MASSACHUSETTS
HEALTH POLICY COMMISSION

Meeting of the Market Oversight and Transparency Committee

October 6, 2021

MASSACHUSETTS
HEALTH POLICY COMMISSION

AGENDA

- **Call to Order**
- Approval of Minutes from June 2, 2021 **(VOTE)**
- Report Findings: *Children with Medical Complexity in the Commonwealth*
- HPC 2021 Policy Recommendations
- Schedule of Upcoming Meetings

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HEALTH POLICY COMMISSION

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MASSACHUSETTS
HEALTH POLICY COMMISSION

VOTE: Approving Minutes

MOTION: That the Commission hereby approves the minutes of the Commission meeting held on **June 2, 2021** as presented.

MASSACHUSETTS
HEALTH POLICY COMMISSION

AGENDA

- Call to Order
- Approval of Minutes from June 2, 2021 **(VOTE)**
- **Report Findings: *Children with Medical Complexity in the Commonwealth***
- HPC 2021 Policy Recommendations
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Report Findings:
Children with Medical Complexity in the Commonwealth

- **Legislative Charge**
- Defining Children with Medical Complexity
- Demographics, Spending, and Utilization
- Stakeholder Perspectives
- Next Steps

HPC

Legislative Charge

To better understand the landscape of care for **children with medical complexity (CMC)** in the Commonwealth, the Massachusetts Legislature enacted Chapter 124 of the Acts of 2019: *An act relative to children's health and wellness.*

Section 7 of Chapter 124 of the Acts of 2019 tasks the Massachusetts Health Policy Commission (HPC) with estimating the number of CMC in the Commonwealth, their demographics, primary diagnoses, health coverage, access to and utilization of health care, associated costs, and recommendations for ongoing data collection and reporting.

Background on Children with Medical Complexity

CHARACTERISTICS

- Serious, chronic, and multiple medical and mental, behavioral, or developmental health conditions, including functional limitations, high health service needs, and high utilization.[1]
- A diverse and high-need population, representing the most medically fragile subgroup of children with special health care needs.[2]
  - Children with special health care needs have or are at risk of chronic physical, developmental, behavioral, or emotional conditions, requiring services beyond those required by children generally.[3]

UTILIZATION

- Often require surgery or inpatient services, or rely on DME and supplies, medical technology, or home health services.[4-6]
- CMC have disproportionately high health spending compared with healthy children.[5]

PREVALENCE

- Research estimates that nationally, CMC represent 1-4% of all children,[8,9] and 5-6% of children covered by Medicaid.[5,7]

1 Berry JG, Agrawal RK, Cohen E, Kuo DZ. The Landscape of Medical Care for Children with Medical Complexity. Children's Hospital Association. June 2013. Available at: http://www.columbia.edu/itc/hs/medical/residency/peds/new_compeds_site/pdfs_new/PL3%20new20readings/Special_Report_The_Landscape_of_Medical_Care_for_Children_with_Medical_Complexity.pdf

2 Cohen E, Kuo DZ, Agrawal R, Berry JG, Bhagat SKM, Simon TD, Srivastava R. Children With Medical Complexity: An Emerging Population for Clinical and Research Initiatives. Pediatrics. 2011; 127(3):529-583.

3 HRSA Maternal & Child Health. Children with Special Health Care Needs: NSCH Data Brief. Jul 2020. Available at: https://mchb.hrsa.gov/sites/default/files/mchb/Data/NSCH/nsch-cshcn-data-brief.pdf

4 Doupnik SK, Rodean J, Feinstein J, Gay JC, Simmons J, Bettenhausen JL, Markham JL, Hall M, Zima BT, Berry JG. Health Care Utilization and Spending for Children With Mental Health Conditions in Medicaid. Academic Pediatrics. 2020; 20(5):678-686.

5 Berry JG, Hall M, Neff J, Goodman D, Cohen E, Agrawal R, Kuo D, Feudtner. Children With Medical Complexity And Medicaid: Spending And Cost Savings. Health Affairs. 2014; 33(12): 2199-2206.

6 Kuo DZ, Melguizo-Castro M, Goudie A, Nick TG, Robbins JM, Casey PH. Variation in Child Health Care Utilization by Medical Complexity. Maternal and Child Health Journal. 2015; 19: 40-48.

7 Reuland CP, Collins J, Chiang L, Stewart V, Cochran AC, Coon CW, Shinde D, Harguani D. Oregon's approach to leveraging system-level data to guide a social determinants of health-informed approach to children's healthcare. BMJ Innovations. 2020; 7(1): 1-8.

8 NASHP. National Care Coordination Standards for Children and Youth with Special Health Care Needs. Oct 16, 2020. Available at: https://www.nashp.org/national-care-coordination-standards-for-children-and-youth-with-special-health-care-needs/#toggle-id-1

9 Children's Hospital Association. Coordinating All Resources Effectively for Children with Medical Complexity (CARE Award): Early Lessons Learned from the Project. Sept 2016. Available at: https://www.childrenshospitals.org/-/media/Files/CHA/Main/Programs_and_Services/Quality_Safety_and_Performance/CARE/CARE_award_early_lessons_learned_sept2016.pdf

About the Report

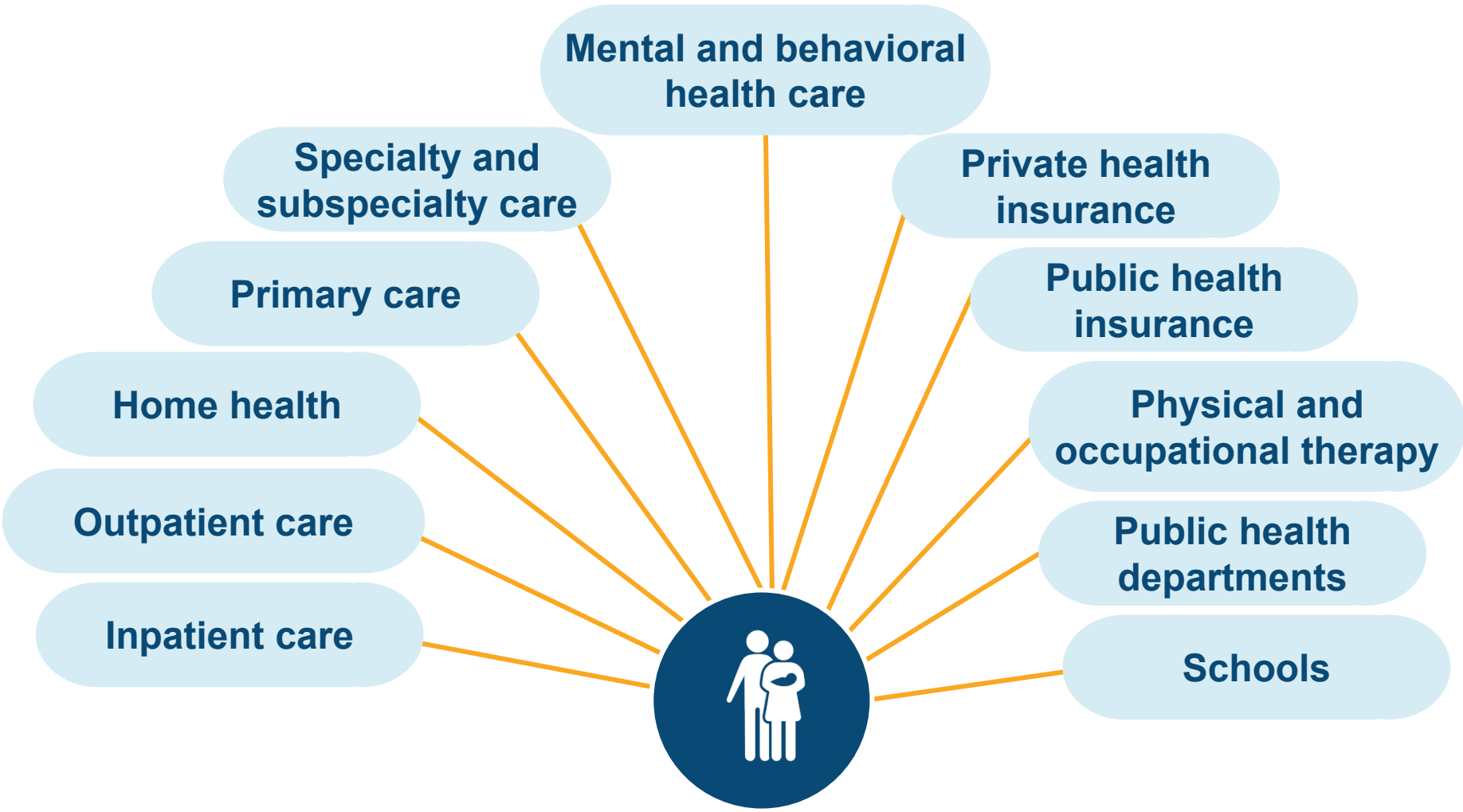
- Children with medical complexity (CMC) are a high-need population, with significant use of health and social services.
- The health system is not always set up to adequately support CMC, for whom health care and health coverage are often fragmented, and who require coordination across multiple overlapping medical and social service settings and systems.
- To understand the population of CMC and their health care landscape in the Commonwealth, the HPC investigated demographics, health coverage, health service utilization, and spending.
- The HPC also met with stakeholders to understand issues of care not measurable in administrative data, including access, care continuity, and social complexity for families.

Report Findings:
Children with Medical Complexity in the Commonwealth

- Legislative Charge
- **Defining Children with Medical Complexity**
- Demographics, Spending, and Utilization
- Stakeholder Perspectives
- Next Steps

HPC

Children with medical complexity and their families often rely on multiple health and social service systems.



Navigating across multiple sources of care can be burdensome for CMC and their families.

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There are many insurance coverage and public programs supporting CMC in Massachusetts.

HEALTH COVERAGE

MASSHEALTH

- MASSHEALTH STANDARD
- MASSHEALTH MCO/ACO
- KAILEIGH MULLIGAN MASSHEALTH
- MASSHEALTH LIMITED
- MASSHEALTH FAMILY ASSISTANCE
- CHILDREN'S MEDICAL SECURITY PLAN
- COMMUNITY CASE MANAGEMENT
- ACO CARE MANAGEMENT PROGRAMS
- LTSS COMMUNITY PARTNERS
- CHILDREN'S BEHAVIORAL HEALTH INITIATIVE
- AUTISM WAIVER
- SPECIAL KIDS SPECIAL CARE **DCF**
- COMMONHEALTH

COMMERCIAL

- EMPLOYER-SPONSORED INSURANCE
- MARKETPLACE COVERAGE VIA THE HEALTH CONNECTOR

OTHER PUBLIC PROGRAMS

DESE

- SCHOOL-BASED PHYSICAL, OCCUPATIONAL, & SPEECH THERAPY SERVICES
- DDS/DESE PROGRAM (COMMUNITY RESIDENTIAL EDUCATION PROGRAM)
- INDIVIDUALIZED EDUCATIONAL PROGRAMS (IEPS)
- 504 PLANS
- IN-SCHOOL NURSING; ASSISTANCE WITH ACTIVITIES OF DAILY LIVING (*including 1-1 nursing; may be provided by a nurse or a paraprofessional*)
- IN-SCHOOL BEHAVIORAL HEALTH SERVICES AND SOCIAL-EMOTIONAL LEARNING SUPPORTS
- IN-SCHOOL APPLIED BEHAVIOR ANALYSIS SERVICE

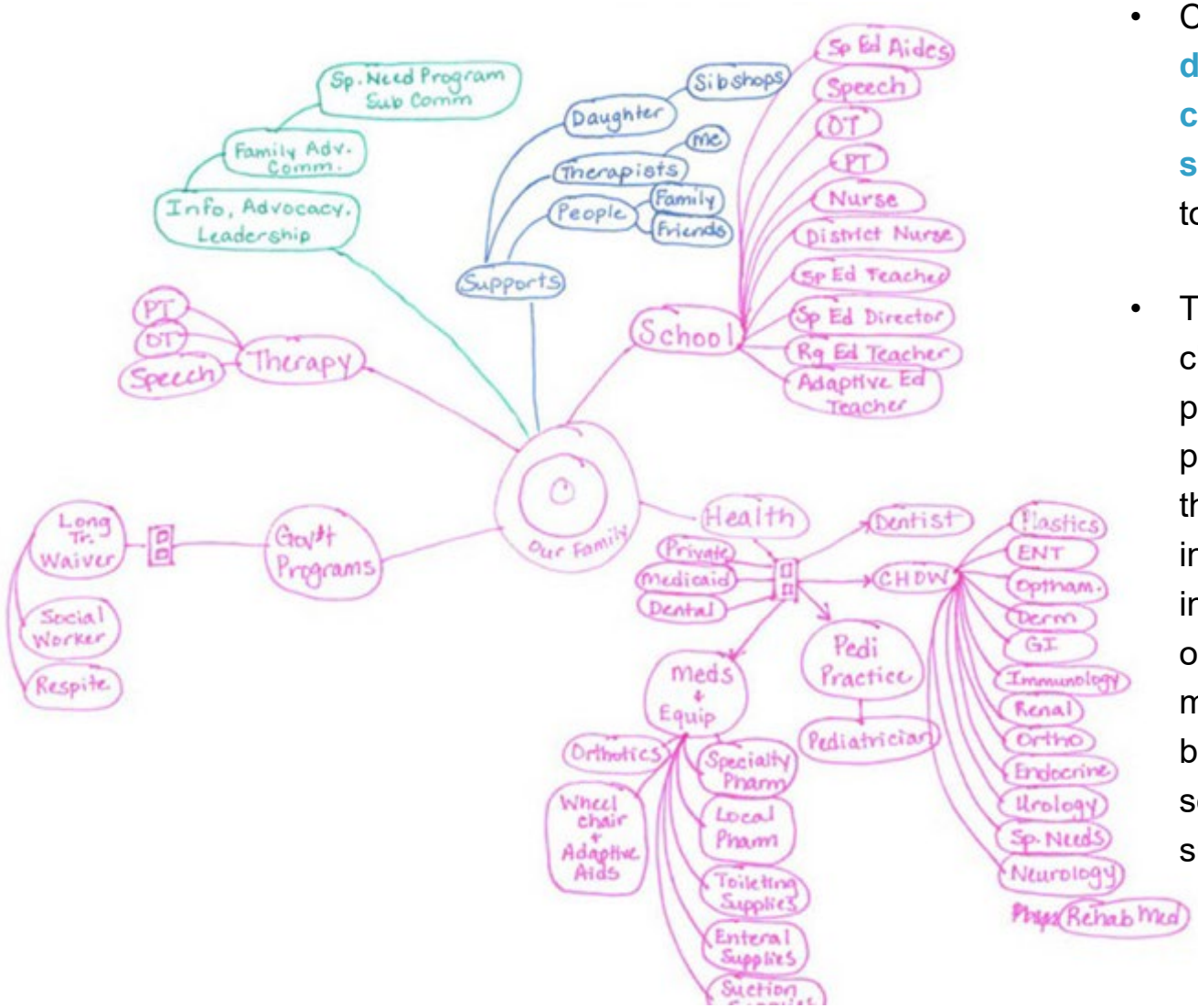
DDS

- MEDICALLY COMPLEX PROGRAMS
- DDS FAMILY SUPPORT

DPH

- EARLY INTERVENTION SERVICES
- CATASTROPHIC ILLNESS IN CHILDREN RELIEF FUND
- PEDIATRIC PALLIATIVE CARE
- PAPPAS REHABILITATION HOSPITAL FOR CHILDREN
- OFFICE OF FAMILY INITIATIVES
- PAPPAS REHABILITATION HOSPITAL FOR CHILDREN
- SCHOOL-BASED HEALTH CENTERS
- SCHOOL HEALTH SERVICES
- TITLE V PROGRAMS WITHIN THE DIVISION FOR CHILDREN & YOUTH WITH SPECIAL HEALTH NEEDS *(including Community Support Line, Care Coordination Program, Family TIES, Hearing Aid Program, Medical Review Team (MRT) Program, Massachusetts Technology Assistance Resource Team (MASSTART), Universal Newborn Hearing Screening Program)*

Example Family Care Map



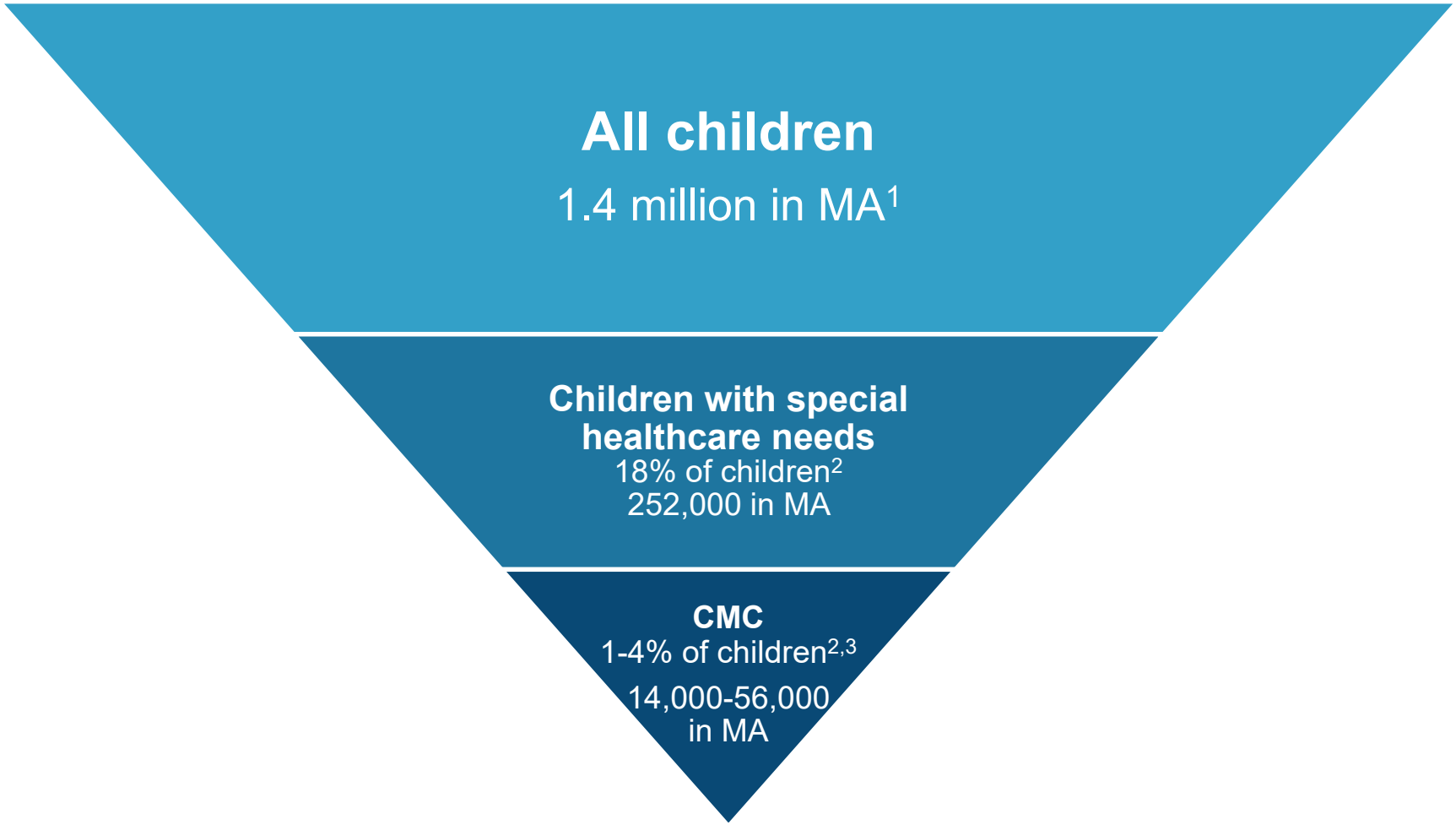
- Care maps are **family-created diagrams** depicting the **constellation of providers, services, and supports** needed to care for CMC.[1]

- This care map for a patient with a chromosomal disorder depicts public programs, speech, physical, and occupational therapy, public and private health insurance, health services including pediatric, other outpatient, hospital inpatient, medication, and DME, and school-based health and educational services and supports, as well as support from family and friends.

1 Adams S, Nicholas D, Mahant S, Weiser N, Kanani R, Boydell K, Cohen E. Care maps for children with medical complexity. Developmental Medicine & Child Neurology. 2017; 59(12): 1299-1306.

Exhibit source: Children's Wisconsin. A picture paints a thousand words: Care maps help families identify what matters most. Nov 9, 2017. Available at: https://childrenswi.org/NewsHub/stories/a-picture-paints-a-thousand-words-care-maps-help-families-identify-what-matters-most

Research estimates that CMC make up about 1-4% of all children, or approximately 14,000 – 56,000 children in Massachusetts.



1 United States Census Bureau. Quickfacts: Massachusetts. Available at: https://www.census.gov/quickfacts/MA

2 NASHP. National Care Coordination Standards for Children and Youth with Special Health Care Needs. Oct 16, 2020. Available at: https://www.nashp.org/national-care-coordination-standards-for-children-and-youth-with-special-health-care-needs/#toggle-id-1

3 Children's Hospital Association. Coordinating All Resources Effectively for Children with Medical Complexity (CARE Award): Early Lessons Learned from the Project. Sept 2016. Available at: https://www.childrenshospitals.org/-/media/Files/CHA/Main/Programs_and_Services/Quality_Safety_and_Performance/CARE/CARE_award_early_lessons_learned_sept2016.pdf

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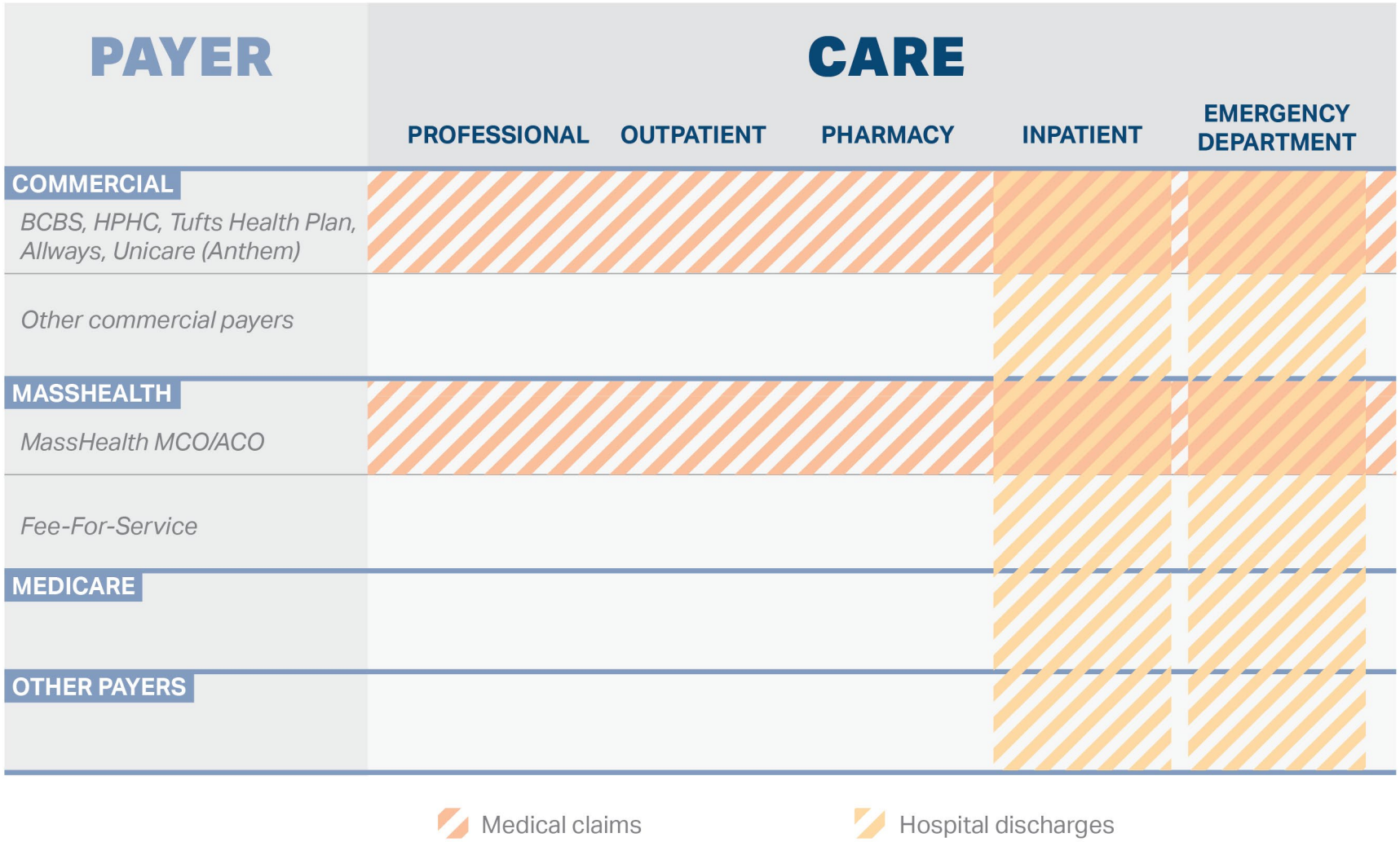
HPC

Data Sources: The HPC analyzed both all-payer hospital discharge data and medical claims from certain commercial and MassHealth plans.



Using the Pediatric Medical Complexity Algorithm to Identify CMC in Inpatient Stay and Claims Data

The PMCA sorts individuals aged 21 and younger into three groups:

NON-CHRONIC

Individuals with no diagnoses or with acute non-chronic conditions lasting <1 year, such as **ear infection**

NON-COMPLEX CHRONIC

Individuals with chronic conditions lasting ≥1 year, such as **Type 1 diabetes, ADHD**

COMPLEX CHRONIC

Individuals with any of the following:

- Physical, mental, or developmental chronic conditions lasting ≥1 year, in at least 2 body systems
  - Includes **Type 1 diabetes + depression, or developmental delay + a chronic pulmonary condition**
- Progressive conditions associated with deteriorating health and decreased life expectancy
  - Includes **muscular dystrophy, cystic fibrosis**
- Continuous dependence on technology for at ≥6 months
  - Includes **renal dialysis, or tracheostomy + ventilator assistance**
- Malignancies
  - Includes **leukemia, lymphoma, brain tumor**

Notes: See appendix for more detail. Individuals with health care utilization but without acute non-chronic conditions (e.g., pediatric well visits) are classified as "Non-chronic."

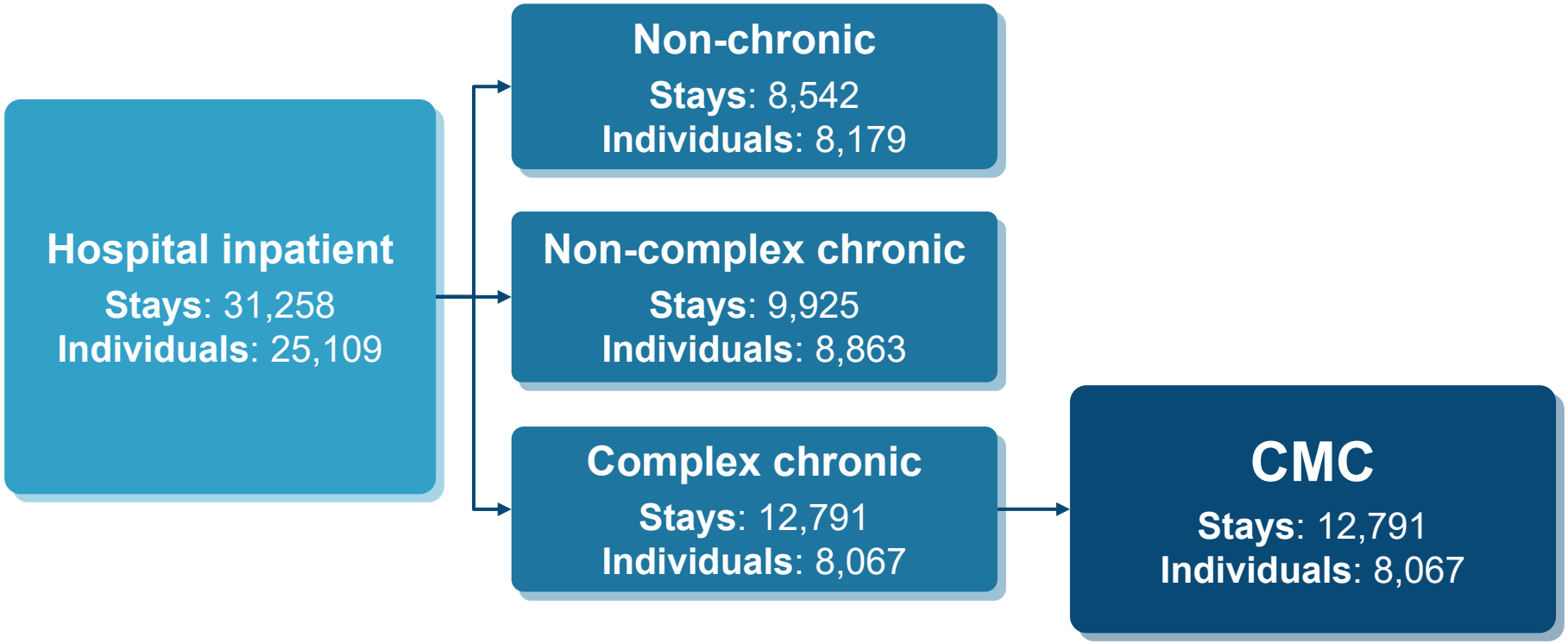
Source: Simon TD, Cawthon ML, Stanford S, Popalisky J, Lyons D, Woodcox P, Hood M, Chen, AY, Mangione-Smith R. Pediatric Medical Complexity Algorithm: A New Method to Stratify Children by Medical Complexity. Pediatrics. 2014; 133(6): e1647-e1654.

HPC

In 2018, there were over 8,000 children with medical complexity who had at least one inpatient hospital stay.

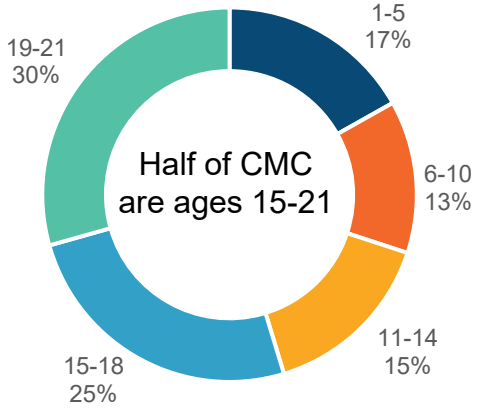
31,258 of the approximately 800,000 inpatient hospital stays in Massachusetts in 2018 were among people ages 1-21.

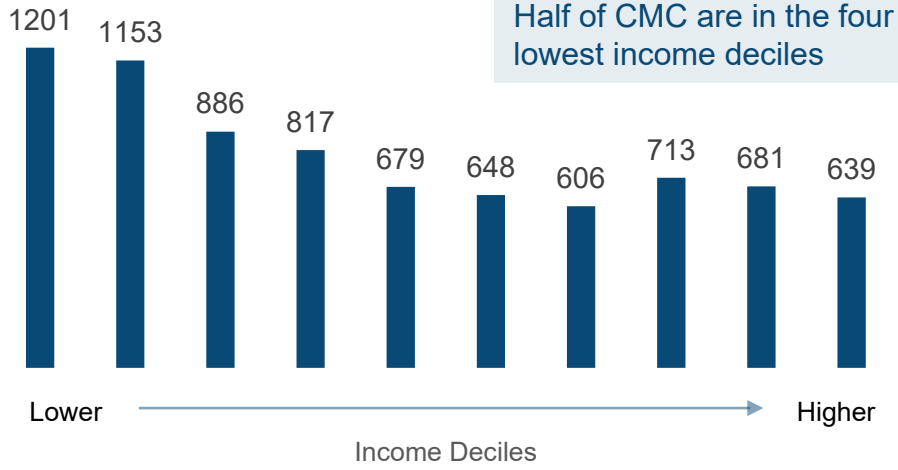
41% of the 31,258 stays were for children with medical complexity.



Demographics of CMC with Inpatient Hospital Stays, 2018

Discharges

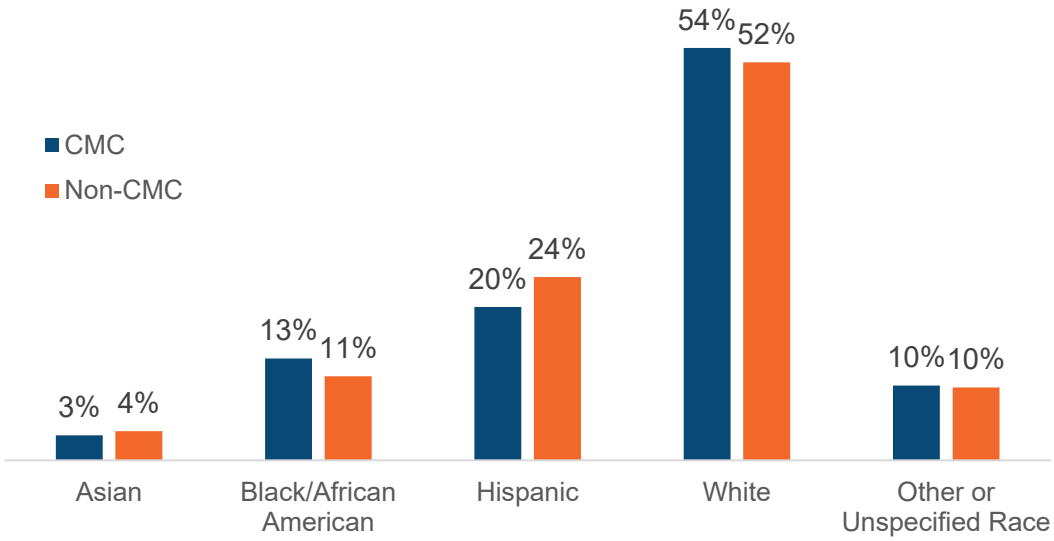




Half of CMC are in the four lowest income deciles

48% male

52% female



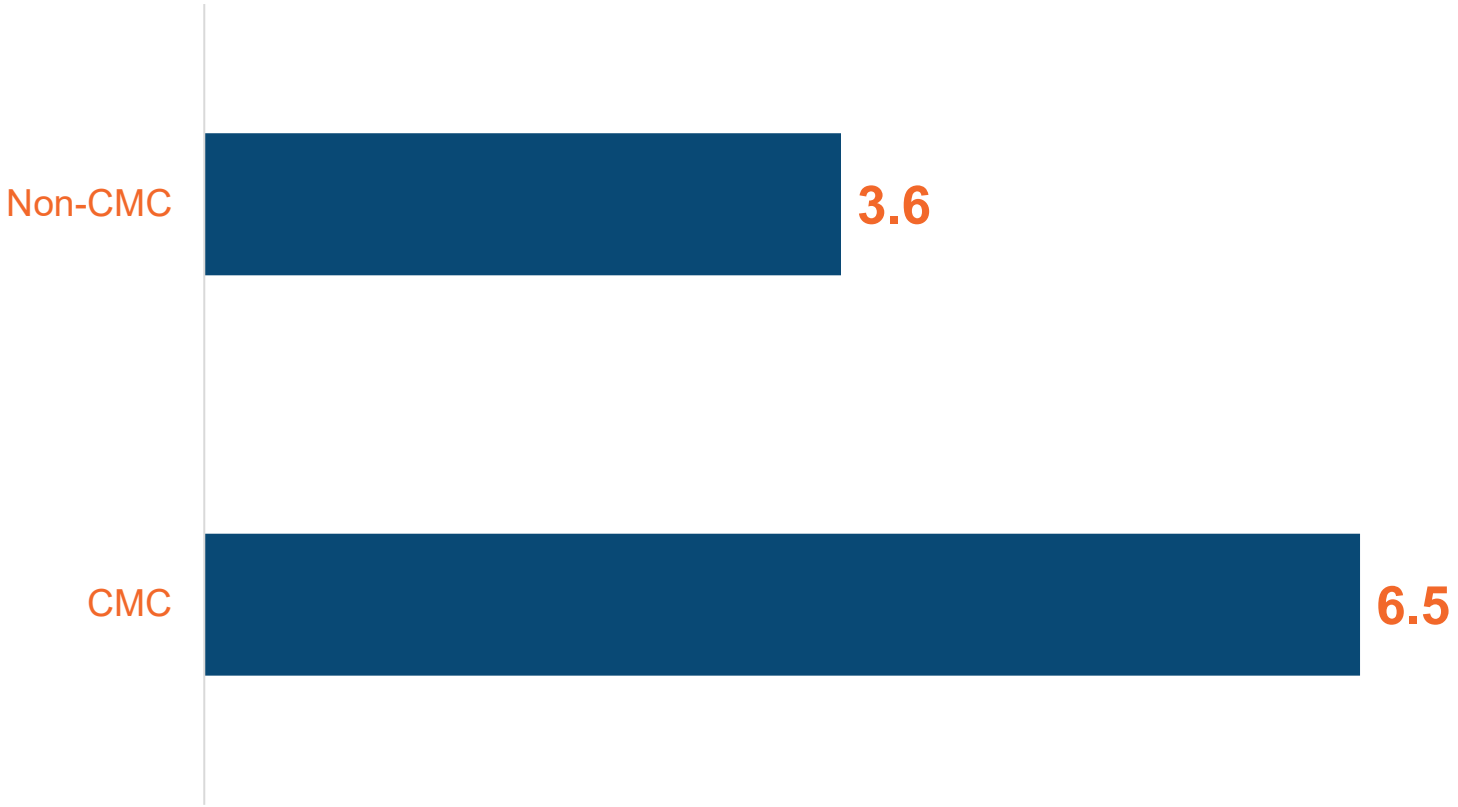
Note: Analysis excludes individuals <1 year old. <11 American Indian/Alaska Native and Native Hawaiian or other Pacific Islander individuals not shown. Other race includes other race, non-Hispanic and unspecified race, non-Hispanic.

Source: HPC Analysis of the Center for Health Information and Analysis (CHIA), Hospital Inpatient Discharge Database, 2018

The average length of an inpatient stay for CMC was 6.5 days, nearly double the length of stay for non-CMC.

Discharges

Mean hospital inpatient length of stay in days for CMC and non-CMC, 2018

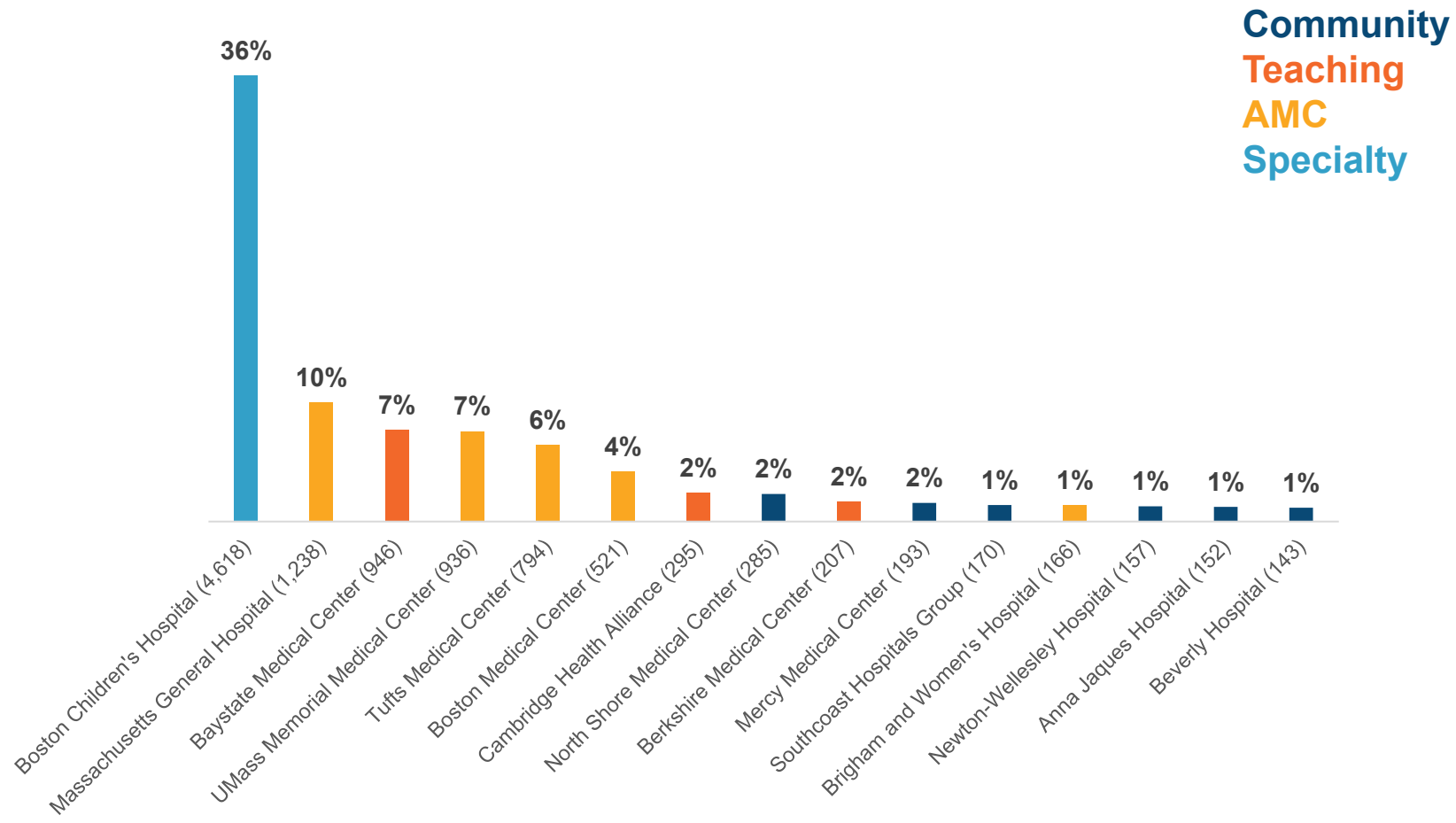


Note: Analysis excludes individuals <1 year old.
Source: HPC Analysis of the Center for Health Information and Analysis (CHIA), Hospital Inpatient Discharge Database, 2018

CMC inpatient stays were concentrated at a few hospitals, with nearly 70% of stays taking place at five hospitals.

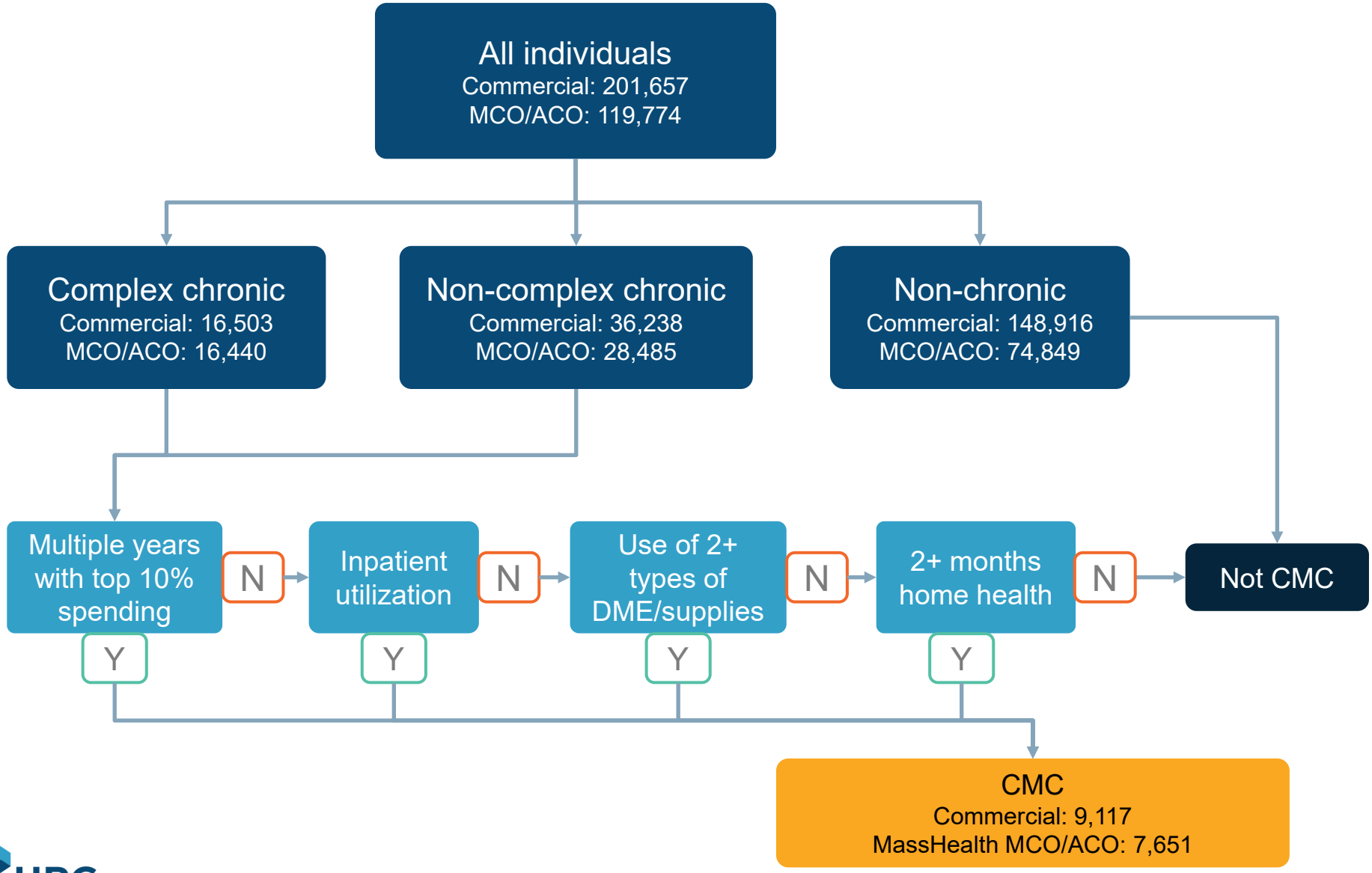
Discharges

Proportion of CMC discharged per hospital at the top 15 hospitals for CMC discharges, 2018



Note: Analysis excludes individuals <1 year old.
Source: HPC Analysis of the Center for Health Information and Analysis (CHIA), Hospital Inpatient Discharge Database, 2018

Identifying CMC in 2018 Claims Data: 4.5% of children with commercial coverage and 6.4% of children with MassHealth MCO/ACO primary coverage are CMC.



Notes: See appendix for more detail

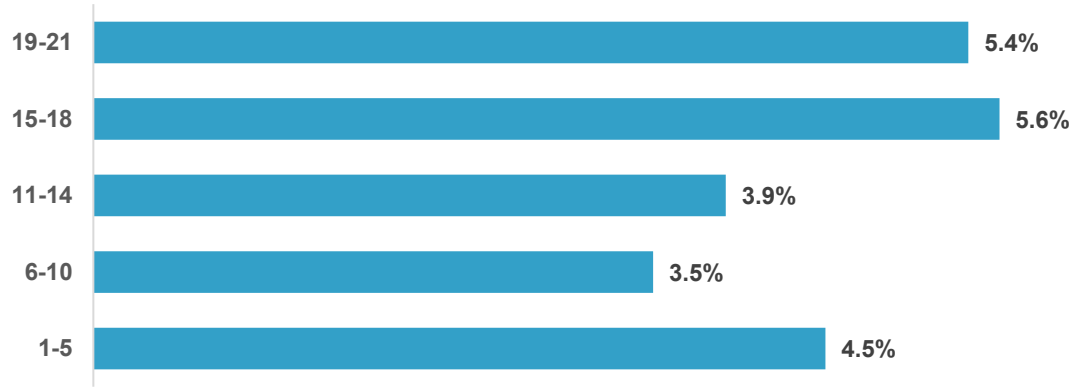
Demographics of Commercially-Insured CMC, 2018

Claims

1 in 5

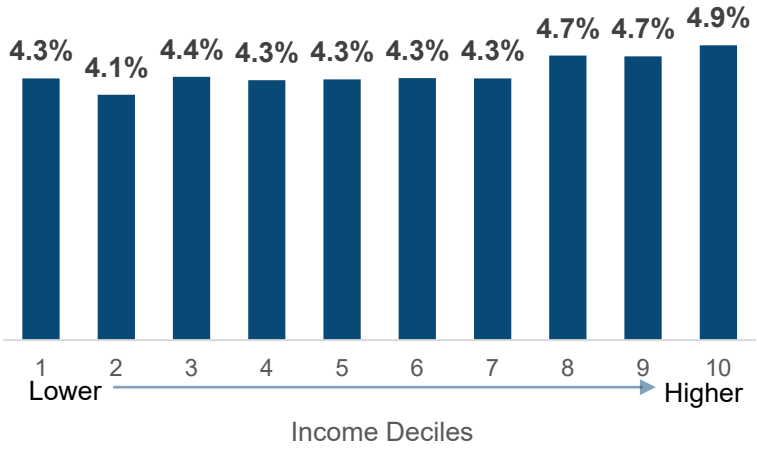
CMC have mood disorders such as anxiety and depression. Other common behavioral diagnoses include autism and ADHD.

CMC make up 3-6% of each age group



52% of CMC are male

48% of CMC are female



4-5% of each income decile is CMC. Half of commercially-insured CMC are in the three highest income deciles.

Notes: Analysis excludes individuals <1 year old Diagnosis analysis uses conditions flagged as chronic or either acute or chronic by the Healthcare Cost and Utilization Project (HCUP) Chronic Condition Indicator. Available at: https://www.hcup-us.ahrq.gov/toolssoftware/chronic_icd10/chronic_icd10.jsp

Source: HPC analysis of All-Payer Claims Database 8.0

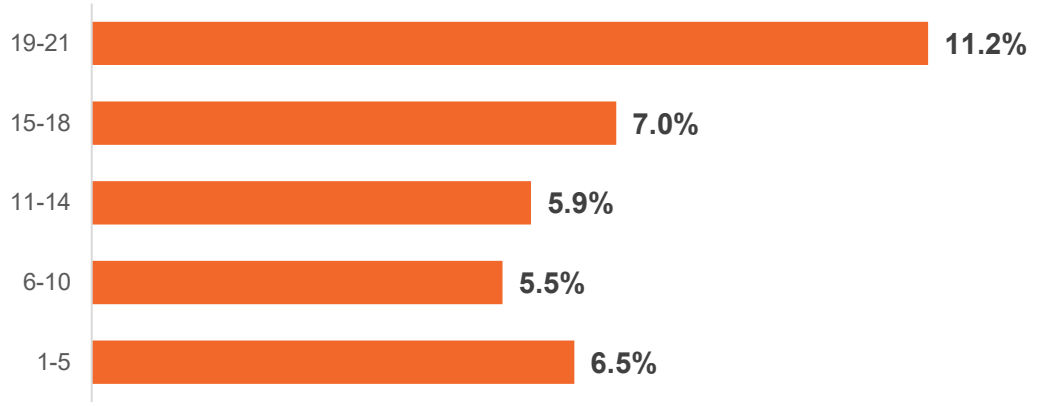
Demographics of CMC covered by MassHealth MCO/ACO plans, 2018

Claims

1 in 5

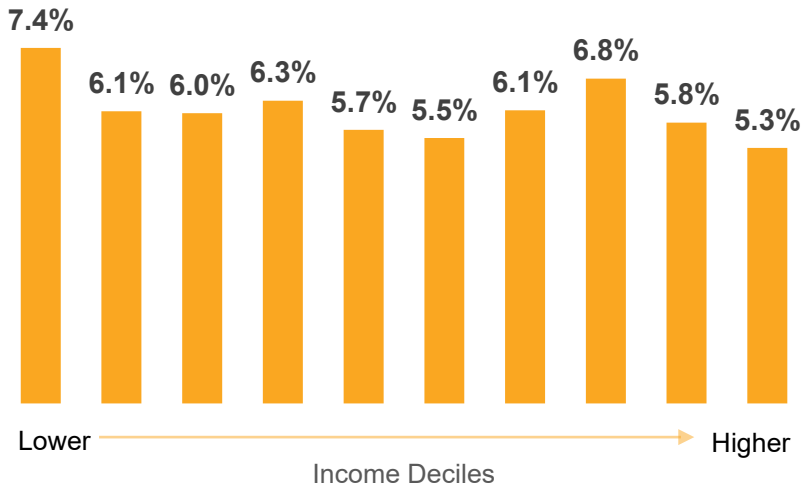
CMC have mood disorders such as anxiety. Other common behavioral diagnoses include autism and ADHD

CMC make up 6-11% of each age group



58% of CMC are male

42% of CMC are female



5-7% of each income decile is CMC. Nearly two-thirds of CMC covered by MassHealth managed care plans are in the three lowest income deciles

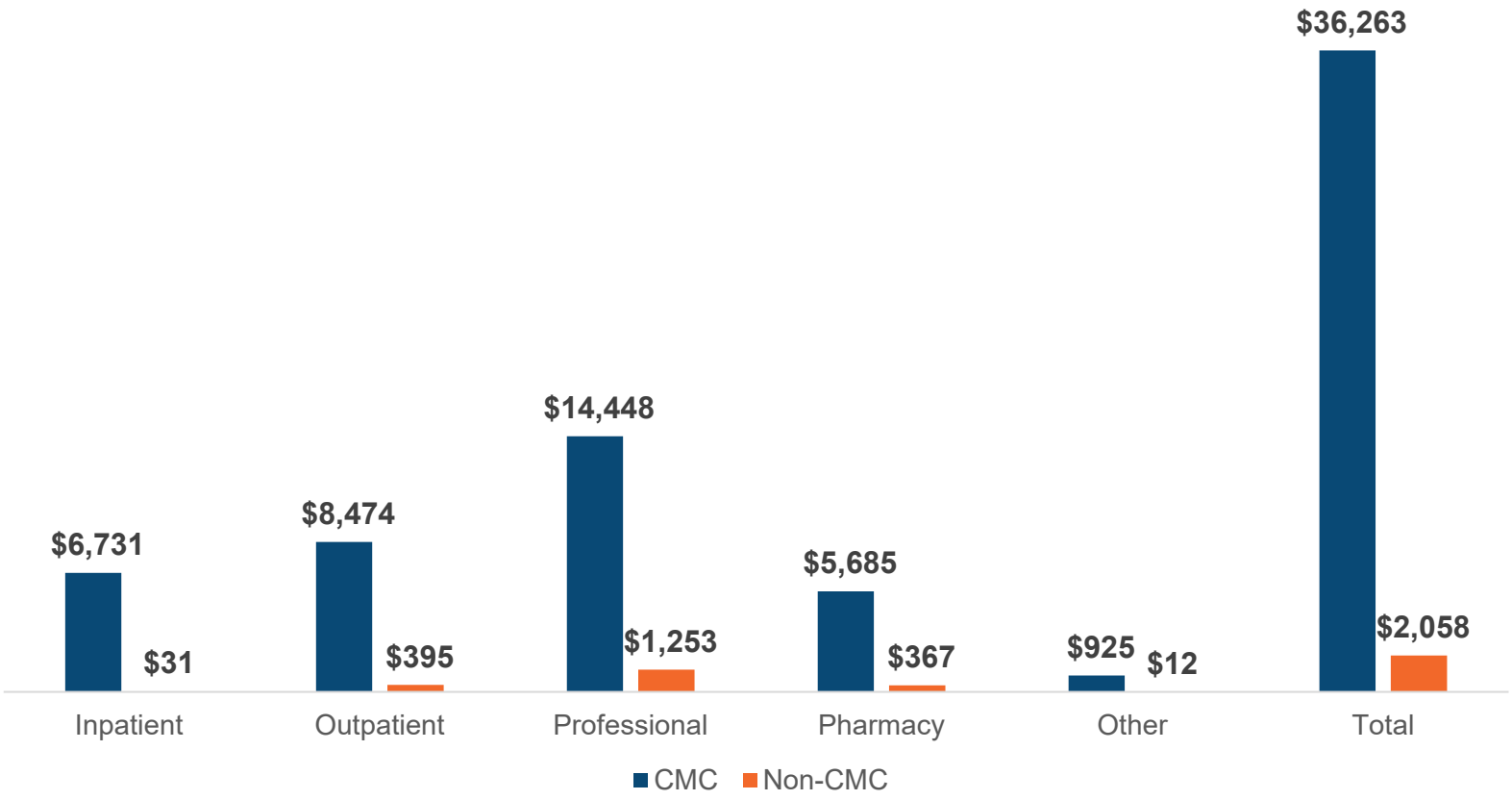
Notes: Analysis excludes individuals <1 year old Diagnosis analysis uses conditions flagged as chronic or either acute or chronic by the Healthcare Cost and Utilization Project (HCUP) Chronic Condition Indicator. Available at: https://www.hcup-us.ahrq.gov/toolssoftware/chronic_icd10/chronic_icd10.jsp

Source: HPC analysis of All-Payer Claims Database 8.0

Average total annual spending for commercially-insured CMC was $36,263, compared to $2,058 for non-CMC.

Claims

Mean commercial inpatient, outpatient, professional, pharmacy, and other spending for CMC and non-CMC per member per year, 2018



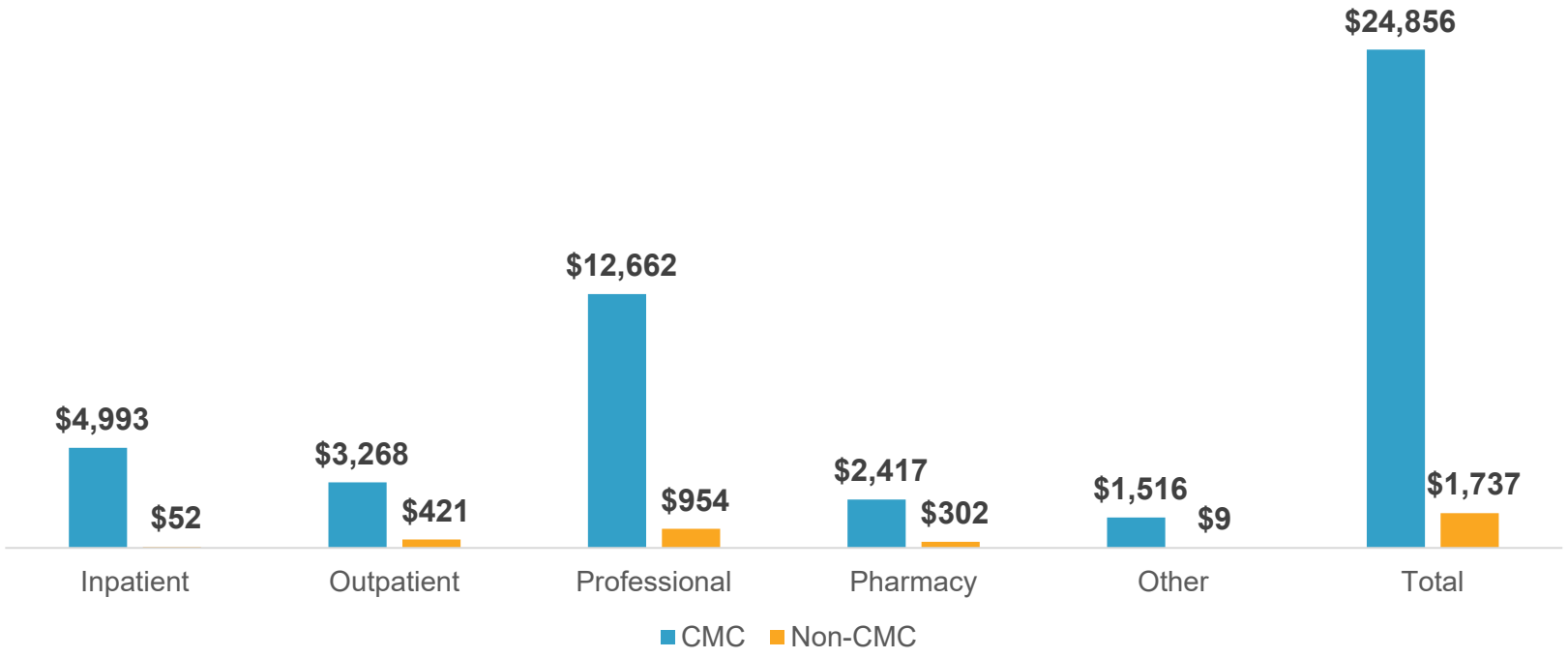
Notes: Analysis excludes individuals <1 year old Other includes DME, home health, hospice, skilled nursing, and spending on services of unknown type. Pharmacy spending was not available for 25% of children in the APCD due to carveouts. Pharmacy spending represents the average among children with non-missing data. Total spending is shown using that average as if it represents the average for all children.

Source: HPC analysis of All-Payer Claims Database 8.0

Average total annual spending for CMC with MassHealth MCO/ACO coverage was $24,856, compared to $1,737 for non-CMC.

Claims

Mean MCO/ACO inpatient, outpatient, professional, pharmacy, and other spending for CMC and non-CMC per member per year, 2018



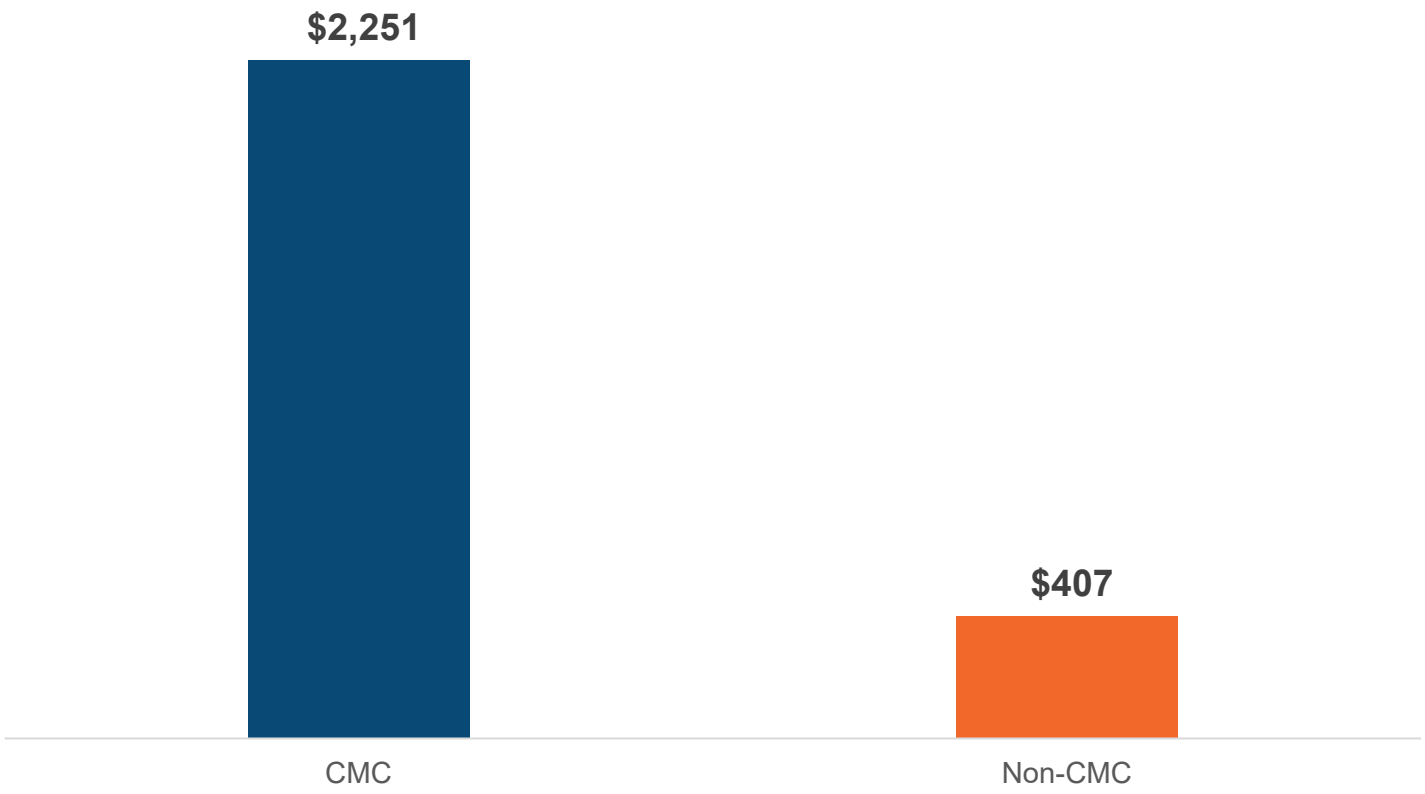
Notes: Analysis excludes individuals <1 year old Other includes DME, home health, hospice, skilled nursing, and spending on services of unknown type. All individuals had a full year of pharmacy coverage.

Source: HPC analysis of All-Payer Claims Database 8.0

Average annual commercial out-of-pocket spending for CMC was 5.5 times ($2,251) that of non-CMC ($407).

Claims

Commercial out-of-pocket medical and pharmacy spending for CMC and non-CMC per member per year, 2018

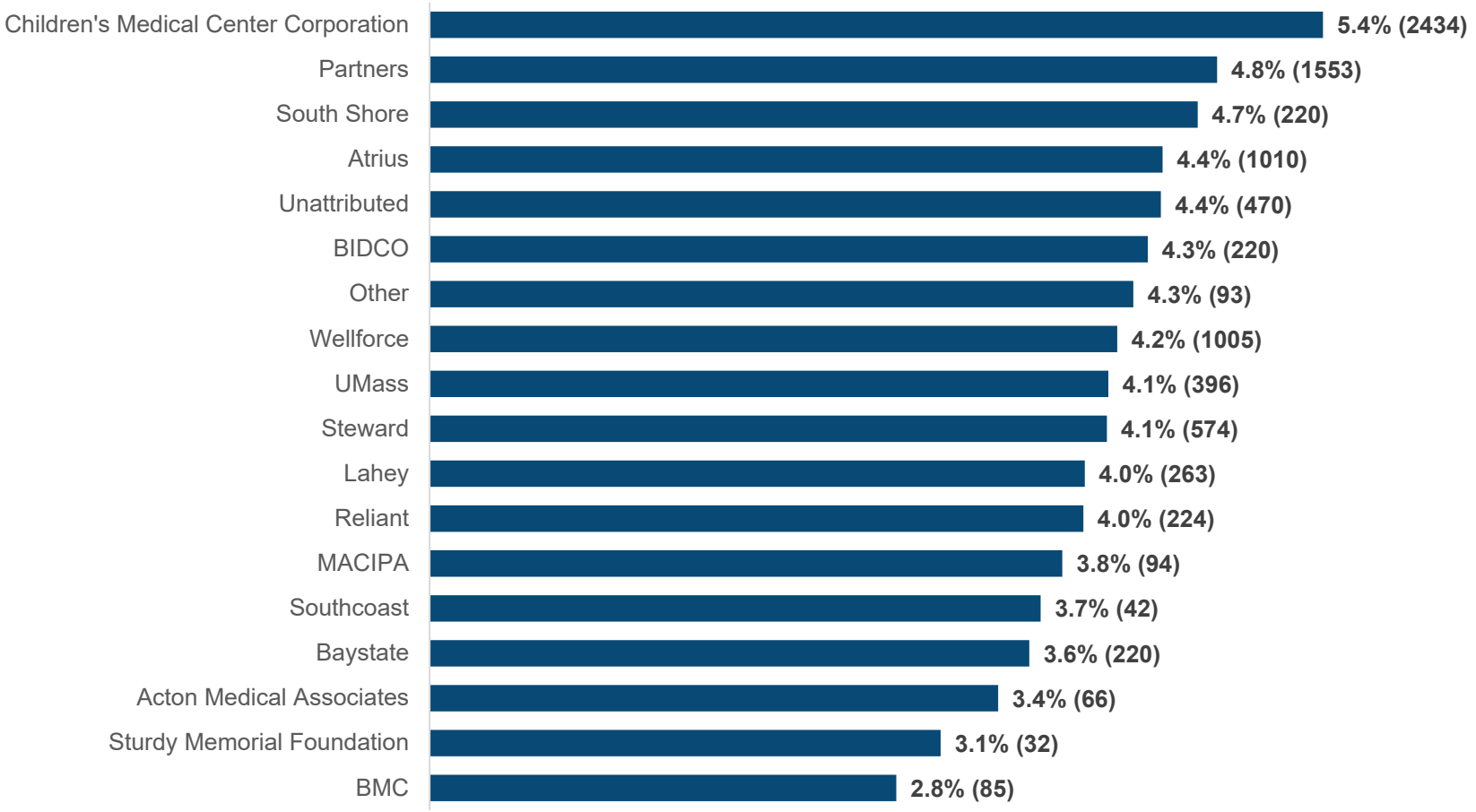


Notes: Analysis excludes individuals <1 year old. Pharmacy includes only individuals with a full year of pharmacy coverage (CMC: N=6773, non-CMC: N=145,125)
Source: HPC analysis of All-Payer Claims Database 8.0

CMC make up 3-5% of commercially-insured pediatric patients per provider organization.

Claims

Proportion of commercially-insured CMC ages 1-21 by provider organization, 2018



Notes: Analysis excludes individuals <1 year old Total individuals: 201,657. “Other” includes provider groups with <1000 lives in observed in 2018: Berkshire Health System, Community Care Cooperative, Franciscan Hospital for Children, Lawrence, Milford Regional Medical Center, New England Baptist Hospital, and Tenet Healthcare Corporation. Missing excluded.

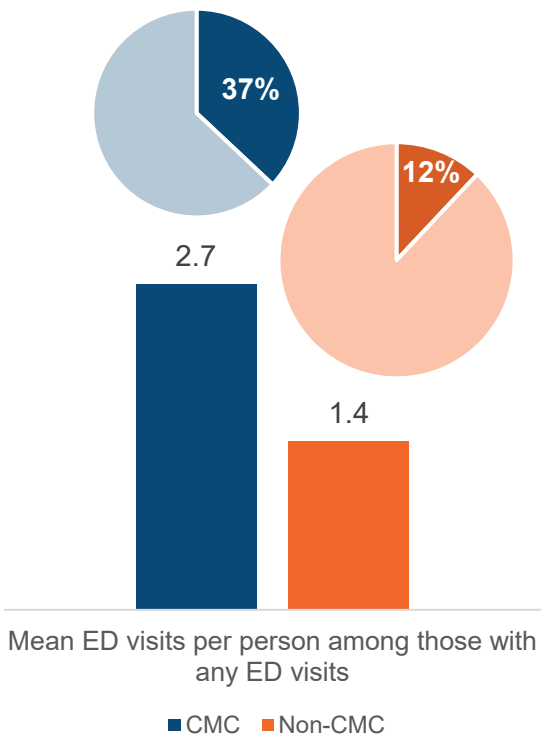
Source: HPC analysis of All-Payer Claims Database 8.0

CMC are more likely to use the ED than non-CMC and have almost twice as many ED visits per person.

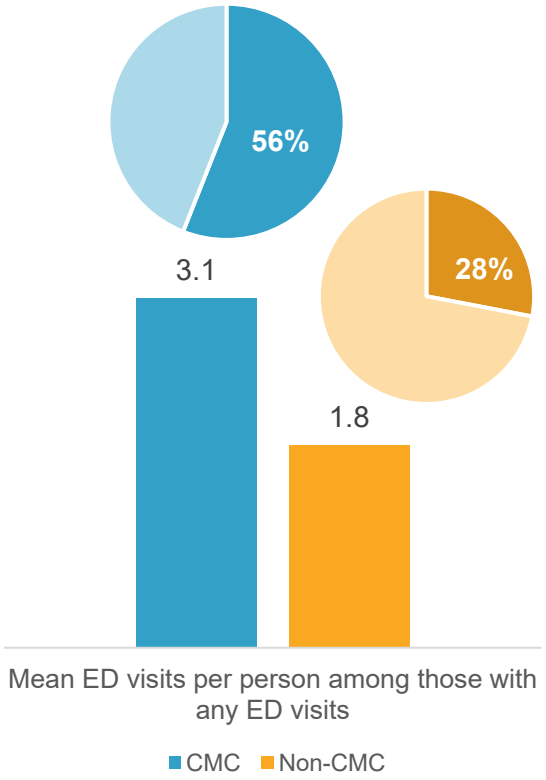
Claims

Proportion of commercially- and MassHealth ACO/MCO-insured CMC and non-CMC with any ED utilization and mean ED visits per person among individuals who used the ED, 2018

Commercial
Proportion of CMC and non-CMC with ED utilization



MCO/ACO
Proportion of CMC and non-CMC with ED utilization



Notes: Analysis excludes individuals <1 year old
Source: HPC analysis of All-Payer Claims Database 8.0

Summary of Key Findings

- 4.5% of commercially-insured children and 6.4% of children with MassHealth MCO/ACO coverage are children with medical complexity (CMC).
- About half of CMC in Massachusetts have commercial insurance, and about half are covered by MassHealth.
  - Preliminary findings do not capture children with primary commercial and secondary MassHealth coverage.
- CMC who are hospitalized have nearly double the length of inpatient stay of healthier children who are hospitalized (6.5 vs. 3.6 days). A plurality of CMC (36%) are hospitalized at Boston Children's Hospital.
- Annual commercial spending for CMC is 18 times that of healthier children ($30,578 vs. $1,691), and annual MassHealth MCO/ACO spending for CMC is 16 times that of healthier children ($22,439 vs. $1,435).
- Annual commercial out-of-pocket spending for CMC is 5.5 times that of healthier children ($2,251 vs. $407).
- 21% of CMC have an identified mood disorder, such as anxiety or depression.
- CMC are all types of children and live in all parts of Massachusetts: similar rates of CMC are found across all demographic groups and regions of the Commonwealth.

Report Findings:
Children with Medical Complexity in the Commonwealth

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- Defining Children with Medical Complexity
- Demographics, Spending, and Utilization
- **Stakeholder Perspectives**
- Next Steps

HPC

Stakeholders Consulted in the Development of the Report

- Baystate Health
- Boston Children's Hospital
- Federation for Children with Special Needs
- Health Care for All
- MassGeneral Hospital for Children
- Massachusetts Center for Health Information and Analysis (CHIA)
- Massachusetts Department of Public Health (DPH)
- MassHealth
- Reliant Medical Group
- Assorted researchers and clinicians

Stakeholders discussed access concerns for CMC.

Primary Care

- Community pediatricians may only be able to treat a few CMC at a time.

Specialty Care

- According to stakeholders, a shortage of pediatric specialists who accept MassHealth can create access delays.
- Many CMC require specialty and sub-specialty treatment or inpatient care, which is concentrated in the Boston area; stakeholders noted challenges for CMC who have difficulty traveling or who lack transportation.
- Transportation difficulties can lead to missed appointments and families being denied further appointments as no-shows.

COVID-19

- Caution about exposure has led to missed in-person care, including fewer home health or PCA visits.
- Providers noted that telehealth has helped to resolve some access issues but is not appropriate for all children or available to all families.

HPC

1 Berry JG, Hall M, Neff J, Goodman D, Cohen E, Agrawal R, Kuo D, Feudtner. Children With Medical Complexity And Medicaid: Spending And Cost Savings. Health Affairs. 2014; 33(12): 2199-2206.

Stakeholders identified care continuity and coordination concerns.

Coverage and Benefit Design

- Stakeholders described frequent changes or interruptions in employment for parents of CMC, making care continuity difficult for families with commercial insurance.
- Providers noted that benefit designs intended to reduce avoidable spending can lead to interruptions in care for CMC.
- Likewise, avoidable emergency department (ED) utilization and spending can occur when benefit design limits access to DME and supplies.

Care Coordination

- Stakeholders explained that families need an "air traffic controller" – a high level of coordination across systems.
- Stakeholders agreed this level of coordination belongs at regional public health agencies.

Stakeholders reflected that social complexity for families with CMC likely contributes to additional challenges.

Families of CMC often face **financial and social marginalization.**[1]

Parents of CMC are at **increased risk of poor mental health.**[2]

Some families face **additional social complexity challenges** including poverty, housing instability, food insecurity or insufficiency, lack of transportation, language barriers, or foster system involvement.[3]

Stakeholders agreed that social complexity can make it **more difficult for families of CMC to navigate systems** involved in caring for their children.

1 Foster CC, Corniy A, Kwon S, Kan K, Heard-Garris N, Davis MM. Children With Special Health Care Needs and Forgone Family Employment. Pediatrics. 2021; 148(3).
2 Bayer ND, Wang H, Yu JA, Kuo DZ, Haltrerman JS, Li Y. A National Mental Health Profile of Parents of Children With Medical Complexity. Pediatrics. 2021; 148(2).
3 Reuland CP, Collins J, Chiang L, Stewart V, Cochran AC, Coon CW, Shinde D, Harguani D. Oregon's approach to leveraging system-level data to guide a social determinants of health-informed approach to children's healthcare. BMJ Innovations. 2020; 7(1): 1-8.

Report Findings:
Children with Medical Complexity in the Commonwealth

- Legislative Charge
- Defining Children with Medical Complexity
- Demographics, Spending, and Utilization
- Stakeholder Perspectives
- **Next Steps**

HPC

The HPC anticipates releasing a final report in the coming months.

Additional topics may include:

- Pediatric to adult care transitions
- Behavioral health
- Emergency Department boarding
- 30-day hospital inpatient readmissions
- Additional spending analyses

MASSACHUSETTS
HEALTH POLICY COMMISSION

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- **HPC 2021 Policy Recommendations**
  - Strengthen Accountability for Excessive Spending
  - Constrain Excessive Provider Prices
- Schedule of Upcoming Meetings

Health care in Massachusetts is increasingly unaffordable.

- **Health care spending growth exceeded the benchmark in 2018 and 2019, placing increasing burden on employers, individuals, and state budgets.**
  - THCE per capita increased 3.6% in 2018 and 4.3% in 2019.
  - Commercial spending per enrollee grew 4.6% in 2018 and 4.1% in 2019.

- **Affordability for individuals and families is worsening.**
  - Health care spending increases from 2017-9 **outpaced wage increases.**
  - Health care spending absorbs **more than 1/4th of all earnings** for one-third of middle-class families (up from 28%).
  - Nearly 1 in 3 lower income residents with commercial coverage **avoided care due to cost** in 2019.

According to a 2021 survey of Massachusetts adults:

- 51% experienced any affordability burden
- 46% delayed or skipped care due to cost
- 26% struggled to pay medical bills
- Affordability burdens were much higher for Black (75%) and Hispanic (68%) residents

HPC

Massachusetts Health Policy Commission 2021 Annual Cost Trends Report
Altarum Healthcare Value Hub, Data Brief 97, September 2021," Massachusetts Residents Struggle to Afford High Healthcare Costs; Worry About Affording Care, Leading to Support for Government Actions to Address High Healthcare Costs"

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HPC 2021 Policy Recommendations

AREAS OF FOCUS

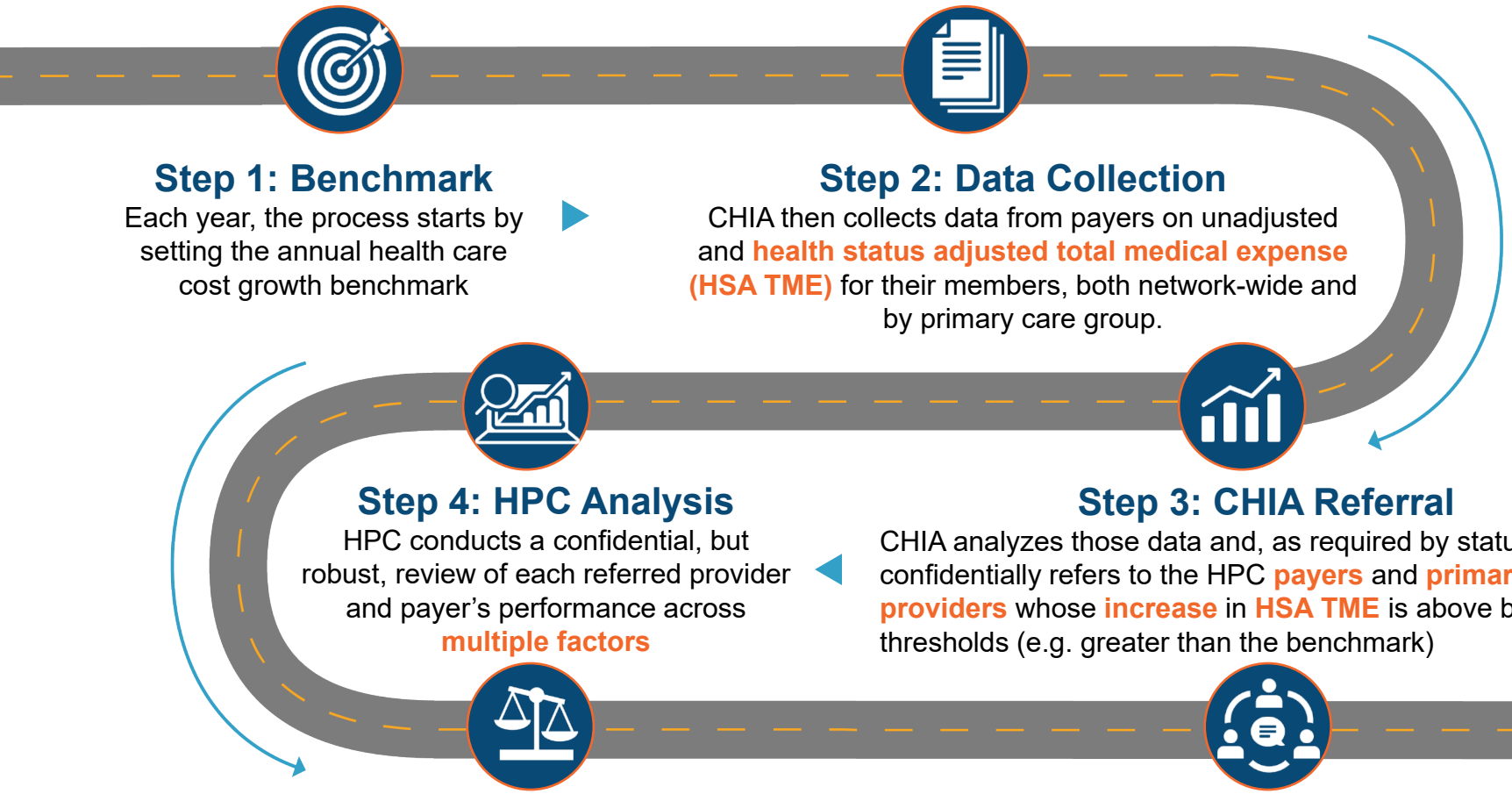
1	2	3	4	5
Strengthen Accountability for Excessive Spending	Constrain Excessive Provider Prices	Make Health Plans Accountable for Affordability	Advance Health Equity for All	Implement Targeted Strategies and Policies

1 **Strengthen Accountability for Excessive Spending.** Strengthen the mechanisms for holding providers, payers, and other health care actors responsible for spending performance by improving the metrics used in the annual performance improvement plan (PIP) process, increasing financial penalties for above-benchmark spending or non-compliance, and considering additional tools to reflect and respond to underlying variation in the relative level of provider prices.

Recommendation 1: Strengthening Accountability for the Benchmark

1. PIPs Process and Limitations
2. Impact of Increased Coding Intensity
3. Improving Accountability

Accountability for the Health Care Cost Growth Benchmark: An Overview



Step 1: Benchmark

Each year, the process starts by setting the annual health care cost growth benchmark

Step 2: Data Collection

CHIA then collects data from payers on unadjusted and **health status adjusted total medical expense (HSA TME)** for their members, both network-wide and by primary care group.

Step 3: CHIA Referral

CHIA analyzes those data and, as required by statute, confidentially refers to the HPC **payers** and **primary care providers** whose **increase** in **HSA TME** is above bright line thresholds (e.g. greater than the benchmark)

Step 4: HPC Analysis

HPC conducts a confidential, but robust, review of each referred provider and payer's performance across **multiple factors**

Step 5: Decision to Require a PIP

After reviewing all available information, including confidential information from payers and providers under review, the **HPC Board votes** to require a PIP if it identifies significant concerns and finds that a PIP could result in meaningful, cost-saving reforms. The entity's identity is public once a PIP is required.

Step 6: PIP Implementation

The payer or provider must propose the PIP and is subject to **ongoing monitoring** by the HPC during the **18-month implementation**. A fine of up to than $500,000 can be assessed as a last resort in certain circumstances.

HPC

Accountability for the Health Care Cost Growth Benchmark: CHIA Referral

CHIA is required by statute to refer providers and payers to the HPC based on an **increase** in **health-status adjusted total medical expense (HSA TME)**.

- Total medical expense (TME) is a measure of **all medical spending** (rx, hospital, physician office visits, etc.) **for a group of patients.** Provider TME reflects all spending by the provider's *primary care patients*, regardless of where the spending occurred.
- Health status adjusted (HSA) means that the spending figures are then **adjusted** based on demographic information and health conditions in patients' medical records **to reflect the health status** of the population.
- HSA TME exists only for **payers** and **primary care providers**. It does not exist for other provider types (e.g., hospitals)
- CHIA has created **two bright line thresholds** for referral to the HPC:
  1. HSA TME growth ≥ the benchmark; OR
  2. HSA TME growth ≥ 85% of the benchmark if the payer or provider is large (≥ 2% of statewide member months) and has either high unadjusted growth (≥ the benchmark) or, for providers, a high baseline level of spending (≥ the 75th percentile).

High unadjusted spending growth, a high spending level, or high prices (which can impact other entities' TME and statewide THCE) alone **do not trigger referral**.

Reflecting on Five Years of Accountability Under the PIPs Process: Strengths and Limitations

Strengths

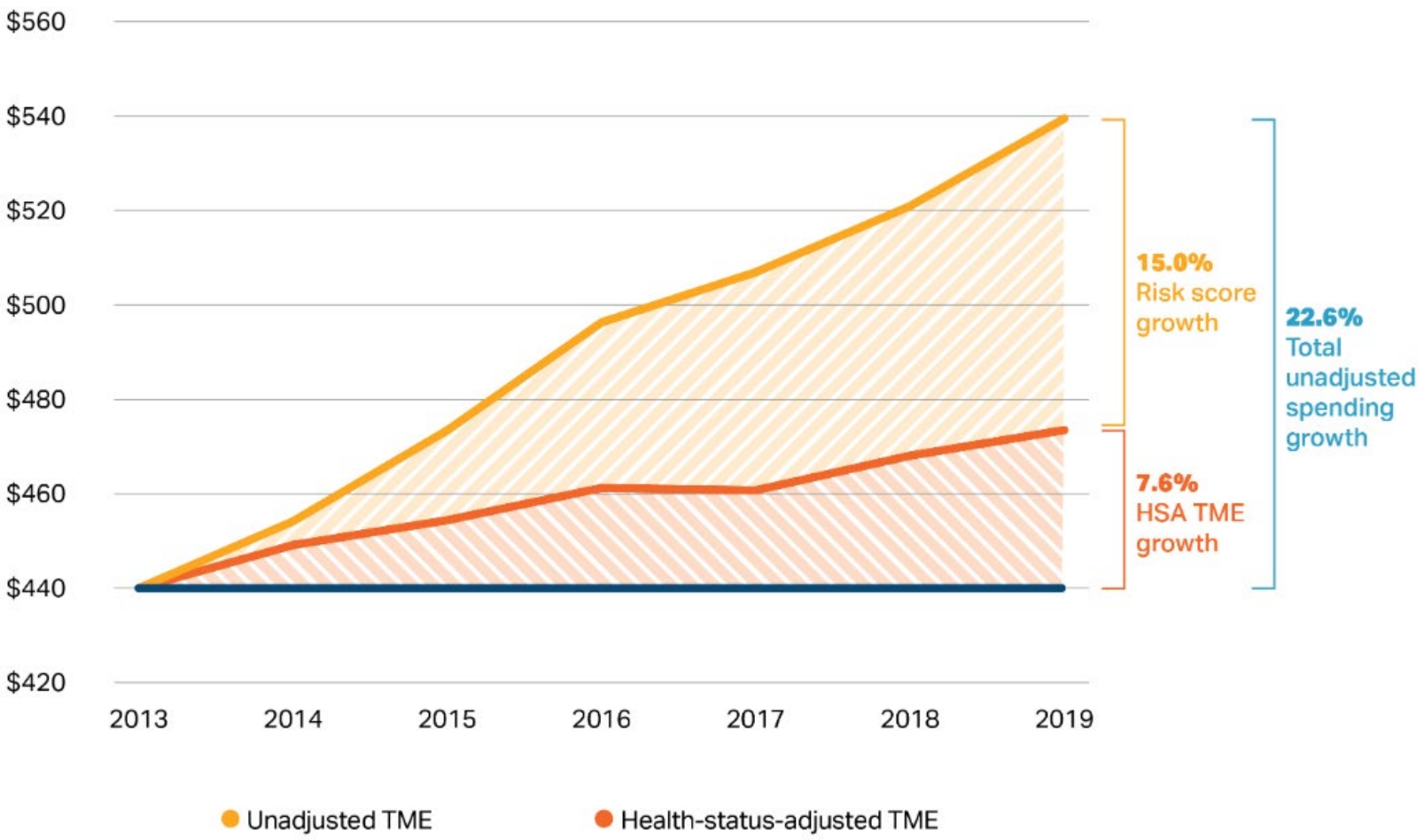
- The CHIA and HPC processes are **well-coordinated**.
- HPC's review of individual payer and provider performance has been effective in distinguishing between factors that are more **within their control** (e.g., prices) and those that are **unexpected or outside of their control** (enrollment changes, new high-cost drugs, COVID).
- Payers and providers have **appreciated the greater insight** into their own performance.
- Payers and providers have been **willing to work with HPC** on an ongoing basis to address spending trends, even without a public PIP.

Limitations

- By statute, PIP referrals must be based on **increases** in **HSA TME**, but:
  - Health status adjustment is impacted by medical coding changes, **masking spending growth** for many entities; and
  - Entities with **high spending *levels*** or providers with **high *prices*** that impact other entities' TME and statewide THCE may not be referred.
- Under the statute, **only payers and primary care providers** can be referred and subject to a PIP.
  - Providers are only accountable for their **primary care patients'** spending (not, e.g., hospital spending for patients with outside PCPs) .
- **Penalties are low** and unrelated to spending levels.

HSA TME does not fully reflect spending growth: risk scores have grown 15% in 6 years, obscuring two-thirds of spending growth.

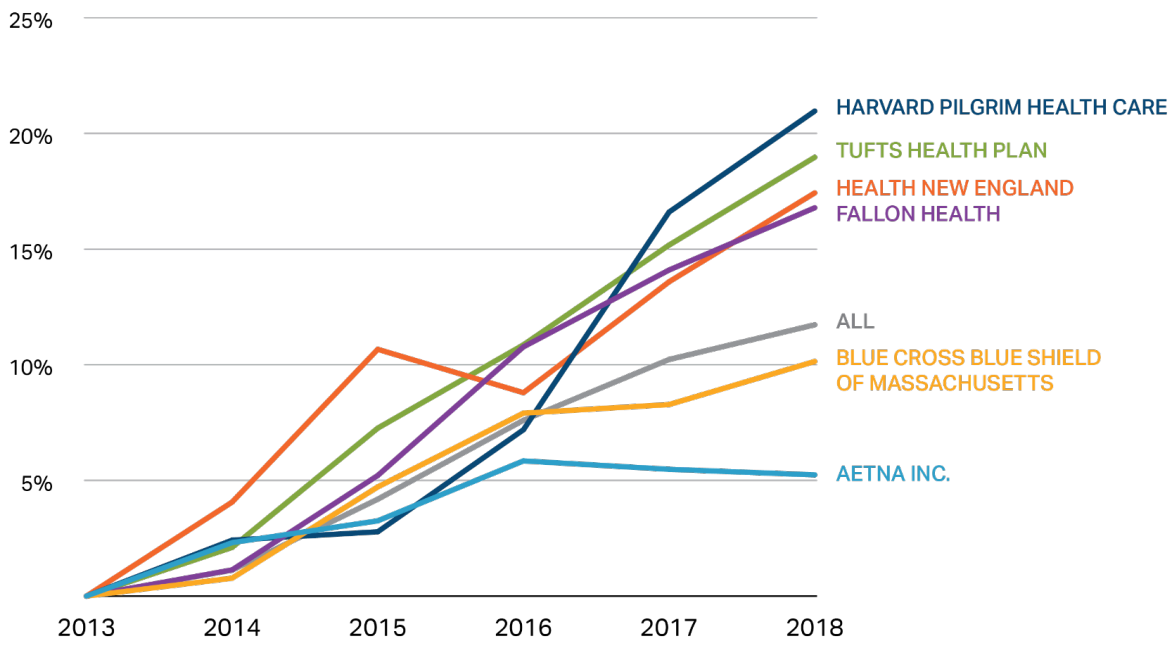
Total spending growth, risk score growth and HSA TME growth, 2013 to 2019 for Massachusetts commercial payers



Notes: United, Cigna, BMC Healthnet, Minuteman, Celticare and NHP (now Allways) excluded due to data anomalies or wide membership fluctuations
Source: Massachusetts Center for Health Information and Analysis, 2016 and 2018 databooks.

Population health changes don't explain risk score growth.

Change in average risk score for all members, by payer, 2013-2018



- Changes in the age-sex mix of the commercial population explains **0.5%** of the **11.7%** increase.
- **No increase** in underlying burden of chronic disease (BRFSS, 2013-6).
  - Arthritis, diabetes up
  - Asthma, COPD down
- No change in life expectancy.

The growth of risk scores from 2013-2018 is equivalent to **430,000** more privately-insured Massachusetts residents with complex diabetes or **920,000** more residents with cerebral palsy.

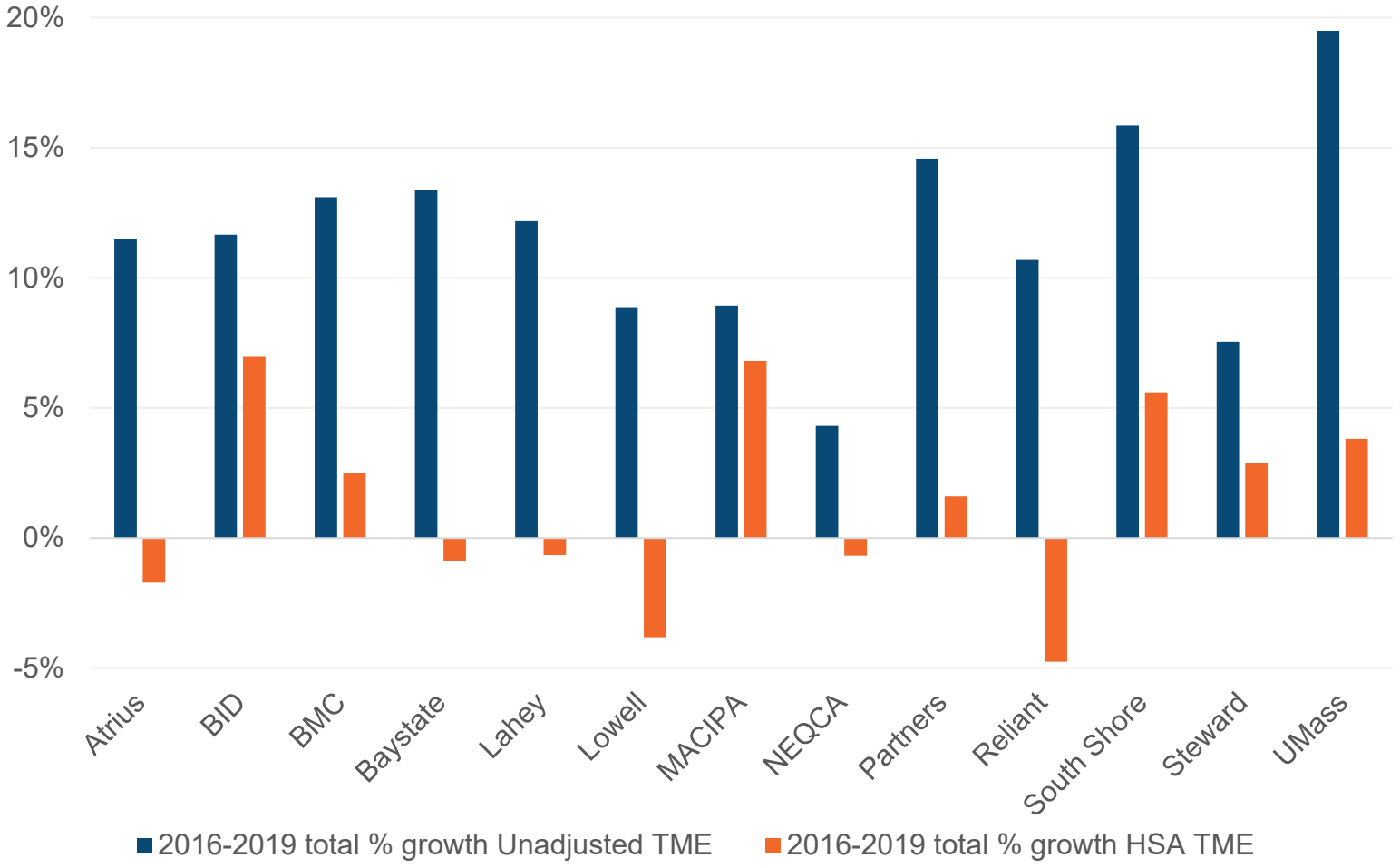
Notes: Risk scores normalized to 1.0 in 2013. United, Cigna, BMC Healthnet, Minuteman, NHP and Celticare excluded due to data anomalies or fluctuating membership.

Sources: CHIA TME databooks, 2016 and 2018. Federal Register vol 78 no. 47 March 11, 2013, Adult Risk Adjustment Model Factors. Burden of chronic disease analyzed using the CDC's BRFSS survey; rates of arthritis and diabetes among Massachusetts residents increased while COPD and asthma decreased from 2013 to 2016. Life expectancy was unchanged. Impact of population aging assessed using insurer demographic data combined with age/sex/spending profiles from the APCD.

HPC

HSA TME growth was below unadjusted TME growth for all major provider groups from 2016-2019.

Percentage increase in unadjusted and health-status adjusted (HSA) TME by provider group for attributed BCBS members, 2016-9

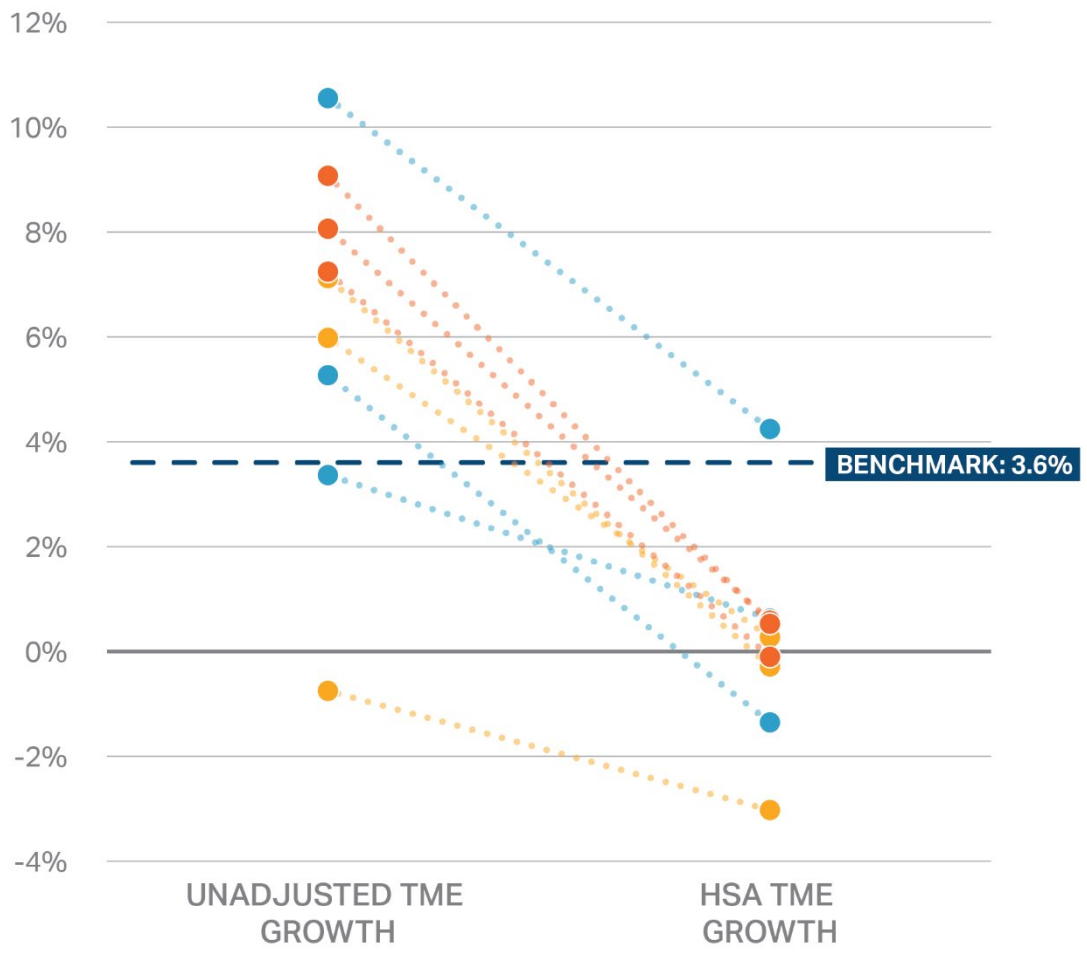


Notes: PPO members are included only where assigned to a provider organization through a PCP. Only commercial members covered by Blue Cross Blue Shield of Massachusetts (BCBSMA) are included and provider organizations are excluded if the total number of member months across these payers is below 100,000 in any of 2016-2019. Sources: HPC analysis of Center for Health Information and Analysis TME databooks. Data for 2017-9 are based on CHIA's 2021 Annual Report. Data for 2016 are based on CHIA's 2019 Annual Report and are included by computing the percentage growth in TME from 2016 to 2017 in the 2019 Annual report applied to the 2017 values in the 2021 Annual Report to preserve within-databook consistency.

HPC

Most entities with unadjusted TME growth over the benchmark have HSA TME growth below the benchmark and are not referred.

Percentage increase in unadjusted vs. health-status adjusted (HSA) TME for three large provider groups and the three major payers.



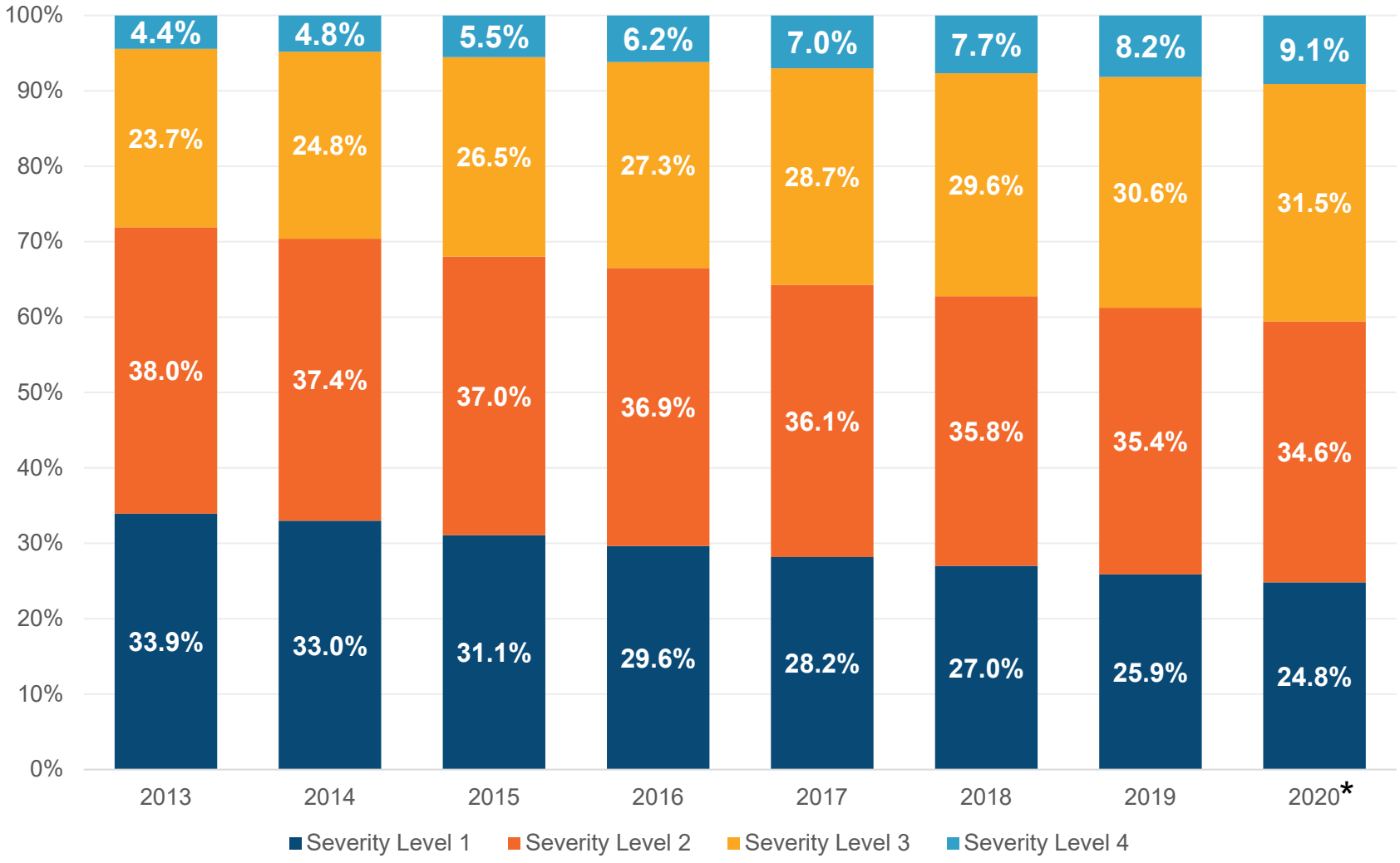
For example, in one year, among 71 payer-provider contracts, unadjusted TME growth exceeded the benchmark for 47 (66%), but only 17 (24%) had HSA TME growth that exceeded the benchmark, triggering referral.

The chart on the left shows this dynamic for a representative subset of providers and payers.

Notes: The number of referred contracts shown on this slide may not reflect the actual number of referrals as CHIA refers some contracts or books of business with HSA TME growth below 3.6% in accordance with its published referral methodology.
Sources: Center for Health Information Analysis

Hospital admissions continue to be coded at increasingly higher severity levels.

Change in number of hospital admissions at each severity/complications level, 2013-2020

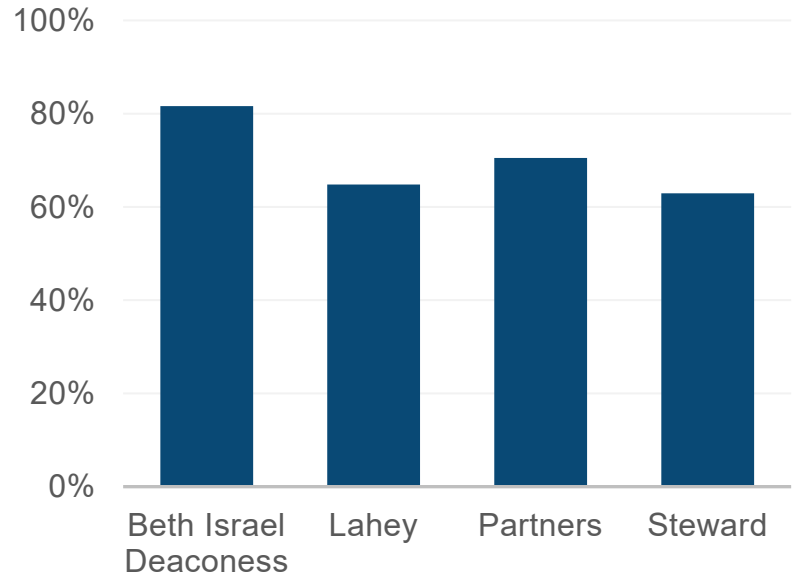


Notes: APR-DRG Level 1 is least severe and Level 4 is most severe. *COVID hospitalizations have been excluded from 2020 data.
Sources: CHIA HIDD Acute Case-mix Database, 2013-2020; MS-DRG classification system, APR-DRG classification system

By statute, only part of the health care system is held accountable for controlling spending growth, and tools to reduce spending are limited.

- By statute, only **payers** and **primary care providers** are accountable for spending growth.
- Providers are only accountable for their **primary care patients' spending**
  - For example, hospitals are not accountable for their patients' spending if those patients have outside PCPs, and the majority of discharges at major hospital systems in Massachusetts are for patients with PCPs outside of the system.
  - If higher-priced hospitals **raise prices** or **increase volume** from patients with outside PCPs, there is limited impact on their own TME growth.

Percent of Discharges at System Hospitals among patients with a Non-System PCP
BCBS Commercial, 2016



- By statute, the maximum penalty that any entity can receive for non-compliance with the PIPs process is **$500,000**, which may be far below an entity's contribution to spending growth.
- The PIPs process is unable to directly address another of the major drivers of health care spending in the state – provider prices.

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Strengthen Accountability for Excessive Spending	**Constrain Excessive Provider Prices**	Make Health Plans Accountable for Affordability	Advance Health Equity for All	Implement Targeted Strategies and Policies

2 Constrain Excessive Provider Prices. Since prices continue to be a primary driver of health care spending growth in Massachusetts and divert resources away from smaller, community providers, the HPC recommends the following actions:

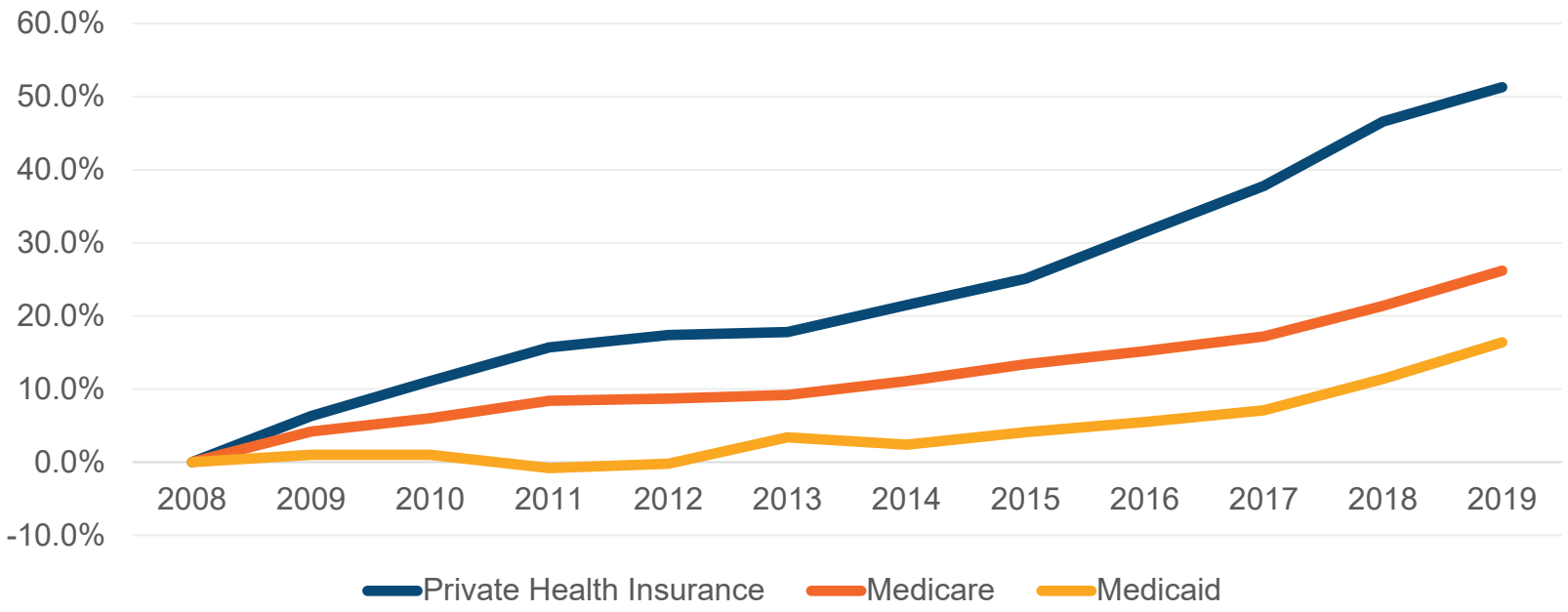
a. **Establish Price Caps for the Highest Priced Providers in Massachusetts.** As a complement to the statewide benchmark, cap prices for the highest priced providers (i.e., limiting the highest, service-specific commercial prices with the greatest impact on spending) and limit price growth (e.g., limiting annual service-, insurer-, and provider-specific price growth) to reduce unwarranted price variation and promote equity.

Recommendation 2: Constraining Excessive Provider Prices

1. Hospital Prices as Key Cost Driver
2. Activity in Rhode Island and Other States
3. Constraining Prices in Massachusetts
4. Next Steps

Private health insurance spending is growing faster than Medicare and Medicaid, largely due to price increases.

Cumulative growth in spending per enrollee by type of coverage since 2008; National Health Expenditures



- Commercial spending per hospital stay grew 14% from 2015 to 2018 compared to 6% for Medicare.
- Commercial spending growth per hospital stay is mostly driven by **facility spending** growth.
  - Inpatient: facility prices grew 42%; physician prices grew 18% (2007-2014)
  - Outpatient: facility prices grew 25%; physician prices grew 6% (2007-2014)

HPC

Cooper, Z., Craig, S., Gaynor, M., Harish, N. J., Krumholz, H. M., & Van Reenen, J. (2019). Hospital prices grew substantially faster than physician prices for hospital-based care in 2007–14. Health Affairs, 38(2), 184-189; Peterson-KFF Health System Tracker: https://www.healthsystemtracker.org/chart-collection/u-s-spending-healthcare-changed-time/#item-start

There are increasing calls for constraining provider prices from the policy and academic community.

"While the United States will likely continue to rely largely on markets to allocate health-care resources, overall market forces have not been sufficient to contain commercial provider prices."

- Chernew ME, Dafny LS, Pany MJ. "A Proposal to Cap Provider Prices and Price Growth in the Commercial Health Care Market." The Hamilton Project, March 2020

The Hamilton Project's Proposed Approach

Three-pronged approach

- Set **rate caps** to limit prices for health care services *at the very top of the commercial price distribution*
  - Propose setting the cap at five times the 20th percentile of the market's truncated commercial price distribution
- Annual **price growth caps** specific to each insurer-provider-service combination to reduce (but not eliminate) price growth and provider price variation
- Flexible **government oversight** to address potential evasion

Committee for a Responsible Federal Budget: Estimates a commercial hospital price cap at 200% of Medicare rates would reduce commercial premiums by $889B (6%) and cost-sharing by $99 billion nationally (2%) over 10 years.

HPC

Chernew, Dafny, Pany. The Hamilton Project proposal: Chernew ME, Dafny LS, Pany MJ. "A Proposal to Cap Provider Prices and Price Growth in the Commercial Health Care Market." The Hamilton Project, March 202. Available at: https://www.hamiltonproject.org/assets/files/CDP_PP_WEB_FINAL.pdf. Committee for a Responsible Federal Budget. Health Savers Initiative: Capping Hospital Prices. Available at: Final_Capping Hospital Prices_022221 (crfb.org)

Rhode Island was the first state to cap hospital prices (excluding Maryland), but many states have now followed their lead.

Montana (2016)	▪ **Cap on state employee health plan payments** for inpatient and outpatient hospital services (*average price of all services at hospital*): Payments limited to **234%** of Medicare rates ▪ State was able to secure all major hospitals in network, due partly to public pressure from workers and unions
Oregon (2019)	▪ **Cap on state employee health plan payments** for inpatient and outpatient hospital services (*for each service individually*): in-network services limited to **200%** of Medicare rates and out-of-network services limited to **185%** of Medicare rates
Washington (2019) Colorado (2021) Nevada (2021)	▪ Created **public options** using public-private partnerships, with plans offered through private companies (like Medicare Advantage and Medicaid MCOs) ▪ WA capped provider payments at **160%** of Medicare rates ▪ In CO, rates can't be lower than **155%** of Medicare, but the insurance commission can mandate lower rates if insurers fail to meet the premium target ▪ All three states set provider participation requirements
Delaware (2021)	▪ Department of Insurance set a **target for commercial payer aggregate unit price growth** for non-professional services (inpatient, outpatient, and other medical services) of inflation (core CPI) plus 1 percentage point ▪ Progress on achieving the target will inform, but not determine, DOI's rate review decisions

Sources: https://www.crfb.org/sites/default/files/HSI_CappingHospitalPrices.pdf; Insurance Rate Review as a Hospital Cost Containment Tool: Rhode Island's Experience – The National Academy for State Health Policy (nashp.org); States' Role in Combatting High Health Care Prices | Commonwealth Fund; How a public option for health insurance works in Colorado, Nevada, and Washington – Vox; Delaware-Health-Care-Affordability-Standards-Report-Final-03042021.pdf; Oregon Educators Benefit Board

Notes: Maryland's longstanding All-Payer Rate System is a different model, but also serves to restrain hospital prices. See Rates (maryland.gov)

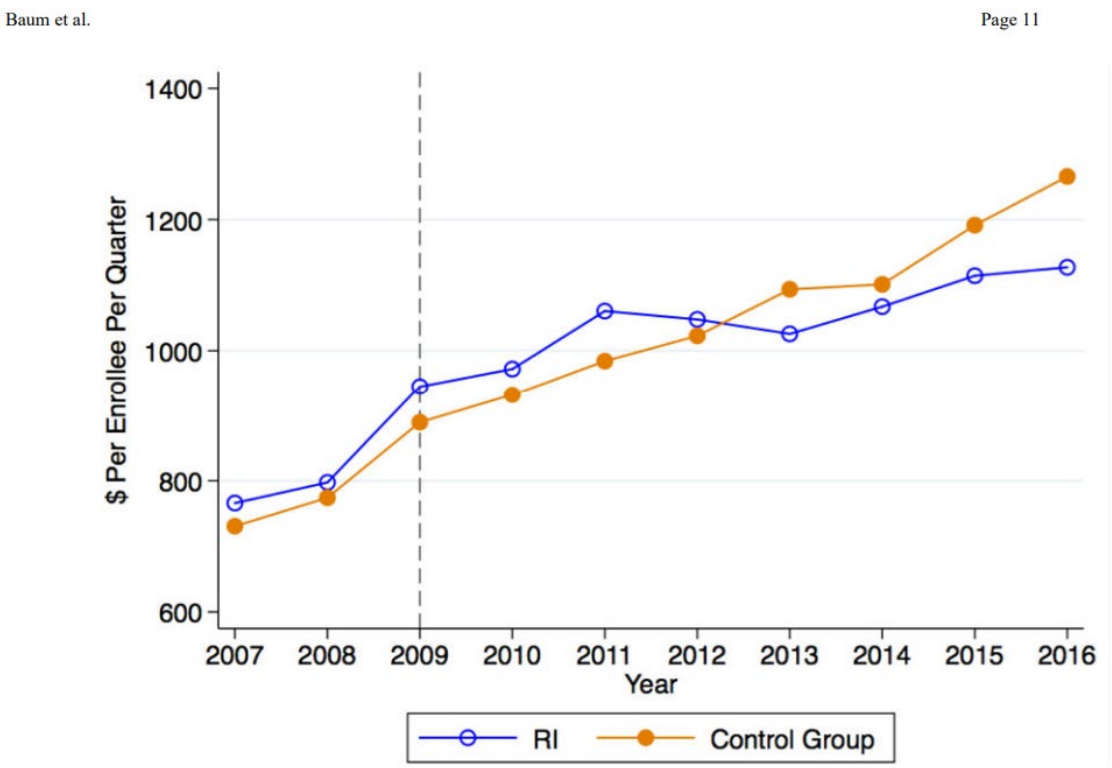
Rhode Island's Affordability Standards

- In 2009, the Rhode Island Legislature passed a package of Affordability Standards including mandated increases in the percentage of overall spending devoted to primary care and constraints on hospital price growth.
- **Hospital inpatient and outpatient price growth** from year to year was limited to Medicare's hospital update factor (later switched to CPI-U) plus one percentage point (e.g., 2.7% in 2017-8).
- Growth is measured as a given payer's **aggregate price increases** (inpatient and outpatient combined) for a given hospital.
- The limit is enforced by the Office of the Health Insurance Commissioner via the rate review process.

HPC

Notes: http://www.ohic.ri.gov/ohic-reformandpolicy-affordability.php

Rhode Island's reforms dramatically reduced spending.



- Rhode Island's spending was initially above control states.
- Spending growth declined in Rhode Island starting in 2012; spending was **15%** below control states by 2016.
- Most of the savings came via a reduction in **spending per hospital inpatient visit.**
- Cost-sharing also dropped markedly.
- Quality of care was unchanged.

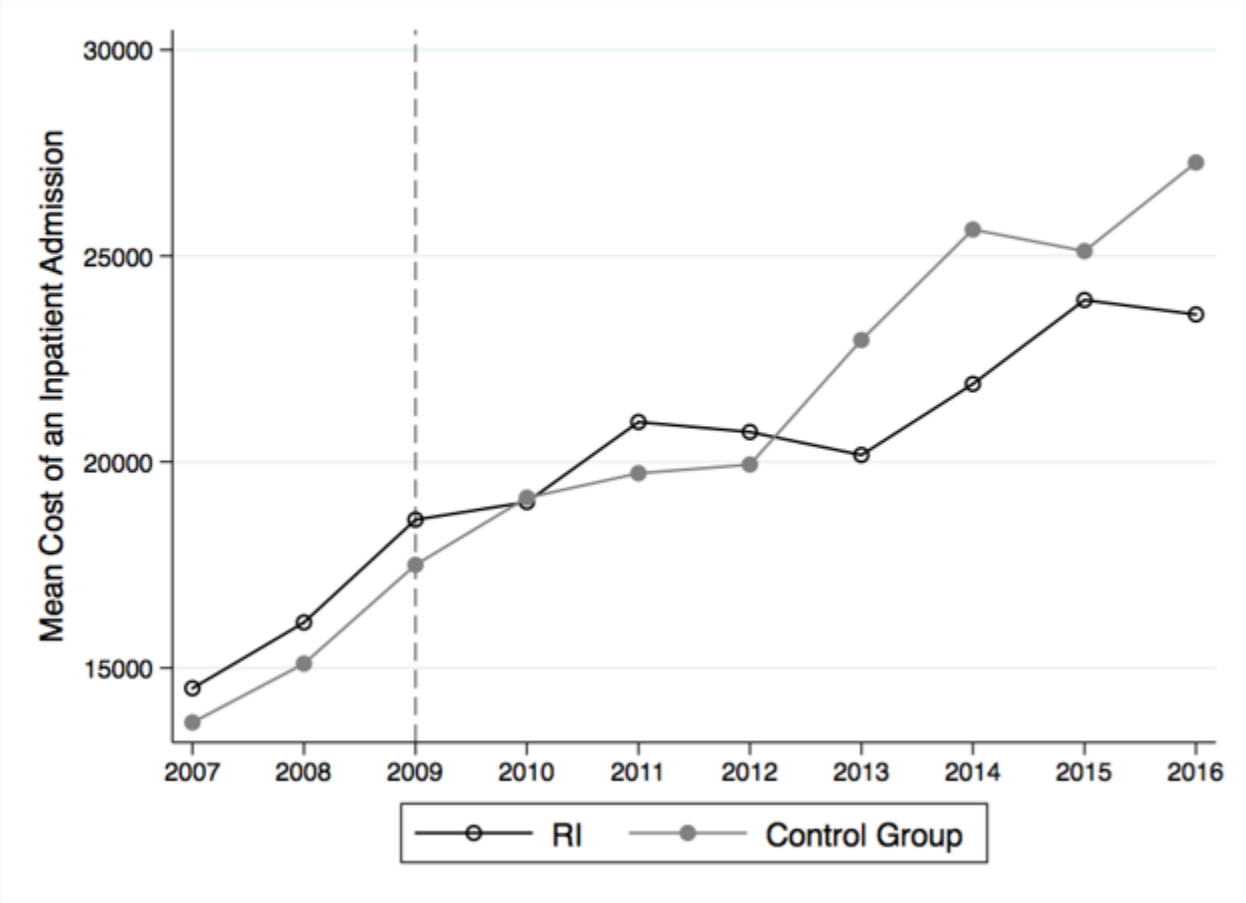
"Rhode Island's experience thus suggests that mandated price control measures may effectively leverage state regulatory power to reduce healthcare costs, particularly in areas where the market power of providers is greater than insurers."
– Baum et al. Health Affairs, 2019

HPC

Source: Baum, A., Song, Z., Landon, B. E., Phillips, R. S., Bitton, A., & Basu, S. (2019). Health care spending slowed after Rhode Island applied affordability standards to commercial insurers. Health Affairs, 38(2), 237-245.

Following reform, spending per hospital visit in RI decreased significantly.

Exhibit A9. Unadjusted Spend per Inpatient Admission in the Rhode Island Cohort and the Control Group Cohort



Source: Baum, A., Song, Z., Landon, B. E., Phillips, R. S., Bitton, A., & Basu, S. (2019). Health care spending slowed after Rhode Island applied affordability standards to commercial insurers. Health Affairs, 38(2), 237-245.

Prices (particularly hospital prices), are also the major driver of commercial spending growth in Massachusetts.

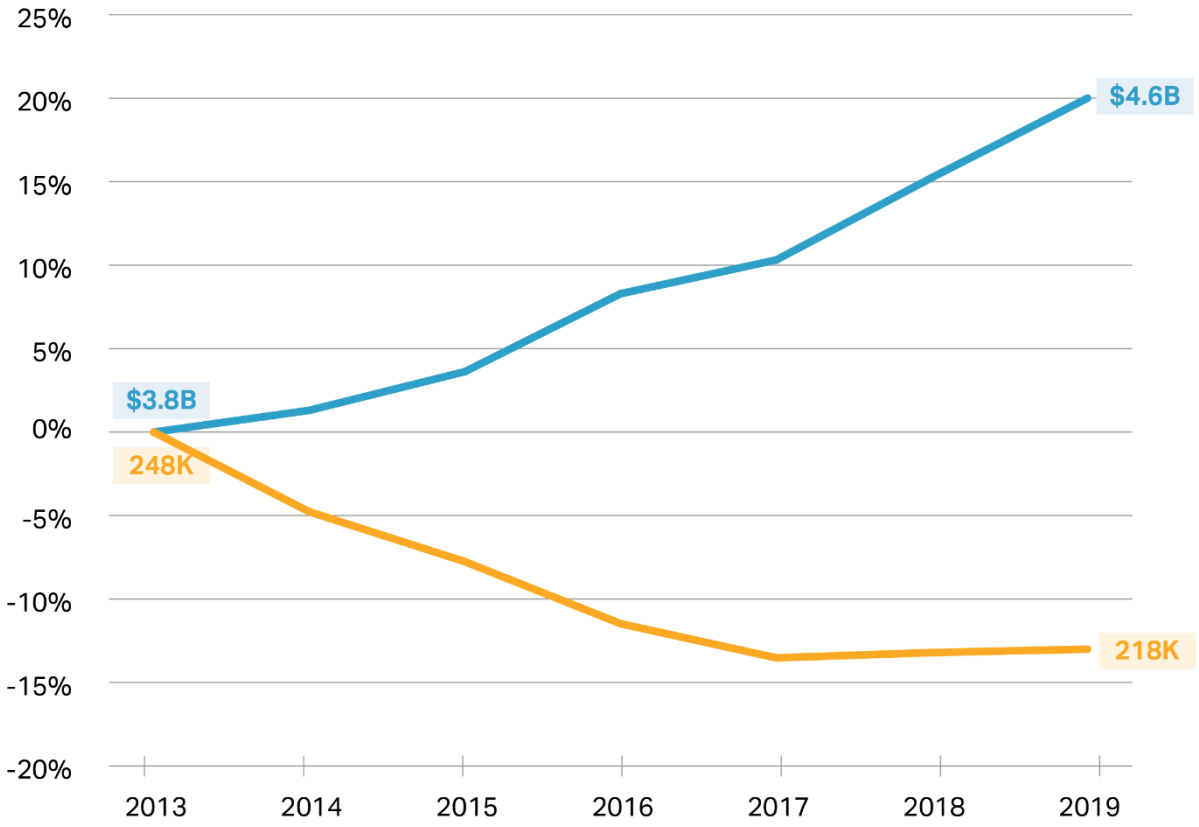
- **Massachusetts price growth overall**
  - BCBS, Tufts and HPHC all reported annual prices grew from 2015-2018 **more than twice** the rate of utilization.
  - The Health Care Cost Institute found that Massachusetts commercial health care prices grew **15.6%** from 2014-2018 while utilization grew **7.0%.**

- **Massachusetts price growth by category, 2016-8 (2021 Cost Trends Report)**
  - Hospital inpatient services: **9.1%**
  - Hospital outpatient services: **6.6%**
  - Office-based services: **4.4%**

Source: HCCI 2018 Health Care Cost and Utilizaton Report. Available at: https://healthcostinstitute.org/interactive/2018-health-care-cost-and-utilization-report
Massachusetts Health Policy Commission. 2021 Cost Trends Report. Sept. 2021. Available at: https://www.mass.gov/doc/2021-health-care-cost-trends-report/download

Commercial inpatient spending on hospital stays grew 20% even as volume declined 13% from 2013 to 2019.

Cumulative change in commercial inpatient hospital volume and spending per-enrollee (percentages) and absolute, 2013 – 2019



Spending per commercial discharge grew **38%** (5.5% annually), from **$15,100 to $20,900,** from 2013 to 2019

5.5% growth in price per discharge has been divided roughly evenly between **price increases** and **acuity increases.**

Notes: Data points indicate % growth from previous year (2013=0). Volume data correspond to fiscal years while spending data are calendar years.

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

How do hospital price increases in Massachusetts compare to Rhode Island's growth cap?

- Rhode Island limit on payer-hospital level (inpatient and outpatient combined) facility price growth from 2017-8: **2.7%**

For comparison:

- Massachusetts aggregate **hospital inpatient** price growth 2017-2018:
  - Facility and professional combined: **4.2%** growth
  - Facility only: **4.5%** growth

- Massachusetts aggregate **hospital outpatient** (HOPD) price growth 2017-2018:
  - Facility and professional combined: **2.9%** growth
  - Facility only: **3.2%** growth

Note: these are retrospective price growth estimates versus prospective rate increases

Notes: RI allowed amount of price growth can be found here:http://www.ohic.ri.gov/ohic-reformandpolicy-affordability.php.
Inpatient payment growth includes both facility and professional claims for an inpatient stay. Inpatient stays were identified by MS-DRG. Hospital outpatient price growth is computed at the level of the procedure code encounter. Encounters are defined as the same person, same date of service, same procedure code. Overall average percent price growth for inpatient and HOPD was weighted by 2018 aggregate spending for the procedure code in the respective setting. This methodology is available in more detail in the 2021 Cost Trends Report.
Sources: HPC analysis of CHIA's All-Payer Claims Database v8.0

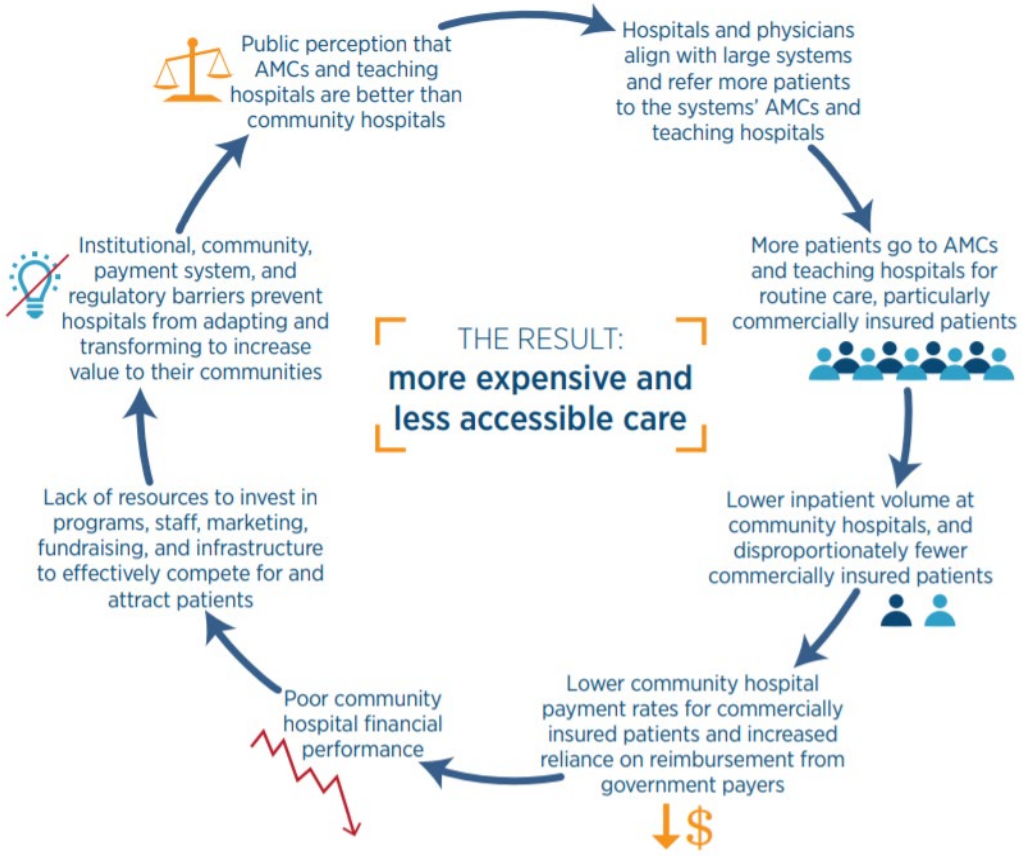
HPC

Limits on high price levels are needed as well.

"Capping prices [levels] can reduce the impact of provider market power while allowing prices to remain flexible beneath the cap. Capping price growth ensures that prices can rise to reflect a changing economy, but not at runaway speed."

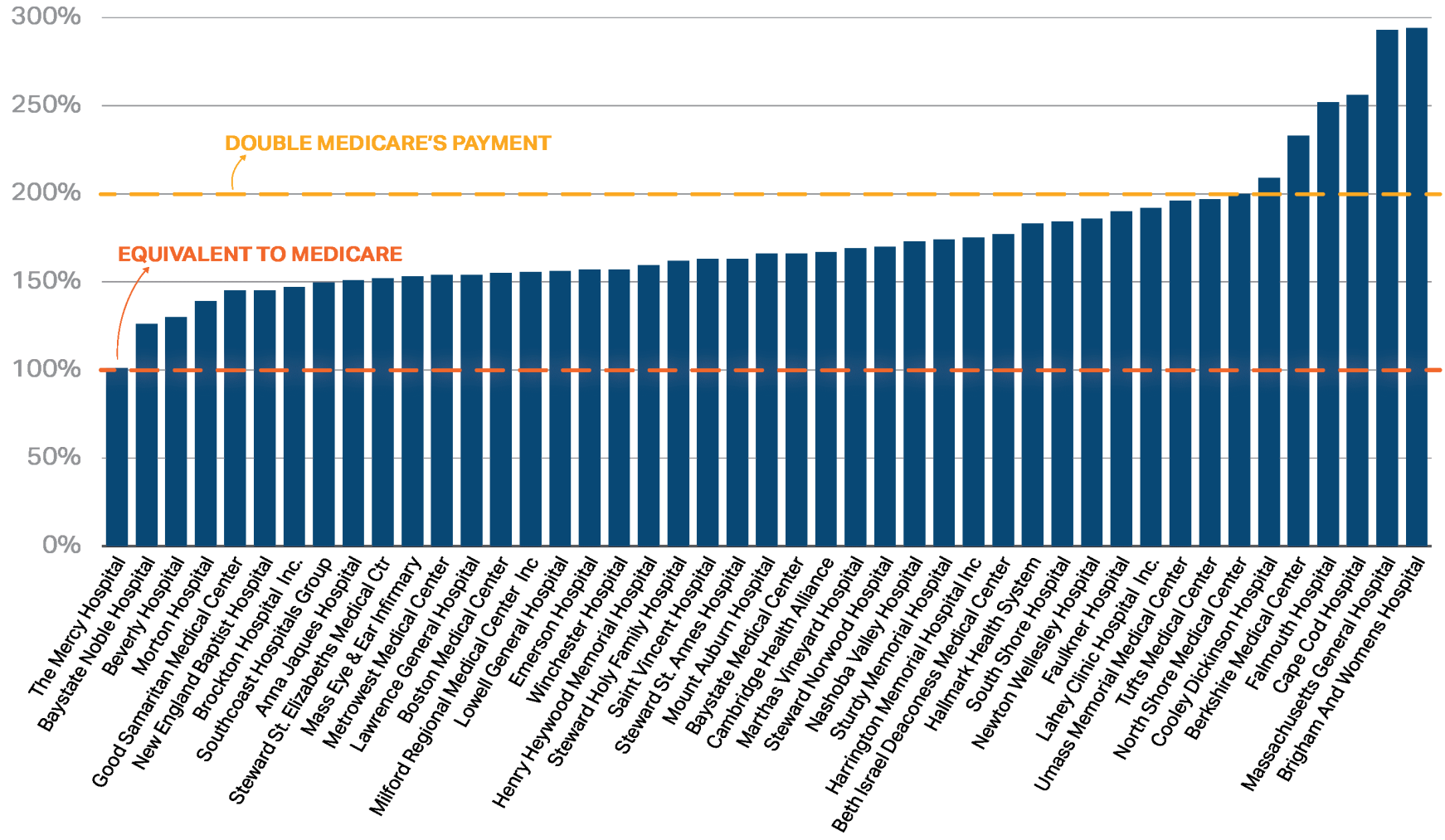
- Chernew ME, Dafny LS, Pany MJ. "A Proposal to Cap Provider Prices and Price Growth in the Commercial Health Care Market.

- **Price growth caps** are important to reduce health care spending growth, but do not address unwarranted price variation and could perpetuate a cycle that disadvantages many community hospitals.
- **Price level caps** would affect only the highest priced providers and could help mitigate these disparities.



Hospital outpatient prices vary nearly threefold by hospital.

Aggregate commercial hospital outpatient payments to hospital relative to what they would have received from Medicare, 2016-2018

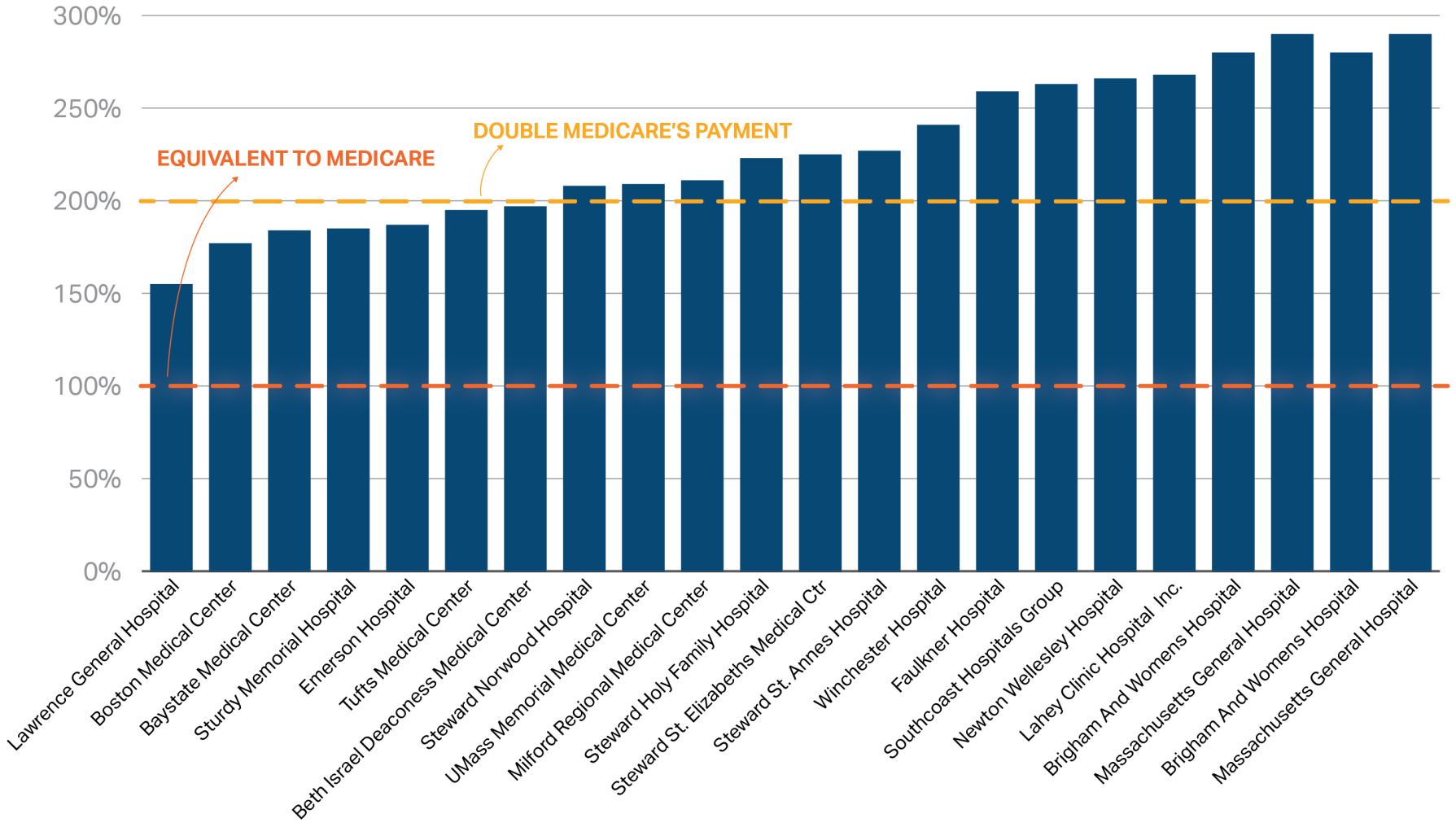


Data from supplemental data files included in the report, Nationwide Evaluation of Health Care Prices Paid by Private Health Plans: Findings from Round 3 of an Employer-Led Transparency Initiative by Christopher Whaley et al, https://www.rand.org/pubs/research_reports/RR4394.html. Data represent aggregate spending from 2016-2018. Analysis based on commercial claims-level data contributed by self-insured employers and private health plans. Authors simulated Medicare payments using 3M software that applied Medicare payment rules to claims data. Data based on more than 100,000 services provided in MA hospitals. Hospitals excluded from figure if fewer than 250 services.

HPC

Hospital inpatient prices vary twofold by hospital.

Aggregate commercial hospital inpatient payments to hospital relative to what they would have received from Medicare, 2016-2018



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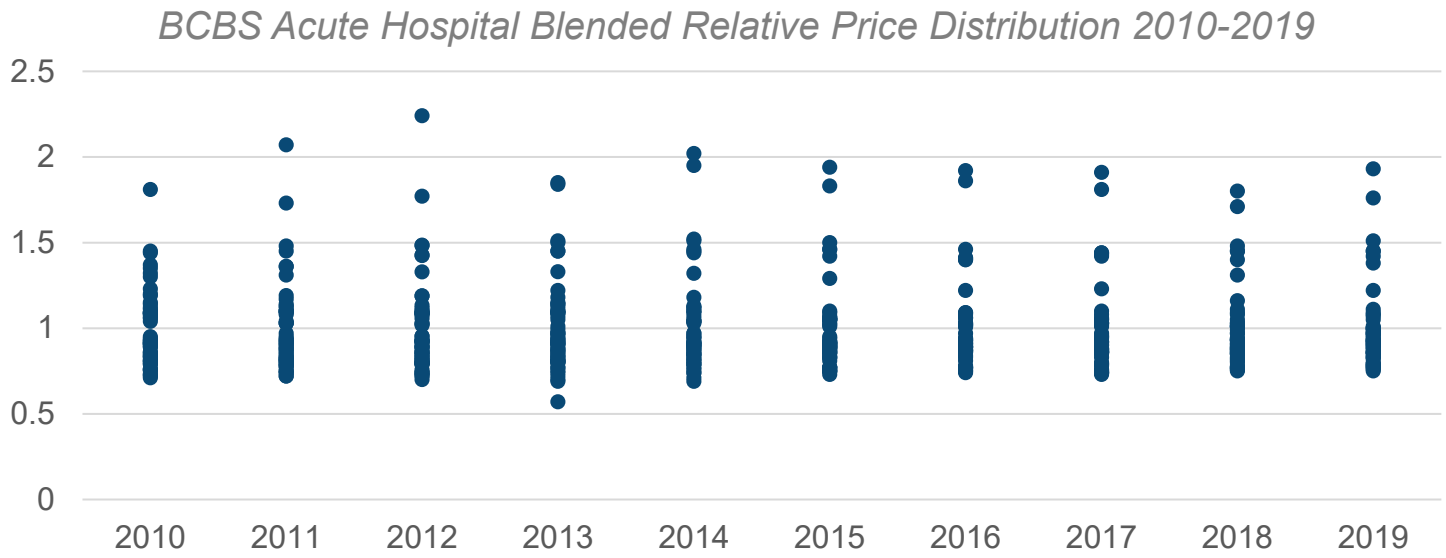
HPC

Price variation has persisted; volume and spending at high-priced providers is growing.

- The extent of price variation has not significantly diminished over time.

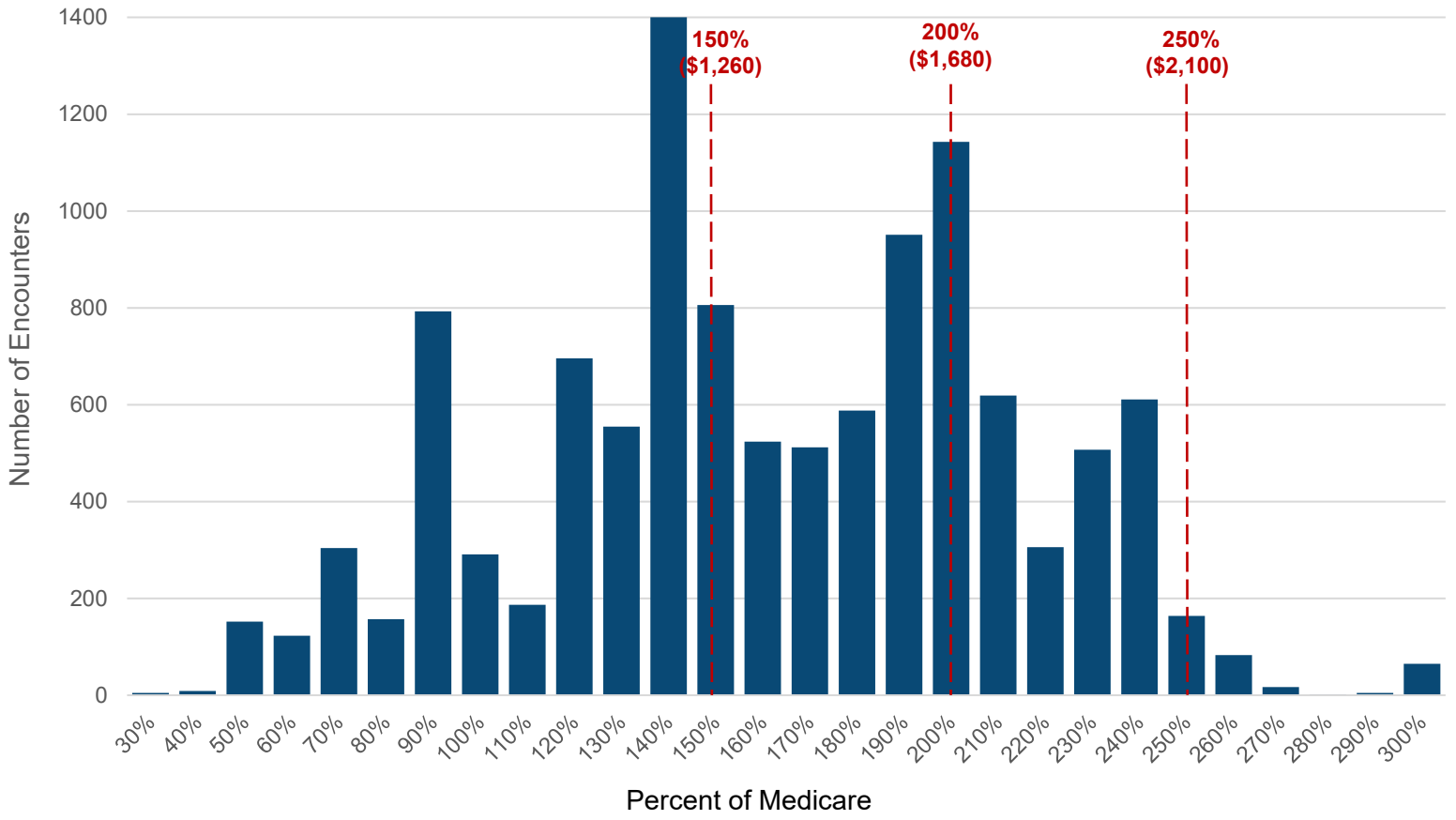


- The volume at high priced providers is growing:
  - The percentage of discharges from hospitals with prices 20% above average **grew from 23.8% in 2015 to 27.6% in 2019**.
  - The percentage of payments to hospitals in the top price quartile **grew from 51.9% in 2015 to 54.3% in 2019**

Sources: HPC analysis of data provided by the Center for Health Information and Analysis: Relative Price.

There was wide variation in colonoscopy payments in 2018, with many prices far above 200% of Medicare.

Facility price per colonoscopy encounter in Massachusetts, 2018



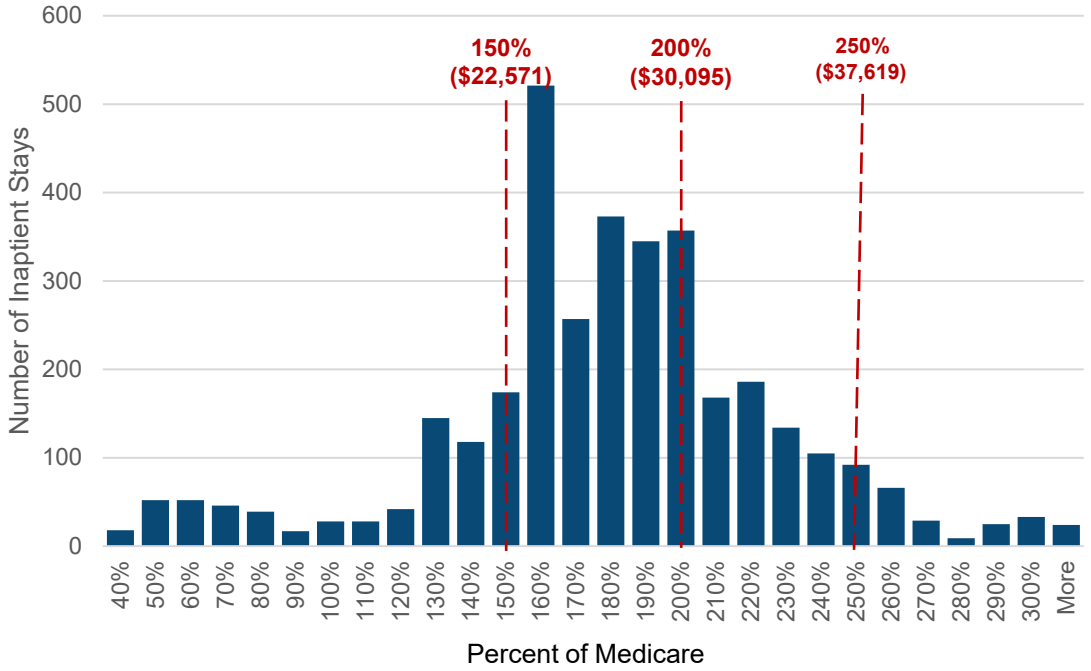
- 21.7% of encounters were paid **more than 200% of Medicare's rates**.
- Spending for these services would be **reduced by 4.8%** if prices were limited to 200% of Medicare.

Notes: The prices examined are for diagnostic colonoscopy CPT 45378. The Medicare prices represent the payment for Suffolk county. Prices are shown as percent of Medicare payment.

Sources: HPC analysis of CHIA's All-Payer Claims Database v8.0; Medicare data

There was also wide price variation for hip and knee inpatient procedures.

Facility spending per major joint replacement (DRG 470) in Massachusetts relative to Medicare base rate, 2018



- Using Medicare's base rate as a comparison (**excluding** DSH and teaching add-ons):
  - 25% of encounters were paid more than 200% of Medicare's rates.
  - Spending would be reduced by 4.8% if prices were limited to 200% of Medicare.
- Using Medicare's hospital specific rates as a comparison (**including** DSH and teaching):
  - 12% of encounters were paid more than 200% of Medicare rates.
  - Spending would be reduced by 1.7% if prices were limited to 200% of Medicare.

Notes: HPC created inpatient stay episodes and assigned an MS-DRG to each episode. All facility payments associated with an inpatient stay for MS-DRG 470 were included in the facility spending for a given service. Spending is shown as a percent of Medicare's base rate.

Sources: HPC analysis of CHIA's All-Payer Claims Database v8.0; Medicare data

Options for Setting Price Benchmarks

- The Hamilton Project's Proposed Approach uses a benchmark based on **private rates** (5 times the 20th percentile of the distribution* of private prices).
  - A private rate-based benchmark would be more influenced by local market conditions
- Many states use **Medicare-based benchmarks.**
  - Medicare hospital payments are designed to be consistent with an efficient hospital's costs.
    - For efficient hospitals in 2019, Medicare paid 1% below their cost
    - For other hospitals in 2019, Medicare paid 7% below their cost

Thus, a payment benchmark of 200% of Medicare is providing a 90+% markup over cost for an average hospital.

  - Medicare spending growth is consistent with the Massachusetts benchmark.
  - In Massachusetts, from 2016 to 2019:
    - Commercial spending per enrollee grew **3.7%** per year
    - Medicare spending per enrollee grew **2.4%**

HPC

MedPAC report to the Congress, March 2021.
*In some cases, the distribution would first be truncated to remove high-cost outliers.

Next Steps

1. Further research and development of spending measures that are less influenced by changes in coding intensity, and further documentation of coding trends.

2. Further exploration of the implications of different price benchmarks, including both savings estimates and distributional impacts (which providers, impacts on health equity).

3. Further research on how to implement growth and level price caps (e.g., different levels of aggregation – hospital-wide average or service-specific).

MASSACHUSETTS
HEALTH POLICY COMMISSION

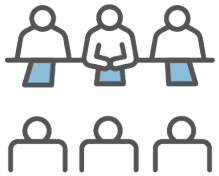
AGENDA

- Call to Order
- Approval of Minutes from June 2, 2021 **(VOTE)**
- Report Findings: *Children with Medical Complexity in the Commonwealth*
- HPC 2021 Policy Recommendations
- **Schedule of Upcoming Meetings**

2021 Meetings and Contact Information

BOARD MEETING

December 14



ADVISORY COUNCIL

December 8

COST TRENDS

November 17

Mass.gov/HPC

@Mass_HPC

HPC-info@mass.gov

HPC

MASSACHUSETTS
HEALTH POLICY COMMISSION

Appendix

Detail on Identifying Children with Medical Complexity

- Identified CMC in claims and discharge data using a combination of diagnoses and utilization

- The Pediatric Medical Complexity Algorithm[1] is a diagnosis code-based tool to identify CMC in administrative data, using medical, mental, and behavioral diagnoses to flag individuals under 22 years old as having *non-chronic*, *non-complex chronic*, or *complex chronic* conditions
  - Healthy individuals with utilization but no diagnoses (e.g., well visits) are flagged as *non-chronic*

- The PMCA flags medical complexity using a more- and less-conservative definition of complexity, based on the number of claims per body system of diagnosis for at least two body systems. Less-conservative flags with at least one claim, more-conservative flags with at least two

- However, diagnosis codes alone may inaccurately flag largely asymptomatic children as CMC while omitting CMC without clear diagnoses[2,3]
  - Diagnoses alone do not account for health service needs or functional impairments
  - Diagnoses exclude individuals whose conditions are not defined by clear diagnoses or who have trouble accessing needed care

- Identifying CMC in the APCD:
  - Refined the *complex chronic* and *non-complex chronic* cohorts flagged with the less-conservative definition to flag individuals with multiple years in the top 10% of spending, any inpatient utilization, ≥2 months home health spending, or ≥2 types of DME or supplies as CMC
- Identifying CMC in the Hospital Inpatient and Emergency Department Discharge Databases:
  - Treated discharges flagged by the PMCA with the less-conservative as *complex chronic* as equivalent to CMC

1 Simon TD, Cawthon ML, Stanford S, Popalisky J, Lyons D, Woodcox P, Hood M, Chen, AY, Mangione-Smith R. Pediatric Medical Complexity Algorithm: A New Method to Stratify Children by Medical Complexity. Pediatrics. 2014; 133(6): e1647-e1654.

2 Cohen E, Kuo DZ, Agrawal R, Berry JG, Bhagat SKM, Simon TD, Srivastava R. Children With Medical Complexity: An Emerging Population for Clinical and Research Initiatives. Pediatrics. 2011; 127(3): 529-538.

3 Reuland CP, Collins J, Chiang L, Stewart V, Cochran AC, Coon CW, Shinde D, Harguani D. Oregon's approach to leveraging system-level data to guide a social determinants of health-informed approach to children's healthcare. BMJ Innovations. 2020; 7(1): 1-8.

Commercially-insured CMC and non-CMC and Medical Spending per Member per Year by Provider Organization, 2018

	Non-CMC	CMC	Non-CMC spending (Mean)	CMC spending (Mean)	CMC spending (Median)	Percent CMC
Acton Medical Associates	1851	66	$1655	$24610	$12080	3.4%
Atrius	21741	1010	$1543	$30192	$13479	4.4%
BIDCO	4838	220	$1644	$27380	$14265	4.3%
BMC	2922	85	$1452	$31891	$16242	2.8%
Baystate	5837	220	$1343	$28927	$14829	3.6%
Children's Medical Center Corporation	42552	2434	$1834	$31599	$14145	5.4%
Lahey	6365	263	$1671	$28993	$15951	4.0%
MACIPA	2359	94	$1713	$28118	$13243	3.8%
Other	2089	93	$1642	$30756	$13185	4.3%
Partners	31011	1553	$1872	$28798	$14121	4.8%
Reliant	5434	224	$1518	$30020	$16191	4.0%
South Shore	4509	220	$1739	$29075	$13616	4.7%
Southcoast	1093	42	$1474	$22189	$14027	3.7%
Steward	13418	574	$1647	$34651	$13435	4.1%
Sturdy Memorial Foundation	1002	32	$1696	$21788	$12973	3.1%
UMass	9238	396	$1520	$37844	$17243	4.1%
Unattributed	10142	470	$1592	$30812	$13366	4.4%
Wellforce	23129	1005	$1658	$29349	$13908	4.2%

Notes: “Other” includes provider groups with <1000 lives in observed in 2018: Berkshire Health System, Community Care Cooperative, Franciscan Hospital for Children, Lawrence, Milford Regional Medical Center, New England Baptist Hospital, and Tenet Healthcare Corporation. Missing excluded. Mean and median spending reported for CMC due to outliers.

Source: HPC analysis of All-Payer Claims Database 8.0