Pandemic Politics: Timing State-Level Social Distancing Responses to COVID-19

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Context. Social distancing is an essential but economically painful measure to flatten the curve of emergent infectious diseases. As the novel coronavirus that causes COVID-19 spread throughout the United States in early 2020, the federal government left to the states the difficult and consequential decisions about when to cancel events, close schools and businesses, and issue stay-at-home orders.

Methods. We present an original, detailed dataset of state-level social distancing policy responses to the epidemic, then apply event history analysis to study the timing of implementation of five social distancing policies across all fifty states.

Results. The most important predictor of when states adopted social distancing policies is political: all else equal, states led by Republican governors were slower to implement such policies during a critical window of early COVID-19 response.

Conclusions. Continuing actions driven by partisanship, rather than public health expertise and scientific recommendations, may exact greater tolls on health and broader society.

> If the experience of the 1918 pandemic is relevant, social distancing and other NPI strategies would, in all likelihood be implemented in most communities at some point during a pandemic. The potential exists for such interventions to be implemented in an uncoordinated, untimely, and inconsistent manner that would impose economic and social costs similar to those imposed by strategically implemented interventions but with dramatically reduced effectiveness.
>
> Centers for Disease Control and Prevention (2007)

Introduction

The coronavirus pandemic has created a natural experiment in which elected officials must make urgent and far-reaching policy decisions in a domain where they often have no personal experience or expertise, and where available information is limited, uncertain, or so dated as to be of questionable relevance. The most significant decisions they have faced so far – in terms of protecting the public health and their economies – relate to social distancing.

SARS-CoV-2, the virus that causes COVID-19, is a contagious emergent pathogen for which there is no pre-existing immunity, available vaccine, or effective treatment. In the absence of more widely available testing and a stronger evidence base on SARS-CoV-2 transmission dynamics, more refined infectious disease containment strategies cannot be fully deployed (Bai, Yao, Wei, Tian, Jin, Chen, and Wang, 2020). Consequently, social distancing policies, which aim to reduce close contact among individuals, have emerged as the primary tool to mitigate the epidemic (Niu and Xu, 2020; Anderson, Heesterbeek, Klinkenberg, and Hollingsworth, 2020; Ferguson, Laydon, Nedjati-Gilani, Imai, Ainslie, Baguelin, Bhatia, Boonyasiri, Cucunubá, Cuomo-Dannenburg, Dighe, Fu, Gaythorpe, Thompson, Verity, Volz, Wang, Wang, Walker, Walters, Winskill, Whittaker, Donnelly, Riley, and Ghani, 2020). Social distancing is especially vital for preventing a key multiplier of COVID-19 fatality rates: overwhelmed hospitals (Sun, Chen, and Viboud, 2020; Anderson et al., 2020; Lazzerini and Putoto, 2020; Kaiser, 2020). Recent studies support the effectiveness of social distancing mandates, suggesting that measures adopted by states during the spring of 2020 reduced mobility by as much as 23%, potentially saving many lives (Malik, Couzens, and

Omer, 2020; White and Hébert-Dufresne, 2020; Siedner, Harling, Reynolds, Gilbert, Venkataramani, and Tsai, 2020).

The public health case for mandatory social distancing in the United States developed quickly in the wake of the first reports of community transmission on 26 February in Washington state. Estimates of the uncontrolled doubling-time of COVID-19 cases vary and are complicated by the slow rollout of effective testing in the US, but many studies find doubling times in the range of three days absent any intervention to nine days if social distancing measures are in place (Pellis, Scarabel, Stage, Overton, Chappell, Lythgoe, Fearon, Bennett, Curran-Sebastian, Das et al., 2020; Maier and Brockmann, 2020; Wu, Darcet, Wang, and Sornette, 2020; Ferguson et al., 2020; Anderson et al., 2020). These estimates imply daily growth rates of 8.0% to 26.0%. Thus a two-day delay of a fully effective response to the epidemic could result in a peak caseload that is up to 17% to 59% higher, all else equal.

For public health officials, therefore, early government action to promote social distancing was seen as a strong determinant of the course the epidemic would take (Malik, Couzens, and Omer, 2020; White and Hébert-Dufresne, 2020; Siedner et al., 2020).

In late February 2020, public health experts urged government leaders to quickly mandate social distancing to "flatten the curve" of coronavirus infections (Kaiser, 2020; Chinazzi, Davis, Ajelli, Gioannini, Litvinova, Merler, Piontti, Mu, Rossi, Sun, Viboud, Xiong, Yu, Halloran, Longini, and Vespignani, 2020). Many used the 1918 flu pandemic to demonstrate their point: in 1918, Philadelphia held a parade welcoming soldiers returning from World War I whereas St. Louis cancelled its parade. In Philadelphia, the epidemic peaked two months sooner with 250 deaths per hundred thousand compared to just 50 deaths per hundred thousand in St. Louis (Hatchett, Mecher, and Lipsitch, 2007; Bootsma and Ferguson, 2007). Experts also pointed to the more recent trajectories of epidemics in China, South Korea, Italy, and Spain to convey the gravity of what was likely to happen in the US if political leaders did not act quickly and decisively.

Under the federal and state constitutions, key decisions rested with executives, and particularly with governors, whose powers in state emergencies are typically singular and extensive. Most governors have little expertise where emergent infectious diseases are concerned. One might therefore expect the fifty states to quickly adopt the recommendations of public health experts. Yet it became quickly obvious that different governors were responding to a shared threat differently.

In an echo of decisions made a century before, some states moved more quickly than others to implement social distancing policies, for reasons not obviously related

to considerations of public health. For instance, Kentucky reported its first confirmed case of COVID-19 on 6 March 2020. Governor Andy Beshear (D) immediately called a state of emergency, encouraged social distancing, and closed bars and restaurants ten days later. Neighboring Tennessee reported its first confirmed case a day earlier than Kentucky on March 5th. But Governor Bill Lee (R) waited a week to declare a state of emergency and more than two weeks to close restaurants and bars on 22 March (WKYT-FM, 2020).

As the CDC warned in 2007, delays variation in the adoption of social distancing policies across states might not only increase the total volume of cases within states that delay – these delays could also impede the effectiveness of states that promptly implement social distancing, as they are likely to import cases from lagging neighbor states.

In this paper we draw on an original dataset to investigate differences in the timing of state social distancing policy adoptions. As elected officials, governors who believed the experts faced a dilemma. At a time when most states had few reported cases, the political dynamics of pandemics offered governors little reason to expect that they would be rewarded by constituents for taking decisive action. Members of the public who experience the massive economic costs of social distancing mandates may perceive them as an overreaction in precisely those cases where such mandates successfully prevent widespread mortality. We argue that this was especially true for Republican Governors. For decades, Republican elites and conservative media have portrayed government, science, universities, and the mainstream media as part of the opposition. The White House was also quick to charge that Democrats were politicizing the coronavirus response (Gollust, Nagler, and Fowler, 2020) . This produced a political situation where Republican voters were much less likely to view the novel coronavirus as a public health threat, were less likely to modify their own behavior, and were less supportive of costly preventive actions such as social distancing (Kushner Gadarian, Goodman, and Pepinsky, 2020; Grossman, Kim, Rexer, and Thirumurthy, 2020; Milosh, Painter, Van Dijcke, and Wright, 2020). Indeed, more Republicans were concerned about Ebola during Obama's presidency than they were about COVID-19 under Trump (Tesler, 2020).

To make matters worse, the one Republican who could provide them with needed political cover repeatedly failed to do so. On numerous occasions in press conferences viewed by millions of Americans, President Trump undermined efforts by public health experts to convey the seriousness of the situation. On March 4, Trump insisted that COVID-19 was similar to the flu; two days later, he falsely claimed the situation

in Italy was improving, and that the US was handling coronavirus much better than other industrialized countries. As late as March 15, with reported cases rising rapidly, he continued to claim that the epidemic within the US was under control (Qiu, Marsh, and Huang, 2020). In April, Trump and other Republican leaders – such as Gov. Brian Kemp of Georgia – were leading the charge to "reopen" states. The president's supporters in the conservative media repeatedly cast doubt on the warnings of experts. Fox News personality Sean Hannity even pushed a conspiracy theory that coronavirus was an effort by the "deep state" to "manipulate markets, suppress dissent and push mandated medicines." Viewers of such programs were less likely to report practicing social distancing measures. (Media Matters Staff, 2020; Bursztyn, Rao, Roth, and Yanagizawa-Drott, 2020).

Although partisan politics is a clear contender for explaining variation in social distancing policy implementation across states, it is important to consider other possibilities. For example, state with fewer confirmed cases of the virus may choose to delay implementation. The seemingly quicker action of "blue states" could simply be a result of the coronavirus first emerging in cities like Seattle, San Francisco, and New York. The social and economic costs of imposing social distancing policies may also have been higher in some states. Shutting restaurants and public places is more costly in states that are more dependent on tourism. States with more limited economic resources will also find it more difficult to weather an economic shutdown. Closing schools is more difficult in states where a greater proportion of children depend on schools for subsidized lunches (Ferré-Sadurní, 2020). On the other hand, states with more hospital beds per capita may feel better prepared to handle a surge in coronavirus cases and therefore less willing to implement policies with economic costs. Prior research also suggests that governors sometimes follow the lead of neighboring or peer states (Desmarais, Harden, and Boehmke, 2015). Likewise, separating the effects of Republican governors from Republican-leaning voters is challenging, though aided by the fact that some blue states, like Maryland, have Republican governors (and *vice versa*).

To investigate why some states were slower to implementing social distancing than others beginning in March 2020, we assembled information on announcement dates for five social distancing measures – recommendations and restrictions against public gatherings, school closures, restrictions on the normal operation of restaurants, closures of non-essential businesses, and statewide stay-at-home orders. We then used event history analysis to disentangle many competing explanations for differences in state timing. Our findings are unambiguous: the party of the governor is the most important predictor of the early adoption of social distancing policies. States with Republican

governors took about two days longer to announce social distancing mandates. Given the potential for exponential growth of cases without effective social distancing measures, this is a dramatic and potentially devastating delay.

State-Level Social Distancing Measures

We examine state social distancing measures starting from the date of the first reported US case of transmission on 26 February 2020.[1] Our primary interest is in state policymaking during the earliest phase of the epidemic, from 26 February to 23 March, before the national debate on "re-opening the economy" had fully developed. During this period, governors were essentially left to their own devices to set state policy, and by 23 March, every governor had adopted at least one statewide social distancing mandate. The following day, President Trump began to argue for a rapid re-opening of the economy, setting off a new phase of the debate over social distancing in which partisan differences continued to play a critical role in determining policy directions (Liptak, 2020). Although we present data through 6 April – and find that our partisan explanation holds through this later date – the actions Governors took or did not take in the crucial and uncertain early days of the epidemic are arguably the most revealing.

Our data collection process began with data on executive actions compiled by the National Governors Association (NGA), which we verified, corrected, updated, and supplemented using information obtained directly from governors' executive orders, public health orders, and in rare cases when executive orders were unavailable, from press conferences and media reports (Fullman, Bang-Jensen, Reinke, Magistro, Amano, Wilkerson, and Adolph, 2020). We focus here on five types of social distancing measures:

1 We consider the first community transmission in the US more epidemiologically and politically relevant than initial reported transmission in each state. At the time of first community transmission in the US, virologists suggested this strain had been circulating in Washington state since mid-January (Bedford, 2020). Given scarce and unreliable testing, governors faced a choice between immediate action as national cases increased or waiting for (potentially belated) reports of in-state cases. We prefer to treat the decision to wait for a confirmed case as something to be explained, and so control for confirmed in-state cases in our model. However, our results are robust to using the first in-state confirmed case as a starting date for each state.

(1) Recommendations or restrictions on gatherings: We code the date on which the first such measure was announced, regardless of the size of gathering specified.[2]

(2) School closures: We code the date that the governor instructs or recommends school districts to close public K-12 schools.

(3) Restaurant restrictions: We code the date on which states first announced mandatory restrictions on in-person dining, including maximum capacity limits likely to render most restaurants non-viable.

(4) Non-essential business closures: The classification of non-essential businesses varies by state.[3]

(5) Stay-at-home orders: This coding includes mandates to stay at home but not advisory orders that recommend that citizens remain at home.

Our focus is on when these policies were announced rather than implemented, for two reasons. First, the effects of these emergency measures on social behavior should be immediate. The state's power to compel socially responsible behavior often depends on "quasi-voluntary compliance," where most citizens choose pro-social behaviors following a cue from the state that is backed by the threat of sanction (Levi, 1988). Second, our goal is to predict the timing of governors' actions, which naturally points to announcement dates. Regardless, announcement and enactment dates were often closely linked, with many observed differences related to non-policy considerations, such as weekends or pre-scheduled school vacations.

Figure 1 displays when different states announced each of these five social distancing policies over the four-week study period. No state acted before March 10, thirteen days after the first report of community transmission. As states began to act, the general pattern was to first discourage or restrict public gatherings, then to restrict or close schools and restaurants, steps which virtually every state eventually took. A majority,

2 We include recommendations in this category for two reasons: first, this was often the first action states took, and early actors did not always revisit these policies with a restrictive mandate; second, the target of these measures was typically large events that would be unlikely to maintain viable attendance under the cloud of a state recommendation to cancel events.

3 We include in this coding any mandated closures which explicitly encompass all "non-essential businesses" or which explicitly provide extensive lists of non-essential businesses, while excluding more limited business closures that target only narrow subsets of such businesses.

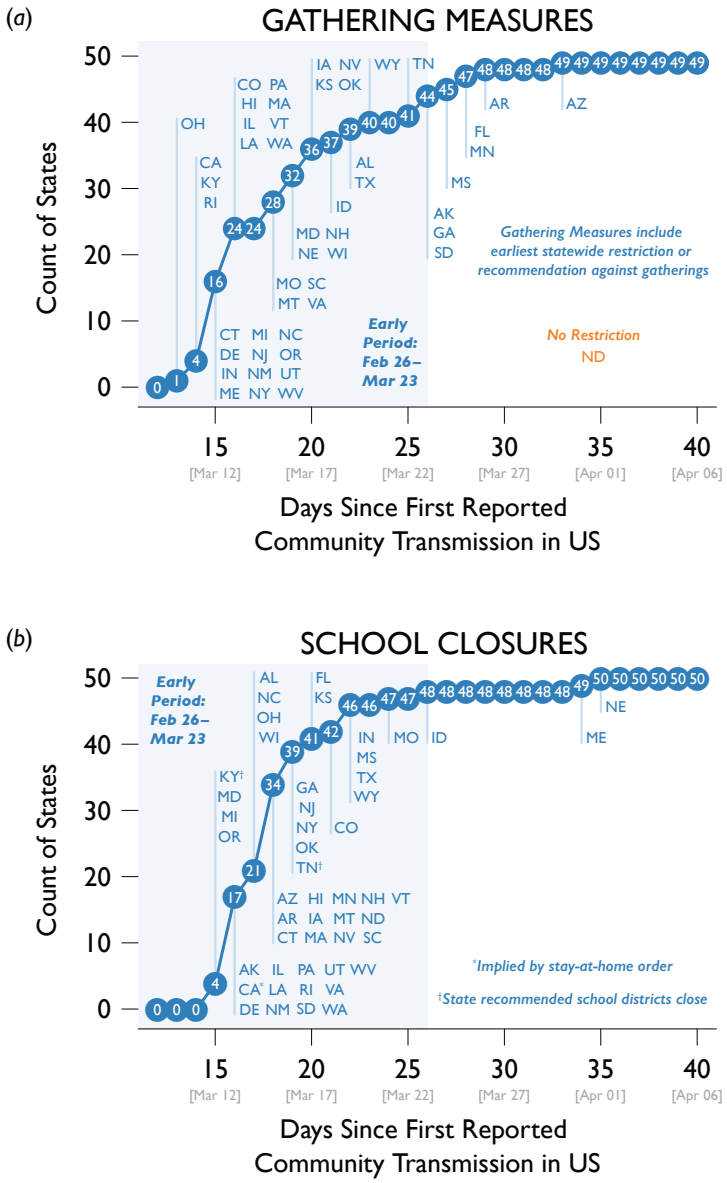
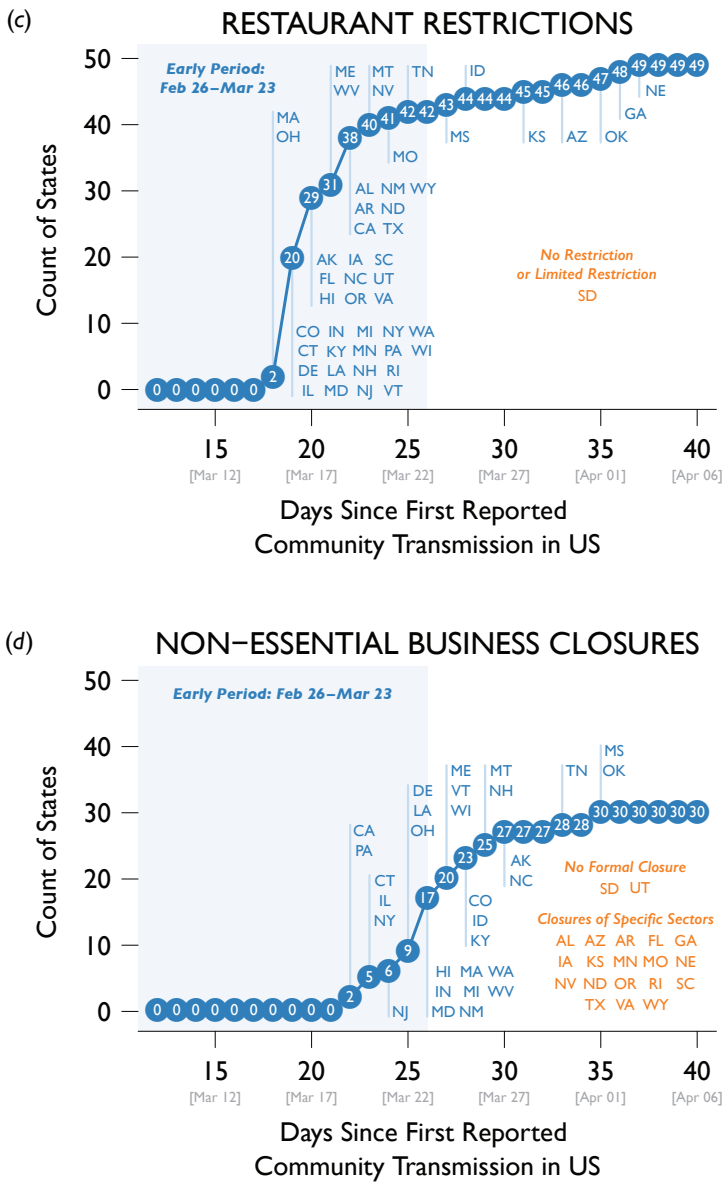


Figure 1. *The diffusion of (a) gathering measures, (b) school closures, (c) restaurant restrictions, (d) non-essential business closures, (e) stay-at-home orders, and (f) all five social distancing measures across the states through 6 April 2020.* States recorded by date of policy announcement. Sources: Authors' original data collection (Fullman et al., 2020), supplemented by National Governors Association and Kaiser Family Foundation. Data available at `http://covid19statepolicy.org`



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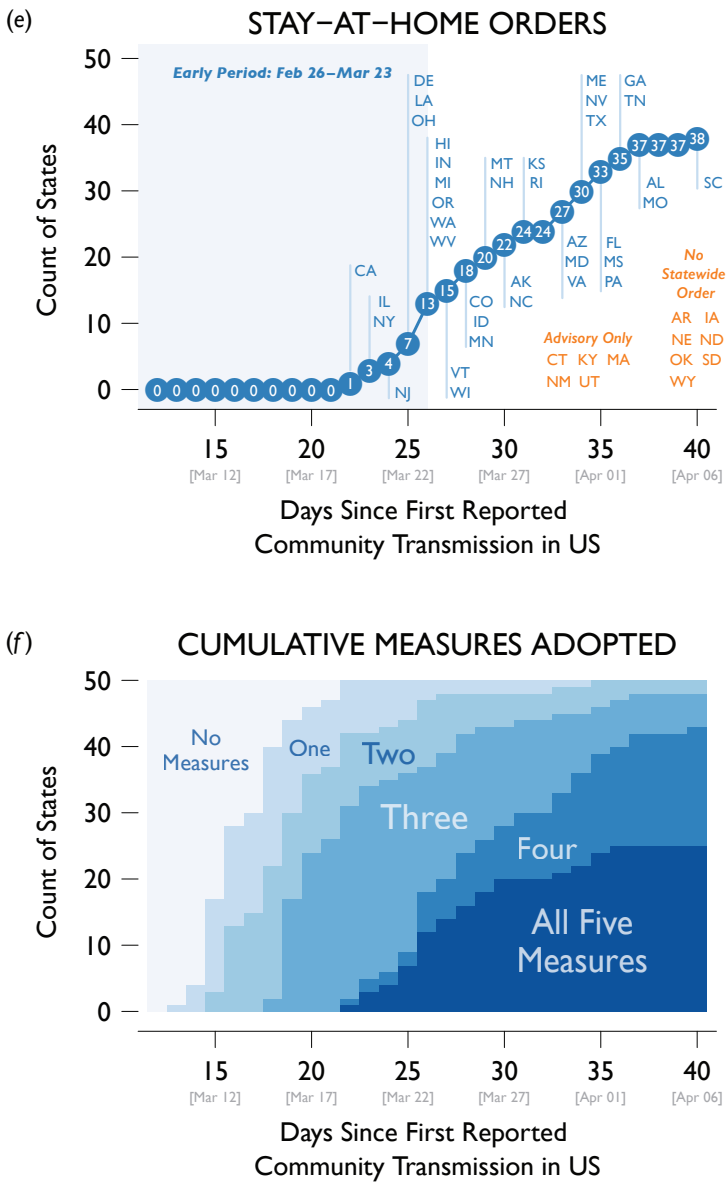

Figure 1, continued.

but far from all states, then closed non-essential business and issued stay-at-home orders. By the end of the early period (through 23 March, highlighted in blue in the first five plots), 44 states had limited public gatherings; 48 states had closed schools and 42 had restricted restaurant operations, 17 closed non-essential businesses, and 13 had issued stay-at-home orders. The sixth plot in Figure 1 illustrates the rapid growth in the adoption of multiple social distancing measures by many states, while revealing a substantial number of hold-out states that resisted the more economically painful measures of issuing stay-at-home orders and (especially) closing non-essential businesses.

Modeling Social Distancing Policy with Event History Analysis

We estimate an event history model to predict the timing of announced social distancing directives across U.S. states from 26 February 2020 to 23 March 2020. We model the likelihood that a state will implement each social distancing policy as a function of time (measured in days) with a pooled, stratified Cox proportional hazards model, often referred to as the Wei-Lin-Weissfeld marginal model (Wei, Lin, and Weissfeld, 1989). This approach allows us to examine the common factors affecting implementation of social distancing across states by (1) pooling the five social distancing measures shown in Figure 1 in a single model, (2) stratifying baseline hazards across the five policy types to allow for varying underlying tendencies to adopt some policies more quickly than others, and (3) clustering standard errors by state. The baseline hazard rate captures any purely national trends, such as the common tendency of states to adopt social distancing policies as national deaths climb or public awareness of COVID-19 increases, while leaving cross-state variation to be explained by covariates.[4]

We expect state level responses to vary based on differences in social, economic and political costs. We include five covariates in our baseline model: the number of confirmed cases of COVID-19 in the state (Center for Systems Science and Engineering, Johns Hopkins University, 2020), logged gross state product (GSP) per capita (US Bureau of Economic Analysis, 2020), whether the state has a Republican governor (The National Conference of State Legislators, 2020), the percent of neighboring states enacting each social distancing measure, and population density as the log of persons per square mile (US Census, 2017).

4 Analyses were performed in `R` (version 4.0.2) using the `survival` and `coxed` (Harden and Kropko, 2019) packages. All visualizations constructed using the `tile` package (Adolph, 2020).

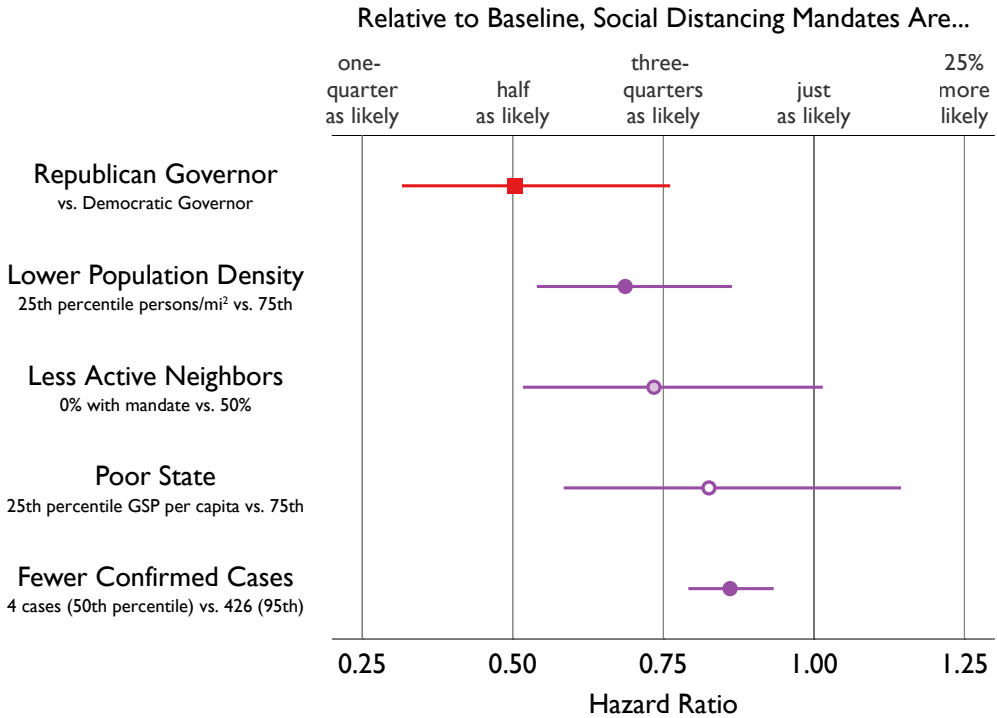

Figure 2. *Relative probability of adopting an additional social distancing measure, by factor.* Estimated hazard ratios obtained from a pooled stratified Cox proportional hazards model on all social distancing policies announced by the fifty states, 26 February – 23 March 2020. The red square marks the hazard ratio for Republican governors; purple circles indicate hazard ratios for other covariates. Horizontal lines are 95% confidence intervals. Solid symbols indicate significance at the 0.05 level; shaded symbols indicate significance at the 0.1 level.

Results

We tested a large number of potential explanations of social distancing timing. Here we present results for the baseline model, representing the impact of each factor in two ways. First, we report the degree to which a factor reduces the likelihood that a state will announce a new social distancing policy on a given day (Figure 2; see Appendix for tabular results). Second, we simulate the average delay each factor would cause if it were present in every state (Figure 3). For example, if every state had a Republican governor, but were otherwise unchanged, how much sooner or later would states have announced each social distancing measure on average?

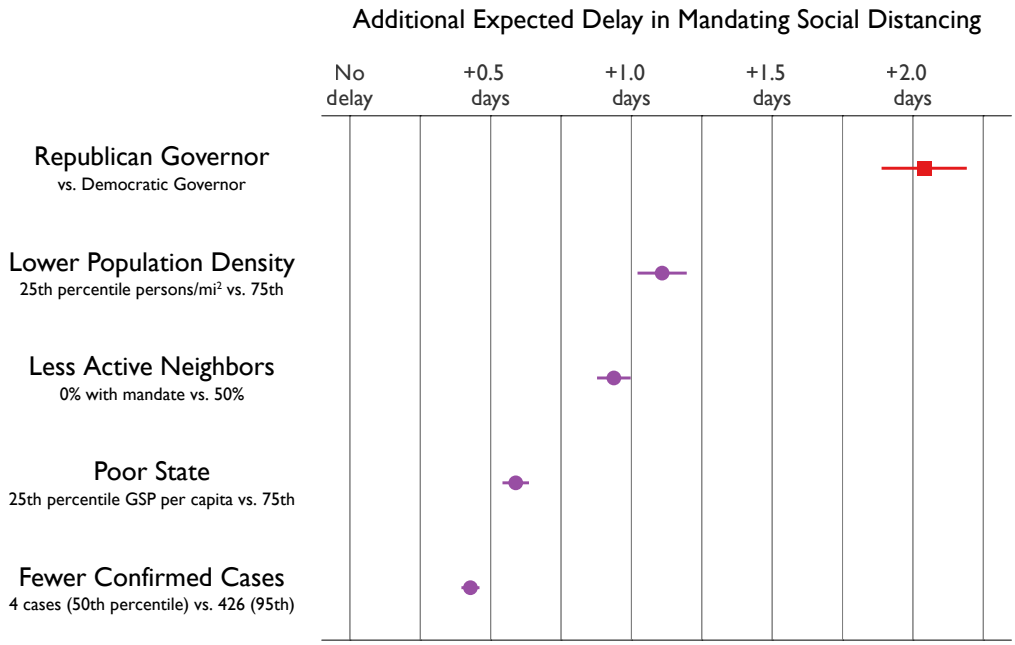

Figure 3. *Expected delay in adopting an additional social distancing measure, by factor.* Estimated average marginal effects obtained by post-estimation simulation from a pooled stratified Cox proportional hazards model on all social distancing policies announced by the fifty states, 26 February – 23 March 2020. The red square marks the average marginal effect for Republican governors; purple circles indicate average marginal effects for other covariates. Horizontal lines are 95% confidence intervals, which are bootstrapped using non-parametric step functions. Solid symbols indicate significance at the 0.05 level.

States with Republican governors were slower to adopt social distancing policies. The party of the governor is the most important predictor of the timing of social distancing measures. All else equal, Republican governors were 49.7% (95% CI: 24.1% to 68.2%) less likely to issue a given social distancing policy as their Democratic counterparts on any given day. By the same token, Republican governors were slower to act by an average of 2.04 days (95% CI: 1.89 to 2.19). As discussed earlier, research predicts a 17% to 59% increase in future caseloads given a delay of this magnitude in the implementation of effective social distancing (Siedner et al., 2020; White and Hébert-Dufresne, 2020).

States with lower population density were slower to adopt social distancing. Governors of rural states may have believed COVID-19 would transmit more slowly in their states. For example, states at the 25th percentile of population density were 31.3% (95% CI:

13.9% to 45.8%) less likely to announce social distancing measures as their denser peers at the 75th percentile, leading to a delay of 1.11 days on average (95% CI: 1.03 to 1.19).

States with fewer confirmed cases were slower to take up social distancing policies. Confirmed state-level caseload had a small but significant impact on policy timing in the early phase of the epidemic. For example, a state with four confirmed cases (the median for all state-days across the early period) was just 13.9% (95% CI: 6.9% to 20.6%) less likely to announce a social distancing policy on a given day compared to a state with 426 cases (the 95th percentile). This translates to an average delay of just 0.43 days (95% CI: 0.40 to 0.45), countering the widespread belief that the more aggressive early action of states with Democratic governors was a simple function of higher caseloads.

Gross state product had no significant effect on social distancing policies. All else equal, states at the 25th percentile of gross state product per capita were 17.4% less likely to implement social distancing than states at the 75th percentile, but this result was not significant (95% CI: -14.2% to 41.3%). Taking into account each states' particular context, the simulated average marginal delay for poorer states is significant, but relatively small (0.59 days; 95% CI: 0.55 to 0.63).

States may be more likely to adopt social distancing policies when neighboring state also act. A state with no neighbors announcing a policy on a given day was 26.4% less likely to announce that a state with 50% or more of its neighbors adopting the policy, but this result was only significant at the 0.1 level (90% CI: 0.4% to 45.2%). Taking context into account, states with no neighboring states taking action delayed each policy by an average of 0.94 days (95% CI: 0.88 to 0.99).

Sensitivity Analysis

Figure 4 shows the estimated hazard rate of policy implementation under Republican governors (all else equal) under a series of alternative models. The effect of Republican governors is highly robust to alternative timeframes, various measures of public health indicators, and other control variables. Although we believe – given freedom of interstate travel and inadequate testing in late February – that it is appropriate to treat each state as "at risk" from the first reports of community spread in the US, the Republican governor effect persists if we allow the "start date" for the event history model to vary by state, based on each state's first confirmed report of community infection. Like-

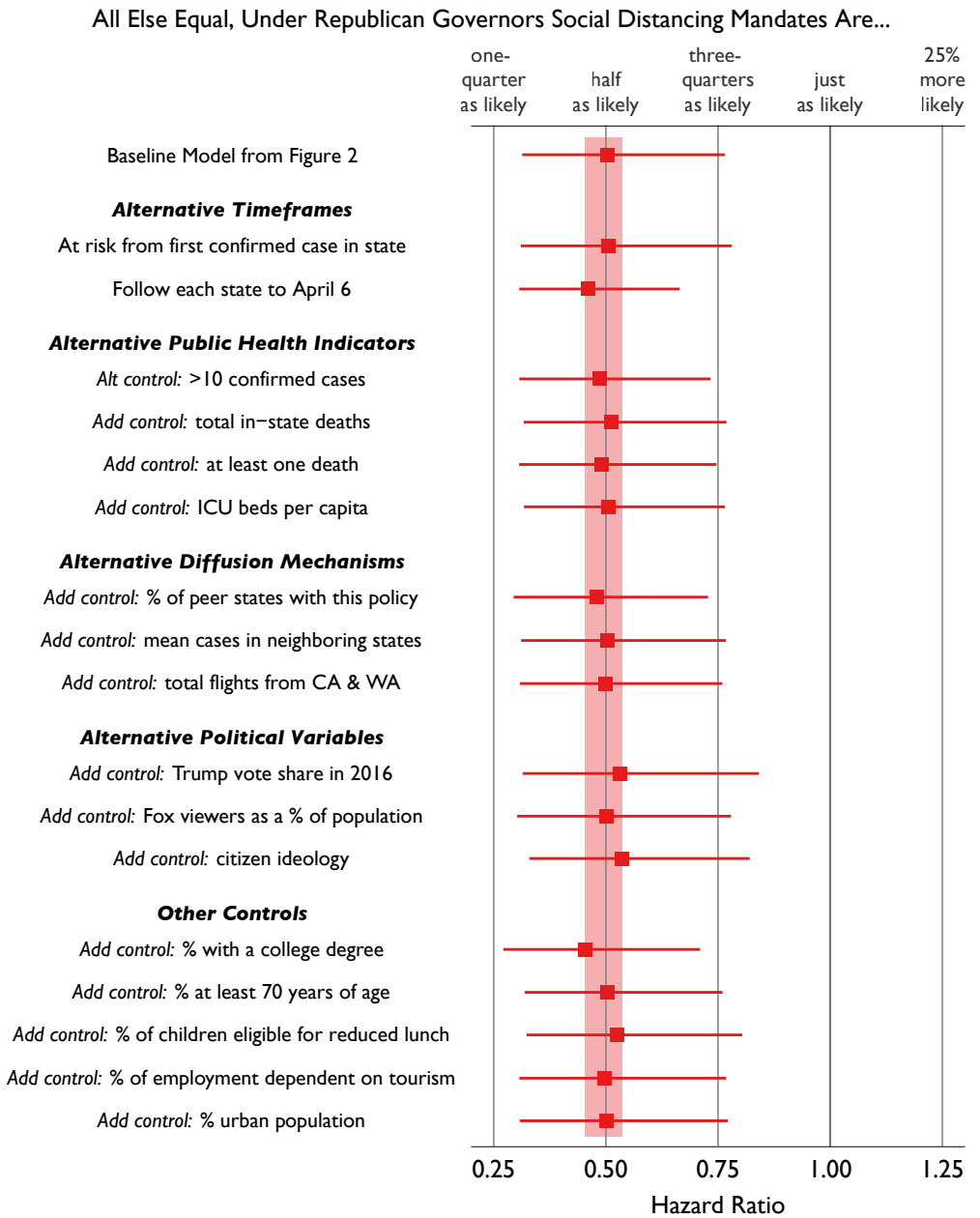

Figure 4. *Delays associated with Republican governors are highly robust.* Estimated hazard ratios for effect of Republican governors from a series of pooled stratified Cox proportional hazards model on all social distancing policies announced by the fifty states, for various periods and additional controls. Horizontal lines are 95% confidence intervals. Solid symbols indicate significance at the 0.05 level.

wise, when we extend the period under study to April 6, we find the same Republican governor effect.

To ensure robustness, we also test the serial inclusion of more than a dozen alternative measures and possible confounders. First, we include alternative measures of public health indicators, such as a "tripwire" at 10 confirmed cases, the count of COVID-19 deaths within the state (Center for Systems Science and Engineering, Johns Hopkins University, 2020), the presence of any deaths, or the total number of ICU beds per capita (Harvard Global Health Institute, 2020). Second, we consider alternative indicators of policy and problem diffusion across states, such as the spread of social distancing policies among the states from which each state typically borrows policies (Desmarais, Harden, and Boehmke, 2015), the total number of confirmed COVID-19 cases in neighboring states, or the number of flights the state received from California and Washington, known hot-zones in early March (Bureau of Transportation, 2019). We also test for alternative paths of political influence, including Trump's vote share in 2016, the percentage of the population watching Fox News, and recently-updated state-level measures of citizen ideology (New York Times Staff, 2017; Simply Analytics, 2018; Berry, Ringquist, Fording, and Hanson, 1998; Fording, 2018); these sensitivity tests check whether the effects of governor partisanship are distinct from these other potential political mechanisms by placing them in direct competition. Finally, we consider factors that might encourage faster or slower policy implementation, including the percentage of state employment dependent on tourism (Burnett, 2017), the percentage of state residents who were at least 70 years of age (Institute for Health Metrics and Evaluation, 2017), the percentage of school children receiving reduced price lunches (Center for Education Statistics, US Department of Education, 2019), the percentage of state residents with a college degree (American Communities Survey, US Census, 2018), and the share of the population living in cities (US Census, 2010). Across all of these robustness checks, Republican governors retain the same, significant effect and continue to be the most important explanation of delays.

Discussion

This paper examines how governors responded in the early days of the United States coronavirus pandemic. The structure of US and state constitutions and an absence of executive leadership at the national level combined to put governors on the front line in the battle against COVID-19. To understand the part governors played, we collected data from all 50 states to document important differences in the adoption and timing

of social distancing policies. We then employed event history analysis to uncover the sources of these differences. We found that population density, confirmed case counts, and the responses of neighboring states do matter. However, the governor's party affiliation was, by far, the most important predictor of social distancing policy delay.

Why were Republican governors so much slower to act? Elected officials, regardless of party, must be attentive to political consequences if they hope to be re-elected. Responding to the coronavirus threat effectively required imposing immediate and substantial costs on constituents weeks before the full impact of the virus emerged. These are not easy actions for any elected official to take, but they are especially difficult for Republican politicians who are part of a political ecosystem that has prospered by portraying government and science as enemies of the people (Turner, 2018).

Even Republican governors who were inclined to take swift and decisive action faced an uphill political battle. Their best opportunity for political cover could be found in President Trump's overwhelming popularity among Republican voters. However, in the early days of the crisis, Trump failed to send clear signals of support for aggressive state action. To be clear, we do not argue that governors *only* considered politics when issuing social distancing directives. Nearly all states eventually implemented most of the social distancing measures we examined despite the economic cost of shuttering schools and businesses. But Republican governors faced significantly greater political headwinds than Democrats: headwinds of their own party's making.

The 2007 CDC pre-pandemic planning guidance quoted in the epigraph of this article warned of the social and economic costs of uncoordinated and inconsistent state-level social distancing policies and non-pharmaceutical interventions. Yet few if any planners seem to have anticipated coordination failure would result from partisan politics. In a recent *Nature* article, Maxmen and Tollefson (2020) note that pandemic war games correctly predicted piecemeal travel bans and medical equipment shortages, but these exercises did not predict the wholesale rejection of public health advice on the part of key political leaders. This rejection of public health advice has been perhaps the most important driver of the pandemic's trajectory in the U.S., resulting in thousands of preventable illnesses and deaths as well as prolonged economic pain (Yong, 2020).

In August 2020, the pandemic is far from over. Under federal pressure, most governors re-opened businesses and allowed gatherings before it was safe to do so. Not surprisingly, the states that eased social distancing mandates most aggressively have seeing rapidly climbing COVID-19 case counts, with potentially severe consequences for public health and the economy (López and Rodó, 2020; Tsai, Harling, Reynolds, Gilbert, and Siedner, 2020). Unfortunately, the partisan politics we identified in the

early phases of the pandemic seem little changed. Our research into the evolution of state-level social distancing policies is on-going, but preliminary analysis of governors' decisions to ease social distancing policies starting in late April suggests partisanship remains the most important factor explaining policy change and remains far more consequential than public health considerations like the growth rate of confirmed COVID-19 cases.

Even as they struggle to contain COVID-19, states face more challenges ahead: the start of a new school year, the combination of COVID-19 and flu season, and massive state budget deficits created by falling revenue and overwhelmed unemployment insurance systems. How governors respond to these intersecting crises will likely have lasting consequences for national recovery from both the pandemic and the economic recession it caused. Unless an effective vaccine can be widely distributed, the primary "exit strategy" from blunt social distancing measures is to reduce transmission to manageable levels via robust case detection and isolation strategies. So long as states operate an uncoordinated, politically motivated patchwork of responses to the pandemic, the country seems destined to remain in a stop-and-go pattern of easing and reimposing social distancing mandates. In sum, if some governors continue to underestimate the public health risks of COVID-19, or to prioritize politics over public health, the cumulative impact on their states, and on the country as a whole, could be vast.

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Appendix

Table 1. Pooled, stratified Cox proportional hazards model of state-level social distancing mandates, 26 February to 23 March 2020.

	Counterfactuals		hazard	95% CI	
Covariate	***pre***	***post***	**rate**	***lower***	***upper***
Republican governor	0	1	0.50	0.32	0.76
Population density (persons/mi^2)	197	42	0.69	0.54	0.86
Neighboring states with policy	50%	0%	0.73	0.52	1.01
log(Gross state product per capita)	$63.4k	$48.3k	0.83	0.59	1.14
Confirmed cases	426	4	0.86	0.79	0.93
Total state-policy-days at risk				5724	
Total state-policies at risk				250	
Total events				164	
AIC				1009.6	
Concordance index (Harrell's *c*)				0.75	

Baseline hazards are stratified across the five pooled social distancing measures: recommendations and restrictions on gatherings, school closures, restaurant restrictions, non-essential business closures, and stay-at-home orders. Each row shows the hazard ratio for (the counterfactual change in) the covariate listed at the left. Counterfactual changes are chosen to simplify comparison of hazard ratios for covariates with different scales of measurement. Covariates with both 95% confidence limits below 1.0 significantly reduce the chance of adopting an additional social distancing measure. Standard errors used to compute confidence intervals are clustered by state. The concordance index shows the proportion of all pairs of states for which the model correctly predicts which state will adopt a given social distancing mandate first. Schoenfeld residuals show no evidence of violation of proportionality for any covariate. The Efron method is used to resolve ties.