

Physical distancing to slow COVID-19 in 2020 lagged in US South, rural areas

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Early in the COVID-19 pandemic, when governors across the United States were closing businesses and schools to slow the virus' spread, people in the South stayed home at lower rates than residents of other

regions of the country, according to a Yale-led study.

The study, published in the journal *PLOS ONE*, matched U.S. census data with anonymized geolocation data from a nationally representative sample of more than 20 million mobile devices throughout 2020 to provide a clearer picture of regional differences in physical distancing behavior and how this pattern differs by race and socioeconomic status. It found that the highest stay-at-home rates from April to December of last year generally occurred in the Northeast while the South lagged behind other regions over that period. Physical distancing was less prevalent in [rural areas](#) compared with cities and suburbs, according to the study.

The study provides evidence that differences in physical distancing patterns were unlikely to have driven the disproportionate rates of COVID-19 cases, hospitalizations, and deaths among Black Americans nationwide. It found that, across regions, stay-at-home rates generally were higher in census block groups—neighborhoods and other areas where 600 to 3,000 people live—that have higher percentages of Black residents. This contradicts the narrative that Black Americans were physically distancing at lower rates than other racial and ethnic groups based on media reports only focused on large cities.

"The COVID-19 virus struck different parts of the United States at different times and with varied intensity, making it important to understand trends in physical distancing behavior by region and differential patterns by race and socioeconomic status within each region," said Emma Zang, assistant professor of sociology in Yale's Faculty of Arts and Sciences and the study's lead author. "Better understanding these regional and local trends in physical distancing can help policymakers target specific areas for COVID-19 mitigation strategies and public health outreach."

Before the pandemic ramped up in March 2020, about 25% of people were at home on any given day in the Northeast, Midwest, South, and West, the study showed. Nearly all regions experienced sharp increases in the percentages of people staying home after school closures and stay-at-home orders took effect. By April 1, about 46% of people in the Northeast were staying home, the highest level of physical distancing among the four regions. On the same date, 37% of people in the South were staying home, the lowest percentage among regions. Physical distancing rates in the Midwest dipped below those in the South from July through October, but the southern [region](#) had the lowest rates overall from the pandemic's onset through the end of 2020, according to the study.

By June, physical distancing had sharply declined across all regions, and never approached levels reached in early spring, the researchers found. This pattern emerged even though severe COVID-19 outbreaks struck regions at different times of the year, with the Northeast bearing the brunt of the pandemic's first wave and the West and South becoming hotspots during the summer, they explained.

The researchers cited prior studies providing evidence that structural factors, such as poverty or low-quality housing, can make it difficult for people to practice physical distancing. Many of these social and structural challenges—including higher poverty rates, restricted access to health insurance, and high rates of poor health behaviors—are more prevalent in the South relative to other regions, creating disadvantages in implementing physical distancing policies and mitigating COVID-19, the researchers said. They noted that rural areas, which the study showed had lower social distancing rates than cities, confront similar disadvantages.

"Our work offers further evidence that people's ability to physically [distance](#) is driven by social and structural factors, such as whether they

have the ability to work from home, have paid sick leave, or live near a good grocery store," said Yale College senior Nathan Kim, a research assistant at Yale's Institution for Social and Policy Studies, and a co-author of the study. "In other words, physical distancing is about much more than just an individual's decision; it's also about how our society is structured to make these choices possible for some and not for others."

Stay-at-home rates were higher in wealthier and more educated census block groups that have fewer frontline workers, although wealthy individuals nationwide became increasingly mobile in the summer of 2020, according to the study.

"Our findings confirm that people's [socioeconomic status](#)—their income, education level, and type of job—is an important factor in their level of exposure to COVID-19 and ability to adhere to mitigation strategies," Zang said. "The pandemic has shown how deeply embedded social and structural inequities cause differing health outcomes in neighborhoods throughout the United States."

Jessica West of Duke University and Christina Pao of the University of Oxford were co-authors of the study.

Provided by Yale University

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