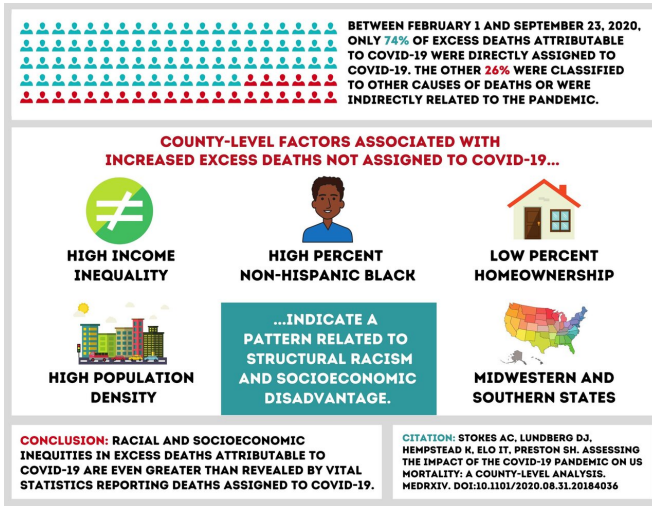


U.S. COVID deaths may be underestimated by 36%

5 October 2020, by Michele W. Berger



Credit: University of Pennsylvania

More than 200,000 people in the United States have now died from COVID-19. But the death toll of the U.S. epidemic is likely much higher, according to a new, first-of-its-kind study from researchers at the University of Pennsylvania, Boston University, and the Robert Wood Johnson Foundation.

Available as a pre-print on medRxiv ahead of peer-reviewed publication, the study estimates the number of "excess deaths," those that occurred from February through September 2020 above what would be expected in a normal year. For every 100 excess deaths directly attributed to COVID-19, there were another 36 excess deaths. This means 26% of all excess deaths were not directly attributed to COVID.

The research team, which included Penn demographers Samuel Preston and Irma Elo, found more of these additional deaths in counties with greater income inequality, more non-Hispanic Black residents, less homeownership, and high-

population density, indicating a pattern related to socioeconomic disadvantage and structural racism.

"Excess deaths can provide a more robust measure of the total mortality effects of the [pandemic](#) compared to direct tallies of COVID deaths," says study lead author Andrew Stokes, an assistant professor of global health at BU. "Excess deaths include COVID deaths that were ascribed to other causes, as well as the indirect consequences of the pandemic on society." These could include fear of going to the hospital for another condition or any number of issues caused or exacerbated by COVID's economic and mental health impacts.

Stokes and colleagues analyzed county-level mortality data from the National Center for Health Statistics for 1,021 counties with 10 or more COVID deaths from Feb. 1 to Sept. 23. Previous studies have estimated excess deaths at the national and state levels, but this is the first to examine the question at the county level, allowing the researchers to look at how patterns of excess deaths vary by demographic and structural factors.

The researchers used Centers for Disease Control and Prevention data from 2013 to 2018 to estimate how many deaths each county would have been expected to have during this period if not for the COVID pandemic (as [death](#) rates change from year to year).

In total, the 1,000-plus counties experienced 249,167 excess deaths, or those beyond what was expected given historical patterns. Of those, 26%, or 65,481 death certificates, did not directly assign COVID as the cause of death. The other 183,686 did. In other words, the number of deaths directly assigned to COVID should be inflated by 36% to estimate the total number of deaths for which COVID is responsible.

"Counties with high levels of COVID-19 mortality also had exceptionally high levels of mortality in

2020 from other causes of death," says Preston, study senior author and a Penn professor of sociology. "This result suggests that the epidemic is responsible for many more deaths than are attributed to COVID-19 alone."

While most counties saw more deaths than would have been expected in a normal year, some saw fewer. The researchers analyzed the relationship between these excess deaths and differences in demographics and structural factors using U.S. Census data, finding that communities already known to have been most harmed by COVID-19 have lost even more lives to the pandemic than official numbers show.

"Our results focus important attention on the disparate impact of the COVID-19 pandemic on low-income and minority communities," says Elo. "These groups have historically experienced high death rates, which are now further exacerbated by the current pandemic."

More information: Andrew C Stokes et al. Assessing the Impact of the COVID-19 Pandemic on US Mortality: A County-Level Analysis, (2020). [DOI: 10.1101/2020.08.31.20184036](https://doi.org/10.1101/2020.08.31.20184036)

Provided by University of Pennsylvania

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