

Epidemiology of COVID-19 among people experiencing homelessness: Early evidence from Boston

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Abstract

People experiencing homelessness are at high risk for coronavirus disease (COVID-19). We estimated population frequencies of confirmed COVID-19 cases among adults experiencing homelessness in Boston relative to the Massachusetts adult population. Over a 15-day period, 182 homeless adults in Boston were diagnosed with COVID-19 for an estimated cumulative frequency of 46.3 cases per 1000 persons, as compared to 1.9 cases per 1000 among Massachusetts adults on the same date. The trajectory and burden of COVID-19 cases among homeless adults suggests that cities should prepare urgently for the possibility of a COVID-19 surge in this population.

Introduction

About 500,000 individuals sleep in homeless shelters each night in the US.¹ People experiencing homelessness are at particularly high risk for coronavirus disease (COVID-19) due to a heavy burden of medical, psychiatric, and addictive disorders² combined with harsh living conditions in congregate settings. Despite increasing attention on the potentially devastating threat posed by COVID-19 to people experiencing homelessness, there has been no published evidence describing the epidemiology of COVID-19 in this population. To inform public health response planning, we used early evidence from Boston Health Care for the Homeless Program (BHCHP) to estimate the population frequencies of confirmed COVID-19 cases among adults experiencing homelessness in Boston relative to the Massachusetts adult population.

Methods

Participants were homeless adults ≥ 18 years old in Boston with COVID-19 confirmed by polymerase chain reaction (PCR) testing of nasopharyngeal swabs who came into contact with

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BHCHP for COVID-related care in one of 3 ways: 1) identification and referral by area hospitals (either in lieu of or following a COVID-related hospitalization), 2) symptom screening at local shelters and referral for COVID-19 testing, and 3) outbreak investigations among homeless individuals conducted by BHCHP staff in partnership with the Massachusetts Department of Public Health. We constructed a cumulative frequency plot of COVID-19 cases per 1000 persons among homeless adults in Boston for the 15-day period between March 20, 2020 and April 3, 2020. Adult homeless population estimates in Boston were derived from the 2019 point-in-time count.¹ As a point of reference, we constructed a similar cumulative frequency plot of COVID-19 cases per 1000 persons among Massachusetts adults based on daily case counts issued by the Massachusetts Department of Public Health, with Massachusetts adult population estimates based on the 2018 US Census Bureau American Community Survey.³ Similarly detailed daily case counts were not available for the City of Boston, but cumulative case frequency data from the Boston Public Health Commission for Boston residents as of April 2, 2020, are also included as a point of reference.⁴ The Partners HealthCare Human Research Committee exempted this study.

Results

The Figure displays the results of our analysis. Over the 15-day observation period, a total of 182 homeless adults were diagnosed with COVID-19, yielding an estimated cumulative frequency of 46.3 cases (95% confidence interval 39.9-53.3 cases) per 1000 persons as of April 3, 2020. In contrast, the cumulative frequency of COVID-19 was 1.9 cases per 1000 persons among Massachusetts adults on the same date. On April 2, 2020, the City of Boston reported a cumulative frequency of 1.8 cases per 1000 residents.

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Discussion

These findings illustrate an alarming trajectory of COVID-19 cases among homeless persons, despite proactive infection control measures consistent with Centers for Disease Control and Prevention guidance.⁵

Although our results suggest a disproportionately high burden of COVID-19 among people experiencing homelessness, caution should be taken in directly comparing the cumulative frequency in this population to that in the general population due to more proactive case finding efforts among homeless individuals. At the same time, the transient and marginalized nature of homelessness introduces the possibility of under-ascertainment of the true number of homeless individuals with COVID-19.

Despite these limitations, our findings point toward a concerning trend with important public health and health care resource implications, since even the mildest COVID-19 cases among homeless people require consideration of alternate venues for isolation and management. Municipalities with sizable homeless populations should prepare urgently for the possibility of a surge in COVID-19 among people experiencing homelessness.

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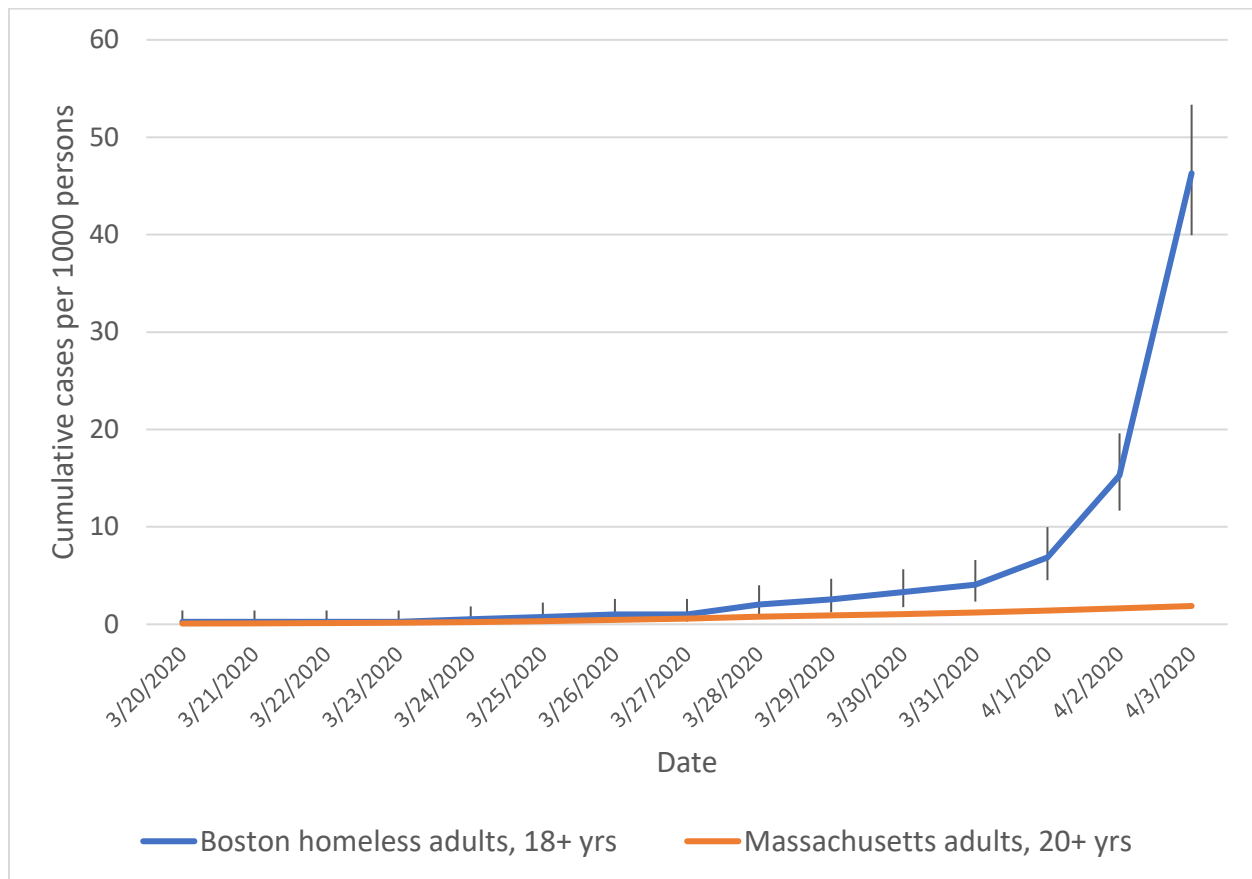


Figure title:

COVID-19 cases per 1000 persons, Boston homeless adults vs Massachusetts adults

Figure footnotes:

- COVID-19 cases in the Massachusetts adult population (≥ 20 years old) were based on daily reports published by the Massachusetts Department of Public Health: <https://www.mass.gov/info-details/covid-19-cases-quarantine-and-monitoring>.
- Error bars represent exact 95% confidence intervals calculated using the Clopper-Pearson method.

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