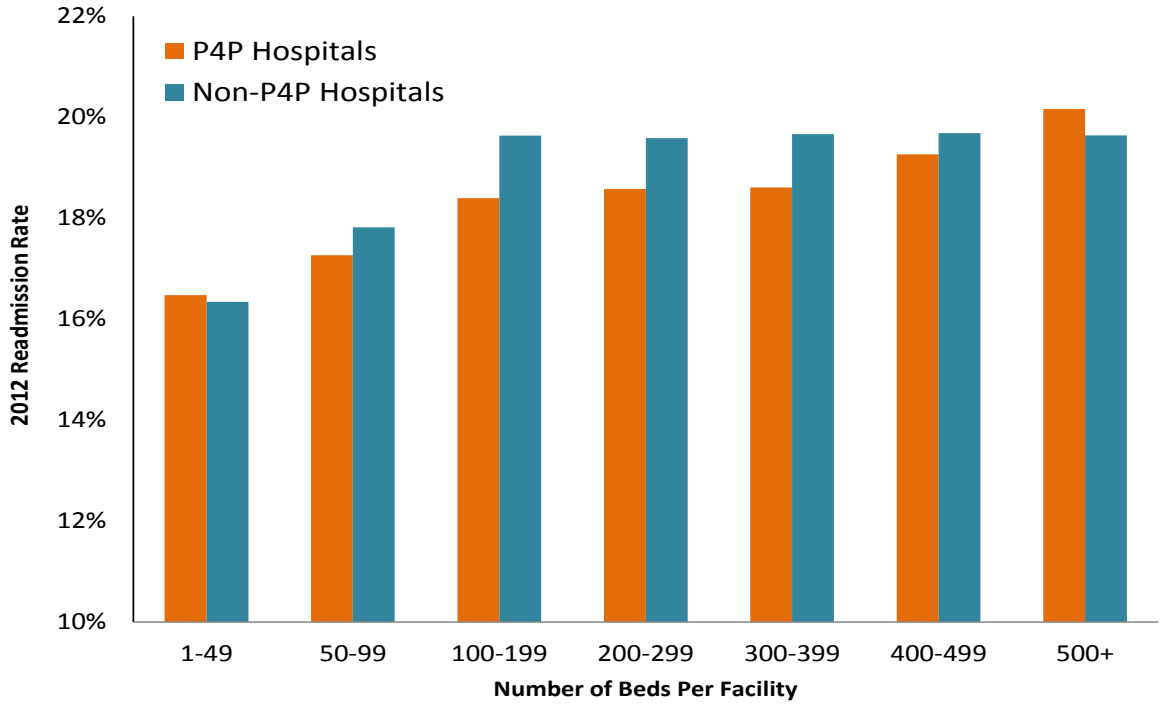
SOURCE: Chronic Conditions Data Warehouse 2007–2012.

Exhibit 3. Monthly Readmission Rates at P4P and Non-P4P Hospitals January 2010–December 2012



SOURCE: Chronic Conditions Data Warehouse 2007–2012.

Exhibit 4. Readmission Rates in 2012 at P4P and Non-P4P Hospitals by Hospital Size

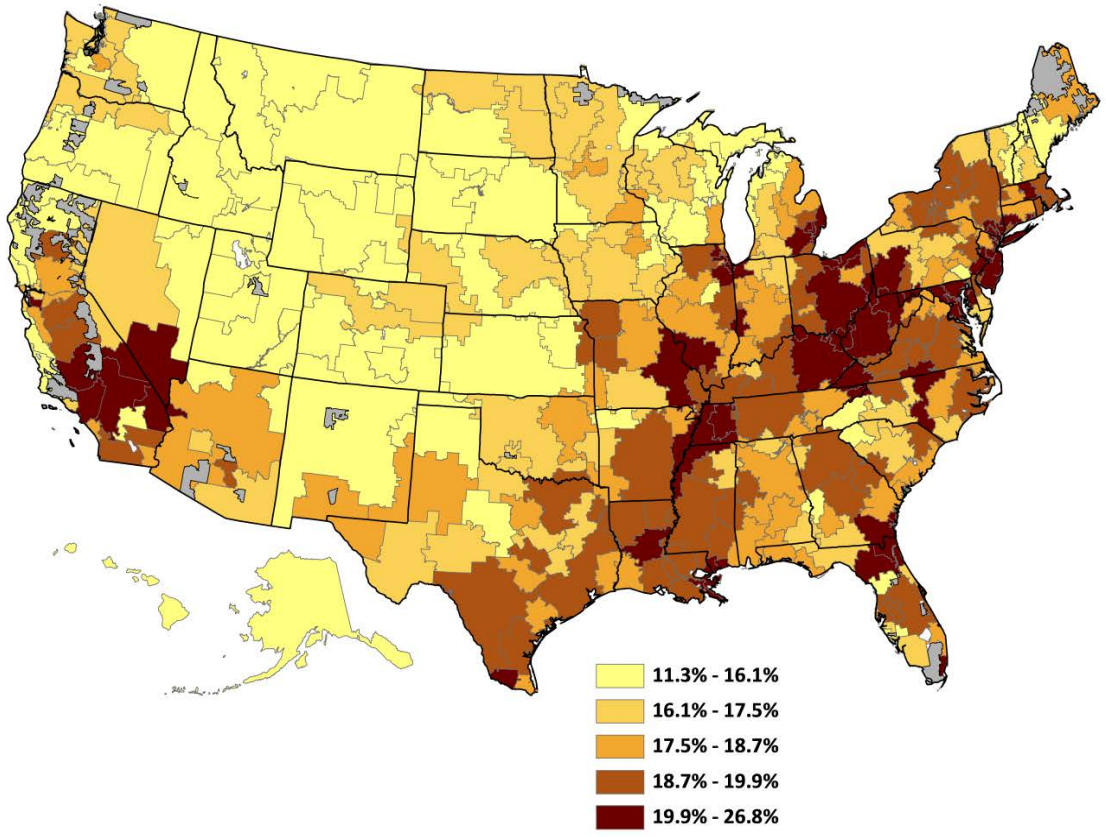


SOURCE: Chronic Conditions Data Warehouse 2007–2012.

Rates by Hospital Referral Region

We also examined readmission rates among the 306 HRRs defined by the Dartmouth Atlas. We found that there is a significant degree of variation in the unadjusted readmission rates in different areas of the country. As shown in Exhibit 5, readmission rates in 2011 were lowest in the Mountain West and the Pacific Northwest. Rates were generally highest in the Mid-Atlantic region, the eastern Midwest, and certain areas in the South and on the West Coast.

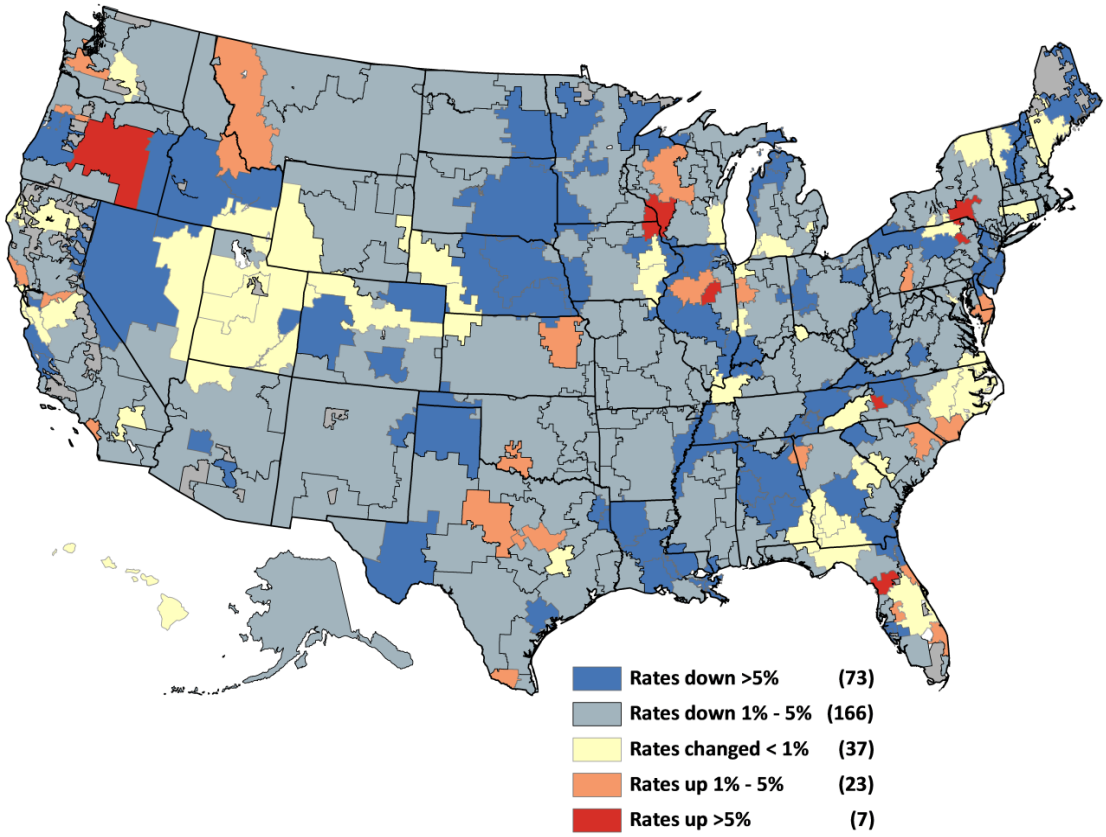
Exhibit 5. Readmission Rates by Hospital Referral Region, 2011.



SOURCE: Chronic Conditions Data Warehouse 2011, Dartmouth Hospital Referral Regions.

Exhibit 6 shows how readmission rates changed from 2011 to 2012 in each HRR. We found that the reduction in readmission rates was widespread across the country. Rates in 166 HRRs fell by between 1 and 5 percent, while rates dropped by more than 5 percent in 73 HRRs, with the largest reduction in Longview, Texas. Roughly 85 percent of all 2012 index admissions occurred in these 239 HRRs. Rates increased by more than 1 percent in only 30 HRRs, with the largest increase in Bloomington, Illinois.

Exhibit 6. Change in Readmission Rates by Hospital Referral Region, 2011–2012.



SOURCE: Chronic Conditions Data Warehouse 2011, Dartmouth Hospital Referral Regions.

At the national level, reductions in readmission rates observed during 2012 generally were consistent across various age groups, and controlling for age did not yield materially different results. Reductions in readmission rates were widespread across the country, with most HRRs seeing rates drop by more than one percent in 2012 compared to 2011. Not only were readmission rates lower in 2012, but the absolute number of index admissions and readmissions per beneficiary has been dropping over the six-year period analyzed. We also found that readmission rates at hospitals participating in the P4P program were, on average, consistently lower than the rates at non-participating hospitals except at the very smallest and largest hospitals.

Discussion

Our findings for 2007–2011 are consistent with other studies that have looked at hospital readmission rates over the last decade (Dartmouth Atlas Project & Lake Research Group,

2013; Jencks, 2009). Differences between their findings and ours about readmission rates during this period are most likely the result of methodological differences in how rates were calculated rather than meaningful differences in trend.

Many factors could have played a role in the observed changes in readmission rates. One possible explanation for the observed reduction in rates in 2012 is that payment reforms and other initiatives aimed at reducing avoidable readmissions are starting to have a measurable impact on provider behavior and are resulting in improved care. Our current analysis of readmission rates does not determine whether any of these policies or strategies are affecting rates in a measurable way, only that overall readmission rates in 2012 were lower than they had been during the previous five years.

Another possibility for why the readmission rates have declined is that more beneficiaries are receiving post-discharge care through emergency departments, observational stays, or other non-inpatient settings without material improvements in quality of care. Since we did not control for health status, it is also possible that changes in severity of illness or mortality rates could be affecting readmission rates, although the magnitude of the change in 2012 suggests that this is not the case. However, it does not appear that an influx of new, younger enrollees is driving the reduction in rates, as rates fell by similar amounts across various age cohorts.

Particular caution should be taken when comparing rates between geographic regions, because readmission rates can be affected by differences in demographic characteristics and disease profiles among beneficiaries in different areas. Our findings on geographic variation largely correspond with what we found about rates being lower at small hospitals and higher at large hospitals, since the areas of the country with lower rates tend to have a high proportion of small hospitals, while many areas with higher rates have a higher concentration of large hospitals. However, this correlation does not mean that smaller, more rural hospitals, in and of themselves, lead to lower readmission rates. Differences in readmission rates can exist for a variety of reasons, including patient demographics and the risk profile of the patient population. It is important to note that our results are based on observed rates and have not been adjusted to account for differences in demographic factors or risk profiles, which limits the ability to make direct comparisons between different areas.

Although claims data are not yet final for 2012, preliminary data indicates that hospital readmission rates among Medicare FFS beneficiaries were significantly lower during that year compared to previous years. Our analysis looks at the trend in readmission rates and does not address the factors that may have played a role in the observed change. As such, the reasons behind the reduction, as well as the implications for clinicians and policy makers, are not yet clear and merit further monitoring and analysis.

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