

Disadvantaged neighborhoods see more COVID-19 infections and deaths

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New York City neighborhoods that had higher levels of socioeconomic disadvantage experienced more COVID-19 infections and deaths, according to Mount Sinai scientists who created a neighborhood-level COVID-19 inequity index.

The [index](#) measured factors that fueled inequities in the residents' lives, such as employment and commuting patterns, population density of their neighborhood, food access, socioeconomic status, and access to [health care](#). This allowed the scientists to compare between [neighborhoods](#) the contributions of these social factors in facilitating [disease transmission](#) during the first wave of the pandemic in a study published in *Nature Communications* in June.

"Much of the early rhetoric around COVID-19 disparities centered on comorbidities which, due to [health](#) disparities, may have explained why communities of color were suffering higher mortality. But we were seeing more people of color getting infected in the first place," said Daniel Carrión, Ph.D., MPH, first author and postdoctoral researcher in the Department of Environmental Medicine and Public Health at the Icahn School of Medicine at Mount Sinai. "Our research team wanted to add to the literature outlining how structural racism is related to neighborhood disadvantage, and how that disadvantage is related to increased COVID-19 infections and mortality."

The COVID-19 [inequity](#) index showed that the disparities were considerably worse based on neighborhood racial and ethnic composition; Black neighborhoods had the highest average inequity index, followed by Latinx communities, while white neighborhoods had the lowest. The authors believe one of the reasons for these disparities is the diminished capacity to socially isolate based on where someone lives.

This study showed that areas with higher COVID-19 inequity indices had higher subway ridership after New York State introduced stay-at-home orders. This implies that the residents had less capacity to socially distance, the researchers said, possibly due to their jobs as essential workers or because they lived in denser housing.

The researchers believe their approach to identifying social factors that

are associated with viral spread may be useful throughout the United States to pinpoint potential areas for targeted [public health](#) intervention.

"The social factors in the COVID-19 inequity index are upstream neighborhood characteristics—they were already in place before the pandemic," said Allan Just, Ph.D., senior author on the study and Assistant Professor of Environmental Medicine and Public Health at Icahn Mount Sinai. "In the near term, this speaks to the importance of place-based interventions in Black, Indigenous, and people of color (BIPOC) communities to reduce disease incidence and mortality, such as improved and targeted vaccine availability for these communities. This also supports the need to look at [social factors](#) in pandemic preparedness."

The team analyzed many forms of publicly available data, including census, New York City subway ridership, New York City Department of Health and Mental Hygiene infections and mortality data, and other datasets available through New York City's and New York State's open data portals.

Many neighborhood-level social variables are closely related; for example, median income can be strongly associated with education or even food access. This can be a challenge for traditional statistical approaches, so the team employed a new statistical framework designed to deal with these challenges, developed by co-author Elena Colicino, Ph.D., Assistant Professor of Environmental Medicine and Public Health at Icahn Mount Sinai.

The COVID-19 inequity index included neighborhood-level characteristics, but specifically excluded race and ethnicity as input variables. "Past literature shows that structural racism operates by historically sorting BIPOC people into neighborhoods that do not have the same resources and may facilitate infectious disease transmission,"

said Dr. Carrión. "We wanted to see if our index reconstructed those racial disparities."

Provided by The Mount Sinai Hospital

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