Experience, Narratives, and Climate Change Beliefs*

Milena Djourelova† Ruben Durante‡ Elliot Motte§

Eleonora Patacchini¶

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Abstract

Linking the location and timing of US-based natural disasters to large-scale electoral survey data, we study how the experience of a natural disaster affects climate change beliefs and how experience interacts with ideology. Contrary to the predictions of standard learning models, we find evidence for divergence in beliefs: exposure to the same disaster event increases stated climate change and environmental concerns among liberals but decreases them among conservatives, widening the ideological gap by 11-17%. We further provide evidence of conflicting ideological media discourse on climate change in the aftermath of disasters by applying GPT as a novel text annotation approach. Our findings are consistent with natural disasters making the debate around climate change and partisan cleavages on this issue more salient and further polarizing initial beliefs. We discuss implications for the timing of efforts to build consensus on climate action.

Keywords: Climate change, narratives, salience, mass media, political polarization

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†Cornell University and CESifo. Email: mnd43@cornell.edu

‡National University of Singapore, UPF, IZA, CESifo, and CEPR. Email: rubendurante@gmail.com

§Universitat Pompeu Fabra. Email: elliot.motte@upf.edu

¶Cornell University, EIEF, IZA, and CEPR. Email: ep454@cornell.edu

1 Introduction

Political polarization has increased in several countries in recent decades, raising concerns that it may undermine social cohesion and exacerbate political gridlock (Iyengar et al. 2019; Finkel et al. 2020). A key worry is that, if public views on important societal challenges are polarized ideologically, consensus on their solutions may fail to emerge, even as these challenges grow more urgent.

In this paper, we examine the empirical relevance of this concern in the context of climate change – arguably one of the greatest challenges faced by humanity today. We study how the occurrence of natural disasters affects (1) the ideological polarization in views on climate change and the environment, and (2) the media discourse surrounding these issues.

This context is instructive about the dynamics of polarization for at least two reasons. First, partisan divisions in views on the existence, causes, and consequences of climate change are increasing.[1] According to data from Gallup, in the U.S., the gap in the share of Democrats versus Republicans who believe that "the effects of global warming have already begun" has increased from 13 percentage points in 2001 (61% vs. 48%), to 53 percentage points in 2021 (82% vs. 29%). Second, how these polarized views react to disaster occurrence is ex-ante ambiguous. On the one hand, standard learning models would predict that exposure to a common signal of the effects of climate change should lead beliefs to converge (Blackwell and Dubins 1962; DeGroot 1974). On the other hand, convergence may be impeded by the ambiguity of the signal – despite the broad scientific consensus about the link between climate change and the frequency and severity of natural disasters (IPCC 2014), attributing any *individual* event to climate change is still scientifically challenging and politically controversial. Indeed, as we show, the occurrence of disasters often triggers conflicting ideological discourse about their causes. As a consequence, following a disaster, climate change

[1] According to a 2024 survey by the Pew Research Center, the level of partisan disagreement regarding the urgency of climate change and environmental policy is the highest across a range of issues, including the economy, immigration, healthcare, and gun policy (`https://www.pewresearch.org/politics/2024/02/29/americans-top-policy-priority-for-2024-strengthening-the-economy/`). Partisan cleavages in climate change beliefs, though generally less pronounced than those in the U.S., also exist in many other countries in the world (`https://www.pewresearch.org/short-reads/2015/11/06/the-u-s-isnt-the-only-nation-with-big-partisan-divides-on-climate-change/`).

beliefs may not only fail to converge, but may in fact further diverge along ideological lines as partisan cleavages on the issue become more salient.

We start our analysis by providing evidence for the premise that individuals interpret the causes of disasters through an ideological lens. Specifically, we elicit beliefs about the causes of a major recent disaster – Hurricane Ian – in an online survey of liberal and conservative respondents. We document a gap of 21 to 41 percentage points between the two groups regarding the likelihood of associating the event with climate change or naming climate change as its likely cause. We also find that respondents are very much aware of this gap – about 70% believe that a respondent with an opposing ideology would disagree with them on the question of whether the event was caused by climate change or by nature's unpredictability.[2] The survey also allows us to validate the measures of self-reported environmental concerns available in large-scale electoral surveys by showing that they are highly correlated with a real-stakes choice to donate to a carbon reduction charity rather than other causes.

In the second part of the paper, we turn to studying the impact of natural disasters on climate change beliefs in an observational setting. To this end, we link the exact start dates and locations of disasters declared by the Federal Emergency Management Agency (FEMA) to individual climate change and environmental beliefs expressed in the Cooperative Election Study (CES). Our empirical strategy leverages variation in the exact timing of respondents' exposure to a given disaster event – we compare the beliefs of respondents who experienced a disaster in the four weeks after taking the survey, to those of respondents who experienced a disaster in the four weeks before. In our most demanding specification, we further restrict the comparison to respondents in the same county and surveyed in the same wave – thus subject to the same local events -– and identify the effect of disaster experience based solely on the idiosyncrasies in the timing of the survey relative to that of the disaster. Crucially, in addition to estimating the average effect of disaster experience, we allow this effect to vary depending on respondents' ideology.[3]

[2] A series of recent studies suggest that people generally underestimate others' climate change concerns (Sparkman et al. 2022; Andre et al. 2024a,b). The difference in our case is that we elicit second-order beliefs specifically for individuals of opposing ideology.

[3] We do so by interacting a post-disaster indicator with ideology.

The results indicate that disaster exposure leads to a divergence of environmental beliefs along ideological lines. Exposure to a local disaster *increases* stated climate change and environmental concerns by 1.4-2.6 percentage points among liberal respondents, but *decreases* these concerns by 2.5-2.6 percentage points among conservative respondents. As a result, the gap in climate change beliefs between liberals and conservatives widens by 11%, and the gap in preference for the environment vs. jobs widens by 17%. This belief polarization is not explained by changes in the distribution of respondent ideology, nor by heterogeneity in disasters' effects by socioeconomic characteristics correlated with ideology (such as age, education, or income). We obtain similar results using alternative and potentially more precise measures of ideological priors on climate change, including a measure of prior environmental beliefs predicted based on a combination of respondent characteristics and views on other contentious issues. Consistent with local disasters temporarily increasing the salience of climate change, the effects are detectable for several weeks but decay with time, and spill over from directly affected counties to neighboring ones but tend to decay with distance.

In the third part of the paper, we explore the role of mass media in raising the salience of ideological divisions on climate change. Specifically, we study the evolution of climate change coverage in local newspapers before and after a local disaster, and in cable TV before and after major disasters of national interest. In both cases, we find that the number of news stories about climate change increases significantly in liberal outlets but not in conservative ones, despite an equal increase in the volume of disaster-related coverage. We also study differences in the way news reports relate disasters to climate change. To quantify this nuanced aspect of coverage, we develop and apply a text annotation method based on GPT's large language model. This approach allows us to overcome the limitations of more conventional natural language processing techniques. We find that, in the aftermath of a disaster, liberal media are more likely to suggest a causal link between the disaster and climate change. In contrast, conservative media are more likely to negate such a link or to express skepticism using a sarcastic tone. Furthermore, we show that these differences in tone widen in the aftermath of a local disaster, relative to their pre-disaster levels. This suggests that outlets with different

ideologies not only generally differ in whether and how they connect disasters to climate change, but that these differences are further aggravated when the topic becomes more salient.

We interpret these results to suggest that the conflicting media discourse on the causes of disasters may mediate the polarizing effect of disaster exposure on environmental beliefs. In the last part of the paper, we provide suggestive evidence in line with this interpretation. First, we show that the polarizing effect of disasters is only present in counties with one or more local newspaper(s), and absent in counties with no strong presence of local media. Second, we find that this effect is more pronounced in cases in which the local media discourse in the aftermath of the disaster clashes with the respondent's ideology. Environmental concerns decline among conservatives experiencing a disaster with high (rather than low) local climate change coverage and increase among liberals experiencing a disaster with low (rather than high) local climate coverage. This heterogeneity is consistent with a mechanism in which a clash between one's ideology and the local media discourse reinforces ideological priors.[4]

This paper contributes to an emerging literature demonstrating how exposure to the same politically salient signal can polarize beliefs. Yousaf (2021) documents a widening partisan gap over gun control policies in the aftermath of US mass shootings. Schneider-Strawczynski and Valette (2021) and Colussi et al. (2021) find that the salience of immigration and the visibility of ethnic minorities are associated with more polarized views towards these groups. In a randomized experiment in Turkey, Baysan (2022) finds a polarizing effect of exposure to the same political campaign. Theoretically, such phenomena have been linked to mechanisms such as preferences for cognitive consistency or confirmation (Lord et al. 1979; Cotton 1985; Rabin and Schrag 1999; Baliga et al. 2013), limited memory or attention (Fryer Jr et al. 2019; Che and Mierendorff 2019), or mistrust in the source of the signal (Gentzkow et al. 2023). Our study adds to this body of research by using natural disasters as an exogenous shock to the salience of climate change and studying the evolution of public opinion and media discourse in their aftermath.

[4]We also consider the role of the pre-existing ideological animosity in mediating the effects. To this end, we construct a measure of district-level affective polarization using data from the American National Election Study and following the method of Boxell et al. (2024). We find no heterogeneity in our baseline results between districts with high and low ex-ante levels of polarization.

In doing so, we integrate two previously separate strands of literature. First, we contribute to a large literature on the link between exposure to natural disasters or extreme weather events and environmental attitudes or behaviors. Howe et al. (2019) review this literature and conclude that the evidence remains mixed despite 73 papers studying this topic. Some studies find a significant positive impact (Hazlett and Mildenberger 2020; Deryugina 2013; Baccini and Leemann 2020; Rüttenauer 2021), others a mixed or qualitatively small positive impact (Konisky et al. 2016; Bergquist and Warshaw 2019), and yet others find no effect (Marquart-Pyatt et al. 2014; Carmichael et al. 2017). Unlike many previous studies, our dataset and empirical approach enable us to examine shifts in beliefs in the immediate aftermath of disaster exposure and to explicitly model heterogeneity by individual ideology.[5] We are, therefore, able to uncover effects that would be masked in a coarser empirical strategy or with more aggregate outcomes. In particular, we find that the beliefs of liberals and conservatives move in *opposite* directions and that these two effects cancel each other in the average. To the best of our knowledge, we are the first to document conservative backlash in environmental beliefs in response to disaster exposure.

We introduce to this literature an analysis of the media discourse following natural disasters and thus relate to a growing body of work on narratives, i.e., the causal accounts people employ to make sense of reality (Shiller 2017, 2020; Eliaz and Spiegler 2020; Andre et al. 2022). While some studies have documented differences in how liberal and conservative sources cover climate change (Chinn et al. 2020; Mastrorocco et al. 2023), we focus on narratives on the causal relation between these phenomena and study how they mediate the individual experience of natural disasters. From a methodological standpoint, our analysis is also novel in that it uses GPT's large language model to measure implied causal connections and their negation in news reports, overcoming the limitations of standard natural language

[5]Previous research documents a strong correlation between political ideology and environmental views. Hornsey et al. (2016) conducted a meta-analysis on the determinants of climate change beliefs and concluded that ideology and political orientation stand out as the strongest predictors. Dechezleprêtre et al. (2023) document similar results regarding views on climate policy across countries. Gustafson et al. (2019) provide detailed evidence on the emergence of partisan divisions over climate policy for the case of the Green New Deal. The role of ideology has also been examined in the context of economic decisions related to environmental considerations, such as energy conservation (Costa and Kahn 2013), or real estate ownership in areas exposed to climate risk (Bernstein et al. 2022; Fairweather et al. 2023).

processing approaches in capturing nuanced causal links.

Finally, our work relates to studies on the public reaction to politicians' environmental efforts in the aftermath of natural disasters. Gagliarducci et al. (2020) show that congressional representatives who push environmental legislation in the aftermath of a disaster suffer an electoral penalty. In a survey experiment, Hai and Perlman (2022) show that Republicans rate less favorably politicians who link extreme weather events to climate change. Here, we document a possible role of media discourse in this type of backlash.

The remainder of the paper is organized as follows. Section 2 describes the data used in the analysis. Section 3 presents the results on the evolution of environmental beliefs in the aftermath of natural disasters. Section 4 discusses the results on media discourse around natural disasters. Section 5 discusses suggestive evidence on mechanisms, and section 6 concludes.

2 Data

Our analysis combines (i) survey data on environmental attitudes and beliefs about the causes of natural disasters, (ii) data on the occurrence of natural disasters, and (iii) data on the news coverage of natural disasters and climate change in local newspapers and cable television.

Attribution of disasters to climate change: Prolific survey To shed light on the causal associations people make between the occurrence of natural disasters and climate change, we conduct a survey of 200 self-identified conservatives and 200 self-identified liberals on the platform Prolific.[6]

Appendix C presents the survey questionnaire. After a demographics block and an attention check (passed by virtually all participants), we ask participants to watch a 1-minute long time-lapse video depicting the devastation caused by Hurricane Ian in Fort Myers, Florida,

[6]While the Prolific sample is not constructed to be representative of the overall US population, in Table A1 we show that liberal and conservative respondents in the Prolific sample have comparable demographic characteristics and environmental beliefs to those of liberal and conservative respondents in the nationally representative CES sample. One exception is that conservative respondents on Prolific have substantially higher education and income.

in September 2022.[7] The video contains minimal factual information on the disaster and does not mention or allude to climate change. We then ask open-ended questions regarding the associations that come to the respondents' minds and their opinions on the cause of the disaster depicted in the video. We also ask a multiple-choice version of the same question, where the choices are (a) climate change or (b) nature's unpredictability. In addition to eliciting respondents' own beliefs, we ask them to guess the answer of a randomly chosen respondent with the opposite ideology. The latter question is incentivized – participants who give a correct guess enter a lottery for a monetary reward.

To investigate the extent to which stated beliefs are correlated with behavior, in the final block of the survey, we ask respondents to choose a charity we will donate to on their behalf (we implement the choice of one random participant) among the following options: (a) the animal protection charity The Humane Society of the US, (b) the environmental charity Carbon180, and (c) the cancer charity Prostate Cancer Foundation. Finally, we ask two questions on self-reported climate change and environmental concerns formulated identically to those in the CES (described below).

Environmental beliefs: CES Our main observational data source on environmental beliefs is the Cooperative Election Study (CES). The CES is a nationally representative repeated cross-section conducted around congressional elections, with a sample size of up to 60,000 respondents per year and smaller sample sizes in non-election years. In addition to its large sample size, the CES has the advantage of including information on respondents' exact location (i.e., county of residence), the date each survey was completed, as well as the respondents' self-reported ideology and political affiliation.[8] The survey includes two questions that capture broad beliefs about climate change and the environment with answers on

[7] The actual video shown during the survey can be accessed at `https://www.youtube.com/watch?v=ozqGvyTWeAg`

[8] An alternative data source is Nationscape, an 18-month electoral survey conducted around the 2020 Presidential elections. In contrast to the CES, Nationscape does not include information on the respondent's county of residence but only on the electoral district, a much coarser spatial unit. Rather than using continuous opinion scales on climate change, Nationscape asks two binary questions – support or opposition to a cap on carbon emissions and support or opposition to large technological investment to protect the environment. Because of these limitations in time span, geographic detail, and scale of responses, we use the CES data for our main analysis.

a five-point scale:

1. *"Some people think it is important to protect the environment even if it costs some jobs or otherwise reduces our standard of living. Other people think that protecting the environment is not as important as maintaining jobs and our standard of living. Which is closer to how you feel, or haven't you thought much about this?"*, asked in the survey years 2006-2008, 2010, 2012, and 2013. The possible answers are: *1= "Jobs much more important," 2="Jobs somewhat more important," 3="Environment and jobs of same importance," 4="Environment more important," 5="Environment much more important."*[9]

2. *"From what you know about global climate change or global warming, which one of the following statements comes closest to your opinion?"*, asked in the survey years 2006-2007 and 2009-2012. The possible answers are: *1="Climate change not occurring," 2="No action necessary," 3="More research needed," 4="Some action needed," 5="Immediate action necessary."*

For our main measure of environmental beliefs, we standardize answers to these two questions and aggregate them into a z-score with mean zero and standard deviation one.[10]

We merge this dataset to data on the occurrence of FEMA-declared disaster events (described below) using the respondent's county of residence and the precise date they took the survey. This allows us to construct a measure of the timing of exposure to a local FEMA-declared disaster. Our baseline measure defines this variable as one if the respondent is surveyed within the four calendar weeks after the start date of a local disaster (including the week of the start date) and zero if the respondent is surveyed within the four calendar weeks before the disaster start date. We also consider different time windows as a robustness check.

[9]These questions generally do not include a "No opinion" option. We interpret responses in the middle of the scale as undecided.

[10]After 2014, the CES asked the following "support" / "oppose" questions on more narrow issues related to environmental regulation: *"Raise fuel efficiency from 25 to 35 mpg," "Strengthen EPA enforcement of the Clean Air and Water acts," "Require states to use a minimum amount of renewable fuels," "Allow the EPA to regulate carbon dioxide emissions".* We construct another standardized index of support for environmental regulations aggregating these four questions.

[11]

Conditional on the two main measures of environmental beliefs being non-missing, the resulting linked CES estimation sample consists of 12,783 respondents and 493 distinct county-specific disaster episodes, which correspond to 67 distinct FEMA declarations. Appendix Table A2 lists the corresponding declarations composing the estimation sample, and Figures A1 and A2 present the geographic coverage of the linked sample.[12]

Natural disasters. Our source of data on the occurrence and characteristics of natural disasters is the Federal Emergency Management Agency (FEMA). [13] For each FEMA declaration, we observe the set of affected counties and the start date of the disaster in each county. Importantly, our analysis uses the county-specific start date of the disaster event (i.e. the date when the meteorological phenomenon occurred), and not the date of disaster declaration, which is often announced with a lag.

The dataset also includes information on whether the disaster was associated with an "Emergency Declaration" or a "Major Disaster Declaration." In the former case, FEMA assistance merely supplements state and local efforts and may not exceed $5 million. In contrast, in the latter case, the President deems the severity of the disaster to be beyond the combined capabilities of state and local governments to respond. We use this distinction to proxy for disaster severity. In addition, for most disasters, we observe the dollar amount granted by FEMA under two of its main relief programs.[14] We use this information to

[11]Note that this measure considers all FEMA events, even ones taking place outside of the period the survey is conducted over, so that it does not mechanically depend on whether a respondent is surveyed at an early or late stage of the implementation of a given survey wave. For example, a respondent can be in the "post-disaster" group even if he/she is the first respondent surveyed in a given year if his/her county was affected by a disaster over the few weeks prior to this date. Conversely, a respondent can be in the "pre-disaster" group even if he/she is the last respondent surveyed in a given year if his/her county was affected by a disaster over the few weeks following this date.

[12]The linked sample includes both Republican and Democrat counties, with an average Republican vote share in the 2012 Presidential election of 57%.

[13]FEMA disaster declarations follow a 2-step procedure. First, the state's governor must carry out a damage assessment for affected counties and evaluate the amount of state funds that can be allocated for evacuation, relief and reconstruction. The governor then files a request to the office of the President of the United States, who declares a state of emergency for some or all of the counties.

[14]These programs are: i) the Individual Housing program targeted towards damage mitigation and reconstruction of private property, and ii) the Public Assistance program, which delivers funds to assist local communities in rebuilding damaged public infrastructure, such as roads, schools, and other community buildings.

identify the most severe disasters likely to attract interest at the national level. We perform minimal manipulations on this dataset, such as dropping events with missing information on the affected counties and removing events related to Covid-19.

Media: Local newspaper coverage. We collected the text of disaster- and climate-change-related articles published in US daily newspapers between January 2000 and June 2021. We combine data from two sources: *Newsbank*, which covers 989 newspapers, and *Proquest*, which covers an additional 236 newspapers.[15]

To identify articles on climate change, we query all articles that include the phrase "climate change" or "global warming" in the headline or the full text. About 1 million articles satisfy this condition. To identify articles on natural disasters, we query all articles that include at least one of a series of disaster-specific keywords (e.g., "hurricane", "flood", etc.). Table A3 reports the full list of keywords. About 9.4 million articles match this criterion. For each article, we record the publication date and the full text. We also collect information on the county where each newspaper is headquartered using the information from the database (for Newsbank) or by performing manual searches based on the newspaper's name, state, and town or city (for Proquest). We use this information to approximate the local market served by each newspaper.[16]

Media: Cable news coverage. Regarding news coverage on cable TV channels, we use data from the GDELT Television Archive. The archive includes the transcripts (derived from closed captions) of newscasts from 2009-2021, organized into 15-second long snippets. We focus on MSNBC, CNN, and Fox News, three channels with distinct ideological leanings. Following the same approach described for newspapers, we identify the snippets related to climate change as those containing the keywords "climate change" or "global warming"

[15] In practice, we obtained a "walled garden" access to Newsbank articles that match our keywords of interest. Proquest articles matching our queries were similarly collected using institution access to TDM Studio, an interface developed by Proquest to search its full article archive. Both entailed building searchable folders containing newspaper articles before recursively parsing and extracting article information, including the article's full text.

[16] We exclude national newspapers, such as the New York Times, USA Today, and the Wall Street Journal, for which the notion of local market does not apply.

and snippets related to disasters as those containing at least one disaster-specific keyword. Overall, we find 76,691 snippets on climate change and 164,072 on disasters. In addition, we are interested in identifying those news segments that talk about climate change and disasters in close proximity. To capture these cases, we back out the text of the one-minute-long segment containing the snippets of interest.[17] We find 5,237 segments containing both climate change and disaster-related keywords.

3 Disasters and environmental beliefs

3.1 Motivating evidence: Prolific survey

Attribution of disasters to climate change. We start by presenting the results of the online survey on beliefs about the causes of Hurricane Ian. Figure 1 presents the rates of attribution of Hurricane Ian to climate change, using different measures of attribution. When asked an open-ended question about the associations that came to mind while watching a 1-minute-long video showing the devastation caused by Ian, 23% of liberal respondents and only 3.12% of conservative respondents mentioned climate change or global warming. When asked more directly about the *cause* of the disaster, between 47% and 62% of liberals and between 6.8% and 12.8% of conservatives attribute it to climate change or global warming (depending on whether the question is open-ended or multiple choice). [18]

When it comes to second order beliefs, only 9% of liberals guess that a randomly drawn conservative respondent named climate change as a cause of the disaster. Conversely, 86% of conservatives guess that a randomly drawn liberal respondent named climate change as a cause of the disaster.

These findings support the view that political ideology acts as a lens through which

[17] We do so by retrieving the one-minute transcript corresponding to any 15-second snippet matching our "climate change" or "global warming" query by crawling the Television Archive URL links associated with these snippets. The URL links are provided as an element of the response when querying the GDELT Television Archive API.

[18] We obtain virtually identical results in regressions controlling for respondents' age, gender, income, and education.

individuals interpret the same disaster experience, and suggest that people are generally aware of these ideological divides.

Validation of self-reported measures of environmental concerns. In addition to revealing how views on the causes of disasters correlate with ideology, the Prolific survey allows us to validate measures of stated beliefs on climate change and the environment. Specifically, besides the measures discussed above, we include scales of climate change and environmental concerns formulated identically to those in the CES, as well as a tangible behavioral outcome – the choice to donate to a climate change cause versus other causes. Table 1 reports the pairwise correlations of climate change donations with each of the belief measures elicited in the survey, controlling for respondents' ideology and socio-economic characteristics. The relationship between stated beliefs and the choice to donate to an environmental organization is always positive and significant. Associating Hurricane Ian with climate change increases the likelihood of donating to an environmental organization by 21-31 percentage points, and a 1-point increase in reported concerns about climate change or the environment (on a five-point scale) is associated with an increase of 6-10 percentage points. This confirms that stated beliefs, including the self-reported measures in the CES survey, are highly correlated with real-world behavior.

3.2 Effects of disaster exposure on environmental beliefs – CES

Having established that liberals and conservatives differ in their interpretations of the causes of disasters, and having validated the measures of environmental beliefs available from the CES, we turn to analysing the effects of disaster occurrence on environmental beliefs in an observational setting. In this analysis, we use data from the CES linked to the location and timing of FEMA-declared disasters.

Descriptive evidence. We start by presenting descriptively the distribution of beliefs on climate change and the environment before and after exposure to a local disaster. Figure A3 presents the distribution of these variables separately by respondent's ideology. There

is an evident partisan divide in opinions on these issues. The median liberal respondent believes that the environment is more important than jobs and that immediate action on climate change is necessary. In contrast, the median conservative respondent believes that jobs are more important than the environment, and that more research is necessary before we take action on climate change. Following a disaster, this divide appears to widen: the distribution for liberal and moderate respondents shifts slightly to the right (i.e., in a more pro-environmental direction), while conservatives shift, if anything, slightly to the left (i.e., in a less pro-environmental direction).

Empirical strategy. To estimate the effects of disaster exposure, we consider specifications of the following form:

$$Outcome_{ict} = \alpha + \beta Post\_Disaster_{ct} + \psi_{m(t)} + \phi_{c,y(t)} + \theta' X_i + \epsilon_{ict}, \tag{1}$$

where $Outcome_{ict}$ is a survey response by individual i, in county c, in week t; $Post\_Disaster_{ct}$ is a dummy variable equal to 1 if the respondent is surveyed up to four weeks *after* a local disaster and equal to 0 if the respondent is surveyed up to four weeks *before* a local disaster; $\psi_{m(t)}$ are year-month FEs, $\phi_{c,y(t)}$ are county-by-survey-year FEs, X_i is a vector of respondent controls, including age, gender, college degree, and income. Standard errors are clustered by county, or alternatively, by state.

This specification compares environmental beliefs among respondents interviewed before and after the occurrence of a local disaster. County-by-survey-year FEs further limit the comparison to individuals interviewed in the same county and the same year, who differ only in the timing of the survey relative to the disaster's timing. The identifying assumption is that, conditional on observables, the time a particular respondent is surveyed is quasi-random relative to the start date of the disaster.

To test the hypothesis that disaster exposure affects people with different political views in different ways, we further allow the coefficient β to vary by respondent's ideology:

$$
\begin{aligned}
Outcome_{ict} = \alpha &+ \beta_L(Post\_Disaster_{ct} \times Liberal_i) \\
&+ \beta_M(Post\_Disaster_{ct} \times Moderate_i) \\
&+ \beta_C(Post\_Disaster_{ct} \times Conservative_i) \\
&+ \psi_{m(t)} + \phi_{c,y(t)} + \theta' X_i + \epsilon_{ict}, \qquad (2)
\end{aligned}
$$

where $Liberal_i$, $Moderate_i$ and $Conservative_i$ are indicators for the self-reported ideology of respondent i. The main effects of respondent ideology are included in the vector X_i, such that the coefficients β_L, β_M and β_C are interpreted as the effects of disaster exposure for the respective group of respondents, relative to the group's pre-disaster average.

A potential concern with comparing responses before and after a local disaster is that the disaster may affect the implementation of the survey in a systematic way correlated with ideology. Two features of the setting alleviate this concern to some extent. First, the CES is administered online and thus not directly disrupted by local logistical issues. Second, most disaster events in the FEMA data are of moderate severity and rarely involve population displacement. As we will show later, our main results also hold in the subsample of less severe FEMA events.

Nonetheless, to understand how respondents surveyed before versus after a disaster compare in practice, we examine the distribution of self-reported ideology and socio-economic characteristics in Table B1. Panel (a) shows no significant difference in the distribution of political ideology between the two groups. However, Panel (b) suggests that "treated" respondents (i.e., those surveyed after a disaster) are younger, less educated, and report lower income than non-treated ones (those surveyed before a disaster).

We account for these imbalances in two ways. First, we include respondent-level controls for age, gender, education, and income in all subsequent specifications (denoted by the vector X_i in equation 2). Second, in additional robustness checks we control for the interaction of the vector X_i with a post-disaster indicator. As we will show, our results are robust to these

controls, suggesting that imbalances in the sample do not explain the effects we document.

Main results. Table 2 presents the main results from specifications 1 and 2, estimated on the sample of respondents surveyed in the four weeks before or after a local disaster. In the first two panels, we consider the five-point scale variables introduced above. The third panel presents results for the standardized index aggregating these two variables. We control for a set of respondent-level socio-economic characteristics, month-year and county fixed effects in all specifications, and present results additionally controlling for county-by-survey-year FEs in columns (3), (6) and (9).

The results suggest an increase in preferences for the environment over jobs of 0.14 points among liberals and a decline of about 0.12 points among conservatives (measured on a five-point scale). Together, these two effects imply an increase in the gap between liberals and conservatives of 17% relative to the overall gap in the CES (=1.5 points). The pattern is similar for climate change concerns, with an increase of 0.07 points among liberals and a decline of 0.13 points among conservatives – an 11% increase relative to the overall liberal-conservative gap in the CES (= 1.8 points).[19] Aggregating these two outcomes into a standardized index, our estimates imply that liberals express 0.09 standard deviations greater environmental concerns, and conservatives express 0.11 standard deviations lower concerns after a disaster. It is also worth noting that the average post-disaster effect is insignificant and close to zero, as the two opposite-direction effects tend to cancel each other out.[20]

Other measures of ideological priors. Our interpretation of the results documented above is that self-reported ideology proxies for different ideological priors on the issue of climate change and the environment. Confronted with an ambiguous signal on the effects

[19]Interestingly, we find consistently positive effects for moderates, though significant only for preferences for the environment over jobs.

[20]In Table B2 we examine the effects of disaster exposure on support for specific environmental regulations – raising fuel efficiency from 25 to 35mpg, granting certain regulatory authorities to the EPA, or requiring states to use a minimum amount of renewable fuels. We find no effect of disaster exposure on an index of all four regulatory questions nor any heterogeneity by respondent ideology. Our interpretation of this null result is that respondents may make a connection between disasters and the general issue of climate change and the environment, but not necessarily with individual environmental regulations. The null effect may also indicate a lack of familiarity with specific regulatory issues and their environmental effects.

of climate change, how people update their climate change beliefs may depend on where they stand at baseline, which is (partly) determined by political ideology. To support this interpretation, we develop more precise measures of climate change priors using additional information from the CES.

We construct these measures as follows. First, using the sample of CES respondents who have not recently been exposed to a local disaster (i.e., who are not included in our estimation sample), we run a regression of the index of environmental views on a large set of respondent characteristics including demographics, state of residence, year of the survey, plus a full set of indicators for detailed ideology and party affiliation (version 1), or alternatively, a set of indicators for views on unrelated policy issues (version 2). Specifically, in the second version, we consider opinions on abortion, gun control, immigration, and preference scale for tax increases over spending cuts.[21] Second, we construct a fitted value of this index for our main sample of CES respondents (surveyed within four weeks before/after a local disaster) based on their respective characteristics. This provides us with a measure of predicted environmental priors for respondents in our sample, which (1) considers a broader set of characteristics than ideology alone; and (2) in the second version of this measure, does not rely on self-reported ideology, which may in principle suffer from a reporting bias.

Panel (a) of Table 3 presents the heterogeneous effects of disaster exposure on environmental views by these two measures of predicted environmental priors. The results suggest that disaster exposure leads respondents in the highest tercile of the distribution of predicted priors to express 0.08 to 0.09 standard deviations greater environmental concerns, while it leads respondents in the lowest tercile to express 0.12 to 0.14 standard deviations lower concerns. The results are also remarkably similar for the two versions of predicted priors, alleviating concerns about the measurement of self-reported ideology.

Alternatively, we present results by past vote choice in Panel (b) of Table 3. While this measure is likely to be a less precise proxy for prior environmental views, it has the advantage of being pre-determined in time and therefore potentially less prone to contamination from

[21] As we show later, these views are not systematically affected by disaster occurrence.

other policy views expressed at the time of the survey. We find similar results for this measure – a positive effect for respondents who have chosen a Democrat candidate in the last election and a negative effect for ones who have chosen a Republican candidate.

Effects by detailed ideology scale. In Figure 2, we decompose the main results further by replacing the 3-point ideology scale with a more detailed five-point scale or – with a seven-point party affiliation scale. We present, for each ideological category, the coefficient corresponding to its interaction with a Post-Disaster indicator conditional on respondent controls (incl. the main effects of ideology or party affiliation), year-month, and county-by-year FEs. This decomposition confirms that the effect of disasters on environmental concerns is systematically positive for liberal/Democrat respondents and negative for conservative/Republican respondents. It also suggests that the effects are more muted at the very extremes of the ideological distribution, consistent with floor/ ceiling effects.

Placebo disaster dates. To probe the robustness of the results and ensure they indeed capture the impact of disasters rather than longer-term trends in climate change views, we conduct a placebo exercise replacing the actual start dates of the disasters in our sample with fictitious ones. Specifically, for each of the 240 disasters that occurred between September 1st and December 31st of each year in the 2006-2013 period, we randomly generate an alternative start date for the disaster. To avoid contamination of the placebo with actual disasters, we impose that the placebo dates be selected outside a four week window around the disaster (four weeks before, four weeks after).[22] We then run our baseline specification but defining the Post-Disaster indicator relatively to the randomly generated placebo date, and repeat the procedure for each of the 1000 draws.

Figure B1 displays histograms of the placebo coefficient associated to the change in the gap in climate change beliefs between liberals and conservatives ($\beta_L - \beta_C$). These distributions are centered around zero and there are only 20 placebo draws (resp. 9) out of 1000 that

[22]Results are robust to further increasing the window size to eight weeks (eight weeks before, eight weeks after).

produce an estimate that is larger than our baseline for the climate change concerns outcome (resp. environment vs jobs outcome). Relatedly, there are only 9 draws out of 1000 that produce estimates of β_L that are greater than our baseline and, simultaneously, estimates of β_C that are smaller than our baseline.

Other robustness checks. We perform several additional tests. First, we address the concern that the results may reflect heterogeneity in the effect of disasters by socio-economic characteristics correlated with ideology, rather than by ideology itself. To tackle this issue, we augment our main specification to include the interaction of the post-disaster dummy with age, education, gender, and income. Figure 3 shows that including these controls has virtually no impact on the baseline estimates.

Second, in Figure 4, we vary the time window relative to the disaster that defines the treatment and control groups. We obtain very similar results for windows of two, three, or five weeks. On the other hand, the estimates for both conservatives and liberals start to attenuate as we increase this event window further (to six or eight weeks). This pattern suggests that disaster exposure triggers short-term effects that decay with time.

Third, we show that the results are not driven by outliers. Figure B2 presents estimates of our baseline specification dropping from the sample one state at a time. The estimates remain robust to excluding any individual state and are thus not driven by any individual state or any individual disaster event.[23] We also obtain similar results using different functional forms for the dependent variable (i.e., ordered probit or a linear probability model), or more conservative clustering of the standard errors (at the level of state rather than county) (Figures B3 and B4).

Views on other divisive policy issues. In Figure 5, we turn to test for any effect of disaster exposure on views on other politically divisive issues. We consider four questions asked regularly in the CES and available over a similar time period as the questions on

[23] As an additional robustness check, we verify that our results are robust to excluding counties with few respondents (e.g., less than 25). Note that since our analysis is at the respondent level, such counties receive low weight in the regressions and have a minor influence on the estimates.

environmental views. These include a four-point scale of support for allowing abortion access, a dummy for opposition to increasing border security on the US-Mexican border, a three-point scale of support for restricting gun sales, and a 0 to 100 scale of preferences to tax increases over spending cuts. We recode all outcomes such that higher values always indicate a more left-leaning position. To facilitate a comparison of the magnitudes of the effects, we convert all of these outcomes to z-scores with mean zero and standard deviation equal to one and estimate specifications identical to that in Figure 2 (a) for each of these dependent variables.

The pattern of increased polarization after a disaster is not replicated for any of these policy issues. If anything, for some outcomes, we observe effects going in the *opposite* direction – e.g., a slight increase in opposition to border restrictions for very conservative respondents and a slight decline in preferences for tax increases over spending cuts for very liberal respondents. These findings indicate that disaster experience polarizes environmental views without making people generally more conservative or progressive.

Finally, we use governor approval ratings available from the CES to investigate disapproval of the government's disaster management as a mechanism behind the conservative backlash effect. If this mechanism is at play, we would expect conservatives to express lower approval of their state governor – the political office typically responsible for disaster management. However, Table B3 suggests no significant effect of disaster exposure on conservatives' approval of either Republican or Democrat incumbents (though we find positive effects for Liberal respondents).

Heterogeneity by disaster characteristics. We also explore how the effect of disaster experience on climate change beliefs varies depending on the characteristics of the event. We present these results in Figure B5. In panel (a), we estimate the effect of disaster experience separately for disasters of different severity, as proxied by the type of declaration reported by FEMA. We find similar effects for emergency declarations (the default category) and major disaster declarations (the category of more severe disasters that are granted additional aid).

In panel (b), we distinguish between the effects of hurricanes and storms (which account for over 80% of the data) and other disaster types. Our baseline result is preserved in the sub-sample of hurricanes and storms, while we find no significant effects in the smaller sample of other disaster types. In panel (c), we explore the role of past disaster experiences, splitting the sample by the median number of disasters the county of the respondent has experienced over the past 5 years. Interestingly, the divergence in environmental beliefs is more pronounced in situations with low past disaster experience.

Effects by distance to the event. Are the effects of disaster exposure on environmental views localized to affected counties or do they spread to neighboring areas? To answer this question, we redefine the treatment as an indicator equal to one if a disaster occurred in a neighboring county in the four weeks before the survey and equal to zero if a disaster occurred in a neighboring county in the four weeks after the survey. To isolate the effect of the indirect exposure, we only consider respondents in counties not directly affected by any event. The results, presented in Figure B6, indicate that the indirect experience of disasters also has a polarizing effect on attitudes towards climate change and the environment. This effect tends to decay with distance, as attested by the smaller and less precise estimates for disasters affecting second-degree neighbors relative to those affecting first-degree neighbors.[24]

4 Disasters and the news coverage of climate change

A large literature has demonstrated the role of exposure to slanted media coverage in shaping beliefs on policy-relevant issues (DellaVigna and Kaplan 2007; Martin and Yurukoglu 2017, e.g.), including beliefs on climate change and the environment (Djourelova et al. 2024; Ash et al. 2023). In this section, we explore the role mass media may play in the divergence of climate change beliefs in the immediate aftermath of a disaster. Specifically, we hypothesize that by voicing conflicting narratives about the causes of the disaster, media coverage may

[24]This result is consistent with previous findings regarding the spatial effects of wildfires (Hazlett and Mildenberger 2020) and floods (Gallagher 2014; Rüttenauer 2021) on environmental attitudes and behaviors.

make ideological divisions on climate change more salient.

4.1 Local newspapers

We start by documenting how disasters and climate change are covered in liberal and conservative media in the aftermath of a disaster, analyzing (i) the volume of coverage of these issues before and after a disaster occurs and (ii) the tone of the coverage conditional on both issues making the news.

Empirical strategy. To analyze the dynamics of news coverage in local newspapers, we compare the number of articles about disasters and climate change published in a given newspaper before and after a disaster hits the area served by the newspaper. To proxy for the political leaning of a newspaper, we use the Republican vote share in the most recent presidential election in the county where the newspaper is headquartered.[25] Specifically, we estimate regressions of the form:

$$\begin{aligned} Coverage_{nct} = \alpha &+ \beta_D(Post\_Disaster_{ct} \times Dem_{c,y(t)}) \\ &+ \beta_R(Post\_Disaster_{ct} \times Rep_{c,y(t)}) + \psi_{m(t)} + \phi_{n,y(t)} + \epsilon_{nct}, \end{aligned}$$

where $Coverage_{nct}$ is the IHS-transformed number of articles related to disasters or climate change published by newspaper n, headquartered in county c, in a week t; $Post\_Disaster_{ct}$ is a dummy variable which takes value 0 in the four weeks *before* a disaster and 1 in the four weeks *after* a disaster; $\phi_{n,y(t)}$ and $\psi_{m(t)}$ are newspaper-year and year-month fixed effects respectively, and ϵ_{nct} is the error term. We allow the effect of $Post\_Disaster_{ct}$ to vary depending on the political leaning of the newspaper's market by interacting $Post\_Disaster_{ct}$ with dummies for above- and below-median Republican vote share in county c and year y – $Rep_{c,y(t)}$ and $Dem_{c,y(t)}$. We cluster standard errors by county.

[25] This choice is motivated by the strong association between the ideological slant of a newspaper and the political make-up of the market it serves (Gentzkow and Shapiro 2010). The fact that a large share of the circulation of US local papers is typically concentrated in the HQ's county also supports this choice (Djourelova et al. 2023).

Main results. Table 4 presents the results of this specification. We find that disaster-related news in local newspapers increase by about 30% in the aftermath of a local event. The magnitude of the effect is similar for newspapers headquartered in Republican and Democratic counties. However, there is substantial heterogeneity in the evolution of news coverage of climate change, which increases significantly in newspapers in Democratic counties (+2.3%) but not in newspapers in Republican counties.

Effects by time and distance to the event. Figure 6 illustrates the dynamics of the effect for disaster-related news (panel a) and climate change news (panel b) separately for newspapers in Democratic counties and Republican counties. In both groups, we observe a sizable increase in coverage of disasters, which starts in the week after the onset and lasts for at least six weeks. Coverage of climate change on newspapers in Democratic counties increases significantly in the 2-3 weeks after the event, while there is no detectable effect for newspapers in Republican counties. In Figure B7, we also investigate the spatial reach of these effects, redefining the treatment as an indicator equal to 1 if a disaster occurred in a county neighboring the newspaper's HQ over the past four weeks and equal to 0 if a disaster occurred in a neighboring county over the following four weeks. In this specification, we exclude newspapers in directly affected counties. The results suggest significant spillovers in disaster-related and climate change-related news that tend to decay with distance.

Tone of coverage. In addition to the number of articles about disasters and climate change, we are interested in understanding how they talk about these topics and, in particular, whether they make or negate a causal connection between the two issues. Quantifying this aspect is challenging since implied causal connections are difficult to capture with standard text analysis techniques, and manual annotation is costly for large corpora like ours. We therefore turn to a new annotation method using the ability of large language models - namely OpenAI's GPT engine - to infer subtle meanings from the text. We focus on the set of articles that include both disaster- and climate change-related keywords and that are published in the four weeks after the onset of a local disaster. 8,361 articles satisfy these

criteria. For each article, we prompt GPT to answer four questions:[26] (i) Do the articles imply that there is a causal connection between climate change and extreme weather?, (ii) Does the article negate a causal connection between extreme weather events and climate change?, (iii) Does the article say that climate change is an important issue? (iv) Does the article use sarcasm when discussing the issue of climate change?

Appendix A.2 provides examples of the resulting annotation. To validate this method, we compare the answers provided by GPT to those provided by two independent research assistants for a random sample of 300 articles. Figure A4 shows that the agreement between GPT and a given human annotator is very similar to the agreement between two human annotators. We measure agreement by an accuracy score, i.e., the ratio of answers that are classified identically by GPT and by the human annotator over the number of total answers. This lends credence to the method's reliability for this specific annotation task.[27]

Figure 7 presents the relationship between each of the four measures of content and the Republican vote share in the newspaper's HQ county. Panels (a) and (b) show that the share of articles stating the importance of climate change and implying a causal connection between climate change and disasters decreases the more Republican the area served by the newspaper. In contrast, panel (c) and panel (d) indicate that the share of articles that negate a causal connection between climate change and disasters and use a sarcastic tone when discussing climate change increases the more conservative the newspaper's audience. These findings indicate strong differences in media narratives in the aftermath of disasters depending on the slant of news outlets.

In addition, we provide evidence that disasters trigger a growing divide in the narrative conveyed by local newspapers. To do so, we first annotate all articles jointly mentioning disaster and climate change keywords in the four weeks prior to a local disaster event using GPT. We then estimate our main newspaper coverage specification using the IHS-transformed

[26] In practice, we prompt GPT to act as a text annotator. We list the questions it will be asked to answer for each news report, and ask it to return answers as "yes", "no" or "not discussed/not sure/conflicting". In our main results, we group the latter two categories together, but we obtain similar results excluding segments coded as "not discussed/not sure/conflicting."

[27] See Gilardi et al. (2023) and Törnberg (2023) for validation of GPT's annotation task performance in other contexts.

number of articles with a given content as the dependent variable, and we include the IHS-transformed number of articles mentioning disaster and climate change keywords as a control variable to account for the increase in disaster and/or climate change news after a disaster. Table 5 presents the results. We find substantial heterogeneity in the impacts of disasters on the narratives about climate change and disasters along ideological lines. For instance, newspapers headquartered in Democratic counties increase the number of weekly stories implying a causal connection between a disaster and climate change by 1.8% following a disaster, whilst newspapers in Republican counties decrease the production of such content by 0.9%. We observe a similar increase in the gap between liberal and conservatives for the other three types of narratives we measure. Taken together, this evidence indicates that disasters impact not only *what* local newspapers choose to cover, but also *how* they cover it.

4.2 Cable news

Next, we analyze the coverage of disasters and climate change on cable TV. Since news content on cable channels is not differentiated by location, we focus on large disasters attracting national coverage. In particular, we look at news coverage of large disasters on CNN, MSNBC, and Fox News in the weeks before and after each event. To minimize the overlap between the period after one disaster and before another, we focus on the 10 disasters that received most relief funds by FEMA between 2009 and 2021 (the period for which TV data are available).[28]

Panel (a) of Figure 8 shows the volume of news coverage of disasters and climate change, respectively - measured by the number of 15-second snippets that include the relevant keywords - in the four weeks before and after the onset of the disaster. It is clear that news coverage of the disaster increases dramatically after the event starts, and this pattern is common to CNN, MSNBC, and Fox News. A different picture emerges for the coverage of climate change. Though the level of pre-disaster coverage is slightly higher on Fox News than on the other channels, the number of segments on climate change more than doubles after

[28]This includes Hurricane Irene (August 2011), Hurricane Isaac (August 2012), Hurricane Sandy (October 2012), Hurricane Harvey, Hurricane Irma & Hurricane Maria (August & September 2017), Hurricane Florence & Hurricane Michael (September & October 2018), Hurricane Laura (August 2020) and the 2017 and 2018 Californian wildfires.

the event on CNN and MSNBC but remains virtually unchanged on Fox News.

We also explore qualitative differences between channels in how they cover climate change and its link with disasters. To this end, we apply the same procedure described above for newspapers to the 5,237 TV segments that include both disaster and climate change keywords within a minute from each other.[29] The results are shown in panel (c) of Figure 8. They indicate that, compared to CNN and MSNBC, Fox News is significantly less likely to report that climate change is an important issue and to suggest a causal connection between climate change and natural disasters. In contrast, it is much more likely to explicitly negate this connection and to use sarcasm when discussing climate change. The differences are sizable, ranging between 10 and 30 percentage points depending on the outcome.

Taken together, our results reveal significant ideological disparities in how local and national media cover climate change and its correlation with natural disasters.

5 Environmental beliefs and media discourse

Our results suggest that disasters polarize environmental beliefs and trigger conflicting media discourse on climate change. In this section, we provide suggestive evidence of the link between these two effects.

Role of media coverage. As a first suggestive test of the role of media in the polarization of beliefs, in Table 6 we consider the presence of local media in the affected locality. To do so, we use information on the universe of US daily newspapers available from the Editor & Publisher 2010 yearbook. Following the literature (Gentzkow and Shapiro 2010; Djourelova et al. 2023), we consider as local to a county all newspapers headquartered in that county and estimate the effect of local disasters separately for counties with no local newspapers and counties with one or more newspapers. The results indicate that the polarizing effect of

[29] As for newspapers, we validate the quality of the annotations by GPT against a human benchmark (Appendix Figure A5).

disaster experience only holds in the latter subsample.[30] We interpret this result as suggestive of a mediating role of local media exposure in generating belief polarization in the aftermath of disasters.

Role of exposure to opposing narratives. Conditional on the presence of a local newspaper, we can further differentiate between respondents exposed to a high or low volume of climate change coverage in the aftermath of a disaster. In Table 7, we restrict attention to respondents in counties with a local newspaper covered by our data on content. For each disaster event, we compute the total number of climate change articles published four weeks after the event and split the sample at the sample median of about 12 articles. We find that the backlash among conservatives is significantly stronger for respondents exposed to high climate change coverage than for those exposed to low climate change coverage (p-value < 0.01). Conversely, the effect on liberals is more pronounced for respondents exposed to low local climate change coverage than for those exposed to high local climate change coverage (p-value $= 0.13$). The pattern is similar if we consider the number of articles explicitly suggesting a causal connection between the disaster and climate change.[31]

This result suggests that the polarization in environmental beliefs is more pronounced in situations of a clash between the local media discourse and respondents' ideology. To the extent that high climate change coverage is generated in liberal-leaning areas (as suggested by Table 4), this result is also indicative of a direction of causality running from media coverage to the change in opinions on climate change rather than the reverse. If local media cater to the ideological majority in their audience, we would expect that demand-driven changes in coverage align with changes in the views of the majority. Instead, we find, if anything, larger changes in respondents' views if they are exposed to opposing coverage.[32]

[30] While counties with and without a local newspaper differ on many dimensions, we find that the ideology-specific pre-disaster levels of environmental concerns are similar in the two subsamples – i.e., conservatives (liberals) in counties with a local newspaper have similar baseline beliefs to conservatives (liberals) in counties without a local newspaper.

[31] As in the previous table, the ideology-specific pre-disaster levels of environmental concerns are similar in each subsample.

[32] We find a similar pattern of heterogeneity, though less pronounced, if we split the sample by the Republican vote-share in the respondent's county (Table B4).

6 Conclusion

This paper documents a polarizing effect of disaster experiences on views about climate change and the environment. Using large-scale survey data linked to the universe of disaster events declared by FEMA, we find robust evidence that liberal respondents express more significant concerns about climate change and the environment in the aftermath of a local disaster. In contrast, conservative respondents show the opposite effect. In other words, individuals interpret the same experience differently depending on their prior ideological beliefs and update their environmental beliefs in opposite directions as they witness the same event. The finding of belief divergence contradicts the predictions of standard models of learning. It is, however, consistent with disaster occurrence triggering conflicting media discourse around the disasters' causes, thereby making ideological disagreements on climate change more salient.

Our findings contribute to the ongoing debate on ideological polarization. We demonstrate that ideological differences in beliefs can endure and even increase in the presence of pertinent signals, particularly when these signals heighten the salience of ideological divides. As a result, our analysis indicates that, contrary to prevailing political strategies, such times may not be the most opportune for fostering consensus. Specifically, in the context of climate change policy and activism, efforts to raise awareness or garner broad support for climate policies immediately following natural disasters may trigger conservative opposition. Our results also suggest that the politicization of climate change in mass media may act as a substantial obstacle to achieving consensus regarding its existence and urgency.

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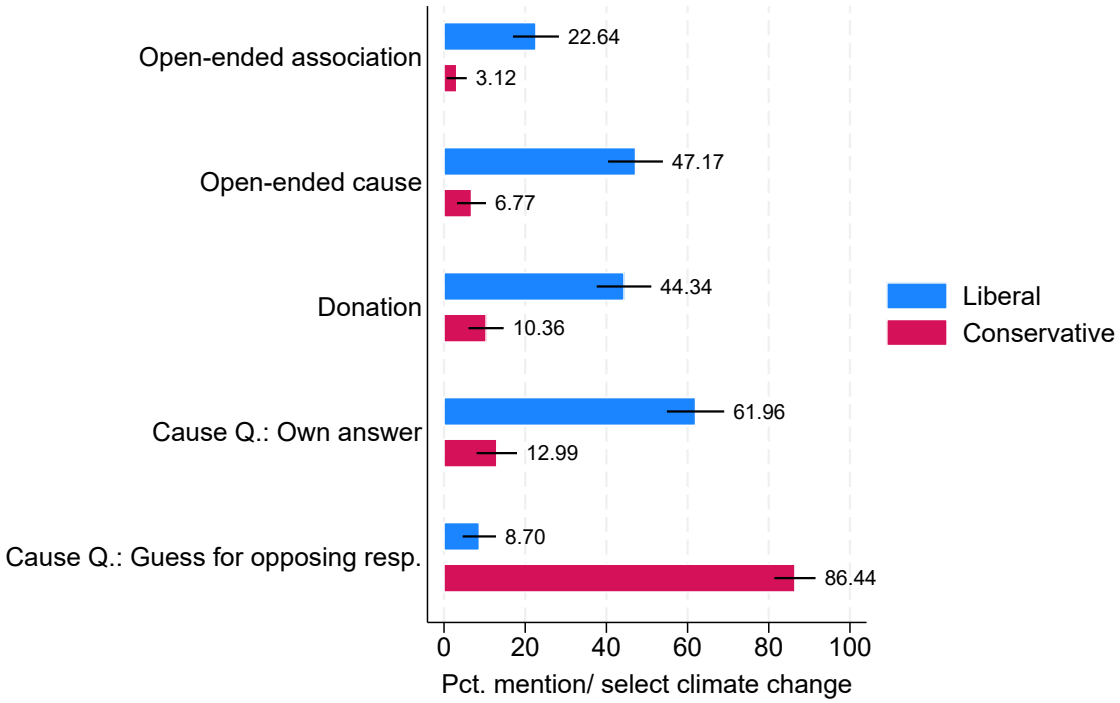
7 Figures

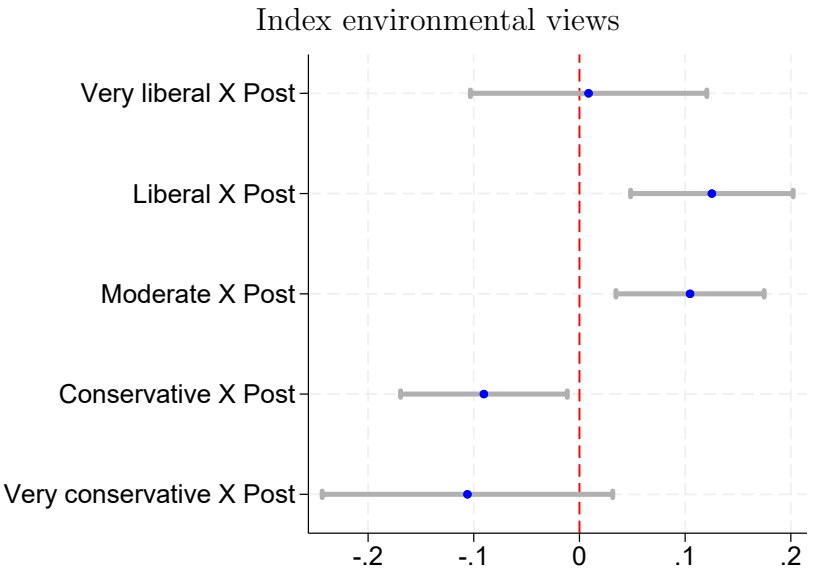
Figure 1: Attribution of disasters to climate change: Prolific survey



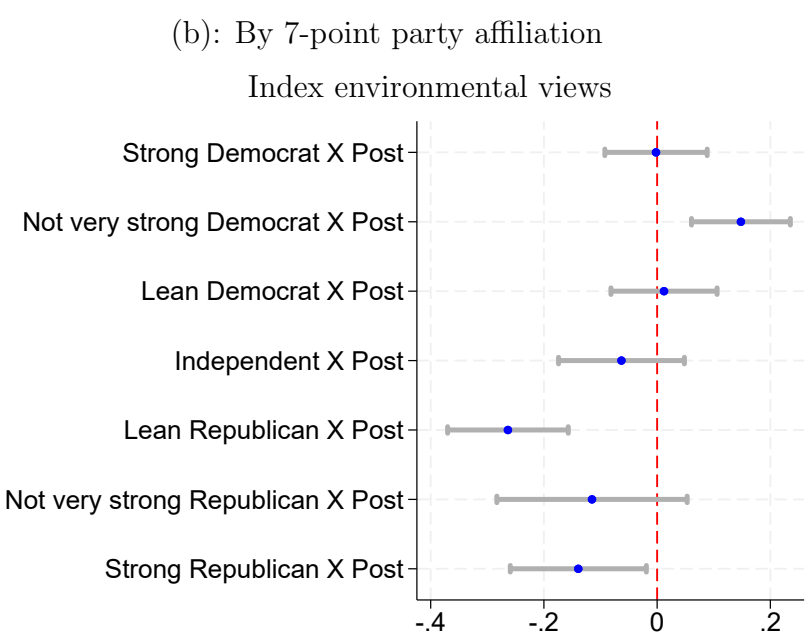
Notes: Attribution of disasters to climate change, by respondent ideology. The measures relate to a video depicting the surge of hurricane Ian, and are defined as follows (from top to bottom): 1. Mention of "climate change" or "global warming" in an open-ended question about associations with the video; 2. Mention of "climate change" or "global warming" in an open-ended question about the cause of the event depicted in the video; 3. Choice of donation to a carbon reduction charity; 4. Selection of climate change in a multiple-choice question about the cause of the disaster depicted in the video; 5. Guess that a respondent of opposing ideology chooses climate change in question 4.

Figure 2: Disaster occurrence and climate change / environmental concerns: Estimates by detailed ideology and party affiliation

(a): By 5-point ideology scale

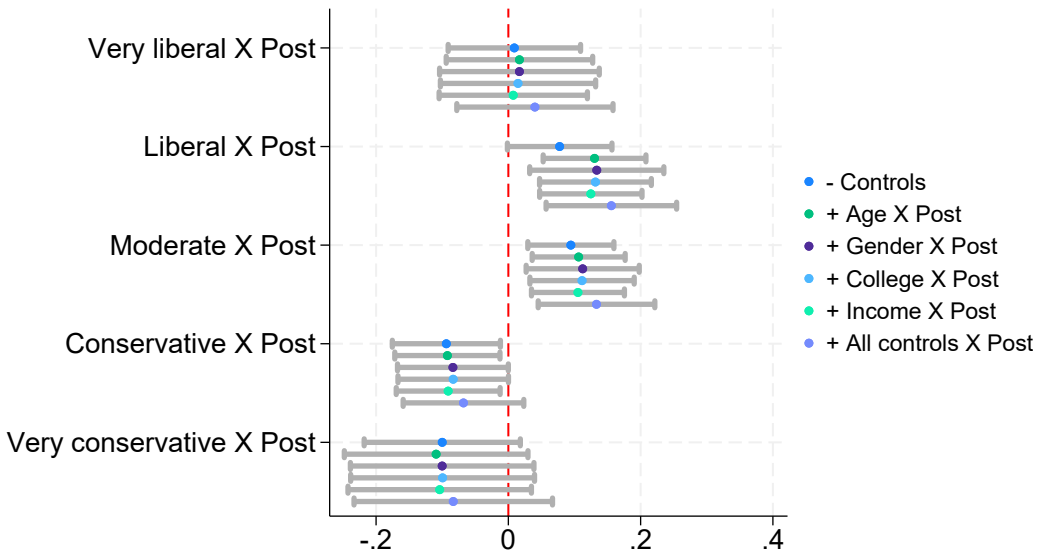


(b): By 7-point party affiliation



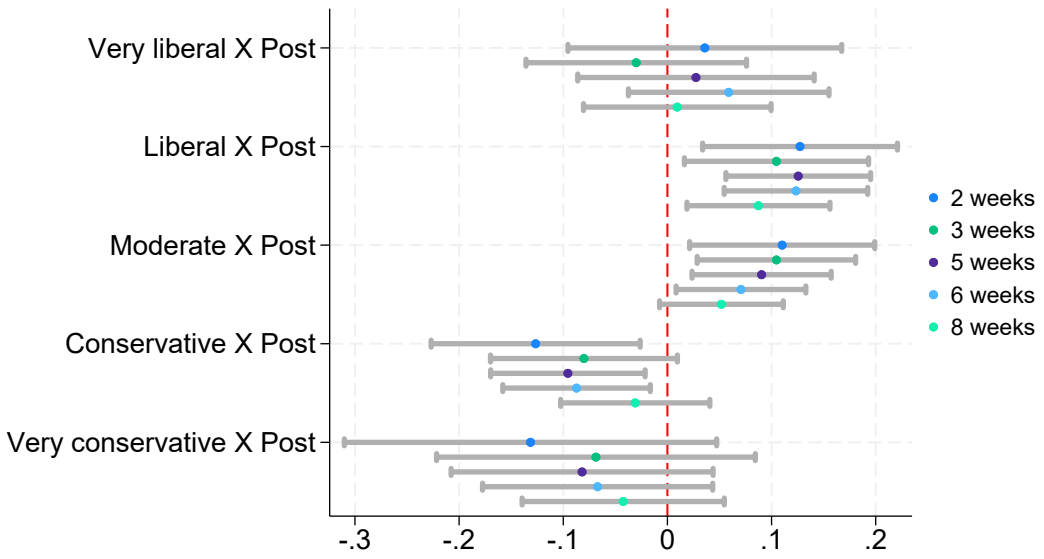
Notes: Point estimates and 95% confidence intervals from a regression of an index of environmental views on the interaction of a full set of categories for respondents' ideology (panel a) or party affiliation (panel b) with an indicator for being surveyed after a local disaster. The sample includes respondents surveyed up to 4 weeks before or up to 4 weeks after a local disaster. All specifications control for respondent characteristics, including the main effects of 5-point ideology/ 7-point party affiliation category, month-year and county × survey year FEs. Standard errors clustered by county.

Figure 3: Robustness: Additional controls for respondent characteristics × Post-Disaster



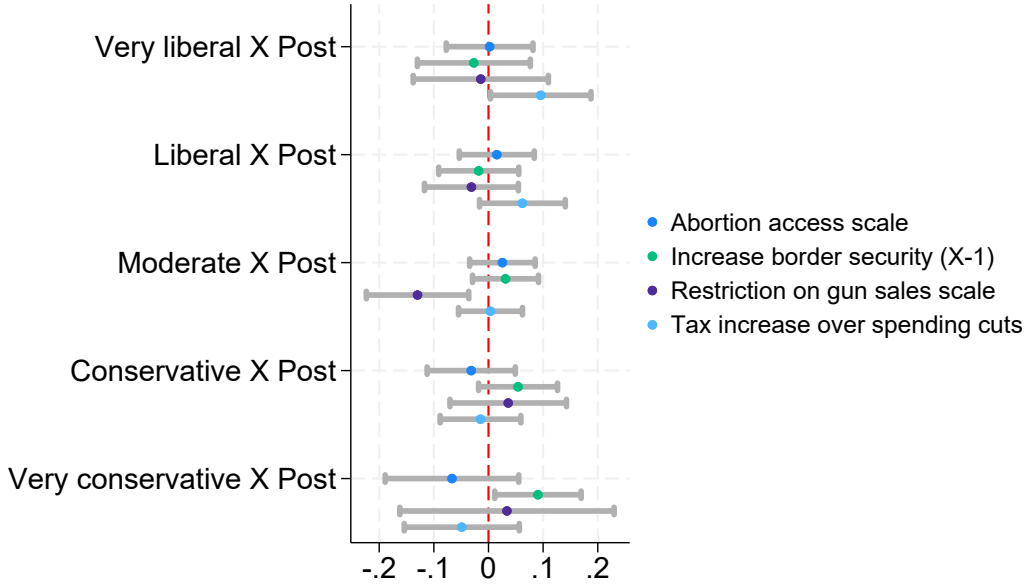
Notes: Point estimates and 95% confidence intervals from a regression of an index of environmental views on the interaction of a full set categories for respondents' ideology with an indicator for being surveyed after a local disaster. Each coefficient corresponds to our baseline specification augmented with the interaction of a respondent-level covariate with an indicator for post-disaster. The sample includes respondents surveyed up to 4 weeks before or up to 4 weeks after a local disaster. All specifications control for respondent characteristics, including the main effects of 5-point ideology, year-month and county × survey year FEs. Standard errors clustered by county.

Figure 4: Robustness: Alternative time windows



Notes: Point estimates and 95% confidence intervals from a regression of an index of environmental views on a full set categories for respondents' ideology with an indicator for being surveyed after a local disaster. Each coefficient replicates our baseline specification, but varies the time-window for the definition of pre- and post-disaster. The sample includes respondents surveyed up to 8 weeks before or up to 8 weeks after a local disaster, subject to the above time-windows for the definition of pre- and post-disaster. All specifications control for respondent characteristics, including the main effects of 5-point ideology, year-month and county × survey year FEs. Standard errors clustered by county.

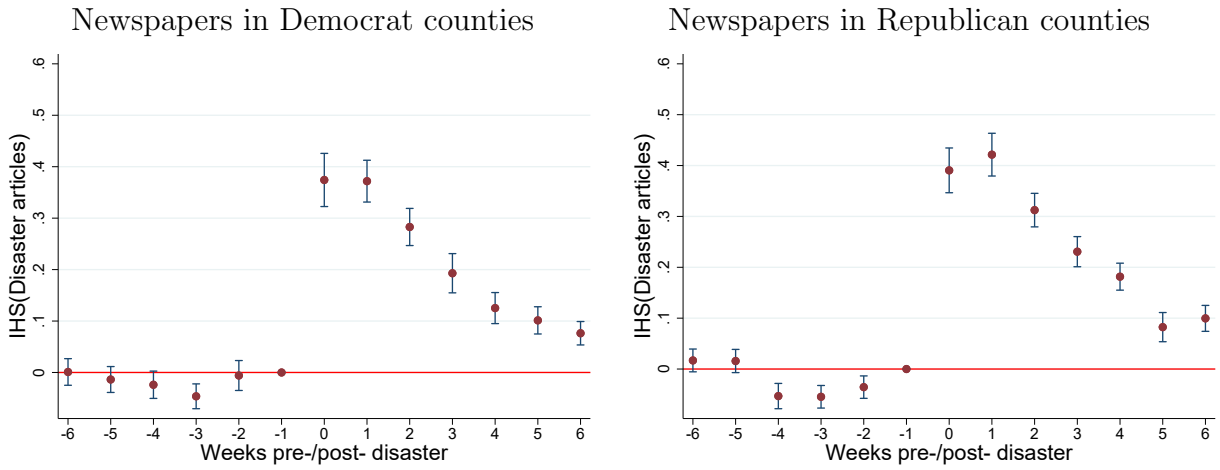
Figure 5: Disaster occurrence and other policy views



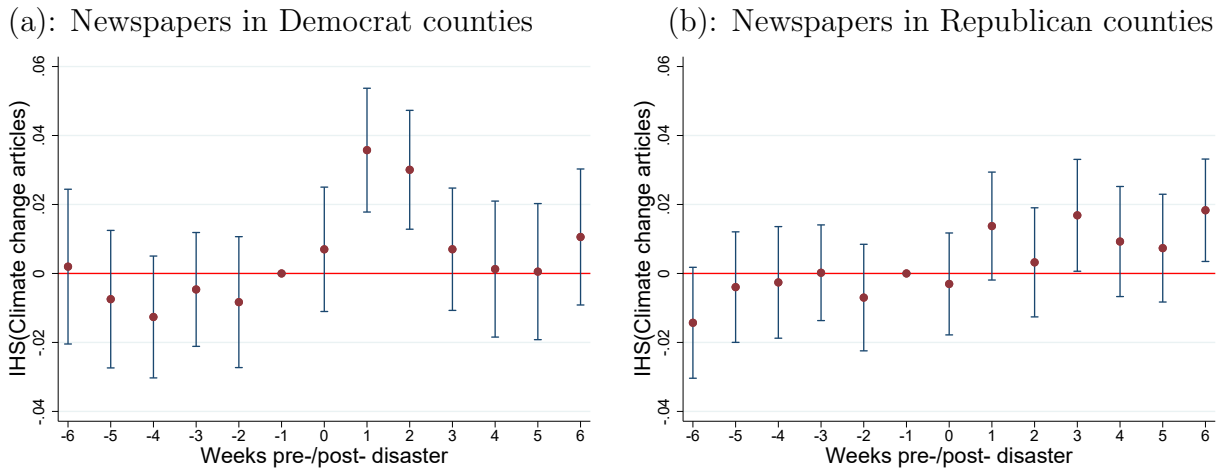
Notes: Point estimates and 95% confidence intervals from a regression of views on other policies on the interaction of a full set of categories for respondents' ideology with an indicator for being surveyed after a local disaster. The sample includes respondents surveyed up to 4 weeks before or up to 4 weeks after a local disaster. All specifications control for respondent characteristics, including the main effects of 5-point ideology, month-year and county × survey year FEs. Higher values of the dependent variables always indicate more liberal policy views, and outcomes are recoded to z-scores with mean zero and standard deviation 1. Standard errors clustered by county.

Figure 6: Local news coverage of disasters and climate change: Event studies

(a): Disaster coverage



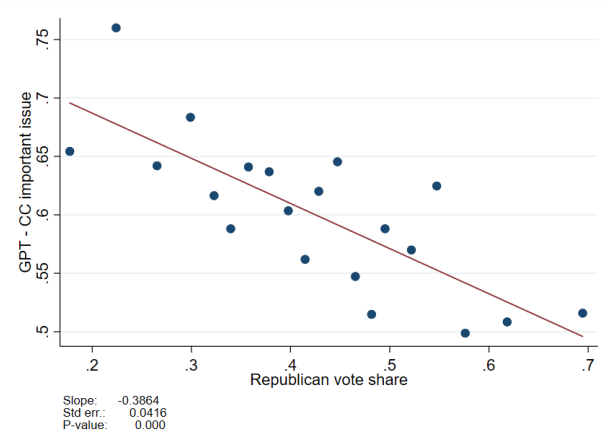
(b): Climate change coverage



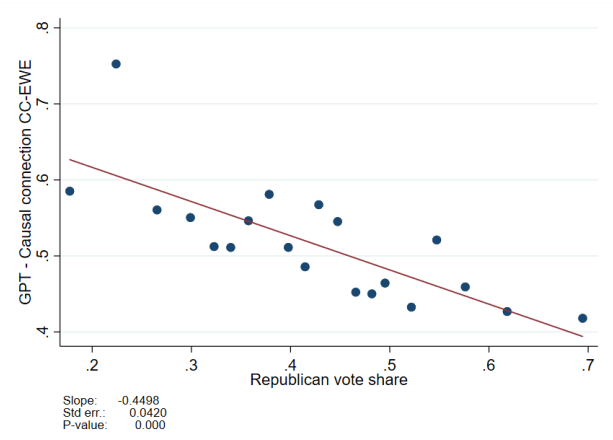
Notes: Event-studies for the effect of local disaster occurrence on disaster and climate change related coverage in local newspapers. The dependent variable is the IHS-transformed number of disaster related articles (panel a) or climate change related articles (panel b) by newspaper and week. Time zero corresponds to the start week of a FEMA disaster in the county of the newspapers' HQ and the omitted category is the week prior to the start date. All specifications control for year-month and newspaper × year FEs. Standard errors clustered by county.

Figure 7: Local news coverage of disasters and climate change: GPT content analysis

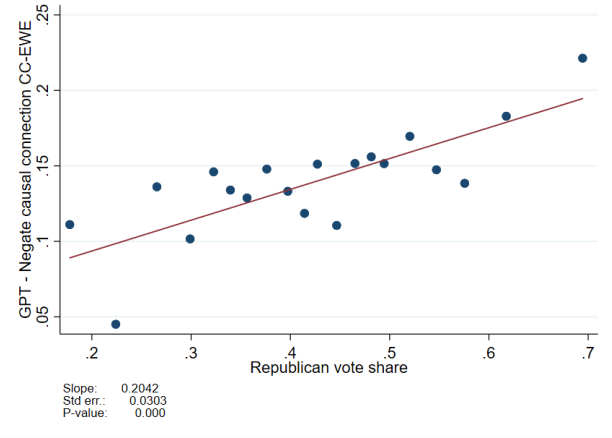
(a): Climate change important



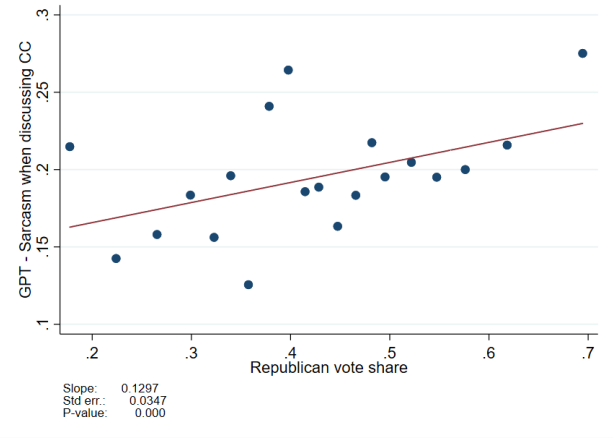
(b): Causal connection



(c): Negate causal connection



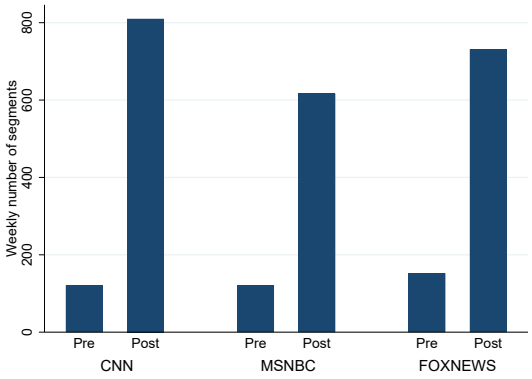
(d): Sarcasm



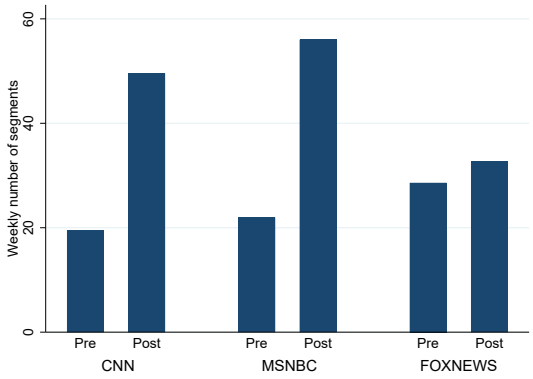
Notes: Binscatter plots for the relationship between the Republican vote share in a newspaper's HQ county and GPT's annotations of the articles related to disasters and climate change published by that newspaper in the 4 weeks after a local disaster.

Figure 8: Cable news coverage of disasters and climate change

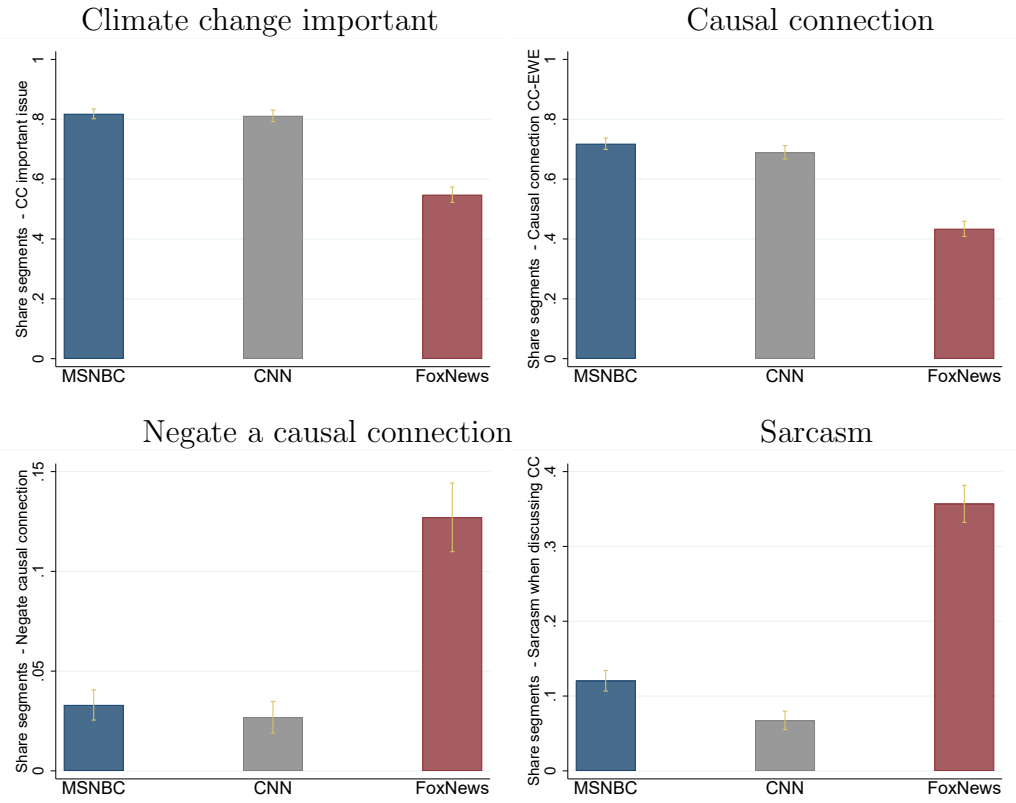
(a): Volume of disaster coverage



(b): Volume of climate change coverage



(c): Tone of coverage in segments mentioning both disaster- and climate change related keywords: GPT annotation



Notes: Volume of coverage of disasters (panel a) and climate change (panel b) on cable TV, comparing the 4 weeks before and 4 weeks after the occurrence of a major national-interest disaster. Major disasters are defined as the top 10 non-overlapping disaster events declared by FEMA that receive the most relief funding in the period 2009-2021.

8 Tables

Table 1: Stated beliefs and climate change donations (Prolific survey)

	(1)	(2)	(3)	(4)	(5)
	Carbon reduction donation (0/1)				
Climate change mentioned:					
Open-ended association	0.209***				
	(0.079)				
Climate change mentioned:					
Open-ended cause		0.285***			
		(0.060)			
Climate change selected:					
Multiple choice cause			0.306***		
			(0.060)		
Climate change concerns (5-point scale)				0.099***	
				(0.019)	
Environment vs jobs (5-point scale)					0.055***
					(0.018)
Conservative	-0.287***	-0.214***	-0.181***	-0.159***	-0.243***
	(0.046)	(0.049)	(0.055)	(0.059)	(0.055)
Respondent controls	Yes	Yes	Yes	Yes	Yes
Observations	404	404	361	404	404
R^2	0.18	0.22	0.23	0.20	0.17

Notes: Regressions of an indicator for choosing to donate to a climate change cause (*Carbon180*) on measures of stated climate change beliefs/ associations. Respondent controls include age, gender, college degree and income. Significance levels: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table 2: Disaster occurrence and climate change / environmental concerns

	Environment vs jobs (5-point scale)			Climate change concerns (5-point scale)			Index environmental views (z-score)		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Post-Disaster	0.023			-0.022			0.005		
	(0.033)			(0.034)			(0.029)		
Liberal × Post-Disaster		0.135***	0.139***		0.075**	0.070*		0.087**	0.089**
		(0.044)	(0.044)		(0.037)	(0.038)		(0.035)	(0.035)
Moderate × Post-Disaster		0.139***	0.148***		0.057	0.060		0.103***	0.105***
		(0.045)	(0.046)		(0.041)	(0.042)		(0.036)	(0.036)
Conservative × Post-Disaster		-0.124***	-0.120***		-0.123***	-0.128***		-0.113***	-0.111***
		(0.045)	(0.045)		(0.047)	(0.049)		(0.042)	(0.043)
Respondent controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Month-Year FEs	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
County FEs	Yes	Yes	No	Yes	Yes	No	Yes	Yes	No
County× Survey-Year FEs	No	No	Yes	No	No	Yes	No	No	Yes
Observations	15,251	14,233	14,226	13,980	13,031	12,979	12,783	11,934	11,917
Number of counties	561	542	542	529	511	501	493	479	476
R^2	0.08	0.25	0.25	0.09	0.36	0.37	0.09	0.36	0.36
Baseline Lib.-Cons. gap	1.22	1.22	1.22	1.55	1.55	1.55	1.22	1.22	1.22

Notes: Effect of local disaster occurrence on environmental concerns. The dependent variable is a 5-point scale of preferences for the environment over jobs in columns (1) to (3), a 5-point scale of climate change concerns in columns (4) to (6), and a standardized index aggregating these two measures in columns (7) to (9). The sample consists of respondents surveyed up to 4 weeks before or up to 4 weeks after a local disaster. *Liberal*, *Moderate* and *Conservative* denote categories of self-reported respondent ideology on a 3-point scale. Respondent controls include age, gender, college degree, income, and indicators for ideology. Standard errors are clustered by county. Significance levels: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table 3: Disaster occurrence and climate change / environmental concerns: By other proxies for ideological priors

Panel (a): Predicted priors

	By predicted prior Incl. ideology + party	By predicted prior Incl. other views
	(1)	(2)
	Index environmental views	
Q3 – high prior × Post-Disaster	0.091**	0.076**
	(0.044)	(0.037)
Q2 – medium prior × Post-Disaster	0.037	-0.011
	(0.034)	(0.047)
Q1 – low prior × Post-Disaster	-0.119**	-0.138***
	(0.047)	(0.050)
Respondent controls	Yes	Yes
Month-Year FEs	Yes	Yes
County× Survey-Year FEs	Yes	Yes
Observations	12,766	12,766
Number of counties	490	490
R^2	0.36	0.33

Panel (b): Past vote choice

	By vote in last election
	(1)
	Index environmental views
Voted for Democratic candidate × Post-Disaster	0.098**
	(0.043)
Voted for other candidate/ didn't vote × Post-Disaster	-0.231**
	(0.104)
Voted for Republican candidate × Post-Disaster	-0.150***
	(0.057)
Respondent controls	Yes
Month-Year FEs	Yes
County× Survey-Year FEs	Yes
Observations	8,450
Number of counties	374
R^2	0.41

Notes: Effect of local disaster occurrence on environmental concerns, by alternative measures of ideological priors. The dependent variable is a standardized index of climate change concerns and preference for the environment over jobs. Panel (a) presents effects by tercile of predicted environmental priors, where the prediction is based on respondents' ideology and party affiliation (column 1), or on views on other policy issues (column 2), plus demographics, state of residence, and year of the survey (both columns). Panel (b) presents effects by vote choice in the last presidential election. The sample consists of respondents surveyed up to 4 weeks before or up to 4 weeks after a local disaster. Respondent controls include age, gender, college degree, income, and the main effects of tercile of predicted priors (panel a), or vote choice in the last election (panel b). Standard errors are clustered by county. Significance levels: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table 4: Local news coverage of disasters and climate change

	(1)	(2)	(3)	(4)
	IHS(Disaster articles)		IHS(Climate change articles)	
Post-Disaster	0.311***		0.008	
	(0.014)		(0.005)	
Newspaper HQ in Democrat county × Post-Disaster		0.300***		0.023***
		(0.018)		(0.008)
Newspaper HQ in Republican county × Post-Disaster		0.320***		-0.006
		(0.018)		(0.006)
Month-Year FEs	Yes	Yes	Yes	Yes
Newspaper × Year FEs	Yes	Yes	Yes	Yes
Observations	61,787	61,715	61,787	61,715
Number of newspapers	1,089	1,086	1,089	1,086
R^2	0.87	0.87	0.70	0.70

Notes: Effect of local disaster occurrence on the newspaper coverage of disasters and climate change. The sample is restricted to the 4 weeks before and the 4 weeks after the start date of a local disaster. *Democrat_county* and *Republican_county* denote counties with below- and above-median Republican vote share in the most recent presidential election. Standard errors clustered by county. Significance levels: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table 5: Effect of disasters on local newspaper content

	(1) IHS(Causal connection)	(2) IHS(CC important)	(3) IHS(Sarcasm CC)	(4) IHS(Negate causal connection)
Newspaper HQ in Democrat county × Post-Disaster	0.018***	-0.001	0.006	-0.021***
	(0.005)	(0.006)	(0.007)	(0.006)
Newspaper HQ in Republican county × Post-Disaster	-0.009*	-0.019***	0.011**	0.006
	(0.005)	(0.005)	(0.006)	(0.005)
IHS(CC&EWE articles)	Yes	Yes	Yes	Yes
Month × Year FEs	Yes	Yes	Yes	Yes
Newspaper × Year FEs	Yes	Yes	Yes	Yes
Observations	32,516	32,516	32,516	32,516
Number of newspapers	496	496	496	496
R squared	0.57	0.69	0.45	0.62
Mean dep. var.	0.11	0.15	-0.09	-0.14

Notes: Effect of local disaster occurrence on local newspaper content. The sample is restricted to Newsbank newspapers that have published at least one article jointly mentioning a climate change and a disaster related keyword in the 4 weeks before and the 4 weeks after the start date of a local disaster. *Democrat_county* and *Republican_county* denote counties with below- and above-median Republican vote share in the most recent presidential election. Standard errors clustered by county. Significance levels: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table 6: Heterogeneity by presence of local media

	0 newspapers	$\geq$ 1 newspapers
	(1)	(2)
	Index environmental views	
Liberal × Post-Disaster	0.021	0.099***
	(0.066)	(0.038)
Moderate × Post-Disaster	0.030	0.125***
	(0.070)	(0.041)
Conservative × Post-Disaster	0.044	-0.151***
	(0.077)	(0.046)
Respondent characteristics	Yes	Yes
Month-Year FEs	Yes	Yes
County × Survey-Year FEs	Yes	Yes
Observations	2,725	9,192
Number of counties	189	287
R^2	0.38	0.36
Baseline Lib.-Cons. gap	1.22	1.22
Test for equality of coefficients		
Liberal × Post-Disaster	(1) vs (2): p-val=0.30	
Moderate × Post-Disaster	(1) vs (2): p-val=0.24	
Conservative × Post-Disaster	(1) vs (2): p-val=0.03	

Notes: Effect of local disaster occurrence on climate change and environmental concerns: heterogeneity by the presence of a local newspaper. The sample consists of counties with zero versus one or more newspapers. The dependent variable is an index of environmental beliefs. *Post-Disaster* is an indicator equal to one in the 4 weeks after the start date of a local disaster. *Liberal*, *Moderate* and *Conservative* denote categories of self-reported ideology. Respondent controls include age, gender, college degree, income, and indicators for ideology. Standard errors are clustered by county. Significance levels: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table 7: Heterogeneity by climate change coverage and narrative

	Low CC coverage	High CC coverage	Low Causal Conn.	High Causal Conn.
	(1)	(2)	(3)	(4)
	Index environmental views			
Liberal × Post-Disaster	0.206***	0.076	0.260***	0.032
	(0.062)	(0.061)	(0.070)	(0.046)
Moderate × Post-Disaster	0.192***	0.140**	0.234***	0.096
	(0.067)	(0.059)	(0.060)	(0.080)
Conservative × Post-Disaster	-0.004	-0.258***	-0.070	-0.139*
	(0.062)	(0.074)	(0.061)	(0.077)
Respondent controls	Yes	Yes	Yes	Yes
Month - Year FEs	Yes	Yes	Yes	Yes
County × Survey-Year FEs	Yes	Yes	Yes	Yes
Observations	3,656	3,677	3,644	3,689
Number of counties	118	58	116	59
R^2	0.35	0.36	0.36	0.35
Baseline Lib.-Cons. gap	1.23	1.19	1.20	1.22
Test for equality of coefficients				
Liberal × Post-Disaster	(1) vs (2): p-val=0.13		(3) vs (4): p-val=0.01	
Moderate × Post-Disaster	(1) vs (2): p-val=0.56		(3) vs (4): p-val=0.16	
Conservative × Post-Disaster	(1) vs (2): p-val<0.01		(3) vs (4): p-val=0.48	

Notes: Effect of local disaster occurrence on climate change and environmental concerns: heterogeneity by the number of climate change articles, and articles implying a causal connection between disasters and climate change. The sample consists of respondents in counties where the number of post-disaster climate change articles is below the median (column 1) and above the median (column 2), or those in counties where the number of post-disaster articles implying a causal connection between disasters and climate change is below the median (column 3) and above the median (column 4). The dependent variable is a standardized index of environmental views. *Post-Disaster* is an indicator equal to one in the 4 weeks after the start date of a local disaster. *Liberal*, *Moderate* and *Conservative* denote categories of self-reported ideology. Respondent controls include age, gender, college degree, income, and indicators for ideology. Standard errors are clustered by county. Significance levels: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

A Appendix: Data

Table A1: Comparison of the characteristics of Prolific respondents to CES respondents

	(1) CES Liberal	(2) Prolific Liberal	(3) CES Conservative	(4) Prolific Conservative
Age	46.48	39.19	49.16	47.02
Male	0.41	0.37	0.45	0.46
College Degree	0.54	0.64	0.33	0.59
Income	64.54	69.13	54.88	75.59
Climate change concerns (5-point scale)	4.49	4.84	2.75	3.08
Environment vs jobs (5-point scale)	3.78	4.17	2.35	2.55
Carbon reduction donation (0/1)	–	0.44	–	0.10

Notes: This table compares the socio-economic characteristics and stated climate change beliefs of Prolific respondents to those in the nationally-representative CES data.

Table A2: Disasters in the CES estimation sample

Declaration Name	Start Date	State	Disaster Type	Declaration Type
FM-2675-TX	9/14/2006	TX	Fire	Emergency Declaration
FM-2675-TX	9/14/2006	TX	Fire	Emergency Declaration
FM-2676-CA	9/16/2006	CA	Fire	Emergency Declaration
FM-2677-CA	9/25/2006	CA	Fire	Emergency Declaration
DR-1669-AK	10/8/2006	AK	Severe Storm	Major Disaster
DR-1665-NY	10/12/2006	NY	Severe Storm	Major Disaster
DR-1664-HI	10/15/2006	HI	Earthquake	Major Disaster
DR-1668-LA	10/16/2006	LA	Severe Storm	Major Disaster
FM-2678-CA	10/26/2006	CA	Fire	Emergency Declaration
DR-1671-WA	11/2/2006	WA	Severe Storm	Major Disaster
DR-1672-OR	11/5/2006	OR	Severe Storm	Major Disaster
FM-2679-NV	11/11/2006	NV	Fire	Emergency Declaration
FM-2680-TX	11/15/2006	TX	Fire	Emergency Declaration
DR-1670-NY	11/16/2006	NY	Severe Storm	Major Disaster
DR-1684-PA	11/16/2006	PA	Severe Storm	Major Disaster
DR-1681-IL	11/30/2006	IL	Cold/Snow	Major Disaster
EM-3269-IL	11/30/2006	IL	Cold/Snow	Emergency Declaration

Disasters affecting the CCES sample (continued)

Declaration Name	Start Date	State	Disaster Type	Declaration Type
DR-1673-MO	11/30/2006	MO	Severe Storm	Major Disaster
FM-2681-CA	12/3/2006	CA	Fire	Emergency Declaration
DR-1731-CA	10/21/2007	CA	Fire	Major Disaster
FM-2739-CA	10/22/2007	CA	Fire	Emergency Declaration
FM-2738-CA	10/22/2007	CA	Fire	Emergency Declaration
FM-2740-HI	10/28/2007	HI	Fire	Emergency Declaration
DR-1733-OR	12/1/2007	OR	Severe Storm	Major Disaster
DR-1734-WA	12/1/2007	WA	Severe Storm	Major Disaster
DR-1743-HI	12/4/2007	HI	Severe Storm	Major Disaster
DR-1741-KS	12/6/2007	KS	Severe Storm	Major Disaster
EM-3282-KS	12/6/2007	KS	Severe Storm	Emergency Declaration
DR-1736-MO	12/6/2007	MO	Cold/Snow	Major Disaster
EM-3281-MO	12/8/2007	MO	Cold/Snow	Emergency Declaration
DR-1735-OK	12/8/2007	OK	Cold/Snow	Major Disaster
EM-3280-OK	12/8/2007	OK	Cold/Snow	Emergency Declaration
DR-1737-IA	12/10/2007	IA	Cold/Snow	Major Disaster
FM-2857-CO	9/12/2010	CO	Fire	Emergency Declaration
FM-2858-CA	9/14/2010	CA	Fire	Emergency Declaration
DR-1943-NY	9/16/2010	NY	Severe Storm	Major Disaster
FM-2859-UT	9/19/2010	UT	Fire	Emergency Declaration
DR-1941-MN	9/22/2010	MN	Severe Storm	Major Disaster
DR-1947-SD	9/22/2010	SD	Severe Storm	Major Disaster
DR-1944-WI	9/22/2010	WI	Severe Storm	Major Disaster
DR-1942-NC	9/27/2010	NC	Severe Storm	Major Disaster
FM-5013-WA	9/9/2012	WA	Fire	Emergency Declaration
FM-5014-WY	9/9/2012	WY	Fire	Emergency Declaration
FM-5016-MT	9/10/2012	MT	Fire	Emergency Declaration
DR-4088-UT	9/11/2012	UT	Flood	Major Disaster
DR-4094-AK	9/15/2012	AK	Severe Storm	Major Disaster
FM-5020-WA	9/19/2012	WA	Fire	Emergency Declaration
FM-5021-CA	9/23/2012	CA	Fire	Emergency Declaration
FM-5022-CO	10/23/2012	CO	Fire	Emergency Declaration
DR-4096-DC	10/26/2012	DC	Hurricane	Major Disaster
EM-3349-MD	10/26/2012	MD	Hurricane	Emergency Declaration
EM-3360-NH	10/26/2012	NH	Hurricane	Emergency Declaration
DR-4086-NJ	10/26/2012	NJ	Hurricane	Major Disaster
DR-4099-PA	10/26/2012	PA	Hurricane	Major Disaster
EM-3356-PA	10/26/2012	PA	Hurricane	Emergency Declaration
EM-3355-RI	10/26/2012	RI	Hurricane	Emergency Declaration

Disasters affecting the CCES sample (continued)

Declaration Name	Start Date	State	Disaster Type	Declaration Type
EM-3359-VA	10/26/2012	VA	Hurricane	Emergency Declaration
DR-4087-CT	10/27/2012	CT	Hurricane	Major Disaster
EM-3353-CT	10/27/2012	CT	Hurricane	Emergency Declaration
DR-4090-DE	10/27/2012	DE	Hurricane	Major Disaster
DR-4097-MA	10/27/2012	MA	Hurricane	Major Disaster
EM-3350-MA	10/27/2012	MA	Hurricane	Emergency Declaration
DR-4085-NY	10/27/2012	NY	Hurricane	Major Disaster
EM-3351-NY	10/27/2012	NY	Hurricane	Emergency Declaration
EM-3352-DC	10/28/2012	DC	Hurricane	Emergency Declaration
DR-4098-OH	10/29/2012	OH	Hurricane	Major Disaster
DR-4093-WV	10/29/2012	WV	Hurricane	Major Disaster
EM-3358-WV	10/29/2012	WV	Hurricane	Emergency Declaration
FM-2788-CA*	10/12/2008	CA	Fire	Emergency Declaration
DR-1811-SD*	11/5/2008	SD	Cold/Snow	Major Disaster
DR-1810-CA*	11/13/2008	CA	Fire	Major Disaster
FM-2792-CA*	11/15/2008	CA	Fire	Emergency Declaration
DR-1951-VT*	12/1/2010	VT	Severe Storm	Major Disaster
DR-4161-AK*	10/27/2013	AK	Flood	Major Disaster
DR-4159-TX*	10/30/2013	TX	Severe Storm	Major Disaster
DR-4162-AK*	11/5/2013	AK	Severe Storm	Major Disaster
DR-4157-IL*	11/17/2013	IL	Severe Storm	Major Disaster
DR-4160-AR*	12/5/2013	AR	Cold/Snow	Major Disaster
DR-4164-OK*	12/5/2013	OK	Severe Storm	Major Disaster
DR-4163-VT*	12/20/2013	VT	Cold/Snow	Major Disaster
DR-1861-AR**	10/29/2009	AR	Severe Storm	Major Disaster
DR-1863-LA**	10/29/2009	LA	Severe Storm	Major Disaster
DR-1866-AL**	11/9/2009	AL	Hurricane	Major Disaster
DR-1867-NJ**	11/11/2009	NJ	Severe Storm	Major Disaster
DR-1862-VA**	11/11/2009	VA	Severe Storm	Major Disaster
DR-1869-NY**	11/12/2009	NY	Severe Storm	Major Disaster
DR-1868-KS**	11/14/2009	KS	Severe Storm	Major Disaster
DR-1870-AL**	12/12/2009	AL	Severe Storm	Major Disaster
DR-1882-DC**	12/18/2009	DC	Cold/Snow	Major Disaster
DR-1875-MD**	12/18/2009	MD	Cold/Snow	Major Disaster
DR-1871-NC**	12/18/2009	NC	Severe Storm	Major Disaster
DR-1874-VA**	12/18/2009	VA	Cold/Snow	Major Disaster
DR-1881-WV**	12/18/2009	WV	Cold/Snow	Major Disaster
DR-1873-NJ**	12/19/2009	NJ	Cold/Snow	Major Disaster
DR-1885-KS**	12/22/2009	KS	Severe Storm	Major Disaster

Disasters affecting the CCES sample (continued)

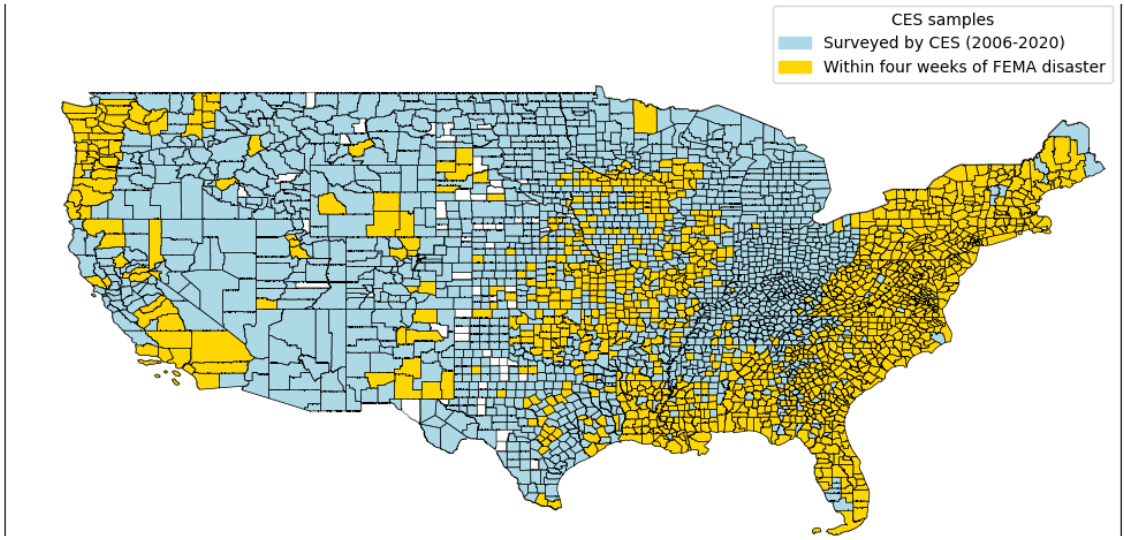
Declaration Name	Start Date	State	Disaster Type	Declaration Type
DR-1878-NE**	12/22/2009	NE	Severe Storm	Major Disaster
DR-1872-AR**	12/23/2009	AR	Severe Storm	Major Disaster
DR-1876-OK**	12/24/2009	OK	Severe Storm	Major Disaster
DR-4046-CT**	10/29/2011	CT	Severe Storm	Major Disaster
EM-3342-CT**	10/29/2011	CT	Severe Storm	Emergency Declaration
DR-4051-MA**	10/29/2011	MA	Severe Storm	Major Disaster
EM-3343-MA**	10/29/2011	MA	Severe Storm	Emergency Declaration
DR-4049-NH**	10/29/2011	NH	Severe Storm	Major Disaster
EM-3344-NH**	10/29/2011	NH	Severe Storm	Emergency Declaration
DR-4048-NJ**	10/29/2011	NJ	Severe Storm	Major Disaster
DR-4054-AK**	11/15/2011	AK	Severe Storm	Major Disaster
FM-2973-NV**	11/18/2011	NV	Fire	Emergency Declaration
DR-4053-UT**	11/30/2011	UT	Severe Storm	Major Disaster
DR-4056-WA**	1/14/2012	WA	Severe Storm	Major Disaster

Notes: This table lists all 108 disasters that occur within four weeks of any respondent in our main estimation sample being interviewed (see equation 1). The declaration name is the unique identifying string for FEMA disaster events. Emergency Declarations correspond to disasters where federal assistance cannot surpass $5 million, whereas disasters declared as Major Disasters may receive more than $5 million. Disasters not marked by any asterisk denote disasters affecting both samples, equivalently, the sample of respondents for which the environmental views index can be computed. Disasters marked by an asterisk (*) denote disasters that affect only the estimation sample pertaining to the environment versus jobs dependent variable. Disasters marked by two asterisks (**) denote disasters that affect only the estimation sample pertaining to the climate change concern variable.

Table A3: Disaster-related keywords

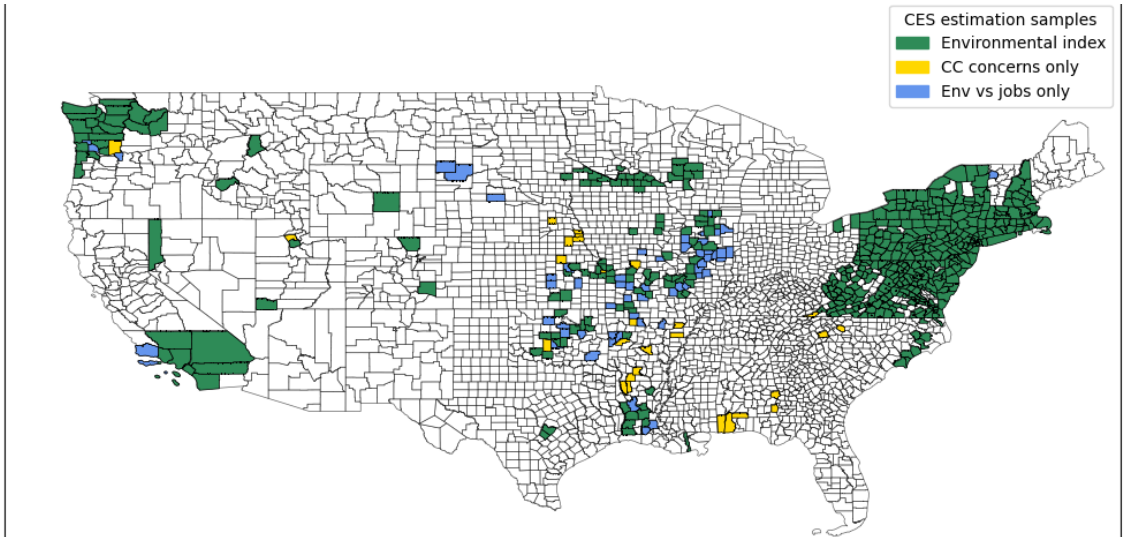
Disaster Type	**Keywords**
Cold & Snow	blizzard, coldwave, cold wave, extreme cold, snowstorm, snow storm, winterstorm, winter storm
Drought & Heat	drought, extreme heat, extreme hot, heatwave, heat wave
Earthquake & Volcano	earthquake, volcano, volcanic
Fire	bushfire, bush fire, forest fire, wildfire, wild fire, wild-fire
Flood	flood
Hurricane	hurricane, cyclone
Landslide	avalanche, landslide, land slide, mudslide, mud slide, rockfall
Storm	coastal storm, hailstorm, hail storm, superstorm, super storm, tornado, typhoon, windstorm, wind storm
General	extreme weather, natural disaster

Figure A1: Coverage of full CES sample



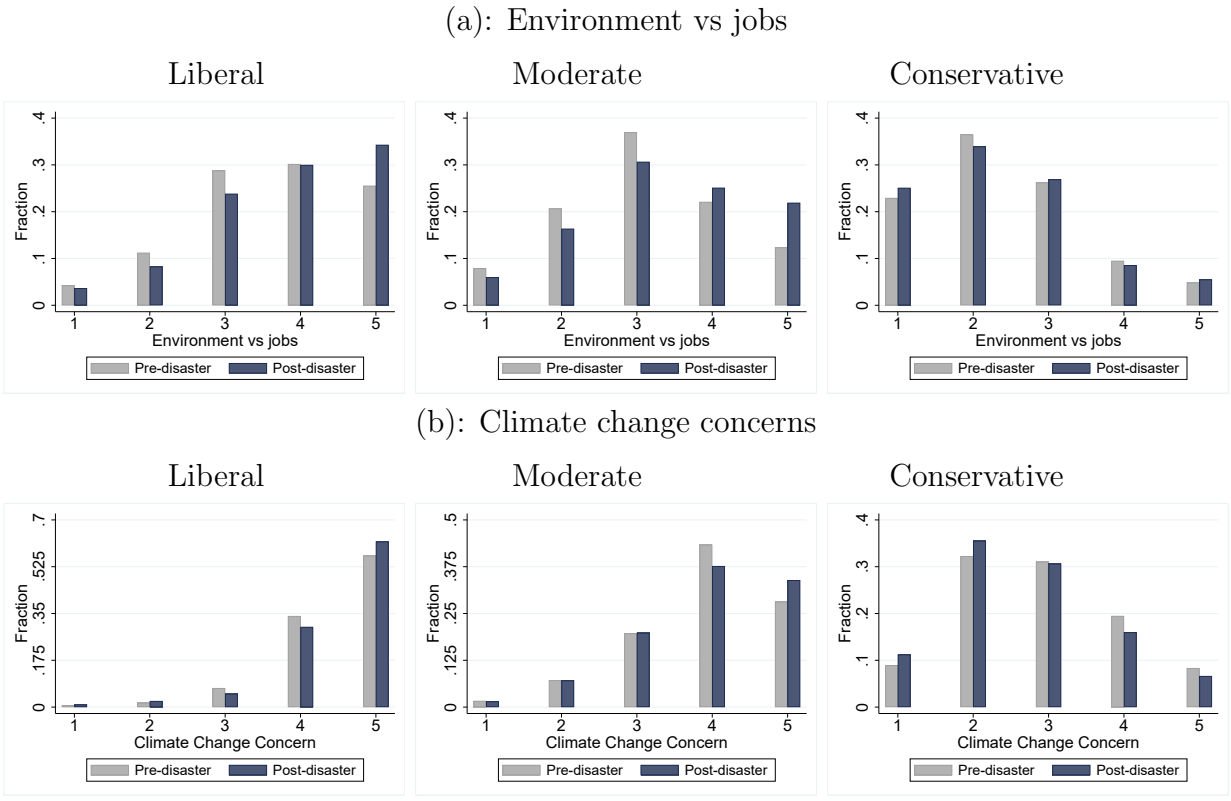
Notes: Map of US counties surveyed by the CES between 2006 and 2020 (blue and yellow counties). Counties colored in yellow are surveyed within four weeks of a local FEMA-declared disaster.

Figure A2: Coverage of the CES estimation sample



Notes: Map of US counties composing the main CES estimation samples (2006-2013). Counties colored in green are those where at least one respondent is surveyed within four weeks of a FEMA-declared disaster, and for whom both environmental attitudes variables are non-missing as well as self-reported ideology and demographic controls. Counties colored in blue (resp. yellow) are those additional counties where at least one respondent is surveyed within four weeks of a FEMA-declared disaster, and for whom only the environment versus jobs (resp. climate change concerns) variable is non-missing as well as self-reported ideology and demographic controls.

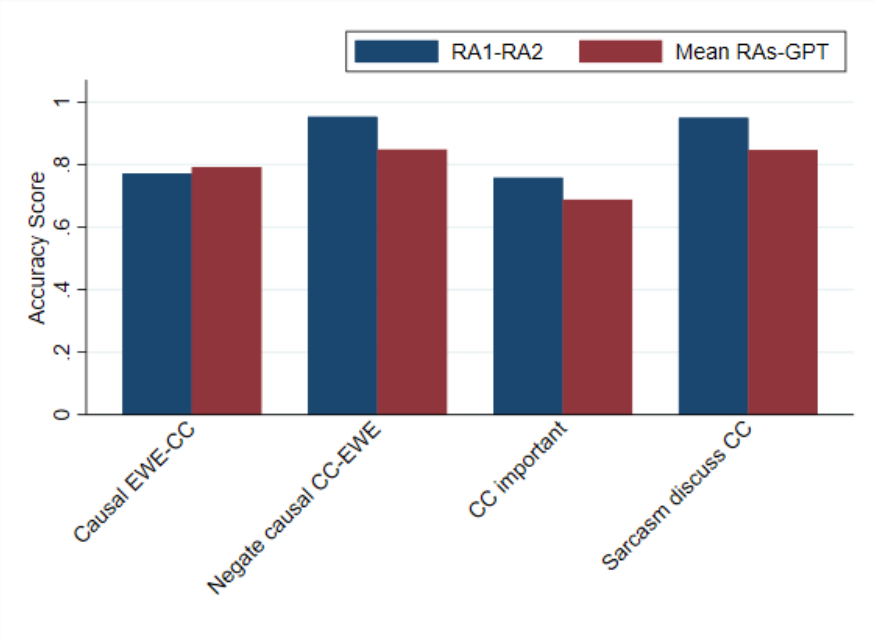
Figure A3: Climate change / environmental concerns: Distribution pre- and post- a local disaster



Notes: Distribution of preferences for the environment over jobs (panel a) and climate change concerns (panel b) by respondent ideology. Gray bars indicate the distribution among respondents surveyed in the 4 week period prior to a local disaster occurrence. Dark blue bars indicate the distribution among respondents surveyed in the 4 week period after a local disaster occurrence.

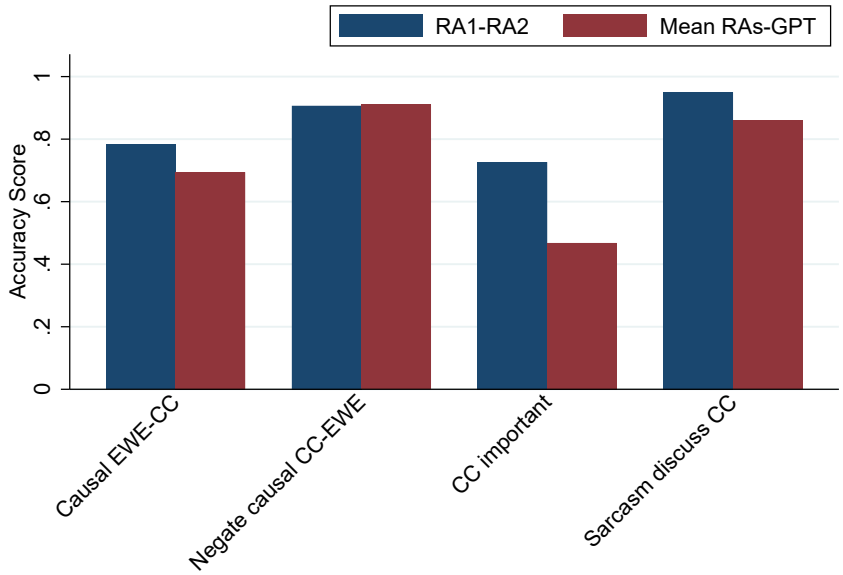
A.1 Validation of GPT annotations

Figure A4: Newspaper coverage of disasters and climate change: GPT validation



Notes: Accuracy of human and GPT annotations of newspaper articles. The accuracy score is defined as the number of identical annotations across coders over the number of annotated articles.

Figure A5: Cable TV coverage of disasters and climate change: GPT validation



Notes: Accuracy of human and GPT annotations of cable TV segments. The accuracy score is defined as the number of identical annotations across coders over the number of annotated segments.

A.2 GPT Annotation: Examples

- **San Jose Mercury News, Sept. 16th, 2020.**
  "Sadly, these wildfires and the devastation they cause are utterly predictable," [Senator Kamala] Harris said, speaking alongside Gov. Gavin Newsom on the edge of a school playground melted by the Creek fire [...]. . Her visit came a day after President Trump met Newsom in Sacramento for a wildfire briefing. While Trump continued to blame California and Western states for failing to aggressively clear the forests of "matchsticks" of fallen trees, Democratic nominee Joe Biden attacked the president as a "climate arsonist" in denial of a warming planet that is intensifying the blazes."

  GPT's annotations:
  Causal connection: Yes.
  Negate causal connection: No.
  Climate change is an important issue: Yes.
  Sarcasm: No.

- **Madera Tribune, Sept. 19th, 2020.**
  "The wildfires that have burned thousands of acres and destroyed thousands of lives can be attributed to decades of poor forest management. In the 1980s and 1990s, environmental groups convinced like-minded judges to rule in favor of eliminating logging and many other forms of forest management. Climate change is also blamed by some for contributing to the cause of the wildfires. The blame game in the middle of a crisis is rarely productive. After the fires are contained is time to point fingers and assign blame. Those responsible should be severely punished for the catastrophic wildfires, turning California into a wasteland of charred branches and piles of ashes."

  GPT's annotations:
  Causal connection: No.
  Negate causal connection: Yes.
  Climate change is an important issue: Yes.
  Sarcasm: Yes.

- **MSNBC, February. 11th, 2010.**
  "- Joining us now is Emmy award winner and scientist Bill Nye. [...] Can you explain in layman's terms whether a snowstorm disproves global warming?
  - Well first of all it doesn't, no. But let me remind you that global warming was the first term for this phenomenon that we now can call climate change so it's very reasonable that a snowstorm in Washington that's this severe is a result of climate change.
  - Is it consistent to have extreme weather conditions like big storms or even seasonal appropriate storms and to have the kind of climate change that's been forecasted and discussed by most of the reputable scientists in the world ?
  - I know what you're driving at Rachel. Yes, this would be consistent with such a thing."

  GPT's annotations:

Causal connection: Yes.
Negate causal connection: No.
Climate change is an important issue: Yes.
Sarcasm: No.

- **Fox News, February. 9th, 2010.**
  "Tonight's meltdown brought to you by the DC snow storm that dumped two feet of snow on Washington over the weekend causing thousands of power outages and keeping many home from work today. The most severe winter storm in years which would seem to contradict Al Gore's hysterical global warming theories. Also ironic given a couple of years ago Robert F. Kennedy Jr. was sounding the alarm about the lack of snow in the area lamenting snow is so scarce that most Virginia children don't own a shred. [...] I bet the snow even kept Al Gore's jet from taking off."

  GPT's annotations:
  Causal connection: No.
  Negate causal connection: Yes.
  Climate change is an important issue: No.
  Sarcasm: Yes.

B Appendix: Additional Results

Table B1: Pre- and post-disaster distribution of respondent characteristics (CES)

(a) Distribution of ideology

	(1) Very liberal	(2) Liberal	(3) Moderate	(4) Conservative	(5) Very conservative
Post-Disaster	-0.003	0.007	0.018	-0.011	-0.010
	(0.008)	(0.009)	(0.011)	(0.009)	(0.008)
Respondent controls	No	No	No	No	No
Month-Year FEs	Yes	Yes	Yes	Yes	Yes
County× Survey-Year FEs	Yes	Yes	Yes	Yes	Yes
Observations	33,936	33,936	33,936	33,936	33,936
Number of counties	1,037	1,037	1,037	1,037	1,037
R^2	0.06	0.05	0.05	0.06	0.08
Mean dep. var.	0.11	0.20	0.34	0.24	0.11

(b) Socio-economic characteristics

	(1) Age	(2) Male	(3) College degree	(4) Income category
Post-Disaster	-5.710***	-0.001	-0.142***	-0.576***
	(0.478)	(0.012)	(0.013)	(0.073)
Month-Year FEs	Yes	Yes	Yes	Yes
County× Survey-Year FEs	Yes	Yes	Yes	Yes
Observations	36,686	36,686	36,680	32,552
Number of counties	1,079	1,079	1,079	1,045
R^2	0.11	0.05	0.09	0.12
Mean dep. var.	49.78	0.46	0.46	6.30

Notes: Pre- and post-disaster distribution of CES respondent characteristics. The sample consists of respondents surveyed up to 4 weeks before or up to 4 weeks after a local disaster. Standard errors clustered by county. Significance levels: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table B2: Disaster occurrence and views on environmental regulations

	(1)	(2)	(3)
	Index of support for regulations		
Post-Disaster	0.015		
	(0.029)		
Liberal × Post-Disaster		-0.101	-0.083
		(0.069)	(0.072)
Moderate × Post-Disaster		-0.016	0.002
		(0.038)	(0.048)
Conservative × Post-Disaster		0.086	0.106
		(0.072)	(0.081)
Respondent controls	Yes	Yes	Yes
Month-Year FEs	Yes	Yes	Yes
County FEs	Yes	Yes	No
County× Year FEs	No	No	Yes
Observations	14,956	13,932	13,875
Number of counties	611	589	581
R^2	0.11	0.32	0.32
Mean dep. var.	0.02	0.03	0.03

Notes: Effect of local disaster occurrence on a standardized index of support for environmental regulations. The sample consists of respondents surveyed up to 4 weeks before or up to 4 weeks after a local disaster. *Liberal*, *Moderate* and *Conservative* denote categories of self-reported respondent ideology on a 3-point scale. Respondent controls include age, gender, college degree, income, and indicators for ideology. Standard errors are clustered by county. Significance levels: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table B3: Effect of local disasters on approval of the incumbent governor

	Democrat governor	Republican governor
	(1)	(2)
	Governor approval	
Liberal × Post-Disaster	0.151***	0.120
	(0.054)	(0.085)
Moderate × Post-Disaster	0.073	0.035
	(0.056)	(0.068)
Conservative × Post-Disaster	-0.032	-0.026
	(0.066)	(0.090)
Respondent controls	Yes	Yes
Month-Year FEs	Yes	Yes
County × year FEs	Yes	Yes
Observations	13,047	15,396
Number of counties	454	646
R^2	0.29	0.27
Mean dep. var.	3.13	2.90

Notes: Effect of local disaster occurrence on a approval of the incumbent governor. Approval is measured on a 5-point scale ranging from strongly disapprove to strongly approve. The sample consists of respondents surveyed up to 4 weeks before or up to 4 weeks after a local disaster. *Liberal*, *Moderate* and *Conservative* denote categories of self-reported respondent ideology on a 3-point scale. Respondent controls include age, gender, college degree, income, and indicators for ideology. Standard errors are clustered by county. Significance levels: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

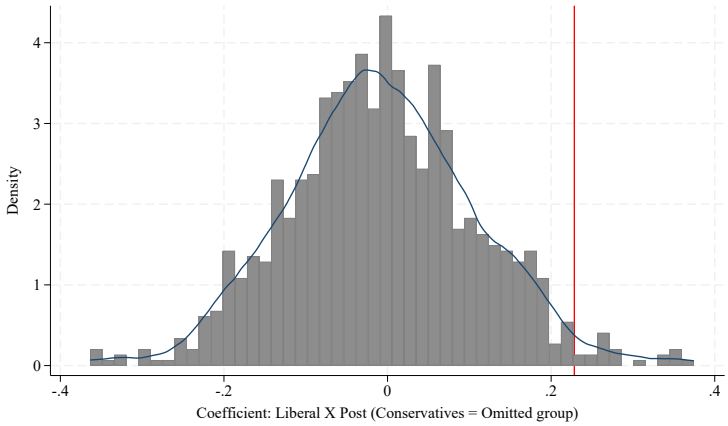
Table B4: Heterogeneity by county-level Republican vote share

	Democrat counties	Republican counties
	(1)	(2)
	Index environmental views	
Liberal × Post-Disaster	0.073*	0.164**
	(0.041)	(0.080)
Moderate × Post-Disaster	0.111***	0.105
	(0.042)	(0.074)
Conservative × Post-Disaster	-0.116**	-0.091
	(0.058)	(0.063)
Respondent controls	Yes	Yes
County × year FEs	Yes	Yes
County FEs	Yes	Yes
Year-Month FEs	Yes	Yes
Observations	8,639	3,272
Number of counties	184	294
R^2	0.32	0.43
Mean dep. var.	0.16	-0.06

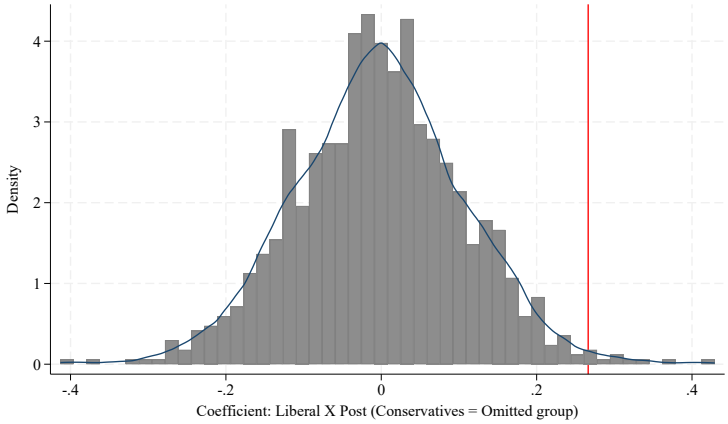
Notes: Effect of local disaster occurrence on climate change and environmental concerns: heterogeneity by Republican vote share in the most recent presidential election. *Post-Disaster* is an indicator equal to one in the 4 weeks after the start date of a local disaster. *Liberal*, *Moderate* and *Conservative* denote categories of self-reported ideology. Respondent controls include age, gender, college degree, income, and indicators for ideology. Standard errors are clustered by county. Significance levels: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Figure B1: Change in partisan gap in climate change beliefs after placebo disaster dates

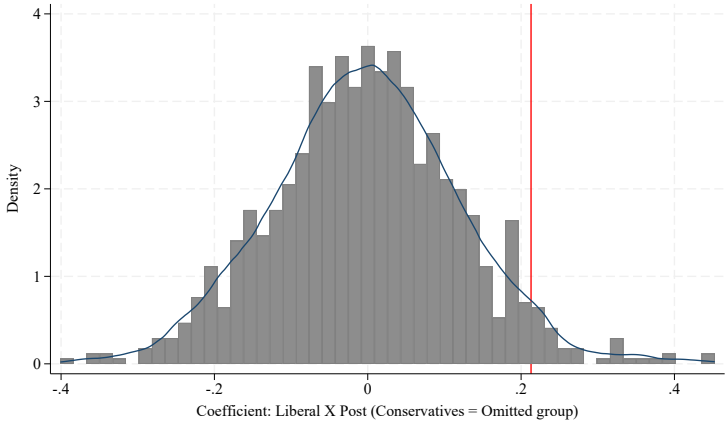
(a): Climate change concerns



(b): Environment vs jobs

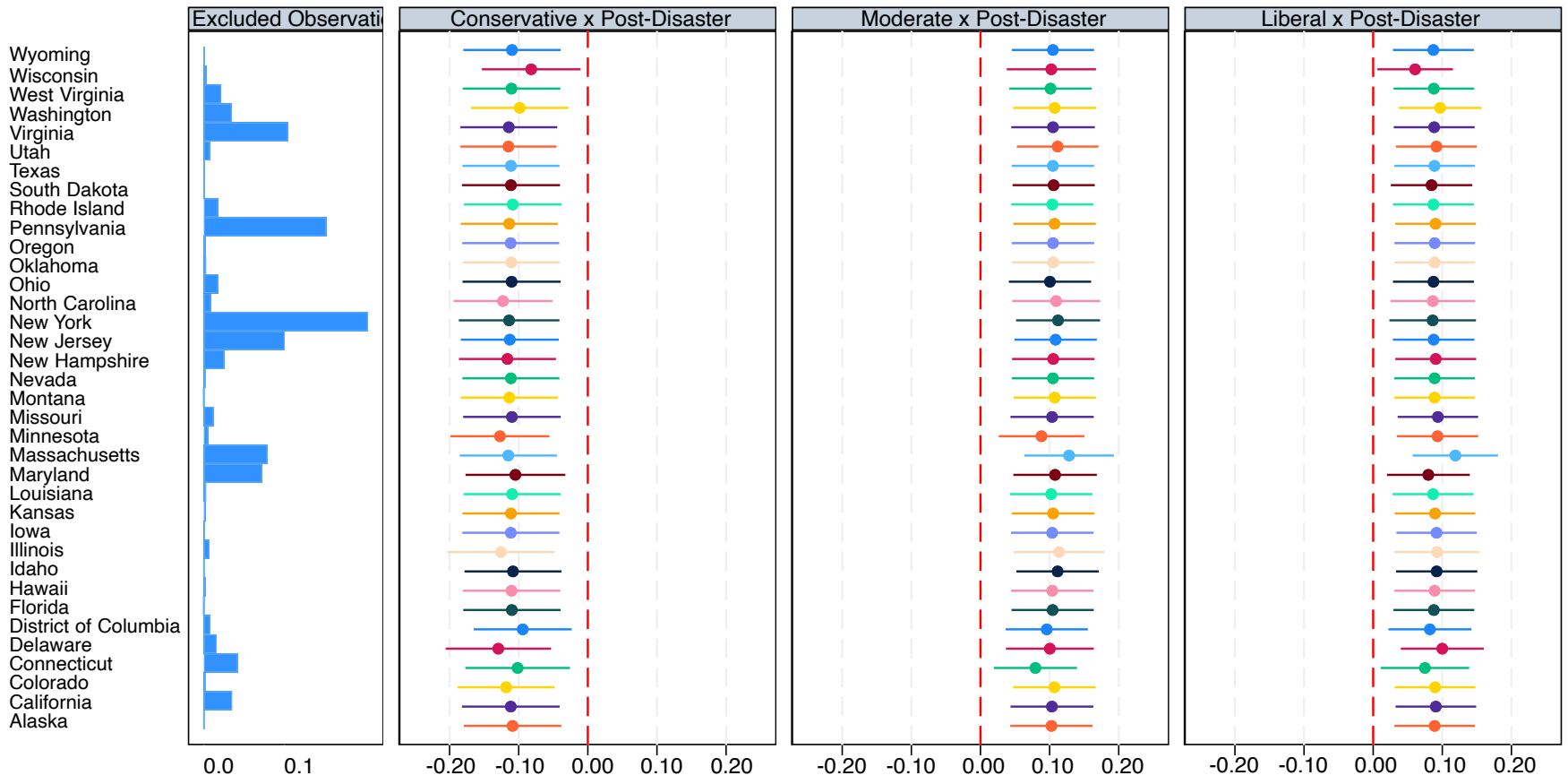


(c): Index environmental beliefs (z-score)



Notes: The histograms plot the distribution of point estimates of a regression of environmental views on the interaction between an indicator for being surveyed four weeks after an alternative disaster start date and identifying as liberal. The omitted category for respondent ideology is conservative, meaning that the point estimates captures the average change in the gap between liberals' and conservatives' environmental views after an alternative disaster date. Alternative start dates are randomly selected among dates within the September 1st to December 31st period of each year between 2006 an 2013. The baseline coefficient is marked by a vertical red line. All specifications control for respondent characteristics, including the main effects of respondent ideology, year-month and county × survey year FEs. Standard errors clustered by county.

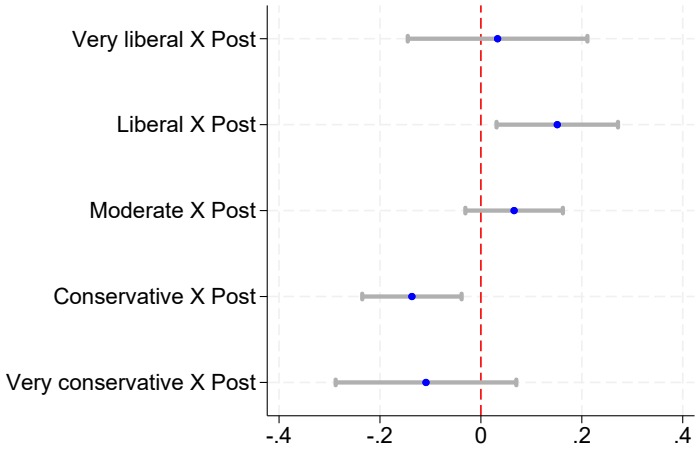
Figure B2: Robustness: Leaving out one state at a time



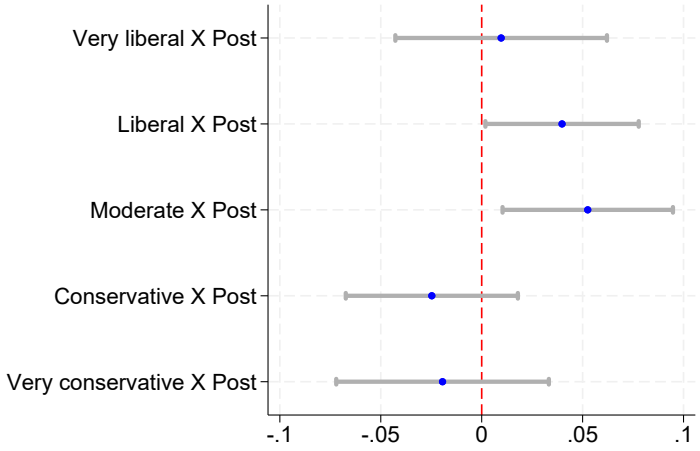
Notes: Point estimates and 90% confidence intervals from a regression of an index of environmental views on the interaction of a full set categories for respondents' ideology with an indicator for being surveyed after a local disaster. Each coefficient corresponds to a regression leaving out one state at a time from the baseline sample. All specifications control for respondent characteristics, including the main effects of 5-point ideology, year-month and county × survey year FEs. Standard errors clustered by county.

Figure B3: Robustness: Alternative functional forms

(a): Ordered probit: 5-point scale
Index environmental views

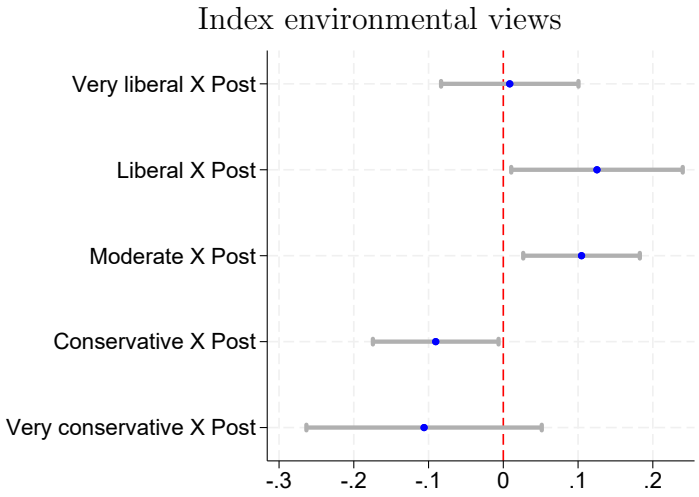


(b): Linear probability: Dummy for above-average concerns
Index environmental views



Notes: Point estimates and 95% confidence intervals from a regression of an index of environmental views on a full set categories for respondents' ideology with an indicator for being surveyed after a local disaster. Panel (a) presents the results of an ordered probit model, and panel (b) presents the results of a linear probability model with outcomes equal to an indicator for above-median environmental concerns. The sample includes respondents surveyed up to 4 weeks before or up to 4 weeks after a local disaster. All specifications control for respondent characteristics, including the main effects of 5-point ideology, year-month and county × survey year FEs. Standard errors clustered by county.

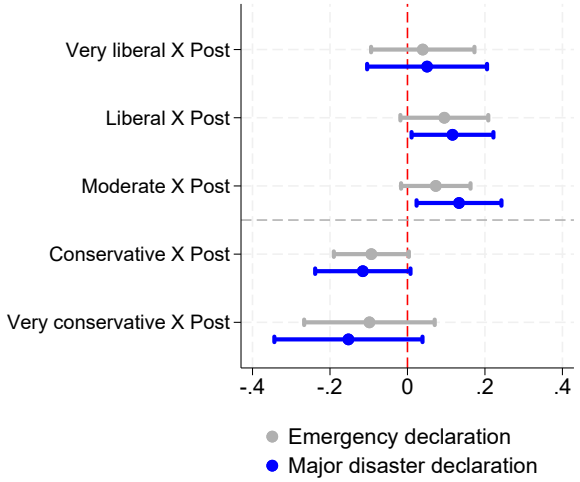
Figure B4: Robustness: Standard errors clustered by state



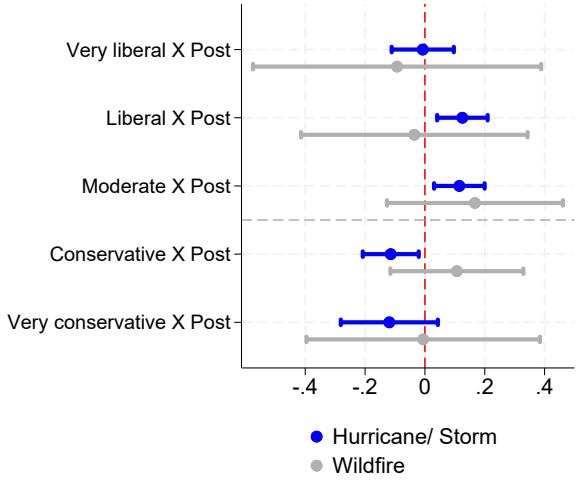
Notes: Point estimates and 95% confidence intervals from a regression of an index of environmental views on a full set categories for respondents' ideology with an indicator for being surveyed after a local disaster. The sample includes respondents surveyed up to 4 weeks before or up to 4 weeks after a local disaster. All specifications control for respondent characteristics, including the main effects of 5-point ideology, year-month and county × survey year FEs. Standard errors clustered by state.

Figure B5: Disaster occurrence and environmental views: Heterogeneity

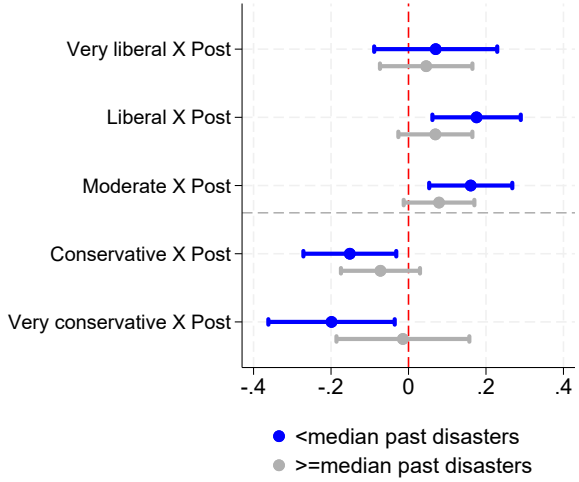
(a): By declaration type (disaster severity)



(b): By disaster type

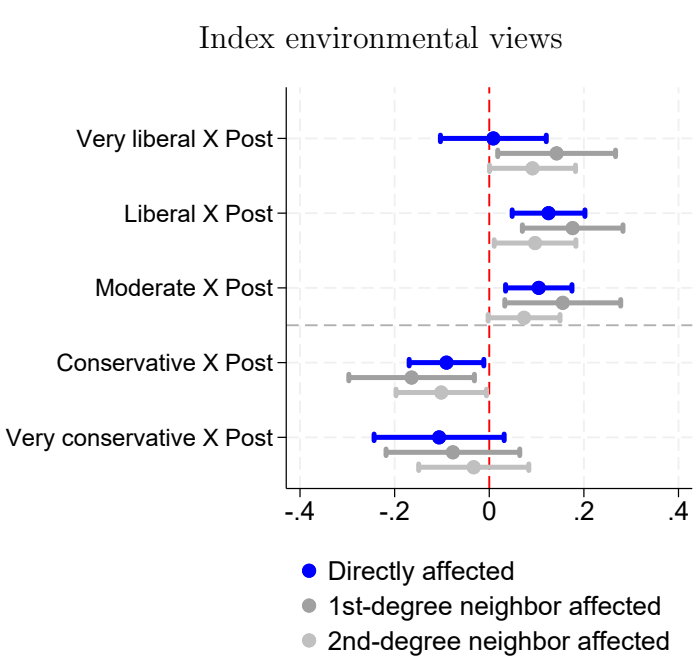


(c): By past disaster experience



Notes: Point estimates and 95% confidence intervals from a regression of an index of environmental views on the interaction of a full set categories for respondents' ideology with an indicator for being surveyed after a local disaster. The sample includes respondents surveyed up to 4 weeks before or up to 4 weeks after a local disaster. Each panel presents a sample split by the characteristics of the event or of the affected county: by declaration type in (panel a), by disaster type (panel b) and by the number of past disasters occurred in the county over the past 5 years (panel c). All specifications control for respondent characteristics, including the main effects of 5-point ideology, year-month and county × survey year FEs. Standard errors clustered by county.

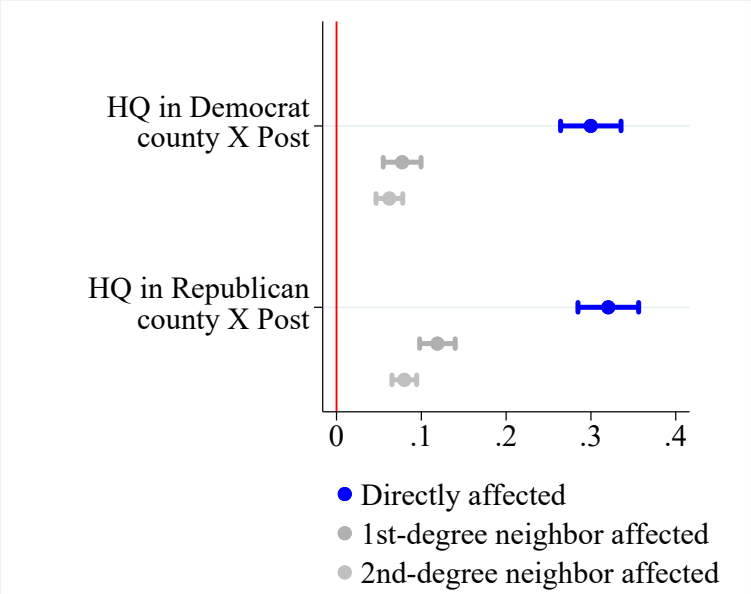
Figure B6: Disaster occurrence and climate change / environmental concerns: Spillovers



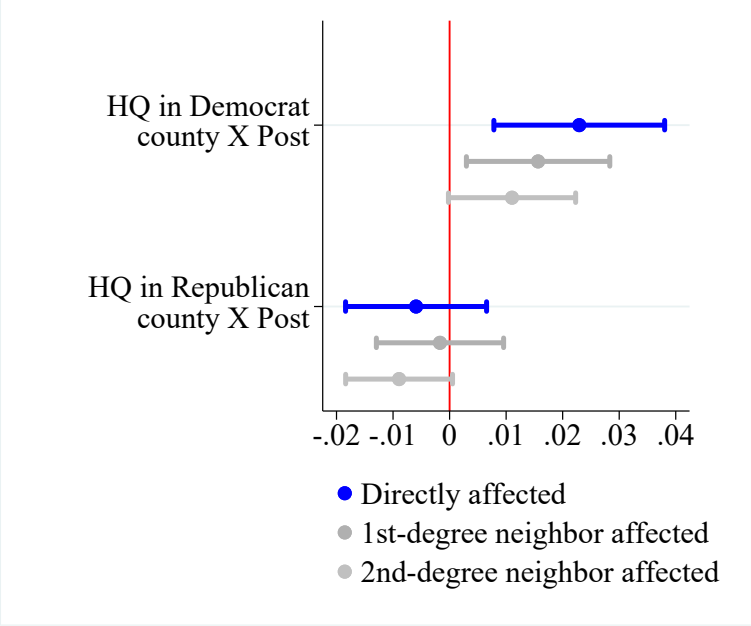
Notes: Point estimates and 95% confidence intervals from a regression of an index of environmental views on the interaction of a full set of categories for respondents' ideology with (i) an indicator for disaster occurrence in the respondent's county, or (ii) an indicator for disaster occurrence in a neighboring county. The sample includes respondents surveyed up to 4 weeks before or up to 4 weeks after a disaster in the respective geographic area, and excludes directly affected respondents in case (ii). All specifications control for respondent characteristics, including the main effects of 5-point ideology, year-month and county × survey year FEs. Standard errors clustered by county.

Figure B7: Local news coverage of disasters and climate change: Spillovers

(a): Disaster coverage



(b): Climate change coverage



Notes: Point estimates and 95% confidence intervals from regressions of disaster and climate change related coverage in local newspapers on the interaction of the partisan composition of the newspapers' core market with (i) an indicator for disaster occurrence in the county of the newspaper's HQ, or (ii) an indicator for disaster occurrence in a neighboring county. The dependent variable is the IHS-transformed number of disaster articles in panel (a), and the IHS-transformed number of climate change articles in panel (b). *Democrat_county* and *Republican_county* denote counties with below- and above-median Republican vote share in the most recent presidential election. The sample is restricted to the 4 weeks before and the 4 weeks after the start date of a disaster in the respective geographic area, and excludes directly affected counties in case (ii). All specifications control for year-month and newspaper × year FEs. Standard errors clustered by county.

C Prolific Survey Questionnaire

Consent

Cornell University Online Consent Form for Research Participation

Study Number: IRB 0147868
Study Title: Climate
Researchers: Milena Djourelova, Eleonora Patacchini, Ruben Durante, Elliot Motte
Collaborating Institutions: Universitat Pompeu Fabra

Description: We are researchers at Cornell University and Universitat Pompeu Fabra doing a research study on public perceptions. Participation should take up around 4min in total. Your participation is voluntary.

Incentives: Your participation will be rewarded automatically through the Prolific platform at the rate indicated in the study page ($12/ hour).

Risks and Benefits: Your participation in this study does not involve any risk to you beyond that of everyday life. Taking part in this research study may help us learn new things that could help others.

Confidentiality: Identifiable data will never be shared outside the research team. All personally identifying information collected about you will be removed or changed before files are shared with other researchers or results are made public, and destroyed once it is no longer needed for the study.

Contacts & Questions: If you have questions or concerns about the study, you can contact the researchers at mnd43@cornell.edu (Milena Djourelova). If you have any questions or concerns regarding your rights as a subject in this study, you may contact the Institutional Review Board (IRB) for Human Participants at 607-255-6182 or access their website at https://researchservices.cornell.edu/offices/IRB. You may also report your concerns or complaints anonymously through Ethicspoint online at www.hotline.cornell.edu or by calling toll free at 1-866-293-3077. Ethicspoint is an independent organization that serves as a liaison between the University and the person bringing the complaint so that anonymity can be ensured.

Consent: Participation is voluntary. Refusal to participate or withdrawing from the research will involve no penalty or loss of benefits to which you might otherwise be entitled. By clicking ``agree" below, you confirm that you have read the

consent form, are at least 18 years old, and agree to participate in the research. Please save a copy of this page for your records. If you do not agree to participate, please exit the survey by closing this link

○ Agree

Prolific ID

What is your Prolific ID?
Please note that this response should auto-fill with the correct ID

${e://Field/PROLIFIC_PID}

Demographic Block

What is your gender?

○ Male

- ○ Female
- ○ Other

In what year were you born?

What was your TOTAL household income, before taxes, last year?

- ○ $0-$9,999
- ○ $10,000-$14,999
- ○ $15,000-$19,999
- ○ $20,000-$29,999
- ○ $30,000-$39,999
- ○ $40,000-$49,999
- ○ $50,000-$69,999
- ○ $70,000-$89,999
- ○ $90,000-$109,999
- ○ $110,000-$149,999
- ○ $150,000-$199,999
- ○ $200,000+

Please indicate your marital status

- ○ Single
- ○ Married
- ○ Legally separated or divorced

- ○ Widowed

How many children do you have?

- ○ I do not have children
- ○ 1
- ○ 2
- ○ 3
- ○ 4
- ○ 5 or more

What racial or ethnic group best describes you?

- ○ White
- ○ Black or African-American
- ○ Hispanic or Latino
- ○ Asian or Asian-American
- ○ Native American
- ○ Middle Eastern
- ○ Mixed Race
- ○ Other

Were you born in the United States?

- ○ Yes
- ○ No

Were both of your parents born in the United States?

- ○ Yes
- ○ No

What is your ZIP code?

Which category best describes your highest level of education?

- ○ Eighth Grade or less
- ○ Some High School
- ○ High School degree / GED
- ○ Some College
- ○ 2-year College Degree
- ○ 4-year College Degree
- ○ Master's Degree
- ○ Doctoral Degree; Professional Degree (JD, MD, MBA)

What is your current employment status?

- ○ Full-time employee
- ○ Part-time employee
- ○ Self-employed or small business owner
- ○ Unemployed and looking for work
- ○ Student
- ○ Not currently working and not looking for work
- ○ Retiree

What is your current occupation?

Even if you are not currently working, what was latest occupation?

On policy matters, where do you see yourself on the liberal / conservative spectrum?

- ○ Very liberal
- ○ Liberal
- ○ Moderate
- ○ Conservative
- ○ Very conservative

In politics, as of today, do you consider yourself a Republican, a Democrat or an independent?

- ○ Strong Democrat
- ○ Not Very Strong Democrat
- ○ Lean Democrat
- ○ Independent
- ○ Lean Republican
- ○ Not Very Strong Republican
- ○ Strong Republican

Did you vote in the 2020 presidential election?

- ○ Yes
- ○ No

In the 2020 presidential election, you supported:

- ○ Joe Biden
- ○ Donald Trump
- ○ Other

Even if you did NOT vote, please indicate the candidate that you were most likely to have voted for in 2020 or who represents your views most closely:

- ○ Joe Biden
- ○ Donald Trump
- ○ Other

Attention check

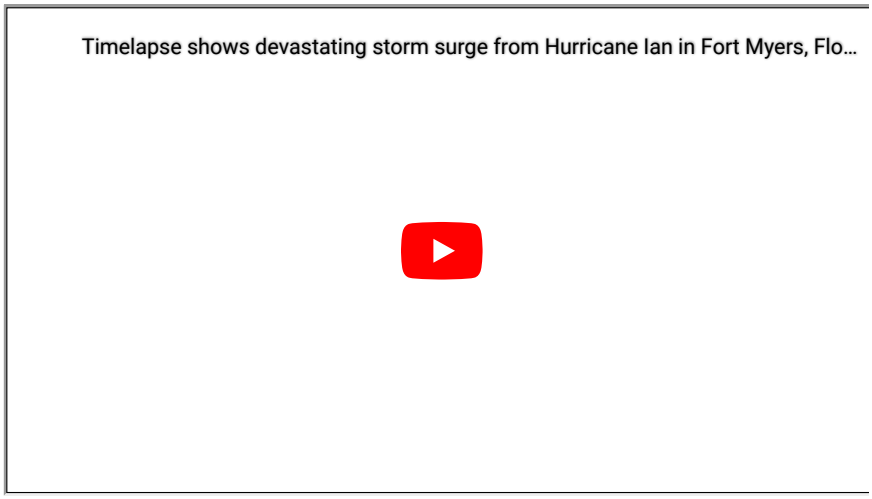
How many states are there in the U.S.?

- ○ 5
- ○ 100
- ○ 10
- ○ 50

Disaster Treatment

Please watch carefully the following 1-min video on the devastation caused by **Hurricane Ian** in September 2022.

You will be able to click to the next page after the video ends.



Free Text

What associations came to mind when you watched the video?
Please answer in at least one sentence.

What do you think is the cause of the disaster pictured in the video?
Please answer in at least one sentence.

Cause Questions

To be more specific, which of these two options comes closer to your opinion on what is the main cause of the disaster depicted in the video?

- ○ Climate change
- ○ Nature's unpredictability

We asked a randomly chosen respondent who identifies as ***liberal*** on policy matters to answer the same question. What do you think he/she named as the main cause of the disaster depicted in the video?

If your guess is correct, you will be entered into a lottery for a $50 Amazon gift card.

- ○ Climate change
- ○ Nature's unpredictability

Views on climate change

We would like to offer you a chance to donate to a good cause. We will make a $100 donation on behalf of a randomly chosen participant of this study, to a charity of their choice. This is in addition to your payment for participating in the study.

Which of the following charities would you like us to donate $100 to on your behalf?

- **Carbon180:**
  Works to eiminate legacy carbon emissions and create a livable climate in which current and future generations can thrive.
- **Prostate Cancer Foundation:**
  Brings together patients, researchers, caregivers, and clinicians into a singular community focused on reducing death and suffering from prostate cancer.
- **The Humane Society of the U.S.**:
  Works to end the cruelest practices toward all animals, care for animals in crisis and build a stronger animal protection movement.

From what you know about global climate change or global warming, which one of the following statements comes closest to your opinion?

- Climate change is not occuring.
- No action is necessary.
- More research is needed.
- Some action is necessary.
- Immediate action is necessary.

Some people think it is important to protect the environment even if it costs some jobs or otherwise

reduces our standard of living. Other people think that protecting the environment is not as important as maintaining jobs and our standard of living.

Which is closer to the way you feel?

- ○ Jobs are much more important.
- ○ Jobs are somewhat more important.
- ○ The environment and jobs are of the same importance.
- ○ The environment is somewhat more important.
- ○ The environment is much more important.

End

You have completed the survey. Thank you for your participation!