

CENTER FOR HEALTH INFORMATION AND ANALYSIS

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

SFY 2017

JUNE 2019



Executive Summary

Providers, payers, and policymakers are increasingly turning their attention to whether a patient visits the emergency department (ED) within 30 days of hospital discharge as a measure of health care system performance. Some states have introduced this “revisits” measure alongside readmissions to capture potentially avoidable utilization in the health care system. The ED is a costly setting in which to receive care, and patients visiting the ED in the post-hospital discharge period may represent inadequate access to lower-cost options and an opportunity to improve care transition and coordination.

The Massachusetts Center for Health Information and Analysis (CHIA) has produced a series of statewide readmission analyses using hospital discharge summary data. These include statewide, all-payer, all-cause readmission reports, hospital-specific profiles and a special supplement on behavioral health and readmissions.

This report on ED revisits is an update of CHIA’s revisits analysis first published in 2017. A revisit is defined here as a visit to the ED within 30 days of hospital discharge. This report provides updated estimates for the all-payer adult population in Massachusetts using data from CHIA’s acute hospital Case Mix dataset from the State Fiscal Year (SFY) 2017.

Key Findings

- In SFY 2017, 26.4% of inpatient discharges were followed by a return to the ED within 30 days.
- There was wide variation in 30-day revisit rates among Massachusetts acute care hospitals, ranging from a low of 20.9% to a high of 35.9%.
- Among all 30-day revisits, 48% resulted in discharge from the ED, 44% resulted in readmission to the inpatient setting, and 8% resulted in placement in observation status.
- Forty-two percent of first revisits occurred within seven days of discharge from the hospital.
- Among all 30-day revisits, rates were highest for adults under age 65, specifically patients whose primary expected payer was Medicaid or Medicare.
- Psychiatric and substance use-related conditions were among those with the highest rates of 30-day revisits.
- Thirty percent of 30-day revisits were to hospitals other than the discharging facility. This percentage varied widely across hospitals, ranging from a low of 9.5% to a high of 62.1%.

Table of Contents

Introduction	1
Overall Statewide Revisits	2
Statewide 30-Day and 90-Day Revisit Rates.....	3
Number of Days to First Revisit	4
Total Number of 30-Day Revisits to the Emergency Department.....	5
All 30-Day Revisits by Same/Different Hospital and ED Disposition	6
All 30-Day Revisits by Payer Type	7
Revisits by Patient and Hospitalization Characteristics	8
30-Day Revisits by Age.....	9
30-Day Revisits by Payer Type	10
30-Day Revisits by Age and Payer Type.....	11
30-Day Revisits by Discharge Setting	12
30-Day Revisits by Region of Patient Residence	13
30-Day Revisits by Discharge Diagnosis (Top 10 by Volume)	14
30-Day Revisits by Discharge Diagnosis (Top 10 by Revisit Rate).....	15
Revisits by Hospital Characteristics	16
30-Day Revisits by Hospital Type	17
30-Day Revisit Rates by Hospital	18
Revisit to Hospital is Different than the Hospital Discharged From.....	19
About the Revisits Methodology	20
End Notes	22

Introduction

The Massachusetts Center for Health Information and Analysis (CHIA) has produced a series of statewide readmission analyses using hospital discharge summary data. These analyses are intended to supply providers with 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 and slow the rate of health care cost increases in the Commonwealth of Massachusetts.¹

CHIA's statewide, all-payer, all-cause readmission analyses² have been supplemented by hospital-specific reports,³ a special examination of behavioral health and readmissions,⁴ and an analysis of revisits,⁵ defined as a visit to the ED within 30 days of an inpatient discharge. CHIA provided the first statewide examination of revisits for the all-payer adult population in Massachusetts acute care hospitals for State Fiscal Year (SFY) 2015. This report updates CHIA's initial revisits analysis, providing statewide estimates for SFY 2017.

According to CHIA's readmissions report, the all-payer all-cause rate of unplanned readmissions in Massachusetts for SFY 2017 was 16.1%.⁶ However, there are more occurrences of acute care utilization in the post-hospital discharge period than are captured by the readmission measure alone. In SFY 2015 and SFY 2017, 26% of inpatient discharges were followed by an ED visit within 30 days. Visits to the ED during the post-hospital discharge period may represent opportunities to reduce readmissions⁷ and improve access to care or care management.⁸

CHIA releases this updated report, *Emergency Department Visits after Inpatient Discharge in Massachusetts: SFY 2017*, to provide a statewide examination of revisits for the all-payer adult population in Massachusetts acute care hospitals and help guide ongoing efforts to improve health care delivery. As efforts to improve care transitions evolve into 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.

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

Key Findings

- In SFY 2017, 26.4% of inpatient hospital discharges were followed by at least one ED visit within 30 days.
- Forty-two percent of 30-day revisits occurred within seven days of discharge.
- Of all 30-day revisits, 48% resulted in discharge from the ED, 44% resulted in readmission to the inpatient setting, and 8% resulted in placement in observation status.
- Adults covered by Medicaid were disproportionately likely to visit the ED within 30 days of inpatient discharge; Medicaid members accounted for 15% of all eligible inpatient discharges, yet accounted for 25% of 30-day revisits.

STATEWIDE REVISITS

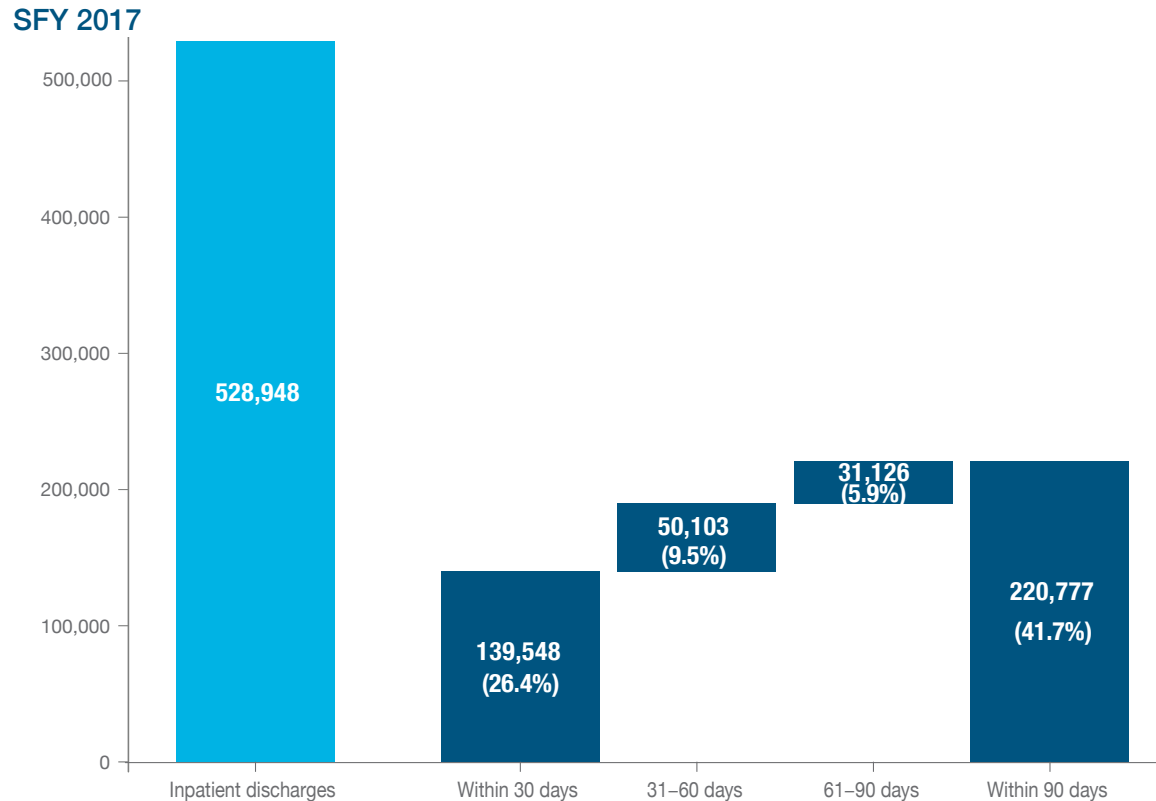
Statewide 30-Day and 90-Day Revisit Rates

Of all eligible inpatient discharges (528,948) in Massachusetts acute care hospitals, 26.4% visited the emergency department within 30 days of discharge.

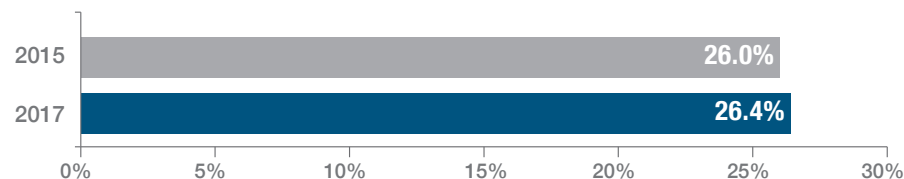
Within 31-60 days, 9.5% of inpatient discharges visited the ED and within 61-90 days, 5.9% of inpatient discharges visited the ED.

Within 90 days, 41.7% of all inpatient discharges visited the ED.

From SFY 2015 to SFY 2017, the statewide 30-day revisit rate increased slightly, from 26% to 26.4%.



SFY 2015 - SFY 2017 30-Day Revisit Rate



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

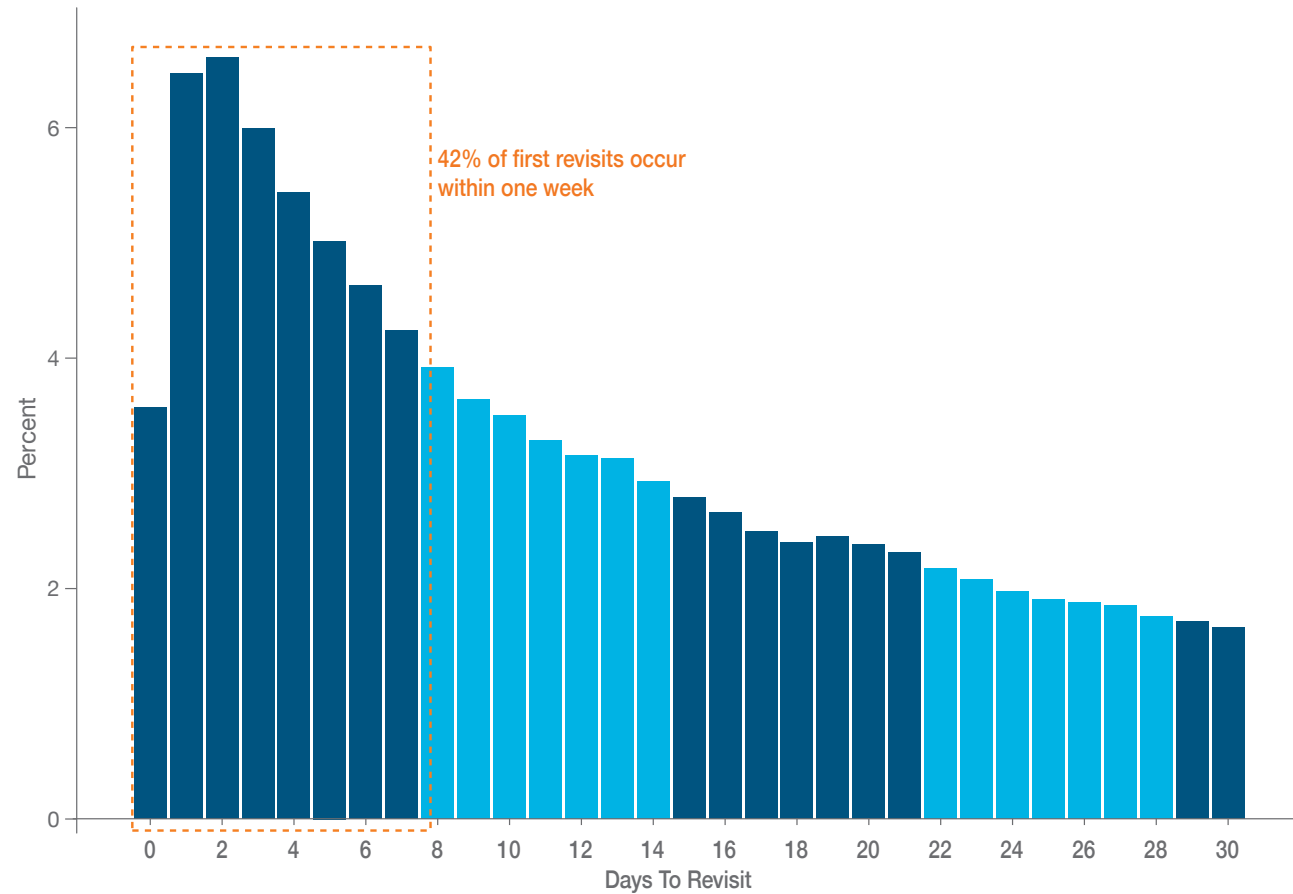
Data source: Massachusetts Acute Hospital Case Mix Database, July 2014 to June 2017.

STATEWIDE REVISITS

Number of Days to First Revisit

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

Among all of the 30-day first revisits (139,548), 42% occurred within the first week following inpatient discharge.



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

Data source: Massachusetts Acute Hospital Case Mix Database, July 2016 to June 2017.

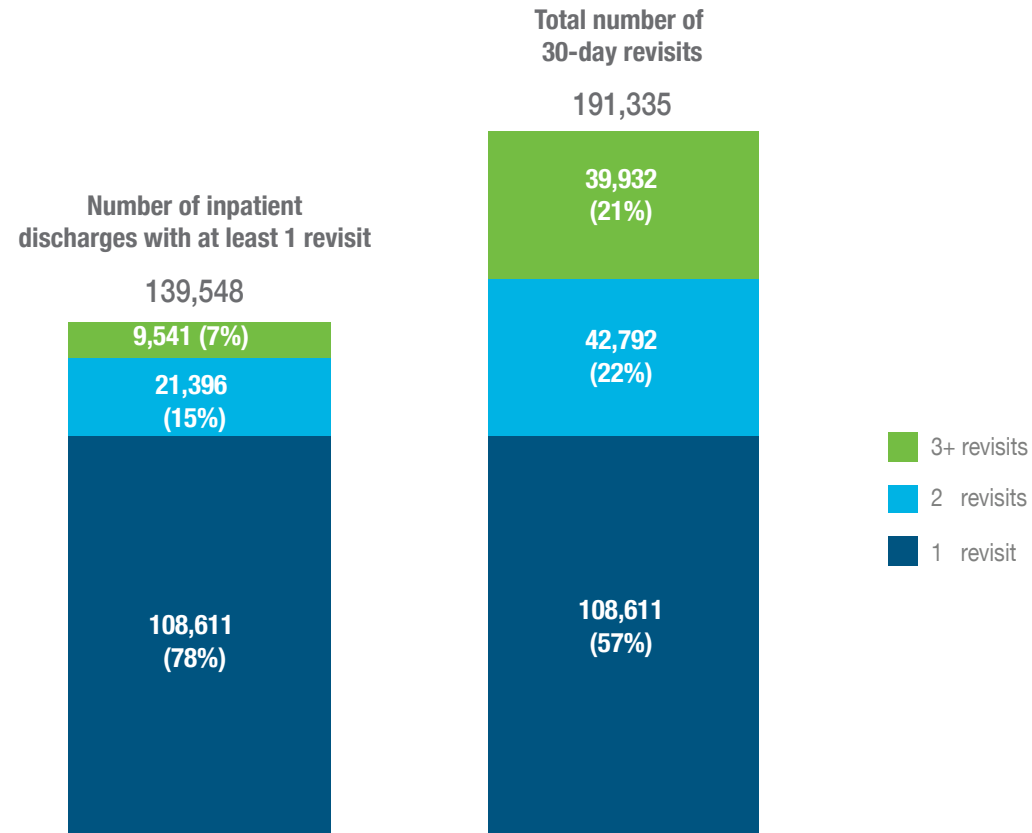
STATEWIDE REVISITS

Total Number of 30-Day Revisits to the Emergency Department

Of the 139,548 inpatient discharges that led to a visit to the ED within 30 days, 78% resulted in one revisit, 15% had two revisits, and 7% had three or more revisits within 30 days.

In SFY 2017, the statewide total number of 30-day revisits was 191,335.

Seven percent of the inpatient discharges with three or more revisits accounted for 21% of the total number of 30-day revisits.



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

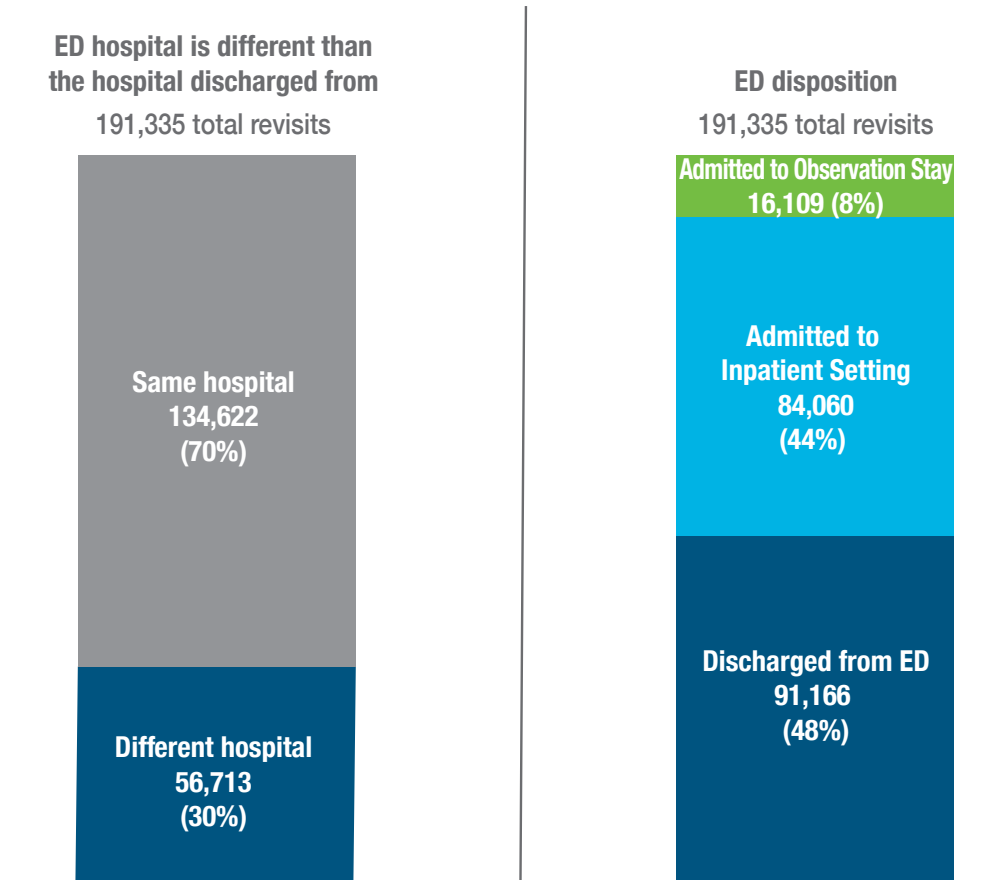
Data source: Massachusetts Acute Hospital Case Mix Database, July 2016 to June 2017.

STATEWIDE REVISITS

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

Of all the statewide 30-day revisits (191,335), 30% occurred at a different hospital than where the inpatient discharge occurred.

Of all 30-day revisits, 48% were discharged from the emergency department, 44% were admitted to a hospital, and 8% were placed in observation status.



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

Data source: Massachusetts Acute Hospital Case Mix Database, July 2016 to June 2017.

STATEWIDE REVISITS

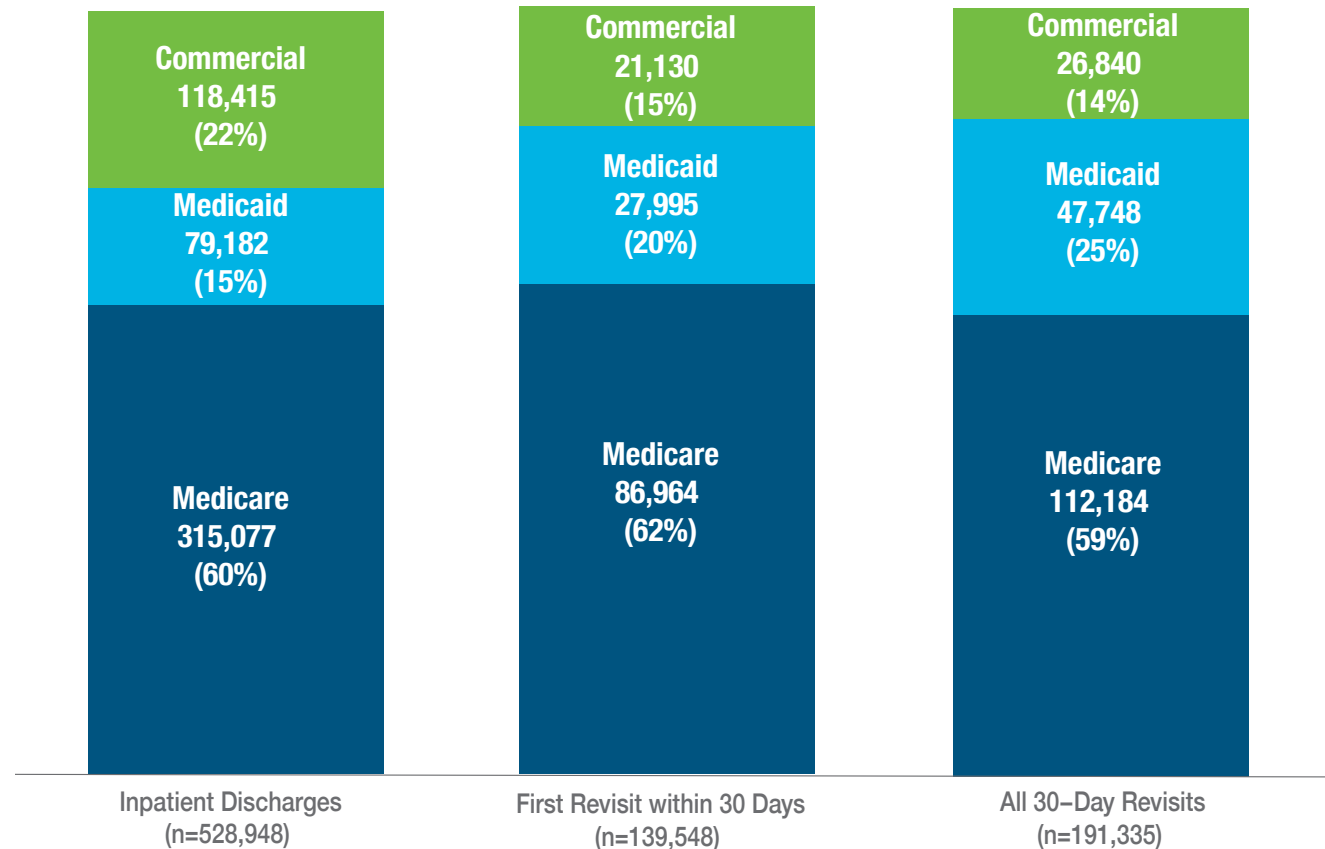
All 30-Day Revisits by Payer Type

Within 30-days of hospital discharge, some patients return to the ED more than once. Multiple returns to the ED are included in the All 30-Day Revisits column.

Patients with commercial insurance made up 22% of all inpatient discharges, but only 14% of all 30-day revisits.

Medicaid patients made up 15% of all inpatient discharges, but accounted for 25% of all 30-day revisits.

Medicare patients made up a similar proportion of inpatient discharges (60%) and 30-day revisits (59%).



Notes: 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.

Percentages do not add up to 100% due to this exclusion.

Data source: Massachusetts Acute Hospital Case Mix Database, July 2016 to June 2017.

Revisits by Patient and Hospitalization Characteristics

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 of an inpatient discharge. In addition, revisit rates are presented by hospitalization characteristics such as discharge setting and primary diagnosis on the inpatient discharge.

Key Findings

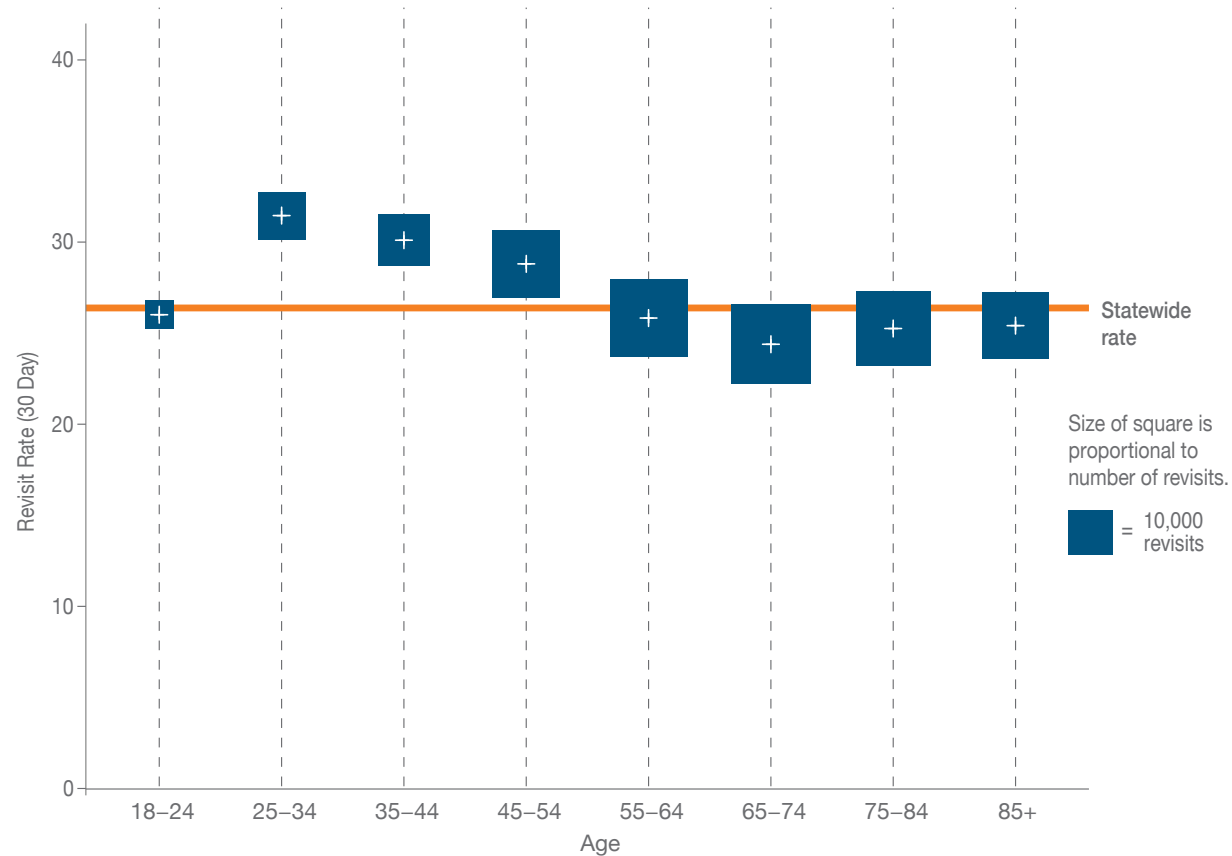
- Revisits were more frequent among younger patients, particularly Medicaid recipients and Medicare beneficiaries aged 18 to 64.
- Revisit rates were higher among discharges to rehabilitation or skilled nursing facilities.
- Heart failure, sepsis, chronic obstructive pulmonary disease (COPD), and substance use disorders were among the top 10 discharge diagnoses that most commonly resulted in a 30-day revisit.
- Revisit rates varied based on the region of patients' residence. Patients residing in the Berkshires and the Fall River region had the highest 30-day revisit rates.

REVISITS BY PATIENT AND HOSPITALIZATION CHARACTERISTICS

30-Day Revisits by Age

Revisit rates differed by patients' age. Younger patients (aged 25-34, 35-44, and 45-54) had the highest rates of 30-day revisits (31.5%, 30.1%, and 28.8%, respectively) after inpatient discharge.

Older patients (aged 65 and over) accounted for 50% of all revisits. Though the largest volume of revisits came from those aged 65-74, this age group also had the lowest 30-day revisit rate (24.4%).



Notes: 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.

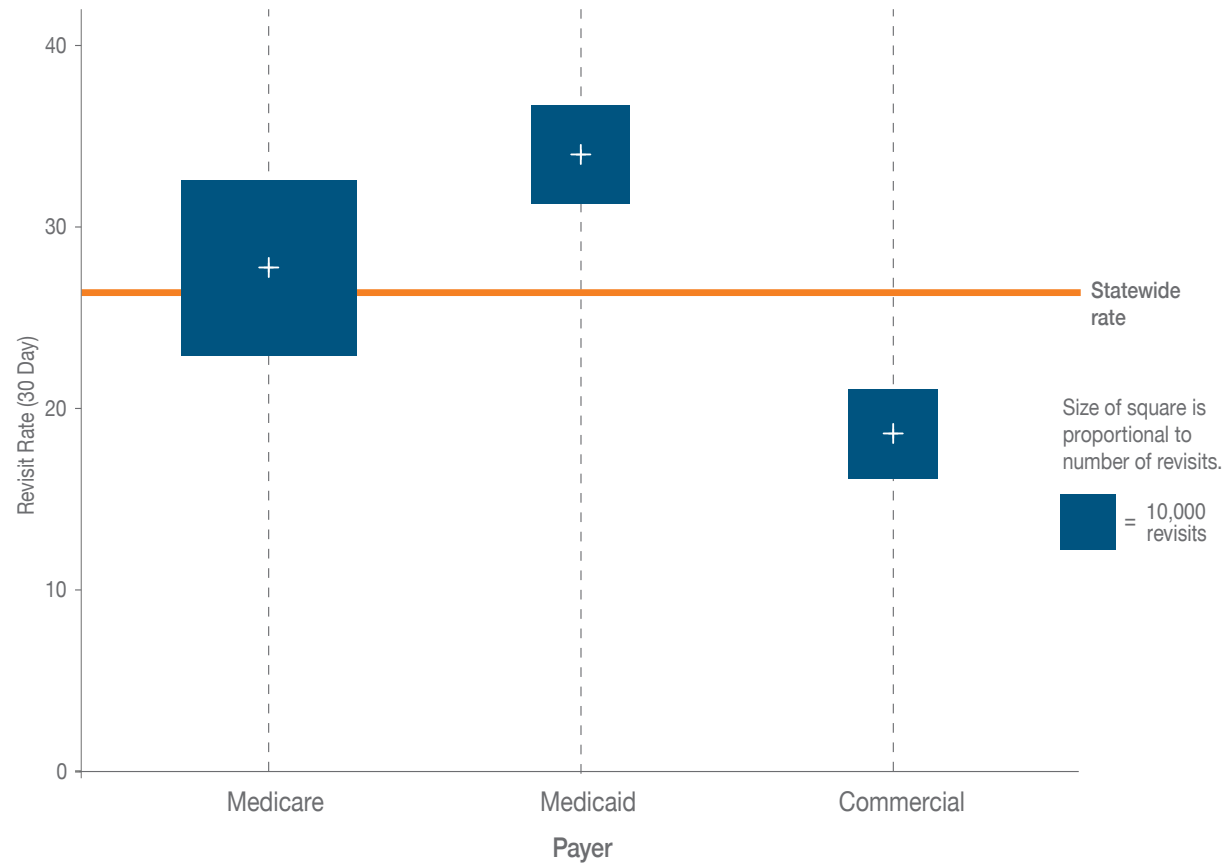
Data source: Massachusetts Acute Hospital Case Mix Database, July 2016 to June 2017.

REVISITS BY PATIENT AND HOSPITALIZATION CHARACTERISTICS

30-Day Revisits by Payer Type

Patients with Medicare accounted for the vast majority of all 30-day revisits (62.7%).

The 30-day revisit rate was highest for those with Medicaid coverage (34%). Those in commercial health insurance plans had the lowest revisit rate (18.6%) and the lowest volume of revisits of the three payer types.



Notes: 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 2016 to June 2017.

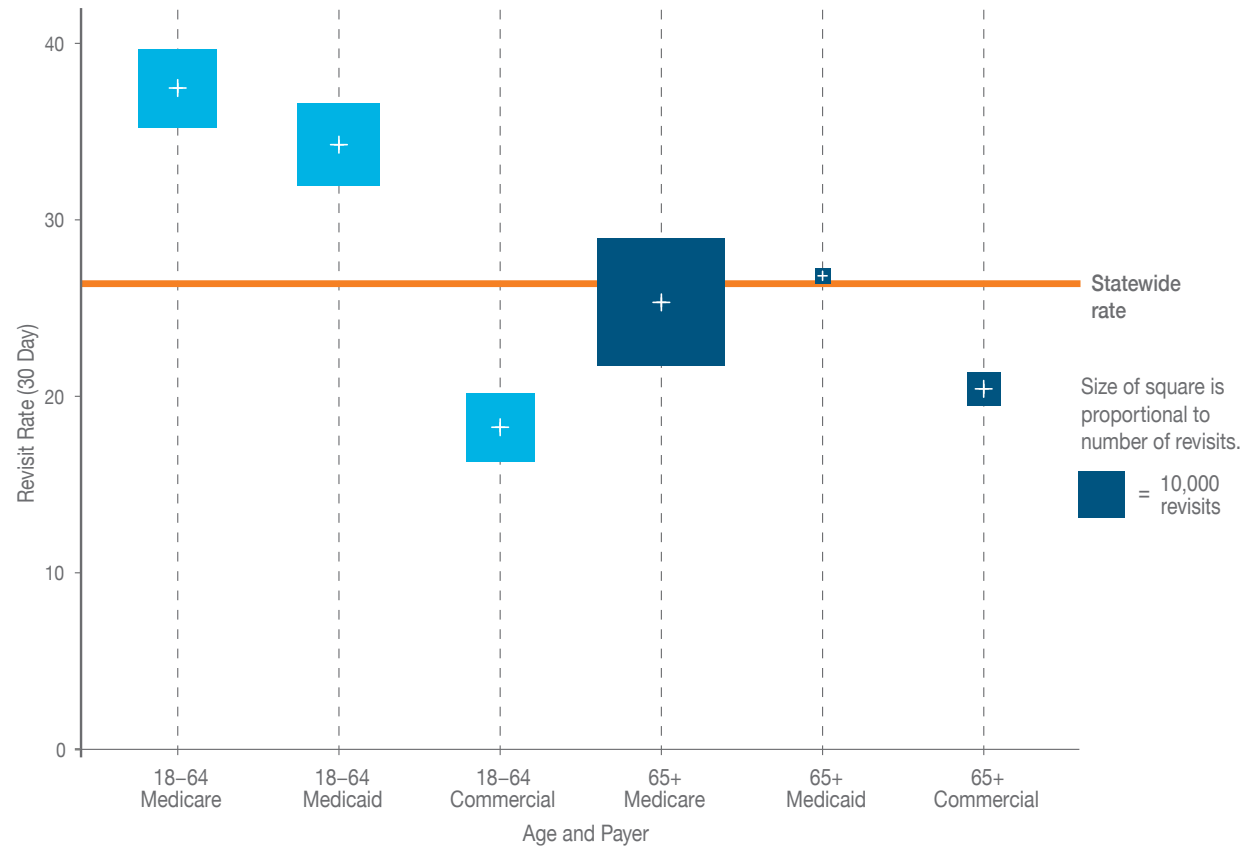
REVISITS BY PATIENT AND HOSPITALIZATION CHARACTERISTICS

30-Day Revisits by Age and Payer Type

Medicare beneficiaries aged 18 to 64 had the highest rate of 30-day revisits (37.5%), followed by adults aged 18 to 64 with Medicaid coverage (34.3%).

Medicare beneficiaries aged 65 and over had the highest volume of revisits (46.8%).

Those with commercial insurance had the lowest revisit rates, both for those aged 18 to 64 (18.2%) and those aged 65 and over (20.4%).



Notes: 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.

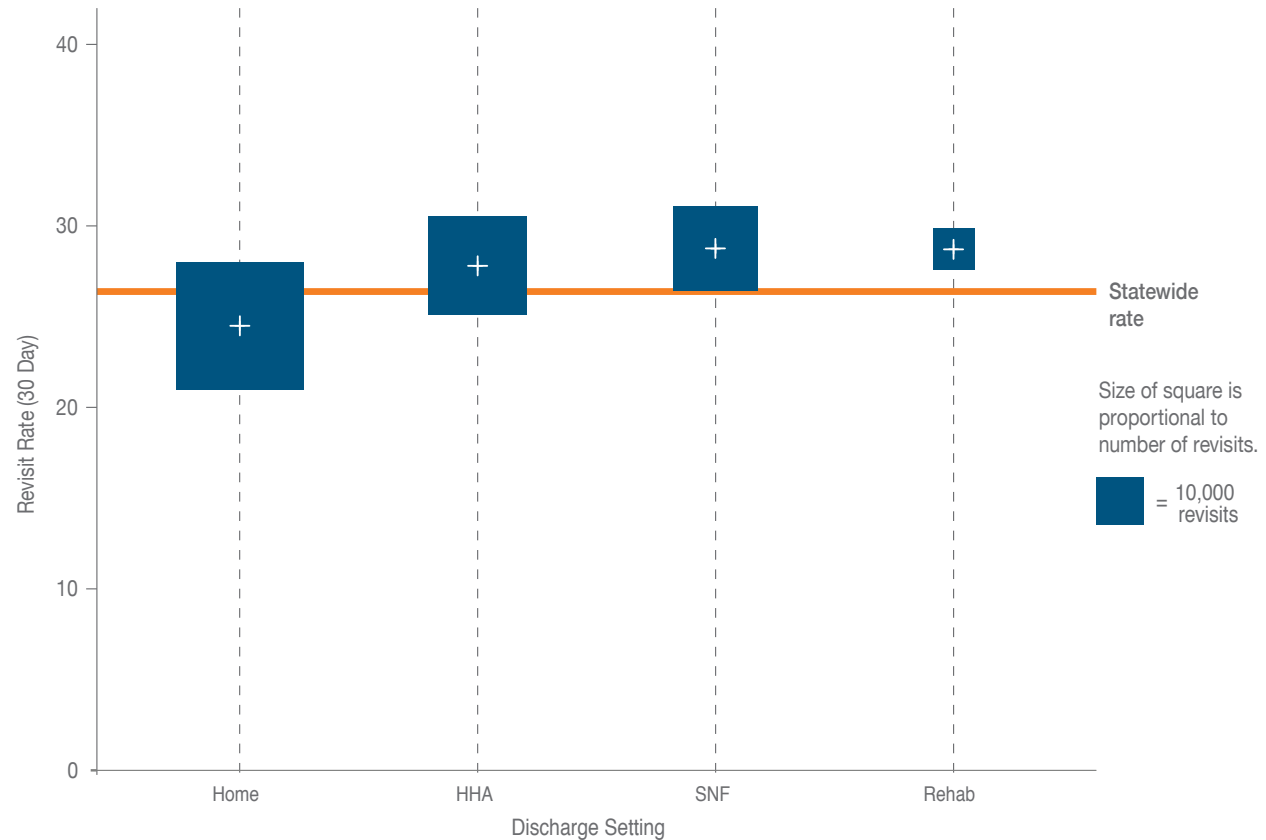
Data source: Massachusetts Acute Hospital Case Mix Database, July 2016 to June 2017.

REVISITS BY PATIENT AND HOSPITALIZATION CHARACTERISTICS

30-Day Revisits by Discharge Setting

Revisit rates differed by discharge setting. Discharges to rehabilitation and skilled nursing facilities had the highest revisit rates (28.7% for both), followed by discharges to home health (HHA) at 27.8%.

Discharges to home had the lowest rate of revisit (24.5%) but accounted for the highest percentage of all discharges that led to a revisit (45%).



Notes: 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.

HHA = home with home health agency care

SNF = skilled nursing facility

Data source: Massachusetts Acute Hospital Case Mix Database, July 2016 to June 2017.

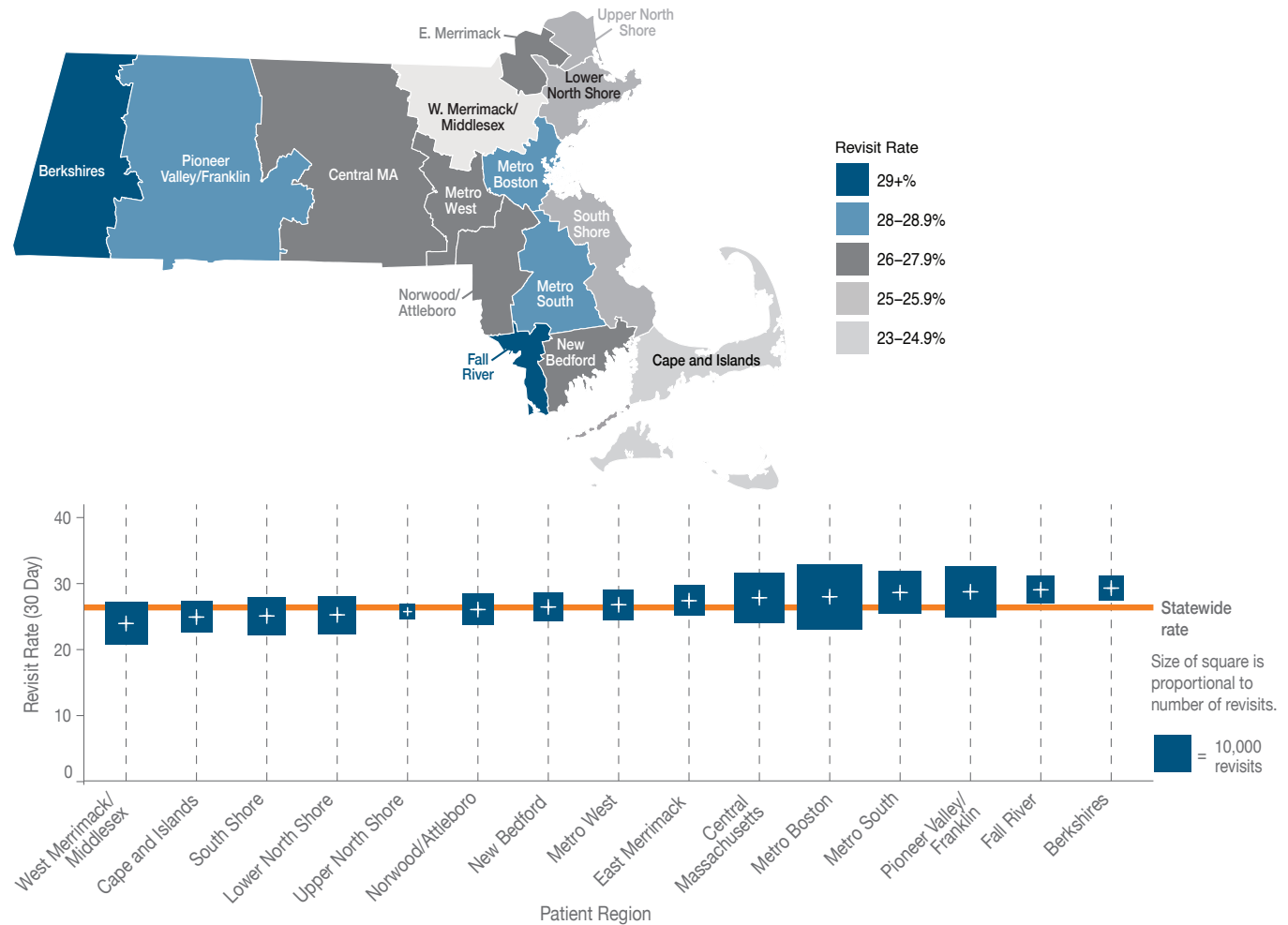
Note: The 30-day revisit rate for those discharged to hospice care is 8.4% (data not shown) which represents about one percent of hospitalizations.

REVISITS BY PATIENT AND HOSPITALIZATION CHARACTERISTICS

30-Day Revisits by Region of Patient Residence

Thirty-day revisit rates ranged from 23.9% to 29.3% depending on the region in which the patient lived.

The highest 30-day revisit rates were observed among patients living in the Berkshires (29.3%), followed by the Fall River region (29.1%).



Notes: 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 2016 to June 2017.

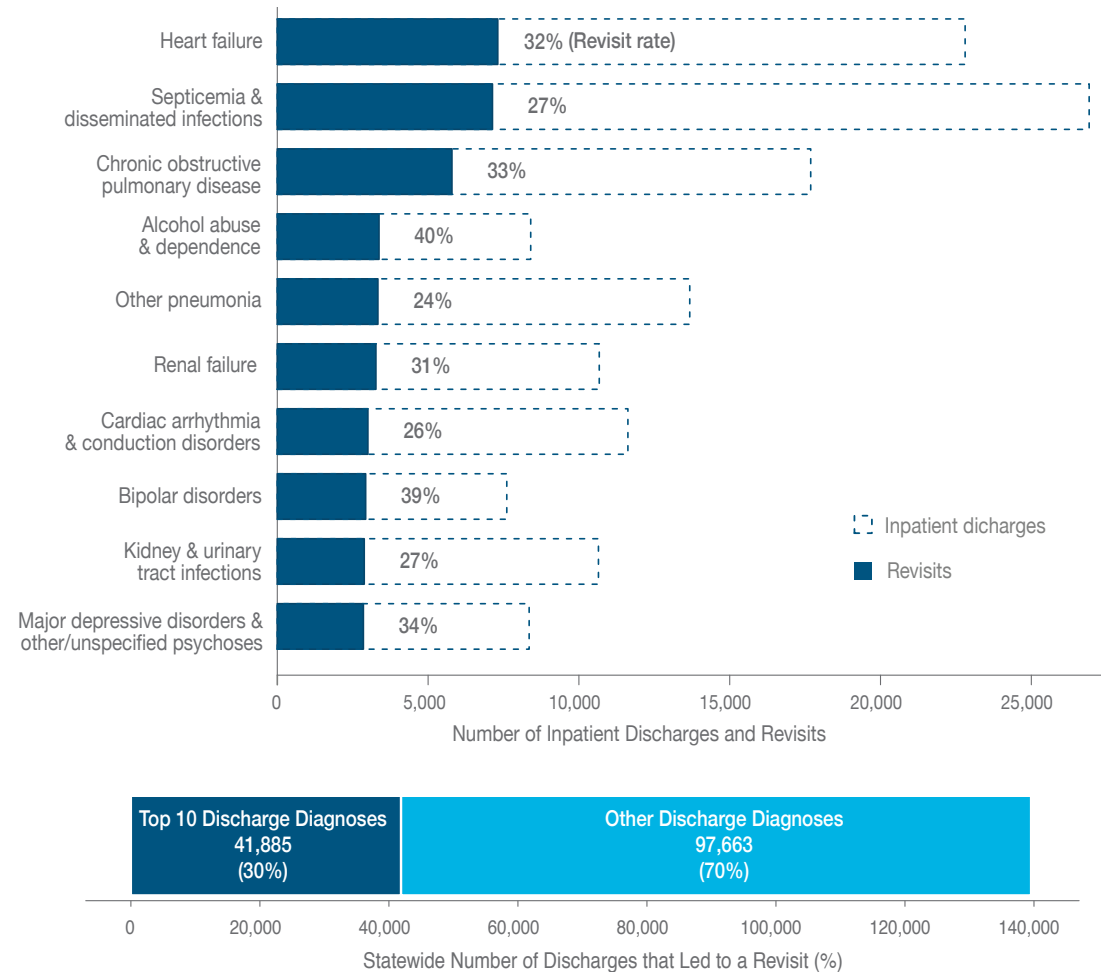
REVISITS BY PATIENT AND HOSPITALIZATION CHARACTERISTICS

30-Day Revisits by Discharge Diagnosis (Top 10 by Volume)

Heart failure, sepsis, and chronic obstructive pulmonary disease were the top three discharge diagnoses leading to the highest number of revisits.

Several of the discharge diagnoses leading to the most revisits were related to behavioral health conditions, including alcohol abuse and dependence, bipolar disorders, and major depressive disorders.

The top 10 diagnoses that led to the most 30-day revisits accounted for only 30% of all revisits; this means the majority (70%) of revisits have discharge diagnoses outside of the top 10.



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

The discharge diagnosis is based on APR DRG version 30.0.

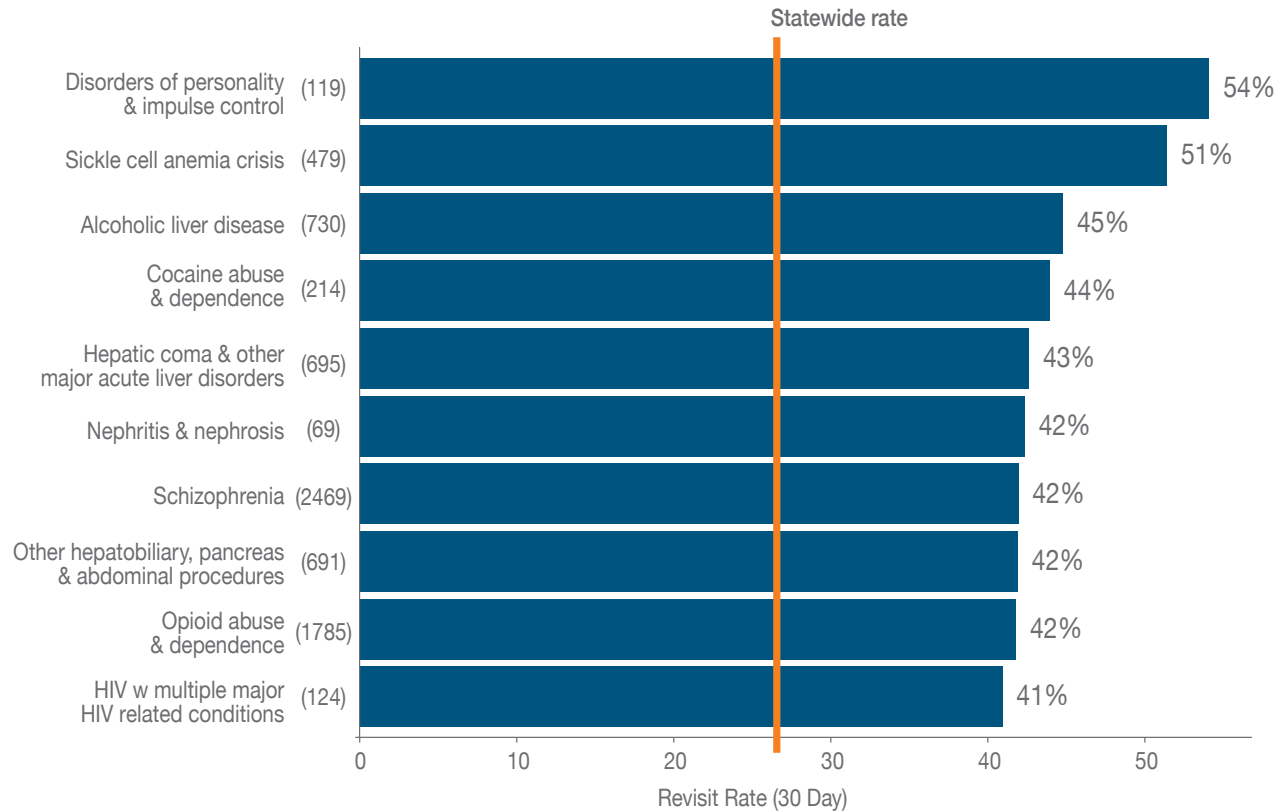
Data source: Massachusetts Acute Hospital Case Mix Database, July 2016 to June 2017.

REVISITS BY PATIENT AND HOSPITALIZATION CHARACTERISTICS

30-Day Revisits by Discharge Diagnosis (Top 10 by Revisit Rate)

The highest rates of 30-day revisits were for disorders of personality and impulse control, sickle cell anemia, substance use disorders, and liver disease.

Patients with these conditions returned to the ED following inpatient discharge at very high rates (41% to 54%).



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

The discharge diagnosis is based on APR DRG version 30.0.

The number of inpatient discharges with a 30-day revisit is in parentheses.

Data source: Massachusetts Acute Hospital Case Mix Database, July 2016 to June 2017.

Revisits by Hospital Characteristics

This section shows variation in 30-day revisits by hospital and hospital characteristics for the hospital associated with the patient's inpatient discharge. The revisit rates presented are not adjusted for the differences among hospitals in the patients they treat and the services they provide. Therefore, some portion of differences across hospital rates may be attributed to differing hospital service mix and patient case mix.

Key Findings

- Thirty-day revisit rates varied widely among acute care hospitals, with hospital-specific rates ranging from a low of 20.9% to a high of 35.9%.
- Community-High Public Payer hospitals had the highest revisit rate followed by Teaching Hospitals and Academic Medical Centers. Community hospitals had the lowest revisit rate.
- Thirty percent of revisits were to hospitals other than the discharging facility. The percentage ranged widely between individual hospitals from a low of 9.5% to a high of 62.1%.

REVISITS BY HOSPITAL CHARACTERISTICS

30-Day Revisits by Hospital Type

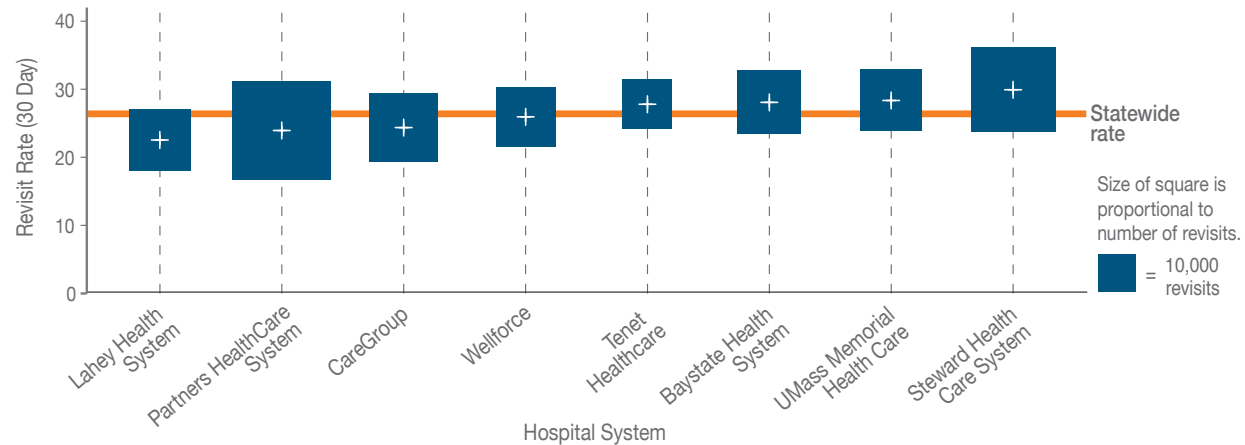
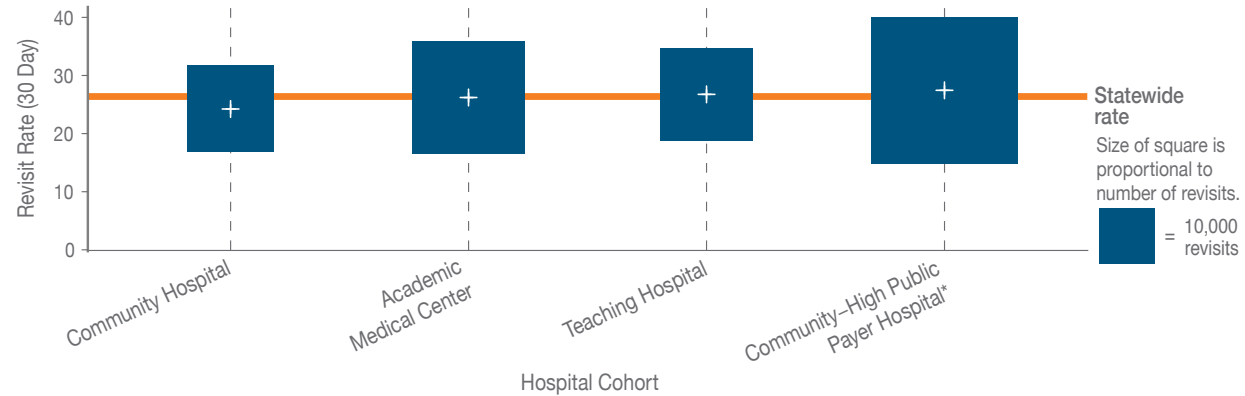
Community hospitals had the lowest revisit rate (24.2%) followed by Academic Medical Centers (26.2%), and Teaching Hospitals (26.8%). Community-High Public Payer hospitals had the highest revisit rate (27.5%).

Community-High Public Payer hospitals also accounted for the largest volume of revisits compared to other hospital types.

The 30-day revisit rate varied by hospital system. The highest 30-day revisit rates were observed for Steward (29.9%), UMass Memorial (28.3%), and Baystate (28.1%).

The lowest 30-day revisit rates were observed for Lahey (22.5%), Partners (23.9%), and CareGroup (24.4%).

The variation in revisit rates by hospital cohorts and systems may be due to differences in patient populations and service mix.



*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.

Notes: 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 2016 to June 2017.

REVISITS BY HOSPITAL CHARACTERISTICS

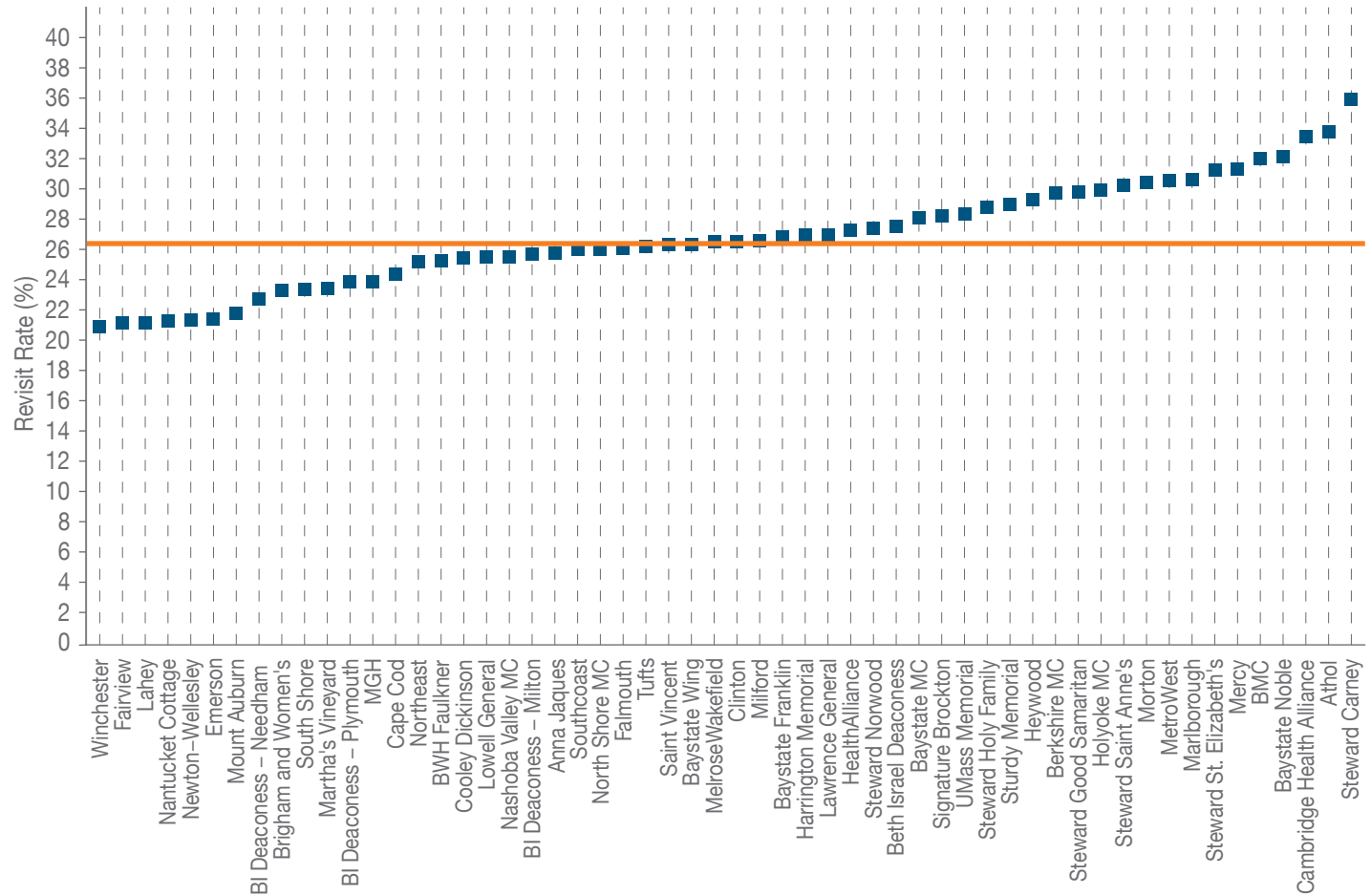
30-Day Revisit Rates by Hospital

Thirty-day revisit rates varied among acute care hospitals, ranging from a low of 20.9% to a high of 35.9%.

The lowest 30-day revisit rates were observed for Winchester (20.9%), Fairview (21.1%), and Lahey (21.2%).

The highest 30-day revisit rates were observed among inpatient discharges from Steward Carney (35.9%), Athol (33.8%), and Cambridge Health Alliance (33.5%).

The variation between hospital's revisit rates may be due to differences in their respective patient populations and service mix.



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

Data source: Massachusetts Acute Hospital Case Mix Database, July 2016 to June 2017.

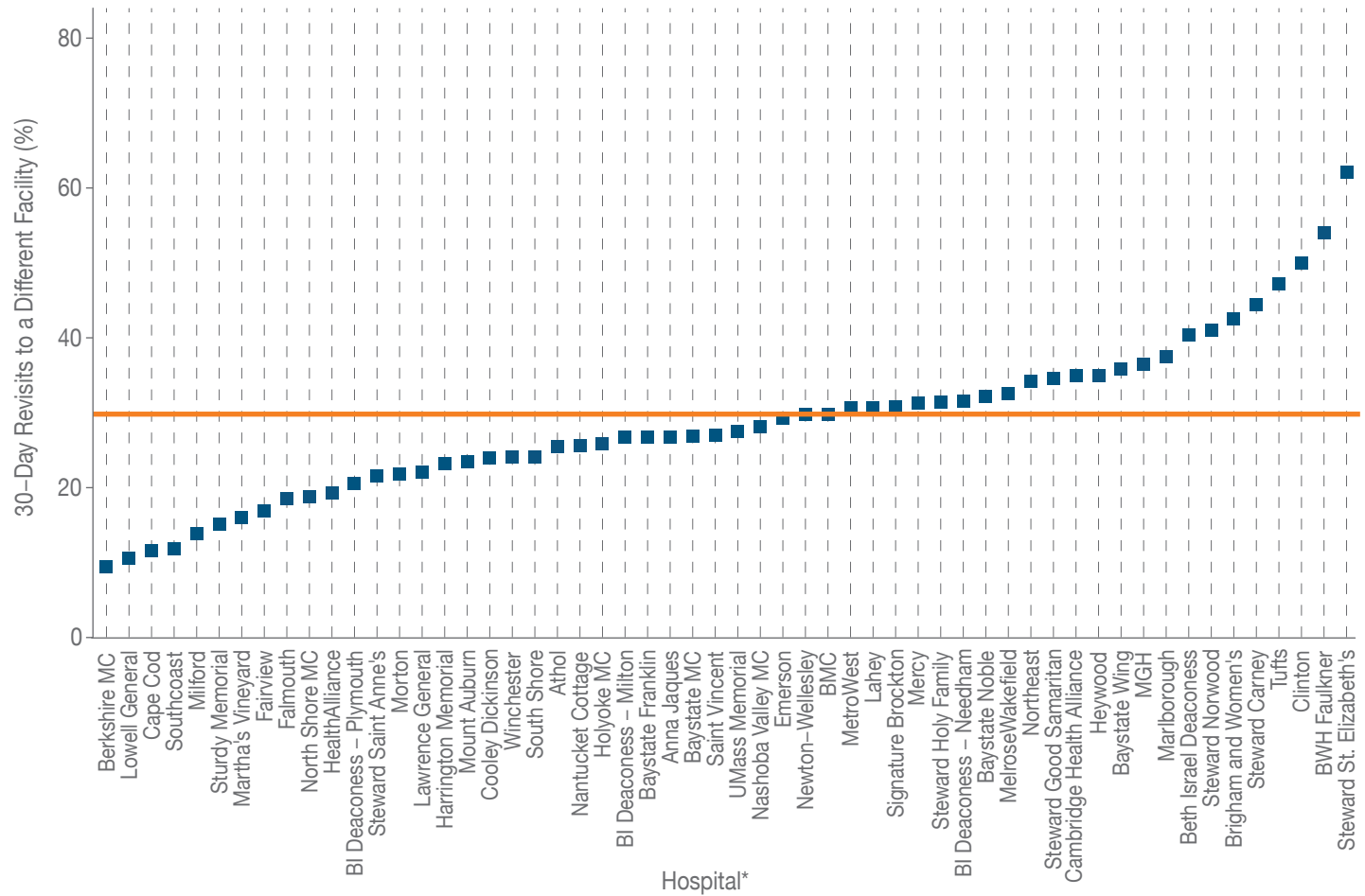
REVISITS BY HOSPITAL CHARACTERISTICS

Revisit to Hospital is Different than the Hospital Discharged From

Approximately 30% of all statewide revisits were to hospitals other than the discharging facility.

The percentage of revisits that went to a different hospital varied from a low of 9.5% at Berkshire Medical Center to a high of 62.1% at Steward St. Elizabeth's.

The variation by hospital may be due to multiple factors in addition to differences in patient populations and service mix, such as patients' patterns of ED use, referrals determined by emergency calls to 911, and the proximity of ED facilities.



*Location of the initial inpatient discharge

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

Data source: Massachusetts Acute Hospital Case Mix Database, July 2016 to June 2017.

About the Revisits Methodology

The revisits analysis is a retrospective study of adult patients (aged 18+) discharged from all Massachusetts acute care hospitals in SFY 2017 (July 1, 2016 to June 30, 2017). 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 2017 with certain exclusions; and
- 2) a source dataset of all emergency department visits for adults from SFY 2017.

The index inpatient discharge dataset exclusions are similar to CHIA's readmission report analyses. The exclusion criteria and data processing methods are adapted from the Hospital-Wide All-Cause Unplanned 30-day Readmission Measure developed by CMS and the Yale Center for Outcomes Research and Evaluation. CHIA also adapted the measure to accommodate an all-payer population—the original measure was developed for use with the Medicare population.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

The source 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 records from the HIDD and OOD flagged as starting in the emergency department. 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 (encrypted 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 2017. Since we are unable to determine with certainty 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.¹⁰

* **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.

End 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 2011-2017 (Boston, December 2018), <http://www.chiamass.gov/hospital-wide-adult-all-payer-readmissions-in-massachusetts>.
- 3 Center for Health Information and Analysis (CHIA), Hospital-Specific Readmissions Profiles (Boston, March 2019), <http://www.chiamass.gov/hospital-specific-readmissions-profiles>.
- 4 Center for Health Information and Analysis (CHIA), Behavioral Health and Readmissions in Massachusetts Acute Care Hospitals (Boston, August 2016), <http://www.chiamass.gov/behavioral-health-and-readmissions-in-massachusetts-acute-care-hospitals>.
- 5 Center for Health Information and Analysis (CHIA), Emergency Department Visits After Inpatient Discharge (Boston, July 2017), <http://www.chiamass.gov/emergency-department-visits-after-inpatient-discharge/>.
- 6 Center for Health Information and Analysis (CHIA), Hospital-Wide Adult All-Payer Readmissions in Massachusetts: SFY 2011-2017 (Boston, December 2018), <http://www.chiamass.gov/hospital-wide-adult-all-payer-readmissions-in-massachusetts>.
- 7 Published research on emergency department use to potentially reduce readmissions includes:
 - Rising KL, White L, Fernandex W, Boutwell AE Emergency Department Visits After Hospital Discharge: A Missing Part of the Equation. *Annals of Emergency Medicine* 62(2): 145-50 August 2013.
 - 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 Health care Strategies. *State of the State: Reducing Readmissions in Massachusetts*. (March 2016), <http://patientcarelink.org/state-of-the-state-reducing-readmissions-in-massachusetts/>.
 - Agency for Health care Research and Quality (AHRQ), *Designing and Delivering Whole-Person Transitional Care: The Hospital Guide to Reducing Medicaid Readmissions*. (Prepared by Collaborative Health care Strategies, Inc., and John Snow, Inc., under Contract No. HHSA290201000034I). Rockville, MD: AHRQ; September 2016. AHRQ Publication No. 16-0047-EF.
 - 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.
- 8 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 <https://hsrcr.maryland.gov/Pages/init-gbr-pau.aspx>.
- 9 Center for Health Information and Analysis (CHIA), Hospital-Wide Adult All-Payer Readmissions in Massachusetts: SFY 2011-2017 (Boston, December 2018), <http://www.chiamass.gov/hospital-wide-adult-all-payer-readmissions-in-massachusetts>.
- 10 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 2011-2017, Technical Appendix (Boston, December 2018), <http://www.chiamass.gov/hospital-wide-adult-all-payer-readmissions-in-massachusetts>.



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