

IDENTIFYING COVID-19 MORTALITY AND SOCIAL DEPRIVATION HOT SPOTS AND EXPLORING OPPORTUNITIES FOR HEALTH CENTER RESPONSE

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Key Findings

- Areas impacted most by COVID-19 mortality that have the highest levels of social deprivation are located in the southeastern United States (U.S.), Texas, Arizona, and the Dakotas.
- These areas include more than 250 Health Center Program awardees serving more than 6.5 million patients.

Overview

The COVID-19 pandemic has more adversely affected low-income and minority populations, with research also indicating that counties with higher levels of social vulnerability have higher rates of COVID-19 cases and mortality.¹⁻² Further, COVID-19 has led to significant decreases in preventive health care visits involving immunization, cancer screening, and chronic disease management.³⁻⁵ While increases in telehealth and virtual visits have offset some of these decreases, it is likely that large numbers of people are deferring critical preventive care that may lead to poorer health outcomes in the future.⁵ Higher levels of social deprivation, defined by population health characteristics such as poverty, lack of access to a vehicle, or unemployment, may also play a role in increasing the deferral of preventive care.⁶ People with greater levels of social deprivation already face barriers to accessing care. Identifying areas most impacted by COVID-19 allows for targeted outreach to communities that may have deferred preventive care during the pandemic. Furthermore, having a better understanding of the geographies and populations disproportionately impacted by COVID-19 can inform tailoring of interventions and resource deployment.

Objective

This study explores county-level data with two primary aims: (1) to identify opportunities for increased preventive care based on high levels of social deprivation and COVID-19 mortality and COVID-19 mortality hot spots (i.e., clusters of high rates of COVID-19 mortality), and (2) to identify health centers located in priority areas and describe the patients they serve.

Data Sources and Methods

All analyses use county-level data from various sources: COVID-19 deaths January 22, 2020–March 13, 2021 from USA Facts;⁷ the social deprivation index (SDI) from the Robert Graham Center (2015-2019);⁸ and various demographic and socio-economic measures from the American Community Survey (2015-2019).⁹ Authors used geospatial methods to identify priority areas based on COVID-19 mortality and social deprivation, and used geographic information systems (GIS) to overlay health centers on these areas.

Results

Clear geographic patterns for priority counties

We identified 504 priority counties that had high rates of COVID-19 mortality and social deprivation or were part of a COVID-19 mortality hot spot.

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- Most priority counties were located in Arizona, rural areas in Texas, the southeastern U.S. (MS, GA, AL, LA), and the Great Plains States (KS, IA, ND, SD), while several were within large urban centers (New York City).

Health centers are well-positioned to provide care in priority counties

Priority counties include more than 250 Health Center Program awardees, 1,660 service delivery sites, and 6.5 million patients.

- Health centers in priority counties have higher percentages of Black patients, uninsured, persons experiencing homelessness, and residents near or in public housing compared to health centers not located in priority counties.

Figure 1. Health Center Delivery Sites in Priority Counties

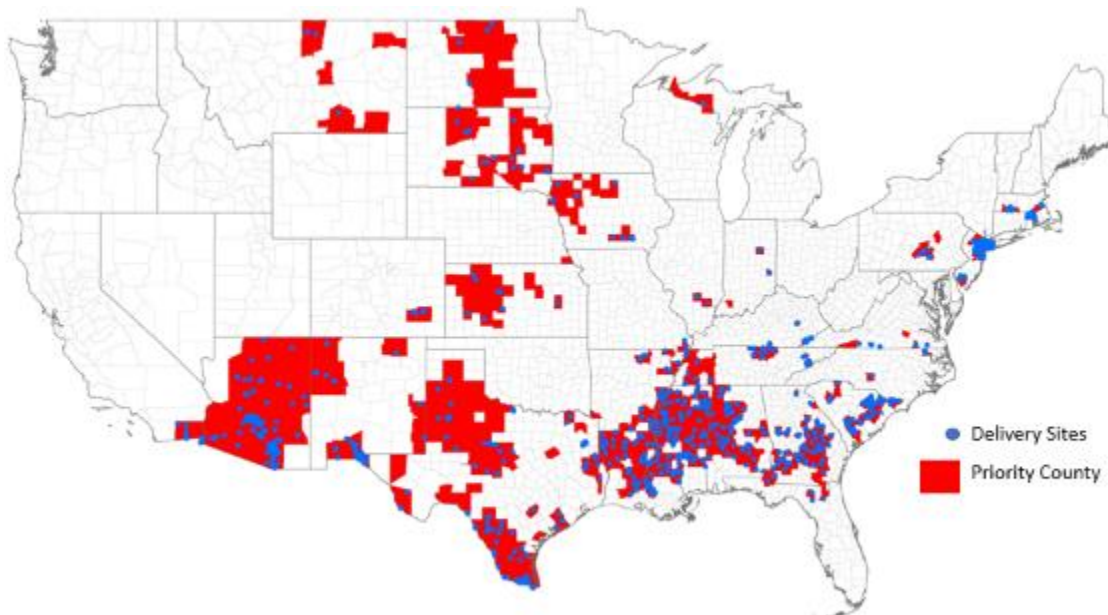


Figure 1 shows that health centers are well-positioned to provide care in high-need areas, particularly in the southeastern U.S., south Texas, and Arizona.

Discussion

Arizona, parts of Texas, the southeastern U.S., the Great Plains states, and a few large urban centers were identified as the areas with high rates of social deprivation most impacted by COVID-19 mortality. While the impact of COVID-19 has been uniformly significant for health centers across the U.S., particular attention on health centers located in the hardest hit areas can inform prioritization of activities and use of finite resources. Subsequent evaluation efforts should track COVID-19 health center activities such as testing, treatment, and vaccinations and monitor for declines in routine health care utilization, including having large numbers of patients forgo critical preventive care such as cancer screenings, chronic care management (e.g., hemoglobin A1c testing), and immunizations. Given the high rates of COVID-19-related mortality in the geographies found, nested health centers and those serving the areas could benefit the most from having increased access to COVID-19 vaccinations. This research

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identifies opportunities to target resources to these health centers regarding preventive care, COVID-19 immunizations, and other patient outreach.

Next Steps

- Future research should explore vaccination rates and vaccine confidence in areas hardest hit by the COVID-19 pandemic.

Additional Details on Data Sources and Methods

Given the high levels of variance in COVID-19 mortality among counties, the first step included using a Bayesian approach to smooth county-level mortality rates. Second, we identified counties in the top quintile for Bayesian-adjusted COVID-19 mortality and the top quintile for SDI. Next, we used a Local Moran's I with Empirical Bayes adjusted rates to identify counties that are part of geographic hot spots – which are clusters of counties with high rates of Bayesian-adjusted COVID-19 mortality. It is important to note that hot spot counties are part of larger geographic areas that have been impacted by COVID-19 mortality, but the counties themselves may not have particularly high rates of COVID-19 mortality. Priority counties are defined using the following criteria: (1) counties that are in the top quintile for COVID-19 mortality and the top quintile for SDI, or (2) counties that are identified as a COVID-19 mortality hot spot. Finally, we utilized GIS to overlay health center service delivery sites on priority counties and explored the characteristics of health center awardees with delivery sites located within priority counties.

Limitations

This analysis used county-level data, which may mask sub-county variation.

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Key Definitions and Acronyms

Geographic Information Systems (GIS): A computer system used to store, analyze, and display data with a spatial component.

Hot Spots: Areas identified by a GIS as having clusters of higher-than-expected values for an indicator.

Local Moran's I: A spatial analysis technique used to identify areas with concentrations of high or low values for an indicator.

Social Deprivation Index (SDI): A composite measure of area level deprivation used to quantify socio-economic variation in health outcomes.

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