CENTER FOR HEALTH INFORMATION AND ANALYSIS

HOSPITAL-WIDE ADULT ALL-PAYER READMISSIONS

IN MASSACHUSETTS: SFY 2011-2015

DECEMBER 2016

CHIA

Executive Summary

Unplanned hospital readmissions, many of which may be preventable, are costly and may adversely impact patient health and experience of care. Massachusetts has historically had readmission rates higher than the national average. Under the Centers for Medicare and Medicaid Services (CMS) Hospital Readmissions Reduction Program, CMS will penalize 86% of the Commonwealth's hospitals for having higher than expected readmission rates in Federal Fiscal Year (FFY) 2017. Both the percentage of hospitals fined and the average level of fines imposed are greater in Massachusetts than in most other states.[1]

To monitor readmissions in the Commonwealth, the Massachusetts Statewide Quality Advisory Committee in 2012 adopted the Yale/CMS Hospital-Wide All-Cause Unplanned 30-day Readmission Measure for the Commonwealth's Standard Quality Measure Set.[2] The Massachusetts Center for Health Information and Analysis (CHIA) adapted the Yale/CMS measure, which was originally developed for use with the Medicare population, for an all-payer population using CHIA's Hospital Inpatient Discharge Database.[3]

This report, the third in CHIA's annual series of all-payer readmission reports, updates previous reports with State Fiscal Year (SFY) 2015 data and additionally focuses on trends over time in readmission rates, from SFY 2011 to 2015.

After declining from 2011 to 2013, readmissions increased in 2014 and 2015. In SFY 2015 the statewide all-payer readmission rate for Massachusetts acute care hospitals rose to 15.8%; it was 15.2% in 2013 and 15.3% in 2014.

Readmissions for Medicare beneficiaries and commercially insured patients both paralleled the statewide trend of recent increases in the readmission rate. Readmissions among Medicaid patients declined slowly but consistently throughout the five-year period.[4]

Key Findings

- The all-payer readmission rate for Massachusetts acute care hospitals in SFY 2015 rose to 15.8%, up from 15.3% in 2014. The five-year trend reflects declining rates from 2011 to 2013 and increasing rates from 2013 to 2015.
- Readmission rates for adults increase with age; however, readmission rates for younger adults have been increasing steadily over the past five years. Rates for older adults, after relatively steep declines in 2012 and 2013, have risen since 2014.
- Readmission rates for Medicare and commercially insured patients declined from 2011 through 2013 and increased in 2014 and 2015. Rates for Medicaid patients declined across the five-year period from SFY 2011 to 2015.[5]
- Patients discharged to post-acute care settings (skilled nursing facilities, home with home health agency care, and rehabilitation) are more likely to be readmitted than those discharged to home or hospice care. The readmission rate for patients discharged to skilled nursing facilities increased from 18.4% to 19.4% between SFY 2014 and 2015. The readmission rate for patients discharged to home, the largest group by volume, also increased from 12.1% to 12.5%, during this time period.
- Frequently hospitalized patients, defined as those with four or more hospitalizations in any 12-month period from SFY 2013 to 2015, constituted only 7% of the patient population but accounted for 25% of hospitalizations and 58% of readmissions.
- Hospitals' risk-standardized readmission rates (RSRRs), which account for patient case mix and hospital service mix, varied from 14.8% to 17.3%. Three hospitals had risk-standardized readmission rates significantly above the statewide rate of 15.8%.
- There is significant consistency in readmissions by hospital over time; six hospitals had risk-standardized rates consistently in the highest quartile (top 25%, worse) across the five years studied, while five hospitals had rates consistently in the lowest quartile (best) during this period.

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Introduction

Unplanned hospital readmissions, many of which may be preventable, are costly and may adversely impact patient health and experience of care. To monitor readmissions in the Commonwealth, the Massachusetts Statewide Quality Advisory Committee in 2012 adopted the Yale/CMS Hospital-Wide All-Cause Unplanned 30-day Readmission Measure for the Commonwealth's Standard Quality Measure Set.[6] CHIA adapted the Yale/CMS measure, which was originally developed for use with the Medicare population, for an all-payer population using CHIA's Hospital Discharge Datasets.[7] All-payer readmission rates give providers and policymakers a more comprehensive view of readmissions as they identify options to improve quality and reduce waste.

Nationally, the Centers for Medicare and Medicaid Services (CMS) instituted the Hospital Readmissions Reduction Program as part of the Affordable Care Act in 2012. This program incentivizes hospitals to address readmissions by levying financial penalties for hospitals that have higher-than-expected readmission rates. In Federal Fiscal Year (FFY) 2017 (October 2016 to September 2017) the program will penalize acute care hospitals a total of $528 million for having higher-than-expected readmission rates. Massachusetts has historically had readmission rates higher than the national average. CMS is penalizing 86% of the Commonwealth's hospitals an average of 0.77% of their reimbursements for FFY 2017. Both the percentage of hospitals fined and the average level of fines imposed are greater in Massachusetts than in most other states.[8]

This report, the third in CHIA's annual series of readmission reports, updates previous reports with State Fiscal Year (SFY) 2015 data and additionally focuses on trends in readmission rates from SFY 2011 to 2015 (July 2010 through June 2015).

Section I presents the overall trend in statewide all-payer readmissions for the past five years. Section II examines readmissions by characteristics of patients and hospitalizations such as age and expected payer type, and Section III shows readmissions for individual hospitals and groupings of hospitals such as hospital cohorts and hospital systems.

I. Overall Trends in All-Payer Readmissions

This section presents the overall trend in all-payer readmissions for acute care hospitals in Massachusetts. The rates are calculated separately for SFYs 2011 to 2015. The five-year study period spans July 1, 2010 to June 30, 2015.

This section includes two types of readmission rates. Observed or "raw" readmission rates are calculated as the number of readmissions that occurred in a year as a proportion of all the discharges that are eligible for inclusion in the measure during the year. The measure excludes certain categories of hospitalizations from consideration, such as obstetric admissions or primary psychiatric admissions (for details see Section IV: About the Readmissions Methodology). A readmission is defined as an unplanned hospitalization for any reason within 30 days of an eligible discharge. With observed hospital readmission rates, some portion of differences among hospitals may be due to differing service mix and patient case mix. Risk-standardized readmission rates (RSRRs), which are calculated for hospitals and for groups of hospitals, take into account differences across hospitals in patient age, patient comorbidities, and the profile of conditions that each hospital treats, and thus allow for more accurate comparisons across hospitals (for details see Section IV: About the Readmissions Methodology).

Key findings:

- The all-payer readmission rate for Massachusetts acute care hospitals in SFY 2015 rose to 15.8%, up from 15.3% in 2014. The five-year trend reflects a decrease from 2011 to 2013 and an increase from 2013 to 2015.
- The range of hospital RSRRs shifted upward (toward more readmissions) in SFY 2015 and became more concentrated, with few hospitals in 2015 having relatively low rates.

OVERALL TREND

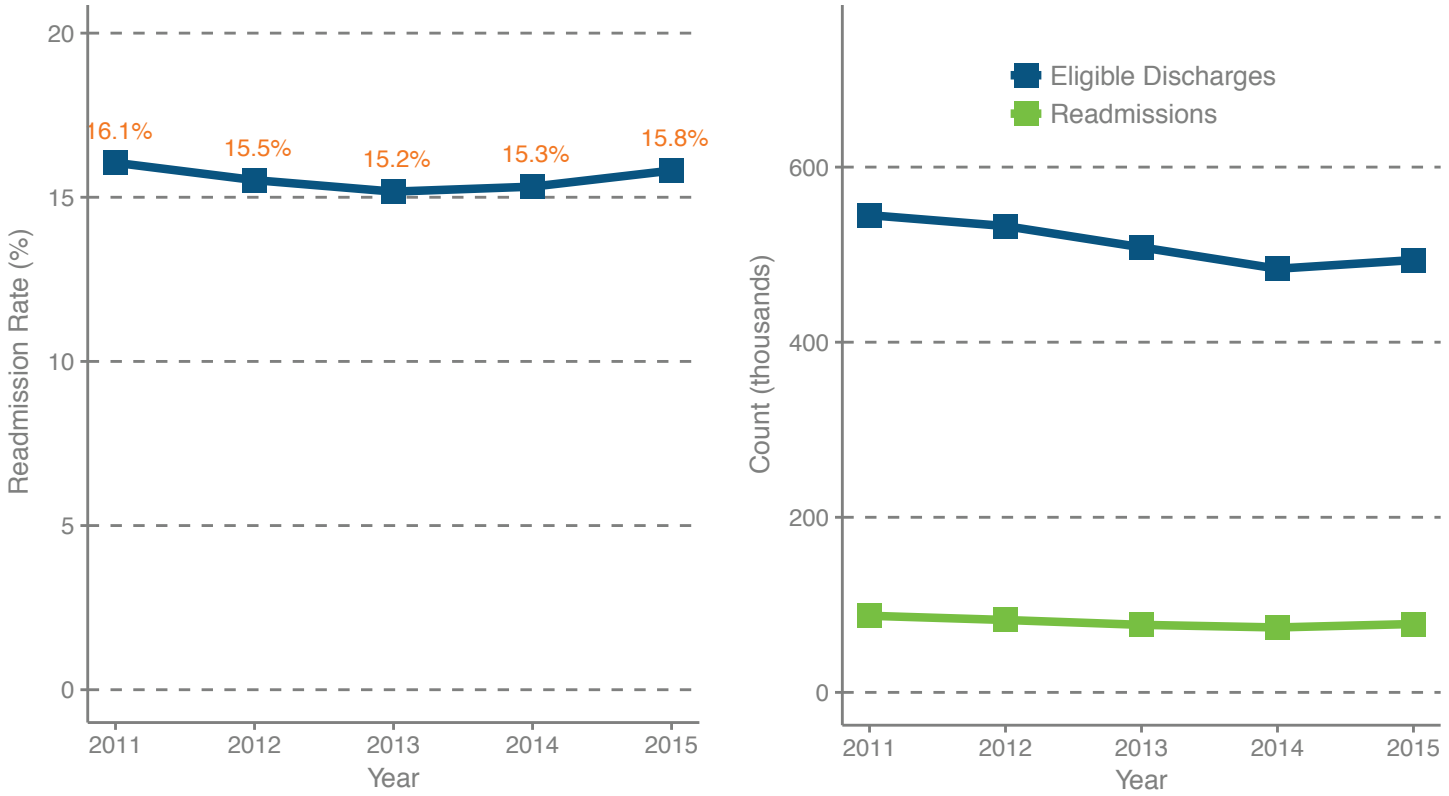
Trends in Statewide All-Payer Readmission Rate, Discharges, and Readmissions

SFY 2011-2015

In SFY 2015, 15.8% of eligible discharges from Massachusetts acute care hospitals resulted in a readmission, a 0.5 percentage point increase from the 2014 rate of 15.3%. Across the five years, rates declined from 2011 to 2013 and increased thereafter.

The number of eligible discharges in Massachusetts acute care hospitals increased in 2015, from 484,000 to 494,000, reversing a long-term trend of declining hospitalizations. The number of readmissions, which has also been declining historically, increased between 2014 and 2015 as well, from 74,000 to 78,000.

In 2015, readmissions increased more quickly than hospitalizations, resulting in the higher readmission rate.



Note: Analyses include discharges for adults with any payer, excluding discharges for obstetric or primary psychiatric care.

Data source: Massachusetts Hospital Inpatient Discharge Database, July 2010 to June 2015.

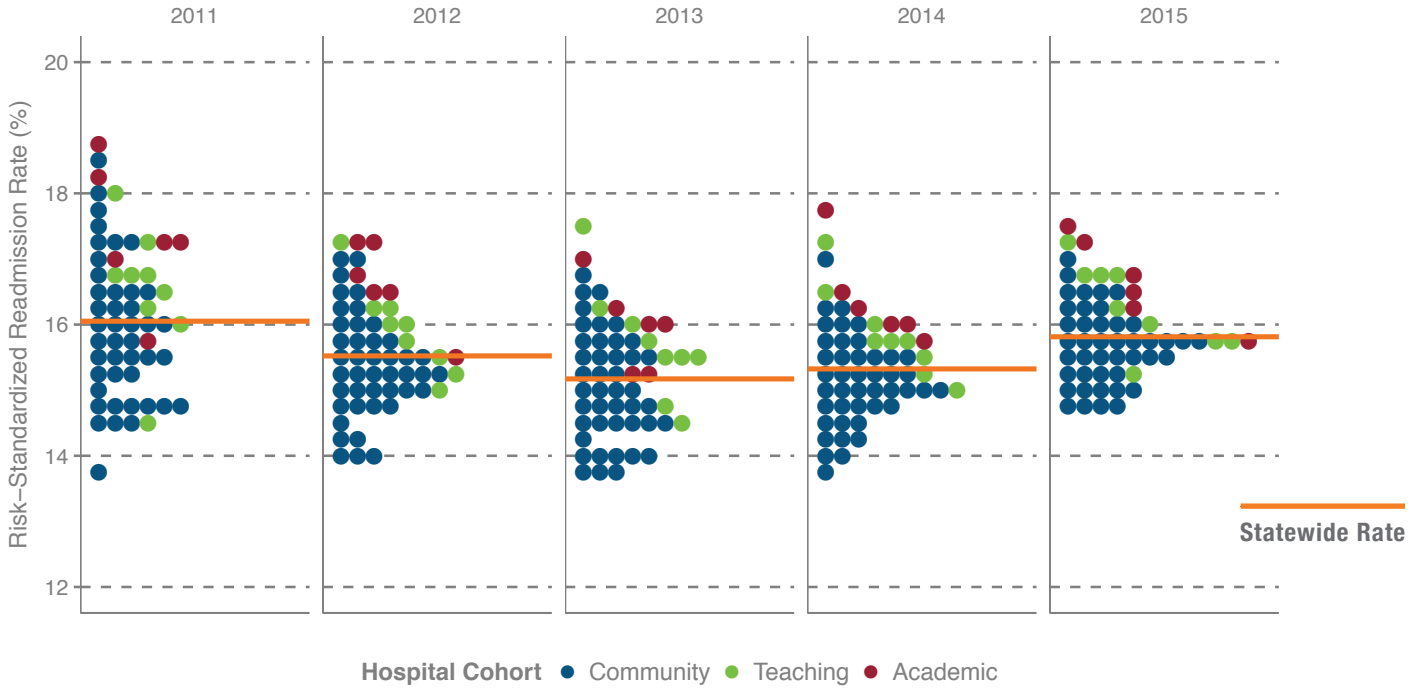
OVERALL TREND

Distribution of Hospital Risk-Standardized Readmission Rates by Year

SFY 2011-2015

Hospital risk-standardized readmission rates (RSRRs) account for differences among hospitals in the patients they treat and the services they provide.

From 2011 to 2013 the distribution of hospitals' RSRRs shifted downward (readmission rates declined) and the hospitals' rates became more tightly concentrated. The distribution remained relatively constant from 2013 to 2014 but shifted decidedly upward in 2015, when there were few hospitals with lower rates. This reflects the overall statewide rate increase during this period and less variation in readmission rates across hospitals.



Note: Figure excludes the two specialty hospitals, Massachusetts Eye and Ear Infirmary and New England Baptist Hospital. Figure shows risk-standardized readmission rates that account for patient case mix and hospital service mix. Analyses include discharges for adults with any payer, excluding discharges for obstetric or primary psychiatric care.

Data source: Massachusetts Hospital Inpatient Discharge Database, July 2010 to June 2015.

II. All-Payer Readmissions by Characteristics of Patients and Hospitalizations

This section presents observed readmission rates by several characteristics of patients and hospitalizations, such as patient age, expected payer type, and discharge setting. In addition, hospital readmissions among patients who were frequent users of hospital services are examined.

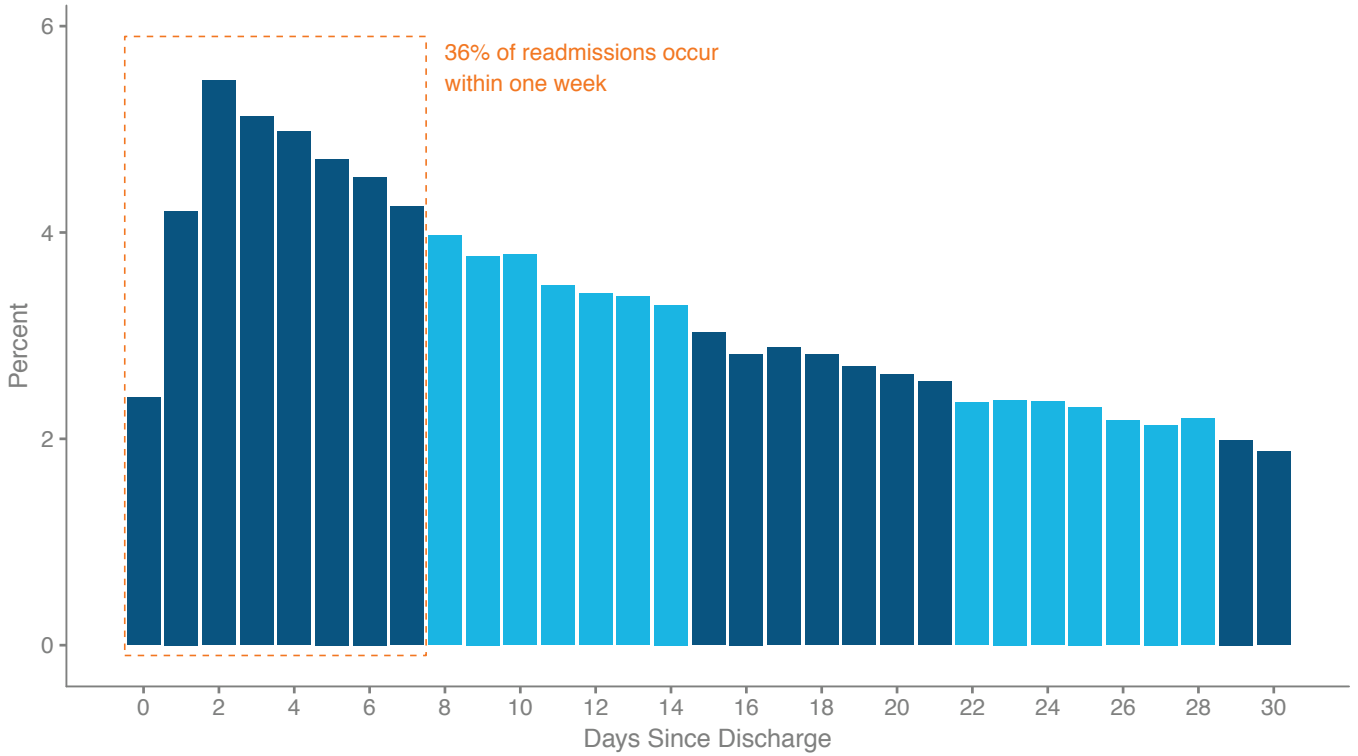
Key findings:

- Readmission rates for adults increase with age, however, readmission rates for younger adults have been increasing steadily over the past five years. Rates for older adults, after relatively steep declines in 2012 and 2013 have risen since 2014.
- Rates for Medicare and commercially insured patients declined from 2011 through 2013 and increased in 2014 and 2015. Rates for Medicaid patients declined across the five year period from SFY 2011 to 2015.[9]
- Patients discharged to post-acute care settings (skilled nursing facilities, home with home health agency care, and rehabilitation) are more likely to be readmitted than those discharged to home or hospice care. The readmission rate for patients discharged to skilled nursing facilities increased from 18.4% to 19.4% between SFY 2014 and 2015. The readmission rate for patients discharged to home, the largest group by volume, also increased from 12.1% to 12.5%, during this time period.
- The ten conditions that account for the highest numbers of readmissions together represent only 34% of all readmissions. While it is important to focus on these high volume conditions in readmission reduction efforts, an exclusive focus on them would miss two-thirds of all readmissions.
- Frequently hospitalized patients, defined as those with four or more hospitalizations in any 12-month period from SFY 2013 to 2015, constituted only 7% of the patient population but accounted for 25% of hospitalizations and 58% of readmissions.

All-Payer Readmissions by Days Since Discharge

Any unplanned admission within 30 days of an eligible discharge is counted as a readmission. Therefore, readmissions may occur at any point within the 30-day period following an eligible discharge.

More than one-third of readmissions (36%) occurred in the week following discharge. Readmissions peak at two days after the initial discharge, and decline steadily thereafter.



Note: Analyses include discharges for adults with any payer, excluding discharges for obstetric or primary psychiatric care.

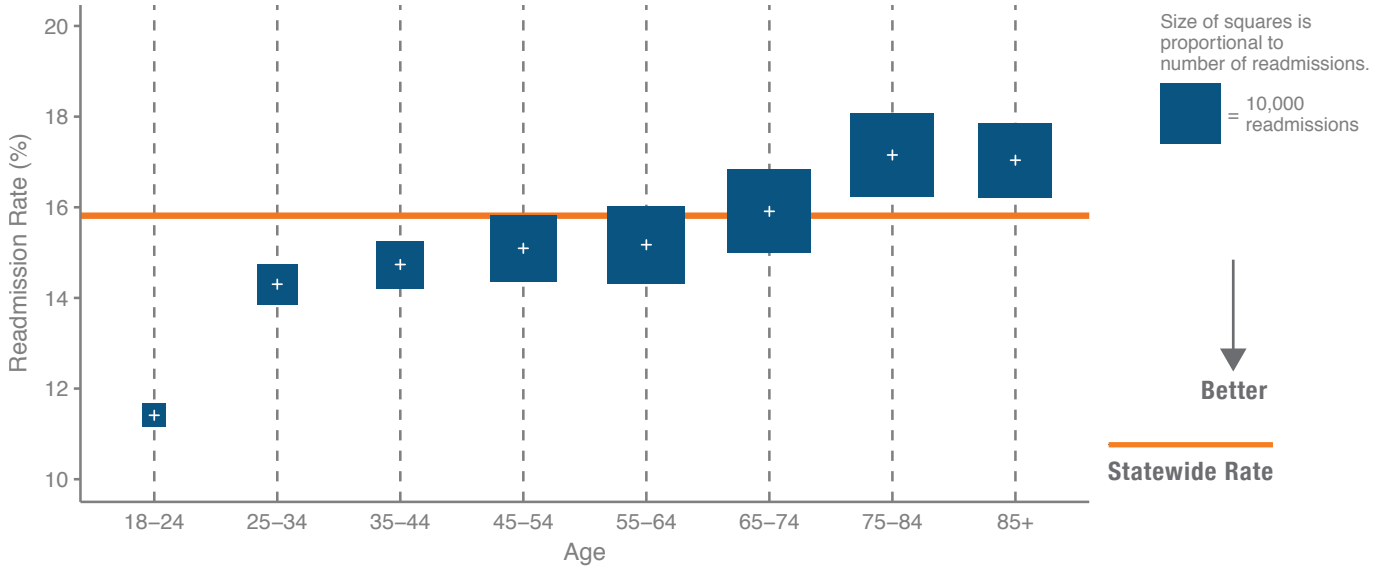
Data source: Massachusetts Hospital Inpatient Discharge Database, July 2014 to June 2015.

All-Payer Readmissions by Patient Age

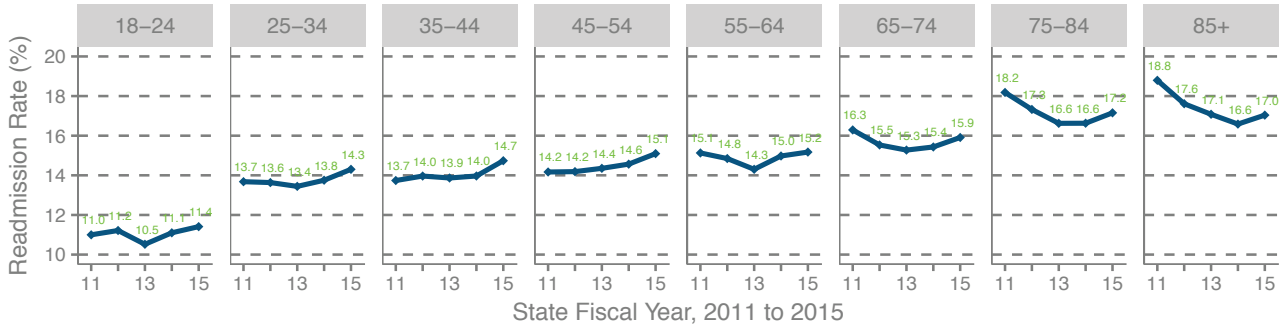
Readmission rates vary by patient age. The top figure shows readmission rates for 2015 by patient age. Among the youngest age group, patients aged 18-24, 11.4% of discharges resulted in a readmission, while 17.0% of discharges among patients aged 75-84 resulted in a readmission. Elderly patients age 65+ accounted for 54% of hospitalizations and 57% of readmissions.

The bottom figure shows trends over the five-year study period for the different age groups. Among the younger age groups, readmissions have trended slowly upwards during the past five years. The figure also shows particularly strong declines in readmission rates among the elderly age 75+ from 2011 to 2014. In 2015, however, readmission rates rose across all age groups, including the elderly patients.

State Fiscal Year 2015



Five-Year Trend



Note: The size of the squares in the top figure is proportional to the number of readmissions. Figures show observed readmission rates (not risk-standardized). Analyses include discharges for adults with any payer, excluding discharges for obstetric or primary psychiatric care.

Data source: Massachusetts Hospital Inpatient Discharge Database, July 2010 to June 2015.

STATEWIDE READMISSIONS

All-Payer Readmissions by Payer Type

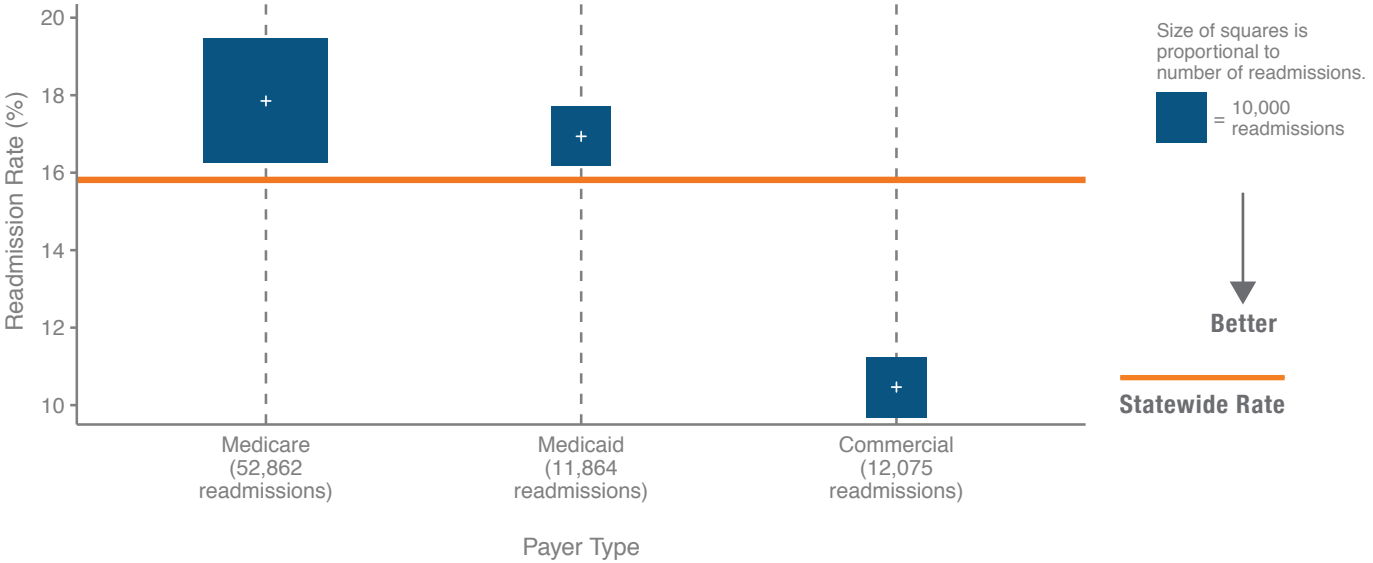
In 2015, readmission rates for Medicare and Medicaid patients —17.9% and 16.9%, respectively— were substantially higher than the rate for commercial hospitalizations, at 10.5%.

The bottom figure shows trends in readmission rates over time for the three major payer types. After steeper decreases between 2011 and 2013, Medicare readmission rates have risen slightly in 2014 and 2015. Because Medicare accounts for 60% of all discharges and 68% of all readmissions, these trends are reflected in the statewide pattern.

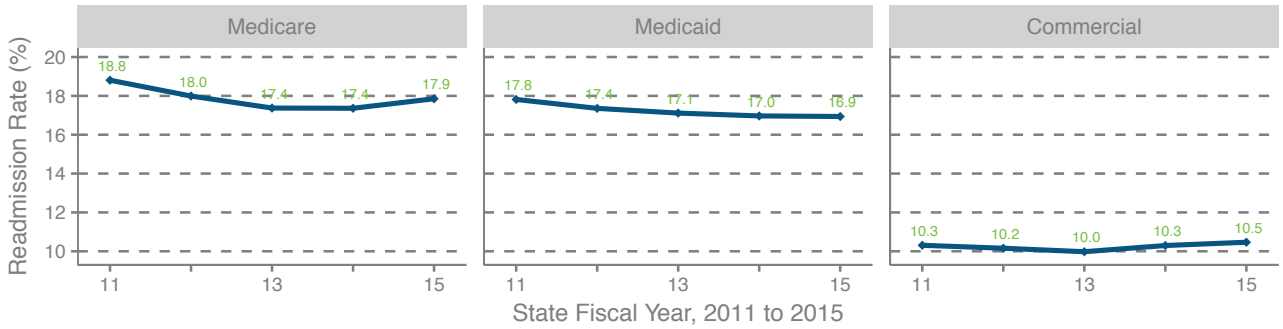
Medicaid readmission rates have declined throughout the five-year study period, though more slowly in the past two years.[10] The trend for commercially insured patients remained relatively stable, with increases in the past two years. Commercial rates range from a low of 10.0% in 2013 to a high of 10.5% in 2015.

Differences in readmission rates between payer types likely reflect differences in patient case mix between the populations the payers cover.

State Fiscal Year 2015



Five-Year Trend



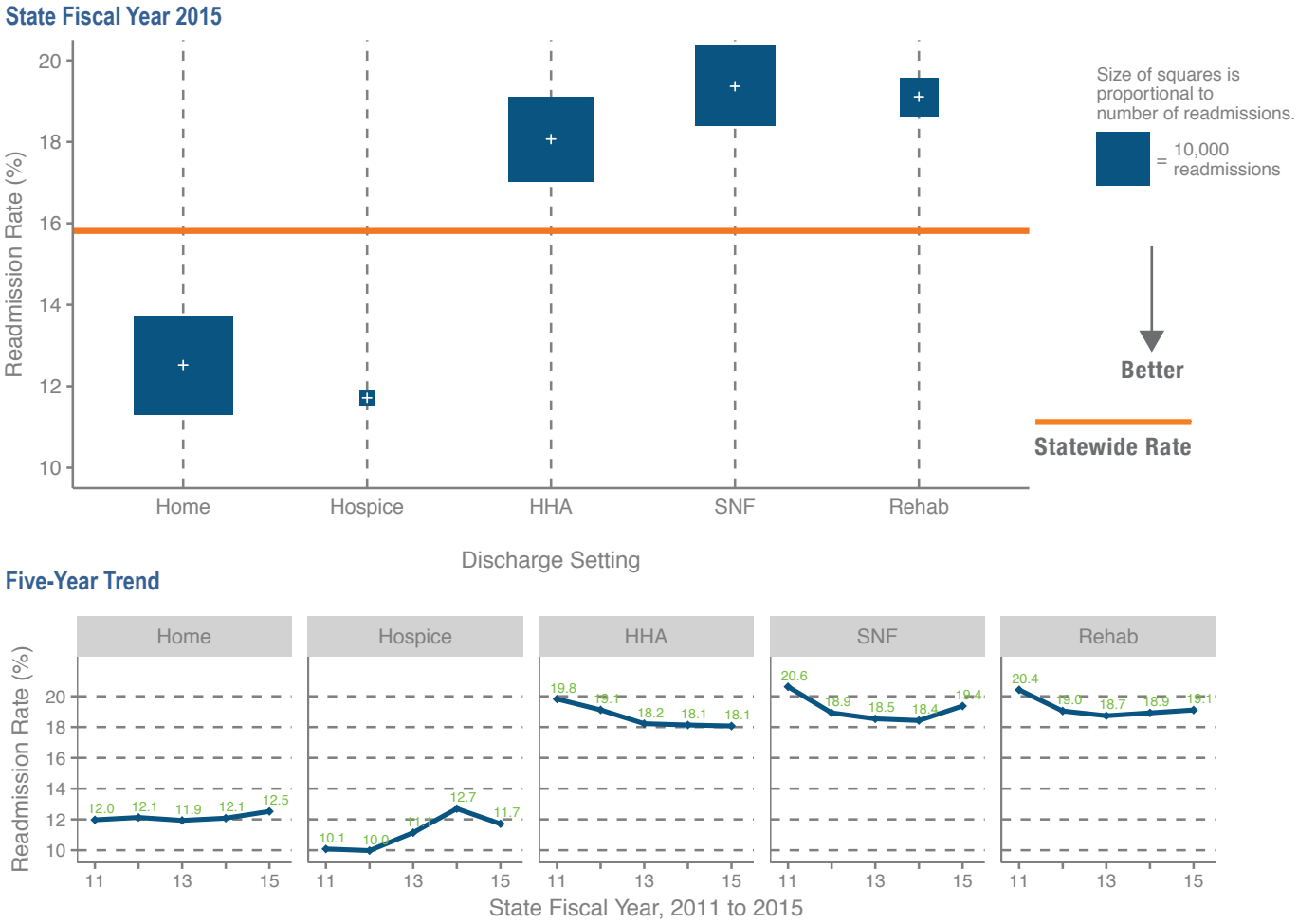
Note: The size of the squares in the top figure is proportional to the number of readmissions. Figures show observed readmission rates (not risk-standardized). Analyses include discharges for adults with any payer, excluding discharges for obstetric or primary psychiatric care.

Data source: Massachusetts Hospital Inpatient Discharge Database, July 2010 to June 2015.

All-Payer Readmissions by Discharge Setting

These figures show readmission rates by the settings to which patients were discharged. Readmission rates among patients discharged to post-acute care settings (home with home health agency care, skilled nursing facility, rehabilitation) were significantly higher than rates for patients discharged to home and hospice (approximately 18% versus 12%).

The trend charts show different patterns for readmission rates by discharge setting over the past five years. Readmissions for those discharged home, the most common destination, were generally lower but have increased over the past five years, while rates for those discharged home with home health agency care have decreased. The trend in readmissions from skilled nursing facilities reflects a full percentage point rise, from 18.4% in 2014 to 19.4% in 2015. This increase is notable and may be a possible target for readmission reduction efforts, particularly should the trend continue in future years.



Note: The size of the squares in the top figure is proportional to the number of readmissions. HHA = home with home health agency care, SNF = skilled nursing facility. Figures show observed readmission rates (not risk-standardized). Analyses include discharges for adults with any payer, excluding discharges for obstetric or primary psychiatric care.

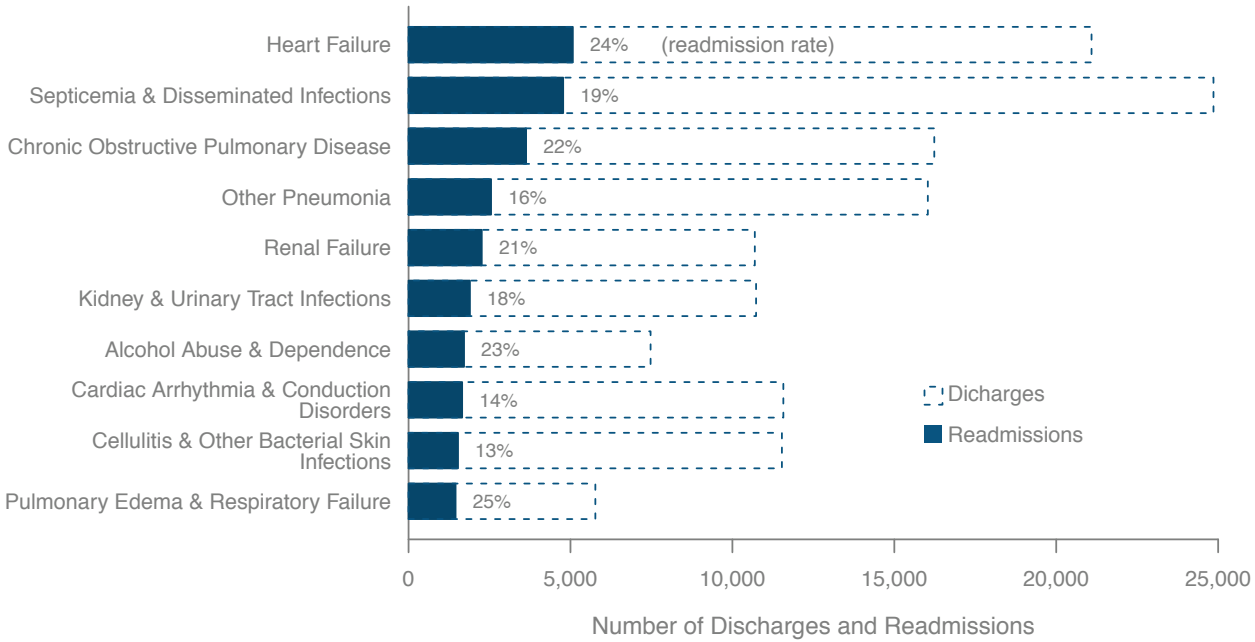
Data source: Massachusetts Hospital Inpatient Discharge Database, July 2010 to June 2015.

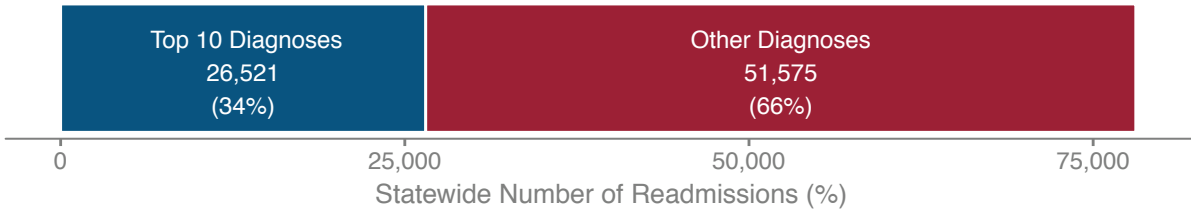
Discharge Diagnoses Resulting in the Highest Numbers of Readmissions

These figures show the diagnoses associated with the greatest **numbers** of readmissions.

As in previous years, heart failure was the diagnosis associated with the highest number of readmissions—slightly over 5,000 in 2015. There is substantial stability over time in the conditions resulting in the highest numbers of readmissions: of the ten conditions listed here, nine were among the top ten in 2014.

These top ten conditions (out of 269) accounted for 34% of all readmissions. While it is important to focus readmissions reduction efforts on these high volume conditions, an exclusive focus on them would miss two-thirds of all readmissions.





Note: Figures show observed readmission rates (not risk-standardized). Analyses include discharges for adults with any payer, excluding discharges for obstetric or primary psychiatric care.

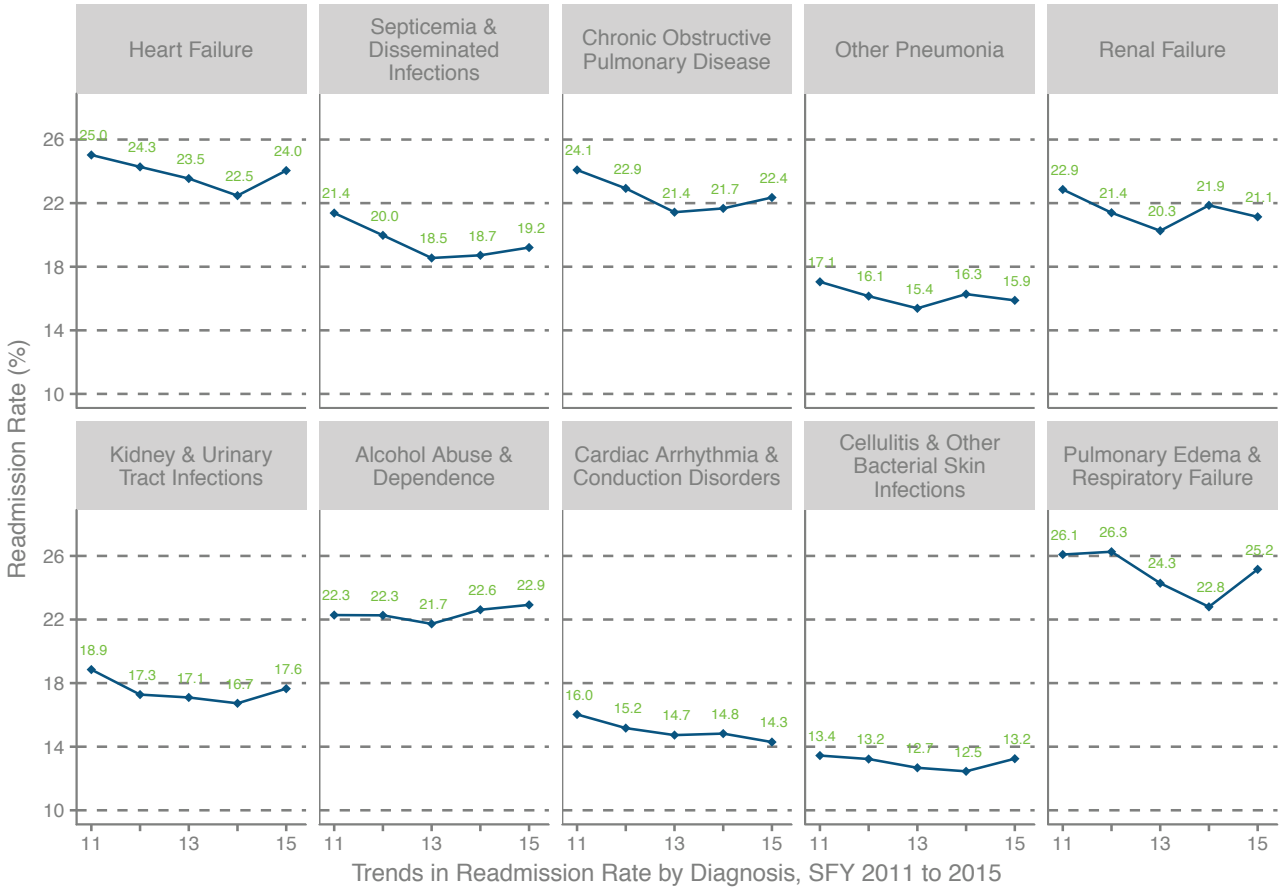
Data source: Massachusetts Hospital Inpatient Discharge Database, July 2014 to June 2015.

Trends in Discharge Diagnoses Resulting in the Highest Number of Readmissions

SFY 2011-2015

This figure shows trends over time in readmission rates for the ten conditions associated with highest **numbers** of readmissions.

Seven of the ten show increases from 2014 to 2015. Two conditions, heart failure and pulmonary edema and respiratory failure, show sizable increases (1.5% and 2.4% percentage points).



Note: Figure shows observed readmission rates (not risk-standardized). Analyses include discharges for adults with any payer, excluding discharges for obstetric or primary psychiatric care.

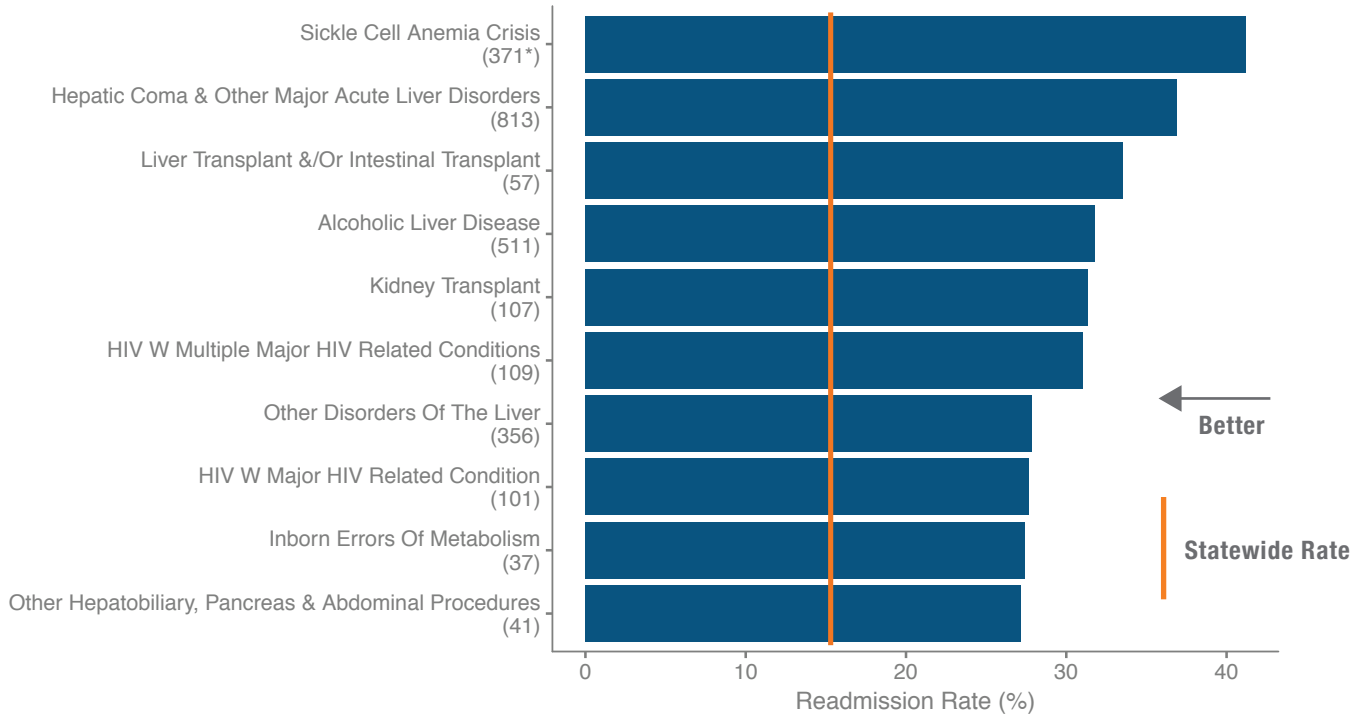
Data source: Massachusetts Hospital Inpatient Discharge Database, July 2010 to June 2015.

Discharge Diagnoses with the Highest Rates of Readmissions

This figure shows the diagnoses associated with the highest **rates** of readmission.

As in previous years, complex conditions associated with sickle cell, liver disease, kidney disease, and HIV are among those with the highest rates of readmission.

While the overall numbers of readmissions from these conditions are small—they are responsible for only 3% of readmissions—these conditions represent patients at higher risk of readmission.



* Number of readmissions.

Note: Figure shows observed readmission rates (not risk-standardized). Analyses include discharges for adults with any payer, excluding discharges for obstetric or primary psychiatric care.

Data source: Massachusetts Hospital Inpatient Discharge Database, July 2014 to June 2015.

All-Payer Readmissions Among Frequently Hospitalized Patients

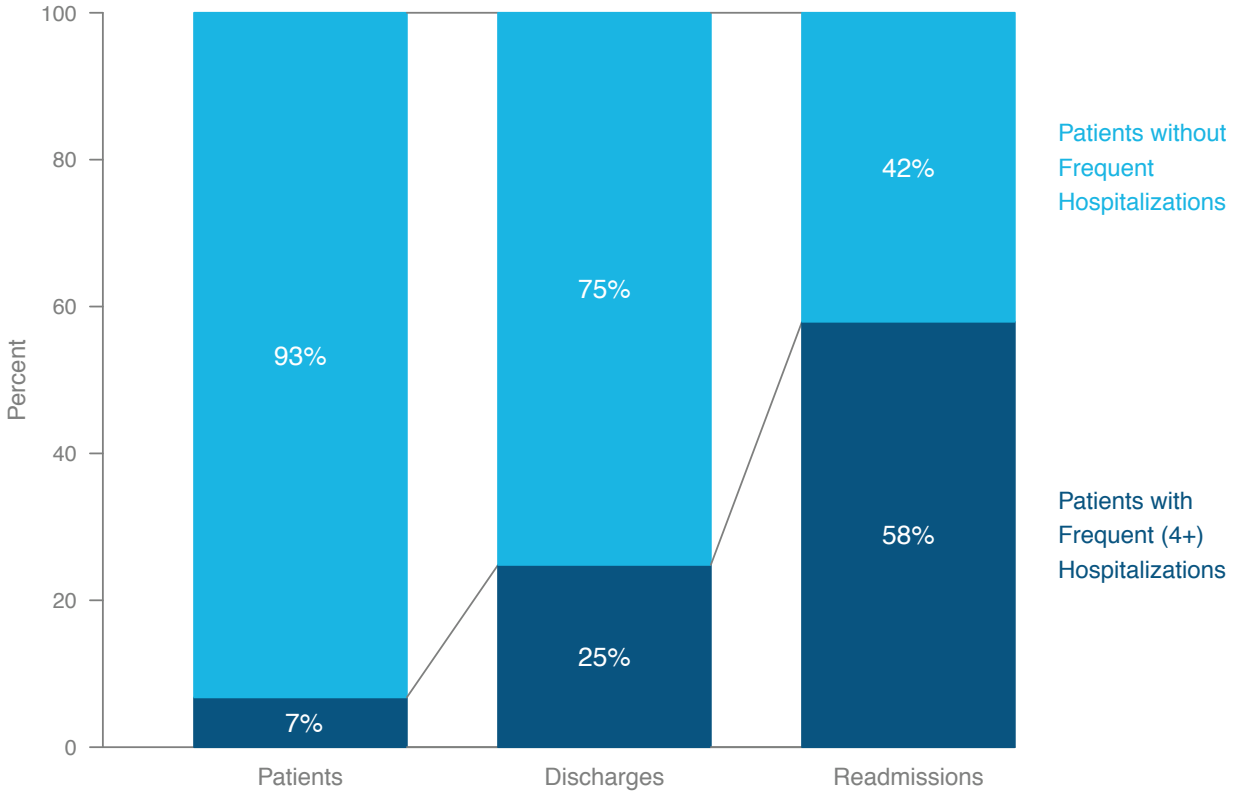
SFY 2013-2015

Frequently hospitalized patients are defined as those with four or more hospitalizations within a 12-month period at any point during the three years from July 2012 to June 2015.

During that span of time, 7% of patients were in this high-utilization group.

This small group of high-utilizing patients accounted for 25% of hospitalizations and 58% of readmissions in the state. The readmission rate among the frequently hospitalized patients was 36%, more than twice the statewide rate.

In contrast, the 93% of patients without frequent hospitalizations accounted for only 42% of readmissions. The readmission rate among this group was 8.6%, roughly half the statewide rate.



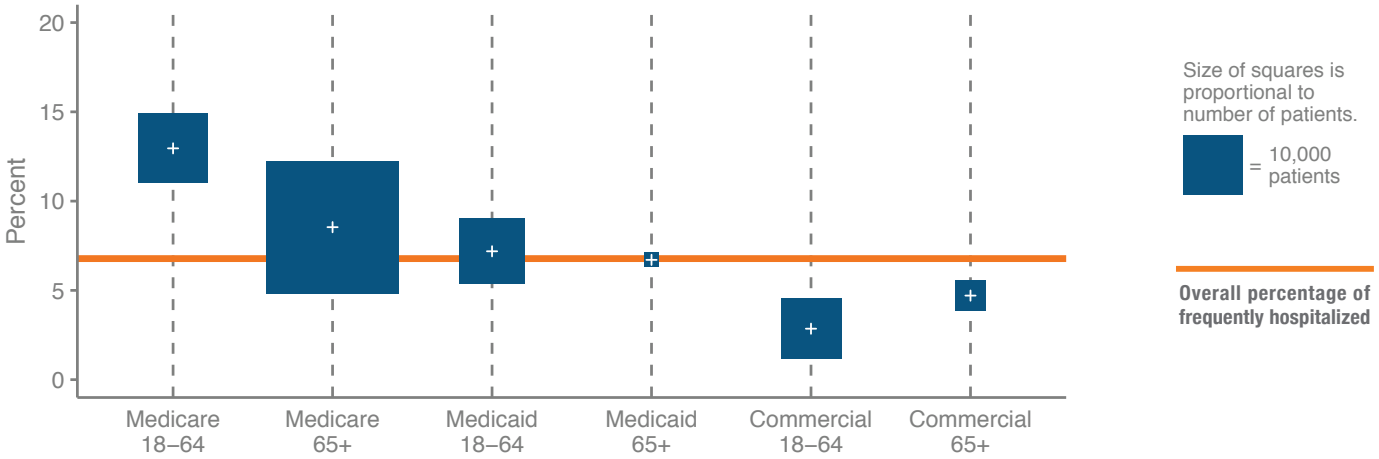
Note: Frequently hospitalized patients are defined as those with four or more hospitalizations within any one-year period between July 2012 and June 2014. Analyses include discharges for adults with any payer, excluding discharges for obstetric or primary psychiatric care.

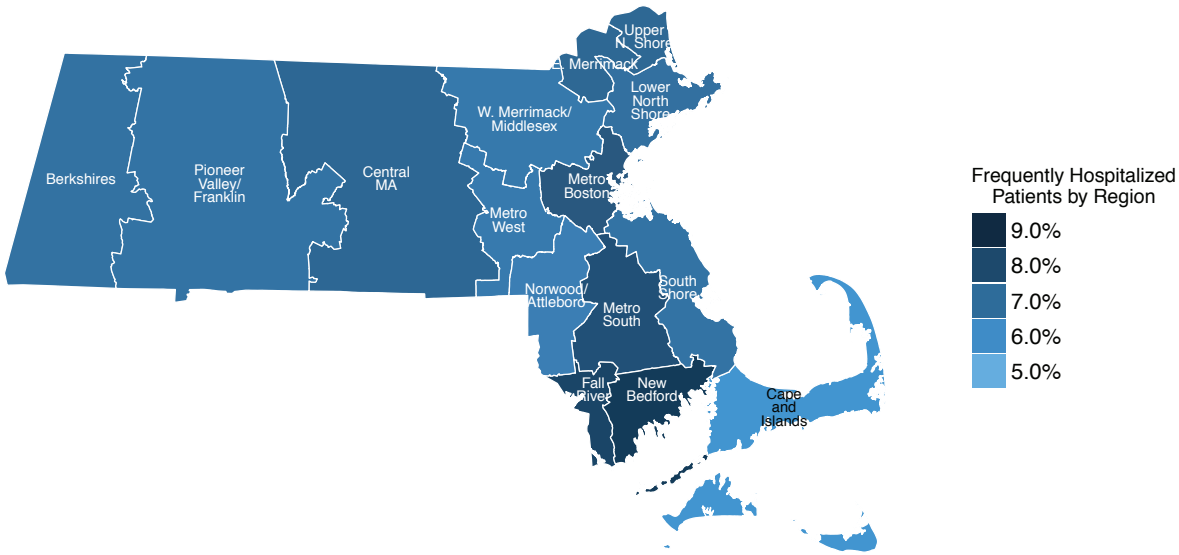
Data source: Massachusetts Hospital Inpatient Discharge Database, July 2012 to June 2015.

Age, Payer Type, and Region of Frequently Hospitalized Patients

Frequently hospitalized patients are more likely to be elderly and insured by public payers. Medicare beneficiaries aged 18-64, who are likely disabled, have the highest proportion of frequently hospitalized patients, at 14%. These patients are likely dually eligible for Medicare and Medicaid. Dually eligible patients are included in the Medicare category, since Medicare provides their primary coverage.

Geographically, frequent users are concentrated in the Fall River, New Bedford, Metro South and Boston regions.





Note: The size of the squares in the top figure is proportional to the number of patients with frequent hospitalizations. Bottom figure shows observed readmission rates (not risk-standardized). Frequently hospitalized patients are defined as those with four or more hospitalizations within any 1-year period between July, 2012 and June 2014. Analyses include discharges for adults with any payer, excluding discharges for obstetric or primary psychiatric care. Data source: Massachusetts Hospital Inpatient Discharge Database, July 2012 to June 2015.

III. All-Payer Readmissions by Hospital

This section contains analyses of both observed (raw) and risk standardized readmission rates (RSRRs) for individual hospitals and for groups of hospitals. RSRRs take into account differences across hospitals in patient age, patient comorbidities, and the profile of conditions that each hospital treats, and thus allow for more accurate comparisons across hospitals than do observed (raw) readmission rates (for details see Section IV: About the Readmissions Methodology).

Key findings:

- Hospitals' risk-standardized readmission rates (RSRRs), which account for patient case mix and hospital service mix, varied from 14.8% to 17.3%. Three hospitals had risk-standardized readmission rates significantly above the statewide rate of 15.8%.
- Six hospitals had RSRRs consistently in the highest quartile (top 25%) across the five years studied, while five hospitals had rates consistently in the lowest quartile during this period.
- Academic medical centers had slightly higher RSRRs than teaching hospitals, which had higher rates than community hospitals, but the differences were relatively small (16.5%, 16.1%, and 15.6%, respectively).

READMISSIONS BY HOSPITAL

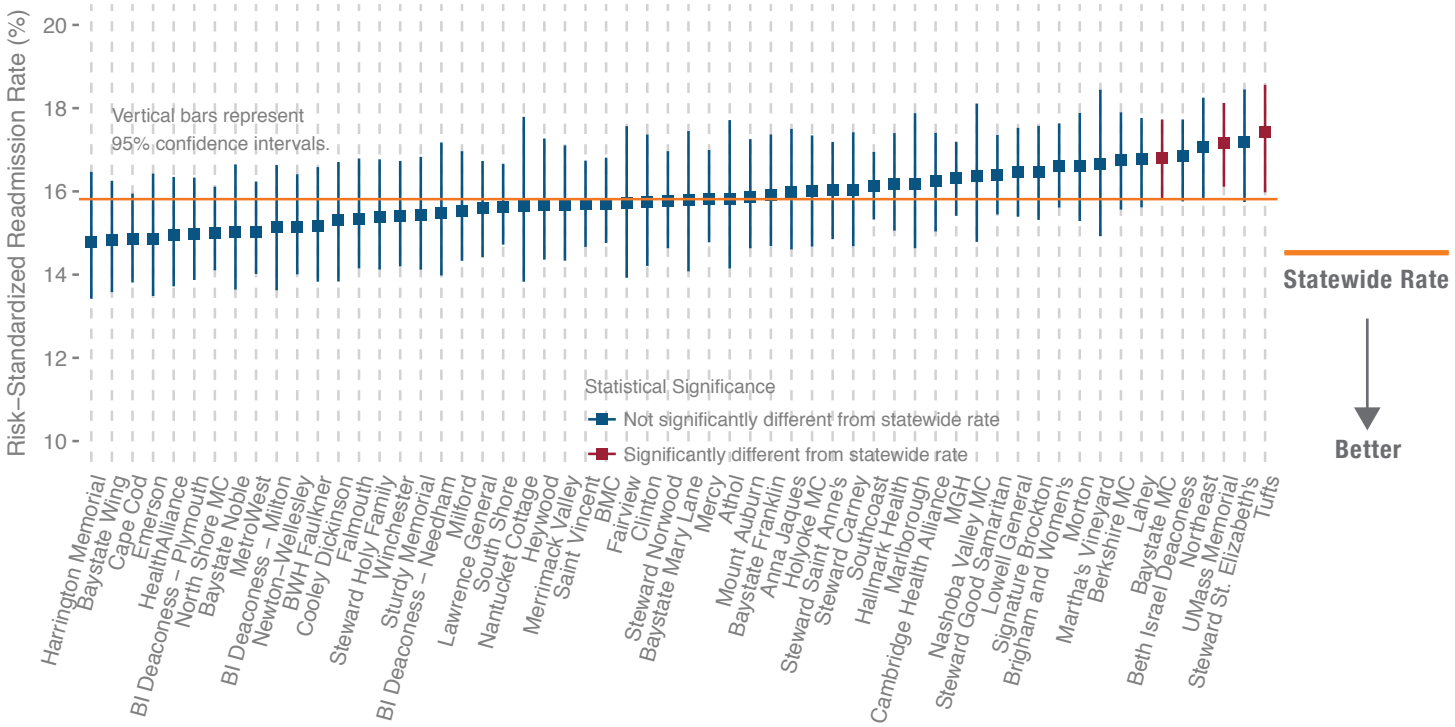
All-Payer Risk-Standardized Readmission Rates of Acute Care Hospitals

SFY 2015

This figure shows risk-standardized readmission rates for hospitals in SFY 2015 along with corresponding 95% confidence intervals. Risk-standardized rates provide for more accurate comparisons between hospitals by adjusting observed rates for the differences among hospitals in the age and complexity of their patients, and for the conditions they treat.

The hospitals' risk-standardized rates range from 14.8% for Harrington Memorial, Cape Cod, and Baystate Wing to 17.3% at Tufts Medical Center, a range of 2.5% percentage points, or a relative difference of 17%.

Only three hospitals had risk-standardized rates that were statistically significantly higher than the statewide rate.



Note: Figure excludes specialty hospitals New England Baptist and Massachusetts Eye and Ear Infirmary. Figure shows risk-standardized readmission rates that account for patient case mix and hospital service mix. Analyses include discharges for adults with any payer, excluding discharges for obstetric or primary psychiatric care.

Data source: Massachusetts Hospital Inpatient Discharge Database, July 2014 to June 2015.

Hospitals Consistently in Highest and Lowest Risk-Standardized Readmission Rate Quartiles

SFY 2011-2015

Hospitals were grouped into quartiles based on their risk standardized readmission rates for each of the five study years from SFY 2011 to 2015. This table shows hospitals with consistently high or consistently low risk-standardized readmission rates over time.

Six hospitals fall into the highest quartile across all five years, and five hospitals are in the lowest quartile across all five years. Academic and teaching hospitals dominate the highest quartile group with consistently higher risk-standardized readmission rates, while community hospitals dominate the group with consistently lower rates.

RSRR Quartile	Hospitals	Median Risk-Standardized Readmission Rate in 2015
Highest quartile consistently across four years (worse readmission rates)	Beth Israel Deaconess Medical Center Brigham and Women's Hospital Northeast Hospital Steward St. Elizabeth's Medical Center Tufts Medical Center UMass Memorial Medical Center	16.7%
Lowest quartile consistently across four years (better readmission rates)	Cape Cod Hospital Emerson Hospital Falmouth Hospital HealthAlliance Hospital North Shore Medical Center	15.0%

Note: Table excludes specialty hospital New England Baptist Hospital. Specialty hospitals treat substantially different patient populations and as a group tend to have low readmission rates. Analyses include discharges for adults with any payer, excluding discharges for obstetric or primary psychiatric care.

Data source: Massachusetts Hospital Inpatient Discharge Database, July 2010 to June 2015.

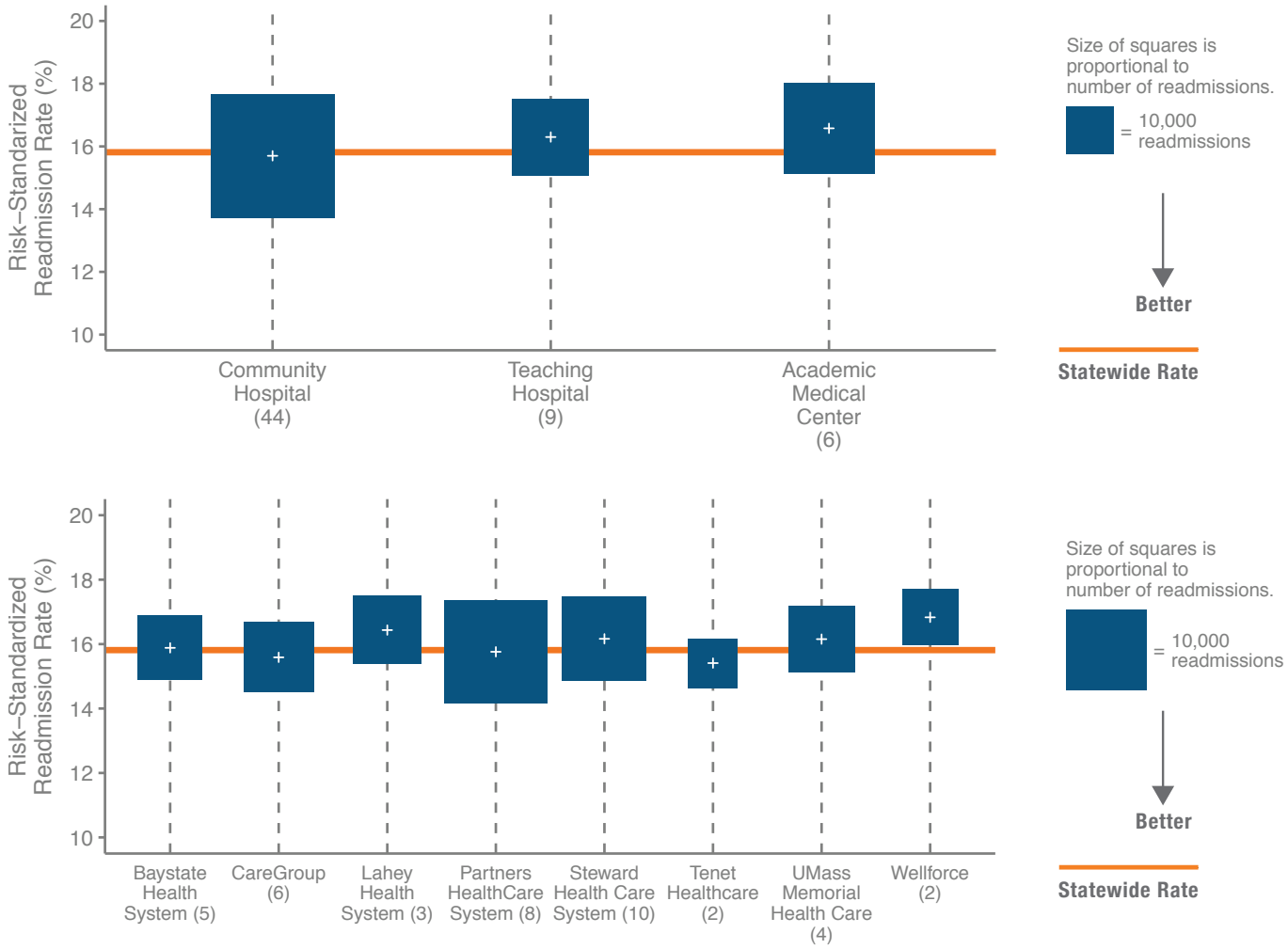
READMISSIONS BY HOSPITAL

All-Payer Risk-Standardized Readmissions by Cohort and System

These figures present risk-standardized readmission rates, for hospital cohorts and hospital systems. These rates account for differences in patient characteristics and hospital service mix.

Academic medical centers had slightly higher RSRRs than teaching hospitals, which had higher rates than community hospitals, but the differences are relatively small (16.5%, 16.1%, and 15.6%, respectively).

RSRRs also vary by hospital system, from a low of 15.5% at Tenet Healthcare to a high of 16.8% at Wellforce. The largest hospital system—Partners Healthcare System—had a risk-standardized rate of 15.8%, matching the statewide readmission rate and accounting for 19% of all discharges and 18% of all readmissions. See the technical appendix for hospitals' systems affiliations.



Note: The sizes of the squares in both figures are proportional to the number of readmissions. Cohort of two specialty hospitals (New England Baptist Hospital and Massachusetts Eye and Ear Infirmary) not shown in top figure. Hospital systems are included in bottom figure if they account for 4% or more of statewide discharges. Figures show risk-standardized readmission rates that account for patient case mix and hospital service mix. Analyses include discharges for adults with any payer, excluding discharges for obstetric or primary psychiatric care.

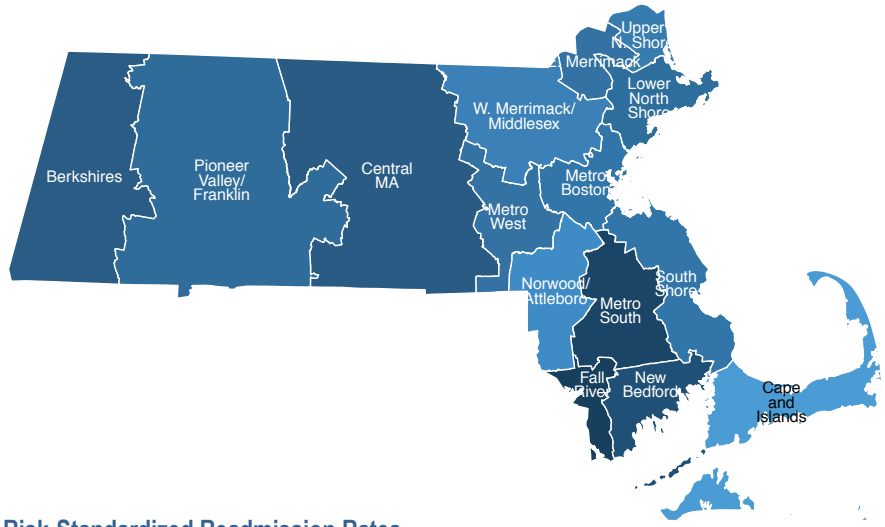
Data source: Massachusetts Hospital Inpatient Discharge Database, July 2014 to June 2015.

All-Payer Observed and Risk-Standardized Readmission Rates by Hospital Region

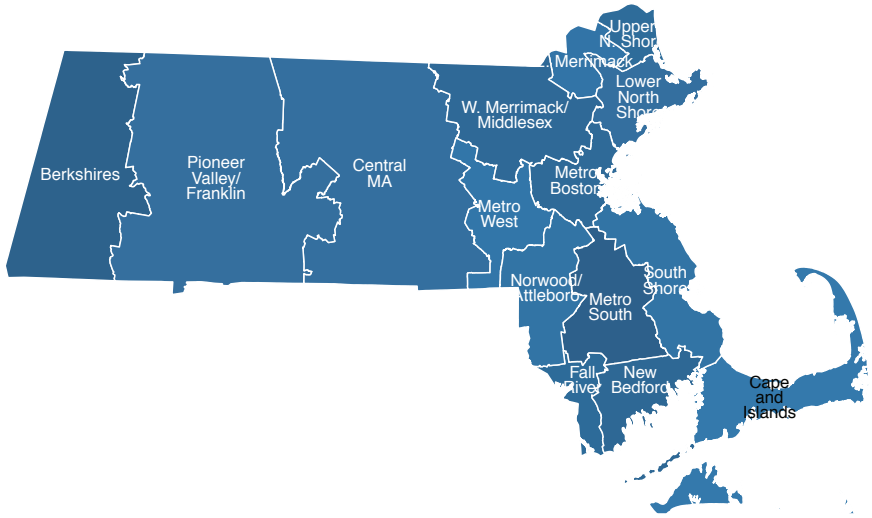
The top figure shows geographic variation in observed readmission rates while the bottom figure shows variation in RSRRs that account for differences in hospitals' patient populations and the services they provide.

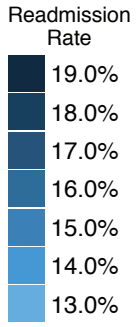
The observed rates vary considerably—by over four percentage points—from a low of 13.8% on the Cape and Islands to 18.0% in Fall River. Once differences in patient populations and hospital service mix are accounted for with the RSRRs, the geographic variation becomes much smaller (bottom figure), only one percentage point (15.5% to 16.5%).

Observed Readmission Rates



Risk-Standardized Readmission Rates





Note: Analyses include discharges for adults with any payer, excluding discharges for obstetric or primary psychiatric care.

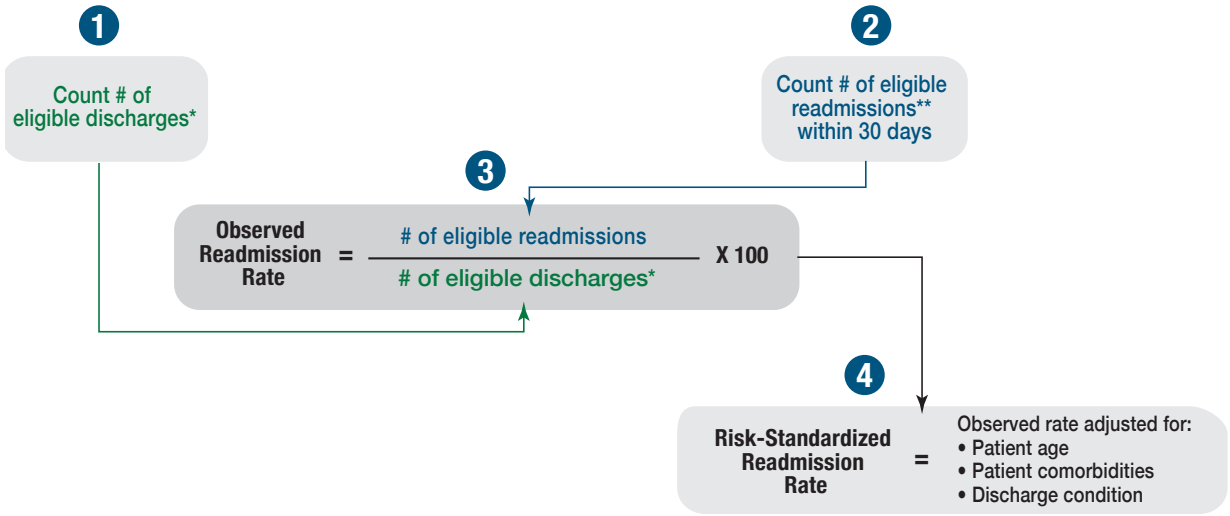
Data source: Massachusetts Hospital Inpatient Discharge Database, July 2014 to June 2015.

IV. About the Readmissions Methodology

To report on all-payer readmissions in the Commonwealth, CHIA has adapted the Hospital-Wide All-Cause Unplanned 30-day Readmission Measure[11] (NQF #1789) developed by CMS and the Yale Center for Outcomes Research and Evaluation, and applied the measure to CHIA's Hospital Inpatient Discharge Database, which is collected from all acute hospitals in Massachusetts.[12]

Readmission rates are calculated in four broad steps. First, eligible hospital discharges are defined. Then, from among this set of discharges, the number of eligible readmissions within 30 days is derived. The latter divided by the former and turned into a percentage gives the readmission rate. In a final step hierarchical statistical models are used to standardize the readmission rates and generate risk-standardized readmission rates (RSRRs). These rates account for differences between hospitals in patient case mix and hospital service mix.

The technical appendix has further details on the readmissions methodology, including categories of discharges excluded from the analysis.



* Eligible discharges are discharges for adults during the study period from non-Federal acute-care hospitals in Massachusetts. Analyses exclude obstetric and primary psychiatric discharges. Nine further exclusions are made. See the technical appendix for further details.

** Eligible readmissions are admissions for any reason that occur within 30 days of an eligible discharge and are not planned.

Notes

1. Rau, J. (2016). *Medicare's readmission penalties hit new high*. Kaiser Health News, August 2, 2016, available at http://khn.org/news/more-than-half-of-hospitals-to-be-penalized-for-excess-readmissions/.

2. For the original measure technical report see: Horwitz et. al. (2012). *Hospital-wide all-cause unplanned readmission measure. Final technical report.* Yale New Haven Health Services Corporation/Center for Outcomes Research & Evaluation. For the updated 2015 v. 4.0 specification see: Yale New Haven Health Services Corporation/Center for Outcomes Research & Evaluation (YNHHSC/CORE). (2015). *2015 Measure updates and specification report: hospital-wide all-cause unplanned readmission measure (version 4.0)*. YNHHSC/CORE. Both available from: http://www.cms.gov/Medicare/Quality-Initiatives-Patient-Assessment-Instruments/HospitalQualityInits/Measure-Methodology.html. For the NCQA measure specification document see http://www.qualityforum.org/WorkArea/linkit.aspx?LinkIdentifier=id&ItemID=69324. For information on the Massachusetts Statewide Quality Advisory Committee and the Standard Quality Measure Set see http://www.chiamass.gov/sqac/.

3. Information on the Massachusetts Hospital Inpatient Discharge Database is available at http://www.chiamass.gov/case-mix-data/.

4. There was an increase in MassHealth (the Medicaid program in Massachusetts) enrollment in 2014 due to expanded Medicaid eligibility under the Affordable Care Act.

5. See note 4.

6. See note 2.

7. See note 3.

8. See note 1.

9. See note 4.

10. See note 4.

11. See note 2.

12. See note 3.

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