Associations between governor political affiliation and COVID-19 cases and deaths in the United States

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Abstract

Introduction

As the response to the COVID-19 pandemic has become increasingly politicized in the United States (US), political party affiliation of state leaders may contribute to policies affecting the spread of the disease. We examined differences in COVID-19 infection and death rates stratified by governor party affiliation across the 50 US states and the District of Columbia (DC).

Methods

We conducted a longitudinal analysis examining daily COVID-19 incidence and death rates from March 1 through September 30, 2020, for each US state and DC. We fit a Bayesian negative binomial model to estimate adjusted daily risk ratios (RRs) and posterior intervals (PIs) comparing infection and death rates by gubernatorial (mayoral for DC) party affiliation. We adjusted for several state-level variables, including population density, age, race, poverty, and health.

Results

From March to early June 2020, Republican-led states had, on average, lower COVID-19 incidence rates compared to Democratic-led states. However, on June 8, the association reversed, and Republican-led states had higher per capita COVID-19 incidence rates (RR=1.15, 95% PI: 1.02, 1.25). This trend persisted until September 30 (RR=1.26, 95% PI: 0.96, 1.51). For death rates, Republican-led states had lower average rates early in the pandemic, but higher rates from July 13 (RR=1.22, 95% PI: 1.03,1.37) through September 30 (RR=1.74, 95% PI: 1.20, 2.24).

Conclusion

Gubernatorial party affiliation may drive policy decisions that impact COVID-19 infections and deaths across the US. As attitudes toward the pandemic become increasingly polarized, policy decisions should be guided by public health considerations rather than political ideology.

Introduction

Coronavirus disease 2019 (COVID-19) has resulted in a global public health crisis. As of October 3, 2020, there have been over 7 million confirmed COVID-19 cases and over 2 million related deaths in the US.[1] In response to the pandemic, the governors of all 50 states declared states of emergency. Shortly thereafter, states began enacting policies to help stop the spread of the virus. However, these policies vary and are guided, in part, by decisions from state governors.

Under the 10th Amendment to the US Constitution, which gives states all powers not specifically apportioned to the federal government, state governors have the authority to take action in public health emergencies. For example, earlier this year, nearly all state governors issued stay-at-home executive orders that advised or required residents to shelter in place.[2] Two recent studies found that Republican governors, however, were slower to adopt stay-at-home orders, if they did so at all.[3,4] Moreover, another study found that Democratic governors had longer durations of stay-at-home orders.[5] Further, researchers identified governor Democratic political party affiliation as the most important predictor of state mandates to wear face masks.[6]

Although recent studies have examined individual state policies, such as mandates to socially distance, wear masks, and close schools and parks,[3,4,6-8] multiple policies may act in unison to impact the spread of COVID-19. Additionally, the pandemic response has become increasingly politicized.[7,9,10] As such, political affiliation of state leaders, and specifically governors, might best capture the omnibus impact of state policies. Therefore, the purpose of this study was to

examine differences in incidence and death rate trends over time, stratified by governors' political affiliation among the 50 states and DC.

Methods

We conducted a longitudinal analysis examining COVID-19 incidence and death rates from March 1 through September 30, 2020 for the 50 states and DC. Based on prior research,[3,4,6,7] we hypothesized that states with Republican governors would have lower incidence and death rates early in the pandemic as many Democratic governors preside over international hubs that served as points of entry for the virus in early 2020.[11,12] We also hypothesized that Republican-led states would have higher rates in later months, potentially reflecting policy differences that break along party lines. The Institutional Review Boards at the Medical University of South Carolina and Johns Hopkins Bloomberg School of Public Health deemed this research exempt.

We documented governor party affiliation for each US state; for DC, we used mayoral affiliation. We obtained daily COVID-19 incident case and death data from USAFacts,[13] a well-validated source of COVID-19 tracking information, for each county in the US.[14,15] We aggregated county data to obtain state-level data. We then adjusted for potential confounders chosen *a priori* from the US Census Bureau and the Robert Wood Johnson Foundation.[16-18] These included state population size to compute population density, the percentage of state residents aged 65 and older, the percentage of Black and Hispanic residents, the percentage below the federal poverty line, the percentage in poor or fair health, and the number of primary care physicians per 100,000 residents.

Statistical analysis

We fit Bayesian negative binomial models with daily incident cases and deaths for each state as the outcomes. The models included penalized cubic Bsplines for both the fixed and random (state-specific) temporal effects. We included state population as an offset on the log scale. We assigned ridging priors to the spline coefficients.[19] We standardized adjustment variables and assigned diffuse normal priors to their coefficients. We assigned a gamma prior to the dispersion parameter. For posterior computation, we developed an efficient Gibbs sampler[20,21] and ran the algorithm for 50,000 iterations with a burn-in 10,000 to ensure convergence. Sensitivity analyses demonstrated the model's robustness to prior specification.

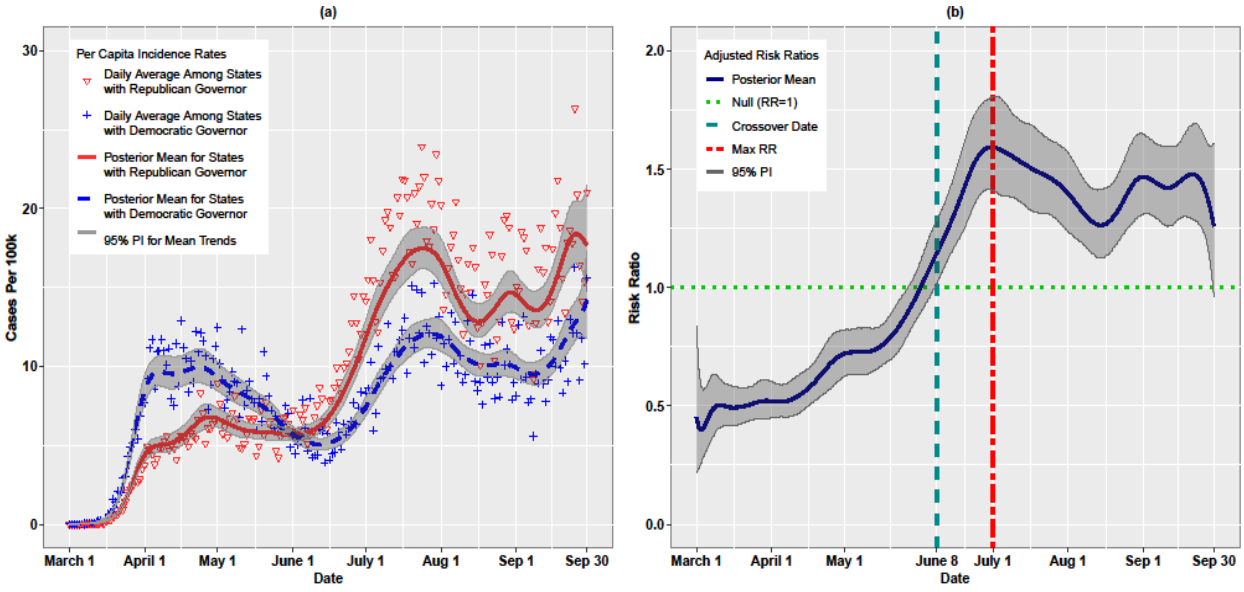
We stratified states by governors' affiliation and graphed the posterior mean incidence and death rates daily for the reference covariate group, as well as the 95% posterior intervals (PIs). We reported adjusted risk ratios (RRs) and 95% PIs comparing states, with RRs > 1.00 indicating higher rates among Republican-led states. We conducted analyses using R software version 3.6 (R Core Team, 2019).

Results

The final sample comprised 10,914 observations (51 states x 214 study days) with 26 Republican-led and 25 Democratic-led states. Figures 1(a) and 1(b) present incidence trends (in cases per 100,000) and adjusted RRs by gubernatorial affiliation. Republican-led states had lower rates from March to early June 2020. However, on June 8, the association reversed (RR=1.15, 95% PI: 1.02, 1.25), indicating that Republican-led states had on average 1.15 times more cases per 100,000 than Democratic-led states. The RRs increased steadily thereafter,

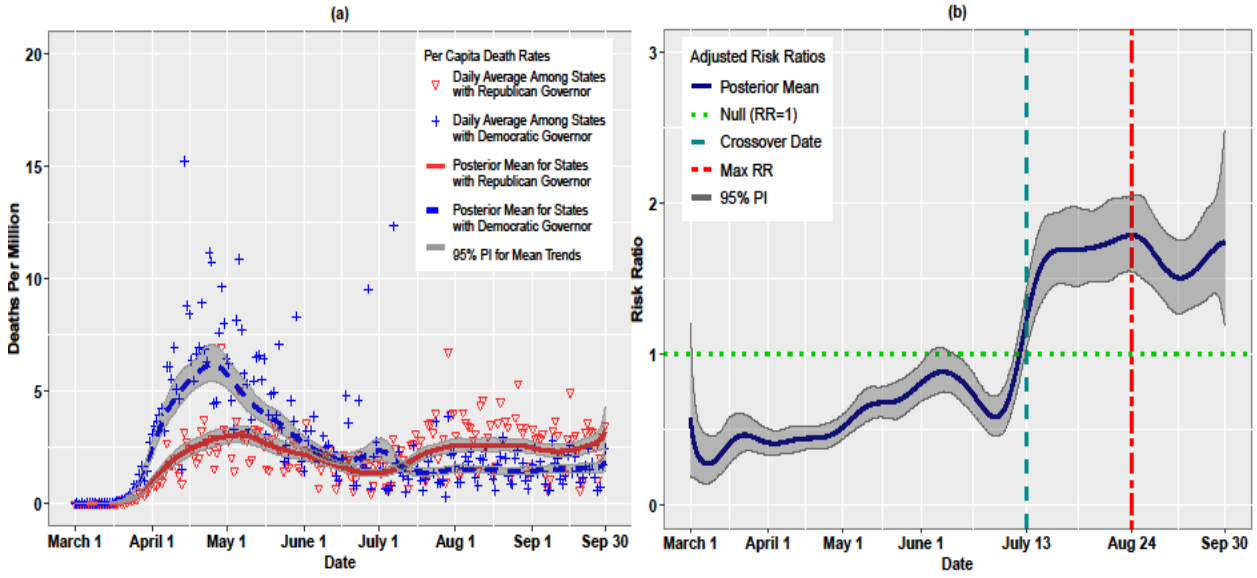
achieving a maximum of 1.59 (95% PI: 1.42, 1.73) on July 1. The trends leveled but remained positive through September 29 (RR=1.31, 95% PI: 1.06, 1.52). However, on September 30, risk ratio overlapped the null (RR=1.26, 95% PI: 0.96, 1.51).

Figure 1. (a) Per capita COVID-19 incidence rates by governor affiliation; (b) adjusted risk ratios (RRs) and 95% posterior intervals (PIs)



We observed a similar pattern for the death trends shown in Figures 2(a) and 2(b). Republican-led states had lower death rates (per million) early in the pandemic, but the trend reversed on July 13 (RR=1.22, 95% PI: 1.03,1.37). The estimated RRs increased sharply through July 25 (RR=1.69, 95% PI: 1.46, 1.87) and hovered between 1.50 and 2.00 through September 30 (RR=1.74, 95% PI: 1.20, 2.24).

Figure 2. (a) Per capita COVID-19 death rates by governor affiliation; (b) adjusted risk ratios (RRs) and posterior intervals (PIs)



Discussion

In this longitudinal analysis, we found that Republican-led states had fewer per capita COVID-19 cases and deaths early in the pandemic, but these trends reversed in early June (for cases) and in July (for deaths). These early trends could be explained by high COVID-19 rates among Democratic-led states that are home to initial ports of entry for the virus in early 2020.[11,12] However, the subsequent reversal in trends to Republican-led states may reflect policy differences that could have facilitated the spread of the virus.[3,4,6-9]

For instance, Adolph et al. found that Republican governors were slower to adopt both stay-at-home orders and mandates to wear face masks.[3,6] Other studies have shown that Democratic governors were more likely to issue stay-at-home orders with longer durations.[4,5] Moreover, decisions by Republican governors in spring 2020 to retract policies, such as the lifting of stay-

at-home orders on April 28 in Georgia,[22] may have contributed to increased cases and deaths. Thus, governors' political affiliation might function as an upstream progenitor of multifaceted policies that, in unison, impact the spread of the virus. Although there were notable exceptions among Republican governors in states such as Maryland, Ohio, and Massachusetts, Republican governors were by and large less likely than their Democratic counterparts to enact policies aligned with public health social distancing recommendations.[3]

There are, however, limitations to this study. We conducted a population-level rather than individual-level analysis. Although we controlled for potential confounders (e.g., population density), the findings could reflect the virus's spread from urban to rural areas.[11,12] Additionally, as with any observational study, we cannot infer causality. Finally, governors are not the only authoritative actor in a state. Future research could explore associations between party affiliation of state or local legislatures, particularly when these differ from governors.

Our findings suggest that governor political party affiliation may differentially impact COVID-19 incidence and death rates. As attitudes toward the pandemic become increasingly polarized,[7,9,10] policy decisions should be guided by public health considerations rather than political expedience,[23] as the latter may lead to increases in COVID-19 cases and deaths.

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