Aid for Incumbents: The Electoral Consequences of COVID-19 Relief*

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Abstract

The COVID-19 pandemic led to unprecedented levels of federal aid being transferred to state governments. Did this increase in funding benefit state incumbents electorally? Identifying the effect of revenue windfalls on economic voting is challenging because whatever conditions led to the influx of cash might also benefit or harm incumbent politicians for a variety of other reasons. We exploit the fact that pandemic aid was channeled systematically to low-population states to develop an instrument that allows us to predict allocations based on variation in congressional representation. We find that incumbents in state-wide races in 2020, 2021, and 2022 performed significantly better in states that received more relief funding due to their over-representation in Congress. These results are robust across specifications and after adjusting for a variety of economic and political controls. We consistently find that the pandemic-period electoral advantage of incumbent politicians in low-population states substantially exceeds the more modest advantage these politicians enjoyed during pre-pandemic elections. This paper contributes to our understanding of the incumbency advantage during times of crisis as well as the downstream electoral consequences of unequal representation.

*Thanks to our excellent RA Beatrice Lee.

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1 Introduction

In response to the COVID-19 pandemic, the U.S. federal government transferred nearly $1 trillion in aid to state and local governments—the largest influx of federal money in response to either a public-health or financial crisis in history. The goal was to stabilize the economy while providing states with the necessary resources to address the public health crisis. Did this increase in resources benefit incumbent politicians? We provide evidence on this question by exploiting the fact that states received unequal levels of aid as a means to estimating the effect of federal aid on state-wide elections.

The ability to claim credit for government programs and spending comprises an important source of the incumbency advantage (Mayhew 1974; Erikson 1971; Ansolabehere and Snyder Jr. 2002). There are a variety of reasons why increased pandemic aid might have helped incumbent politicians running for re-election. Incumbents can generate support among constituents by emphasizing their efforts to lobby for additional funding, and if they use the money effectively, voters might reward that work at the ballot box. However, if politicians are not able to use the increased revenues to enact policies and programs that voters prefer, we may not observe an impact of increased aid on incumbent vote shares.

Studying the effect of economic windfalls on the electoral fortunes of politicians is difficult due to standard endogeneity concerns. The conditions that result in an influx of federal revenue might either benefit or harm incumbents' electoral prospects for other reasons. To overcome this challenge, we employ an instrumental variables strategy. Following Clemens et al. (2023), we leverage the fact that pandemic assistance varied based on congressional representation, with an additional senator or representative per million residents predicting roughly $1,000 dollars in additional aid per capita. As a result, small states received systematically more funding based on their per capita representation in Congress. By predicting aid levels using congressional representation as an instrument, we seek to isolate the effect of COVID-19 spending on state-wide election results.

We find that federal pandemic aid strongly predicts incumbent performance in the 2020, 2021, and 2022 elections. The exclusion restriction here assumes that higher per capita representation in Congress did not benefit incumbents through channels other than the increase in COVID-19 funding. If incumbents in these low-population states enjoy a persistent advantage, we note that this advantage would be present in pre-pandemic elections. In an analysis of a decade-long panel, we find that incumbents in overrepresented states did, in fact, enjoy a small electoral edge even before the pandemic's onset, but that their advantage rose significantly–both in electoral and statistical terms–after federal pandemic aid had been appropriated.

This paper makes three primary contributions. First, our research design allows us to study the effect of a dramatic economic shock on the incumbency advantage. Second, our analysis contributes to our understanding of the political effects of COVID-19. Several scholars have begun to study the electoral effects of the pandemic, but existing work has focused primarily on the presidential election of 2020, and we know less about the downstream and statewide effects (Clarke, Stewart, and Ho 2021; Baccini, Brodeur, and Weymouth 2021; Mendoza Aviña and Sevi 2021). Finally, this paper adds to a body of research demonstrating that representation matters for the allocation of resources (Ansolabehere, Gerber, and Snyder 2002; Lee 1998). We document how the consequences of this uneven distribution can shape electoral politics.

2 Existing Literature and Institutional Background

Across both state and federal offices in the United States, incumbent politicians tend to perform well at the ballot box. A large literature on distributive politics posits that constituents reward incumbent politicians for securing more federal dollars (Levitt and Snyder Jr. 1997; Bickers and Stein 1996; Cain, Ferejohn, and Fiorina 1987). Incumbents can also strategically claim credit for government spending in order to cultivate a personal vote (Grimmer, Messing, and Westwood 2012). At the same time, local economic conditions strongly pre-

dict incumbent support (de Benedictis-Kessner and Warshaw 2020), and the incumbency advantage is larger in states with larger per capita legislative operating budgets (Hirano and Snyder 2009).

A substantial body of research on retrospective voting has established that voters generally hold incumbents accountable for the economy's performance while they are in office, penalizing them for poor economic outcomes and rewarding them for positive ones (for a review, see Healy and Malhotra (2013)). Economic downturns lead voters to embrace challenger parties and reduce support for incumbents (Gourevitch 1986; Bartels 2014; Healy and Lenz 2017). Alternatively, voters reward politicians for windfalls (Chen 2013; Bechtel and Hainmueller 2011). Early political science research on retrospective voting focused primarily on establishing patterns of how economic conditions correlate with vote choice (e.g. Tufte 1978). The goal was often prediction rather than inference. For example, Niemi, Stanley, and Vogel (1995) find that a one standard deviation increase in real income per-capita within a state was associated with an 8 percentage point increase in the incumbent's vote share in gubernatorial elections.

More recent work in political economy focuses on exploiting shocks ranging from the Great Depression to the China trade shock to study how changes in economic conditions affect political outcomes. Margalit (2011) finds that counties exposed to more foreign competition due to offshoring experienced greater job loss, and that each percentage point decrease in the employment rate corresponded with a 0.15 percentage point penalty for the incumbent party in presidential elections. Healy and Lenz (2017) study the 2008 financial crisis and find that negative economic shocks harm incumbents: zip codes with the highest levels of delinquent mortgages, for example, shifted their vote share away from the incumbent party by 7.7 percentage points relative to zip codes with the lowest delinquency rates.[1]

Together, these stylized facts suggest that an influx of funding should increase the electoral support for incumbent politicians. However, whatever political and economic conditions

[1]For additional examples, see Margalit (2019).

led to the windfall might also influence voter evaluations, making it difficult to credibly estimate the effect of government spending on incumbent performance. In this paper, we develop an instrument to credibly estimate how the unprecedented levels of federal aid to state governments influenced the electoral fortunes of incumbent politicians.

The federal structure of the United States means that transfers from the national government comprise an important component of state budgets. The COVID-19 pandemic resulted in historically high levels of federal aid being transferred to state and local governments (Clemens and Veuger 2020*a*). Notably for our analysis, transfers were more generous towards states with higher per capita representation in Congress (Clemens and Veuger 2021). Importantly, a state's congressional representation does not simply reflect its population, as each state elects two senators and at least one member of the House of Representatives. Clemens et al. (2022a and 2022b) exploit this bias in favor of small-states and use an instrumental variables approach to estimate the effect of aid on state and local government employment and on the roll out of COVID-19 testing and vaccination operations.

Here, our starting point is a similar design to estimate the effect of COVID-19 aid on incumbent performance in statewide elections in 2020, 2021 and 2022. Other literature has found that over-represented states enjoy additional federal funding per capita across a range of measures (Atlas et al. 1995; Lee 1998; Hauk Jr. and Wacziarg 2007). Consistent with these findings, we document that states with higher per capita representation enjoy a slightly larger incumbency advantage prior to the pandemic. However, after nearly $1 trillion of COVID-19 relief were appropriated, states that received more aid saw a disproportionate increase in incumbent vote share. We describe our empirical approach in detail in the next section.

We study both legislative and executive incumbents whose constituency is an entire state, including senators, members of the House elected at large, and governors. The literature suggests that legislators might enjoy a stronger incumbency advantage, in part because it can be difficult to identify which individual legislators are responsible for government

performance. Legislators can exploit the fact that voters may not know who to blame for a weak economy or public health crisis and engage in more constituent casework and credit claiming, which may boost their advantages (Fiorina 1989). Governors, on the other hand, are more likely to be held accountable for economic performance because executive decisions are more easily attributable to a single politician. Some existing work has found that members of the Senate are more likely to be evaluated on the basis of presidential performance, while governors are punished or rewarded based a state's economic conditions (Atkeson and Partin 1995).

The question of whether legislators or executive officers should benefit more from the distribution of pandemic aid is ultimately an empirical question (Ansolabehere and Snyder Jr. 2002). While our baseline analysis pools across office types in order to maximize our sample size, we also explore differences across legislative and executive offices when assessing mechanisms. We find that governors of overrepresented states see their incumbency advantage increase more during the pandemic than legislators. This is in line with previous work that assigns credit for state level outcomes to governors. Additionally, we note that the crisis may also have increased gubernatorial visibility through greater media attention. In "normal" times, roles appear to be reversed and, if anything, legislators benefit more from overrepresentation, in the spirit of (Fiorina 1989).

The condition of state and local governments' budgets is a dimension of the context we analyze that may be relevant for contrasting our results with estimates from other settings. At the pandemic's outset, estimates from a number of sources projected that state and local revenue shortfalls would rise easily into the hundreds of billions and might reach as high as $1 trillion dollars (Auerbach et al. 2020; Bartik 2020; McNichol, Leachman, and Marshall 2020; Clemens and Veuger 2020*b*,*a*; Whitaker 2020). We now know that, for a number of reasons, these estimates substantially overstated the revenue shortfalls that would ultimately occur. First, states' tax bases were buoyed by federal support for households and businesses, much of which had not been legislated at the time of these early-pandemic

forecasts. Second, both state and local sales tax revenues were enhanced by the pandemic's effect on consumption patterns (de Benedictis-Kessner and Warshaw 2020), which underwent an unforeseen shift away from services (which are disproportionately untaxed) and towards goods (which are disproportionately taxed); in the end, state governments' revenues would ultimately exceed rather than fall short of pre-pandemic forecasts (National Association of State Budget Officers 2021). For our purposes, an implication of these developments is that federal aid generated surpluses over which governors and state legislatures may have viewed themselves as holding substantial discretion. This can be contrasted with times of starker need, where incremental funds might less discretionarily be devoted towards the maintenance of employment and pay for essential personnel.

Existing research on the political effects of the COVID-19 pandemic has so far focused on the presidential election of 2020. Voters reacted negatively to Trump's handling of the pandemic (Clarke, Stewart, and Ho 2021), and Baccini, Brodeur, and Weymouth (2021) found that pandemic death rates negatively predicted Trump's vote share at the county level. Self-exposure to COVID-19 cases and deaths negatively predict support for the former president (Mendoza Aviña and Sevi 2021). However, we are not aware of any papers that have studied the consequences of pandemic aid on post-2020 elections for other offices. In the next section, we introduce our data and research design.

3 Data

Our primary outcome of interest is incumbent-party vote share. We construct this outcome by taking the incumbent party's total number of votes as a share of the top two candidates' total votes. In cases in which more than one candidate from the incumbent party runs in an election, we take the top-performing incumbent party candidate's total votes to be equal to the incumbent party's total votes. MIT's Election Lab provides vote counts for congressional elections through 2020, while we use vote counts from Amlani and Algara (2021) for gubernatorial elections through 2020. Vote counts for the 2021 and 2022 elections

are taken from Leip (2024). Our sample is comprised of Senate and gubernatorial elections nationwide and House elections for the six states with at-large (state-wide) congressional districts. The resulting sample of 131 elections from 2020, 2021, and 2022 is depicted in the maps displayed in Figure 1, which are shaded to provide an initial look at the incumbent party's vote share in each election. The broader sample in which we contrast pandemic elections with pre-pandemic elections, incorporates an additional 217 Senate, gubernatorial, and at-large House races, such that our decade-long sample incorporates 348 elections from 2013 through 2022.

Our baseline specifications incorporate a common control from the literature on U.S. electoral politics, namely the "normal vote," which accounts for the performance of the incumbent party in the previous election cycle. We construct the normal vote as the incumbent-party share, as defined above, of the top two candidates' total votes from the most recent pre-COVID-19 pandemic election. For most elections, this is the incumbent party's vote share from the most recent election. However, for elections that occur every two years, which in our sample includes the at-large House races and the New Hampshire and Vermont gubernatorial elections, this means we look to the incumbent party's vote share from the second-most recent election.[2]

We use a state's number of congressional representatives per million residents as our measure of congressional representation. Rosters of the House of Representatives and Senate during the 116th and 117th Congresses come from Lewis et al. (2021). We note that because 2020 Congressional representation was allocated according to state population from the 2010 census, Congressional representation is not affected by variations in population driven by the COVID-19 pandemic.

We analyze the four major pieces of fiscal relief that were passed during the COVID-19 pandemic: the CARES Act, the Families First Coronavirus Response Act (FFCRA), the

[2]In the 2010 South Dakota Senate election, incumbent John Thune ran uncontested, meaning the incumbent party's vote share equaled 100 percent. Because this is not an accurate measure of the incumbent party's power, we do not use this value as the normal vote control in the 2016 South Dakota Senate election. Instead, we use the incumbent (Republican) party's share of the top two candidate's votes from the 2012 South Dakota at-large House election.

Response and Relief Act (RRA), and the American Rescue Plan Act (ARPA). Our analysis focuses on the nearly $1 trillion in funds that were allocated by these bills to state and local goverments. As in Clemens and Veuger (2021), data from the Committee for a Responsible Federal Budget (2021) form the basis of our fiscal assistance variable, supplemented by several other sources.[3] Our analysis focuses on the grand total of aid committed to each state across all four major pieces of COVID-19 fiscal relief. That is, our main independent variable for analyses of the impact of federal aid is the grand total of aid allocated to each state per resident in thousands of dollars. Variations in these aid distributions across states are displayed in Figure 2. Summary statistics for the full set of variables used in our analyses can be found in Table A.1.

4 Methods

The goal of our analysis is to estimate the causal effect of federal aid to state and local governments on the electoral fortunes of incumbents. A general difficulty for estimating the causal effects of pandemic fiscal assistance is that fiscal assistance may have been targeted, at least to some extent, towards the states in greatest need. If state needs linked to the pandemic's health and economic impacts also influenced incumbents' electoral fortunes, a naïve regression of electoral outcomes on aid would tend to yield estimates that are biased towards negative values.

As a solution to the problem of federal aid's endogeneity, we propose an instrumental variables estimation framework that makes use of the fact that federal aid distributions were far more generous to states that enjoy over-representation in the U.S. Congress, due in large

[3]We use data from the CRFB's COVID-19 Money Tracker as of August 19th, 2021. As in Clemens and Veuger (2021), "[w]e obtain information on the distribution of transit funds for the RRA and ARPA from the US Federal Transit Administration (2021). Data on the allocation of ARPA assistance to nonpublic schools come from the US Office of Elementary and Secondary Education (2021). We obtain estimates of ARPA section 9817 matching increases from Chidambaram and Musumeci (2021). We approximate the allocation of ARPA section 9819 federal matching funds for uncompensated care using FY2021 estimates of federal disproportionate share hospital allotments by state from the Medicaid and Chip Payment Access Commission (2021)." The Coronavirus Capital Projects Fund outlined in ARPA is distributed according to guidance from the United States Department of the US Department of the Treasury (2021).

part to the U.S. Senate's over-representation of individuals from low-population states. The initial strategy we implement, the validity of which we discuss below, is described by the following set of equations:

$$\frac{\text{Total Aid}_{s,o,t}}{\text{Pop}_s} = \gamma_0 + \gamma_1 \text{Reps Per Million}_s + \gamma_2 \text{Normal Vote}_{s,o,t} + X_{s,o,t}\gamma + \epsilon_{s,o,t} \tag{4.1}$$

$$\text{Vote Share}_{s,o,t} = \beta_0 + \beta_1 \frac{\widehat{\text{Total Aid}}_{s,o,t}}{\text{Pop}_s} + \beta_2 \text{Normal Vote}_{s,o,t} + X_{s,o,t}\beta + u_{s,o,t} \tag{4.2}$$

In equations (4.1) and (4.2), s indexes states, o indexes offices (senator, governor, or at-large representative), and t indexes years. The observations in our primary analysis sample consist of the 131 Senate, governor, and at-large House races that occurred in 2020, 2021, and 2022. $\frac{\text{Total Aid}_{s,o,t}}{\text{Pop}_s}$ is the total per capita federal pandemic aid (in thousands of dollars) to state and local governments in state s.[4] Reps Per Million$_s$ is our instrument, a measure of the representatives and senators each state is allocated per million residents. Normal Vote$_{s,o,t}$ is a conventional control from the elections literature which captures the performance of the incumbent (or the incumbent party) in the prior election cycle for a given race. While Normal Vote$_{s,o,t}$ is the only additional covariate in our baseline specification, we also explore robustness checks in which proxies for potential sources of bias are included in the additional covariate vector $X_{s,o,t}$.

The validity of our instrumental variables estimation framework depends largely on two criteria. A first requirement for variations in political representation to provide a good instrument is that congressional representation must be a strong, or relevant, predictor of the amount of aid each state received per resident. This fact has been established by Clemens and Veuger (2021), who explain how the small-state bias in federal funding arose in large part

[4]In Appendix Table A.2 We check to confirm that we obtain very similar results whether we apply the grand total of aid across the four relief packages to each election or, alternatively, apply aid from the CARES Act and FFCRA to the elections that took place in November of 2020.

from the use of floor functions in the otherwise population-driven formulas for distributing general purpose fiscal relief.

The formal test of our instrument's strength involves the F-statistic on the excluded instrument in the first stage of our specifications. As shown primarily in Table 1, the relevant F-statistics exceed 100, with an additional representative or senator per million residents predicting roughly $1,000 in additional aid per state resident Additionally, as shown in Clemens and Veuger (2021) and subsequent studies, the strength of the first stage relationship is little impacted by adding any of a number of covariates to the regression model.

A second requirement is that our instrument must satisfy the exclusion restriction. That is, conditional on any additional covariates in our model, our instrument must only be correlated with election outcomes through its effect on federal aid distributions. A number of pieces of evidence support the plausibility of this requirement.

First, earlier work has shown the small state bias in federal aid was unrelated to a number of plausible correlates of the needs states faced as a consequence of the pandemic. Clemens and Veuger (2021) show, in particular, that the small-state advantage is more or less orthogonal to state and local government funding needs as proxied by forecasts of pandemic-driven revenue shocks, pandemic-driven economic shocks, and the size of their public sector at baseline. This earlier paper showed that controlling for these proxies for need has little effect on the relationship between federal aid distributions and our instrument.

Second, we directly explore the robustness of our analysis by implementing straightforward approaches to rule out a role for some of the primary dimensions along which the pandemic differentially impacted states' economies. First, as is widely recognized, tourism-intensive states like Nevada, Hawaii, and Florida suffered more dramatically from the pandemic's initial impacts on their overall economic activity. Second, as noted by Clemens et al. (2024), the pandemic's early impacts on oil and gas prices, as well as on the initiation of new resource extraction activity, had a substantial impact on the revenues of Alaska, Wyoming, and North Dakota, which rely to a far greater degree on severance and other resource-related

revenue streams than other states. We explore robustness to the potential relevance of these issues by showing that our results are little changed if we drop the most impacted states from the sample. Additionally, we show that our results are robust to controlling for plausibly exogenous pre-pandemic proxies for variations in political and pandemic-policy preferences, which may themselves have exerted non-trivial impacts on political outcomes during the pandemic itself.

Third, as a placebo test we investigate whether the variations in aid that are predicted by our instrument predict the performance of incumbent politicians in elections from 2013 through 2019. This exercise provides evidence on whether incumbents in low-population states enjoy a persistent electoral advantage relative to incumbents in high population states, which would be consistent with the hypothesis we emphasize throughout given that the over-representation of low-population states is a structural feature of the U.S. Congress.

Our analysis of pre-pandemic elections finds that the relationship between election outcomes and the aid predicted by our instrument is weaker in this placebo test sample than in our primary analysis sample. While the relationship between our instrument and pre-pandemic election outcomes of incumbents is statistically modest, however, it is nonetheless suggestive that incumbents in over-represented states might enjoy a persistent advantage. To ensure that our estimates capture the advantage politicians in over-represented states enjoyed due specifically to the pandemic relief packages, we thus implement an additional set of analyses. Specifically, we implement a set of panel models in which we directly compare the electoral advantage of incumbent parties in over-represented states during the pandemic relative to their performance across several pre-pandemic electoral cycles. We begin this analysis by estimating the relatively sparse model below:

$$\begin{aligned}\text{Vote Share}_{s,o,t} = \alpha_0 &+ \alpha_1 \text{Reps Per Million}_s + \alpha_2 \text{Reps Per Million}_s \times \text{Pandemic}_t \\ &+ \alpha_3 \text{Pandemic}_t + \epsilon_{s,o,t} \end{aligned} \tag{4.3}$$

where Pandemic_t is an indicator that takes a value of 1 in 2020, 2021, and 2022 and a value of 0 in earlier years. Equation (4.3) can be described as a relatively sparse, reduced form analysis of the relationship between our instrument and electoral outcomes in which we allow that relationship to differ during the pandemic relative to pre-pandemic elections. As with our instrumental variables framework, we proceed with additional analyses that augment equation (4.3) by controlling for Normal $\text{Vote}_{s,o,t}$ and, further, by allowing the relationship between Normal $\text{Vote}_{s,o,t}$ and electoral outcomes to vary across election cycles.

We then further augment our panel estimator to include an increasingly saturated set of fixed effects that rule out the possibility that our estimates are driven by persistent state wide, or even state-by-office level, incumbency advantages. That is, we begin this final wave of analyses by adding full sets of state fixed effects and time fixed effects, then additionally adding office fixed effects, and finally adding state-by-office fixed effects, as in the model below:

$$\begin{aligned}\text{Vote Share}_{s,o,t} = \alpha_s + \alpha_t + \alpha_s \times \alpha_o + \rho\text{Reps Per Million}_s \times \text{Pandemic}_t \\ + \gamma_t\text{Normal Vote}_{s,o,t} \times \text{Year}_t + \epsilon_{s,o,t} \qquad (4.4)\end{aligned}$$

Note that in contrast with equation (4.3), equation (4.4) excludes the main effect of $\text{Reps Per Million}_s$ because it would be colinear with the set of state fixed effects. The coefficient ρ in equation (4.4) is a reduced form estimate of the incremental, pandemic-specific electoral advantage of enjoying an additional senator or representative per million state residents. Note that because an additional representative predicts roughly \$1,000 in additional aid, as estimated using equation (4.1), the scaling of ρ relative to β_1 from equation (4.2) is essentially the same. Crucially, the estimate of ρ in equation (4.4) is not subject to potential biases associated with time-invariant factors that differentiate low and high population states. Plausible sources of bias would need to involve pandemic-specific factors that differentially influenced low and high population states. These are the potential biases

we seek to address with the robustness checks to which we subject our estimate of equations (4.1) and (4.2).

5 Results

Table 1 presents our baseline results. In column 1, we estimate the reduced-form relationship between federal representation and incumbent vote share. We find that an additional representative or senator per million residents is associated with a statistically significant and politically meaningful additional four percentage points of the two-candidate vote for the incumbent.

Our estimate of the first-stage equation (4.1), in column 2, highlights the strong relationship between over-representation at the federal level and pandemic aid to state and local governments, which should come as no surprise given the discussion above in section 4. Conveniently for the scaling and interpretation of the reduced-form estimates, an additional representative or senator per million residents roughly translates into an additional $1,000 in aid per capita.

Column 3 shows our estimate of equation (4.2), the 2SLS relationship, without any controls. An additional $1000 in federal aid per capita translates, again, into a statistically significant and politically meaningful additional four percentage points of the two-candidate vote for the incumbent.

In columns 4 through 6 we go through the same exercise, but this time we control for the normal vote. Inclusion of the normal vote, a conventional control that produces our preferred specification, reduces the size of our estimate of the effect of additional aid by about a quarter. The estimated effect, a statistically significant and politically meaningful additional three percentage points of the two-candidate vote for the incumbent for an additional $1000 in federal aid, remains meaningful and statistically significant.

Table 2 presents the results of our first set of robustness tests. The first column replicates our preferred specification: that of column 6 from Table 1, which is the estimate of (4.2) with

the normal vote control included. To investigate whether our estimates are influenced by variations in the severity of the pandemic's toll on states' economies and tax bases, column 2 drops the most natural-resource intensive states, column 3 drops the most tourism intensive states, and column 4 drops both of these categories of states that were hard hit by the economic turmoil of the early pandemic. Our estimated effects of the impact of additional aid on the remaining subsamples of states are, if anything, slightly larger than the estimate based on the full sample.

In Table 3, we introduce two additional controls. After replicating our preferred specification in column 1, we control for the stringency of COVID-19 controls in March 2020 in column 2. In column 3 we control for Donald Trump's vote share in the 2016 presidential election. Finally, in column 4 we control for both of these variables, which we interpret as proxies for pandemic-related political and policy preferences. As can be seen in the table, the Trump vote share and, to a lesser extent, the measure of March 2020 COVID-19 lockdown stringency are both predictive of incumbents' vote shares, but their inclusion has no impact on our coefficient of primary interest. This reflects the fact that variation in federal aid was essentially orthogonal to these additional sources of variation in incumbents' electoral fortunes.

We also consider our results' robustness to issues related to functional form and to the election years included in our sample. In Table A.2, we replace the grand total of federal aid with the running total of aid, such that the federal aid we link to the 2020 elections stems primarily from the CARES Act. The resulting estimates are modestly larger than those in Table 1.[5] Additionally, we find very similar results if we exclude the 2020 elections from the sample, such that our sample only incorporates elections that occurred after all four relief packages had been passed (results not shown).

[5]Our preference for using the grand total of aid reflects the fact that, at the time of the 2020 elections, additional relief packages were under debate and, although there magnitude was uncertain, they could reasonably have been forecast to retain the earlier packages' bias in favor of low-population states. We are reassured that the estimates in Tables 1 and A.2 are very similar, however, as it is not obvious how voters' expectations regarding future aid packages should be taken into account.

A somewhat different approach to ensuring that our results are not a mere statistical fluke is that of Table 4. Here we run a placebo test: we test whether our instrument and the variations in federal aid that are predicted by our instrument predict the vote share of incumbent politicians in 2013-2019, which pre-date the pandemic. The question this test answers is whether elected officials in over-represented states may simply enjoy a long-running structural electoral advantage, in addition to or instead of a temporary advantage connected to the pandemic. We find weak evidence that incumbent politicians do enjoy a modest, long-running advantage in over-represented states, whether we look at the reduced form or instrument for pandemic-era aid. Notably, this advantage is not significantly different from zero at conventional levels of statistical significance. In addition, the size of the effect is much smaller than what we found for the "over-represented incumbent bonus" during the pandemic. In the equivalent of our baseline specification, where we control for the normal vote based on earlier elections, the estimated advantage of incumbents in states with an additional senator or representative per capita is a statistically insignificant 1 percentage point in pre-pandemic elections. This contrasts with the 3 percentage point advantage we estimate during the pandemic.

The scatterplots presented in Figure 3 provide an additional, transparent look at the reduced form relationship between our instrument and incumbent performance during both the pandemic (panels A and C) and pre-pandemic (panels B and D) elections in our sample. The slopes of the best fit lines in panels A and C are distinctively steeper than those in panels B and D, indicating a much stronger relationship between our instrument and the electoral fortunes of incumbents during the pandemic. This is consistent with the estimates from Tables 1 and 4, as discussed above. The scatterplots in panels A and B present the bivariate relationship between our instrument and incumbent vote shares, while the scatterplots in panels C and D present data that are residualized with respect to the normal vote. The relationships as presented in panels C and D thus correspond with our baseline specification, which uses the normal vote variable as a control for the incumbent party's performance in

the previous election. Notably, the relationship between our instrument and incumbents' vote shares is relatively flat once this standard control is incorporated. That said, because the data are perhaps suggestive that incumbents from low-population states might enjoy an advantage relative to their counterparts from high-population states during the pre-pandemic period, we take additional steps to ensure that any structural advantages of this sort are not influencing our estimates.

We proceed by investigating directly whether the effect of over-representation on incumbent performance during the pandemic does in fact stand out relative to normal times. We investigate this question in Table 5, where we present further estimates of the panel specifications of equations (4.3) and (4.4), and confirm that incumbent elected officials from over-represented states do indeed benefit disproportionately from their over-representation in the 2020-2022 period.

This result holds across the full set of specifications in Table 5. Column 1 presents the simple panel specification of equation (4.3) for the full 2013-2022 period. The estimated coefficient on the interaction between "Reps per Million" and the indicator for the pandemic years indicates that an additional representative or senator per million residents during the pandemic years gave incumbents an additional edge of close to two percentage points. (Remember that this corresponds almost precisely to the effect of an additional $1,000 in federal aid per capita.) Note that the coefficient on "Reps Per Million" in this specification measures the impact of representation outside the pandemic years. This coefficient is, as it should be, identical to that in Column 1 of Table 4, which motivated our analysis of the full panel.[6]

As we saw in our static analysis as well, the effect of aid on incumbent vote shares is reduced somewhat when we control for the normal vote in column 2, but remains politically and statistically significant. Column 3 presents a more flexible specification that lets the

[6]The attentive reader may also have noticed that the sum of the the coefficients on Reps per Million x Pandemic (1.803) and Reps per Million (2.280) equals the reduced-form coefficient from Table 1 (4.083).

normal vote vary in its predictive value across election cycles. The resulting estimate of the pandemic-era impact of over-representation resembles that in column 1.

Columns 4 through 6 of Table 5 presents estimates generated by the augmented panel estimator of equation (4.4). Column 4 introduces year and state fixed effects; column 5 adds office fixed effects; and column 6 appends state-by-office fixed effects. The point estimates of the effect size we find here moderately exceed those of columns 1 through 3 and remain significant at the 99% confidence level. The amount of increased support for incumbents from over-represented states during the pandemic turns out to be robust to this increasingly demanding battery of controls and remains within the range of estimates we have found previously.

6 Mechanisms

Having conclusively established the existence of a pandemic-era electoral boost for incumbents from states with over-representation at the federal level, we now turn to an attempt to explain the mechanisms at work driving these results. We test a number of potential mechanisms in Table 6, which follows our baseline specification. Specifically, we check whether additional federal aid had an impact on COVID-19 outcomes, disposable income, and the unemployment rate. While we think of these results as suggestive, we find that additional federal aid reduced the number of COVID-19 deaths in beneficiary states and that residents of those states saw their disposable income go up in the year of the relevant election. These outcomes are suggestive that voters had ample reasons to keep their incumbents around a little longer (at least in models of retrospective voting where voters are naive or effort is imperfectly observed).

A distinction that relates to a number of mechanisms as well as to theories of attribution (Fiorina 1989; Atkeson and Partin 1995; Ansolabehere and Snyder Jr. 2002) is that between the impact of additional aid on the electoral success of incumbents in the legislative offices versus executive offices. Appendix Table A.3 presents results for these two subsamples.

Columns 5 through 8 suggest that during the public-health crisis, governors from overrepresented states enjoyed a major incumbency advantage. Columns 1 through 4 show the smaller incumbency bonus enjoyed by legislators. The situation is strikingly different during normal times, as the second row of estimates shows: if anything, legislators normally enjoy a greater incumbency bonus from overrepresentation. Gubernatorial visibility in times of crisis may be responsible for this gap; we plan on exploring this potential explanation by analyzing differences in media coverage.

7 Conclusion

This paper estimates the effects of the distribution of federal pandemic aid to state and local governments on the performance of incumbent politicians in state-wide elections. Our findings substantiate the hypothesis that increased federal aid, as a consequence of the COVID-19 pandemic, has indeed benefited incumbents in the electoral arena. Specifically, we demonstrate that states with higher per capita congressional representation—and by extension, those that received more federal aid per capita—saw a significant increase in incumbent vote share in the 2020, 2021 and 2022 elections. This relationship holds even after controlling for various factors, including the normal vote, COVID-19 control stringency, and political preferences expressed in the 2016 presidential election, underscoring the robustness of our results. Our instrumental variables strategy to address endogeneity concerns reinforces the credibility of these findings.

In addition to its empirical contributions, our analysis has broader implications for understanding the political dynamics of crisis response. It highlights how economic windfalls, particularly those aimed at mitigating unprecedented crises, can shape electoral outcomes. Furthermore, the paper contributes to the literature on incumbency advantage, offering new insights into how government spending, particularly in times of crisis, can bolster incumbents' electoral prospects. These findings have significant implications for policymakers and

political strategists alike, suggesting that the allocation of aid can have far-reaching political as well as economic consequences.

Ultimately, this research underscores the critical role of federal aid in the political landscape, especially during times of crisis. It extends the existing body of literature by focusing on the downstream and statewide effects of the COVID-19 pandemic, areas previously underexplored. As such, it provides a foundational basis for future inquiries into the political effects of crisis management strategies and their impact on electoral politics. In doing so, this paper not only sheds light on the political ramifications of the recent pandemic but also sets the stage for a deeper understanding of how governments' responses to crises can influence the democratic process.

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Tables and Figures

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Table 1: Baseline Estimates of the Effect of Aid on Incumbents' Vote Shares

	(1) Reduced Form	(2) First Stage	(3) 2SLS	(4) Reduced Form	(5) First Stage	(6) 2SLS
Reps per Million	4.083***	1.013***		2.910***	1.017***	
	(0.981)	(0.059)		(0.886)	(0.075)	
Total Aid per Resident (USD thousands)			4.032***			2.861***
			(1.079)			(0.963)
Normal Vote				0.400***	-0.002	0.404***
				(0.103)	(0.008)	(0.108)
Observations	131	131	131	131	131	131
R^2	0.220	0.870	0.143	0.340	0.870	0.294
First Stage F-Stat			293.569			183.504

This table uses data from the Committee for a Responsible Federal Budget (2021), US Federal Transit Administration (2021), US Census Bureau (2021), Chidambaram and Musumeci (2021), Medicaid and Chip Payment Access Commission (2021), US Office of Elementary and Secondary Education (2021), and US Department of the Treasury (2021), Lewis et al. (2021), Amlani and Algara (2021), Leip (2024), and MIT Election Data and Science Lab (2022*b*,*a*). The estimated 2SLS model, as estimated on data for 2020-2022, is described by the equations below, while the "Reduced Form" model is estimated by substituting the vote share outcome on the left-hand side of the first equation below:

$$\frac{\text{Total Aid}_{s,o,t}}{\text{Pop}_s} = \gamma_0 + \gamma_1 \text{Reps Per Million}_s + \gamma_2 \text{Normal Vote}_{s,o,t} + X_{s,o,t}\gamma + \epsilon_{s,o,t}$$

$$\text{Vote Share}_{s,o,t} = \beta_0 + \beta_1 \frac{\widehat{\text{Total Aid}}_{s,o,t}}{\text{Pop}_s} + \beta_2 \text{Normal Vote}_{s,o,t} + X_{s,o,t}\beta + u_{s,o,t}$$

Where $\text{Total Aid}_{s,o,t}$ is the total federal aid per resident to state and local governments (USD thousands) in state s pooled across all four bills. $\text{Total Aid}_{s,o,t}$ is scaled by Pop_s state s's 2020 official Census population. Our outcome of interest, $\text{Vote Share}_{s,o,t}$, is the incumbent party's share of the top two candidate's total votes in state s in year y for office o. $\text{Normal Vote}_{s,o,t}$ is a control for the incumbent party's vote share in the previous election. Note that the normal vote control is included in the regressions presented in columns 4 through 6, but is excluded in the regressions presented in columns 1 through 3. The control vector $X_{s,o,t}$ is empty in this table's specifications. Columns 1 and 4 present the reduced form relationship between our outcome of interest ($\text{Vote Share}_{s,o,t}$) and instrument ($\text{Reps Per Million}_{s,o,t}$). In the first stage regression represented by equation (4.1) and presented in Columns 2 and 5, $\frac{\text{Total Aid}_{s,o,t}}{\text{Pop}_s}$ is instrumented using ($\text{Reps Per Million}_{s,o,t}$), the number of representatives and senators per million residents in 2020. The fitted values from the first stage (4.1) are used to estimate the second stage (4.2). Columns 3 and 6 present estimates of the second stage. Columns 3 through 6, add $\text{Normal Vote}_{s,o,t}$ which is the incumbent party's vote share in the previous election. Standard errors are clustered by state. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 2: Analysis of Robustness with Respect to States' Exposure to Shocks Due to Their Reliance on Resource-Extraction and Tourism-Related Industries

	(1) Baseline	(2) Without Resource Intensive States	(3) Without Tourism Intensive States	(4) Without Resource and Tourism Intensive States
Total Aid per Resident (USD thousands)	2.861***	3.892***	2.928***	3.980***
	(0.963)	(0.986)	(0.973)	(0.997)
Normal Vote	0.404***	0.348***	0.390***	0.330***
	(0.108)	(0.109)	(0.110)	(0.112)
Observations	131	118	125	112
R^2	0.294	0.227	0.281	0.209
First Stage F-Stat	183.504	70.544	181.536	68.407

This table uses data from the Committee for a Responsible Federal Budget (2021), US Federal Transit Administration (2021), US Census Bureau (2021), Chidambaram and Musumeci (2021), Medicaid and Chip Payment Access Commission (2021), US Office of Elementary and Secondary Education (2021), US Department of the Treasury (2021), Lewis et al. (2021), Algara & Amlani (2021), Leip (2024), and MIT Election Lab (2022a, 2022b) to estimate the following equations for years 2020, 2021, and 2022 pooled:

$$\frac{\text{Total Aid}_{s,o,t}}{\text{Pop}_s} = \gamma_0 + \gamma_1 \text{Reps Per Million}_s + \gamma_2 \text{Normal Vote}_{s,o,t} + X_{s,o,t}\gamma + \epsilon_{s,o,t}$$

$$\text{Vote Share}_{s,o,t} = \beta_0 + \beta_1 \frac{\widehat{\text{Total Aid}}_{s,o,t}}{\text{Pop}_s} + \beta_2 \text{Normal Vote}_{s,o,t} + X_{s,o,t}\beta + u_{s,o,t}$$

Where $\text{Total Aid}_{s,o,t}$ is the total federal aid per resident to state and local governments (USD thousands) in state s pooled across all four bills. $\text{Total Aid}_{s,o,t}$ is scaled by Pop_s state s's 2020 official Census population. Our outcome of interest, $\text{Vote Share}_{s,o,t}$, is the incumbent party's share of the top two candidate's total votes in state s in year y for office o. $\text{Normal Vote}_{s,o,t}$ is a control for the incumbent party's vote share in the previous election. The control vector $X_{s,o,t}$ is empty in this table's specifications. Column 1 presents baseline estimates of equation (4.2), which include all senate, gubernatorial, and house-at-large elections between 2020-2022 for all 50 states. Column 2 drops resource intensive states (Alaska, North Dakota, and Wyoming), Column 3 drops the tourism intensive (Hawaii, Nevada, and Florida) states, and Column 4 drops both of these categories of states, which were particularly impacted by the economic turmoil of the early pandemic. Standard errors are clustered by state.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 3: Analysis of Robustness with Respect to Baseline Proxies for Political and COVID-19 Policy Preferences

	(1) Baseline	(2) With OSI	(3) With Trump Vote Share	(4) With OSI and Trump Vote Share
Total Aid per Resident (USD thousands)	2.861***	3.016***	2.721***	2.757***
	(0.963)	(0.944)	(1.052)	(1.045)
Normal Vote	0.404***	0.383***	0.375***	0.373***
	(0.108)	(0.106)	(0.113)	(0.112)
March 2020 OSI		-26.411*		-4.980
		(13.941)		(15.294)
Trump Vote Share 2016			0.209***	0.198**
			(0.077)	(0.091)
Observations	131	131	131	131
R^2	0.294	0.312	0.355	0.356
First Stage F-Stat	183.504	282.106	209.692	270.699

This table uses data from the Committee for a Responsible Federal Budget (2021), US Federal Transit Administration (2021), US Census Bureau (2021), Chidambaram and Musumeci (2021), Medicaid and Chip Payment Access Commission (2021), US Office of Elementary and Secondary Education (2021), US Department of the Treasury (2021), Lewis et al. (2021), Algara & Amlani (2021), Leip (2024), MIT Election Lab (2022a, 2022b), and Hale et. al (2023) to estimate the following equations for years 2020, 2021, and 2022 pooled:

$$\frac{\text{Total Aid}_{s,o,t}}{\text{Pop}_s} = \gamma_0 + \gamma_1 \text{Reps Per Million}_s + \gamma_2 \text{Normal Vote}_{s,o,t} + X_{s,o,t}\gamma + \epsilon_{s,o,t}$$

$$\text{Vote Share}_{s,o,t} = \beta_0 + \beta_1 \frac{\widehat{\text{Total Aid}}_{s,o,t}}{\text{Pop}_s} + \beta_2 \text{Normal Vote}_{s,o,t} + X_{s,o,t}\beta + u_{s,o,t}$$

Where $\text{Total Aid}_{s,o,t}$ is the total federal aid per resident to state and local governments (USD thousands) in state s pooled across all four bills. $\text{Total Aid}_{s,o,t}$ is scaled by Pop_s state s's 2020 official Census population. Our outcome of interest, $\text{Vote Share}_{s,o,t}$, is the incumbent party's share of the top two candidate's total votes in state s in year y for office o. $\text{Normal Vote}_{s,o,t}$ is a control for the incumbent party's vote share in the previous election. Column 1 presents baseline estimates of equation (4.2). Included in Columns 2 through 4 is a set of state-level controls ($X_{s,o,t}$). Column 2 controls for a state's March 2020 Oxford Stringency Index, while Column 3 controls for Donald Trump's vote share in the 2016 election in a given state. Column 4 controls for both a state's March 2020 Oxford Stringency Index and it's Trump vote share in 2016. Standard errors are clustered by state. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 4: Analysis of the Correlation between Pandemic Aid and Pre-Pandemic Election Outcomes

	(1) Reduced Form	(2) 2SLS	(3) Reduced Form	(4) 2SLS
Reps per Million	2.280*		1.192	
	(1.163)		(1.040)	
Total Aid per Resident (USD thousands)		2.299*		1.195
		(1.204)		(1.060)
Normal Vote			0.471***	0.474***
			(0.129)	(0.127)
Observations	217	217	217	217
R^2	0.054	0.037	0.172	0.167
First Stage F-Stat		290.907		220.761

This table uses data from the Committee for a Responsible Federal Budget (2021), US Federal Transit Administration (2021), US Census Bureau (2021), Chidambaram and Musumeci (2021), Medicaid and Chip Payment Access Commission (2021), US Office of Elementary and Secondary Education (2021), US Department of the Treasury (2021), Lewis et al. (2021), Algara & Amlani (2021), Leip (2024), and MIT Election Lab (2022a, 2022b). The estimated 2SLS model, as estimated on data for 2013-2019, is described by the equations below, while the "Reduced Form" model is estimated by substituting the vote share outcome on the left-hand side of the first equation below:

$$\frac{\text{Total Aid}_{s,o,t}}{\text{Pop}_s} = \gamma_0 + \gamma_1 \text{Reps Per Million}_s + \gamma_2 \text{Normal Vote}_{s,o,t} + X_{s,o,t}\gamma + \epsilon_{s,o,t}$$

$$\text{Vote Share}_{s,o,t} = \beta_0 + \beta_1 \frac{\widehat{\text{Total Aid}}_{s,o,t}}{\text{Pop}_s} + \beta_2 \text{Normal Vote}_{s,o,t} + X_{s,o,t}\beta + u_{s,o,t}$$

Where $\text{Total Aid}_{s,o,t}$ is the total federal aid per resident to state and local governments (USD thousands) in state s pooled across all four bills. $\text{Total Aid}_{s,o,t}$ is scaled by Pop_s state s's 2020 official Census population. Our outcome of interest, $\text{Vote Share}_{s,o,t}$, is the incumbent party's share of the top two candidate's total votes in state s in year y for office o. $\text{Normal Vote}_{s,o,t}$ is a control for the incumbent party's vote share in the previous election. The control vector $X_{s,o,t}$ is empty in this table's specifications. Columns 1 and 3 presented the reduced form relationship between our outcome of interest ($\text{Vote Share}_{s,o,t}$) and instrument ($\text{Reps Per Million}_{s,o,t}$). Columns 2 and 4 present estimates of equation (4.2). In Columns 3 and 4, the control $\text{Normal Vote}_{s,o,t}$ is added. Standard errors are clustered by state. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 5: Reduced-Form Panel Estimates of the Relationship between Representation and Incumbents' Vote Shares

	(1)	(2)	(3)	(4)	(5)	(6)
Reps per Million×Pandemic	1.803***	1.528**	2.056***	2.677***	2.795***	3.022***
	(0.627)	(0.728)	(0.767)	(0.649)	(0.657)	(0.602)
Reps per Million	2.280*	1.258	0.820			
	(1.165)	(1.028)	(1.030)			
Pandemic	-2.256	-1.513				
	(1.861)	(2.041)				
Normal Vote		0.442***				
		(0.086)				
Observations	348	348	348	348	348	348
R^2	0.118	0.234	0.302	0.497	0.512	0.617
Year FE	No	No	Yes	Yes	Yes	Yes
Normal Vote x Year FE	No	No	Yes	Yes	Yes	Yes
Office FE	No	No	No	No	Yes	Yes
State FE	No	No	No	Yes	Yes	Yes
Office x State FE	No	No	No	No	No	Yes

This table uses data from the Committee for a Responsible Federal Budget (2021), US Federal Transit Administration (2021), US Census Bureau (2021), Chidambaram and Musumeci (2021), Medicaid and Chip Payment Access Commission (2021), US Office of Elementary and Secondary Education (2021), US Department of the Treasury (2021), Lewis et al. (2021), Algara & Amlani (2021), Leip (2024), and MIT Election Lab (2022a, 2022b) to estimate the following equations for years 2013-2022 pooled:

$$\text{Vote Share}_{s,o,t} = \alpha_0 + \alpha_1 \text{Reps Per Million}_s + \alpha_2 \text{Reps Per Million}_s \times \text{Pandemic}_t + \alpha_3 \text{Pandemic}_t + \epsilon_{s,o,t}$$

$$\text{Vote Share}_{s,o,t} = \alpha_s + \alpha_t + \alpha_s \times \alpha_o + \rho \text{Reps Per Million}_s \times \text{Pandemic}_t + \gamma_t \text{Normal Vote}_{s,o,t} \times \text{Year}_t + \epsilon_{s,o,t}$$

Where $\text{Reps Per Million}_s$ is the number of representatives and senators per million residents in 2020. Pandemic_t is an indicator that takes a value of 1 in 2020, 2021, and 2022 and a value of 0 in earlier years. Column 1 presents estimates of (4.3). Column 2 adds the control $\text{Normal Vote}_{s,o,t}$, the incumbent party's vote share from the previous election, to (4.3), while Column 3 adds both year and normal vote x year fixed effects. Column 4 presents estimates of equation (4.4), which adds year and state fixed effects to the specification. Column 5 adds office fixed effects, and Column 6 adds state-by-office fixed effects. Standard errors are clustered by state. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 6: Analysis of Potential Mechanisms Including COVID–19 and Economic Outcomes

	(1) Total Deaths	(2) Total Cases	(3) Change Disp. Inc.	(4) Unemp. Rate
Total Aid per Resident (USD thousands)	-34.560***	-663.150	0.414**	-0.037
	(11.362)	(942.705)	(0.175)	(0.187)
Normal Vote	0.148	-14.828	0.002	-0.020
	(1.389)	(117.058)	(0.022)	(0.019)
Observations	131	131	131	131
R^2	0.045	.	0.014	0.004
First Stage F-Stat	183.504	183.504	183.504	183.504

This table uses data from the Committee for a Responsible Federal Budget (2021), US Federal Transit Administration (2021a), US Census Bureau (2021), Chidambaram and Musumeci (2021), Medicaid and Chip Payment Access Commission (2021), US Office of Elementary and Secondary Education (2021), US Department of the Treasury (2021), Lewis et al. (2021), Dong, Du, and Gardner (2023), U.S. Bureau of Economic Analysis (2024), U.S. Bureau of Labor Statistics (2024), Algara & Amlani (2021), Leip (2024), and MIT Election Lab (2022a, 2022b), to estimate the following equations for years 2020, 2021, and 2022 pooled:

$$\frac{\text{Total Aid}_{s,o,t}}{\text{Pop}_s} = \gamma_0 + \gamma_1 \text{Reps Per Million}_s + \gamma_2 \text{Normal Vote}_{s,o,t} + X_{s,o,t}\gamma + \epsilon_{s,o,t}$$

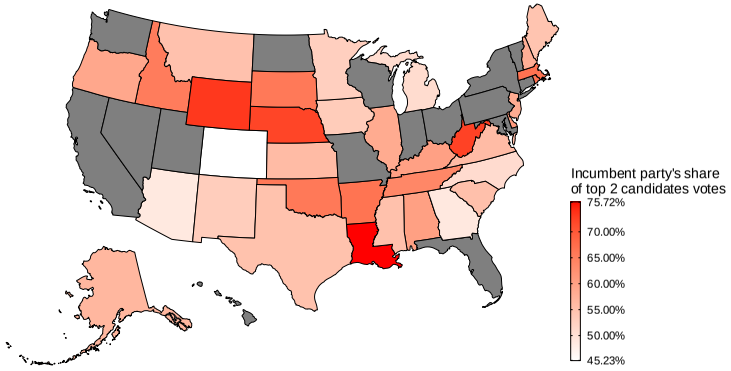
$$\text{Y}_{s,o,t} = \beta_0 + \beta_1 \frac{\widehat{\text{Total Aid}}_{s,o,t}}{\text{Pop}_s} + \beta_2 \text{Normal Vote}_{s,o,t} + X_{s,o,t}\beta + u_{s,o,t}$$

Where $\text{Total Aid}_{s,o,t}$ is the total federal aid per resident to state and local governments (USD thousands) in state s pooled across all four bills. $\text{Total Aid}_{s,o,t}$ is scaled by Pop_s state s's 2020 official Census population. $\text{Y}_{s,o,t}$ is a vector of state-level outcomes. $\text{Normal Vote}_{s,o,t}$ is a control for the incumbent party's vote share in the previous election. Column 1 uses the total number of COVID-19 deaths in December of year y in state s as the outcome of interest, while Column 2 uses the total number of COVID-19 cases in December of year y in state s. Column 3 uses the change in nominal disposable income from the previous year (USD thousands). Column 4 uses the change in unemployment rate from the previous year. Standard errors are clustered by state.

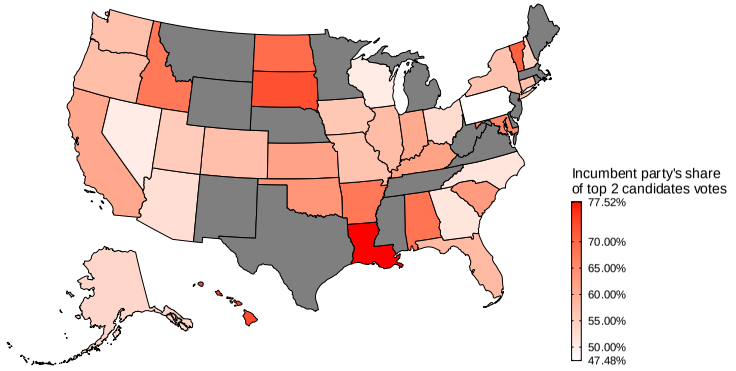
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Figure 1: In-Sample Elections and Incumbent Party Vote Margins

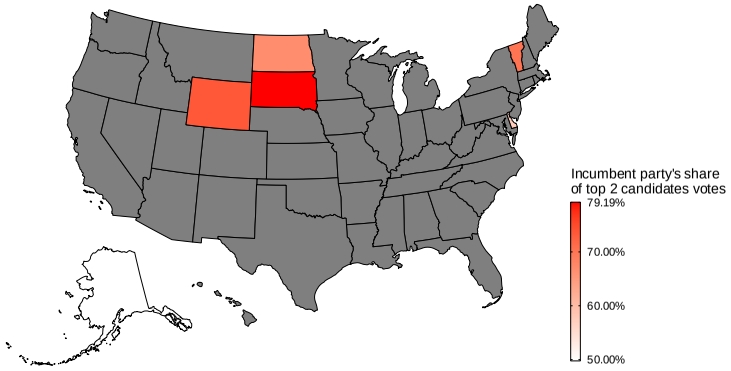
Panel A: Senate 2020



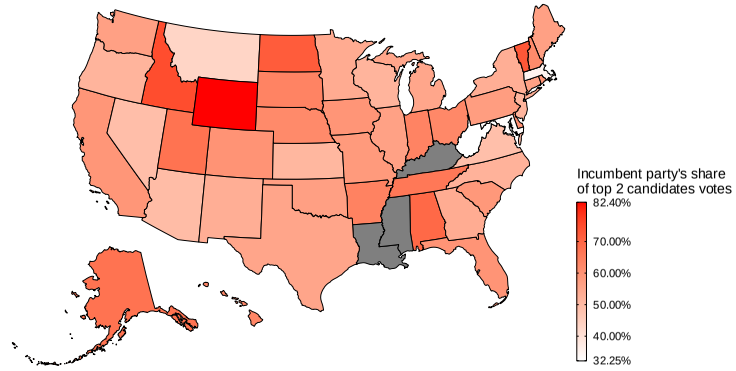
Panel B: Senate 2022



Panel C: House-At-Large

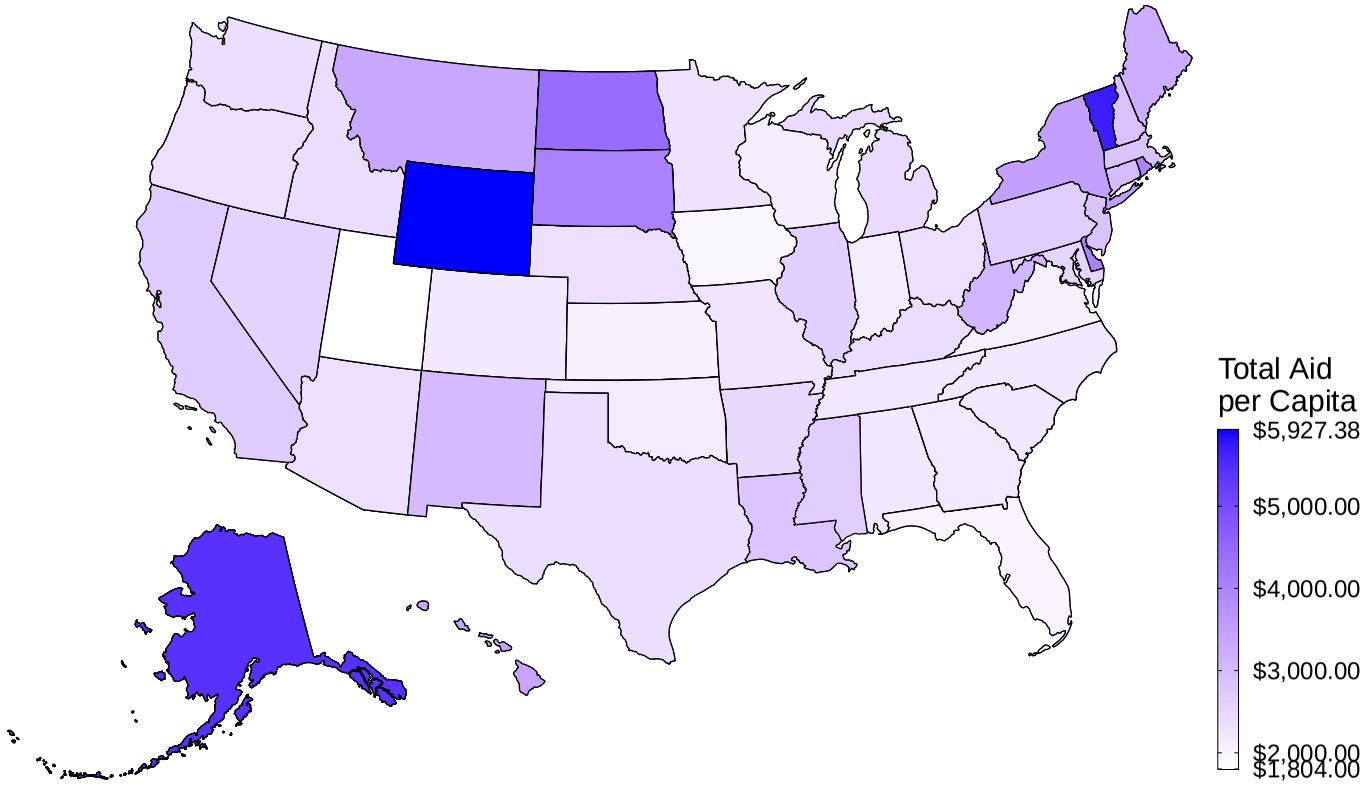


Panel D: Gubernatorial



Note: This figure uses data from data from Amlani and Algara (2021), Leip (2024), and to show the geographic distribution of incumbent party vote share of the top two candidates total votes for Senate, at-large House, and gubernatorial elections during the pandemic era. Panel A showcases the incumbent party vote share for 2020 Senate elections, while Panel B showcases the same for 2022 Senate elections. Panel C showcases the average of 2020 and 2022 incumbent party vote share for at-large House elections. Panel D showcases the incumbent party vote share for gubernatorial elections between 2020-2022. Values shown for Vermont and New Hampshire, which hold gubernatorial elections every two years, are averages of 2020 and 2022 values.

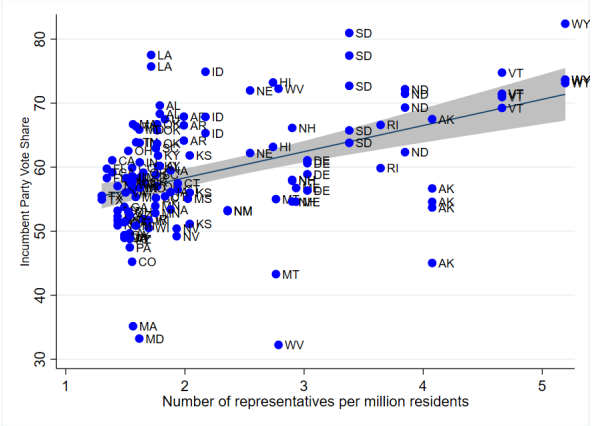
Figure 2: Geographic Distribution of Total State and Local Aid



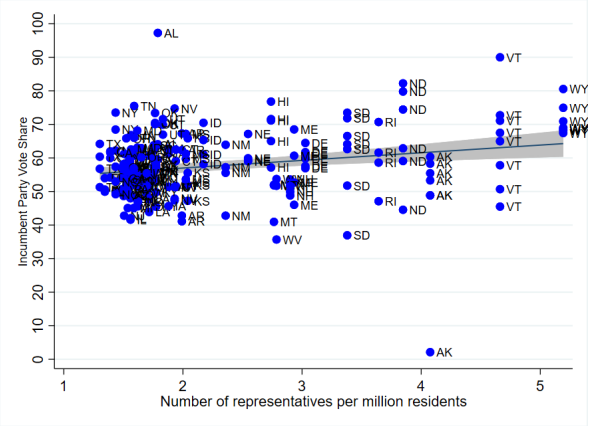
Note: This figure uses data from the Committee for a Responsible Federal Budget (2021), US Federal Transit Administration (2021), US Census Bureau (2021), Chidambaram and Musumeci (2021), Medicaid and Chip Payment Access Commission (2021), US Office of Elementary and Secondary Education (2021), and US Department of the Treasury (2021) to show the geographic distribution in total aid per capita to in USD.

Figure 3: Distribution of Incumbent Party Vote Share

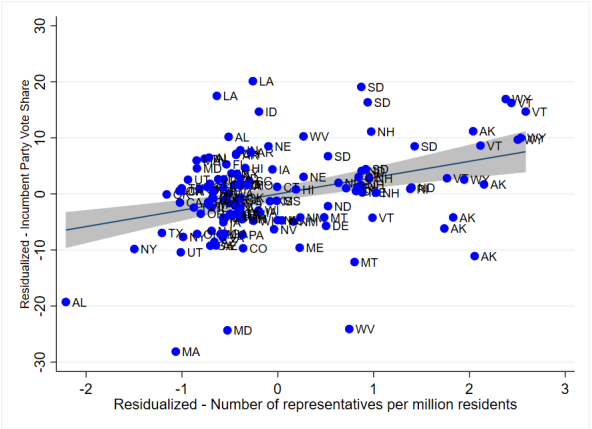
(a) Incumbent Party Vote Share vs. Cong. Rep (Main Sample)



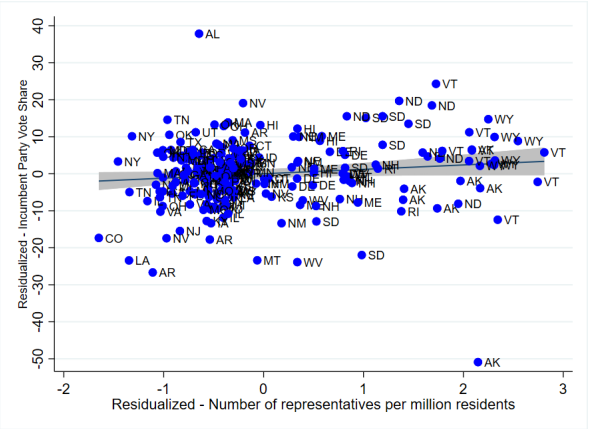
(b) Incumbent Party Vote Share vs. Cong. Rep (Placebo Sample)



(c) Residualized Incumbent Party Vote Share vs. Cong. Rep (Main Sample)



(d) Residualized Incumbent Party Vote Share vs. Cong. Rep (Placebo Sample)



Panels A plots congressional representation against incumbent party share of the top two candidate's total votes for our main sample (2020-2022), while Panel B plots the equivalent for the placebo sample (2013-2019). Panels C and D regress the remaining variation in representation and incumbent vote share after controlling for the normal vote, mirroring the results in 1 Column 4 and Table 4 Column 3. This figure uses data from the Committee for a Responsible Federal Budget (2021), US Federal Transit Administration (2021), US Census Bureau (2021), Chidambaram and Musumeci (2021), Medicaid and Chip Payment Access Commission (2021), US Office of Elementary and Secondary Education (2021), and US Department of the Treasury (2021), Amlani and Algara (2021), Leip (2024), and MIT Election Data and Science Lab (2022*b*,*a*). The slope coefficients for displayed regressions are 4.280 in Panel A, 2.280 in Panel B, 2.910 in Panel C, and 1.192 in Panel D.

Online Appendix

Intended for online publication only.

Table A.1: Summary Statistics

Panel A: Pandemic Sample (2020-2022)					
	Mean	SD	Min	Max	N
Incumbent Vote Share	59.643	9.010	32.250	82.403	131
Total Aid per Resident (USD thousands)	3.004	1.124	1.804	5.927	131
Reps per Million	2.319	1.036	1.302	5.193	131
Normal Vote	59.921	8.355	50.072	97.252	131
March 2020 OSI	0.433	0.050	0.335	0.560	131
Trump Vote Share 2016	49.800	10.492	29.440	68.631	131
Total Deaths	227.223	129.297	21.818	437.401	131
Total Cases	20645.413	12225.960	1189.065	41967.128	131
Change Disposable Income From Previous Year (USD thousands)	1.635	1.739	-2.440	4.876	131
Change in Unemployment Rate From Previous Year	5.002	1.909	2.100	10.058	131
Panel B: Pre-Pandemic Sample (2013-2019)					
	Mean	SD	Min	Max	N
Incumbent Vote Share	57.668	10.015	2.121	97.252	217
Total Aid per Resident (USD thousands)	3.004	1.095	1.804	5.927	217
Reps per Million	2.298	1.025	1.302	5.193	217
Normal Vote	60.110	7.666	47.521	82.085	217
Change Disposable Income From Previous Year (USD thousands)	1.526	0.942	-1.989	3.542	217
Change in Unemployment Rate From Previous Year	4.649	1.361	2.358	8.375	217

This table uses data from the Committee for a Responsible Federal Budget (2021), US Federal Transit Administration (2021), US Census Bureau (2021), Chidambaram and Musumeci (2021), Medicaid and Chip Payment Access Commission (2021), US Office of Elementary and Secondary Education (2021), and US Department of the Treasury (2021), Lewis et al. (2021), Amlani and Algara (2021), Leip (2024), MIT Election Data and Science Lab (2022*b*,*a*), Hale et al. (2020), Dong, Du, and Gardner (2020), US Bureau of Economic Analysis (2024), and US Bureau of Labor Statistics (2024).

Table A.2: Baseline Estimates of the Effect of Aid on Incumbents' Vote Shares: Analysis of Sensitivity to Using the Running Total of Aid Rather than the Grand Total of Aid

	(1) Reduced Form	(2) First Stage	(3) 2SLS	(4) Reduced Form	(5) First Stage	(6) 2SLS
Reps per Million	4.083***	0.724***		2.910***	0.743***	
	(0.981)	(0.080)		(0.886)	(0.099)	
Running Total of Aid per capita (USD thousands)			5.640***			3.916***
			(1.628)			(1.350)
Normal Vote				0.400***	-0.007	0.426***
				(0.103)	(0.011)	(0.099)
Observations	131	131	131	131	131	131
R^2	0.220	0.348	.	0.340	0.350	0.132
First Stage F-Stat			82.636			56.641

This table uses data from the Committee for a Responsible Federal Budget (2021), US Federal Transit Administration (2021), US Census Bureau (2021), Chidambaram and Musumeci (2021), Medicaid and Chip Payment Access Commission (2021), US Office of Elementary and Secondary Education (2021), and US Department of the Treasury (2021), Lewis et al. (2021), Amlani and Algara (2021), Leip (2024), and MIT Election Data and Science Lab (2022*b*,*a*) to estimate the following equations for years 2020, 2021, and 2022 pooled:

$$\frac{\text{Running Aid}_{s,o,t}}{\text{Pop}_s} = \gamma_0 + \gamma_1 \text{Reps Per Million}_s + \gamma_2 \text{Normal Vote}_{s,o,t} + X_{s,o,t}\gamma + \epsilon_{s,o,t}$$

$$\text{Vote Share}_{s,o,t} = \beta_0 + \beta_1 \frac{\widehat{\text{Running Aid}}_{s,o,t}}{\text{Pop}_s} + \beta_2 \text{Normal Vote}_{s,o,t} + X_{s,o,t}\beta + u_{s,o,t}$$

Where $\text{Running Aid}_{s,o,t}$ is the running total of federal aid per resident to state and local governments (USD thousands) in state s. For observations in 2020, this includes the sum of funding from the CARES Act and Families First Coronavirus Response Act (FFCRA). For observations in 2021 and 2022, this includes the sum of funding from all four major bills (CARES, FFCRA, RRA, and ARPA). $\text{Running Aid}_{s,o,t}$ is scaled by Pop_s state s's 2020 official Census population. Our outcome of interest, $\text{Vote Share}_{s,o,t}$, is the incumbent party's share of the top two candidate's total votes in state s in year y for office o. $\text{Normal Vote}_{s,o,t}$ is a control for the incumbent party's vote share in the previous election. The control vector $X_{s,o,t}$ is empty in this table's specifications. Columns 1 and 4 present the reduced form relationship between our outcome of interest ($\text{Vote Share}_{s,o,t}$) and instrument ($\text{Reps Per Million}_{s,o,t}$). In the first stage regression presented in Columns 2 and 5, $\frac{\text{Running Aid}_{s,o,t}}{\text{Pop}_s}$ is instrumented using ($\text{Reps Per Million}_{s,o,t}$), the number of representatives and senators per million residents in 2020. The fitted values from the first stage are used to estimate the second stage. Columns 3 and 6 present estimates of the second stage. Columns 3 through 6, add $\text{Normal Vote}_{s,o,t}$ which is the incumbent party's vote share in the previous election. Standard errors are clustered by state. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table A.3: Reduced-Form Panel Estimates of the Relationship between Representation and Incumbents' Vote Shares: A Comparison of Senate and Gubernatorial Elections

	Senate Elections				Gubernatorial Elections			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Pandemic × Reps per Million	1.139	0.753	1.274	2.850**	5.004**	4.896**	5.194**	5.818***
	(1.202)	(1.185)	(1.334)	(1.249)	(1.885)	(1.912)	(2.265)	(2.094)
Reps per Million	2.403**	1.074	0.912		0.141	-0.223	-0.667	
	(1.138)	(0.748)	(0.895)		(2.027)	(1.863)	(2.029)	
Pandemic	-1.620	-0.705			-7.800**	-7.220*		
	(2.765)	(2.915)			(3.779)	(3.887)		
Normal Vote		0.490***				0.291*		
		(0.092)				(0.145)		
Observations	175	175	175	175	143	143	143	143
R^2	0.079	0.253	0.314	0.601	0.115	0.156	0.231	0.620
Year FE	No	No	Yes	Yes	No	No	Yes	Yes
State FE	No	No	No	Yes	No	No	No	Yes
Normal Vote×Year FE	No	No	Yes	Yes	No	No	Yes	Yes

This table uses data from the Committee for a Responsible Federal Budget (2021), US Federal Transit Administration (2021), US Census Bureau (2021), Chidambaram and Musumeci (2021), Medicaid and Chip Payment Access Commission (2021),US Office of Elementary and Secondary Education (2021), and US Department of the Treasury (2021), Lewis et al. (2021), Amlani and Algara (2021), Leip (2024), and MIT Election Data and Science Lab (2022*b*,*a*) to estimate the following equations for years 2013-2022 pooled:

$$\text{Vote Share}_{s,o,t} = \alpha_0 + \alpha_1 \text{Reps Per Million}_s + \alpha_2 \text{Reps Per Million}_s \times \text{Pandemic}_t + \alpha_3 \text{Pandemic}_t + \epsilon_{s,o,t}$$

$$\text{Vote Share}_{s,o,t} = \alpha_s + \alpha_t + \alpha_s \times \alpha_o + \rho \text{Reps Per Million}_s \times \text{Pandemic}_t + \gamma_t \text{Normal Vote}_{s,o,t} \times \text{Year}_t + \epsilon_{s,o,t}$$

Where $\text{Reps Per Million}_s$ is the number of representatives and senators per million residents in 2020. Pandemic_t is an indicator that takes a value of 1 in 2020, 2021, and 2022 and a value of 0 in earlier years. Column 1 presents estimates of (4.3). Column 2 adds the control $\text{Normal Vote}_{s,o,t}$, the incumbent party's vote share from the previous election, to (4.3), while Column 3 adds both year and normal vote x year fixed effects. Column 4 presents estimates of equation (4.4), which adds year and state fixed effects to the specification. Columns 1 through 4 show estimates for Senate races, while Columns 5 through 8 show estimates for gubernatorial races. Standard errors are clustered by state. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$