Does the Media Respond to Political Messaging? Evidence from Local Newspaper Coverage of Climate Change

Preliminary

Graham Beattie* and Andrew Meyer†

May 25, 2022

Abstract

Despite the scientific consensus around climate change, skepticism among the general public remains an obstacle for policy. Because the media is the primary channel of information dissemination, media coverage of climate change plays a crucial role in public perceptions. We investigate the agenda-setting power that state governors have over this coverage. Using a regression discontinuity analysis around narrow election victories, we find that having a Republican governor causes local newspapers to use a more skeptical tone when discussing climate change.

Keywords: climate change; belief formation; media bias; elections; public opinion

*Loyola Marymount University

†Marquette University

1 Introduction

There is a scientific consensus that anthropogenic climate change is real. However, many continue to believe that climate change is not real or not a concern (Funk and Kennedy, 2016). Given that public opinion plays an important role in determining the feasibility of climate mitigation policies, considerable attention has been paid in the economics, political science, sociology, psychology, and communications literature to how people form and act upon their beliefs about climate change. Two major sources of these beliefs are politics and the media.

It is well documented that in the US politically liberal voters and supporters of the Democratic party are more concerned about climate change than politically conservative voters and supporters of the Republican party (Egan and Mullin, 2017). This pattern is replicated around the world (Hornsey et al., 2016), which argues that this phenomenon is not simply a function of the peculiarities of American politics and that general inferences can be drawn from the American context. Shao (2017) finds that identifying as a Republican, a political conservative, and a supporter of the Tea Party political movement are the among the strongest predictors of skepticism of the scientific consensus about the existence, causes of, and impacts of climate change even after controlling for other factors that influence opinion such demographics, religiosity, and local weather patterns.

The political science literature attributes much of this polarization to politicians and political elites, as polarization among politicians precedes polarization among the general population. Bisgaard and Slothuus (2018) demonstrate that political partisans respond strongly to cues from the political elites. Environmental issues and climate change in particular do not appear to be an exception to this phenomenon. Significant differences between Democratic and Republican legislators' voting behavior on environmental issues began emerging in the early 1970's (Shipan and Lowry, 2001). However, this was this was not reflected in public opinion until the 1990's (McCright et al., 2014). Guber (2013) shows that this polarization is larger among those who are more politically active and are more aware of cues from

politicians, hinting at a causal relationship between politicians and partisan beliefs about climate change.

If political elites are able to shape popular opinions about climate change, then politicians who achieve more prominence should have a larger impact on opinion. Meyer (2019) tests this proposition by showing that political leaders affect climate change beliefs of their constituents; the election of a Republican governor significantly decreases the probability of a Republican constituent believing in climate change relative to the election of a Democratic governor. This effect is particularly pronounced for constituents who share a party identification with the governor.

This paper attempts to identify the mechanism by which politicians affect public opinion about climate change. If it is purely a function of political tribalism, we would expect that people would seek out signals from political leaders they support and ignore signals from political leaders they do not. Democratic or liberal voters would be affected by the statements of the most prominent Democratic politicians, independent of the electoral success of those politicians. Another possibility is that politicians who care more about the environment pass more environmental legislation, and thus push environmental issues into the front of the minds of their constituents. Lastly, it is possible that successful politicians are able to influence public opinion through having agenda-setting influence over media coverage. Given that the primary source about climate change for most people is the media (Leiserowitz et al., 2010) and that it is well documented that media coverage can influence public opinion (DellaVigna and Kaplan, 2007; Gerber et al., 2009; Chiang and Knight, 2011), influence over media coverage should lead to an influence over public opinion.

It is this last hypothesis – that elected officials have an influence over media coverage of climate change – that this paper investigates. We use a regression discontinuity design using close gubernatorial elections where the outcome of interest is the tone of coverage in local newspapers. This empirical strategy addresses the obvious endogeneity problems that would arise from simply comparing media coverage in Democratic and Republican states – states

with a more Democratic electorate are more likely to elect a Democratic governor and have media coverage that appeals to more liberal or Democratic sensibilities about climate change. Instead we analyze whether narrow Republican gubernatorial victories lead to significantly different coverage than narrow Democratic victories. The underlying political preferences of the population are very similar between these narrow victories, but the electoral outcome is very different. Therefore this represents an ideal experiment to study the effect of governors on media coverage.

Our measure of tone of coverage about climate change is based on Beattie (2020) and Beattie (2021), which develop a method to measure tone based on frequency of phrase usage and comparisons to known pro-environmental and skeptical tests. Articles which more closely match the language of known pro-environmental texts are classified as pro-environmental, while articles that more closely match the tone of known skeptical texts are classified as skeptical. We apply this textual analysis algorithm to a searchable database (Newslibrary), containing archives from thousands of US newspapers over the period 2000-2019 to assemble a large novel panel data set on coverage of climate change. We then match newspaper articles to zip codes using circulation data to create a geographical measure of each article's influence.

We find that the results of gubernatorial elections matter. Our baseline results show that the close election of a Republican governor increases the probability an article about climate change is skeptical by 6 percentage points, relative to the counterfactual of a close Democratic victory. The main relationship appears to be driven by both a reduction in the pro-environmental content of coverage and an increase in skeptical content. We also find evidence that this effect is not simply driven by coverage of the governor, suggesting that governors have a broader agenda setting power.

The relationship between electoral outcomes and media coverage of climate change has significant implications because prior research shows that media coverage affects behavior. Markets and political institutions can only work efficiently if individuals' beliefs are accurate.

Climate change will impose substantial economic costs on society if we continue our current trajectory of greenhouse gas emissions (Auffhammer, 2018). We stand a lower chance of passing climate change policy to mitigate climate damages if public opinion remains skeptical. Our results show that aside from affecting climate outcomes through mitigation policies, political leaders can also influence public opinion through media coverage and thus effect the political viability of future policy solutions.

2 Background and related literature

This paper makes contributions in multiple areas that have received considerable attention in the literature: the influence of politicians, in particular governors, on environmental beliefs; the influence of politicians on media coverage; and the determinants of media coverage of climate change.

As discussed in the introduction, there is a considerable amount of evidence that politicians play a role in forming the beliefs of their constituents. However, this literature is fairly silent on the mechanism through which this influence exists – it is just assumed that partisans respond to signals sent by political elites. By providing evidence that media coverage is one of the primary channels through which these signals, this paper contributes to the understanding of the influence of politicians on environmental attitudes. In particular, by highlighting the importance of media coverage to the relationship between politicians and voters in this area it allows for a more careful analysis of when this relationship may be stronger and how it might evolve.

Previous literature has documented politicians' influence over media coverage. Media outlets may collude with politicians to present favorable coverage, because of bribes (Besley and Prat, 2006), the politicians ability to put in place favorable policies (Szeidl and Szucs, 2021), editorial policies imposed by governments (Gehlbach and Sonin, 2014), or in order to secure access in future periods (Ozerturk, 2020). Even if media capture of this form does not

exist, politicians may influence coverage simply by using the "bully pulpit" to direct media attention towards issues or framing more favorable to them (Puglisi, 2004; Miles, 2014).

The influence of politicians over media coverage has also been documented empirically. Di Tella and Franceschelli (2011) test a version of this type of model in the Argentinian context by demonstrating that newspaper coverage of political scandals is more favorable in newspapers where the political party subject to the scandal advertises more. McMillan and Zoido (2004) and Qin et al. (2018) provide evidence of more direct media capture in more authoritarian states in Peru and China, respectively. Durante and Knight (2012) find that the tone of coverage of Italian public broadcasters is affected by the party which is in power and thus controls the public broadcasters.

Even absent any causal relationship between politicians and media, coverage may be affected by which politicians are in power. Media coverage may be influenced by the audience preferences (Gentzkow and Shapiro, 2010), advertisers (Beattie et al., 2021), or journalists (Baron, 2006). These interests may have different influences on coverage depending on who is in power. For example, Larcinese et al. (2011) show that the amount of coverage negative economic news receives depends on whether the party a media outlet generally supports is in power and Puglisi and Snyder (2011) show a similar result for political scandals.

The context studied in this paper is distinct from much of the previous literature about the relationship between politicians and the media. Instead of identifying evidence of corruption or media capture or analyzing the interaction between partisan media outlets and politicians, we look at how the overall media landscape is affected by politicians. When a politician is elected governor we expect that their speeches are covered more, they are a sought after interview subject, their policy priorities are more relevant, and they have a greater ability to affect the tone of public discourse. We find evidence of this use of the 'bully pulpit' and document how it affects media coverage.

Previous papers that examine for this relationship do not identify a significant effect. Gentzkow and Shapiro (2010), who identify a relationship between consumer preferences

and the political slant of newspaper coverage, do not find a significant relationship between gubernatorial party and slant after controlling for consumer ideology. Gentzkow et al. (2015) analyze the period from 1869-1928, when newspapers were more explicitly partisan, and find that gubernatorial party has no effect on the relative circulation of partisan newspapers or their tone of coverage, as measured by the number of mentions of political candidates.

Media coverage of climate change has often been criticized for providing too much space to climate change skepticism (Boykoff and Boykoff, 2004, 2007; Boykoff, 2011). Shapiro (2016) presents a model where journalistic norms for balance create incentives for media to cover all sides of an issue to increase credibility. In the case of issues like climate change, where skeptical scientists are a small minority (Anderegg et al., 2010), providing attention to climate skepticism as an alternative viewpoint is likely to elevate it beyond its role in the scientific literature. Further, if media coverage provides a considerable amount of attention to climate skepticism, there is scope for this amount to be influenced by factors like advertising from carbon emitting industries (Beattie, 2020) or, in the case of this paper, elected politicians.

3 Data

For our empirical analysis, we combine data on gubernatorial election results with data on local newspaper coverage. The election data is taken from Leip's Atlas of US Presidential Elections.

We include both regular and special elections from all 50 states between 2000 and 2019. Regular gubernatorial elections are held every 4 years (except in the case of Vermont and New Hampshire which are every two years), but the years are staggered across states. 11 states hold their elections simultaneously with presidential elections (every 4 years including 2000, 2004, etc.), 2 states hold their elections 1 year after presidential elections, 36 states hold their elections 2 years after presidential elections,[1] and 3 states hold their elections 3

[1]New Hampshire and Vermont have gubernatorial elections simultaneously with both presidential elections and two years afterward

years after presidential elections. In every state except Louisiana, gubernatorial elections are held on the first Tuesday of November.[2] If a governor does not complete their full term, a state constitution can specify someone from the line of succession to complete their term or call for a special election. A special election can also occur based on an attempt to recall a governor. During the time period of our dataset, there were 3 special elections (Utah in 2010, West Virginia in 2011, and Oregon in 2016) and 2 recall elections (California in 2003 and Wisconsin in 2012).

For each of the elections in our dataset, we collect data on the vote share for both of the major parties. We combine this with a dataset we create measuring both the quantity and tone of media coverage of climate change in local newspapers in each state.

We use the news aggregator Newslibrary as the source for our newspaper coverage data. Newslibrary is a searchable archive of almost 1000 local newspapers in the US that allows us to extract the bibliographic information from all articles that satisfy a given search criteria. The quantity of coverage data is simply a count of all the articles that include the phrase "climate change".

The quantity of articles that mention climate change misses an important component of coverage. Each of these articles could be written in a pro-environmental tone that draws attention and concern towards climate change, but they could also be written in a tone that is skeptical of climate change and discourages or downplays concern or action. Grouping both of these types of articles together is a source of measurement error, particularly since skeptical articles can reasonably be construed as serving the opposite purpose as pro-environmental articles.

To address this issue, we construct a measure of the tone of coverage about climate change, based on a measure developed in Beattie (2020) and Beattie (2021) which in turn are based on Gentzkow and Shapiro (2010). This measure uses a bag-of-words model of text, which assumes authors discussing a similar topic from a similar perspective will use many

[2]Louisiana holds its election in late October and holds a runoff (if necessary) in late November.

of the same words and phrases. Specifically, in a bag-of-words model authors draw words or phrases from a distribution specific to the topic and perspective the author is using. Texts with unknown perspective can be classified by comparing their language use to the language use in different texts with known perspective. If the text with unknown perspective shares more in common with one known text over others, it is more likely to be written using this perspective.

To implement this model in our context, we begin by finding two-word phrases that are particularly indicative of the pro-environmental or skeptical perspectives about climate change by comparing texts that are known to be pro-environmental or skeptical.[3]

The pro-environmental texts are the 2007 Intergovernmental Panel on Climate Change (IPCC) report (Pachauri and Reisinger, 2007; Solomon et al., 2007; Parry et al., 2007; Metz et al., 2007) and James Hansen's book *Storms of My Grandchildren: The Truth About the Coming Climate Catastrophe and Our Last Chance to Save Humanity* (Hansen, 2010). The IPCC report is a United Nations panel that attempts to assemble reports on the state of consensus climate science. We use the 2007 report since it is closest to the midpoint of our analysis period. Hansen's book represents a particularly concerned perspective on climate change aimed at a general audience.

The skeptical texts are the 2009 Nongovernmental International Panel on Climate Change (NIPCC) report (Singer and Idso, 2009) and Roy Spencer's book *The Great Global Warming Blunder: How Mother Nature Fooled the World's Top Scientists* (Spencer, 2012). The NIPCC reports are designed to be a skeptical response to the IPCC reports and Spencer's book is written to present the skeptical perspective to a general audience.

In order to focus on meaningful words and phrases, the texts are stemmed by removing morphemes that indicate plural nouns or verb tenses, so that a set of words such as 'change', 'changes', 'changing', and 'changed' are treated as different instances of a single word. In

[3]Choosing the length of phrases involves a trade-off. Longer phrases are more meaningful, but are rarer and thus create a more sparse dataset. Previous work using these techniques tend to find that a phrase length of two or three words is optimal.

addition we remove stop-words, which are short words such as articles and prepositions.

Next, the texts are split into a pair of scientific texts (the IPCC and NIPCC reports) and a pair of books for a general audience (the Hansen and Spencer books). For each two word phrase, we calculate a Pearson's chi-squared statistic for each pair of texts using the following formula.

$$\chi_p^2 = \frac{(f_{pe} + f_{ps} + f_{\sim pe} + f_{\sim ps}) * (f_{pe} f_{\sim ps} - f_{ps} f_{\sim pe})^2}{(f_{pe} + f_{ps}) * (f_{pe} + f_{\sim pe}) * (f_{ps} + f_{\sim ps}) * (f_{\sim pe} + f_{\sim ps})}$$

where f_{pe} and f_{ps} are the number of occurrences of phrase p in the pro-environmental text and the skeptical text respectively, and $f_{\sim pe}$ and $f_{\sim ps}$ are the number of concurrences of all other phrases in each text. This statistic measures whether the frequency of the phrase is significantly different in the two texts.

Phrases that occur with a significantly different frequency at the 95% level in both pairs of texts are classified as indicative of either the pro-environmental or skeptical phrases. Focusing on these indicative phrases has multiple advantages. First, it ignores phrases that are used with a similarly high frequency in all texts. These phrases are likely to be either everyday common phrases or phrases that are used to discuss climate change in any context and thus would have limited value for classifying the tone of texts. Second, because the Newslibrary is a searchable database and we do not have the full text of the newspaper articles, we need to identify a reasonably sized set of search terms. Finally, by selecting only phrases that are significantly different in both pairs of texts we reduce noise, ensure we are identifying phrases that are indicative in texts with different levels of scientific rigor, and ensure we are not identifying phrases that are simply a function of a particular authorial or editorial style.

Table 1 contains a list of the phrases with the highest Pearson's chi-squared values for each perspective. The pro-environmental phrases consist of phrases used to discuss the causes of (fossil fuel, carbon emission, air pollution, carbon cycle), consequences of (sea

level, level rise, climate sensitivity), and solutions to (emission reduction, energy efficiency, renewable energy, Kyoto protocol) climate change. The skeptical phrases are used in common arguments against climate change, such as historical temperature fluctuations (little ice (age), medieval warm, warm period, tree ring), uncertainty in modeling, (computer model, negative feedback), and the hockey stick controversy (hockey stick).[4]

Table 1: Indicative phrases

Most pro-environmental phrases	Most skeptical phrases
develop country	dioxide concentration
sea level	twentieth century
level rise	little ice
emission reduction	warm period
fossil fuel	dioxide content
energy efficiency	medieval warm
climate sensitivity	tree ring
renewable energy	extra carbon
carbon cycle	computer model
kyoto protocol	during twentieth
carbon emission	hockey stick
air pollution	negative feedback

The next stage of constructing measures of tone of coverage is to search the Newslibrary database for newspaper articles written between 2000 and 2019 that contain the phrase "climate change" along with one or more of the indicative phrases. This database contains the bibliographic information for all articles that satisfy given search parameters for a set of approximately 1000 local newspapers. The text classification model assumes that the more pro-environmental phrases that an article contains, the more likely it is to be written from a pro-environmental perspective, and the more skeptical phrases an article contains, the more likely it is to be written from a skeptical perspective.

We use this method to create two primary measures of tone for our dependent variable.

[4]The hockey stick controversy refers to a graph produced in Mann et al. (1998, 1999) and reproduced in many places that shows global temperatures following a hockey stick shape – increasing rapidly after a long period of stability. The assumptions used to construct historical temperature patterns were a subject of considerable controversy.

$Skept_{Extensive}$ and $Skept_{Intensive}$. Both these measures are evaluated at the article level. $Skept_{Extensive}$ is a dichotomous variable that measures whether or not an article is more likely to use a skeptical tone than a pro-environmental tone. $Skept_{Extensive}$ takes a value of 1 if there are more skeptical phrases than pro-environmental phrases in an article. $Skept_{Intensive}$ is a continuous variable that measures the intensive margin of skepticism. $Skept_{Intensive}$ measures the share of all indicative phrases that are skeptical, so a value of 0 indicates an article that contains 1 or more pro-environmental phrases and no skeptical phrases, a value of 0.5 indicates that an article uses an equal number of pro-environmental and skeptical phrases, and a value of 1 indicates an article that contains 1 or more skeptical phrases and no pro-environmental phrases.

Since gubernatorial election data is at the state level, it is useful to aggregate this article level data to the state level measure of coverage that takes into account the relative size and influence of different newspapers. To do this, we use 2009 zip code level newspaper circulation data purchased from the Alliance for Audited Media. We collapse the article-level dependent variables to the state-year level, weighting each article by the circulation of the newspaper in which it appeared. Therefore, at the state-year level, $Skept_{Extensive}$ captures the percentage of all circulation-weighted articles that have a skeptical tone and $Skept_{Intensive}$ measures the overall intensity of circulation-weighted skeptical tone.

Table 2 describes our two key dependent variables and the percentage of state-year observations in which a Republican governor is in power. Panel A includes all observations with a Republican or Democratic governor and Panel B includes only observations from close elections.[5] Focusing on the close election sample, slightly more than one-third of state-years experience skeptical tone. Additionally, the average overall intensity of climate skepticism is 0.43. This indicates that, on average, newspaper articles in our close election sample use slightly more pro-environmental phrases than skeptical phrases. Republicans win approximately 50 percent of close gubernatorial elections in our sample.

[5]We define close election using the optimal bandwidth for our baseline specification for the outcome of $Skept_{Extensive}$. This corresponds to column 1 of Table 5.

Table 2: Summary statistics for primary analysis samples

	Mean	SD	Min	Max
Panel A. All Elections				
Extensive skepticism	0.363	0.110	0.0004	0.996
Intensive skepticism	0.436	0.097	0.0004	0.996
Republican governor	0.562	0.496	0	1
Observations		982		
Panel B. Only Close Elections				
Extensive skepticism	0.356	0.107	0.0004	0.995
Intensive skepticism	0.430	0.094	0.0004	0.995
Republican governor	0.496	0.501	0	1
Observations		448		

Notes: Summary statistics are at the state-year level. Panel A includes all observations with a Republican or Democratic governor and Panel B includes only observations from close elections (optimal bandwidth for $Skept_{Extensive}$ of 10.353). All state-year level observations on $Skept_{Extensive}$ and $Skept_{Intensive}$ are the circulation-weighted averages of article-level observations.

4 Empirical strategy

In this section, we describe our empirical framework to estimate the impact of the governor's political party on the tone of newspaper coverage of climate change. Unobserved state level characteristics likely correlate with gubernatorial partisan affiliation and our outcomes of interest. For example, newspapers in states with more conservative political ideologies may be more likely to publish skeptical articles about climate change and these same states are also more likely to elect Republican governors. A naïve OLS regression of climate change tone on the governor's partisan affiliation would therefore likely suffer from omitted variables bias. Consequently, we use a regression discontinuity (RD) design to identify the effects of the governor's partisan affiliation on the tone of climate change coverage. The close election RD design originates with Lee (2001) and Lee (2008) and is now widely applied in the economics and political science literatures.[6]

In our RD design, gubernatorial election vote margin is the running variable that deter-

[6]Examples of studies applying the RD design to close gubernatorial elections include Beland (2015), Beland and Boucher (2015), Beland and Oloomi (2017), Beland and Unel (2018), Hill and Jones (2017), Keita and Mandon (2018), Leigh (2008), and Meyer (2019).

mines treatment status. We define the Republican vote margin in state s in year t as M_{st}, so that the RD threshold occurs at $M_{st} = 0$, a positive value indicates a Republican candidate won the election, and a negative value indicates a Democratic candidate won the election. Our baseline RD estimator with linear controls is:[7] :

$$Y_{st} = \alpha + \beta * R_{st} + \gamma * M_{st} + \delta * R_{st} * M_{st} + \phi X_{st} + \mu_t + \pi_s + \epsilon_{st} \quad (1)$$

where Y_{st} is the outcome of interest, R_{st} is an indicator for a Republican winning the gubernatorial election, M_{st} is the vote margin in favor of the Republican candidate, μ_t are year fixed effects, and π_s are state fixed effects. X_{st} includes covariates for state s during year t. In the baseline specification, we use a uniform kernel, which equally weights all observations within the bandwidth. To demonstrate the stability of the results, we also present specifications that 1) use a triangular kernel to weight more heavily the observations near the RD threshold and 2) use local quadratic, rather than local linear controls.

The main parameter of interest is β, which is the RD treatment effect. The RD treatment effect is the difference between the expected outcome given a Republican gubernatorial win (treated group) and the expected outcome given a Democratic gubernatorial win (control group) at the RD threshold. There are no observations falling exactly at the RD threshold, so local linear RD instead relies on linear regressions using observations close to the RD threshold. Thus, our estimate of β is a local estimate of the causal effect of a Republican gubernatorial victory, relative to a counterfactual Democratic gubernatorial victory. Because polynomial methods use only data near the RD threshold, one must select the estimation bandwidth – the maximum margin of victory for an election to be included in the analysis. In general, there is a tradeoff between smoothing bias of the local polynomial approximation and the variance of the estimated RD coefficient. An optimal bandwidth calculation formalizes this tradeoff. We use the optimal bandwidth calculations proposed in Calonico et al. (2019),

[7] Our baseline analysis is at the state-year level, consistent with variation in election data. In an online appendix, we replicate our main specifications where we instead conduct all analysis at the paper-state-year level.

which minimizes the mean squared error of the local polynomial point estimator.[8] This bandwidth selector allows for the inclusion of baseline covariates such as year fixed effects and facilitates clustering at the state level.[9] We refer to the estimates from the Calonico et al. (2019) optimal bandwidth as our baseline estimates, but also show results from other bandwidths to demonstrate the stability of the results.

5 Results

5.1 Graphical evidence

We begin by providing RD plots to visualize the magnitudes of discontinuities in our outcomes. For both outcomes, $Skept_{Extensive}$ and $Skept_{Intensive}$, we use the MSE optimal bandwidths from Calonico et al. (2019) to select the observations for the plots.[10] To best visualize the RD estimates from our primary specification (equation (1)), we include year and state fixed effects as covariates, and use a uniform kernel, a linear regression fit, and the IMSE-optimal number of bins. Figures 1 and 2 present the RD plots.

We begin with Figure 1, which presents an RD plot for the percentage of skeptical articles. This figure plots binned averages of $Skept_{Extensive}$ within narrow margins of victory. Each bin to the left of 0 represents averages from a Democratic victory and each bin to the right of 0 represents averages from a Republican victory. As shown in Figure 1, there appears to be a discontinuous increase in the probability of a skeptical article as we cross the RD threshold. The vertical difference between the linear regression fits at 0 visually represents the RD treatment effect. Relative to the counterfactual of a close Democratic gubernatorial election victory, a close Republican gubernatorial election victory increases the probability

[8] The mean squared error of the local polynomial point estimator is the sum of its squared bias and variance. Other optimal bandwidth calculations include Imbens and Kalyanaraman (2012) and Calonico et al. (2014)

[9] We provide power calculations for our RD design in an online appendix.

[10] The MSE optimal bandwidth is the default option in the Calonico et al. (2019) rdbwselect command. We include year fixed effects as covariates for the bandwidth calculations.

Figure 1: RD plot for percentage of skeptical articles (extensive outcome)

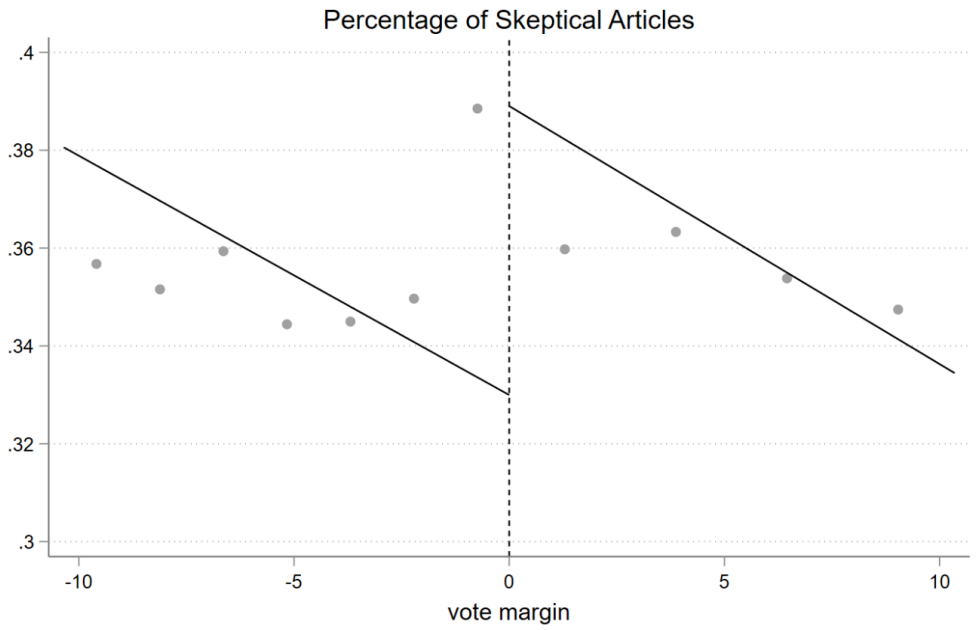
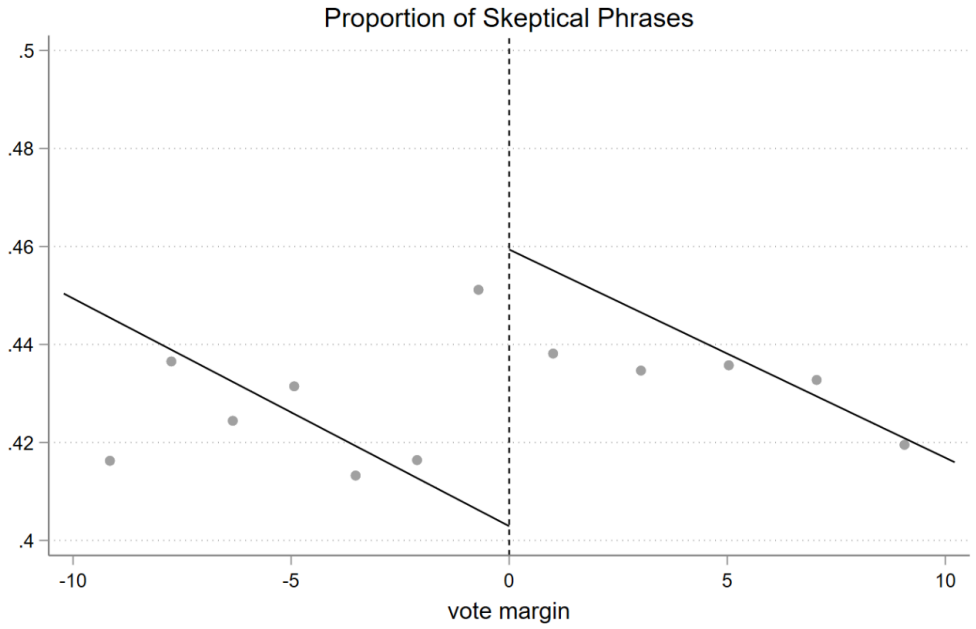


Figure 2: RD plot for proportion of skeptical phrases (intensive outcome)



of a skeptical article by around 6 percentage points. Figure 2 shows an analogous RD plot for the proportion of skeptical phrases, and hence plots binned averages of $Skept_{Intensive}$. Once

again, we see a discontinuous increase in the skeptical tone of climate change articles as we move from a close Democratic gubernatorial victory to a close Republican gubernatorial victory. A close Republican win appears to increase the proportion of skeptical phrases by around 5.5 percentage points, relative to a counterfactual close Democratic win. Lastly, we note that linear regressions fit the binned averages reasonably well in both Figures 1 and 2. The only noticeable outliers appear in the first bin to the left of 0, which represents very close Democratic victories. These outliers serve to decrease the magnitude of the estimated RD treatment effect. If not for the outliers, the estimated effect of a Republican gubernatorial win would be larger.

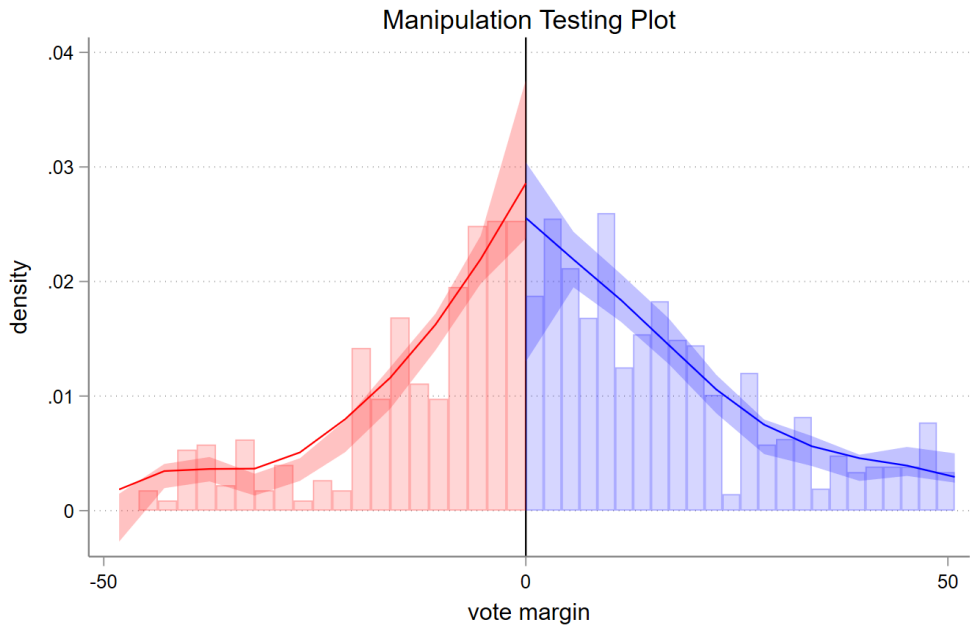
5.2 Validity tests

Next, as recommended in the literature, we conduct several classes of RD validity tests. First, we examine the distribution of vote margin to test for possible manipulation in the running variable. We then conduct falsification tests where we test for treatment effects on predetermined covariates and placebo outcomes.

5.2.1 Density of vote margin

First introduced by McCrary (2008) in the context of RD designs, manipulation testing formally tests for evidence of a discontinuous density at the RD threshold. A discontinuous density in the running variable can suggest nonrandom sorting into treatment, so the literature suggests manipulation testing as an important RD design falsification test. In the context of close elections, discontinuous density could suggest that one party can better organize and influence vote totals for close gubernatorial elections. We use the manipulation test of Cattaneo et al. (2020), which are based on a local polynomial density estimator. As seen in Figure 3, we do not find evidence of a discontinuity in vote margin at the RD threshold.

Figure 3: RD density plot



5.2.2 Treatment effect on predetermined covariates and placebo outcomes

Next, we conduct falsification tests on variables that are determined prior to the gubernatorial election (predetermined covariates), and on variables that are determined after the gubernatorial election but unlikely to be affected by the RD treatment (placebo outcomes). Our main identifying assumption for the RD design is that the potential outcome functions for climate skeptical newspaper coverage are continuous at the RD threshold. Evidence of discontinuities in predetermined covariates or placebo outcomes at the threshold could suggest that the potential outcome functions are also discontinuous at the threshold. Therefore, as recommended by Cattaneo et al. (2019), we separately estimate our RD specification on each predetermined covariate and placebo outcome, each time using a new optimal bandwidth for the specific outcome.

We first test for a treatment effect of a close Republican win in year t on demographic variables in year $t-4$. We separately estimate equation (1) for the following lagged state-year

level demographic variables: unemployment rate, poverty rate, and income per capita.[11] We also test for persistence in gubernatorial election outcomes with an outcome variable that is a 4 year lagged indicator for a Republican governor.[12] Table 3 shows RD results for each of the predetermined covariates. We do not find evidence that a close Republican gubernatorial victory has an effect on any of the lagged demographic variables nor on the probability of a Republican winning the previous gubernatorial election.

Table 3: RD regression results for predetermined covariates

	(1) Unemployment Rate$_{t-4}$	(2) Poverty Rate$_{t-4}$	(3) Income per Capita$_{t-4}$	(4) Republican Governor$_{t-4}$
Republican Governor	0.212	0.519	0.102	-0.189
	(0.473)	(0.750)	(0.655)	(0.244)
State FE	YES	YES	YES	YES
Year FE	YES	YES	YES	YES
Bandwidth	10.54	8.512	10.888	7.223
No. of Clusters	44	40	44	39
Observations	364	302	365	315

Notes: Each column represents a separate estimation of equation 1.
Each column uses a uniform kernel and linear polynomial controls.
Standard errors clustered by state are shown in parentheses.
*** p<0.01, ** p<0.05, * p<0.1

We next test for discontinuities in variables that are determined after the gubernatorial election but unlikely to be affected by a close Republican win. We use the following placebo outcomes: Republican majority in the state senate, Republican majority in the state house of representatives, Republican majority in the state's US senate delegation, and Republican majority in the state's US house delegation.[13] Table 4 shows RD results for each of the placebo outcomes. In each case, we fail to reject the null that a close Republican win has

[11] We obtain data for these demographic variables from the University of Kentucky Center for Poverty Research National Welfare Data (https://ukcpr.org/resources/national-welfare-data).

[12] We use the 2 year lagged values for each predetermined covariate for New Hampshire and Vermont since these states have 2 year gubernatorial terms.

[13] We gather data for Republican majority in the state's US senate delegation and Republican majority in the state's US house delegation from the Biographical Directory of the United States Congress (https://bioguide.congress.gov/) and from the US Census Bureau's 2010 Statistical Abstract of the United States.

no discontinuous effect on the placebo outcome. Moreover, most of the point estimates on the RD treatment effects for the placebo outcomes are small in magnitude. Overall, these falsification tests therefore give support to the validity of the RD design.

Table 4: RD regression results for placebo outcomes

	(1) State Senate Rep. Maj.	(2) State House Rep. Maj.	(3) US Senate Delegation Rep. Maj.	(4) US House Delegation Rep. Maj.
Republican Governor	-0.0472	0.278	-0.0424	0.0204
	(0.119)	(0.188)	(0.152)	(0.109)
State FE	YES	YES	YES	YES
Year FE	YES	YES	YES	YES
Bandwidth	9.507	9.095	8.627	9.898
No. of Clusters	44	43	42	45
Observations	404	400	378	425

Notes: Each column represents a separate estimation of equation 1.
Each column uses a uniform kernel and linear polynomial controls.
Standard errors clustered by state are shown in parentheses.
*** p<0.01, ** p<0.05, * p<0.1

5.3 Main results

Table 5 tabulates our baseline RD results. In column (1), we see that a close Republican gubernatorial win increases the probability of a skeptical article by approximately 5.9 percentage points, relative to the counterfactual of a close Democratic gubernatorial win. Furthermore, the estimated effect is stable across the alternative specifications in columns (2) and (3). Column (2) uses a triangular kernel in place of the baseline uniform kernel and column (3) uses local quadratic controls in place of the baseline linear controls.[14]

Next, in column (4), we estimate that a close Republican win increases the proportion of skeptical phrases relative to pro-environmental phrases in articles mentioning climate change by approximately 5.7 percentage points. Once again, the results remain stable for alternative

[14]In section 5.5, we also show that results are stable across alternative bandwidths.

specifications with a triangular kernel (column (5)) and with local quadratic controls (column (6)).

Table 5: Baseline gubernatorial RD regression results

	(1)	(2)	(3)	(4)	(5)	(6)
	Extensive skepticism			Intensive skepticism		
Republican Governor	0.0591**	0.0553**	0.0544*	0.0565**	0.0574**	0.0650**
	(0.0274)	(0.0264)	(0.0301)	(0.0279)	(0.0268)	(0.0304)
State FE	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES
Kernel	Uniform	Triangular	Uniform	Uniform	Triangular	Uniform
Polynomial	Linear	Linear	Quadratic	Linear	Linear	Quadratic
Bandwidth	10.353	12.183	15.248	10.215	12.458	15.371
No. of Clusters	46	46	50	46	46	50
Observations	446	479	594	439	495	594

Notes: Standard errors clustered by state are shown in parentheses.
*** p<0.01, ** p<0.05, * p<0.1

5.4 Heterogeneity

In this section, we use the same regression discontinuity framework to further analyze the relationship between governors and the tone of media coverage of climate change.

The measures of tone of coverage we use in the baseline results are a function of both usage of skeptical language and usage of pro-environmental language. The shift in tone towards skepticism that occurs when a Republican governor is elected could be because newspapers use more skeptical language, less pro-environmental language or both. Columns (1) and (2) of Table 6 separate these by using the number of skeptical phrases and the number of pro-environmental phrases per article as dependent variables. There is more solid evidence for an increase in the use of skeptical language when a Republican governor is elected than there is for a decrease in the use of pro-environmental language.

One explanation for the relationship between election results and media coverage is that language use by governors creates a fairly mechanical relationship. Newspapers cover

Table 6: RD results: Types of article

	(1) Skept. Phrases	(2) Env. Phrases	(3) Skept. Share of Pol. Articles	(4) Skept. Share of non-Pol. Articles	(5) Skept. Phrases Share in Pol. Articles	(6) Skept. Phrases Share in non-Pol. Articles
Republican Governor	0.105*	-0.0246	0.0225	0.0517**	0.0625	0.0503**
	(0.0577)	(0.0861)	(0.0537)	(0.0208)	(0.0534)	(0.0228)
State FE	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES
Bandwidth	8.767	12.944	9.997	11.756	10.408	11.457
No. of Clusters	43	47	45	46	46	46
Observations	387	514	421	467	440	463

Notes: Each column represents a separate estimation of equation 1.
Each column uses a uniform kernel and linear polynomial controls.
Standard errors clustered by state are shown in parentheses.
*** p<0.01, ** p<0.05, * p<0.1

speeches and do interviews with governors, so governors' language use should be reflected in the language use in newspapers simply through quotes and paraphrases. To test whether this is a main factor driving our results we separate articles into 'political' articles – articles that mention the words 'governor' or 'governors' or the name of a gubernatorial candidate – and 'non-political' articles – articles that mention none of these. Columns (3) to (6) of Table 6 replicate the baseline specification restricting the analysis to political or non-political articles. The effect of a Republican governor on both the share of non-political articles that are skeptical (column (4)) and the share of indicative phrases that are skeptical in non-political articles (column (6)) is significant and not significantly different from the equivalent measures in political articles (columns (3) and (5)). These results suggest that governors have an agenda setting power – newspaper coverage about climate change has a more skeptical tone under Republican governors even in articles that are not about the governor.

Another area of heterogeneity worth exploring is the timing of the relationship between the governor's party and newspaper coverage within a gubernatorial term. It is possible

that this relationship increases over the course of a governor's term as their opinions become better known and they develop relationships with journalists. Alternatively, the relationship may fade over time as the novelty of the newly elected governor fades. Columns (1) and (2) of Table 7 test this hypothesis by including interaction terms between a dummy variable for the first two years of a governor's term and both the Republican win variable and the slope variables. These specifications do not support either of these hypotheses (or they cancel each other out) as the coefficient on the interaction term between the first 2 years of a term and a Republican win is not significant.

Columns (3) and (4) of Table 7 test how the relationship evolves over time. The media landscape in the second half of the analysis period (2010-2019) was substantially different than in the first half (2000-2009) as social media played an increasingly important role in disseminating news. However, we do not identify a significant difference in the relationship between elections and coverage between these two time periods.

Finally, we look at heterogeneity over states. Columns (1) and (2) of 8 test whether the effect of elections on coverage is different in states with populations above and below 5 million. These specifications include a similar set of interaction terms as Table 7. The coefficient for the interaction between the large state variable and a Republican win is negative and similar in magnitude to the positive coefficient for the Republican win variable, suggesting that there is no effect of elections on coverage in larger states. These larger states often have multiple media markets with different local interests, may have less close relationships between politicians and journalists, and may have more entrenched partisan media. All of these factors could make local newspapers less responsive to the governor.

Columns (3) and (4) of Table 8 show a similar specifications for fossil fuel producing states, where a fossil fuel producing state is defined as a state where the per capita production of oil, coal, or natural gas is greater than the 75th percentile.[15] They show that the effect of gubernatorial elections on coverage of climate change is larger in fossil fuel producing states,

[15]Fossil fuel production data is taken from the Energy Information Administration.

Table 7: RD Results: Time heterogeneity

	(1) Extensive skepticism	(2) Intensive skepticism	(3) Extensive skepticism	(4) Intensive skepticism
Republican Governor	0.0840**	0.0758**	0.0619***	0.0569**
	(0.0368)	(0.0361)	(0.0228)	(0.0228)
Republican Governor x First 2 years of term	-0.0362	-0.0177		
	(0.0331)	(0.0285)		
Republican Governor x 2000-2009			-0.0080	-0.0024
			(0.0621)	(0.0593)
State FE	YES	YES	YES	YES
Year FE	YES	YES	YES	YES
Polynomial x First 2 years	YES	YES	NO	NO
Polynomial x 2000-2009	NO	NO	YES	YES
Kernel	Uniform	Uniform	Uniform	Uniform
Polynomial	Linear	Linear	Linear	Linear
Bandwidth	10.210	9.784	10.353	10.215
No. of Clusters	46	45	46	46
Observations	439	423	446	439

Standard errors clustered by state are shown in parentheses
*** p<0.01, ** p<0.05, * p<0.1

where climate change policies are likely to be more politically salient and controversial.

5.5 Further falsification tests and robustness

One potential issue is that election results within states may be correlated over time; if the governor in the previous term shares political party with the current governor and the previous governor affected current climate skepticism, we could misattribute current climate skepticism to current gubernatorial control. Similarly, a future governor should not be able to affect current climate skepticism. We therefore conduct falsification tests where we create placebo treatments from either past or future gubernatorial election results. We estimate specifications that link the outcome variables for the true year with the RD treatment and vote margin from four years earlier or four years later. The results of this test are shown

Table 8: RD Results: Heterogeneity by state

	(1) Extensive Skepticism	(2) Intensive Skepticism	(3) Extensive Skepticism	(4) Intensive Skepticism
Republican Governor	0.120***	0.135***	0.0417	0.0340
	(0.0347)	(0.0361)	(0.0290)	(0.0324)
Republican Governor x Large State	-0.127***	-0.141***		
	(0.0397)	(0.0426)		
Republican Governor x Fossil Fuel State			0.0984*	0.135***
			(0.0511)	(0.0549)
State FE	YES	YES	YES	YES
Year FE	YES	YES	YES	YES
Polynomial x Large State	YES	YES	NO	NO
Polynomial x Fossil Fuel	NO	NO	YES	YES
Kernel	Uniform	Uniform	Uniform	Uniform
Polynomial	Linear	Linear	Linear	Linear
Bandwidth	11.472	11.179	11.129	10.286
No. of clusters	46	46	46	46
Observations	463	458	458	439

Large states are defined as states with population greater than 5 million. Fossil fuel states are defined as states where the per capita production of oil, coal, or natural gas is above the 75th percentile.

Standard errors clustered by state are shown in parentheses

*** p<0.01, ** p<0.05, * p<0.1

in Table 9. Present and future elections do not have a significant effect on either extensive or intensive climate change skepticism, suggesting that our analysis passes this placebo test. The absence of an effect of past elections also shows that the effect of a governor on newspaper coverage does not last beyond the their term.

Next, we demonstrate the stability of our results for alternative RD bandwidths. Table 10 shows results for our two primary newspaper tone outcomes, using bandwidths ranging from 5 to 12. Panel A shows results for the extensive skepticism outcome, which reflects the proportion of articles with a skeptical tone. We find point estimates that range from 0.051 to 0.073 and coefficients are statistically significant at conventional levels for all bandwidths except for 5. Panel B shows results for the intensive skepticism outcome, which reflects the

Table 9: RD regression results for past and future placebo gubernatorial treatments

	(1)	(2)	(3)	(4)
	Extensive skepticism		Intensive skepticism	
Republican Governor 4 years prior	-0.00545		-0.00420	
	(0.00994)		(0.0107)	
Republican Governor 4 years in future		-0.0140		-0.0139
		(0.0143)		(0.0138)
State FE	YES	YES	YES	YES
Year FE	YES	YES	YES	YES
Bandwidth	9.332	8.601	9.665	9.336
No. of Clusters	45	42	45	45
Observations	393	354	409	380

Notes: Each column represents a separate estimation of equation 1.
Each column uses a uniform kernel and linear polynomial controls.
Standard errors clustered by state are shown in parentheses.
*** p<0.01, ** p<0.05, * p<0.1

proportion of all indicative phrases that are skeptical. Again, point estimates are stable across the different bandwidths and most of the coefficients are statistically significant at conventional levels.

While a state's governor likely has the most agenda-setting power, it is also possible that state legislative bodies could affect the tone of media coverage. Unlike the gubernatorial election setting, many different elections determine majority status in a state legislature. Therefore, rather than a single vote margin, the multidimensional RD design (Feigenbaum et al., 2017) creates a distance measure to capture the closeness of a set of local election results to the threshold that results in a partisan majority status. Consistent with prior literature (Bergquist, 2019; Caughey et al., 2017), we focus on the effect of a Republican majority in the lower house of representatives where all seats are simultaneously up for election.[16]

[16]State senate elections are typically staggered across years with many seats not up for election in a given year. Like prior studies, we limit our sample to general elections in states with single member, partisan districts.

Table 10: RD results for alternative bandwidths

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Panel A. Extensive Skepticism							
Republican	0.0608***	0.0563**	0.0638**	0.0579**	0.0730*	0.0715*	0.0510
Governor	(0.0218)	(0.0239)	(0.0269)	(0.0269)	(0.0379)	(0.0373)	(0.0488)
Panel B. Intensive Skepticism							
Republican	0.0634***	0.0608**	0.0603**	0.0577**	0.0633	0.0649*	0.0503
Governor	(0.0234)	(0.0251)	(0.0265)	(0.0269)	(0.0383)	(0.0385)	(0.0483)
State FE	YES	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES	YES
Bandwidth	12	11	9	8	7	6	5
No. of clusters	46	46	44	41	39	37	34
Observations	476	458	396	363	314	284	228

Notes: Each column represents a separate estimation of equation 1. Each column uses a uniform kernel and linear polynomial controls. Standard errors clustered by state are shown in parentheses. ***p<0.01, ** p<0.05, * p<0.1.

Klarner (2018) provides election data that cover the universe of state legislative elections from 1967-2016. We use these data and follow Feigenbaum et al. (2017) to create the RD forcing variable using the following method. Denote the number of seats needed by the minority party to attain majority status as k. Then, create a function of the loss margins in the k closest elections to obtain the multidimensional distance measure. The most common choice is the Euclidean distance, which is the square root of the sum of the squares of the loss margins from these k closest elections. The RD threshold occurs at a Euclidean distance of zero and we define the RD treatment as a Republican majority, so we multiply the distance by -1 for Democratic majorities. We then estimate our primary specification (equation (1)), replacing "Republican governor" with "Republican majority" and "vote margin" with "Euclidean distance".[17]

Table 11 tabulates results for the multidimensional RD, where we estimate the effect of a

[17]We again use a uniform kernel, the Calonico et al. (2019) optimal bandwidth, and cluster standard errors at the state level. Another distance measure is the minimum rectilinear, or Manhattan, distance (Folke, 2014). We also show results for this alternative distance measure.

Republican majority in the lower house on the newspaper tone outcomes of $Skept_{Extensive}$ and $Skept_{Intensive}$. Across all columns of Table 11, we find statistically insignificant effects of a Republican majority on our measures of newspaper climate skepticism. Moreover, the point estimates are all close to 0, indicating that a close Republican majority in the lower house does not cause the tone of climate change news to change, relative to a close Democratic majority.

These null effects of a partisan majority in the lower house are intuitive given the limited agenda setting power of a narrow legislative majority. Unlike gubernatorial leadership where one administration controls the executive branch, a party with a narrow majority needs to work with their most centrist members. Winning more seats beyond a close majority may have more influence over the legislature's agenda than winning a narrow majority. Thus, we may not expect a larger discontinuity in the tone of local newspaper coverage at the house majority threshold than at any other seat.[18] Broadly, these null state legislative effects provide additional evidence that local newspapers are responding to the party of the governor, as opposed to generic partisan effects.

6 Conclusion

In this paper, we attempt to identify a mechanism by which gubernatorial elections affect perceptions of climate change. Given that most people receive information about climate change primarily through media coverage and that media coverage has been shown to affect perceptions and behavior, a causal relationship between the outcome of gubernatorial elections and media coverage would have important implications.

We measure the tone of local newspaper coverage of climate change between 2000 and 2019. Our measure is based on the frequency of particularly skeptical and particularly pro-environmental phrases, which are identified by comparing texts with known perspective.

[18] Another explanation for null effects here is that local newspapers likely cover state legislature based on speeches or interviews, and these stories could cover the actions of the local representative, the speaker of the house, or some other legislator. The tone, as transmitted through the media, could differ by legislator.

Table 11: State legislative multidimensional RD results

	(1)	(2)	(3)	(4)
	Extensive skepticism		Intensive skepticism	
Republican	0.00263	0.000994	-0.00229	0.00286
Majority	(0.0190)	(0.0170)	(0.0163)	(0.0171)
State FE	YES	YES	YES	YES
Year FE	YES	YES	YES	YES
Distance	Euclidean	Manhattan	Euclidean	Manhattan
Bandwidth	0.685	1.753	0.592	1.433
No. of Clusters	35	34	34	33
Observations	481	430	458	394

Notes: Each column uses a uniform kernel and linear polynomial controls.
Standard errors clustered by state are shown in parentheses.
*** p<0.01, ** p<0.05, * p<0.1

We implement a regression discontinuity design to address the endogeneity concern that would arise if we simply used the Republican vote share as the primary independent variable. States with a more Republican electorate are likely to have a population more skeptical of climate change, and newspapers may adopt a more skeptical tone to attract this more skeptical population. The regression discontinuity design addresses this concern by accounting for the vote share and testing whether coverage is different in states where the Republican candidate narrowly won than it is in states where the Democratic candidate narrowly won.

We find that coverage of climate change is indeed more skeptical in states with a Republican governor. This result is robust to a number of different specifications and measures of tone of coverage. Further, we find that this effect is driven more by an increase in skeptical language than by a decrease in pro-environmental language and that the effect in articles that do not mention the governor is just as strong as the effect in articles that do.

References

Anderegg, W. R., J. W. Prall, J. Harold, and S. H. Schneider (2010): "Expert credibility in climate change," *Proceedings of the National Academy of Sciences*, 107, 12107–12109.

Auffhammer, M. (2018): "Quantifying economic damages from climate change," *Journal of Economic Perspectives*, 32, 33–52.

Baron, D. (2006): "Persistent media bias," *Journal of Public Economics*, 90, 1–36.

Beattie, G. (2020): "Advertising and media capture: The case of climate change," *Journal of Public Economics*, 188, 104219.

——— (2021): "Measuring social benefits of media coverage: How coverage of climate change affects behavior," *Working Paper*.

Beattie, G., R. Durante, B. Knight, and A. Sen (2021): "Advertising spending and media bias: Evidence from news coverage of car safety recalls," *Management Science*, 67, 698–719.

Beland, L.-P. (2015): "Political parties and labor-market outcomes: Evidence from us states," *American Economic Journal: Applied Economics*, 7, 198–220.

Beland, L.-P. and V. Boucher (2015): "Polluting politics," *Economics Letters*, 137, 176–181.

Beland, L.-P. and S. Oloomi (2017): "Party affiliation and public spending: Evidence from US governors," *Economic Inquiry*, 55, 982–995.

Beland, L.-P. and B. Unel (2018): "The impact of party affiliation of US governors on immigrants' labor market outcomes," *Journal of Population Economics*, 31, 627–670.

Bergquist, P. (2019): "Controlling the regulators: How party control of government shapes environmental regulation in the 21st century," .

Besley, T. and A. Prat (2006): "Handcuffs for the grabbing hand? Media capture and government accountability," *American Economic Review*, 96, 720–736.

Bisgaard, M. and R. Slothuus (2018): "Partisan elites as culprits? How party cues shape partisan perceptual gaps," *American Journal of Political Science*, 62, 456–469.

Boykoff, M. T. (2011): *Who speaks for the climate?: Making sense of media reporting on climate change*, Cambridge University Press.

Boykoff, M. T. and J. M. Boykoff (2004): "Balance as bias: global warming and the US prestige press," *Global Environmental Change*, 14, 125–136.

——— (2007): "Climate change and journalistic norms: A case-study of US mass-media coverage," *Geoforum*, 38, 1190–1204.

Calonico, S., M. D. Cattaneo, M. H. Farrell, and R. Titiunik (2019): "Regression discontinuity designs using covariates," *Review of Economics and Statistics*, 101, 442–451.

Calonico, S., M. D. Cattaneo, and R. Titiunik (2014): "Robust nonparametric confidence intervals for regression-discontinuity designs," *Econometrica*, 82, 2295–2326.

Cattaneo, M. D., N. Idrobo, and R. Titiunik (2019): *A practical introduction to regression discontinuity designs: Foundations*, Cambridge University Press.

Cattaneo, M. D., M. Jansson, and X. Ma (2020): "Simple local polynomial density estimators," *Journal of the American Statistical Association*, 115, 1449–1455.

Caughey, D., C. Warshaw, and Y. Xu (2017): "Incremental democracy: The policy effects of partisan control of state government," *The Journal of Politics*, 79, 1342–1358.

Chiang, C. and B. Knight (2011): "Media bias and influence: Evidence from newspaper endorsements," *Review of Economic Studies*, 78, 795–820.

DellaVigna, S. and E. Kaplan (2007): "The Fox News effect: Media bias and voting," *Quarterly Journal of Economics*, 122, 1187–1234.

Di Tella, R. and I. Franceschelli (2011): "Government advertising and media coverage of corruption scandals," *American Economic Journal: Applied Economics*, 3, 119–51.

Durante, R. and B. Knight (2012): "Partisan control, media bias, and viewer responses: Evidence from Berlusconi's Italy," *Journal of the European Economic Association*, 10, 451–481.

Egan, P. J. and M. Mullin (2017): "Climate change: US public opinion," *Annual Review of Political Science*, 20, 209–227.

Feigenbaum, J. J., A. Fouirnaies, and A. B. Hall (2017): "The majority-party disadvantage: Revising theories of legislative organization," *Quarterly Journal of Political Science*, 12, 269–300.

Folke, O. (2014): "Shades of brown and green: Party effects in proportional election systems," *Journal of the European Economic Association*, 12, 1361–1395.

Funk, C. and B. Kennedy (2016): "The politics of climate," *Pew Research Center*, 4.

Gehlbach, S. and K. Sonin (2014): "Government control of the media," *Journal of Public Economics*, 118, 163–171.

Gentzkow, M., N. Petek, J. M. Shapiro, and M. Sinkinson (2015): "Do newspapers serve the state? Incumbent party influence on the US press, 1869–1928," *Journal of the European Economic Association*, 13, 29–61.

Gentzkow, M. and J. Shapiro (2010): "What drives media slant? Evidence from US daily newspapers," *Econometrica*, 78, 35–71.

Gerber, A., D. Karlan, and D. Bergan (2009): "Does the media matter? A field experiment measuring the effect of newspapers on voting Behavior and political opinions," *American Economic Journal: Applied Economics*, 1, 35–52.

Guber, D. L. (2013): "A cooling climate for change? Party polarization and the politics of global warming," *American Behavioral Scientist*, 57, 93–115.

Hansen, J. (2010): *Storms of my grandchildren: the truth about the coming climate catastrophe and our last chance to save humanity*, Bloomsbury Publishing USA.

Hill, A. J. and D. B. Jones (2017): "Does partisan affiliation impact the distribution of spending? Evidence from state governments' expenditures on education," *Journal of Economic Behavior & Organization*, 143, 58–77.

Hornsey, M. J., E. A. Harris, P. G. Bain, and K. S. Fielding (2016): "Meta-analyses of the determinants and outcomes of belief in climate change," *Nature: Climate Change*, 6, 622–626.

Imbens, G. and K. Kalyanaraman (2012): "Optimal bandwidth choice for the regression discontinuity estimator," *The Review of Economic Studies*, 79, 933–959.

Keita, S. and P. Mandon (2018): "Give a fish or teach fishing? Partisan affiliation of US governors and the poverty status of immigrants," *European Journal of Political Economy*, 55, 65–96.

Klarner, C. (2018): "State Legislative Election Returns, 1967–2016," *Harvard Dataverse*, 3.

Larcinese, V., R. Puglisi, and J. Snyder (2011): "Partisan bias in economic news: Evidence on the agenda-setting behavior of US newspapers," *Journal of Public Economics*, 95, 1178–1189.

Lee, D. S. (2001): "The electoral advantage to incumbency and voters' valuation of politicians' experience: A regression discontinuity analysis of elections to the US House," .

——— (2008): "Randomized experiments from non-random selection in US House elections," *Journal of Econometrics*, 142, 675–697.

Leigh, A. (2008): "Estimating the impact of gubernatorial partisanship on policy settings and economic outcomes: A regression discontinuity approach," *European Journal of Political Economy*, 24, 256–268.

Leiserowitz, A. A., N. Smith, and J. R. Marlon (2010): *Americans' knowledge of climate change*, Yale Project on Climate Change Communication.

Mann, M. E., R. S. Bradley, and M. K. Hughes (1998): "Global-scale temperature patterns and climate forcing over the past six centuries," *Nature*, 392, 779–787.

——— (1999): "Northern hemisphere temperatures during the past millennium: Inferences, uncertainties, and limitations," *Geophysical Research Letters*, 26, 759–762.

McCrary, J. (2008): "Manipulation of the running variable in the regression discontinuity design: A density test," *Journal of Econometrics*, 142, 698–714.

McCright, A. M., C. Xiao, and R. E. Dunlap (2014): "Political polarization on support for government spending on environmental protection in the USA, 1974–2012," *Social Science Research*, 48, 251–260.

McMillan, J. and P. Zoido (2004): "How to subvert democracy: Montesinos in Peru," *Journal of Economic Perspectives*, 18, 69–92.

Metz, B., O. Davidson, P. Bosch, R. Dave, and L. Meyer, eds. (2007): *Climate change 2007 - Mitigation of climate change: Working group III contribution to the fourth assessment report of the IPCC*, Cambridge University Press.

Meyer, A. G. (2019): "Elite influence on climate change skepticism: Evidence from close gubernatorial elections," *Journal of the Association of Environmental and Resource Economists*, 6, 783–822.

Miles, M. R. (2014): "The bully pulpit and media coverage: Power without persuasion," *The International Journal of Press/Politics*, 19, 66–84.

Ozerturk, S. (2020): "Media access, bias and public opinion," .

Pachauri, R. K. and A. Reisinger, eds. (2007): *IPCC, 2007: Climate Change 2007 - Synthesis Report: Contribution of Working Groups I, II and III to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change*, Cambridge University Press.

Parry, M. L., O. Canziani, J. Palutikof, P. Van der Linden, C. Hanson, et al., eds. (2007): *Climate change 2007-Impacts, adaptation and vulnerability: Working group II contribution to the fourth assessment report of the IPCC*, Cambridge University Press.

Puglisi, R. (2004): "The spin doctor meets the rational voter: Electoral competition with agenda-setting effects," *SSRN Working Paper*.

Puglisi, R. and J. M. Snyder (2011): "Newspaper coverage of political scandals," *The Journal of Politics*, 73, 931–950.

Qin, B., D. Strömberg, and Y. Wu (2018): "Media bias in China," *American Economic Review*, 108, 2442–76.

Shao, W. (2017): "Weather, climate, politics, or God? Determinants of American public opinions toward global warming," *Environmental Politics*, 26, 71–96.

Shapiro, J. (2016): "Special interests and the media: Theory and an application to climate change," *Journal of Public Economics*, 144, 91–108.

Shipan, C. R. and W. R. Lowry (2001): "Environmental policy and party divergence in congress," *Political Research Quarterly*, 54, 245–263.

Singer, S. F. and C. Idso, eds. (2009): *Climate change reconsidered: The report of the Nongovernmental International Panel on Climate Change*, The Heartland Institute.

Solomon, S., M. Manning, M. Marquis, D. Qin, et al., eds. (2007): *Climate change 2007-The physical science basis: Working group I contribution to the fourth assessment report of the IPCC*, Cambridge university press.

Spencer, R. W. (2012): *The great global warming blunder: How mother nature fooled the world's top climate scientists*, Encounter Books.

Szeidl, A. and F. Szucs (2021): "Media capture through favor exchange," *Econometrica*, 89, 281–310.