

2021 ANNUAL HEALTH CARE COST TRENDS REPORT CHARTPACK

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COMMERCIAL PRICE TRENDS

KEY FINDINGS

COMMERCIAL PRICE TRENDS

- From 2016 to 2018, prices for common ambulatory procedures and services grew by an average 4.4% in physician offices, 6.1% in hospital outpatient departments (HOPDs) and 9.0% in hospital inpatient settings. Many individual services saw price increases of more than 20%.
- For common evaluation and management services, visits have shifted towards being coded as higher-acuity, higher-paying visits; the highest acuity code also had the largest price increase.
- Prices at HOPDs for common procedures and labs were often double the amount paid for the same services performed in physician offices.
- Prices for common HOPD services such as mammography, GI endoscopy and colonoscopy tended to vary substantially by hospital, in some cases by a factor of more than two, with the highest prices generally occurring at academic medical centers and geographically isolated hospitals (e.g. Cape Cod).
- Payments for cesarean section deliveries varied from \$15,600 (Mount Auburn) to \$24,000 (Massachusetts General). For major joint replacement, payments varied from \$22,000 (Lowell General) to \$42,000 (Massachusetts General).

INTRODUCTION

COMMERCIAL PRICE TRENDS

While prices for health care services in Medicare and Medicaid are set administratively by government bodies, prices in the commercial market are determined through negotiations between payers and providers. Because the leverage that different payers and providers have in those negotiations varies considerably, commercial prices vary considerably – far more than prices vary for government payers.¹

Commercial prices are also considerably higher than Medicare and Medicaid prices – often by a factor of two or more – and are also often twice as high as the costs of providing care.² Furthermore, the gap between public and private prices has been growing.³ These trends likely reflect gains in provider market power relative to payers through vertical (e.g. physician-hospital) and horizontal (e.g. hospital-hospital) consolidation, which increases provider negotiating leverage.^{4,5} Researchers have found little, if any, relationship between commercial prices and quality of care.⁶

Recent work from the HPC has identified growth in inpatient and outpatient commercial spending driven by price increases (HPC Annual Cost Trends Report, 2019). This Cost Trends Report demonstrates that increases in prices – rather than increases in utilization – continue to be the primary driver of increases in commercial spending in Massachusetts.

This section focuses on commercial price trends in Massachusetts from 2016 to 2018 for roughly 1.5 million commercially-insured members with medical claims in the All-Payer Claims Database covered by BCBSMA, THP, HPHC, AllWays or Anthem, including an examination of utilization trends, price growth, and price variation by service, setting, and provider. See technical appendix for more details.

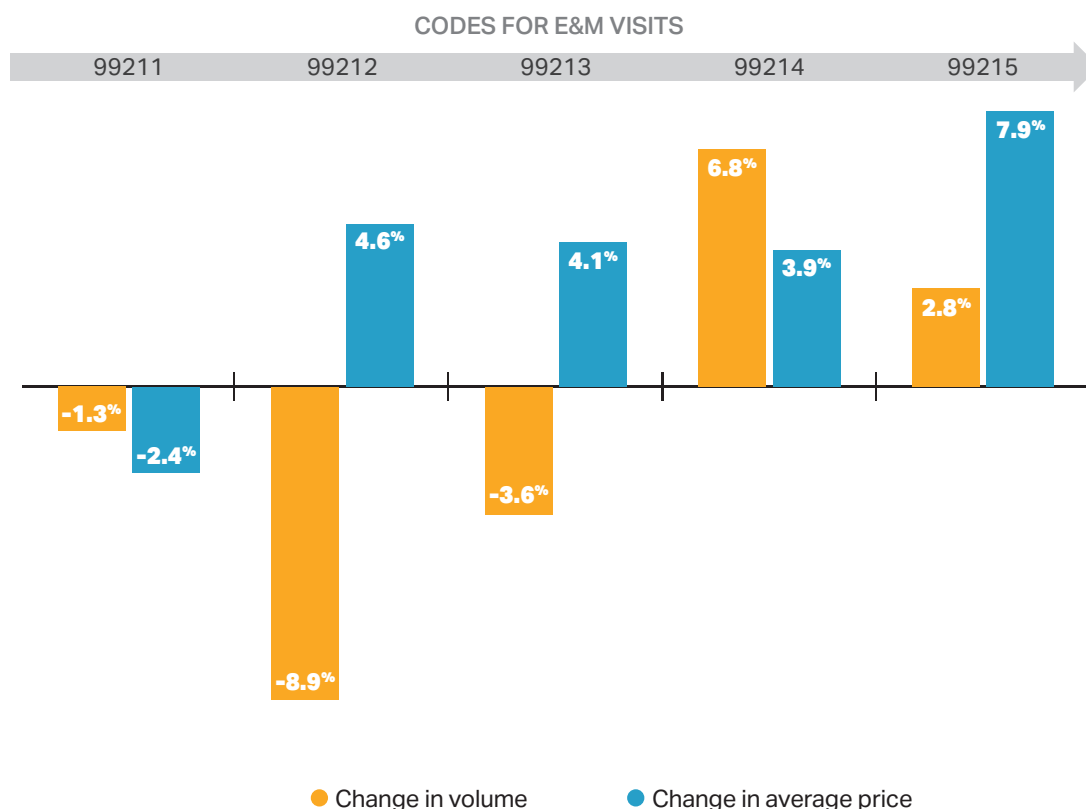
Terminology note: This chartpack use “price” to refer to the reimbursement level for an office or HOPD service. “Payment” to refer to the total reimbursement for an inpatient stay, since a stay may include multiple services.

(1) Chernew ME, Hicks AL, Shah SA. Wide State-Level Variation In Commercial Health Care Prices Suggests Uneven Impact Of Price Regulation: An examination of state-level price variation in the commercial market, relative to Medicare, for a broader set of states and a wider set of services than had been previously examined. Health Aff (Millwood). 2020 May 1;39(5):791–9. (2) Kaiser Family Foundation, Lopez, Eric, Tricia Neuman, Gretchen Jacobson, and Larry Levitt. "How much more than Medicare do private insurers pay? A review of the literature." (2020).(3) <http://www.medpac.gov/blog/why-have-medicare-costs-grown-so-much-slower-than-the-cost-of-employer-sponsored-insurance/2017/09/11/why-have-medicare-costs-grown-so-much-slower-than-the-cost-of-employer-sponsored-insurance>. (4) Cooper Z, Craig SV, Gaynor M, Van Reenen J. The Price Ain't Right? Hospital Prices and Health Spending on the Privately Insured*. Q J Econ. 2019 Feb 1;134(1):51–107. (5) Fulton BD. Health Care Market Concentration Trends In The United States: Evidence And Policy Responses. Health Aff (Millwood). 2017 Sep;36(9):1530–8. (6) Roberts ET, Mehrotra A, McWilliams JM. High-Price And Low-Price Physician Practices Do Not Differ Significantly On Care Quality Or Efficiency. Health Aff (Millwood). 2017 May;36(5):855–64.

OFFICE AND HOSPITAL OUTPATIENT DEPARTMENT PRICE TRENDS

COMMERCIAL PRICE TRENDS

PERCENT CHANGE IN VOLUME AND AVERAGE PRICE FOR EVALUATION AND MANAGEMENT VISITS (ARRAYED FROM LEAST TO HIGHEST COMPLEXITY), 2016–2018



1. For more details on E&M coding changes see: <https://www.aappublications.org/news/2020/12/01/coding120120>

NOTES: Prices include both facility and professional claims. Evaluation and management (E&M) visits are billed by a variety of provider types (advanced practice providers, primary care providers, specialists, etc.). These figures include services across all provider types billed in office and hospital outpatient department care settings. Prices for services paid under global payment arrangements or other non-fee-for-service methods are not included in the calculation of average price.

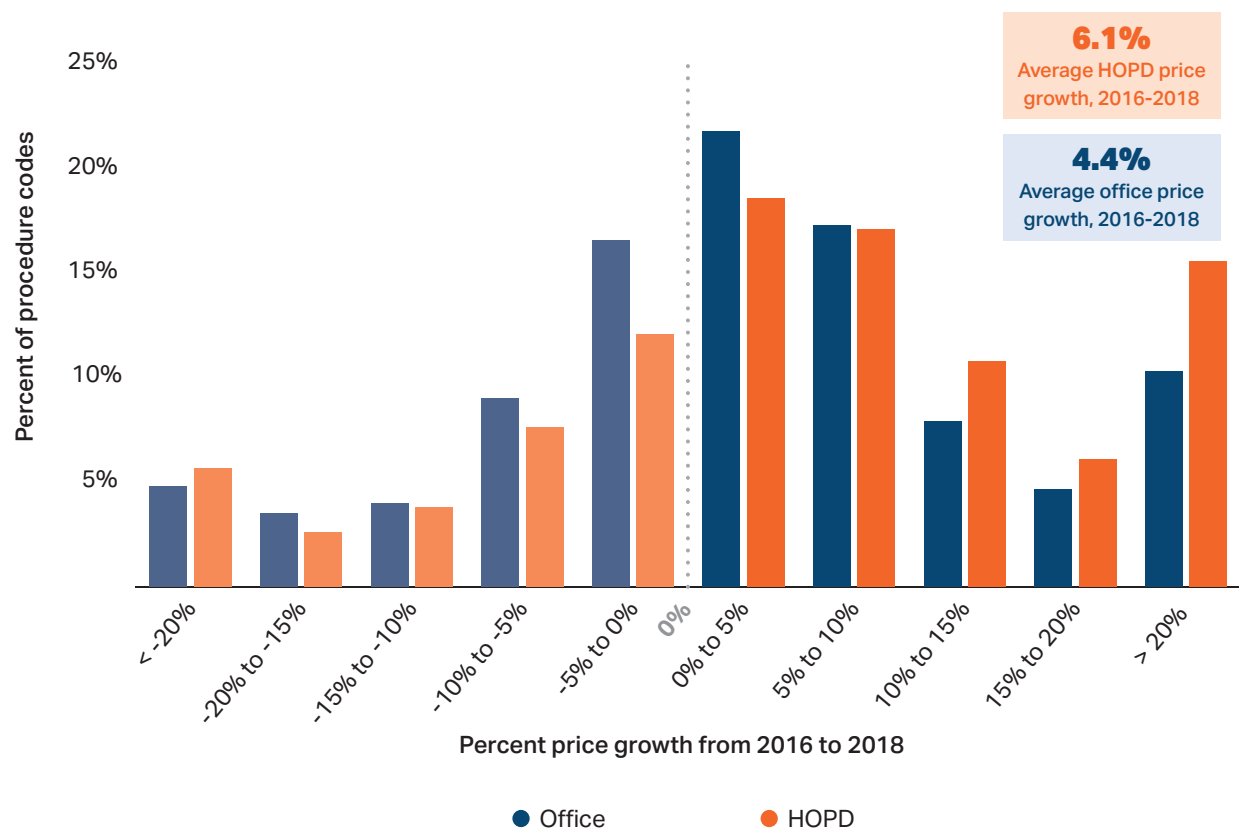
SOURCES: HPC analysis of Center for Health Information and Analysis All-Payer Claims Database v8.0, 2016–2018

Physician offices and hospital outpatient departments (HOPDs) both provide ambulatory care. Evaluation and management (E&M) visits are the most commonly billed ambulatory care services and can be provided in either setting. E&M visits range from lower-complexity, shorter visits (99211) to higher-complexity, longer visits (99215). A mid-level visit (99213) is the most commonly billed service among all medical claims and was paid an average of \$123 in 2016.

Between 2016 and 2018, spending per E&M visit increased by 5.0%. The HPC found that 75% of the spending growth was due to price increases, while the remainder reflects an increase in the proportion of services billed as higher complexity. Price changes ranged from a decrease of 2.4% for 99211 (lowest complexity) to an increase of 7.9% for 99215 (highest complexity). From 2016 to 2018, volume declined for the three lowest-complexity codes and grew for the two highest-complexity codes.

Recent efforts to mitigate unwarranted shifts towards higher intensity codes in Medicare have led to a restructuring of guidelines for the services that constitute each level of an E&M visit; billing updates went into effect January 2021.¹

CHANGES IN PRICE FOR SERVICES PROVIDED IN OFFICES AND HOPDS, 2016–2018



NOTES: Price growth is computed at the level of the procedure code encounter. Encounters are defined as the same person, same date of service, same procedure code to capture the potential for both facility and professional claims billed on the same day for the same service based on the setting. Procedure codes with < 20 services or < \$1,000 in aggregate spending in 2018 were excluded. Overall average percent price growth for office and HOPD was weighted by 2018 aggregate spending for the procedure code in the respective setting.

SOURCES: HPC analysis of Center for Health Information and Analysis All-Payer Claims Database v8.0, 2016-2018

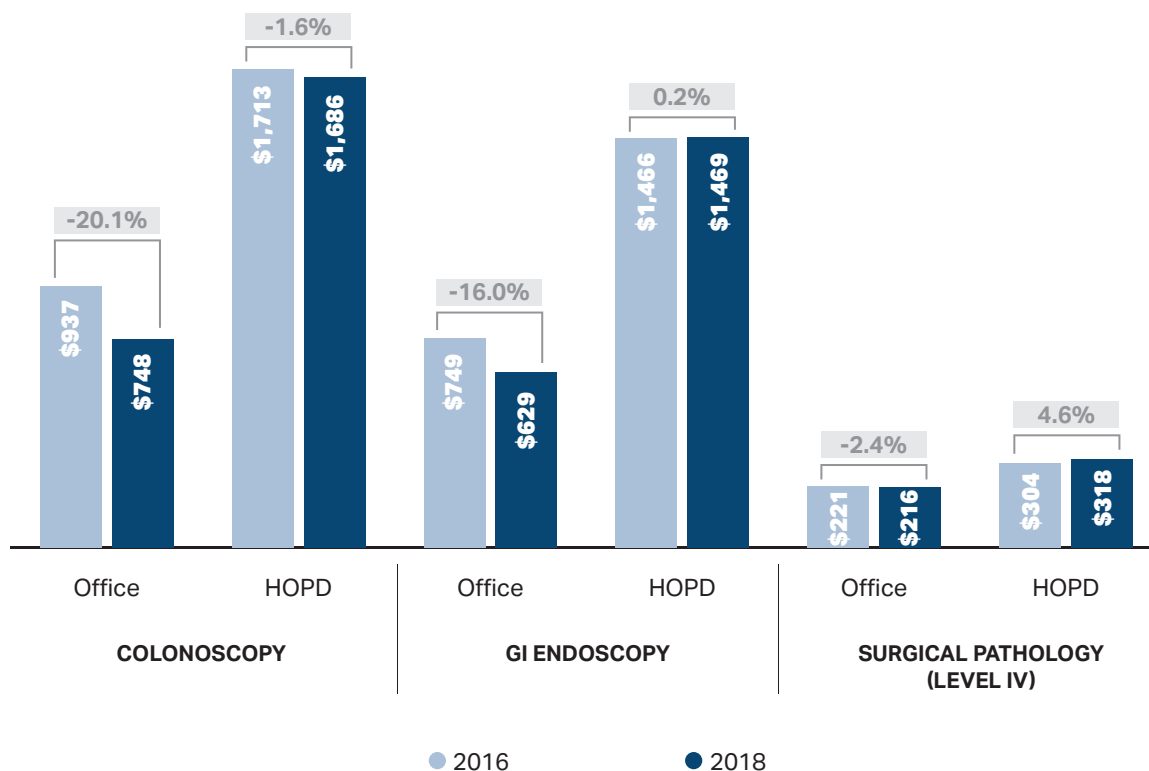
Many ambulatory services, including E&M visits, can be provided safely in either physician offices or HOPDs. Some HOPD services cannot safely be performed in an office setting (for example, major procedures). For other services, the appropriate setting may depend on patient acuity.

From 2016-2018, price growth was generally greater for HOPD services than for office-based services.

About half (49%) of unique services in the HOPD setting had price growth above 5%, with one-third (33%) of services having price growth above 10%. Thirty-two percent of HOPD services declined in price. Overall, HOPD prices grew an average 6.1% from 2016 to 2018.

For office-based services, 40% of unique services had price growth above 5%, and 23% of services had price growth above 10%. Thirty-eight percent of services declined in price. Overall, office prices grew an average 4.4% from 2016 to 2018.

PRICES AND PRICE GROWTH FOR HIGH-VOLUME PROCEDURES COMMONLY PERFORMED IN BOTH OFFICE AND HOPD SETTINGS



NOTES: Services displayed had the highest aggregate HOPD spending in 2018 (colonoscopy: \$22.9M; pathology: \$20M; GI endoscopy: \$15.6M) and were also billed in 2016. Prices reflect encounters (same person, same date of service, same procedure code) to capture the potential for both facility and professional claims billed on the same day. Colonoscopy (CPT 45380, 'Colonoscopy, flexible; with biopsy, single or multiple'); GI endoscopy (CPT 43239, 'Esophagogastroduodenoscopy'); Surgical pathology (CPT 88305, 'Level IV Surgical pathology, gross and microscopic examination').

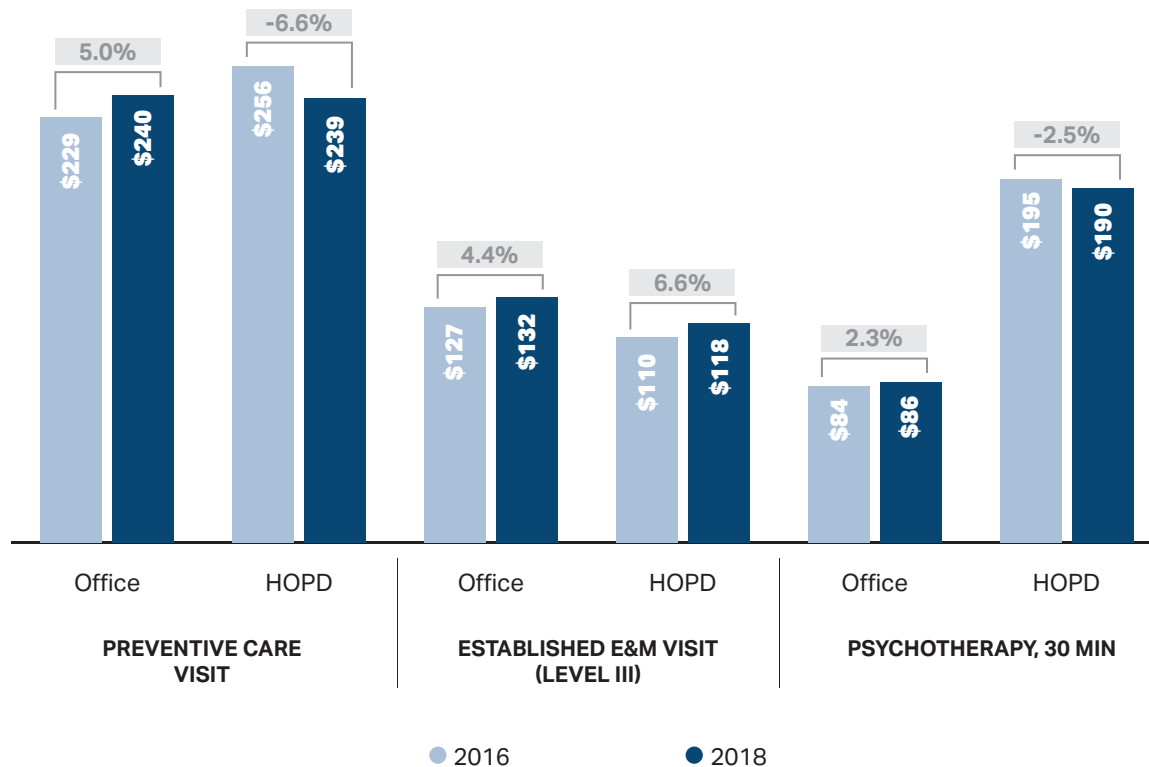
SOURCES: HPC analysis of Center for Health Information and Analysis All-Payer Claims Database v8.0, 2016-2018

The average price paid for the three most common HOPD services was much higher when performed in a HOPD than when performed in an office, in both 2016 and 2018. In 2018, the price for a colonoscopy was \$1,686 when performed in a HOPD, 2.3 times greater than the average \$748 paid for an office-based colonoscopy. That differential grew relative to 2016 because the average price for the office-based procedure declined by 20% from 2016 to 2018.

Similarly, the average payment for a gastrointestinal (GI) endoscopy was 2.3 times greater in a HOPD (\$1,469) than in an office (\$629) in 2018, a differential that also grew due to a drop in the average office-based price from 2016 to 2018.

The average price for a level IV surgical pathology examination was roughly 1.5 times greater in a HOPD than in an office in both 2016 and 2018.

PRICES AND PRICE GROWTH FOR HIGH-VOLUME AMBULATORY VISIT TYPES PERFORMED IN BOTH OFFICE AND HOPD SETTINGS



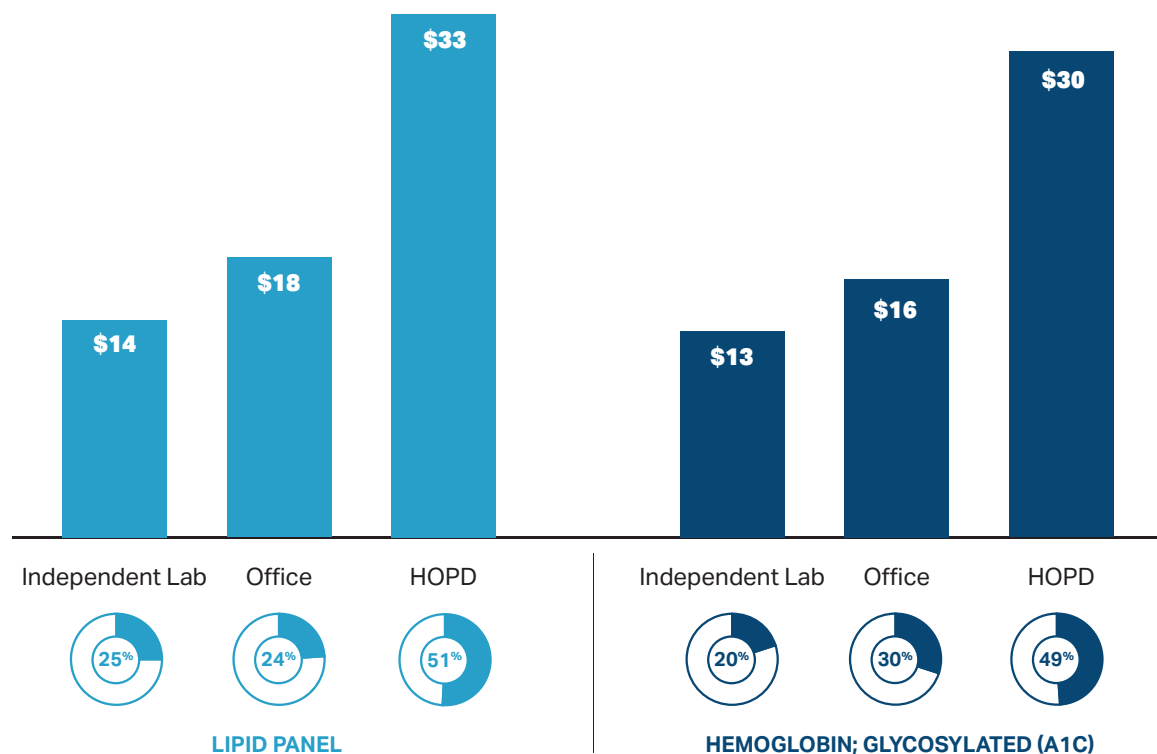
The three services shown in the graph are among the most common ambulatory services delivered both in office and HOPD settings.

For psychotherapy (90834) encounters, the average price in the HOPD setting was more than two times the office-based price for the same service. This was not the case for E&M visits (99213) and preventive care visits (99396), for which prices were similar in either setting. Price changes were small between 2016 and 2018 for all three services.

NOTES: Services represent a selection of common ambulatory services that are frequently delivered in both office and HOPD settings. Prices reflect encounters (same person, same date of service, same procedure code) to capture the potential for both facility and professional claims billed on the same day. The HPC expects that the services examined in this graph are provided by a mix of clinician types (e.g. physician / nurse practitioner or psychiatrist / psychologist / social worker) which may also be related to prices but is not expected to differ substantially across site of service.

SOURCES: HPC analysis of Center for Health Information and Analysis All-Payer Claims Database v8.0, 2016-2018

AVERAGE PRICES AND DISTRIBUTION OF VOLUME FOR COMMON LABORATORY SERVICES, BY SETTING, 2018



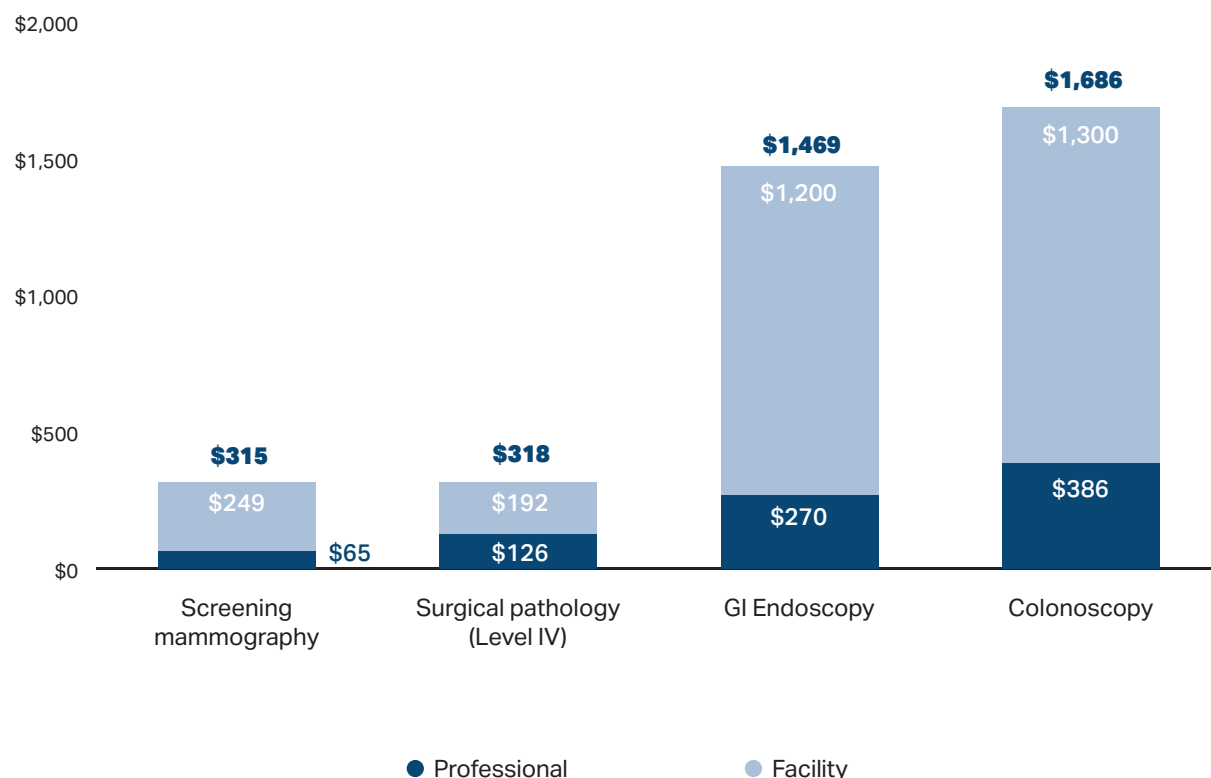
Ambulatory lab services are typically delivered in one of three settings: independent labs (a service provider that only provides lab and diagnostic services), physician offices, and HOPDs. For both lipid panels and Hemoglobin A1C tests, roughly half of all volume took place in HOPDs with the remainder divided among office and independent lab settings.

For both lab tests, prices were lowest when performed by independent labs, slightly higher when performed in offices, and more than twice as high when performed in HOPD settings. While average prices for these lab tests are relatively low, they are very high-volume services. For the roughly 1.5 million commercial members included in this data, spending for both lab tests across all three ambulatory settings totaled \$19.6 million in 2018.

NOTES: Prices reflect encounters (same person, same date of service, same procedure code) to capture the potential for both facility and professional claims billed on the same day for the same service. Prices for services paid under global payment arrangements or other non-fee-for-service methods are not included in the calculation of average price. Lipid panel (CPT 80061, 'Lipid panel'); Hemoglobin glycosylated (A1c) (CPT 83036, 'HbA1c'). Share of volume for all ambulatory lab services in each setting is listed as a percent under the x-axis; some values may not add to 100% due to rounding.

SOURCES: HPC analysis of Center for Health Information and Analysis All-Payer Claims Database v8.0, 2016-2018

AVERAGE PRICE FOR COMMON HOPD SERVICES BY PROFESSIONAL AND FACILITY COMPONENT, 2018



NOTES: Services displayed had the highest aggregate HOPD spending in 2018. Prices reflect encounters (same person, same date of service, same procedure code) to capture the potential for both facility and professional claims billed on the same day. Screening mammography (CPT 77067, 'Screening mammography, bilateral, including computer-aided detection (CAD) when performed'); Colonoscopy (CPT 45380, 'Colonoscopy, flexible; with biopsy, single or multiple'); GI endoscopy (CPT 43239, 'Esophagogastroduodenoscopy'); Surgical pathology (CPT 88305, 'Level IV Surgical pathology, gross and microscopic examination'). Subtotals may not equal totals due to rounding.

SOURCES: HPC analysis of Center for Health Information and Analysis All-Payer Claims Database v8.0, 2016-2018

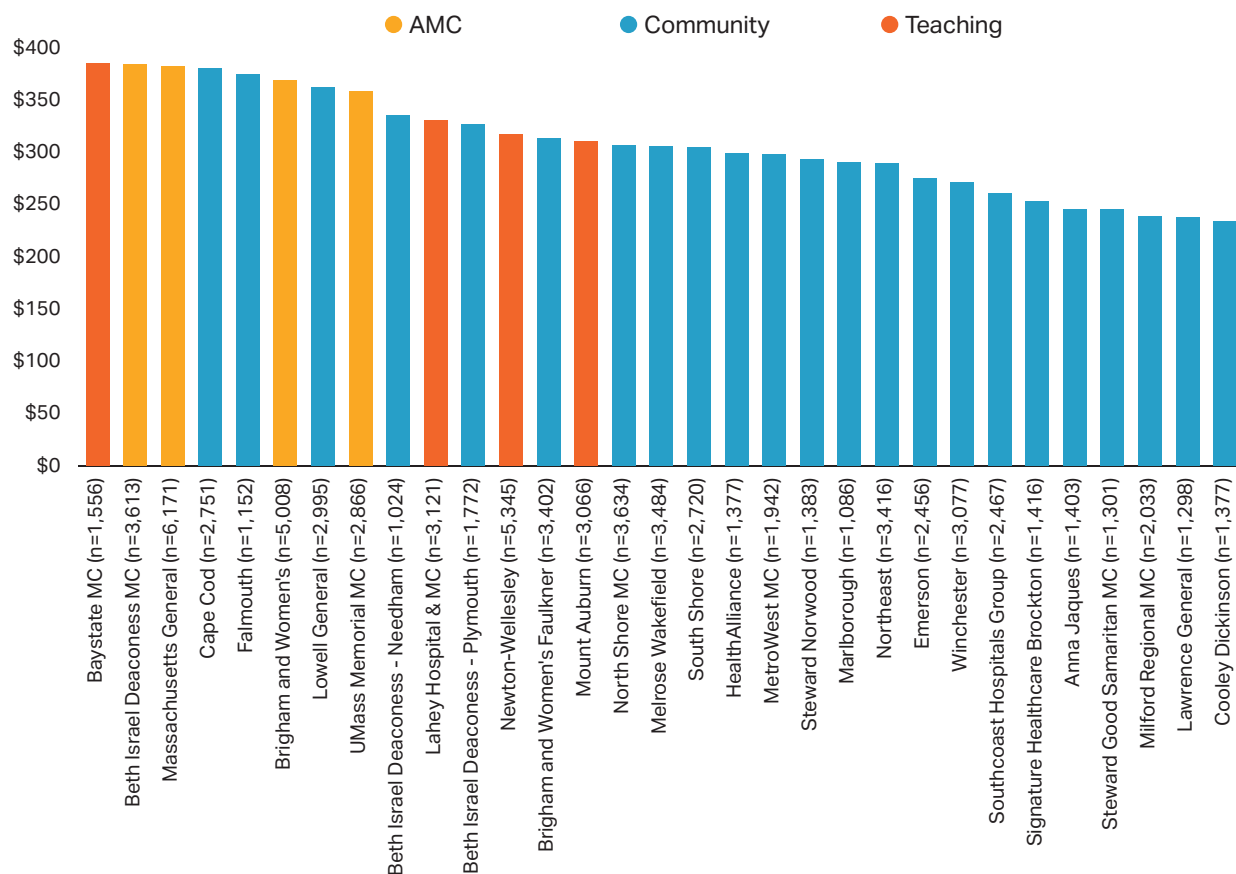
Among HOPD services, the total commercial price for an encounter typically includes both a professional and facility spending component. The facility component is intended to compensate for hospital resources used for the service, and the professional component provides payment for physician and other clinician services. When a service is provided in an office, a single payment is intended to compensate for both resources and professional services used to deliver the service.

This figure demonstrates the contribution of professional and facility spending to the total service price for four common HOPD services.

In each case, the facility payment comprises the majority of total service spending. The proportion ranged from 60% for a pathology encounter (\$192 out of a total \$318) to 82% of the average encounter spending for GI endoscopy (\$1,200 out of a total \$1,469).

For each of these services, the office price is higher than the HOPD professional component alone, but far lower than the total. For example, the office-based price for a colonoscopy was \$748 in 2018.

AVERAGE PRICE OF A MAMMOGRAPHY PERFORMED IN A HOPD, BY HOSPITAL, 2018



NOTES: Facilities listed are limited to those with at least 1,000 commercial encounters for the service in 2018. Prices reflect encounters (same person, same date of service, same procedure code) to capture the potential for both facility and professional claims billed on the same day. Prices for services paid under global payment arrangements or other non-fee-for-service methods are not included in the calculation of average price. Mammography (CPT 77067, 'Screening mammography, bilateral, including computer-aided detection (CAD) when performed'). Price growth is not shown in this figure because the CPT 77067 was newly introduced in 2017 to replace a retiring CPT code, G0202.

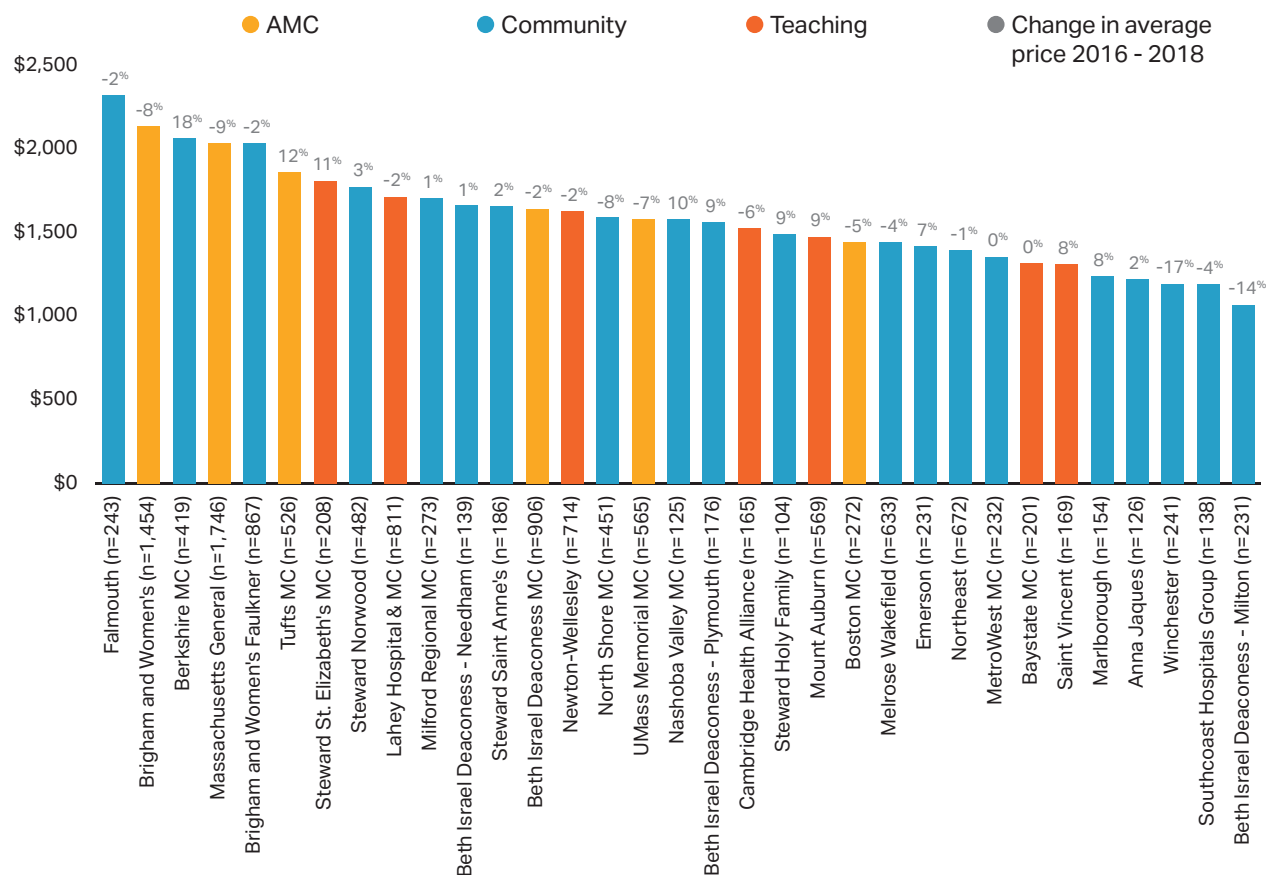
SOURCES: HPC analysis of Center for Health Information and Analysis All-Payer Claims Database v8.0, 2016-2018

Mammography screenings are one of the most common services delivered in the ambulatory care setting.

Among HOPDs that provide a high volume of mammography screenings, the price for a mammography at the most expensive provider (Baystate Medical Center, \$386) was 65% higher than that of the lowest-priced provider (Cooley Dickinson, \$234). HOPDs operated by academic medical centers (AMCs) or teaching hospitals had higher prices than most community hospitals.

On average, HOPD mammography services were 25% more expensive than the same service performed in an office. In 2018, the average price for a mammography performed in a HOPD was \$315, while the average office-based price was \$251.

AVERAGE PRICE OF A COLONOSCOPY PERFORMED IN A HOPD, BY HOSPITAL, 2018, WITH PERCENT CHANGE IN PRICE, 2016–2018



Among HOPDs that provide a high volume of colonoscopies, the price for a colonoscopy at the most expensive HOPD (Falmouth, \$2,325) was more than twice that of the least expensive HOPD provider (Beth Israel Deaconess–Milton, \$1,069).

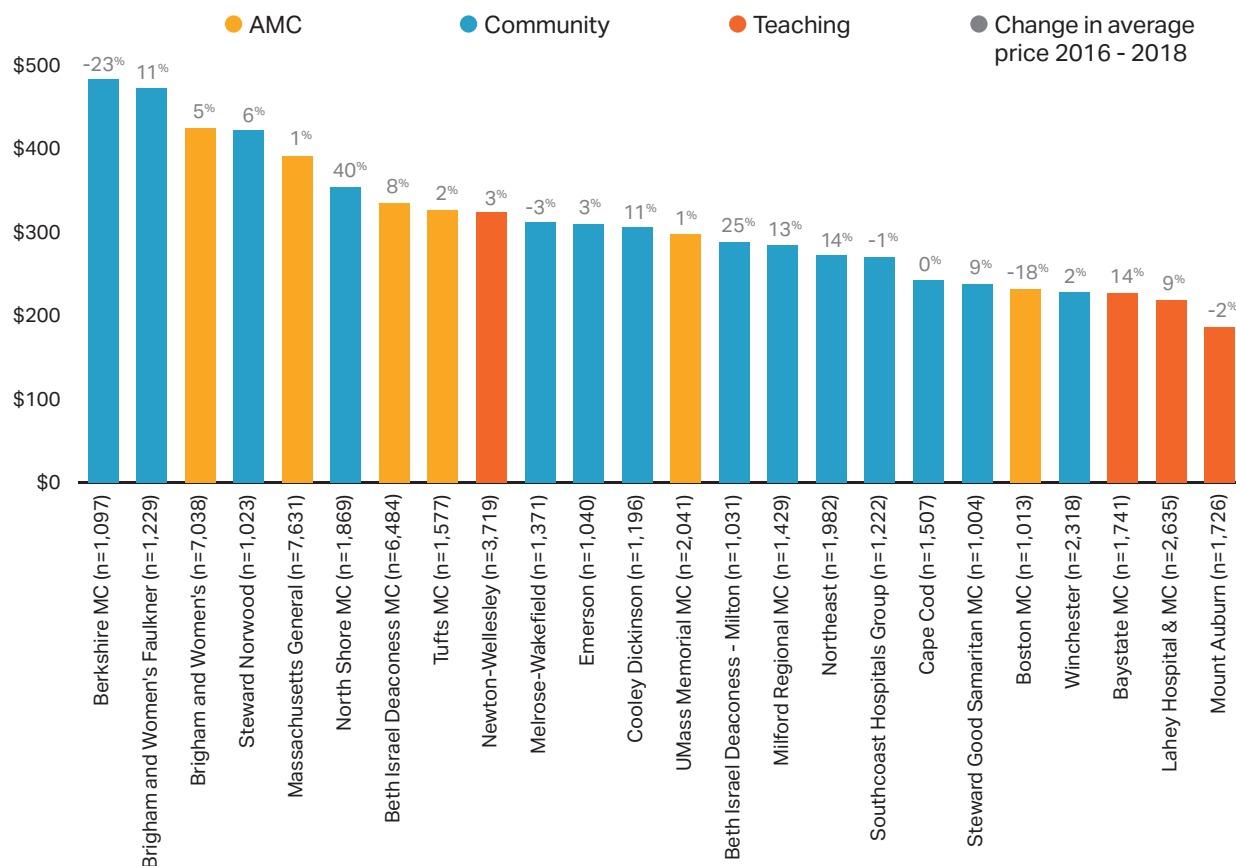
Despite declines in price across many providers, prices remained relatively high among geographically isolated community hospital providers (Falmouth and Berkshire Medical Center) and several AMCs.

In 2018, the average price for a colonoscopy performed in a HOPD was \$1,686, 2.3 times more expensive than the average price for a colonoscopy performed in an office (\$748).

NOTES: Facilities listed are limited to those with at least 100 commercial encounters delivered in 2018. Prices reflect encounters (same person, same date of service, same procedure code) to capture the potential for both facility and professional claims billed on the same day. Prices for services paid under global payment arrangements or other non-fee-for-service methods are not included in the calculation of average price. Colonoscopy (CPT 45380, 'Colonoscopy, flexible; with biopsy, single or multiple'). Percent change in average price by HOPD between 2016 and 2018 is listed in grey above each price bar.

SOURCES: HPC analysis of Center for Health Information and Analysis All-Payer Claims Database v8.0, 2016-2018

AVERAGE PRICE OF A SURGICAL PATHOLOGY EXAMINATION PERFORMED IN A HOPD, BY HOSPITAL, 2018, WITH PERCENT CHANGE IN PRICE, 2016–2018



NOTES: Data are for surgical pathology (CPT 88305, 'Level IV Surgical pathology, gross and microscopic examination'). Facilities listed are limited to those with at least 500 commercial encounters delivered in 2018. Prices reflect encounters (same person, same date of service, same procedure code) to capture the potential for both facility and professional claims billed on the same day. Prices for services paid under global payment arrangements or other non-fee-for-service methods are not included in the calculation of average price. Percent change in average price by HOPD between 2016 and 2018 is listed in grey above each price bar.

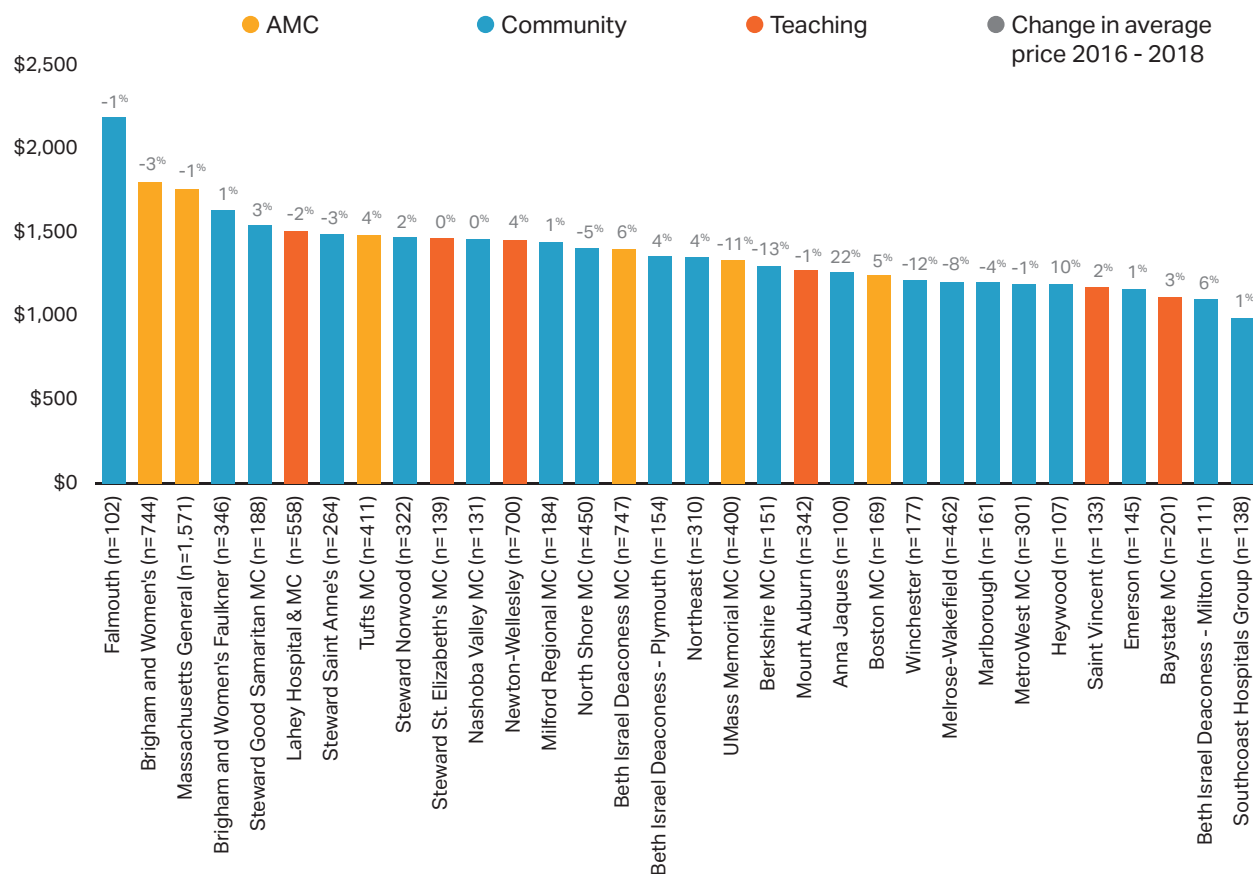
SOURCES: HPC analysis of Center for Health Information and Analysis All-Payer Claims Database v8.0, 2016-2018

Among HOPDs that provide a high volume of surgical pathology examinations, the price for this service at the most expensive HOPD (Berkshire Medical Center, \$483) was 2.6 times that of the least expensive HOPD provider (Mount Auburn, \$186).

Prices for this service increased for most hospitals between 2016-2018. The pattern of prices by hospital cohort was mixed, with teaching hospitals comprising the three lowest-priced hospitals for this service.

In 2018, the average HOPD price for this service was \$318, 48% more expensive than the average office-based price (\$216).

AVERAGE PRICE OF A GI ENDOSCOPY IN A HOPD, BY HOSPITAL, 2018, WITH PERCENT CHANGE IN PRICE, 2016–2018



Among HOPDs that provide a high volume of GI endoscopies, the price for this service at the most expensive HOPD (Falmouth, \$2,194) was more than twice that at the least expensive HOPD (Southcoast Hospitals Group, \$991).

Average prices were generally stable between 2016 and 2018 for many hospitals, with notable exceptions. The trends in prices by hospital cohort were generally mixed.

The average HOPD price in 2018 for GI endoscopy was \$1,469, 2.3 times the average office-based price (\$629).

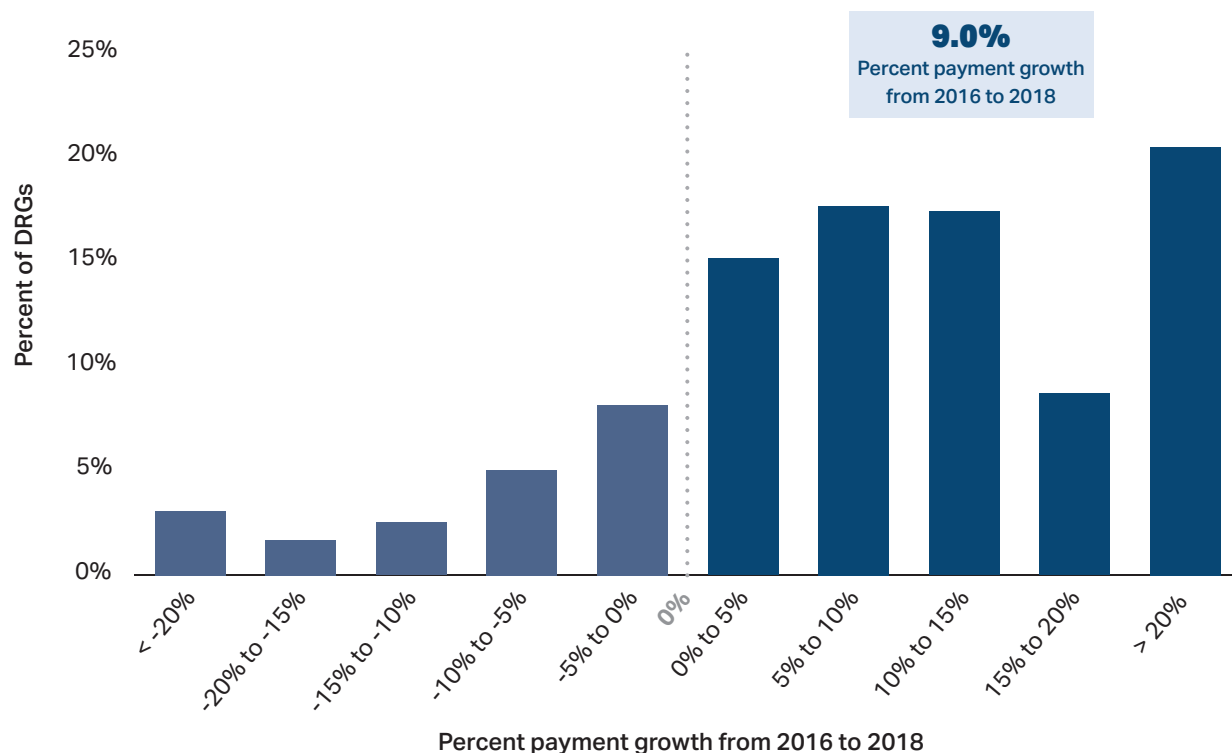
NOTES: Prices reflect encounters (same person, same date of service, same procedure code) to capture the potential for both facility and professional claims billed on the same day. GI endoscopy (CPT 43239, 'Esophagogastroduodenoscopy'). Prices for services paid under global payment arrangements or other non-fee-for-service methods are not included in the calculation of average price. Percent change in average price by HOPD between 2016 and 2018 is listed in grey above each price bar.

SOURCES: HPC analysis of Center for Health Information and Analysis All-Payer Claims Database v8.0, 2016-2018

INPATIENT PAYMENT TRENDS

COMMERCIAL PRICE TRENDS

CHANGE IN PAYMENTS FOR INPATIENT STAYS, BY DIAGNOSIS RELATED GROUP (DRG), 2016–2018



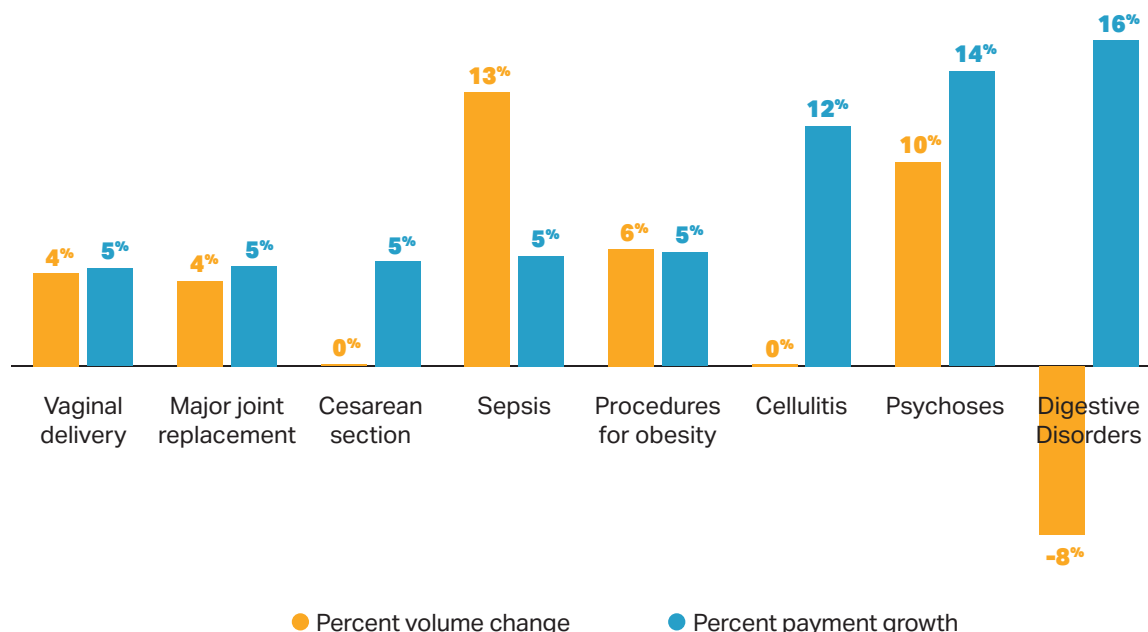
NOTES: Average payment growth includes both facility and professional claims for an inpatient stay. Inpatient stays were identified by MS-DRG. 356 MS-DRGs out of 739 identified in the 2018 APCD were included in this analysis. DRG inclusion criteria were at least 20 inpatient stays with a particular DRG and at least \$10,000 in 2018 aggregate spending. Overall average percent payment growth was weighted by 2018 aggregate spending for the DRG.

SOURCES: HPC analysis of Center for Health Information and Analysis Massachusetts All-Payer Claims Database, v8 2016-2018

To understand growth in inpatient payments, the HPC combined all payments associated with each observed inpatient hospital stay, including all hospital payments as well as payments for physician or other professional services during the stay. Stays are classified according to diagnosis related groups (DRGs), which serve as the basis of payment for most commercial and government payers.

Overall, payments for inpatient stays grew faster than prices for HOPD and office services, as shown in previous charts. The average payment per stay, weighted by spending, grew 9% from 2016 to 2018. Almost half (47%) of unique DRGs had a payment increase over 10% from 2016 to 2018 (n=166). Only 21% of unique DRGs had a payment decrease from 2016 to 2018 (n=73).

CHANGE IN PAYMENTS AND VOLUME FOR SELECT HIGH-VOLUME TYPES OF INPATIENT STAYS, 2016–2018



The HPC examined volume and payment growth for high-volume types of inpatient stays from 2016 to 2018.

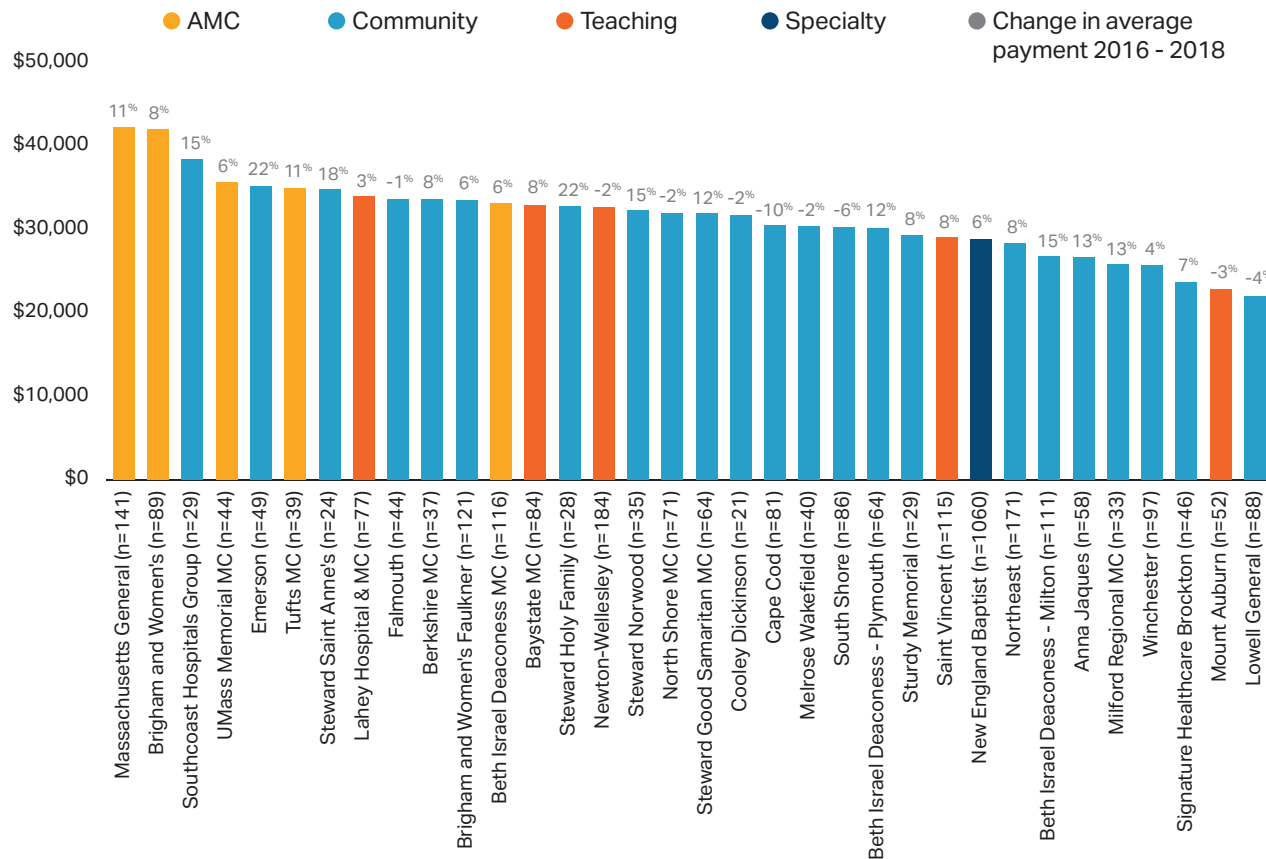
Payments grew significantly for all of these common types of inpatient stays with payments for cellulitis, psychoses and digestive disorders increasing by more than 10%. Trends in volume change were mixed, with notable growth in psychoses and sepsis. Prior HPC research has shown that infection-related stays are increasingly coded as sepsis instead of conditions that could lead to sepsis (e.g., pneumonia).¹

1. Massachusetts Health Policy Commission 2019 Cost Trends Report

NOTES: Average payment shown includes both facility and professional claims for an inpatient stay collapsed across severity levels for a DRG-stay (eg, with and without major complexity or comorbidity). To account for changes in payment or volume that may be related to coding within a type of inpatient stay (e.g., more major joint replacements coded as “with complications”), DRGs that differed only by severity classification were grouped together. Vaginal delivery includes MS-DRGs 774 and 775. Major joint replacement includes MS-DRG 469 & 470. Cesarean section delivery includes 765 and 766. Sepsis includes MS-DRG 871 and 872, but not 870 (with mechanical ventilation). Obesity procedures includes MS-DRGs 619-621. Cellulitis includes MS-DRGs 603 and 604. Psychoses only includes MS-DRG 885. Digestive disorders includes MS-DRGs 391 and 392. Volume is adjusted for total member months in each year.

SOURCES: HPC analysis of Center for Health Information and Analysis Massachusetts All-Payer Claims Database, v8 2016-2018

AVERAGE PAYMENT FOR MAJOR JOINT REPLACEMENT SURGERY BY HOSPITAL, 2018, WITH PERCENTAGE CHANGE IN AVERAGE PAYMENT FROM 2016–2018



The average payment for an inpatient major joint replacement varied from \$42,238 (Massachusetts General) to \$21,991 (Lowell General) in 2018, a nearly two-fold difference (92% higher at Massachusetts General).

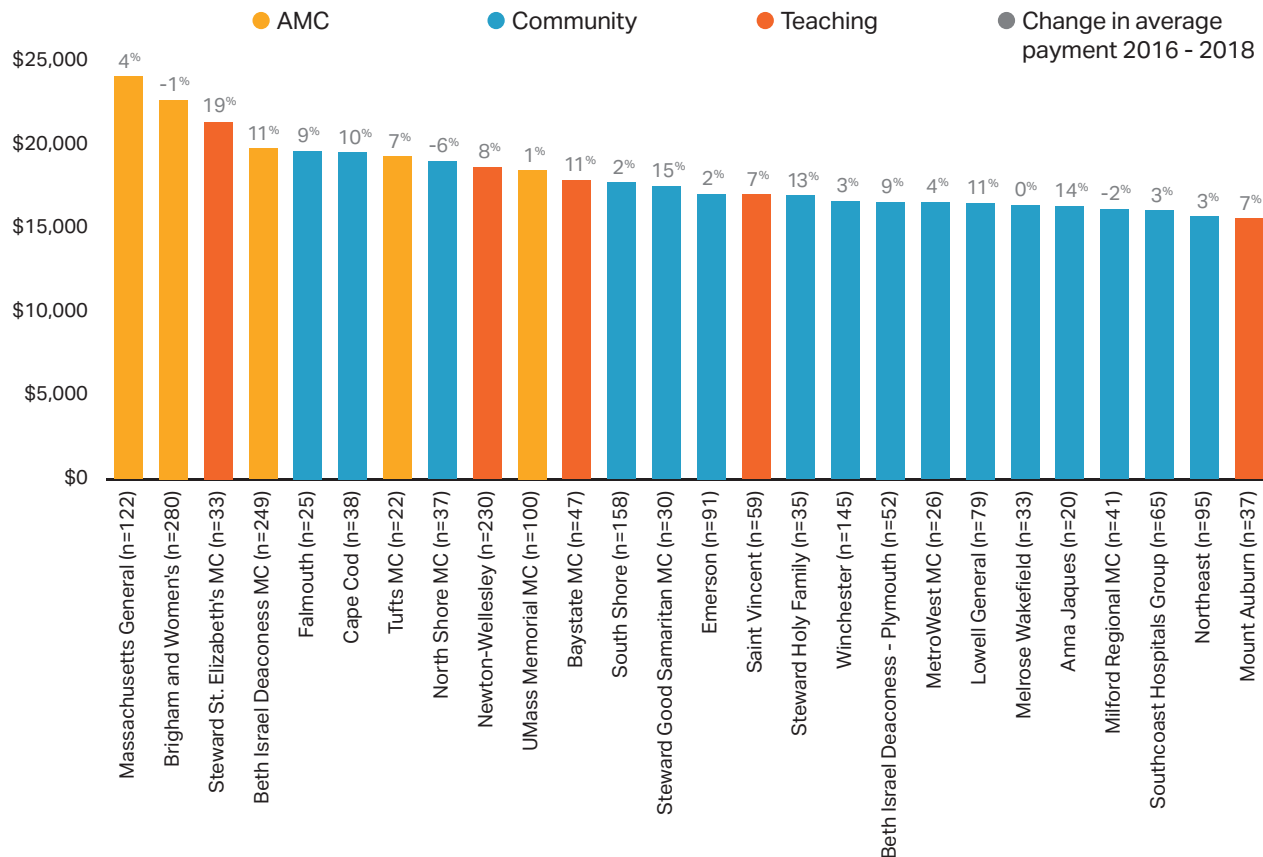
New England Baptist, a specialty hospital, had the largest volume of these surgeries by far, as well as one of the lower average payments at \$28,778 per surgery.

Among the 34 hospitals meeting the volume threshold for this analysis, 12 had price increases of over 10% from 2016 to 2018.

NOTES: Average payment shown includes both facility and professional claims for an inpatient stay labelled with DRG 470 (major joint replacement without major complication or comorbidity). Hospital inclusion criteria was at least 20 inpatient stays in both 2016 and 2018. Percent change in average payment by hospital between 2016 and 2018 is listed in grey above each payment bar.

SOURCES: HPC analysis of Center for Health Information and Analysis Massachusetts All-Payer Claims Database, v8 2016-2018

AVERAGE PAYMENT FOR CESAREAN SECTION DELIVERY (WITHOUT COMPLICATIONS) BY HOSPITAL, 2018, WITH PERCENTAGE CHANGE IN AVERAGE PAYMENT FROM 2016–2018



Average payments for cesarean section delivery varied by hospital in 2018, although to a lesser extent than joint replacement surgery. The average payment for a cesarean delivery varied by 54% — from a low of \$15,619 at Mount Auburn to a high of \$24,099 at Massachusetts General.

Boston-based AMCs had among the highest average payments, while many of the lower average payments were at community hospitals. Payment growth from 2016 to 2018 was mixed, but increases on the order of 10% were not uncommon.

As found in prior HPC work, Mount Auburn continues to have some of the lowest payments for maternity inpatient care (data not shown for vaginal delivery, see technical appendix).

NOTES: Average payment shown includes both facility and professional claims for an inpatient stay labelled with DRG 766 (cesarean section without major complication or comorbidity). Hospital inclusion criteria was at least 20 inpatient stays in both 2016 and 2018. Percent change in average payment by hospital between 2016 and 2018 is listed in grey above each payment bar.

SOURCES: HPC analysis of Center for Health Information and Analysis Massachusetts All-Payer Claims Database, v8 2016-2018

HOSPITAL UTILIZATION

KEY FINDINGS

HOSPITAL UTILIZATION

- Massachusetts continues to have higher hospital utilization than the U.S. overall, including inpatient stays (9% higher), outpatient visits (42% higher), and ED visits (12% higher), but the gap has narrowed slightly in recent years.
- The average commercial payment (excluding professional fees) per inpatient hospital stay rose from \$15,100 in 2013 to \$20,900 in 2019, or an average 5.5% per year.
- Per-capita total ED visits, potentially avoidable ED visits and behavioral health-related ED visits continued to decline slightly in 2019.
- Avoidable ED visit rates varied more than two-fold (2.7 times) across regions in Massachusetts in 2019 between Fall River (highest) and the Upper North Shore (lowest).
- All-payer readmission rates in Massachusetts did not improve in 2018. The gap between the high Medicare readmission rate in Massachusetts and the national rate continues to widen.
- Between 2010 and 2019, the share of total commercial discharges and newborn deliveries that took place at community hospitals continued to decline. In 2019, while community hospitals accounted for 52.4% of all hospital stays, they accounted for 49.7% of newborn stays and 44.7% of commercially-insured stays.
- In Massachusetts, inpatient and outpatient hospital care is increasingly provided by a few large provider systems. Beth Israel Lahey Health and Mass General Brigham together provide 41% of hospital-based care, with other top systems representing far smaller shares.

INTRODUCTION

HOSPITAL UTILIZATION

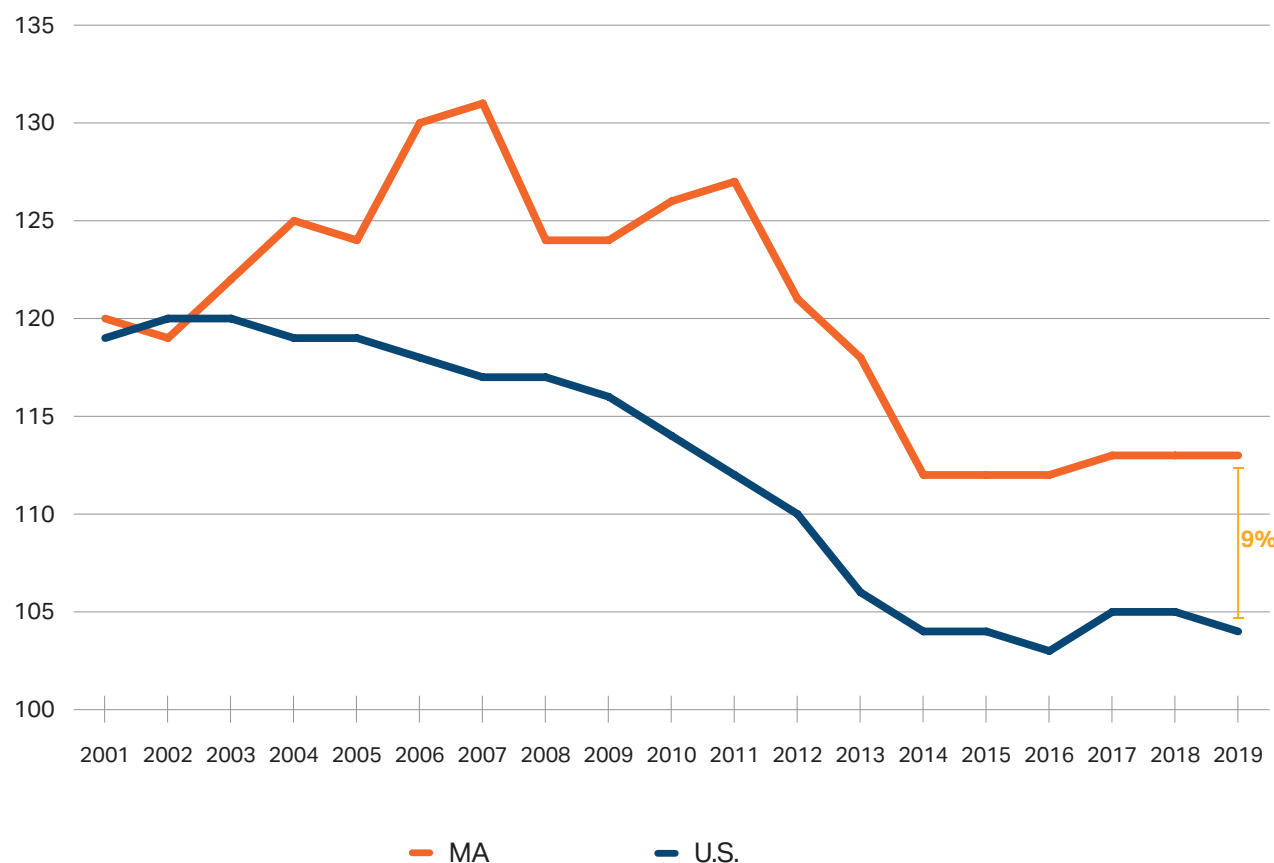
While Massachusetts has consistently ranked well as compared to other states on metrics such as health care access, it ranked 37th in the nation for avoidable hospital use and costs in 2020, according to the Commonwealth Fund's Scorecard on State Health System Performance, worsening in rank for the second consecutive year.¹ In previous cost trends reports, the Massachusetts Health Policy Commission (HPC) has shown that hospital use in Massachusetts is higher than the national average and a larger share of inpatient care is delivered by higher-cost academic medical centers. The HPC has recommended action to reduce unnecessary hospital use and shift appropriate care to community hospitals.

The higher utilization of care in intensive and costly settings in Massachusetts may reflect a number of factors such as patient preference or richer insurance benefits and may, in some cases, reflect greater access to necessary care. These data also highlight that some of that care could have been safely delivered in lower-intensity settings or prevented entirely. Massachusetts' performance relative to other states warrants attention, given the implications of avoidable use of intensive care settings for patient experience and health system spending.

This section reviews recent trends through 2019 in hospital use and examines several measures of avoidable hospital utilization, including avoidable emergency department (ED) use and readmissions. It also examines trends in the Commonwealth in community-appropriate inpatient care occurring in community hospitals versus teaching hospitals and academic medical centers. See technical appendix for details. These data predate the COVID-19 pandemic, which has had a profound effect on hospital-based care in 2020 and beyond, but can provide an important baseline for trends in hospital use during the pandemic. For more information on the impact of COVID-19 on hospital utilization in 2020, please see the HPC's [Impact of COVID-19 on the Massachusetts Health Care System: Interim Report](#).

¹ .Commonwealth Fund's 2020 Scorecard on State Health System Performance. Available at: <https://scorecard.commonwealthfund.org/>. Accessed February 2021.

INPATIENT HOSPITAL DISCHARGES PER 1,000 RESIDENTS IN MASSACHUSETTS AND THE U.S., 2001–2019



After declining sharply from 2011 to 2014, Massachusetts inpatient hospital use remained near 2014 levels through 2019. Rates in the U.S. overall were also relatively unchanged between 2014 and 2018, after years of decline.

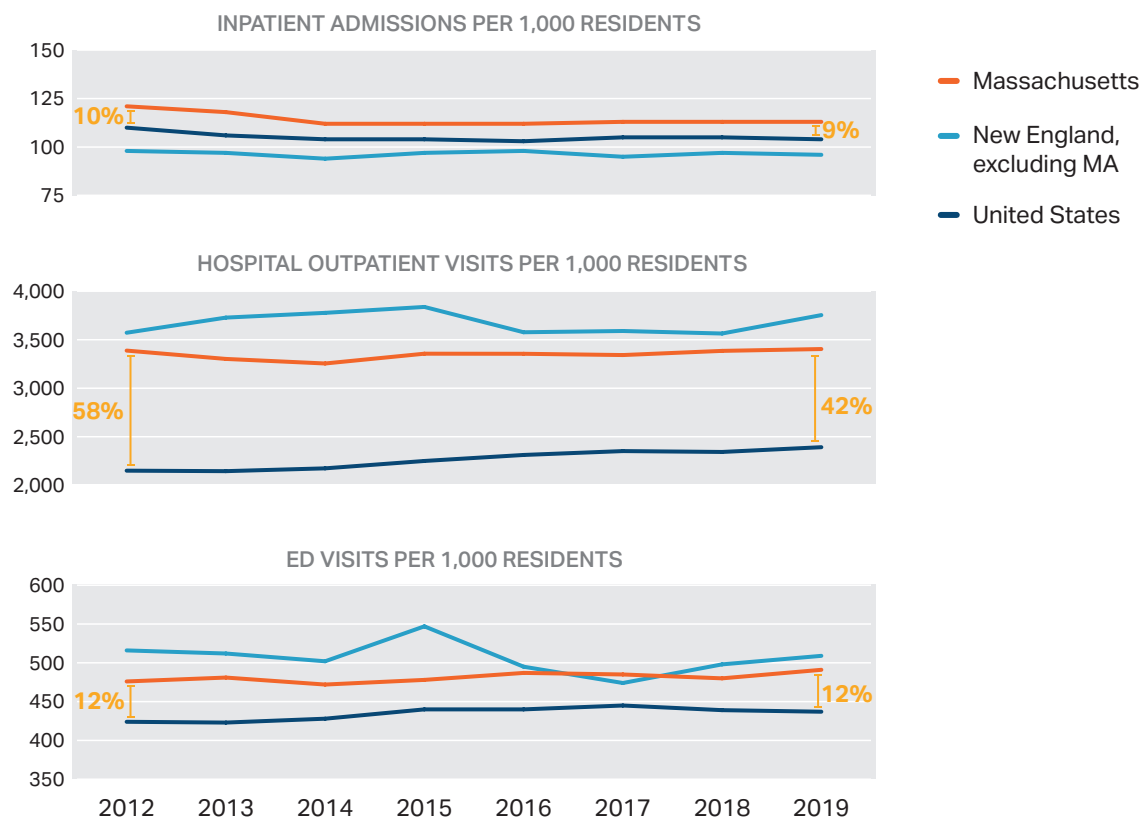
In 2019, the number of inpatient hospital discharges per 1,000 Massachusetts residents was 9% higher than the national average.

HOSPITAL

NOTES: U.S. data include Massachusetts. Data are for community hospitals as defined by Kaiser Family Foundation, which represent 85% of all hospitals. Federal hospitals, long term care hospitals, psychiatric hospitals, institutions for the intellectually disabled, and alcoholism and other chemical dependency hospitals are not included.

SOURCES: Kaiser Family Foundation analysis of American Hospital Association data (U.S. and MA, 2001-2019)

HOSPITAL USE IN MASSACHUSETTS, NEW ENGLAND, AND THE U.S., 2012–2019



Massachusetts continues to have higher utilization of hospital inpatient, outpatient, and ED services relative to the U.S.

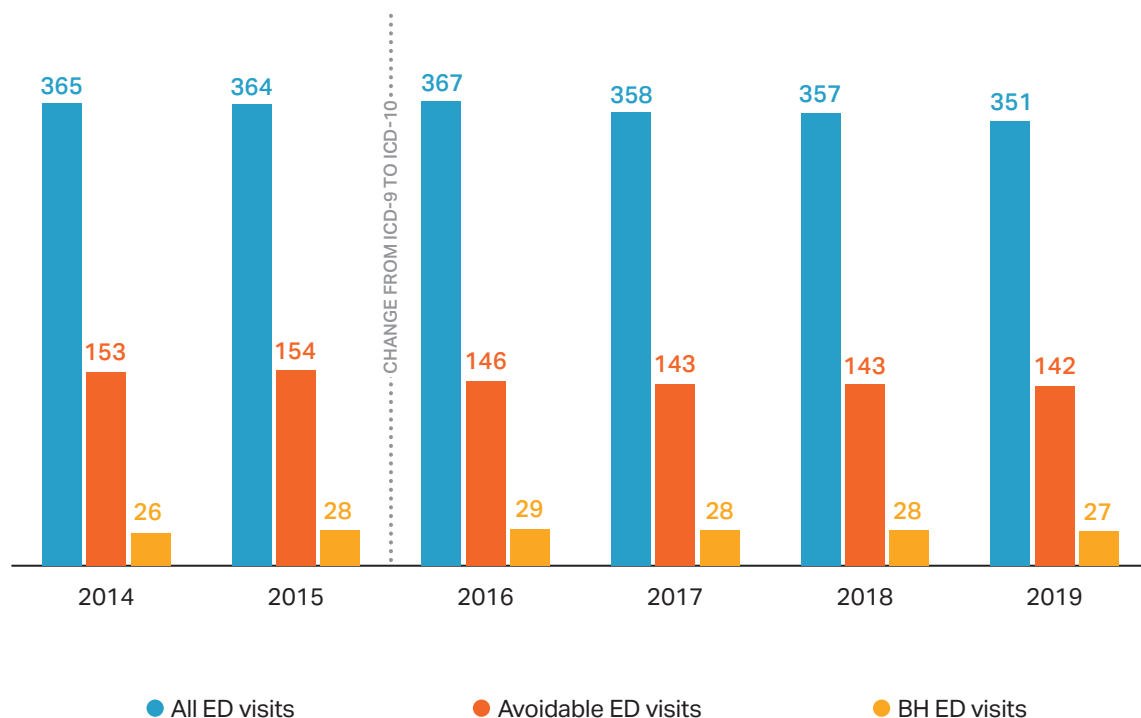
In 2019, the rate of hospital outpatient visits in Massachusetts was 42% higher than that of the U.S. However, between 2012 and 2019, the gap between Massachusetts and U.S. rates for hospital outpatient visit and inpatient admission metrics narrowed somewhat.

While Massachusetts has somewhat lower utilization of hospital outpatient visits than its regional neighbors, the rate of inpatient admissions remains substantially higher in Massachusetts than in other New England states (23% higher in 2012 and 17% higher in 2019). Rates of ED visits in New England overall were slightly higher than in Massachusetts.

NOTES: Data are for community hospitals as defined by Kaiser Family Foundation, which represent 85% of all hospitals. Federal hospitals, long term care hospitals, psychiatric hospitals, institutions for the intellectually disabled, and alcoholism and other chemical dependency hospitals are not included. New England includes Connecticut, Maine, New Hampshire, Rhode Island and Vermont. Massachusetts is excluded from the New England category.

SOURCES: Kaiser Family Foundation State Health Facts, accessed April 2021

ALL ED VISITS, POTENTIALLY AVOIDABLE ED VISITS, AND BEHAVIORAL HEALTH ED VISITS PER 1,000 RESIDENTS, 2014–2019



Between 2014 and 2019, ED visits per 1,000 residents declined 4%, with a 2% decline between 2018 and 2019.

Behavioral health-related ED visit rates declined 3% between 2018 and 2019.

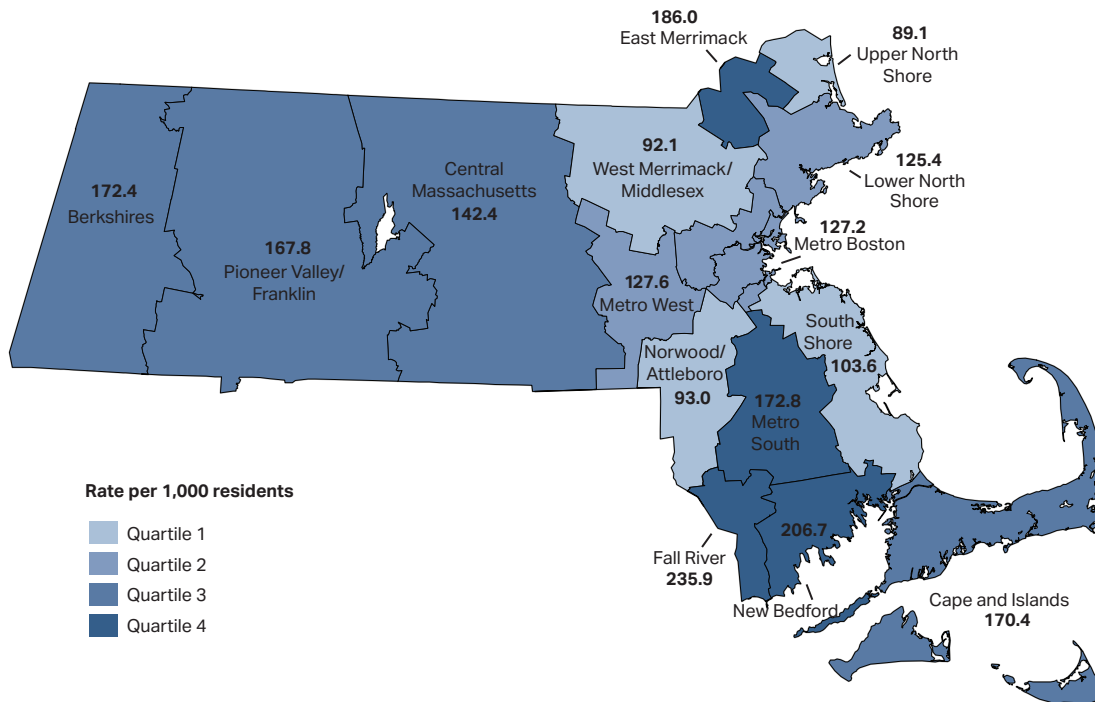
Potentially avoidable ED visits declined 3% between 2016 and 2019. The change from ICD-9 to ICD-10 coding makes comparisons to 2015 and earlier years somewhat less reliable.

HOSPITAL

NOTES: Avoidable ED visits are based on the Billings algorithm, which classifies an ED visit into the following categories: Emergent–ED care needed and not avoidable; Emergent–ED care needed but avoidable; Emergent–primary care treatable; and Non-emergent–primary care treatable. "Avoidable" is defined here as ED visits that were emergent–primary care treatable or non-emergent–primary care treatable. Behavioral health ED visits were identified based on a principal diagnosis related to mental health and/or substance use disorder using the Clinical Classifications Software (CCS) diagnostic classifications. To improve classification rate, diagnosis codes unclassified by the Billings algorithm were truncated and shortened codes were re-classified.

SOURCES: HPC analysis of Center for Health Information and Analysis Emergency Department Database, 2014–2019

POTENTIALLY AVOIDABLE EMERGENCY DEPARTMENT UTILIZATION BY HPC REGION, 2019



The rate of potentially avoidable ED visits is a key metric of health system efficiency and quality. An avoidable visit signals care that could have been treated by a primary care provider, either at the time of the visit or through prevention. The statewide rate of avoidable ED visits was 141.8 per 1,000 residents in 2019, representing a 3% decline in avoidable ED utilization since 2016.

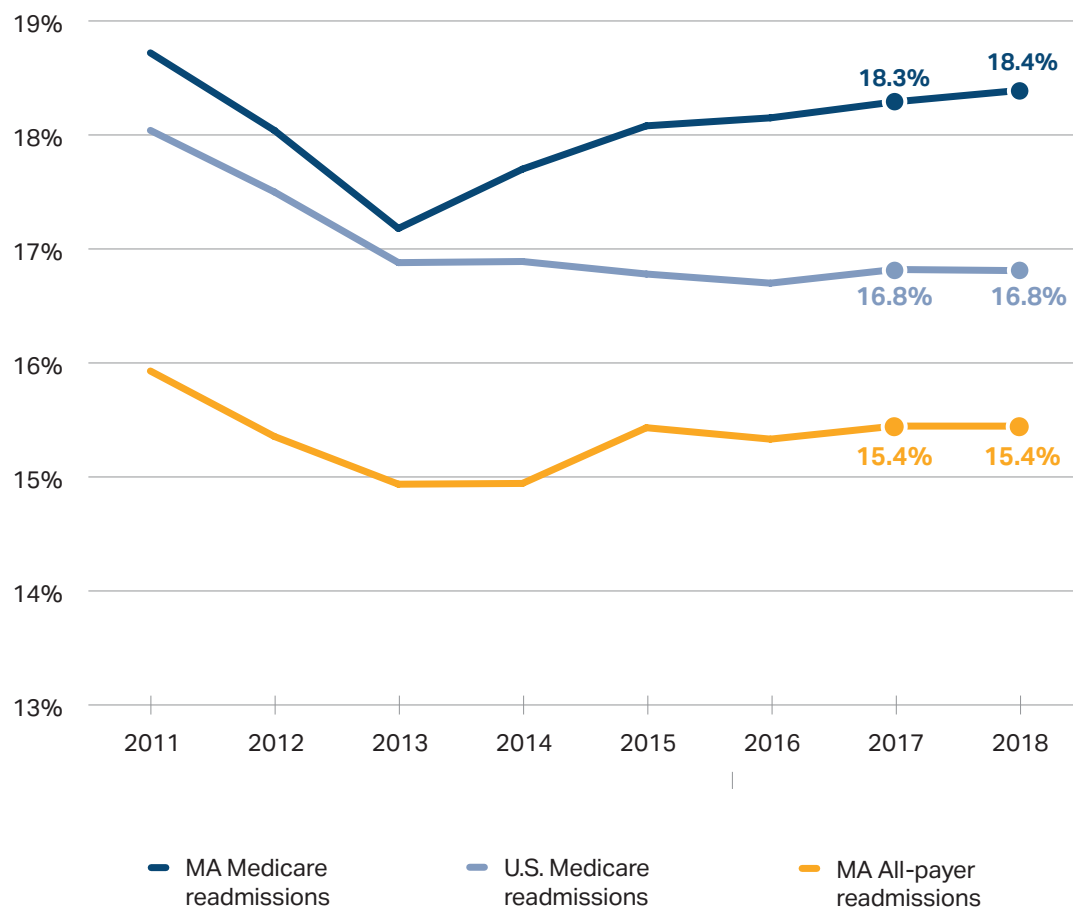
Despite the overall drop in statewide rates, there is considerable variation by region. Rates varied more than two-fold, from 235.9 avoidable ED visits per 1,000 residents in Fall River to 89.1 per 1,000 residents in the Upper North Shore.

Several regions showed notable increases in the rate of avoidable ED visits between 2016 and 2019 including Metro West (5.1%), the Lower North Shore (3.4%) and Pioneer Valley/Franklin (2.1%).

NOTES: Avoidable ED visits are based on the Billings algorithm, which classifies an ED visit into the following categories: Emergent-ED care needed and not avoidable; Emergent-ED care needed but avoidable; Emergent-primary care treatable; and Non-emergent-primary care treatable. "Avoidable" is defined here as ED visits that were emergent-primary care treatable or non-emergent-primary care treatable. Behavioral health ED visits were identified based on a principal diagnosis related to mental health and/or substance use disorder using the Clinical Classifications Software (CCS) diagnostic classifications. To improve classification rate, diagnosis codes unclassified by the Billings algorithm were truncated and shortened codes were re-classified.

SOURCES: HPC analysis of Center for Health Information and Analysis Emergency Department Database, 2014-2019

THIRTY-DAY READMISSION RATES, MASSACHUSETTS AND THE U.S., 2011–2018



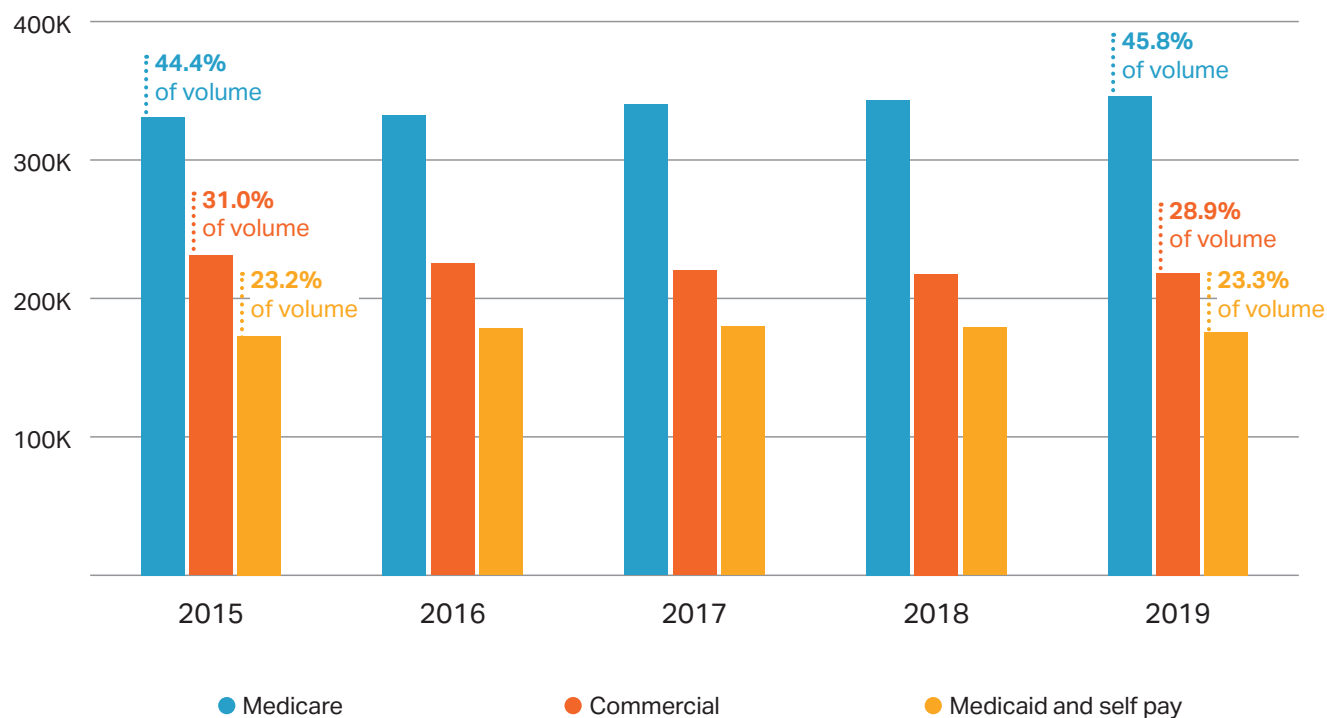
Hospital readmissions represent potentially avoidable hospital use and are a measure of health system performance.

After near convergence with U.S. rates in 2013, Massachusetts' Medicare readmission rates have continued to trend upward, although increases have been slower in recent years. National Medicare readmission rates remained stable in 2018 after trending downward in earlier years.

All-payer readmission rates in Massachusetts showed no improvement in 2018. Commercial and Medicaid readmission rates remained constant between 2017 and 2018 (data not shown).

SOURCES: Centers for Medicare and Medicaid Services (U.S. and MA Medicare), 2011-2018; Center for Health Information and Analysis (all-payer MA), 2011-2018

TOTAL INPATIENT HOSPITAL DISCHARGES BY PAYER, 2015 – 2019



Over the past five years, Medicare patients have comprised an increasing share of all inpatient hospital discharges in Massachusetts, growing from 44.4% in 2015 to 45.8% in 2019. This trend is partly due to a higher share of the population enrolled in Medicare due to the state's aging population. The share of discharges from commercially insured patients has decreased from 31.0% in 2015 to 28.9% in 2019.

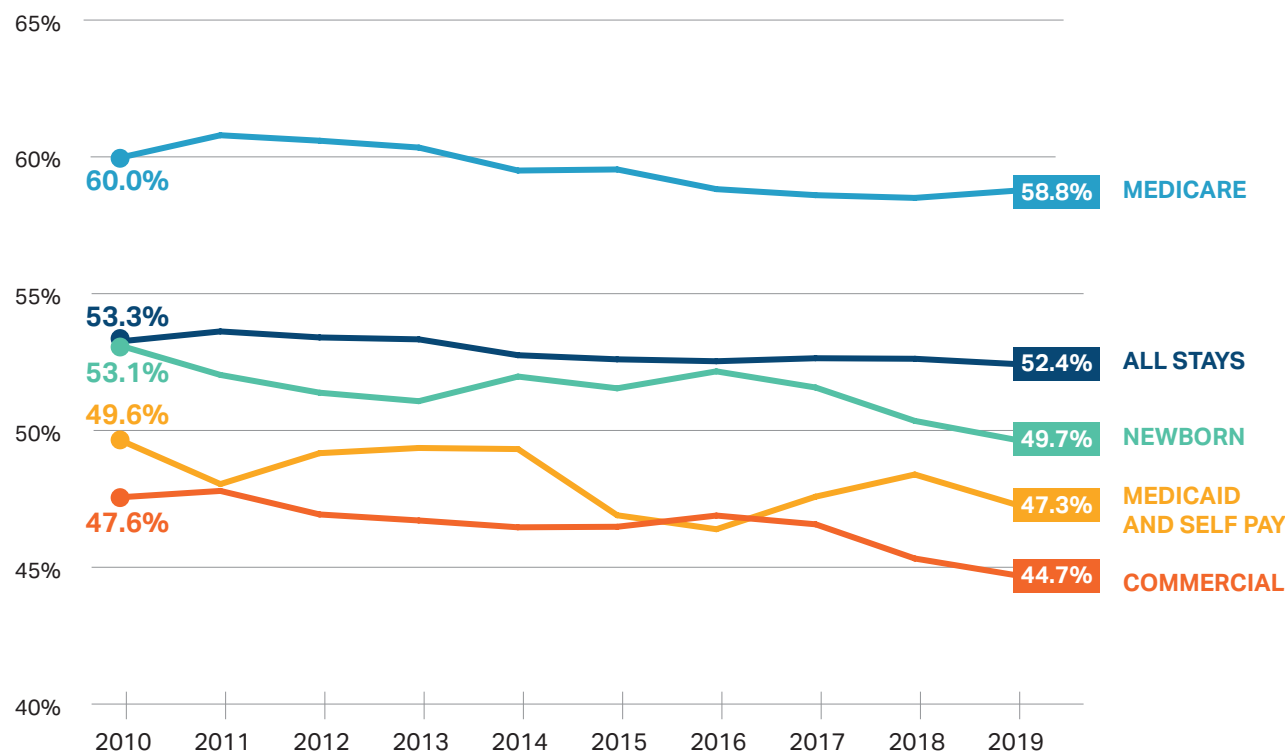
Since commercial payment rates are higher than public payer rates for most hospitals, this shift in the composition of inpatient volume has financial implications for hospitals.

Self pay discharges are grouped here with Medicaid to account for coding inconsistencies, see notes for details.

NOTES: Out of state residents (~5% of discharges) are excluded from this analysis. Medicaid and self pay category includes free care, health safety net, and CommonwealthCare/ConnectorCare plans. All other payers (including other government) are not illustrated, but accounted for in percentage calculations. The number of inpatient hospital discharges coded with self pay as the primary payer has increased more than three-fold between 2015 and 2019, from 0.6% to 2.2%. Based on provider input, the HPC and CHIA believe that many Medicaid discharges were incorrectly coded as self pay. To address this inconsistency, the HPC grouped self pay with Medicaid for this analysis.

SOURCES: HPC analysis of Center for Health Information and Analysis Hospital Inpatient Discharge Database, 2015-2019

PERCENTAGE OF INPATIENT STAYS OCCURRING IN COMMUNITY HOSPITALS, BY DISCHARGE TYPE, 2010–2019



One strategy to reduce health care spending is to shift community appropriate inpatient care away from higher-cost academic medical centers and teaching hospitals.

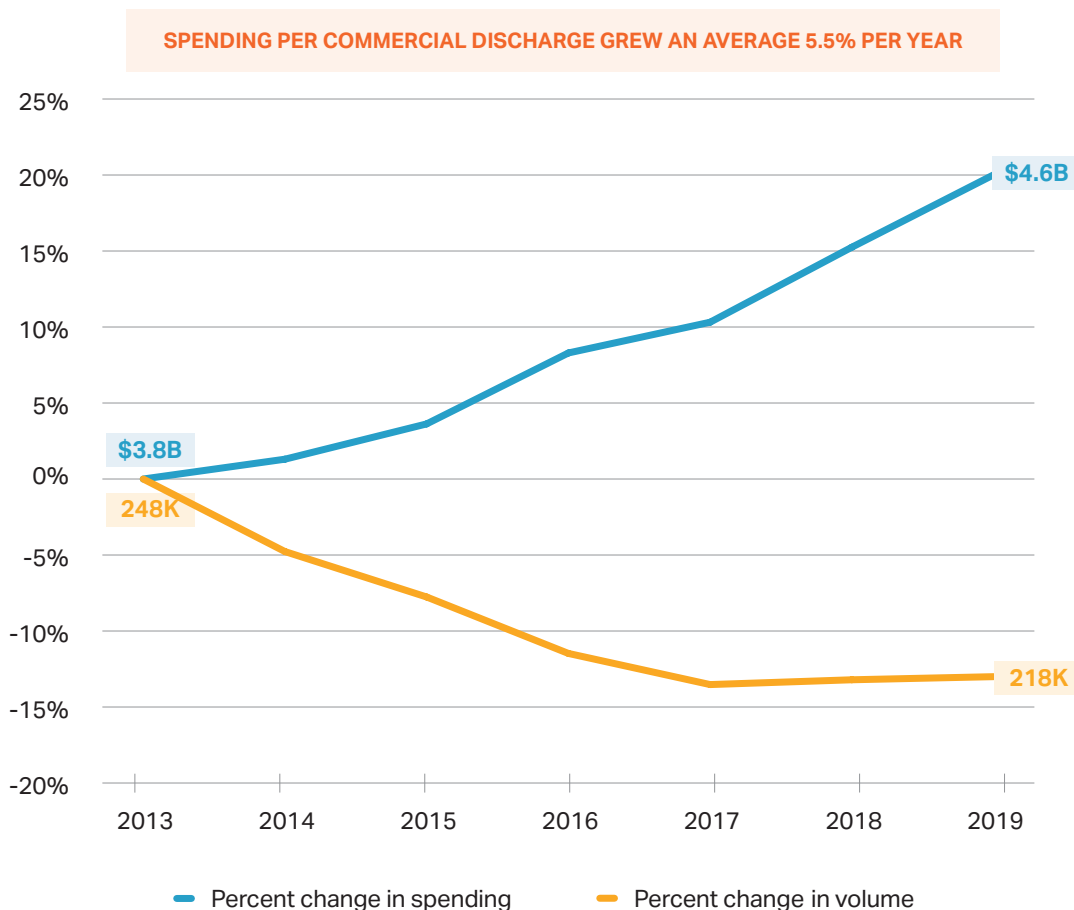
The share of all stays occurring at community hospitals has remained roughly constant since 2010. However, since 2010, the share of commercial discharges taking place at community hospitals has declined, especially since 2016, implying that public payers account for a growing share of community hospital volume.

Likewise, the share of newborn deliveries taking place at community hospitals declined 2.5 percentage points between 2016 and 2019, as more newborn deliveries take place at academic medical centers and teaching hospitals.

NOTES: The Center for Health Information and Analysis defines community hospitals as general acute care hospitals that do not support large teaching and research programs.

SOURCES: HPC analysis of Center for Health Information and Analysis Hospital Inpatient Discharge Database, 2010-2019

CUMULATIVE PERCENT CHANGE IN COMMERCIAL INPATIENT HOSPITAL VOLUME AND SPENDING PER ENROLLEE AND ABSOLUTE VALUES, 2013–2019



NOTES: Data points indicate cumulative percent growth relative to 2013 (2013=0). Volume data correspond to fiscal years while spending data are calendar years.

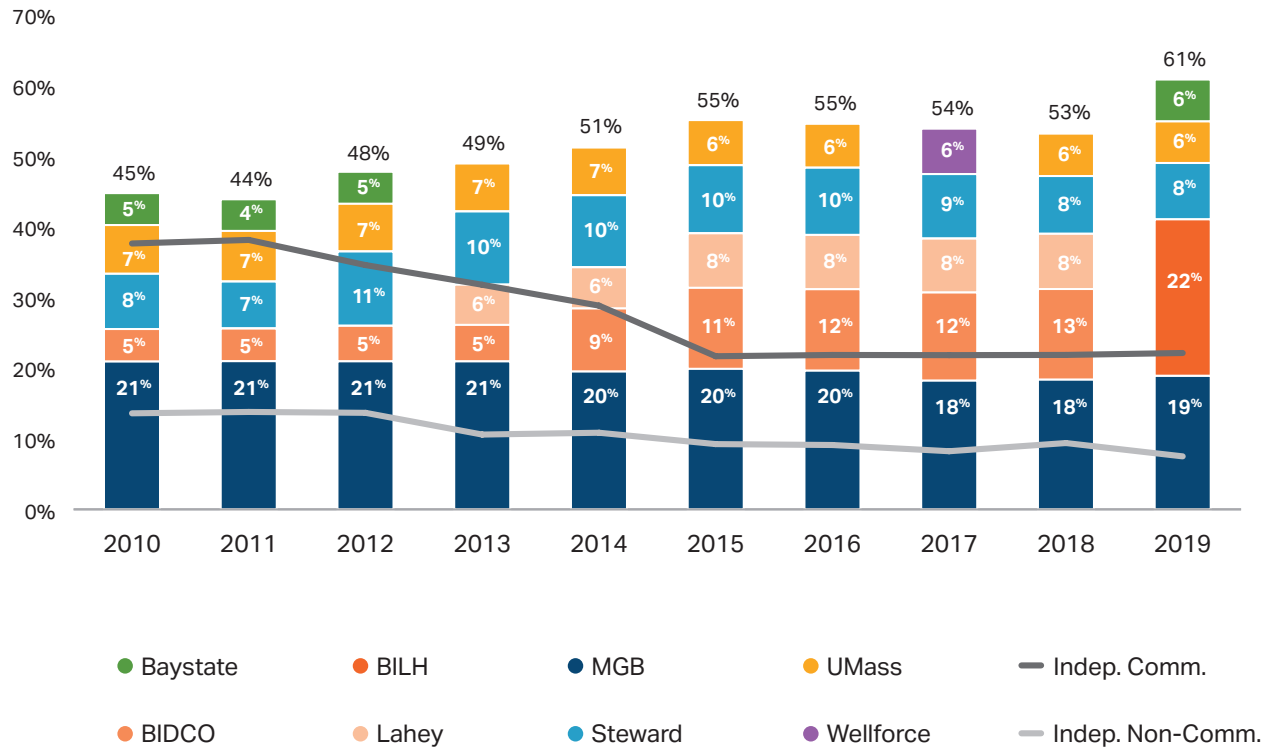
SOURCES: CHIA Hospital Inpatient Discharge Data, 2013-2018. Commercial full-claims TME from CHIA Annual Report TME Databooks. 2019 Annual report (for 2017-8 growth and 2016-7 growth), 2018 Annual Report (for 2015-6), 2017 annual report (for 2014-2015) and 2016 Annual Report (for 2013-4 growth).

In 2019, commercial inpatient hospital spending in Massachusetts increased 4.2% to \$4.6 billion (3.9% increase per stay), while the number of commercial inpatient stays was nearly the same as in 2018, at approximately 218,000.

Over the 6-year period, commercial payments for inpatient care increased by more than \$800 million, or 20%, even as the number of stays dropped by 30,000, or 13%. The average commercial payment (excluding professional fees) per stay rose from \$15,200 in 2013 to \$20,900 in 2019, or 5.5% per year (38% overall).

Findings from the HPC's 2019 Annual Cost Trends Report showed that this growth in payments per stay is roughly evenly divided between higher prices for a given type of stay and growth in the acuity of those stays; and that the growth in stay acuity is, in turn, driven by changes in hospital coding practices more than actual changes in patient health.

SHARE OF INPATIENT AND OUTPATIENT CARE IN THE FIVE LARGEST HOSPITAL SYSTEMS AND INDEPENDENT HOSPITALS, 2010–2019



In Massachusetts, hospital care is increasingly provided by a small number of large provider systems. Examining inpatient and outpatient care combined, the HPC found that 61% of such care was provided at one of the five largest hospital systems in 2019, a significant increase from previous years in large part owing to the formation of Beth Israel Lahey Health (BILH) in 2019. BILH and MGB provide 41% of hospital-based care, with other systems representing far smaller shares.

The formation of BILH was accompanied by a slight decrease in care at independent non-community hospitals in 2019. The share of care at independent community hospitals continues to remain at about 22% of care.

NOTES: Partners HealthCare changed its name to Mass General Brigham (MGB) in 2019. Inpatient care is measured in hospital discharges for general acute care services. Hospital outpatient care is measured in outpatient discharge equivalents, the quantity of outpatient services expressed in inpatient stay equivalents. See technical appendix for details.

SOURCES: HPC analysis of Center for Health Information and Analysis Hospital Cost Reports, 2010–2019

POST-ACUTE CARE

KEY FINDINGS

POST-ACUTE CARE

- Following a hospitalization, Massachusetts patients have a higher rate of discharge to institutional post-acute care (PAC) and home health than the national average. The difference in home health discharge rates between Massachusetts and the U.S. has widened over time.
- The percentage of Massachusetts hospital discharges to institutional PAC dropped by almost 1 percentage point for the fourth year in 2019, while home health discharges increased by 0.7 percentage points. Routine discharges remained stable. The decrease in discharges to institutional PAC between 2018 to 2019, partially offset by an increase in home health use, is consistent with trends since 2015.
- In 2019, among the 30 hospitals with the highest discharge volume, St. Elizabeth's Medical Center had the highest rate of discharge to institutional PAC at 25.8%, while Newton-Wellesley Hospital had the lowest rate at 15.4%, even after adjusting for patient age, sex, admission source, payer, and diagnosis.

INTRODUCTION

POST-ACUTE CARE

Post-acute care (PAC) refers to a range of medical services that support a patient's rehabilitation and nursing care needs following a hospitalization. Depending on patients' needs, these services may be delivered at home (through a home health agency) or in an institutional setting such as a skilled nursing facility (SNF), inpatient rehabilitation facility (IRF), or long-term care hospital (LTCH). Patients with a routine discharge are discharged to home with no formal post-acute care, but they may receive some services, such as physical therapy, on an outpatient basis.

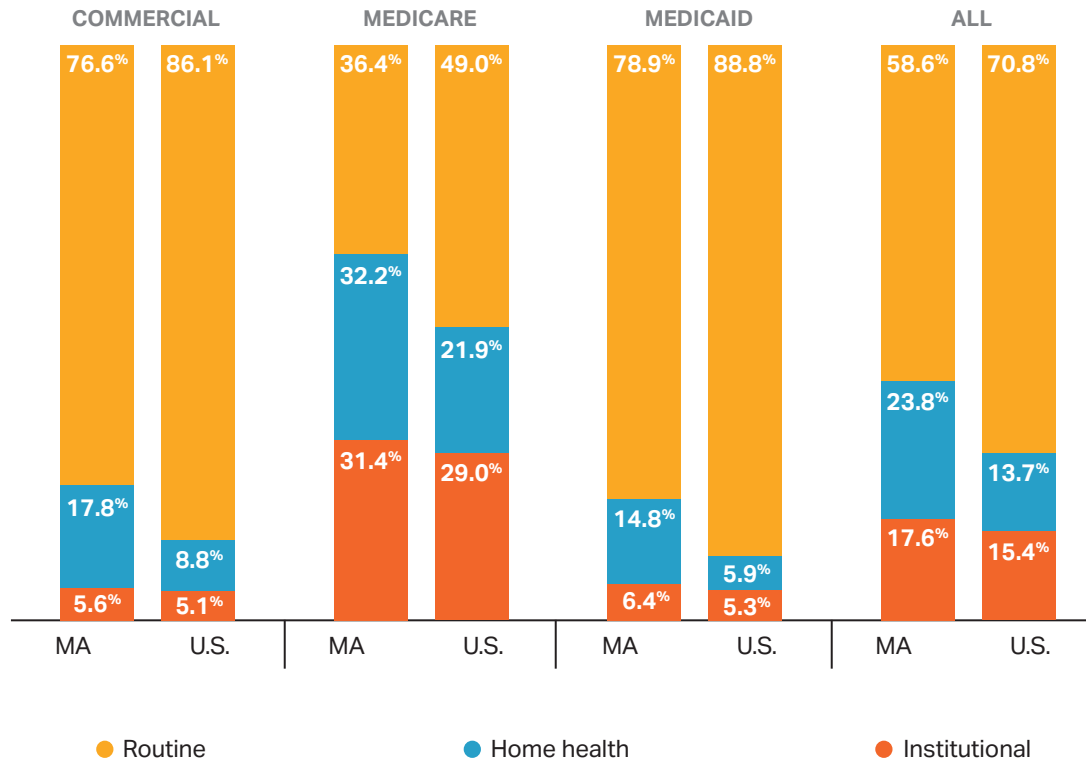
PAC is a large category of health care spending, representing nearly \$53 billion and 15% of total Original Medicare (fee-for-service) spending nationwide. The HPC previously found that Massachusetts has higher rates of discharge to institutional PAC and home health than the U.S. average, across all payers, contributing to higher PAC spending. In 2018, Massachusetts Medicare spending on PAC exceeded \$1.6 billion, and annual PAC spending per beneficiary in Massachusetts was 17.6% higher (\$279 more) than the U.S. average.¹

Institutional PAC is considerably more expensive than home health. In 2018, Medicare spending in Massachusetts for a SNF stay averaged \$10,200, compared to \$3,200 for a home health episode.¹ Therefore, choosing the appropriate PAC setting can have a substantial impact on both costs and patient experience. The COVID-19 pandemic has increased the focus on this policy area, presenting new challenges such as the capacity and capability of PAC facilities and home health agencies to safely care for COVID-19 patients as they recover from infection.² See technical appendix for details.

1 HPC analysis of 2018 CMS Medicare Geographic Variation Public Use File, State/County Report- All Parts A and Parts B Beneficiaries.

2 Grabowski DC, Joynt Maddox KE. Post acute Care Preparedness for COVID-19: Thinking Ahead. JAMA. 2020;323(20):2007–2008. doi:10.1001/jama.2020.4686

PAC DISCHARGES, ALL DRGS, ALL PAYERS, 2017



Massachusetts has a higher rate of discharge to institutional PAC and home health than the U.S. average.

Across all payers in 2017, Massachusetts had an institutional discharge rate that was 2.2 percentage points higher than the U.S. average and a home health discharge rate that was 10.1 percentage points higher. The difference in home health discharge rate between Massachusetts and the U.S. had widened over time: in 2016, the home health discharge rate was 8.8 percentage points higher than U.S. average.

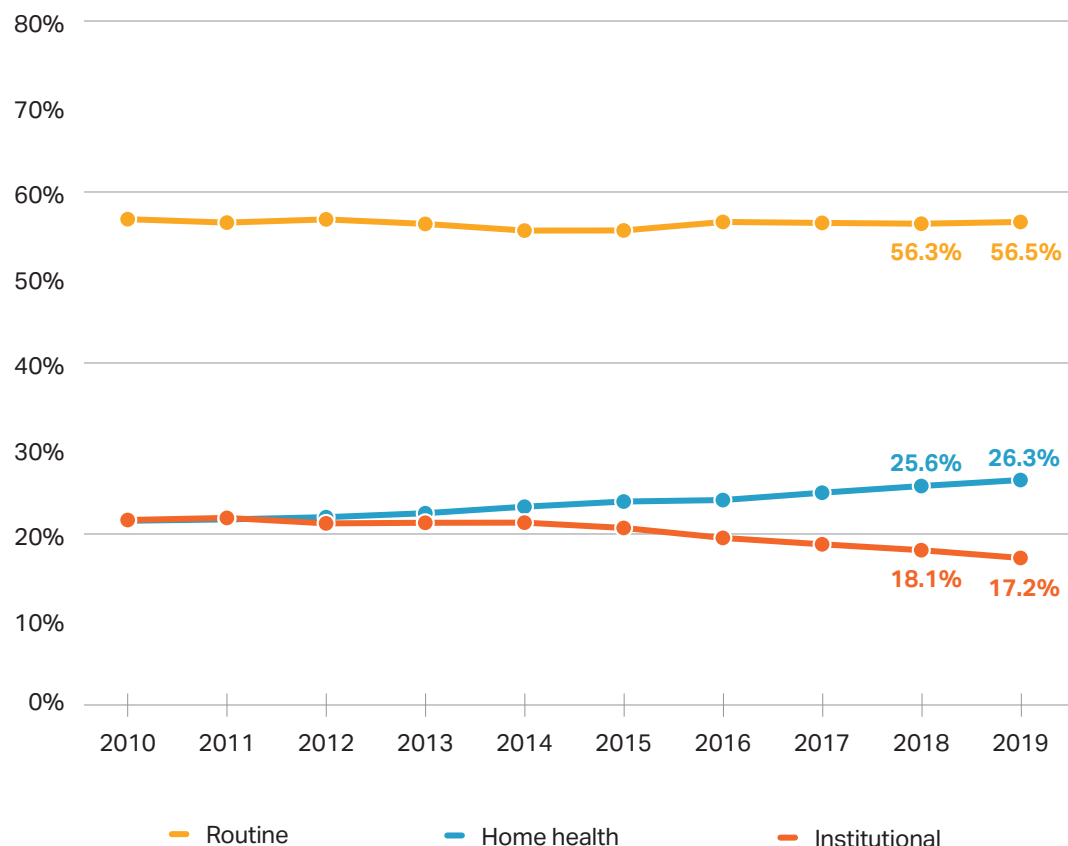
Consistent with trends in prior years, Medicare had the largest differential in 2017, with the Massachusetts rate of discharge to institutional PAC exceeding the national average by 2.4 percentage points.

Patients covered by commercial insurance were twice as likely to be discharged to home health care if they lived in Massachusetts compared to the rest of the nation.

NOTES: Institutional settings include skilled nursing facilities, inpatient rehabilitation facilities, and long-term care hospitals. Routine = discharge to home with no formal post-acute care.

SOURCES: HPC analysis of Healthcare Cost and Utilization Project (HCUP) Nationwide Inpatient Sample Survey and State Inpatient Sample, 2017

USE OF POST-ACUTE CARE IN MASSACHUSETTS FOLLOWING HOSPITAL DISCHARGE, ALL DRGS, 2010–2019



NOTES: Out of state residents and those under 18 are excluded. Institutional post-acute care settings include skilled nursing facilities, inpatient rehabilitation facilities, and long-term care hospitals. Rates adjusted using ordinary least squares (OLS) regression to control for age, sex, and changes in the mix of diagnosis-related groups (DRGs) over time. Discharges from hospitals that closed and specialty hospitals, except New England Baptist, were excluded. Several hospitals (UMass Memorial Medical Center, Clinton Hospital, Cape Cod Hospital, Falmouth Hospital, Marlborough Hospital) were excluded due to coding irregularities in the database. Routine = discharge to home with no formal post-acute care.

SOURCES: HPC analysis of Center for Health Information and Analysis Hospital Inpatient Discharge Database, 2010-2019

The percentage of patients discharged to institutional PAC following a hospitalization dropped by almost 1 percentage point for the fourth consecutive year in 2019. Rates are adjusted to control for population changes over time.

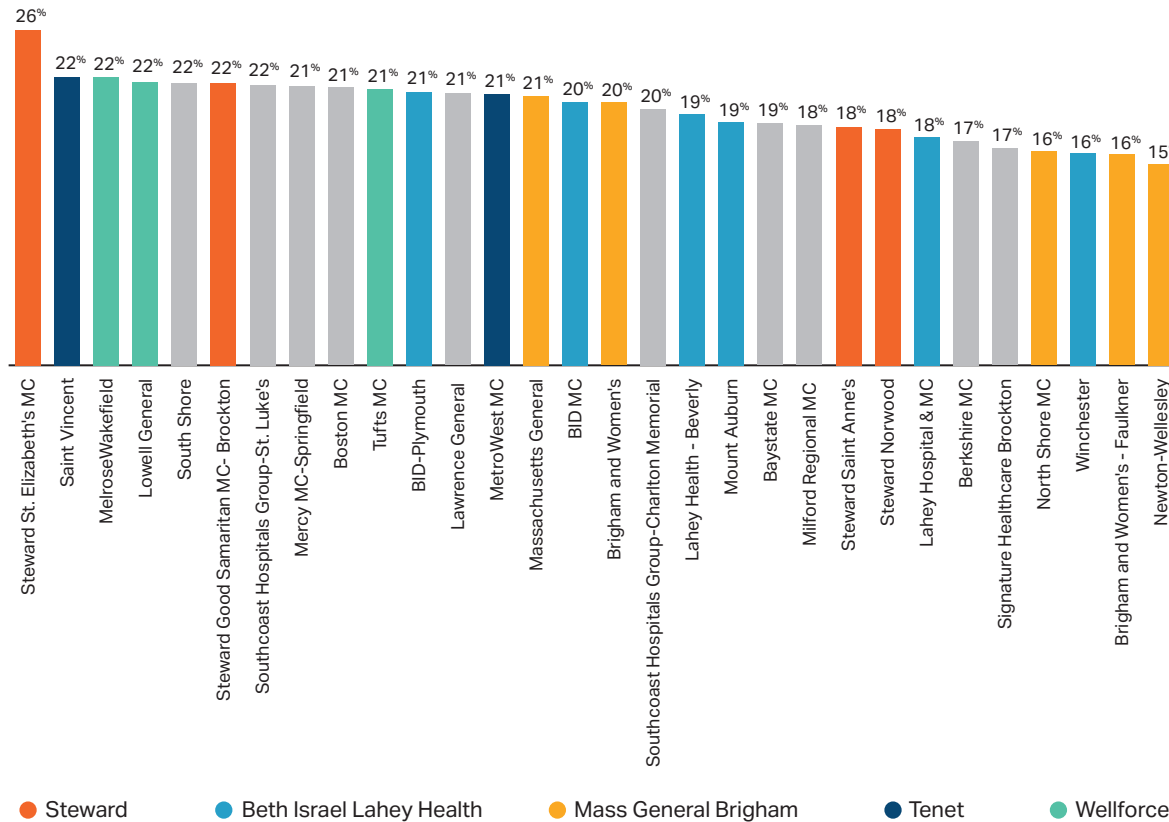
Since 2010, the rate of discharge to institutional PAC has dropped steadily (4.4 percentage points in total), and nearly 80% of the reduction occurred between 2015 and 2019.

Conversely, the use of home health has grown in the same period, increasing by 0.7 percentage points from 2018 to 2019 and 4.8 percentage points in total since 2010.

The reduction in institutional PAC discharges varies by condition and was partially driven by changes in discharge patterns for musculoskeletal conditions such as hip and knee replacements. The rate of discharge to institutional PAC for these conditions declined by 3.5 percentage points between 2016 and 2019.

PAC

ADJUSTED INSTITUTIONAL DISCHARGE RATES FOR 30 HIGHEST VOLUME HOSPITALS, 2019



Demographic and clinical factors such as age and comorbidities are important considerations in the use of institutional PAC. However, even after adjusting for patient age, sex, admission source, payer, and diagnosis, the rate of discharge to institutional PAC varied significantly across high volume hospitals in Massachusetts.

Of the top 30 hospitals by discharge volume, rates of discharge to institutional PAC varied from 26% at St. Elizabeth's Medical Center to 15% at Newton-Wellesley. By health care system, Wellforce hospitals had among the highest rates and MGB had among the lowest rates. However, for most health care systems, rates varied widely by hospital.

Prior research has shown that variation in PAC is influenced by nonclinical factors, such as provider practice patterns, patient social factors such as availability of support at home, and the supply of services.¹ More research is needed on the factors driving variation between hospitals in Massachusetts.

1. Kane et al. Geographic variation in the use of post-acute care. Health Services Research, 2002. Jun; 37(3): 667-682. Available at: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC1434656/>

NOTES: Hospital rates have been adjusted for major diagnostic category, age, sex, admission source and primary payer. Fiscal Year 2019 Case Mix data reflect discharges from Oct 1, 2018 to September 30, 2019. The formation of Beth Israel Lahey Health was completed in March, 2019.

SOURCES: HPC analysis of Center for Health Information and Analysis Hospital Inpatient Discharge Database, 2019

ALTERNATIVE PAYMENT METHODS

KEY FINDINGS

ALTERNATIVE PAYMENT METHODS

- The share of commercial member-months in alternative payment methods (APM) in Massachusetts remained flat from 2017 to 2019 (41.2% vs 41.3%).
- Both BCBSMA and THP saw an increase in the rate of APM use for their HMO/POS products and their PPO, indemnity, and other products from 2017 to 2019. HPHC saw a decrease in APM use for its HMO/POS products and no APM use in other products during this time.
- Smaller Massachusetts-based insurers saw a decrease in APM use for their HMO/POS plans from 2017 to 2019 (36% to 23%), while APM adoption in their non-HMO/POS plans remained flat.
- Among commercial members who were required to select a primary care provider (PCP) by their plans and who were in an HMO/POS plan, the percent of member-months under full global budget payment arrangements decreased from 28.7% in 2017 to 25.7% in 2019.
 - The percent of member months in fee-for-service (FFS) arrangements increased from 45.1% in 2017 to 49.1% in 2019.
- Provider groups vary considerably in whether APM arrangements have “upside only” versus “two-sided” risk. Many provider organizations have a smaller proportion of HMO/POS member-months under two-sided risk arrangements in 2019 than they did in 2018.

NOTES: BCBSMA = Massachusetts include Blue Cross Blue Shield of MA, HPHC = Harvard Pilgrim Health Care, THP = Tufts Health Plan, HMO = health maintenance organization, POS = point-of-service, PPO = preferred provider organization.

INTRODUCTION

ALTERNATIVE PAYMENT METHODS

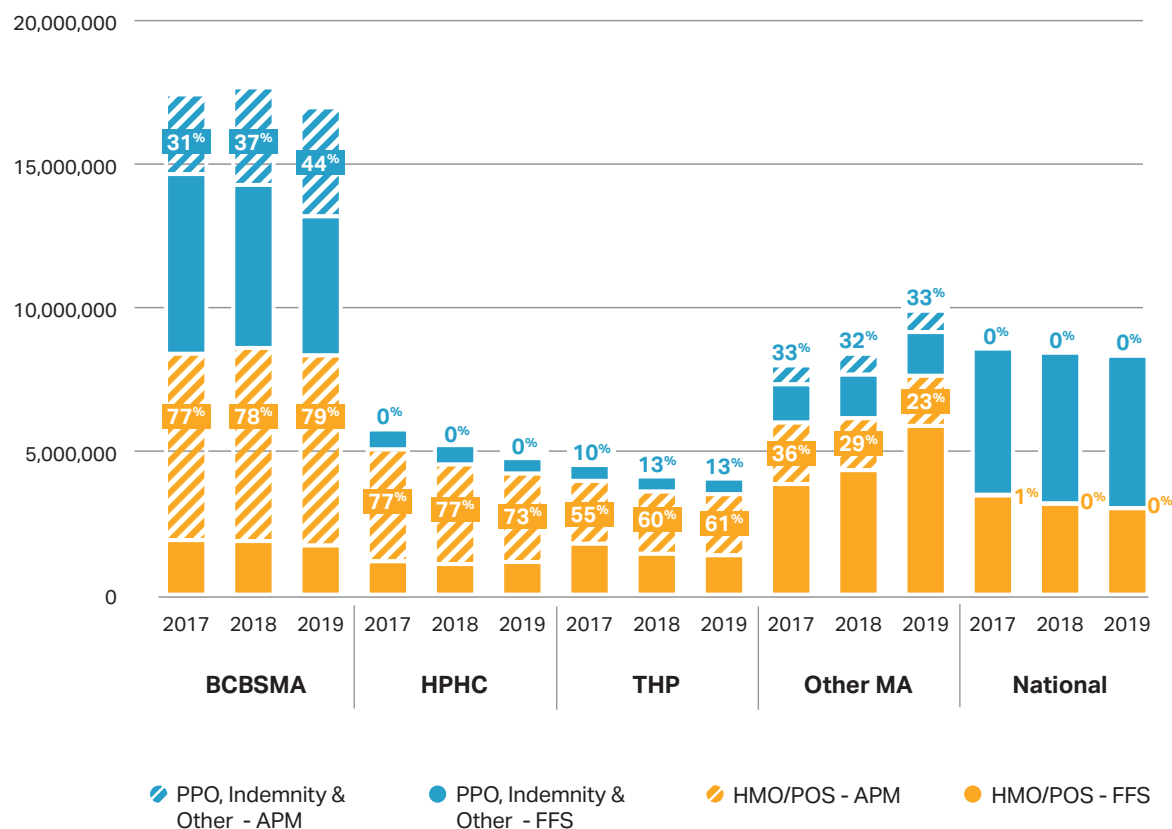
Alternative payment methods (APMs) are a key strategy to promote high-quality, efficient care and reduce health care spending. Traditional fee-for-service (FFS) payment methods reward providers for the volume of services provided, while APMs, such as global budget contracts and bundled payments, seek to promote value-based care to reduce unnecessary utilization. These types of payments can be used in most insurance products. Earlier growth in APM adoption has stalled among Massachusetts payers in recent years, with the exception of MassHealth. The share of APM coverage among MassHealth members receiving full benefits from managed care organizations or accountable care organizations (ACOs) increased from 67.4% in 2018 to 84.6% in 2019 (see CHIA's 2020 Annual Report¹).

In commercial insurance products, 41.3% of members in Massachusetts had primary care physicians engaged in an APM in 2019.¹ Many providers note that operating in an environment where fewer than half of their patients are covered under an APM contract (and the rest paid under traditional FFS) creates conflicting incentives. For APM incentives to work effectively, providers need a critical mass of patients covered under risk-based contracts for the financial benefits of reducing avoidable utilization under an APM to outweigh the FFS losses of those services. In addition, growth in recent years of partial global budget arrangements means that more patients have their care linked to both APM and FFS contracts.

This section focuses on APMs in the commercial market in Massachusetts, including trends in uptake of APMs, use of APMs by product type and payer, trends in type of APM by payer, and adoption of different risk sharing contracts by provider organization. See technical appendix for details.

¹ Center for Health Information and Analysis. Performance of the Massachusetts Health Care System Annual Report. March 2021

COMMERCIALLY-INSURED MEMBER-MONTHS UNDER APMS IN MASSACHUSETTS (MASSACHUSETTS-BASED AND NATIONAL INSURERS), 2017 – 2019



NOTES: The three largest insurers in Massachusetts include Blue Cross Blue Shield of MA (BCBSMA), Harvard Pilgrim Health Care (HPHC), and Tufts Health Plan (THP), including Tufts HMO. Other MA payers include AllWays, BMC HealthNet Plan, Fallon Community Health Plan, Health New England, Health Plans Inc., Tufts Health Public Plans, and Unicare (Anthem). National payers include Cigna and United. *Aetna was excluded due to data irregularities. HMO = health maintenance organization, POS = point-of-service, PPO = preferred provider organization.

SOURCES: HPC analysis of Center for Health Information and Analysis Annual Report APM data set, 2020. Analysis includes full and partial claims for commercial.

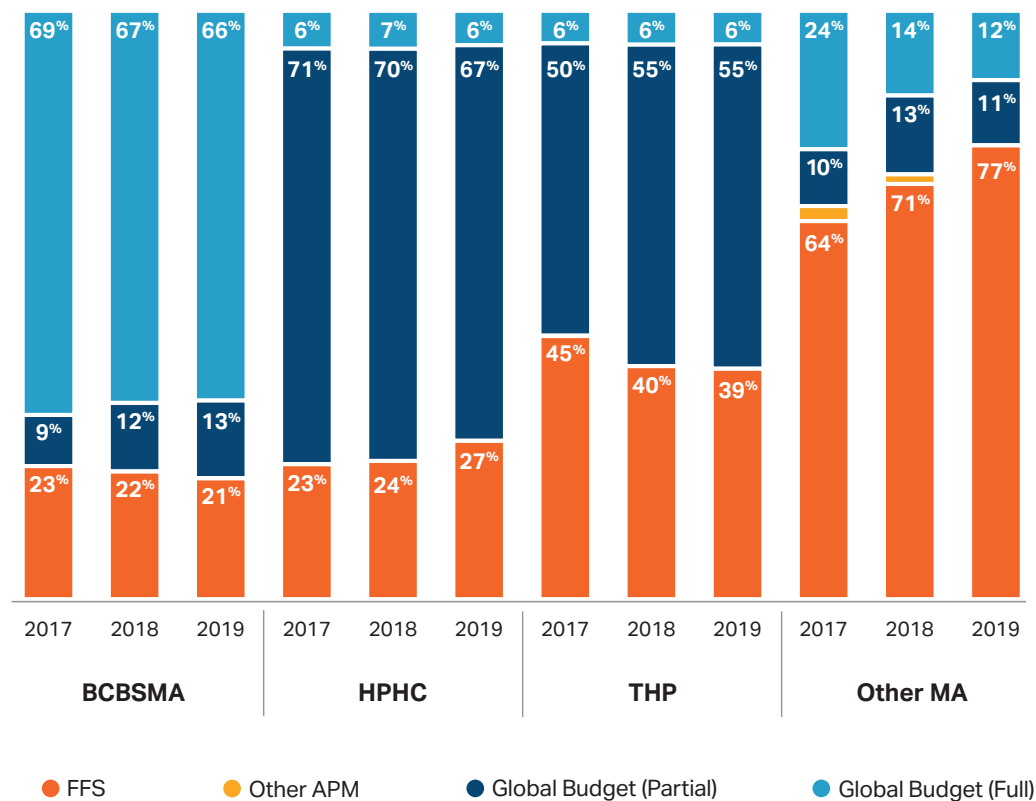
The overall rate of APM use in Massachusetts decreased in 2019. After an increase from 41.2% in 2017 to 41.9% in 2018, APM use declined to 41.3% in 2019.

Blue Cross Blue Shield of Massachusetts (BCBSMA) was the only large payer to increase the share of members with PPO and other non-HMO/POS plans covered under APMS in 2019. The share of non-HMO/POS members under APMS also increased slightly among smaller Massachusetts-based insurers as well. Harvard Pilgrim Health Care (HPHC) continued to have no APM use for its PPO plans.

While BCBSMA and Tufts Health Plan (THP) both had slight growth in APM adoption among HMO/POS members, BCBSMA continued to have the greatest share of APM use in these products of the three largest Massachusetts-based insurers. For smaller Massachusetts-based insurers, the share of members in HMO/POS products covered under APMS dropped by thirteen percentage points from 2017 to 2019.

National insurers have virtually none of their Massachusetts members covered under APMS.

TRENDS IN APM USE AND TYPE OF APM FOR HMO/POS COMMERCIAL MEMBERS BY MASSACHUSETTS-BASED INSURERS, 2017–2019



In full global budget arrangements, all of members' spending is under a risk-based contract. For payers with members under partial global budgets, members have some services carved out of the risk-based contract, such as behavioral health care or prescription drugs.

Overall, 26% of HMO/POS commercial member-months for Massachusetts-based insurers were under full global budget arrangements in 2019, down from 27% in 2018 and 29% in 2017. The percent of member-months in FFS arrangements increased from 45% in 2017 to 49% in 2019.

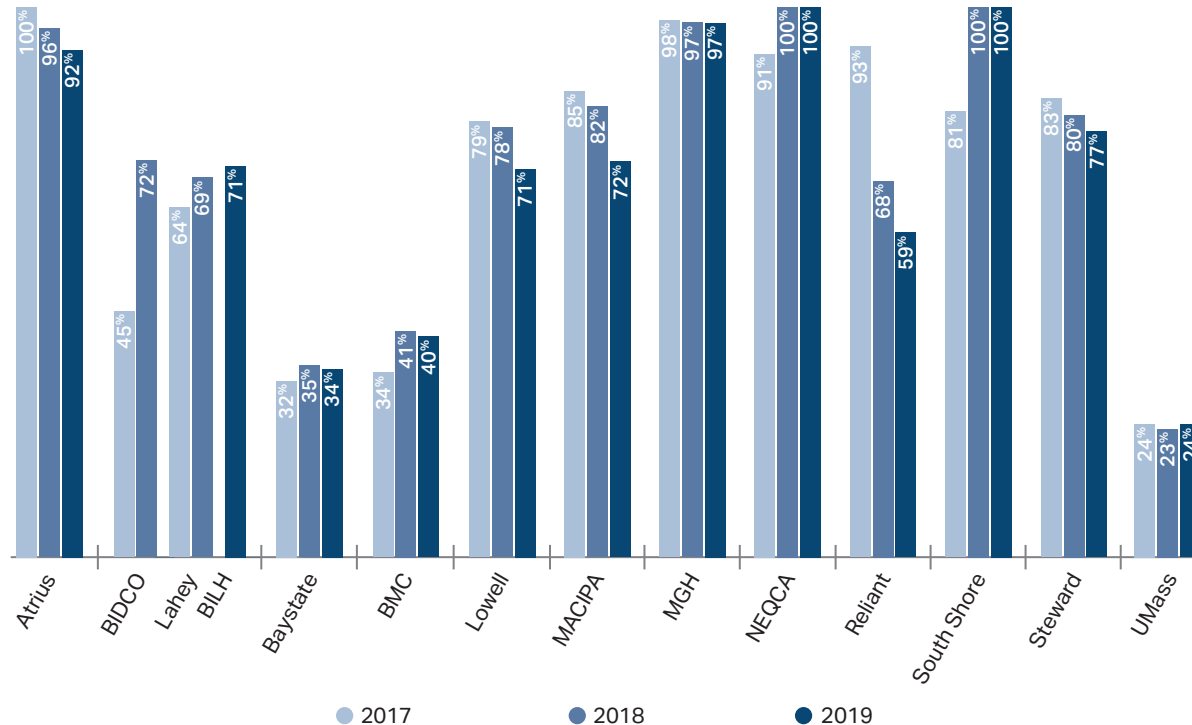
The proportion of member-months under full global budget arrangements declined for BCBSMA from 2017 to 2019, representing a shift towards having a slightly larger proportion under partial global budget arrangements. Member-months under full global budget arrangements decreased slightly for HPHC, and remained flat for THP.

HPHC also saw a decrease in the percent of member-months under partial global budget arrangements, representing a shift towards a greater share of FFS member-months.

NOTES: The three largest insurers in Massachusetts include Blue Cross Blue Shield of MA (BCBSMA), Harvard Pilgrim Health Care (HPHC), and Tufts Health Plan (THP), including Tufts HMO. Other MA payers include AllWays, BMC HealthNet Plan, Fallon Community Health Plan, Health New England, Health Plans Inc., Tufts Health Public Plans, and Unicare (Anthem).

SOURCES: HPC analysis of Center for Health Information and Analysis Annual Report APM data set, 2020. Analysis includes full and partial claims for commercial.

PERCENTAGE OF APM RISK ARRANGEMENTS FOR COMMERCIAL HMO/POS MEMBERS THAT INCLUDE “TWO-SIDED” RISK (“UPSIDE” AND “DOWNSIDE” RISK) BY LARGE PROVIDER GROUP, 2017 – 2019



NOTES: Only member-months where the members had a designated PCP and were in an HMO/POS plan with full commercial claims were included in this analysis. Beth Israel Deaconess Care Organization (BIDCO) and Lahey Health are reported as Beth Israel Lahey Health (BILH) in 2019. Partners HealthCare changed its name to Mass General Brigham (MGB) in 2019. Results may vary from previous years due to data updates. HMO = health maintenance organization, POS = point-of-service, PPO = preferred provider organization. NEQCA = New England Quality Care Alliance, BMC = Boston Medical Center, MACIPA = Mount Auburn Cambridge Independent Practice Association .

SOURCES: HPC analysis of Center for Health Information and Analysis Annual Report APM data set, 2020. Analysis includes full claims for commercial

APMs can include both “upside” risk (where providers gain bonus payments if spending is below a target) and “downside” or “two-sided” risk, where providers can also lose money if spending exceeds their target. The latter provides a stronger incentive to avoid unnecessary care and use lower cost providers. However, even in a two-sided risk arrangement, the level of risk could be high or low.

Provider organizations vary considerably in the nature of their risk arrangements. All or nearly all of the commercial HMO/ POS members covered by APMs at Atrius, NEQCA, MGB, and South Shore are under two-sided risk arrangements.

In contrast, fewer than half of the patients at Baystate, BMC, and UMass are in APM arrangements that include downside risk. Additionally, Baystate, BMC, Lowell, MACIPA, Reliant, and Steward all had a smaller percentage of member-months under downside-risk contracts in 2019 than in 2018.

**PROVIDER
ORGANIZATION
PERFORMANCE
VARIATION**

KEY FINDINGS

PROVIDER ORGANIZATION PERFORMANCE VARIATION

- Patients attributed to Mass General Brigham (MGB) had the highest unadjusted (\$6,506) and adjusted (\$6,131) medical claims spending in 2018, which were 50% and 30% higher than the lowest spending organizations based on unadjusted (Reliant, \$4,352) or adjusted spending (Atrius, \$4,709), respectively.
- Unadjusted total medical expenditures (which also include non-claims-based spending) varied similarly to claims spending. Spending differed by 46% between MGB (\$706 per attributed patient per month) and Lowell General PHO (\$485 per attributed patient) in 2019.
- Among broad categories of spending, hospital outpatient spending varies the most by provider organization. Per member per year (PMPY) spending for hospital outpatient services was highest for patients attributed to MGB (\$2,481), 43% above the average (\$1,737) and double that of patients attributed to Reliant (\$1,176).
- Patients attributed to Boston Medical Center providers had the highest rate of ED utilization (298 annual visits per 1,000 members) and potentially avoidable ED visits (92), which was 68% more ED visits (178) and 144% more potentially avoidable ED visits (38) than patients attributed to Atrius providers.
- A study of seven low value care services identified more than 130,000 instances of low value care provided to over 80,000 patients in 2018. Rates of low value care generally varied two-fold or more across provider organizations.

INTRODUCTION

PROVIDER ORGANIZATION PERFORMANCE VARIATION

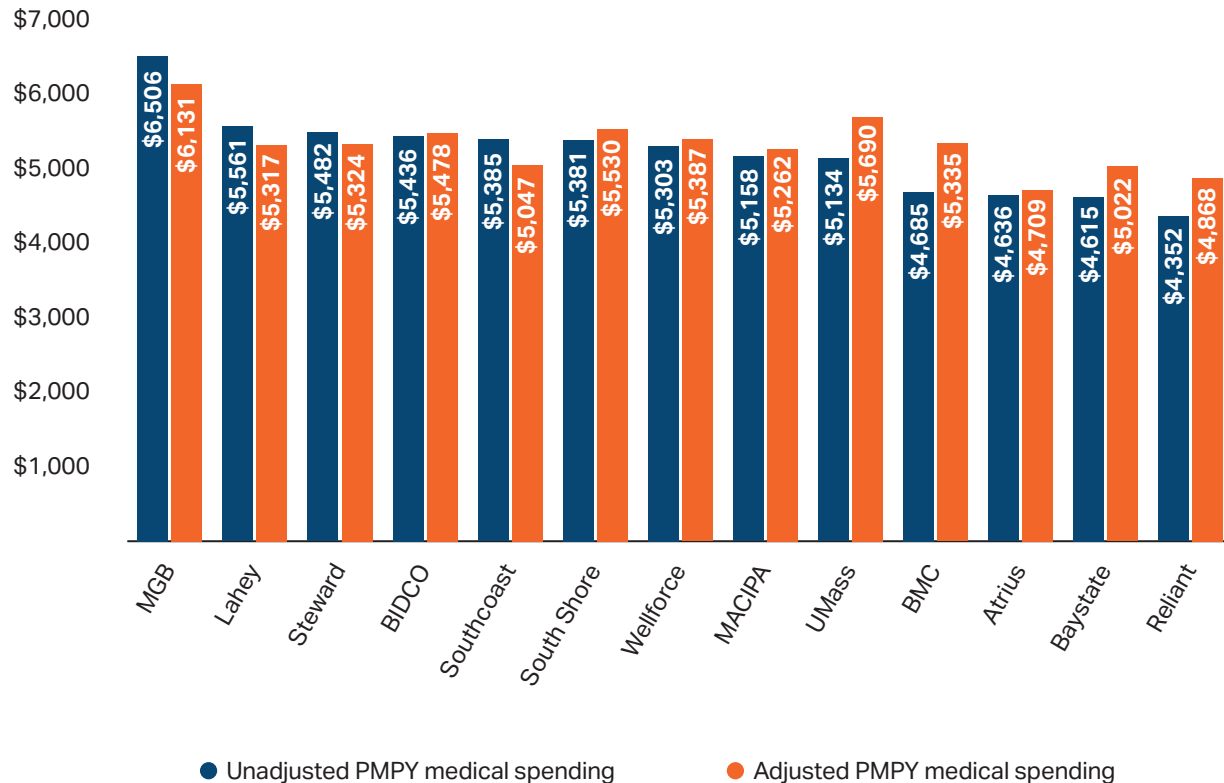
This section of the Chartpack analyzes the performance of provider organizations in the Commonwealth and includes measures of medical spending, inpatient and ED utilization, and low value care.

Analyzing variation in performance between provider organizations across a range of spending and utilization measures allows for identification of areas for improvement in efficiency and care delivery across the Commonwealth. These analyses rely on attribution of patients to a primary care provider (PCP) based on data in the Massachusetts All-Payer Claims Database, and attribution of PCPs to their affiliated provider organization based on data from the 2018 Registration of Provider Organizations (RPO). The RPO data was supplemented with a 2017 commercial database obtained from IQVIA, which has information on additional Massachusetts providers including nurse practitioners. Using this attribution methodology, we report on a cohort of ~900,000 patients with private insurance through Blue Cross Blue Shield of Massachusetts, Tufts Health Plan, Harvard Pilgrim Health Plan, Anthem, and Neighborhood Health Plan (now Allways) who were attributed to PCPs affiliated with one of the ten largest provider organizations in the state in 2018. Details of the methodology have been previously published¹ and can also be found in the technical appendix.

All results in this section (with the exception of TME, categorical spending and low value care measures) have been statistically adjusted for differences in age, sex, health status, insurer and product type, and community-level variables related to education and socioeconomic status. However, other potential unmeasured differences in patient populations may influence results.

1 Massachusetts Health Policy Commission. 2017 Cost Trends Report. March 2018. Available at: <https://www.mass.gov/doc/2017-health-care-cost-trends-report/download>

UNADJUSTED AND ADJUSTED MEDICAL CLAIMS SPENDING PER MEMBER PER YEAR (EXCLUDING PRESCRIPTION DRUG SPENDING) BY PROVIDER ORGANIZATION, 2018



Using APCD data, the HPC calculated unadjusted medical spending by provider organization and adjusted results for differences in age, sex, health status, payer, product, and community-level variables related to socioeconomic status. Differences between adjusted and unadjusted spending by organization could also be affected by differences in coding behavior.

MGB had the highest unadjusted and adjusted total medical spending in 2018, consistent with prior years studied. At \$6,131 per member per year (PMPY), MGB's adjusted spending was 8% higher than the next highest group (UMass), 15% higher than the average of the groups shown here (\$5,315), and 30% higher than the lowest spending group (Atrius).

Atrius had the lowest adjusted spending PMPY at \$4,709, which was 11% lower than the average.

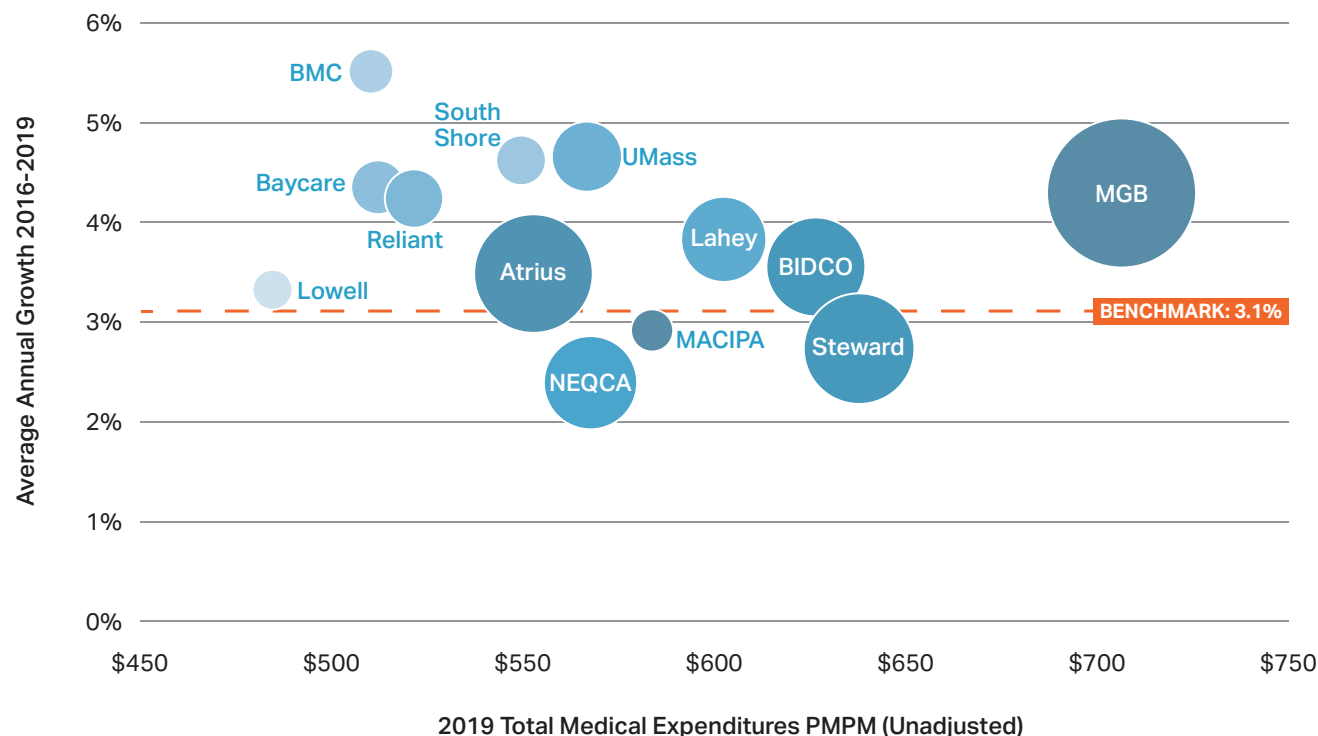
Four of the five organizations with the highest adjusted spending are anchored by academic medical centers (AMCs), with South Shore as the exception. The two organizations with the lowest adjusted spending are both physician-led.

Differences in unadjusted spending were greater than differences in adjusted spending. MGB's unadjusted spending was 50% higher than spending for Reliant, the group with the lowest spending (\$6,506 and \$4,352, respectively).

NOTES: PMPY: Per member per year. Prescription drug spending and non-claims-based spending excluded. Spending results are for commercial attributed adults (N=877,946). Prescription drug spending is excluded from this analysis to increase the size of the population included in the analysis. Health status adjustment has been processed by software called The Johns Hopkins ACG® System © 1990, 2017, Johns Hopkins University. All Rights Reserved. See technical appendix for details.

SOURCES: HPC analysis of Center for Health Information and Analysis Massachusetts All-Payer Claims Database, 2018

UNADJUSTED TOTAL MEDICAL EXPENDITURES (TME) PER MEMBER PER MONTH IN 2019 AND AVERAGE ANNUAL TME GROWTH FROM 2016 TO 2019, BY PROVIDER ORGANIZATION



NOTES: TME is reported by payers to CHIA and includes all medical expenditures (including copayments, deductibles, and non-claims-based expenditures) for patients assigned to a primary care physician in the noted provider organization. PPO members are included only where assigned to a provider organization through a PCP. Only commercial members covered by Blue Cross Blue Shield of Massachusetts, Tufts Health Plan, or Harvard Pilgrim Health Care are included and provider organizations are excluded if the total number of member months across these payers is below 100,000 in any of 2016-2019. Bubble size reflects total member months.

SOURCES: HPC analysis of Center for Health Information and Analysis TME databooks. Data for 2017-9 are based on CHIA's 2021 Annual Report. Data for 2016 are based on CHIA's 2019 Annual Report and are included by computing the percentage growth in TME from 2016 to 2017 in the 2019 Annual report applied to the 2017 values in the 2021 Annual Report to preserve within-databook consistency.

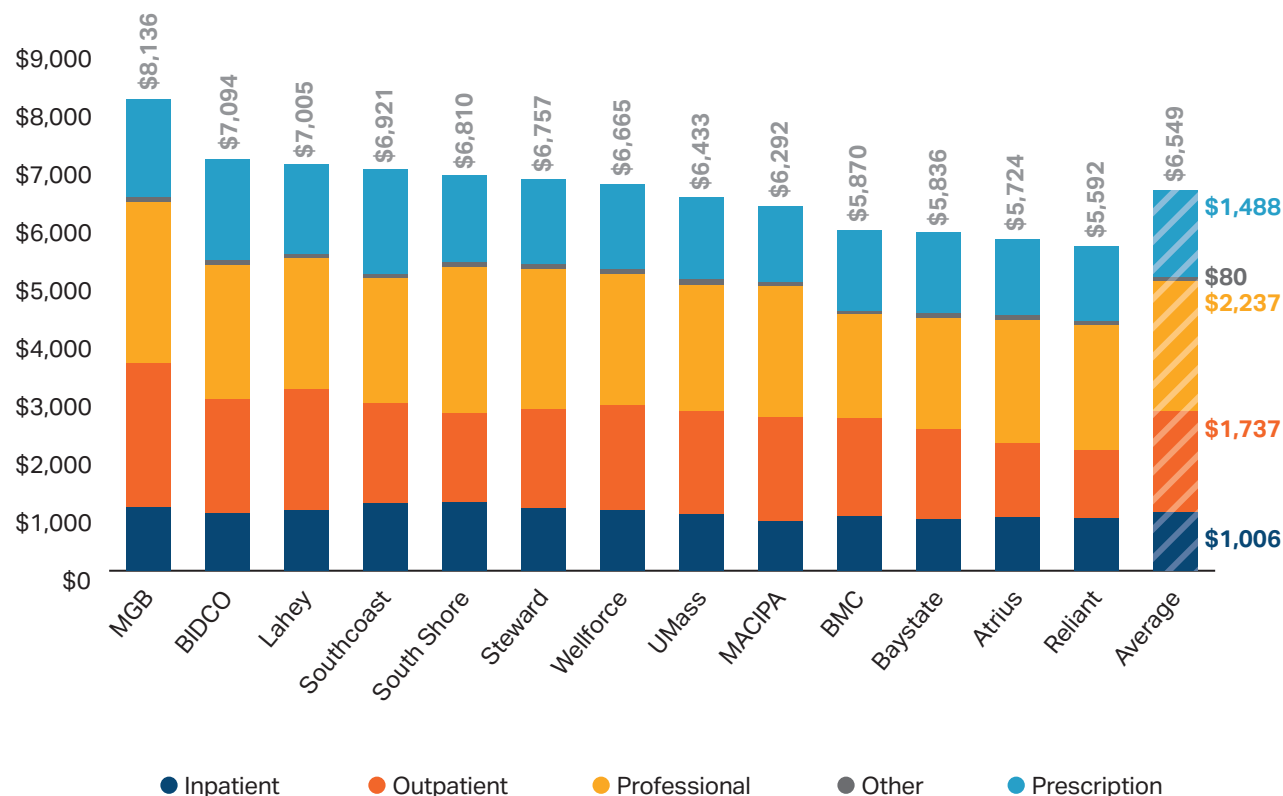
Unadjusted TME is reported by payers for patients attributed to various provider groups. The expenditures also include non-claims-based spending. This chart combines spending reported by BCBSMA, THP, and HPHC.

TME per member per month (PMPM) varied from \$485 for patients with primary care providers in the Lowell General PHO to \$706 (46% higher) for patients attributed to the physician organization affiliated with MGB.

Average annual growth in TME from 2016 to 2019 also varied by provider group, from 2.4% for patients attributed to NEQCA to 5.5% for patients attributed to BMC. Spending growth for most groups over this period exceeded the benchmark target growth rate of 3.6% for 2016-2017 and 3.1% for 2017-2018 and 2018-2019.

In addition to unadjusted TME, health status-adjusted (HSA) TME is also reported by payers for provider groups, but can not reliably be combined across payers because their methods of adjustment vary. Variation in HSA TME between provider groups is somewhat less than variation in unadjusted TME but is also influenced by differences in coding behavior across provider groups.

UNADJUSTED TOTAL MEDICAL CLAIMS SPENDING PER MEMBER PER YEAR BY CATEGORY OF SPENDING AND PROVIDER ORGANIZATION, 2018



Average unadjusted per member per year (PMPY) spending was \$6,549 when including prescription drug spending. MGB had the highest PMPY spending at \$8,136 and Reliant had the lowest at \$5,592.

Inpatient spending comprised about 15% of total PMPY spending, with hospital outpatient spending making up 27%, professional spending representing 34%, prescription drugs 23%, and other spending constituting only about 1% of total spending.

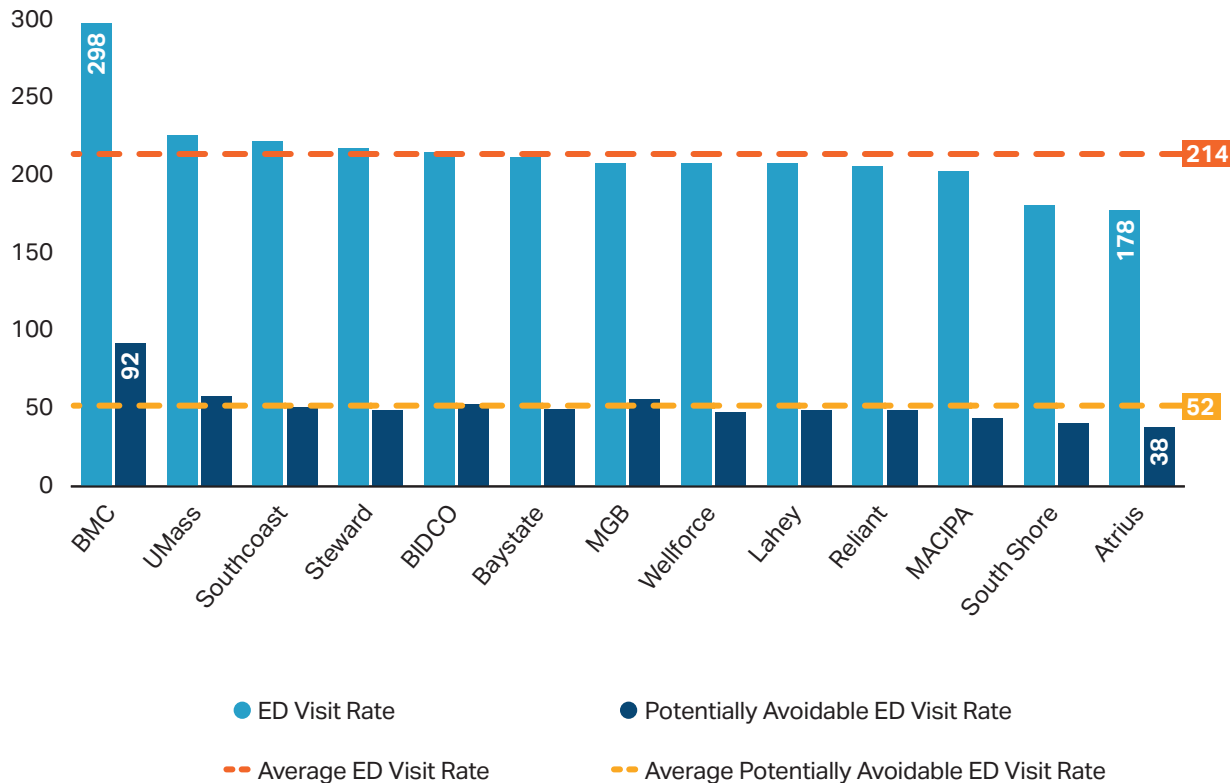
South Shore had the highest inpatient spending at \$1,182, or 18% above the average of \$1,006. MGB had the highest outpatient spending at \$2,481, or 43% above the average, as well as the highest professional spending at \$2,769, or 24% above the average. Southcoast had the highest prescription drug spending at \$1,802, or 21% above the average.

NOTES: PMPY: Per member per year. Individuals without 12 months of prescription drug insurance coverage were excluded. Spending results are for commercial attributed adults (N=689,304). See technical appendix for more details.

SOURCES: HPC analysis of Center for Health Information and Analysis Massachusetts All-Payer Claims Database, 2018

TOTAL AND POTENTIALLY AVOIDABLE EMERGENCY DEPARTMENT UTILIZATION, 2018

Adjusted visits per 1,000 attributed commercial patients, 2018



Overall emergency department (ED) utilization and potentially avoidable ED utilization may indicate inefficient use of acute care resources, in addition to opportunities to improve access to primary care, urgent care, and other community resources.

Across all provider organizations, the adjusted commercial ED utilization rate was 214 ED visits per 1,000 attributed commercial patients. ED utilization varied by 68% among provider organizations, from 298 among patients attributed to Boston Medical Center-affiliated PCPs to 178 among patients attributed to Atrius-affiliated PCPs.

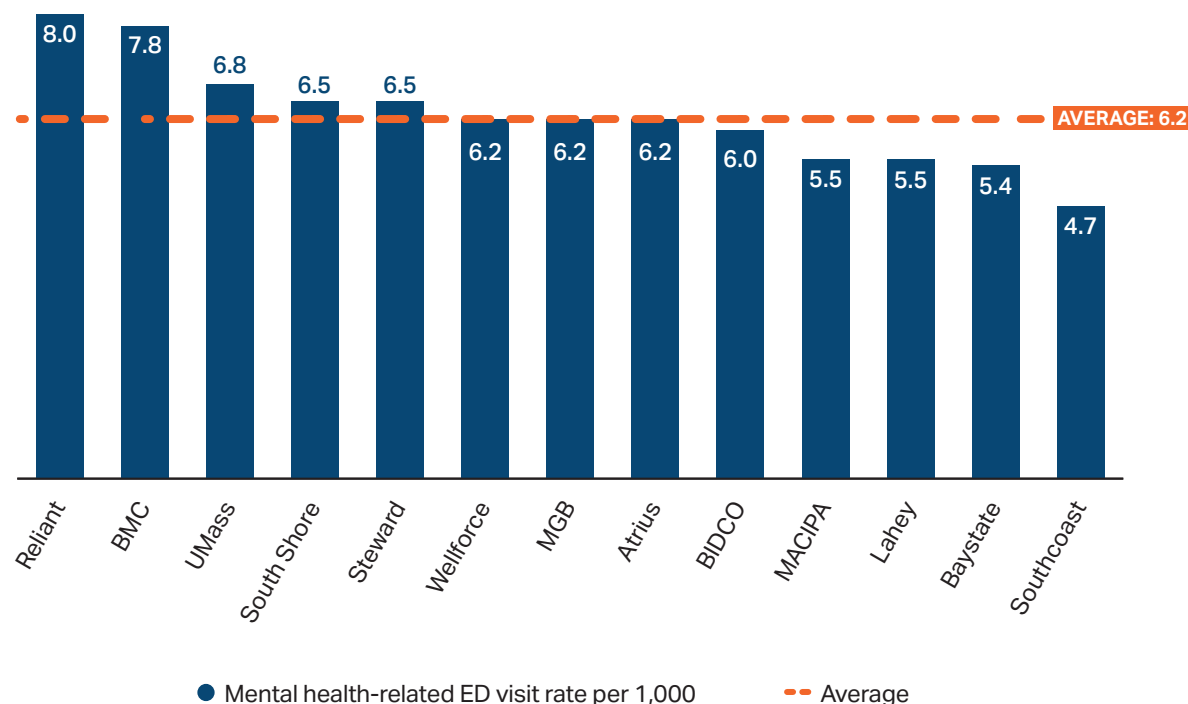
The percentage of ED visits classified as potentially avoidable varied from 21% to 31% across provider organizations. The average rate of potentially avoidable visits was 52 per 1,000 patients, with rates by provider organization ranging from 92 (Boston Medical Center) to 38 (Atrius).

NOTES: Potentially avoidable ED visits are based on the Billings algorithm. Results reflect commercial attributed adults, at least 18 years of age (N=877,946). Results are adjusted for differences in age, sex, health status, and community-level variables related to education and socioeconomic status. See technical appendix for details.

SOURCES: HPC analysis of Center for Health Information and Analysis Massachusetts All-Payer Claims Database, 2018

MENTAL HEALTH-RELATED EMERGENCY DEPARTMENT UTILIZATION, 2018

Adjusted visits per 1,000 attributed commercial patients, 2018



Mental health-related ED utilization may indicate poor access to outpatient behavioral health care, as some patients may seek care in the ED if care in other settings is not available to address or manage their behavioral health needs.

Reliant had the highest rate of mental health-related ED visits, while Southcoast had the lowest. The adjusted rate of mental health-related ED utilization was 70% higher for patients attributed to Reliant relative to patients attributed to Southcoast, and 28% higher than the average of 6.2 among these provider groups.

The average number of mental health-related ED visits among commercially insured adults with at least one such visit was 1.36 visits per patient per year.

NOTES: MH visits were defined using AHRQ CCSR MBD001-MDB034. Results reflect commercial attributed adults, at least 18 years of age (N=877,946). Results are adjusted for differences in age, sex, health status, and community-level variables related to education and socioeconomic status. See technical appendix for details.

SOURCES: HPC analysis of Center for Health Information and Analysis Massachusetts All-Payer Claims Database, 2018

LOW VALUE CARE INTRODUCTION

Low value care (LVC) refers to medical services recognized by clinicians as not based on evidence and typically unnecessary. In the 2019 Cost Trends Report, the HPC updated previous reporting on the prevalence of LVC in Massachusetts to focus on seven LVC measures across three domains (screening, pre-operative, and procedures), using commercial claims data for 2017 and reconstructing measures to reflect the transition from the ICD-9 to ICD-10 coding systems. The following charts report on these same measures now using claims data from 2018.

The HPC selected these seven measures based on published literature, relatively high prevalence and spending in commercial populations, ability to be captured using APCD claims data, and availability of specifications using ICD-10 codes. Specific codes and sources for all measures can be found in the technical appendix of this report. While the measures presented do not capture the full extent of LVC in the Commonwealth, they are illustrative of the prevalence of such care, the variation in care, and the associated spending in the Massachusetts commercial population.

1 Massachusetts Health Policy Commission. 2018 Cost Trends Report. February 2019. Available at: <https://www.mass.gov/doc/2018-report-on-health-care-cost-trends/download>

LOW VALUE CARE HIGHLIGHTS, 2018

LOW VALUE SERVICES STUDIED

Screening

T3 (Thyroid) screening for patients with hypothyroidism

Cardiac stress testing for patients with an established diagnosis of ischemic heart disease or angina

Vitamin D screening for patients without chronic conditions

Pre-operative testing

Baseline labs in patients without significant systemic disease undergoing low risk surgery

Chest radiograph for patients undergoing noncardiothoracic low risk surgery

Procedures

Spinal injections for lower back pain

Coronary stent for patients with an established diagnosis of ischemic heart disease or angina



80,559

Total # of patients with at least 1 LVC service



137,203

Total # of LVC services identified



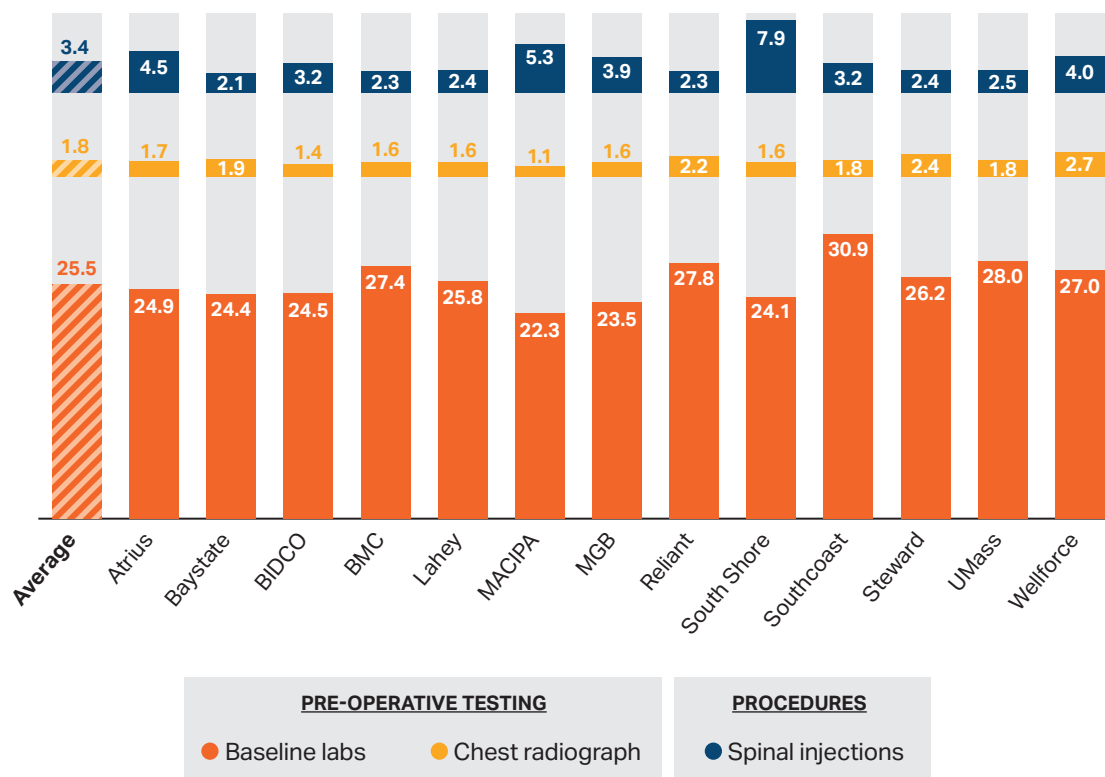
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Variation in LVC spending per 100 eligible members across provider organizations

POPv

LOW VALUE PRE-OPERATIVE TESTING AND PROCEDURES, 2018

Low value pre-operative tests and procedures per 100 eligible commercial patients, 2018



NOTES: Baseline labs = Baseline labs in patients without significant systemic disease undergoing low risk surgery; Chest radiograph = Chest radiographs occurring less than 30 days before a low or intermediate risk non-cardiothoracic surgical procedure (not associated with inpatient or emergency care). Based on a patient's medical history and inclusion criteria for each low value measure, a patient could be counted in multiple measures. Average reflects rate for all commercial patients, including patients not attributed to a listed provider organization. See technical appendix for details.

SOURCES: HPC analysis of Center for Health Information and Analysis Massachusetts All-Payer Claims Database, 2018

The HPC evaluated rates of pre-operative testing and procedures among "eligible" patient populations – that is, populations in which these services would be considered low value. See notes for details.

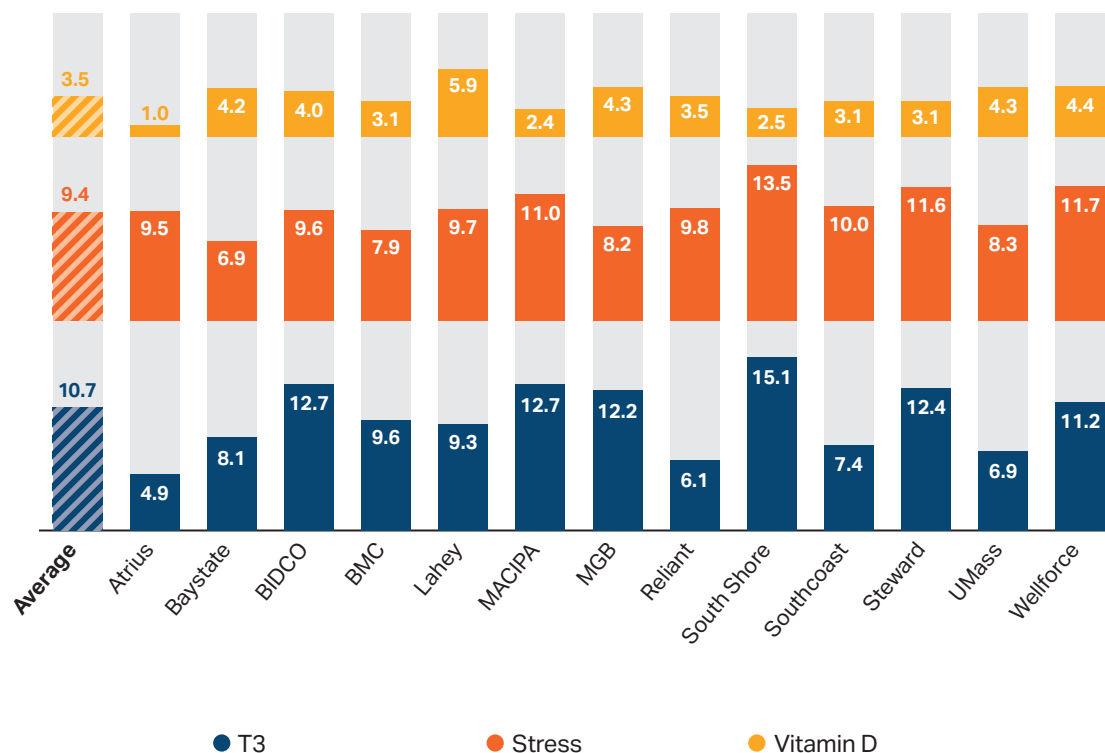
19% of patients undergoing a low risk surgery received at least one low value baseline lab test. Some patients received multiple lab tests, resulting in a rate of 25.5 lab tests per 100 eligible patients. Average spending per eligible patient for low value baseline lab tests was \$12. Total spending on low value baseline labs was \$1.2 million.

Low value chest radiographs were less common, with only 1.7% of eligible patients receiving this service. The total spending on low value chest radiographs was \$138,812.

Spinal injections for individuals with lower back pain were also less common, with only 1.7% of eligible patients receiving this low value service, but amounted to higher total spending at \$2.4 million. There was an almost four-fold variation between the organizations with the highest (South Shore) and lowest (Baystate) rates for this procedure.

LOW VALUE SCREENINGS: T3 (THYROID), CARDIAC STRESS, AND VITAMIN D, 2018

Low value screenings per 100 eligible commercial patients, 2018



NOTES: T3 = Total or free T3 level measurement in a patient with a hypothyroidism diagnosis during the year; Stress = Stress testing for patients with an established diagnosis of ischemic heart disease or angina at least 6 month before the stress test, and thus not done for screening purposes; Vitamin D = Population based screening for 25-OH-Vitamin D deficiency (all adults). Based on a patient's medical history and inclusion criteria for each low value measure, a patient could be counted in multiple measures. Average reflects rate for all commercial patients, including patients not attributed to a listed provider organization. See technical appendix for details.

SOURCES: HPC analysis of Center for Health Information and Analysis Massachusetts All-Payer Claims Database, 2018

The rates of low value screenings for patients attributed to the largest provider organizations reflect 47,298 low value encounters across 46,215 patients in 2018. These screenings accounted for \$4.5 million in spending.

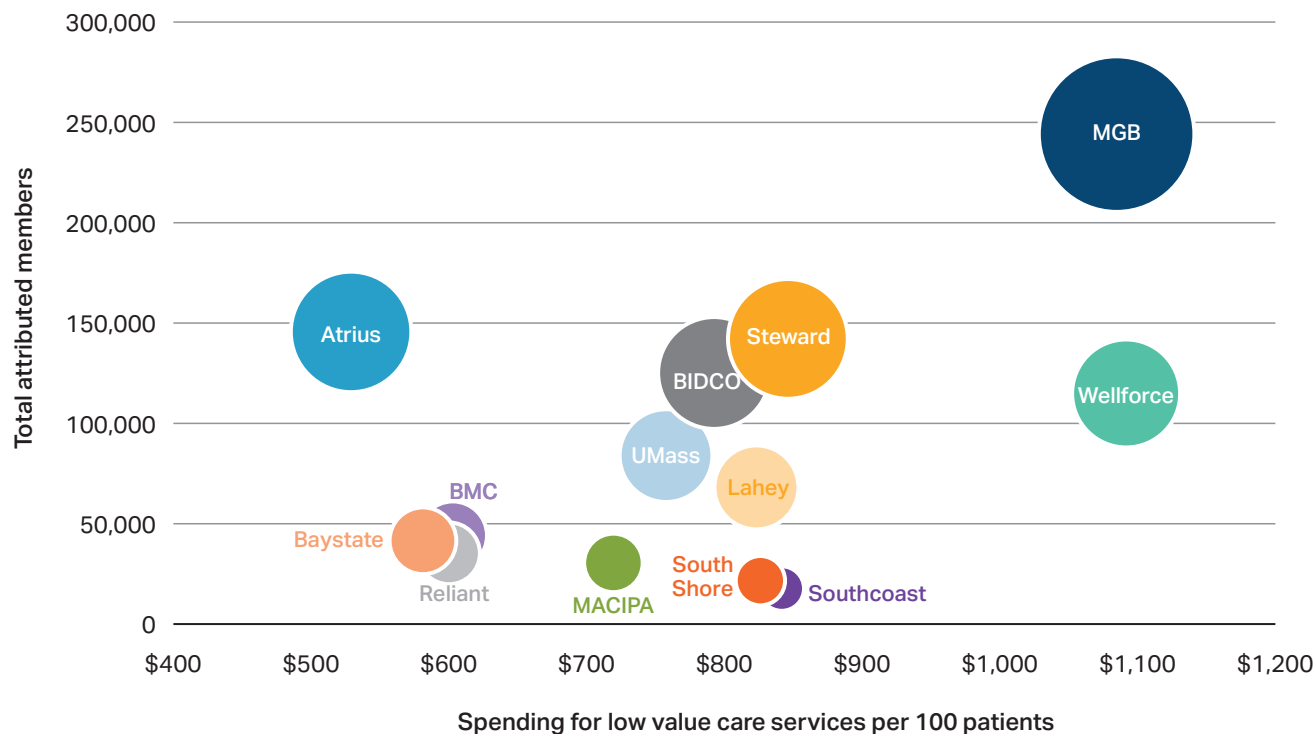
The HPC evaluated rates of these screenings among patient populations in which the screenings would be considered low value (see notes for details).

Patients attributed to South Shore had the highest rate of T3 tests, 3.1 times the rate for patients attributed to Atrius, the organization with the lowest rate. The rate of stress tests varied two-fold between the organizations with the highest (South Shore) and lowest (Baystate) rates.

In 2018, the average rate of vitamin D screenings decreased 30% from 2017, from 5.0 to 3.5 screenings per 100 patients. This decrease continues the trend observed since 2015, when the rate was 16.5 per 100 patients. Vitamin D testing had the largest variation of the screening tests, with rates ranging from 5.9 (Lahey) to 1.0 (Atrius).

Nonetheless, vitamin D screenings among these provider organizations still accounted for \$2.3 million in low value spending in 2018.

SPENDING FOR SEVEN LOW VALUE SERVICES PER 100 PATIENTS AND VOLUME OF ATTRIBUTED MEMBERS, BY PROVIDER ORGANIZATION, 2018



In this exhibit, the size of the circle is proportional to the total number of patients attributed to each provider organization, which is also reflected on the Y axis. Provider organizations are arranged left-to-right based on low value spending per 100 attributed patients.

Spending reflects both the number of low value services per patient and the average price of those services, which vary considerably across provider organization. For example, average spending for a vitamin D test was \$92 for a patient attributed to MGB, but \$46 for a patient attributed to Reliant.

Overall, Atrius had the lowest low value spending per 100 patients at \$528, half that of Wellforce (\$1,091).

NOTES: Low value spending across all seven measures was summed by provided organization and then divided by the total number of commercial adult attributed patients, and reported as a rate per 100 patients. Results for the low value stent procedure are not presented by provider organization due to small numbers at some organizations in the two previous charts, but are included here in overall spending. Patients included in this population were not restricted to 12 months of continual coverage, N=1,117,933.

SOURCES: HPC analysis of Center for Health Information and Analysis Massachusetts All-Payer Claims Database, 2018



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