Do Pledges Bind? The Mass Politics of International Climate Targets

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Abstract

Contemporary climate governance rests on voluntary pledges made by states to reduce greenhouse gas emissions. Given the lack of formal enforcement mechanisms and limitations of naming and shaming, what weight do these pledges carry? We argue that independent of interest group pressure and transnational shaming, public distaste for backing down from treaty commitments dissuades defection. Emissions targets establish easily interpretable benchmarks, creating a salient cleavage between politicians who adhere to versus defect from them. This allows voters to better distinguish between politicians and electorally sanction those offering policies discordant with climate pledges. Conjoint and vignette experiments fielded in the U.S. suggest that candidates who deemphasize climate pledges lose votes in Democratic primaries and general elections. Analysis of U.S. cable news media supports the intuition that emissions targets have simplified popular climate discourse. These findings illustrate the potential electoral weight of international climate commitments.

Keywords: climate change; international law; Paris Agreement; international cooperation; emissions

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The Paris Agreement marked a sea change in the nature of global climate governance. Rather than relying on the top-down mandates and weak enforcement mechanisms that characterized the Kyoto Protocol, negotiators in Paris opted for a new logic: a bottom-up approach whereby states publicly and voluntarily pledged to reduce greenhouse gas emissions by self-determined amounts, with the goal of limiting warming to 1.5–2°C above pre-industrial levels. The Paris framers gambled that international and domestic "naming and shaming" would induce compliance by establishing easily identifiable benchmarks and allowing audiences to monitor states' performance against them (Falkner 2016).

What weight do these voluntary, non-binding commitments carry? Theories of international cooperation provide reasons to be skeptical of the Paris framework. Classic studies of international organization emphasize material coercion as a means of ensuring that states remain cooperative (Krasner 1976; Barrett 1997). The threat of tangible penalties or withheld benefits has proven crucial where free-riding incentives are strong or where compliance is in tension with domestic political incentives (Keohane 1984; Axelrod and Keohane 1985; Fearon 1998; Hafner-Burton 2012). International climate cooperation features these incentives (Barrett 2003; Colgan, Green, and Hale 2021; Kennard and Schnakenberg 2023), yet the current climate regime lacks formal means of materially sanctioning non-cooperative states. Moreover, research on naming and shaming indicates that its effects are often limited in magnitude, highly conditional, or counterproductive (Hafner-Burton 2008; Terman 2023). Even when naming and shaming succeeds in marshaling domestic disapproval (Tingley and Tomz 2022), it is unclear whether or how these attitudinal shifts translate into meaningful political costs for leaders (Kallbekken 2023), as recent scholarship on international law scholarship shows (Chilton and Linos 2021; Sheppard and von Stein 2022).

Despite the lack of formal enforcement and limits to naming and shaming, we argue that voluntary climate commitments are meaningful because they generate approval costs that voters levy on leaders who fail to follow through on these pledges. Independent of shaming by the international community or domestic activists, voters may punish governments at the ballot box for reneging on emissions reduction targets when they have information about such behavior. The public nature

of climate pledges, as well as Paris's overarching goal of keeping warming below 1.5–2°C, eases the informational burden of discerning what commitments have been made (Bechtel and Scheve 2013), enabling citizens to calibrate expectations and generating a standard against which politicians can be evaluated.[1] Emissions reduction targets contained in state pledges allow voters to better discriminate between politicians' climate platforms and sanction those who pursue policies discordant with global climate goals.

Climate pledges, formally known as nationally determined contributions (NDCs), can in this way activate an audience costs mechanism that encourages leaders to abide by their promises. Canonically, leaders who retrench from known international commitments incur approval costs at home as backing down makes them look weak or irresolute (Fearon 1994; Tomz 2007a; Kertzer and Brutger 2016). Though leaders can sometimes insulate themselves from such sanctions (e.g., Levendusky and Horowitz 2012; Lin-Greenberg 2019), including those resulting from breaches of international law (Morse and Pratt 2022), the public nature of emissions targets means that rhetorical reframing or policy substitution may struggle to avert disapproval. Even if the commitments are ambiguous, their publicity and ultimate intent of containing warming to a well-known level (1.5–2°C) creates a salient distinction between what it looks like to be on versus off-track.

These approval costs should intensify when other countries comply with their own commitments. Audiences are not only attentive to reciprocity in international climate politics (Bechtel and Scheve 2013; though see Beiser-McGrath and Bernauer 2019), but also may fear the reputational damage (Guisinger and Smith 2002; Crescenzi 2018; Tomz and Weeks 2021) and status loss (Renshon 2017; Ward 2017; Murray 2018; Larson and Shevchenko 2019; Barnhart 2020) that could result from noncompliance if other states have found ways to meet similar targets. Latent public preferences for conditional cooperation may thus impose additional costs on leaders who fail to meet commitments in the face of others' compliance.

While there are challenges in evaluating whether a country is on pace to meet its commitments

[1]Countries vary in the depth and specificity of their Paris targets (Sabel and Victor 2022; Tørstad and Wiborg 2022). Issuance of vague pledges may be a means of avoiding either commitment to specific courses of action or electoral sanction (Snyder and Borghard 2011).

(Victor, Lumkowsky, and Dannenberg 2022), we assume that voters have access to information on either (*a*) a country's performance vis-à-vis its climate pledges, such as from third-party monitors, or (*b*) whether a candidate in an election promises to abide by a target. We see this assumption as reasonable given extensive media coverage about the adequacy of national climate performance (Carattini and Löschel 2021, though see Chaudoin 2022) and the political salience of climate change (Hermwille and Sanderink 2019; Maliniak, Parajon, and Powers 2021). Exit polls suggest that about two-thirds of U.S. voters rated climate change as a "serious problem" in the 2020 general election, while climate change was tied with immigration as the third-most important issue facing the country among 2022 midterm voters.[2] However, unlike recent work, we do not consider cases where a government is "publicly denounce[d]" for poor climate performance (Tingley and Tomz 2022, 445); we rather focus on responses to non-compliance independent of external normative judgments.

We test our argument via two survey experiments fielded on diverse samples of the American public, as well as an analysis of thousands of English-language television news stories about climate change. We focus on the United States due to its status as one of the world's largest emitters, making it a potential "linchpin" upholding the global climate regime (Barrett 2003; though see Urpelainen and Van de Graaf 2018). The first experiment takes the form of a candidate choice conjoint. We show, even after accounting for demographic traits and other policy positions, that positions on a U.S. climate commitment are among the most powerful predictors of candidate choice in both general elections and Democratic primaries. This suggests that politicians, particularly those seeking votes from the left, have a strong electoral incentive to support and comply with non-binding climate commitments. The striking magnitude of these effects diverges from existing work that finds politicians' climate stances to be a relatively minor determinant of vote choice (Hainmueller, Hopkins, and Yamamoto 2014; Bansak, Hainmueller, Hopkins et al. 2022).

The second experiment explores the mechanisms underlying these candidate choices. We construct a hypothetical vignette that varies whether the sitting president has pursued policies that

[2] *Pew Research Center*, October 6, 2020, `rb.gy/zahbry`; *Washington Post*, December 14, 2020, `rb.gy/grgltc`; *Washington Post*, November 10, 2022, `rb.gy/dxry0o`; *New Republic*, November 11, 2022, `rb.gy/3gtvmr`.

support the U.S. climate pledge and whether peer countries are on pace to meet their own targets. Results indicate that voters disapprove of failures to meet the U.S. pledge, particularly when other countries stay on track. We additionally find that voters interpret commitment failures as damaging to the international reputation of the U.S. We identify these effects for Democrats, Republicans, and independents. Viewed in conjunction with the conjoint experiment, these results suggest that while Republicans in principle support the maintenance of international climate accords, this does not translate into changes in candidate choice when viewed alongside politicians' other policy positions and demographic attributes.

Finally, to further investigate whether international agreements have cultivated a salient difference between meeting and missing climate commitments, we analyze roughly 95,000 English-language news segments televised between 2009 and 2020. This sample includes all discussions of climate change that aired on CNN, Fox News, MSNBC, or BBC News during the period in question. Using a novel dictionary of binary climate terminology, we demonstrate that mentions of the Paris Agreement, which went into effect in 2016, are associated with significantly greater usage of language that frames countries' performance as either on or off track. These results offer suggestive evidence that Paris targets clarify the sufficiency of politicians' climate policies.

Our research makes two primary contributions. First, we shed light on the practical implications of public support for climate agreements (Bechtel and Scheve 2013; Tingley and Tomz 2014; Beiser-McGrath and Bernauer 2019), offering a new account of the incentives to abide by climate commitments independent of naming and shaming. Building on work that identifies public disapproval of noncompliance with such commitments (Tingley and Tomz 2022), we find that changes in climate platforms translate into major shifts in individuals' candidate evaluations and prospective vote choice, a link that has not been extensively explored in the climate politics literature. In doing so, we add to work detailing the domestic political ramifications of international climate agreements (Bechtel, Scheve, and van Lieshout 2022). Second, we extend the reach of audience costs theory, applying insights from crisis bargaining (Tomz 2007a; Brutger and Kertzer 2018), economic sanctions (Hart Jr. 2000; Thomson 2016), and trade (Chaudoin 2014; Casler and Clark

2021) to a new issue area while demonstrating its implications for political accountability (Fearon 1999; Besley 2006; Daley and Snowberg 2011; Ashworth 2012).

Audience Costs and Climate Politics

Many countries are at risk of failing to reach their self-determined emissions targets under the Paris Agreement. Germany, grappling with volatile energy supplies in the wake of the Russian invasion of Ukraine, has opted to keep online several coal plants previously scheduled for retirement.[3] The U.S., despite passing landmark clean energy legislation, fell even further behind its emissions reductions targets in 2022.[4] Brazil, set back by rampant deforestation under former President Jair Bolsonaro, now faces an uphill battle to meet its commitments.[5] Do failures to meet Paris commitments erode leaders' standing with their citizens? If so, do these approval costs translate into tangible electoral losses?

Existing research is skeptical of the public's role in shaping international climate cooperation. The naming-and-shaming mechanism on which Paris relies has proven ineffective or counterproductive for human rights compliance (Hafner-Burton 2008; Terman 2023), though survey evidence suggests it is conditionally effective in the climate context (Tingley and Tomz 2022). More broadly, however, publics have rarely achieved mass mobilization on climate (Obradovich and Zimmerman 2016; Egan and Mullin 2017), perhaps because of low issue salience (Kennard 2021). While leader and media cues often facilitate mobilization on foreign policy (Guisinger 2017; Brutger and Strezhnev 2022), elites and publics remain split in their concern for international cooperation (Dellmuth, Scholte, Tallberg et al. 2022), suggesting that such cues have been ineffective in this domain. As Falkner (2016, 1123) notes, "the outlook for accountability [to Paris] at the hands of civil society is uncertain and highly uneven."

Even in cases where scholars posit a role for public opinion of international climate agreements (Bechtel and Scheve 2013), it is unclear whether such attitudes translate into meaningful pressure on policymakers (Tingley and Tomz 2022, fn. 49; Egan and Mullin 2017; Kallbekken 2023).

[3] *Politico*. October 4, 2022. `politi.co/3ZfJjU2`.
[4] *Financial Times*. January 10, 2023. `rb.gy/lbd6ym`.
[5] *Bloomberg*. December 19, 2022. `bloom.bg/3HXqTQ1`.

Scholars of international law identify inconsistent and weak linkages between public preferences and policy choices (Chilton and Linos 2021), suggesting there may be a "democratic deficit" in global climate governance (cf. Dahl 1999).

We revise this conventional wisdom, contending that when leaders fail to meet climate pledges, many voters will sanction them at the ballot box regardless of whether or not the leaders have been shamed. We derive this argument from a large body of work on audience costs in international relations. A key condition under which audience costs operate is publicity, as citizens must be able to observe the general content (though not the specificity) of a commitment in order to punish defection from it (Fearon 1994; Tomz 2007a). Commitments are necessarily public under the Paris Agreement. States pledge to meet certain emissions targets under their NDCs. For example, the 2021 U.S. NDC set "an economy-wide target of reducing its net greenhouse gas emissions by 50–52 percent below 2005 levels in 2030."[6] Third-party monitors, including foreign governments, international organizations, NGOs, and academics, estimate emissions and track states' progress toward NDCs.[7] Third-party monitoring enables the public to observe whether states are on pace to reach their targets, even in cases where states manipulate emissions data (Carnegie, Clark, and Zucker 2022). This information allows voters to prospectively evaluate how candidates might perform in office, as well as retrospectively assess whether a politician's policies have accorded with or deviated from Paris pledges.

Targets also clarify the *sufficiency* of climate policies. In their absence, it is more difficult to assess whether politicians are meaningfully contributing to global mitigation efforts given the deep uncertainties that surround climate policymaking (Constantino and Weber 2021; Zucker 2023). We suggest that targets help resolve such ambiguity by creating straightforward benchmarks for politician performance and progress on climate. States are, ideally, either on track to meet their NDCs or not.[8] In separating compliant leaders from deviant laggards, these pledges simplify a

[6] See the online "Nationally Determined Contributions Registry," UNFCCC, `unfccc.int/NDCREG`.

[7] See, e.g., the European Union's Emissions Database for Global Atmospheric Research (EDGAR), `edgar.jrc.ec.europa.eu`.

[8] As noted previously, assessments of compliance are more difficult for thinner and vaguer NDCs. The audience costs mechanism may weaken when pledges are less precise.

complex policy space by introducing more discernible standards for audiences to evaluate politicians against. Scholars have long recognized the heuristic power of classification schemes and global performance indicators (Dolan 2018; Honig and Weaver 2019; Morse 2019). Their utility, both in the climate domain and elsewhere, derives from their simplicity and ease of interpretation (Kelley and Simmons 2020). This categorization of leaders' and candidates' climate policies allows audiences to assess their positions and performance and select or sanction them accordingly (Grossman and Slough 2022, 135).

We note here a point of compatibility with naming-and-shaming theory. Naming and shaming rests on the provision of information on a country's norm violations by foreign actors or domestic civil society. The changes in approval and vote choice that we theorize may be products of this component of naming and shaming, but they do not require some value judgment to operate. Tingley and Tomz (2022), for example, consider declarations that a country should be "ashamed" of itself for poor climate performance; the mechanism we put forth does not depend on normative statements of this sort. Rather, to the extent that a climate pledge contains a specific and observable emissions target, it independently generates views of whether policy is proper (concordant with the target) or improper (inconsistent with the target).

Sanctions levied by domestic electorates may be a core means by which governments incur costs for falling short of their commitments.[9] This differentiates climate from issue areas like trade and foreign investment, where aggrieved parties can seek financial recompense through institutions like the World Trade Organization and International Centre for the Settlement of Investment Disputes (Jandhyala, Henisz, and Mansfield 2011; Carnegie 2015). Though governance by soft law and informal institutions is increasingly common (Roger 2020; Roger and Rowan 2023), the absence of material carrots and sticks may limit adherence to non-binding pledges (Simmons 2009; Posner 2014). Given the lack of statutory enforcement mechanisms for climate, the sanctions that leaders may incur for missing emissions targets relate not just to naming-and-shaming by other

[9]Others argue that compliance with soft commitments is only high because such commitments are shallow (Chayes and Chayes 1995; Downs, Rocke, and Barsoom 1996).

states and third parties (Tingley and Tomz 2022), but also to their electoral standing.[10]

We theorize that public climate pledges, whether made or inherited by a leader, activate an audience costs mechanism that encourages those leaders to meet stated targets. Leaders tend to pay "inconsistency costs" for failing to follow through on a threat or promise (Kertzer and Brutger 2016).[11] This has also proven true in the context of various international legal issues, such as trade, where leaders often inherit commitments from predecessors (Chaudoin 2014), and immigration, where leaders are bound by UN convention to treat refugees humanely (Sheppard and von Stein 2022). In the climate case, pledges have informational value (Bechtel and Scheve 2013), sharpening the distinction between adequate and inadequate policy while clarifying when leaders have or have not followed through on their country's commitments.[12] In this way, pledges make salient the consistency or inconsistency of a leader's record on climate.

We expect disapproval of insufficient climate policy to affect vote choice, eroding leaders' electoral standing. Here we depart from previous studies, particularly in the climate literature, that have bracketed vote choice as an outcome of interest (Kallbekken 2023). While Tomz (2007a) identified an attitudinal-behavioral link in audience costs, there has been little subsequent focus on how approval loss from backing down might translate into tangible electoral costs. Scholarship on climate often points to a lack of popular mobilization on the issue and general hesitance to take costly steps toward mitigation or adaptation (Greenstone and Jack 2015; Obradovich and Zimmerman 2016; Egan and Mullin 2017); substantial shares of voters in Western democracies prioritize economic growth over environmental protection (Drews, Antal, and van den Bergh 2018).

We theorize that concerns over a leader reneging on their country's climate pledges extend to evaluations of candidates for political office and future vote choice. To the extent that they create a clear standard against which climate policies and performance can be assessed, pledges

[10]Over- or under-promising on emissions reductions may affect public support (Tingley and Tomz 2020).

[11]Audience costs also involve "belligerence costs" paid for issuing a threat in the first place. Given that across states there is little variation in the existence of pledges, we see inconsistency costs as more applicable to climate.

[12]In addition to concern about consistency between leaders' words and deeds, voters are broadly concerned about climate change (Howe, Mildenberger, Marlon et al. 2015; Zucker 2023). We are not the first to apply audience costs to questions of economic cooperation, but by examining inconsistency costs in the climate domain, our contribution is distinct. See Hart Jr. (2000); Dorussen and Mo (2001); Krustev and Morgan (2011); Whang, McLean, and Kuberski (2013); Thomson (2016); Casler and Clark (2021).

make clear the sufficiency of competing climate platforms and — in cases where platforms are clustered around the stated target — separate "consistent" candidates from inconsistent ones.[13] Given voters' general interest in leaders' consistency, as a marker of their competence and capacity for good judgment, we anticipate that voters will tend to select candidates offering climate policies consistent with their country's emissions target.

Hypothesis 1. *Citizens should be more likely to approve of and vote for candidates who prioritize meeting a climate pledge than those who do not.*

A logic of comparative achievement in relation to foreign states may affect how strongly these costs bind leaders. Citizens should disapprove most of leaders who renege on climate pledges when other countries remain on pace to achieve their own commitments. Approval costs could intensify in this context for two reasons. The first is reciprocity, the principle thought to underpin international cooperation even in settings with high potential for opportunism (Keohane 1984; Axelrod and Keohane 1985). Yet the evidence for reciprocity in public opinion on climate is mixed. On the one hand, Bechtel and Scheve (2013) demonstrate that climate treaties which encompass the most countries garner the greatest popular support. On the other hand, Tingley and Tomz (2014) find little evidence of negative intrinsic reciprocity in mass climate attitudes — public support for climate change mitigation only varies positively with other countries' performance. Beiser-McGrath and Bernauer (2019) similarly show that attitudes among American and Chinese citizens about the design of international climate accords do not change with information about other countries' behavior. We are therefore skeptical that the prospect of conditional cooperation, at least of the form envisioned by intrinsic reciprocity, will shape approval of the leader.

We favor a second mechanism: reputation. On the one hand, domestic audiences have a "taste" for reputation insofar as they care about whether their government comes across reliable, honest, and competent (Guisinger and Smith 2002; Simmons 2009; Jervis, Yarhi-Milo, and Casler 2021; Tomz and Weeks 2021). The logic of reputation is not only a core premise on which audience costs

[13]Positions on climate pledges may do less to swing votes when all candidates have either weak climate platforms (all would be inconsistent with the pledge) or sufficient platforms (all consistent with the pledge).

rest (Brutger and Kertzer 2018), but also an important ingredient for sustaining cooperation in its own right (Jervis 1970; Tomz 2007b; Crescenzi 2018; Schmidt 2021; Casler, Ribar, and Yarhi-Milo 2023). On the other hand, governments and leaders pursue status, an esteemed position in the global hierarchy. States thus seek inclusion and high rank in groupings of countries for a mix of material and prestige-related reasons (Renshon 2017; Ward 2017; Murray 2018; Larson and Shevchenko 2019; Barnhart 2020).

Public audiences may accordingly see deviation from climate pledges as doubly damaging. Missing an emissions target could evince not just a lack of capacity or trustworthiness, but also erode a state's standing in relation to foreign peers. Climate, in particular, is a setting in which individual countries can serve as "linchpins" required to hold international agreements together; one major defection can cause an entire agreement to unravel (Barrett 2003). The largest emitters are also the most economically powerful states, which confers membership in an exclusive club: these countries not only hold significant economic sway but are also the actors who possess the resources to address the problem at hand. Failure to act when influential states remain committed to doing so causes domestic audiences to fear that their leader has endangered their country's global reputation. This mechanism is complementary to but distinct from naming and shaming, the transnational version of which relies on states chastising one another for violating international agreements (Hafner-Burton 2008; Tingley and Tomz 2022). We rather consider how electorates sanction leaders for failing to meet pledges when other countries are or are not compliant with their own commitments.

Hypothesis 2. *Citizens should disapprove more of leaders who renege from climate commitments when other countries remain on pace to meet their own pledges.*

Experimental Evidence

We test this theory via a two-pronged experimental approach. We first evaluate whether non-compliance with climate targets affects vote choice. We then probe whether voter disapproval of leaders' inconsistency underlies any electoral sanctioning of recalcitrant candidates. To do so, we

embedded a pair of preregistered experiments in online surveys deployed on diverse samples of U.S. adults in the spring and fall of 2022.[14] We fielded these studies in the U.S. given the aforementioned salience of climate issues and the Paris Agreement specifically in recent U.S. elections. By our accounting, the Paris Agreement was mentioned by at least one candidate in nine of the eleven Democratic presidential primary debates held in 2019–20 (Tables A1–A3). Then-candidate Joe Biden repeatedly framed the issue in stark terms, stating during the July 2021 debate: "There is no middle ground about my plan. The fact of the matter is I call for the immediate action to be taken [...] I would immediately rejoin that Paris Accord. I would make sure that we up the ante which it calls for."[15] Candidates Michael Bloomberg, Cory Booker, Pete Buttigieg, Julian Castro, Kirsten Gillibrand, Kamala Harris, and Bernie Sanders also explicitly referenced Paris, promising to reenter the agreement upon assuming the presidency or criticizing then-president Donald Trump for withdrawing from the accord.

The first experiment is a candidate choice conjoint, in which we examine how candidates' policies regarding climate pledges — alongside other policy positions and demographic attributes — affect hypothetical vote choice (Bansak, Hainmueller, Hopkins et al. 2021). The second experiment adopts a two-by-two factorial design, offering vignettes that vary in (*a*) a hypothetical president's performance regarding a climate pledge, and (*b*) the behavior of peer countries. Results are consistent with this paper's theory. Americans, especially those on the left, disapprove of inconsistency with climate pledges and express this discontent by adjusting their voting intentions. We further find that disapproval mounts when defection occurs while peer countries are on track to meet their commitments.

Candidate Choice Conjoint Experiment

We conducted the candidate choice conjoint experiment in November and December 2022. We embedded this experiment in an online survey implemented by Qualtrics, which recruited 2,013 U.S. adults representative of the national population along the dimensions of age, gender, and region

[14] Both experiments were preregistered with the Wharton Credibility Lab (#94210, #112445); see Appendix 7 for pre-analysis plans.

[15] *NBC News*, July 19, 2021, `https://rb.gy/clac9`.

of residence (see Appendix 2 for descriptive statistics). Qualtrics is recognized as a high-quality source of representative samples for social science work (Boas, Christenson, and Glick 2020). Subjects read a brief description of a hypothetical scenario at the beginning of the experimental module, in which the U.S. pledged at an international conference in 2025 to reduce emissions by 65 percent by 2035 relative to 2005. Subjects were then told they would be evaluating hypothetical candidates for the U.S. presidency in 2028.

The survey subsequently presented subjects with ten conjoint tasks.[16] Each task asked subjects to choose between two unnamed candidates who randomly varied along twelve political and demographic dimensions, which themselves were presented in random order.[17] The forced-choice question permits estimation of average marginal component effects (AMCEs): the marginal effect of adjusting one candidate attribute, relative to some baseline, on subject vote choice. The conjoint design is therefore appealing in that it furnishes estimates of how changes in a feature, such as a politician's age or tax platform, affects vote choice when presented alongside a battery of other attributes (Hainmueller, Hopkins, and Yamamoto 2014; Bansak, Hainmueller, Hopkins et al. 2022). This approach appreciates the multidimensional nature of voter preferences — individuals may form beliefs about candidates on the basis on multiple characteristics — as well as the bundled character of candidate profiles and platforms.

The party affiliation of each candidate was randomized, which naturally generated general and primary election matchups (two candidates from different parties or two from the same party). Each candidate profile listed their position on the climate pledge. Recent work indicates that leaders can effectively reframe noncompliance with international law to avert disapproval (Morse and Pratt 2022); we accordingly paired these positions with a brief justification. Some candidates promised to "reduce emissions to meet U.S. pledge under Paris Agreement and avert the worst effects of climate change." Others said they would "not meet U.S. emissions reduction pledge

[16]Bansak, Hainmueller, Hopkins et al. 2018 find that subjects are comfortably able to perform ten conjoint tasks. However, as a robustness check, we re-estimate the model focusing only on the first task each subject faced.

[17]We opted for the year 2028 to avoid conflation of Democratic candidates with Joe Biden and Republican candidates with Donald Trump, both of whom may stand for election in 2024. This future scenario also matches the setting of the vignette experiment that follows.

under Paris Agreement to keep costs of fossil fuel energy low."[18] Like other candidate choice conjoint experiments, the profiles also listed each candidate's position on healthcare, taxation, and immigration, as well as their age, gender, ethnicity and race, sexual orientation, profession, political experience, and military service (Bansak, Hainmueller, Hopkins et al. 2021).[19]

Figure 1 displays top-line AMCEs. Consistent with our first hypothesis, intended deviation from Paris causes a six percentage point loss in expected vote share across the full sample, an effect exceeded in magnitude only by the loss of support resulting from a pledge to reduce taxes only for high-income Americans (-16 points, relative to cutting taxes for the low and middle classes).[20] This effect magnitude also exceeds that of candidate positions on healthcare and immigration. Overall, respondents voted for candidates who pledged to meet the U.S. Paris target 53 percent of the time and for those prioritizing lower fossil fuel prices 47 percent of the time.[21] This finding is robust to correcting for the measurement error present in conjoint experiments (Clayton, Horiuchi, Kaufman et al. 2023).[22] These results are striking since existing conjoint studies have not found environmental policy to be a significant predictor of candidate choice (Hainmueller, Hopkins, and Yamamoto 2014; Bansak, Hainmueller, Hopkins et al. 2022). These other studies present climate policies without mention of international commitments; the significant findings we identify suggest that adhering to international climate pledges may carry some importance beyond general environmentalist preferences.

[18] While including the justification may introduce a compound treatment effect, this language is faithful to how politicians take and defend positions on climate policy in practice. Additionally, we obtain very similar results in the vignette experiment (in terms of approval costs), where the treatment language does not include a justification.

[19] We do not restrict any of the attributes in the conjoint. In line with best practices (Hainmueller, Hopkins, and Yamamoto 2014), we selected attributes and candidate positions that are plausible for candidates from either major party. We acknowledge that some candidate positions and attributes are more common in one party than the other.

[20] AMCEs can be interpreted as the expected change in vote share for a given candidate (Bansak, Hainmueller, Hopkins et al. 2022), though they should not be taken as indicative of majority preferences (Abramson, Kocak, and Magazinnik 2022). Results are consistent when focusing only on the first tasks seen by subjects (Appendix 4).

[21] AMCEs and marginal means calculated via Barari, Berwick, Hainmueller et al. 2018 and Leeper 2020.

[22] Clayton, Horiuchi, Kaufman et al. 2023 find that conjoint experiments can involve nontrivial measurement error due to unreliable subjects; correcting for this generally yields larger effect sizes. Following their recommendation, we assume that 25% of subjects in our study are unreliable (i.e., would respond to the same conjoint task differently within the course of the same survey). Accounting for this estimated unreliability rate, we recalculate the Paris AMCE ("Do not reduce emissions") as -0.129 with a 95% confidence intervals of $[-0.158, -0.099]$. We estimate the measurement error-corrected standard errors via the bootstrapping technique proposed by Clayton et al. (drawing 1,000 random samples of 1,000 subjects).

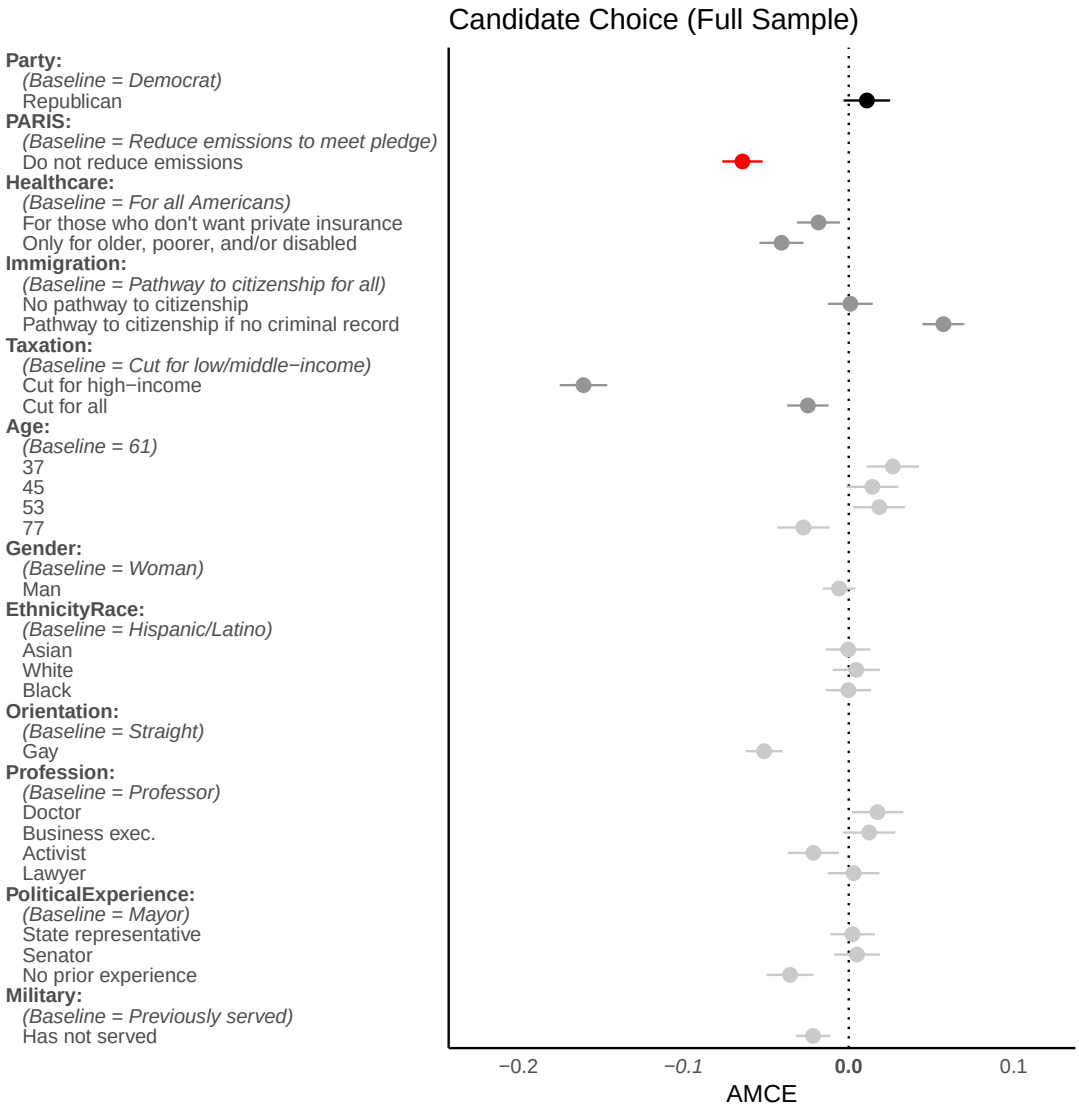

Figure 1: Average marginal component effects for all subjects across all candidate choice tasks. 95% confidence intervals plotted according to standard errors clustered by subject. Estimates based on 40,260 profiles seen by 2,013 subjects.

As an exploratory test, Figure 2 disaggregates results by subjects' party identification. Clear differences emerge between Democratic and Republican subjects. Among Democrats, the estimated vote share for candidates who rejected Paris was 13 percentage points lower than for those who embraced it. Democrats voted for candidates who prioritized lower fossil fuel prices over the Paris target in just 43 percent of contests. By contrast, candidates who rejected Paris received a slight advantage among Republicans, winning their vote in 51 percent of cases. These results indicate that Democrats are especially sensitive to candidate positions on Paris targets; the average

magnitude of changes in Republican voting behavior were smaller in comparison.[23]

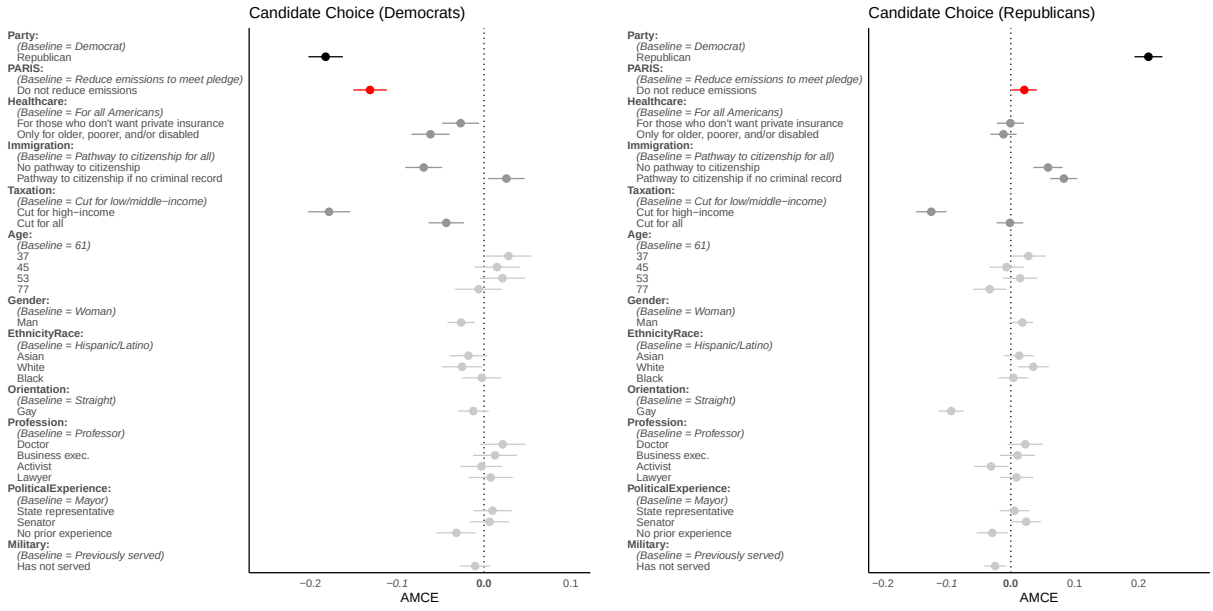

Figure 2: Average marginal component effects for self-identified Democrats (left) and Republicans (right) across all candidate choice tasks. 95% confidence intervals plotted according to standard errors clustered by subject. Estimates based on 14,060 profiles seen by 703 subjects (Democrats) and 13,460 profiles seen by 673 subjects (Republicans).

We next examine how Democratic and Republican voting intentions vary between general and primary elections. Party primaries serve an important function in candidate selection in American politics (Hirano and Snyder 2014), particularly given "calcification" of voting behavior in general elections along partisan lines (Sides, Tausanovitch, and Vavreck 2022). Results indicate, as expected, that candidate party is the strongest determinant of vote choice in general elections: Democrats vote for fellow Democrats in 67 percent of cases and Republicans for fellow Republicans in 70 percent. Support among Democrats diminishes somewhat if the Democratic candidate rejects Paris, but Democrats nonetheless vote for their party's candidate in 60 percent of cases. Among Republicans, support for the Republican candidate does not meaningfully vary with their position on the U.S. climate pledge.

Clear differences emerge in hypothetical primaries, particularly among Democrats.[24] For

[23]These results are robust to accounting for measurement error (Clayton, Horiuchi, Kaufman et al. 2023). We estimate the error-corrected Paris AMCE for Democrats as -0.263 with a 95% confidence interval of $[-0.284, -0.242]$. For Republicans, we estimate the error-corrected Paris AMCE for Republicans as $+0.042$ with a 95% confidence interval of $[+0.021, +0.063]$.

[24]In these analyses, we assume that primaries are closed: only Democrats (Republicans) vote in Democratic (Re-

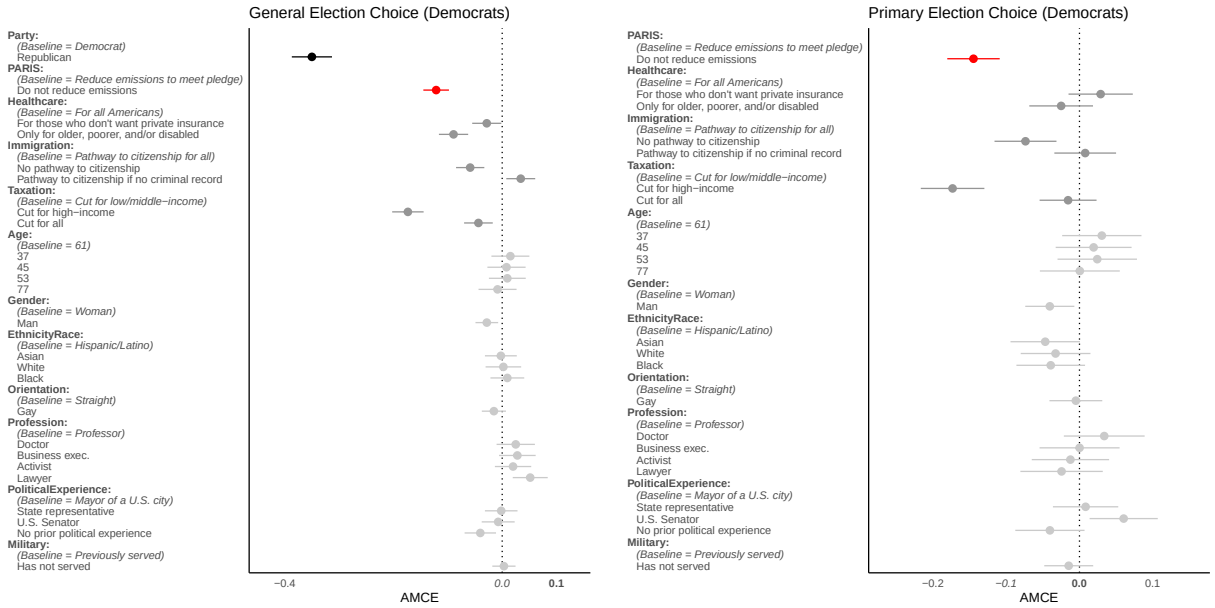

Figure 3: Average marginal component effects for self-identified Democrats in general election (left) and primary election (right) tasks. 95% confidence intervals plotted according to standard errors clustered by subject. Estimates based on 7,376 profiles (general) and 3,342 profiles (primary) seen by 703 subjects.

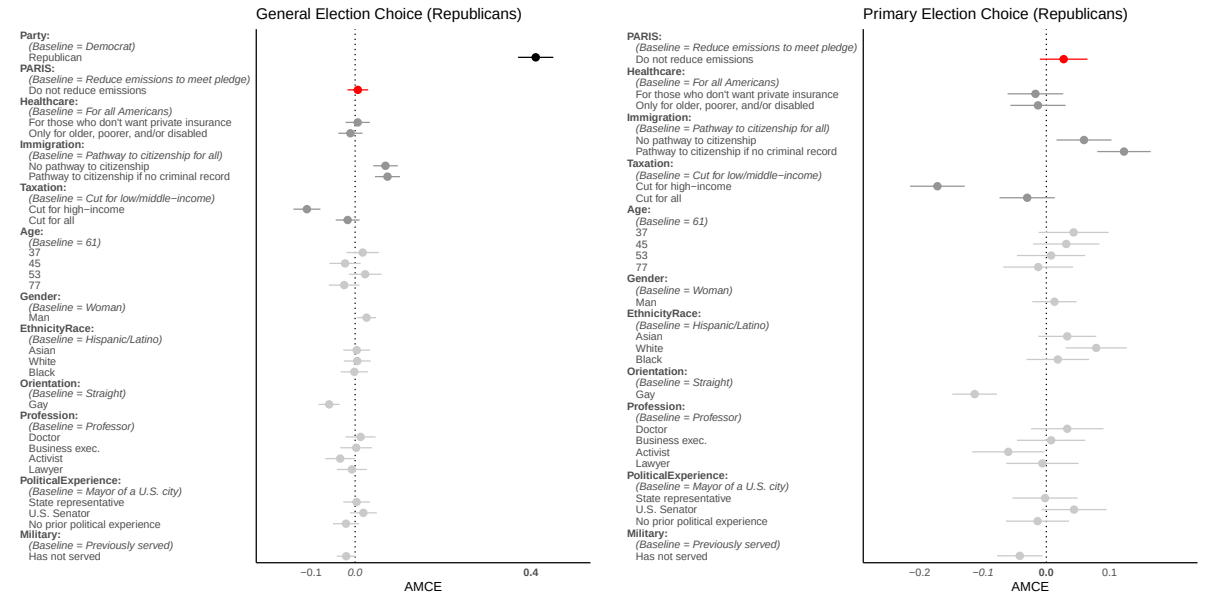

Figure 4: Average marginal component effects for self-identified Republicans in general election (left) and primary election (right) tasks. 95% confidence intervals plotted according to standard errors clustered by subject. Estimates based on 7,032 profiles (general) and 3,214 profiles (primary) seen by 673 subjects.

Democrats, positions on climate pledges powerfully separate candidates. We estimate that candidates in Democratic primaries who express opposition to Paris targets would see their vote shares

publican) primaries.

decline by 14 percentage points compared to those who promise to abide by the agreement. For Republicans, by contrast, there is little evidence of vote switching according to candidates' positions on climate pledges (AMCE $p = 0.15$). In these mock primaries, self-identified Republicans were principally responsive to candidates' race (white candidates favored), immigration platforms (opposition to a pathway to citizenship for all immigrants), military service (veterans favored), and sexual orientation (straight candidates favored). These results align with scholarship finding that Democrats and Republicans respond asymmetrically to climate cues (Hazlett and Mildenberger 2020; Hai and Perlman 2022).

Vignette Experiment

We conducted the vignette experiment in April 2022. We recruited 1,232 U.S. adults via the online platform Prolific, which supplies samples with better quality and similar diversity to Amazon's Mechanical Turk (Peer, Brandimarte, Samat et al. 2017; Palan and Schitter 2018). We collected a variety of pre-treatment demographic and attitudinal information about our subjects, including age, education, income, race, and partisanship. Table 1 lists descriptive statistics for this sample, after screening out respondents who failed both of our attention checks per the pre-analysis plan presented in Appendix 7.[25] The remaining sample is balanced along demographic and attitudinal lines.

Variable	N	Mean	St. Dev.	Min	Max
Age	1232	38.86	16.98	3	292
Income	1232	1.86	0.77	1	3
Education	1232	3.89	1.21	1	6
Democrat	1232	0.49	0.50	0	1
Republican	1232	0.15	0.36	0	1
Global warming caused by human activities	1202	1.20	0.55	1.00	4.00
Approval	1232	3.08	1.49	1	5
Reputation	1232	2.70	1.49	1	5

Table 1: Descriptive statistics for sample in vignette experiment. All covariates are balanced by treatment condition; no covariate mean significantly differs across treatment arms (p values greater than 0.1).

The experiment features a two-by-two factorial design with treatment assignment randomized

[25] Out of 1,540 original responses, we excluded 305 (just under 20%) for failing attention checks that asked subjects to name the correct color (after a prompt which told them what color to choose) and to state whether they agreed or disagreed with the statement, "I swim across the Atlantic Ocean to get to work."

by individual. The intervention follows from the theory described above and resembles that in the conjoint experiment, but with four treatment conditions that map onto different combinations of domestic and foreign behavior regarding climate pledges. Subjects were asked to evaluate a hypothetical future scenario, set in 2025, in which the U.S. pledged to reduce emissions by 65 percent over the next decade.[26] Subjects then received two pieces of information, which comprise each treatment arm: first, whether "President Smith," the hypothetical American leader elected after this pledge was made, had enacted policies to ensure that the U.S. would meet its target according to independent climate monitors; and second, whether other major emitters including China and Europe were on track to meet their own commitments, again according to independent climate monitors. An example of a randomized vignette reads as follow:

> We are going to describe a situation the United States could face in the future. Some parts of the description may seem important to you; other parts may seem unimportant. This situation is hypothetical.
>
> In 2025, the U.S. pledged at an international conference to reduce greenhouse gas emissions by 65% by 2035. President Smith, elected after this pledge was made, has since enacted policies that prevent the U.S. from meeting this target, according to independent monitors.
>
> Other big emitters, like China and Europe, also committed to reduce emissions by 2035. Independent monitors say that these countries will meet their commitments.

Subjects then answered questions designed to assess reactions to the vignette. The primary outcome question asked respondents to indicate their approval of the way that President Smith handled the situation. To better understand the sources of public (dis)approval of the president, we also asked whether respondents saw President Smith's actions as damaging to the international reputation of the U.S. Response options for these questions were structured as five-point scales ranging from strongly disapprove (disagree) to strongly approve (agree).

We first estimate the difference in mean approval between subjects who received information that the U.S. was versus was not on track to meet its commitments. The results offer strong support for our first hypothesis: approval is 1.8 points higher on the five-point scale when the president is on

[26]This design aligns with best practices for vignette-based surveys in its abstraction (Brutger, Kertzer, Renshon et al. 2022).

track to meet U.S. climate commitments ($p = 0.000$). We similarly find evidence that reputational concerns drive these changes in approval. The perception that the president hurt U.S. reputation is 1.9 points higher on the five-point scale when the U.S. is not on track to meet its commitments ($p = 0.000$). Figure 5 displays plots containing bootstrapped treatment effects for each hypothesis based on 1,500 draws. Both sets of results suggest that audience costs may bind leaders when they issue or inherit climate pledges.

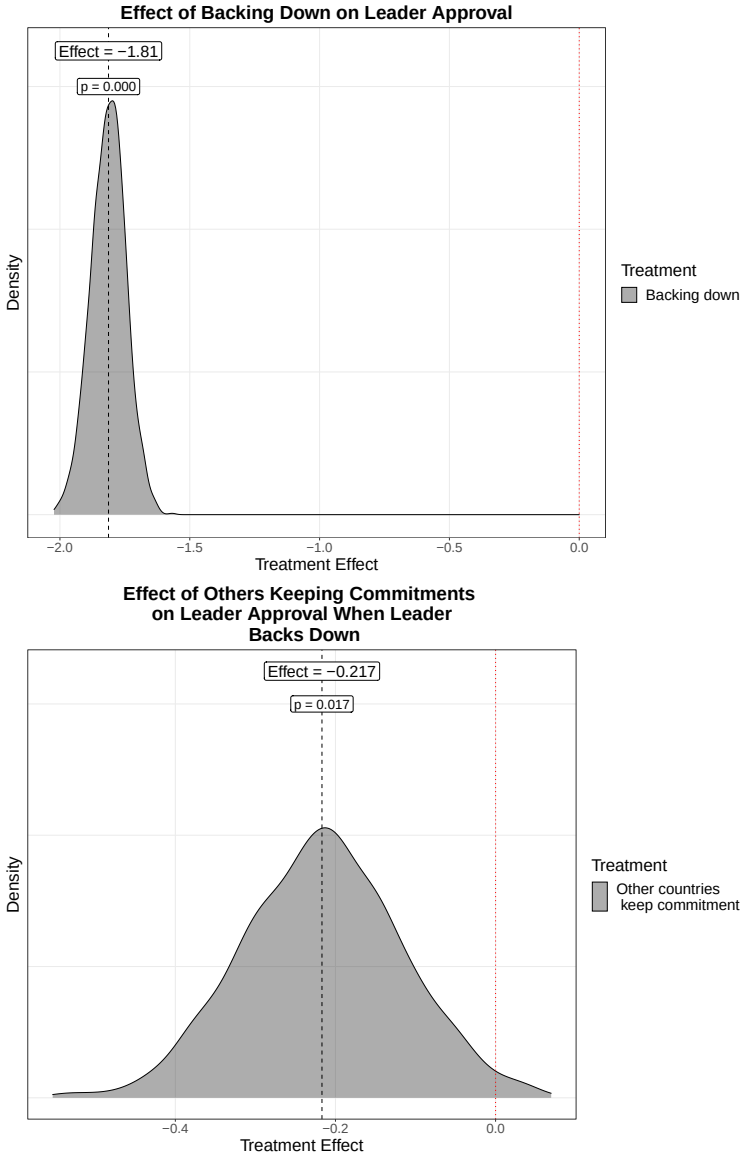

Figure 5: Bootstrapped treatment effects for each hypothesis, based on 1,500 draws. The top plot shows results testing the effect of a leader reneging on a pledge. The bottom plot shows results testing whether this effect varies with the performance of other countries.

We next test whether approval varies with the behavior of other states. Per our second hypothesis, we anticipate that approval will be lowest when the leader backs down and other states remain on pace to meet their climate targets. Table 2 reports results that are in line with this intuition. Holding U.S. behavior constant at "Renege," approval is significantly lower when other countries comply than when they renege (-0.2 points on the five-point scale, $p = 0.033$). Subjects are similarly more likely to believe that U.S. reputation has suffered when the president reneges and other states comply versus when other states also renege ($+0.5$ points on the five-point scale, where higher values indicated greater perceived reputational damage; $p = 0.000$).

Furthermore, we find that approval is always highest, and perceived reputational damage is always lowest, when the U.S. meets its targets, *regardless* of peers' behavior. Mean approval is two points higher when the U.S. abides by versus reneges on the pledge ($p = 0.000$) while others comply and 1.7 points higher when the U.S. abides by versus reneges on the pledge while others renege ($p = 0.000$). Yet approval of a compliant president does not meaningfully decline when other countries renege ($p = 0.439$). We observe a nearly identical pattern for reputation, wherein respondents perceive far more reputational damage when the U.S. backs away from versus adheres to its pledge while peers comply ($+2.1$ points, $p = 0.000$) and when the U.S. backs away from versus adheres to its pledge while peers renege ($+1.7$ points, $p = 0.000$). However, so long as the president sticks with the commitment, perceptions of reputational damage do not change substantially as a function of what peers do ($p = 0.465$).

United States	**Peers**	**Outcome: Approval**	**Outcome: Reputation**
Comply	Comply	3.966	1.773
Renege	Comply	2.004	3.949
Comply	Renege	3.897	1.830
Renege	Renege	2.220	3.484

Table 2: Mean responses by treatment condition. *Approval* indicates subject approval of the president (five-point scale, increasing in approval). *Reputation* indicates extent to which subjects see president's actions as damaging the international reputation of the U.S. (five-point scale, increasing in perceived reputational damage).

We then model these tests in a regression framework, controlling for subject age, income, education, partisanship, and prior perceptions about climate change. We might expect Democrats,

younger respondents, highly educated individuals, and those who believe that climate change is caused by human activity to more harshly punish a president who fails to meet climate pledges. Accounting for respondent attitudes about climate change is especially important as we argue that adherence to climate pledges matters above and beyond individuals' climate attentiveness. Regression results are in line with expectations. Across the models in Table 3, U.S. failures to keep up with the commitment undermine support for the sitting president by 1.7–1.8 points on the five-point scale. Interaction results (models 3–4) suggest that this disapproval mounts by roughly another 0.3 on the scale when peer countries remain on track to meet their own targets.

	Approval			
	Model 1	**Model 2**	**Model 3**	**Model 4**
U.S. reneges	-1.814^{***}	-1.821^{***}	-1.677^{***}	-1.684^{***}
	(0.067)	(0.068)	(0.094)	(0.094)
Others comply			0.069	0.058
			(0.092)	(0.093)
U.S. reneges × others comply			-0.286^{**}	-0.288^{**}
			(0.134)	(0.135)
Constant	3.931^{***}	3.664^{***}	3.897^{***}	3.621^{***}
	(0.046)	(0.170)	(0.065)	(0.174)
N	1232	1202	1232	1202
Adj. R-squared	0.371	0.388	0.373	0.390
Controls		✓		✓
$^{***}p < .01$; $^{**}p < .05$; $^{*}p < .1$				

Table 3: Regressions of approval of the president on U.S. compliance with its climate pledge, interacted in certain models with peers' compliance with their own targets. Estimated by ordinary least squares. Robust standard errors parenthesized. Models 2 and 4 control for subject age, income, educational attainment, party identification, and belief that global warming is caused by human activity.

In parallel with the exploratory analysis presented for the conjoint experiment, we further examine whether the identified treatment effects in the vignette experiment vary by partisan identification. Table 4 reports these subgroup results. We find consistent evidence of approval costs across subgroups, though the effect is substantively largest among Democrats. These results are notable in their indication that even voters generally hesitant to embrace climate action, such as Republicans, are still sensitive to abandonment of climate pledges. We find little evidence that the behavior of peer countries affects disapproval for Democrats or Republicans; the interactive effect is only present for independents.

	DEMOCRATS		REPUBLICANS		INDEPENDENTS	
	Approval	**Reputation**	**Approval**	**Reputation**	**Approval**	**Reputation**
U.S. reneges	-2.253^{***}	2.090^{***}	-0.510^{**}	0.704^{***}	-1.300^{***}	1.396^{***}
	(0.121)	(0.123)	(0.249)	(0.250)	(0.156)	(0.145)
Others comply	0.191	-0.144	0.016	-0.060	0.012	-0.005
	(0.119)	(0.121)	(0.242)	(0.242)	(0.155)	(0.144)
U.S. reneges $\times$ others comply	-0.202	0.448^{**}	-0.099	0.248	-0.575^{***}	0.819^{***}
	(0.177)	(0.179)	(0.348)	(0.349)	(0.222)	(0.207)
Constant	4.200^{***}	1.653^{***}	3.093^{***}	2.442^{***}	3.752^{***}	1.863^{***}
	(0.083)	(0.084)	(0.181)	(0.182)	(0.107)	(0.100)
N	609	609	188	188	435	435
Adj. R-squared	0.538	0.523	0.038	0.097	0.332	0.436

$^{***}p < .01$; $^{**}p < .05$; $^{*}p < .1$

Table 4: Regressions of the approval and reputation outcomes on treatment conditions, by subjects' party identification. Robust standard errors parenthesized.

Tests of reputation costs also yield strong support for our argument. Democrats, Republican, and independents on average see a failure to abide by climate commitments as damaging to the reputation of the U.S., a key indicator that audience costs are operative (Tomz 2007a; Brutger and Kertzer 2018). These results offer support for the audience costs mechanism independent of alternative drivers of support for climate pledges, such as respondents' general concern about climate change. We do not find, however, that other countries' behavior consistently magnifies reputational costs; only independents see reputational damage as mounting when peers abide by their own targets. This may be because independents hold less polarized beliefs than partisans about climate issues, with weaker priors due to the receipt of fewer partisan cues (Chaudoin 2014; Casler and Groves 2023).

Binary Climate Discourse in News Media

Our experimental results suggest that voters sanction politicians for failing to abide by U.S. climate pledges, viewing this behavior as harmful to the international reputation of the U.S. We theorize that climate pledges enable citizens to register disapproval of leaders who are out of step with climate goals by serving as an easily interpretable yardstick against which politicians can be evaluated and compared, thus clarifying the sufficiency of their policies. To test this mechanism, we analyze changes in a corpus of English-language television news discourse concerning climate change.

We show that discussions of the Paris Agreement tend to assess politicians' climate policies and platforms in simple, yes-or-no terms.

To do so, we analyze discussions of climate on CNN, FOX News, and MSNBC between 2009–20, as well as BBC News for 2017–20. We gather data on these discussions from the Global Database of Events, Language, and Tone (GDELT), which records all televised climate mentions during this period based on the Internet Archive's Television News Archive.[27] The unit of analysis is the "snippet," a 15-second transcript clip in which climate is discussed; the data contain about 95,000 such snippets. We code whether each snippet uses binary language in discussing climate change; we measure this according to whether the snippet includes at least one of the following words: "break", "commit", "exceed", "fail", "goal", "meet", "pledge", "promise", "short", "succeed", "target", or "track." Table 5 lists examples of snippets and their codings.

Snippet	**Binary?**
"... of new diesel and petrol cars by 2040. We have to get rid of petrol and diesel cars from our roads if we are going to make sure not only do we deal with the health problems air pollution causes, but also that we **meet** our climate change **targets**." – *BBC News at One* (BBC News), 26 Jul 2017	✓
"... to reduce greenhouse gas emissions. There are now three countries on the whole planet that don't belong. Syria, Nicaragua and us, the United States of America. By making good on his campaign **promise** to get out of the accord the president signaled to the world the U.S. is no longer interested in being any kind of ..." – *The Rachel Maddow Show* (MSNBC), 2 Jun 2017	✓
"... security. Oh, gosh. Let's get to this. On a bigger picture, much grander scale President Obama is pressing the country to do more to fight climate change and to no one's surprise he apologized for America's role in global warming or cooling or ..." – *The Five* (FOX News), 27 Jan 2015	✗
"... that climate change is a hoax. The report says global warming is transforming where and how we live and presents serious challenges to the health and ..." – *The Lead with Jake Tapper* (CNN), 23 Nov 2018	✗

Table 5: Examples of television news snippets discussing climate change. Words indicating binary language are in bold.

Our expectation is that the Paris Agreement will be associated with climate discourse that distinguishes between sufficient (compliant) and insufficient (non-compliant) climate policies and

[27] GDELT identifies 15-second transcript snippets in the Television News Archive that mention "climate change," "global warming," "climate crisis," "greenhouse gas," "greenhouse gases," or "carbon tax." See GDELT, 2020, [bit.ly/3WexYCC].

platforms. We test this by regressing an indicator for binary language on an indicator for whether a snippet mentions "Paris." We include show and month-year fixed effects to account for time-invariant differences between television programs in the dataset, as well as broader shifts in how climate has been discussed over time.

Table 6 reports the estimation results of this model. We find that Paris mentions are associated with significantly higher rates of binary language usage. Across the full dataset, discussion of Paris is associated with a ten-point increase in the probability of binary language being used; substantively and statistically significant increases along these lines also emerge for CNN, MSNBC, FOX News, and BBC News individually. These results are not an artifact of the specific terms used to indicate binary language, as they remain consistent across thousands of alternative dictionaries of binary climate terminology (Appendix 5).

	Pr(Binary Language Used = 1)				
	All	**CNN**	**MSNBC**	**FOX News**	**BBC News**
"Paris" mention	0.099^{***}	0.100^{***}	0.077^{***}	0.043^{**}	0.146^{***}
	(0.011)	(0.018)	(0.019)	(0.019)	(0.011)
N	94,858	19,304	26,429	25,865	23,260
Adjusted R^2	0.032	0.026	0.022	0.018	0.021
Show FE	✓	✓	✓	✓	✓
Month-Year FE	✓	✓	✓	✓	✓
$^{***}p < .01$; $^{**}p < .05$; $^{*}p < .1$					

Table 6: Regressions of an indicator for binary language on a dummy variable indicating a mention of "Paris" in the same transcript snippet. Models estimated by ordinary least squares with show and month-year fixed effects and robust standard errors clustered by show.

Complementing this dictionary-based approach, we perform structural topic modeling (STM) with these television news data to determine if an unsupervised model detects a similar increase in binary language alongside "Paris" mentions. We tune the model to six topics and find consistent evidence.[28] The results, illustrated in Figure 6, show that the proportion of text devoted to binary language increases by around 20 percentage points when "Paris" is discussed; for example, one snippet in this topic describes how the U.S. will "meet the goals of the Paris climate change accord

[28] Appendix 6 contains diagnostic plots and details about pre-processing.

even after President Trump withdrew from the pact." Appendix Table A4 reports the full list of topics and representative responses for each.

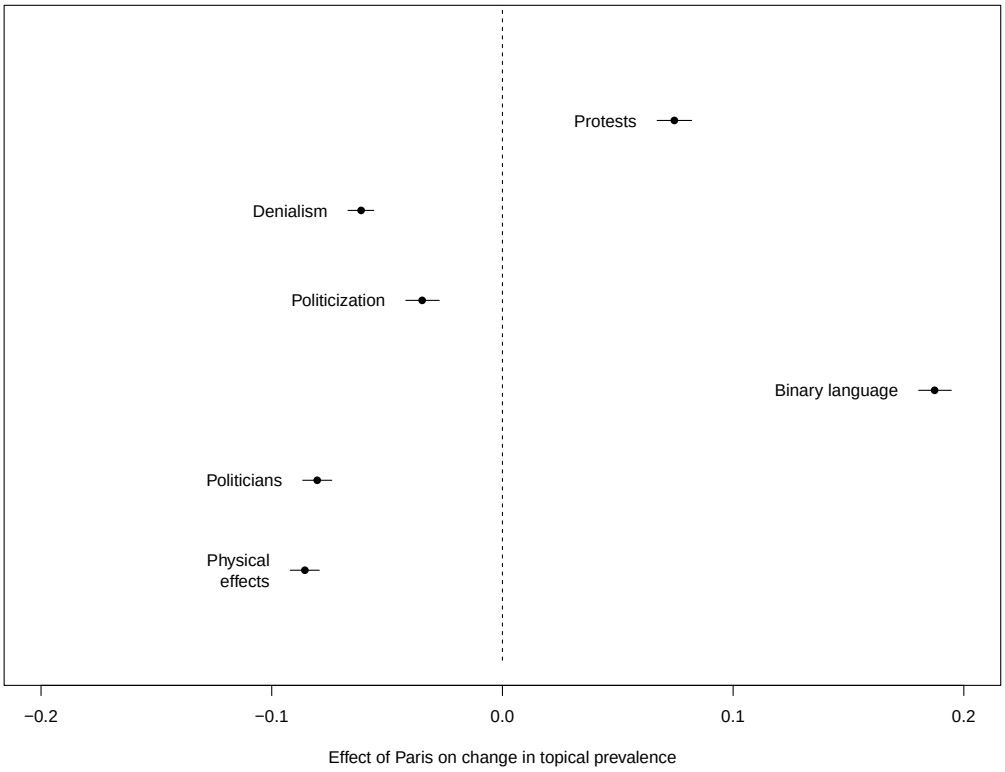

Figure 6: Substantively, the effect size corresponds to the change in the proportion of the text relevant to a given topic when "Paris" is mentioned. The plot depicts 90 percent confidence intervals.

Conclusion

The global climate regime rests on pledges made by states in the absence of formal enforcement mechanisms. Canonical theories of international cooperation illustrate states' strong incentives to defect from such commitments. We explore one mechanism by which states may nonetheless face pressure to adhere to those pledges: audience costs levied by domestic electorates. Through a series of survey experiments, we find that many Americans sanction politicians for backing down from climate targets, preferring those who prioritize meet these pledges over those who sacrifice them in favor of lower energy prices. Whether a candidate intends to uphold their country's climate pledges is one of the most powerful predictors of vote choice among Americans, particularly for

Democrats. Results indicate that disapproval of policies inconsistent with pledges and concern for the global reputation of the U.S. underlie these voting behaviors. We also find some evidence that other countries' behavior conditions how the public views their own government: some voters are more likely to punish defection when other countries abide by their own climate targets. Analyses of English-language news media support our contention that Paris pledges have simplified popular climate discourse, allowing voters to better distinguish between climate platforms and sanction non-compliant politicians.

Our findings suggest several avenues for future work. First, we encourage scholars to examine whether audience costs shape the prospects for climate action in autocracies, including in major emitters such as China. We expect our findings generalize to other developed democracies.[29] While there is some evidence of audience costs in autocracies, particularly among elites (Weeks 2008; Weiss 2013), they may not emerge for climate (Bättig and Bernauer 2009; though see Alkon and Wang 2018). Second, we encourage scholars of audience costs and public opinion of international agreements to incorporate candidate choice conjoint experiments into their analyses in order to better understand when attitudinal shifts translate into meaningful behavioral changes. While the audience costs framework appears increasingly applicable outside of its original international security context, we still have a limited sense about whether empty or unfulfilled threats and promises made in the context of foreign policy cost leaders outside of short-term drops in approval. Third, scholars might investigate what these attitudinal findings portend for elite political strategy. Do candidates for elected office, particularly those on the left, adjust their climate platforms in response to voters' support for abiding by climate pledges?

The effects identified in this paper are promising for the future of climate cooperation and the longevity of the Paris framework. Voters appear willing to punish leaders who fail to meet climate pledges, irrespective of whether politicians are explicitly "named and shamed" for this behavior. These results suggest that voters may care about foreign policy to an extent that existing literature overlooks (Guisinger 2009; Guisinger and Saunders 2017; Rho and Tomz 2017). Though the cli-

[29] See Bush and Clayton 2023 on differences in climate perceptions between developed and developing settings.

mate domain has some unique features, insofar as it holds clear and salient domestic distributional implications that other issue areas lack (Gaikwad, Genovese, and Tingley 2022), we might expect these dynamics to be salutary for the future of global climate governance.

On the one hand, Democrats are evidently willing to vote on climate issues, which ought to incentivize more ambitious rhetoric and action from Democratic politicians. On the other hand, framing appears to shape how Republicans evaluate candidates' climate policies. In the conjoint experiment, when given the choice between a candidate who would meet the U.S. emissions target to avert the worst effects of climate change versus one who would prioritize keeping energy prices low, Republicans narrowly favored the latter. In the vignette experiment, when adherence to Paris was framed as a public commitment that the president could meet or back down from, Republicans punished anti-Paris politicians and saw significant reputational costs to reneging. As low-carbon energy becomes more competitive, the tradeoff between energy prices and climate action may become less severe; this may render relatively more salient the reputational implications of climate (in)action, providing Republican candidates with some space to offer Paris-aligned policies. While collective action problems and interest group lobbying have hamstrung climate action to date (Aklin and Mildenberger 2020; Kennard and Schnakenberg 2023), our findings suggest some electoral reason for optimism about the self-enforcing nature of Paris commitments.

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Supplemental Appendix for Do Pledges Bind? The Mass Politics of International Climate Targets

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Contents

1 Survey Instrument

1.1 Demographic and Attitudinal Questions

In what ZIP code do you currently reside?

- Numeric entry

What is your gender?

- Male
- Female
- Other

What is your age?

- Numeric entry

What is your race?

- White/Causasian
- Black or African American
- Non-White Hispanic or Latino
- Asian
- Native American
- Native Hawaiian or Pacific Islander
- Other, please list

What is your annual household income?

- Less than $50,000
- $50,000-$100,000
- $100,000

What is the highest level of education you have completed?

- Less than a complete high school education
- Complete high school education
- Some university-level or vocational education
- Complete university-level or vocational education
- Some post-graduate education

- Complete post-graduate education

Do you think of yourself as a Democrat, Republican, Independent or what?

- Democrat
- Republican
- Independent
- Other
- Don't know

[Branching from previous question] Would you call yourself a:

- Strong [Democrat/Republican]
- Democrat/Republican
- Lean [Democrat/Republican]

What is your industry of employment?

- Agriculture, Forestry, and Fisheries
- Mining
- Construction
- Manufacturing (Non-durable)
- Manufacturing (Durable)
- Transportation, Communications, and Other Public Utilities
- Wholesale Trade
- Retail Trade
- Finance, Insurance, and Real Estate
- Business and Repair Services / Personal Services
- Entertainment and Recreation Services
- Professional and Related Services
- Public Administration

Assuming global warming is happening, do you think it is . . . ?

- Caused mostly by human activities

- Caused mostly by natural changes in the environment
- None of the above because global warming isn't happening
- Other
- Don't know

Which of the following two statements comes closest to your own values?

- Protecting the environment should be given priority, even if it causes some loss of jobs or economic growth
- Creating jobs should be the top priority, even if the environment suffers to some extent

Please indicate your agreement with the following statement: I swim across the Atlantic Ocean to get to work every day

- Strongly disagree
- Disagree
- Agree
- Strongly agree

1.2 Vignette Experiment

We are going to describe a situation the U.S. could face in the future. Some parts of the description may seem important to you; other parts may seem unimportant. This situation is hypothetical.

In 2025, the U.S. pledged at an international conference to reduce greenhouse gas emissions by 65% by 2035. President Smith, elected after this pledge was made, has since enacted policies that [ensure that the U.S. will meet / prevent the U.S. from meeting] this target, according to independent monitors.

Other big emitters, like China and Europe, also committed to reduce emissions by 2035. Independent monitors say that these countries [will meet / will not meet] their commitments.

Outcomes
Do you approve or disapprove of the way that President Smith handled this situation?

- Strongly approve
- Somewhat approve
- Neither approve nor disapprove
- Somewhat disapprove
- Strongly disapprove

Do you agree or disagree with the following statement: President Smith's handling of the situation hurt the reputation of the United States in the world.

- Strongly agree
- Somewhat agree
- Neither agree nor disagree
- Somewhat disagree
- Strongly disagree

Do you approve or disapprove of the U.S. commitment to reduce emissions by 65% by 2035?

- Strongly approve
- Somewhat approve
- Neither approve nor disapprove
- Somewhat disapprove
- Strongly disapprove

Suppose your household had to pay a higher monthly electric bill to help the U.S. meet its commitment to reduce emissions by 65%. How much more money a month would you be willing to spend?

- Sliding scale from 0% to 100%

Do you think there will be any economic consequences imposed by other countries from the President's actions?

- Strong negative consequences
- Weak negative consequences
- No consequences
- Weak positive consequences
- Strong positive consequences

What considerations were most important in your assessment of President Smith's behavior? Please explain.

- Short answer box

1.3 Conjoint Experiment

We are going to describe a situation the United States could face in the future. Some parts of the description may seem important to you; other parts may seem unimportant. This situation is hypothetical.

In 2025, the United States pledged at an international conference to greenhouse gas emissions by 65% by 2035, relative to 2005 levels. Other big emitters, like China and Europe, also committed to reduce emissions by 2035.

The 2028 general election for President of the United States offers voters a choice between Candidate A and Candidate B. The candidates possess the attributes listed below and have staked out the following positions on key policy issues:

Conjoint Attributes
1. Military service

   - Previously served in military
   - Has not served in military

2. Immigration policy

   - Pathway to citizenship for all undocumented immigrants
   - Pathway to citizenship for undocumented immigrants with no criminal record
   - No pathway to citizenship for undocumented immigrants

3. Previous occupation

   - Lawyer
   - Doctor
   - Business executive
   - College professor
   - Activist
   - Age

4. Age

   - 37, 45, 53, 61, 77

5. Gender

   - Man
   - Woman

6. Race/ethnicity
    - White
    - Black
    - Hispanic/Latino
    - Asian
7. Sexual orientation
    - Straight
    - Gay
8. Climate policy
    - Reduce emissions to meet U.S. pledge under Paris Agreement and avert the worst effects of climate change
    - Do not meet U.S. emissions reduction pledge under Paris Agreement to keep costs of fossil fuel energy low
9. Offer government healthcare to:
    - All Americans
    - Only older, poorer, and/or disabled Americans
    - Americans who do not want private health insurance
10. Lower taxes for:
    - All Americans
    - High-income Americans
    - Low- and middle-income Americans
11. Previous political experience
    - U.S. Senator
    - Mayor of a U.S. city
    - State representative
    - No prior political experience
13. Party
    - Democratic Party
    - Republican Party

2 Descriptive Statistics for Conjoint Experiment

Sample characteristics for conjoint experiment:

- **Age:** 14% 18–24 years old; 15% 25–34; 20% 35–44; 12% 45–54; 12% 55–64; 26% 65+.
- **Income:** 18% less than $25,000; 27% $25,000–49,999; 22% $50,000–74,999; 14% $75,000–99,999; 12% $100,000–149,999; 6% $150,000+.
- **Education:** 3% less than a complete high school education; 23% complete HS education; 27% some university/vocational education; 28% complete university/vocational education; 5% some post-graduate education; 14% complete post-graduate education.
- **Party:** 35% Democrat; 31% independent; 33% Republican.
- **Global warming caused by human activities:** 62% yes; 28% caused mostly by natural changes in the environment; 7% global warming isn't happening; 2% other.

3 Paris Rhetoric Among Democratic Politicians

Candidate	Date	Quote
Julian Castro	26 Jun 2019	"And if I'm elected president, the first thing that I would do, like Senator Klobuchar also has said, is sign an executive order recommitting us to the Paris Climate Accord so that we lead again..."
Kamala Harris	27 Jun 2019	"And on this issue it is a–it is a critical issue that is about what we must do to confront what is immediate and before us right now. That is why I support a Green New Deal. It is why I believe on day one and as President will re-enter us in the Paris agreement because we have to take these issues seriously..."
Joe Biden	27 Jun 2019	"And new science and technology to be the exporter not only of the green economy, but economy that can create millions of jobs. But, I would immediately rejoin the Paris Climate Accord. I would up the ante in that accord, which it calls for because we make up 15 percent of the problem; 85 percent of the world makes up the rest. And so, we have to have someone who knows how to corral the rest of the world, bring them together, and get something done like we did in our administrator [sic]."
Joe Biden	31 Jul 2019	"There is no middle ground about my plan. The fact of the matter is I call for the immediate action to be taken. First of all, one of the things that - we're responsible for 15 percent of all the pollution in the country. He's right about how it affects people and it affects neighborhoods, particularly poor neighborhoods. But here's the deal; in area, there's also another piece. Eighty-five percent of it is something I helped negotiate; and that is the Paris Climate Accord. I would immediately rejoin that Paris Accord. I would make sure that we up the ante which it calls for. I would be able to bring those leaders together who I know I - I convene (ph) them in the White House, like we did in nuclear summit, and I would raise the standard."
Kamala Harris	31 Jul 2019	"...I would re-enter us in the Paris agreement"
Kirsten Gillibrand	31 Jul 2019	'The second thing I'm going to do is I will reengage on global climate change. And I will not only sign the Paris global climate accords, but I will lead a worldwide conversation about the urgency of this crisis."
Corey Booker	31 Jul 2019	"Science didn't become a reality yesterday. This has been going on for years. There was another president that would not join an international accord. Then it was the Kyoto accords. I was mayor then. And I stood up in national leadership joining with other mayors to say climate change is not a separate issue. It must be the issue and the lens with which we view every issue. Nobody should get applause for rejoining the Paris climate accords. That is kindergarten. We have to go to far advances and make sure that everything from our trade deals, everything from the billions of dollars we spend to foreign aid, everything must be sublimated to the challenge and the crisis that is existential, which is dealing with the climate threat."
Corey Booker	12 Sep 19	"From trade to battling China to the global crisis of climate change, the challenges in the Middle East, he [Trump] is pulling us away from our allies, out of the Iran deal, out of the Paris climate accords.

Table A1: Mentions of Paris Agreement in 2020 Democratic presidential debates, part I.

Candidate	Date	Quote
Kamala Harris	20 Nov 19	"And to do it in a way that understands that part of the strength of who we are as a nation – and therefore, an extension of our ability to be secure – is not only that we have a vibrant military, but that when we walk in any room around the globe, we are respected because we keep to our word, we are consistent, we speak truth, and we are loyal. What Donald Trump has done from pulling out of the Paris agreement to pulling out of the Iran nuclear deal to consistently turning a back on people who have stood with us in difficult times..."
Bernie Sanders	19 Dec 2019	"The issue, as you should know, what the scientists are telling us is they have underestimated the threat and severity of climate change. You're talking about the Paris agreement, that's fine. Ain't enough. We have got to – and I've introduced legislation to do this – declare a national emergency. The United States has got to lead the world. And maybe, just maybe, instead of spending $1.8 trillion a year globally on weapons of destruction, maybe an American president, i.e. Bernie Sanders, can lead the world, instead of spending money to kill each other, maybe we pool our resources and fight our common enemy, which is climate change."
Pete Buttigieg	14 Jan 2020	"The question is, how are we going to make sure any of this actually gets done? Because people have been saying the right things in these debates for literally decades. The other day in Winterset, there was a kid at one of my events, raised his hand and he pointed out that he expects to be here in his 90s in the year 2100. He will sit in judgment over what we do, not just what we on this stage do, anyone old enough to vote right now, whether we actually put together the national project it will require to meet our climate goals, to act aggressively, not just re-joining the Paris Climate Accord, that's table stakes, but to actually move on from the fossil-dependent economy we live in today."
Joe Biden	7 Feb 2020	"I was also part of the deal putting together the Paris Climate Accord. I brought in the Chinese. I was part of that. I've been part of every major initiative we've had relative to diplomacy. I have not argued for the placement of major numbers of US combat troops. I have said, along with the President of the United States, Barack Obama as his partner, I have said, we have to strengthen NATO to make it clear that we keep our commitments when we make them. Like we don't keep our commitments to the Kurds. We must keep our commitments when we make them. Otherwise, we have no power whatsoever."
Michael Bloomberg	19 Feb 2020	"But let's just start at the beginning. If you're president, the first thing you do the first day is you rejoin the Paris Agreement. This is just ridiculous for us to drop out.Two, America's responsibility is to be the leader in the world. And if we don't, we're the ones that are going to get hurt just as much as anybody else."
Joe Biden	19 Feb 2020	"Here's the last point I want to make to you. On day one, when I'm elected president, I'm going to invite all of the members of the Paris Accord to Washington, D.C. They make up 85 percent of the problem. They know me. I'm used to dealing with international relations. I will get them to up the ante in a big way."

Table A2: Mentions of Paris Agreement in 2020 Democratic presidential debates, part II.

Candidate	Date	Quote
Joe Biden	25 Feb 2020	"And I spent more time with Xi Jinping than any world leader had by the time we left office. This is a guy who is – doesn't have a democratic, with a small D, bone in his body. This is a guy who is a thug, who in fact has a million Uighurs in "reconstruction camps," meaning concentration camps. This is a guy who you see what's happening right now in – in Hong Kong, and this is a guy who I was able to convince should join the international agreement at the Paris agreement because, guess what, they need to be involved. You can cooperate and you can also dictate exactly what they are, when in fact they said "We're going to set up a no-fly zone, that you can't fly through our zone. He said, "What do you expect me to do," when I was over there. I said, "We're going to fly right through it. We flew B-1 bombers through it. We've got to make it clear. They must play by the rules..."
Joe Biden	15 Mar 2020	"In addition to that, we also have to – I would immediately rejoin the Paris Climate Accord, which I helped put together. I would call the 100 nations – over 100 nations, but the 100 major polluters to the United States in the first 100 days to up the ante and make it clear that, in fact, we would – in fact, if they didn't, there would be a price to pay."
Bernie Sanders	15 Mar 2020	"We have to act dramatically, boldly, if we're going to save lives in this country and around the world. I look at climate change in exactly the same way. It's not a question of re-entering the Paris Accord. That's fine. Who cares. Not a big deal. The deal right now is do we have the courage? And this gets back to the point I'm trying to make all night long."
Joe Biden	15 Mar 2020	"Number two, we're in a situation, as well, where we cannot – we – we are able to move rapidly to change the dynamic in terms of what we can do to set in motion – the fact that he says climate change, Paris Accord doesn't mean much – we can get everything exactly right. We're 15 percent of the problem. Eight-five percent of the problem is over there. We need someone who can deal internationally. We need someone who can bring the world together again. We need someone who can move in a direction that, in fact, if you violate the commitment you make, you will pay an economic price for it, like what's happening in China. They're exporting coal, significant coal."
Bernie Sanders	15 Mar 2020	"OK, look, obviously, the Paris Accord is – is useful. But it doesn't go anywhere – if you're laughing, Joe, then you're missing the point. This is an existential crisis."

Table A3: Mentions of Paris Agreement in 2020 Democratic presidential debates, part III.

4 Conjoint Results Limited to First Tasks

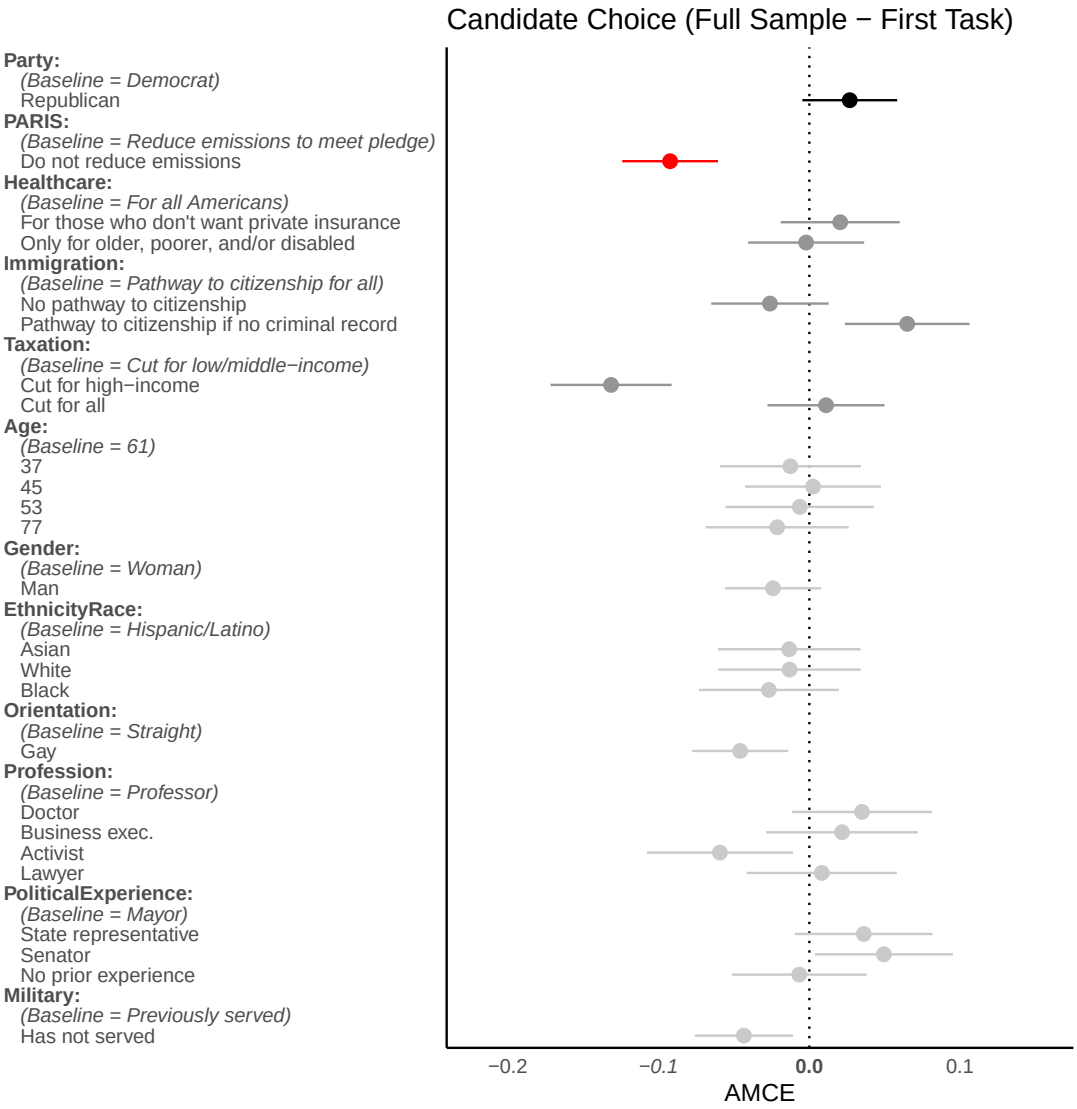

Figure A1: Replication of primary conjoint test, limiting data to the first candidate choice task seen by subjects.

5 Alternative Dictionaries for Media Discourse Test

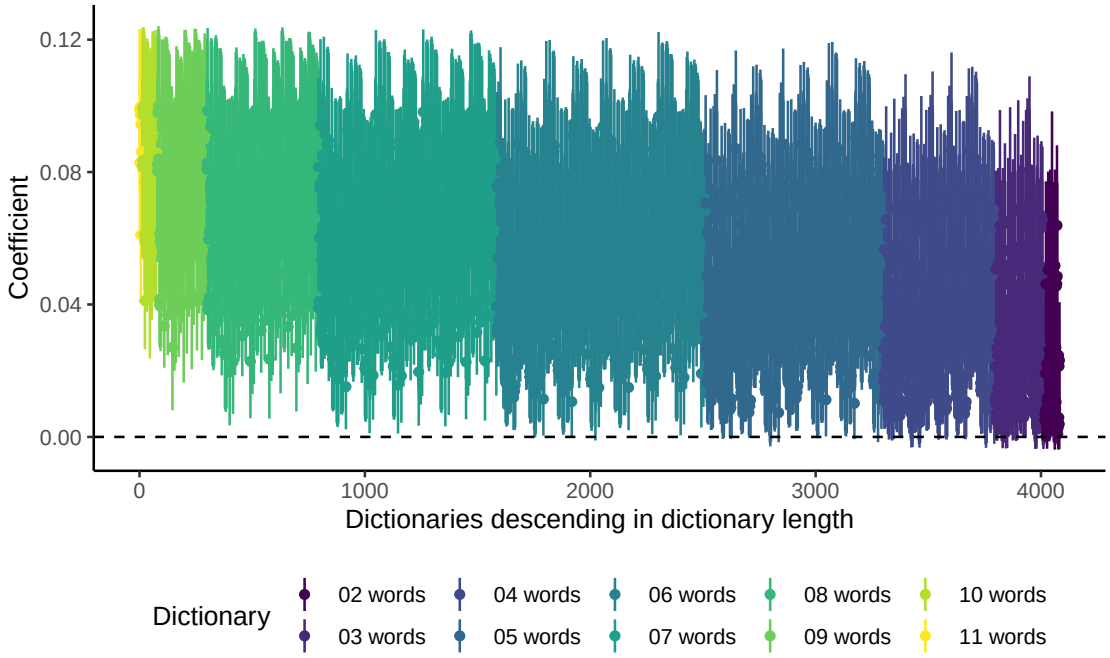

Figure A2: Replications of media discourse regressions with alternative dictionaries. Each replication uses a unique subset, ranging from two to eleven words, of the original 12-word dictionary indicating binary language. Other regression specifications remain the same. Coefficients on the "Paris" mention indicator are plotted with 95% confidence intervals.

6 STM

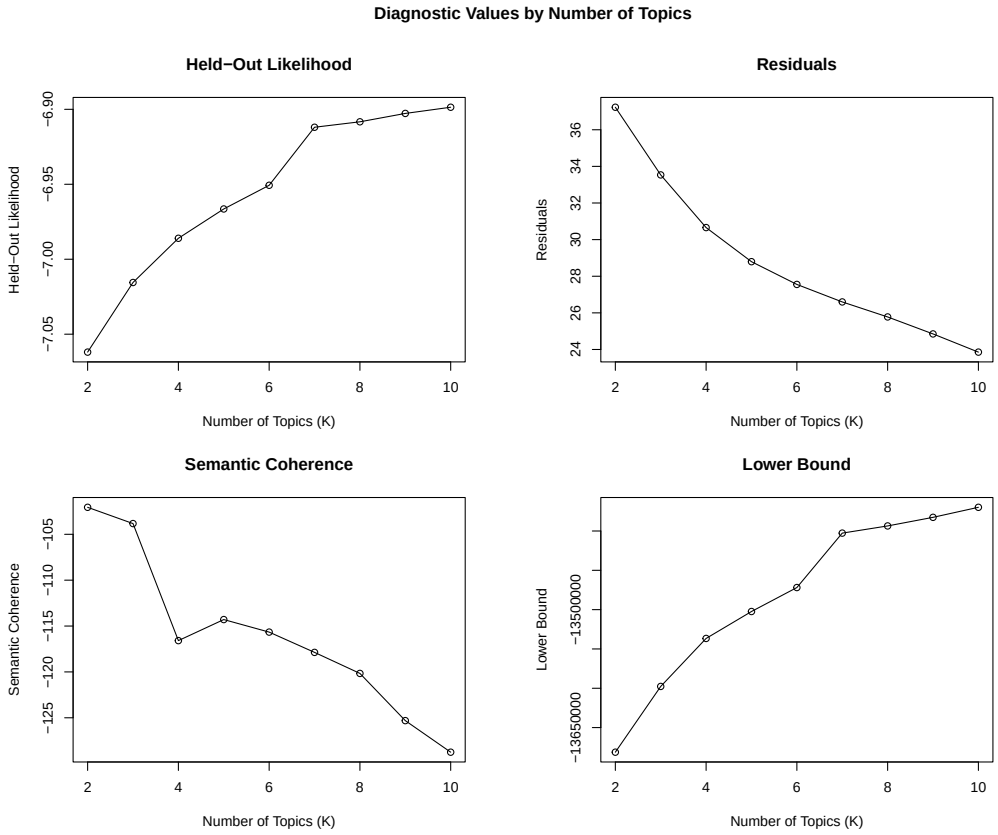

Figure A3: Diagnostic plots for STM. We pre-process all text by eliminating common English stopwords, numbers, and punctuation. We also lowercase all text.

Topic 1: Protests

1. Hundreds of police have begun removing climate change protesters who have been blocking London's main [...]

2. For a third day in a row, climate change activists from extinction rebellion have been protesting in central London. A group gathered outside Jeremy Corbyn's home while others glued themselves to a carriage on the docklands light railway.

Topic 2: Denialism

1. This is like dumb talking to dumber. Dumb and dumber. Global warming? We have proven now that the globe goes through warming and cooling cycles. His 15 minutes are up.

2. Whatever the evidence they will shake it up and say it is global warming. Everything is caused by global warming. The reality is the last five years the Earth's temperatures are cooling.

Topic 3: Politicization

1. A fifty-ton train makes barely a mark on the environment. And a country facing climate change finds climate solutions. Somewhere in America, we've already answered some of the nation's toughest questions.

2. He's a bit of a different kind of a Pope. No question about it. He's taken on big political subjects like climate change and it's very interesting but he's got a certain way about him that's very unique and very nice.

Topic 4: Binary language

1. Countries met in Paris and entered into an agreement of which over 185 of the countries committed to reducing the greenhouse gas emissions significantly and agreed to a long-term goal of zero net.

2. Meet the goals of the Paris climate change accord even after President Trump withdrew from the pact. Opponents say the package of bills represented a regressive tax that would not affect climate change. Good day for the markets [...]

3. Will it help save the planet or kill business competition and raise energy costs for everyone?

4. Significantly propping up the economic prosperity of American manufacturers, creating millions of jobs and advancing environmental goals.

5. That has meant a dismantling of multinational agreements, the pulling out of the Paris climate change accords and the destabilisation of the Iran nuclear deal."

Topic 5: Politicians

1. That was a web video that hit Nancy Pelosi and Al Gore. Newt Gingrich was in a video supporting them on climate change themselves backed that message up with a tough Iowa attack mailing.

2. [...] withhold support from climate change legislation if the Senate pushes ahead with an immigration bill first. Graham had been working on a bipartisan bill with Senator John Kerry that was supposed to be unveiled tomorrow but that is on hold.

Topic 6: Physical effects

1. Rising sea levels are forecast to flood more land near our coasts, but wetlands suck in and store the atmospheric carbon.

2. [...] caused by climate change off the coast of Texas. That meant that the storm surge was worse and there was more coastal flooding. The ocean temperatures were warmer which means more moisture in the atmosphere.

Table A4: Representative responses in each topic from STM. Responses were selected from among the most representative responses for each topic (i.e., those with the highest proportion of content assigned to that topic). Responses are adjusted for typos and brevity. Our main topic of theoretical interest is denoted in red.

7 Preregistration

AS PREDICTED

Wharton CREDIBILITY LAB
University of Pennsylvania

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Climate Conjoint (#112445)

Created: 11/09/2022 01:45 PM (PT)

This is an anonymized copy (without author names) of the pre-registration. It was created by the author(s) to use during peer-review.
A non-anonymized version (containing author names) should be made available by the authors when the work it supports is made public.

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1) Have any data been collected for this study already?
No, no data have been collected for this study yet.

2) What's the main question being asked or hypothesis being tested in this study?
The Paris Agreement marked a sea change in the international community's approach to climate governance. Rather than relying on the top-down mandates that anchored the Kyoto Protocol, the Paris negotiators opted for a bottom- up "review-and-ratchet" approach whereby states voluntarily pledged to reduce greenhouse gas emissions by self- determined amounts (Busby 2016). Yet traditional theories of international organization emphasize the importance of material rewards and sanctions in facilitating cooperative behavior by states (Krasner 1976; Keohane 1984; Barrett 2005; Hafner-Burton 2008; Bagwell and Staiger 2009; Clark 2021). Absent such carrots and sticks, what weight do these voluntary, non-binding climate commitments carry?

Hypothesis: Citizens should be more likely to vote for a leader who has pledged to meet rather than not meet U.S. emissions reduction targets under the Paris Agreement.

3) Describe the key dependent variable(s) specifying how they will be measured.
- Warm versus cold feeling toward candidate (A/B)
- Vote choice for hypothetical candidate (A/B)

4) How many and which conditions will participants be assigned to?
The experiment is a conjoint design that varies 12 attributes of two hypothetical candidates for President of the United States. These attributes include military service, immigration policy, previous occupation, age, gender, race/ethnicity, sexual orientation, climate policy, healthcare policy, tax policy, previous political experience, and political party. Subjects will be told to evaluate them in the context of a future general or primary election for president taking place in 2028. We randomize whether each candidate's climate policy is to meet versus not meet the U.S.'s Paris emissions targets.

5) Specify exactly which analyses you will conduct to examine the main question/hypothesis.
We will use OLS to regress respondents' feeling thermometer ratings and vote choice on each of the individual conjoint conditions. We will use covariates including respondents' gender, age, income, education, party identification, and industry of employment.

6) Describe exactly how outliers will be defined and handled, and your precise rule(s) for excluding observations.
Qualtrics will screen out low-quality respondents through the use of speeding and attention checks. Our attention check asks respondents to state that they are "extremely interested" and "very interested" after reading the following statement: "People are very busy these days and many do not have time to follow what goes on in the government. We are testing whether people read questions. To show that you've read this much, answer both "extremely interested" and "very interested"."

7) How many observations will be collected or what will determine sample size? No need to justify decision, but be precise about exactly how the number will be determined.
We will collect 2,000 responses. Our power analysis suggests that we only need 250 responses for the conjoint to provide precise estimates.

8) Anything else you would like to pre-register? (e.g., secondary analyses, variables collected for exploratory purposes, unusual analyses planned?)
The survey will also collect pre-treatment information on respondents' ZIP code, attitudes toward climate change, and tendencies toward nationalism and cooperative internationalism.

Note: another component of this study (not concerning the conjoint/hypothesis described above) was previously preregistered here: https://aspredicted.org/blind.php?x=4DD_RMW

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Climate Commitments (#94210)

Created: 04/14/2022 04:04 PM (PT)

1) Have any data been collected for this study already?
No, no data have been collected for this study yet.

2) What's the main question being asked or hypothesis being tested in this study?
The Paris Agreement marked a sea change in the international community's approach to climate governance. Rather than relying on the top-down mandates that anchored the Kyoto Protocol, the Paris negotiators opted for a bottom-up "review-and-ratchet" approach whereby states voluntarily pledged to reduce greenhouse gas emissions by self-determined amounts (Busby 2016). Yet traditional theories of international organization emphasize the importance of material rewards and sanctions in facilitating cooperative behavior by states (Krasner 1976; Keohane 1984; Barrett 2005; Hafner-Burton 2008; Bagwell and Staiger 2009; Clark 2021). Absent such carrots and sticks, what weight do these voluntary, non-binding climate commitments carry?

We advance four hypotheses:
H1 -- Citizens should disapprove more of a leader who backs down from a climate commitment.
H2 -- Citizens should disapprove more of a leader who backs down from climate commitments specifically when other countries have met their own commitments.
H3 -- Citizens proximate to climate-vulnerable industries should exhibit greater disapproval of a leader who backs down from a climate commitment. Citizens proximate to carbon-emitting industries should exhibit less disapproval of a leader who backs down from a climate commitment.
H4 -- Citizens who live in regions vulnerable to physical climate damages should exhibit greater disapproval of a leader who backs down from a climate commitment.

3) Describe the key dependent variable(s) specifying how they will be measured.
Support for president who kept or reneged on U.S. commitment; assessment of president's reputation; sensitivity to higher energy bills

4) How many and which conditions will participants be assigned to?
Four conditions:
1) US meets commitment / other big emitters meet commitment
2) US meets commitment / other big emitters do not meet commitment
3) US does not meet commitment / other big emitters meet commitment
4) US does not meet commitment / other big emitters do not meet commitment

5) Specify exactly which analyses you will conduct to examine the main question/hypothesis.
We will use OLS to regress respondents' support for the president, assessment of the president's reputation, and sensitivity to higher energy bills on their treatment condition. We will conduct one-tailed tests in line with our hypotheses that expect backing down will typically generate disapproval (rather than approval) of the president and a hit to the president's reputation, except among citizens who are proximate to carbon-emitting industries (but for whom we also expect the effects to run in only one direction). We will also use covariates including respondents' gender, age, income, education, party affiliation, and industry of employment.

6) Describe exactly how outliers will be defined and handled, and your precise rule(s) for excluding observations.
We will exclude participants who fail our attention checks asking them to name the correct color (after we tell them what color to choose) and state whether they agree or disagree with the statement, "I swim across the Atlantic Ocean to get to work."

7) How many observations will be collected or what will determine sample size? No need to justify decision, but be precise about exactly how the number will be determined.
1000

8) Anything else you would like to pre-register? (e.g., secondary analyses, variables collected for exploratory purposes, unusual analyses planned?)
The survey will also collect pre-treatment information on respondents' ZIP code and attitudes toward climate change.