



# Impact of COVID-19 on the Massachusetts Health Care System: Interim Report

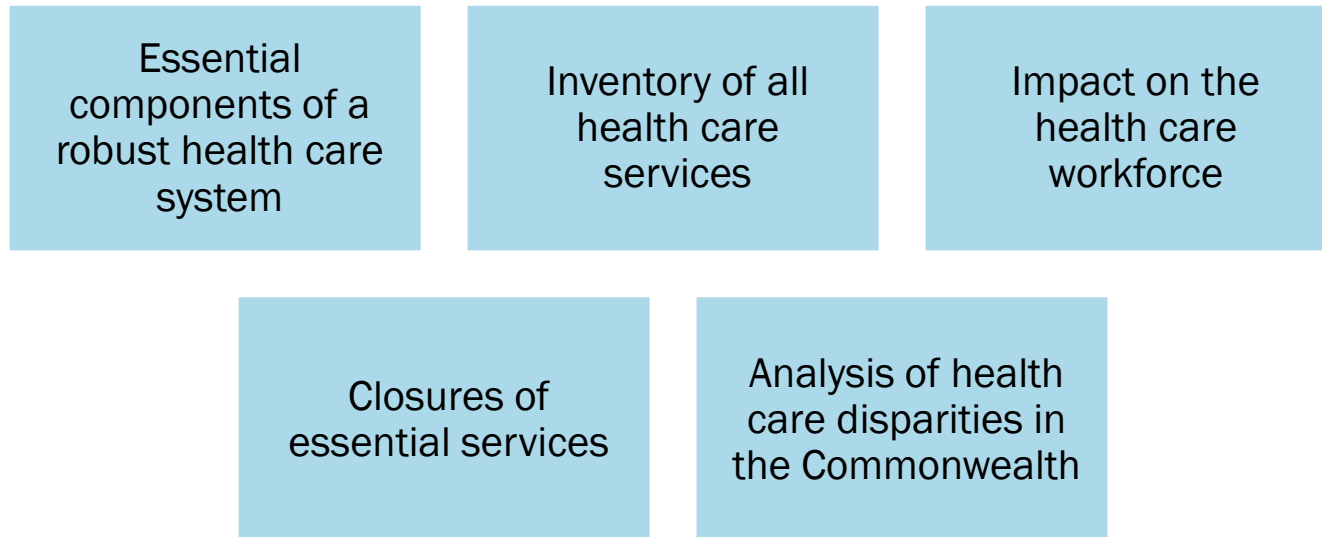
# COVID-19 Impact Study Mandate

“An Act Promoting A Resilient Health Care System that Puts Patients First” was signed into law on January 1, 2021. It charges the HPC with conducting an analysis and issuing a report on:

“...the effects of the COVID-19 pandemic on the Commonwealth's health care delivery system, including on the accessibility, quality, and cost of health care services and the financial position of health care entities in the short-term, and the implications of those effects on long-term policy considerations.”

An interim report is due April 2021, and a final report is due January 2022.

**Additional components of the study mandate include:**



- 1 INTRODUCTION
- 2 ANALYSIS OF UTILIZATION AND MARKET IMPACT TO DATE
  - Utilization
    - Hospital Care
    - Ambulatory Care
    - Telehealth
    - Behavioral Health
  - Market Impact
    - Provider Market
      - Financial Impact
      - Closures and Consolidation
    - Insurer Market
      - Financial Impact
      - Coverage
- 3 TOPICS FOR FUTURE STUDY
- 4 METHODOLOGY
- 5 APPENDIX

# Introduction

The Coronavirus Disease 2019 (COVID-19) has indelibly changed the lives of Massachusetts residents and the health care system that serves them. As of April 1, 2021, a little over a year after the first reported case in Massachusetts, there have been almost 640,000 reported COVID-19 cases and over 17,000 directly related deaths in the Commonwealth. Health care providers responded to two high-volume surges in cases and hospitalizations while continuing to provide essential care for all residents. Significant job losses have contributed to deep economic effects, with implications for health-related social needs, such as food and housing insecurity. Further, the pandemic has exacerbated existing health disparities by race, ethnicity, geography, and income in the Commonwealth and across the U.S.

Even as vaccine administration efforts accelerate in the short-term, recovery for communities and the health care system will be a long-term process. To help guide this recovery, policymakers, health care leaders, and community partners should look to lessons from the pandemic to inform opportunities for rebuilding sustainable, resilient, and equitable systems of care.

In this context, the Legislature has charged the HPC with studying the impact of COVID-19 on the health care delivery system in Massachusetts, including short-term and long-term implications. Many of the questions the HPC is charged with examining require both additional data collection and analysis and input from stakeholders, which will be addressed in future studies and a final report.

This legislatively-mandated interim report focuses on health care utilization and market impacts to date, with a primary focus on calendar year 2020. To contextualize these analyses, the report presents a brief overview of the pandemic's impacts on the population and social determinants of health. This report concludes by outlining the framework of topics that the HPC aims to address on a rolling basis in 2021 and 2022 as additional data and information are made available for study.

## INTERIM REPORT COMPONENTS:

- Introduction and study mandate
- Analysis of utilization and market impact to date
- Topics for future study

# Key Findings: Hospitals

**1 INPATIENT ADMISSIONS** Total hospital inpatient volume dropped 32% from January to April 2020. At the same time, hospitals were converting clinical capacity to care for patients with COVID-19. The number of **COVID-19-related admissions peaked in April, totaling 20% of all admissions that month.** Non-COVID-19 volume increased after April, as capacity stabilized and the health care system reopened, but totals did not reach pre-pandemic levels by the end of 2020. Overall, the number of admissions was 9% lower in 2020 than in 2019.

**2 HIGH ACUITY INPATIENT ADMISSIONS** While the total number of inpatient admissions dropped in April, **the number of patient days in intensive care units/critical care units (ICU/CCU) increased dramatically, spiking 63% over April 2019 levels.** While ICU/CCU use dropped after the initial surge, ICU/CCU days remained higher than 2019 levels through 2020. Overall, the number of ICU/CCU days increased 10% from 2019 to 2020, even as the number of admissions was lower.

**3 INPATIENT ADMISSIONS BY RACE/ETHNICITY** People of color represented a larger share of COVID-19-related inpatient hospital admissions, compared to their share of overall inpatient admissions. **COVID-19-related hospital admissions were particularly disproportionate for Black and Hispanic patients.** Among patients age 65+, the share of COVID-19 related admissions among Black patients was **double** their share of all hospital admissions. Among Hispanic patients 18 to 64 and age 65+, the share of COVID-19-related admissions was **more than twice** their share of all hospital admissions.

## Data limitations for this interim report include:

- Hospital and ED data are preliminary.
- Hospital inpatient data and hospital financial data do not currently include all Massachusetts hospitals.
- Limited data available on ambulatory care and other non-hospital providers.
- The HPC will update data and aim to identify additional data sources for the final report.

## Key Findings: Hospitals

**4 EMERGENCY DEPARTMENT (ED) VISITS** ED visits fell sharply in spring 2020, decreasing 55% between January and April 2020. ED visits then started to increase, but as of September 2020, had not returned to 2019 levels. Overall, the number of **ED visits in January to September 2020 was 23% lower than the total from the same months in 2019.**

**5 POTENTIALLY AVOIDABLE ED USE** All categories of ED visits declined during the pandemic, but potentially avoidable ED visits declined most. **From April – September 2020, the total number of potentially avoidable ED visits was 38% lower than in the same months in 2019**, compared to declines of 34% for injuries, 22% for behavioral health, and 31% for all other ED visits.

- Potentially avoidable ED visits decreased most for children compared to other age groups. More research is needed to understand the extent to which patients who may have otherwise gone to the ED sought alternative care (e.g., primary care visits, telehealth), did not need care (e.g., due to lower exposure), or had unmet care needs.

**6 HOSPITAL FINANCIAL IMPACT** Including federal and state COVID-19 relief funding, median margins were positive for all hospital cohorts in fiscal year (FY) 2020. **However, some hospitals, particularly community hospitals and community high public payer hospitals, had negative margins in FY 2020 even with relief funding preventing greater losses.** With respect to Massachusetts' 22 larger health systems that encompass most of these hospitals and their affiliated physician organizations, 8 had negative overall margins in FY 2020 even including COVID-19 relief funds, a higher number of systems than in 2019. 7 of the 8 were community-hospital based systems.

## Key Findings: Behavioral Health

**7 ED BOARDING** The total number of behavioral health (BH)-related ED visits was 16% lower in January to September 2020, compared to the same months in 2019. However, the percentage of these visits resulting in **ED boarding (waiting over 12 hours in the ED) increased, from 27% of BH-related visits over those months in 2019 to 29% in 2020.** The percentage of BH-related ED visits resulting in ED boarding increased throughout the pandemic, reaching 31% in September.

- Rates of ED boarding were highest among pediatric patients. From March to September 2020, **39% of pediatric BH ED visits resulted in ED boarding** compared to 28% of adult BH visits.
- Pediatric BH patients not only had higher rates of ED boarding than other age groups but were also more likely to experience boarding that lasted over 48 hours. In 2020, **29% of pediatric patients who experienced ED boarding spent over 48 hours in the ED.**
- One important dynamic likely impacting the increase in behavioral health ED boarding is the **loss of nearly 270 psychiatric beds** in the Commonwealth during this time period, due to closures and COVID-19 related physical distancing and quarantine protocols.

**8 INPATIENT ADMISSIONS** The volume of BH-related inpatient stays at acute-care hospitals decreased about 14% from 2019 to 2020. As mentioned above, this decline may be a reflection of loss of psychiatric bed capacity at these hospitals and not due to a lack of need for inpatient psychiatric beds. Information on admissions for free-standing psychiatric hospitals was not available.

**9 TELEHEALTH FOR BEHAVIORAL HEALTH** Utilization data from two data sources showed that **over 70% of visits for BH were performed via telehealth in April, with this percentage remaining near 70% through September 2020.** Although all age groups had the majority of their psychotherapy visits via telehealth in the spring, those under 10 years old and over 75 years old were slightly more likely to return to in-person therapy by the summer compared to others. Among pediatric patients who were receiving psychotherapy services before the pandemic, the majority of patients converted entirely to telehealth or a mix of in-person and telehealth (72%), but almost a quarter of these patients discontinued care.

# Key Findings: Preventative Care, Telehealth, and Health Insurers

- 10 PREVENTATIVE CARE** Annual primary care well visits declined **28%** among Group Insurance Commission members with coverage through Health New England from March 2020 – February 2021 compared to March 2019 – February 2020.
- 11 TELEHEALTH** Use of telehealth as a share of all healthcare services peaked in April 2020 in Massachusetts. **Among commercially-insured Massachusetts residents, approximately 70% of primary care, specialist, and BH visits were provided via telehealth in April.** Starting in May, primary care and specialist visits began returning to in-person care but use of telehealth still represented 20-30% of visits in September. Use of telehealth for BH remained consistently high.
- 12 INSURER FINANCIAL IMPACT\*** Massachusetts-based commercial insurers retained a greater amount of their premium income in 2020 than in the previous two years. Across Massachusetts-based insurers, premium revenue increased by 1.5% (\$15.8 to \$16.1 billion) from 2019 to 2020, while medical claims expenditures decreased by 3.6% (\$14.1 to \$13.6 billion). Profitability did not necessarily increase in proportion to these changes, however, as these figures do not include administrative expenses or potential rebates and premium credits.



## DATA SOURCES

- ▶ Center for Health Information and Analysis (CHIA)
  - ED and inpatient data, hospital/ health system financial data
- ▶ Division of Insurance (DOI)
  - Insurer financial reports commercial fully-insured plans for 2020
  - Preliminary utilization data
- ▶ COVID-19 research database
  - For more details on this database, see slide 35
- ▶ The HPC used terminologies for racial and ethnic groups as they appeared in the data sources, which may be inconsistent in their categorization and language

## LIMITATIONS

- ▶ Hospital inpatient data is incomplete; the following hospitals were missing one or more quarters of data for 2020:
  - Cape Cod Hospital, Falmouth Hospital, Lawrence General Hospital, MetroWest Medical Center, Shriners Hospital Boston and Springfield, and Sturdy Memorial Hospital
- ▶ ED and inpatient data are preliminary
- ▶ Hospital financial data only includes 49 of 61 acute care hospitals
- ▶ MA All-Payer Claims Data is not yet available for 2020
- ▶ The HPC will update data and aim to identify additional data sources for the final report
- ▶ The HPC will also seek input from diverse stakeholders for the final report

- Introduction
- Analysis of Utilization and Market Impact to Date



## – UTILIZATION

- Hospital Care
  - Ambulatory Care
  - Telehealth
  - Behavioral Health
- Topics for Future Study
  - Methodology
  - Appendix

## Utilization: Hospital and Ambulatory Care

The COVID-19 pandemic significantly affected health care utilization across all health care sectors in Massachusetts. Acute care hospitals in Massachusetts were faced with a rapid influx of acute COVID-19 patients, stretching ICUs past traditional capacity, while also experiencing an increase in behavioral health boarding. At the same time, utilization for non-COVID-19 care dropped due to multiple factors including state and federal guidance intended to maintain needed hospital bed capacity and reduce infection transmission, patient hesitancy to receive in-person care, and the shift in care to telehealth. To support hospitals in caring for increasing numbers of COVID-19 patients during the spring and winter surges, Massachusetts established five field hospitals in the spring and two in the winter, which collectively treated 1,251 COVID-19 patients.

On March 15, 2020, to protect patients and health care personnel and conserve personal protective equipment (PPE) consistent with CMS guidance, the Baker-Polito Administration ordered that hospitals and ambulatory surgery centers postpone or cancel any nonessential, elective invasive procedures.<sup>1</sup> Beginning in May 2020, in phased re-opening guidance to acute hospital and non-hospital providers, the Department of Public Health (DPH) authorized the provision of a greater number of in-person services in accordance with appropriate capacity and public health and safety requirements.<sup>2</sup>

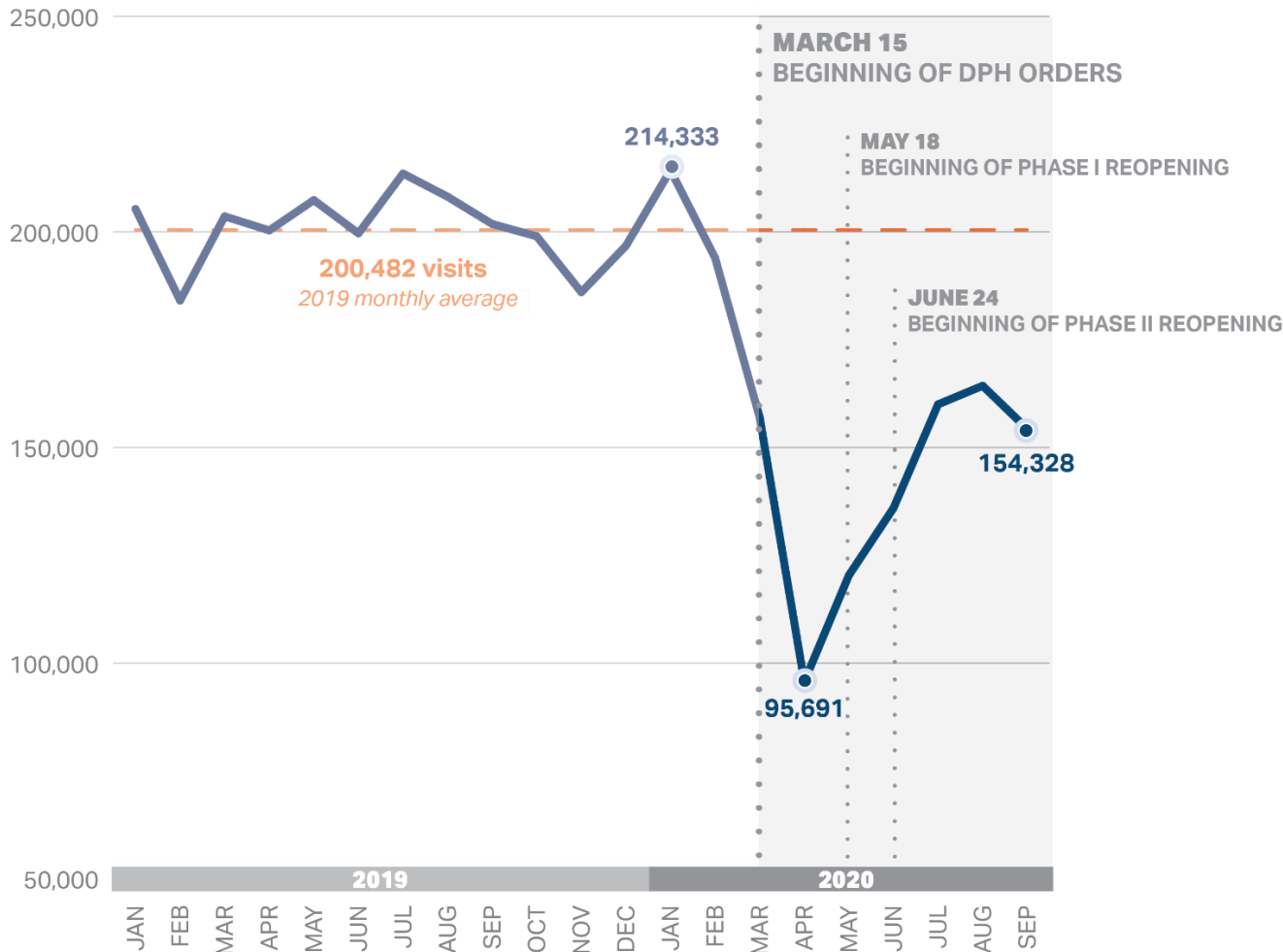
Utilization trends have varied by health care sector and have changed over the course of the pandemic to date. Due to current data limitations, the analyses in this interim report focus largely on hospital and emergency department utilization in calendar year 2020, as well as some aspects of ambulatory care. Future HPC work will expand the analyses of trends reported here, including by focusing on utilization trends across additional categories such as post-acute care, and will update analyses to include data from 2021.

1. Commonwealth of Massachusetts. Executive Office of Health and Human Services. Order of the Commissioner of Public Health. March 15, 2020. Available at: <https://www.mass.gov/doc/march-15-2020-elective-procedures-order/download> 2. Commonwealth of Massachusetts. Executive Office of Health and Human Services. Health and Human Services Reopening Plans and Guidance [webpage] Accessed March 25, 2021. Available at: <https://www.mass.gov/lists/reopening-health-and-human-services-in-massachusetts>

# Emergency department visits decreased 55% between January and April 2020, and as of September were 24% below 2019 levels.

HOSPITAL ED

Total ED visits, January 2019- September 2020



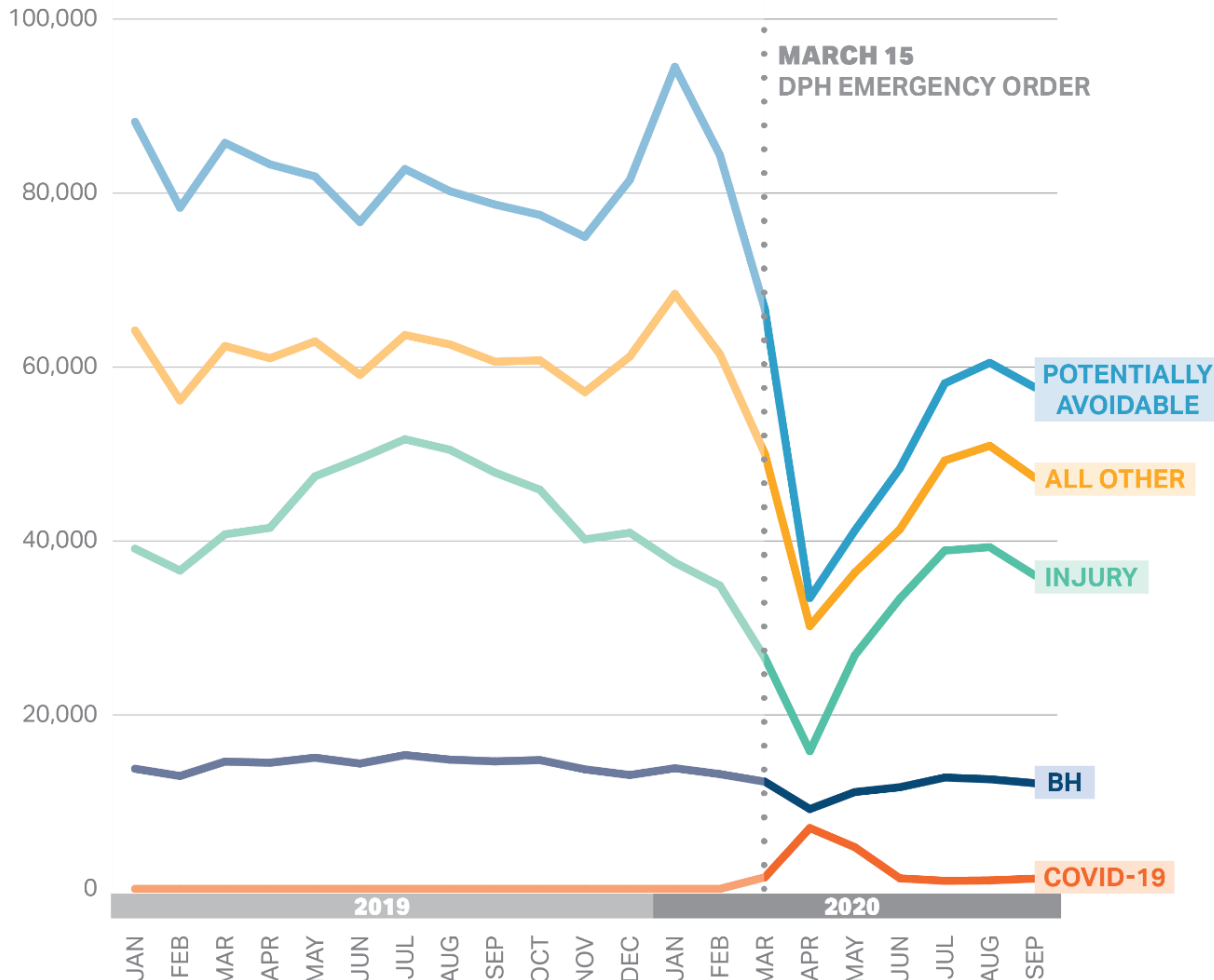
Emergency department (ED) visits in Massachusetts decreased sharply in the spring of 2020, falling 55% between January and April. The number of ED visits then started to increase but, as of September 2020, remained 24% below 2019 levels. These figures include ED visits for patients with COVID-19, which peaked at nearly 7,000 in April 2020.

The decrease in ED visits occurred even though hospital emergency services remained available throughout the pandemic. More research is needed to understand the extent to which patients who may have otherwise gone to the ED sought alternative care (e.g., primary care visits, telehealth), did not need care (e.g., due to lower exposure), or had unmet care needs.

# All categories of non-COVID-19 ED visits dropped in April 2020 compared to 2019. Potentially avoidable visits decreased 60%, while BH-related visits decreased 37%.

HOSPITAL ED

ED visit volume by type of visit, January 2019 - September 2020



Decreases in ED visit rates in 2020 varied by type of ED visit. In April 2020, potentially avoidable ED visits (-60%) and visits for injuries (-62%) experienced the largest declines with behavioral health visits declining more modestly (-37%). At the same time, ED visits for COVID-19 peaked in April at 6,995 visits.

By August 2020 ED visits had increased, but were still 25% lower for potentially avoidable visits, 22% lower for injury, 15% lower for BH, and 19% lower for all other ED visits compared to August 2019.

The HPC classifies avoidable ED visits annually as a measure of efficient health care system use. Potentially avoidable ED visits are visits to the ED that could have been treated in a primary care setting, whether the visits were emergent or non-emergent.

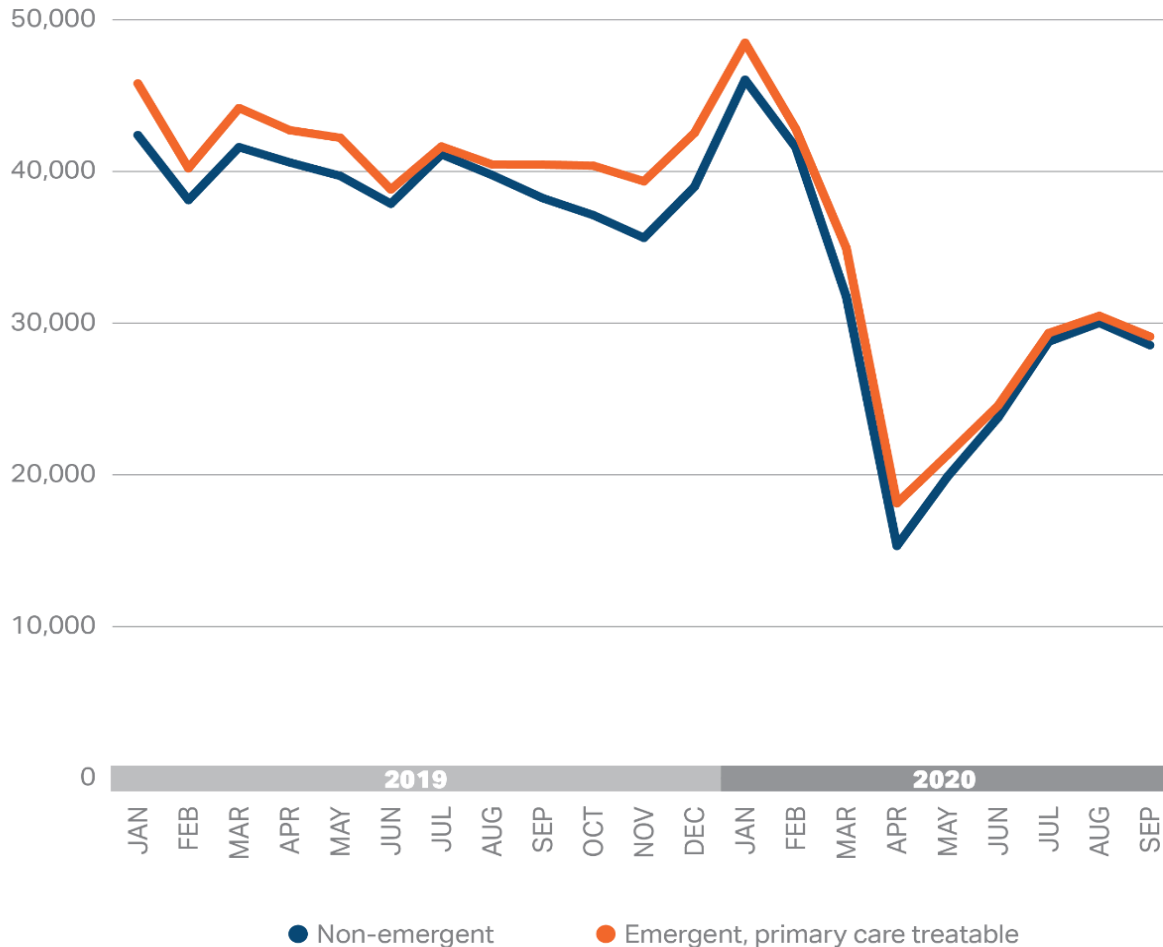
**Notes:** BH visits were defined using AHRQ CCSR MBD001-MDB034. Injury and avoidable ED visits are based on the Billings algorithm, which classifies an ED visit into multiple categories. "Avoidable" is defined here as ED visits that were emergent - primary care treatable or non-emergent. All other are the total sum of ED visits minus avoidable ED, BH visits, COVID-19, and injury visits.

**Source:** HPC Analysis of the Center for Health Information and Analysis (CHIA), Emergency Department Discharge, FY2019, preliminary FY2020.

# Among potentially avoidable ED visits, non-emergent visits declined somewhat more (-62%) than emergent, primary care treatable (-58%).

HOSPITAL ED

Non-emergent and emergent, primary care treatable potentially avoidable ED visits, January 2019- September 2020



Potentially avoidable ED visits are comprised of visits for conditions that are non-emergent (e.g., sunburn, non-traumatic dental conditions) or visits that are emergent, primary care treatable (e.g., ear infections, certain rashes).

Although there are consistently higher volumes of emergent, primary care treatable visits, non-emergent visits declined more than the emergent, primary care treatable visits in April 2020 compared to April 2019.

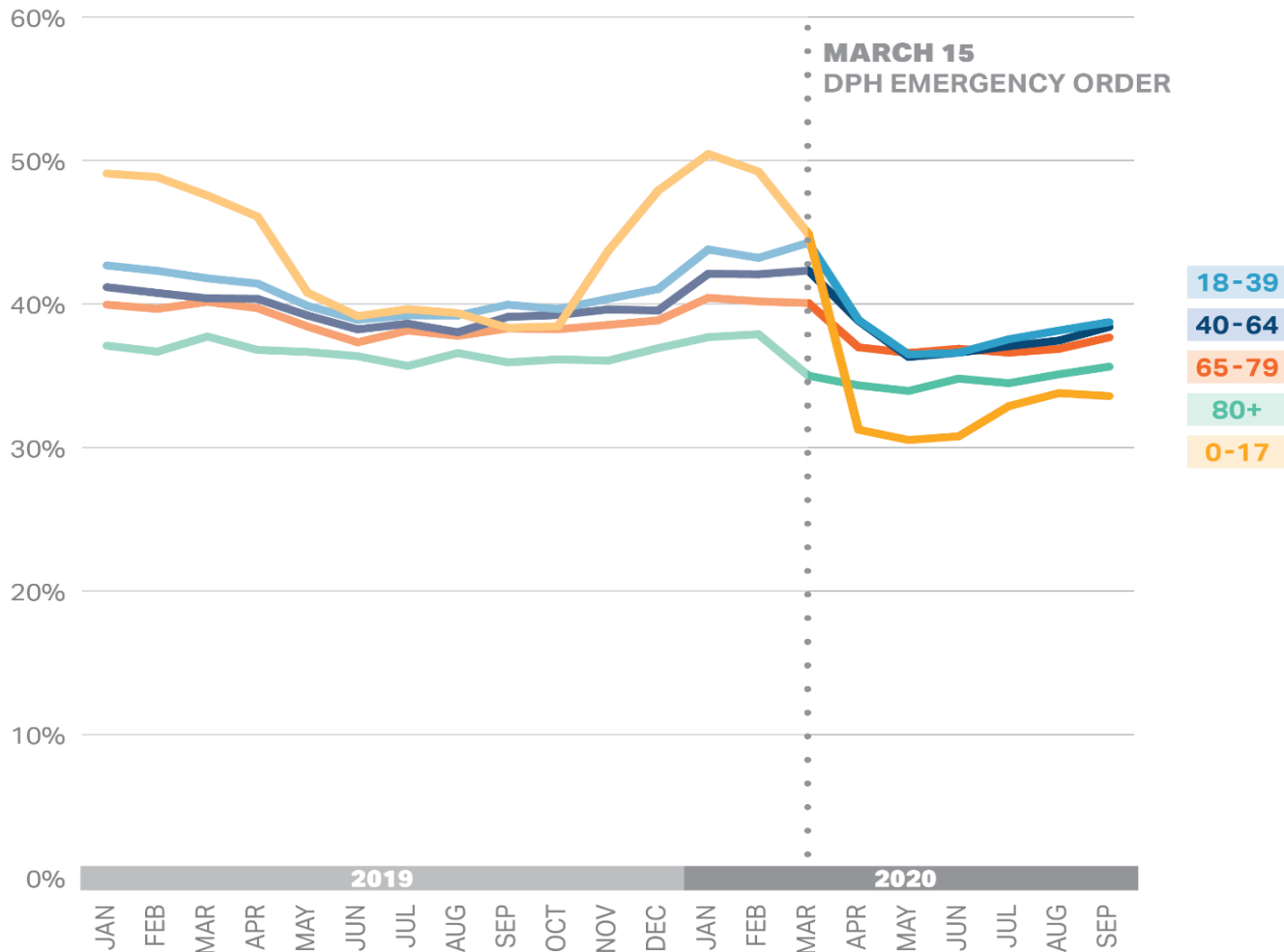
By August 2020, some volume had returned but both types of avoidable ED visits were still down by 25%, compared to August of 2019.

While many of the top reasons for an ED visit remained the same in 2019 compared to 2020, visits for upper respiratory infections dropped out of the top ten ED diagnoses, and urinary tract infections dropped by over 5,000 visits. These are conditions that have a high likelihood as being classified as “potentially avoidable,” and can most often be effectively treated in less acute (and less expensive) care settings.

# The percentage of ED visits that were potentially avoidable decreased most for children compared to other age groups from March to April 2020 (13.6 percentage points).

HOSPITAL ED

Percent potentially avoidable ED visits by age, January 2019- September 2020



The greatest decrease in potentially avoidable ED visits occurred among children ages 0-17.

In 2019, the share of ED visits for children that are potentially avoidable dropped from a peak in January to a low in September. While there is typically a decline for this population during summer months, the decrease from January through September 2020 was greater than January through September 2019 (16.9 percentage points compared to 10.8 percentage points).

Among children, potentially avoidable ED visits for upper respiratory infections had the largest volume decrease of almost 11,993 visits (81% decrease) April through September 2020 compared to the same time period in 2019. ED visits for fevers also saw a significant decrease of 5,685 visits (58% decrease).

More research is needed to understand the extent to which patients who may have otherwise gone to the ED sought alternative care (e.g., primary care visits, telehealth), did not need care (e.g., due to lower exposure), or had unmet care needs.



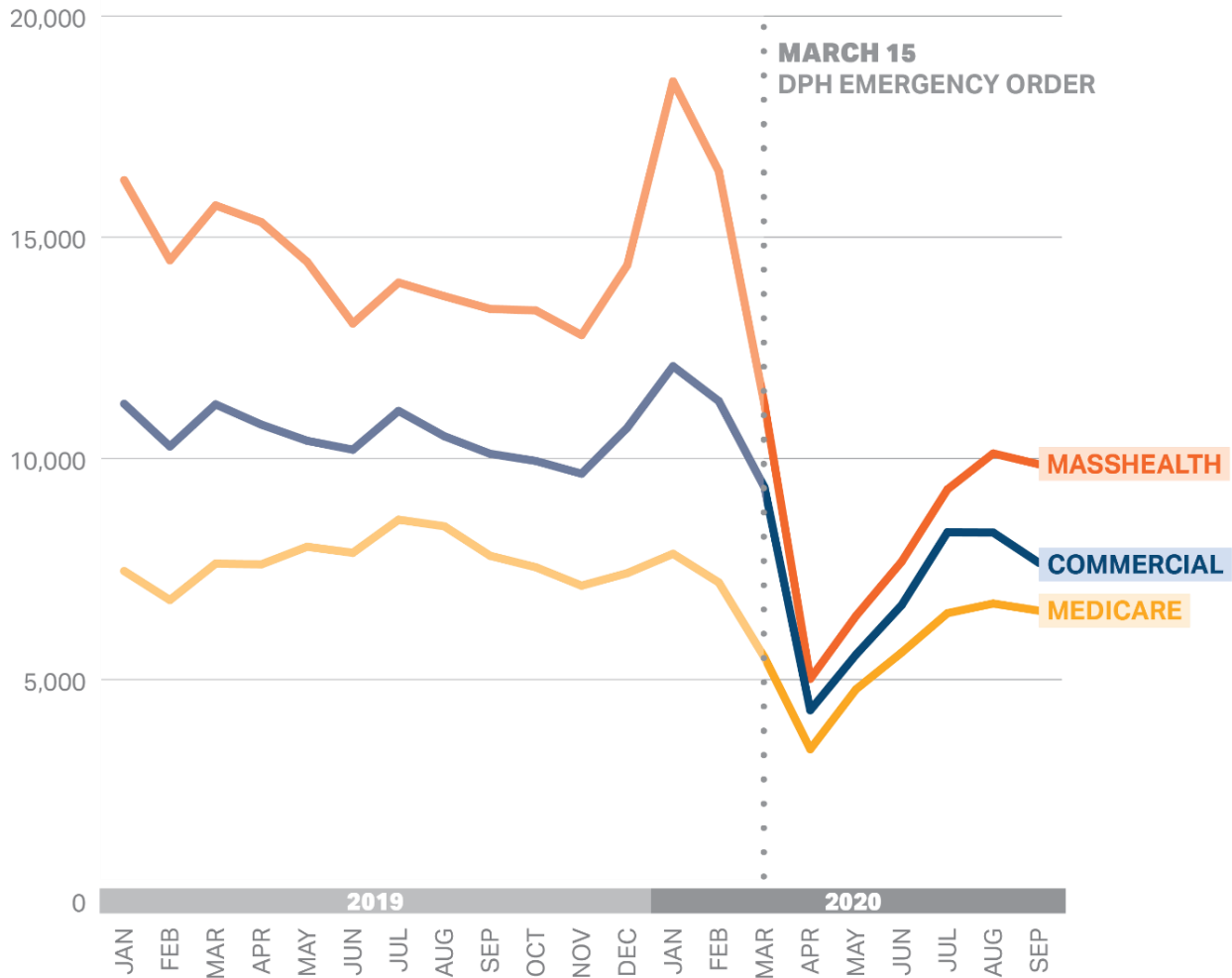
**Notes:** COVID-related visits excluded. Avoidable ED visits are based on the Billings algorithm, which classifies an ED visit into multiple categories. "Avoidable" is defined here as ED visits that were emergent - primary care treatable or non-emergent.

**Source:** HPC Analysis of the Center for Health Information and Analysis (CHIA), Emergency Department Discharge, FY2019, preliminary FY2020.

# Potentially avoidable ED visits declined most for MassHealth patients in April 2020 compared to April 2019 (67%) followed by commercial patients (60%).

HOSPITAL ED

Potentially avoidable ED visits by payer, January 2019- September 2020



Potentially avoidable visits decreased sharply in April across patients in all major insurance coverage categories. The decrease was largest for MassHealth patients, with a 67% decline in April 2020 compared to April 2019. Potentially avoidable visits decreased 60% among commercial patients, and 55% among Medicare patients.

Numerous clinical, demographic, and socioeconomic factors likely contribute to these differences by payer.

**Notes:** COVID-related visits excluded. BH visits were defined using AHRQ CCSR MBD001-MDB034. Injury and avoidable ED visits are based on the Billings algorithm, which classifies an ED visit into multiple categories. "Avoidable" is defined here as ED visits that were emergent - primary care treatable or non-emergent - primary care treatable. All other are the total sum of ED visits minus avoidable ED, and injury visits.

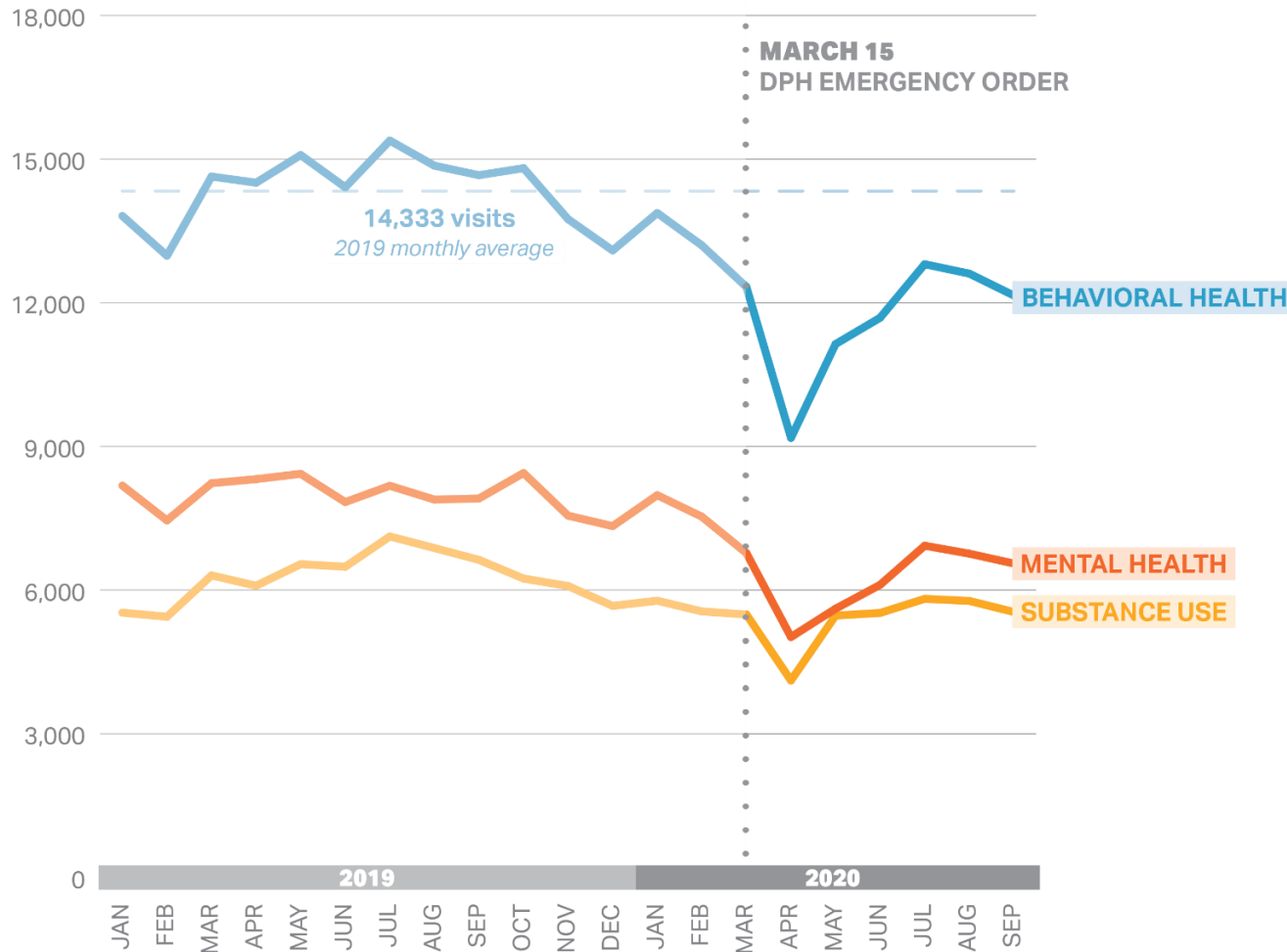
**Source:** HPC Analysis of the Center for Health Information and Analysis (CHIA), Hospital Emergency Department Discharge, preliminary FY2020.



# Mental health and substance use-related ED visits were declining slightly before the pandemic and continued to decline overall in 2020.

HOSPITAL ED

Behavioral health ED visits, January 2019- September 2020



Behavioral health ED visits were already slightly declining pre-COVID-19 compared to 2019 levels for the first quarter (13,810 visits for Q1 2019 compared to 13,134 visits Q1 2020).

In April 2020, behavioral health ED visits dropped 37% from April 2019. However, due to larger decreases in other categories of ED visits, the proportion of all ED visits that were behavioral-health related increased from 7.2% in April-June of 2019 to 9.4% in April-June 2020.

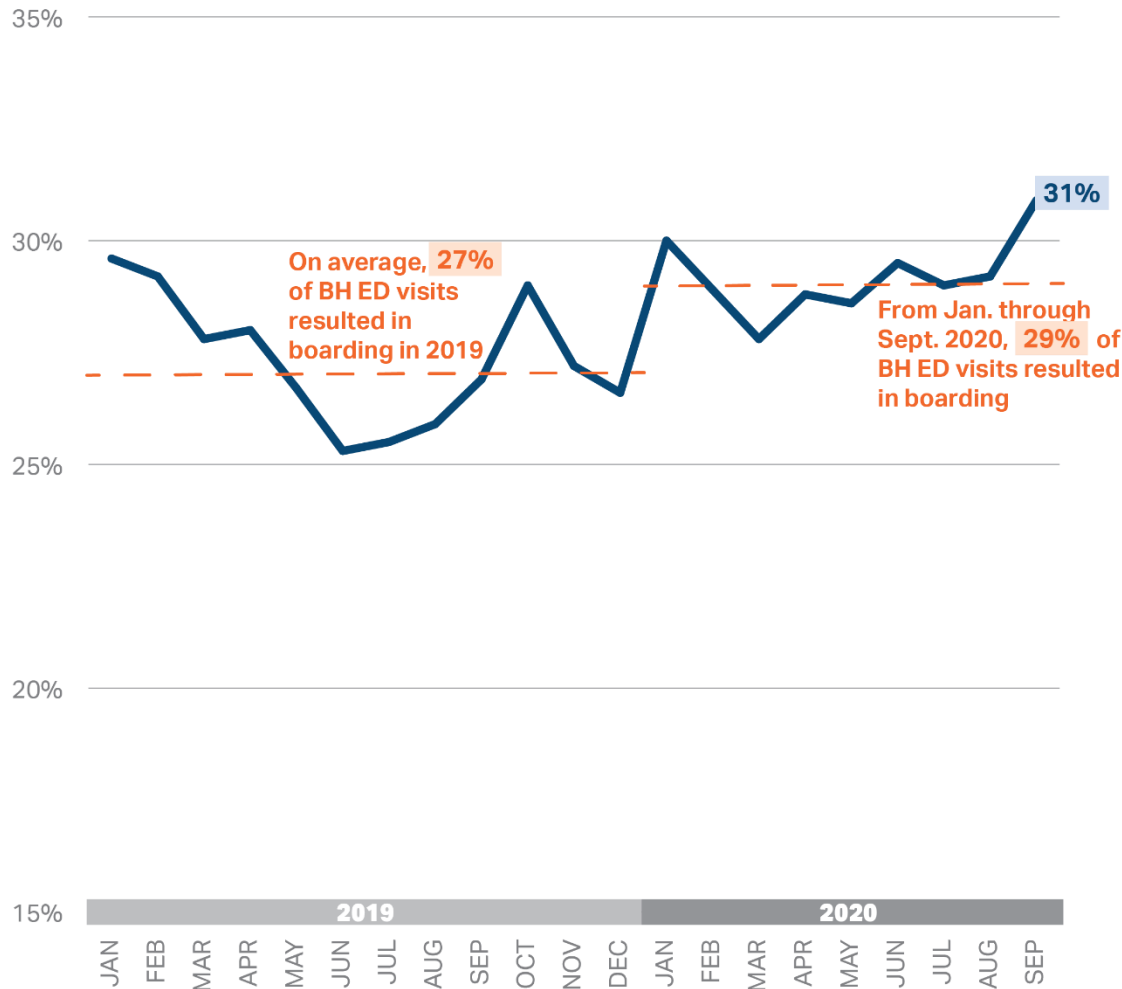
Visits began to increase in the spring and summer but stayed well below 2019 monthly averages. However, as shown in the following exhibits, a greater proportion of these visits resulted in ED boarding (12+ hours in the ED).

It is unclear if the decrease in behavioral health-related ED visits reflects patients not seeking care, barriers to access, or patients utilizing alternative care settings or resources, such as tele-behavioral health to meet these health needs.

# From January to September 2020, more than 28,000 behavioral health-related ED visits resulted in boarding, an increase of over 2 percentage points.

HOSPITAL ED

Percent of behavioral health ED visits that resulted in boarding, January 2019- September 2020



While the overall number of behavioral health-related ED visits decreased in 2020 compared to 2019, the percentage of visits where the patient waited over 12 hours in the ED, known as ED boarding, increased by over 2 percentage points. From January to September 2020, at least 28,000 behavioral health-related ED visits resulted in ED boarding.

By September 2020, the percentage of behavioral health-related ED visits that resulted in boarding reached a peak of 31% since January 2019.

One important contextual dynamic likely impacting the increase in behavioral health-related ED boarding is the loss of nearly 270 psychiatric beds in the Commonwealth over this time period, as described in greater detail on the next slide.



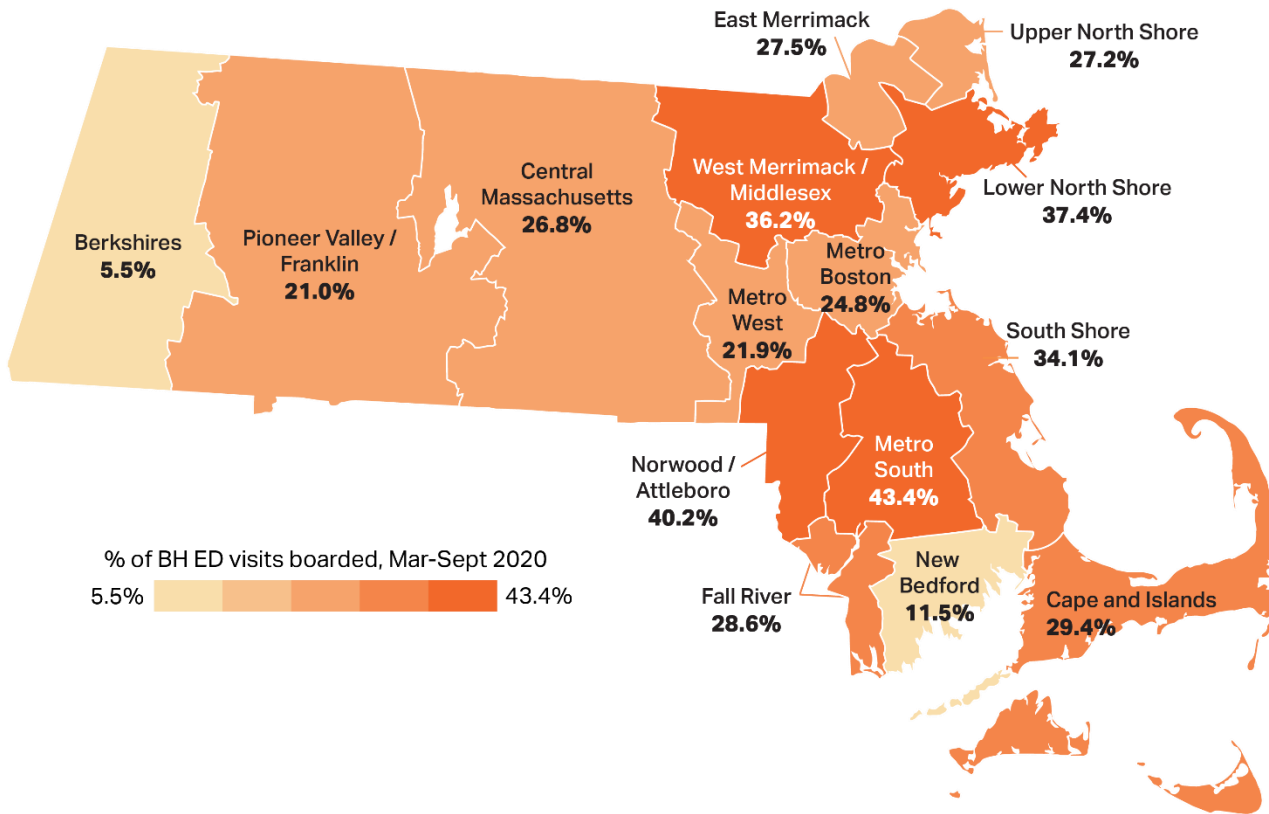
**Notes:** The HPC defines ED boarding as greater than or equal to 12 hours in the hospital ED. ED visits where patients were admitted to the same hospital were excluded from this boarding analysis. Behavioral health visits were identified using AHRQ's CCSR for the primary diagnosis (BH: MBD001-MBD034, Mental Health: MBD001-MBD013, Substance Use: MBD17-MBD34).

**Source:** HPC Analysis of the Center for Health Information and Analysis (CHIA), Emergency Department Discharge, FY2019, preliminary FY2020.

# The loss of psychiatric bed capacity in 2020 likely contributed to higher behavioral health-related ED boarding rates statewide, with a greater impact in certain regions.

HOSPITAL ED

Percent of behavioral health ED visits resulting in boarding, by HPC region, March – September 2020



The percent of behavioral health-related ED visits that resulted in boarding from January through September 2020 ranged from a low of 5.5% in the Berkshires to a high of 40.2% in Norwood/Attleboro and 43.4% in Metro South.

As mentioned on the previous slide, the reduction of psychiatric inpatient bed capacity likely resulted in high and varied percent of ED boarding across the Commonwealth. Some changes that resulted in less inpatient bed capacity include:

- Closure of Trinity Health’s Providence Behavioral Health Hospital
- Closure of Norwood Hospital due to flooding
- Reduction of inpatient psychiatric beds to allow for COVID-related distancing and quarantine space.

There are planning efforts urgently underway to add additional beds at both new and existing facilities, including those detailed by the Executive Office of Health and Human Services’ Roadmap for Behavioral Health Reform.

**Note:** The HPC defines ED boarding as greater than or equal to 12 hours in the hospital ED. ED visits where patients were admitted to the same hospital were excluded from this boarding analysis. Behavioral health visits were identified using AHRQ’s CCSR for the primary diagnosis (BH: MBD001-MBD034, Mental Health: MBD001-MBD013, Substance Use: MBD17-MBD34).

For more information on the Roadmap for Behavioral Health Reform: <https://www.mass.gov/service-details/roadmap-for-behavioral-health-reform>

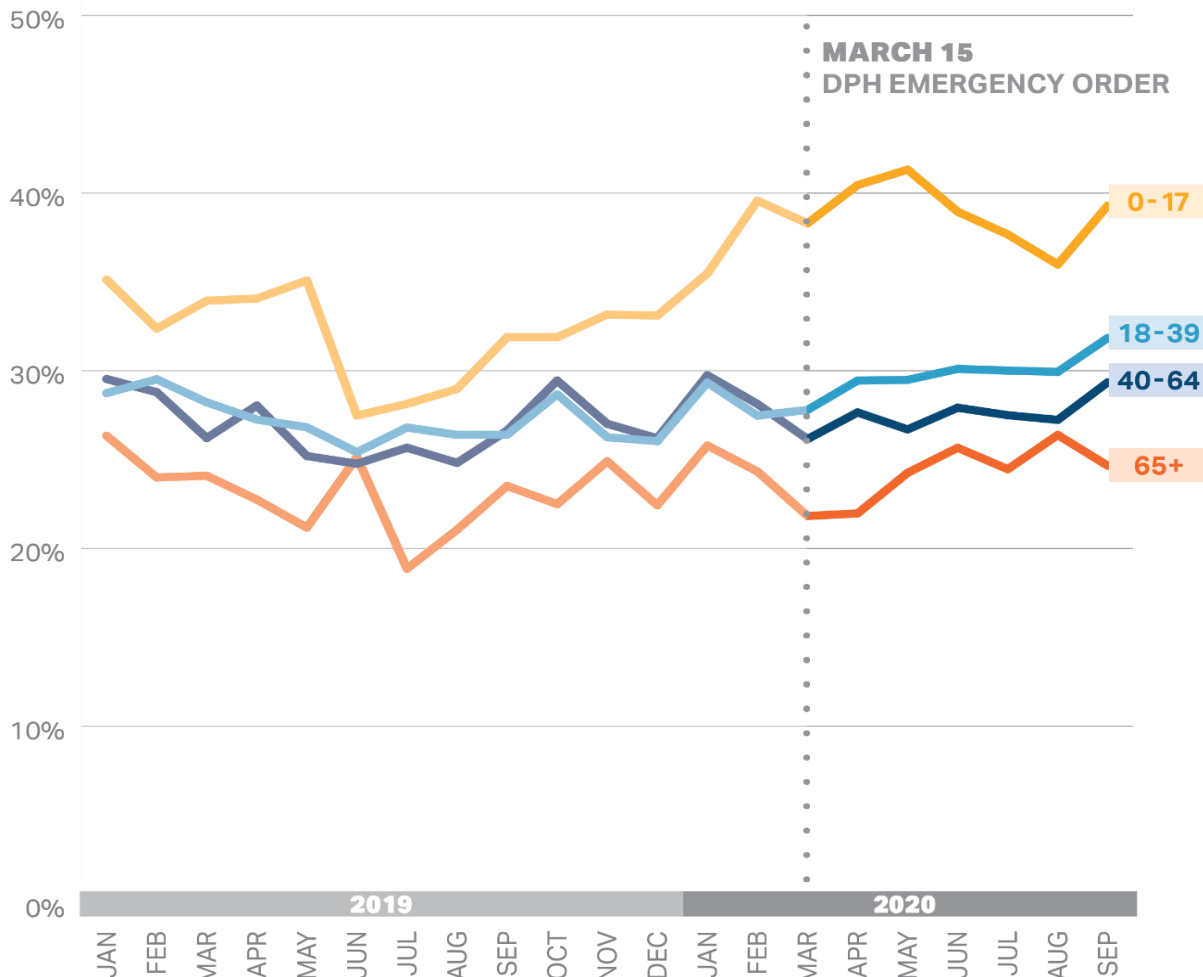
Information on psychiatric bed closures was provided as part of the Oversight Hearing of the Joint Committee on Mental Health, Substance Use and Recovery Trends in Behavioral Healthcare During the COVID-19 Pandemic on October 23, 2020.

**Source:** HPC Analysis of the Center for Health Information and Analysis (CHIA), Hospital Emergency Department Discharge, preliminary FY2020.

# For pediatric behavioral health patients, the percent of ED visits that resulted in boarding increased 7 percentage points from 2019.

HOSPITAL ED

Percent of behavioral health ED visits resulting in boarding by age group, January 2019 – September 2020



Although drivers of behavioral health ED boarding affect patients of all ages, pediatric patients face particular barriers in access to care that can result in ED boarding.

From March through September 2020, 39% of pediatric behavioral health ED visits resulted in ED boarding compared to 28% of adult behavioral health visits.

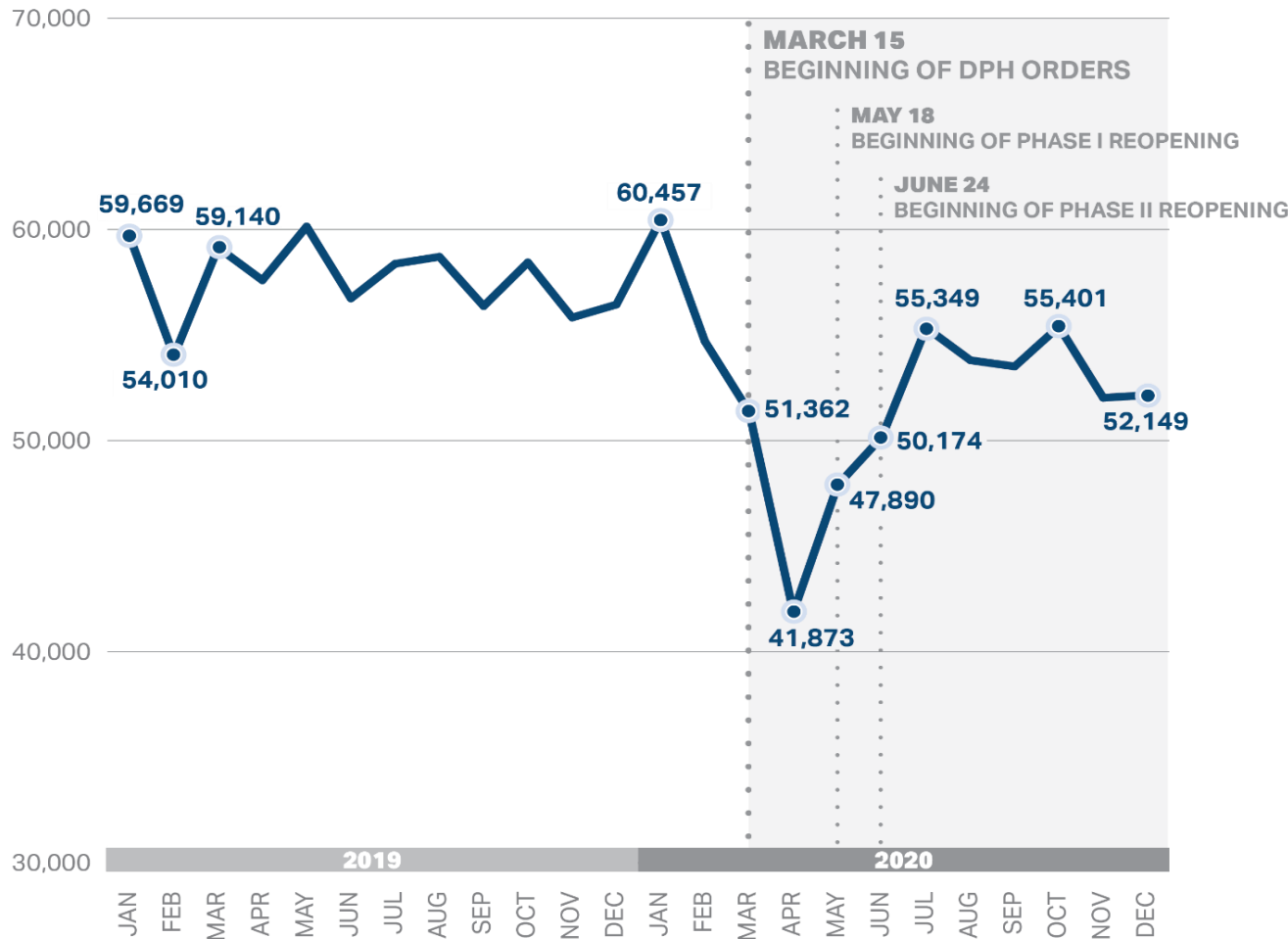
Overall, there were approximately 3,200 fewer pediatric behavioral patients who had an ED visit from March through September 2020 compared to the same months 2019, but there was a higher percentage of pediatric patient visits that resulted in boarding, increasing by 7 percentage points.

Pediatric BH patients not only had higher rates of ED boarding than other age groups, but also were more likely to experience boarding that lasted over 48 hours. In 2020, 29% of pediatric patients who experienced ED boarding spent over 48 hours in the ED (n=878).

# Hospital inpatient volume dropped 31% from January to April 2020 and remained below pre-pandemic levels through December.

HOSPITAL INPATIENT

Massachusetts acute care hospital inpatient admissions, 2019-2020



On March 15, 2020, as COVID-19 hospitalizations began to rapidly increase, DPH issued an order to postpone or cancel any nonessential elective invasive procedures. Over the next several weeks, hospital stays continued to drop to a low of 41,873 in April (15,720 fewer stays than April 2019).

These figures include admissions for patients with COVID-19, which peaked at 8,196 admissions in April 2020, representing 19.6% of all admissions that month. The acute needs of these COVID-19 patients increased the average length of stay from 4.85 to 5.96 days, an 22.9% increase compared to 2019.

In May and June, as COVID-19 hospitalizations and other public health metrics decreased, DPH issued guidance for a phased reopening of the health care system. Overall volume continued to increase but had not reached pre-pandemic levels by the end of 2020.

In late fall and early winter, hospital discharges began to decrease again as COVID-19 hospitalizations began to rise.



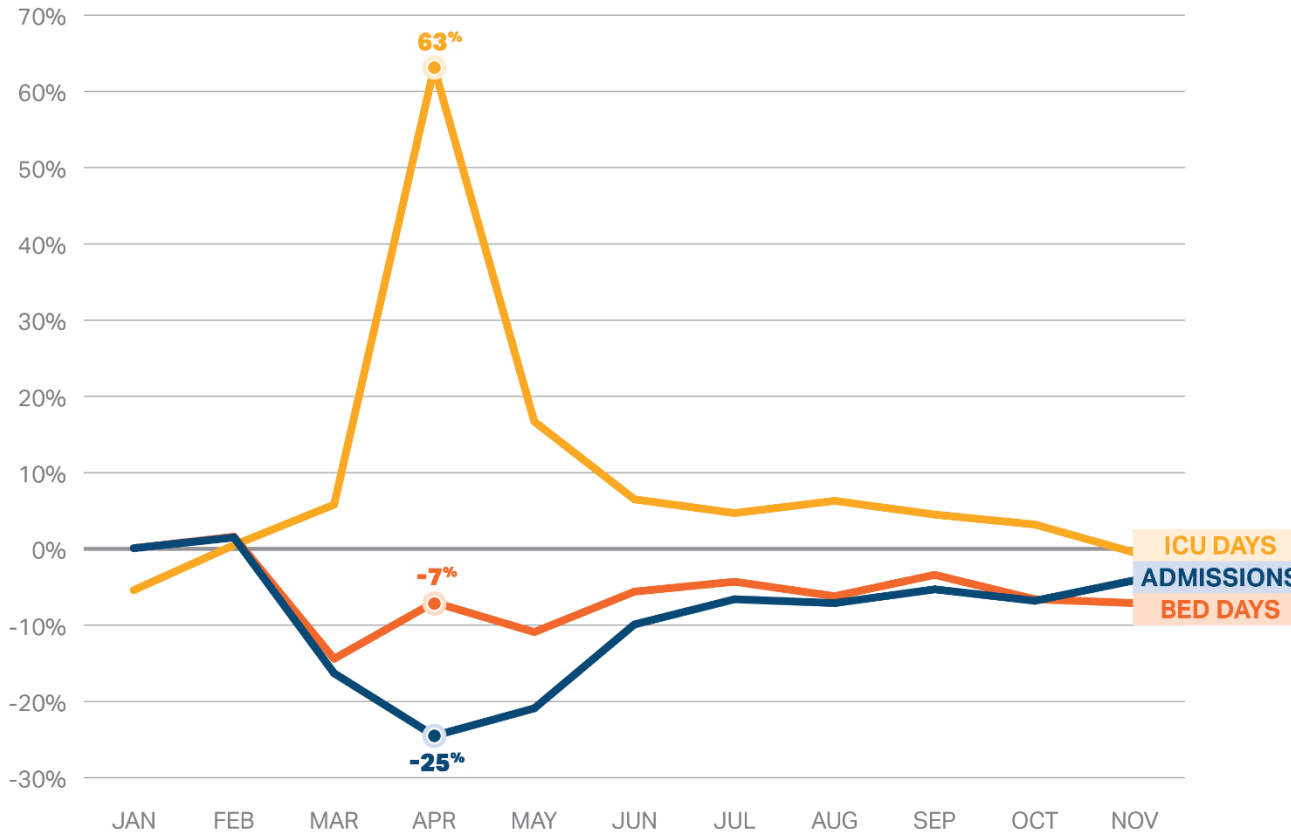
**Notes:** For more information on Reopening Health and Human Services, please see: <https://www.mass.gov/lists/reopening-health-and-human-services-in-Massachusetts>. Some hospitals were excluded for the entire study period due to missing data for 1 or more quarters. This list of hospitals is available in the appendix. Discharges were excluded if they were transfers, LOS >180 days, or rehabilitation.

**Source:** HPC Analysis of the Center for Health Information and Analysis (CHIA), Hospital Inpatient Discharge, FY2018-2019, preliminary FY2020, and FYTD2021 (as of Feb 2021 submission).

# ICU and critical care volume increased dramatically in April 2020, spiking 63% over 2019 levels, and remained higher throughout 2020.

HOSPITAL INPATIENT

Percent change in admissions, bed days, and ICU/CCU days, January 2019 - November 2020



While the total number of inpatient admissions dropped in April, the number of patient days in intensive care units/critical care units (ICU/CCU) increased dramatically, spiking 63% over April 2019 levels.

While ICU/CCU use dropped after the initial surge, ICU/CCU days remained higher than 2019 levels through 2020.

Overall, from 2019 to 2020, the number of admissions decreased 9%, while ICU/CCU days increased 10%. Hospital bed-days (related to occupancy rates), did not decline as much as the number of admissions because patients with COVID-19 experienced longer hospital stays, on average.

**Notes:** This analysis assigns the number of bed days and ICU/CCU days for each admission to the original admission date. ICU days and CCU days were identified using revenue codes (0200, 0201, 0202 and 0210); pediatric, neonatal, and intermediate ICUs were excluded from this analysis. Because many of the December stays were not discharged until January and data was not complete for January 2021, December is excluded from this graph.

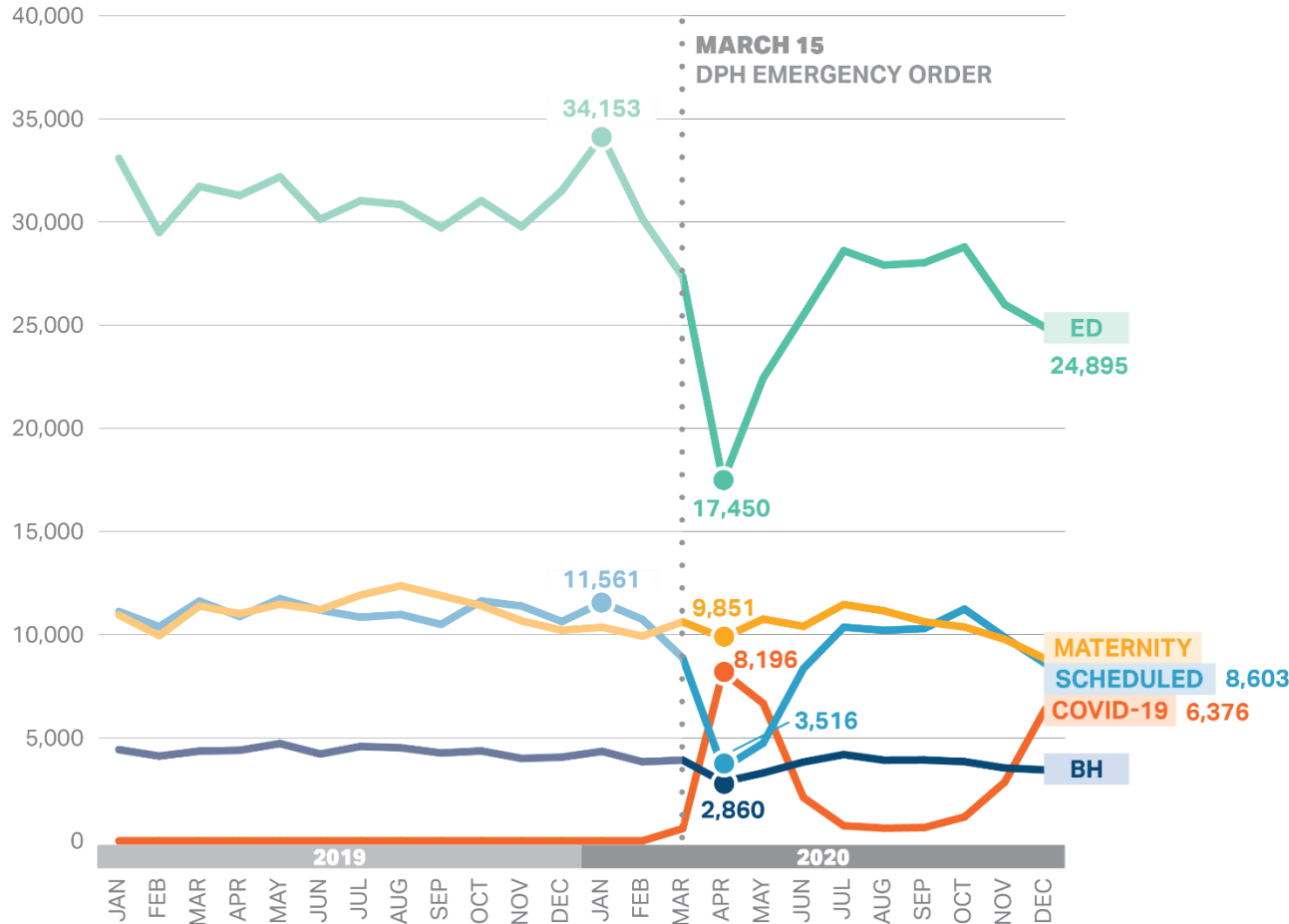
HPC Analysis of the Center for Health Information and Analysis (CHIA), Hospital Inpatient Discharge, FY2018-2019, preliminary FY2020, and FYTD2021 (as of Feb 2021 submission). 22



# Admissions from the ED and scheduled admissions fluctuated throughout 2020 but remained below 2019 levels.

HOSPITAL INPATIENT

Massachusetts acute care hospital inpatient admissions by admission type, 2019-2020



**Notes:** COVID-related discharges are excluded. Maternity includes all stays with a maternity-related APR-DRG. ED admissions include all stays with an ED flag or ED-specific revenue code. Behavioral Health (BH) stays include all stays with a BH diagnosis as the primary diagnosis. Scheduled includes remaining stays. Some hospitals were excluded for the entire study period due to missing data for 1 or more quarters. This list of hospitals is available in the appendix. Discharges were excluded if they were transfers, LOS >180 days, or rehabilitation.

**Source:** HPC Analysis of the Center for Health Information and Analysis (CHIA), Hospital Inpatient Discharge, FY2018-2019, preliminary FY2020, and FYTD2021 (as of Feb 2021 submission).

Trends in hospital admission volume over 2020 varied by admission type. In March and April 2020, the number of admissions through the ED and scheduled admissions declined sharply. These admission types rebounded but remained below 2019 levels. In late fall and early winter, hospital discharges began to decrease again as COVID-19 hospitalizations began to rise.

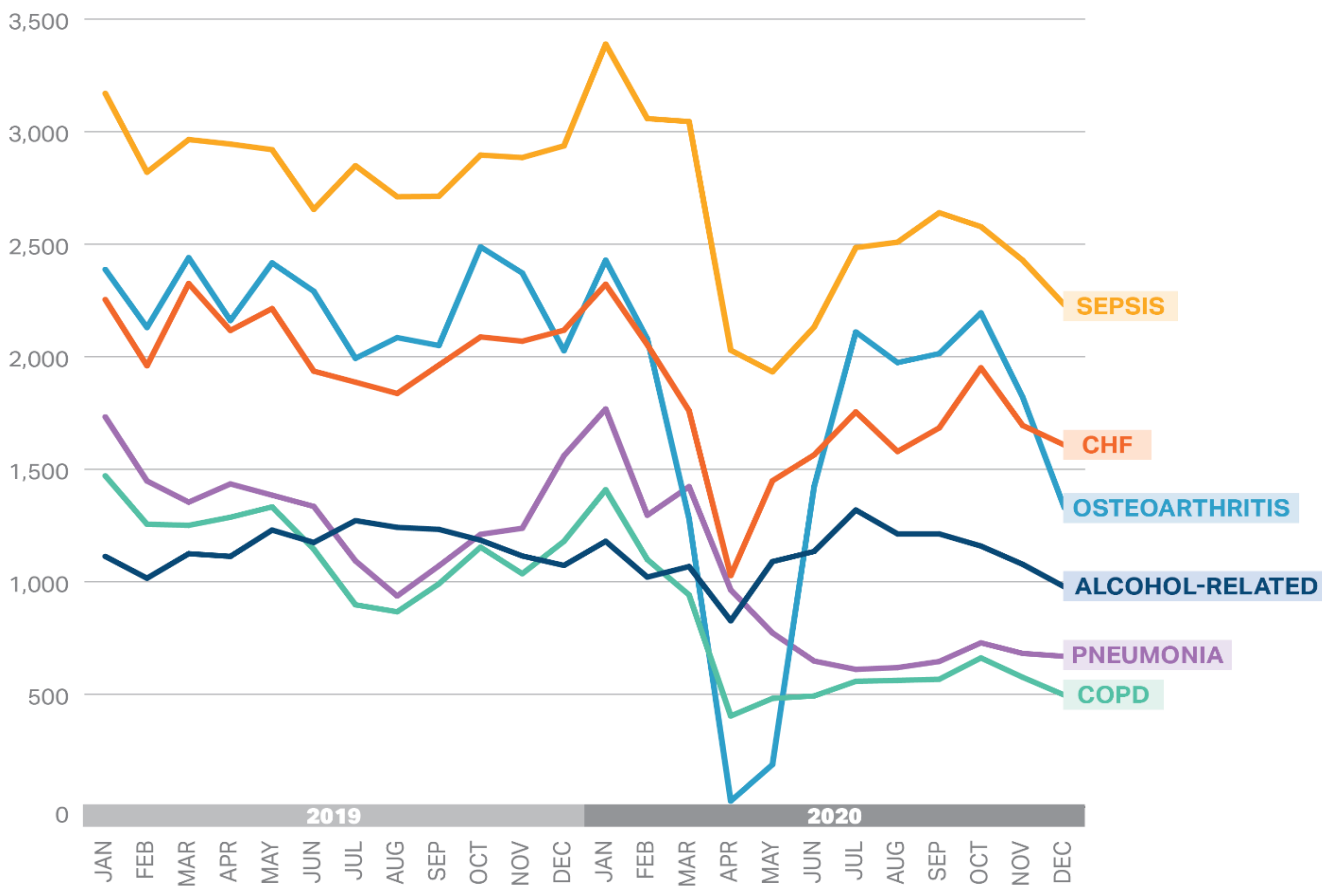
Maternity-related stays declined the least over this time period (8%). Behavioral health admissions, although a relatively small volume of acute-inpatient admissions, declined 14% from 2019-2020.

When examining behavioral health admissions, it is important to note that the data only includes information from acute care hospitals and does not include admissions at free-standing psychiatric hospitals. Additionally, the overall loss of psychiatric bed capacity, as described on previous slides, also likely impacted the volume of behavioral health admissions during this time period.

# Most types of inpatient conditions had the lowest volume in April during the spring surge, while there was a more attenuated drop in the fall.

HOSPITAL INPATIENT

Select inpatient hospital admissions by diagnosis condition, 2019-2020



**Note:** COVID-related discharges are excluded. Condition is based on the primary diagnosis grouping using AHRQ HCUP's Clinical Classification Software Refined 2021. CHF = congestive heart failure; COPD = chronic obstructive pulmonary disease. Some hospitals were excluded for the entire study period due to missing data for 1 or more quarters. This list of hospitals is available in the appendix. Discharges were excluded if they were transfers, LOS >180 days, or rehabilitation.

**Source:** HPC Analysis of the Center for Health Information and Analysis (CHIA), Hospital Inpatient Discharge, FY2018-2019, preliminary FY2020, and FYTD2021 (as of Feb 2021 submission).

Trends in hospital admission volume over 2020 varied by condition. Osteoarthritis, representing many orthopedic procedures that are considered elective (e.g., hip and knee replacements), had the largest drop in volume during the initial surge. In late fall and early winter, osteoarthritis discharges began to decrease again as COVID-19 hospitalizations began to rise.

Congestive heart failure cases had similar trends to osteoarthritis, but with less dramatic declines. More research is needed to understand the drivers of variation for this condition.

Alcohol-related stays remained relatively flat over this time period.

Pneumonia stays decreased rapidly starting in April and the drop continued throughout the year, possibly due to decreased (non-COVID-19) upper respiratory infection rates across the Commonwealth as a result of public health practices.

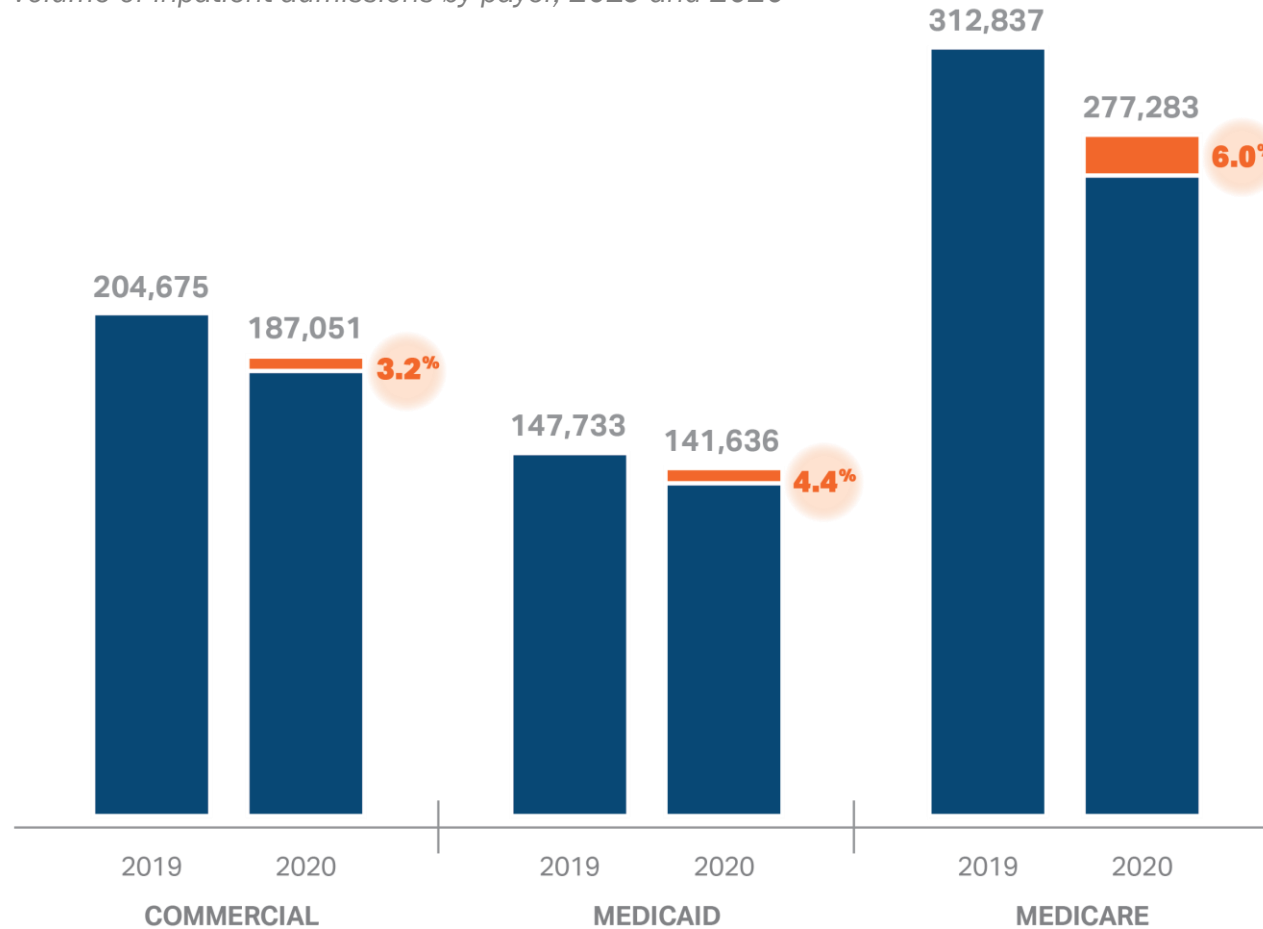
Of note, when including COVID-19 related hospitalizations, sepsis cases spiked during the initial surge (27.5% increase from April 2019).



# Medicare patients had the greatest decrease in inpatient stays between 2019 and 2020 (11% decrease) compared to commercial and Medicaid patients.

HOSPITAL INPATIENT

Volume of inpatient admissions by payer, 2019 and 2020



● Non-COVID-19 discharges ● COVID-19 discharges

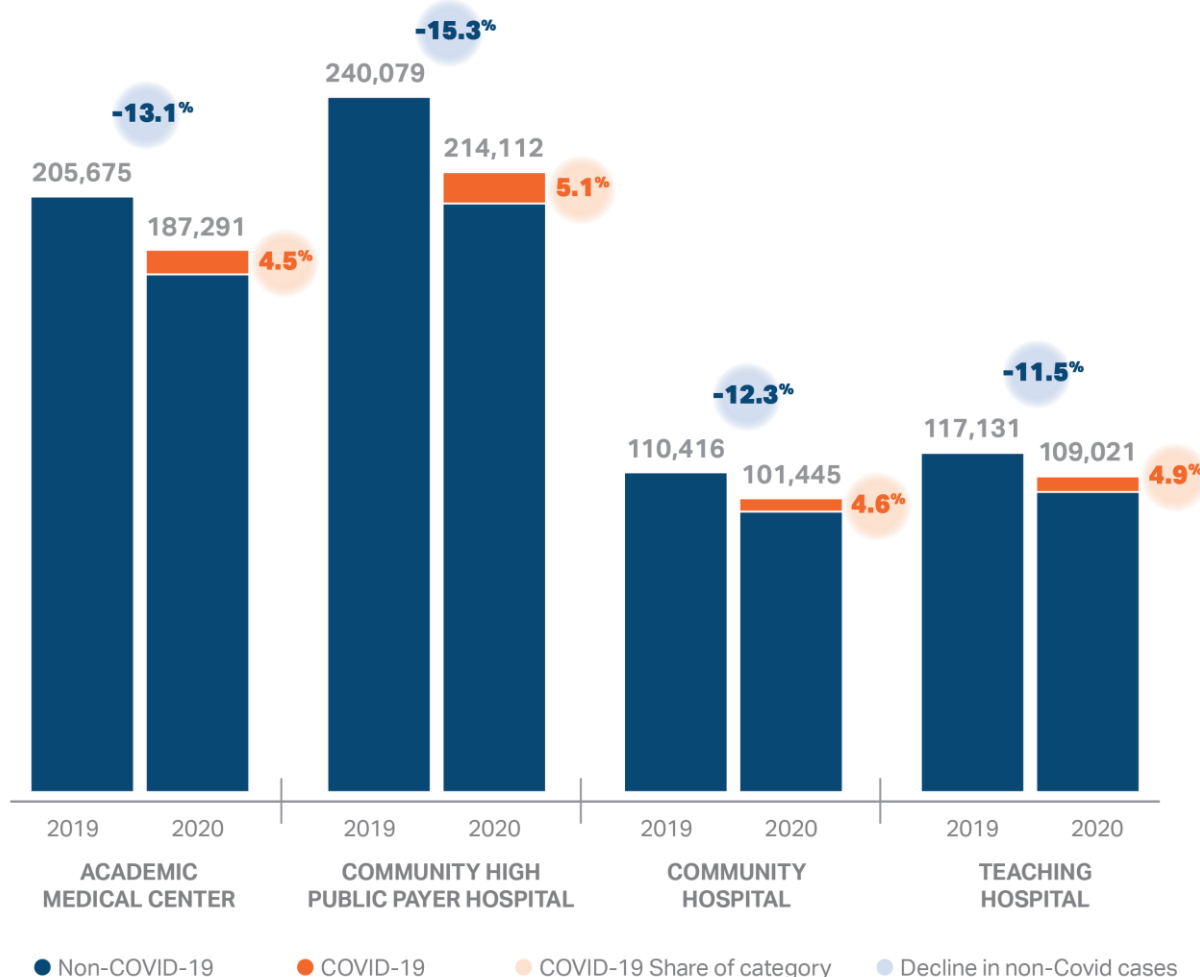
Changes in hospital admission volume from 2019 to 2020 varied by payer population. Despite representing the largest share of COVID-19 hospitalizations, the largest decrease in total hospitalizations was in the Medicare population, which decreased 11.4% from 2019 to 2020, compared to 9% in the commercial population and 4% in the Medicaid population.

However, the smaller decreases in the commercial and Medicaid populations are partially because a substantial share of admissions in these populations are births (39% for commercial, 34% Medicaid in 2020). Excluding maternity admissions, volume among commercial patients declined similarly to the volume among Medicare patients (11.5% decrease).

# All hospital cohorts treated a similar percentage of COVID-19 patients through 2020, but community high public payer hospitals treated the largest volume of these patients while losing the most volume for other types of inpatient stays.

HOSPITAL INPATIENT

Total inpatient admissions and percentage of admissions that were COVID-19-related, by hospital cohort, 2019 and 2020



Throughout 2020, hospitals worked with the state's COVID-19 Command Center to continuously monitor bed capacity and volume of COVID-19 patients. To ensure adequate capacity within and across hospital systems and geographic regions, hospitals worked collaboratively to balance patient needs.

The volume of COVID-19 patients as a percentage of all admissions was similar across all hospital cohorts, ranging from 4.5% of all admissions at academic medical centers (AMCs) to 5.1% at community high public payer hospitals (CHPPHs), excluding field hospitals. However, CHPPHs treated the largest volume of COVID-19 patients in 2020, totaling 10,829 patients.

Additionally, CHPPHs experienced the greatest decline in non-COVID-19 admissions, decreasing 15.3% between 2019 and 2020.

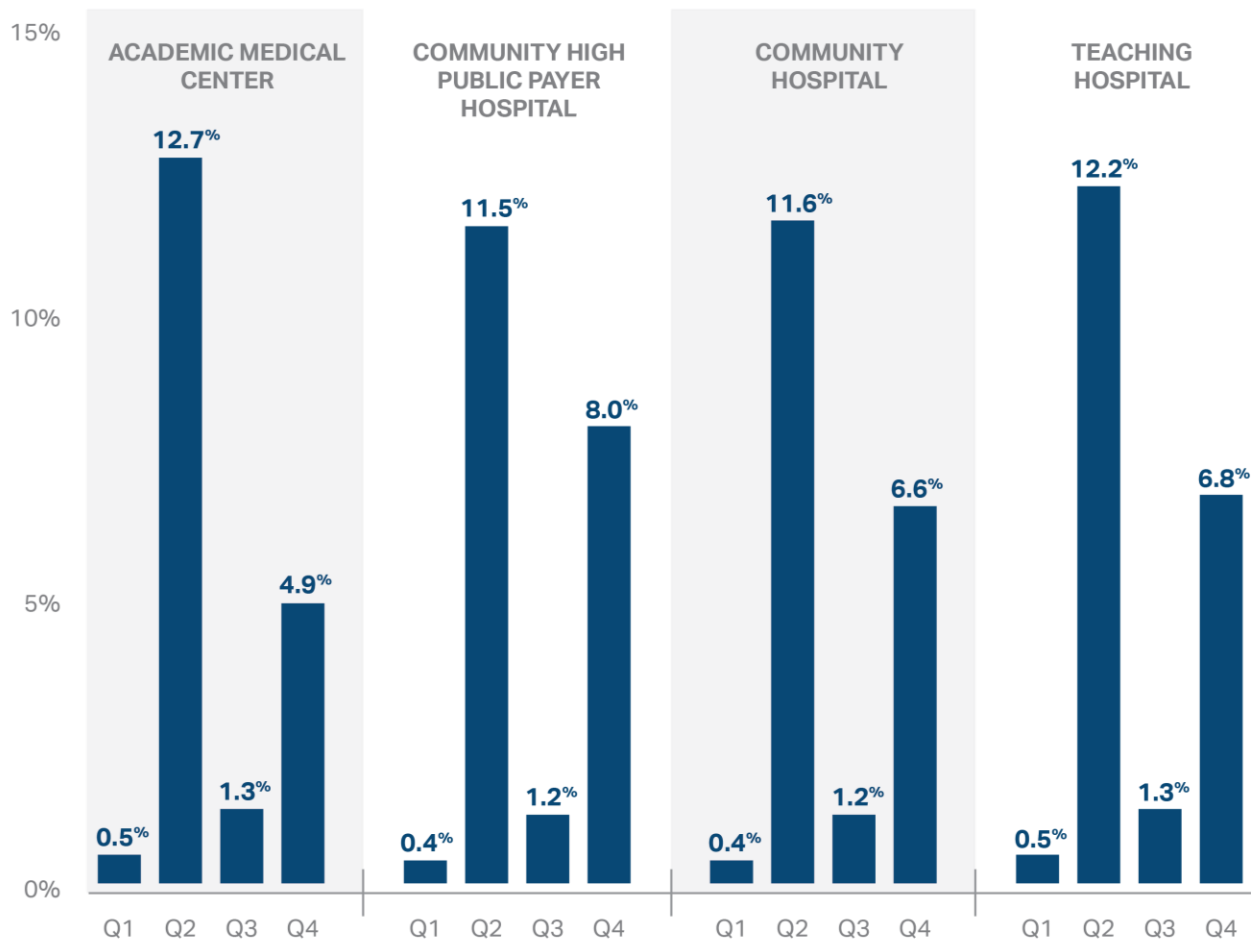
**Note:** Some hospitals were excluded for the entire study period due to missing data for 1 or more quarters. This list of hospitals is available in the appendix. Discharges were excluded if they were transfers, LOS >180 days, or rehabilitation.

**Source:** HPC Analysis of the Center for Health Information and Analysis (CHIA), Hospital Inpatient Discharge, FY2018-2019, preliminary FY2020, and FYTD2021 (as of Feb 2021 submission).

# In March through June 2020, academic medical centers had the highest percentage of COVID-19 patients as a share of total admissions (12.7%), but by the end of 2020 had the lowest share (4.9%).

HOSPITAL      INPATIENT

Percent of total inpatient admissions that were COVID-19-related by hospital cohort, 2020



During the initial surge (corresponding to Quarter 2, April - June), AMCs had the highest percentage of total admissions that were COVID-19-related (12.7%). CHPPHs had the highest volume of COVID-19-related stays in Quarter 2 (5,721).

However, in the fourth quarter of 2020, as COVID-19 hospitalizations rose again, AMCs had the smallest share of COVID-19 admissions (4.9%). CHPPHs had the largest share among hospital cohorts (8.0%).

These shifts may reflect changing clinical needs of COVID-19 patients as well as the improvement in treatment protocols at all hospitals.

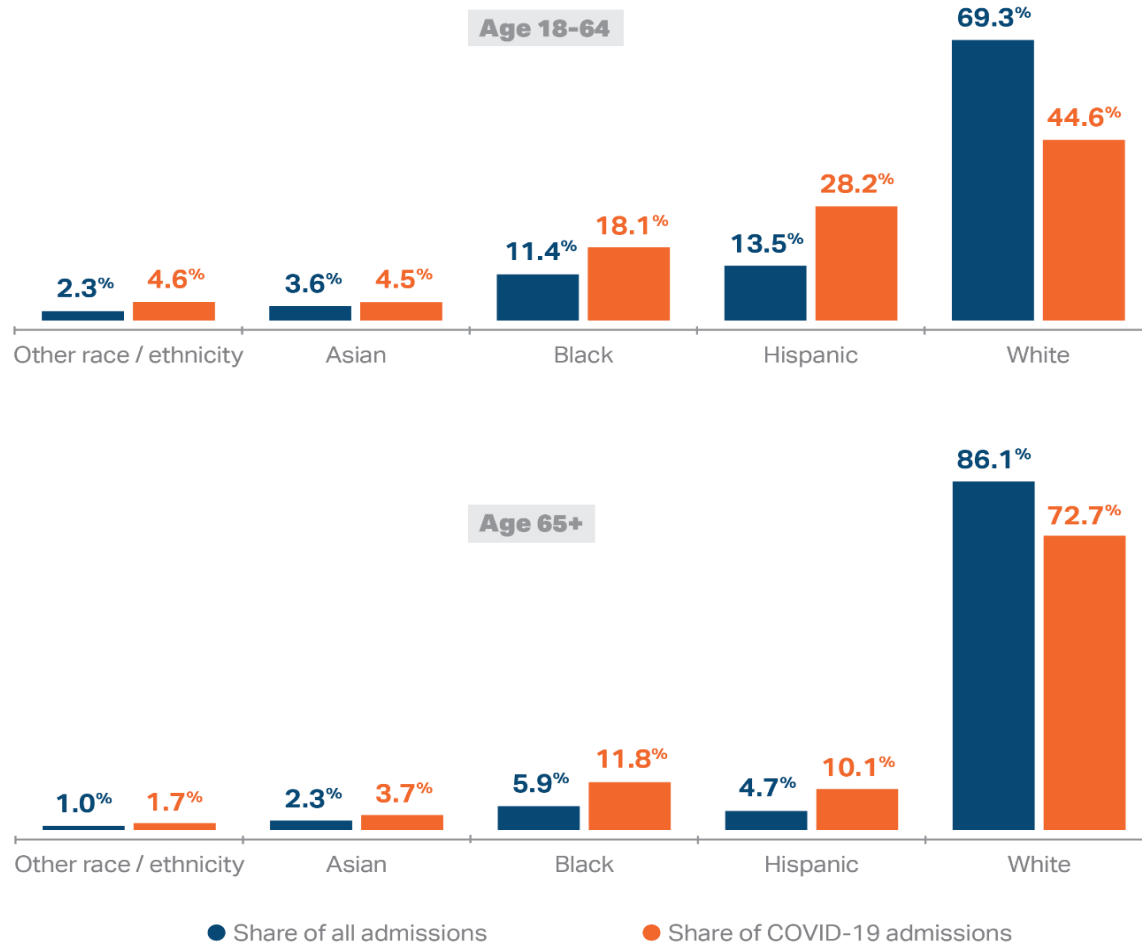
**Note:** Specialty hospitals are excluded as are COVID-19-specific field hospitals, if they appeared as a separate site in the data. Some hospitals were excluded for the entire study period due to missing data for 1 or more quarters. This list of hospitals is available in the appendix. Discharges were excluded if they were transfers, LOS >180 days, or rehabilitation.

**Source:** HPC Analysis of the Center for Health Information and Analysis (CHIA), Hospital Inpatient Discharge, FY2018-2019, preliminary FY2020, and FYTD2021 (as of Feb 2021 submission).

# Hispanic and Black patients represented a disproportionate share of COVID-19-related hospital admissions in 2020.

HOSPITAL INPATIENT

Inpatient hospital admissions by race/ethnicity, 2020



Patients of color represented a disproportionate share of COVID-19-related hospital admissions in 2020.

COVID-19 hospital admissions were particularly disproportionate for Black and Hispanic patients. Among patients age 65+, Black patients represented double the share of COVID-19 admissions, compared to their share of all admissions. Among patients age 18-64 and 65+, Hispanic patients represented more than twice the share of COVID-19 admissions, compared to their share of all admissions. Among patients age 65+, the share of COVID-19 admissions represented by Asian American patients was 65% higher than their share of all admissions.

A recent CDC study found racial and ethnic disparities in U.S. COVID-19 hospitalizations, with the proportion highest for Hispanic patients. Driving factors cited include higher risk of exposure to the virus associated with occupational and housing conditions, as well as higher risk for severe disease.<sup>1</sup>

**Notes:** Hispanic category includes Hispanic ethnicity with any race. Other Race includes American Indian/Alaska Native, Native Hawaiian, other Pacific Islander, or other race. Some hospitals were excluded for the entire study period due to missing data for 1 or more quarters. This list of hospitals is available in the appendix. Discharges were excluded if they were transfers, LOS >180 days, or rehabilitation.

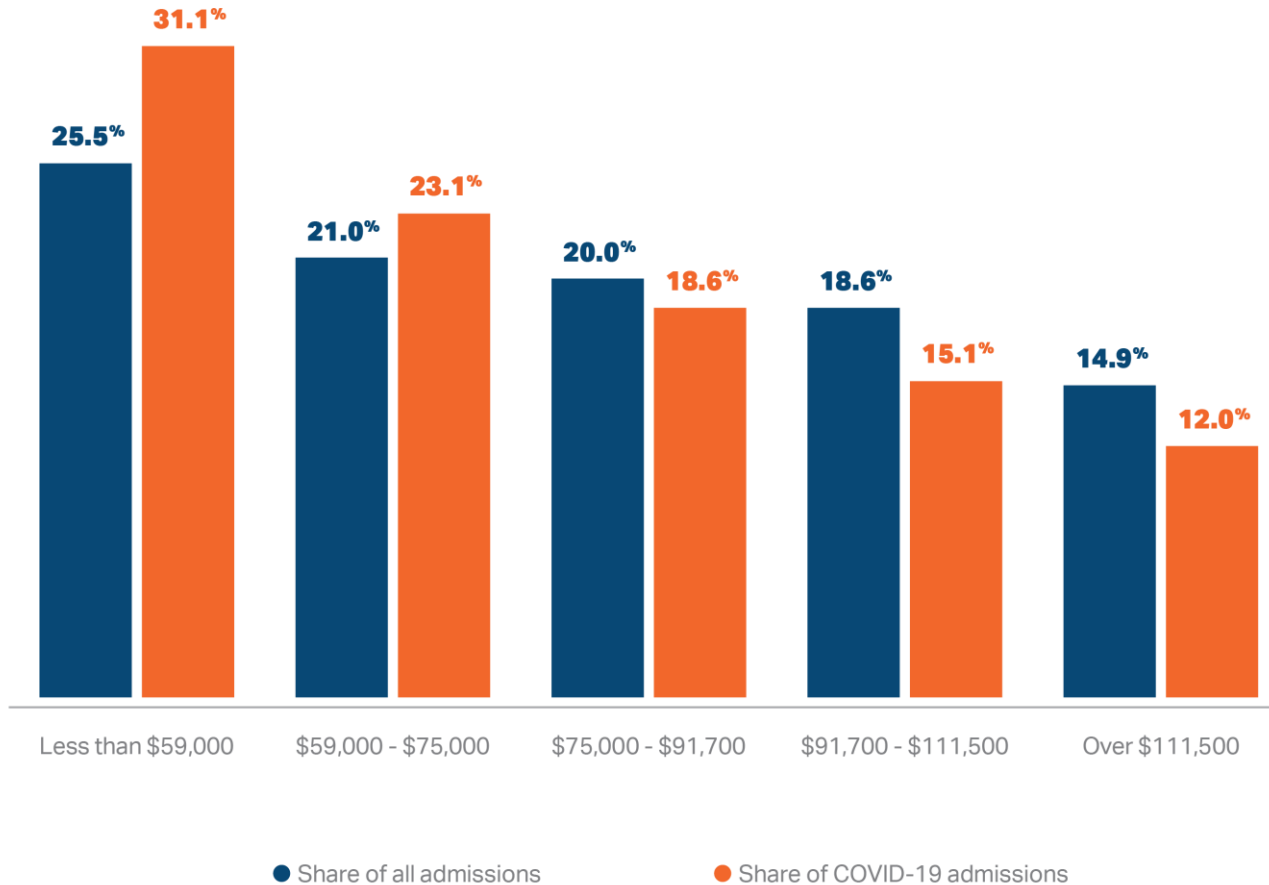
**Source:** HPC Analysis of the Center for Health Information and Analysis (CHIA), Hospital Inpatient Discharge, FY2018-2019, preliminary FY2020, and FYTD2021 (as of Feb 2021 submission).

1. Treisman R. "Studies Confirm Racial, Ethnic Disparities In COVID-19 Hospitalizations And Visits." NPR. April 12, 2021. Available at: <https://www.npr.org/sections/coronavirus-live-updates/2021/04/12/986513859/studies-confirm-racial-ethnic-disparities-in-covid-19-hospitalizations-and-visits>

# Patients from lower income communities represented a disproportionate share of COVID-19-related hospital admissions in 2020.

HOSPITAL      INPATIENT

*Inpatient hospital admissions among patients age 18+ by median income of patient zip code, 2020*



Patients from lower income communities in Massachusetts represented a larger share of COVID-19-related inpatient hospital admissions in 2020, compared to their share of overall inpatient admissions.

The disparity was largest for patients who live in zip codes in the lowest quintile of median community income (household income less than \$59,000). Patients in the lowest quintile represented 25.5% of all admissions, but 31.1% of all COVID-19-related admissions.

Patients living in the second income quintile represented 21.0% of all admissions, but 23.1% of all COVID-19-related hospital admissions. Patients living in the highest income quintile represented 14.9% of all admissions, but only 12.0% of all COVID-19-related admissions.

# Data from Massachusetts and the U.S. indicates drops in preventative care visits for children and adults in 2020.

## AMBULATORY

### MASSACHUSETTS



**39%**

**Drop in cholesterol screening rates in Massachusetts during the pandemic, based on data from one large health system<sup>6</sup>**



**28%**

**Drop in well visits among GIC members with coverage through Health New England from March 2020 – February 2021 compared to March 2019 – February 2020<sup>7</sup>**

### NATIONALLY



**16%**

of low-income parents have **postponed well visits** for their children, and

**10%**

have **postponed immunizations<sup>5</sup>**

**2X**

Parents with lower incomes were more likely to report postponing immunizations for their children compared to parents with higher incomes

**Adult primary care utilization and breast, cervical, and colon cancer screenings have all decreased<sup>1-4</sup>**



In spring 2020, colon cancer screenings nationwide dropped by

**86%**

Breast and cervical cancer screenings dropped by

**94%**

By mid-June, weekly screening volumes remained approximately **30%** lower than pre-COVID-19 levels

Preventative care is important for both pediatric and adult populations. Pediatric preventative care includes childhood immunizations and well visits for infants and children. Adult preventative care includes well visits, lab tests such as cholesterol screenings, and cancer screenings such as mammograms and colonoscopies. Delays in preventative care may have important downstream implications for health.

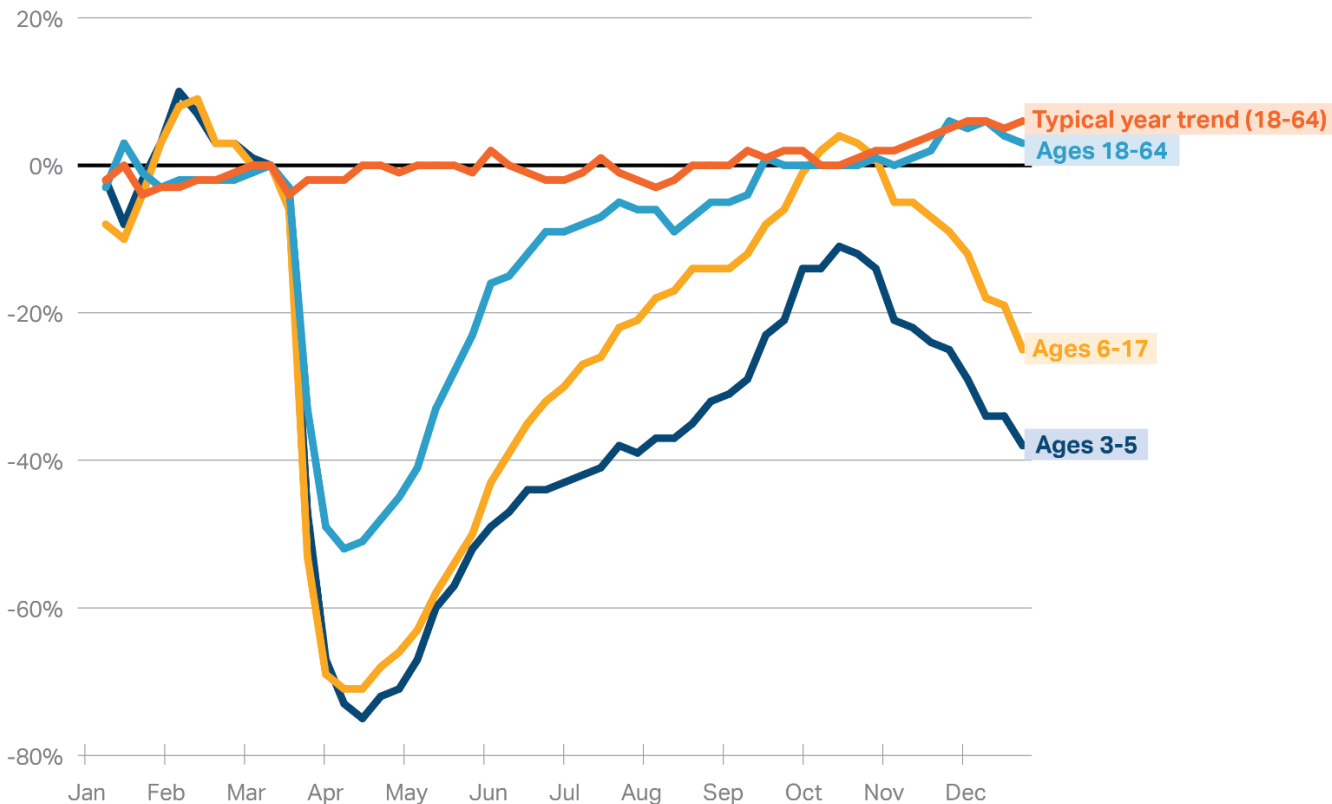
As more data becomes available, the HPC will aim to identify how COVID-19 has impacted adult and pediatric preventative care, which groups have been able to maintain access, and what are anticipated consequences of missed or deferred care.

1 Atherly A, Van Den Broek-Altenburg E, Hart V, Gleason K, Carney J. Consumer Reported Care Deferrals Due to the COVID-19 Pandemic, and the Role and Potential of Telemedicine: Cross-Sectional Analysis. JMIR Public Health and Surveillance. 2020;6(3):1-10. 2. Song H, Bergman A, Chen AT, Ellis D, David G, Friedman AB, Bond AM, Bailey JM, Brooks R, Smith-McLallen A. Disruptions in preventive care: Mammograms during the COVID-19 pandemic. Health Services Research. 2021; 56:95-101. 3 Epic Health Research Network. Delayed cancer screenings. May 4, 2020. Available at: <https://ehrm.org/delays-in-preventive-cancer-screenings-during-covid-19-pandemic/> 4 Mast, C, Muñoz del Rio, A. Delayed Cancer Screenings—A Second Look. July 17, 2020. Available at: <https://ehrm.org/articles/delayed-cancer-screenings-a-second-look/> 5 Gonzalez D, Karpman M, Kenney, GM, Zuckerman S. Delayed and Forgone Health Care for Children during the COVID-19 Pandemic February 16, 2021. Available at <https://www.urban.org/research/publication/delayed-and-forgone-health-care-children-during-covid-19-pandemic> 6 Gumuser ED, Haidermota S, Finneran P, Natarajana P, Honigberga MC. Trends in cholesterol testing during the COVID-19 pandemic COVID-19 and cholesterol testing. American Journal of Preventive Cardiology. 2021;6. 7. Health New England data provided to the Group Insurance Commission. Data courtesy of the Group Insurance Commission.

# Nationally in 2020, ambulatory visits dropped steeply and then rebounded to pre-pandemic levels for adults but not for children.

## AMBULATORY

Percent change in ambulatory provider visits relative to the week of March 1, 2020



In the U.S., the volume of adult outpatient clinician visits reached its lowest point in 2020 during the week of April 7, with a 52% decline in volume compared to the week of March 1. However, adult visits appear to have rebounded to pre-pandemic levels by the end of 2020.

Pediatric visits had greater declines than adult visits, and while they also rebounded in the fall, they declined again sharply by the end of the year, especially among children ages 3 to 5.

For children ages 6 to 17, visit volume in the week of April 7 was 73% lower than in the week of March 1, and volume in the week of December 22 was 25% lower. For children ages 3 to 5, visit volume in the week of April 14 was 75% lower than in the week of March, and volume in the week of December 22 was 38% lower.

# Utilization: Telehealth

## TELEHEALTH

The pandemic produced a dramatic increase in the use of telehealth to provide certain services both nationally and in Massachusetts. In the U.S., measured as a percent of total medical claim lines processed by commercial insurers, telehealth increased from 0.18% in October 2019 to 5.61% in October 2020.<sup>1</sup>

As part of an emergency declaration, CMS has allowed telehealth visits to be reimbursed in lieu of in-person visits in Medicare. In Massachusetts, the Baker / Polito Administration issued an Executive Order in March 2020 expanding access to telehealth with coverage and payment mandates.<sup>2</sup> EO HHS Health Care Reopening Guidance has emphasized that telehealth should be used whenever feasible.<sup>3</sup> Chapter 260 of the Acts of 2020 requires insurers to cover telehealth services when telehealth is appropriate and in-person care is covered, establishes permanent payment parity for behavioral health (BH) services, extends payment parity for primary care and chronic disease management services until 2022, and charges the HPC with studying the impact of telehealth on health care access and cost, as well as recommending appropriate payment rates for telehealth services.<sup>4</sup>

After an April peak, telehealth visits in the U.S. held steady at roughly 10% of all visits through 2020.<sup>5</sup> Based on data from GIC members with AllWays insurance, 36% of all office visits were performed through telehealth from March 2020 to January 2021.<sup>5</sup> Telehealth has been employed in BH to a far greater extent than in other specialties, with telehealth representing an estimated 41% of BH visits in October 2020, compared with 14% in the next highest specialties of rheumatology and endocrinology.<sup>7</sup>

While telehealth offers considerable opportunities for continued integration into care models after the pandemic, many questions remain about optimal usage, how to reduce disparities due to internet access and other factors, and appropriate payment models. The HPC's final report will focus on how telehealth use has changed over the course of the pandemic, disparities in telehealth access, and framing the opportunities and challenges that telehealth presents.

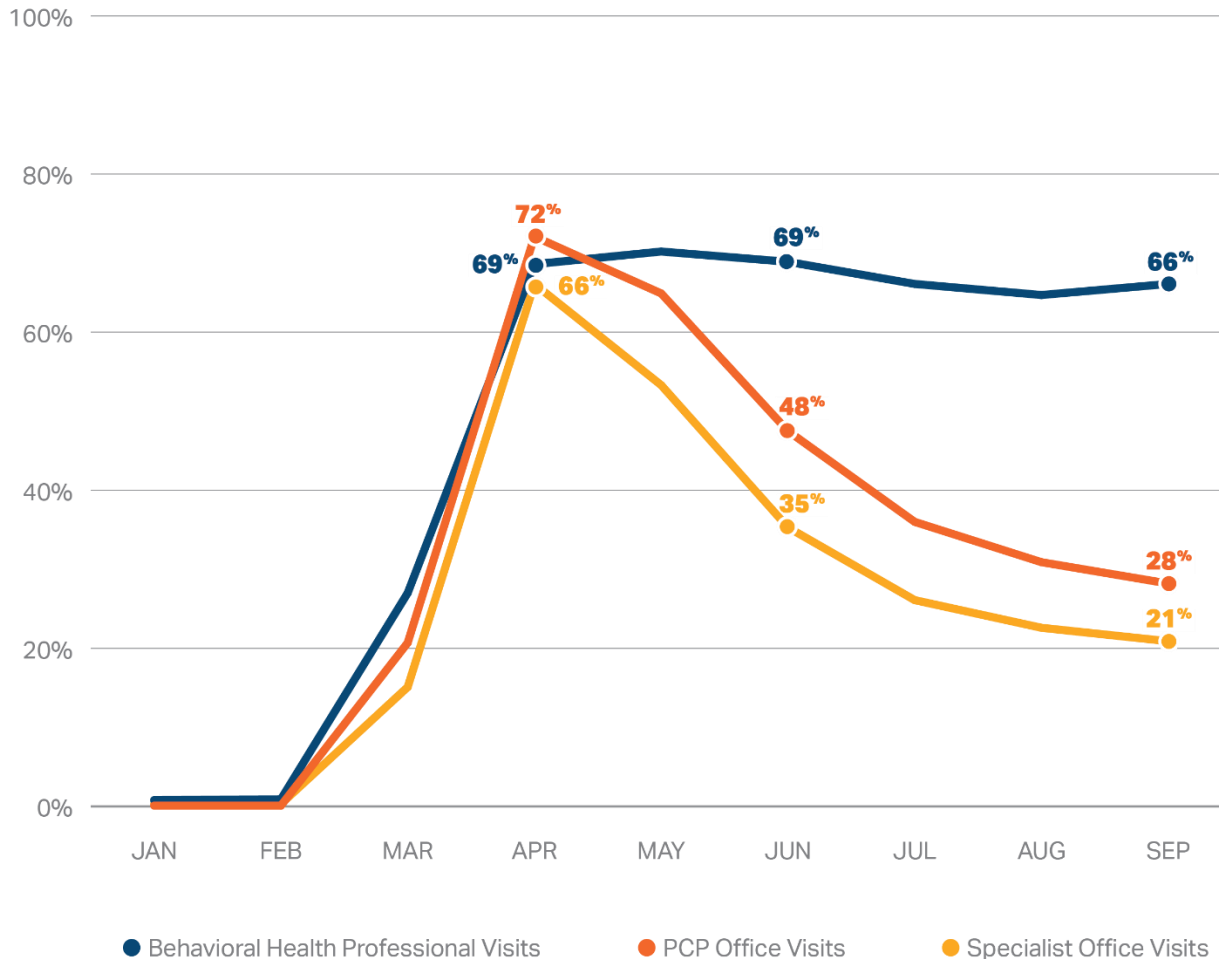
1. Fair Health. Fair Health Newsroom. Telehealth Claim Lines Increase 3,060 Percent Nationally When Comparing October 2019 to October 2020. Available at: <https://www.fairhealth.org/press-release/telehealth-claim-lines-increase-3-060-percent-nationally-when-comparing-october-2019-to-october-2020> 2. Commonwealth of Massachusetts. Office of the Governor. Order of the Governor. March 15, 2020. Available at: <https://www.mass.gov/doc/march-15-2020-telehealth-order/download2> 3. Commonwealth of Massachusetts. Executive Office of Health and Human Services. Massachusetts Department of Public Health Guidance Reopen Approach for Health Care Providers Phase 4. March 23, 2021. Available at: <https://www.mass.gov/doc/phase-4-reopening-guidance-massachusetts-department-of-public-health-guidance-reopen-approach-for-health-care-providers> 4. Chapter 260 of the Acts of 2020. Available at: <https://malegislature.gov/Laws/SessionLaws/Acts/2020/Chapter260> 5. IQVIA. Monitoring the impact of COVID-19 on the Pharmaceutical Market, Published January 15, 2021, data week ending January 1, 2021. Available at: [https://www.iqvia.com/-/media/iqvia/pdfs/files/iqvia-covid-19-market-tracking-us.pdf?\\_id=1612813941357](https://www.iqvia.com/-/media/iqvia/pdfs/files/iqvia-covid-19-market-tracking-us.pdf?_id=1612813941357) 6. AllWays data for Group Insurance Commission members. Data provided courtesy of the Group Insurance Commission. 7. Commonwealth Fund. The Impact of the COVID-19 Pandemic on Outpatient Care: Visits Return to Prepandemic Levels, but Not for All Providers and Patients. October 15, 2020. Available at: <https://www.commonwealthfund.org/publications/2020/oct/impact-covid-19-pandemic-outpatient-care-visits-return-prepandemic-levels>



# Over 60% of behavioral health visits for commercially-insured Massachusetts residents were performed via telehealth starting in April 2020.

## TELEHEALTH

Trend in total visits by relative percentage of telehealth and in-person encounters for fully-insured commercial members in Massachusetts, January – September 2020



Among commercially-insured Massachusetts residents, swift adoption of telehealth starting in March 2020 peaked in April, with approximately 70% of primary care, specialist, and behavioral health visits taking place via telehealth.

Starting in the spring and summer, the proportion of primary care and specialist visits provided by telehealth decreased to under 30%. In contrast, the share of behavioral health visits performed via telehealth remained high, at over 60% of visits.

# Utilization: Behavioral Health

## BEHAVIORAL HEALTH

The pandemic has disrupted access to in-person behavioral health care and at the same time intensified behavioral health needs. In the U.S., 41% of adults reported at least one adverse mental or behavioral health condition in a June 2020 CDC survey.<sup>1</sup> The behavioral health crisis appears particularly acute in children and young adults, with 75% of 18- to 24-year-olds reporting at least one adverse condition, and one in four (26%) young adults reporting having “seriously considered suicide in the past 30 days.” Among GIC members with Tufts Health Plan coverage, psychotherapy use was an average 4% higher per month from March 2020 to February 2021, compared to encounters per month before March 1, 2020.<sup>2</sup>

Traditional in-person mental health visits quickly transitioned to a telehealth model for many patients. By Executive Order and Division of Insurance (DOI) bulletin on March 16, the Baker-Polito Administration required coverage for and payment for telehealth services at the same level as for in-person services. Chapter 260 of the Acts of 2020 established permanent payment parity for tele-behavioral health services. Telehealth offers opportunities, but also challenges in access for certain populations, as well as long-term questions of when telehealth versus in-person visits are most clinically appropriate.

Importantly, the pandemic has exposed a crisis in access to inpatient and outpatient options for behavioral health. EOHHS recently released the Roadmap for Behavioral Health Reform, proposing reforms to expand access to treatment and improve health equity. Drawing on state efforts, the HPC’s final report will include a focus on the needs for comprehensive behavioral health care in the Commonwealth.

# Further Analysis of Behavioral Health Visits in Massachusetts Based on Unique COVID-19 Research Database

## BEHAVIORAL HEALTH



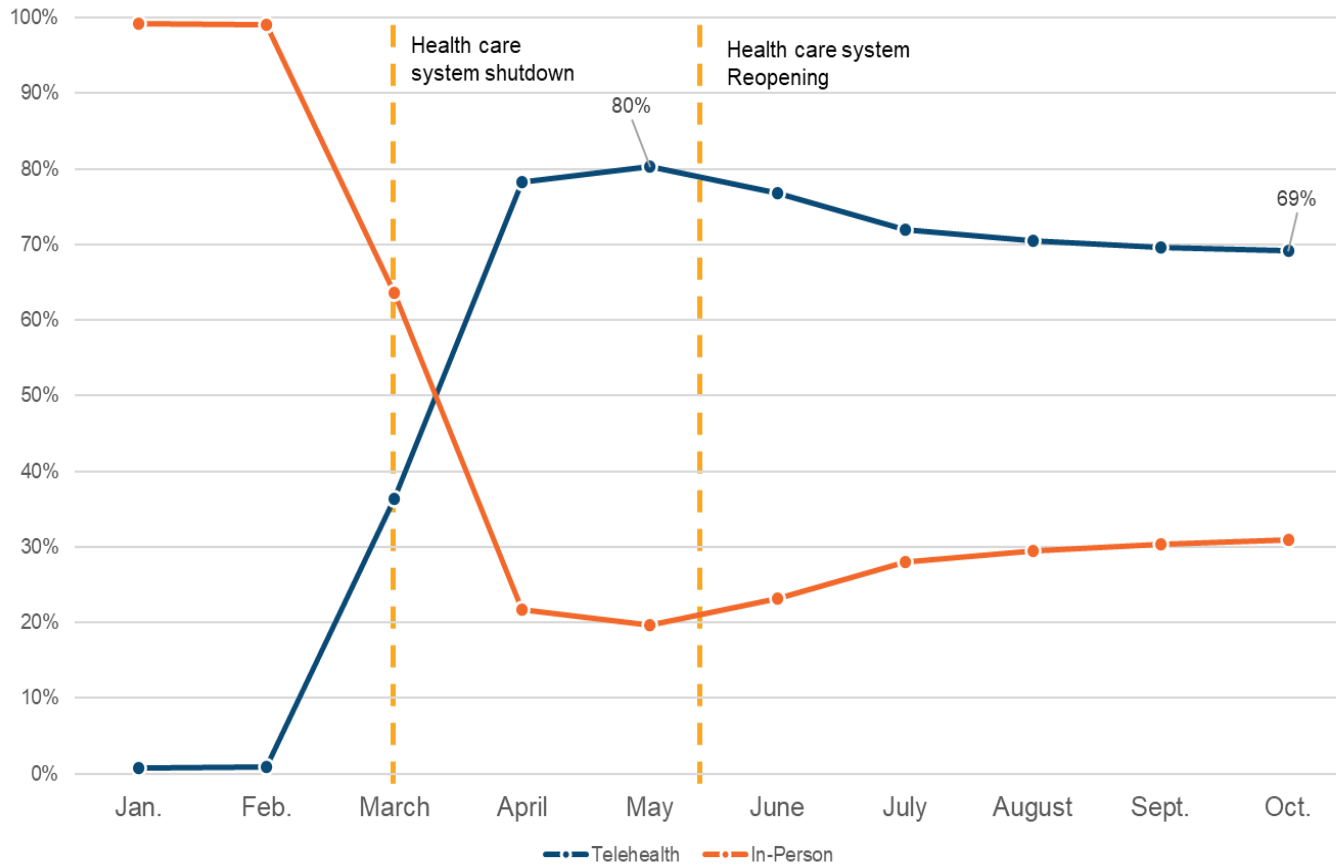
- The HPC obtained a sample of Massachusetts claims data from a new national research database to examine recent trends in health care utilization.
- The data, technology, and services used in the generation of these data and research findings were generously supplied pro-bono by the COVID-19 Research Database partners, who are acknowledged at <https://covid19researchdatabase.org>
- Data used in the following analyses derive from a provider-driven claims submission platform that aggregates claims for providers to send to payers. Only providers who use this vendor for claims submission are included in the data set. These providers are over-represented by smaller, commercial, and predominately behavioral-health providers in Massachusetts.
- The data contains limited information on demographics and spending.

**2020 Massachusetts claims represent ~192,000 unique individuals and 3.5 million encounters as of December 2020.**

# The percentage of behavioral health visits using telehealth peaked at 80% in May, before declining to 69% by October.

## BEHAVIORAL HEALTH

Trend in total visits by relative percentage of telehealth and in-person encounters for behavioral health in Massachusetts, 2020



Based on a sample of providers, the percentage of behavioral health visits in Massachusetts provided through telehealth peaked at 80% in May.

Relative use of telehealth declined somewhat afterwards as the health care system reopened, but has held steady in recent months, representing the majority of behavioral health visits, at 69% of visits in October.

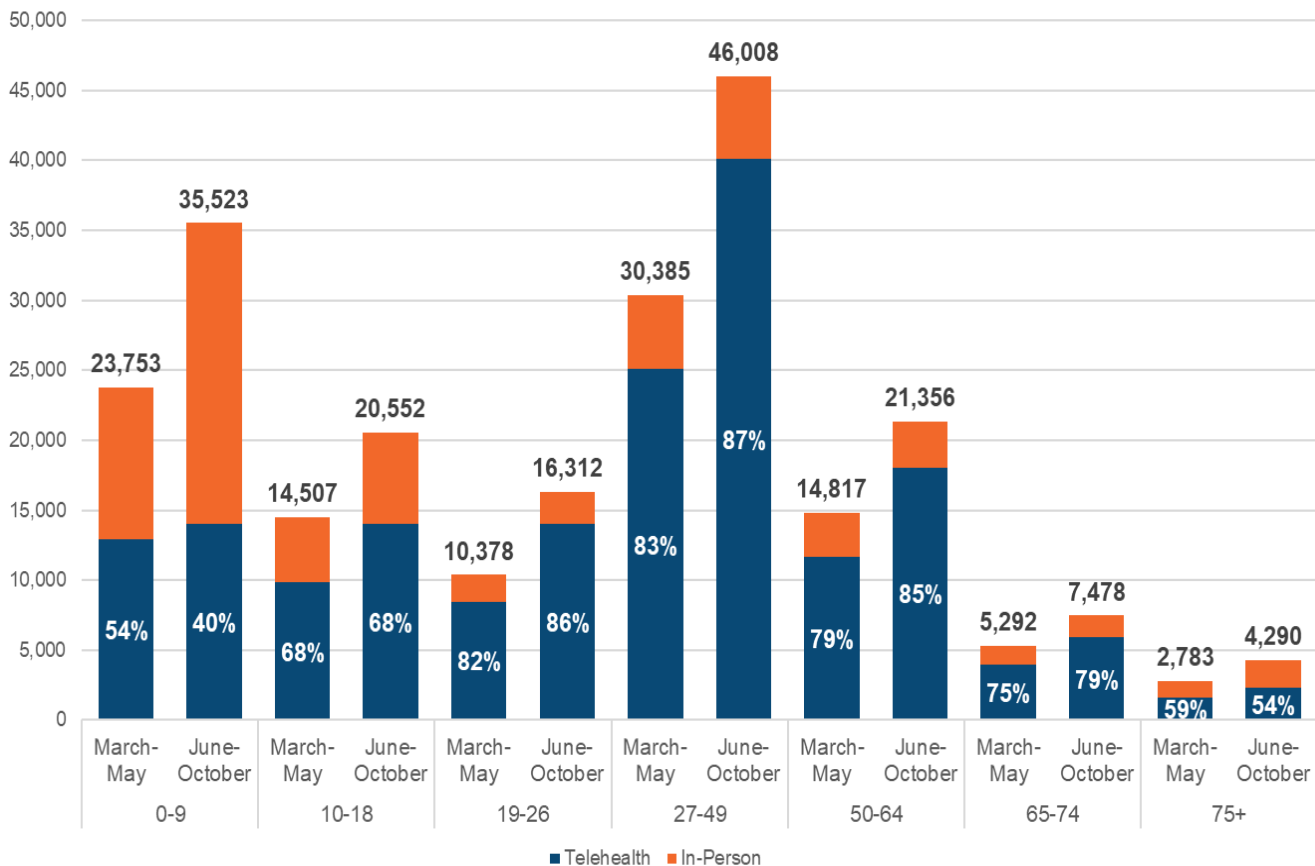
**Notes:** MMS guidelines for telehealth: <http://www.massmed.org/Patient-Care/COVID-19/Plan-Specific-Coverage-for-COVID-19/>. Behavioral Health diagnosis coding based on CHIA guidelines for the Payer Reporting of Primary Care and Behavioral Health Expenses Data Specification Manual. CHIA guidelines were used for procedure codes but provider taxonomy was not able to be applied due to lack of data: <https://www.chiamass.gov/assets/docs/p/pbhc/PC-BH-Data-Specification-Manual.pdf>

**Source:** COVID-19 Research Database, 2020. Data accessed January 2021.

# Patients under 9 and over 75 were more likely to resume in-person behavioral health visits as the health care system reopened.

## BEHAVIORAL HEALTH

Average behavioral health monthly volumes during and after health system shut down by age groups and telehealth status, 2020



As the pandemic progressed, the total volume of behavioral health visits increased across all age groups in Massachusetts.

Across most age groups, the share of visits provided through telehealth increased over time. Among adults ages 27 to 49, the share of visits through telehealth increased from 83% in March through May to 87% in June through October.

However, patients under 9 and over 75 were more likely to resume in-person care over time. For patients ages 0 to 9, the share of visits through telehealth decreased from 54% to 40%. For patients ages 75 and older, the share of visits through telehealth declined from 59% to 54%. For patients ages 10 to 18, the share of visits provided through telehealth remained stable at 68%.

Differences in telehealth use by age highlight that care needs may vary by population.

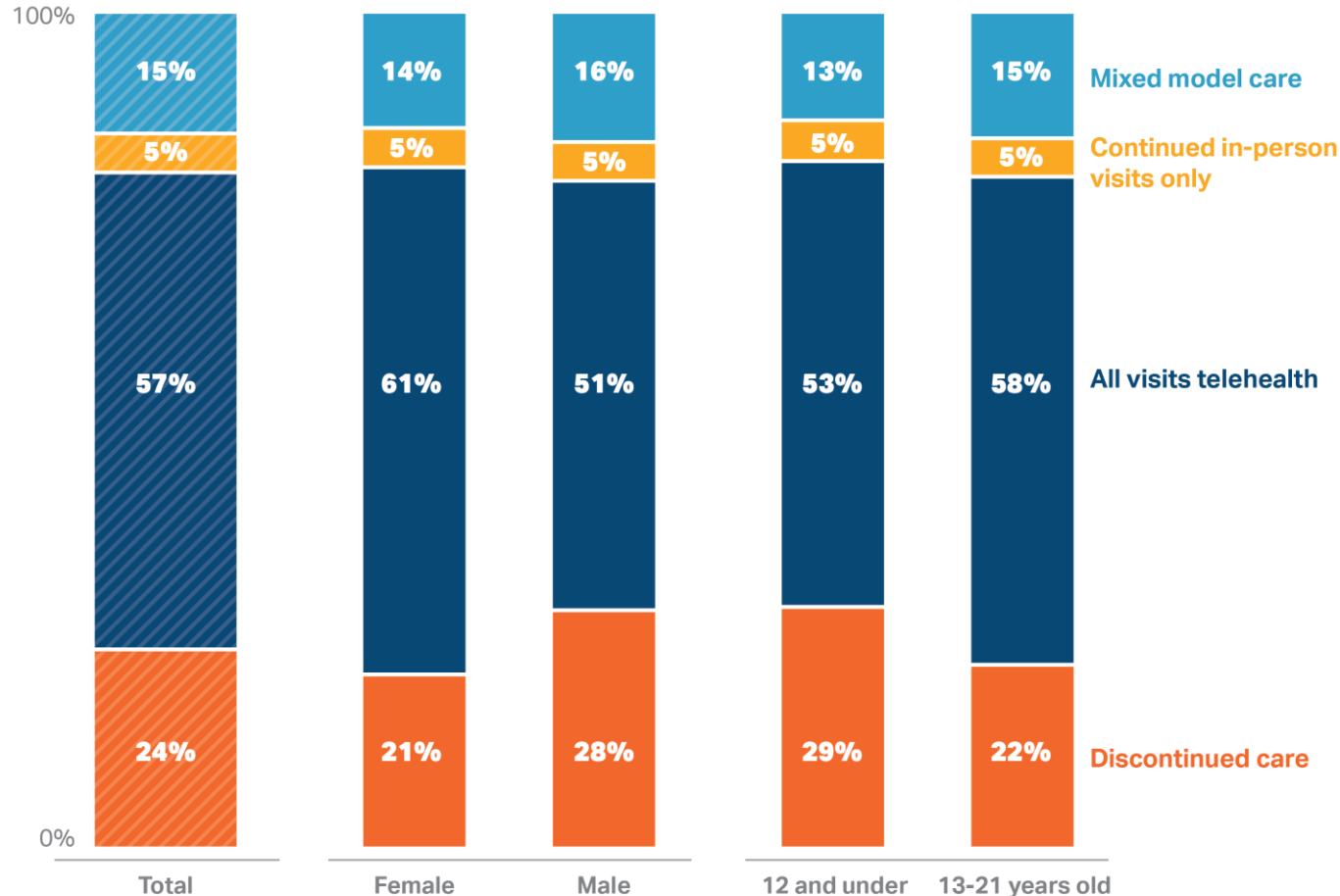
**Notes:** Due to COVID-19, EOHHS issued an executive order limiting in-person health care to certain essential and emergency health care services. In mid-May, EOHHS initiated the start of health care reopening. For more information see: <https://www.mass.gov/lists/reopening-health-and-human-services-in-massachusetts>.

**Source:** COVID-19 Research Database, 2020. Data accessed January 2021.

# About one quarter of pediatric patients using psychotherapy discontinued care with the onset of the health system shut-down, particularly younger and male patients.

## BEHAVIORAL HEALTH

Use of telehealth versus in-person psychotherapy from March 15 to June 30 for pediatric patients who had in-person visits in January/February 2020



Among pediatric patients in Massachusetts who received psychotherapy services before the pandemic (at least 2 visits in January or February 2020, with at least 1 visit in February), most fully transitioned to telehealth or had mixed model care.

Only 5% continued to have in-person visits throughout 2020. 15% used mix model care, and 57% continued to solely use telehealth through June 30, 2020.

About one in four pediatric patients discontinued therapy in March and did not resume through the end of study period, with males and younger children more likely to discontinue. More research is needed on how telehealth impacts traditional psychotherapy. While telehealth may present more challenges for some patients, it may reduce barriers to undesired attrition for others through reduced need for transportation and caregiver time off work.

See appendix for methodology details.

- Introduction
- Analysis of Utilization and Market Impact to Date
  - Utilization
  - – **MARKET IMPACT**
    - Provider Market
      - Financial Impact
      - Closures and Consolidation
    - Insurer Market
      - Financial Impact
      - Coverage
- Topics for Future Study
- Methodology
- Appendix

## Market Impact: Providers

The HPC is charged with studying the impact of COVID-19 on the provider market, including the financial impact on hospitals, physicians and other providers, and the implications for closures and consolidation, in the short and long term.

Since the advent of the pandemic, Massachusetts providers in all sectors have contended with numerous financial challenges, including loss of revenue due to utilization disruptions, operational challenges, including new PPE and other public health and safety requirements, and workforce challenges, including illness and burnout. Many hospitals and providers received short term financial support from state and federal relief funds and loan programs as well as other sources<sup>1</sup>, with differing impact based on their respective pre-COVID-19 financial stability. Long term impacts for all providers will depend on many factors, including utilization patterns in later phases of the pandemic and beyond, government decisions on further financial support, and potential payment and care delivery reforms.

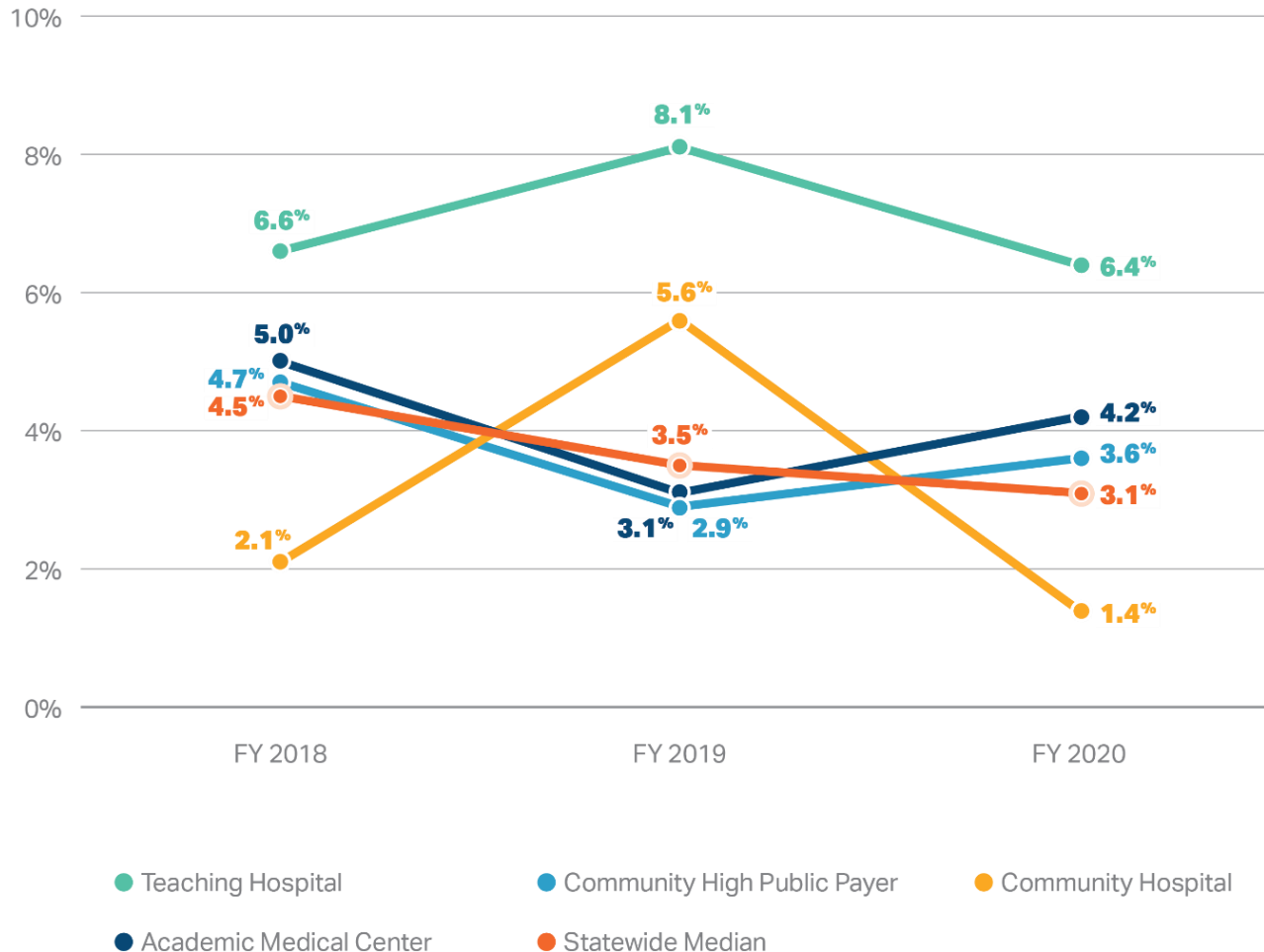
Due to data limitations, the following analyses highlight financial implications for acute care hospitals and primary care providers during the first year of the pandemic. Additional data is needed to understand the financial impacts on other provider sectors, including post-acute and long-term care providers, community health centers, behavioral health providers, specialty physicians, and others. Further study on the impacts of the pandemic will require additional data to focus on the potential consequences of provider market changes, such as closures and consolidations, on prices, spending growth, and access to care for all residents of the Commonwealth.



# Including federal and state COVID-19 relief funds, total margins were positive for all hospital cohorts in FY 2020; the statewide median declined from FY 2019.

## PROVIDERS FINANCIAL IMPACT

Median total margin by hospital cohort



The median total margin was positive for all hospitals cohorts in FY 2020. Including federal and state COVID-19 relief funds, median total margins ranged from 1.4% for community hospitals to 6.4% for teaching hospitals. Median total margins were also positive for all hospital cohorts in FY 2018 and FY 2019.

AMCs had an increase in profitability in FY 2020 compared to the last fiscal year. The median total margin for AMCs increased from 3.1% in FY 2019 to 4.2% in FY 2020. While CHPPHs also appeared to have higher margins in FY 2020 than in FY 2019, about a quarter of CHPPHs did not yet report data for FY 2020.

However, the medians and inclusion of COVID-19 relief funds mask substantial variation within cohorts: some hospitals had negative margins, while others had high profits in FY 2020. Results for individual hospitals are reported in later exhibits.

**Notes:** FY 2020 figures include 49 of 61 hospitals, accounting for hospitals with a June 30 or September 30 fiscal year end.

**Source:** Center for Health Information and Analysis. Massachusetts Acute Hospital and Health System Financial Performance: Preliminary Update on Fiscal Year 2020 Data. April 2020. Available at: <https://www.chiamass.gov/hospital-financial-performance/>

# Without COVID-19 relief funds, the median margins of hospital cohorts would have been negative in FY 2020.

## PROVIDERS FINANCIAL IMPACT

Median total margin by hospital cohort for FY 2020, with and without COVID-19 relief funds



Without federal and state COVID-19 relief funds, total margins would have been negative for all hospital cohorts in FY 2020.

The statewide median hospital margin in FY 2020 was 3.1%. Without COVID-19 relief funds, the statewide median margin would have been -4.2%.

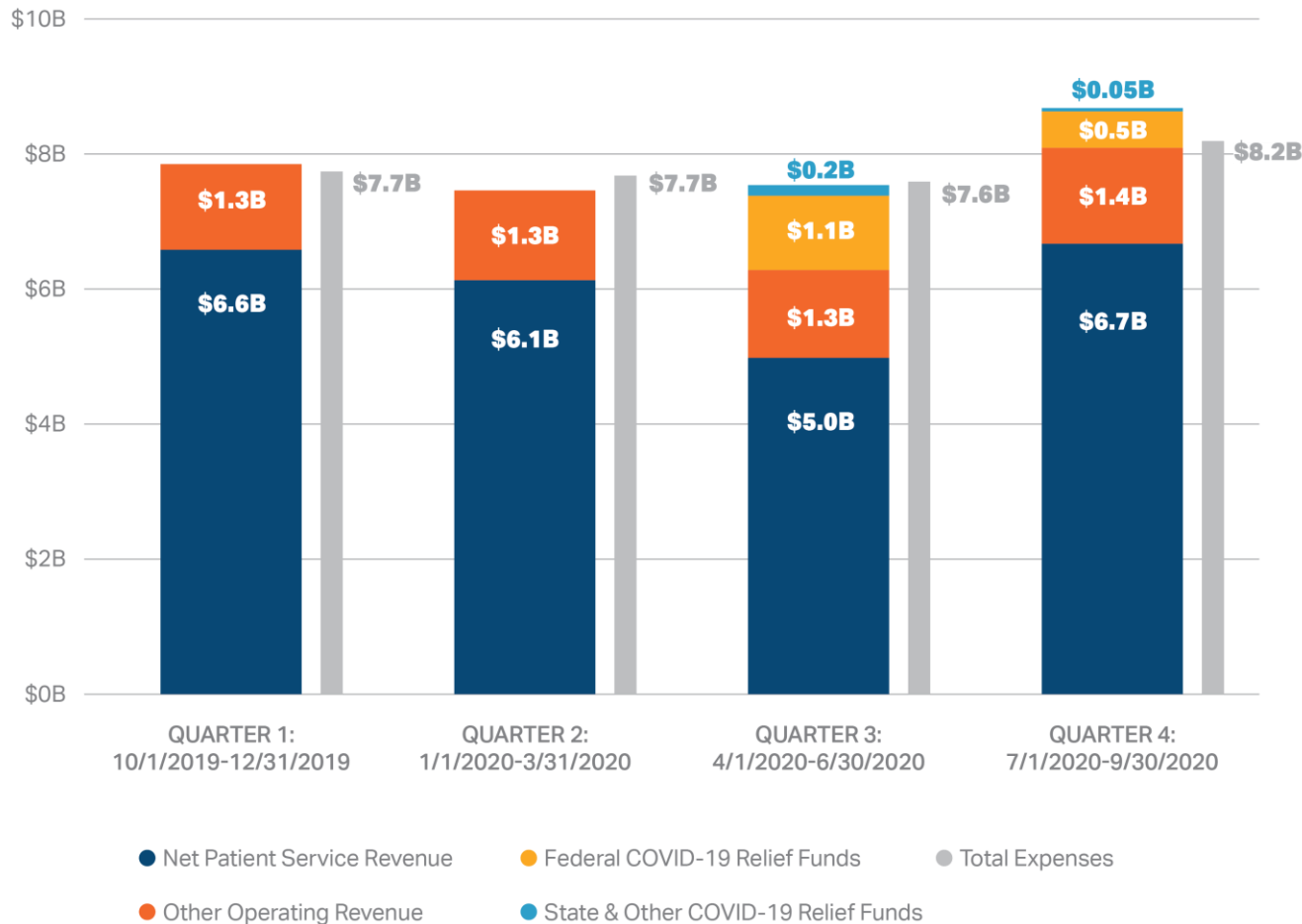
Community hospitals and CHPPHs would have been particularly hard hit financially without the relief funds.

Teaching hospitals had the largest overall financial benefit from relief funds, increasing margins by almost 9 percentage points.

# COVID-19 relief funds prevented greater financial losses in quarter 3, but by quarter 4 revenue was near expenses even without these funds.

## PROVIDERS FINANCIAL IMPACT

Hospital operating revenue and expenses by quarter



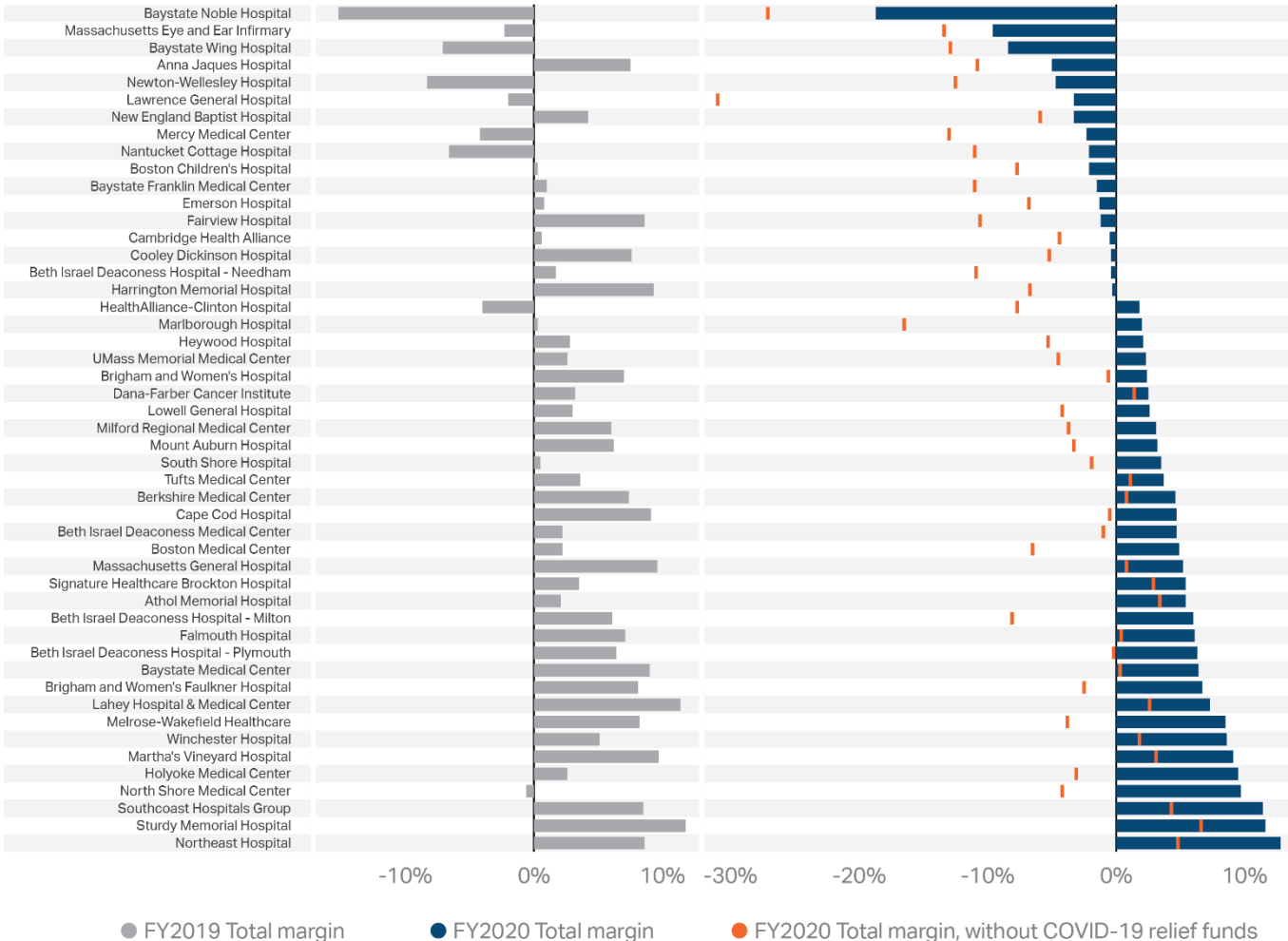
From April through June 2020, corresponding to quarter 3, COVID-19 relief funds prevented greater financial losses. Total expenses were \$1.3 billion higher than net patient service revenue (NPSR) and other operating revenue. With relief funding, expenses exceeded total operating revenue by \$64 million.

In quarter 4, July through September 2020, NPSR and other operating revenue almost covered expenses even without the COVID-19 relief funds. It is uncertain whether the financial improvement at the end of FY 2020 will continue into the first two quarters of FY 2021, given the fall resurgence of COVID-19 hospitalizations.

# Some hospitals had negative margins in FY 2020, but COVID-19 relief funds prevented greater losses.

## PROVIDERS FINANCIAL IMPACT

Total margin by hospital, FY 2019 and FY 2020



Some hospitals had negative margins in FY 2020, but COVID-19 relief funds prevented greater losses.

Fewer hospitals were profitable in FY 2020, compared to FY 2019. Of 49 hospitals reporting, 9 hospitals were not profitable in FY 2019 (18%). In FY 2020, 17 hospitals were not profitable (35%). Of the hospitals that were not profitable in FY 2020, 7 were CHPPHs (about one-third of CHPPHs), 6 were community hospitals (half of community hospitals), 3 were specialty hospitals (3 of 4 specialty hospitals), and 1 was a teaching hospital (20% of teaching hospitals).

Particularly for hospitals that typically have low or negative margins, uncertainty about future relief funds and other revenue sources may be a particular concern.



**Notes:** Figures include 49 of 61 hospitals, accounting for hospitals with a June 30 or September 30 fiscal year end.

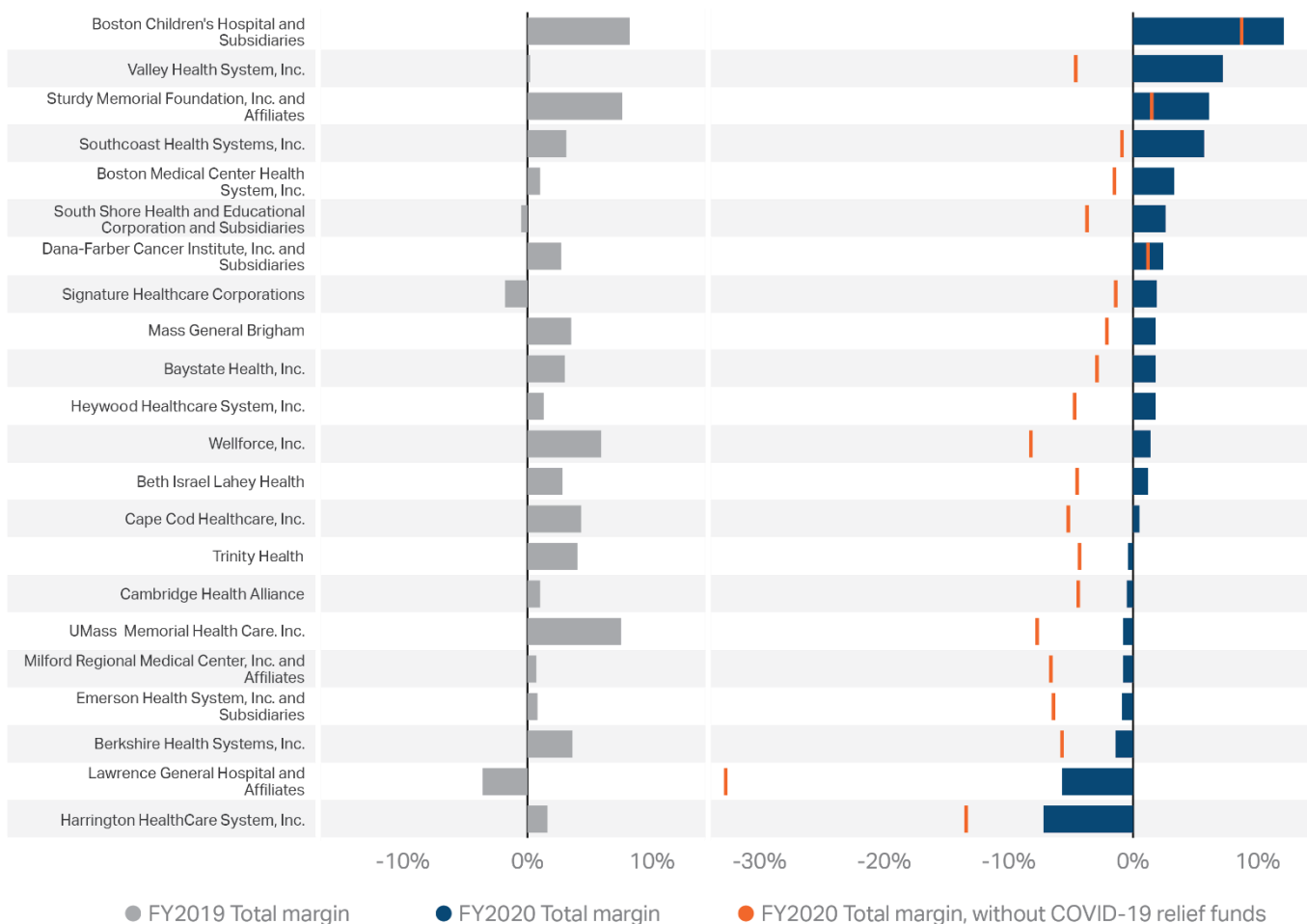
**Source:** Center for Health Information and Analysis. Massachusetts Acute Hospital and Health System Financial Performance: Preliminary Update on Fiscal Year 2020 Data. April 2020. Available at: <https://www.chiamass.gov/hospital-financial-performance/>

# Fewer health systems had positive margins in FY 2020 than in FY 2019, even with COVID-19 relief funds preventing greater losses.

## PROVIDERS

## FINANCIAL IMPACT

Total margin by health system, FY2019 and FY2020



Fewer health systems had positive margins in 2020 than in 2019, even with COVID-19 relief funds supporting hospitals in each system. Of 22 health systems, 14 had positive margins in 2020, compared to 19 in 2019.

Without COVID-19 relief funds, only 3 health systems would have had positive margins in 2020 (Boston Children's Hospital and Subsidiaries, Sturdy Memorial Foundation, Inc. and Affiliates, and Dana-Farber Cancer Institute, Inc. and Subsidiaries).

Health systems must balance finances across the different provider types in each system. For almost all health systems, physician organizations typically have negative margins year over year. Of 47 physician organizations reporting data to the Center for Health Information and Analysis (CHIA) in 2020, only 6 had positive margins, even with COVID-19 relief funds. Among these, about half had margins of -25% or lower. In 2019, of 48 entries, only 6 were positive.



**Notes:** Figures include 49 of 61 hospitals, accounting for hospitals with a June 30 or September 30 fiscal year end.

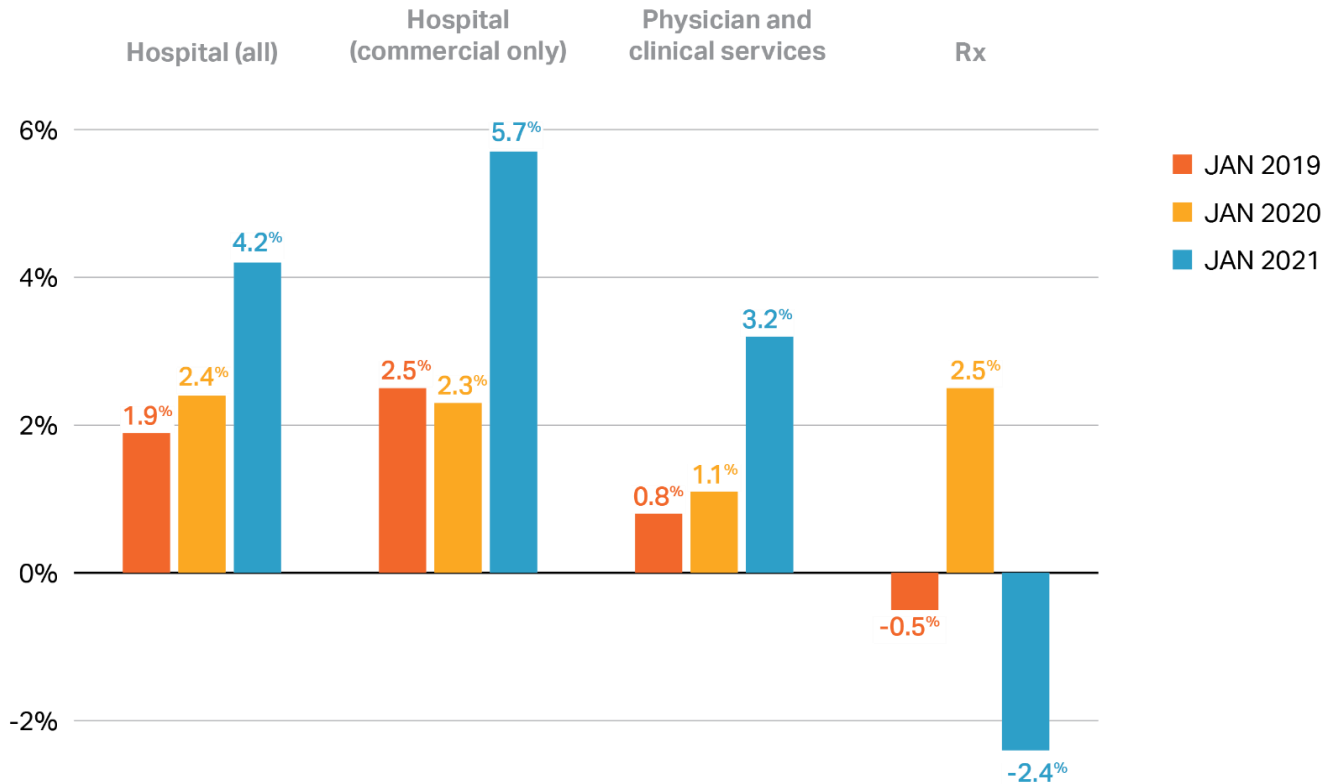
**Source:** Center for Health Information and Analysis. Massachusetts Acute Hospital and Health System Financial Performance: Preliminary Update on Fiscal Year 2020 Data. April 2020. Available at: <https://www.chiamass.gov/hospital-financial-performance/>

# Although national spending was down in 2020, provider price growth accelerated.

## PROVIDERS

## FINANCIAL IMPACT

National growth in average prices for the 12-month period ending in the date shown, by sector, all payers



In the U.S., hospital and professional prices grew dramatically in 2020.

Hospital prices increased 4.2% across all payers, with an even higher increase of 5.7% for commercial payers. Prices for physician and clinical services grew 3.2% in 2020, following two years of growth around 1% or less.

Prices for prescription drugs decreased 2.4% in 2020, although annual prices trends for drugs are more variable.

**Notes:** Data represents growth from January to January, for example, from January 2020 to January 2021 in the case of the most recent series.

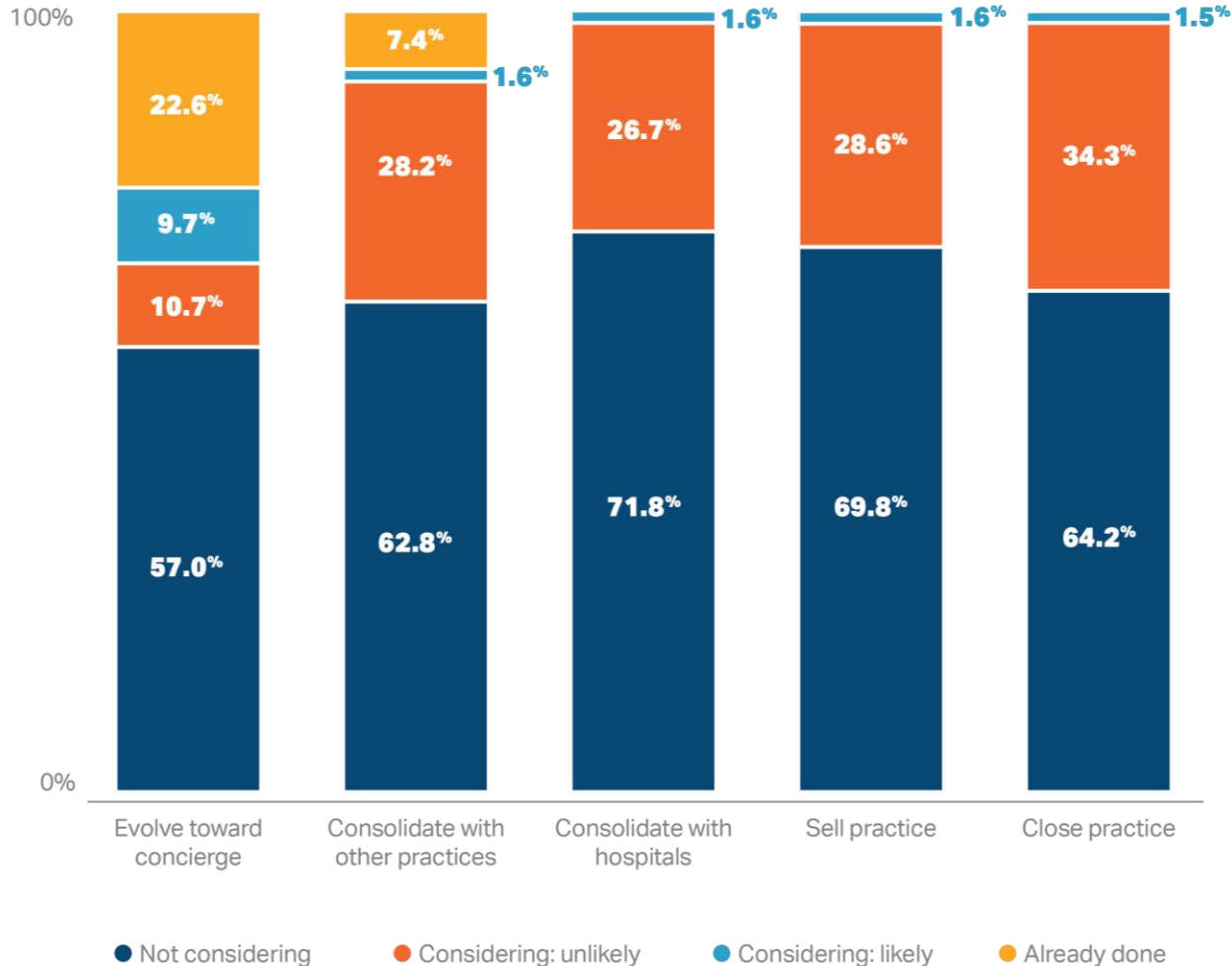
**Source:** Data from the Altarum Institute. Available at: [https://altarum.org/sites/default/files/uploaded-publication-files/SHSS-Price-Brief\\_February\\_2021.pdf](https://altarum.org/sites/default/files/uploaded-publication-files/SHSS-Price-Brief_February_2021.pdf). Underlying data from the US Bureau of Labor Statistics.

# A 2020 survey shows many independent primary care practices in Massachusetts are considering consolidating or shifting to a concierge model.

PROVIDERS

CONSOLIDATION

Independent primary care practices' anticipated responses to the pandemic (N = 116)



Over one-third of Massachusetts independent primary care practices (37%) surveyed were considering or had already undergone consolidation with other practices, based on a survey conducted in Fall 2020. 29% were considering consolidating with hospitals.

23% of practices were already evolving toward a concierge medicine model while another 21% were considering changing their practice.

Over one-third of respondents (36%) were considering closing their practices altogether.

Practices expressed very high levels of concern (data not shown) about stress and burnout for clinical and non-clinical staff, as well as about the socioeconomic effects of COVID-19 on patients (such as job loss, evictions, and food security).

# Massachusetts providers continue to face challenges and opportunities.

## PROVIDERS

### CHALLENGES

**TELEHEALTH:** “Telehealth is fine once one has started to build trusting relationships, but starting that process is barely possible by telehealth.” – *Primary care, Independent*

“Patients using telehealth tend to keep the visits shorter and say less... my geriatric patients have a hard time using video.” – *BH, Independent*

**FINANCIAL:** “Paying rent, utilities, etc. for an office space I cannot safely return to.” – *BH, Independent*

**CHILDCARE:** “Lack of childcare has forced staff resignations adding to shortages of qualified and highly trained staff” – *Multispecialty group practice, Independent*

**STRESS:** “It's turned the medical practices upside down...We've done our best to adjust, PPE, cleaning constantly, 6 ft apart and still the complaining that we aren't doing enough....The stress that the staff and providers are under is tremendous.” - *Dermatology, Independent*

### OPPORTUNITIES

**TELEHEALTH:** “My practice has been booming, I have been able to see new patients virtually and keep clients that I've known for years. The crisis has been a challenge but moving to remote counseling has proven a gift to them and to myself.” – *BH, Independent*

**REFORM:** “It gives the healthcare system the opportunity to look at how we provide access to lower income communities. COVID-19 has brought many deficiencies to light that need to be addressed.” – *Primary care, Independent*



## Market Impact: Insurers

Insurers experienced major impacts in 2020 from the effects of COVID-19 on health care utilization, as well as shifts from employer-based commercial coverage to MassHealth, due in large part to the significant loss of employment and financial instability of Massachusetts residents.

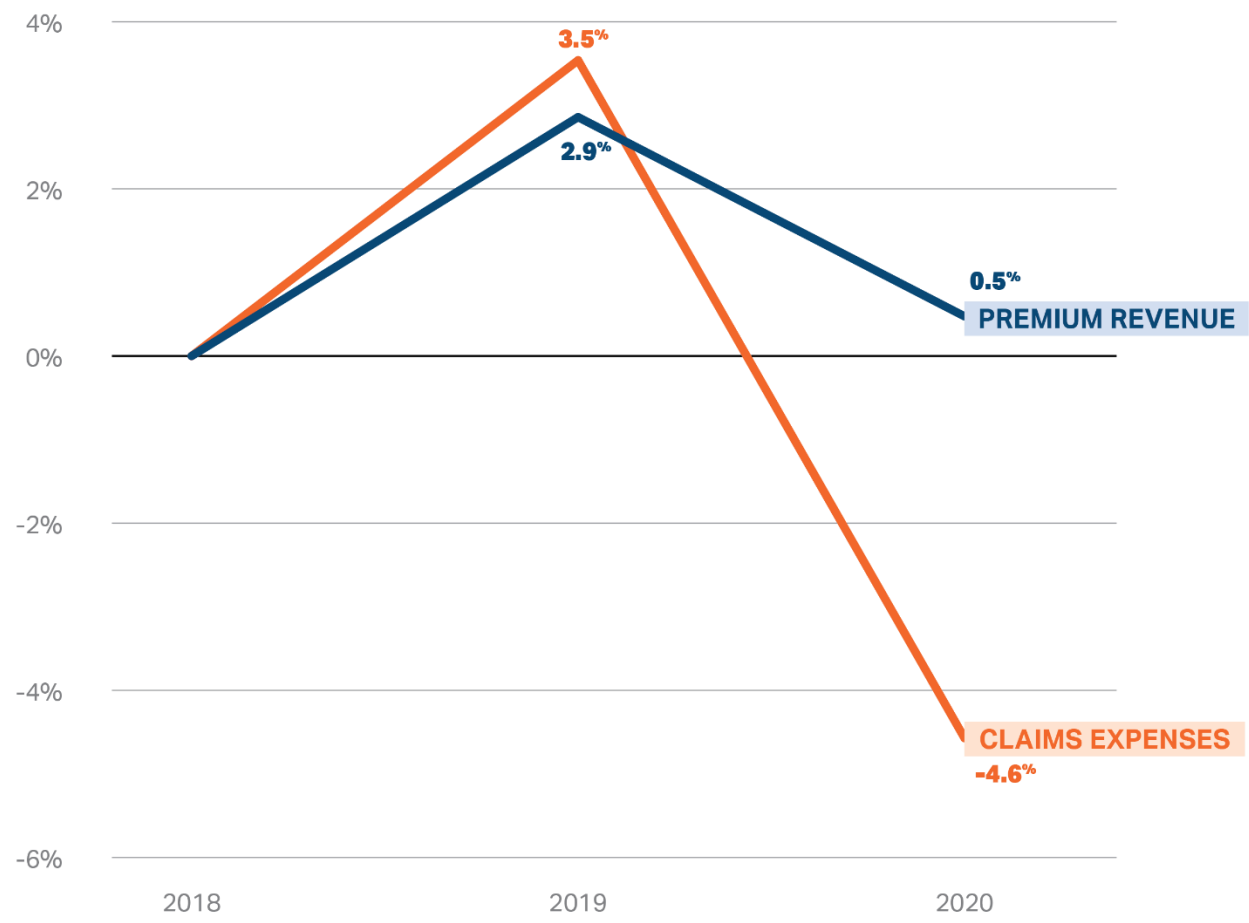
Media reports have indicated that 2020 was generally a profitable year for many insurers nationwide, with expenses related to COVID-19 medical care and testing offset by fewer claims for care overall.<sup>1,2</sup> However, there is considerable uncertainty for trends in 2021 and beyond, as care patterns rebound, and COVID-19 vaccinations continue. Furthermore, national data shows evidence of substantial increases in prices at the end of 2020, as shown in the previous section. Price trends as Massachusetts rebounds from the pandemic have critical implications for insurer premiums and for the Commonwealth's cost containment goals.

The following data tracks financial impacts for Massachusetts insurers for the first year of the pandemic, as well as shifts in coverage. The HPC will continue to investigate these trends for 2021 and beyond for the final report.

# For large Massachusetts commercial insurers in 2020, premium revenue grew slightly while claims expenses dropped sharply.

**INSURERS**    **FINANCIAL IMPACT**

Percent change in premium revenue and claims expenses for BCBSMA, HPHC, and THP, 2018-2020



For the three largest Massachusetts-based commercial insurers (Blue Cross Blue Shield of Massachusetts, Harvard Pilgrim Health Care, and Tufts Health Plan), premium revenue grew 0.5% from 2019 to 2020, while claims expenses dropped 4.6%.

For smaller Massachusetts-based commercial insurers, there was a similar divergence in 2020, with premium revenue growing at 5.5%, while claims expenses did not change. Across all commercial Massachusetts-based insurers with available data, premium revenue increased by 1.5% (\$15.8 to \$16.1 billion) from 2019 to 2020, while medical claims expenditures decreased by 3.6% (\$14.1 to \$13.6 billion).

Profitability did not necessarily increase in proportion to these changes, however, as these figures do not include administrative expenses or potential rebates and premium credits.

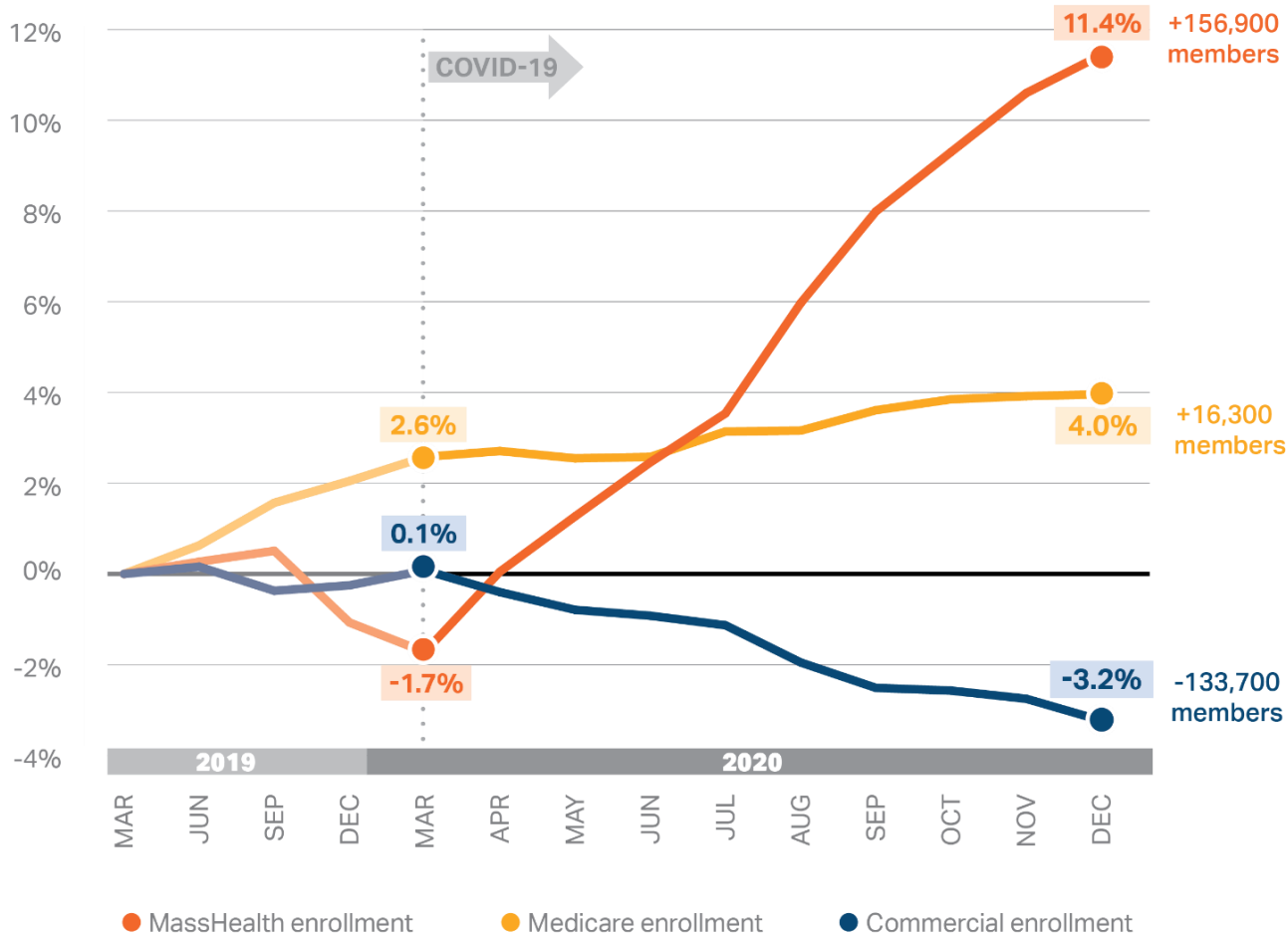


Notes: The three largest insurers in Massachusetts include Blue Cross Blue Shield of MA (BCBSMA and Blue Cross Blue Shield HMO Blue), Harvard Pilgrim Health Care (HPHC), and Tufts Health Plan (Tufts HMO) (THP). Other Massachusetts plans include AllWays, Health New England, and Fallon Community Health Plan. Data for UniCare(Anthem) was unavailable for analysis. Premium income is net of adjustments reported.  
 Source: HPC analysis of insurer financial reports, submitted to the Massachusetts Division of Insurance for Q4 2019 and Q4 2020. Data for 2018 sourced from Q4 2019 reports; data for 2019 and 2020 sourced from Q4 2020 reports.

# Insurance coverage continues to shift from commercial to MassHealth, in response to economic instability and federal coverage policies.

## INSURERS > COVERAGE

Massachusetts health insurance enrollment by primary source of coverage, relative to March 2019



Since the start of the pandemic, insurance coverage has steadily shifted from commercial to MassHealth, reflecting broader economic trends.

MassHealth enrollment has climbed continuously, with an increase of 11.4% between March 2020 and December 2020. MassHealth has had a net enrollment increase of 11.4% since March 2019. In contrast, commercial enrollment decreased 3.3% since March 2020. This shift represents a decrease of about 133,700 commercial members and an increase of about 156,900 MassHealth members since March 2020.

Medicare enrollment has continued to increase moderately over time, with an increase of about 16,300 members since March 2020, in line with expected trends due to the aging of the population.

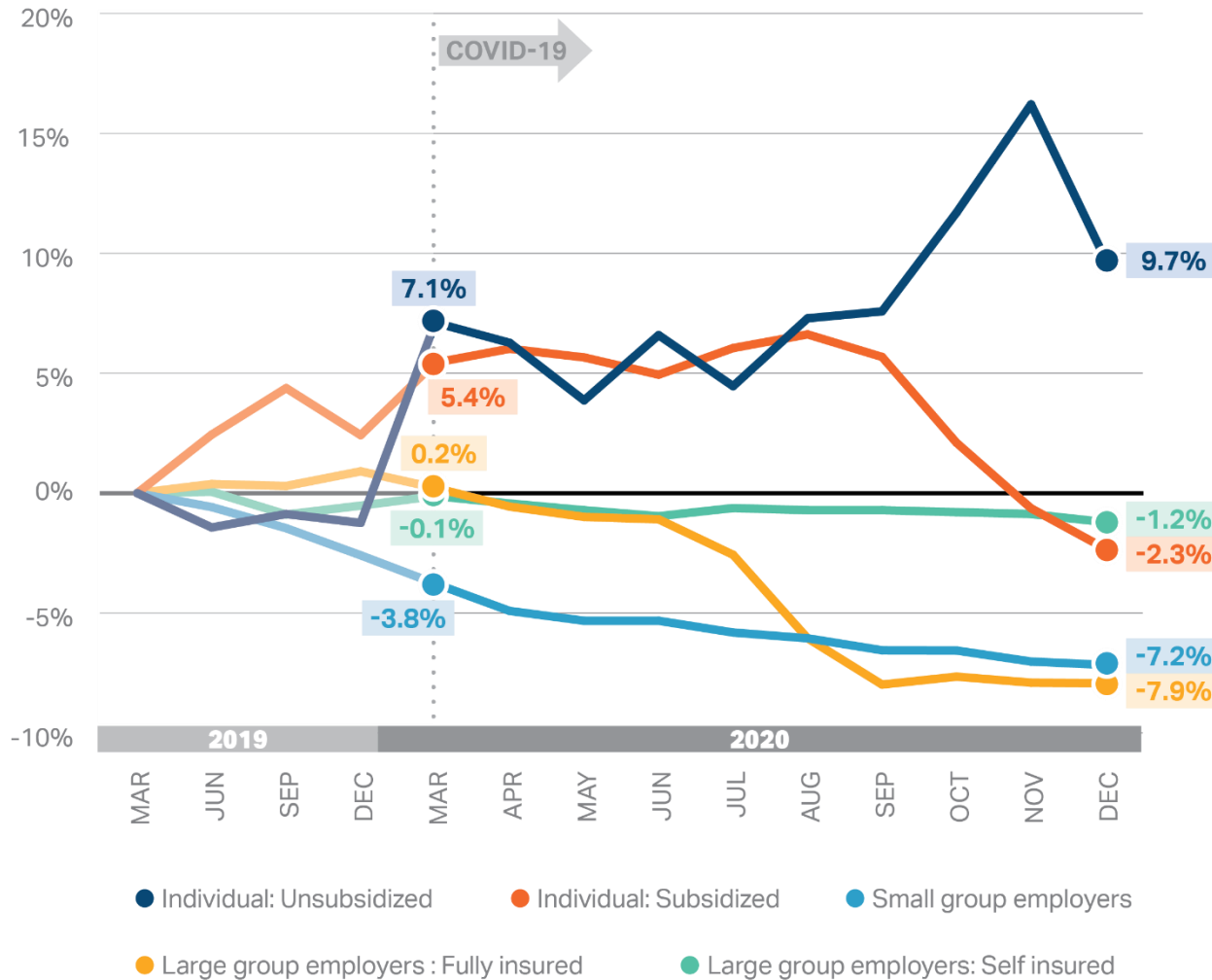
Federal Medicaid maintenance of effort requirements outlined in COVID-19 relief legislation likely resulted in many individuals staying in MassHealth even after reporting changes that would normally shift them to the Health Connector or other commercial coverage.

# For the largest employers, health insurance enrollment remained stable in 2020, while enrollment shifted from smaller employers to the individual market.

INSURERS

COVERAGE

Massachusetts private health insurance enrollment by market segment, relative to March 2019



Insurance coverage in the self-insured large group market (which includes most of the largest employers) declined only 1% since the start of the pandemic, a decline of 25,200 members.

In contrast, coverage through small employers declined 3.4%, and coverage through the fully-insured large group market (which tend to be medium-sized employers) declined 8.1% in 2020, a decrease of 14,300 and 79,600 members, respectively.

Unsubsidized coverage through the individual market, which was stable in 2019, increased sharply at the start of the pandemic and continued to increase throughout 2020. Trends in the subsidized individual market remained relatively stable in 2020 until declining in the fall.

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## Topics for Future Study (1 of 4)

TOPIC	KEY QUESTIONS
<b>Utilization</b>	
<b>Trends by Sector</b>	<ul style="list-style-type: none"><li>What were utilization trends in 2020, 2021, and beyond by provider market sector? Do the changes due to the pandemic appear to be short-term or long-term?</li></ul>
<b>Behavioral Health</b>	<ul style="list-style-type: none"><li>How has COVID-19 impacted the delivery of behavioral health care in Massachusetts?</li><li>How has COVID-19 impacted the need for inpatient and outpatient behavioral health services?</li></ul>
<b>Preventative Care</b>	<ul style="list-style-type: none"><li>How has COVID-19 impacted utilization of adult and pediatric preventative care? How has this impact varied by group in Massachusetts?</li><li>What are anticipated consequences of missed or deferred care?</li></ul>
<b>Telehealth</b>	<ul style="list-style-type: none"><li>How has telehealth use changed over the course of the pandemic?</li><li>What are key issues in disparities in telehealth access?</li><li>What opportunities and challenges does telehealth use present?</li></ul>

## Topics for Future Study (2 of 4)

TOPIC	KEY QUESTIONS
<b>Market Impact</b>	
<b>Provider Impact</b>	<ul style="list-style-type: none"><li>▪ How has the pandemic impacted the provider market in Massachusetts in terms of closures and consolidations?</li><li>▪ To what degree have provider sectors been affected financially, including primary care providers, specialist practices, hospitals, prescription drugs, post-acute and long-term care facilities, and home health?</li><li>▪ What are potential consequences of provider market changes for prices, spending, and access to care in the Commonwealth?</li><li>▪ Are some groups of Massachusetts residents likely to be disproportionately impacted by changes in provider markets during the pandemic?</li></ul>
<b>Insurer Impact</b>	<ul style="list-style-type: none"><li>▪ What was the net financial impact of COVID-19 on insurers in 2020, after accounting for medical loss ratio rebates?</li><li>▪ What are financial trends for insurers in 2021 and beyond?</li><li>▪ How does payer coverage mix change in 2021 based on trends in employment?</li><li>▪ Are there options the Commonwealth should consider to support more sustainable access to affordable insurance coverage, to enable resiliency for economic uncertainty?</li></ul>

TOPIC	KEY QUESTIONS
<b>Inventory and Systemic Analyses</b>	
<b>Inventory of Services</b>	<ul style="list-style-type: none"><li>▪ Develop approach for design, stakeholder input, and data collection, in conjunction with agency partners</li></ul>
<b>Essential Components of Health Care System</b>	<ul style="list-style-type: none"><li>▪ Develop approach for design, stakeholder input, and data collection, in conjunction with agency partners</li></ul>
<b>Analysis of Health Care Disparities</b>	<ul style="list-style-type: none"><li>▪ Develop approach for design, stakeholder input, and data collection, in conjunction with agency partners</li></ul>



## Topics for Future Study (4 of 4)

TOPIC	KEY QUESTIONS
<b>Health-Related Social Needs</b>	<ul style="list-style-type: none"><li>▪ What has been the impact of COVID-19 on food insecurity, housing insecurity, and other health-related social needs?</li><li>▪ How have these health-related social needs impacted population health and health care needs in the short term? What are potential long-term impacts on population health and health care needs?</li><li>▪ Which groups of Massachusetts residents have been able to maintain adequate food access? Which groups have not?</li><li>▪ Which groups of Massachusetts residents have been most impacted by housing insecurity?</li><li>▪ What systemic barriers and insufficiencies do these health-related social needs point to?</li></ul>
<b>Health Care Workforce</b>	<ul style="list-style-type: none"><li>▪ What is the impact of COVID-19 on health care employment levels, including furloughs and layoffs, by sector in 2020, 2021, and beyond?</li><li>▪ What is the impact of COVID-19 on workforce health in the short run and long run?</li><li>▪ How has the impact varied by race / ethnicity, gender, and immigration status?</li><li>▪ What are the lessons of COVID-19 for providers to invest in workforce readiness, engagement in decision-making, safety, and supports (such as hazard pay, sick time, childcare, transportation, and mental health supports)?</li><li>▪ How do needs differ to support physicians, advance practice nurses, registered nurses, physician assistants, non-clinical staff, and other workforce groups?</li></ul>

# Acknowledgements

## HPC COMMISSIONERS

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## HPC EXECUTIVE DIRECTOR

David Seltz

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The HPC wishes to acknowledge the deep pain and loss the COVID-19 pandemic has caused and continues to cause individuals, families, and communities across Massachusetts, the nation, and the world. The HPC expresses its gratitude and respect to all those serving on the frontlines for their tireless work and sacrifices responding to the pandemic.

HPC staff Sara Sadownik, David Auerbach, Laura Nasuti, and Sasha Albert conducted analyses and prepared this report, with significant contributions from Sweya Gaddam, Yue Huang, Hannah James, Justin Kiel, Lyden Marcellot, and Diana Sanchez. Chair Stuart Altman, Secretary Marylou Sudders, Undersecretary Lauren Peters, David Seltz, and Lois Johnson provided leadership and guidance. Many HPC staff contributed to the preparation, design, and production of this report, including Coleen Elstermeyer, Ashley Johnston, Hannah Kloomok, Ben Thomas, Kara Vidal, Rebecca Willmer, Courtney Wright, and Megan Wulff.

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The Massachusetts Health Policy Commission (HPC) is an independent state agency that develops policy to reduce health care cost growth and improve the quality of patient care. The HPC’s mission is to advance a more transparent, accountable, and equitable health care system through its independent policy leadership and innovative investment programs. The HPC’s overall goal is better health and better care – at a lower cost – for all residents across the Commonwealth. For more information, please visit the HPC’s website ([www.mass.gov/hpc](http://www.mass.gov/hpc)) and Twitter account (@Mass\_HPC).

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# Methodology

To track emergency department (ED) visits and hospital inpatient admissions, the HPC used the Center for Health Information and Analysis (CHIA) Hospital Inpatient Discharge and ED Databases for fiscal years (FY) 2019 and 2020 (10/1/2018- 9/30/2020) as well as a partial FY2021 file for Hospital Inpatient Discharge (10/1/2020-12/31/2020). The FY2020 and partial FY2021 files are preliminary, and results may change with updated data.

- ▶ For both inpatient admissions and emergency department (ED) visits, COVID-19-related cases were identified as any case with a primary or secondary ICD-10-CM diagnosis indicating confirmed COVID-19 diagnosis March 1, 2020 or after, or a primary or secondary diagnosis of other (not SARS-associated) coronavirus and a visit or admission date prior to April 1, 2020. The ICD-10 codes used to identify these were U07.1, U07.2, B97.29.
- ▶ The Agency for Healthcare Research and Quality Clinical Classifications Software Refined (CCSR) 2021 for ICD-10-CM Diagnoses was used to identify the primary diagnoses associated with a visit or admission.

## ED ANALYSES

- ▶ ED visits missing a primary diagnosis were excluded from analyses (n=164 in 2019, n=96 in 2020). Patients with an ED visit who were admitted to inpatient care or observation at the same hospital do not appear in the ED database.

## Type Of ED Visits

- ▶ The HPC employed a step-down methodology. First, visits with a primary diagnosis of behavioral health (BH) were identified using AHRQ Clinical Classifications Software Refined (CCSR) 2021. For this study, BH visits were identified as any diagnosis code that fell into CCSR categories MBD001-MBD0034. After identifying BH visits, the Billings algorithm was applied to all remaining visits to classify visits as potentially avoidable, injury, or other. This algorithm is based on work by the NYU Center for Health and Public Service Research. "Potentially avoidable" is defined here as ED visits that were emergent - primary care treatable or non-emergent. For more information on the Billing's algorithm please see: <https://wagner.nyu.edu/faculty/billings/nyued-background>

## Behavioral Health ED Boarding

- ▶ Visits were first restricted to BH visits. Among these visits, BH ED boarding visits were defined as any BH visit where the number of hours in the ED was greater than or equal to 12 hours. A visit was considered boarding regardless of whether the patient was transferred to another facility or discharged back to their place of residence.
- ▶ The following hospitals were excluded from this analysis because of missing or irregular length of stay data for the study period: UMass Memorial Medical Center, Marlborough Hospital, Health Alliance Hospital, Clinton Hospital, Baystate Mary Lane Hospital, MetroWest Medical Center, and Saint Vincent Hospital.

## INPATIENT ANALYSES

- ▶ Due to missing data for one or more quarters, the following hospitals **were excluded** from these analyses: Cape Cod Hospital, Falmouth Hospital, Lawrence General Hospital, MetroWest Medical Center, Shriners Hospital Boston and Springfield, and Sturdy Memorial Hospital.
- ▶ The following admissions were excluded: transfers, LOS >180 days, rehabilitation, or non-Massachusetts residents.

## *Type of Inpatient Admissions*

- ▶ Admissions were categorized into one of four mutually exclusive groups: maternity, behavioral health (BH), admissions through the ED or scheduled. Maternity includes all admissions with a maternity-related DRG. BH includes all admissions with a BH diagnosis as the primary diagnosis. Admissions through the ED includes all stays with an ED flag or ED-specific revenue code. Scheduled includes all remaining admissions.

## INCLUSION CRITERIA



- Massachusetts residents **age 21 and under**
- At least one primary behavioral health diagnosis before March 2020
- Actively receiving **psychotherapy services** before the pandemic
  - At least 2 total visits in January and February
  - At least 1 visit in February

## DEFINITIONS



- Behavioral health diagnoses based on CHIA definitions
- Psychotherapy services: CPT codes 90832-90853, 90875, 90876
  - Individual, group, family therapy
- Telehealth
  - Centers for Medicare and Medicaid Services place of service code 2
  - Procedure modifier GT, GQ, 95

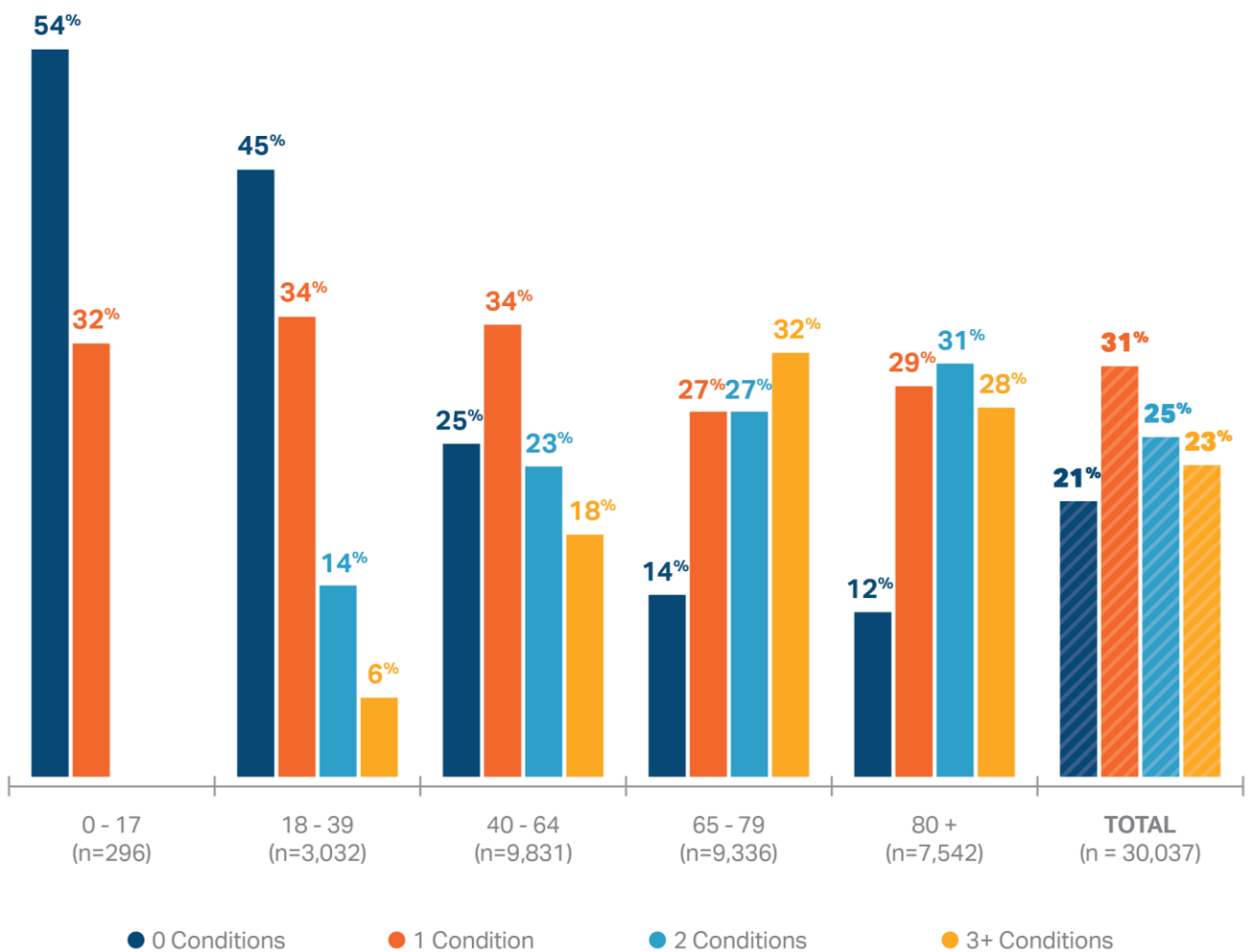
**Notes:** These criteria were applied to the research conducted using COVID-19 Research Database. Only professional claims were included in the analysis. One psychotherapy visit combines all claims lines for the same procedure code from the same patient on the same day at the same place of service.

**Source:** Massachusetts Center for Health Information and Analysis, Primary care and behavioral health supplemental data code list and cross walk. Available at: <https://www.chiamass.gov/payer-data-reporting-primary-and-behavioral-health-care-expenditures/>

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# About 80% of patients with a COVID-19-related inpatient admission had at least one condition associated with increased risk of severe illness from COVID-19.

Percent of patients with a COVID-19-related inpatient admission with 0-3+ conditions associated with increased risk of severe illness from COVID-19, by age group, 2020



The HPC examined the presence of conditions associated with increased risk of severe illness from COVID-19 among patients with a COVID-19-related inpatient admission in 2020. The HPC used a set of conditions cited by the Centers for Disease Control and Prevention, see details in the chart notes.

The share of COVID-19 patients with at least one such condition increased with patient age, as did the share of patients with multiple conditions. Overall, 79% of all patients with an inpatient admission for COVID-19 in 2020 had at least one condition.



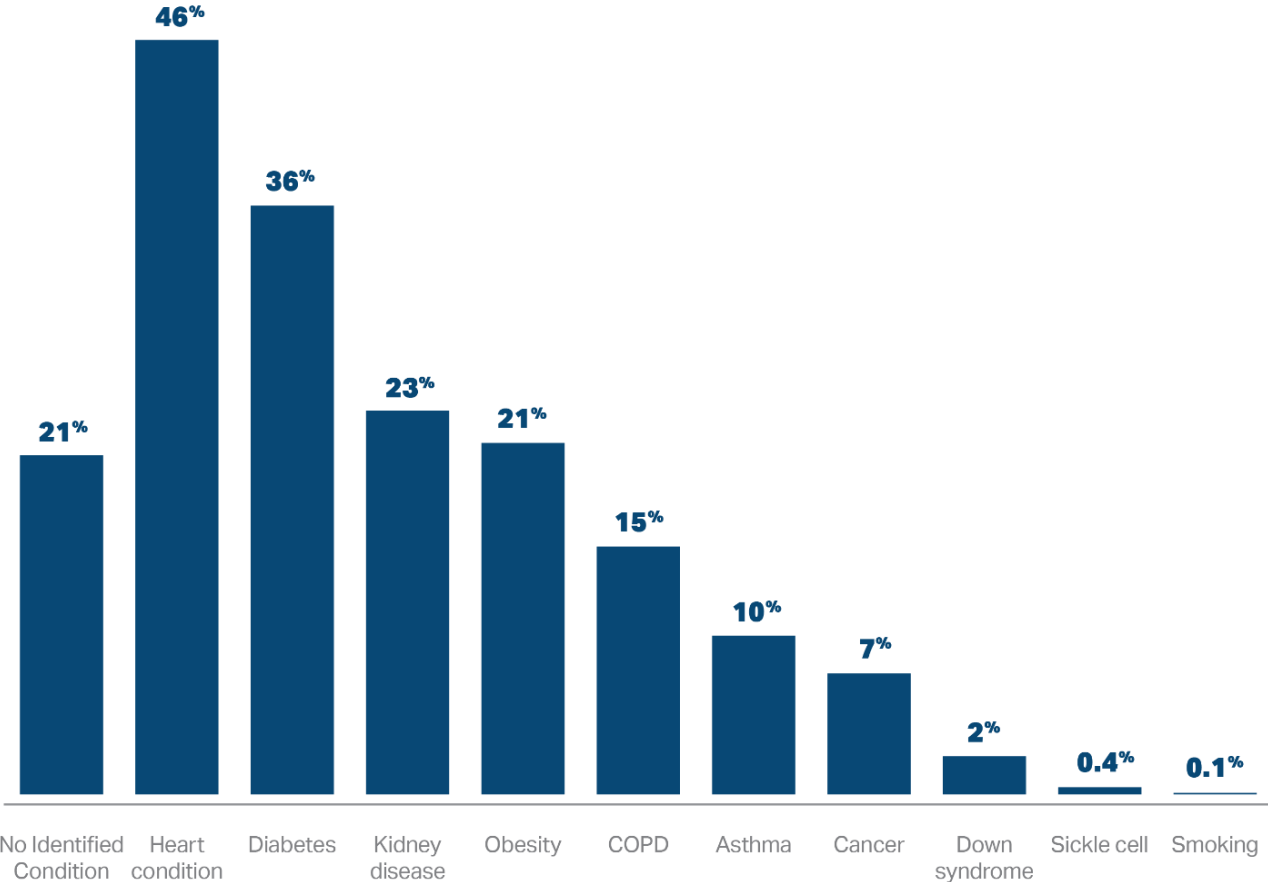
**Notes:** Conditions were selected based on guidance from the Centers for Disease Control and Prevention (prior to March 2021) and included heart condition, diabetes, kidney disease, obesity, COPD, asthma, cancer, Down syndrome, sickle cell disease, and smoking. Smoking is likely undercounted in the inpatient data. Condition is based on the primary diagnosis grouping using AHRQ HCUP's Clinical Classification Software Refined 2021.

**Source:** HPC analysis of the Center for Health Information and Analysis (CHIA), Hospital Inpatient Department Discharge, preliminary FY2020 and preliminary FYTD2021 (as of Feb 2021 submission).



# Among patients with an inpatient admission for COVID-19 in 2020, about half had a comorbid heart condition.

Percent of patients with a COVID-19-related inpatient admission with a condition associated with increased risk of severe illness from COVID-19, 2020



The HPC examined the presence of conditions associated with increased risk of severe illness from COVID-19 among patients with a COVID-19-related inpatient admission in 2020, using a set of conditions identified by the Centers for Disease Control and Prevention (see details in the chart notes).

Among patients with an inpatient admission for COVID-19 in 2020, the most frequent comorbid conditions were heart condition (46%), diabetes (36%), and kidney disease (23%).

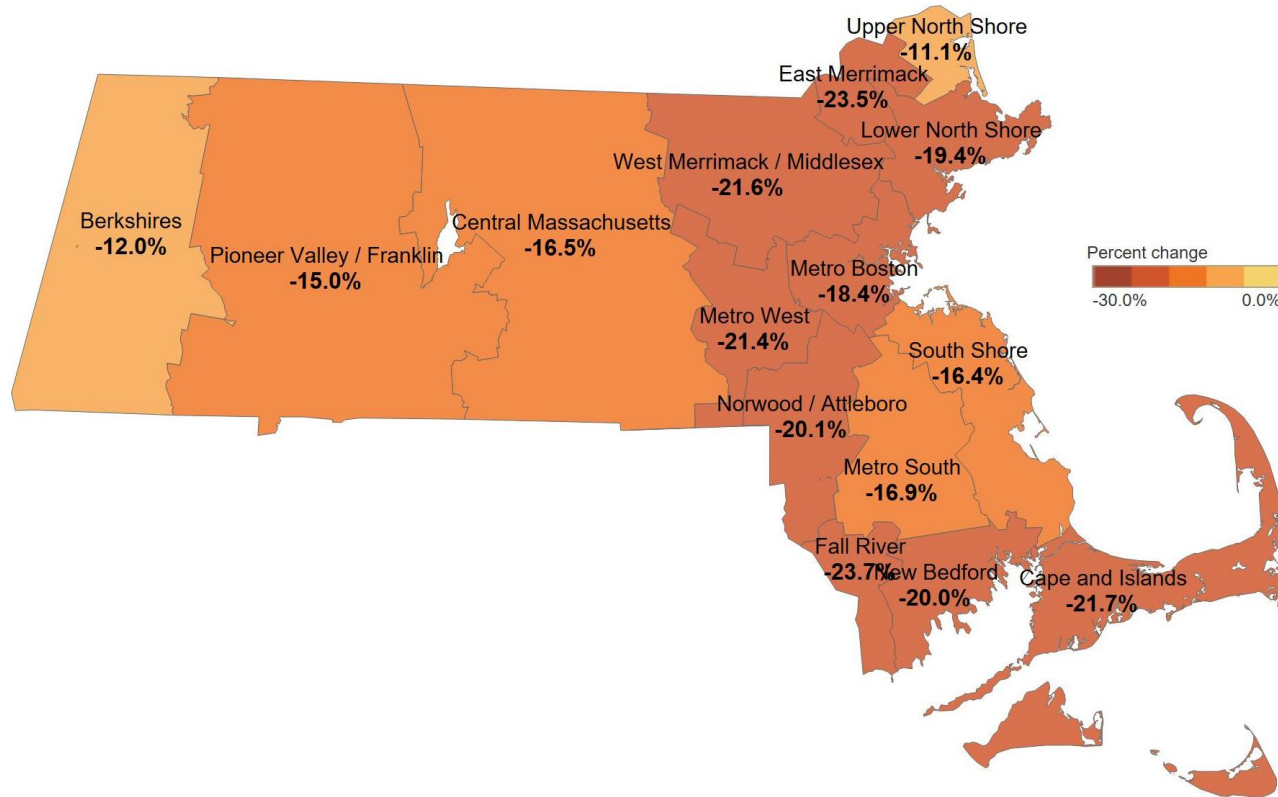


**Notes:** Conditions were selected based on guidance from the Centers for Disease Control and Prevention (prior to March 2021) and included heart condition, diabetes, kidney disease, obesity, COPD, asthma, cancer, Down syndrome, sickle cell disease, and smoking. Smoking is likely undercounted in the inpatient data. Condition is based on the primary diagnosis grouping using AHRQ HCUP's Clinical Classification Software Refined 2021. Categories are not mutually exclusive and do not sum to 100%.

**Source:** HPC analysis of the Center for Health Information and Analysis (CHIA), Hospital Inpatient Department Discharge, preliminary FY2020 and preliminary FYTD2021 (as of Feb 2021 submission).

# Scheduled inpatient admissions declined most for residents of Fall River and declined least for those in the Upper North Shore between 2019 and 2020.

Changes in scheduled inpatient admissions by HPC region, 2019-2020



The volume of scheduled inpatient admissions decreased in all regions of Massachusetts from 2019 to 2020.

The decrease varied by HPC region, with scheduled inpatient admissions declining most for residents of Fall River (-23.7%) and East Merrimack (-23.5%) and least for residents of the Upper North Shore (-11.1%) and the Berkshires (-12.0%).

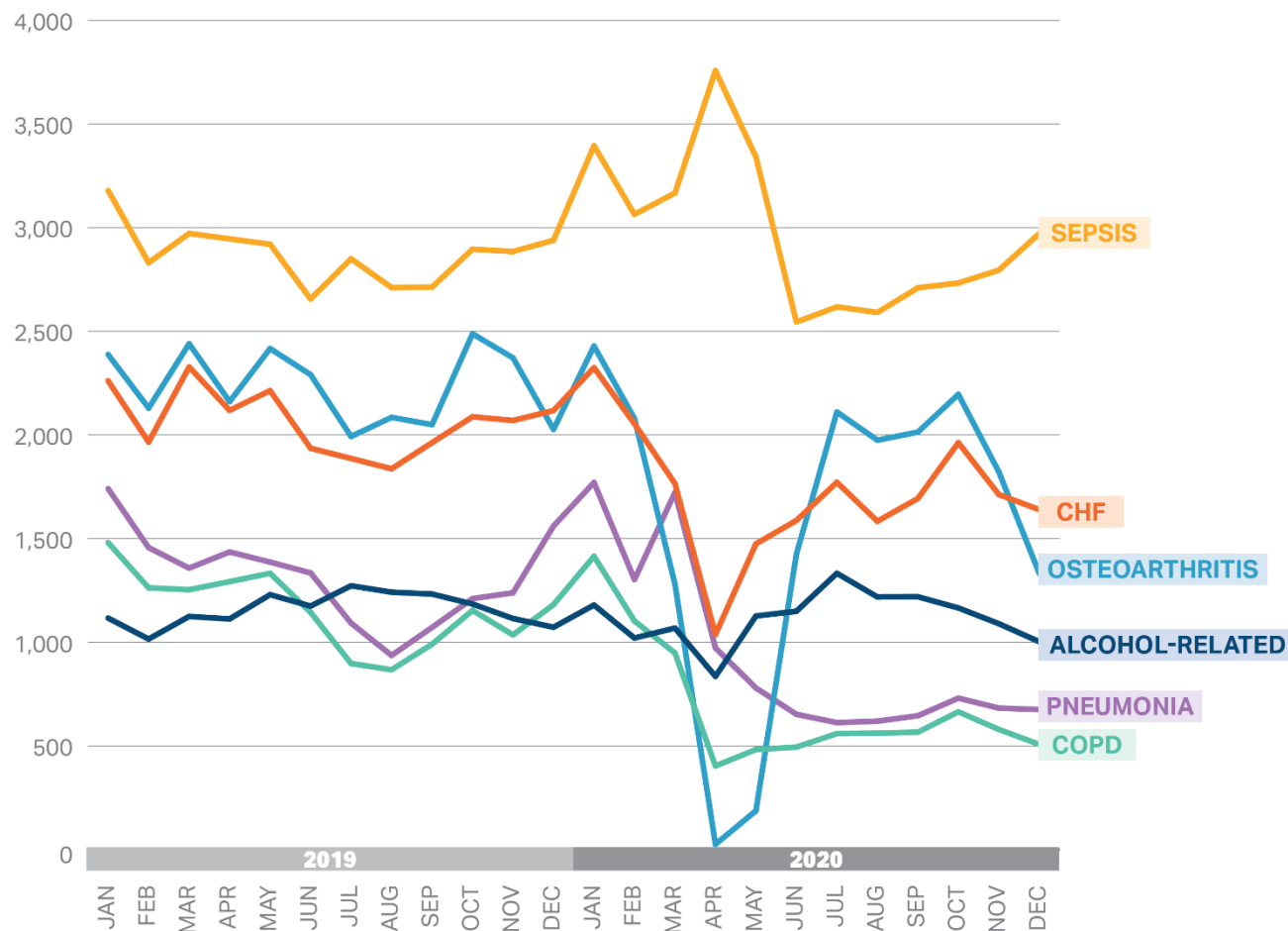
Some of the decrease in scheduled inpatient admissions, which is predominantly surgeries, may be because some care was provided in other settings, such as outpatient settings. More research is needed to understand the extent to which it reflects that patients received care in alternative settings or did not receive care.

**Notes:** Scheduled admissions includes all admissions after excluding maternity, behavioral health, and admissions from the ED. Some hospitals were excluded for the entire study period due to missing data for 1 or more quarters. This list of hospitals is available in the appendix. Discharges were excluded if they were transfers, LOS >180 days, or rehabilitation. All non-acute care hospitals (including freestanding psychiatric hospitals) are not included in the data. COVID-19 discharges were excluded for this analysis.

**Source:** HPC analysis of the Center for Health Information and Analysis (CHIA), Hospital Inpatient Department Discharge, preliminary FY2020 and preliminary FYTD2021

# Most types of inpatient conditions had the lowest volume in April during the spring surge, while there was a more attenuated drop in the fall.

Select inpatient hospital admissions by select primary diagnosis condition, 2019-2020

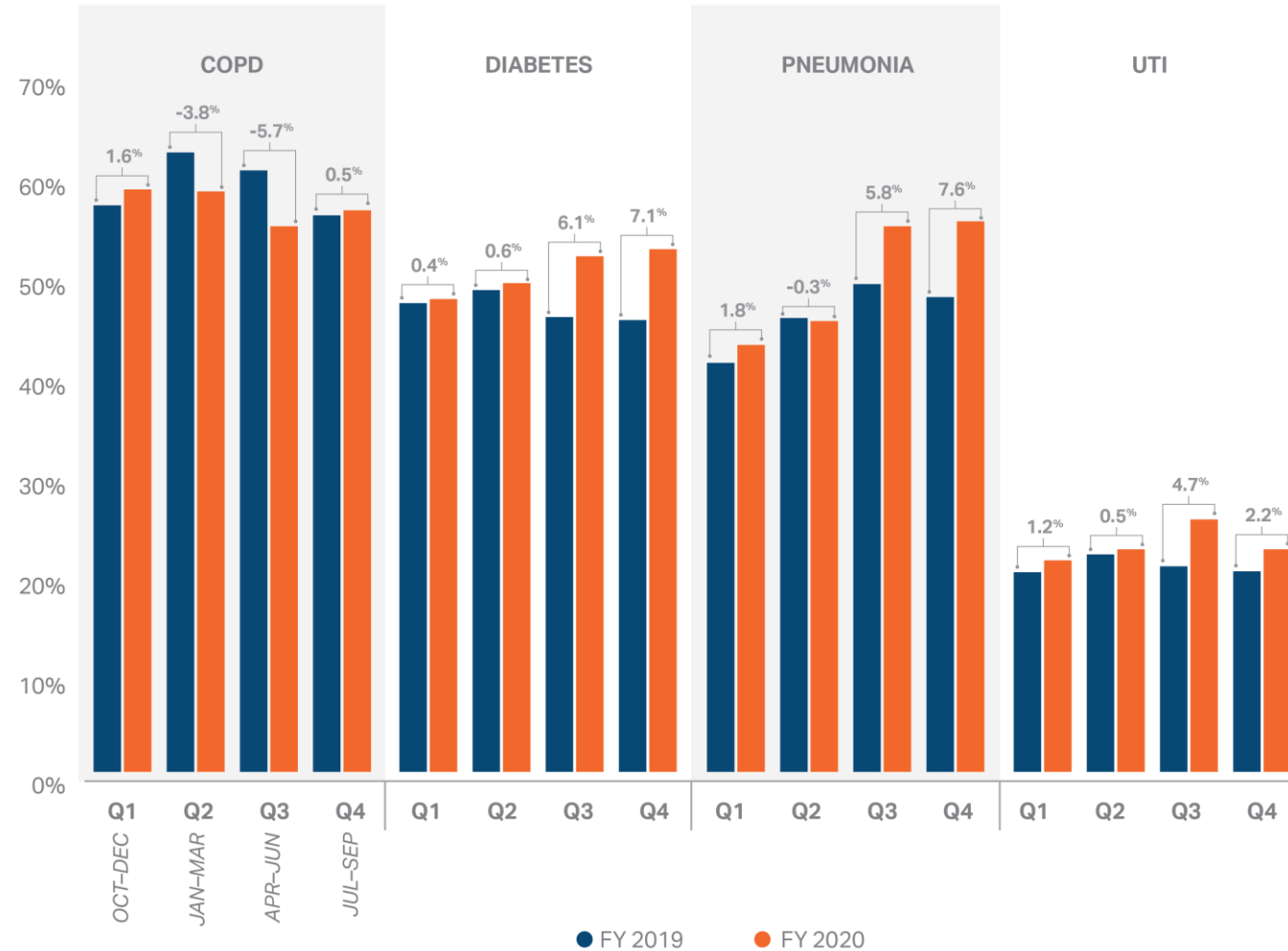


Trends in hospital admission volume during 2020 varied by condition. This graph shows trends for select primary diagnosis condition, and includes patients where COVID-19 may be a secondary condition.

Unlike other conditions shown, the volume of sepsis cases spiked during the initial surge (27% increase from April 2019), likely associated with COVID-19 cases.

# Patients who sought treatment at the ED for diabetes, pneumonia, and UTI were more likely to be admitted April-September 2020 than over the same time period in 2019.

Change in percentage points of share of ED visits admitted to inpatient care for select conditions, FY 2019 - FY 2020



The HPC previously examined variability in admissions from the ED in the 2018 Cost Trends Report Overall, the number of ED visits in January to September 2020 was 23% lower than in the same months in 2019. The number of inpatient admissions from the ED in January to September 2020 was 14% lower than in the same months in 2019.

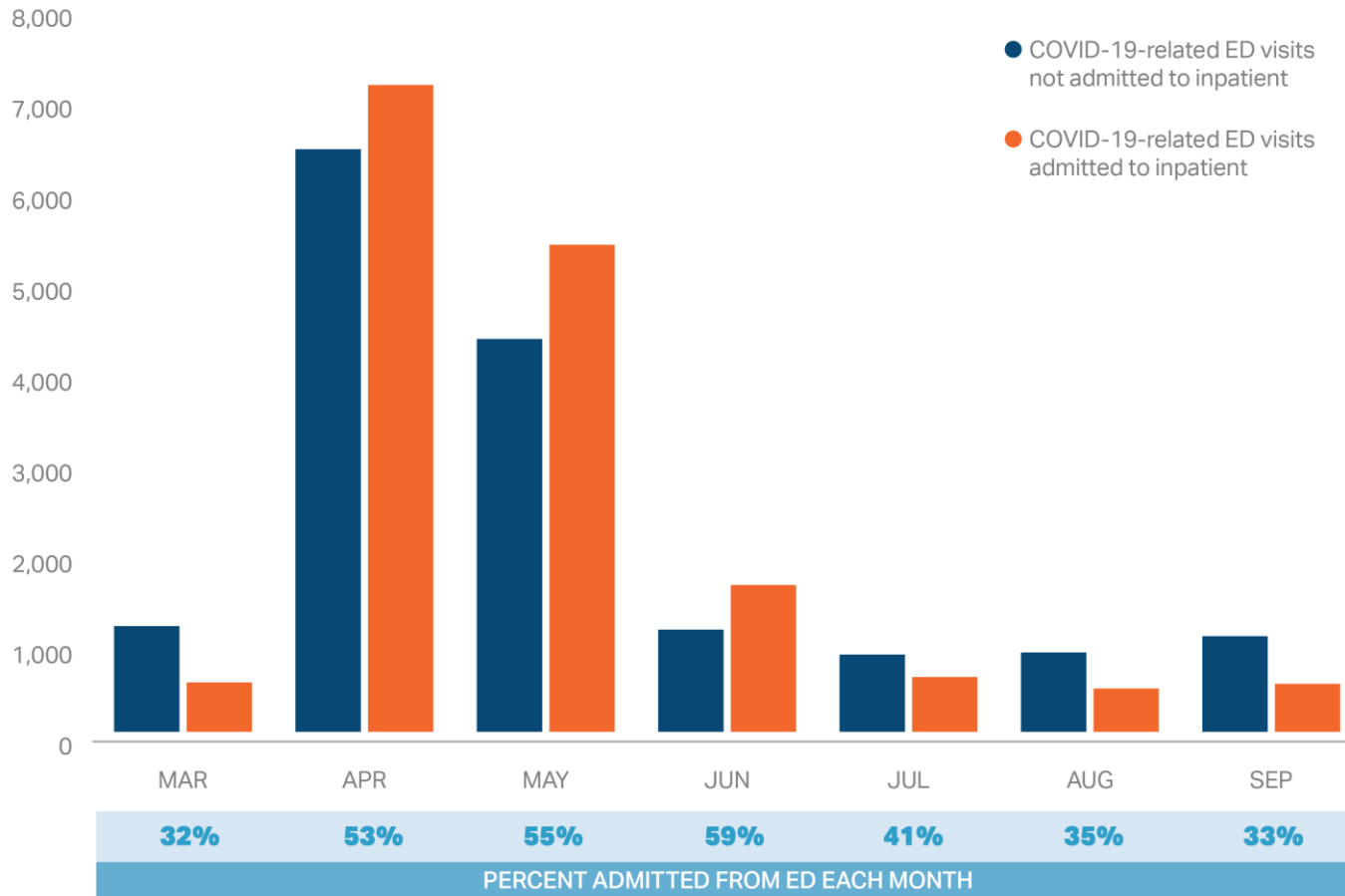
This graphic highlights certain diagnoses found to have high variation among providers and showed the greatest change in rates of admission from the ED from FY 2019 to FY 2020 across all hospitals.

While trends varied by condition, patients with an ED visit for diabetes, pneumonia, and UTI were more likely to be admitted in April to September 2020 than in 2019. For example, the share of patients with an ED visit for diabetes admitted to inpatient care was 6.1 percentage points higher in April to June 2020, compared to April to June 2019 (51.7% versus 45.6%).

Several conditions had consistent rates of admission from the ED across this time period including heart attacks, heart failure, strokes, and septicemia (data not shown).

# COVID-19-related ED visits peaked in April 2020 at 13,500 visits, with 53% of these visits admitted to inpatient care.

COVID-19-related ED visits admitted and not admitted to inpatient care, March – September 2020



Emergency department (ED) visit data through September 2020 show that the number ED visits with either a primary or secondary COVID-19 diagnosis peaked in April 2020. The decrease in the summer months is likely a reflection of decreasing community prevalence of COVID-19.

The percentage of patients with a COVID-19-related ED visit who were admitted to inpatient care varied substantially by month.

In April, 53% of patients with a COVID-19-related ED visit were admitted to inpatient care, with this share peaking in June at 59%. The rate declined steeply in July through September. In September, 33% of ED visits with a COVID-19 diagnosis were admitted to inpatient care.