

CENTER FOR HEALTH INFORMATION AND ANALYSIS

**EMERGENCY DEPARTMENT
VISITS AFTER INPATIENT
DISCHARGE IN MASSACHUSETTS**

SFY 2015

JULY 2017



Executive Summary

The Massachusetts Center for Health Information and Analysis (CHIA) has produced a series of statewide readmission analyses using hospital discharge summary data. Statewide, all-payer, all-cause readmission reports have been supplemented by hospital-specific profiles and a special supplement on behavioral health and readmissions. This analysis of emergency department (ED) visits following inpatient discharge is an expansion in this series. This report is intended to give providers data to inform their ongoing quality improvement efforts, and to provide policymakers, payers, and the public with information to improve the delivery of health care in the Commonwealth of Massachusetts and slow the rate of health care cost increases.¹

The hospital readmission rate is a commonly used health care system performance measure. As previously reported in CHIA's [*Hospital-Wide Adult All-Payer Readmissions in Massachusetts: SFY 2011-2015*](#), about 15% of discharges from the inpatient setting of care are followed by a readmission to the inpatient setting of care within 30 days. Inpatient discharges resulting in inpatient readmissions are a subset of the actual volume of discharges that are followed by a return to the acute care setting within 30 days. Patients may return to the emergency department or to observation status without this activity being captured in the “readmission rate.”

Providers, payers, and policymakers are increasingly turning their attention to whether the patient returns to the acute care setting at any level (ED, observation, or inpatient) within 30 days of hospital discharge. Some states have introduced this “revisits” measure alongside readmissions to capture potentially avoidable utilization in the health care system. Accountable care organizations and providers managing bundled payments for 90 day episodes of care focus on avoiding any return to the acute care setting, as well as responding in real-time to the patient who has returned to the ED in order to facilitate a timely and coordinated care.

This analysis provides a broader look at the patients who return to the ED, whether or not they are readmitted to the inpatient level of care. These “revisits” to the ED may represent an opportunity to prevent a hospital readmission or may themselves be avoidable. As efforts to improve care transitions evolve into increasingly cross-setting and community-based strategies, measuring the rate of ED visits after inpatient discharge may reveal opportunities to improve care transitions and reduce avoidable acute-level hospital use.

In this report, we use CHIA’s acute hospital Case Mix data to analyze revisits—defined here as a visit to the ED within 30 days of an inpatient discharge—and provide a first statewide examination of revisits for the all-payer adult population in Massachusetts acute care hospitals.

For questions on this report, please contact Mark Paskowsky, Research Development Manager, at mark.paskowsky@state.ma.us.

Key Findings

- Twenty-six percent of inpatient discharges were followed by a return to the ED within 30 days in State Fiscal Year 2015 (July 1, 2014 to June 30, 2015).
- There was wide variation in 30-day revisit rates among Massachusetts acute care hospitals, ranging from a low of 20.6% to a high of 34.5%.
- Of the ED revisits that occurred within 30 days of inpatient discharge, 49% resulted in discharge from the ED, 42% resulted in readmission to the inpatient setting, and nine percent resulted in placement in observation status.
- Of all the first ED revisits that occurred within 30 days of inpatient discharge, 42% occurred within seven days of discharge.
- The rates of revisits were the highest for younger adults, particularly Medicaid members and younger adults with Medicare (who typically qualify through a disability).
- Behavioral health conditions were among those discharges with the highest volume and highest rates of 30-day revisits.
- Thirty percent of ED revisits were to hospitals other than the discharging facility. This percentage varied widely across hospitals, ranging from a low of 10% to a high of 63%.

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Introduction

The Massachusetts Center for Health Information and Analysis (CHIA) has produced a series of statewide readmission analyses using hospital discharge summary data. Statewide, all-payer, all-cause readmission reports have been supplemented by hospital-specific profiles and a special supplement on behavioral health and readmissions.² This report of emergency department (ED) visits following inpatient discharge is an expansion in this series. These reports are intended to give providers data to help with their ongoing quality improvement efforts, and to provide policymakers, payers, and the public with information to improve the delivery of health care in the Commonwealth of Massachusetts and slow the rate of health care cost increases.³

Unplanned readmissions to the hospital within 30 days of discharge have become a focus of efforts to transform the health care delivery system to deliver value-based care. Historically, efforts to reduce unplanned readmissions have focused on implementing quality improvements to the hospital discharge planning process and/or on delivering enhanced follow-up services to high-risk patients in the days to weeks following hospital discharge.

As delivery system innovations continue to emerge, it has become increasingly common to deploy new services and processes within the ED as a component of a multi-faceted portfolio of strategies to reduce readmissions.⁴ Increasingly, through shared savings and risk-based payment models such as accountable care organizations and bundled payments for 90-day episodes of care, providers use the return encounter in the emergency department as an opportunity to reconsider whether an (re)admission is clearly indicated, or whether alternative and/or enhanced services in other care settings would best meet continuing care needs.

Payers and policymakers are also increasingly turning their attention to whether the patient returns to the acute care setting at any level (ED, observation, or inpatient) within 30 days of hospital discharge.⁵ Recent analyses of patterns of care among “super utilizers” of the acute care setting by the Agency for Healthcare Research and Quality (AHRQ) extended an analysis of inpatient utilization to include emergency department utilization as well.⁶

Previous CHIA reports have found that the adult, all-payer, all-cause rate of unplanned readmissions in Massachusetts is approximately 15%. However, there are more occurrences of inpatient discharges being followed by a return to the emergency department than the readmission rate alone measures. A single-site analysis in Massachusetts found that 24% of inpatient discharges were followed by an ED visit within 30 days; of those, 54% did not lead to a hospital readmission.⁷ A recently published analysis of ED revisit following inpatient discharge in New York and Florida found that 20% of inpatient discharges were followed by an ED revisit within 30 days; of those, 54% were readmitted to the inpatient setting.⁸

A more comprehensive approach to understanding factors contributing to subsequent health care use in the post-hospital discharge period includes taking a closer look at patient use of the ED occurring within 30 days of hospital discharge. The Center for Health Information and Analysis releases this new report, *Emergency Department Visits after Inpatient Discharge: SFY 2015*, to provide a first statewide examination of revisits for the all-payer adult population in Massachusetts acute care hospitals in order to help guide the ongoing efforts to improve health care delivery. As efforts to improve care transitions evolve into increasingly cross-setting and community-based strategies, measuring the rate of ED visits after inpatient discharge may reveal opportunities to improve care transitions and reduce avoidable acute-level hospital use.

Overall Statewide Revisits

The 30-day revisit rate is defined as the percentage of eligible inpatient discharges followed by at least one ED visit within 30 days of discharge.¹

This section presents overall statewide data, including the rate of revisits to the ED following an inpatient discharge, and revisits to the ED by the number of days after inpatient discharge. This section also provides statewide information on the total number of revisits, ED disposition, and distributions by payer type.

Key Findings

- In State Fiscal Year (SFY) 2015, over one quarter of inpatient hospital discharges (26%) were followed by at least one ED visit within 30 days; 42% of first revisits occurred within seven days of discharge.
- Most of the 30-day revisits to the ED are not admitted to the hospital—49% of revisits resulted in discharge from the ED, 42% resulted in readmission to the inpatient settings, and nine percent resulted in placement in observation status.
- Adults covered by Medicaid were disproportionately likely to return to the ED following inpatient discharge within 30 days: Medicaid members accounted for 15% of all eligible inpatient discharges, yet accounted for 26% of 30-day revisits.

¹ While the population of “eligible inpatient discharges” for the revisits analysis is similar to CHIA’s readmission analyses—it includes adults (age 18+) and excludes certain conditions such as cancer treatment, obstetric care, and rehabilitation services—the revisits analyses also include those with a primary psychiatric diagnosis. More detail is available in the “About the Revisits Methodology” section of this report.

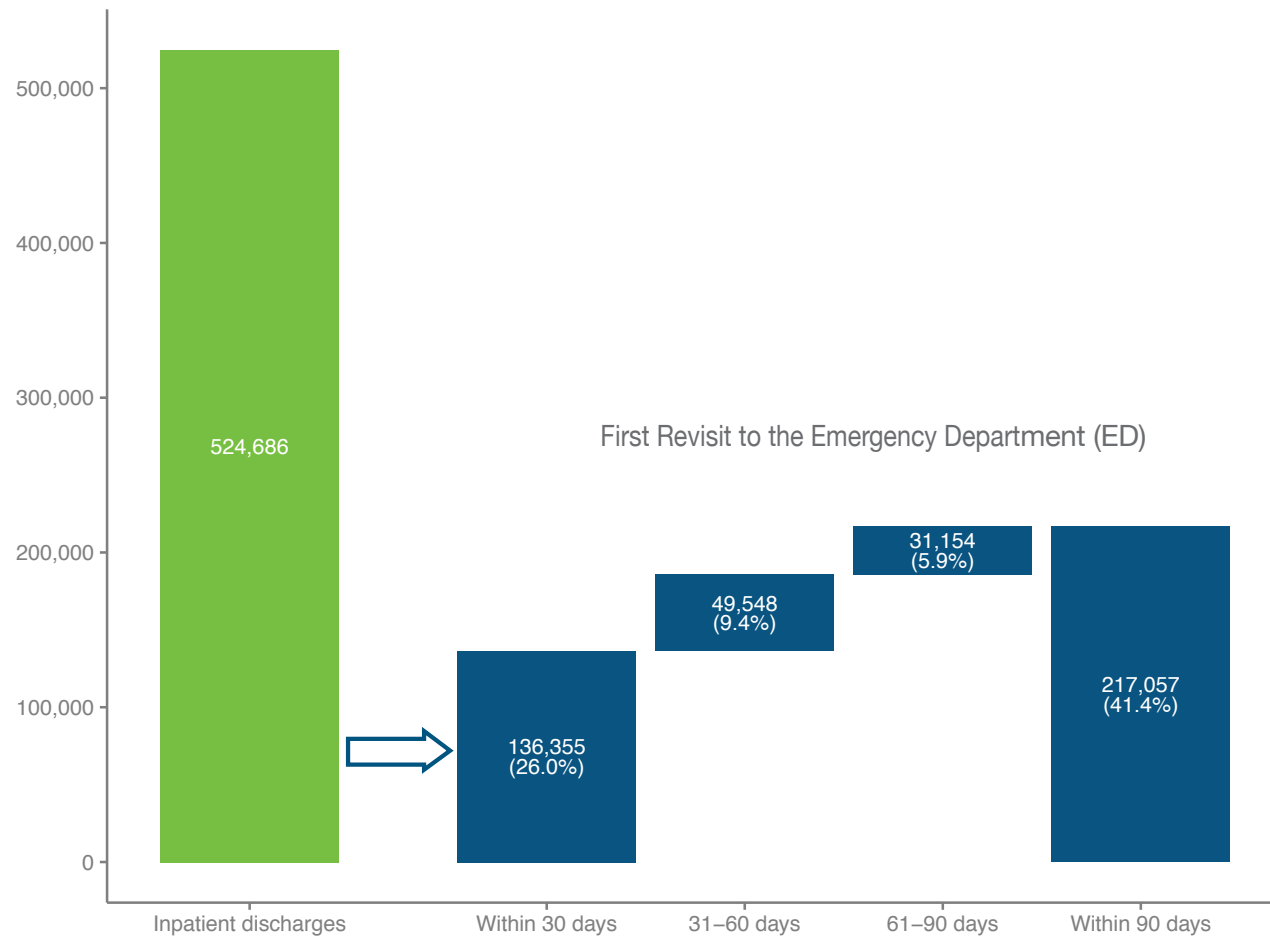
STATEWIDE REVISITS

Statewide 30-Day and 90-Day Revisit Rate

Of all eligible inpatient discharges (524,686) in Massachusetts acute care hospitals, 26% visited the emergency department within 30 days.*

In addition, 9.4% of inpatient discharges had a visit to the ED within 31 to 60 days, and 5.9% visited the ED within 61 and 90 days.

The 90-day revisit rate was 41.4% (217,057 discharges).



* Here we report on the first ED visit following inpatient discharge. However, some had multiple ED visits within 30 days of inpatient discharge.

Note: A revisit is defined as an emergency department visit after an eligible inpatient discharge.

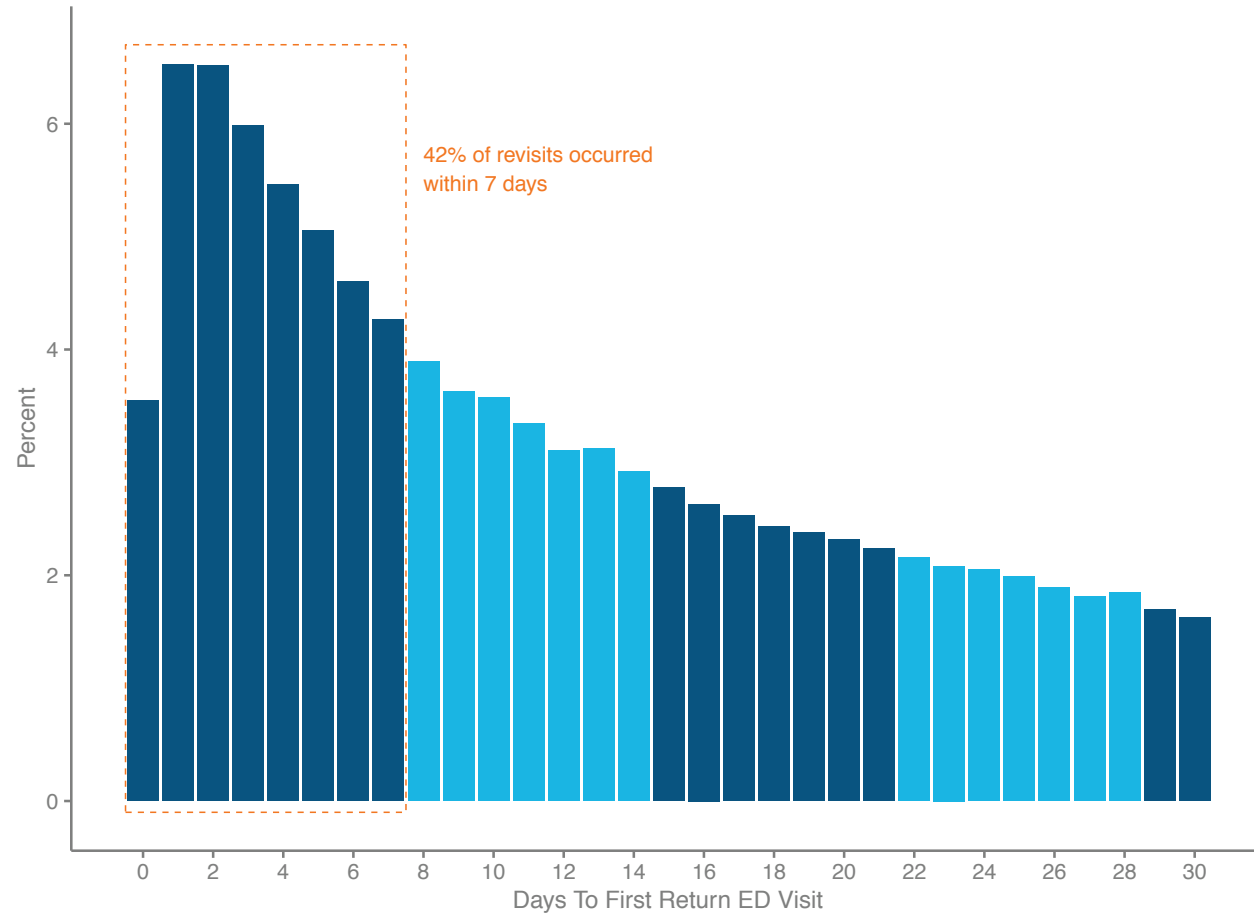
Data source: Massachusetts Acute Hospital Case Mix Database, July 2014 to June 2015.

STATEWIDE REVISITS

Number of Days to First Revisit

Discharged patients are most likely to revisit the emergency department within two days of discharge.

Among all the first revisits within 30 days of inpatient discharge (136,355), 42% occurred within the first week.



Note: A revisit is defined as an emergency department visit after an eligible inpatient discharge.

Data source: Massachusetts Acute Hospital Case Mix Database, July 2014 to June 2015.

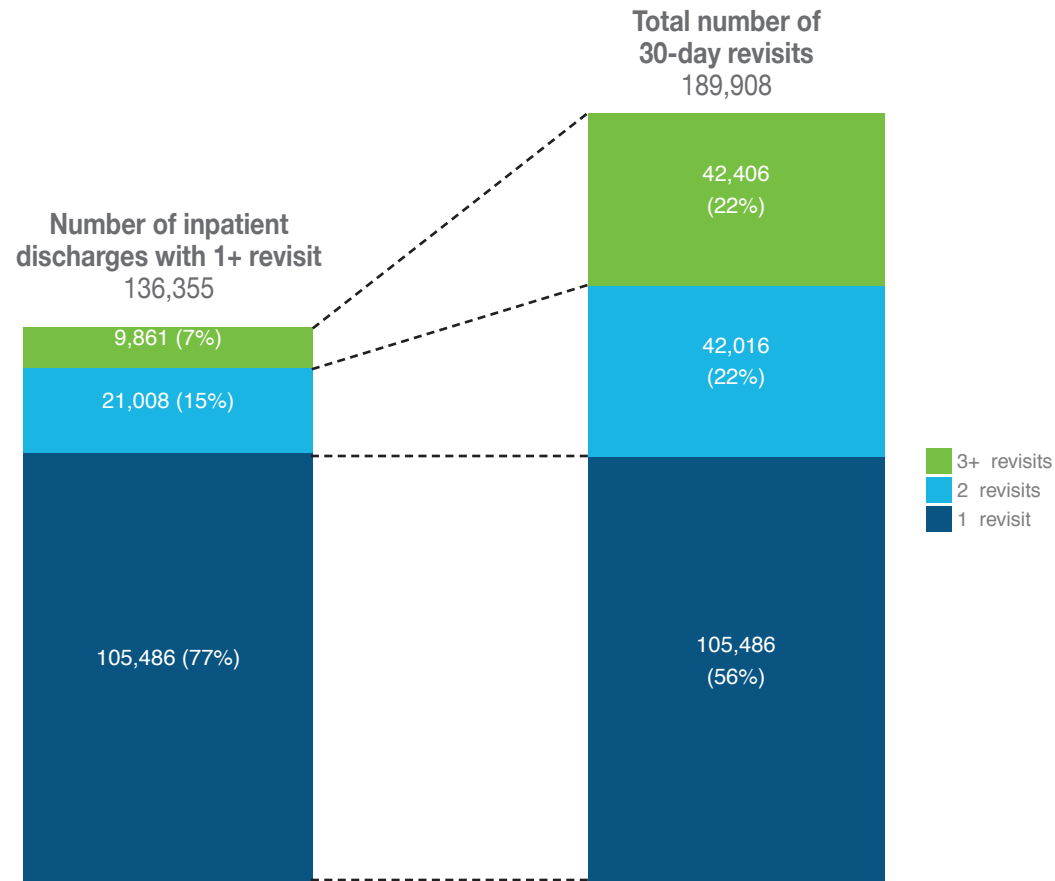
STATEWIDE REVISITS

Total Number of 30-Day Revisits to the Emergency Department

Of the 136,355 inpatient discharges that led to **any** revisit to the emergency department within 30 days, 77% had one revisit to the ED, 15% had two revisits, and seven percent had three or more revisits within 30 days.

In SFY 2015, the statewide total number of revisits to the ED within 30 days of an inpatient discharge was 189,908.

Seven percent of the inpatient discharges with 3+ revisits accounted for 22% of the total number of 30-day revisits.



Note: A revisit is defined as an emergency department visit after an eligible inpatient discharge.

Data source: Massachusetts Acute Hospital Case Mix Database, July 2014 to June 2015.

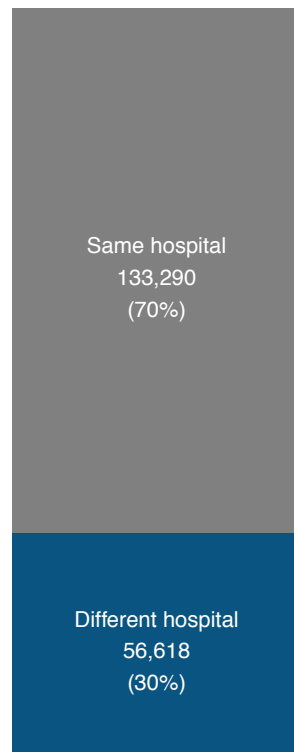
STATEWIDE REVISITS

All 30-Day Revisits By Same/Different Hospital and ED Disposition

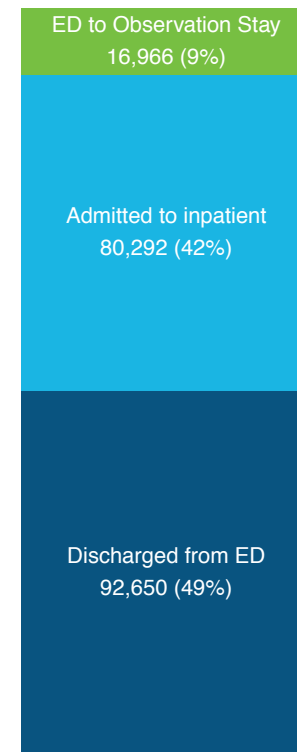
Of all the statewide revisits within 30 days (189,908), 30% occurred at a different hospital than where the inpatient discharge occurred.

Of all 30-day revisits, 49% were discharged from the emergency department, 42% of these resulted in an admission to a hospital, and nine percent were placed in observation status.

ED hospital is different than hospital discharged from
189,908 Total Revisits



ED disposition for 30-day revisit
189,908 Total Revisits



Note: A revisit is defined as an emergency department visit after an eligible inpatient discharge.

Data source: Massachusetts Acute Hospital Case Mix Database, July 2014 to June 2015.

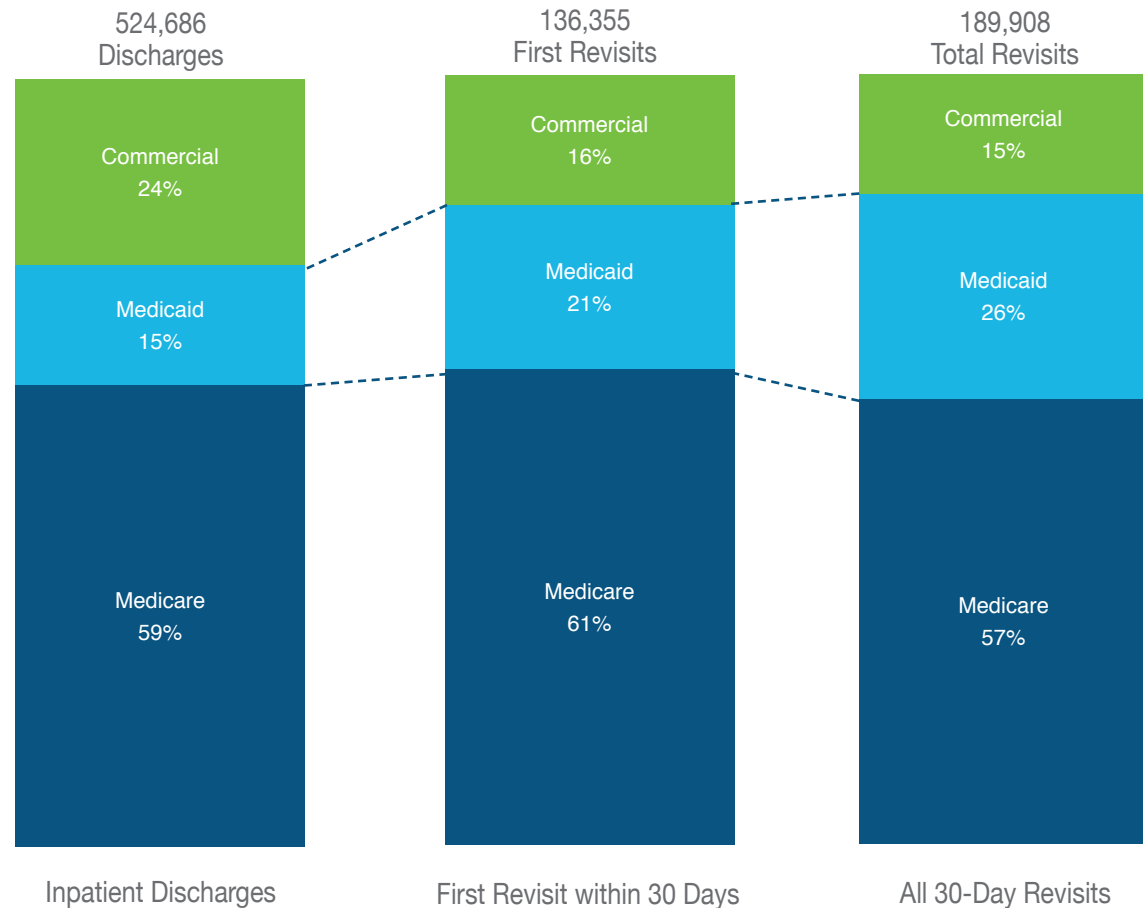
STATEWIDE REVISITS

All 30-Day Revisits by Payer Type

Medicaid accounted for 15% of all inpatient discharges but for 26% of all 30-day revisits.

The Medicare proportion of inpatient discharges (59%) is similar to the proportion for all 30-day revisits (57%).

While commercial payers made up 24% of all inpatient discharges, commercial payers accounted for only 15% of 30-day revisits.



Note: A revisit is defined as an emergency department visit after an eligible inpatient discharge. Not shown in each of the column bars above is the 2% categorized as “other” payer types, including self-pay.

Data source: Massachusetts Acute Hospital Case Mix Database, July 2014 to June 2015.

30-Day Revisits by Characteristics of Patients and Hospitalizations

This section presents information on patient characteristics such as age, payer type, and patient region in order to better understand the population of patients who are more likely to visit the emergency department within 30 days following an inpatient discharge. In addition, revisit rates are presented on hospitalization characteristics such as discharge setting and primary diagnosis on the index inpatient discharge.

Key Findings

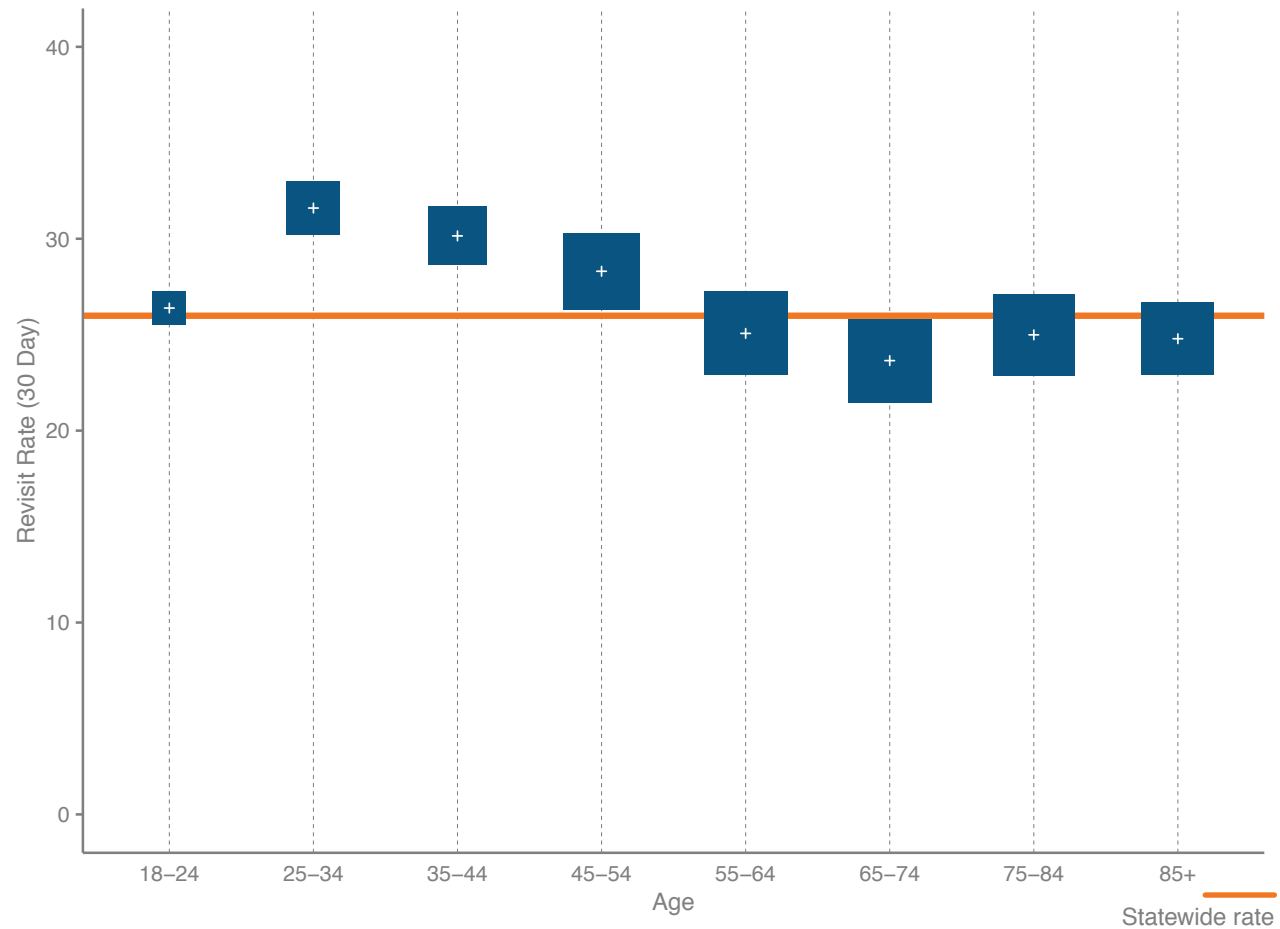
- Revisits to the emergency department after an inpatient discharge were more likely among younger patients, particularly Medicaid recipients, and Medicare beneficiaries aged 18-64 (typically dually Medicare/Medicaid eligible due to a disability).
- Those discharged to a skilled nursing facility or for home health agency care were more likely to have a revisit to the ED within 30 days of an inpatient discharge.
- The 15 discharge diagnoses that most commonly resulted in a 30-day revisit were for the conditions of septicemia, heart failure, and chronic obstructive pulmonary disease (COPD), as well as for mental and substance use conditions. Notably, the diagnoses with the top 15 highest revisit rates accounted for only about 10% of all 30-day revisits.
- There was variation in revisit rates based on the patient's geographic location. Patients residing in New Bedford, Fall River, the Berkshires, and Metro Boston South had the highest rates of 30-day revisits to the ED after an inpatient discharge.

REVISITS BY PATIENT AND HOSPITALIZATION CHARACTERISTICS

30-Day Revisits by Age

Revisit rates varied by the patient's age. Younger patients (age 25-34, 35-44, and 45-54) had the highest rates of 30-day revisits (31.6%, 30.1%, and 28.3%, respectively) after inpatient discharge.

Due to the larger number of total discharges for older patients, while younger patients had higher revisit rates, a greater volume of revisits were from older patients—52% of all revisits were among patients age 65+. The largest volume of revisits came from those age 65 to 74. This older age group also had the lowest 30-day revisit rate (23.6%).



Note: A revisit is defined as an emergency department visit after an eligible inpatient discharge. The size of the box represents the number of inpatient discharges with a revisit. The midpoint of the box (marked with a plus sign) represents the 30-day revisit rate.

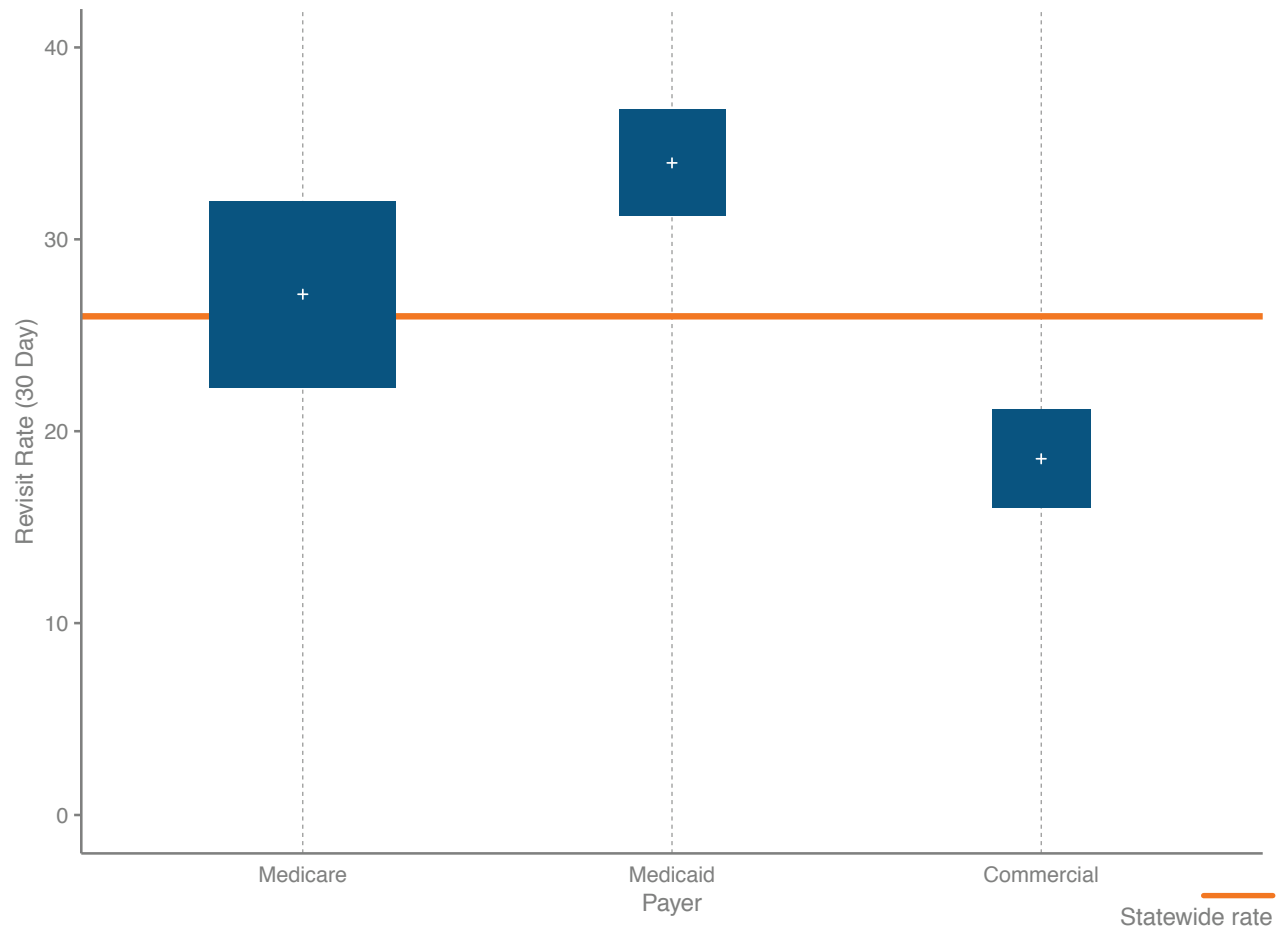
Data source: Massachusetts Acute Hospital Case Mix Database, July 2014 to June 2015.

REVISITS BY PATIENT AND HOSPITALIZATION CHARACTERISTICS

30-Day Revisits by Payer Type

The 30-day revisit rate was highest for those with Medicaid coverage (34%). Those with Medicare coverage had a revisit rate of 27.1% and had the highest volume of 30-day revisits after an inpatient discharge.

Those in commercial health insurance plans had the lowest revisit rate (18.6%) and represented the lowest volume of revisits of the three payer types.



Note: A revisit is defined as an emergency department visit after an eligible inpatient discharge. The statewide 30-day revisit rate also includes other payers, including self-pay (data not shown). The size of the box represents the number of inpatient discharges with a revisit. The midpoint of the box (marked with a plus sign) represents the 30-day revisit rate.

Data source: Massachusetts Acute Hospital Case Mix Database, July 2014 to June 2015.

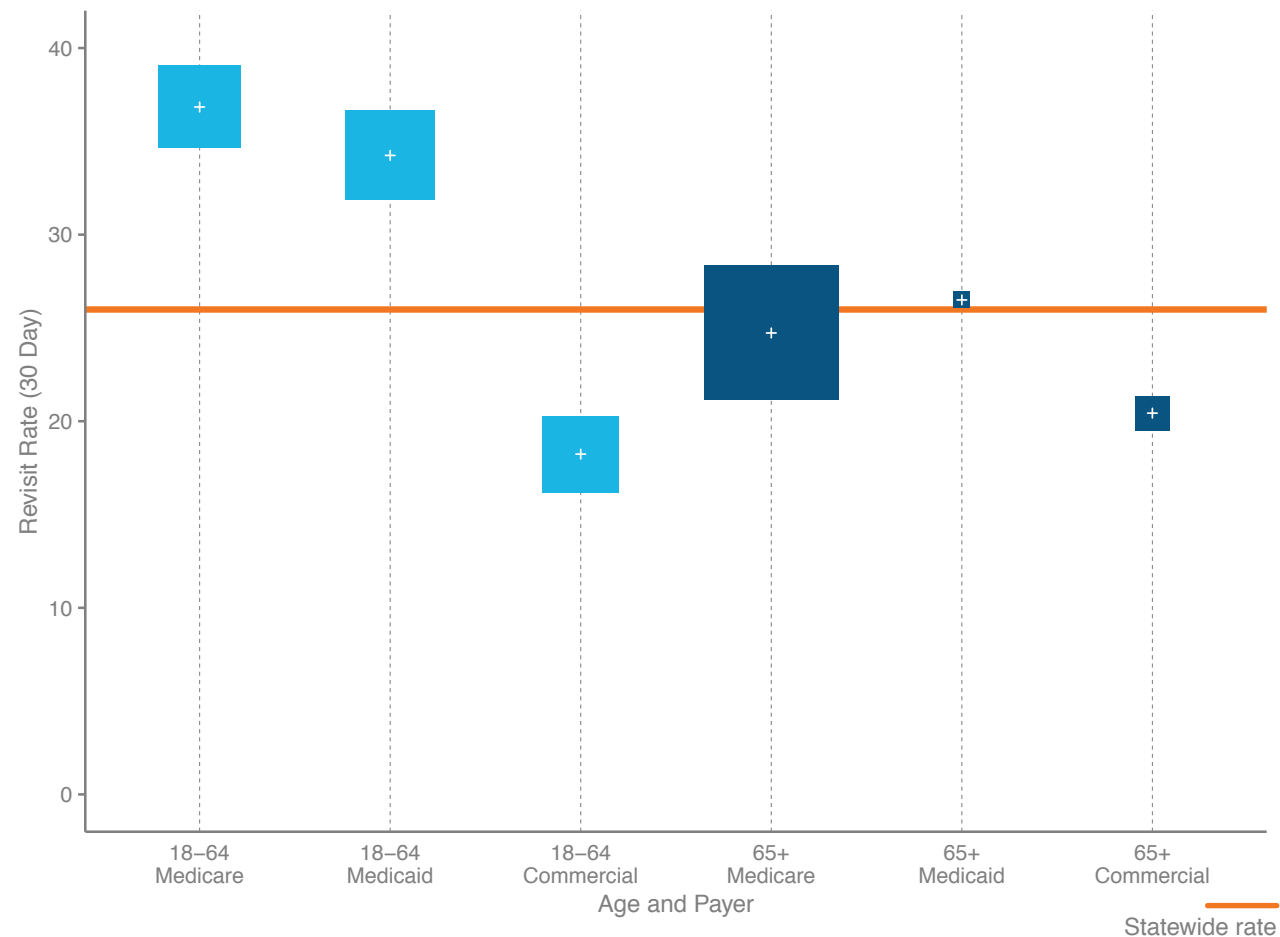
REVISITS BY PATIENT AND HOSPITALIZATION CHARACTERISTICS

30-Day Revisits by Age and Payer Type

Medicare beneficiaries, age 18 to 64 (typically adults who are dually eligible for Medicare and Medicaid, and qualify through a disability) had the highest rate of 30-day revisits to the ED following an inpatient discharge (36.8%). The next highest revisit rate was for Medicaid recipients, age 18 to 64 (34.2%).

Medicare beneficiaries, age 65+ had a below average 30-day revisit rate (24.7%), yet they represented the largest volume of revisits.

Those with commercial insurance coverage had the lowest revisit rates for both younger patients 18 to 64 (18.2%) and older patients 65+ (20.4%).



Note: A revisit is defined as an emergency department visit after an eligible inpatient discharge. The size of the box represents the number of inpatient discharges with a revisit. The midpoint of the box (marked with a plus sign) represents the 30-day revisit rate.

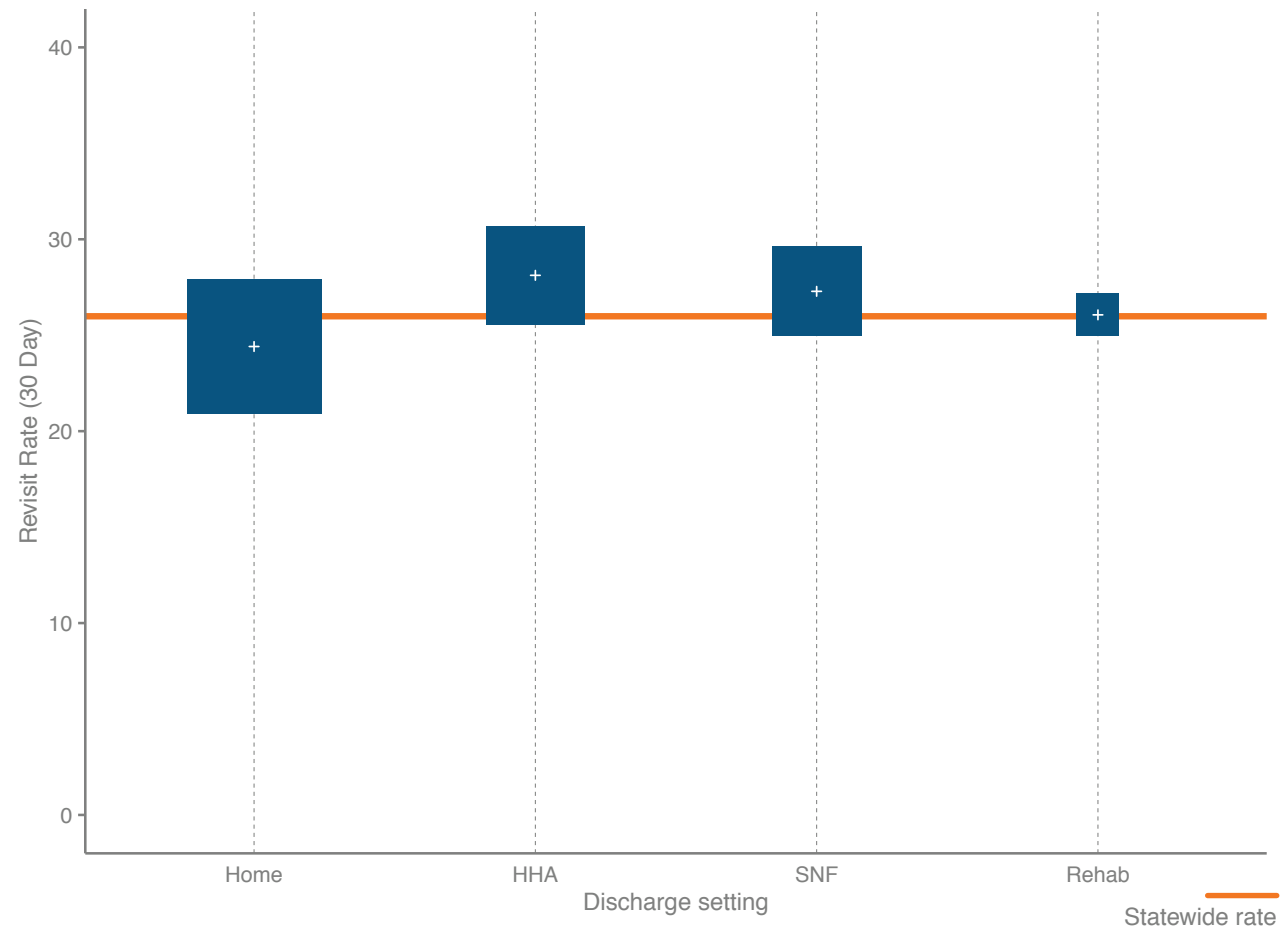
Data source: Massachusetts Acute Hospital Case Mix Database, July 2014 to June 2015.

REVISITS BY PATIENT AND HOSPITALIZATION CHARACTERISTICS

30-Day Revisits by Discharge Setting

Revisit rates differed based on the discharge setting from the inpatient discharge. A slightly higher revisit rate to the ED was observed for those discharged to home health care (28.1%) or a skilled nursing facility (27.3%) than rehabilitation (26.1%) or to home (24.4%).

Although the revisit rate is lowest among those discharged to home, the volume of revisits is highest for this group (50% of the total).



Note: The 30-day revisit rate for those discharged to hospice care is 9.8% (data not shown) which represents about one percent of hospitalizations.

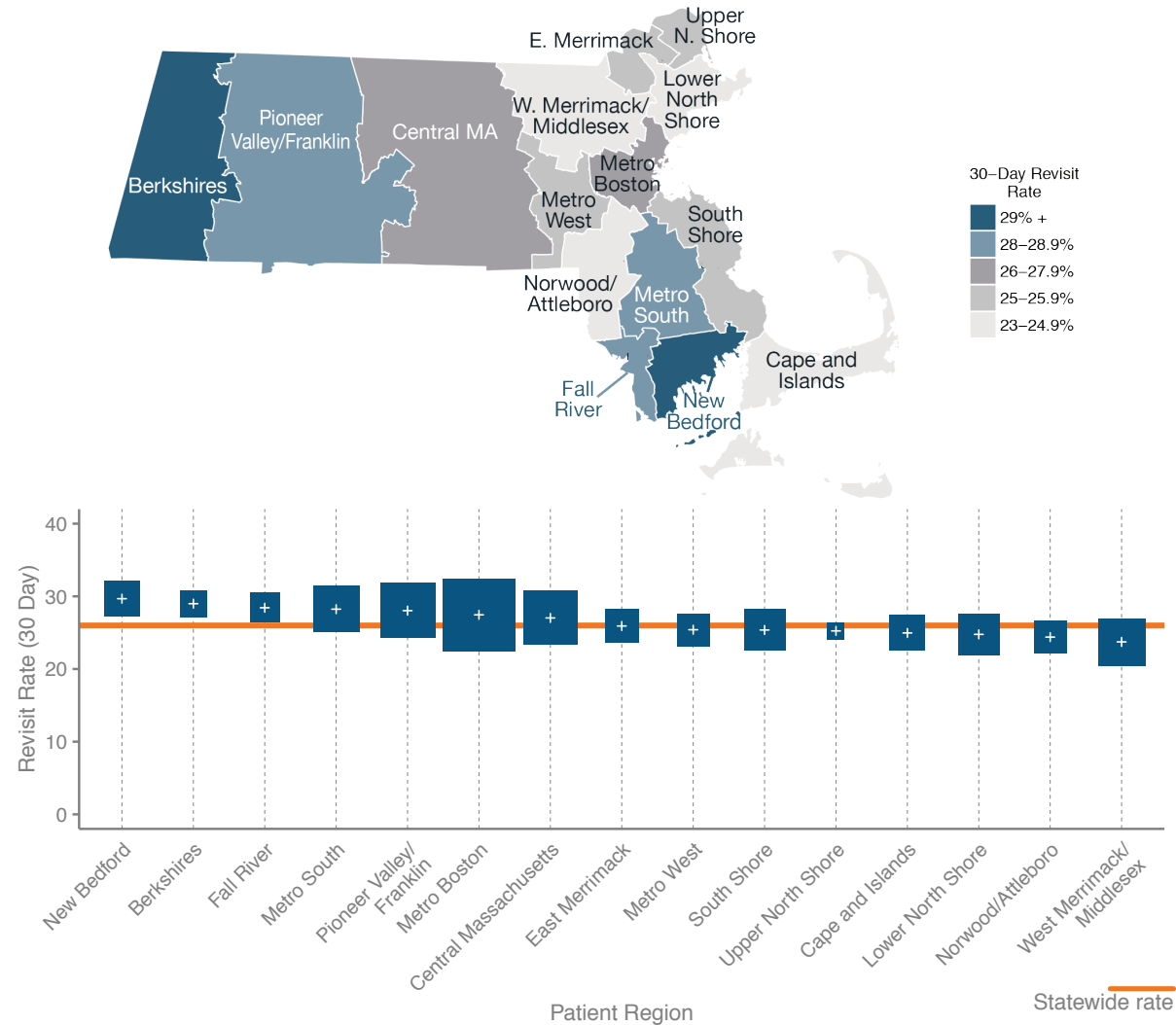
Note: A revisit is defined as an emergency department visit after an eligible inpatient discharge. The size of the box represents the number of inpatient discharges with a revisit. The midpoint of the box (marked with a plus sign) represents the 30-day revisit rate.

Data source: Massachusetts Acute Hospital Case Mix Database, July 2014 to June 2015.

REVISITS BY PATIENT AND HOSPITALIZATION CHARACTERISTICS

30-Day Revisits by Patient Region

The 30-day revisit rates ranged from 23.7% to nearly 30% depending on the region in which the patient lived. The highest revisit rates were for patients living in New Bedford (29.7%), the Berkshires (29%), Fall River (28.4%), and Boston Metro South (28.2%).



Note: A revisit is defined as an emergency department visit after an eligible inpatient discharge. The size of the box represents the number of inpatient discharges with a revisit. The midpoint of the box (marked with a plus sign) represents the 30-day revisit rate.

Data source: Massachusetts Acute Hospital Case Mix Database, July 2014 to June 2015.

REVISITS BY PATIENT AND HOSPITALIZATION CHARACTERISTICS

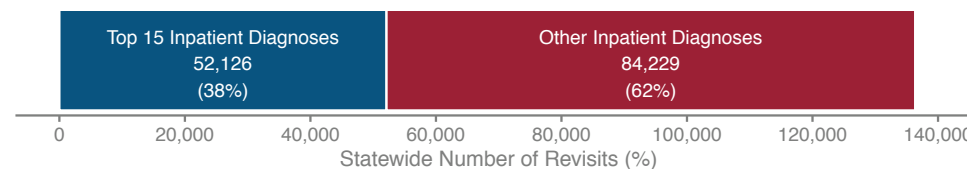
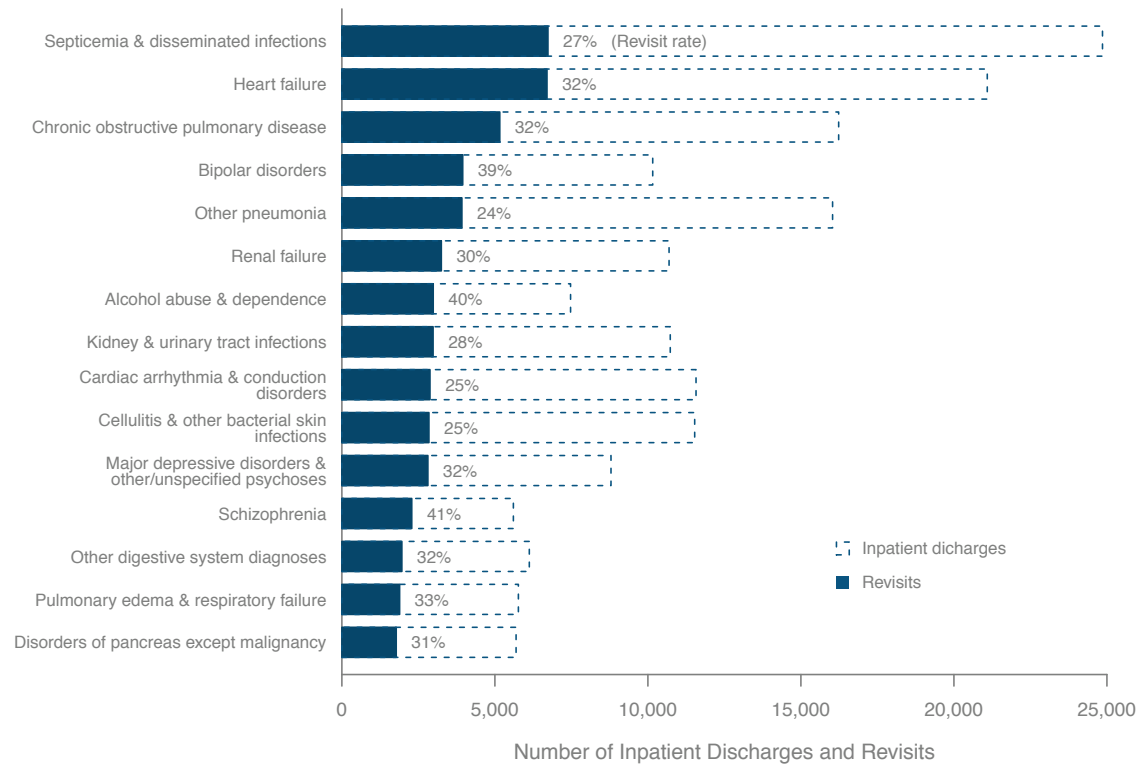
30-Day Revisits by Discharge Diagnosis (Top 15 by Volume)

Sepsis, heart failure, and chronic obstructive pulmonary disease are the top three discharge diagnoses leading to the highest numbers of revisits.

Many of the discharge diagnoses leading to the most revisits—bipolar disorders, alcohol abuse & dependence, major depressive disorders, and schizophrenia—are related to behavioral health conditions.

Many of the discharge diagnoses with the highest number of 30-day revisits (top 15 DRGs) also had high rates of revisit, ranging from 24% to 41%.

It is important to note that about 62% of inpatient discharges that resulted in a revisit to the ED were for diagnoses not in the top 15 categories.



Note: A revisit is defined as an emergency department visit after an eligible inpatient discharge. The diagnosis categories are defined by the All-Payer Refined Diagnosis Related Group (APR-DRG, v30.0).

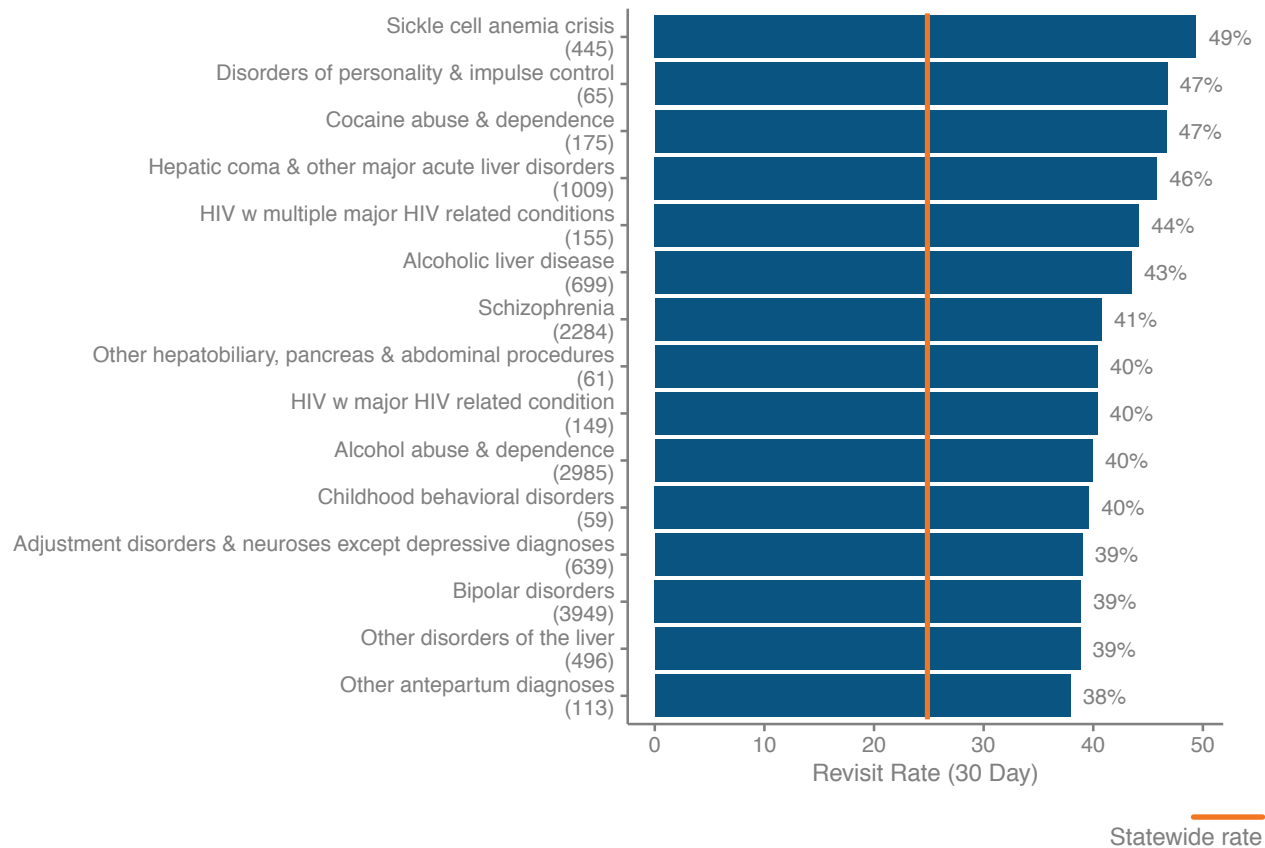
Data source: Massachusetts Acute Hospital Case Mix Database, July 2014 to June 2015.

REVISITS BY PATIENT AND HOSPITALIZATION CHARACTERISTICS

30-Day Revisits by Discharge Diagnosis (Top 15 Rates)

The highest rates of 30-day revisits to the emergency department following an inpatient discharge were for sickle cell anemia, liver disease, kidney disease, HIV-related conditions, and behavioral health conditions.

Please note that some of these conditions do not represent a large number of 30-day revisits—the count for SFY 2015 is in parentheses. Overall, these high revisit rate diagnoses represent about 10% of all hospitalizations that resulted in a 30-day revisit.



Note: A revisit is defined as an emergency department visit after an eligible inpatient discharge. The number of inpatient discharges with a 30-day revisit is in parentheses. The diagnosis categories are defined by the All-Payer Refined Diagnosis Related Group (APR-DRG, v30.0).

Data source: Massachusetts Acute Hospital Case Mix Database, July 2014 to June 2015.

30-Day Revisits by Hospital Characteristics

This section shows variation in 30-day revisits by hospital and hospital characteristics based on the hospital responsible for the patient's inpatient discharge. Please note that the revisit rates are not adjusted for the differences among hospitals in the patients they treat and the services they provide. Therefore, comparisons should be made with caution.

Key Findings

- There was little variation in 30-day revisit rates by hospital cohort. Teaching hospitals had only slightly higher revisit rates (26.5%) to the emergency department after inpatient discharge than community hospitals (26.1%) and academic medical centers (25.9%)
- Thirty-day revisit rates vary widely by acute care hospital from a low of 20.6% to a high of 34.5%.
- Of all the statewide revisits to the ED within 30-days after an inpatient discharge (189,908), about 30% were to hospitals other than the discharging facility. The percentage ranges widely between hospitals from a low of 10% to a high of 63%.

REVISITS BY HOSPITAL CHARACTERISTICS

30-Day Revisits by Hospital Cohort and Hospital System

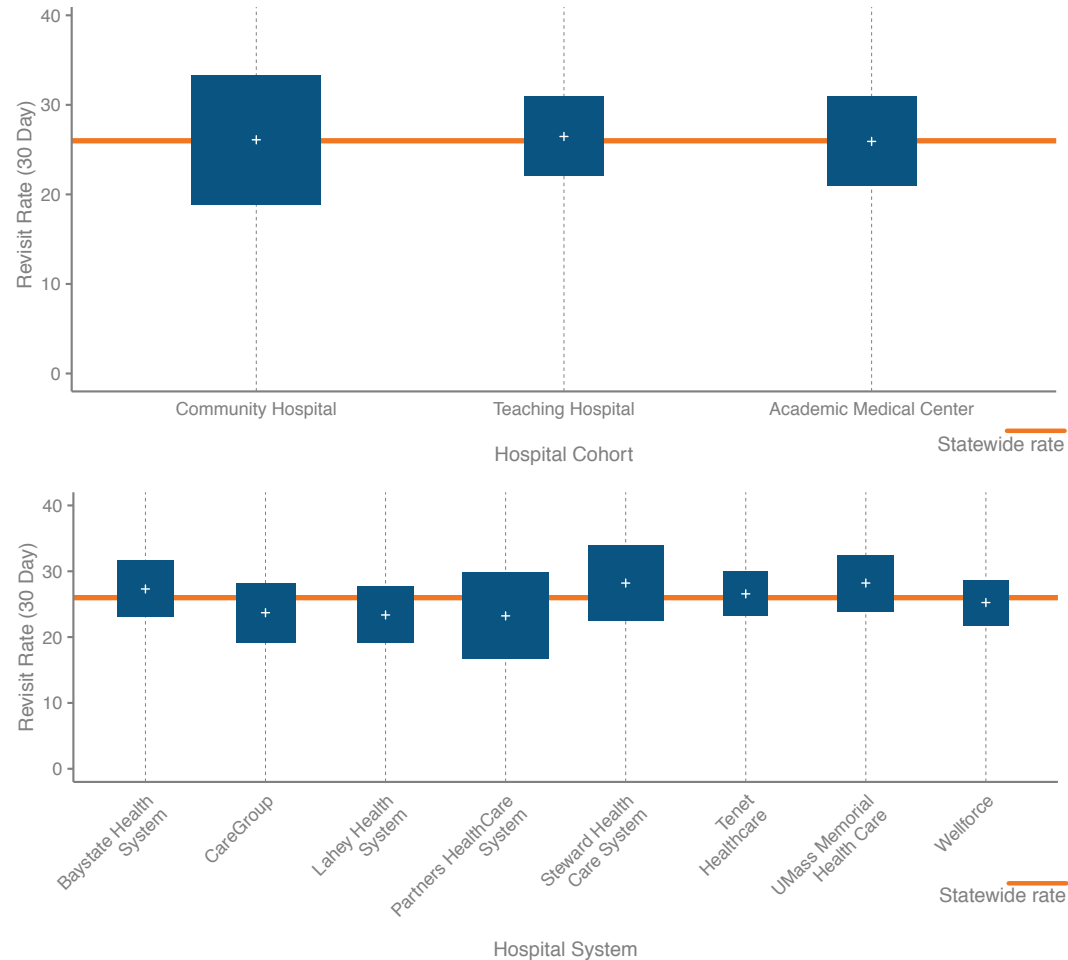
Revisit rates by hospital cohort, based on the hospital of the original inpatient discharge, show only small variations.

Teaching hospitals had a slightly higher rate of revisit (26.5%) to the emergency department after inpatient discharge compared to community hospitals (26.1%) and academic medical centers (25.9%).

The 30-day revisit rate to an emergency department varied based on the hospital system treating the patient during the original hospitalization. The 30-day revisit rates were highest for UMass Memorial (28.2%), Steward (28.2%), Baystate (27.3%), and Tenet (26.6%).

The lowest 30-day revisit rates were for Partners (23.2%), Lahey (23.4%), CareGroup (23.7%), and Wellforce (25.2%).

The variation may be due to differences in patient population characteristics as well as in the service-mix for these hospitals, among other possibilities.



Note: A revisit is defined as an emergency department visit after an eligible inpatient discharge. The size of the box represents the number of inpatient discharges with a revisit. The midpoint of the box (marked with a plus sign) represents the 30-day revisit rate.

Data source: Massachusetts Acute Hospital Case Mix Database, July 2014 to June 2015.

REVISITS BY HOSPITAL CHARACTERISTICS

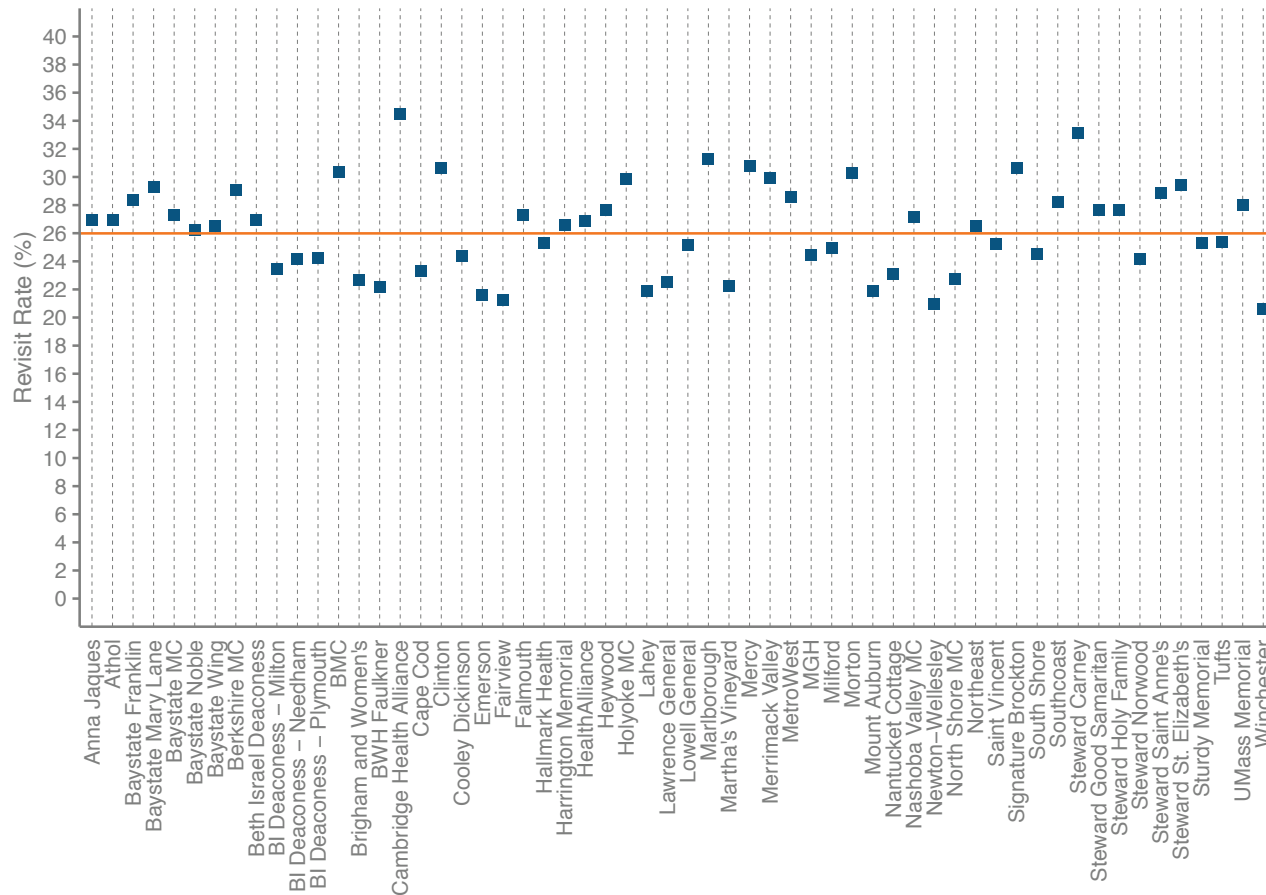
30-Day Revisit Rates by Massachusetts Hospital

Thirty-day revisit rates vary widely by acute care hospital from a low of 20.6% to a high of 34.5%.

The lowest 30-day revisit rates were for inpatient discharges from Winchester, Newton-Wellesley, Fairview, Emerson, and Mount Auburn hospitals (ranging from 20.6% to 21.9%).

The highest 30-day revisit rates were for Cambridge Health Alliance, Steward Carney, and Marlborough (34.5%, 33.2%, and 31.3%, respectively).

The variation may be due to differences in patient population characteristics as well as in the service-mix for these hospitals, among other possibilities.



Note: A revisit is defined as an emergency department visit after an eligible inpatient discharge.

Data source: Massachusetts Acute Hospital Case Mix Database, July 2014 to June 2015.

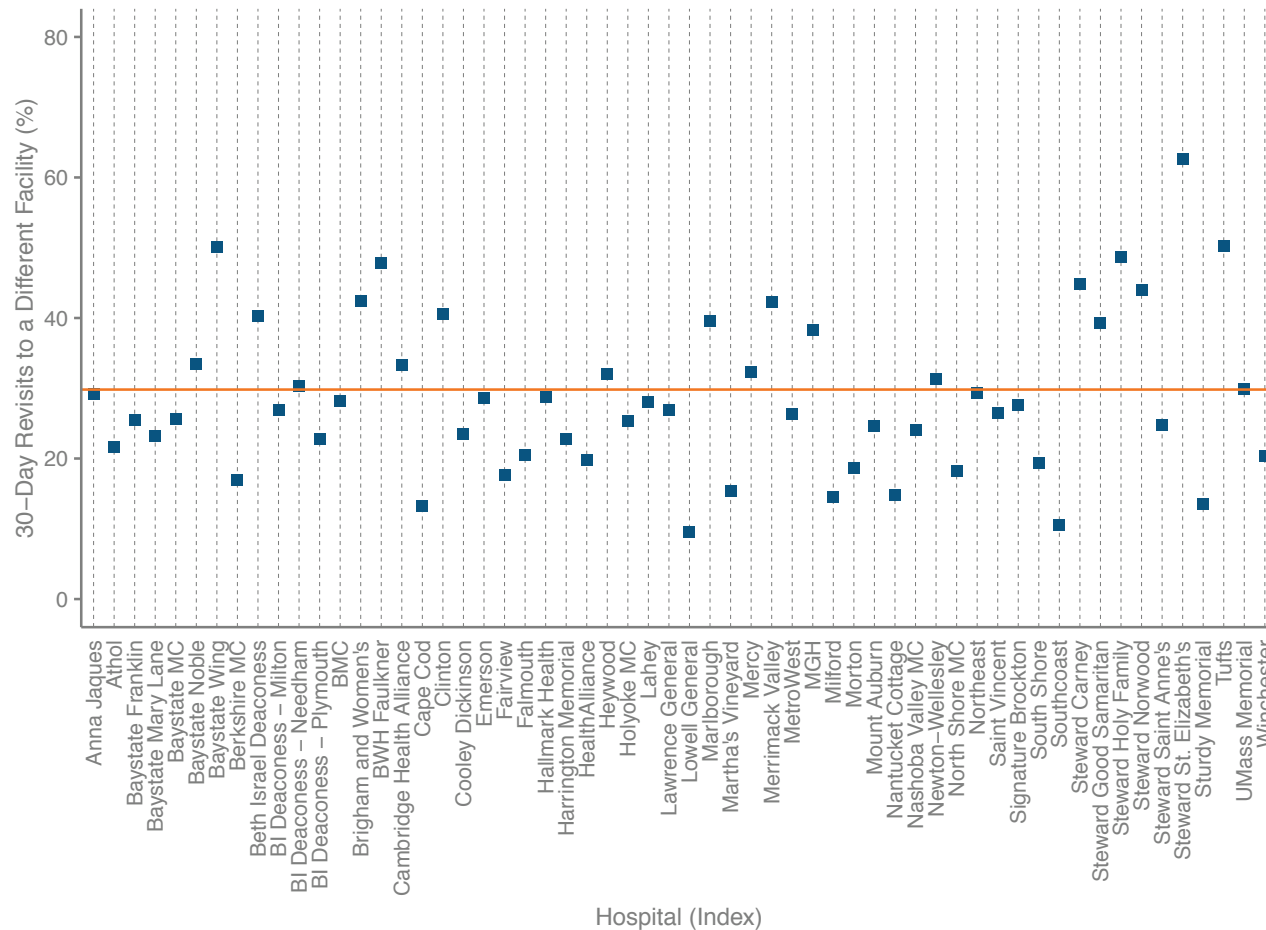
REVISITS BY HOSPITAL CHARACTERISTICS

Revisit to Hospital is Different than the Hospital Discharged From

Patients discharged from one hospital may later go to an ED at another facility for treatment. Approximately 30% of all the statewide revisits to the ED within 30 days after an inpatient discharge (189,908) were to hospitals other than the discharging facility.

The percentage varies widely between hospitals from a low of 10% at Lowell General to a high of 63% at Steward St. Elizabeth's. The percentage of 30-day revisits to a different hospital for Steward St. Elizabeth's was more than twice the overall statewide percentage.

The variation by hospital may be due to multiple factors, such as patients' patterns of ED use, referrals determined by emergency calls to 911, and the proximity of the ED facilities, among other possibilities.



Note: A revisit is defined as an emergency department visit after an eligible inpatient discharge.

Data source: Massachusetts Acute Hospital Case Mix Database, July 2014 to June 2015.

About the Revisits Methodology

The Revisits analysis is a retrospective study of adult (age 18+) patients discharged from all Massachusetts acute care hospitals in State Fiscal Year 2015 (July 1, 2014 to June 30, 2015). The data source is CHIA's Acute Hospital Case Mix database, including hospital inpatient discharge data (HIDD), emergency department data (EDD), and outpatient observation data (OOD).

Using the Case Mix database, two datasets were created:

- 1.) an index dataset of inpatient discharges for adults from SFY 2015 with certain exclusions; and
- 2.) a follow-up dataset of all emergency department visits for adults from SFY 2015.

The index inpatient discharge dataset exclusions are similar to CHIA's Readmission report analyses. The exclusion criteria and data processing methods are based on Mathematica Policy Research's (MPR) processing logic for Readmissions. Modifications were made by CHIA to adapt the MPR method from a Medicare data source to an all-payer data source.⁹

The index inpatient discharge dataset for Revisits excluded records for

- patients under age 18
- patients who died
- those discharged AMA (Against Medical Advice)
- medical conditions of obstetric care, cancer treatment, and rehabilitation services*
- those treated in pediatric or cancer hospitals
- those with missing or invalid SSNs
- collapsed/cleaned records and transfers

***Note:** For the Revisits analyses, patients with a primary psychiatric diagnosis are **included** in the index inpatient discharge database. This is different from the Readmissions methodology that excludes those discharges with a primary psychiatric diagnosis.

The follow-up dataset of all emergency department visits included records from all three Case Mix datasets—EDD, HIDD, and OOD. All adult records from the EDD were included; as well as those designated as emergency department visits for HIDD and OOD. The HIDD and OOD data submitted by hospitals has a flag variable to indicate admission through the emergency department. In addition, HIDD and OOD records which had other variables indicating ED use (admission type="emergency," admission source from an emergency department or through self-referral, or in the case of HIDD had revenue codes of 045x or 0981 indicating ED use, or in the case of OOD had CPT codes between 99281 and 99285) were designated as ED.

To determine a revisit, records in the index inpatient discharge dataset were matched to the emergency department source data by a common person identifier variable (a masked social security number) and only those emergency department admissions within 90 days of an inpatient discharge were kept. A "number of days to revisit" variable was created as part of the matching process to categorize index records as having either a 30-day revisit or a 90-day revisit. The 30-day revisit rate was then calculated as the proportion of index records with an emergency department visit within 30 days of inpatient discharge.

All-Payer, All-Cause Revisits

Similar to the all-payer, all-cause readmissions measure used in CHIA's Annual Readmission report, the Revisits measure is also all-payer and all-cause. The source data for inpatient discharges and emergency department visits includes all-payers of hospital acute care services reported to CHIA in SFY 2015. That is, it is not specific to one payer such as Medicare or Medicaid. Since we are unable with certainty to determine whether the index inpatient discharge is related to any subsequent emergency department visit, we used the universe of all emergency department visits to detect the occurrence of a 30-day revisit following inpatient discharge (all-cause).

The [technical appendix](#) has more details on the methodology used for the Revisits data processing and analysis.

Notes

- ¹ Information on Massachusetts legislation to reduce health care costs - Chapter 224 of the Acts of 2012 – is available at <https://malegislature.gov/Laws/SessionLaws/Acts/2012/Chapter224>.
- ² Center for Health Information and Analysis (CHIA), Hospital-Wide Adult All-Payer Readmissions in Massachusetts: SFY 2011-2015 (Boston, December 2016), <http://www.chiamass.gov/hospital-wide-adult-all-payer-readmissions-in-massachusetts>.

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- ³ Information on Massachusetts legislation to reduce health care costs - Chapter 224 of the Acts of 2012 – is available at <https://malegislature.gov/Laws/SessionLaws/Acts/2012/Chapter224>.
- ⁴ Published research on emergency department use to potentially reduce readmissions includes:
 - Boutwell, A.E., Silber, S., Nguyen, D. et al. Post-Acute Care: What Does it Have to Do with Me? *Curr Emerg Hosp Med Rep* (2014) 2: 9. doi:10.1007/s40138-013-0039-x.
 - Massachusetts Hospital Association and Collaborative Healthcare Strategies. State of the State: Reducing Readmissions in Massachusetts. (March 2016), <https://www.mhalink.org/AM/Template.cfm?Section=Newsroom&template=/CM/ContentDisplay.cfm&contentid=72314>.
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 - Kocher KE, Nallamothu BK, Birkmeyer JD, Dimick JB. Emergency department visits after surgery are common for Medicare patients, suggesting opportunities to improve care. *Health Aff (Millwood)*. 2013 Sep;32(9):1600-7.
 - Rising KL, Padrez KA, O'Brien M, Hollander JE, Carr BG, Shea JA. Return Visits to the Emergency Department: The Patient Perspective. *Ann Emerg Med*. 2014 Aug 22.
 - Brennan JJ, Chan TC, Killeen JP, Castillo EM. Inpatient Readmissions and Emergency Department Visits within 30 Days of a Hospital Admission. *West J Emerg Med*. 2015 December; 16(7): 1025–1029.
- ⁵ Information on Maryland's effort to reduce health care costs, called the Maryland Global Budget Revenue (GBR) Potentially Avoidable Utilization (PAU) Efficiency Adjustment, is available at <http://www.mhaonline.org/docs/default-source/presentations-and-talking-points/october-2-presentation.pdf>.

- ⁶ This AHRQ brief (Jiang et. Al) extends the analysis published by Steiner et al.
- Jiang HJ (AHRQ), Weiss AJ (IBM Watson Health), Barrett ML (M.L. Barrett, Inc.). Characteristics of Emergency Department Visits for Super-Utilizers by Payer, 2014. HCUP Statistical Brief #221. February 2017. Agency for Healthcare Research and Quality, Rockville, MD. https://www.hcup-us.ahrq.gov/reports/statbriefs/sb221-Super-Utilizer-ED-Visits-Payer-2014.jsp?utm_source=ahrq&utm_medium=en-1&utm_term=&utm_content=1&utm_campaign=ahrq_en3_7_2017.
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- ⁷ Rising KL, White LF, Fernandez WG, Boutwell AE. Emergency department visits after hospital discharge: a missing part of the equation. *Ann Emerg Med*. 2013 Aug;62(2):145-50.
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- ⁹ See the Technical Appendix, “Step 1: Definition of Index Discharges” on pages 6-8. Center for Health Information and Analysis (CHIA), Hospital-Wide Adult All-Payer Readmissions in Massachusetts: SFY 2011-2015, Technical Appendix (Boston, December 2016), <http://www.chiamass.gov/hospital-wide-adult-all-payer-readmissions-in-massachusetts>.



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