

Make It Rain? Retrospection and the Attentive Electorate in the Context of Natural Disasters

John T. Gasper Carnegie Mellon University in Qatar
Andrew Reeves Boston University

Are election outcomes driven by events beyond the control of politicians? Democratic accountability requires that voters make reasonable evaluations of incumbents. Although natural disasters are beyond human control, the response to these events is the responsibility of elected officials. In a county-level analysis of gubernatorial and presidential elections from 1970 to 2006, we examine the effects of weather events and governmental responses. We find that electorates punish presidents and governors for severe weather damage. However, we find that these effects are dwarfed by the response of attentive electorates to the actions of their officials. When the president rejects a request by the governor for federal assistance, the president is punished and the governor is rewarded at the polls. The electorate is able to separate random events from governmental responses and attribute actions based on the defined roles of these two politicians.

Severe weather events provide unanticipated challenges to incumbent politicians. While weather is well beyond human control, the response of government is determined by politicians. Most voters use only the information at their fingertips to inform their vote choice, and both the severe weather as well as the response of politicians may influence that retrospection. If voters punish politicians for events beyond their control, then elections may result in competent leaders being victims of circumstance. When voters punish or reward their leaders for their actions and efforts, politicians are held accountable for their responses. We examine the extent to which voters are responsive to random weather events and compare that to the electoral attentiveness to the deliberate actions of their elected officials.

When politicians preside over good times, they and their party tend to be reelected. When things go wrong, they are more likely to be voted out of office. Voters are retrospective. They look to the past to make a decision that will then influence the future. But what information do voters use to judge the incumbent? Do they distinguish between events beyond the control of a politician (e.g., a natural disaster) and areas where politicians can take action (e.g., the response to a natural disaster)? For the voter, attributing outcomes to actors is a difficult propo-

sition. Few citizens can identify their numerous elected officials (Delli Carpini and Keeter 1996). Fewer still grasp the complex processes driving political outcomes. Despite concerns over the abilities of voters, much research has found logic with the state of collective democratic elections. While most voters lack the necessary knowledge, things tend to work out in the aggregate (Fiorina 1981; Key 1966; Kramer 1971; Lupia 1994; Page and Shapiro 1992). It is usually unclear what causes any particular political outcome. We examine a context where responsibility is direct: the response of governors and presidents to natural disasters.

Weather events shape politics by providing unexpected tests of leadership to both incumbent politicians as well as others vying for power. Barnhart (1925) suggests that drought contributed to weakening Nebraska's Republican party in the 1890 gubernatorial election, beginning an era of progressive strength. Berry attributes the Republican nomination of Herbert Hoover for president to the Mississippi flood of 1927 (1997, 412). Outside of the United States, Healey argues that the efforts of Juan Perón in the aftermath of the 1944 earthquake ultimately "create[d] the most powerful labor movement in Latin America" (2002, 50). Reeves (2010) finds evidence that presidents are more likely to provide federal disaster

John T. Gasper is a Visiting Assistant Professor of Political Science, Carnegie Mellon University in Qatar, Education City, P.O. Box 24866, Doha, Qatar. (gasper@andrew.cmu.edu). Andrew Reeves is Assistant Professor of Political Science, Boston University, 232 Bay State Road, Boston, MA 02215 (areeves@bu.edu).

All data and replication materials are available from <http://people.bu.edu/areeves>.

American Journal of Political Science, Vol. 55, No. 2, April 2011, Pp. 340–355

©2011, Midwest Political Science Association

DOI: 10.1111/j.1540-5907.2010.00503.x

assistance to electorally important battleground states. President George W. Bush's response to Hurricane Katrina contributed to declining popularity, which was one factor in the Democratic takeover of the House of Representatives (Jacobson 2007). Although leaders may not plan for it, a natural disaster can influence their political fortunes.

In early 2008, several central Illinois counties experienced severe rainstorms that led to flooding of rivers and streams. For the individuals who experienced the damage of these rainstorms, the effects were devastating. Rose and Jim Keith of Pontiac, Illinois, in Livingston County described the "half inch of mud" and the "stench of mold" that still occupied their home near the banks of the Vermillion River. Mrs. Keith expressed her anger and frustration, saying, "It's not fair . . . it's the river that did it, but it's still not fair of what we have to go through because of the help that is not being given to us" (Sapochetti 2008). Illinois Governor Rod Blagojevich had requested a federal disaster declaration for Livingston County from President George W. Bush. Once a disaster declaration is granted the way is cleared for federal money to be spent on various forms of aid, but President Bush declined this declaration request.

We examine if, in the aggregate, voters respond directly to severe weather. Perhaps, like Mrs. Keith's anger at the Vermillion River, electorates will express anger and blame incumbents for severe weather events. We consider whether voters respond to outcomes without respect to the actions of politicians. Second, we consider cases where a disaster declaration is requested and received. Would the Keith family have been less angry had a disaster declaration been issued? At the next election, would they have been more likely to support the incumbents who took action to bring them federal aid? Finally, would the Keiths notice the efforts of Governor Blagojevich and the denial by President Bush even though no federal aid was promised or delivered? Would these voters and others like them notice the actions and intents of the governor and the president come Election Day? These are the questions that we address here.

In an analysis of county-level vote returns for all states from 1970 to 2006, we find evidence that voters respond to both severe weather damage and the subsequent actions taken by elected officials. We present evidence that disaster damage is negatively related to incumbent vote share for presidents and governors. We also find that when a governor makes a request for a disaster declaration and it is granted by the president, voters respond with increased support for both incumbents come Election Day. Finally, we show that when governors request disaster declarations but are rebuffed by the president, governors

are rewarded and presidents are punished at the ballot box.

The Responsive and Attentive Electorates

Conceptually, we consider two frameworks for explaining the nature of voter retrospection. The frameworks are distinguished by the type of retrospective considerations that electorates use to evaluate incumbent politicians. The *responsive electorate* considers easily accessible factors, such as weather damage, without regard for interventions by the governor or president. The *attentive electorate* is more discriminating. In this framework, competent politicians who preside over bad times are judged on the actions they took and not the circumstance beyond their control. We conduct a county-level analysis and so our findings represent the behaviors of voters aggregated to this constituency level.

The Responsive Electorate

First we consider the *responsive electorate*, which views retrospective judgments as a direct response to the absolute state of the world. Electorates punish or reward an incumbent party based on the state of the world without regard to the responsibility of the incumbent in shaping it.¹ Politicians themselves recognize that events beyond their control may influence electoral fortunes. Former Governor Gray Davis identified the voters of California as a responsive electorate, which might privilege weather patterns over policy. He advised incoming Governor Arnold Schwarzenegger that "you need two things to be successful. . . . You need rain in the north and a strong economy. And there is nothing you can do about either one" (Steinhauer 2009). These voters punish or reward the incumbent based on outcomes "and not upon the actual policies themselves" (Kiewiet and Rivers 1984, 370). Random events may determine the fate of the incumbent.

Does a responsive electorate produce sound outcomes or result in arbitrary electoral turnover? In the title of a seminal work, Key declares the electorate to be "responsible" while still acknowledging that the governing

¹ Many theories of retrospective voting assume a responsive electorate (e.g., Kiewiet and Rivers 1984; Patty and Weber 2007). Like Duch and Stevenson (2008), we draw a distinction between the reasoning mechanisms of the voter. While the responsive electorate does not necessarily take into account actions of the incumbent politician, the electorate we describe in the next section perceives and attributes responsibility.

party will be judged on “[e]vents, over which government may, or more likely may not, have control” (1966, 10). Despite this whimsy, Key asserts an oft cited conclusion that “voters are not fools” (7). Voters use a simple rule of thumb to evaluate incumbent politicians, and in the aggregate, outcomes are broadly attributed to government.

Other scholarship takes a less sanguine view of the outcomes of responsive electorates. Kuklinski and Quirk (2000) argue that the reasoning mechanisms of the electorate are at times capricious and may result in undesirable outcomes. Achen and Bartels criticize this type of sanctioning as a cause of not only irrational but also absurd electoral behavior. Outcomes that result from this “blind retrospection” include the United Kingdom’s Conservative party losing an election because of a bad harvest (2004, 7); the pharaoh’s reign being shortened because of drought (1); President Wilson losing votes in New Jersey because of shark attacks (11); and American presidents losing about a percent of the vote in states that were too dry or too wet (25).² In an analysis of county-level presidential election results from 1988 to 2004, Healy and Malhotra (2009) argue that in the context of disaster mitigation, voters fail to reward politicians for preventative spending that ultimately minimizes public welfare losses. Wolfers (2007) finds that gubernatorial elections in oil-producing states may be swayed by random shocks to oil prices. This is hardly the work of a rational, responsible, and retrospective electorate.

The responsive electorate will react to the current state of the world without respect to cause. Voters use a ‘finger to the wind’ approach to assess the performance of the incumbent. It is unconditional retrospection in which an electorate punishes incumbents regardless of their role or their ability to control a particular outcome. For example, consider the case of Mr. and Mrs. Keith, the family whose house was flooded by the Vermillion River. They express anger and frustration at what the river did to their home. If they are representative voters of the responsive electorate, how might they form their retrospective evaluations? With respect to their own well-being, they are almost certainly less well off than at any time in their near past.³ The house they own is covered in mud and

mold, and they will undoubtedly suffer expenses associated with the repairs and other costs. Their coarse retrospective evaluation is formed by the great losses suffered as a result of the natural disaster. If the Keiths are representative of the responsive electorate, their incumbent politicians will suffer as a result of severe weather.⁴

The primary implication of a responsive electorate is that incumbent governors and presidents will be punished for severe weather without consideration to the actions that they take. We refer to this as the *retrospection of outcome* hypothesis. In our empirical model, we measure outcomes as damage caused by severe weather. This is the variable that is most directly observable. If the electorate responds to weather damage alone without regard to the actions of the incumbent politicians, then this suggests that electorates are responsive and not attentive. Next, we consider an attentive electorate that responds to the actions politicians take in response to severe weather.

The Attentive Electorate

The second framework views electorates as being attentive to the actions of their elected officials and being able to assign praise or blame based on the authority and actions of the politician. In the attentive electorate, a politician is held accountable only for his or her efforts in shaping the state of the world. These electorates reward leaders whom they deem responsible by engaging in a more nuanced judgment of the performance of the incumbent party. Voters observe some noisy signal that is a combination of politicians’ actions as well as exogenous factors, in our case weather events, that go into the observed outcomes. Voters are left trying to detect the signal from the noise in order to reelect politicians who take action in response to severe weather.

The governor and president are the two most prominent actors in the disaster declaration process. According to the Stafford Act, a federal response to a natural disaster requires that a governor first request a disaster declaration from the president.⁵ The president has unilateral authority in granting or declining the request. If the request is granted the federal government is authorized to take action, but sometimes the request of the governor is denied

² Healy and Malhotra find that disaster damage does not influence presidential vote share (2009, 399).

³ Much of the literature on attribution focuses on economic outcomes. This literature has tended to find that sociotropic evaluations trump pocketbook evaluations (e.g., Kinder and Kiewiet 1981). The research here focuses on another policy area (i.e., natural disasters and the federal response) to better understand voter evaluations. As this research shows, with respect to natural disasters, voters react to their local context.

⁴ Even in a world where a responsive electorate receives a disaster declaration, it will still have a negative view of the incumbent politician overall because affected individuals are worse off than they were before the weather event.

⁵ Prior to the Stafford Act (1988), the Disaster Relief Act Amendments of 1974 (Public Law 93-288) codified the procedures of the presidential disaster declaration process. The basics of the process were “enshrined in law in 1950” (Sylvester and Búzás 2007, 3).

by the president. The functional responsibility of these two actors is defined by statute. We investigate whether electorates are attentive to the responsibilities and actions of governors and presidents in the context of natural disasters.

There is both electorate- and individual-level evidence that voters hold politicians accountable for their actions. Arceneaux and Stein (2006) find that the attribution of blame is shaped by direct experience and levels of political information. In a mayoral election following severe flooding, voters held the incumbent mayor responsible depending on levels of political sophistication and individual experience with the flooding. Abney and Hill (1966) find mixed evidence in examining the 1965 New Orleans mayoral election, which occurred in the aftermath of Hurricane Betsy. The incumbent mayor's vote share was no lower in flooded precincts than it was in those precincts that remained dry. The findings suggest no significant differences as a result of levels of flooding. Survey data show that voters generally did not factor the hurricane into their vote choice. One reason is that voters did not know who to blame. Abney and Hill report that interviewers "were told 'I don't know who was supposed to build better levees: some say the mayor or the federal government'" (1966, 978). Some "express[ed] indignation that other voters would be influenced in their voting decisions by the hurricane" (979) since it was simply the mayor's bad luck and the act of "an inscrutable God" (980). Voters may also have responded positively to the recovery operation, including those personally rescued from their rooftops by the mayor (980). Individual-level data show that while some voters are able to discern actions of politicians, these abilities are contingent on events and individual-level characteristics.

Others have argued that voters consider performance in light of context and perceive functional responsibility of their officials. Powell and Whitten (1993) find a weak relationship between economic performance and the vote in countries in which responsibility for economic policy is blurred between government and opposition but a strong relationship in countries where responsibility is clear. Ebeid and Rodden (2006) point out the role of context in U.S. gubernatorial elections, finding that the relationship between economic performance and elections depends on the economic structure of the state. In particular, governors are not held as accountable for economic outcomes in states that rely on farming and natural resources. Wolfers (2007) also examines the extent to which voters can attribute functional responsibility to incumbent politicians during gubernatorial elections. Voters reward governors for strong state economies and are able to discern incumbent performance relative to the

nation as a whole, but they fail to account for exogenous sources of good or bad luck, such as oil price spikes in oil-producing states.

When there are many officials who are taking different actions and have different roles, the demands on an attentive electorate are more strenuous. Politicians occupy different levels of government and have different types of responsibility. Several studies have examined the ability of voters to attribute functional responsibility to politicians at these different levels of government. Stein (1990), Atkeson and Partin (1995), Carsey and Wright (1998), and Arceneaux (2005) have examined the influence of some combination of personal, state, and national economic evaluations on votes for state and federal officials. Arceneaux (2006) finds that voters are able to distinguish responsibility among different levels of government but that these links are only salient if the relevant issues are highlighted. Some studies suggest that the governor is largely captive of their party and the approval of the president (Carsey and Wright 1998; Niemi, Stanley, and Vogel 1995).⁶ Others have found that voters are able to attribute responsibility to officials at different levels of government but only when information about responsibility is highlighted (Malhotra and Kuo 2008).

We address the quality of electoral retrospection in a context where responsibility is clear. Typically, macroeconomic indicators are used to gauge the extent of retrospective voting. These indicators provide, at best, a noisy signal of the competence of the incumbent. How can voters discern policy effects and macroeconomic competence when even experts disagree? If the voter wished to determine actions taken or not taken, severe weather events present an ideal environment to obtain information and attribute praise or blame.

In the economic arena, there are often cries to let market solutions correct political or other economic hardships. The disaster declaration process allows us to observe two actors who can take action to provide aid to a group of individuals who have been affected by severe weather. The governor first initiates the process by making a request of the president. The president then has unilateral control to grant or deny this request, which determines whether federal assistance will be granted. We observe cases where governors request and presidents grant and where governors request and presidents deny. These scenarios provide different contexts for assigning functional responsibility. We examine the extent to

⁶ Other research focusing on gubernatorial elections has found additional mixed evidence that voters are able to attribute responsibility. Peltzman (1987) and Chubb (1982) both find that state income data are a poor predictor of gubernatorial election results.

which electorates recognize these actions and reward their officials.

We identify two hypotheses to test the level of attentiveness of the electorate. The first is *retrospection of action*, which considers observed actions by incumbent politicians. The second is *retrospection of intent*, which considers efforts made by politicians that do not result in an actual outcome. We define retrospection of action as reaction to specific outcomes that result from initiatives taken by a politician. By action, we refer to the observable efforts made by the incumbent politician to respond to the needs of the voters. In the analysis here the action is a disaster declaration requested by the governor and approved by the president. Our retrospection of action hypothesis is that electorates will reward presidents and governors for disaster declarations at the ballot box.

A disaster declaration turn down allows us to test for retrospection of intent and represents a scenario where a governor attempted to take action, but her request was denied by the president. An attentive electorate will perceive the actions that the incumbent took even though the intended outcome was stymied for some reason. While individual politicians may have attempted to affect an outcome, nothing occurred. Of the ability to assign functional responsibility, this is the most difficult. Is intent on the part of the politician enough to merit reward? Politicians introduce bills, make promises, and push for initiatives that often fail for a number of reasons. Politicians may also act to take something away from voters. Military bases may be proposed to be closed only to see last-minute reprieves. Our question is whether voters perceive these actions and attribute them appropriately by rewarding politicians for their attempts. The retrospection of intent hypothesis is that electorates will reward governors and punish presidents for disaster declaration turn downs. If voters are responding only to the tangible aid, then these unrealized efforts would go unnoticed on Election Day.

In examining disaster declaration turn downs, we test the attentiveness of the electorate where responsibility is divided between the state and federal government. Turn downs represent two different types of actions. The governor intends to act positively by requesting a disaster declaration while the president acts negatively by rejecting the request, thus preventing federal aid. We examine whether electorates reward or punish the appropriate politicians. The turn down results in no actual disbursements of federal resources. For voters to react to the intent of the politician requires attention to information beyond their fingertips. Turn downs require keen attentiveness by the electorate. In the signal-to-noise metaphor, the noise is still low but the signal is also relatively faint.

For example, consider the Keiths, whose house was flooded by the Vermillion River, as representative of the attentive electorate. If they can distinguish responsibility and attribute action, then their incumbent politicians may not be blamed for the havoc from the natural disaster. Instead, the governor and the president will be held accountable for the actions they take in response to the flood. This requires that the Keiths determine the ability of their governor and president to act and also for the Keiths to acknowledge the steps each politician took to aid them. In the case of the flooding of the Vermillion, Governor Blagojevich requested federal resources and President Bush denied the request. In the case of the disaster declaration request, the functional responsibility is determined by statute. The governor was the only political actor who could make a request for federal aid for the state, and the president was the lone official who could approve that request. An attentive voter would attribute the functional responsibility appropriately and reward the politician who sought aid and punish the politician who denied it. Had President Bush granted the request, then the Keiths as attentive voters would have rewarded both their incumbent governor and president. While individual-level research has found evidence of such behavior, relatively few voters are able to make such fine-tuned attributions (Arceneaux and Stein 2006).

Alternatively, a small number of voters may respond directly to a turn down and cast a vote against the offending president in the next election. Others may read media accounts, press releases, or the indictments made against the president and base their opinions on the way the story is framed by the media. These media effects may additionally interact and operate through elite opinion formation before ultimately influencing the mass public (Zaller 1992). For instance, when a president rejects a disaster declaration, media and other politicians may turn against him. Coverage may involve depicting the pain of individuals suffering from the disaster, the request for federal support from the governor, and the rebuff by the president. For instance, when President Bush rejected a request for a disaster declaration for counties in central Illinois in early 2008, the anger was reflected in the coverage by the local newspaper. *The Pantagraph* described the pain and outrage over the turn down in the aftermath of severe flooding that hit the region. The paper reported that a local mayor believed that FEMA was "playing politics" and reminded readers that "President Bush, who oversees FEMA, is a Republican" (Sapochetti 2008). In reporting on a disaster turn down in 2003, the *Providence Journal-Bulletin* of Rhode Island cited Democratic Senator Jack Reed's statement that he was "disappointed by President Bush's decision" to turn down the

governor's request (Arsenault 2003). In 1981, shortly before officially announcing his bid for U.S. Senate, Governor Edmund (Jerry) Brown of California publicly denounced the federal government following a disaster declaration turn down. The Associated Press reported that Governor Brown "said the federal government's criticism of his handling of the problem was 'laced with politics by people who have their own axes to grind and offices to seek.' He said Republicans are concerned about retaining control of the U.S. Senate, for which he is considered a probable candidate" (Levitt 1981). Disaster declarations also provide opportunities for politicians to show off their leadership skills in a very public forum (Reeves 2010).

The results here are based on analyses of aggregate election outcomes at the county level. While these results offer more granularity than state-level analyses, we emphasize that these are not individual-level models. As such, we cannot ascribe the aggregate relationships to the individual voter. There is anecdotal evidence in newspaper reports that voters may follow the disaster declaration process and be directly influenced with respect to voting. Aggregate electoral responses are likely a function of elite input in the echo chamber of public opinion. The media may choose to highlight or ignore an event or frame it in a particular way. A disaster declaration or turn down may become part of that frame. Responses of incumbent governors and presidents to disasters may shape elite public opinion, which in turn may influence individual voters. There are both direct and indirect mechanisms influencing individuals. All of these mechanisms are likely to contribute to our finding that at the county level, voters respond to severe weather damage and the response of politicians.

To summarize, we will examine county-level electoral responses in gubernatorial and presidential elections with regard to our hypotheses of outcome, action, and intent. If electorates are responsive, then the measures politicians take, i.e., disaster declarations and disaster declaration turn downs, will go unnoticed. The electorate's response will be driven by election time severe weather events. This is our retrospection of outcome hypothesis. Alternatively, if electorates are attentive to their politicians, then they should reward those politicians for the actions they take. Our retrospection of outcomes hypothesis is that electorates will reward governors and presidents for disaster declarations. In the context of disaster declaration turn downs, where there was no tangible aid, we would still expect attentive electorates to respond positively to gubernatorial requests but negatively to presidential denials. This is our retrospection of intent hypothesis. Responsive electorates hold politicians accountable for events which may be beyond the control of the politicians. Attentive

electorates disregard random events but pay attention to incumbent politician responses.

Data and Methods

Our empirical challenge is to measure the county-level electoral response to severe weather damage conditioned on the actions of the governor and the president. Because we are interested in retrospection, we focus on the electoral performance of the incumbent. We model incumbent vote share as a function of previous electoral performance, the median income of the county, the magnitude of weather damage, and the respective responses of the president and governor.

The unit of analysis is a county in a particular year, and the dependent variable is the incumbent two-party vote share for each of the over 3,100 U.S. counties. For gubernatorial elections, we examine all general elections from 1970 to 2006. Every year sees gubernatorial elections, although most states hold them in the even years when presidential elections are not held. We exclude special elections and also those races in which the incumbent is not running. Because retrospective voting is less likely to be a factor in open seats, we only examine incumbent governors.⁷ This restriction has the effect of eliminating Virginia because the governor is constitutionally barred from serving two consecutive terms. We also exclude Alaska from the analysis because of inconsistent county boundaries.

For the president, we examine all general elections from 1972 to 2004. Again, the unit of analysis is the county-level two-party vote share for the incumbent or his party's nominee. Because the reputation of the incumbent president looms large even when he is not running for reelection, we include all general elections including those in 1988 and 2000 when the incumbent was not running. In both of these races the incumbent vice president was running, further making the actions of the lame duck incumbent president relevant for the electoral fate of the nominee. We also exclude Alaska from the analysis of presidential elections for the reason described above.

To test the primary implication of the responsive electorate model, we examine the effect of severe weather on electoral performance. If electorates are responsive, then they will only react to outcomes independent of the actions of politicians. This framework suggests that electorates will punish incumbents for severe weather

⁷ Gubernatorial elections see stronger personal votes and less of an emphasis on party identification (Chubb 1982).

damage. This is our retrospection of outcome hypothesis.

We examine county-level damage estimates aggregated six months prior to the election.⁸ The weather damage data are available from the Spatial Hazards Events and Losses Database for the United States (SHELDUS 2009), which draws upon several sources to provide comprehensive measures of disaster damage caused in all U.S. states. We adjust these figures for inflation and create a per capita measure of disaster damage to property.⁹ The variable measures the damage in logged dollars per 10,000 citizens adjusted for inflation. Over 90% of counties see some property damage in the six months prior to at least one election in our sample.¹⁰ Figure 1 presents the distribution of damage across all counties from 1972 to 2004 for the six months before the presidential election. As is clear from the map, there is substantial geographic variation in the distribution of weather damage, and most counties receive some damage during this period. Conditional upon receiving any damage, the transformed variable takes on an approximately normal distribution, as seen in Figure 2.¹¹

Our goal is to measure the independent effect of weather damage on incumbent vote share. While weather events are exogenous to the political system, the amount of weather damage may be a function of how much property there is to destroy. We do three things to account for this issue. First, our metric of weather damage is a per capita measure. This accounts for the fact that counties with more people may experience more damage. Second, we include census measures of the median income to

control for the amount of wealth in a particular county. Where there is more wealth, damage from weather may be more severe. Finally, we include indicator variables for each county and each year in our data. This allows the model to account for systematic variation across counties and years. With these adjustments, weather damage provides a more accurate estimate of the independent effect of weather on incumbent vote share.¹²

Based on the implications of the attentive electorate model, we examine disaster declarations, actions taken by presidents and governors in response to severe weather. The disaster declaration is a statutory power of the president. A request must first be made by a governor and can either be approved or denied by the president. If approved, the way is cleared for a variety of individual-, local-, and state-level assistance. The declarations are often accompanied by photos of the president, shirt sleeves rolled up, comforting victims or touring the affected areas. The entire process involves two actors: a governor and the president. The governor initiates the request, and the president responds by either granting or declining the request. After that stage, further decisions are made by bureaucrats and legislators about types and levels of funding. The governor's decision to request and the president's to accept are theirs alone. A disaster declaration sees both a president and governor take action in response to severe weather damage. As previously discussed, disaster declarations provide an opportunity to judge the attentiveness of the electorate and test our retrospection of action hypothesis.

We record the number of county-level disaster declarations made in the six months prior to an election. These data are provided by the Public Entity Risk Institute¹³ as well as the FEMA website.¹⁴ If the electorate is attentive to the actions of politicians, we expect that disaster declarations will have a positive effect on the electoral fortunes of both presidents and governors.

Like Figure 1, Figure 3 presents the geographic distribution of county-level disaster declarations for the six months prior to presidential election years. We again see substantial geographic variation in the distribution of declarations during this time. While one might think that election time disaster declarations are rare or concentrated events, for presidential elections from 1972 until 2004, 63% of the over 3,100 counties in our sample receive at least one federal disaster declaration.

⁸ See Supporting Information for specifications of weather damage, disaster declarations, and disaster turn downs aggregated over 3, 6, and 12 months prior to the election.

⁹ The damage amounts are in 2005 dollars.

¹⁰ In our gubernatorial election data, 91% of counties see some election time damage. For our presidential election data, 95% of counties see some election time damage.

¹¹ We include only those events that produced a total of at least \$50,000 in damage. These severe weather events may involve several counties. We follow Healy and Malhotra (2009) in rescaling the SHELDUS data to account for smoothing. While the SHELDUS data provide measures of county-level damage, the data are smoothed over affected counties. For example, if a disaster that affected five counties caused a total of \$1,000,000 worth of damage, then the recorded damage in each county would be \$200,000. This has the effect of amplifying the per capita damage in small counties since they are allocated the same damage as larger counties but with the damage spread over fewer residents. We rescaled the reported damage by the relative proportion of each affected county. Therefore in a disaster totaling \$600,000 involving three counties with populations 5,000, 3,000, and 2,000, the original reported damage would be \$200,000 for each county; however, the rescaled damage measure we use would be \$300,000 for the first county, \$180,000 for the second, and \$120,000 for the third.

¹² In the Supporting Information, we conduct further analysis on the effect of partisan support, disaster declaration type, and gubernatorial election on-cycle/off-cycle timing.

¹³ <http://www.peripresdecusa.org/>

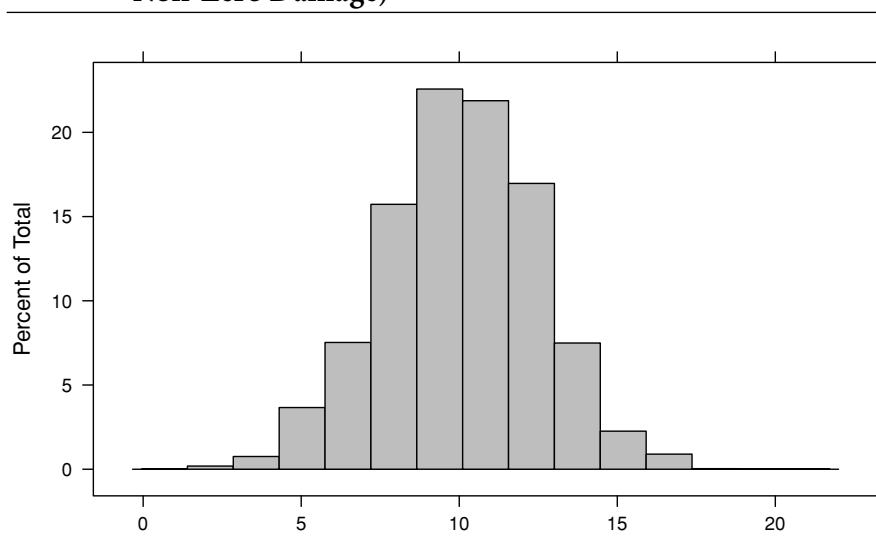
¹⁴ <http://www.fema.gov/>

FIGURE 1 Election Time Disaster Damage, 1972 to 2004.



There is substantial county-level geographic coverage of election time weather damage during this time period.

FIGURE 2 Logged Damage per 10,000 Voters (Only Cases with Non-Zero Damage)



While disaster declarations reflect positive action by both the president and governor, we also observe instances in which the governor attempts to obtain federal resources for disaster assistance while the president denies the request. This affords a stringent test of the attentiveness of the electorate and an opportunity to examine our retrospective of intent hypothesis. Data from the Public Entity Risk Institute provide measures of state-level disaster declaration turn downs. Disaster declaration turn downs offer a clear but weak stimulus to the electorate. No benefits are granted or taken away by either the governor or president. If we observe an electoral response, it is to the intent of action. If the electorate is able to attribute intent, then we will see a reward for the positive action of the governor and an electoral punishment for the denial by the president. If electorates reward the governor and punish the president, it reflects the ability of electorates to at least appear to be attributing responsibility in the context of the disaster declaration process. The disaster declaration turn down data are only available on the state level, so we include the variable as a group-level indicator for when a state is denied federal assistance in the six months prior to an election. In our sample, two-thirds of states received at least one turn down over the 36-year time period.¹⁵

We include several controls to account for other influences on electoral outcomes. For the gubernatorial analysis, we include the vote for the governor in the previous election to account for his or her baseline

level of support in the county. We also include the two-party vote for the presidential candidate of the governor's party in the previous presidential election.¹⁶ We employ a linear model that includes indicators for county and year.

We provide summary statistics and further analysis in the online Supporting Information.¹⁷ These further specifications take into account (among other things) partisan effects of the governor and president; the normal vote of the county; effects of multiple disaster declarations; aggregation of weather events and disaster declarations over different periods of time; the type of natural disaster; and other county characteristics as measured by census variables.

Results

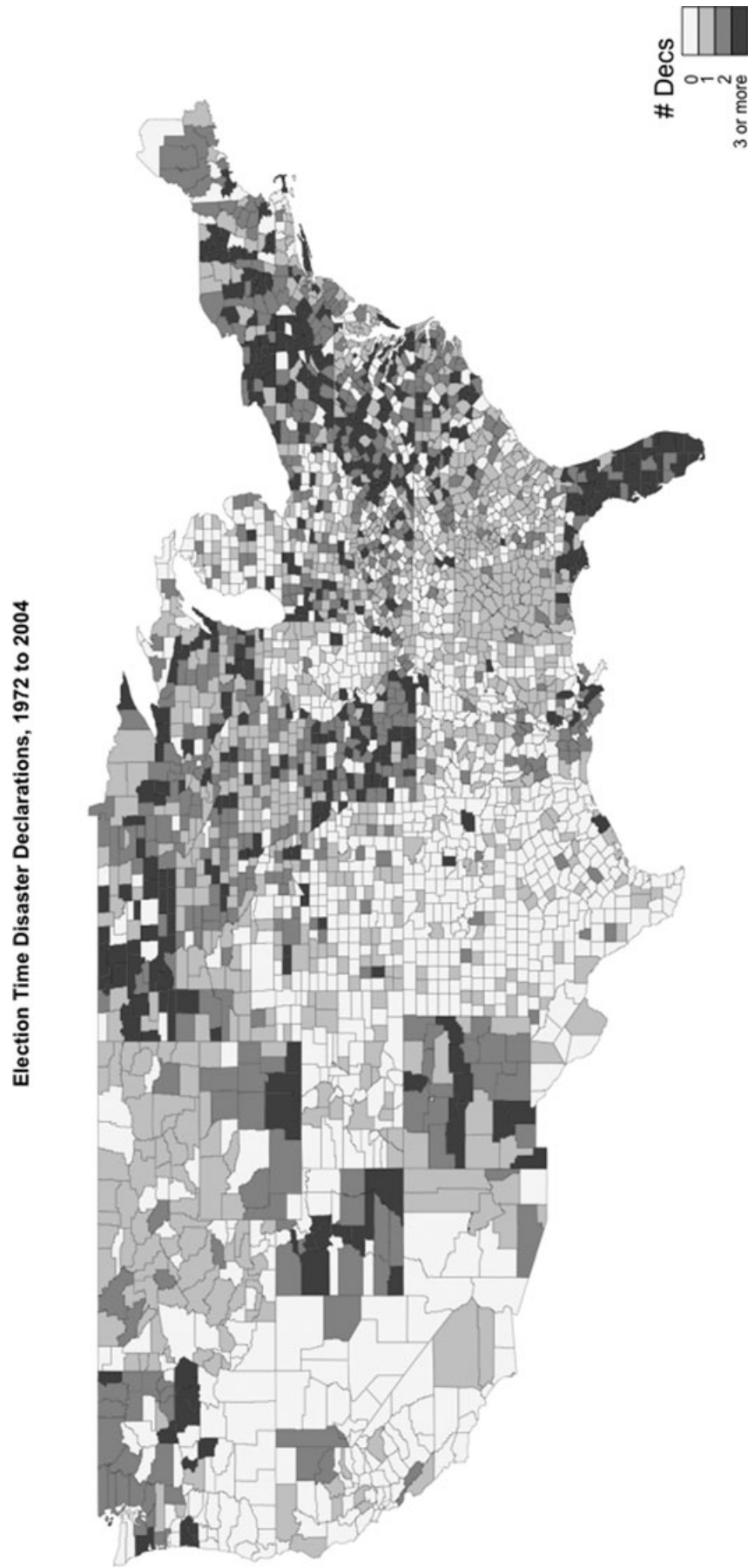
We find varying levels of evidence of a responsive and attentive electorate. We now report the magnitudes and relative importance of the factors associated with the hypotheses generated from these models. In response to severe weather damage, we find that electorates punish

¹⁵ This is for presidential election time turn downs. For gubernatorial elections, approximately three-fifths of states receive a turn down.

¹⁶ For both sets of analyses, we include several county-level demographic variables available from the U.S. Census Bureau, such as percent over age 25 with a bachelor's degree, percent over age 65, and percent black. Since our data span over three decades, we use the closest Census estimate to the year of the observation. We also conditioned on turnout of voting age population in the county. These covariates had no effect on the substantive findings of our analysis. We present these results in the Supporting Information.

¹⁷ Available online at <http://people.bu.edu/areeves>.

FIGURE 3 Election Time Disaster Declarations, 1972 to 2004.



There is substantial county-level geographic coverage of election time disaster declarations during this time period.

TABLE 1 Effect of Severe Weather on Incumbent Gubernatorial Vote Share at the County-Level Year and County Fixed Effects

	Model 1	Model 2	Model 3
Weather Damage	−0.077 (0.020)	−0.129 (0.021)	−0.132 (0.021)
Disaster Declarations (county)		3.530 (0.273)	3.987 (0.275)
Turn Downs (state)			2.650 (0.244)
President Vote (lagged)	0.173 (0.008)	0.173 (0.008)	0.168 (0.008)
Governor Vote (lagged)	0.625 (0.010)	0.632 (0.010)	0.637 (0.010)
Median Income (in 1,000s)	−0.072 (0.030)	−0.063 (0.030)	−0.075 (0.030)
Intercept	10.959 (5.063)	11.023 (5.030)	11.214 (5.007)
<i>N</i>	15580	15580	15580
<i>R</i> ²	0.516	0.522	0.526
adj. <i>R</i> ²	0.400	0.408	0.414
Resid. sd	11.112	11.039	10.988

Standard errors in parentheses.

both the president and the governor. With regard to disaster declarations and turn downs, we find that electorates respond to the actions and intent of both elected officials. The electorate is both responsive to severe weather and attentive to its elected officials.

Gubernatorial Elections

Table 1 presents our model of gubernatorial elections. Column 1 presents the vote share of the incumbent governor as a function of previous personal and partisan electoral support in the state and logged dollars of weather damage per 10,000 citizens in the county. For these results, there is a negative effect of weather damage that remains once we control for the response of the governor. This is evidence of a responsive electorate and supports our retrospection of outcomes hypothesis. An attentive electorate would condition its praise or blame on the actions of the officials and not respond to weather damage. As expected, the electoral controls predict the outcomes quite well.¹⁸ The results for these controls are virtually the same in each model.

¹⁸ One point in the previous election results in six-tenths of a point in the subsequent election with an additional .17 points for every percent of the two-party vote received by the presidential candidate of the governor's party.

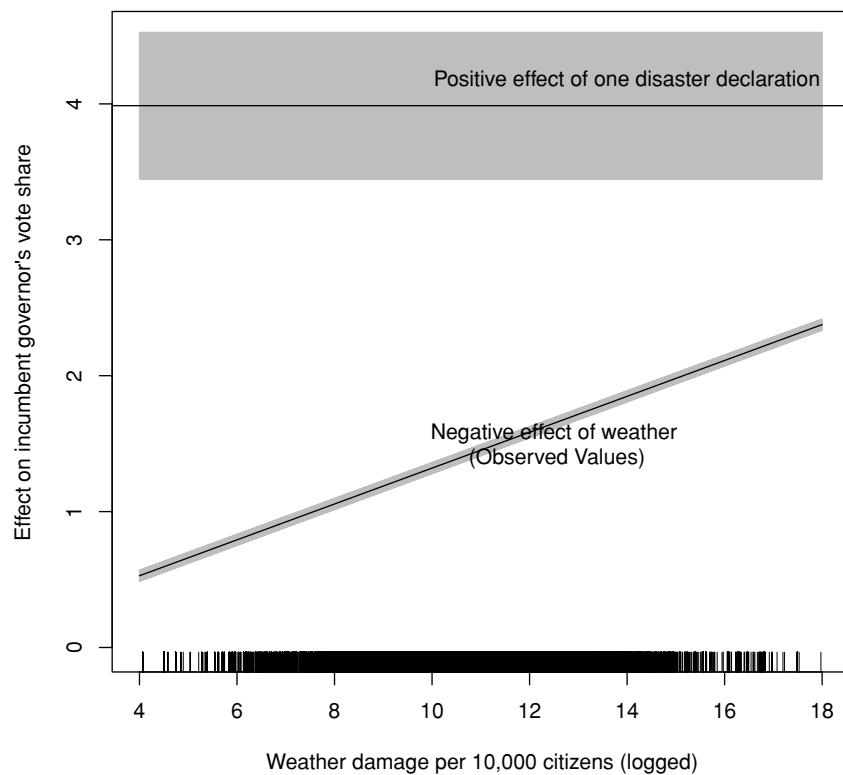
Column 2 of Table 1 models gubernatorial election results using the variables described above as well as the number of disaster declarations issued in the county. These actions reflect decisions by the governor to act in order to address the effects of severe weather. An attentive electorate would not react arbitrarily to inclement weather but to how the governor or president responds to weather emergencies. The results in Table 1 suggest an attentive electorate in gubernatorial elections and provide support for our retrospection of action hypothesis. We estimate that for the more than 1,500 cases that received a disaster declaration, a single declaration is worth nearly 4 points in the county vote.¹⁹ These findings show that electorates reward governors who act in the face of severe weather damage.

Column 3 of Table 1 presents the effect of statewide turn downs on vote share of the incumbent governor. Turn downs are instances where the governor acts with the intention of obtaining federal resources, but the president denies the request. As described in the previous section, a turn down is a state-level predictor so the coefficient should be interpreted as a baseline effect for every county in the state in a given election. Column 3 of Table 1 shows that a turn down is worth 2.7 points for an incumbent governor's vote share. This suggests that the electorate is sensitive to the very intent of the governor and provides evidence of our retrospection of intent hypothesis. These results indicate that county-level electorates produce outcomes that are more sophisticated than a "finger to the wind" approach. We show that an electorate rewards governors for the intent of declaring a disaster even when no federal benefit is received. As we show in our analysis of presidential elections, voters punish presidents for turn downs. Combined, these findings show an attentive electorate who both correctly attributes functional responsibility and allocates electoral punishment and reward appropriately.

We find evidence of responsive and attentive electorates. Which of these is most prevalent in the response of the electorate? Figure 4 provides insight to this question. It presents the relative magnitude of the effect of a disaster declaration (i.e., retrospection of action) versus weather damage (i.e., retrospection of outcome) on electoral support. This figure highlights how much weather damage is equal to one presidential disaster declaration in terms of its effect on the incumbent gubernatorial two-party vote. The x-axis presents the range of non-zero observed

¹⁹ The 95% confidence interval extends from 3.4 to 4.5 points. To provide additional context to the magnitude of this coefficient, it should be noted that county-level election outcomes are relatively variable. In our sample, the average swing in the incumbent's county-level vote is nearly 10 points.

FIGURE 4 The Effect of Weather Damage and Presidential Disaster Declarations on the Incumbent Gubernatorial Vote Share



Effects of weather damage are shown for the range of observed values in the data set. The effect of one disaster declaration is also shown. In gray are 95% confidence intervals. The increase in votes from a presidential disaster declaration exceeds the value of the effect of damage for all observed cases. Tick marks indicate observed values in the data set.

values of weather damage, and the y -axis is the effect on the two-party vote for the incumbent. Also plotted is the effect of one disaster declaration on the vote share as predicted by the model (3.9 points). Both lines have gray bars around them reflecting 95% uncertainty estimates. Tick marks along the x -axis reflect actual observations of weather damage. A disaster declaration outweighs all of the observed cases of damage in terms of electoral benefit even if we consider the uncertainty around the estimate. The effects of weather damage are not insubstantial. If a weather event causes approximately \$1,950 worth of damage per 10,000 citizens, it will cost the incumbent governor 1 point at the ballot box.²⁰ While severe weather damage is detrimental to incumbent election hopes, presidential disaster declarations always more than make up

the cost. For gubernatorial elections, actions weigh more heavily on the electorate than outcomes.

Presidential Elections

Table 2 presents the results for the model of incumbent presidential vote share. Column 1 of Table 2 models vote share as a function of the vote share in the previous two presidential elections and logged weather damage per 10,000 voters. Like the results for gubernatorial elections in Table 1, presidents are punished for severe weather damage. For example, \$20,000 in weather damage in a county of 10,000 voters would result in a modest decrease of a quarter point in the two-party popular vote.²¹ This finding also holds even when accounting for a federal response to weather damage. In all specifications of the model we find evidence supporting a responsive

²⁰ The damage amount of \$1,950 falls between the median and the third quartile of the distribution of weather damage for governors. We calculate the effect as $-.132 \times \ln(1950) = -1$.

²¹ We calculate this as $\ln(20000) \times .025 = .25$.

TABLE 2 Effect of Severe Weather on Incumbent Presidential Vote Share at the County-Level Year and County Fixed Effects

	Model 1	Model 2	Model 3
Weather Damage	−0.017 (0.008)	−0.024 (0.009)	−0.025 (0.009)
Disaster Declarations (county)		0.524 (0.116)	0.518 (0.116)
Turn Downs (state)			−0.940 (0.089)
President Vote (lagged)	0.554 (0.005)	0.555 (0.005)	0.552 (0.005)
President Vote (twice lagged)	0.342 (0.005)	0.341 (0.005)	0.344 (0.005)
Median Income (in 1,000s)	0.015 (0.012)	0.016 (0.012)	0.020 (0.012)
Intercept	25.428 (2.185)	25.397 (2.184)	25.360 (2.180)
<i>N</i>	29746	29746	29746
<i>R</i> ²	0.815	0.815	0.816
adj. <i>R</i> ²	0.793	0.793	0.794
Resid. sd	6.482	6.479	6.466

Standard errors in parentheses.

electorate and our retrospection of outcomes hypothesis. Even though electorates reward politicians for taking action, they also punish the incumbent for so-called acts of God.

The model also shows that presidents receive an electoral boost for disaster declarations, but one that is substantially smaller than the one received by the governor. In Column 2 of Table 2, we see evidence of the attentive electorate and our retrospection of action hypothesis. Presidents, like governors, are rewarded for disaster declarations. A single disaster declaration in a county is worth half a point to the president. This again suggests that electorates penalize incumbents for randomly determined natural events, but they also reward the president when he responds. While governors receive both a stiff electoral penalty for weather damage and a large bump for a disaster declaration, presidents are both punished and credited less.

Furthermore, we find strong evidence that even when no policy outcome is achieved, electorates perceive the actions and efforts of their politicians. Column 3 presents the full model, which estimates the effect of disaster declaration turn downs on the electoral support of the president. We find that electorates sanction the president (or his party's candidate) by almost one point for *not* granting

aid. On the individual voter level, this degree of attribution is quite demanding, yet we observe it in the county-level results. This provides support for our retrospection of intent hypothesis.

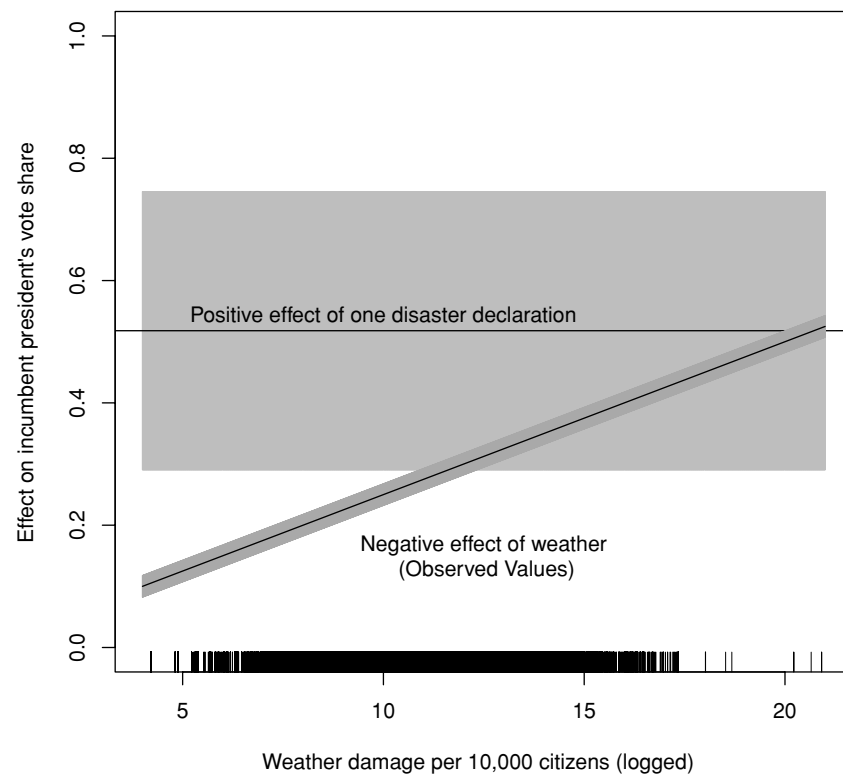
As in our analysis of governors, we find evidence of both a responsive and attentive electorate. Figure 5 presents the relative magnitude of the effect of a disaster declaration (i.e., retrospection of action) versus weather damage (i.e., retrospection of outcome) on electoral support. This figure highlights how much weather damage is equal to one presidential disaster declaration in terms of its effect on the presidential two-party vote. The effect of one disaster declaration as predicted by the model is .52 points. Considering the point estimates, a disaster declaration outweighs all but the most extreme observed cases of damage in terms of electoral benefit. If we consider the lower bound of the 95% confidence interval, we find that the positive effect of a disaster declaration is outweighed by the cost of severe weather damage in about 13% of observed cases and nearly 30% of observed cases where damage is positive. Presidential disaster declarations typically more than make up the cost of severe weather damage. For presidential elections, like gubernatorial elections, actions weigh more heavily on the electorate than outcomes.

Discussion

The findings here inform our understanding of retrospective voting. In the aggregate, voters reward for both observed aid as well as the innuendo of action. They also punish for the act of denying assistance. Electorates compensate both presidents and governors for disaster declarations. This is evidence for the retrospection of action hypothesis. Governors receive an almost 4-point increase while presidents get a half-point increase for a declaration. For a turn down, governors are rewarded with over 2.5 points, while a president is punished by about a point for intent. This provides support for the retrospection of intent hypothesis.

Voters also respond by punishing both presidents and governors for weather events, which are well beyond human control. This provides evidence for the retrospection of outcome hypothesis, which predicts that electorates will punish officials for severe weather damage. When we compare the electoral cost of severe weather to the benefit of a presidential disaster declaration, we find that the latter mostly outweighs the former, and this is especially true for the governor (see Figures 4 and 5 and the discussion thereof).

FIGURE 5 The Effect of Weather Damage and Presidential Disaster Declarations on the Incumbent President Vote Share



Effects of weather damage are shown for the range of observed values in the data set. The effect of one disaster declaration is also shown. In gray are 95% confidence intervals. Considering the point estimates, a disaster declaration outweighs all but the most extreme observed cases of damage. When we account for the uncertainty around the estimates by considering the lower bound of the 95% confidence interval, we find that the positive effect of a disaster declaration is outweighed by the cost of severe weather damage in about 13% of observed cases and nearly 30% of observed cases where damage is positive. Tick marks indicate observed values in the data set.

Taken together, these findings suggest that, in the aggregate, voters are both responsive and attentive. They respond to powerful, random events as well as the actions that the politicians take in response. If the governor does not initiate the request, then both the president and governor face electoral punishment because of severe weather damage. When the governor and president do respectively request and approve a disaster declaration, they typically nullify the negative effect of the damage and may often garner a reward. The effect of a disaster declaration is much stronger for the governor than it is for the president. When we account for both the random event as well as the actions that governors and presidents take, we see that the electorate does more than “merely reward good economic luck and [punish] bad” (Kuklinski and Quirk 2000, 158). We find that electorates do not arbitrarily punish politicians for events beyond their control, but rather they punish politicians who do not take action.

We show that federalism conditions electoral attribution in a manner consistent with the division of responsibility. Compared to the federal government, the state government is more directly involved with disaster response (Schneider 1990). We find that electorates both punish and reward the leader of their state more than the president. Since governors are more responsible for disaster management, they should be held more accountable if the electorate is sensitive to the functions of officials. This is the finding from the model here and further confirmation of an attentive electorate. This contrasts with previous research that finds governors are not rewarded for federal disaster aid (Healy and Malhotra 2009, 392).

While we find evidence that the electorate is paying attention to its politicians, the analysis here still finds several potential problems with the operation of democracy. First, we examine severe weather and disaster declarations for the six months before the election and

find that the electorate responds to events in this time period. This leaves voters susceptible to short-term manipulations such as those described in Tufte (1978) and Bartels (2008). Because politicians can offset the cost of severe weather damage with a disaster declaration, there are potentially incentives to underinvest in disaster mitigation. Healy and Malhotra (2009) find that presidents lack these incentives, and our evidence suggests that this may be true for both governors and presidents. We find voters to be highly attentive as an election approaches, but democratic accountability requires this level of attentiveness throughout the election cycle.

Periodic elections are opportunities to judge government performance. Ultimately, democratic responsiveness requires that voters make reasoned choices and are able to judge incumbent performance. We find that governors and presidents are rewarded for action and punished for inaction with respect to severe weather. We also find that voters punish presidents and governors for the very occurrence of severe weather. Our aggregate county-level findings identify similar mechanisms as Key, which found that "some voters are governed by blind party loyalty," "some others respond automatically to the winds of the environment of the moment" (which we find to be quite literally true), yet there is strong evidence of "persons whose vote is instrumental to their policy preference" (1966, 59).

Weather events are not orthogonal to politics. Even though these events are randomly determined, they have dramatic effects on the lives of individuals and present a test for the politician. We find that the electorate is able to separate random events from governmental responses and attribute actions based on the defined roles of the governor and president. As voters encounter hurricanes, tornados, and other severe weather events, they look to these two politicians. Some will blame for the state of the world without regard for the roles of the politicians in shaping those outcomes. Despite some arbitrary sanctioning, we find that in the aggregate the electorate is attentive, and electoral outcomes are more contingent on the actions that politicians take when faced with an unexpected crisis.

References

- Arceneaux, Kevin. 2005. "Does Federalism Weaken Democratic Representation in the United States?" *Publius: The Journal of Federalism* 35(Jan.): 297–311.
- Arceneaux, Kevin. 2006. "The Federal Face of Voting: Are Elected Officials Held Accountable for the Functions Relevant to Their Office?" *Political Psychology* 27(Oct.): 731–54.
- Arceneaux, Kevin, and Robert Stein. 2006. "Who Is Held Responsible When Disaster Strikes? The Attribution of Responsibility for a Natural Disaster in an Urban Election." *Journal of Urban Affairs* 28(Jan.): 43–53.
- Arsenault, Mark. 2003. "The Station Nightclub Disaster: White House Rejects Appeal for Disaster Declaration." *Providence Journal-Bulletin* (April 24): A–01.
- Atkeson, Lonna Rae, and Randall W. Partin. 1995. "Economic and Referendum Voting: A Comparison of Gubernatorial and Senatorial Elections." *American Political Science Review* 89(March): 99–107.
- Barnhart, John D. 1925. "Rainfall and the Populist Party in Nebraska." *American Political Science Review* 19(Jan.): 527–40.
- Bartels, Larry M. 2008. *Unequal Democracy: The Political Economy of the New Gilded Age*. Princeton, NJ: Princeton University Press.
- Berry, John M. 1997. *Rising Tide: The Great Mississippi Flood of 1927*. New York: Simon & Schuster.
- Carsey, Thomas, and Gerald Wright. 1998. "State and National Factors in Gubernatorial and Senatorial Elections." *American Journal of Political Science* 42(Jul.): 994–1002.
- Chubb, John E. 1982. "Institutions, the Economy, and the Dynamics of State Elections." *American Political Science Review* 133(March): 133–54.
- Delli Carpini, Michael X., and Scott Keeter. 1996. *What Americans Know about Politics and Why It Matters*. New Haven, CT: Yale University Press.
- Duch, Raymond M., and Randolph T. Stevenson. 2008. *The Economic Vote*. Cambridge: Cambridge University Press.
- Ebeid, Michael, and Jonathan Rodden. 2006. "Economic Geography and Economic Voting: Evidence from the US States." *British Journal of Political Science* 36(Jan.): 527–47.
- Fiorina, Morris P. 1981. *Retrospective Voting in American National Elections*. New Haven, CT: Yale University Press.
- Hazards and Vulnerability Research Institute. 2010. "The Spatial Hazard Events and Losses Database for the United States, Version 8.0." Online database. Columbia: University of South Carolina. Available from <http://www.sheldus.org>.
- Healey, Mark Alan. 2002. "The Fragility of the Moment: Politics and Class in the Aftermath of the 1944 Argentine Earthquake." *International Labor and Working-Class History* 62(Jan.): 50–59.
- Healy, Andrew J., and Neil Malhotra. 2009. "Myopic Voters and Natural Disaster Policy." *American Political Science Review* 103(Jan.): 387–406.
- Jacobson, Gary C. 2007. *A Divider, Not a Uniter: George W. Bush and the American People*. New York: Longman.
- Key, V. O. 1966. *The Responsible Electorate: Rationality in Presidential Voting, 1936–1960*. Cambridge, MA: Belknap Press of Harvard University Press.
- Abney, F. Glenn, and Larry Hill. 1966. "Natural Disasters as a Political Variable: The Effect of a Hurricane on an Urban Election." *American Political Science Review* 60(Dec.): 974–81.
- Achen, Christopher H., and Larry M. Bartels. 2004. "Blind Retrospection: Electoral Responses to Drought, Flu, and Shark Attacks." Working paper. Princeton University.

- Kiewiet, D. Roderick, and Douglas Rivers. 1984. "A Retrospective on Retrospective Voting." *Political Behavior* 6(Jan.): 369–93.
- Kinder, Donald, and D. Roderick Kiewiet. 1981. "Sociotropic Politics: The American Case." *British Journal of Political Science* 11(Apr.): 129–61.
- Kramer, Gerald. 1971. "Short-Term Fluctuations in US Voting Behavior, 1896–1964." *American Political Science Review* 65(Jan.): 131–43.
- Kuklinski, James H., and Paul J. Quirk. 2000. *Elements of Political Reason*. Cambridge: Cambridge University Press.
- Levitt, Lisa. 1981. "California Battles Flies, Other States." *Associated Press* (July 21).
- Lupia, Arthur. 1994. "Shortcuts versus Encyclopedias: Information and Voting Behavior in California Insurance Reform Elections." *American Political Science Review* 88(Jan.): 63–76.
- Malhotra, Neil, and Alexander Kuo. 2008. "Attributing Blame: The Public's Response to Hurricane Katrina." *Journal of Politics* 70(Jan.): 120–35.
- Niemi, Richard G., Harold W. Stanley, and Ronald J. Vogel. 1995. "State Economies and State Taxes: Do Voters Hold Governors Accountable?" *American Journal of Political Science* 39(Jan.): 936–57.
- Page, Benjamin, and Robert Y. Shapiro. 1992. *The Rational Public: Fifty Years of Trends in Americans' Policy Preferences*. Chicago: University of Chicago Press.
- Patty, John W., and Roberto A. Weber. 2007. "Letting the Good Times Roll: A Theory of Voter Inference and Experimental Evidence." *Public Choice* 130(Jan.): 293–310.
- Peltzman, Sam. 1987. "Economic Conditions and Gubernatorial Elections." *American Economic Review* 77(2): 293–97.
- Powell G. Bingham, Jr., and G. Whitten. 1993. "A Cross-National Analysis of Economic Voting: Taking Account of the Political Context." *American Journal of Political Science* 32(Jan.): 391–414.
- Reeves, Andrew. 2010. "Political Disaster: Presidential Disaster Declarations and Electoral Politics." Working paper. Boston University.
- Sapochetti, Tony. 2008. "FEMA Denies Politics at Play in Rejection, Flood Victims Say Lack of Assistance 'Not Fair'." *The Pantagraph* (Feb 12).
- Schneider, Sandra. 1990. "FEMA, Federalism, Hugo, and Frisco." *Publius* 20(Jul.): 97–115.
- Stein, Robert. 1990. "Economic Voting for Governor and U.S. Senator: The Electoral Consequences of Federalism." *Journal of Politics* 52(Jan.): 29–53.
- Steinhauer, Jennifer. 2009. "Seeking a Hollywood Ending in Sacramento." *The New York Times* (May 6).
- Sylves, Richard, and Zoltán I. Búzás. 2007. "Presidential Disaster Declaration Decisions, 1953–2003: What Influences Odds of Approval." *State & Local Government Review* 39(Jan.): 3–15.
- Tufte, Edward R. 1978. *Political Control of the Economy*. Princeton, NJ: Princeton University Press.
- Wolfers, Justin. 2007. "Are Voters Rational? Evidence from Gubernatorial Elections." Working paper. University of Pennsylvania.
- Zaller, John. 1992. *The Nature and Origins of Mass Opinion*. New York: Cambridge University Press.

Supporting Information for ‘Make it Rain? Retrospection and the Attentive Electorate in the Context of Natural Disasters’

List of Tables

1	Effect of severe weather on incumbent gubernatorial vote share at the county-level. Cases where the president and governor are of different parties. Compared to the full model, effects are diminished for all substantively important variables. Year and county fixed effects.	3
2	Effect of severe weather on incumbent presidential vote share at the county-level. Cases where the President and Governor are of different parties Compared to the full model, effects are increased for all substantively important variables. Year and county fixed effects.	4
3	Effect of severe weather on incumbent gubernatorial vote share at the county-level. High support counties are those in which the governor received support in the upper quartile of support in the previous election. Low support counties are those where the governor received support in the lowest quartile in the previous election. Low support counties punish more and reward less than either the full model or high support counties. Year and county fixed effects.	5
4	Effect of severe weather on incumbent presidential vote share at the county-level. High support counties are those in which president (or his party) received support in the upper quartile of support in the previous election. Low support counties are those where president (or his party) received support in the lowest quartile in the previous election. Low support counties do not punish the president for weather damage or reward for declaration, and high support counties punish more for weather damage and less for a turn down. Year and county fixed effects.	6
5	Effect of severe weather on incumbent gubernatorial vote share at the county-level. Counties are classified based on the number of disaster declarations they received in the six months before the presidential election. Cases where counties receive multiple disaster declarations are infrequent and constitute about one percent of cases in our sample. Additional disaster declarations provide substantial rewards for governors. Year and county fixed effects.	7
6	Effect of severe weather on incumbent presidential vote share at the county-level. Counties are classified based on the number of disaster declarations they received in the six months before the presidential election. Cases where counties receive multiple disaster declarations are infrequent and constitute about one percent of cases in our sample. Additional disaster declarations yield no substantive effects. Year and county fixed effects.	8

7	Effect of severe weather on incumbent gubernatorial vote share at the county-level. We include interactions between the severity of weather damage and presidential disaster declarations and turndowns. Damage increases the electoral value of a disaster declaration and decreases the value of a disaster declaration turndown. Year and county fixed effects.	9
8	Effect of severe weather on incumbent presidential vote share at the county-level. We include interactions between the severity of weather damage and presidential disaster declarations and turndowns. Damage decreases the reward for a disaster declaration and increases the penalty for a turn down. County and year fixed effects.	10
9	Effect of severe weather on incumbent gubernatorial vote share at the county-level. During Presidential election years. The second column presents the model of presidential election years. For presidential election years, governors are penalized for disaster declarations. For non-presidential election years, the results are substantively similar. Year and county fixed effects.	11
10	Effect of severe weather on incumbent gubernatorial vote share at the county-level. Republican counties are those counties where the normal Republican vote for president is in the upper quartile. Democratic counties are those where the normal Republican vote for president is in the lowest quartile. In Republican counties the effects of weather damage and turndowns are not statistically significant. Republican counties reward the governor for disaster declarations at a slightly higher level than Democratic counties. Democratic counties punish for weather damage and reward for turndowns more than the full model. Year and county fixed effects.	12
11	Effect of severe weather on incumbent presidential vote share at the county-level. Republican counties are those counties where the normal Republican vote for president is in the upper quartile. Democratic counties are those where the normal Republican vote for president is in the lowest quartile.	13
12	Effect of severe weather on incumbent gubernatorial vote share at the county-level. Year and county fixed effects. Effects are measured for each of the largest types of disaster declarations.	14
13	Effect of severe weather on incumbent presidential vote share at the county-level. Effects are measured for each of the largest types of disaster declarations.	15
14	Effect of severe weather on incumbent gubernatorial vote share at the county-level. Year and county fixed effects. Damage, disaster declarations, and turndowns aggregate over 3, 6, and 12 months	16
15	Effect of severe weather on incumbent presidential vote share at the county-level. Damage, disaster declarations, and turndowns aggregate over 3, 6, and 12 months .	17
16	Effect of severe weather on unemployment rate. Year, county, and quarter fixed effects.	18
17	Effect of severe weather on unemployment rate. Year and county fixed effects. . . .	18
18	Effect of severe weather on incumbent gubernatorial vote share at the county-level. Year and county fixed effects.	19
19	Effect of severe weather on incumbent presidential vote share at the county-level. Year and county fixed effects.	20

Table 1: Effect of severe weather on incumbent gubernatorial vote share at the county-level. Cases where the president and governor are of different parties. Compared to the full model, effects are diminished for all substantively important variables. Year and county fixed effects.

	Model 1
Intercept	-0.995 (6.635)
President Vote (lagged)	0.287 (0.014)
Governor Vote (lagged)	0.562 (0.014)
Weather Damage	-0.026 (0.028)
Disaster Declarations (county)	2.083 (0.358)
Turn Downs (state)	0.165 (0.340)
Median Income (in 1,000s)	0.211 (0.041)
N	8323
R^2	0.711
adj. R^2	0.558
Resid. sd	9.156
Standard errors in parentheses	

Table 2: Effect of severe weather on incumbent presidential vote share at the county-level. Cases where the President and Governor are of different parties Compared to the full model, effects are increased for all substantively important variables. Year and county fixed effects.

	Model 1
Intercept	27.843 (3.521)
President Vote (lagged)	0.473 (0.006)
President Vote (twice lagged)	0.382 (0.006)
Weather Damage	-0.066 (0.012)
Disaster Declarations (county)	1.742 (0.175)
Turn Downs (state)	-1.411 (0.123)
Median Income (in 1,000s)	0.018 (0.017)
N	17964
R^2	0.814
adj. R^2	0.775
Resid. sd	6.979
Standard errors in parentheses	

Table 3: Effect of severe weather on incumbent gubernatorial vote share at the county-level. High support counties are those in which the governor received support in the upper quartile of support in the previous election. Low support counties are those where the governor received support in the lowest quartile in the previous election. Low support counties punish more and reward less than either the full model or high support counties. Year and county fixed effects.

	Low Support	High Support
Intercept	30.907 (11.519)	32.144 (6.702)
President Vote (lagged)	0.226 (0.032)	0.039 (0.025)
Governor Vote (lagged)	0.299 (0.037)	0.479 (0.036)
Weather Damage	-0.170 (0.055)	-0.083 (0.050)
Disaster Declarations (county)	2.836 (0.704)	3.744 (0.686)
Turn Downs (state)	1.096 (0.667)	1.507 (0.617)
Median Income (in 1,000s)	-0.358 (0.082)	0.014 (0.075)
N	3924	3926
R^2	0.683	0.654
adj. R^2	0.330	0.274
Resid. sd	11.118	10.264

Standard errors in parentheses

Table 4: Effect of severe weather on incumbent presidential vote share at the county-level. High support counties are those in which president (or his party) received support in the upper quartile of support in the previous election. Low support counties are those where president (or his party) received support in the lowest quartile in the previous election. Low support counties do not punish the president for weather damage or reward for declaration, and high support counties punish more for weather damage and less for a turn down. Year and county fixed effects.

	Low Support	High Support
Intercept	58.257 (3.090)	52.131 (3.288)
President Vote (lagged)	0.155 (0.016)	0.285 (0.021)
President Vote (twice lagged)	0.166 (0.008)	0.146 (0.013)
Weather Damage	-0.002 (0.017)	-0.045 (0.018)
Disaster Declarations (county)	-0.029 (0.231)	0.431 (0.265)
Turn Downs (state)	-0.756 (0.172)	-0.371 (0.203)
Median Income (in 1,000s)	-0.223 (0.021)	-0.086 (0.030)
N	7429	7423
R^2	0.905	0.847
adj. R^2	0.853	0.769
Resid. sd	5.083	5.707

Standard errors in parentheses

Table 5: Effect of severe weather on incumbent gubernatorial vote share at the county-level. Counties are classified based on the number of disaster declarations they received in the six months before the presidential election. Cases where counties receive multiple disaster declarations are infrequent and constitute about one percent of cases in our sample. Additional disaster declarations provide substantial rewards for governors. Year and county fixed effects.

	Model 1
Intercept	10.289 (4.984)
President Vote (lagged)	0.170 (0.008)
Governor Vote (lagged)	0.641 (0.010)
Weather Damage	-0.118 (0.021)
One Disaster Declaration (county)	0.866 (0.388)
More than one Declaration (county)	13.733 (0.749)
Turn Downs (state)	2.696 (0.243)
Median Income (in 1,000s)	-0.050 (0.030)
N	15580
R^2	0.531
adj. R^2	0.419
Resid. sd	10.935
Standard errors in parentheses	

Table 6: Effect of severe weather on incumbent presidential vote share at the county-level. Counties are classified based on the number of disaster declarations they received in the six months before the presidential election. Cases where counties receive multiple disaster declarations are infrequent and constitute about one percent of cases in our sample. Additional disaster declarations yield no substantive effects. Year and county fixed effects.

	Model 1
Intercept	25.310 (2.179)
President Vote (lagged)	0.552 (0.005)
President Vote (twice lagged)	0.344 (0.004)
Weather Damage	-0.026 (0.009)
One Disaster Declarations (county)	0.876 (0.140)
More than one disaster declaration	-0.074 (0.412)
Turn Downs (state)	-0.934 (0.089)
Median Income (in 1,000s)	0.021 (0.011)
N	29746
R^2	0.816
adj. R^2	0.794
Resid. sd	6.463
Standard errors in parentheses	

Table 7: Effect of severe weather on incumbent gubernatorial vote share at the county-level. We include interactions between the severity of weather damage and presidential disaster declarations and turndowns. Damage increases the electoral value of a disaster declaration and decreases the value of a disaster declaration turndown. Year and county fixed effects.

	Model 1
Intercept	11.545 (4.975)
President Vote (lagged)	0.169 (0.008)
Governor Vote (lagged)	0.633 (0.010)
Weather Damage	-0.038 (0.023)
Disaster Declarations (county)	3.026 (0.468)
Turn Downs (state)	5.816 (0.353)
Median Income (in 1,000s)	-0.083 (0.030)
Damage \times Declarations	0.093 (0.044)
Damage \times Turn downs	-0.525 (0.042)
N	15580
R^2	0.533
adj. R^2	0.421
Resid. sd	10.917
Standard errors in parentheses	

Table 8: Effect of severe weather on incumbent presidential vote share at the county-level. We include interactions between the severity of weather damage and presidential disaster declarations and turndowns. Damage decreases the reward for a disaster declaration and increases the penalty for a turn down. County and year fixed effects.

	Model 1
Intercept	25.293 (2.179)
President Vote (lagged)	0.553 (0.005)
President Vote (twice lagged)	0.344 (0.005)
Weather Damage	-0.006 (0.010)
Disaster Declarations (county)	1.218 (0.196)
Turn Downs (state)	-0.746 (0.121)
Median Income (in 1,000s)	0.021 (0.011)
Damage \times Declarations	-0.082 (0.018)
Damage \times Turn downs	-0.034 (0.016)
N	29746
R^2	0.816
adj. R^2	0.794
Resid. sd	6.463
Standard errors in parentheses	

Table 9: Effect of severe weather on incumbent gubernatorial vote share at the county-level. During Presidential election years. The second column presents the model of presidential election years. For presidential election years, governors are penalized for disaster declarations. For non-presidential election years, the results are substantively similar. Year and county fixed effects.

	Presidential Election Year	Non-Presidential Election Year
Intercept	43.798 (5.073)	9.467 (5.061)
President Vote (lagged)	0.005 (0.018)	0.220 (0.009)
Governor Vote (lagged)	0.655 (0.023)	0.618 (0.011)
Weather Damage	-0.232 (0.041)	-0.108 (0.024)
Disaster Declarations (county)	-1.978 (0.629)	5.158 (0.304)
Turn Downs (state)	3.302 (0.543)	2.296 (0.270)
Median Income (in 1,000s)	-0.437 (0.073)	-0.035 (0.033)
N	3090	12490
R^2	0.600	0.551
adj. R^2	0.401	0.442
Resid. sd	9.457	11.081

Standard errors in parentheses

Table 10: Effect of severe weather on incumbent gubernatorial vote share at the county-level. Republican counties are those counties where the normal Republican vote for president is in the upper quartile. Democratic counties are those where the normal Republican vote for president is in the lowest quartile. In Republican counties the effects of weather damage and turndowns are not statistically significant. Republican counties reward the governor for disaster declarations at a slightly higher level than Democratic counties. Democratic counties punish for weather damage and reward for turndowns more than the full model. Year and county fixed effects.

	Republican Counties	Democratic Counties
Intercept	22.160 (5.851)	6.490 (7.376)
President Vote (lagged)	0.208 (0.017)	0.063 (0.023)
Governor Vote (lagged)	0.457 (0.023)	0.707 (0.021)
Weather Damage	-0.069 (0.045)	-0.220 (0.043)
Disaster Declarations (county)	4.240 (0.615)	3.779 (0.537)
Turn Downs (state)	1.059 (0.554)	3.467 (0.547)
Median Income (in 1,000s)	-0.191 (0.069)	-0.030 (0.059)
N	3679	3951
R^2	0.697	0.719
adj. R^2	0.537	0.574
Resid. sd	10.743	10.182

Standard errors in parentheses

Table 11: Effect of severe weather on incumbent presidential vote share at the county-level. Republican counties are those counties where the normal Republican vote for president is in the upper quartile. Democratic counties are those where the normal Republican vote for president is in the lowest quartile.

	Republican Counties	Democratic Counties
Intercept	19.220 (2.628)	32.345 (6.302)
President Vote (lagged)	0.519 (0.011)	0.510 (0.013)
President Vote (twice lagged)	0.390 (0.010)	0.354 (0.013)
Weather Damage	0.007 (0.015)	-0.073 (0.018)
Disaster Declarations (county)	-0.772 (0.237)	1.492 (0.240)
Turn Downs (state)	-0.147 (0.161)	-1.885 (0.180)
Median Income (in 1,000s)	0.106 (0.021)	-0.025 (0.024)
N	7336	7445
R^2	0.941	0.791
adj. R^2	0.926	0.736
Resid. sd	5.441	6.237

Standard errors in parentheses

Table 12: Effect of severe weather on incumbent gubernatorial vote share at the county-level. Year and county fixed effects. Effects are measured for each of the largest types of disaster declarations.

	Model 1
Intercept	11.409 (5.042)
President Vote (lagged)	0.167 (0.008)
Governor Vote (lagged)	0.630 (0.010)
Weather Damage	-0.088 (0.021)
Storm Declarations (county)	0.738 (0.692)
Hurricane Declarations (county)	-2.704 (1.147)
Flood Declarations (county)	3.324 (0.570)
Tornado Declarations (county)	1.058 (2.734)
Turn Downs (state)	2.228 (0.244)
Median Income (in 1,000s)	-0.085 (0.030)
N	15580
R^2	0.520
adj. R^2	0.406
Resid. sd	11.063
Standard errors in parentheses	

Table 13: Effect of severe weather on incumbent presidential vote share at the county-level. Effects are measured for each of the largest types of disaster declarations.

	Model 1
Intercept	25.500 (2.179)
President Vote (lagged)	0.551 (0.005)
President Vote (twice lagged)	0.345 (0.005)
Weather Damage	-0.015 (0.009)
Storm Declarations (county)	1.086 (0.293)
Hurricane Declarations (county)	-0.873 (0.218)
Flood Declarations (county)	-0.089 (0.204)
Tornado Declarations (county)	0.990 (0.419)
Turn Downs (state)	-0.964 (0.089)
Median Income (in 1,000s)	0.019 (0.012)
N	29746
R^2	0.816
adj. R^2	0.794
Resid. sd	6.464
Standard errors in parentheses	

Table 14: Effect of severe weather on incumbent gubernatorial vote share at the county-level. Year and county fixed effects. Damage, disaster declarations, and turndowns aggregate over 3, 6, and 12 months

	Model 1	Model 2	Model 3
Intercept	11.219 (4.983)	11.214 (5.007)	10.615 (5.010)
President Vote (lagged)	0.164 (0.008)	0.168 (0.008)	0.168 (0.008)
Governor Vote (lagged)	0.642 (0.010)	0.637 (0.010)	0.630 (0.010)
Weather Damage (3mo)	-0.102 (0.024)		
Disaster Declarations (3mo)	5.116 (0.448)		
Turndowns (3mo)	6.928 (0.381)		
Median Income (in 1,000s)	-0.062 (0.030)	-0.075 (0.030)	-0.048 (0.030)
Weather Damage (6mo)		-0.132 (0.021)	
Disaster Declarations (6mo)		3.987 (0.275)	
Turndowns (6mo)		2.650 (0.244)	
Weather Damage (12mo)			-0.060 (0.022)
Disaster Declarations (12mo)			2.488 (0.223)
Turndowns (12mo)			2.039 (0.143)
N	15580	15580	15580
R^2	0.531	0.526	0.526
adj. R^2	0.419	0.414	0.413
Resid. sd	10.936	10.988	10.994

Standard errors in parentheses

Table 15: Effect of severe weather on incumbent presidential vote share at the county-level. Damage, disaster declarations, and turndowns aggregate over 3, 6, and 12 months

	Model 1	Model 2	Model 3
Intercept	25.442 (2.182)	25.360 (2.180)	24.841 (2.184)
President Vote (lagged)	0.555 (0.005)	0.552 (0.005)	0.555 (0.005)
President Vote (twice lagged)	0.342 (0.004)	0.344 (0.005)	0.340 (0.005)
Weather Damage (3mo)	-0.071 (0.010)		
Disaster Declarations (3mo)	-0.018 (0.153)		
Turndowns (3mo)	-0.497 (0.154)		
Median Income (in 1,000s)	0.018 (0.012)	0.020 (0.012)	0.016 (0.012)
Weather Damage (6mo)		-0.025 (0.009)	
Disaster Declarations (6mo)		0.518 (0.116)	
Turndowns (6mo)		-0.940 (0.089)	
Weather Damage (12mo)			0.055 (0.009)
Disaster Declarations (12mo)			0.322 (0.094)
Turndowns (12mo)			-0.031 (0.071)
N	29746	29746	29746
R^2	0.815	0.816	0.815
adj. R^2	0.793	0.794	0.793
Resid. sd	6.475	6.466	6.475

Standard errors in parentheses

Table 16: Effect of severe weather on unemployment rate. Year, county, and quarter fixed effects.

	Model 1
Intercept	0.456*
	(0.201)
Unemployment rate (lagged)	0.810*
	(0.002)
Weather Damage	0.0003
	(0.001)
Income per capita	-0.017*
	(0.002)
Percent Black	0.001
	(0.005)
Percent Seniors	0.747*
	(0.360)
Percent College Grads	0.024*
	(0.006)
N	80154
R^2	0.909
adj. R^2	0.906
Resid. sd	0.902
Standard errors in parentheses	
* indicates significance at $p < 0.05$	

Table 17: Effect of severe weather on unemployment rate. Year and county fixed effects.

	Model 1
Intercept	-0.130
	(0.158)
Per Capita Income (logged, lagged)	0.970*
	(0.001)
Weather Damage	-0.005*
	(0.001)
Percent Black	-0.001
	(0.002)
Percent Seniors	4.641*
	(0.191)
Percent College Grads	0.010*
	(0.002)
N	116022
R^2	0.989
adj. R^2	0.989
Resid. sd	0.926
Standard errors in parentheses	
* indicates significance at $p < 0.05$	

Table 18: Effect of severe weather on incumbent gubernatorial vote share at the county-level. Year and county fixed effects.

	Model 1	Model 2	Model 3
Intercept	-2.316	-3.296	-2.621
President Vote (lagged)	0.180 (0.008)	0.181 (0.008)	0.175 (0.008)
Governor Vote (lagged)	0.612 (0.010)	0.619 (0.010)	0.624 (0.010)
Weather Damage	-0.046 (0.020)	-0.099 (0.020)	-0.103 (0.020)
Median Income (in 1,000s)	-0.012 (0.031)	-0.001 (0.031)	-0.014 (0.031)
Percent Black	0.619 (0.065)	0.659 (0.064)	0.630 (0.064)
Percent with Bachelors	0.311 (0.081)	0.312 (0.080)	0.308 (0.080)
Percent over age 65	50.701 (6.656)	52.437 (6.607)	52.150 (6.581)
Turnout	-17.470 (1.833)	-17.349 (1.819)	-16.926 (1.813)
Disaster Declarations (county)		3.711 (0.269)	4.126 (0.271)
Turn Downs (state)			2.438 (0.242)
N	15555	15555	15555
R^2	0.528	0.535	0.538
adj. R^2	0.415	0.424	0.428
Resid. sd	10.976	10.895	10.851

Standard errors in parentheses

Table 19: Effect of severe weather on incumbent presidential vote share at the county-level. Year and county fixed effects.

	Model 1	Model 2	Model 3
Intercept	24.218 (2.323)	24.308 (2.322)	24.350 (2.317)
President Vote (lagged)	0.557 (0.005)	0.558 (0.005)	0.555 (0.005)
President Vote (twice lagged)	0.340 (0.005)	0.340 (0.005)	0.343 (0.005)
Weather Damage	-0.009 (0.008)	-0.018 (0.009)	-0.019 (0.009)
Median Income (in 1,000s)	0.037 (0.012)	0.038 (0.012)	0.043 (0.012)
Percent Black	0.213 (0.024)	0.211 (0.024)	0.207 (0.024)
Percent with Bachelors	0.167 (0.032)	0.167 (0.032)	0.163 (0.032)
Percent over age 65	3.885 (2.857)	3.646 (2.856)	3.864 (2.850)
Turnout	-13.468 (0.762)	-13.667 (0.763)	-13.597 (0.761)
Disaster Declarations (county)		0.624 (0.116)	0.617 (0.116)
Turn Downs (state)			-0.896 (0.088)
N	29218	29218	29218
R^2	0.817	0.817	0.818
adj. R^2	0.796	0.796	0.797
Resid. sd	6.444	6.440	6.428

Standard errors in parentheses