CENTER FOR HEALTH INFORMATION AND ANALYSIS

HOSPITAL-WIDE ADULT ALL-PAYER READMISSIONS

IN MASSACHUSETTS: SFY 2011-2017

DECEMBER 2018

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 96% of the Commonwealth's hospitals for having higher than expected readmission rates in Federal Fiscal Year (FFY) 2019. 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 Center for Health Information and Analysis (CHIA) adapted the Yale/CMS measure, originally developed for use with the Medicare population, for an all-payer population.[3] The readmission analyses presented in this report are based on data from CHIA's Hospital Inpatient Discharge Database.[4]

This report, the fifth in CHIA's annual series of all-payer readmission reports, updates previous reports with State Fiscal Year (SFY) 2017 data and presents statewide trends in readmission rates from SFY 2011 to 2017.

KEY FINDINGS

The unplanned, all-payer readmission rate for Massachusetts acute care hospitals has increased since 2013, rising to **16.1%** in 2017.

Medicare and Medicaid beneficiaries had the highest rates of readmission (**18.1%** and **17.2%**, respectively) and accounted for **84%** of all readmissions.

When accounting for case mix and service mix, the risk-standardized readmission rates (RSRRs) for hospitals ranged from **14.4%** to **18.4%**.

Readmission rates varied by geography, from a low of **13.8%** in Cape Cod to a high of **20.2%** in Fall River.

From 2011 to 2017, readmission rates increased for adults aged 18-64 and decreased for adults aged 65 and over.

Readmission rates for patients discharged to home with home care have declined over the seven-year period, while readmission rates for patients discharged to skilled nursing facilities have increased since 2014.

Heart failure, sepsis, and chronic obstructive pulmonary disease (COPD) were the top three discharge diagnoses leading to the most readmissions in 2017.

A small percentage **(7%)** of hospitalized patients accounted for **25%** of all discharges and over half **(59%)** of all readmissions.

Contents

Introduction

Unplanned hospital readmissions, many of which may be preventable, are costly and may adversely impact patient health and experience of care. In an effort to address this issue, the Centers for Medicare and Medicaid Services (CMS) instituted the Hospital Readmissions Reduction Program (HRRP) as part of the Affordable Care Act in 2012. Now in its seventh year, the program incentivizes hospitals to reduce unplanned readmissions by imposing financial penalties of up to three percent per year for hospitals that have higher than expected readmission rates among their Medicare patients. In Federal Fiscal Year (FFY) 2019 (October 2018 to September 2019), 96% of Massachusetts hospitals will be penalized for higher than expected readmission rates. On average, Massachusetts hospitals will be penalized 0.92% of their total Medicare reimbursements for FFY 2019 under HRRP, up from 0.85% in FFY 2018. Both the percentage of hospitals fined (96%) and the average level of penalty imposed (0.92% of Medicare reimbursements) are higher in Massachusetts than in most other states.[5]

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] Though initially developed for use with the Medicare population, the Center for Health Information and Analysis (CHIA) adapted the Yale/CMS measure for an all-payer population.[7] The readmission analyses presented in this report were conducted using CHIA's Hospital Inpatient Discharge Database.[8] An analysis of statewide, regional, and hospital-specific all-payer, all-cause readmission rates provides the public, providers, and policymakers a complete view of adult readmissions in the Commonwealth of Massachusetts. An all-payer analysis is helpful as strategies to control the growing cost of health care remain public policy priorities in Massachusetts.

This report is the fifth in CHIA's annual series of readmission reports. This year's report updates previous reports with State Fiscal Year (SFY) 2017 data and reports on trends in readmission rates from SFY 2011 to 2017 (July 2010 through June 2017). Please note that this year's report uses the 2018 CMS readmission measure methodology (version 7.0), which updates the planned readmission algorithm and modifies the identification of discharges transferred to rehabilitation units.[9] The historical figures presented in this report were recalculated using version 7.0 and will not exactly match those from earlier reports.

This report presents the overall trend in statewide all-payer readmissions for the past seven years, examines readmissions by characteristics of patients and hospitalizations, and provides readmission rates for individual hospitals and groupings of hospitals.

Overall Trends in All-Payer Readmissions

This section presents the overall trend in all-payer readmissions for acute care hospitals in Massachusetts for the seven-year study period spanning July 1, 2010 to June 30, 2017. A readmission is defined as an unplanned hospitalization for any reason within 30 days of an eligible discharge. This measure excludes certain categories of hospitalizations from consideration, such as obstetric and primary psychiatric admissions.

This report presents readmission rates as both observed and standardized figures. Observed or "raw" readmission rates are calculated as the number of readmissions that occurred in a year as a proportion of all discharges eligible for inclusion in the measure during that year. With observed hospital readmission rates, some portion of differences among hospitals may be attributable to differing service mix and patient case mix. However, these unadjusted rates are still useful for identifying opportunities for improvement and tracking performance over time within individual hospitals. Unless otherwise noted, the readmission rates presented in this report are observed or "raw" readmission rates.

The risk-standardized readmission rates (RSRRs) presented are adjusted observed rates calculated for hospitals and for groups of hospitals. RSRRs take into account the differences across hospitals in patient age, patient comorbidities, and the profile of conditions that each hospital treats to allow for a more accurate comparison across hospitals.

Key Findings

- The observed readmission rate was 16.1% in 2017. Rates have been increasing since 2013.
- Since 2014, the average length of stay (ALOS) for hospitalizations that led to a subsequent readmission has remained 1.4 days longer than those without a readmission.
- RSRRs for hospitals ranged from 14.4% to 18.4%.

OVERALL TREND

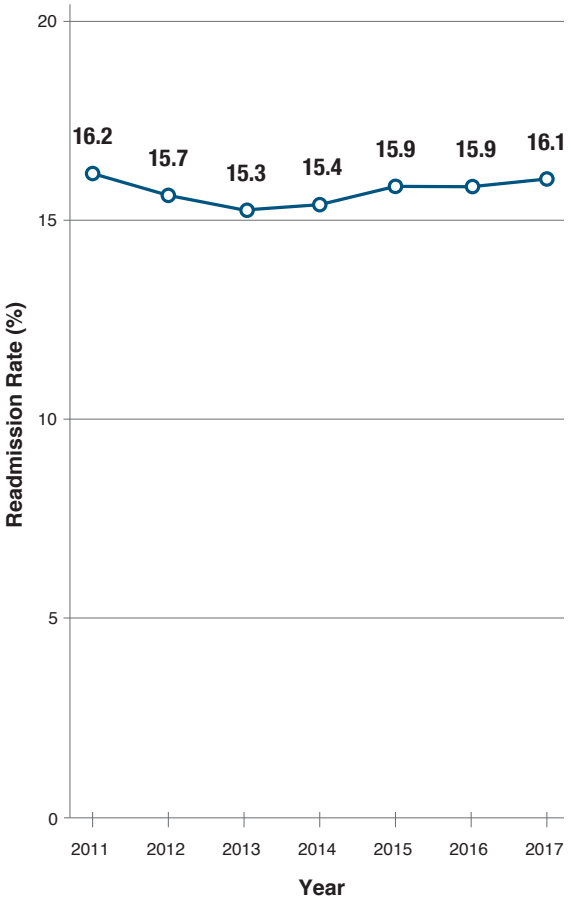
Trends in Statewide All-Payer Readmission Rate, Discharges, and Readmissions

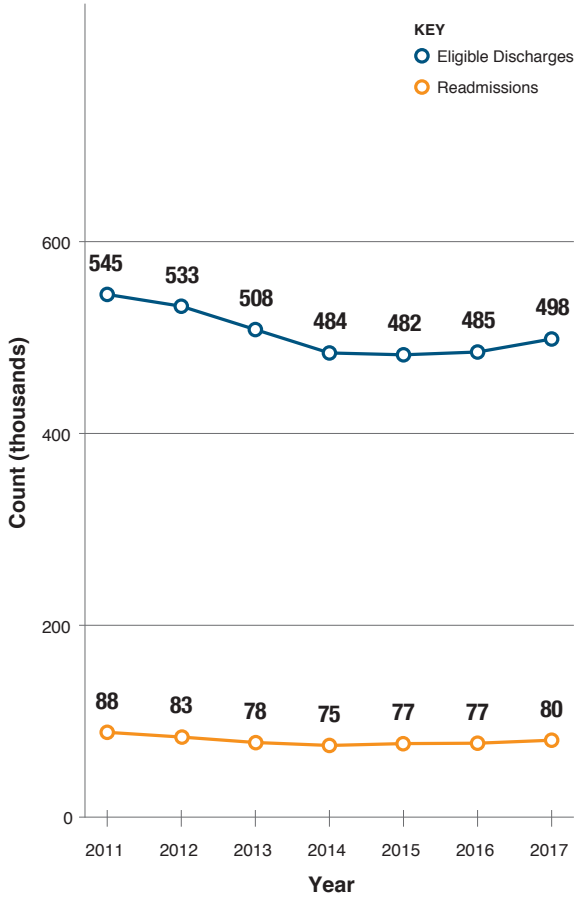
SFY 2011-2017

After an initial decline from 2011-2013, readmission rates have increased since 2013. The statewide observed readmission rate was 16.1% in 2017.

The statewide number of eligible inpatient discharges increased from 484,919 in 2016 to 498,493 in 2017.

The total number of statewide, all-payer readmissions also increased, from 77,066 in 2016 to 80,194 in 2017.





Note: Since this report uses an updated planned readmission algorithm, readmission rates may not exactly match those from earlier reports. Analyses include eligible discharges for adults with any payer type, excluding discharges for obstetric or primary psychiatric care.

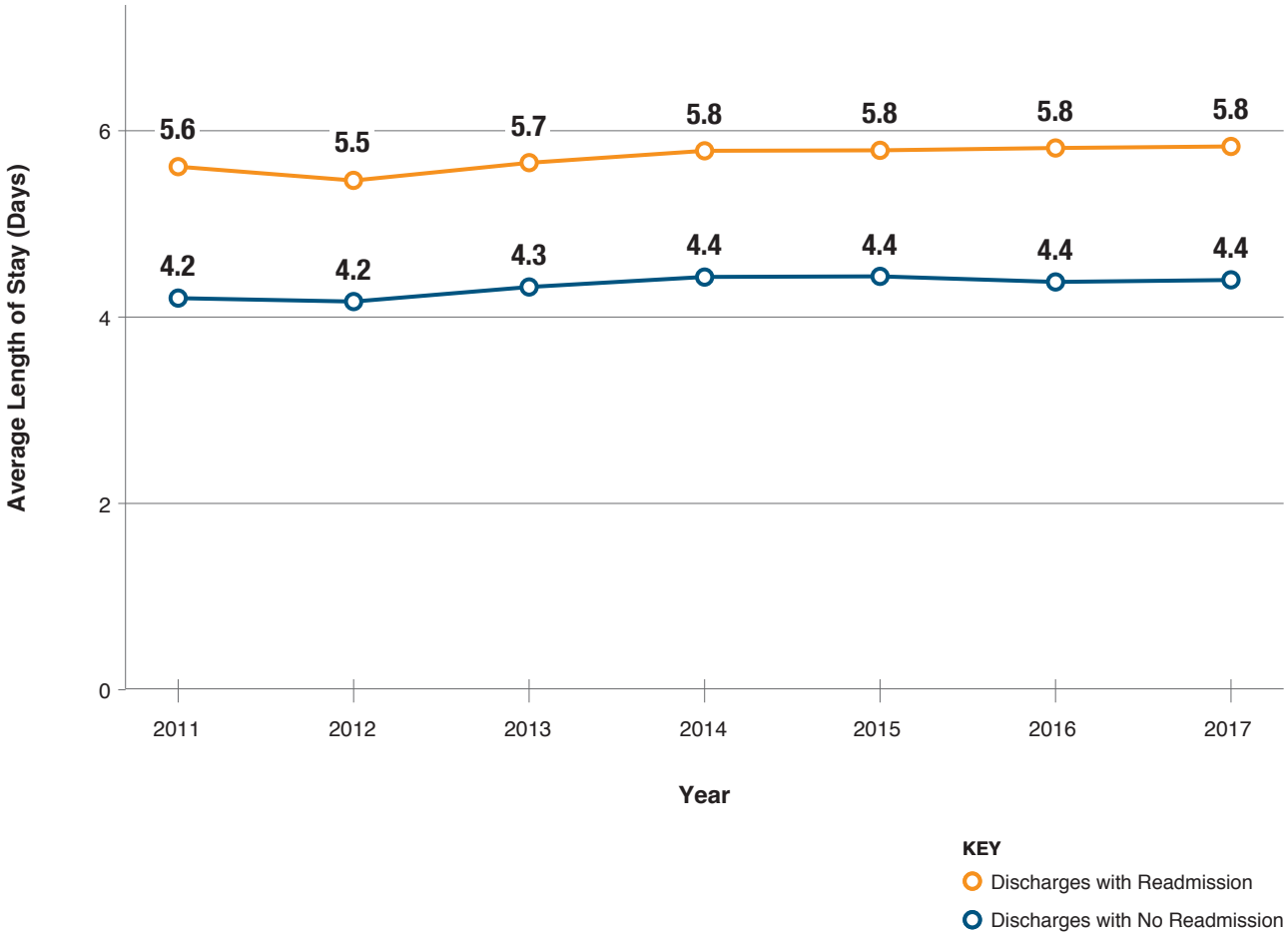
Data source: Massachusetts Hospital Inpatient Discharge Database, July 2010 to June 2017.

OVERALL TREND

Trend in Average Length of Stay (ALOS) by Readmission Status

SFY 2011-2017

In 2017, the ALOS remained 1.4 days longer for eligible discharges with a subsequent readmission (5.8 days) compared to those without a readmission (4.4 days).



Note: The average length of stay (ALOS) was calculated as the difference in the number of days between the discharge date and the admission date. For details, please see the technical appendix. Analyses include eligible discharges for adults with any payer type, excluding discharges for obstetric or primary psychiatric care.

Data source: Massachusetts Hospital Inpatient Discharge Database, July 2010 to June 2017.

OVERALL TREND

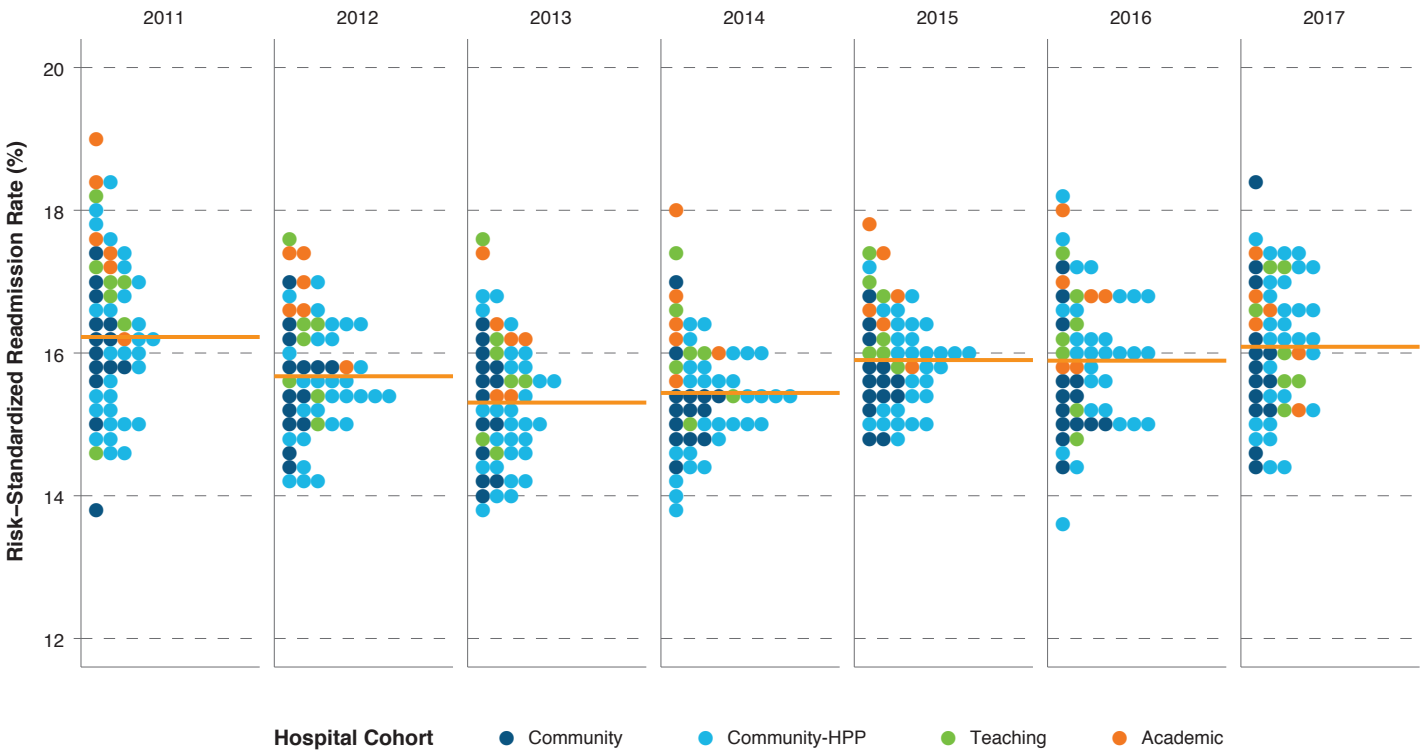
Distribution of Hospital Risk-Standardized Readmission Rates by Year

SFY 2011-2017

Hospital-specific RSRRs account for differences among hospitals in the patients they treat and the services they provide.

Community-High Public Payer (HPP) hospitals are community hospitals that have at least 63% of Gross Patient Service Revenue attributable to Medicare, MassHealth, and other government payers, including the Health Safety Net.

The distribution of hospitals' RSRRs has changed over the seven-year study period. In 2017, RSRRs ranged from 14.4% to 18.4%.



Note: Each dot in this figure represents a hospital. The figure excludes the two specialty hospitals, Massachusetts Eye and Ear Infirmary and New England Baptist Hospital. This figure shows risk-standardized readmission rates that account for patient case mix and hospital service mix. The analysis includes eligible 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 2017.

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, primary discharge diagnosis, prior utilization, and discharge setting.

Key Findings

- Medicare and Medicaid beneficiaries had the highest rates of readmission (18.1% and 17.2%, respectively) and accounted for 84% of all readmissions.
- Readmission rates for adults aged 65 and over have remained stable in recent years, while the rates for the youngest adults (aged 18-24) have increased since 2013.
- When examined by payer type and age, Medicare beneficiaries aged 18-64 had the highest rates of readmission (22.8%).
- Readmission rates for patients discharged to home with home care have declined over the seven-year period, while readmission rates for patients discharged to skilled nursing facilities have increased since 2014.
- Heart failure, sepsis, and COPD were the top three discharge diagnoses leading to the most readmissions in 2017.
- The top ten discharge diagnoses leading to the most readmissions accounted for only 34% of all readmissions.
- Frequently hospitalized patients, defined as those with four or more hospitalizations in a 12-month period from 2015 to 2017, comprised only seven percent of the patient population, but accounted for 25% of all discharges and 59% of all readmissions.

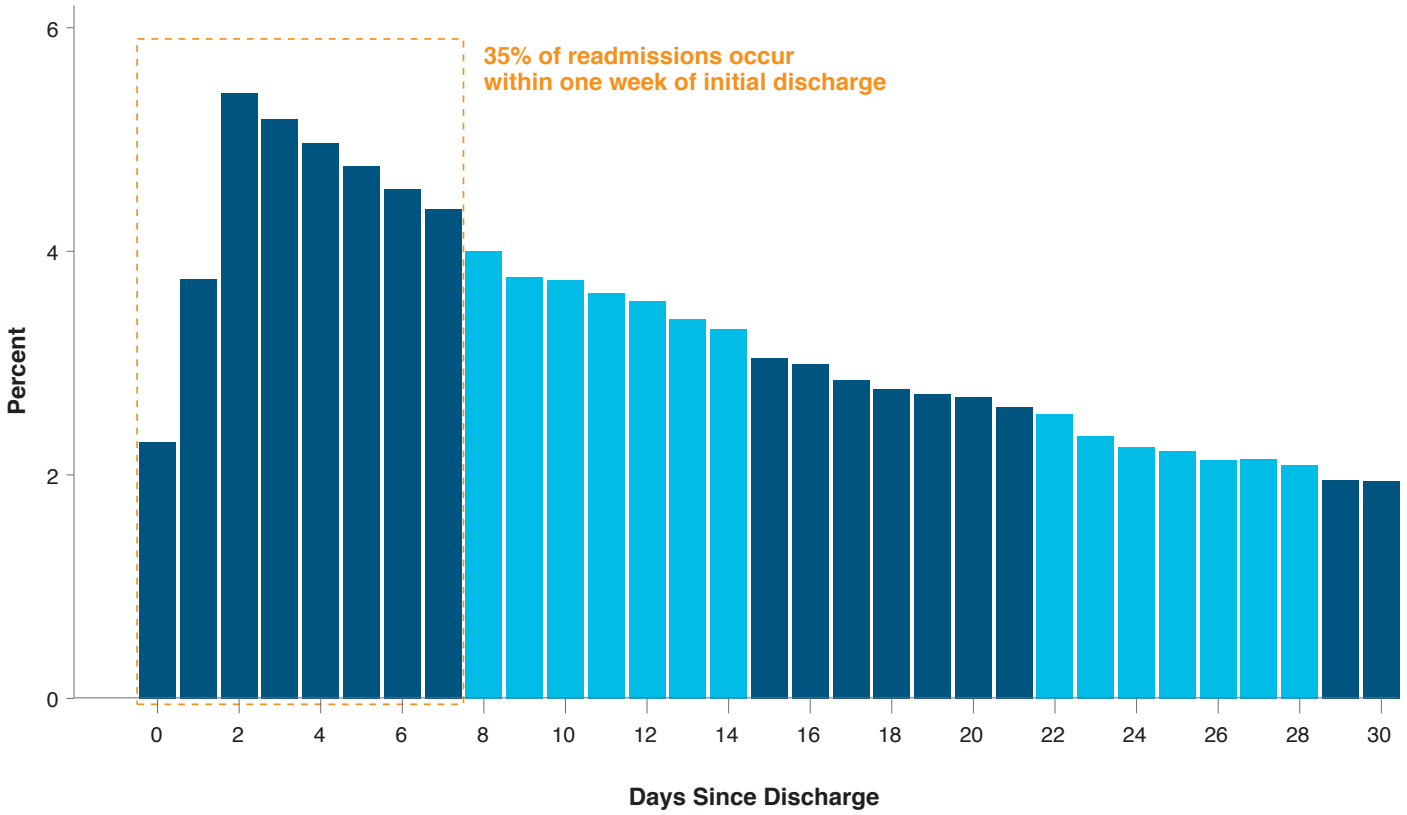
STATEWIDE READMISSIONS

All-Payer Readmissions by Days Since Discharge

SFY 2017

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.

Readmissions peaked at two days after an initial discharge and declined steadily thereafter. More than one-third of readmissions (35%) occurred in the first week following discharge.



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

Data source: Massachusetts Hospital Inpatient Discharge Database, July 2016 to June 2017.

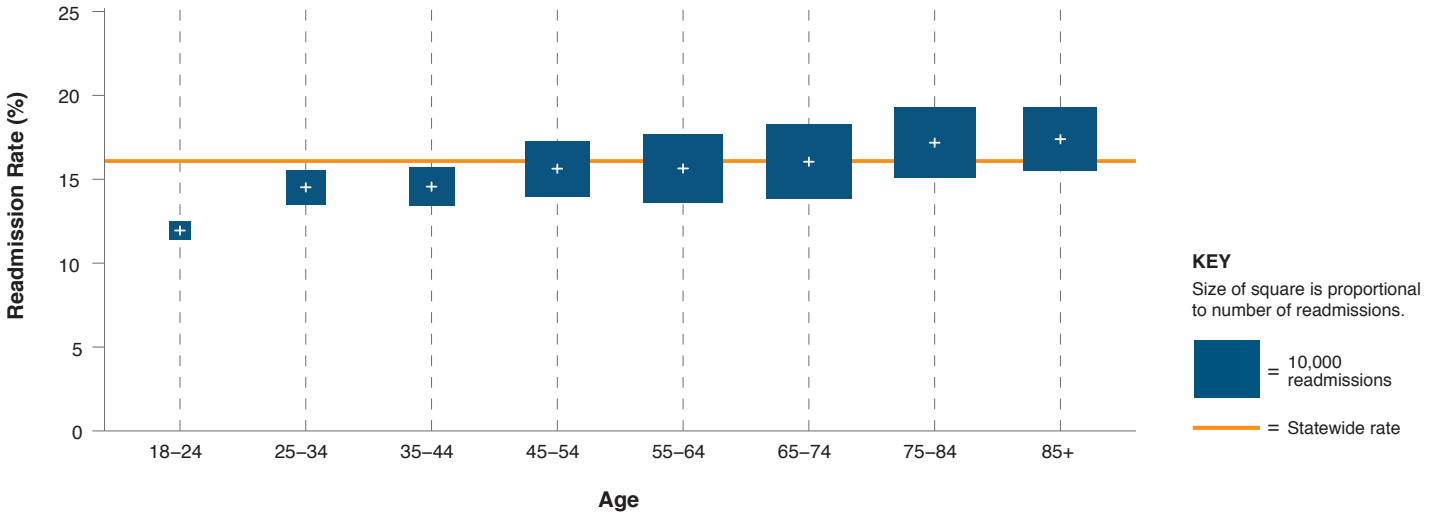
All-Payer Readmissions by Patient Age

SFY 2017

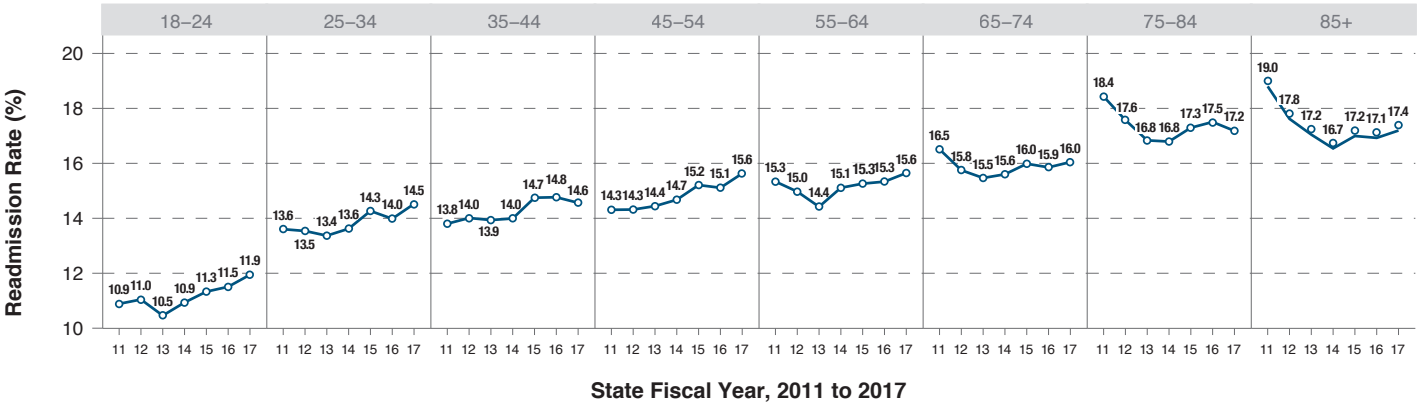
Readmission rates increase steadily with age. Patients aged 65 and over accounted for about 58% of readmissions, and patients under age 65 accounted for 42% of readmissions.

Over the seven-year period from 2011 to 2017, readmission rates increased for adults aged 18-64 and decreased for adults aged 65 and over.

SFY 2017



Seven-Year Trend



Note: The size of the squares in the top figure is proportional to the number of readmissions. Analyses include eligible discharges for adults with any payer type, excluding discharges for obstetric or primary psychiatric care.

Data source: Massachusetts Hospital Inpatient Discharge Database, July 2010 to June 2017.

STATEWIDE READMISSIONS

All-Payer Readmissions by Payer Type

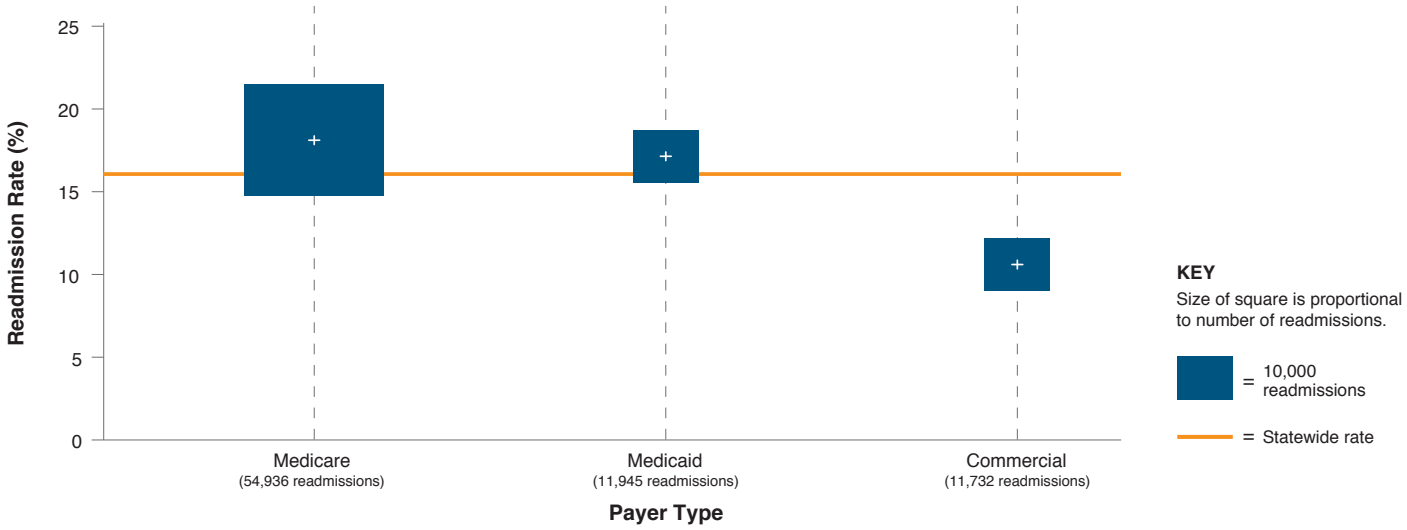
SFY 2017

In 2017, as in prior years, readmission rates for Medicare and Medicaid patients (18.1% and 17.2%, respectively) were substantially higher than the rate for commercially insured patients (10.6%).

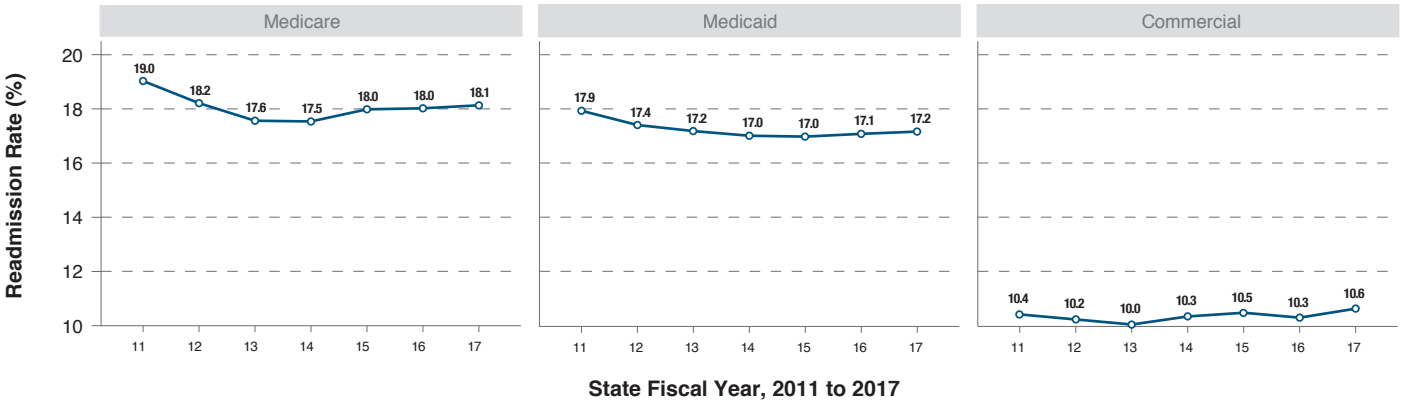
Medicare accounted for 69% of all readmissions statewide and Medicaid accounted for 15% of all readmissions. Together, patients covered by these payers accounted for 84% of all readmissions.

The trends in readmission rates for the three major payer types reveal important insights. Medicare and Medicaid readmission rates decreased in the early years of the seven-year trend and have remained relatively stable since 2015. Readmission rates for commercially insured patients have remained consistently low over time.

SFY 2017



Seven-Year Trend



Note: The size of the squares in the top figure is proportional to the number of readmissions. Analyses include eligible discharges for adults with any payer type, excluding discharges for obstetric or primary psychiatric care.

Data source: Massachusetts Hospital Inpatient Discharge Database, July 2010 to June 2017.

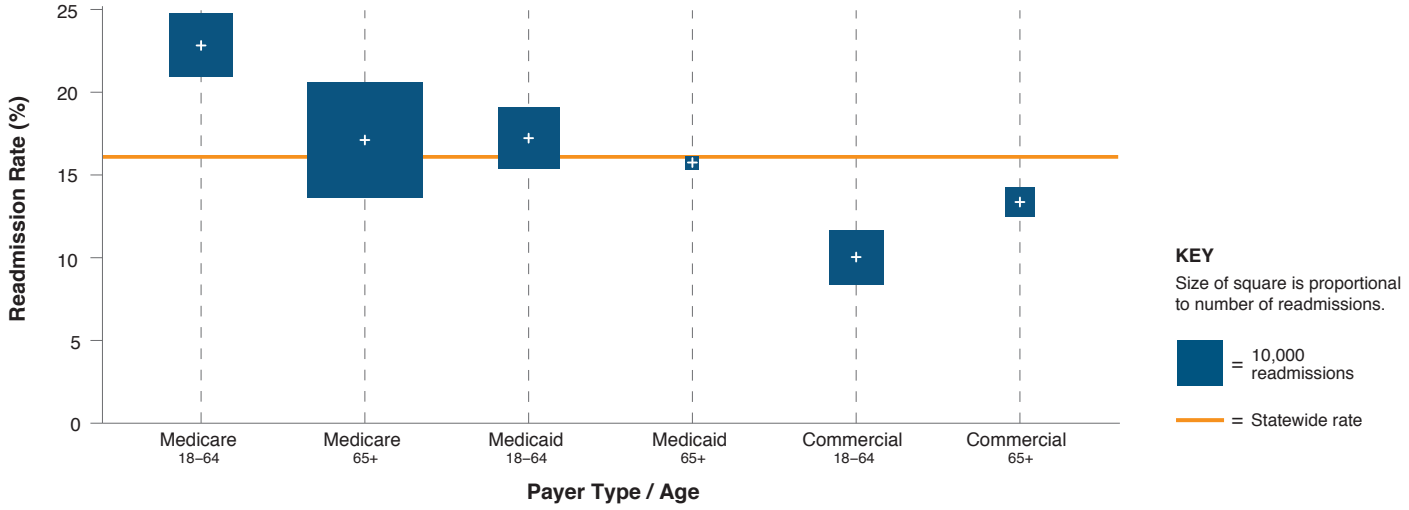
All-Payer Readmissions by Payer Type and Patient Age

SFY 2017

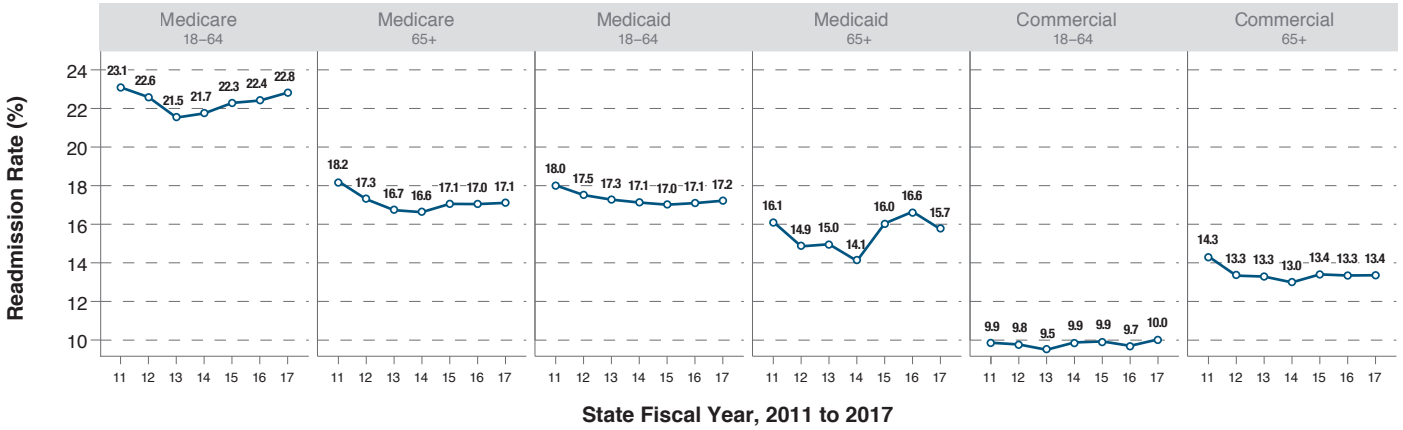
When readmission rates were examined by payer type and age, the rates ranged from a low of 10.0% to a high of 22.8%.

Medicare beneficiaries aged 18-64 had the highest readmission rate in 2017 (22.8%). Adults aged 65+ on Medicare and adults aged 18-64 on Medicaid had similar readmission rates (17.1% and 17.2%, respectively). Adults aged 18-64 with commercial insurance had the lowest rate of readmission (10.0%).

SFY 2017



Seven-Year Trend



Note: The size of the squares in the top figure is proportional to the number of readmissions. Analyses include eligible discharges for adults with any payer type, excluding discharges for obstetric or primary psychiatric care.

Data source: Massachusetts Hospital Inpatient Discharge Database, July 2010 to June 2017.

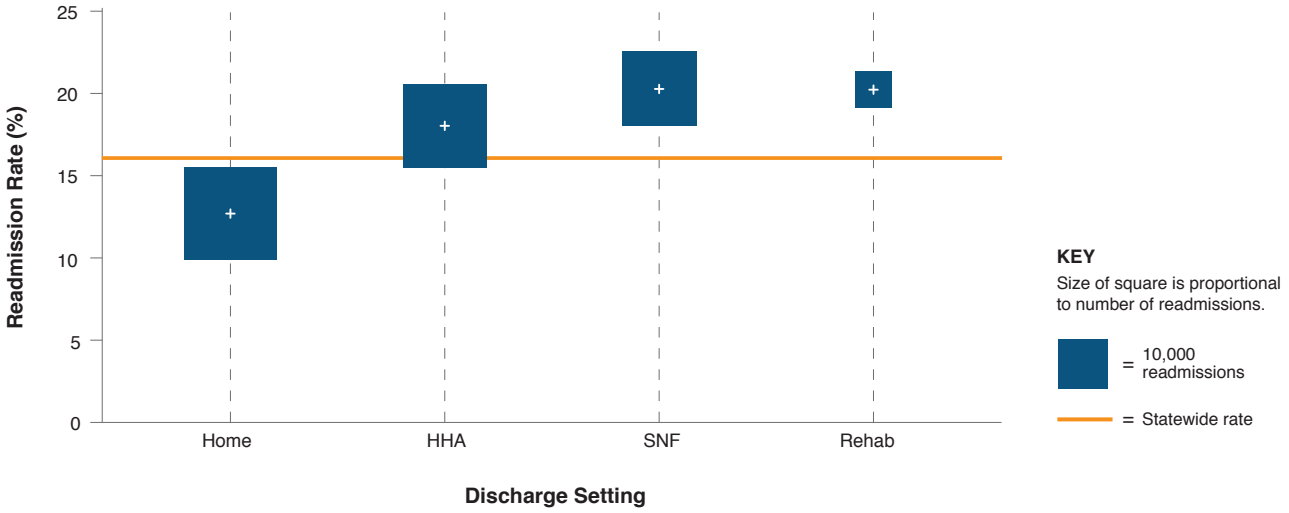
All-Payer Readmissions by Discharge Setting

SFY 2017

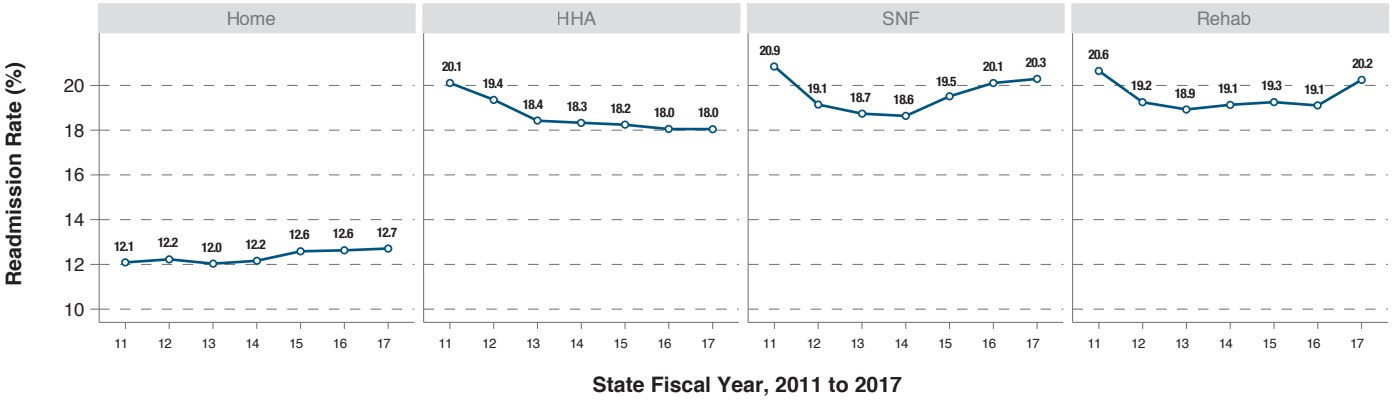
The readmission rate for patients discharged to home (12.7%) was lower than for patients discharged to post-acute care settings: home health agency (HHA) (18.0%), rehabilitation (20.2%), or skilled nursing facility (20.3%).

Over the seven-year period, trends in readmission rates show different patterns by discharge setting. Readmission rates for patients discharged to HHA have declined, while discharges to skilled nursing facilities have increased since 2014.

SFY 2017



Seven-Year Trend



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. Hospice discharges were not included due to its small number of discharges. Analyses include eligible discharges for adults with any payer type, excluding discharges for obstetric or primary psychiatric care.

Data source: Massachusetts Hospital Inpatient Discharge Database, July 2010 to June 2017.

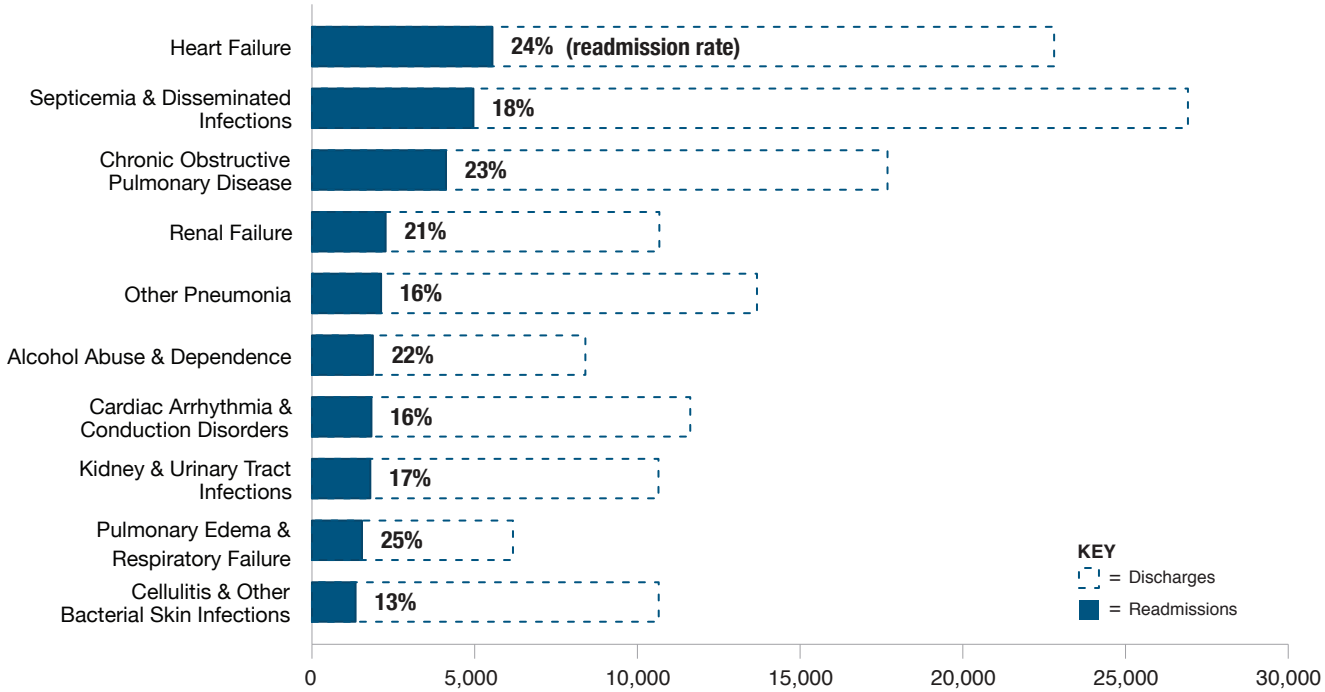
Discharge Diagnoses with the Highest Numbers of Readmissions

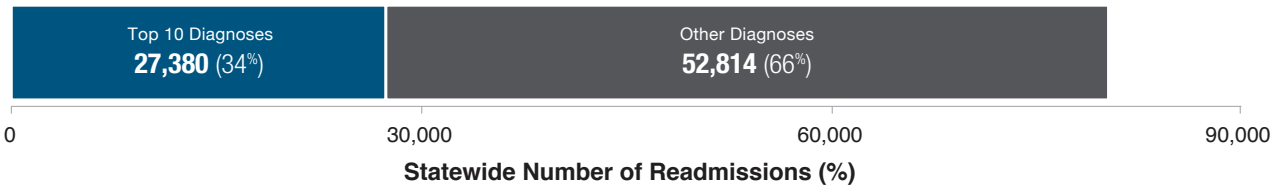
SFY 2017

The 10 discharge diagnoses associated with the highest numbers of readmissions have been the same for the past few years.

In 2017, heart failure, sepsis, and COPD were the top three discharge diagnoses leading to the most readmissions (5,545, 4,961, and 4,119, respectively).

These top 10 discharge diagnoses cumulatively accounted for only one-third of all readmissions. While it may be important to focus readmission reduction efforts on these high volume conditions, an exclusive focus on the top 10 diagnoses would miss a substantial portion of all readmissions.





Note: The discharge diagnosis is based on APR DRG version 30.0. Some discontinuity in trend by diagnosis may be attributed to the change in diagnostic coding from ICD-9-CM to ICD-10-CM in October 2015. See the technical appendix for details.

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

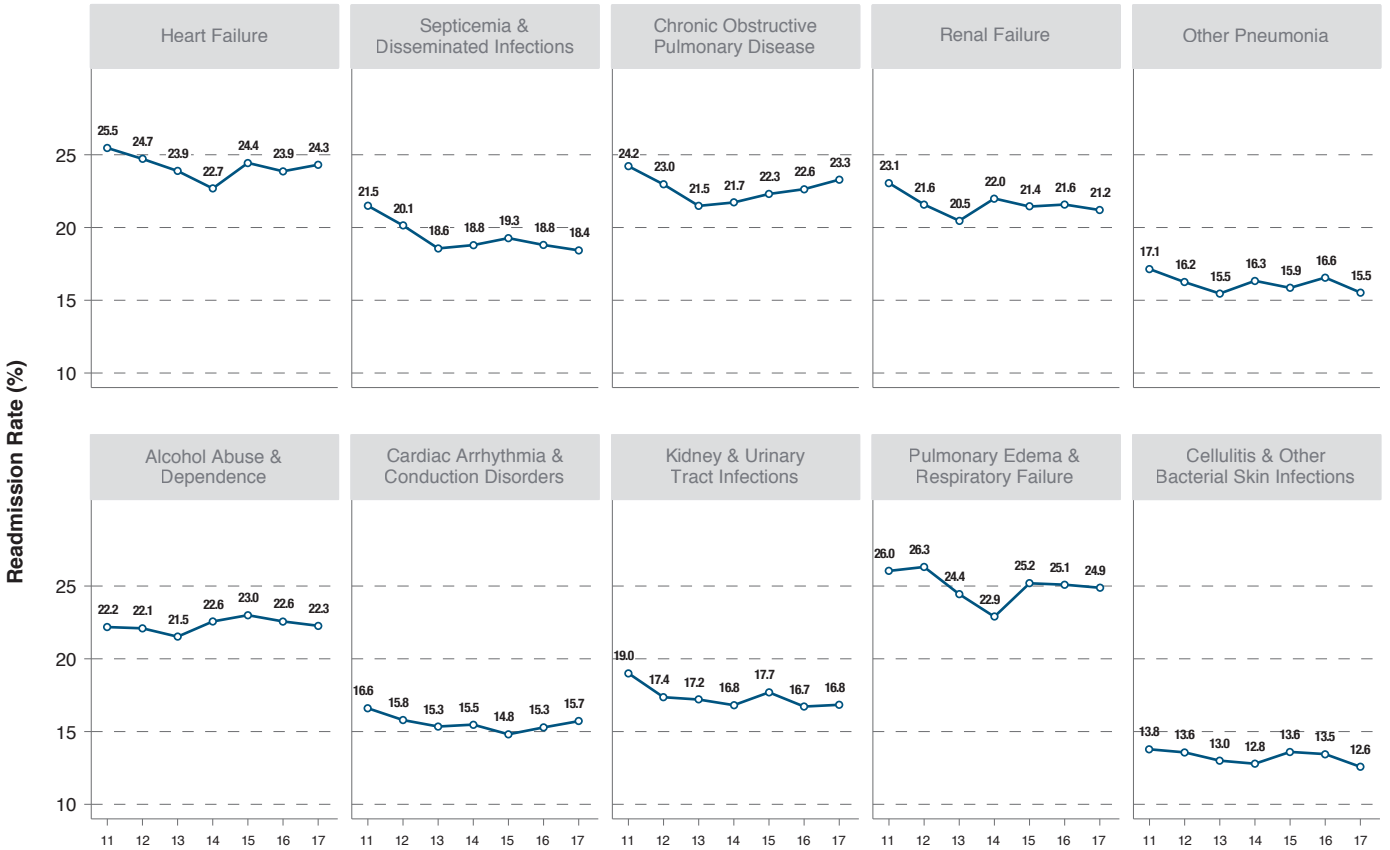
Data source: Massachusetts Hospital Inpatient Discharge Database, July 2016 to June 2017.

Trends in Discharge Diagnoses with the Highest Numbers of Readmissions

SFY 2011-2017

Readmission rates for several, but not all, of the diagnoses leading to the most readmissions decreased over the first few years of the seven-year study period. In recent years, many have either remained relatively stable or slightly decreased.

Notably, however, readmission rates for COPD have increased since 2013 (23.3% in 2017).



Trends in Readmission Rate by Diagnosis, SFY 2011 to 2017

Note: The discharge diagnosis is based on APR DRG version 30.0. Some discontinuity in trend by diagnosis may be attributed to the change in diagnostic coding from ICD-9-CM to ICD-10-CM in October 2015. See the technical appendix for details.

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

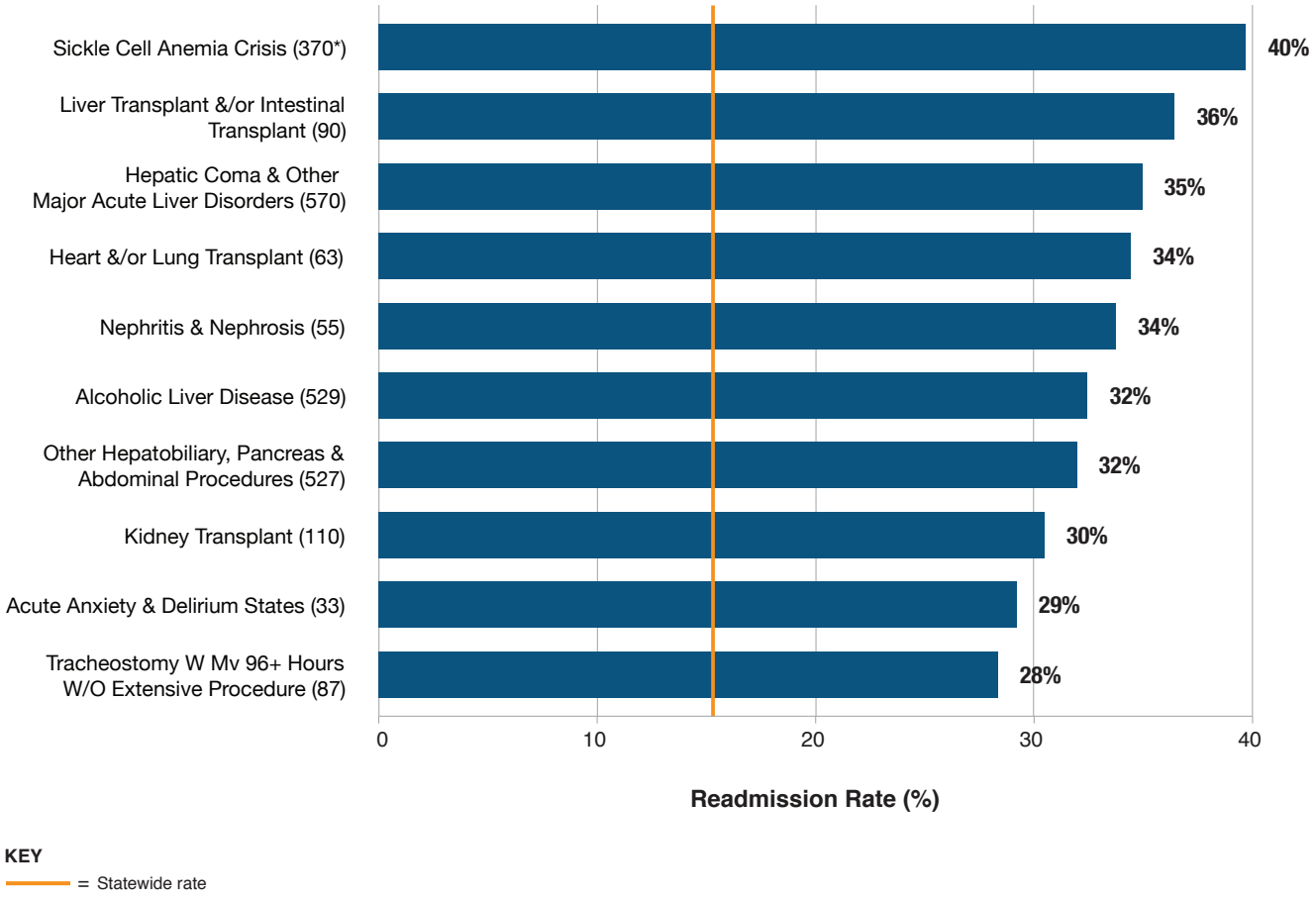
Data source: Massachusetts Hospital Inpatient Discharge Database, July 2010 to June 2017.

Discharge Diagnoses with the Highest Rates of Readmissions

SFY 2017

As in previous years, sickle cell, liver disease, and transplants are among the discharge diagnoses with the highest rates of readmission.

While the overall numbers of readmissions from these conditions are small—they are responsible for only three percent of readmissions—patients with these diagnoses are at very high risk of readmission.



* Number of readmissions.

Note: The discharge diagnosis is based on APR DRG version 30.0. Some discontinuity in trend by diagnosis may be attributed to the change in diagnostic coding from ICD-9-CM to ICD-10-CM in October 2015. See the technical appendix for details.

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

Data source: Massachusetts Hospital Inpatient Discharge Database, July 2016 to June 2017.

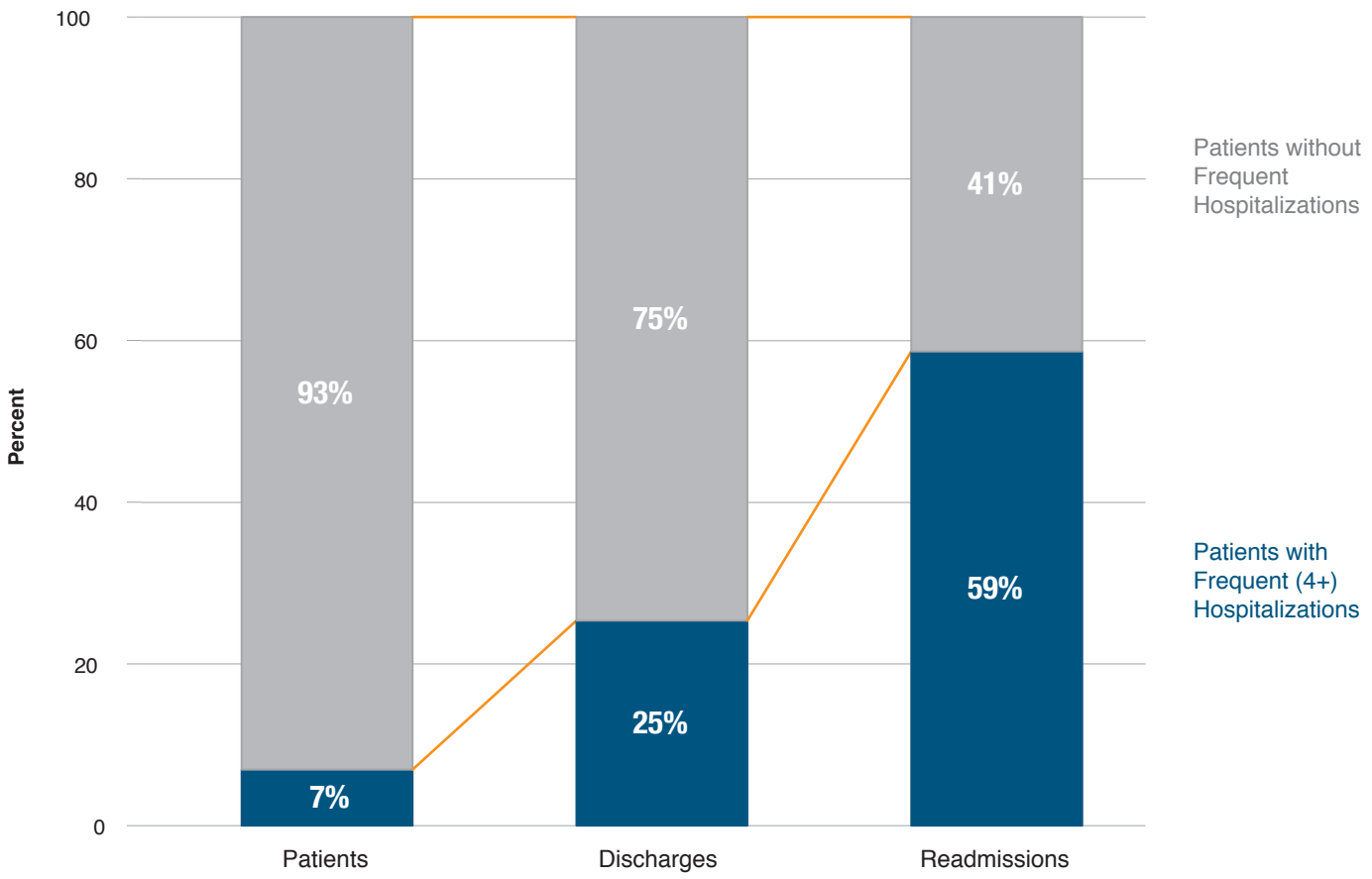
All-Payer Readmissions Among Frequently Hospitalized Patients

SFY 2015-2017

Frequently hospitalized patients are defined as those with four or more hospitalizations within a 12-month period at any point during the most recent three years (July 2014 to June 2017).

During that span of time, seven percent of hospitalized patients had four or more hospitalizations within a 12-month period. Collectively, they accounted for 25% of all hospitalizations and 59% of all readmissions in the state.

The readmission rate among frequently hospitalized patients was 37%. The readmission rate for any patient not classified as a frequently hospitalized patient (e.g., hospitalized one, two, or three times in a 12-month period) was nine percent.



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

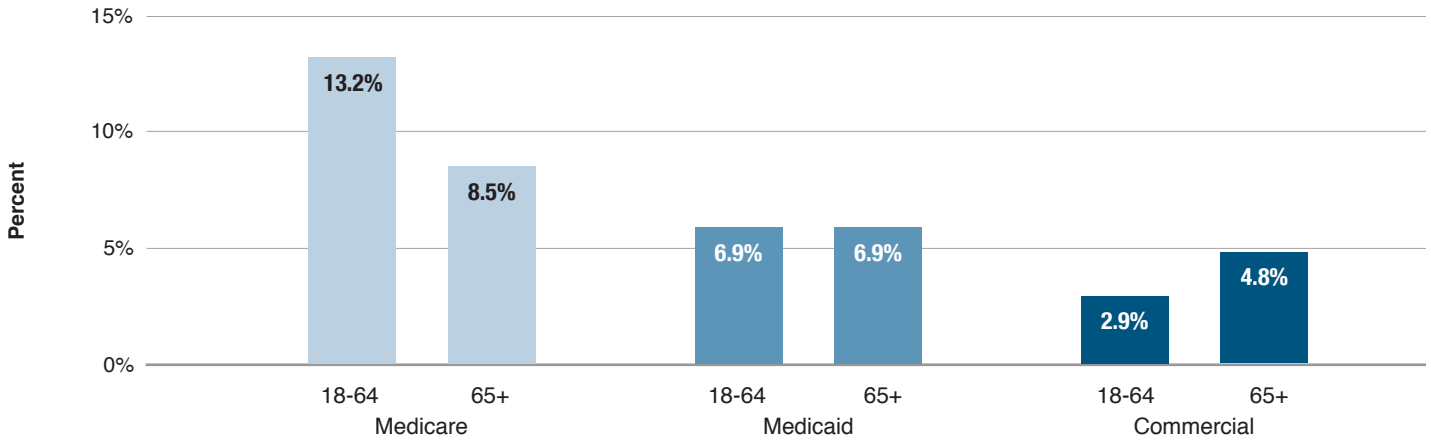
Data source: Massachusetts Hospital Inpatient Discharge Database, July 2014 to June 2017.

Frequently Hospitalized Patients by Payer Type and Age

SFY 2015-2017

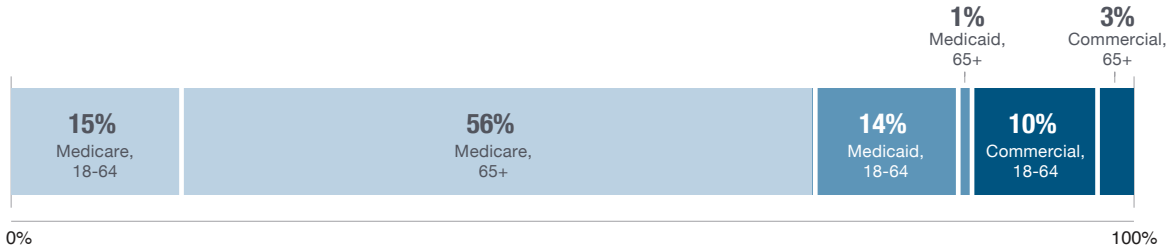
Medicare beneficiaries aged 18-64 accounted for the highest proportion of frequently hospitalized patients of any age-payer subgroup (13%).

The majority (71%) of frequently hospitalized patients were Medicare beneficiaries. Of all frequently hospitalized patients, 86% were covered by either Medicare or Medicaid.



	Medicare 18-64	Medicare 65+	Medicaid 18-64	Medicaid 65+	Commercial 18-64	Commercial 65+
Number of Frequently Hospitalized Patients	8,314	30,512	7,300	296	5,437	1,519
Number of All Patients	63,053	357,063	105,660	4,262	190,474	31,930

Percent of All Frequently Hospitalized Patients



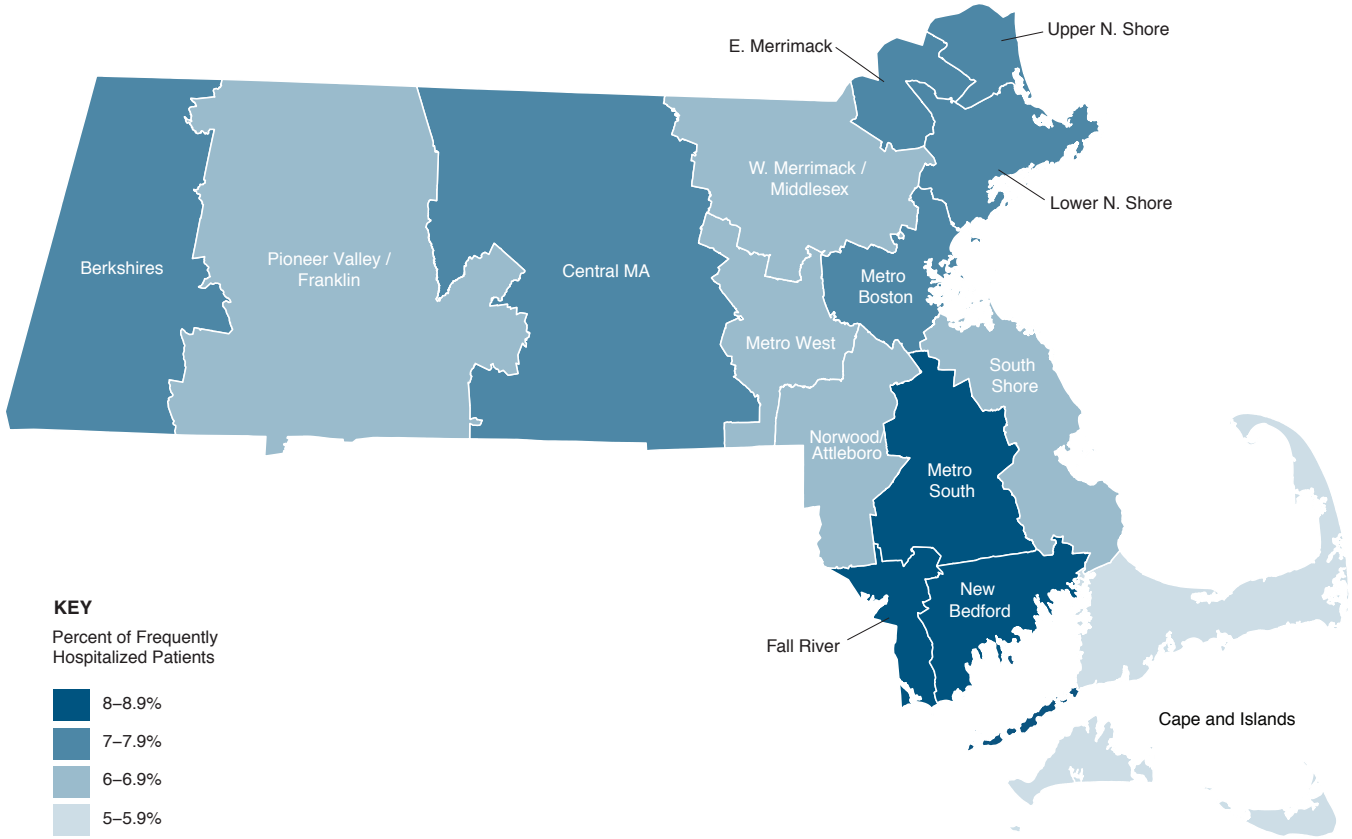
Note: Analyses include eligible discharges for adults with any payer type, excluding discharges for obstetric or primary psychiatric care. Percentages may not add up to 100% due to rounding.

Data source: Massachusetts Hospital Inpatient Discharge Database, July 2014 to June 2017.

Percentage of Frequently Hospitalized Patients by Patient Region

SFY 2015-2017

From 2015 to 2017, the highest proportions of frequently hospitalized patients were in Fall River, New Bedford, and the Metro South regions.



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

Data source: Massachusetts Hospital Inpatient Discharge Database, July 2014 to June 2017.

All-Payer Readmissions by Hospital

This section contains analyses of both observed ("raw") readmission rates and RSRRs for individual hospitals and for groups of hospitals. RSRRs account for differences across hospitals in patient age, patient comorbidities, and the profile of conditions that each hospital treats. Thus, RSRRs allow for a more accurate comparison of performance between hospitals. For details about how RSRRs are calculated, see the technical appendix.

Key Findings

- The RSRRs for acute care hospitals ranged from 14.4% to 18.4% in 2017.
- RSRRs by hospital cohort did not vary widely, with the highest RSRRs for Academic Medical Centers and teaching hospitals.

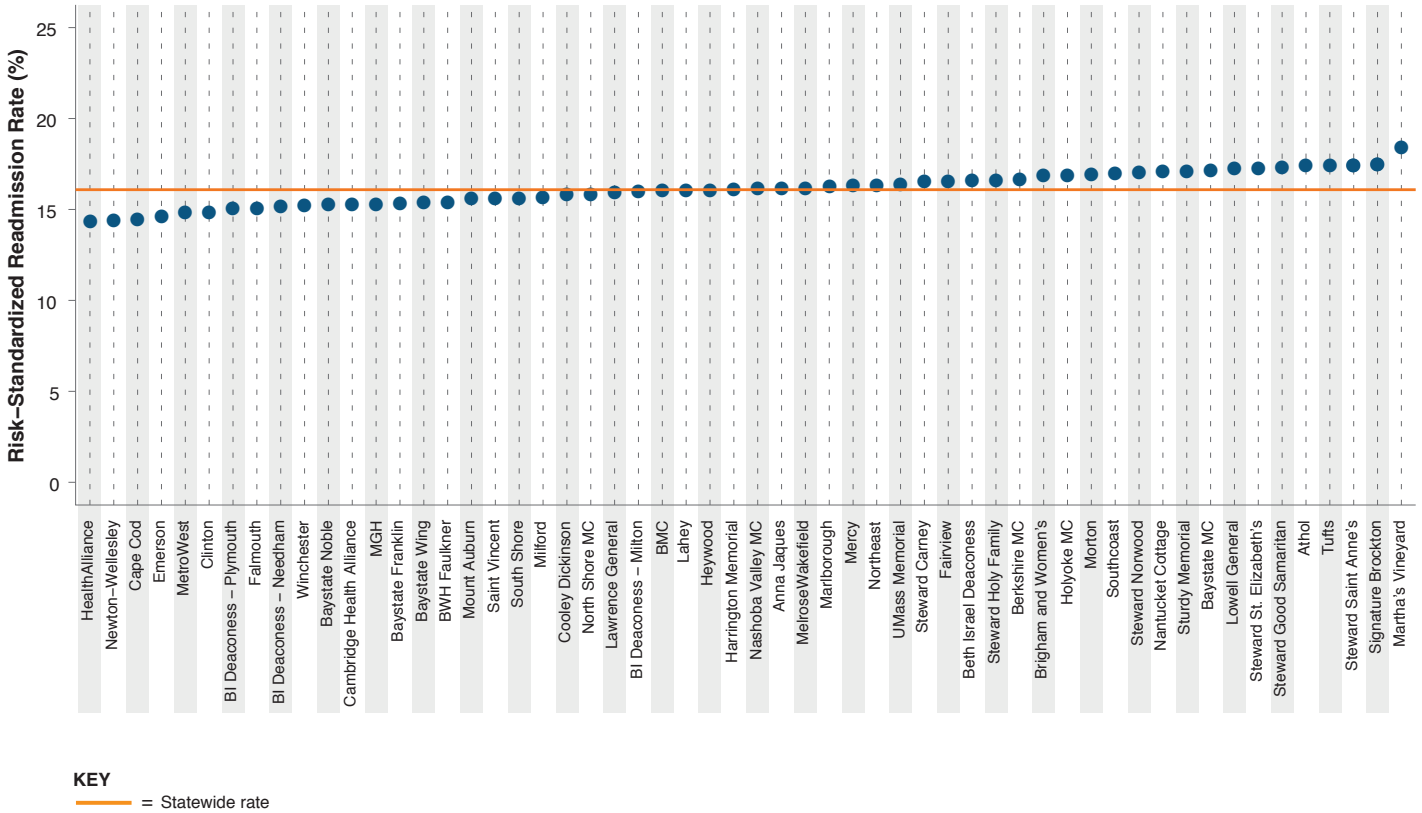
READMISSIONS BY HOSPITAL

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

SFY 2017

RSRRs allow for more accurate comparisons between hospitals by adjusting observed rates for differences among hospitals in the age and complexity of their patients and for the conditions they treat.

RSRRs among hospitals ranged from 14.4% for HealthAlliance Hospital to 18.4% for Martha's Vineyard Hospital, a range of 4.0 percentage points.



Note: The risk-standardized readmission rates (RSRRs) shown in this figure account for the patient case mix and the hospital service mix. Analyses include eligible discharges for adults with any payer type, excluding discharges for obstetric or primary psychiatric care.

This figure excludes the two specialty hospitals, Massachusetts Eye and Ear Infirmary and New England Baptist Hospital. See technical appendix for details.

Data source: Massachusetts Hospital Inpatient Discharge Database, July 2016 to June 2017.

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

SFY 2013-2017

Hospitals were grouped into quartiles based on their RSRRs for each of the last five years (2013 to 2017). Those in the highest quartile had the highest readmission rates, while those in the lowest quartile had the lowest readmission rates of all Massachusetts acute care hospitals in the last five years.

Three hospitals had consistently high RSRRs in each of the last five years, while five hospitals had consistently low rates.

RSRR Quartile	Hospitals	Median Risk-Standardized Readmission Rate in SFY 2017
Highest RSRRs (worse readmission rates) in each of the last five years	Martha's Vineyard Hospital Steward St. Elizabeth's Medical Center Tufts Medical Center	17.4%
Lowest RSRRs (better readmission rates) in each of the last five years	Beth Israel Deaconess Hospital - Plymouth Cape Cod Hospital Emerson Hospital HealthAlliance Hospital Newton-Wellesley Hospital	14.5%

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

Data source: Massachusetts Hospital Inpatient Discharge Database, July 2012 to June 2017.

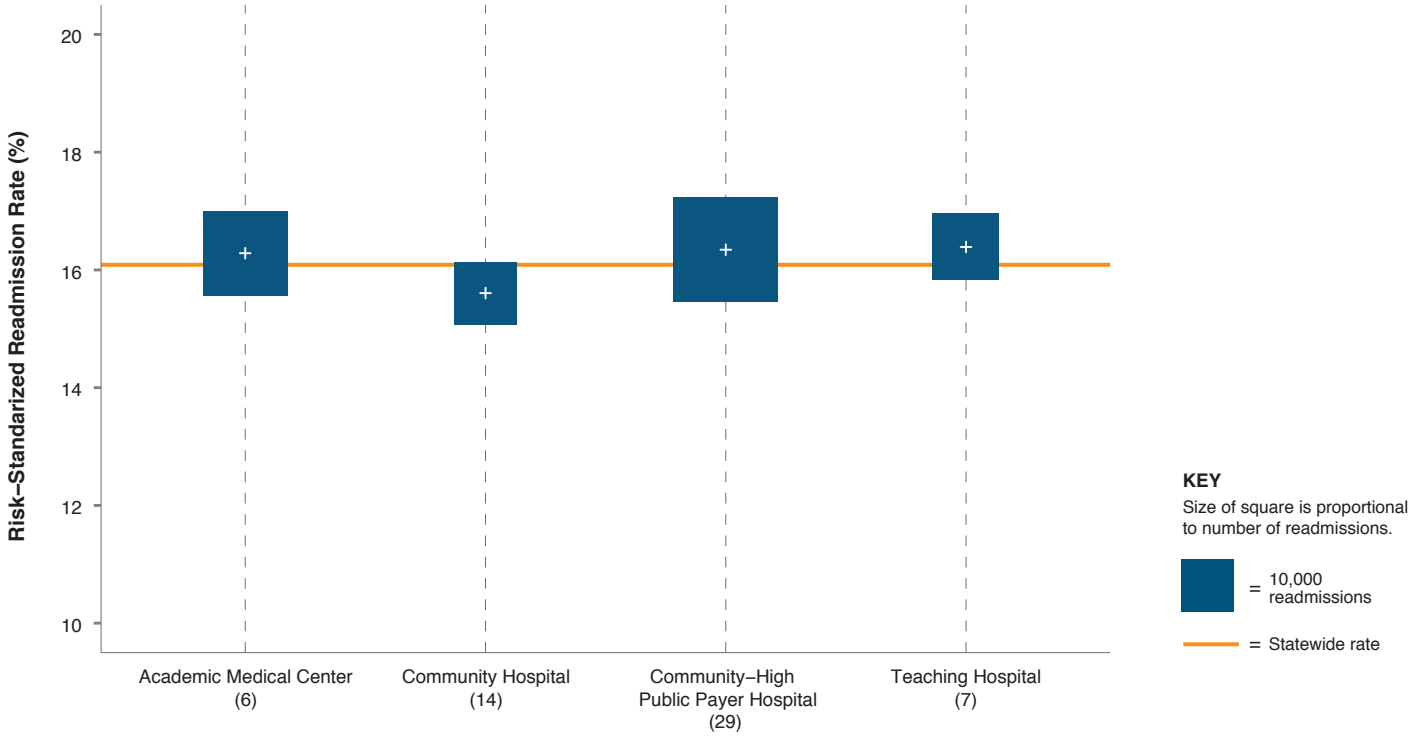
READMISSIONS BY HOSPITAL

All-Payer Risk-Standardized Readmission Rates by Hospital Cohort

SFY 2017

RSRRs are presented by cohorts of similar hospitals: Academic Medical Centers, community hospitals, community-High Public Payer (HPP) hospitals, and teaching hospitals.

There was very little difference in RSRRs by hospital cohort. Academic Medical Centers and teaching hospitals had slightly higher RSRRs than other hospital cohorts (16.3% and 16.4%, respectively).



Note: The size of the squares is proportional to the number of readmissions. Analyses include eligible discharges for adults with any payer type, excluding discharges for obstetric or primary psychiatric care.

Data source: Massachusetts Hospital Inpatient Discharge Database, July 2016 to June 2017.

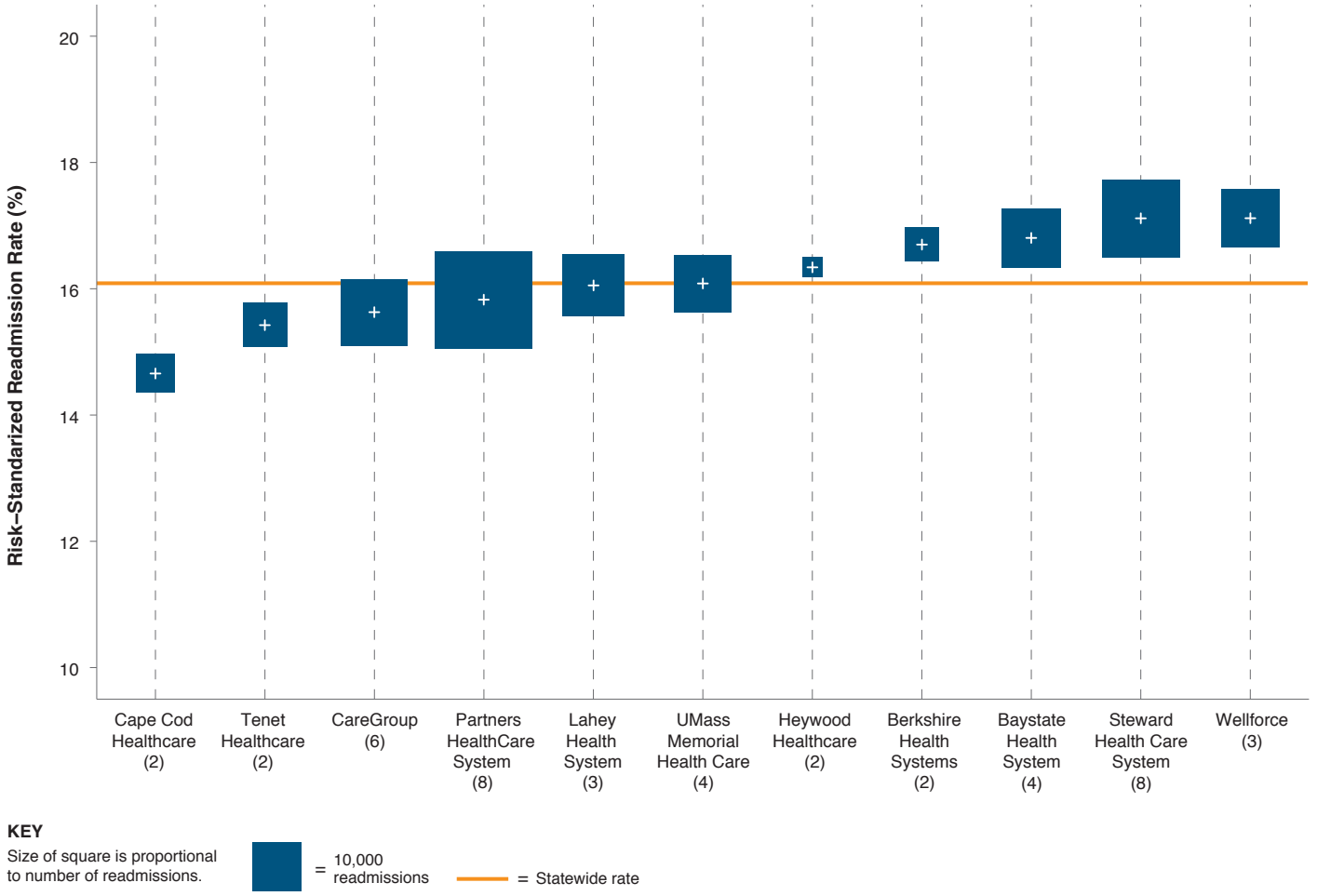
READMISSIONS BY HOSPITAL

All-Payer Risk-Standardized Readmission Rates by Hospital System

SFY 2017

RSRRs varied by hospital system from a low of 14.6% for Cape Cod Healthcare to a high of 17.1% for both Wellforce and Steward Health Care System. The largest hospital system—Partners HealthCare System—had an RSRR of 15.8%. Partners accounted for 19% of all discharges and 19% of all readmissions.

See the technical appendix for a list of hospitals with their system affiliation.



Note: The size of the squares is proportional to the number of readmissions. Analyses include eligible discharges for adults with any payer type, excluding discharges for obstetric or primary psychiatric care.

Data source: Massachusetts Hospital Inpatient Discharge Database, July 2016 to June 2017.

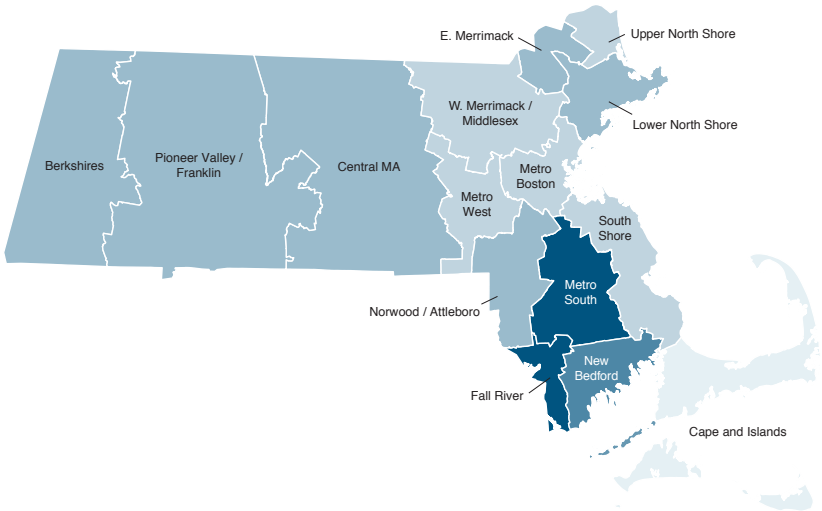
All-Payer Observed and Risk-Standardized Readmission Rates by Hospital Region

SFY 2017

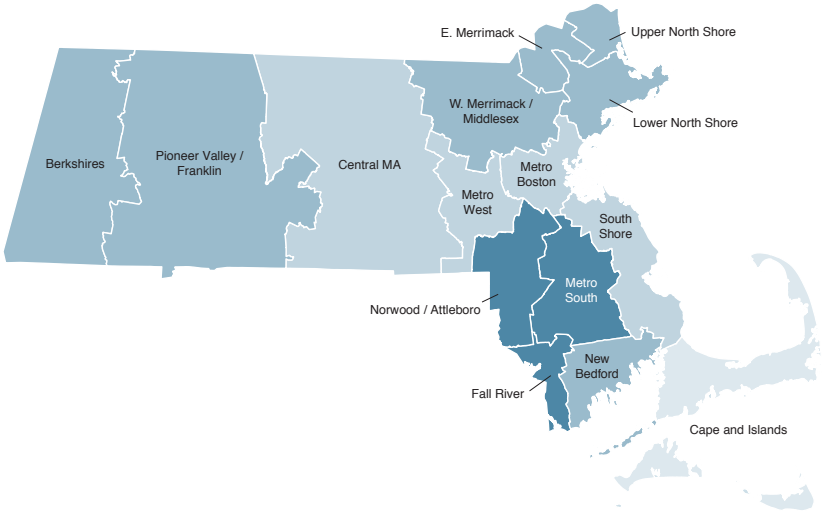
The top figure shows geographic variation in **observed** readmission rates, while the bottom figure shows variation in **RSRRs** that account for differences in hospitals' patient populations and services provided.

The observed rates varied considerably from a low of 13.8% on the Cape and Islands to 20.2% in Fall River. Once differences in patient populations and hospital service mix were accounted for through risk-standardization (bottom figure), the geographic variation narrowed, ranging from 14.8% to 17.5%.

Observed Readmission Rates



Risk-Standardized Readmission Rates



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

Data source: Massachusetts Hospital Inpatient Discharge Database, July 2016 to June 2017.

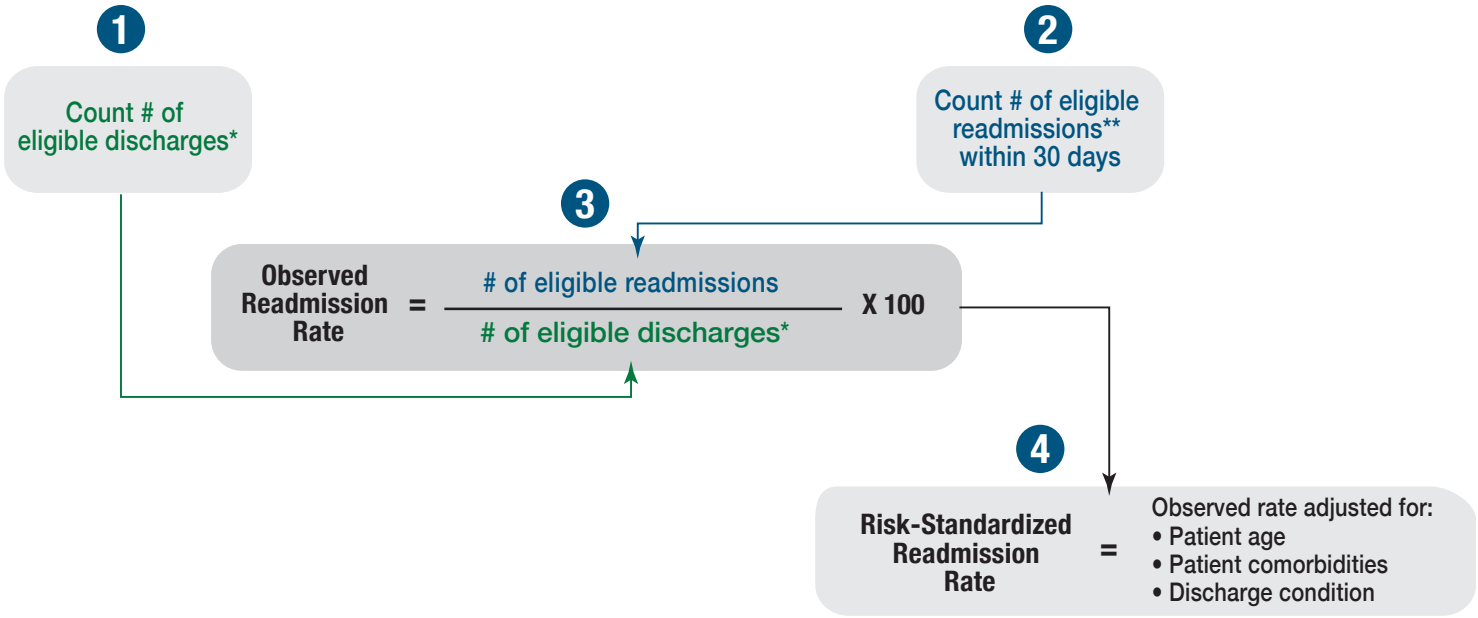
About the Readmissions Methodology

To report on all-payer readmissions in the Commonwealth, CHIA has adapted the Hospital-Wide All-Cause Unplanned 30-day Readmission Measure (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 non-federal acute care hospitals in Massachusetts.[10] This year's report uses the 2018 CMS readmissions measure methodology (version 7.0) which updates the planned readmissions algorithm and modifies the identification of discharges transferred to rehabilitation units.[11] Some discontinuity in trends may be attributable to the change in diagnostic coding from ICD-9-CM to ICD-10-CM.

A readmission is defined as an inpatient admission to an acute care facility in Massachusetts occurring within 30 days of discharge of an eligible index admission. All readmissions are counted except for those that are considered planned.

Readmission rates are calculated in four broad steps. First, eligible hospital discharges are defined. Second, from among this set of eligible discharges, the number of eligible readmissions within 30 days is derived. Then, the latter is divided by the former and turned into a percentage to calculate the observed ("raw") readmission rate. In step four, the risk-standardized readmission rate (RSRR) is derived from the volume-weighted results of five different statistical models, one for each of the following specialty cohorts (groups of discharge condition categories or procedure categories): surgery/gynecology, general medicine, cardiorespiratory, cardiovascular, and neurology. These risk-standardized readmission 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 the categories of discharges that are excluded from the readmissions analyses. •



* 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. "Medicare Eases Penalties Against Safety Net-Hospitals." Kaiser Health News (September 26, 2018). Accessed 10/31/2018. https://khn.org/news/medicare-eases-readmissions-penalties-against-safety-net-hospitals/.

2 For the original measure technical report see: Horwitz, L., C. Partovian, Z. Lin, J. Herrin, J. Grady, M. Conover, J. Montague et al. "Hospital-wide all-cause unplanned readmission measure: final technical report." Centers for Medicare and Medicaid Services (2012).

3 For this report, CHIA used 2018, version 7.0 of the readmission measure specification. Yale New Haven Health Services Corporation/Center for Outcomes Research & Evaluation (YNHHSC/CORE). "2018 All-Cause Hospital-Wide Measure Updates and Specifications Report: Hospital-Level 30-Day Risk-Standardized Readmission Measure – Version 7.0" (March 2018). Accessed 10/31/2018. https://www.cms.gov/Medicare/Quality-Initiatives-Patient-Assessment-Instruments/HospitalQualityInits/Measure-Methodology.html.

4 Information on the Massachusetts Hospital Inpatient Discharge Database is available at http://www.chiamass.gov/case-mix-data/. The FY2017 Hospital Inpatient Discharge Dataset processed by CHIA on November 5, 2018 was used for all analyses published in this year's annual statewide report. CHIA's readmission measure is based on inpatient data only. Observation stay data, which is reported by acute care hospitals to CHIA in a separate data file, was not included in the readmission measure.

5 See note 1.

6 See note 2.

7 See note 3.

8 See note 4.

9 See note 3.

10 National Quality Forum, "Patient Outcomes: All-Cause Readmissions Expedited Review 2011" (July 2012). Accessed 4/5/2018. http://www.qualityforum.org/Projects/Readmissions_Endorsement_Maintenance.aspx.

11 See note 3.

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