

## The importance of population-level incarceration statistics



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The impact of incarceration on individuals and families can be devastating leading to an increased incidence of homelessness,<sup>1</sup> unemployment,<sup>2</sup> divorce,<sup>3</sup> and recidivism.<sup>4</sup> Individuals who have been incarcerated are more likely to be substance users<sup>5,6</sup> and have a higher risk of premature death.<sup>7</sup> Economic deprivation is also a known risk factor for substance abuse and early death.<sup>8,9</sup> It seems plausible, therefore, that both rates of incarceration and impoverishment might contribute to changes in mortality from drug use; but so far, few studies have empirically evaluated this potential link between incarceration, economic decline, and drug-related mortality rates at the population level.

In *The Lancet Public Health*, Elias Nosrati and colleagues<sup>10</sup> investigated the effect of county-level differences in household income and incarceration rates on mortality from drug use disorders. Their findings indicate that county-level economic factors are strongly associated with drug related mortality, with each 1 SD decrease in median county household income associated with an increase of 12.8% (95% CI 11.0–14.6;  $p < 0.0001$ ) in drug-related deaths. Additionally, the authors found a strong association between incarceration rates and mortality, even after controlling for economic and other factors. Each 1 SD increase in jail and prison incarceration rates was associated with an increase of 1.5% (1.0–2.0;  $p < 0.0001$ ) and 2.6% (2.1–3.1;  $p < 0.0001$ ) in drug-related mortality, respectively. Incarceration and household income had strong associations with drug-related mortality, even when controlling for county-level opioid prescription rates.

The findings reported by Nosrati and colleagues are important. The results highlight the need to evaluate current approaches towards the issues associated with incarceration. Overall, much of the research done on incarceration has focused on individual factors, whereas, in the current study, we gain new understanding by looking at the population level. One limitation of the study was that various additional factors associated with incarceration (eg, crime, state variations, racial biases) were not evaluated; however, the findings suggest that incarceration should not be considered as an outcome in itself, but rather a potential contributor to the public health crisis associated with harmful drug use.

This study is a good example of the use of population studies to assess outcome variables, which are frequently assessed at the individual level. This study, and previous studies<sup>11</sup> using this level of analyses, highlight the importance of societal factors with regard to drug-related mortality. Future studies should also examine population-level data, which will allow researchers to focus their attention on policy and societal factors, which, as demonstrated by Nosrati and colleagues, might highlight factors that negatively contribute to public health.

In this study, county-level incarceration records were used to evaluate policies and practices that apply to drug-related mortality. One important area for future research will be arrest and sentencing policies. For example, it is hypothesised that the number of arrests and subsequent incarcerations will be reduced as the movement for decriminalisation of some drug use expands. If within-county incarceration rates decline, and the decline is associated with lower mortality rates, this will provide policy makers with additional information to inform public policy.

A focus on local and county policies and laws is also required. At present, county laws and policies such as trespassing, loitering, and vagrancy laws, unfairly criminalise individuals of low economic status and homeless individuals. These laws increase the level of interaction these at-risk groups have with the legal system, resulting in higher incarceration rates. It would be of benefit to determine whether these laws have an effect on drug-related mortality considering the high co-occurrence of substance use and homelessness.

Future studies should focus on racial and ethnic biases in arrests and sentencing, and the subsequent effect on drug-related mortality. After controlling for economic factors and race or ethnicity, incarceration rates could be used to compare disparities between arrests and sentencing and drug-related mortality both at the county level and across racial or ethnic subpopulations.

By combining national data, Nosrati and his co-authors have demonstrated the powerful potential that better understanding of incarceration can have on public health. More studies of this type are needed to change public policy.

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I declare no competing interests.

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