RESEARCH BRIEF

Assessing Structural Barriers & Racial Disparities of COVID-19 Mortality With Spatial Analysis

Healthy Regions + Policies Lab

RESRACH QUESTION

How do associations between structural factors and COVID-19 mortality help explain the disproportionate impacts experienced by racial and ethnic minority groups?

Read the full article at
**uscovidatlas.org/research**

Key Findings

- We identified 531 counties that had the highest mortality impact for over 100 days of the first year of the COVID-19 pandemic and are home to the largest share of people from particular race/ethnicity groups.

- Associations between social determinants of health and COVID-19 mortality varied across racial and ethnic groups and rural, suburban, and urban contexts during the first year of the pandemic.

- Counties and people facing COVID-19 mortality had different challenges. Counties with high mortality and large African American populations had higher income inequality and more preventable hospital stays. Counties with Hispanic and Latinx residents were often more urban, with high uninsured rates. White counties tended to have older populations and limited health care access.

- Across all areas and people, counties with limited internet access had higher mortality.
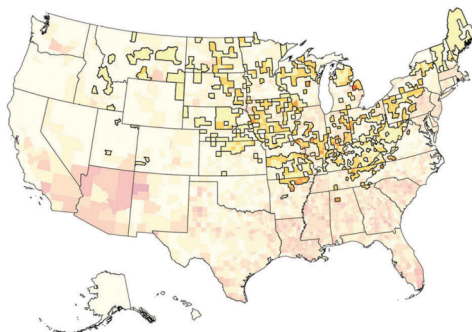
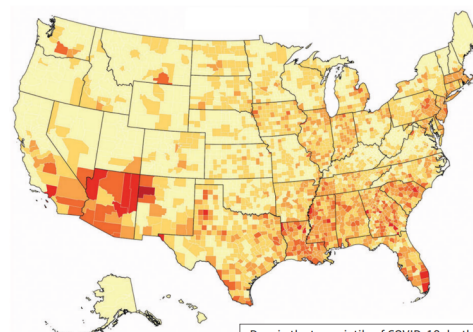A Black or African American population
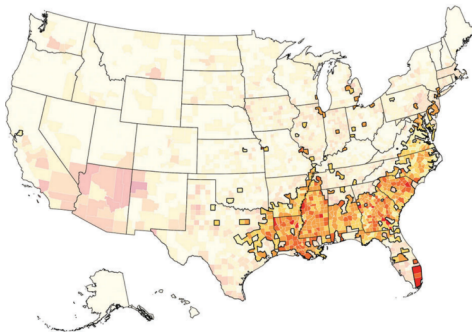
B Hispanic or Latinx populations
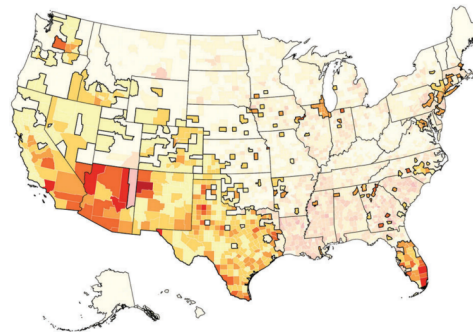
C Non-Hispanic White population

D All US counties

Days in the top quintile of COVID-19 deaths
0   50   100   150   200   250   300

Left: Number of days that a county spent in the top quintile of COVID-19 deaths from January 2020 to February 2021, by racial and ethnicity group in the top quintile of the population.

The COVID-19 pandemic has disproportionately impacted racial & ethnic minority groups in the U.S.

There is a demonstrated need to consider the role of structural racism and social determinants of health in understanding COVID-19 and related health disparities.

We find distinct associations between different social determinants of health (SDOH) and COVID-19 mortality that vary across Black, Hispanic, and non-Hispanic White communities, as well as across rural, suburban, and rural places.

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RESULTS

Structural factors linked with racial & spatial inequities

Although many counties were disproportionately affected by COVID-19, their outcomes stratified by their populations were not the same.

- Counties with large Black populations experienced numerous disadvantages, including higher income inequality and preventable hospital days. Counties most impacted spanned rural, suburban, and urban areas, primarily in the South and Southeast.

- Counties with large Hispanic populations were primarily located in urban areas and had high percentages of uninsured residents. Counties most impacted were clustered in the Southwest, and southern Florida.

- Counties with large White populations were primarily located in rural areas with elderly populations with limited access to health care. The counties most impacted were found across the Midwest and rural Appalachian regions.

- Counties with limited internet access experienced higher mortality rates across all areas but particularly in urban areas.

What does this mean?

Research on health inequities and guiding pandemic-related policies and programs should explore regional patterns of social determinants of health and account for differences across rural, suburban, and urban places.

Significantly, at a time when internet connectivity was a lifeline for families, a crucial factor that cut across all communities–urban, suburban, and rural areas–was lack of broadband access.

Particularly for Hispanic and Latinx communities, our findings supported previous research that found elevated risk associated with work requirements and concern about going to a hospital because of the financial burden or immigration concerns.

Heavily overrepresented in frontline essential jobs, many in the Black community are left without the resources that allow them to stay home or stay safe face greater risk of COVID.

A smaller portion of the White population as compared to Hispanic and Black or African American populations experienced high COVID mortality rates.

RESEARCH METHODS

Uncovering racism's impact using spatial analysis

COVID-19 data by race is mostly unavailable for the whole county. To assess the structural factors associated with disparities, we used Exploratory Spatial Data Analysis (ESDA) to highlight places with high proportions of residents of a particular racial or ethnic group and consistently high COVID-19 mortality during the first year of the pandemic.

We use co-location analysis and spatial regime regression models to better understand where and why some communities were impacted more.

In this cross-sectional analysis, we identified 531 counties as concentrated longitudinal impact counties (CLI counties). A county was identified as CLI if it 1) had mortality rates in the top quintile for at least 100 days over the year, and 2) were in the top quintile of adult populations of a particular racial or ethnic group.

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