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The changing political geographies of COVID-19 in the US

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Abstract

COVID-19 doesn't care who you are or what you believe. It does not respect political ideology or partisan rancor. As far as the virus SARS-COV-2 is concerned, all that matters is opportunities for exposure and transmission: are you available as a potential host – or not. For people, what matters are the actions you are able – or not able or not permitted – to take to protect yourself, your family, and your community, from exposure to the virus. True, COVID-19 is a global pandemic – but it is simultaneously as local and as intimate as the contacts you have where you live, work, travel, and the public spaces you visit. The maps of the changing political geography of COVID-19 make this vividly clear. From mid-March to June, the excess death rates were highest in states leaning Democratic, and the more strongly they tilted in that direction, the greater the excess. However, in mid-July, the pattern reversed, with the burden of excess death rates growing highest in Republican leaning states. As we enter the fall, the rates of excess deaths are now highest in the states that lean most Republican. Reducing risk of exposure is key.

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Let's start with the excess rate of total deaths (all causes) for a given week compared to the average of the total death rate for that same week for 2015 through 2019 (**Figure 1**). The value of this approach is that it does not depend on determining whether or not a death was due to COVID-19, since such classification can be affected by the availability of COVID-19 tests or by whether the death was in a hospital versus at home.[a] It thus is unaffected by differences between states in availability of testing and in reporting of COVID-19 cases and deaths.

We can sort each state in order of how they voted in the 2016 presidential election. We calculated: (number of Republican votes – number of Democratic votes)/total votes. A value of 1 means 100% Republican votes, -1 means 100% Democratic votes, and 0 means an equal number of votes for the two parties.[b] From mid-March to June, the excess death rates were highest in states leaning Democratic, and the more strongly they tilted in that direction, the greater the excess. However, in mid-July, the pattern reversed, with the burden of excess death rates growing highest in Republican leaning states. As we enter the fall, the rates of excess deaths are now highest in the states that lean most Republican.

The same pattern holds for the county-level COVID-19 case rate and death rate (per 100,000 person- years) by their 2016 "political lean" (**Figure 2**). (We cannot compute the excess death rate at the county level because weekly total deaths by county are not publicly available for 2015-2019.)

The state-by-state toll for COVID-19 deaths per million (**Figure 3**) underscores this shift in pattern, analyzed in relation to both the lean of the popular vote (the shading for each state) and their electoral college votes (the border color for each state). Moreover, while the Democratic-leaning East and West Coasts were hit first and hit hard, the map of cumulative COVID-19 deaths per million, by county (**Figure 4**), from the start of the pandemic to now, shows the stunning overall toll on the Republican- leaning US South and Southwest, along with certain areas of the Mid-West. People living in small town outside of large urban centers are, like their fellow Americans in big cities, vulnerable to infection.

The changing political geographies of COVID-19 also show it is deeply misguided to believe that political views or race/ethnicity by themselves can protect White Americans from COVID-19. The same dual truths of poverty burdens by race/ethnicity hold for COVID-19 mortality. Thus: (1) members of the US Black population are at 2.6 times the risk of poverty compared to the US White Non-Hispanic population, AND (2) the bulk of impoverished persons in the US (64%) are White Non-Hispanic (**Figure 5**). Bigger risks for smaller populations and smaller risks for bigger populations both can cause harm. Cut support for anti-poverty programs and both groups are hurt. The same holds for COVID-19 mortality (**Figure 5**) – it is simultaneously true that COVID-19 mortality rates are 3.4 times higher for Black vs. White non-Hispanic Americans AND that White non-Hispanic Americans comprise 71% of

US COVID-19 deaths. Both need protection from COVID-19, as do all other US racial/ethnic groups, commensurate with their risk.

The changes in the political geography of COVID-19 are both a cause for alarm and for hope. The stark patterns show that reductions in risk are possible, increases in risk are not inevitable, and no one is invincible by virtue of beliefs alone. Sound action, backed by political will and resources, can make all the difference in turning this pandemic around. It's still not too late to do better.

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Figure 5. Poverty rates (2019) and COVID-19 mortality rates (cumulative, as of September 26, 2020) among the US Black and White Non-Hispanic Populations.

Data sources

Data	Source
US COVID-19 cumulative cases and deaths by county and denominators (denominators are Census denominators but made available on USA Facts website)	https://usafacts.org/visualizations/coronavirus-covid-19-spread-map/
US COVID-19 deaths per million, by state	https://usafacts.org/visualizations/coronavirus-covid-19-spread-map/
US all-cause mortality data by state for 2020	https://data.cdc.gov/NCHS/Weekly-counts-of-deaths-by-jurisdiction-and-age-gr/y5bj-9g5w/
US all-cause mortality data by state for 2015-2019	https://data.cdc.gov/NCHS/Weekly-counts-of-deaths-by-jurisdiction-and-age-gr/y5bj-9g5w/
US popular vote and US electoral college vote, by state, 2016 presidential election	MIT Election Data and Science Lab, 2018, "County Presidential Election Returns 2000-2016", https://doi.org/10.7910/DVN/VOQCHQ, Harvard Dataverse, V6, UNF:6:ZZe1xuZ5H2l4NUiSRcRf8Q== [fileUNF]
US poverty data (2019) by race/ethnicity	Semega J, Kollar M, Shrider EA, Creamer JF. U.S. Census Bureau, Current Population Reports, P60-270, Income and Poverty in the United States: 2019, U.S. Government Publishing Office, Washington, DC, 2020; Table B1. https://www.census.gov/library/publications/2020/demo/p60-270.html
US COVID-19 mortality data by race/ethnicity	https://data.cdc.gov/NCHS/Deaths-involving-coronavirus-disease-2019-COVID-19/ks3g-spdg

Supporting literature

[a] Excess death rate:

1. Krieger N, Waterman PD, Chen JT. COVID-19 and overall mortality inequities in the surge in death rates by ZIP Code characteristics: Massachusetts, January 1 to May 19, 2020. *American Journal of Public Health* (in press). [Note: this paper will be published on-line advance access on October 15, 2020, and an earlier Working Paper version is available in the *Harvard Center for Population and Development Studies Working Paper Series* (Volume 19, Number 2. May 9, 2020) at: https://cdn1.sph.harvard.edu/wp-content/uploads/sites/1266/2020/05/20_jtc_pdw_nk_COVID19_MA-excess-mortality_text_tables_figures_final_0509_with-cover-1.pdf]
2. Leon DA, Shkolnikov VM, Smeeth L, Magnus P, Pecholdová M, Jarvis CI. COVID-19: a need for realtime monitoring of weekly excess deaths [letter]. *Lancet* 2020; 395(10234):E81. https://doi.org/10.1016/S0140-6736(20)30933-8.
3. Centers for Disease Control and Prevention. Preliminary estimate of excess mortality during the COVID-19 outbreak—New York City, March 11–May 2, 2020. *MMWR Morb Mortal Wkly Rep*. 2020; 69(19):603–605. https://doi.org/10.15585/mmwr.mm6919e5

[b] Political lean

The measure used is calculated using the Index of Concentration at the Extremes (ICE), whose formula is as follows:

$$ICE_i = (A_i - P_i)/T_i$$

where A_i, P_i and T_i correspond, respectively, to the number of persons in the ith geographic area who are categorized as belonging to one designated extreme (A), the other designated extreme (P), and the total population whose status in relation to these extremes was measured.

The ICE thus ranges from -1 to 1, delineating areas in which 100% of the population is in one of the most extreme groups (e.g. A) vs the other extreme group (P). The ICE was originally developed by Douglass Massey in 2001 to quantify economic segregation of areas, and was introduced into the public health literature in 2015 by authors of this op-ed, and it has been used in the political science literature. See:

1. Massey DS. The prodigal paradigm returns: ecology comes back to sociology. In: Booth A, Crouter A. (Eds). *Does It Take a Village? Community Effects on Children, Adolescents, and Families*. Mahwah, NJ: Lawrence Erlbaum Associates, 2001; pp. 41-48

2. Krieger N, Waterman PD, Gryparis A, Coull BA. Black carbon exposure, socioeconomic and racial/ethnic spatial polarization, and the Index of Concentration at the Extremes (ICE). *Health Place*. 2015 Jul;34:215-28. doi: 10.1016/j.healthplace.2015.05.008.

3. Krieger N, Waterman PD, Spasojevic J, Li W, Maduro G, Van Wye G. Public Health Monitoring of Privilege and Deprivation With the Index of Concentration at the Extremes. *Am J Public Health*. 2016 Feb;106(2):256-63. doi: 10.2105/AJPH.2015.302955.

4. McGhee E. California's Political Geography 2020. Public Policy Institute of California, February 2020. https://www.ppic.org/publication/californias-political-geography/

Figure 1. Weekly excess all-cause mortality in US states (rate per 100,000 person-years, smoothed), from January 1, 2020 – September 12, 2020, compared to weekly average all-cause mortality rate for 2015-2019, by quintile of state "political lean" in 2016 US presidential election

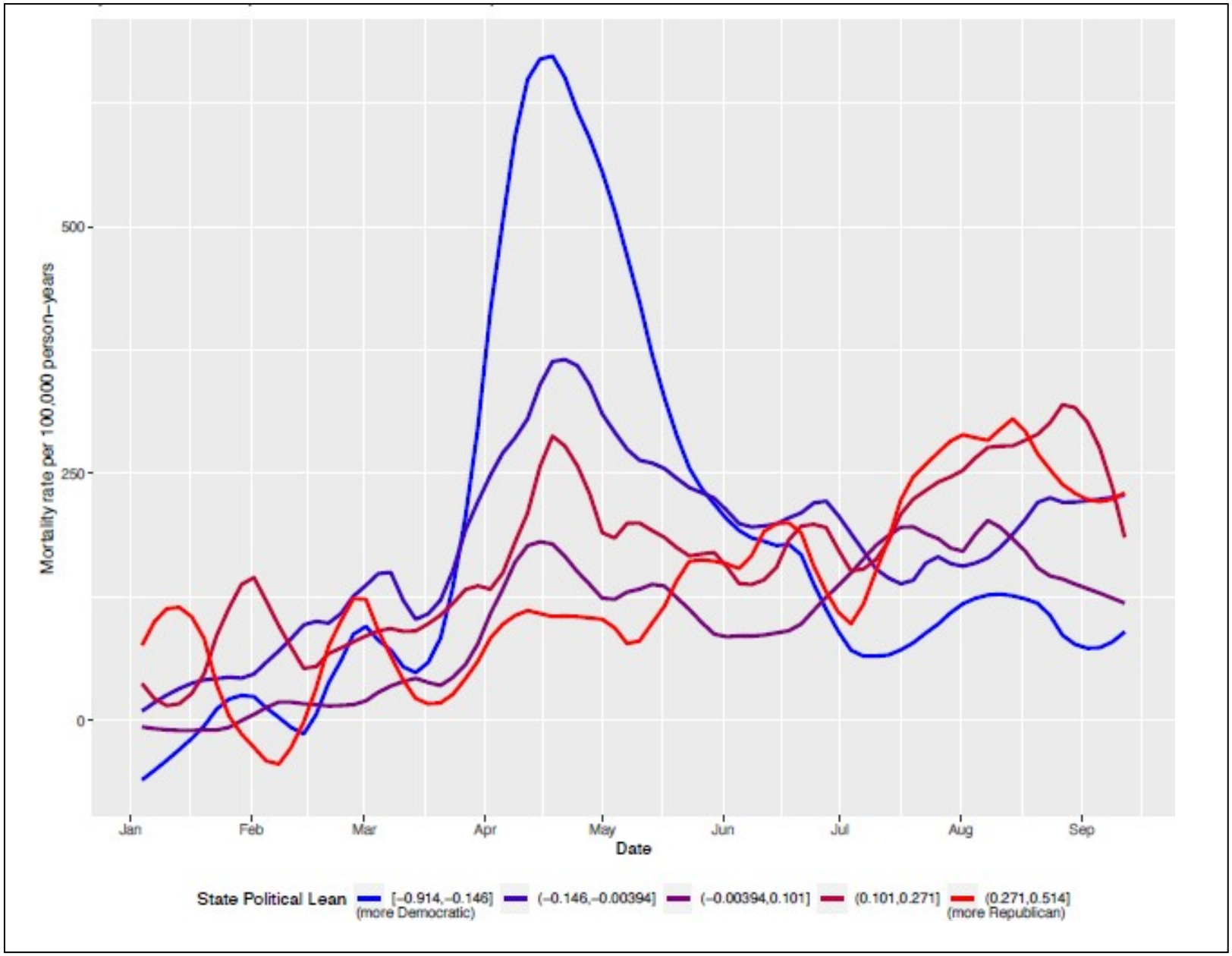

Figure 2. Weekly COVID-19 case rates and death rates (per 100,000 person years, smoothed), from March 18 – September 16, 2020, by quintile of county "political lean" in 2016 US presidential election

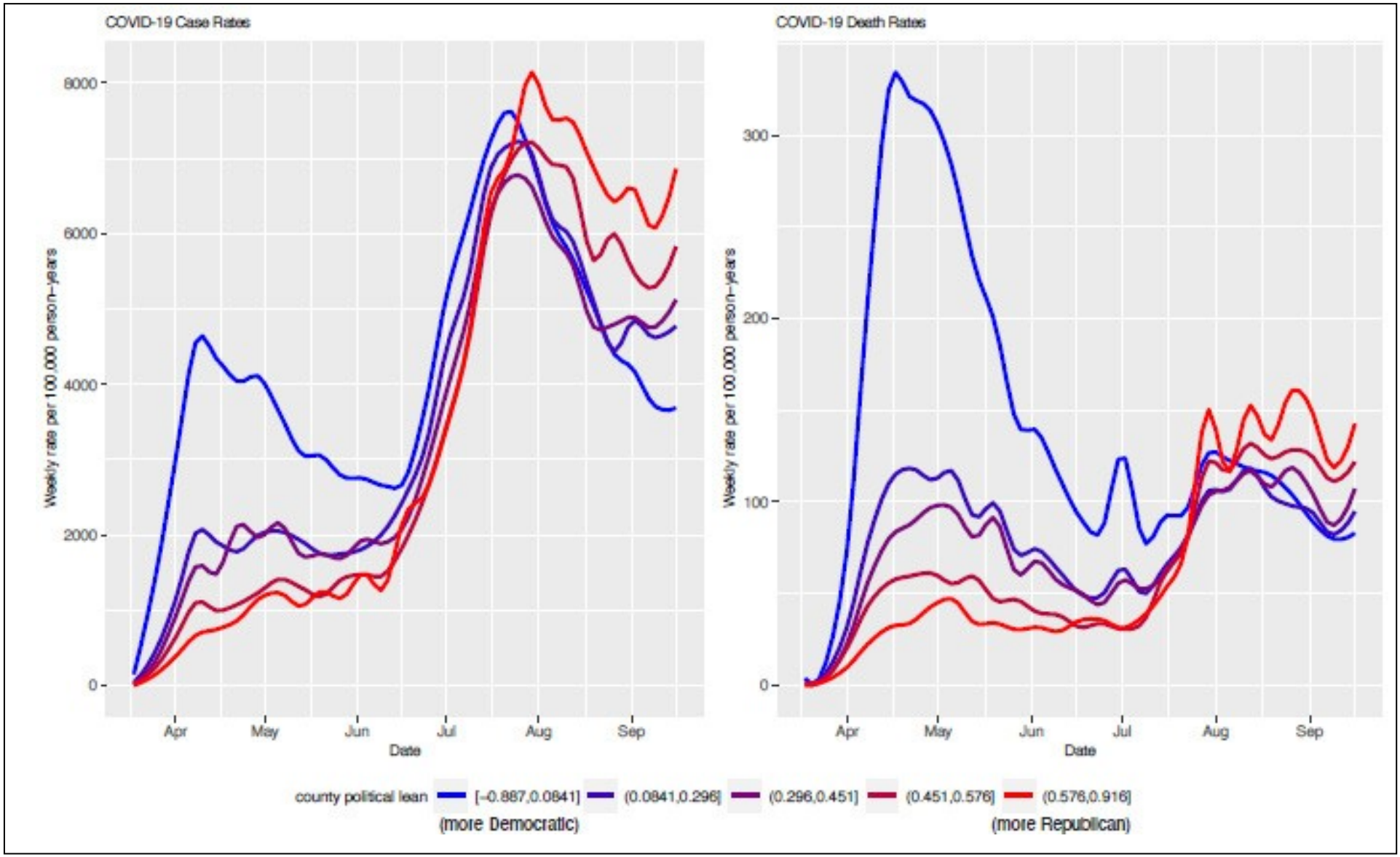

Figure 3. US COVID-19 deaths per million, from January 28, 2020 – September 21, 2020, by US state, and "political lean" of popular vote in 2016 US presidential election (the shading of each state plot) and electoral college vote (the border of each state plot).

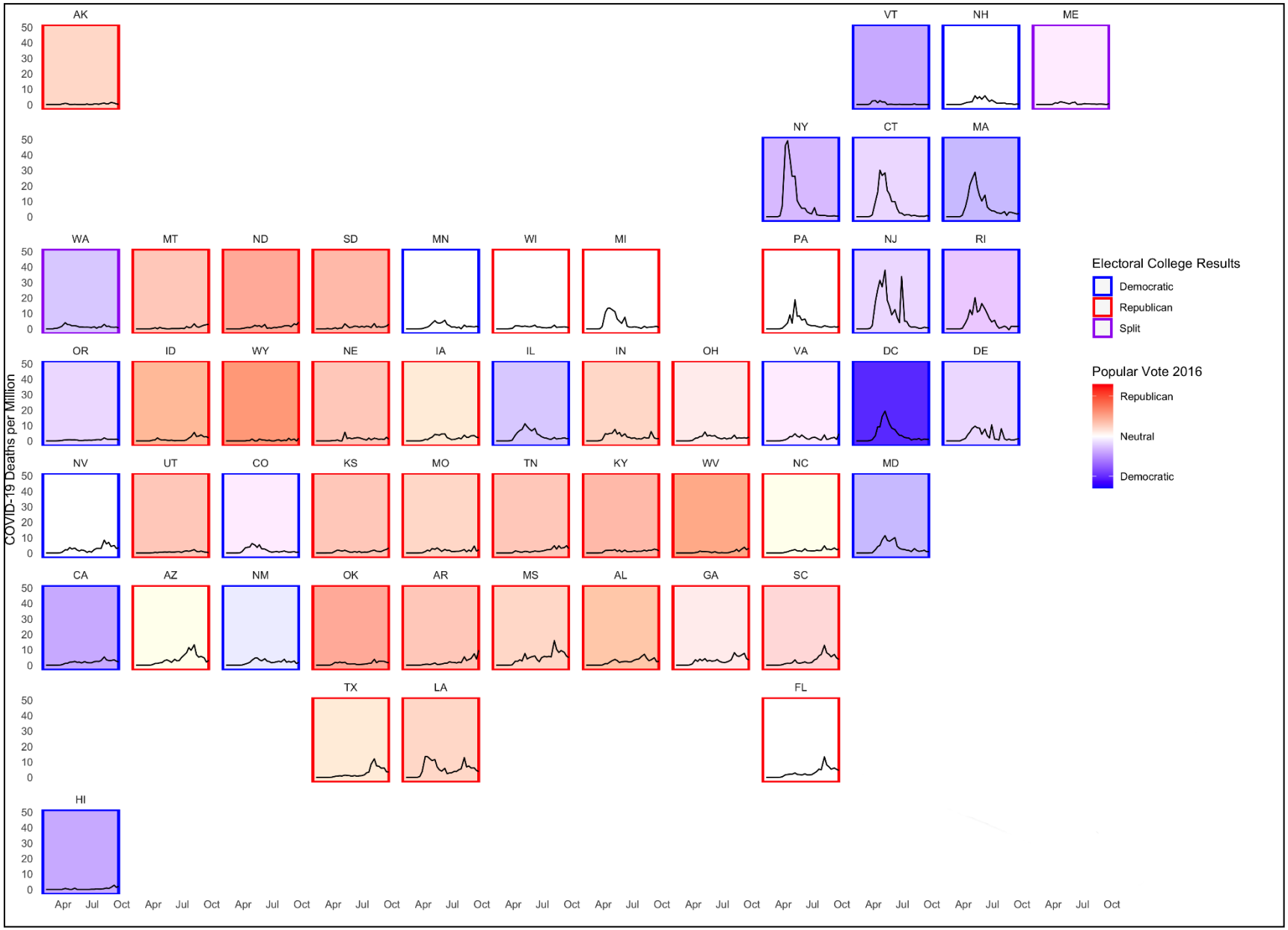

Figure 4. US COVID-19 cumulative deaths (per million) by county, from January 28, 2020 – September 21, 2020.

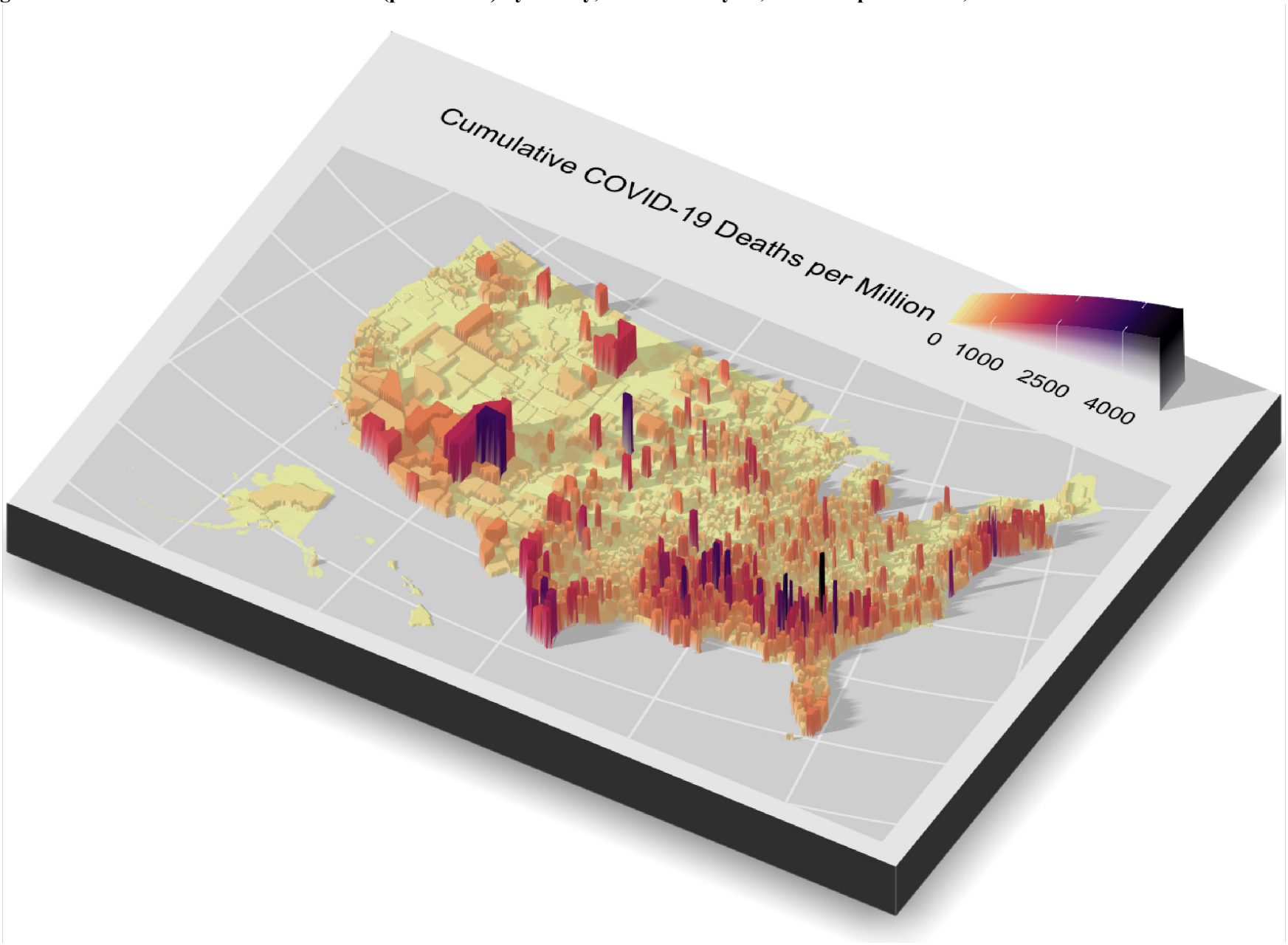

Figure 5. Poverty rates (2019) and COVID-19 mortality rates (cumulative, as of September 26, 2020) among the US Black and White Non-Hispanic Populations.