

# When Does Self-Interest Motivate Political Engagement? The Case of Climate Change

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## Abstract

Past work finds that material self-interest often motivates increased issue engagement. In this paper we identify an important condition under which the opposite can occur. When people see an issue as threatening to harm material well-being, and they are already facing related resource constraints in their own lives, then they become *more* concerned about the issue yet *less* willing to spend scarce resources on issue activism. We demonstrate this point by showing that, among people facing recent health hardships, framing climate change in terms of how it will harm health (a key resource for political participation) is persuasive yet demobilizing. These results advance our theoretical understanding of political participation by showing how people's subjective perceptions of their resources are context dependent. They also show how the motivational influence of material self-interest can have divergent effects on public opinion versus political participation.

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What motivates people to become politically engaged with an economic or social issue – that is, to consider it a political priority, support various policy responses, and engage in issue-related political advocacy? In many cases, people do not connect broad, abstract issues to their own lives. Yet one common finding is that, when people do connect an issue to their material self-interest (perhaps due to elite framing) then this consideration is very impactful (Citrin and Green, 1990; Chong, Citrin and Conley, 2001). By material self-interest, we refer to the tangible impact of an issue on the well-being of oneself or one's family. Concerns about material self-interest can influence people's beliefs about whether issues should be prioritized (Boninger, Krosnick and Berent, 1995; Levine, 2015) and sometimes motivate issue advocacy as well (Green and Cowden, 1992; Visser, Krosnick and Simmons, 2003; Iyengar et al., 2008).

We contribute to this literature by showing that, under certain conditions, perceiving that an issue will affect your material well-being can *decrease* rather than *increase* engagement. We begin by noting that a common reason why people may perceive that an issue affects their well-being is because it threatens to impose resource constraints. This may be because the issue intrinsically involves material harm, such as unemployment, or it may be dependent upon things like elite framing. For instance, infrastructure may be labeled inadequate because of projected congestion and time wasted sitting in traffic (Manville and Cummins, 2015). The national debt may be perceived as harmful when it is linked to how much each individual American would owe.<sup>1</sup> And immigration may be perceived as harmful because of concerns about reduced economic opportunities (Malhotra, Margalit and Mo, 2013).

What happens when people perceive that an issue will harm their material well-being? Given that people are highly sensitive to the threat of losses (Kahneman and Tversky, 1984), this perception increases concern about the issue. However, while increased concern generally motivates activism (Boninger, Krosnick and Berent, 1995), we argue that there is a key condition under which the opposite occurs: when the issue reminds people of a related material constraint they are already facing in their own lives. When this reminder occurs, people feel poorer (Levine, 2015). The result is that, among these people, their willingness to spend scarce resources on issue activism decreases even as their stated concern about the issue in-

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<sup>1</sup>For example, an April 2016 Time Magazine cover read: "Dear Reader, You Owe \$42,998.12" (<http://time.com/4293549/james-grant-united-states-debt/>).

creases.

Studying this pattern enriches our theoretical understanding of political engagement in two ways. First, while we agree that resources are a critical determinant of political participation (Verba, Schlozman and Brady, 1995), subjective perceptions of one's resources may be highly context dependent depending upon what information (e.g. which issue frame) is salient. Second, the motivational influence of material self-interest on political engagement is more complex than typically acknowledged, as it can foster political quiescence at the same time that public opinion registers heightened concern.

In this paper we demonstrate these patterns with respect to climate change. Many have argued that, although most people do not (yet) see themselves as personally affected by climate change, one way to increase engagement on this issue is to frame its consequences in terms of the harmful implications for people's health (e.g. Maibach et al., 2010). While we agree that such framing should increase concern about climate change, we also note that health, like time, is an important material resource for political participation (Pacheco and Fletcher, 2015). If people care about climate change because it threatens their health, then in some cases this concern will also remind them of existing health-related material constraints. These constraints may stem from not feeling healthy oneself and/or needing to spend time devoted to their own or a family member's health. Either way, we argue that this reminder makes them feel poorer – it reduces subjective perceptions that they can afford to devote scarce resources to politics – which reduces their willingness to engage in issue activism.<sup>2</sup>

In what follows we conduct two experiments to test this demobilization claim. As Egan and Mullin (2012) point out, relying on self-reports of the impact of an issue for material well-being may lead to partisan biases and rationalization. To avoid such threats to inference, we instead rely upon experiments in which we randomly assign people to receive different climate change frames. The first is a large-scale email experiment in which we partnered with

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<sup>2</sup>Note our focus is on situations in which the issue threatens to harm material well-being *and* at least some people are already personally facing a related material constraint. This situation differs from one in which a proposed policy change threatens to harm material well-being by removing existing benefits that people enjoy (i.e. a situation in which, rather than facing a material constraint, the people affected currently enjoy a benefit (c.f. Campbell, 2003).)

an environmental organization to investigate the impact of self-interest frames on one form of political action. The second is a survey experiment that compares the frames' effects on both action as well as public opinion. From the perspective of democratic responsiveness, investigating when material self-interest motivates action in addition to public opinion is important because, while the political agenda and policy change are sometimes responsive to citizens' concerns expressed in opinion surveys, that link is not automatic (e.g. Gilens, 2012). Instead, they are more likely to arise in response to *both* issue advocacy and public opinion.

## **Study 1: The effect of material-self interest in the field**

During May 2016 we conducted a field experiment in which we partnered with a national environmental organization. Together we rented emails from Care2, which characterizes its 30 million member list as the world's largest online community for good (see appendix for more details). In particular, we targeted our message toward women over 30 years old. The reason was because, following Miller and Krosnick (2004), it meant that we were recruiting from a part of the list that our partner believed would be most likely to respond. At the same time, we acknowledge that members of this group are (on average) highly likely to be reminded of a health-related resource constraint. Relative to younger women, they are more likely to have health problems, with 55% reporting that they have ongoing conditions that require regular monitoring, care, or medication and 21% reporting that they have a disability, handicap, or chronic disease that limits activity.<sup>3</sup> In addition, women are typically the primary caregivers when family health needs arise, both for elderly parents and for children. For instance, 72% of mothers report that they take care of a sick child and 92% report that they take children for doctor appointments.<sup>4</sup> Based on this, we expect that highlighting how climate change

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<sup>3</sup>See, for example, "Women and health care in the early years of the Affordable Care Act" <https://kaiserfamilyfoundation.files.wordpress.com/2014/05/8590-women-and-health-care-in-the-early-years-of-the-affordable-care-act.pdf>

<sup>4</sup>See, for example, a 2014 report by the Kaiser Family Foundation entitled "Balancing on Shaky Ground: Women, Work, and Family Health" <http://kff.org/womens-health-policy/issue-brief/data-note-balancing-on-shaky-ground-women-work-and-family-health/>

will harm health is highly likely to remind our sample of an existing health-related material constraint, which will reduce their likelihood of taking action.

In total, we rented 100,708 email addresses from Care2 and randomly assigned respondents to receive one of three messages.<sup>5</sup> The *control group* received a message that advocated for clean energy policies. It was modeled after language our partner organization already used that first describes the problem and then quickly transitions to efficacy-boosting language about the value of particular policies. The *risks group* received the same message as the control group along with a short passage that described how climate change will harm public health (and then called for clean energy policies to reduce those risks). This language was modeled after the current “dominant justification” for carbon reduction policies (Bernauer and McGrath, 2016). Lastly, a *benefits group* received the same message as the control along with a short passage that highlighted some health-related benefits to be gained from clean energy policies (e.g. Ansolabehere and Konisky, 2014, Chapter 8).<sup>6</sup> Behavior in the benefits group is interesting unto itself, as it potentially shows how to frame the public health consequences of climate-friendly policies without reminding people of health-related constraints they face. This group also serves an important theoretical point by showing that any behavioral patterns in the risk group are not simply the result of lengthening the appeals. Relative to the control group, we do not expect demobilization to arise with the benefits group.

The emails contained links to an online petition, and respondents were encouraged to sign the petition (and thus become members of our partner organization). Cold emails like ours are commonly used to expand organizations’ active bases of support (Karpf, 2012; Han, 2014). Our measure of political action is the proportion of people that signed the petition.

Consistent with our expectations we found that *fewer* people signed-up after receiving the risks rhetoric relative to the control group (269 versus 321,  $z = -2.16, p = .03$ ),<sup>7</sup>. In contrast, more people signed up after receiving the benefits frame relative to the control (366 versus

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<sup>5</sup>n=33,565 in the control, n=33,589 in the risks group, and n=33,554 in the benefits group.

<sup>6</sup>For theoretical clarity, we refer to this group as the benefits group, though note that the text did not just mention potential benefits but also omitted discussion of potential harms.

<sup>7</sup>Although we stated clear directional expectations, all of our statistical tests are two-sided because our partner organization hypothesized effects in the opposite direction.

321;  $z = 1.73$ ,  $p = .08$ ). Lastly, the difference in behavior between the benefits and risks frames was especially large (366 versus 269,  $z = 3.88$ ,  $p = .00$ ).

## **Study 2: The effect of material-self interest in a survey setting**

The results from the email study supported our key expectation, yet were also limited in several respects. First they raise the prospect of an alternative explanation: perhaps the risks frame demobilized not because it reminded people about a personal health-related resource constraint but instead simply because it was negative in tone (whereas the benefits frame was more positive). In addition, our proposed theoretical contribution would be more convincing if we could show that a similar pattern of demobilization does *not* arise among people without existing health-related resource constraints. Finally, we have yet to examine the implications of our frames for public opinion.

To address these shortcomings we conducted a brief survey experiment. Although survey experiments often feature nationally-representative samples, in our case we wanted a sample that would closely approximate the Care2 email list in several key respects yet at the same time have greater variation in terms of people's recent health experiences. That is, ideally we wanted a relatively liberal and politically-engaged sample – exactly the kinds of people that our partner organization from the field study targets for heightened engagement. One kind of convenience sample that satisfies these criteria is Amazon's Mechanical Turk (AMT) (Berinsky, Huber and Lenz, 2012). While AMT samples are often criticized for their non-representativeness, in the context of our study this is a strength rather than a deficiency.

In total, we recruited 526 people to take our study during November 2016. Subjects were again randomly assigned to receive one of three messages – control, risks, and benefits. The text of each treatment was very similar to the field experiment, though with appropriate modifications given that these were not tied to our earlier partner organization. Afterwards, respondents received a battery of public opinion questions designed to tap concern about climate change as well as one political action question (with the order randomized and a distractor task in between).

The four public opinion questions tapped into various aspects of concern about climate

change: the degree to which people thought that climate change and clean energy policies, respectively, would have a noticeable impact on themselves or their family, how much they favored more policies to reduce carbon emissions, and how much the government should prioritize climate change relative to five other issues. The four items were individually rescaled to range from 0 (very low levels of concern) to 1 (high levels of concern). They were then summed together and rescaled into a *climate change concern index* that also varied from 0 to 1 (again with higher numbers indicating more concern; Cronbach's  $\alpha = 0.82$ ).

In addition, we also offered a political action opportunity by asking respondents if they would join the listserv of 350.org (an environmental organization). To ensure that they took the question seriously, we noted that, if they joined, they'd have the "opportunity to contact elected officials" as well as take other actions. Finally, we included two questions that measured whether respondents faced existing health-related resource constraints: if either they or a family member had a health emergency in the past year. 41.1% indicated yes to at least one of these questions, and is counted as having a "health hardship" in what follows. The appendix contains all treatment text, question wordings, and summary statistics of our sample.

First we discuss our political action results among respondents with a health hardship. Comparing the risks and control groups, the pattern mirrored the field experiment: the risks frame reduced people's willingness to sign up for the 350.org listserv relative to the control (18.2% versus 34.9%,  $z = -2.38, p = .02$ ).<sup>8</sup> The pattern was altogether different among those who received the benefits frame. In that case, the direction of the effect was positive though not statistically significant (36.8% versus 34.9%,  $z = 0.23, p = .82$ ). Lastly, the difference in behavior between those who received the risks and benefits frames was again very large (18.2% versus 36.8%,  $z = -2.64, p = .01$ ).

Next we examine political action among people without a health hardship. As expected, we do not observe any evidence of demobilization when comparing those who received the risks language versus the control, and in fact the direction of the effect is positive (25.2% versus 18.8%,  $z = 1.12, p = .26$ ). Moreover, we continue to not observe any evidence of

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<sup>8</sup>All comparisons reported in the main text are based on marginal effects estimated using the models in the appendix.

demobilization among those that received the benefits frame as well (32.3% versus 18.8%,  $z = 2.20, p = .03$ ). Lastly, in this case behavior among those that received the risks and benefits frames was relatively similar (25.2% versus 32.3%,  $z = -1.10, p = .27$ ).<sup>9</sup>

In sum, the only evidence of demobilization we observe is among those facing health hardships and receiving frames about climate change harming health that remind people of those hardships. However, when we look at public opinion, an altogether different pattern emerges. Among people facing a health hardship the risks frame *increased* climate change concern relative to the control (diff=.07,  $t = 1.77, p = .08$ ) while the benefits frame also had a positive but statistically insignificant effect (diff=.03,  $t = 1.06, p = .29$ ). In addition, among people not facing a health hardship, both frames had a positive effect on public opinion just like action, though only one was statistically significant (comparing risks versus control: diff=.04,  $t = 1.01, p = .31$ ; comparing benefits versus control: diff=.06  $t = 1.85, p = .07$ ).

We raise one final consideration, which is that perhaps people facing a health hardship were demobilized not because they were reminded of health-related resource constraints, but instead simply because the risk frame was negative in tone. While we acknowledge that it is more negative than the benefits frame, we took care to avoid overly catastrophic language (Feinberg and Willer, 2011) and ensure that all treatments included efficacy-boosting language. Moreover, when we asked respondents if they felt anxious and, separately, if they felt hopeful, we did not observe any differences between the risks and control group among people facing a health hardship. Overall, then, our results do not seem attributable to the tone of the information.

Taken together, the political action and public opinion patterns underscore a key finding about the motivational influence of material self-interest and also the politics of climate

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<sup>9</sup>We also tested whether other characteristics that might be related to having health hardships (and political participation), such as income or partisanship, might exhibit similar patterns. We did not find evidence that they exhibited a similar moderating effect. In addition, we noticed that within the control group people without health hardships responded differently than those with them (see the appendix). Given that this attribute is not randomly assigned, and given that we do not have a representative sample, it is difficult to draw firm conclusions about this pattern. We leave this topic for future work.



change: among those already facing a health-related resource constraint, framing climate change in terms of its harm to health can persuade, yet paralyze. A similar pattern does not arise when the issue is framed in terms of health-related benefits, nor does it arise among people without a health-related resource constraint in their own lives. Yet given the prevalence of health hardships, for those seeking to influence climate politics using public health frames highlighting the benefits to be gained is likely to be more impactful.

## Conclusion

These findings extend our understanding of political motivation in mass politics. Appeals that connect issues to people's material self-interest can potentially be powerful because they clarify how an otherwise broad and abstract issue may impact their own well-being. While such appeals can be persuasive and sometimes motivate increased political activism, we also show how they can have the opposite effect when they remind people about resource constraints they already face in their own lives.

Our two theoretical contributions – showing how a critical motivation like material self-interest can have divergent effects on public opinion and issue activism, and then also showing how subjective perceptions of resources can be context-specific – are potentially useful for understanding engagement in several other domains beyond climate change. Issues such as public transit, immigration, the national debt, financial reform, and international trade are all broad issues that people may view as harming their material well-being.<sup>10</sup> In each case, it bears testing whether linking the issues to one's material self-interest affects engagement. It is possible that, as in the case of climate change, strong frames that have the goal of raising awareness may, at least when it comes to issue advocacy, spur quiescence. This outcome would inadvertently diminish the likelihood that the political system responds to citizens' concerns.

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<sup>10</sup>In some cases, such as immigration, scholars have already examined the effect of different issue frames on issue advocacy (e.g. Merolla et al., 2012), though those studies were not designed to isolate the impact of self-interest rhetoric.

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## Online Appendix

### Text of treatments from field experiment

For our field experiment we rented email addresses from Care2. The overall list is composed of 78% women in which 84% are the primary purchaser for their household, 82% have a college degree, and 65% own their own home. Moreover, overall they exhibit high levels of civic engagement especially on traditionally liberal issues: 82% describe themselves as passionate about animal rights, 79% as passionate about the environment, and 64% as passionate on human rights. Lastly, especially important for our experiments is the fact that 78% of the Care2 list believes that petitions create lasting impact.

As noted in the main text we only sampled from the part of the list that contained women over the age of 30. Subjects were randomly assigned to receive one of three messages: control, risks to health, benefits to health. The messages appear below. The subject line was the same for each one: “We have a plan to tackle climate change...Take Action Now”. There were links embedded in the emails at the beginning and end, which re-directed to an online petition advocating for clean energy policies. The content of the petition was the same in all three groups.

#### Control group

**Join us and take action to ensure a swift and just transition to 100% clean energy!**

Dear [name],

**Climate change is real, and we need to take action.** According to the U.S. National Climate Assessment, the most recent decade was the nation’s and the world’s hottest on record, and human activities – like burning fossil fuels – are the primary cause of these changes.

**Fortunately, the National Climate Assessment is hopeful and so are we.** We need immediate public policy that promotes cleaner methods of energy production.

That’s why **[partner organization] is building a movement of people just like you.** Last year the Environmental Protection Agency published a Clean Power Plan requiring states to reduce carbon emissions from power plants. Yet it’s up to state officials to create policies to implement the plan. Those that promote clean energy the most will have the biggest benefit.

**Can you join us and sign our petition to let [state] officials know that you support the fastest and most just transition to 100% clean energy?** Together we will ensure a clean energy future and a livable climate for all children.

Thanks for taking action,  
[Signed by organization’s communications director]

#### Risks to Health

**Join us and take action to ensure a swift and just transition to 100% clean energy!**

Dear [name],

**Climate change is real, and we need to take action.** According to the U.S. National Climate Assessment, the most recent decade was the nation's and the world's hottest on record, and human activities – like burning fossil fuels – are the primary cause of these changes.

**Fortunately, the National Climate Assessment is hopeful and so are we.** We can still avoid the worst consequences of a changing climate with immediate public policy that promotes cleaner methods of energy production.

**Taking action will reduce the risks we face.** We'd stop sea levels rising and reduce the chance of extreme weather like droughts and floods. We would be less affected by food and water shortages, and health issues that come with high temperatures. Reducing all of these risks would be a good pay-off.

That's why [partner organization] is building a movement of people just like you. Last year the Environmental Protection Agency published a Clean Power Plan requiring states to reduce carbon emissions from power plants. Yet it's up to state officials to create policies to implement the plan. Those that promote clean energy the most will have the biggest benefit.

**Can you join us and sign our petition to let [state] officials know that you support the fastest and most just transition to 100% clean energy?** Together we will ensure a clean energy future and a livable climate for all children.

Thanks for taking action,

[Signed by organization's communications director]

### Benefits to Health

**Join us and take action to ensure a swift and just transition to 100% clean energy!**

Dear [name],

**Climate change is real, and we need to take action.** According to the U.S. National Climate Assessment, the most recent decade was the nation's and the world's hottest on record, and human activities – like burning fossil fuels – are the primary cause of these changes.

**Fortunately, the National Climate Assessment is hopeful and so are we.** By taking action now, with immediate public policy that promotes cleaner methods of energy production, we all stand to benefit.

**Taking action will improve our health.** Using cleaner forms of energy – such as solar and wind power – will reduce air and water pollution. It'd make for a healthier society, and that would be a good pay-off.

That's why [partner organization] is building a movement of people just like you. Last year the Environmental Protection Agency published a Clean Power Plan requiring states to

reduce carbon emissions from power plants. Yet it's up to state officials to create policies to implement the plan. Those that promote clean energy the most will have the biggest benefit.

**Can you join us and sign our petition to let [state] officials know that you support the fastest and most just transition to 100% clean energy?** Together we will ensure a clean energy future and a livable climate for all children.

Thanks for taking action,  
[Signed by organization's communications director]

## Text of treatments from survey experiment

Subjects were randomly assigned to one of three experimental groups, in which the text mirrored the field experiment as much as possible.

### Control group

**Climate change is real, and we need to take action.** According to the U.S. National Climate Assessment, the most recent decade was the nation's and the world's hottest on record, and human activities – like burning fossil fuels – are the primary cause of these changes.

**Fortunately, the National Climate Assessment is hopeful.** We need immediate public policy that promotes cleaner methods of energy production.

Last year the Environmental Protection Agency published a Clean Power Plan requiring states to reduce carbon emissions from power plants. Yet it's up to state officials to create policies to implement the plan. Those that promote clean energy the most will have the biggest benefit.

### Risks to Health

**Climate change is real, and we need to take action.** According to the U.S. National Climate Assessment, the most recent decade was the nation's and the world's hottest on record, and human activities – like burning fossil fuels – are the primary cause of these changes.

**Fortunately, the National Climate Assessment is hopeful.** We can still avoid the worst consequences of a changing climate with immediate public policy that promotes cleaner methods of energy production.

**We have a lot to lose if we don't act now. Yet taking action will reduce the health risks we face.** We'd stop sea levels rising and reduce the chance of extreme weather like droughts and floods. We would be less affected by food and water shortages, and health issues that come with higher temperatures. Reducing all of these risks would be a good payoff.

Last year the Environmental Protection Agency published a Clean Power Plan requiring states to reduce carbon emissions from power plants. Yet it's up to state officials to create policies to implement the plan. Those that promote clean energy the most will have the biggest benefit.

### Benefits to Health

**Climate change is real, and we need to take action.** According to the U.S. National Climate Assessment, the most recent decade was the nation's and the world's hottest on record, and human activities – like burning fossil fuels – are the primary cause of these changes.

**Fortunately, the National Climate Assessment is hopeful.** By taking action now, with immediate public policy that promotes cleaner methods of energy production, we all stand to

benefit.

**We have a lot to gain from taking action now, especially for our health.** Using cleaner forms of energy – such as solar and wind power – will reduce air and water pollution. It'd make for a healthier society and that would be a good pay-off.

Last year the Environmental Protection Agency published a Clean Power Plan requiring states to reduce carbon emissions from power plants. Yet it's up to state officials to create policies to implement the plan. Those that promote clean energy the most will have the biggest benefit.

## Survey experiment questions

Afterwards, subjects received a short series of public opinion questions along with a political action question. The order of receiving the questions was randomized, and included a distractor task in the middle (i.e. the order was either opinion questions then distractor then action, or action then distractor then opinion questions).

### *Public opinion questions*

Please state the degree to which you agree or disagree with the following statement:  
Public policies that promote clean energy will have a positive impact on me and/or my family. (*Strongly agree...Strongly disagree*)

Please state the degree to which you agree or disagree with the following statement:  
Climate change will have a noticeable impact on me and/or my family. (*Strongly agree...Strongly disagree*)

To what extent do you agree or disagree with the following statement: We need more public policies that would promote cleaner methods of energy production. (*Strongly agree...strongly disagree*)

Our country faces many different problems and our elected leaders can't deal with all of them at once. Please rank the following issues (by dragging and dropping them) in terms of how you think that our elected leaders should prioritize them. (*The federal budget/federal debt, unemployment/jobs, race relations/racism, climate change, immigration, terrorism*)

To what extent, if at all, does climate change make you anxious about your own material well-being? (*Extremely...Not at all*)

To what extent, if at all, are you hopeful when you think about public policy to promote clean energy? (*Extremely...Not at all*)



### *Health hardship questions*

In the past year, have you personally experienced a health emergency?

In the past year, have any family members living with you experienced a health emergency?

### *Political action question*

350.org is an organization working to build a movement of people that will advocate for policies that promote cleaner methods of energy production.

Would you be willing to join? If you join, then you will have the opportunity to contact elected officials and tell them why we need to pass public policy that would promote clean energy.

Becoming a member is free and easy – it just involves joining 350.org’s email list. Then, you will start receiving instant updates about climate change-related topics as well as opportunities to engage in mass action with others that share your concerns.

If you indicate “yes” below, then at the very end of this study you will be directed to 350.org’s website to sign up. *[Subjects were then presented with two response options: Yes, No.]*

## **Sample characteristics in survey experiment**

In order to ensure that random assignment was successful, we conducted a balance test. For this test, we compared our three experimental groups using the following characteristics: proportion female (coded 1=female, 0=male), average age (ranging from 18-75), average education level (six categories, coded from 0-1), income (24 categories, coded from 0-1), and party identification (7-point measure, coded from 0 (strong Republican) to 1 (strong Democrat))

Table 1 shows the averages for each experimental group along with the results from a one-way ANOVA test that compares the means. In no case do we find evidence of imbalance. Based on these results, we are confident that random assignment was successful and that, as a result, we can make meaningful comparisons across groups. Nevertheless we also confirmed that all of our results are robust to controlling for these five characteristics.

Table 1: Balance statistics across experimental groups

	Control	Risks	Benefits	One-way ANOVA test
Female	0.56	0.60	0.64	0.34
(N)	(174)	(176)	(175)	
Age	35.2	35.0	35.6	0.88
(N)	(175)	(176)	(175)	
Education	0.74	0.74	0.72	0.40
(N)	(174)	(176)	(175)	
Income	0.58	0.59	0.57	0.76
(N)	(175)	(176)	(174)	
Party ID	0.59	0.57	0.58	0.92
(N)	(175)	(176)	(174)	

One-way ANOVA test column reports the probability that the F score exceeds the critical value at the 95% confidence level.

## Results from survey experiment

Here we present detailed results from our survey experiment. This includes the effect of the frames on political action, public opinion (an index of concern about climate change, measured using the four public opinion questions mentioned earlier), levels of anxiety, and levels of hopefulness.

For the sake of completeness (and in case readers are curious), for each topic we present the results in two ways. The first model only includes indicator variables for our two treatments. The second more precisely captures our theoretical predictions by modeling interactions between the treatments and whether respondents are facing a health hardship. In the main text we only present the marginal effects estimated using the latter results given their consistency with our theory.

Table 2: Effect of public health frames on political action

	Join?		Join?	
	Coef.	(s.e.)	Coef.	(s.e.)
Risks	-0.06	(0.15)	-0.52**	(0.23)
Risks*No Health Hardship			0.74**	(0.30)
Benefits	0.27**	(0.14)	0.05	(0.22)
Benefits*No Health Hardship			0.38	(0.29)
No Health Hardship			-0.50**	(0.21)
Constant	-0.69***	(0.10)	-0.38**	(0.16)
N	540		526	
R <sup>2</sup>	0.01		0.02	

Notes: \* $p < .10$ , \*\* $p < .05$ , \*\*\* $p < .01$  (two-tailed tests). Maximum likelihood estimation. All variables are coded from 0-1 (risks, benefits are indicators; no health hardship takes on a value of 1 if people do not report either a personal or family health emergency in the past year; action coded as 1 if respondents join).

Table 3: Effect of public health frames on climate change concern (composed of four public opinion measures, as described in the main text)

	<b>Concerned?</b>		<b>Concerned?</b>	
	Coef.	(s.e.)	Coef.	(s.e.)
Risks	0.05**	(0.03)	0.07*	(0.04)
Risks*No Health Hardship			-0.03	(0.05)
Benefits	0.05***	(0.03)	0.04	(0.04)
Benefits*No Health Hardship			0.02	(0.05)
No Health Hardship			0.01	(0.04)
Constant	0.65***	(0.02)	0.65***	(0.03)
N	522		522	
R <sup>2</sup>	0.01		0.01	

Notes: \* $p < .10$ , \*\* $p < .05$ , \*\*\* $p < .01$  (two-tailed tests). Ordinary least squares estimation. All variables are coded from 0-1 (risks, benefits are indicators; no health hardship takes on a value of 1 if people do not report either a personal or family health emergency in the past year; dependent variable coded from 0 to 1 with higher numbers indicating more concern about climate change (based on an average of responses to the four public opinion measures mentioned earlier).

Table 4: Effect of public health frames on levels of anxiety about own material well-being

	<b>Anxious?</b>		<b>Anxious?</b>	
	Coef.	(s.e.)	Coef.	(s.e.)
Risks	0.06*	(0.03)	0.05	(0.05)
Risks*No Health Hardship			0.02	(0.06)
Benefits	0.02	(0.03)	-0.04	(0.05)
Benefits*No Health Hardship			0.09	(0.06)
No Health Hardship			-0.07	(0.05)
Constant	0.37***	(0.02)	0.41***	(0.04)
N	526		526	
R <sup>2</sup>	0.01		0.01	

Notes: \* $p < .10$ , \*\* $p < .05$ , \*\*\* $p < .01$  (two-tailed tests). Ordinary least squares estimation. All variables are coded from 0-1 (risks, benefits are indicators; no health hardship takes on a value of 1 if people do not report either a personal or family health emergency in the past year; dependent variable coded from 0 to 1 with higher numbers indicating higher levels of anxiety about one's own material well-being).

Table 5: Effect of public health frames on levels of hopefulness

	<b>Hopeful?</b>		<b>Hopeful?</b>	
	Coef.	(s.e.)	Coef.	(s.e.)
Risks	0.06*	(0.03)	0.05	(0.05)
Risks*No Health Hardship			0.00	(0.06)
Benefits	0.04	(0.03)	0.02	(0.05)
Benefits*No Health Hardship			0.03	(0.06)
No Health Hardship			-0.00	(0.05)
Constant	0.46***	(0.02)	0.46***	(0.04)
N	524		524	
R <sup>2</sup>	0.01		0.01	

Notes: \* $p < .10$ , \*\* $p < .05$ , \*\*\* $p < .01$  (two-tailed tests). Ordinary least squares estimation. All variables are coded from 0-1 (risks, benefits are indicators; no health hardship takes on a value of 1 if people do not report either a personal or family health emergency in the past year; dependent variable coded from 0 to 1 with higher numbers indicating higher levels of hopefulness).