

Association Between Prison Crowding and COVID-19 Incidence Rates in Massachusetts Prisons, April 2020-January 2021

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Importance COVID-19 incidence and mortality are higher among incarcerated persons than in the general US population, but the extent to which prison crowding contributes to their COVID-19 risk is unknown.

Objective To estimate the associations between prison crowding, community COVID-19 transmission, and prison incidence rates of COVID-19.

Design, Setting, and Participants This was a longitudinal ecological study among all incarcerated persons in 14 Massachusetts state prisons between April 21, 2020, and January 11, 2021.

Exposures The primary exposure of interest was prison crowding, measured by (1) the size of the incarcerated population as a percentage of the prison's design capacity and (2) the percentage of incarcerated persons housed in single-cell units. The analysis included the weekly COVID-19 incidence in the county where each prison is located as a covariate.

Main Outcomes and Measures The primary outcome was the weekly COVID-19 incidence rate as determined by positive SARS-CoV-2 tests among incarcerated persons at each prison over discrete 1-week increments.

Results There was on average 6876 people incarcerated in 14 prisons during the study period. The median level of crowding during the observation period ranged from 25% to 155% of design capacity. COVID-19 incidence was significantly higher in prisons where the incarcerated population was a larger percentage of the prison's design capacity (incidence rate ratio [IRR] per 10-percentage-point difference, 1.14; 95% CI, 1.03-1.27). COVID-19 incidence was lower in prisons where a higher proportion of incarcerated people were housed in single-cell units (IRR for each 10-percentage-point increase in single-cell units, 0.82; 95% CI, 0.73-0.93). COVID-19 transmission in the surrounding county was consistently associated with COVID-19 incidence in prisons (IRR [for each increase of 10 cases per 100 000 person-weeks in the community], 1.06; 95% CI, 1.05-1.08).

Conclusions and Relevance This longitudinal ecological study found that within 14 Massachusetts state prisons, increased crowding was associated with increased incidence rates of COVID-19. Researchers and policy makers should explore strategies that reduce prison crowding, such as decarceration, as potential ways to mitigate COVID-19 morbidity and mortality among incarcerated persons.