Pandemic, Governors, and Public Opinion: The Effect of COVID-19 Cases and Deaths on Public Support for America's Governors*

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Abstract: A longstanding literature in American foreign policy holds that the American public's support for war significantly depends on the number of US casualties in the conflict (their number, rate, trend, proximity, etc.). While a pandemic is clearly not a war, many observers and political leaders have characterized the U.S. public policy response to the COVID-19 pandemic using the metaphor of wartime. This raises the question of whether such characterizations are more than mere metaphor. Has the American public's response to pandemic-related casualties – cases and deaths – followed similar patterns to those found in the literature on public opinion and war? In this study, we assess the public's responsiveness to COVID-19 casualties at different stages in the pandemic. Utilizing two large, 50-state surveys conducted during the two largest COVID surges, in Winter 2021 and Winter 2022, we test several hypotheses from the public opinion and war literature, including that proximity – spatial and temporal – influences public responses and that the public becomes desensitized to casualties over time. We find that in many respects, the public's response to the pandemic does indeed mirror the patterns found by scholars studying public opinion and war.

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Introduction

Journalists and politicians frequently employ war as a metaphor for fighting pandemic-related illnesses. Early in the COVID-19 Pandemic, former President Donald Trump thus compared the pandemic to a war, commenting, " I'm a wartime president. This is a war. This is a war. A different kind of war than we've ever had." New York Governor Andrew Cuomo, agreed: "The president said this is a war. I agree with that. This is a war." Since these March 2020 observations, the United States has suffered over 93 million COVID-19 cases and over a million deaths from the virus. This represents more deaths than the U.S. has suffered in every war in its history combined.

The analogy between the pandemic and war – particularly with respect to casualties – raises questions concerning the political consequences for leaders on whose watch those casualties – from war or pandemic -- occur. For instance, does the war metaphor cause the public to view fatalities as the sort of collateral damage that is to be expected in wartime? If so, do casualties resulting from COVID-19 affect public support for the government's approach to fighting the pandemic in ways similar to how wartime casualties affect public support for the president responsible for a war's conduct?

A substantial literature in political science has found that Americans' support for U.S. military conflicts depends in significant measure on the number of casualties incurred in the conflict. Among the key insights from this literature is that, over time, as casualties mount, the public becomes desensitized to incremental increases in casualties. In other words, the first casualty in a conflict has a larger absolute impact on public support for the conflict, and for the president responsible for it, than the1,000th casualty (Mueller 1973). This means that the cumulative number of casualties influences public support less, over time. We will term this the *desensitization hypothesis*.

A second key insight from this literature is that proximity, both spatial and temporal matters. For instance, Gartner and Segura (1997) find that local casualties – that is, casualties among people who live close to a given survey respondent, or spatial proximity – matter most in influencing war support. Althaus, Bramlett and Gimpel (2012) refer to this as the "proximity hypothesis." Sam Kernell (1997), in turn, finds that it is recent casualties (measured monthly) – which might be thought of as temporal proximity – rather than the cumulative number of casualties, that drives support for the president and the war effort. Gartner (2008), in turn, finds that recent casualties and casualty trends matter most for public war support. Following Althaus and colleagues, we refer to this emphasis on spatial and temporal proximity as the *proximity hypothesis*.

In this paper, we explore whether and to what extent these patterns regarding the relationship between casualties and war support extend to public support for the chief executives battling COVID-19. Because, for much of the pandemic, the federal government has taken a back seat to state governors in responding to the public health crisis, we focus our analysis on state-level support for America's governors. Specifically, we assess whether and to what extent gubernatorial approval varies with the number of cases and deaths from the virus. We thus investigate whether the *desensitization* and *proximity* hypotheses help explain public support for state governors during the COVID-19 pandemic.

The remainder of this paper proceeds as follows. In the next section, we review the literature on public support for presidents and their war efforts, which we then extrapolate to the COVID-19 pandemic. We then derive hypotheses concerning the relationship between COVID cases and deaths, on the one hand, and public support for state governors, on the other. We next describe our data and methods. We test our hypotheses against two large (over 20,000 respondents each) surveys of all 50 US states conducted in December 2020/January 2021 and December 2021/January 2022. We then present the results of our statistical tests. We assess whether and to what extent cumulative and recent COVID cases and deaths influence state-level support for governors, and whether this relationship systematically differs from relatively early to relatively late in the pandemic. The final section concludes and considers the implications for US politics.

The Effect of Casualties on Public Support in Times of War or Pandemic

There exists substantial literature focused on determining conditions under which a president will or will not be able to sustain public support for a U.S. military engagement. The prevailing view holds that public support for war depends primarily on the degree of success (Kull and Ramsay 2001; Feaver and Gelpi 2004; Eichenberg 2005; Gelpi, Feaver, and Reifler 2006), or alternatively on the extent of American casualties, or, more precisely, their *number* (Milstein and Mitchell 1968; Milstein 1969, 1973, 1974; Mueller 1973, 1994; Gartner and Segura 2000), *rate* (Slantchev 2004), *trend* (Gartner 2008), *locality* (Gartner and Segura 1997) or *framing* (Boettcher and Cobb 2006).

Of course, perceptions of success are likely, at least to some extent, related to casualties; indeed, arguably the latter is a primary cause of the former. Moreover, the bulk of these arguments can usefully be collapsed into the two primary schools of thought with respect to the relationship between casualties and war support that we introduced above: *desensitization*, which encompasses the number and framing of casualties, and *proximity* (both temporal and spatial), which encompasses their rate, trend, and locality.

The key takeaway from the literature on casualties and public war support, in turn, is that as casualties go up, support for the president's conduct of the war goes down (Mueller 1973), with more recent (Kernell 1997) and geographically proximate (Gartner and Segura 1997) casualties mattering most. However, as the public acclimates to a conflict, over time, the marginal effect of each additional casualty on war support recedes (Mueller 1973).

Some research has found evidence that the comparison between war and pandemic is more than a mere analogy. For instance, multiple studies have found evidence of a rally-round-the-flag effect in the early stages of the COVID-19 pandemic that is, in important respects, analogous to the opinion rallies typically associated with the onsets of military conflicts. For instance, short-term spikes in public support for the chief executive's performance (that is, opinion rallies) have been documented in Sweden (Johansson, Hopmann and Shehata 2021), Austria (Kritzinger et al. 2021), Israel (Hamanaka 2021) and the U.S. (Baum 2020).

Additional research, focused on the COVID-19 pandemic, has found evidence that the public has held political leaders at every level of government responsible for pandemic-related fatalities (Warshaw et al. 2020), and that while partisans selectively attributed responsibility for negative pandemic-related developments to the other party, perceptions regarding the competence of political leaders, like the president, were more important in such assessments (Graham and Singh 2022). We argue that public reactions to the casualties resulting associated with the pandemic are likely to be similar to responses to casualties resulting from military conflicts in several additional key respects: First, typical individuals will weight recent cases and deaths from COVID more heavily in their assessments of the performance of responsible public officials than the cumulative cases and deaths incurred (which, by definition, place relatively greater weight on cases and deaths incurred earlier in the pandemic). Second, we expect that cases and deaths that occur closer to home will matter more in such assessments than more geographically distant cases and fatalities.

The *proximity hypothesis*, as articulated by Althaus and his colleagues, Gartner and Segura, and others, primarily focuses on geographic, or spatial, proximity (i.e., the disproportionate importance of local casualties). However, one can also define proximity temporally. The literature on recency bias (e.g., Druckman, Fein and Leeper 2012) holds that, all else equal, typical individuals will give more weight to recent information and events than to older information and events. Popkin (1994) refines this idea to propose Gresham's Law of Information, according to which a small amount of new, personal information will outweigh a large amount of older, less personal information. Applying this logic to pandemic cases and deaths, the implication is that more recent incidents should have a larger impact on evaluations of the government's performance during the pandemic than older cases, especially if the more recent cases hit closer to home, personally or geographically.

Temporal proximity also seems likely to influence the public response to COVID cases and deaths, just as it has been shown to do with war casualties. In other words, more recent cases and deaths, and more recent *trends* in cases and deaths, seem likely to matter more than cumulative case and death counts, which by definition give relatively more weight to cases and deaths that occurred earlier in the pandemic. Our first two hypotheses follow:

H1: *Temporal Proximity Hypothesis*. Recent trends in COVID-related deaths and cases will have a greater effect on public approval of the government's performance during the pandemic than cumulative totals of deaths or cases.

H2: *Spatial Proximity Hypothesis*. More local cases and deaths will have a greater effect on public approval of the government's performance during the pandemic than more geographically remote cases and deaths.

Additionally, research on human information processing shows that individuals who are more knowledgeable about an issue tend to possess relatively more considerations about it. Consequently, they are likely to be less influenced by an additional piece of information about the issue than their less knowledgeable counterparts (Zaller and Feldman 1992). In other words, if I have 10 considerations about an object in my mind and am exposed to one additional consideration, the new information will have greater weight in my summary judgment about the object than if I previously held 100 considerations about the object and added one additional consideration.

Similarly, the notion that repeated exposure to a stimulus can result in diminished psychological responsiveness to future encounters with that stimulus is a well supported phenomenon in psychology (e.g., Bartholow, Bushman, and Sestir 2006; Arradondo 2020; Rachman 1967). Individuals who are repeatedly exposed to a fear inducing stimulus can gradually become desensitized and eventually react to the stimulus as though it were a normal occurrence (Arradondo 2020; Rachman 1967). Although the process of gradual desensitization is primarily thought of as a tool for the treatment of phobias in clinical settings, there are clear parallels to the real-world, repeated exposure to fear inducing COVID-19 news over the course of the pandemic.

The analogy to COVID cases and deaths – as well as to war casualties – is straightforward: as cases and deaths mount, the marginal impact on attitudes of an additional case or death is likely to recede. Stated differently, as the novelty of COVID cases and deaths declines, people become desensitized to them, and so their attitudes about the government's performance during the COVID pandemic are less significantly affected by additional cases and deaths. A final hypothesis follows:

> H3: *Desensitization Hypothesis*. The marginal effect of COVID cases and deaths on public approval of the government's performance during the pandemic will be greater earlier than later in the pandemic.

Methods

To test our hypotheses, we utilize a novel dataset that combines individual survey responses at two points in time with data on covid cases, covid deaths, and state policy responses to the pandemic. Our survey data come from a nonprobability online sample of 47,778 respondents collected using the panel management company PureSpectrum with state-level representative quotas for race/ethnicity, age and gender, as well as reweighting to represent each US state. The data were collected over two survey waves with data collection efforts in each survey wave designed to collect a large sampe from, and approximate the population of, each US state. In addition to balancing through quotas, the data in each survey wave were reweighted to match the US population on age, gender, race/ethnicity, education, and living in urban, suburban, or rural areas.

To evaluate the *desentization hypothesis*, we focus on two specific waves of the survey representing the first and second winter coronavirus surges in the US. The first survey wave was conducted between December 16, 2020 and January 3, 2021 and included a total of 25,133 respondents. The second survey wave was conducted at the height of cases and deaths attributed to the Omicron variant between December 22, 2021 and January 24, 2022 and included 22,645 respondents. In both survey waves, respondents rated their level of approval with their state governor's handling of the coronavirus pandemic, and a series of questions on their socio-demographic characteristics such as gender, age, race, income, partisanship, ideology, and employment status. We then merged data on covid-19 cases, deaths, governor partisanship, and state pandemic policy response to these individual survey responses.

To evaluate the *temporal and spatial proximity hypotheses*, we included three operationalizations of cases and three operationalizations of deaths for two geographic levels (state and county): 30 day moving average of covid-19 cases per capita, 7 day moving average of covid-19 cases per capita, cumulative cases per capita, 30 day moving average of covid-19 deaths per capita, 7 day moving average of COVID-19 deaths per capita, and cumulative deaths per capita.[1] The *temporal proximity hypothesis* would predict the moving averages of cases/deaths will have a greater impact on gubernatorial approval than cumulative cases/deaths. The *spatial proximity hypothesis* predicts that county cases/deaths will have a greater impact on approval than state-wide cases/deaths, given the more local nature of an individual's county versus their entire state.

[1] Models using cumulative cases/deaths exclude respondents in states where a new governor was elected between survey waves (including all respondents from MT, UT, NY, RI, in the later survey wave and VA respondents completing the survey after Glenn Youngkin assumed office).

Data on cases and deaths are from *The New York Times* (2021) and moving averages are computed based on the date the respondent completed the survey.[2] Variables are scaled as per capita estimates to control for population differences across states and counties and to ensure the comparability of estimates. We also control for a moving average of state COVID-19 policy stringency index which includes nine measures of state pandemic response including closures, travel restrictions, and public information campaigns using data from the Oxford OxCGRT repository (Hallas et al 2020).[3]

The main outcome of interest in all models is the respondent's approval of their governor's handling of the pandemic, which is coded on a five-point scale between 0 (strongly disapprove) and 1 (strongly approve).[4] The main predictors of interest in each model is the effect of covid cases or deaths conditional on survey wave, which is captured by including a variable for covid cases or deaths, a dummy variable indicating the respondent completed the later survey wave fielded during the Omicron surge, and the interaction between these two variables. Each model includes the same set of socio-demographic controls including age, gender, race,

[2] Because coronavirus cases and deaths are reported citywide in New York City, all respondents who live in New York City's five counties use pooled NYC-wide county level estimates of cases/deaths.

[3] Also see: https://github.com/OxCGRT/USA-covid-policy and https://github.com/OxCGRT/covid-policy-tracker/blob/master/documentation/index_methodology.md.

[4] The survey asked respondents: "Do you approve or disapprove of the way your state governor is handling the coronavirus (COVID-19) outbreak?" Response options were: Strongly approve; Approve; Neither approve nor disapprove; Disapprove; Strongly disapprove.

education, employment status, ideology, party, a variable capturing the governor's party, the interaction between individual partisanship and governor party, and the average state policy stringency index. Estimates for the average marginal effect (AME) of coronavirus cases or deaths in each survey wave are derived from separate, weighted OLS regressions for each operationalization of state and county cases/deaths: 30 day moving average per capita, 7 day moving average per capita, and cumulative per capita. Models using 30 day moving averages per capita use a 30 day moving average of state policy stringency. Models using 7 day moving averages per capita use a 7 day moving average of state policy stringency. Models using cumulative per capita estimates use the 30 day policy stringency index average.

Table 1 displays weighted summary statistics for the primary independent variables (covid cases and deaths) in the first and second winter surges statewide. Table 2 shows the same summary statistics at the county level. Nationally, the average 30 day state cases per capita is 0.0006 during the 1st winter surge and 0.0008 during the Omicron (2nd) winter surge. This represents an average of about 6 new cases per 10,000 people during the first surge and about 8 new cases per 10,000 people during the Omicron surge. The raw statewide 30 day moving average is 4,748 new cases during the 1st surge and 8,080 new cases during the second surge. The average 7 day state moving average of new cases per capita during the 1st winter surge is 0.00056 and 0.0013 during the Omicron surge. The raw statewide 7 day moving average of new cases is 4,990 in the 1st surge and 13,574 in the 2nd surge. The higher 7 day average relative to the 30 day average for the second surge reflects the extremely steep peak of the Omicron surge versus the comparatively flat distribution of the first winter covid surge.

Table 1. Summary Statistics of Main Independent Variables: State Cases and Deaths.

CASES		DEATHS

30 Day Moving Average Per Capita	7 Day Moving Average Per Capita	Cumulative Per Capita	30 Day Moving Average Per Capita	7 Day Moving Average Per Capita	Cumulative Per Capita
1st Winter Surge			1st Winter Surge		
Mean: 0.000598 SD: 0.000188	Mean: 0.000576 SD: 0.000219	Mean: 0.0606 SD: 0.02	Mean: 0.00000768 SD: 0.00000373	Mean: 0.00000794 SD: 0.00000366	Mean: 0.000996 SD: 0.00044
2nd (Omicron) Winter Surge			2nd (Omicron) Winter Surge		
Mean: 0.000836 SD: 0.000578	Mean: 0.00135 SD: 0.000917	Mean: 0.175 SD: 0.0335	Mean: 0.00000445 SD: 0.00000294	Mean: 0.00000494 SD: 0.00000513	Mean: 0.00245 SD: 0.000638

Table 2. Summary Statistics of Main Independent Variables: County Cases and Deaths.

CASES			**DEATHS**		
30 Day Moving Average Per Capita	7 Day Moving Average Per Capita	Cumulative Per Capita	30 Day Moving Average Per Capita	7 Day Moving Average Per Capita	Cumulative Per Capita
1st Winter Surge			1st Winter Surge		
Mean: 0.000602 SD: 0.000241	Mean: 0.00058 SD: 0.000281	Mean: 0.0611 SD: 0.0239	Mean: 0.00000751 SD: 0.00000617	Mean: 0.00000786 SD: 0.00000753	Mean: 0.00101 SD: 0.000646
2nd (Omicron) Winter Surge			2nd (Omicron) Winter Surge		
Mean: 0.000838 SD: 0.000652	Mean: 0.00136 SD: 0.00107	Mean: 0.175 SD: 0.0422	Mean: 0.0000043 SD: 0.00000398	Mean: 0.00000481 SD: 0.00000671	Mean: 0.00245 SD: 0.001

Figures 1 and 2 show the average 30 day COVID-19 cases per 10,000 residents across the US for the 1st and 2nd winter surges. Comparing figures 1 and 2 demonstrates that unlike the first winter COVID surge where some states had less than a single new case per 10,000 people during a 30 day period, the majority of states during the Omicron winter surge had roughly 3 or more cases per 10,000 people. The notably higher number of average cases during the 2nd winter surge relative to the first winter surge provides a relatively strong test of the desensitization hypothesis, given the threat of COVID-19 infection at this later stage in the pandemic was considerably greater than during the first winter COVID-19 surge and therefore, all else equal, might have an increased likelihood of impacting gubernatorial approval even with significant desensitization.

Figure 1. Average 30 Day Moving Average of State Cases Per Capita- 1st Winter COVID Surge.

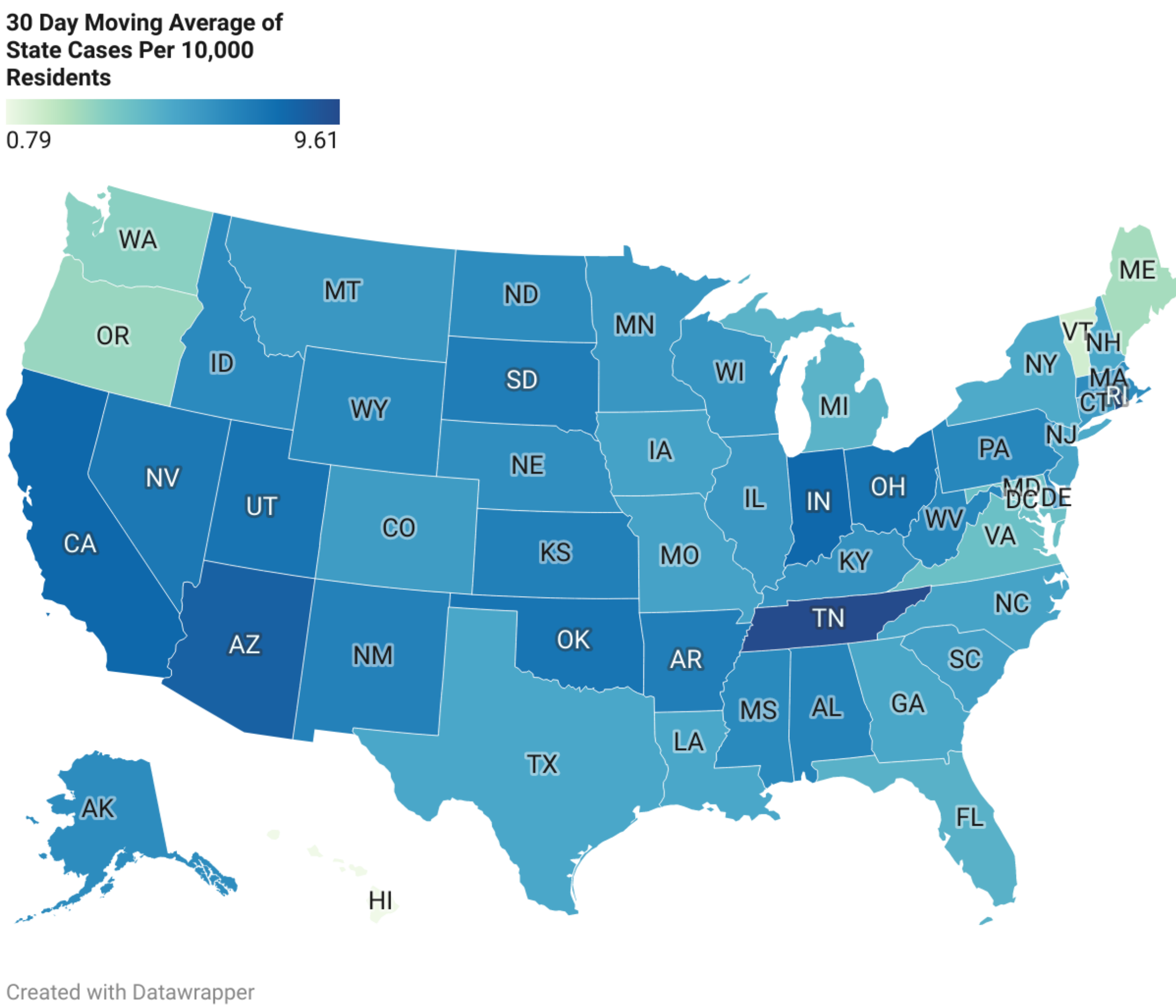
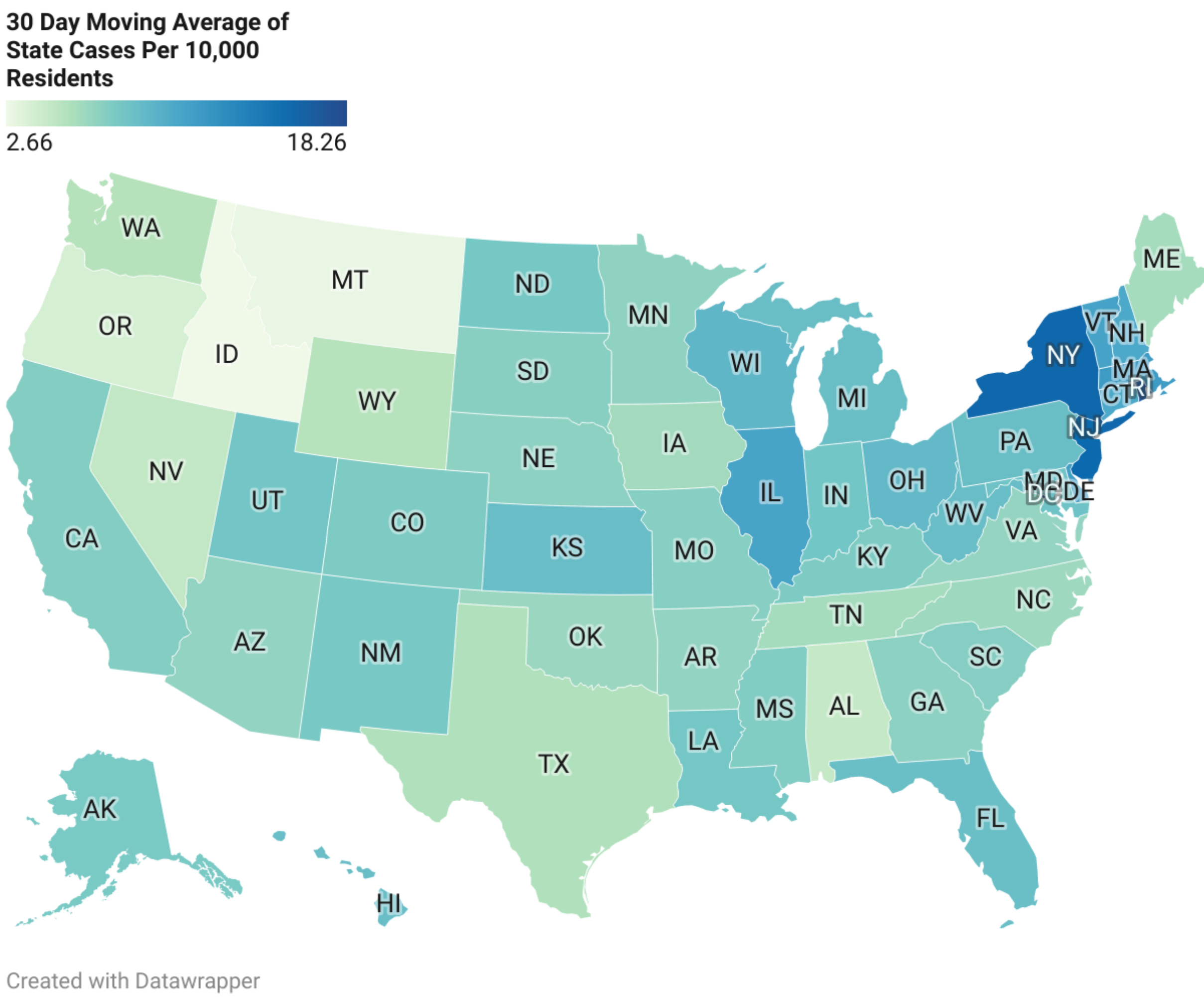


Figure 2. Average 30 Day Moving Average of State Cases Per Capita- 2nd (Omicron) Winter COVID Surge.



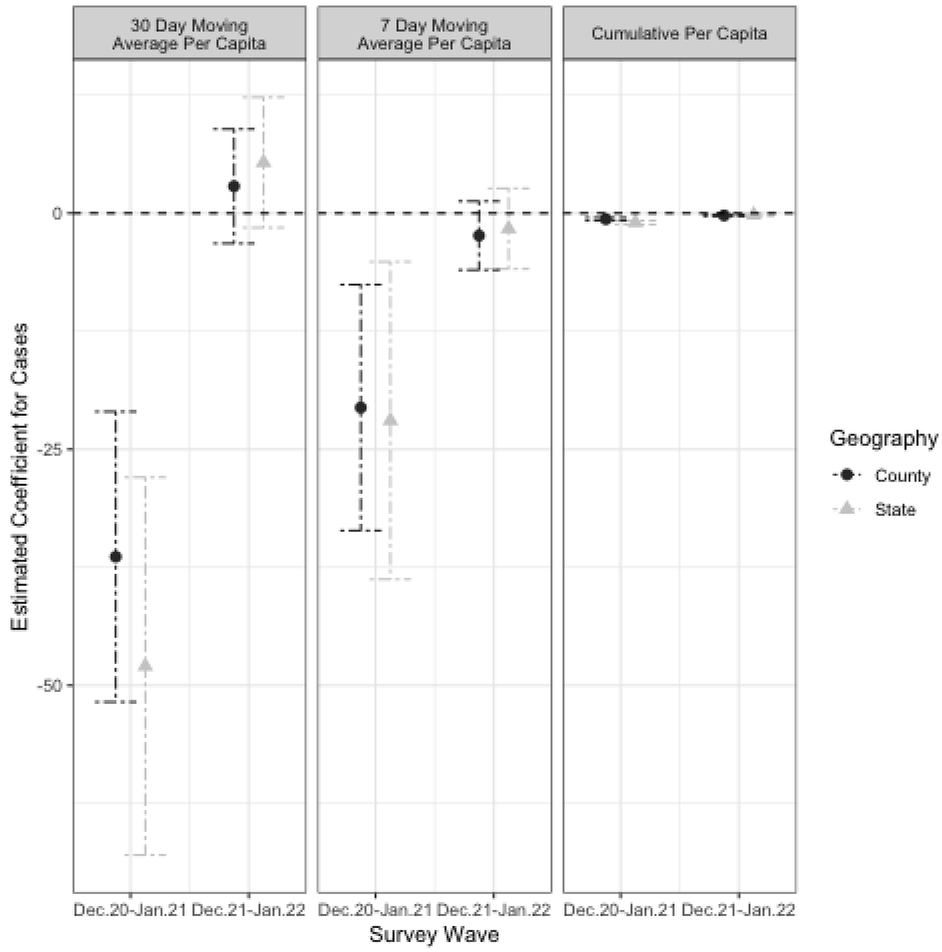
Results

Figure 3 displays the impact of state and county coronavirus cases on governor COVID approval during the first and the second winter COVID surges for three operationalizations of state cases per capita. The regression results and full model specifications are in Appendix Tables 1 and 2. Across specifications, greater state and county coronavirus cases during the first winter surge is associated with significantly lower gubernatorial approval. Consistent with the *temporal proximity hypothesis*, the largest effects are for the moving averages of state and county COVID cases, with cumulative cases per capita exerting a significantly weaker effect on gubernatorial approval.

The results in figure 3 also support the *desensitization hypothesis*. Although additional state COVID-19 cases significantly reduces gubernatorial approval early in the pandemic, the effect is about 5 times weaker later in the pandemic for cumulative cases (1st covid surge: AME=-0.98, p<0.001; second covid surge: AME=-0.18, p=0.005), weaker and statistically insignificant for the 7 day moving averages of state COVID cases (7 day 1st surge: AME=-21.95, p=0.01; 7 day second surge: AME=1.63, p=0.45), and weaker and statistically insignificant for the 30 day moving average of state cases (30 day 1st surge: AME=-48, p<0.001; 30 day second surge: AME= 5.34, p=0.13).

Results for county COVID-19 cases are similar to results for state COVID-19 cases: the effect of county cases is stronger earlier in the pandemic relative to later in the pandemic. Contrary to the expectations under the *spatial proximity hypothesis*, more local cases at the county level had roughly the same effect as the more distant state-wide level of proximity. We did not have specific expectations for how the effects may vary by individual partisanship and the governor's party, however these results are shown in Appendix Figure 3 (for cases) and Appendix figure 4 (for deaths). Results calculated with state fixed effects are generally similar, though estimates for the second COVID surge are negative (see Appendix Figure 1).

Figure 3. Impact of State and County Coronavirus Cases on Governor COVID Approval.



Note: Error bars are 95% confidence intervals.

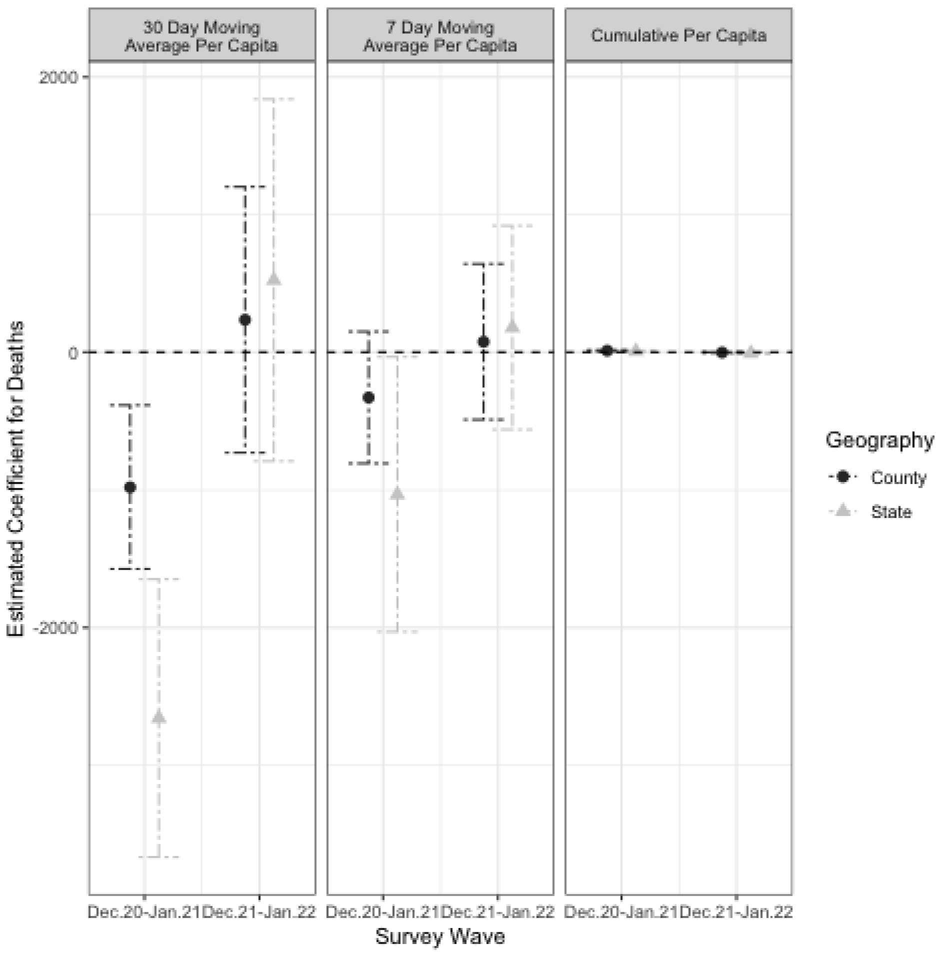
Figure 4 shows the impact of state and county COVID-19 deaths on gubernatorial approval. Regression results are in Appendix Tables 3 and 4. As shown in the left two panels of figure 4, the relatively recent averages of state COVID-19 deaths (both 30 day and 7 day moving averages per capita) significantly reduced gubernatorial approval during the first winter surge (30 day state deaths: AME=-2658.5, p<0.001; 7 day state deaths: AME=-1032.4, p=0.04). Conversely, during the omicron surge neither the 30 day nor the 7 day rolling average of state deaths per capita significantly reduced approval (30 day state deaths: AME=523.1, p=0.44; 7 day state deaths: AME=177.9, p=0.64). This is consistent with the *desensitization hypothesis*. The rolling averages of deaths also has a significantly greater effect on gubernatorial approval than the cumulative deaths, consistent with expectations under the *temporal proximity hypothesis*. Inconsistent with expectations however, state cumulative deaths early in the pandemic had an insignificant effect on approval (AME=5.9, p=0.16) yet significantly decreased approval later in the pandemic (AME=-8.7, p=0.01).

Results for county deaths, also shown in Figure 4, are similar to the results for state deaths. Consistent with the *temporal proximity hypothesis*, the moving averages of county deaths had a significantly greater effect on gubernatorial approval than did cumulative county deaths. As with state deaths, county deaths are also generally consistent with the *desensitization hypothesis*: Although greater county deaths mostly decreased gubernatorial approval during the first winter surge, greater county deaths had a mostly insignificant effect on approval during the Omicron surge later in the pandemic. The sole exception is for cumulative county deaths per capita where greater deaths during the first winter surge is associated with a significant positive effect on approval (AME=10.34, p<0.001) yet later in the pandemic is associated with an insignificant, negative effect (AME=-2.72, p=0.2).

Consistent with the results for coronavirus cases, the results for coronavirus deaths run contrary to the expectations under the *spatial proximity hypothesis*: For the 7 day moving average and cumulative metrics, local deaths at the county level had roughly the same effect as the more distant state-wide deaths. For the 30 day moving average early in the pandemic however, state-wide deaths actually had a significantly greater effect on approval than did county deaths (State 30 day deaths, 1st winter surge: AME=-2658.52, p<0.001; County 30 day deaths, 1st winter surge: AME=-979.43, p=0.001).

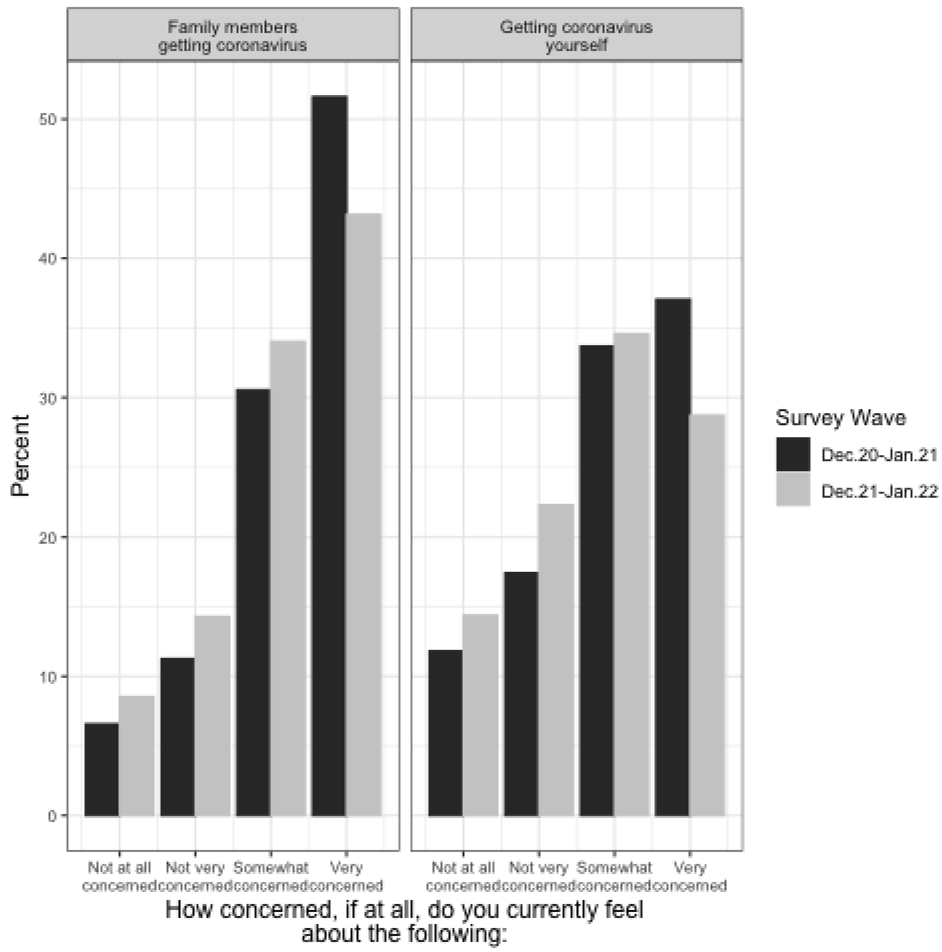
Estimates that include state fixed effects (see Appendix figure 2) differ in several respects. Nearly every estimate for county deaths is insignificant at conventional levels and only 30 day average state deaths per capita is consistent with the *desensitization hypothesis*, with the 7 day and cumulative estimates producing insignificant effects during the 1st COVID surge. This may be due to the state fixed effects causing model instability due to the relative lack of variation within states by survey wave for state and county COVID deaths.

Figure 4. Impact of State and County Coronavirus Deaths on Governor COVID Approval.



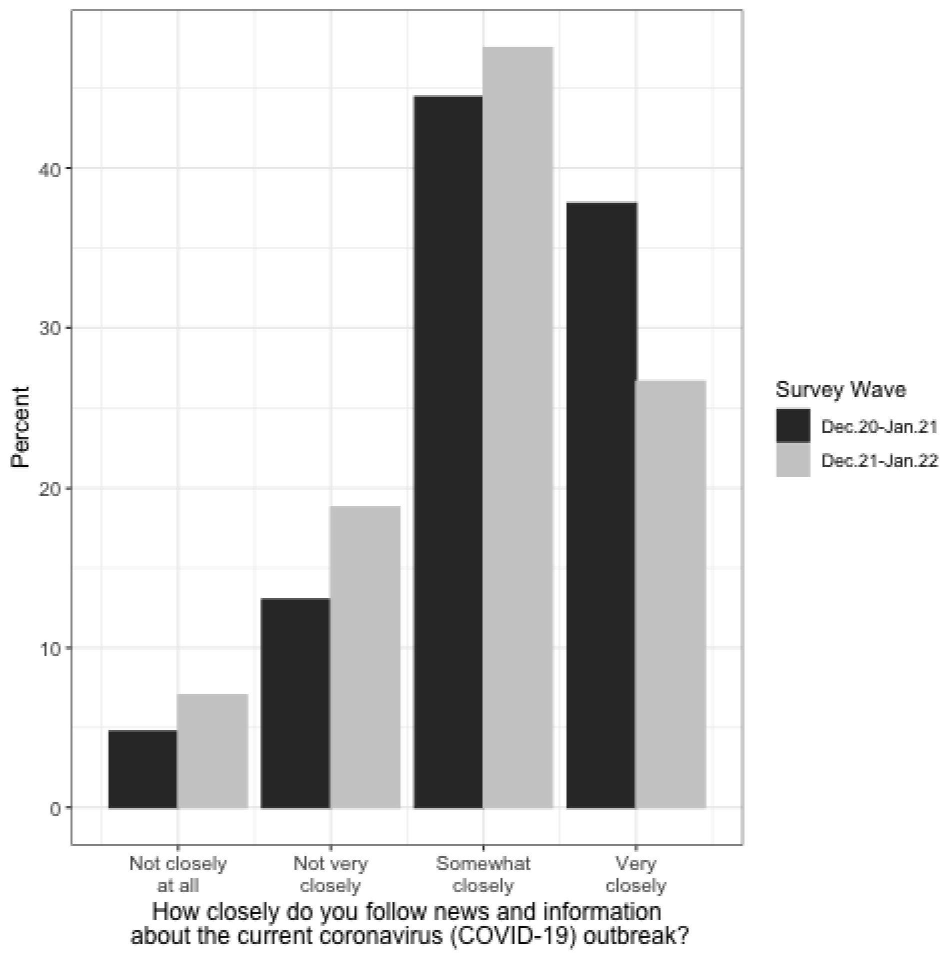
Note: Error bars are 95% confidence intervals.

Figure 5. Percent of Respondents Worried About Themselves or Family Members Catching Coronavirus By Survey Wave



Lastly, given the strong evidence for the *desensitization hypothesis*, we also examined the share of respondents who were worried about personally catching coronavirus or family members contracting the disease by survey wave. Despite the far greater threat of contracting covid-19 during the 2nd winter surge due to the highly contagious Omicron variant, we expected that respondents would be less concerned later in the pandemic. As shown in figure 5, the data support this expectation. The share of respondents who said they were "very concerned" about personally contracting covid-19 decreased from 37% in the first winter surge to 29% in the second (Omicron) winter surge (an 8-point decrease). Similarly, 52% of respondents reported being "very concerned" about family members catching coronavirus during the first winter surge, while just 43% were very concerned during the second (Omicron) winter surge (a 9 point decrease). We also examined the share of respondents who reported closely following news and information about the pandemic by survey wave. As shown in Figure 6, the share of respondents who followed covid-19 news “very closely” declined later in the pandemic: 38% followed news and information about COVID-19 “very closely” during the first winter surge versus 27% during the second winter surge – a decline of roughly 11 percentage points.

Figure 6. Percent of Respondents Closely Following Coronavirus News By Survey Wave



Discussion

American politicians have likened the battle to contain the COVID-19 pandemic to war. This metaphor has prompted research into whether or not the manner in which the public responded to the pandemic has been consistent with the public's past reactions to wars. In this paper, we evaluated how coronavirus cases and deaths impacted the public's evaluation of state governors' performance during the pandemic. We focused on gubernatorial, rather than presidential, approval because, due to the highly federalized U.S. public health system and the governing philosophy of the Trump Administration early in the pandemic, much of the onus for responding to the pandemic fell to the states rather than the federal government.

We investigated three specific hypotheses derived from research on public responses to wartime casualties. We find strong evidence for the *desensitization hypothesis* which predicted that the effect of COVID-19 cases and deaths on the evaluation of state governors' pandemic performance would decline over time. Our data demonstrate that as the pandemic progressed, Americans became less worried about covid-19, followed news and information about the pandemic less closely, and, ultimately, the impact of cases and deaths on gubernatorial approval declined. We also find evidence to support the *temporal proximity hypothesis* that more recent cases/deaths matter more for evaluations of state executive performance than cumulative cases or deaths from the pandemic. Specifically, we find that recent week or month-long moving averages of cases and death rates had a consistently greater effect on gubernatorial coronavirus approval than did the cumulative case or death count. These patterns are consistent with findings from the literature cited in this paper on public opinion and war.

Inconsistent with expectations, and with the public opinion and war literature, our data do not support the *spatial proximity hypothesis*, which predicted that more local cases/deaths at the county level would have a greater effect than more distant, state-wide estimates. Instead, we find that state and county estimates typically exerted similar effects on approval. It is possible this is due to the relative difficulty of accessing news and information about COVID-19 cases and deaths at the county level. Although several news and state departments of health websites had tools allowing residents to look up the cases and deaths at the county level, this information was not commonly reported in other news media, such as local news outlets. The decline in local news over the past several decades likely contributed to this pattern (Hayes and Lawless 2018). However statewide COVID-19 cases and deaths were far more accessible, frequently even reported in the national media. This heightened access and media attention may have increased the salience of state cases/deaths relative to county-level circumstances. Moreover, these patterns differ from the case of local wartime casualties, which are typically front-page news in local news media around the country.

Our findings point to the potential difficulty of holding leaders accountable for persistent challenges such as pandemics. As with their assessments of presidential performance in wartime, Americans seem only to be capable of evaluating governors on the basis of relatively recent pandemic outcomes, which may not always be the best measure of performance. Thus far, predictable patterns have emerged in the seasonality of surges in coronavirus cases, with cases and deaths often increasing precipitously during the winter months, likely due to increases in indoor gatherings during colder, winter months, and the holidays increasing travel and gatherings in general. Even for governors who have otherwise managed to keep cases and deaths low, the public may evaluate them harshly during such times. Additionally, as has been the case during America’s military engagements, we find strong evidence that Americans become desensitized to additional casualties over time and weigh this information less over time in evaluating elected officials' performance.

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APPENDIX

Appendix Table 1. Impact of State Coronavirus Cases on Governor Covid Approval.

	Dependent variable:		
	Governor Covid Approval		
	(1)	(2)	(3)
State Cases 30 Day Moving Average Per Capita	-47.962*** (10.206)		
State Cases 7 Day Moving Average Per Capita		-21.954** (8.578)	
State Cumulative Cases Per Capita			-0.982*** (0.106)
Dec.21-Jan.22 Survey Wave	-0.039*** (0.009)	-0.014* (0.008)	-0.051*** (0.015)
Age: 30-49	0.030*** (0.004)	0.030*** (0.004)	0.030*** (0.004)
Age:50-64	0.060*** (0.004)	0.059*** (0.004)	0.057*** (0.004)
Age: 65+	0.102*** (0.004)	0.101*** (0.004)	0.099*** (0.005)
Ideology	-0.041*** (0.006)	-0.041*** (0.006)	-0.041*** (0.007)
Income	0.018*** (0.005)	0.018*** (0.005)	0.017*** (0.005)

Graduate Degree	0.029^{***} (0.005)	0.029^{***} (0.005)	0.029^{***} (0.005)
Highschool or less	-0.011^{***} (0.004)	-0.011^{***} (0.004)	-0.011^{**} (0.004)
Some College	-0.021^{***} (0.004)	-0.021^{***} (0.004)	-0.021^{***} (0.004)
Republican Governor	-0.217^{***} (0.004)	-0.219^{***} (0.004)	-0.219^{***} (0.004)
Independent	-0.194^{***} (0.005)	-0.194^{***} (0.005)	-0.192^{***} (0.005)
Republican/Lean Republican	-0.296^{***} (0.005)	-0.296^{***} (0.005)	-0.296^{***} (0.005)
Black	0.015^{***} (0.004)	0.015^{***} (0.004)	0.015^{***} (0.005)
Hispanic	-0.006 (0.004)	-0.005 (0.004)	-0.006 (0.004)
Asian	0.004 (0.006)	0.005 (0.006)	0.001 (0.006)
Other Race	-0.039^{***} (0.009)	-0.039^{***} (0.009)	-0.039^{***} (0.009)
Male	0.010^{***} (0.003)	0.010^{***} (0.003)	0.008^{***} (0.003)
Unemployed	-0.005 (0.004)	-0.005 (0.004)	-0.005 (0.004)
30 Day Policy Stringency Index	0.001^{***} (0.0001)		
30 Day Cases*Dec.21-Jan.22 Survey Wave	53.337^{***} (10.852)		
7 Day Policy Stringency Index		0.002^{***} (0.0001)	0.001^{***} (0.0001)

7 Day Cases*Dec.21-Jan.22 Survey Wave		20.320^{**} (8.863)	
Cumulative Cases*Dec.21-Jan.22 Survey Wave			0.803^{***} (0.123)
Republican Governor*Independent	0.214^{***} (0.007)	0.214^{***} (0.007)	0.213^{***} (0.007)
Republican Governor*Republican/Lean Republican	0.431^{***} (0.006)	0.431^{***} (0.006)	0.432^{***} (0.006)
Constant	0.626^{***} (0.012)	0.608^{***} (0.011)	0.685^{***} (0.014)
Observations	47,236	47,236	45,129
R^2	0.148	0.148	0.148
Adjusted R^2	0.147	0.147	0.147
Residual Std. Error	0.291 (df = 47212)	0.291 (df = 47212)	0.291 (df = 45105)
F Statistic	355.774^{***} (df = 23; 47212)	355.203^{***} (df = 23; 47212)	340.312^{***} (df = 23; 45105)
Notes:	*p<0.1; **p<0.05; ***p<0.01		
	Weighted OLS Estimates. Standard errors in parentheses. Dependent variable is coded 0=Strongly Disapprove to 1= Strongly Approve.		

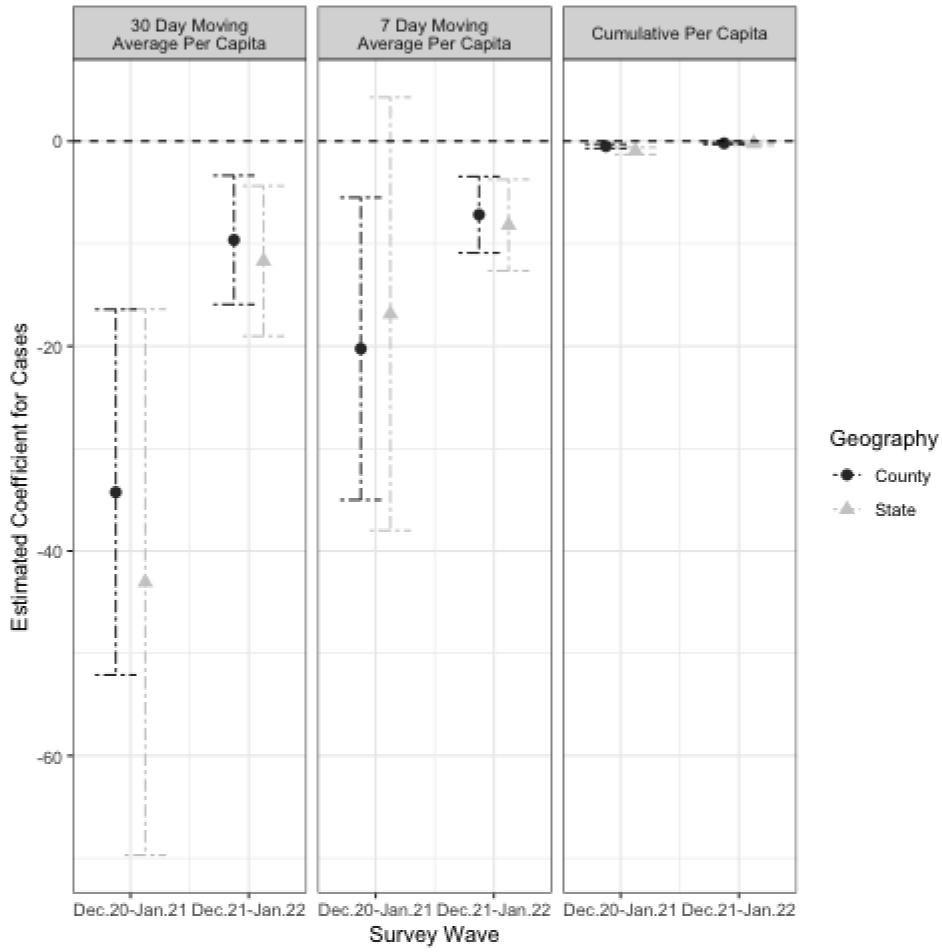
Appendix Table 2. Impact of County Coronavirus Cases on Governor Covid Approval.

	Dependent variable:		
	Governor Covid Approval		
	(1)	(2)	(3)
County Cases 30 Day Moving Average Per Capita	-36.378*** (7.842)		
County Cases 7 Day Moving Average Per Capita		-20.583*** (6.642)	
County Cumulative Cases Per Capita			-0.629*** (0.085)
Dec.21-Jan.22 Survey Wave	-0.030*** (0.008)	-0.013* (0.007)	-0.012 (0.012)
Age: 30-49	0.030*** (0.004)	0.030*** (0.004)	0.030*** (0.004)
Age:50-64	0.059*** (0.004)	0.059*** (0.004)	0.057*** (0.004)
Age: 65+	0.101*** (0.004)	0.101*** (0.004)	0.099*** (0.005)
Ideology	-0.041*** (0.006)	-0.041*** (0.006)	-0.040*** (0.007)
Income	0.018*** (0.005)	0.018*** (0.005)	0.017*** (0.005)
Graduate Degree	0.029*** (0.005)	0.029*** (0.005)	0.029*** (0.005)

Highschool or less	-0.010*** (0.004)	-0.011*** (0.004)	-0.010** (0.004)
Some College	-0.021*** (0.004)	-0.021*** (0.004)	-0.021*** (0.004)
Republican Governor	-0.218*** (0.004)	-0.219*** (0.004)	-0.218*** (0.004)
Independent	-0.194*** (0.005)	-0.194*** (0.005)	-0.192*** (0.005)
Republican/Lean Republican	-0.296*** (0.005)	-0.296*** (0.005)	-0.295*** (0.005)
Black	0.014*** (0.004)	0.015*** (0.004)	0.015*** (0.005)
Hispanic	-0.006 (0.004)	-0.005 (0.004)	-0.005 (0.004)
Asian	0.004 (0.006)	0.005 (0.006)	0.001 (0.006)
Other Race	-0.039*** (0.009)	-0.039*** (0.009)	-0.039*** (0.009)
Male	0.010*** (0.003)	0.010*** (0.003)	0.009*** (0.003)
Unemployed	-0.005 (0.004)	-0.005 (0.004)	-0.005 (0.004)
30 Day Policy Stringency Index	0.001*** (0.0001)		
30 Day Cases*Dec.21-Jan.22 Survey Wave	39.234*** (8.469)		
7 Day Policy Stringency Index		0.002*** (0.0001)	0.001*** (0.0001)
7 Day Cases*Dec.21-Jan.22 Survey Wave		18.212*** (6.903)	

Cumulative Cases*Dec.21-Jan.22 Survey Wave			0.392*** (0.098)
Republican Governor*Independent	0.214*** (0.007)	0.214*** (0.007)	0.212*** (0.007)
Republican Governor*Republican/Lean Republican	0.431*** (0.006)	0.431*** (0.006)	0.431*** (0.006)
Constant	0.619*** (0.011)	0.608*** (0.010)	0.652*** (0.012)
Observations	47,236	47,236	45,129
R^2	0.148	0.148	0.148
Adjusted R^2	0.147	0.147	0.147
Residual Std. Error	0.291 (df = 47212)	0.291 (df = 47212)	0.291 (df = 45105)
F Statistic	355.675*** (df = 23; 47212)	355.413*** (df = 23; 47212)	339.454*** (df = 23; 45105)
Notes:	*p<0.1; **p<0.05; ***p<0.01		
	Weighted OLS Estimates. Standard errors in parentheses. Dependent variable is coded 0=Strongly Disapprove to 1= Strongly Approve.		

Appendix Figure 1. Impact of State and County Coronavirus Cases on Governor Covid Approval (With State Fixed Effects).



Note: Error bars are 95% confidence intervals. Regressions are identical to those estimated in figure 1 of the main text but add random intercepts by state.

Appendix Table 3. Impact of State Coronavirus Deaths on Governor Covid Approval.

	Dependent variable:		
	Governor Covid Approval		
	(1)	(2)	(3)

State Deaths 30 Day Moving Average Per Capita	-2,658.521*** (515.491)		
State Deaths 7 Day Moving Average Per Capita		-1,032.446** (509.100)	
State Cumulative Deaths Per Capita			5.899 (4.202)
Dec.21-Jan.22 Survey Wave	-0.030*** (0.007)	-0.013* (0.007)	0.024** (0.011)
Age: 30-49	0.030*** (0.004)	0.030*** (0.004)	0.031*** (0.004)
Age:50-64	0.059*** (0.004)	0.059*** (0.004)	0.058*** (0.004)
Age: 65+	0.101*** (0.004)	0.102*** (0.004)	0.101*** (0.005)
Ideology	-0.041*** (0.006)	-0.041*** (0.006)	-0.042*** (0.007)
Income	0.019*** (0.005)	0.018*** (0.005)	0.017*** (0.005)
Graduate Degree	0.029*** (0.005)	0.029*** (0.005)	0.029*** (0.005)
Highschool or less	-0.010*** (0.004)	-0.011*** (0.004)	-0.010** (0.004)
Some College	-0.021*** (0.004)	-0.021*** (0.004)	-0.021*** (0.004)
Republican Governor	-0.219*** (0.004)	-0.219*** (0.004)	-0.218*** (0.004)
Independent	-0.194*** (0.005)	-0.194*** (0.005)	-0.192*** (0.005)
Republican/Lean Republican	-0.296*** (0.005)	-0.296*** (0.005)	-0.295*** (0.005)

Black	0.014*** (0.004)	0.014*** (0.004)	0.016*** (0.005)
Hispanic	-0.006 (0.004)	-0.006 (0.004)	-0.007* (0.004)
Asian	0.003 (0.006)	0.004 (0.006)	0.004 (0.006)
Other Race	-0.039*** (0.009)	-0.039*** (0.009)	-0.039*** (0.009)
Male	0.010*** (0.003)	0.010*** (0.003)	0.008*** (0.003)
Unemployed	-0.005 (0.004)	-0.005 (0.004)	-0.005 (0.004)
30 Day Policy Stringency Index	0.001*** (0.0001)		
30 Day Deaths*Dec.21-Jan.22 Survey Wave	3,181.656*** (827.114)		
7 Day Policy Stringency Index		0.002*** (0.0001)	0.002*** (0.0001)
7 Day Deaths*Dec.21-Jan.22 Survey Wave		1,210.392* (629.966)	
Cumulative Deaths*Dec.21-Jan.22 Survey Wave			-14.566*** (5.387)
Republican Governor*Independent	0.214*** (0.007)	0.214*** (0.007)	0.211*** (0.007)
Republican Governor*Republican/Lean Republican	0.431*** (0.006)	0.430*** (0.006)	0.430*** (0.006)
Constant	0.621*** (0.011)	0.604*** (0.011)	0.590*** (0.011)

Observations	47,236	47,236	45,129
R^2	0.148	0.147	0.146
Adjusted R^2	0.147	0.147	0.146
Residual Std. Error	0.291 (df = 47212)	0.291 (df = 47212)	0.291 (df = 45105)
F Statistic	355.950*** (df = 23; 47212)	355.061*** (df = 23; 47212)	335.986*** (df = 23; 45105)
Notes:	*p<0.1; **p<0.05; ***p<0.01		
	Weighted OLS Estimates. Standard errors in parentheses. Dependent variable is coded 0=Strongly Disapprove to 1= Strongly Approve.		

Appendix Table 4. Impact of County Coronavirus Deaths on Governor Covid Approval.

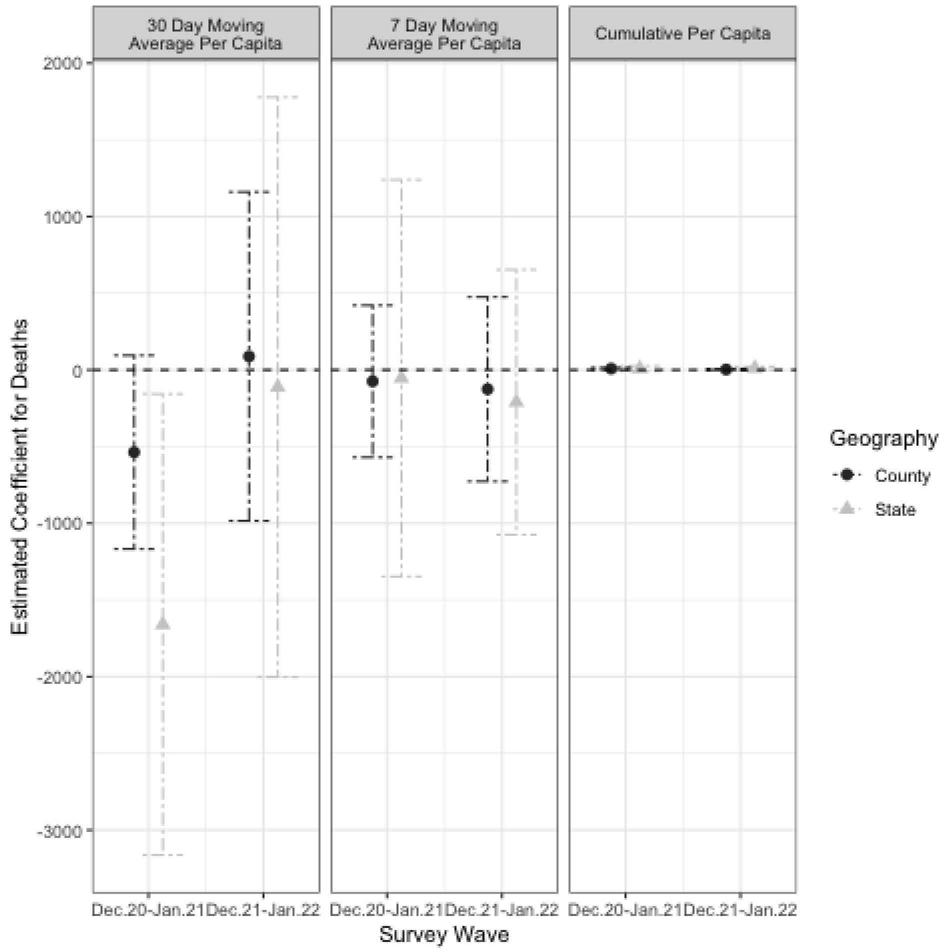
	Dependent variable:		
	Governor Covid Approval		
	(1)	(2)	(3)

County Deaths 30 Day Moving Average Per Capita	-979.430*** (302.738)		
County Deaths 7 Day Moving Average Per Capita		-330.081 (244.599)	
County Cumulative Deaths Per Capita			10.345*** (2.860)
Dec.21-Jan.22 Survey Wave	-0.012** (0.006)	-0.006 (0.005)	0.013 (0.008)
Age: 30-49	0.030*** (0.004)	0.030*** (0.004)	0.031*** (0.004)
Age:50-64	0.059*** (0.004)	0.059*** (0.004)	0.058*** (0.004)
Age: 65+	0.101*** (0.004)	0.102*** (0.004)	0.101*** (0.005)
Ideology	-0.041*** (0.006)	-0.041*** (0.006)	-0.042*** (0.007)
Income	0.018*** (0.005)	0.018*** (0.005)	0.017*** (0.005)
Graduate Degree	0.029*** (0.005)	0.029*** (0.005)	0.029*** (0.005)
Highschool or less	-0.010*** (0.004)	-0.011*** (0.004)	-0.010** (0.004)
Some College	-0.021*** (0.004)	-0.021*** (0.004)	-0.021*** (0.004)
Republican Governor	-0.218*** (0.004)	-0.219*** (0.004)	-0.219*** (0.004)
Independent	-0.194*** (0.005)	-0.194*** (0.005)	-0.192*** (0.005)

Republican/Lean Republican	-0.296*** (0.005)	-0.296*** (0.005)	-0.295*** (0.005)
Black	0.014*** (0.004)	0.014*** (0.004)	0.015*** (0.005)
Hispanic	-0.006 (0.004)	-0.006 (0.004)	-0.008* (0.004)
Asian	0.004 (0.006)	0.005 (0.006)	0.004 (0.006)
Other Race	-0.039*** (0.009)	-0.039*** (0.009)	-0.039*** (0.009)
Male	0.010*** (0.003)	0.010*** (0.003)	0.008*** (0.003)
Unemployed	-0.005 (0.004)	-0.005 (0.004)	-0.005 (0.004)
30 Day Policy Stringency Index	0.002*** (0.0001)		
30 Day Deaths*Dec.21-Jan.22 Survey Wave	1,214.537** (572.015)		
7 Day Policy Stringency Index		0.002*** (0.0001)	0.002*** (0.0001)
7 Day Deaths*Dec.21-Jan.22 Survey Wave		405.300 (377.219)	
Cumulative Deaths*Dec.21-Jan.22 Survey Wave			-13.060*** (3.570)
Republican Governor*Independent	0.214*** (0.007)	0.214*** (0.007)	0.211*** (0.007)

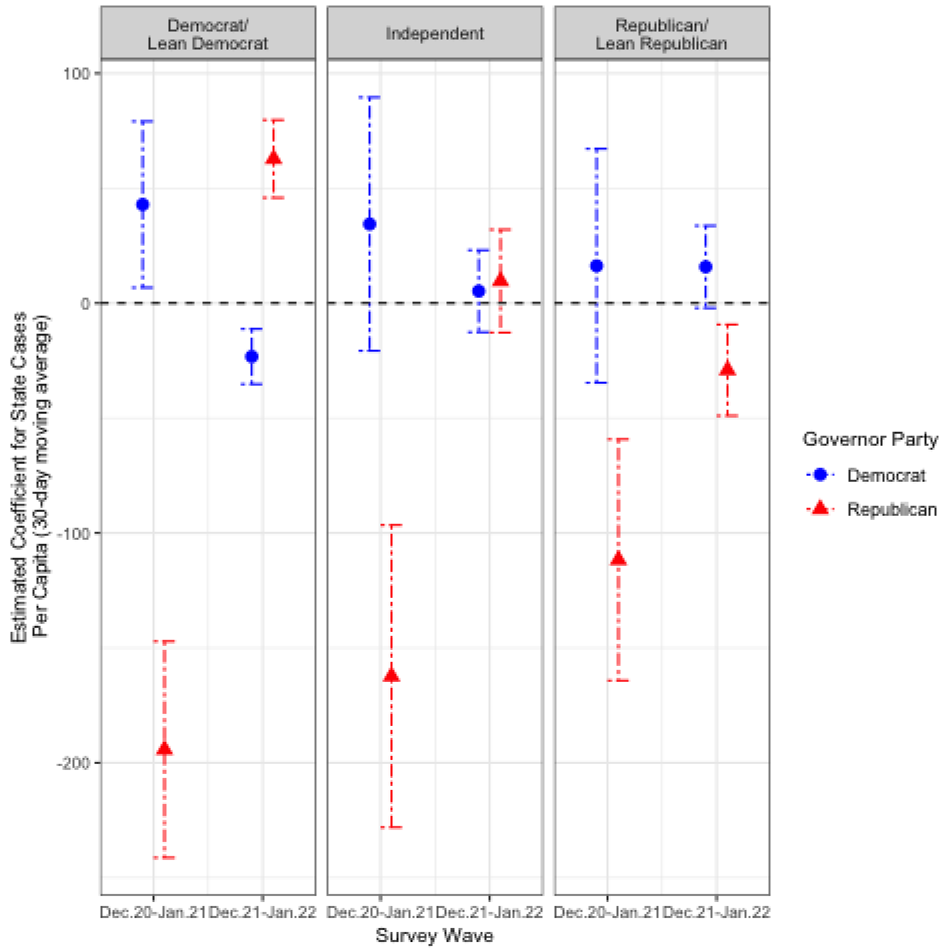
Republican Governor*Republican/Lean Republican	0.431*** (0.006)	0.431*** (0.006)	0.430*** (0.006)
Constant	0.603*** (0.010)	0.598*** (0.010)	0.587*** (0.010)
Observations	47,236	47,236	45,129
R^2	0.147	0.147	0.146
Adjusted R^2	0.147	0.147	0.146
Residual Std. Error	0.291 (df = 47212)	0.291 (df = 47212)	0.291 (df = 45105)
F Statistic	355.090*** (df = 23; 47212)	354.935*** (df = 23; 47212)	336.295*** (df = 23; 45105)
Notes:	*p<0.1; **p<0.05; ***p<0.01		
	Weighted OLS Estimates. Standard errors in parentheses. Dependent variable is coded 0=Strongly Disapprove to 1= Strongly Approve.		

Appendix Figure 2. Impact of State and County Coronavirus Deaths on Governor Covid Approval (With State Fixed Effects).



Note: Error bars are 95% confidence intervals. Regressions are identical to those estimated in figure 2 of the main text but add random intercepts by state.

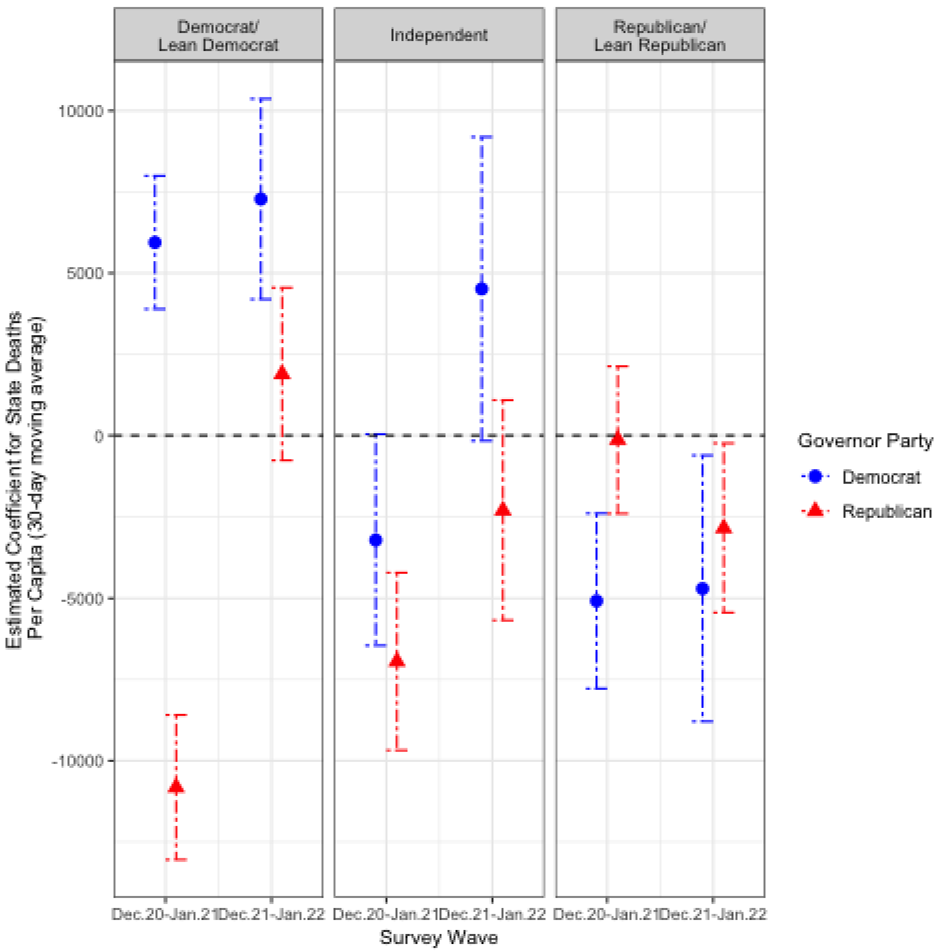
Appendix Figure 3. Impact of State Coronavirus Cases on Governor Approval Conditional on Partisanship, Governor Party, and Survey Wave.



Note: Error bars are 95% confidence intervals. Results from separate regressions by individual partisanship and including triple interaction term between cases, survey wave, and governor party.

As shown in appendix figure 3, more state cases early in the pandemic under Republican governors is associated with significantly lower approval of governor's handling of the pandemic. This is consistently the case across individual party identification. The effect of state cases early in the pandemic for Democratic governors is statistically insignificant for Republicans and Independents, yet is associated with a weak, positive increase among Democrats. This weak, positive effect may be due to a rally effect that only occurred among Democrats rating co-partisan governors. Consistent with the *desensitization hypothesis*, the effect of state cases during the 2nd winter surge is considerably weaker across individual party identifications and regardless of the governor's party. Among pure independents, cases did not have a statistically significant impact on governor covid approval. Among Democrats, higher case counts is associated with significantly higher approval ratings of Republican governors and significantly lower approval ratings of Democratic governors. Among Republicans, the relationship with reversed, with Republican identifiers rating governors belonging to their own party lower when cases are high, and rating Democratic governors more positively when cases are higher. Although we did not have specific expectations on the subject, this relationship among partisans may represent differences in policy preferences. Democrats faced with high case counts under Republican governors late in the pandemic may have still reacted positively to these governors despite rising cases if their pandemic policies were consistent with their own preferences (e.g., an increased preference for looser restrictions). On the other hand, if Democratic governors enacted generally stricter pandemic policies late in the pandemic yet still faced high cases, individual Democrats may have evaluated them more harshly. The relationship among Republican identifiers late in the pandemic is surprising and future research should investigate this relationship further.

Appendix Figure 4. Impact of State Coronavirus Deaths on Governor Approval Conditional on Partisanship, Governor Party, and Survey Wave.



Note: Error bars are 95% confidence intervals. Results from separate regressions by individual partisanship and including triple interaction term between deaths, survey wave, and governor party.

As shown in appendix figure 4, more state deaths early in the pandemic under Republican governors is associated with significantly lower approval of governor's handling of the pandemic among Democrats and Independents. Independents also punish Democratic governors early in the pandemic for higher deaths. Yet among Democrats, there is clear evidence of rally effects for Democratic governors for states facing higher deaths early in the pandemic. Among Republicans, the effect of greater deaths early in the pandemic is associated with significantly lower approval only for Democratic governors, while the effect is insignificant for governors of their own party.

Later in the pandemic, greater deaths are associated with higher approval of Democratic governors among both independents and Democrats yet does not have a statistically significant effect for Republican governors among both groups. For Republicans late in the pandemic, more deaths is associated with significantly lower approval of both Democratic and Republican governors. Contrary to expectations under the *desensitization hypothesis*, this effect among Republicans is similar to the effect early in the pandemic.