

STATE-LEVEL VARIATION IN RATES OF HOSPITAL ADMISSION FOLLOWING A VISIT TO THE EMERGENCY DEPARTMENT

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INTRODUCTION AND OBJECTIVES

Hospital inpatient stays are a major driver of overall health care spending, accounting for 21% of total health care expenditures in Massachusetts in 2019.¹ Previous research has determined that 50% of these hospital admissions begin in an emergency department (ED), and that such admissions are on the rise, even as scheduled and maternity-related admissions are falling. In some cases, ED admissions are the most profitable type of admission, with ED admissions having a 30% larger contribution margin than non-ED admissions.² This growing area of research has also seen wide variation by hospital and diagnosis in admission rates following an emergency department visit. Variation in rates of admission from the ED may contribute to unnecessary utilization and expense for Massachusetts residents.

The Massachusetts Health Policy Commission (HPC) sought to assess variation in the rate by which states admitted patients from their ED. The HPC then estimated potential cost savings if Massachusetts' rate of potentially excess ED admissions looked similar to other states' rates of ED admission.

STUDY DESIGN

The HPC used the Healthcare Cost and Utilization Project Inpatient (SID) and Emergency Department (SEDD) publicly available tables and databases to capture all discharges that originated in a non-federal short-term general or specialty hospital ED. For analyses by diagnosis or payer, the HPC focused on Massachusetts and seven comparison states (MD, MN, NC, NJ, NY, VT, and OR). These states were chosen because they (1) had data for both SID and SEDD, (2) their datasets contained all the data elements needed for analyses, and (3) were representative of the range of state ED admission rates. These analyses were restricted to adult discharges only (80-85% of discharges). Discharges where the diagnosis was missing or where the patient left against medical advice or died were excluded.

1. Center for Health Information and Analysis (CHIA). *Annual Report on the Performance of the Massachusetts Health Care System* (March 2023).
 2. Henneman et al. (2008).
 3. Behavioral Risk Factor Surveillance System (BRFSS) Prevalence Data, 2021.

RESULTS

Among U.S. states, Massachusetts ranked 11th in inpatient discharges out of 35 states with complete annual data with 116.4 per 1,000 population in 2019 (**Exhibit 1**; all-ages and all-payer). This higher rate appeared to be driven by inpatient discharges that originated in an ED. **Exhibit 2** shows inpatient discharges by category. Despite Massachusetts having a lower admission rate for maternity or scheduled/urgent admissions, ED admissions were 28% higher in Massachusetts relative to the nation and were a greater share of all inpatient admissions (62% vs 54%).

When cast as the percentage of ED patients admitted for a hospital stay, Massachusetts ranked 1st with 17% of all ED visits ending in a hospital admission (**Exhibit 3**; all-ages and all-payer).

Prior HPC work has identified considerable variation by hospital in propensity to admit ED patients by diagnosis. Building on that research, this study then compared Massachusetts' admission rate from the ED to seven comparison states (MD, MN, NC, NJ, NY, VT, and OR) by diagnosis category. Among these diagnoses, Massachusetts

had a higher admission rate for 23 of 25 diagnoses with the largest difference for heart disease (**Exhibit 4**).

The HPC further investigated variation by payer. Despite similar rates for Medicaid and commercial payers, Medicare admissions from the ED were 40% higher than the comparison states' average, and a larger share of Medicare ED visits were subsequently admitted to an inpatient unit (38% vs 32%). Massachusetts also has the highest overall hospitalization rate among states' Medicare FFS populations.

It is not clear whether higher rates of ED admissions indicate excessive hospital utilization. However, Massachusetts and the comparison states have comparable prevalence on indicators of population health status, chronic disease, health insurance coverage, and physical activity.³ If Massachusetts had admitted patients from the ED at the same rate as the comparison states, this would have resulted in 9.3% fewer adult inpatient hospitalizations in 2019 (from 708,367 down to 642,723 inpatient discharges).

Exhibit 1. Inpatient discharge rate per 1,000, all ages, 35 states, 2019

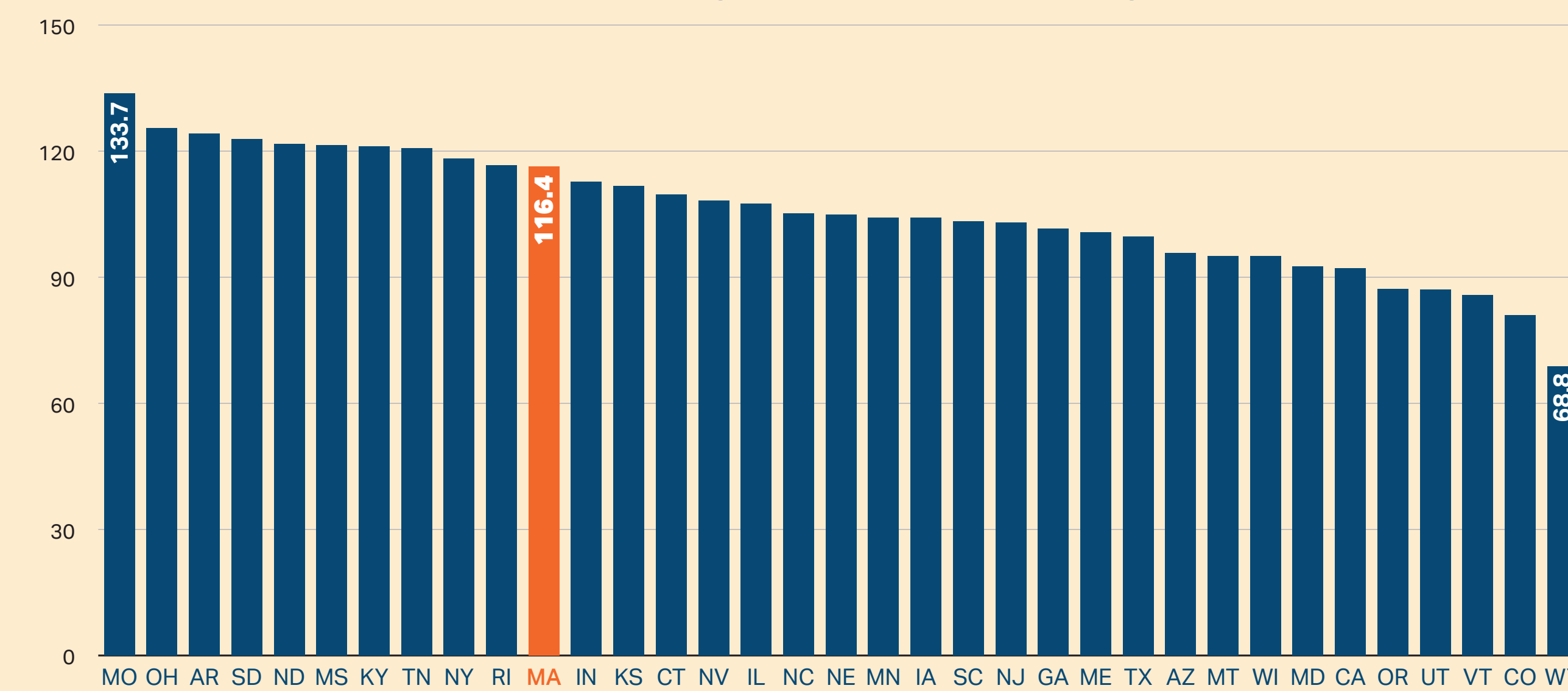


Exhibit 2. Inpatient discharges per 1,000 population by category, all ages, 35 states, 2019

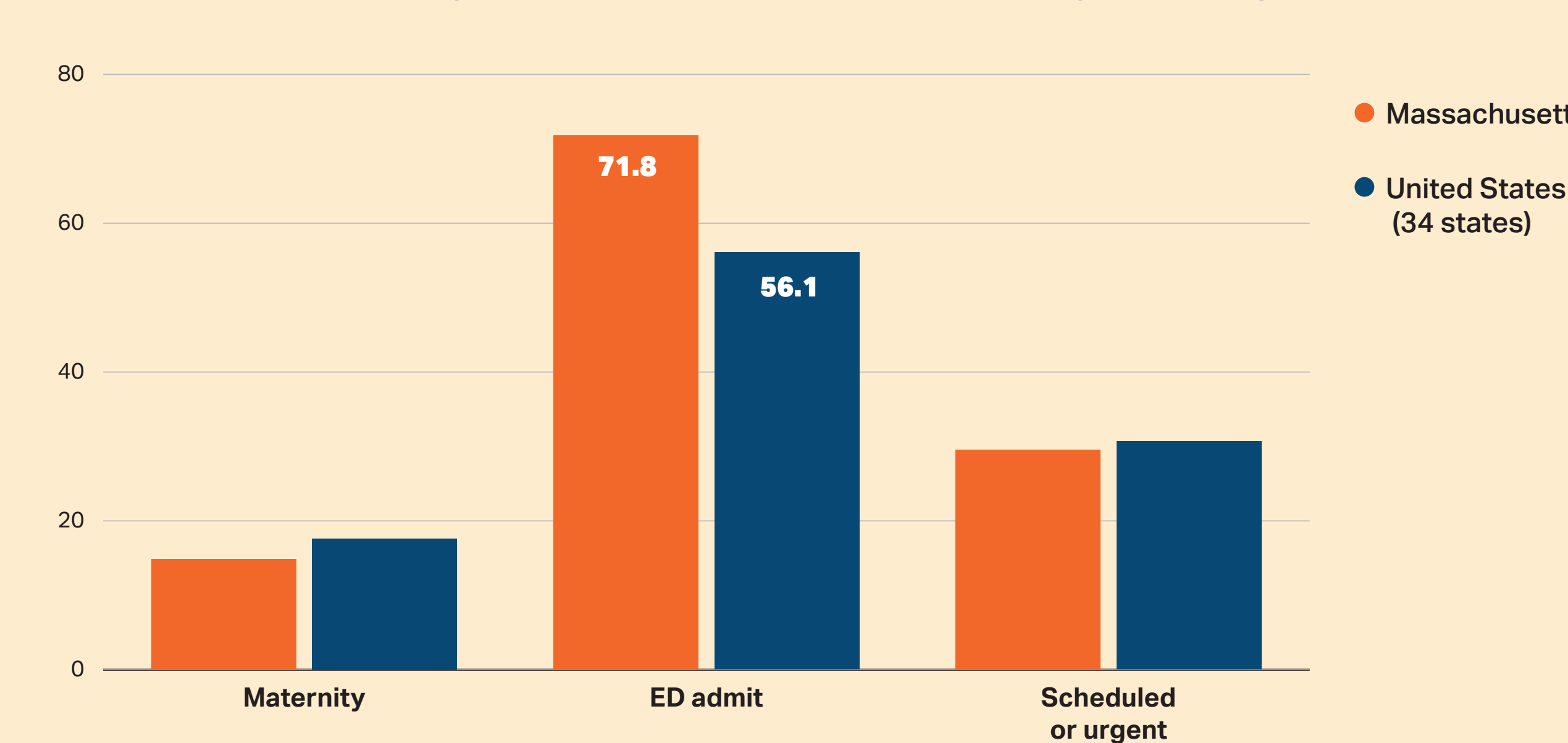


Exhibit 3. Admissions originating in an ED, all ages, 35 states, 2019

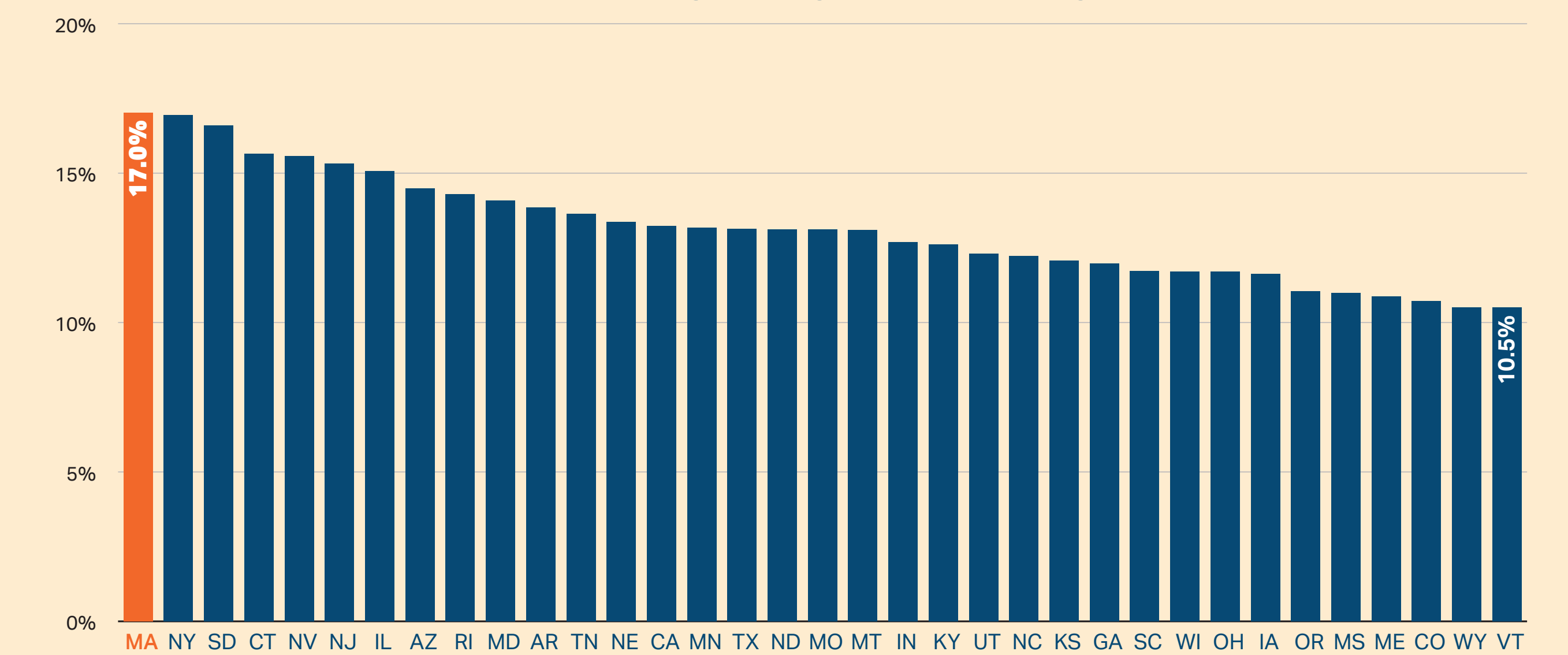


Exhibit 4. Adult ED admission rate by diagnosis, MA vs comparison states, 2019

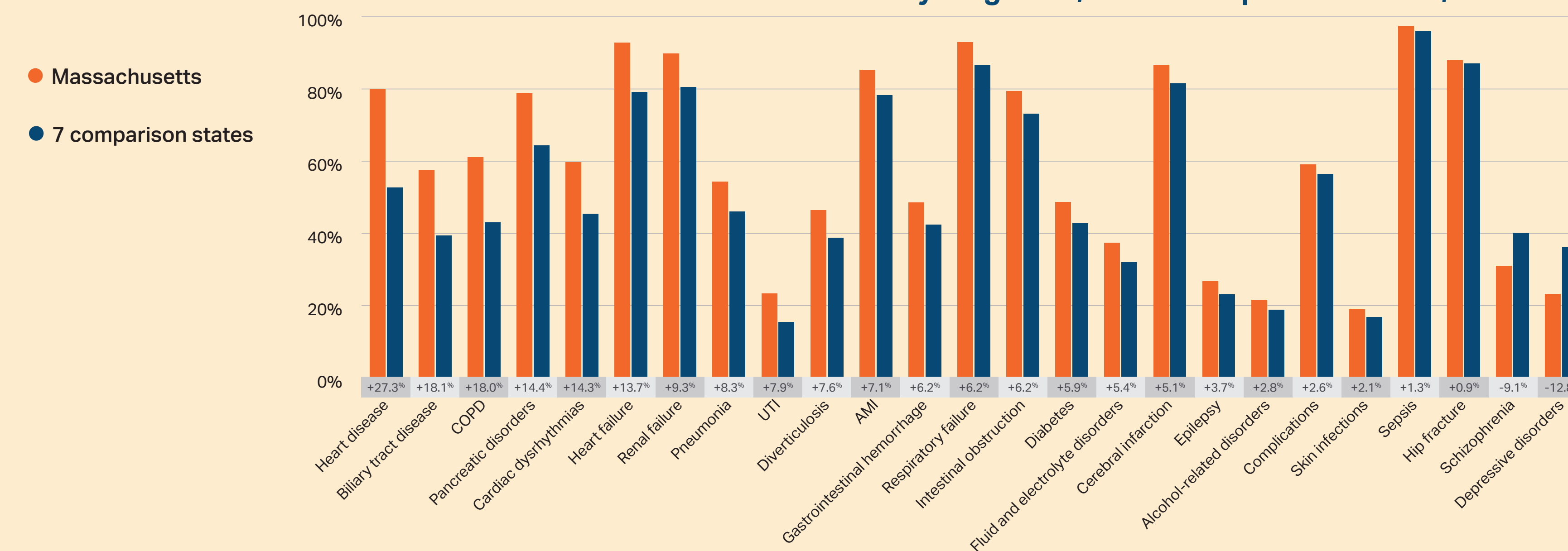
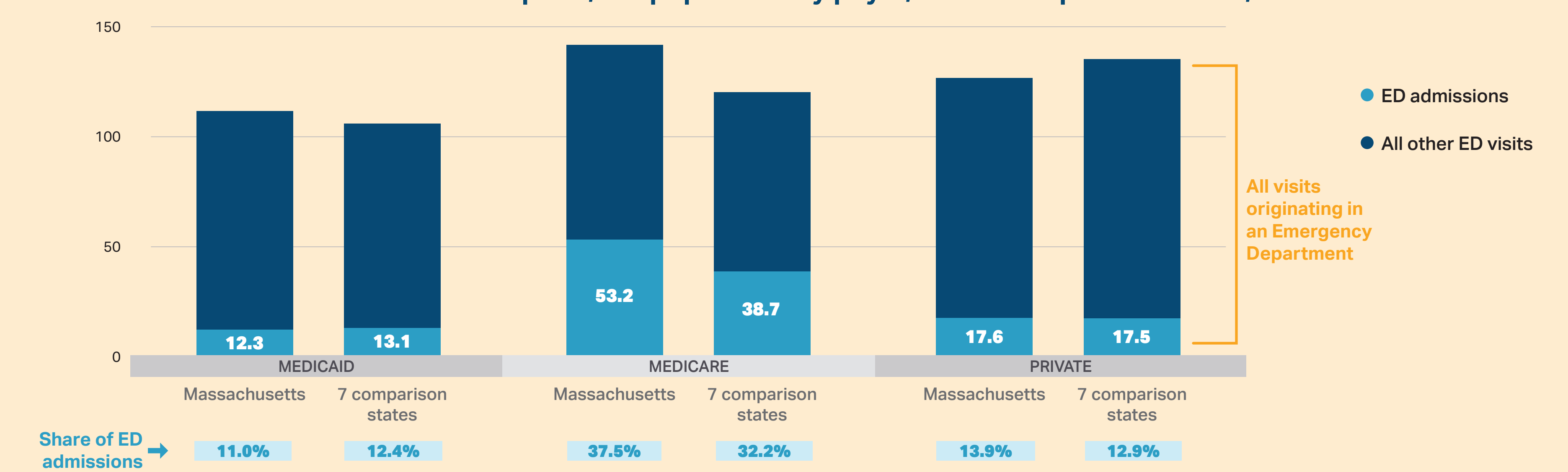


Exhibit 5. Adult ED admission per 1,000 population by payer, MA vs comparison states, 2019



CONCLUSIONS

State-level data on inpatient stays and emergency department visits demonstrate that Massachusetts is an outlier in the rate of admissions originating in an emergency department. This is driven by Medicare admissions and by certain high-volume diagnoses. Though previous HPC work showed hospital-level practice variation within Massachu-

setts, this analysis suggests that the practice environment in Massachusetts as a whole may involve more intensive care patterns (hospital bed supply per capita was not higher in Massachusetts). Future research will examine other potential state-level drivers of this variation and whether positive outcomes result from a higher propensity to hospitalize.

POLICY IMPLICATIONS

These findings suggest that there may be opportunities to avoid medically unnecessary inpatient stays in Massachusetts. Reducing medically unnecessary inpatient stays will aid in reducing ED waiting times for medically necessary stays, decrease health care spending, and improve patient safety.

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