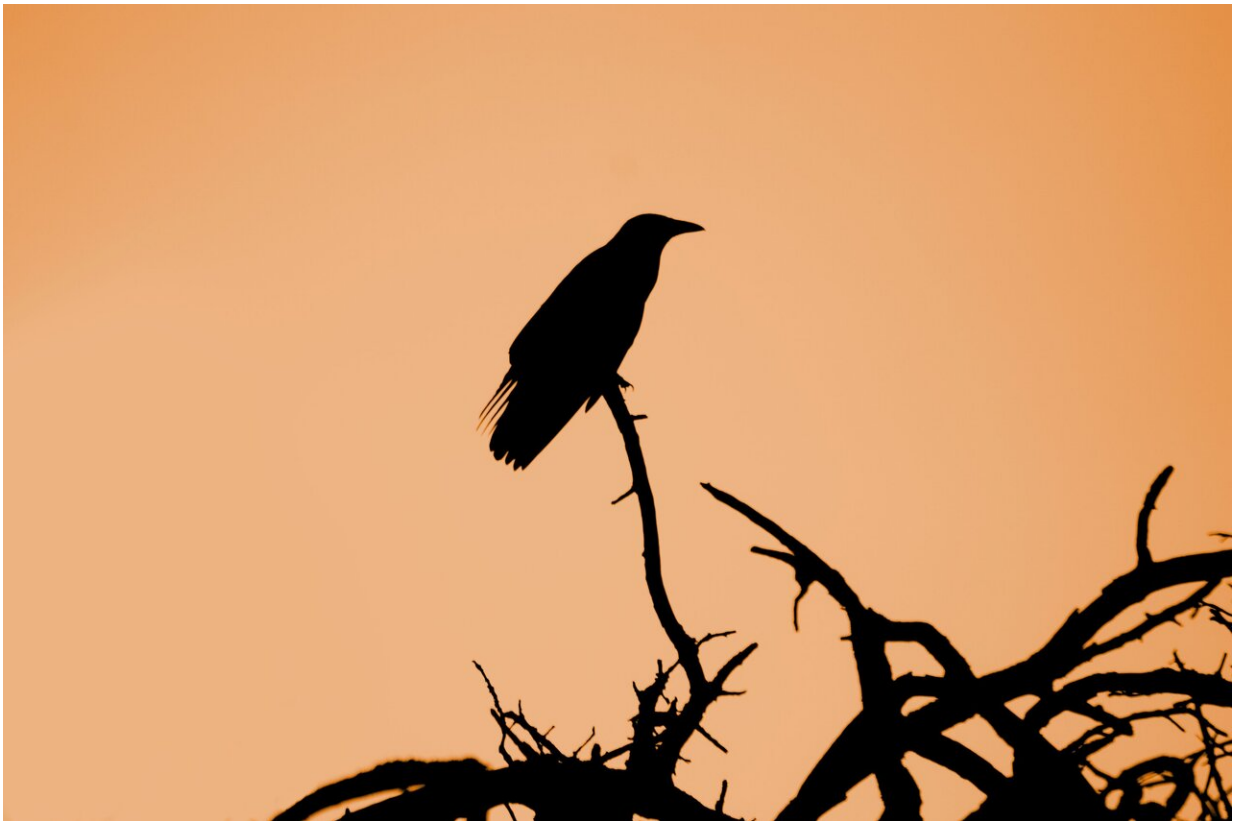


# Total deaths due to COVID-19 underestimated by 20% in US counties

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Deaths caused by indirect effects of the pandemic emphasize the need for policy changes that address widening health and racial inequities.

More than 15 months into the pandemic, the U.S. death toll from COVID-19 is nearing 600,000. But COVID-19 deaths may be underestimated by 20%, according to a new, first-of-its-kind study from Boston University School of Public Health (BUSPH), the University of Pennsylvania, and the Robert Wood Johnson Foundation.

Published in the journal *PLOS Medicine*, the study uses data from the National Center for Health Statistics (NCHS) and the Centers for Disease Control and Prevention (CDC) to estimate the number of deaths in 2,096 counties from January to December 2020 above what would be expected in a normal year, or "excess deaths." For every 100 excess deaths directly attributed to COVID-19, there were another 20 excess deaths not attributed to COVID-19. In other words, 20 out of every 120 excess deaths, or 17%, were not directly attributed to COVID.

The researchers found that the proportion of these excess deaths not directly attributed to COVID-19 was higher in counties with lower average socioeconomic status and less formal education, as well as in counties located in the South and West. Counties with more non-Hispanic Black residents—who were already at high risk of dying directly from COVID-19—also reported a higher proportion of excess deaths not assigned to COVID-19.

"Our findings suggest that the impact of the COVID-19 pandemic on mortality has been substantially underestimated in many communities across the US," says study lead author Dr. Andrew Stokes, assistant professor of global [health](#) at BUSPH. "Several factors, including severe testing shortages, overwhelmed health care systems, and a lack of familiarity with the clinical manifestations of COVID-19 has likely led to significant underreporting of COVID-19 on death certificates, especially early in the pandemic. Official COVID-19 death tallies also fail to capture the pandemic's profound social and [economic consequences](#), including the downstream effects of interruptions in

receiving health care, loss of employment, evictions, and [social isolation](#) and loneliness."

In addition to deaths directly from the [coronavirus](#) that were not recorded as such, some of the excess deaths are likely from indirect consequences of the COVID crisis, including fear of going to the hospital for another condition, or any number of issues caused or exacerbated by the toll that COVID has taken on the economy and on mental health.

"Counties with high levels of COVID-19 mortality also had exceptionally high levels of mortality in 2020 from other causes of death. This result suggests that the epidemic is responsible for many more deaths than are attributed to COVID-19 alone," says study senior author Dr. Samuel H. Preston, professor of sociology at the University of Pennsylvania.

"Racial and socioeconomic inequities in U.S. mortality have widened significantly as a result of the COVID pandemic, especially when considering total excess deaths. To protect public health, policymakers must act decisively to address structural racism and reduce income inequality," says study co-author Dielle Lundberg, a research fellow at BUSPH.

Overall, the study makes clear that county-level measures of direct COVID-19 mortality were not accurate measures of excess mortality in many US counties.

"A more complete accounting of COVID-19 deaths in local communities using excess deaths could lead to increased public awareness and vaccine uptake, particularly in areas where the official [death](#) counts suggested the pandemic had a limited impact," Stokes says.

Provided by Boston University School of Medicine

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