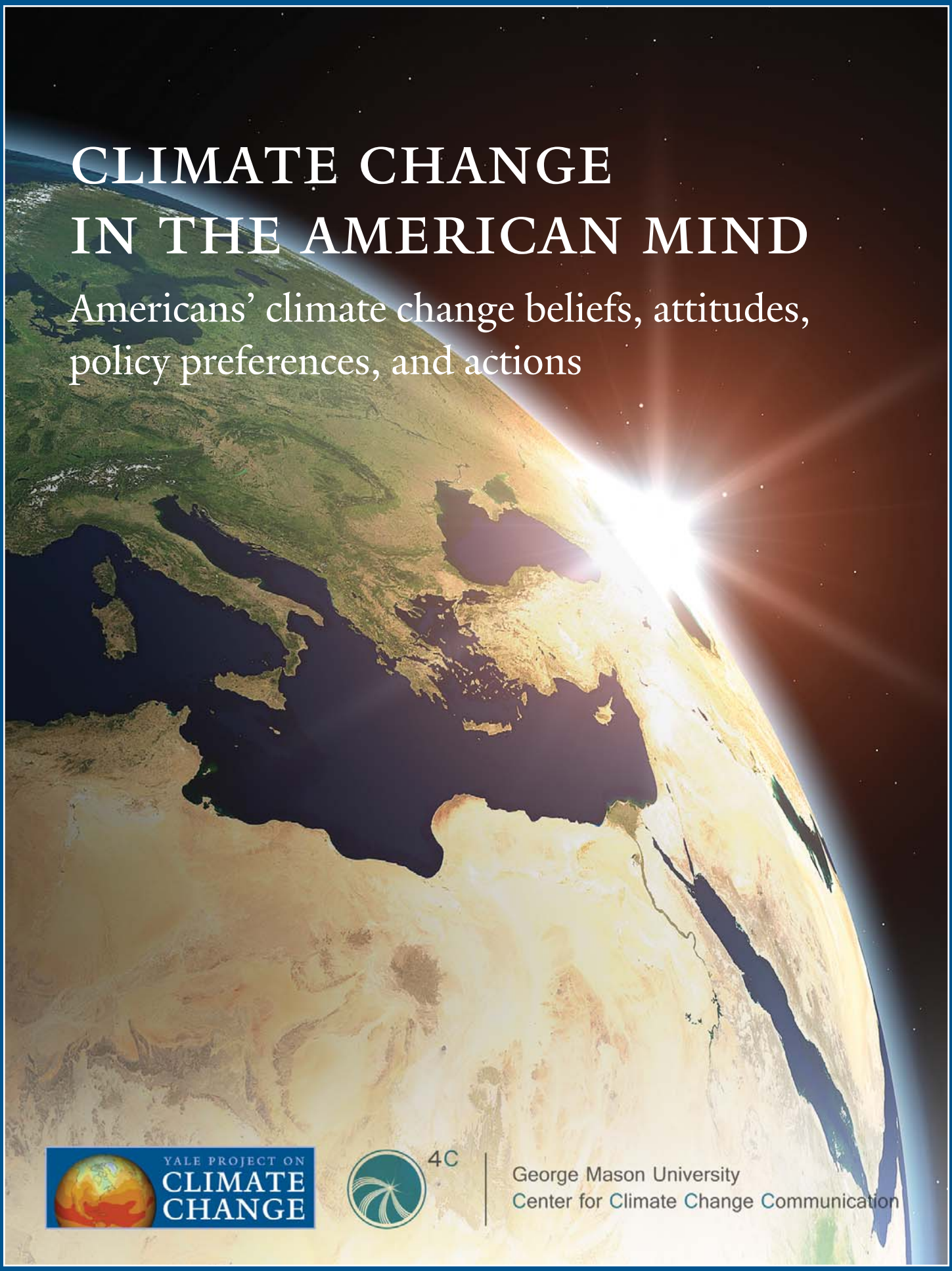
CLIMATE CHANGE IN THE AMERICAN MIND

Americans' climate change beliefs, attitudes, policy preferences, and actions



YALE PROJECT ON CLIMATE CHANGE

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George Mason University
Center for Climate Change Communication

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Principal Investigators:

Anthony Leiserowitz, PhD
Yale Project on Climate Change
School of Forestry and Environmental Studies, Yale University
(203) 432-4865
anthony.leiserowitz@yale.edu

Edward Maibach, MPH, PhD
Center for Climate Change Communication
Department of Communication, George Mason University
(703) 993-1587
emaibach@gmu.edu

Connie Roser-Renouf, PhD
Center for Climate Change Communication
Department of Communication, George Mason University
(707) 825-0601
croserre@gmu.edu

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EXECUTIVE SUMMARY

In September and October of 2008 a research team from Yale and George Mason Universities conducted a nationally representative survey of 2,164 American adults. Survey participants were asked about their issue priorities for the new administration and Congress, support and opposition regarding climate change and energy policies, levels of political and consumer activism, and beliefs about the reality and risks of global warming.

Overall, the survey found that concerns about the economy dwarfed all other issues: 76 percent of Americans said that the economy was a "very high" priority. Global warming ranked 10th out of 11 national issues; nonetheless it remains a high or very high national priority for a majority of Americans. In addition, 72 percent of Americans said that the issue of global warming is important to them personally.

In line with these concerns, large majorities of Americans said that everyone - companies, political leaders at all levels of government, and individual citizens - should do more to reduce global warming. Likewise, despite the economic crisis, over 90 percent of Americans said that the United States should act to reduce global warming, even if it has economic costs. This included 34 percent who said the U.S. should make a large-scale effort, even if it has large economic costs.

Americans strongly supported unilateral action to reduce greenhouse gas emissions: 67% said the United States should reduce its emissions of greenhouse gases, regardless of what other countries do, while only 7 percent said we should act only if other industrialized and developing countries (such as China, India, and Brazil) reduce their emissions.

Americans also strongly supported a wide variety of climate change and energy policies:

- 92 percent supported more funding for research on renewable energy sources, such as solar and wind power;
- 85 percent supported tax rebates for people buying energy efficient vehicles or solar panels;
- 80 percent said the government should regulate carbon dioxide as a pollutant;
- 69 percent of Americans said the United States should sign an international treaty that requires the U.S. to cut its emissions of carbon dioxide 90% by the year 2050.

Large majorities of Americans also supported policies that had a directly stated economic cost. For example:

- 79 percent supported a 45 mpg fuel efficiency standard for cars, trucks, and SUVs, *even if that meant a new vehicle cost up to $1,000 more to buy;*
- 72 percent supported a requirement that electric utilities produce at least 20 percent of

their electricity from wind, solar, or other renewable energy sources, *even if it cost the average household an extra $100 a year;*
- 72 percent supported a government subsidy to replace old water heaters, air conditioners, light bulbs, and insulation, *even if it cost the average household $5 a month in higher taxes;*
- 63 percent supported a special fund to make buildings more energy efficient and teach Americans how to reduce their energy use, *even if this cost the average household $2.50 a month in higher electric bills.*

At the time of the survey, nationwide retail gas prices were approximately $3.25/gallon and energy had become a major issue in the presidential campaign. Within this context, respondents also supported a variety of other energy policies:

- 75 percent supported the expansion of offshore drilling for oil and natural gas off the U.S. coast;
- 61 percent supported the building of more nuclear power plants;
- 57 percent supported drilling for oil in the Arctic National Wildlife Refuge;
- Only 33 percent, however, supported increasing taxes on gasoline by 25 cents per gallon and returning the revenues to taxpayers by reducing the federal income tax.

Finally, this study found relatively weak support for a national cap and trade system. Only 53 percent of Americans supported the creation of a new national market that allows companies to buy and sell the right to emit greenhouse gases. Further, this proposal was strongly supported by only 11 percent of Americans, while it was strongly opposed by 23 percent.

The study also identified the positive outcomes that Americans expect if the nation takes steps to reduce global warming, as well as the outcomes that were most important to them. Two-thirds said that reducing global warming would provide a better life for our children and grandchildren (66%) and would save many plant and animal species from extinction (65%). About half said that it would improve people's health (54%), free us from dependence on foreign oil (48%), or protect God's creation (48%). Of these, the outcomes subsequently selected as the most important personally were providing a better life for our children and grandchildren (25%) and protecting God's creation (19%).

Americans' primary concerns about taking action to reduce global warming were that it would lead to more government regulation (44%), cause energy prices to rise (31%), or cost jobs and harm our economy (17%). However, among those who foresaw both positive and negative outcomes, 92 percent said that despite their concerns, the nation should act to reduce global warming.

Regarding political activism, 8 percent of Americans said they had contacted government officials in the past year urging them to take action on climate change, while 18 percent said they intend to do so more often over the next 12 months – a large potential issue public. Educating, organizing, and mobilizing this issue public, however, will require a concerted effort.

Regarding consumer activism, 33 percent of Americans said they had *rewarded* companies that are taking action to reduce global warming by buying their products, while 24 percent said they had *punished* companies opposing steps to reduce global warming by boycotting their products. Importantly, 48 percent – nearly half of the country – said they are willing to reward or punish companies for their climate change-related activities over the next 12 months, a potentially dramatic increase in consumer pressure on companies to act. The primary barrier preventing most Americans from punishing companies that oppose action on climate change was simply knowledge: 68 percent said they did not know which companies to punish. Again, translating this willingness to reward or punish companies into concrete consumer behavior will largely depend on the success or failure of efforts to educate, organize, and mobilize this large and growing market force.

Overall, large majorities of Americans were convinced about the reality and risks of global warming: 69 percent were convinced it is happening, while 62 percent believed it is caused by human activities, or a combination of human and natural changes. Likewise, 63 percent were worried about global warming and majorities considered it a serious threat, but most perceived global warming as a relatively distant problem that will primarily impact other people, places and species far away. Americans, however, did perceive it as an imminent threat: 51 percent said global warming is already having dangerous impacts on people around the world, or will within the next 10 years. Likewise, majorities of Americans believed that within the next 20 years, global warming will cause more droughts and water shortages, severe heat waves, intense hurricanes, the extinction of plant and animal species, intense rainstorms, famines and food shortages, forest fires, and the abandonment of some large coastal cities due to rising sea levels, if nothing is done to address it. At the same time, however, Americans had little to no understanding of the potential health impacts of global warming. Finally, many Americans said they wanted additional information about the causes, potential impacts, and solutions to the problem.

Americans were still uncertain about whether humanity can and will act to reduce global warming: 51 percent said we have the ability, but were unsure whether we actually will. Only 6 percent were fully confident. At the same time, a large majority of Americans (69%) believed that individual action can make a difference, while a similar majority

(70%) believed the ultimate solution will require much more than just new technological innovations – it will also require significant changes in American lifestyles. A majority, however, said that these lifestyle changes would either improve their own quality of life (31%) or have no impact on it (32%).

Finally, the study investigated whom Americans trust as sources of information about global warming. It found that 82 percent of Americans trusted scientists, followed by family and friends (77%), environmental organizations (66%) and television weather reporters (66%). About half of Americans trusted religious leaders (48%) or the mainstream news media (47%). Only 19 percent of Americans trusted corporations as a source of information. Al Gore was viewed as a trusted source by 58 percent of Americans, leading both Barack Obama (51%) and John McCain (38%). Following President Obama's election, however, it is likely that trust in him as a source of information about global warming has grown.

Thus, it is clear that American opinion about global warming is solidifying. Majorities now believe it is real, happening, human caused, and a serious threat. Likewise, majorities want their elected officials at all levels to take more action and support a variety of policies to reduce national greenhouse gas emissions. Growing numbers of Americans are also willing to express their views politically and through their consumer purchases. Thus there is now a large and growing issue public in support of concerted local, state, and national action, but this public remains relatively disorganized. The success or failure of climate change action in the United States will depend, in no small part, on the ability of leaders, organizations, and institutions at all levels of society to effectively educate, organize, and mobilize the American public.

INTRODUCTION

President Obama, the leaders of Congress, governors, and mayors across the United States have all signaled their intention to institute new policies to achieve greater national energy efficiency and independence, development of clean, renewable energy sources, and reduced emissions of the greenhouse gases causing global warming. Climate change and energy are now at the center of local, state, national, and international policy deliberations. An effective national strategy to achieve these aims, however, must take into account the climate change and energy beliefs, attitudes, policy preferences, and actions of the American people, who will play a crucial role in the success or failure of these initiatives through their decisions as both citizens and consumers. Building public acceptance, support, and demand for new policies and helping people save energy at home and on the road will require education and communication strategies based on a clear understanding of what Americans already know, believe, and support, as well as what they currently misunderstand, disbelieve, and oppose. This report is the second in a series of studies conducted by the Yale Project on Climate Change and the George Mason Center for Climate Change Communication to answer these questions.

METHODS

In September and October of 2008, a nationally representative survey of 2,164 American adults was conducted by researchers at Yale and George Mason Universities. Respondents completed two separate questionnaires, two weeks apart, using the nationally representative online panel of Knowledge Networks.[1] The within-panel completion rate was 54 percent.

Survey questions covered a range of topics related to global warming and energy, including:

- Issue priorities
- Policy preferences
- Reasons for and against action
- Political and consumer activism
- Beliefs
- Risk perceptions
- Desire for more information
- Achievability of emission reductions
- Trust in different messengers.

The exact wording of all the survey questions used in this report is presented in Appendix A. Survey demographics are presented in Appendix B.

[1] See http://www.knowledgenetworks.com/ganp/index.html for more information about the Knowledge Networks methodology.

PART 1:

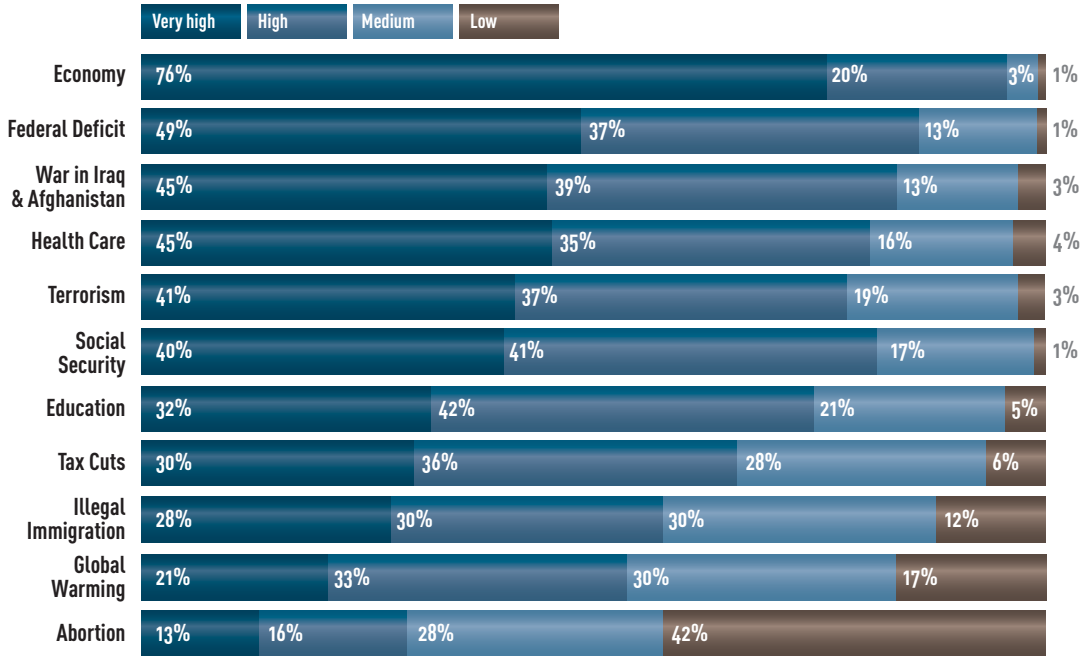
Should global warming be a priority for the new president and Congress?

The economy was clearly Americans' top priority for the new president and Congress: 76 percent said it was a very high priority (Fig. 1). All other issues paled by comparison, including global warming, which ranked 10th out of 11 national issues. Nonetheless, 54 percent of Americans said that global warming was still a high (33%) or very high (21%) national priority, while only 17 percent said that it was a low priority.

Compared to other environmental issues, global warming received more "very high" priority ratings than all other issues, with the exception of water pollution (Fig. 2). Thus, while global warming clearly remains a national concern, it was a lower priority than many other issues that were viewed as either more urgent (the economy) or closer to home (water pollution). In line with these results, 72 percent of Americans said that global warming was either extremely (11%), very (21%), or somewhat important (40%) to them personally (Fig. 3). By contrast, less than a third said that the issue was either not too important (18%) or not at all important (11%) to them personally.

Figure 1: National Issue Priorities

Here are some issues now being discussed in Washington, D.C. Do you think each of these issues should be a low, medium, high, or very high priority for the next president and Congress?



N=2,164

Figure 2: National Environmental Priorities

Here are some environmental issues now being discussed in Washington, D.C. Do you think each of these issues should be a low, medium, high, or very high priority for the next president and Congress?

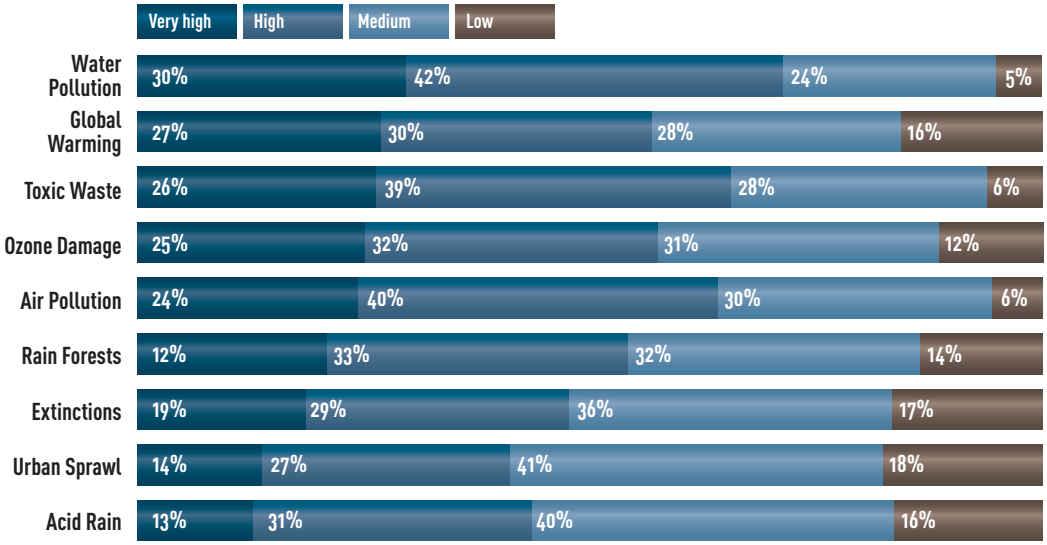


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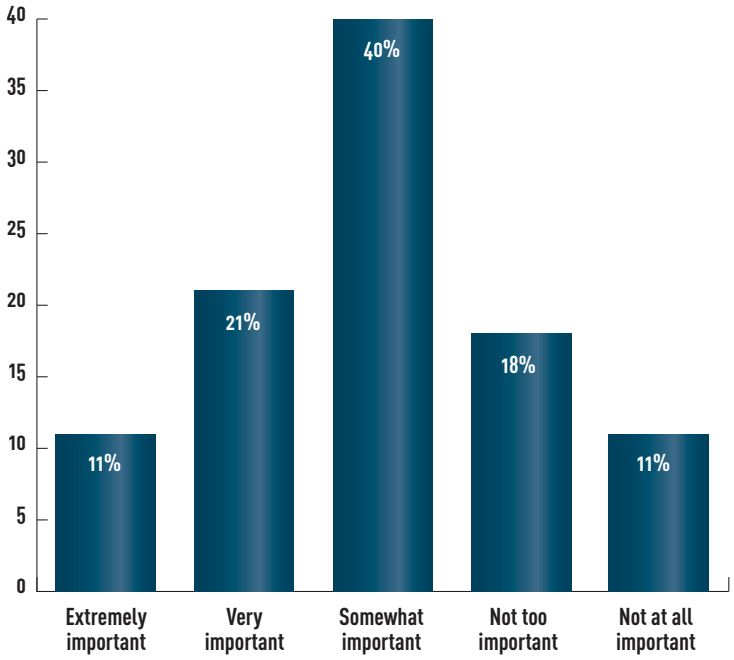
Figure 3: Personal Importance of Global Warming

How important is the issue of global warming to you personally?



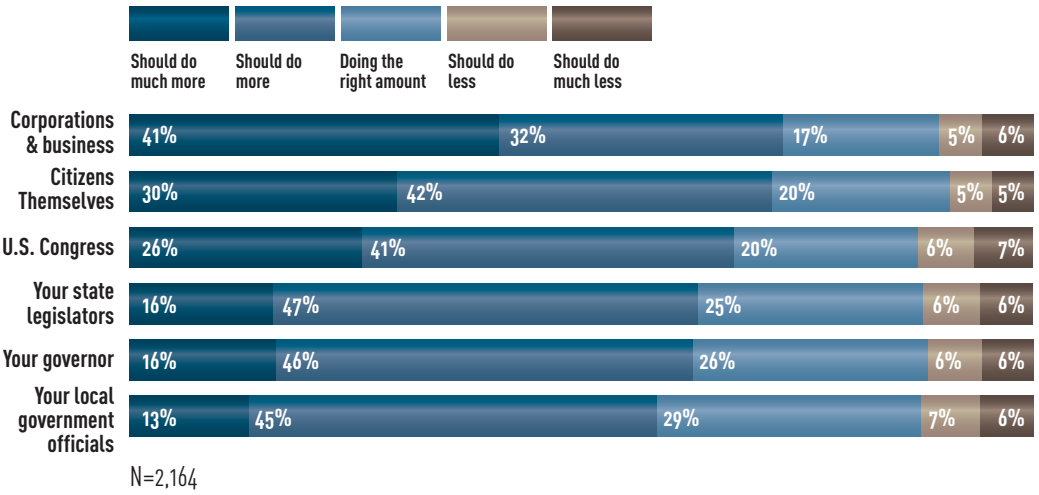
N=2,164

PART 2:

Should elected officials, businesses, and ordinary people be doing more or less to address global warming?

Americans strongly supported additional action by companies, political leaders, and individual citizens. Respondents were asked if they wanted their local government officials, state legislators, governor, the U.S. Congress, corporations and businesses, and citizens themselves to do more, the same, or less to address global warming. A large majority of Americans said that corporations and businesses (76%) and the U.S. Congress (67%) should do more to address global warming (Fig. 4). Likewise, majorities wanted their local government officials to do more as well. Interestingly, a large majority (72%) said that citizens themselves should be doing more to address global warming, demonstrating that Americans believed that all levels of society should be part of the solution. By contrast, only a very small minority of respondents said that political leaders and companies should do less about global warming.

Figure 4: Who Should Act to Address Global Warming?
Do you think the following should be doing more or less to address global warming?



PART 3:

Do Americans support policies to address climate change and energy?

Despite the economic crisis, over 90 percent of Americans said that the United States should act to reduce global warming, even if it has economic costs (Fig. 5). This included 34 percent that said the U.S. should make a large-scale effort to reduce its emissions, even if it has large economic costs, while another 40 percent said that the U.S. should make a medium-scale effort, even if it has moderate economic costs. Only 9 percent said the U.S. should make no effort at all to reduce its emissions.

The study also assessed whether the American public agreed with the tenets of the 1997 Byrd-Hagel non-binding Senate Resolution. Just prior to the 1997 Kyoto climate summit, the U.S. Senate passed a non-binding resolution (95-0) co-sponsored by Senators Robert Byrd (D) of West Virginia and Chuck Hagel (R) of Nebraska, which urged the Clinton administration to not accept any treaty that did not include the "meaningful" participation of all developing as well as industrialized countries, arguing that to do so would unfairly put the U.S. at a competitive disadvantage.

Only 7 percent of Americans agreed with the statement "the U.S. should reduce its greenhouse gas emissions only if other industrialized and developing countries (such as China, India, and Brazil) reduce their emissions" (Fig. 6). By contrast, 67 percent of Americans said "the U.S. should reduce its greenhouse gas emissions regardless of what other countries do." While it is doubtful that most Americans understand the potential economic implications of unilateral action, one interpretation for these results is that many Americans consider this as an issue of individual (country) responsibility. In other words, if the United States is contributing to the problem, it has a responsibility to clean up after itself.

The survey also asked Americans how much they supported or opposed a wide variety of climate change policies, including possible regulations, subsidies, tax incentives, research and development funding, and international treaties. Overall, there was broad-based, bipartisan support for most policy options, with the notable exception of a higher gas tax (Fig. 7). A cap and trade market-based system also received relatively weak support as described further below.

Very large majorities of Americans supported a variety of climate change policies:

- 92 percent said the government should increase funding for research into renewable energy sources, such as solar and wind power;
- 85 percent supported tax rebates for people buying energy efficient vehicles or solar panels;
- 80 percent said the government should regulate carbon dioxide (the primary greenhouse gas) as a pollutant;

- 69 percent of Americans said the United States should sign an international treaty that requires the U.S. to cut its emissions of carbon dioxide 90% by the year 2050.

Importantly, large majorities of Americans also said they would support policies that would personally cost them more. For example:

- 79 percent supported a 45 mpg fuel efficiency standard for cars, trucks, and SUVs, *even if that meant a new vehicle cost up to $1,000 more to buy;*
- 72 percent supported a Renewable Portfolio Standard that required electric utilities to produce at least 20 percent of their electricity from wind, solar, or other renewable energy sources, *even if it cost the average household an extra $100 a year;*
- 72 percent supported a government subsidy to replace old water heaters, air conditioners, light bulbs, and insulation, *even if it cost the average household $5 a month in higher taxes;*
- 63 percent supported establishment of a special fund to make buildings more energy efficient and teach Americans how to reduce their energy use, *even if this cost the average household $2.50 a month in higher electric bills.*

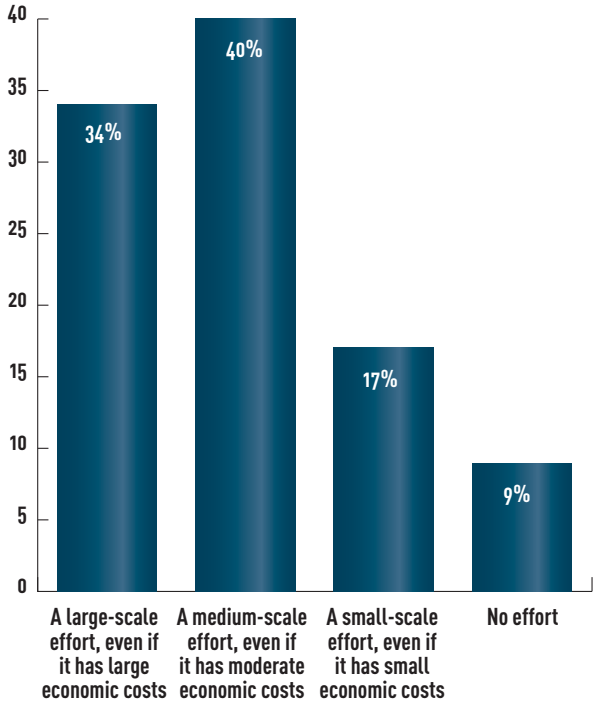
At the time of the survey, nationwide retail gas prices were approximately $3.25/gallon and energy had become a major issue in the presidential campaign. Within this context, respondents also supported a variety of other energy policies:

- 75 percent supported the expansion of offshore drilling for oil and natural gas off the U.S. coast;
- 61 percent supported the building of more nuclear power plants;
- 57 percent supported drilling for oil in the Arctic National Wildlife Refuge;
- Only 33 percent, however, supported increasing taxes on gasoline by 25 cents per gallon and returning the revenues to taxpayers by reducing the federal income tax.

Finally, there was relatively weak public support for a national cap and trade system, which is one of the major policies currently being considered by the U.S. Congress and supported by President Obama. Only 53 percent of Americans supported the creation of "a new national market that allows companies to buy and sell the right to emit the greenhouse gases said to cause global warming. The federal government would set a national cap on emissions. Each company would then purchase the right to emit a portion of this total amount. If a company then emitted more than its portion, it would have to buy more emission rights from other companies or pay large fines." This proposal was strongly supported by only 11 percent of Americans, while it was strongly opposed by 23 percent. These results suggest that the public remains uncertain about a cap and trade system to reduce national emissions of carbon dioxide.

Figure 5: Desired Scale of Action by the United States

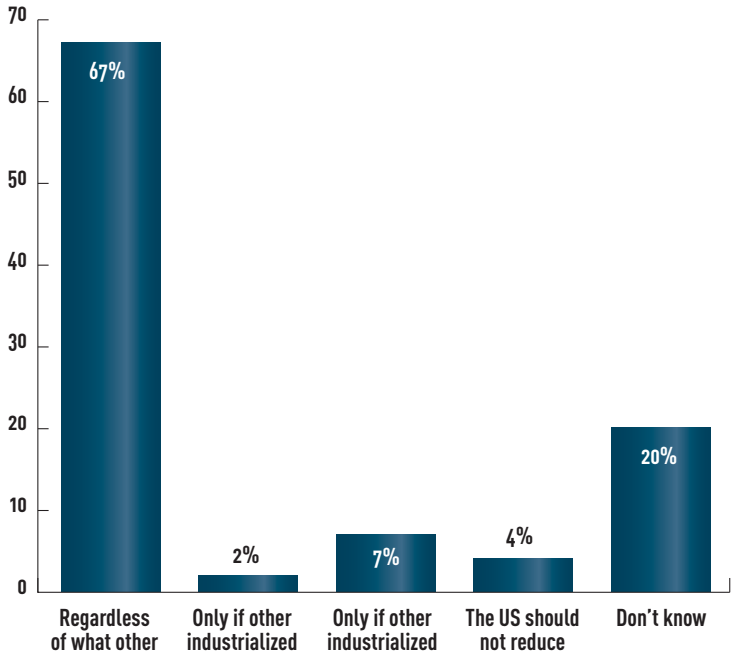
How big of an effort should the United States make to reduce global warming?



N=2,164

Figure 6: Unilateral Action or Only if Other Countries Act?

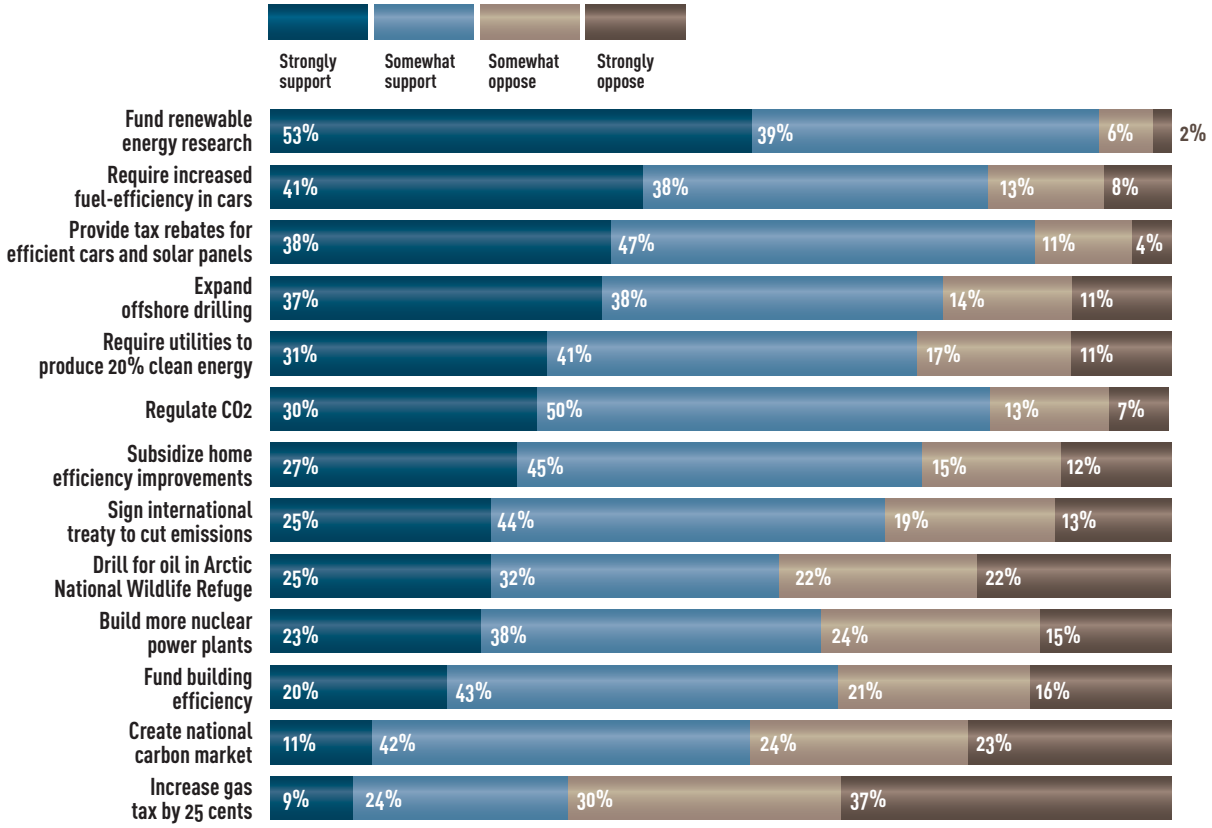
People disagree whether the United States should reduce greenhouse gas emissions on its own, or make reductions only if other countries do too. Which of the following statements comes closest to your own point of view? The United States should reduce its greenhouse gas emissions...



N=2,164

Figure 7: Policy Preferences

How much do you support or oppose the following policies?
(These questions appeared in a random order.)



N=2,164

PART 4:

What reasons do Americans find most compelling, either for or against action to reduce global warming?

Respondents were asked to complete the statement, "If our nation takes steps to reduce global warming, it will …" They were then shown a list of potential positive and negative outcomes and asked to select all those outcomes that they believed were true (Fig. 8). They were next shown a list of all the positive outcomes they had selected and asked to pick the three reasons for action that were most important to them. Then, of these three reasons, they selected the one that was most important to them.

They were next shown a list of all the negative outcomes they had selected and asked to pick the three that were of greatest concern. Of these three concerns, they selected the one that was most important to them. Finally, those respondents who had selected at least one positive and one negative outcome were shown their top reason and top concern and asked, in light of these two potential outcomes, whether the United States should act or not act to reduce global warming.

Majorities of Americans were most likely to believe that taking action to reduce global warming would provide a better life for our children and grandchildren (66%), save many plant and animal species from extinction (65%), improve people's health (60%), create green jobs and a stronger economy (54%), and prevent the destruction of most life on the planet (50%) (Fig. 8). Slightly less than half of Americans believed that action would help free us from dependence on foreign oil (48%) or protect God's creation (48%). Only 17 percent thought that action to reduce global warming would improve our national security. When asked to choose the most important reason among those they had selected, Americans were most likely to choose providing a better life for our children and grandchildren (25%), followed by protection of God's creation (19%), and preventing the destruction of most life on the planet (15%) (Fig. 9).

By contrast, less than half of Americans said that taking action to reduce global warming would lead to more government regulation (44%), cause energy prices to rise (31%), cost jobs and harm our economy (17%), interfere with the free market (13%), harm poor people more than it helps them (11%), or undermine American sovereignty (8%) (Fig. 8). When asked to choose the most important reason for not acting among those they had selected, respondents were most likely to say that they were concerned that taking action to reduce global warming would lead to more government regulation (54%), while smaller proportions said they were most concerned that action would cause energy prices to rise (24%) or cost jobs and harm our economy (10%) (Fig. 10). Thus, the primary source of public resistance to climate change policy in the United States appears to be based on a concern that it will lead to increased government control and regulation.

Overall, 39 percent of respondents selected at least one positive reason for action and no negative reasons, while only 11 percent selected at least one negative reason and no positive reasons for action (Fig. 11). An additional 44 percent selected at least one positive reason for national action and one reason not to act. These respondents were then asked to compare their top reasons for and against action and decide whether the United States should act. A very large majority of these respondents (92%) said that the nation should act to reduce global warming despite their concerns (Fig. 12).

Figure 8: Potential Outcomes of Action to Reduce Global Warming

Please check all of the answers below that you believe are true.
If our nation takes steps to reduce global warming, it will ...

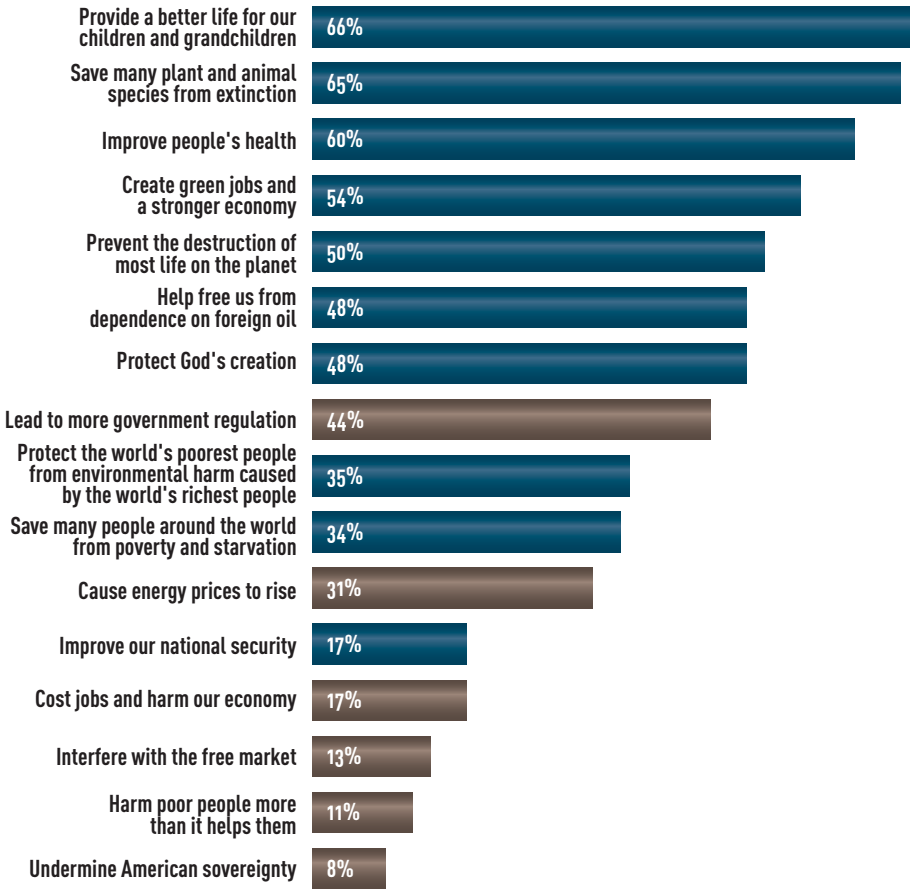
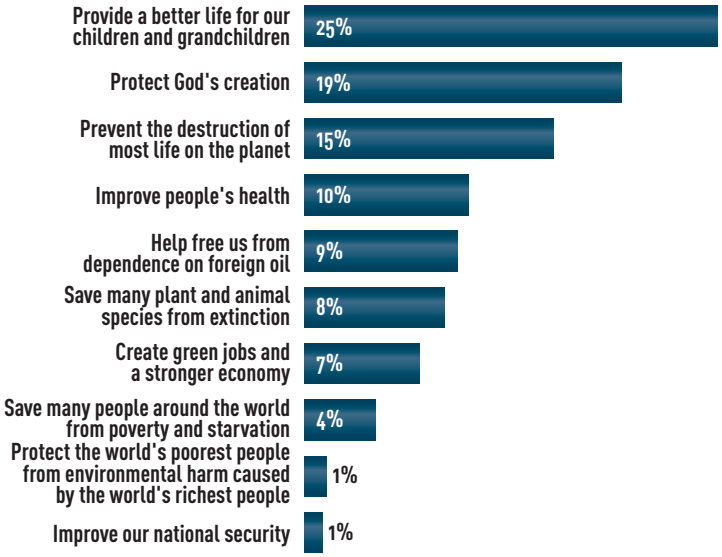


Figure 9: Most Important Reason to Act

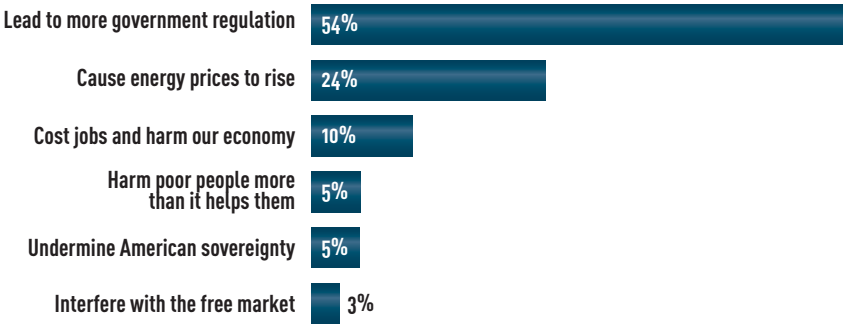
Of the reasons you selected, which one is most important to you personally?



Base = Respondents who chose at least one positive outcome
N = 1,572 (73% of the total sample).

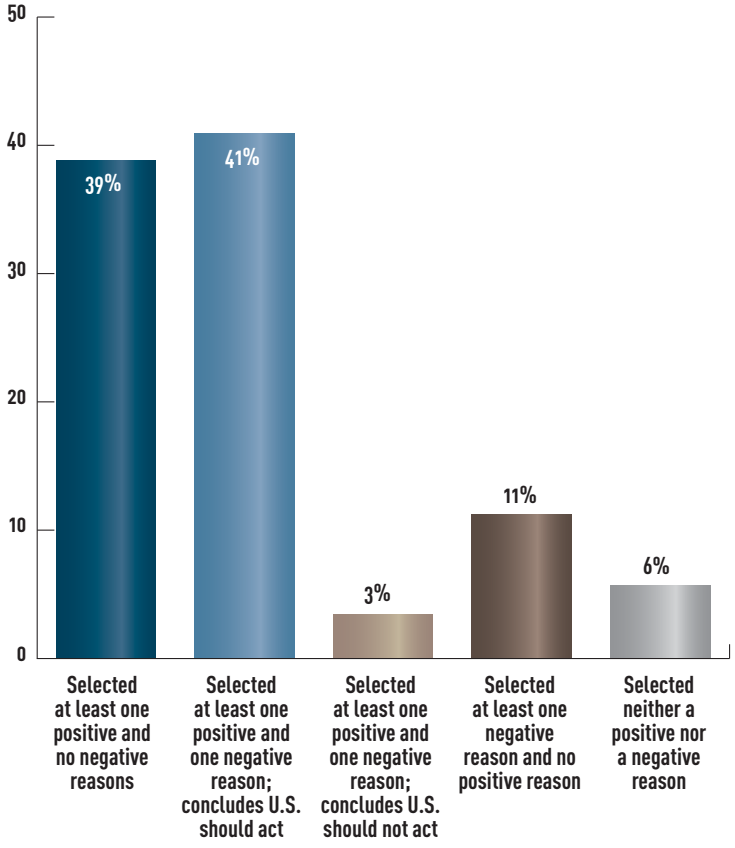
Figure 10: Most Important Concern Regarding Action

Of the things you selected which one is of greatest concern to you personally?



Base = Respondents who chose at least one negative outcome
N = 904 (42% of the total sample).

Figure 11: Reasons and Conclusions About U.S. Action

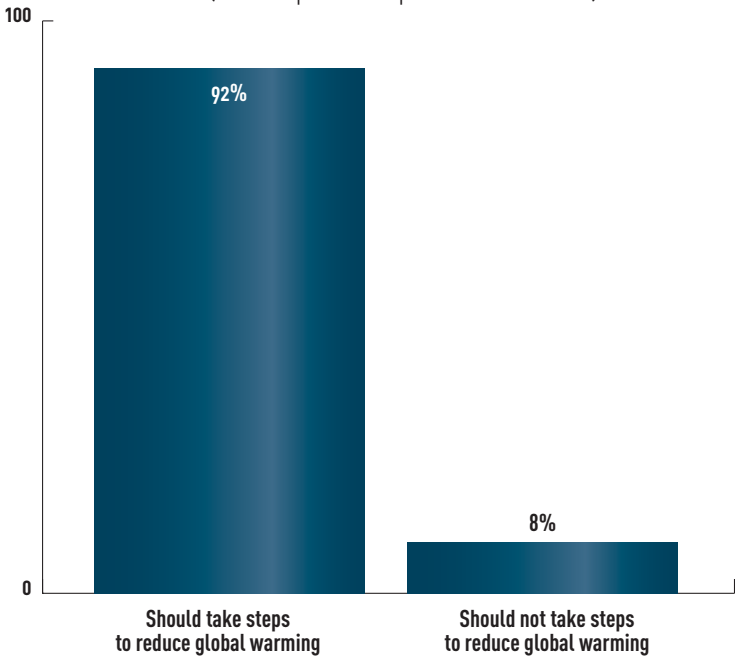


N=2,164

Figure 12: Weighing the Reasons For and Against, Should the U.S. Act?

Which of the following two statements do you find the most convincing?

- We should take steps to reduce global warming because it will (insert respondent's top reason for action)
- We should not take steps to reduce global warming because it will (insert respondent's top concern about action)



Base = Respondents who selected at least one reason for action and one concern from the list in Figure 8; N=953 (44% of the total sample).

PART 5:

How many Americans have taken political or consumer action related to global warming? How many want to, and what prevents them from acting?

Politically, 8 percent of Americans said they had contacted government officials urging them to take action on climate change in the past year while 89 percent said they had never done so (Fig. 13). Importantly, 13 percent of Americans said they intend to contact government officials more often in the coming year (Fig. 15). When those Americans who said they had already contacted government officials and intend to continue doing so at the same rate are included, this figure rises to *18 percent who are willing to urge government officials to take action* – a potential 125 percent increase from the current level of political activism.

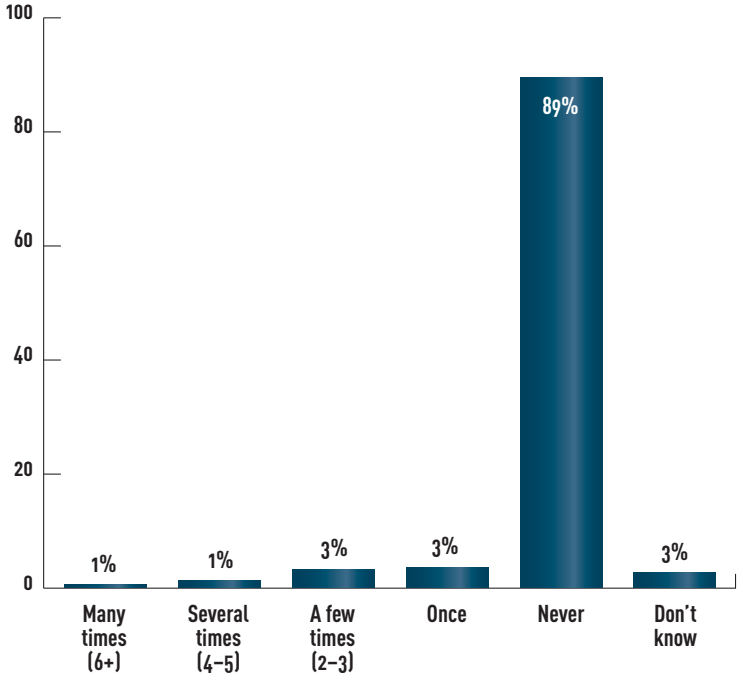
When respondents were asked why they hadn't contacted government officials about global warming, 33 percent said they do not consider themselves activists, while 22 percent said that it wouldn't make any difference even if they did (Fig. 16). Smaller proportions said that they are simply too busy (18%), it's too much effort (16%), or they don't know how (17%). However, 21 percent said that nothing prevents them from contacting their government officials to take action. Thus, translating this apparent willingness to engage the political system into concrete action will largely depend on the success or failure of efforts to educate, organize, and mobilize this issue public.

In terms of consumer behavior, 33 percent of Americans said they had *rewarded* companies that are taking action to reduce global warming by buying their products, while 24 percent said they had already *punished* companies that are opposing steps to reduce global warming by boycotting their products (Fig. 14). Importantly, 40 percent of Americans said they intend to both reward and punish companies *more frequently* in the coming year (Fig. 15). When those Americans who said they were already rewarding and punishing companies and intend to continue doing so at the same rate are included, this figure rises to *48 percent – nearly half of the country – who say they are willing to reward or punish companies for their climate change-related activities.* This represents a potential 100 percent increase or doubling of the current rate of consumer boycotting behavior - a potentially dramatic increase in consumer pressure on corporations to act.

Critically, however, the primary barrier preventing most Americans from punishing companies that oppose action on climate change is simply knowledge: 68 percent said they don't know which companies to punish (Fig. 17). By contrast, less than a quarter felt that they could not afford to target companies or that these actions would have no impact on corporate behavior. Again, however, translating this apparent willingness to reward or punish companies into actual consumer behavior will probably depend largely on the success or failure of efforts to educate, organize, and mobilize this large market force.

Figure 13: Political Activism

Over the past 12 months, how many times have you written letters, emailed, or phoned government officials to urge them to take action to reduce global warming?



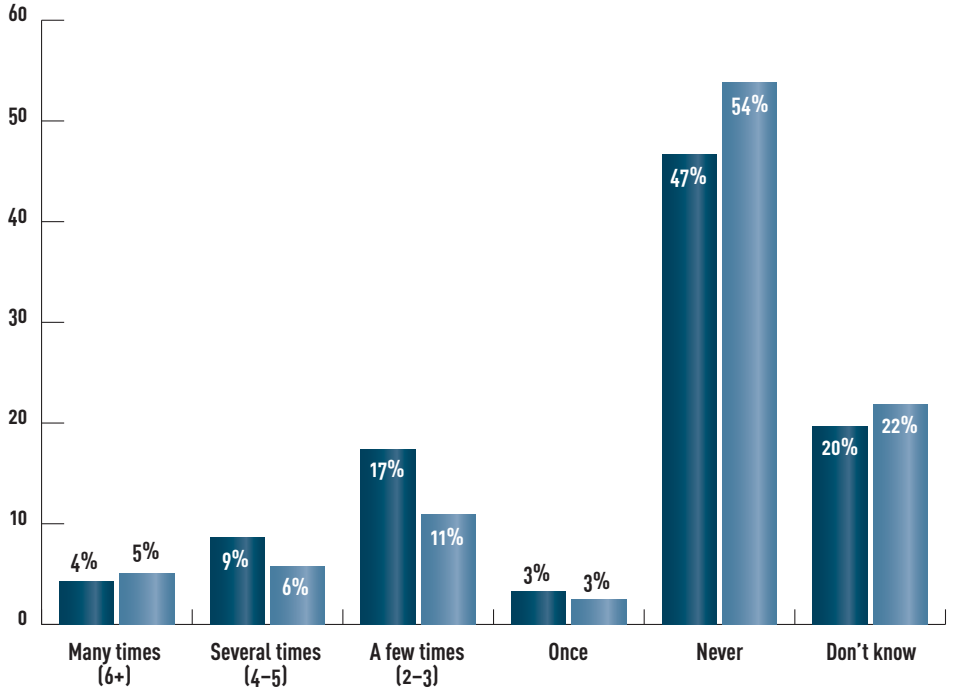
N=2,164

Figure 14: Consumer Activism

Over the past 12 months, how many times have you done these things?

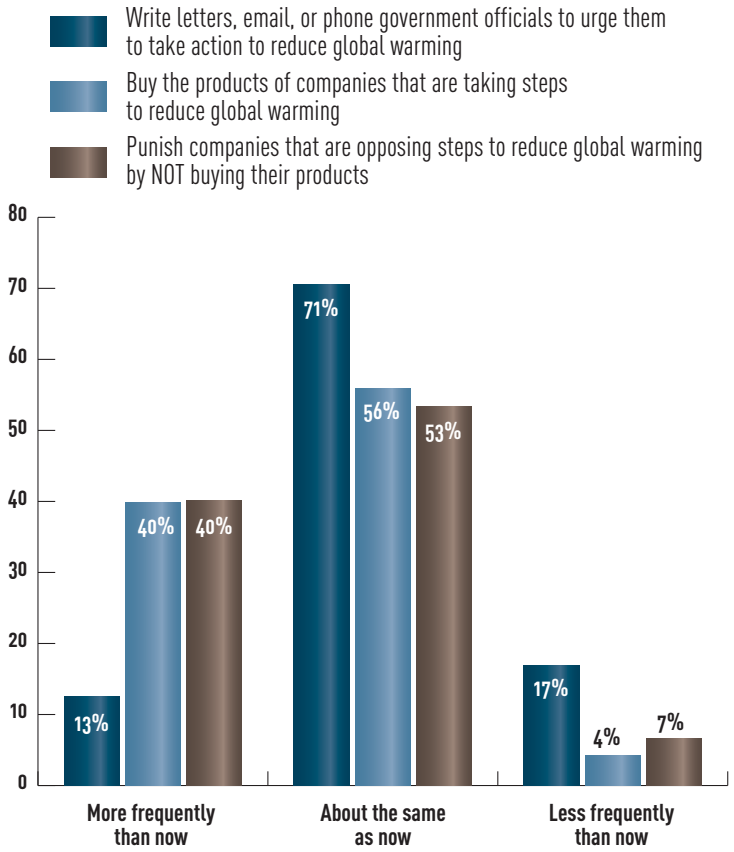
Rewarded companies that are taking steps to reduce global warming by buying their products.

Punished companies that are opposing steps to reduce global warming by NOT buying their products.



N=2,164

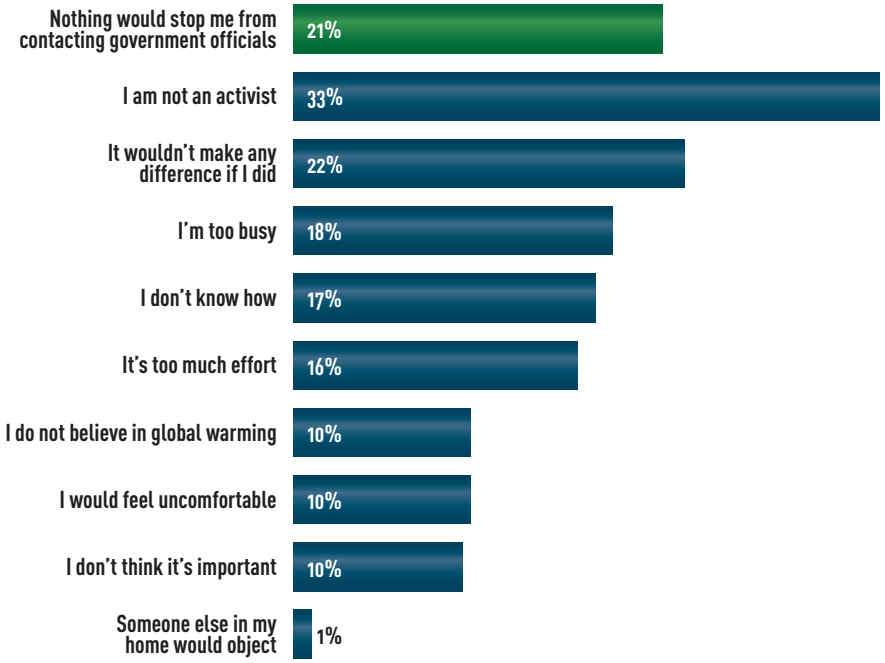
Figure 15: Activism Intentions over the Next Twelve Months



N=2,164

Figure 16: Barriers to Political Activism

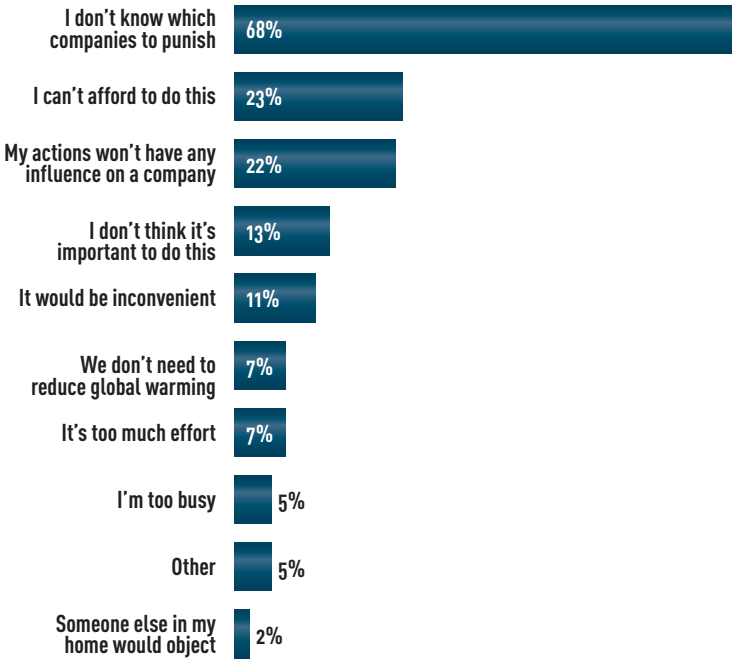
There are many reasons why people do not write letters, emails, or call their elected officials about global warming. Which of the following reasons might prevent you from taking these actions? Please check all that apply.



N=2,164

Figure 17: Barriers to Consumer Activism

Which of the following reasons might prevent you from punishing companies that oppose steps to reduce global warming? Check all that apply.



N=2,164

PART 6:

What do Americans believe about the reality and risks of global warming?

Overall, a large majority (69%) of Americans were convinced that global warming is happening, while only a small minority (10%) were unconvinced (Fig. 18). Surprisingly, however, only 47 percent believed that there is a consensus among the scientific community, while 33 percent of Americans believed there is a lot of disagreement among scientists over whether global warming is occurring (Fig. 19). Thus, many Americans appear to have already made up their minds, drawing on other sources of information, without waiting for a perceived scientific consensus. Further, 62 percent of Americans believed that global warming is caused mainly by human activities (57%), or caused equally by humans and natural changes (5%), while 32 percent believed it is caused mostly by natural changes in the environment (Fig. 20).

A majority of Americans (63%) said they were worried about global warming, while 37 percent said they were not (Fig. 21). Yet only 17 percent of Americans said they were "very worried" about global warming, which may be due, in part, to the fact that many Americans believed that global warming is a greater threat to other species, people and places far away in time and space, but not so serious of a threat to themselves, their own families, or local communities (Fig. 22). For example, majorities of respondents said that global warming will harm other animal and plant species (62%) or future generations a great deal or moderate amount (61%). By contrast, far fewer respondents said global warming will harm them or their families a great deal or moderate amount (32 and 35% respectively). Likewise, 33 percent of Americans agreed that they had already personally experienced the effects of global warming (Fig. 23). A large majority (67%), however, disagreed – another indication that most Americans perceive climate change as a spatially distant problem.

Over the past several years, however, Americans have increasingly perceived global warming as an imminent threat. For example, this study found that 51 percent of Americans believed that global warming is already having dangerous impacts on people around the world (30%) or will within the next ten years (18%) (Fig. 24): a 20 percentage point increase in their sense of threat immediacy since the question was asked in a nationally representative survey in June, 2004[2]. Likewise, 47 percent believed that global warming is already having dangerous impacts on people in the United States (34%) or will within the next ten years (13%).

In line with this sense of more imminent threat, a majority of Americans (62% to 65%) said that worldwide, over the next 20 years, global warming will cause more droughts and water shortages, severe heat waves, intense hurricanes, the extinction of plant and animal species, intense rainstorms, famines and food shortages, and forest fires if nothing is

[2] Reported in: Leiserowitz, A. (2007) American opinions on global warming. A Yale University / Gallup / ClearVision Institute Poll. New Haven, CT: Yale School of Forestry & Environmental Studies. http://environment.yale.edu/news/5305/american-opinions-on-global-warming/

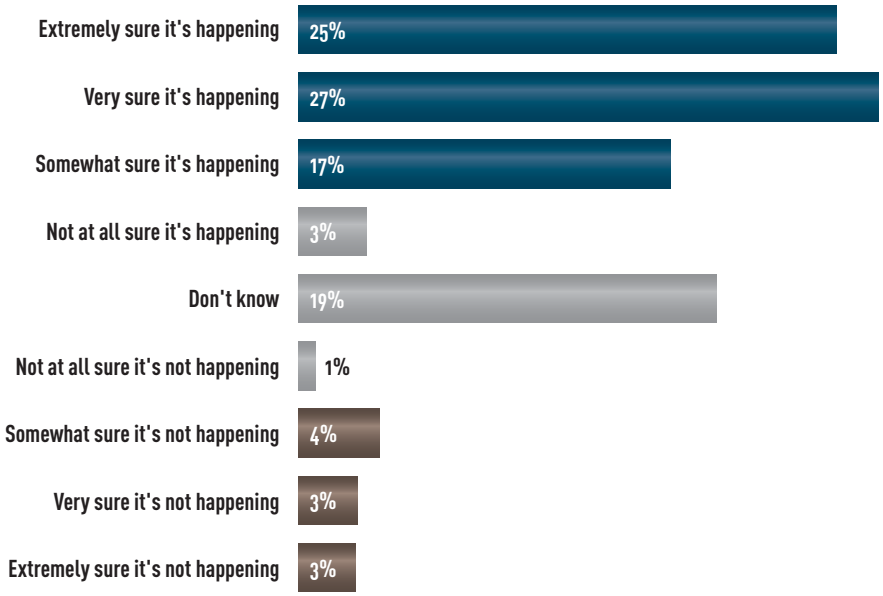
done to address it (Fig. 25). Majorities (51% to 53%) also believed that it will cause more disease epidemics, refugees, and people living in poverty. By contrast, almost no one (1% or less) believed that global warming will actually cause fewer of these problems. Smaller proportions (14% to 23%) believed global warming will not affect these issues one way or the other, while others (19% to 27%) simply did not know enough to even guess. Moreover, a majority of Americans believed that global warming will cause melting ice caps and glaciers (74%) expanding deserts (61%), and the abandoning of large coastal cities due to rising sea levels (57%) over the next 20 years (Fig. 26).

At the same time, however, Americans had little to no understanding of the potential health impacts of global warming. When asked to estimate how many people currently die each year due to global warming, nearly half (48%) simply said they did not know, while an additional 23 percent said none (Fig. 27). When asked to estimate how many are likely to die each year due to global warming 50 years from now, half (50%) again said they did not know, while an additional 14 percent said none. Likewise, when asked to estimate the current and future numbers of people injured or made ill each year by global warming, again large proportions said either none or that they did not know (Fig. 28). These findings clearly demonstrate a major gap in public understanding of this risk.

Figure 18: The Reality of Global Warming

Recently, you may have noticed that global warming has been getting some attention in the news. Global warming refers to the idea that the world's average temperature has been increasing over the past 150 years, may be increasing more in the future, and that the world's climate may change as a result.

- What do you think? Do you think that global warming is happening? (yes, no, don't know)
- How sure are you that global warming is happening? (asked if respondent believed global warming is occurring.)
- How sure are you that global warming is not happening? (asked if respondent believed global warming is not occurring.)

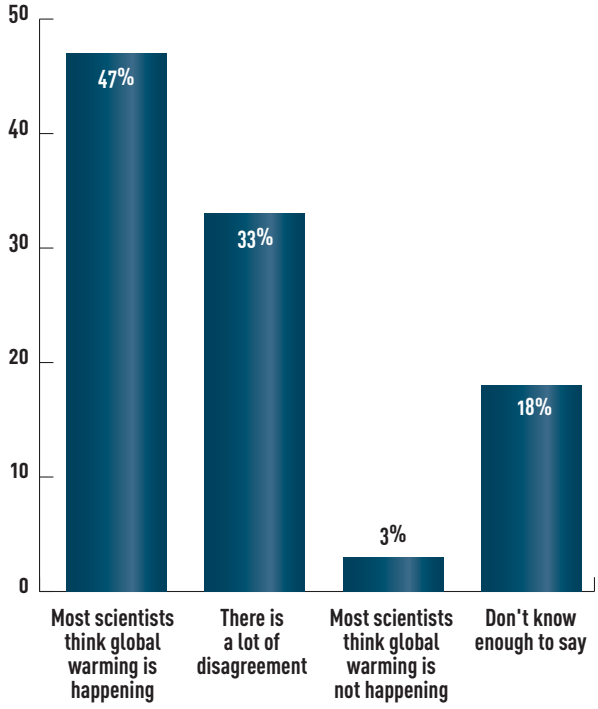


N=2,164

Figure 19: Perceptions of Scientific Consensus

Which comes closer to your own view?
(the first and second responses were randomized)

- Most scientists think global warming is happening
- Most scientists think global warming is not happening
- There is a lot of disagreement among scientists about whether or not global warming is happening
- Don't know enough to say



N=2,164

Figure 20: The Cause of Global Warming

If global warming is happening, do you think it is:
(the first and second responses were randomized)

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

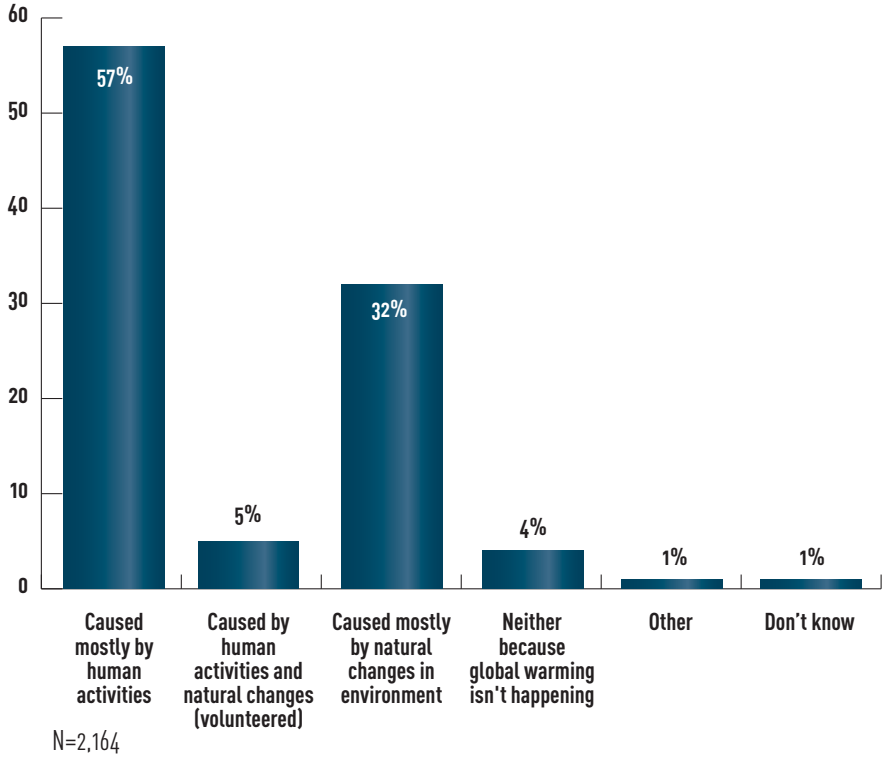


Figure 21: Worry

How worried are you about global warming?

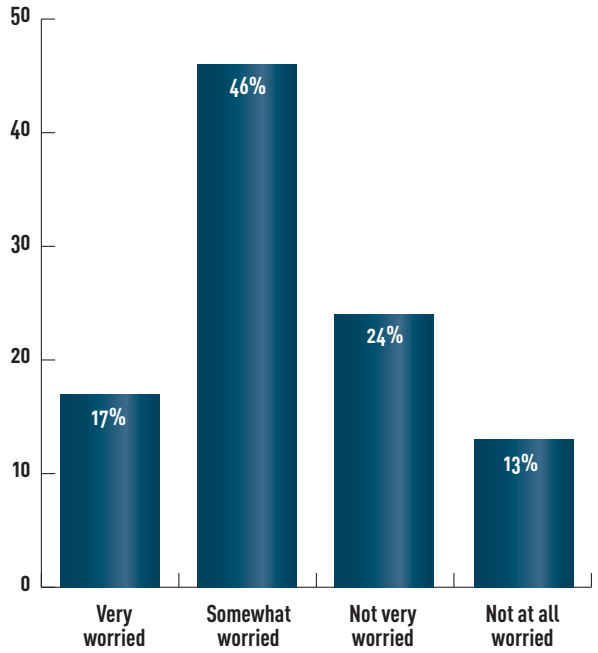


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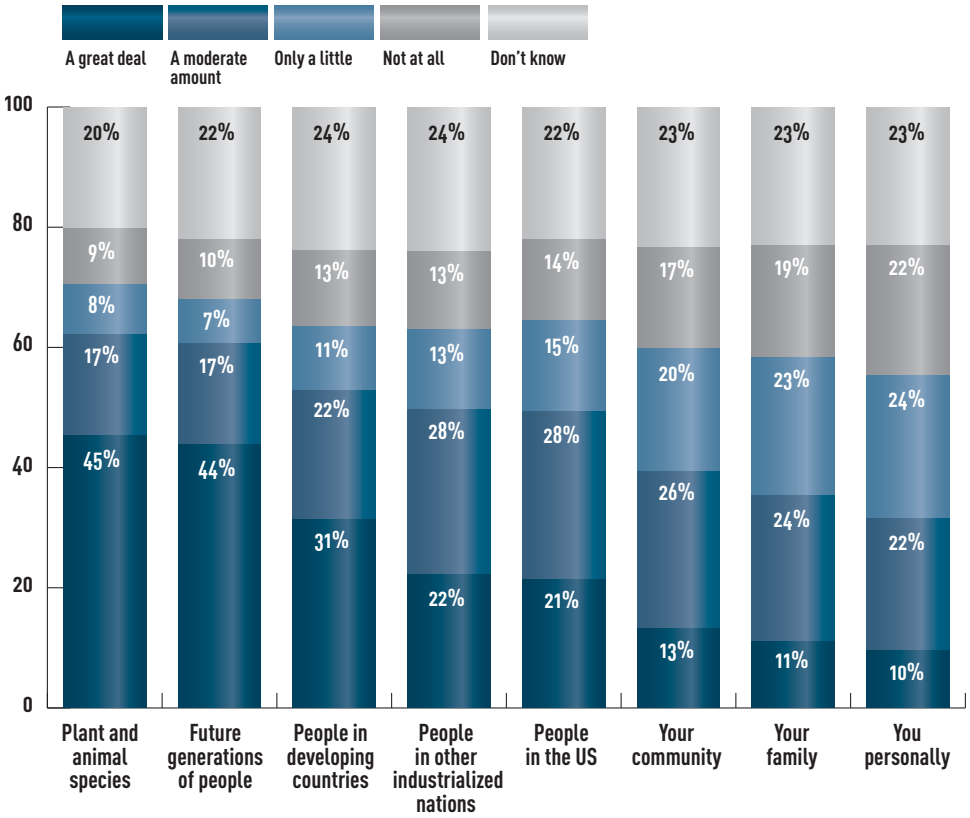
Figure 22: Who Will Be Harmed by Global Warming?

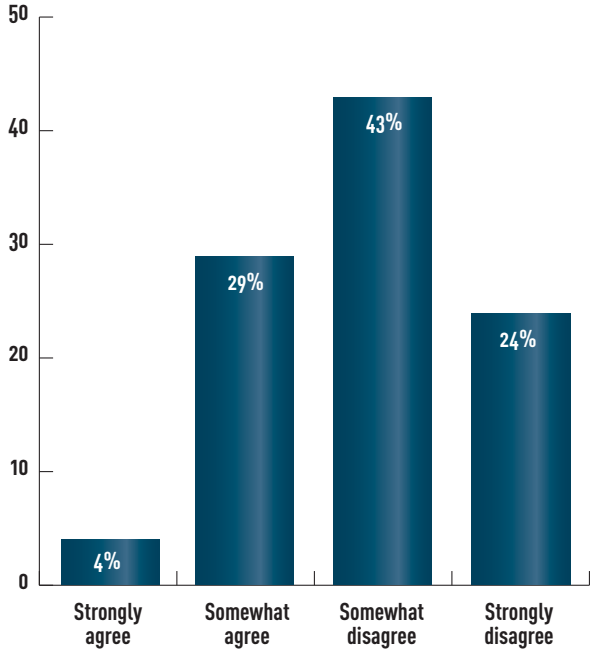
How much do you think global warming will harm ...



N=2,164

Figure 23: Personal Experience

I have personally experienced the effects of global warming.

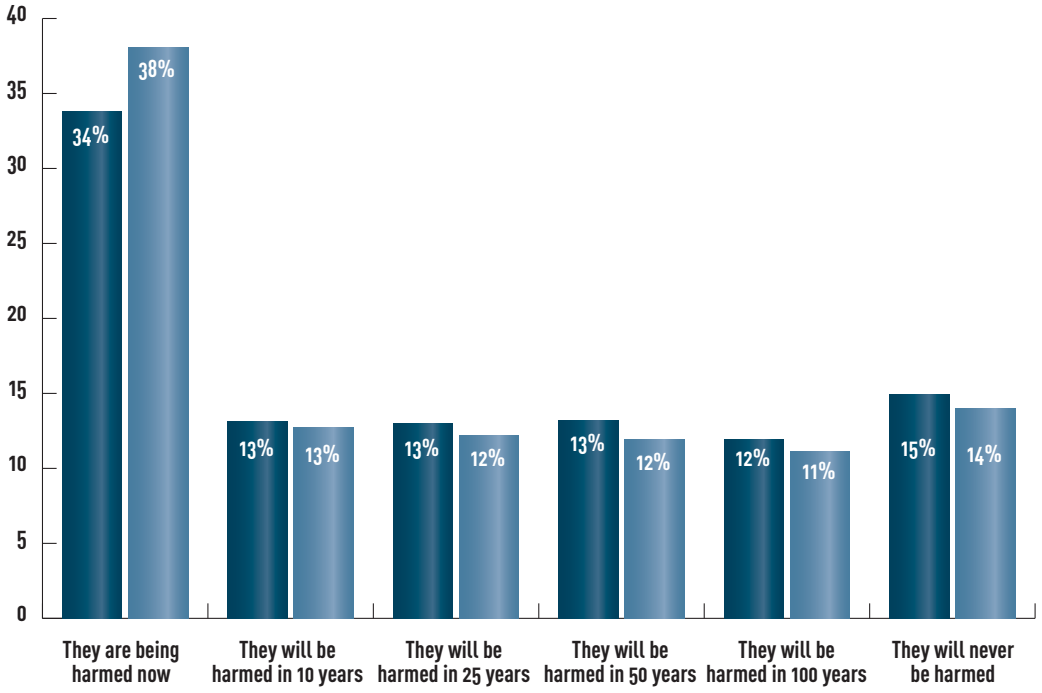


N=2,164

Figure 24: Timing of Impacts

When do you think global warming will start to harm **people in the United States?**

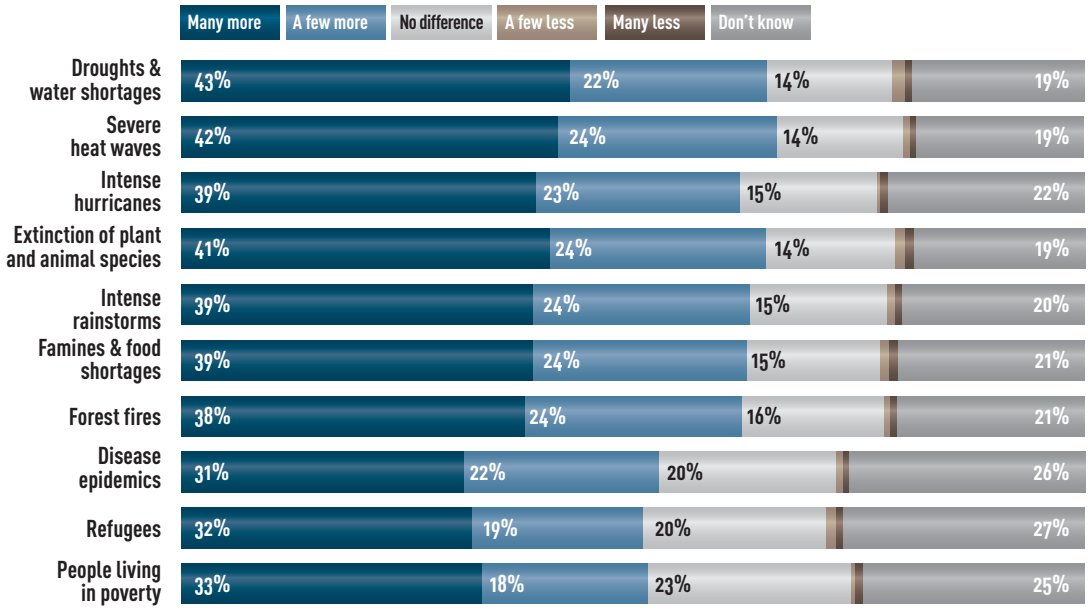
When do you think global warming will start to harm **other people around the world?**



N=2,164

Figure 25: Perceived Frequency of Impacts

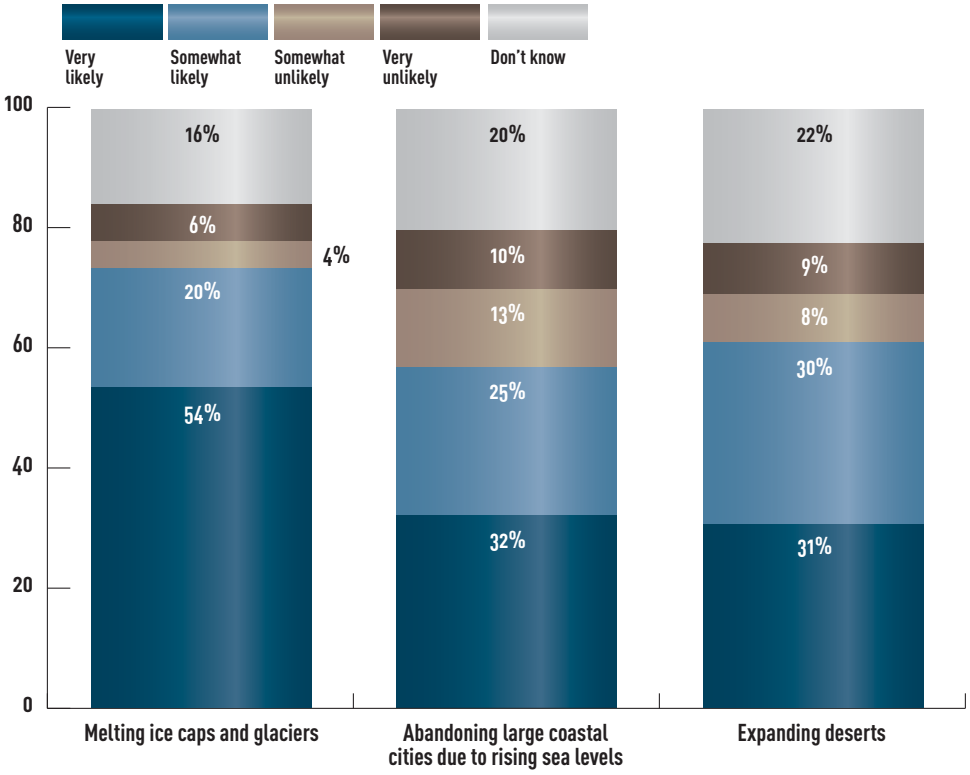
Worldwide over the next 20 years, do you think global warming will cause more or less of the following, **if nothing is done to address it?**



N=2,164

Figure 26: Likelihood of Impacts

Worldwide over the next 20 years, how likely do you think it is that global warming will cause each of the following **if nothing is done to address it?**

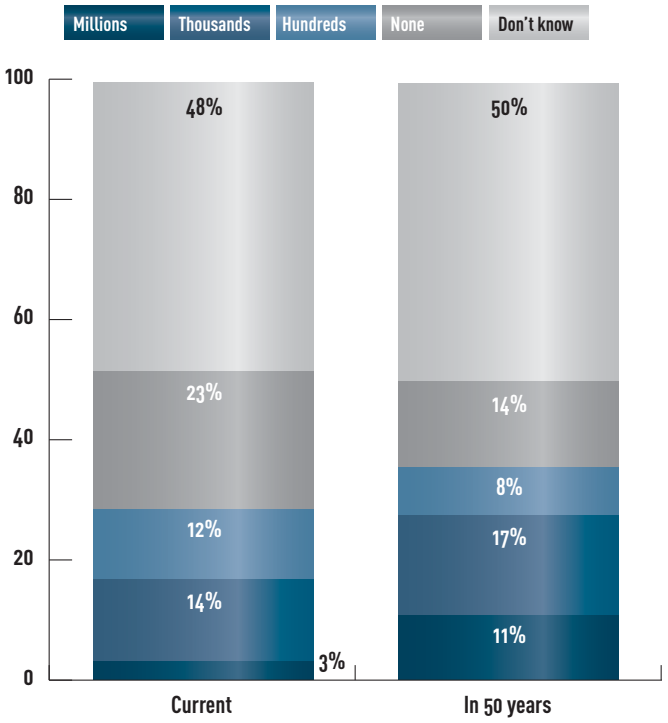


N=2,164

Figure 27: Estimated Fatalities

Now please think about the human health effects of global warming. (Please choose the answer corresponding to your best estimate.) Worldwide, how many people do you think...

- Currently die each year due to global warming?
- Will die each year 50 years from now due to global warming?

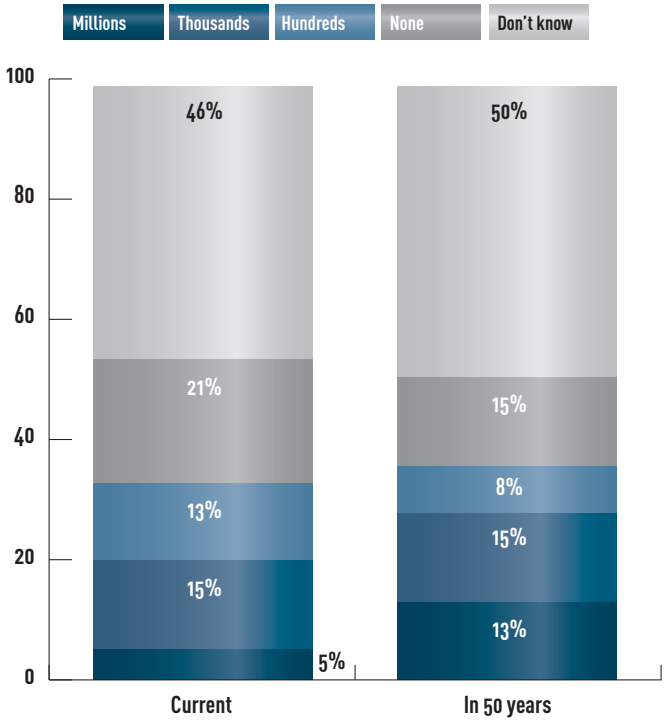


N=2,164

Figure 28: Estimated Injuries and Illnesses

Now please think about the human health effects of global warming. (Please choose the answer corresponding to your best estimate.) Worldwide, how many people do you think...

- Are currently injured or become ill each year due to global warming?
- Will be injured or become ill each year 50 years from now due to global warming?



N=2,164

PART 7:

Do Americans feel well informed about global warming and do they want more information?

The survey also assessed whether Americans felt well informed about climate change, how much they had thought about it or discussed it with family and friends, whether they desired more information, and how easily they could change their minds. Overall, the results suggest that national opinions about global warming are in the process of solidifying, yet many Americans still want additional information about the causes, potential impacts, and solutions to the problem.

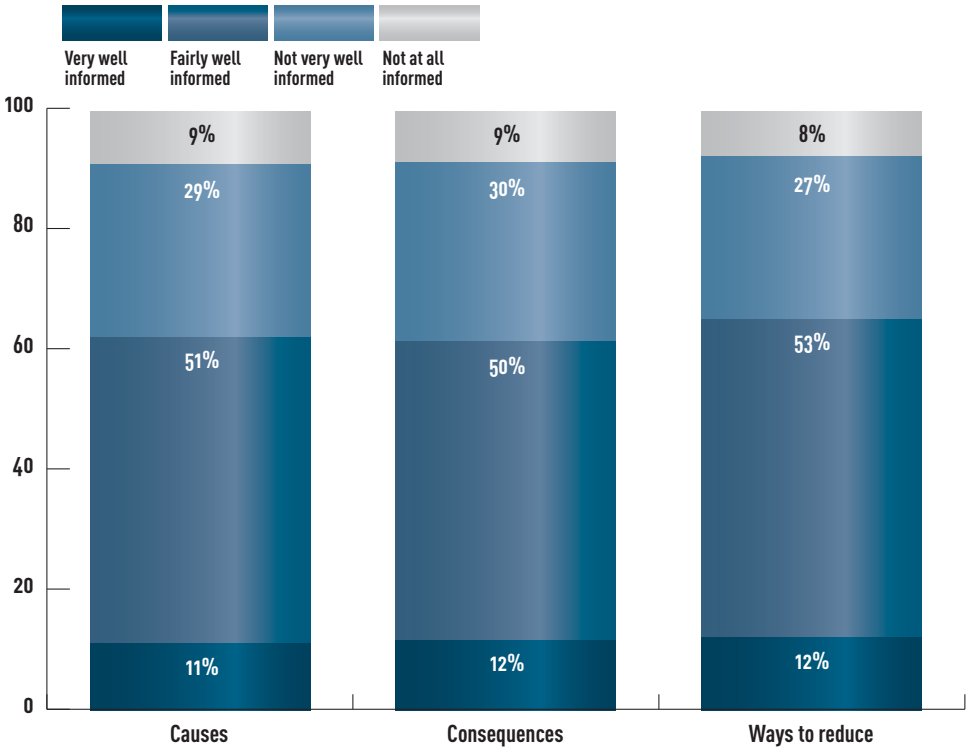
Majorities of Americans said that they were fairly to very well informed about the different causes (62%), consequences (62%), and solutions to global warming (65%) (Fig. 29). However, only 11 to 12 percent said that they were very well informed about these. Similarly, only 20 percent of Americans said they had thought a lot about global warming, with another 35 percent that said they had thought about it some (Fig. 30). Another 45 percent, however, had either not thought about it at all (12%) or just a little (33%). Likewise, most Americans reported that they rarely (33%) or never (27%) discuss global warming with their family and friends, while only 5 percent said they discuss it very often (Fig. 31). Further, most Americans (64%) said that they had not spoken to anyone about global warming in the prior two weeks – another indication that while global warming remains a national priority, it is not part of everyday conversation for most Americans (Fig. 32).

Respondents were also asked how much more information they would need in order to form a firm opinion about global warming. More than half said that they either needed "a lot more" (30%) or "some more" information (30%), while only 18 percent said they did not need any more information at all (Fig. 33). Although many Americans said they would like more information about global warming, most felt relatively certain about their beliefs nonetheless. Only 5 percent strongly agreed that they could easily change their mind about global warming, with another 28 percent that somewhat agreed (Fig. 34). By contrast, 34 percent strongly disagreed that they could change their minds, while another 34 percent somewhat disagreed. Thus 68 percent of Americans felt relatively certain about their current beliefs, again suggesting that public opinion about this issue is solidifying, although many are still open and want to learn more.

Figure 29: Self-Assessed Knowledge of Global Warming

Personally, do you think that you are well informed or not about...

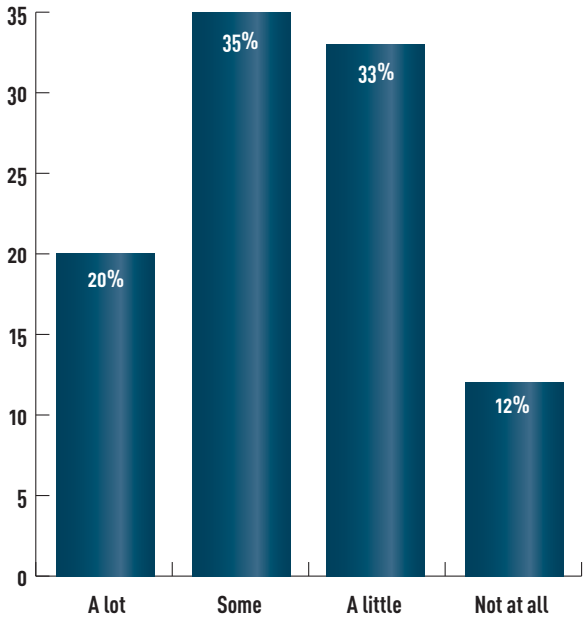
- The different causes of global warming
- The different consequences of global warming
- Ways in which we can reduce global warming



N=2,164

Figure 30: Thought Devoted to Global Warming

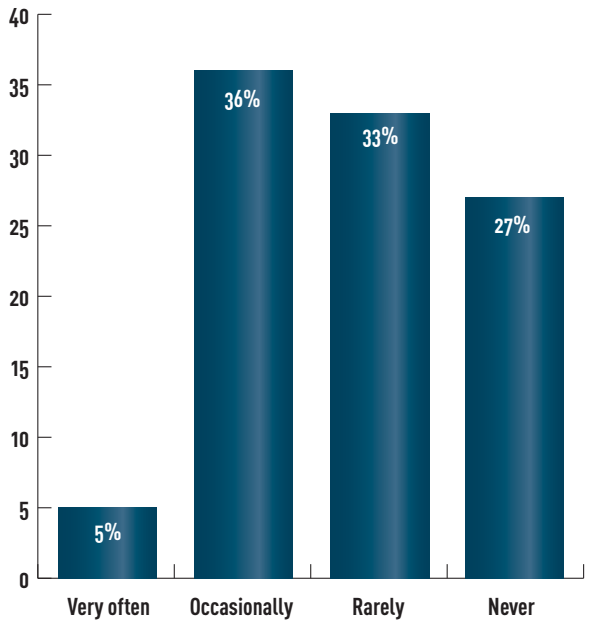
How much had you thought about global warming before today?



N=2,164

Figure 31: Frequency of Discussion

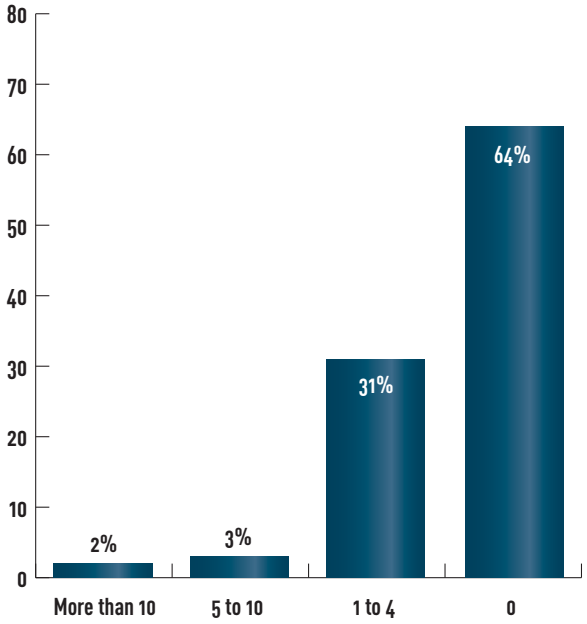
How often do you discuss global warming with your family and friends?



N=2,164

Figure 32: Number of Discussions

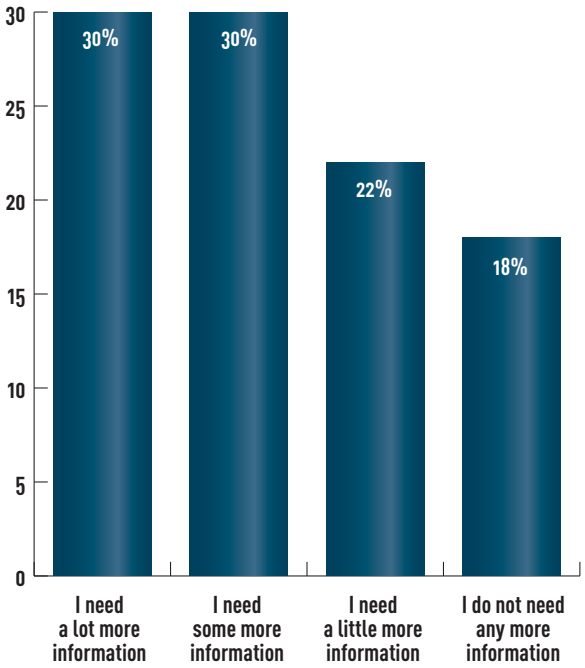
How many people have you spoken with about global warming in the past two weeks?



N=2,164

Figure 33: Need for Information

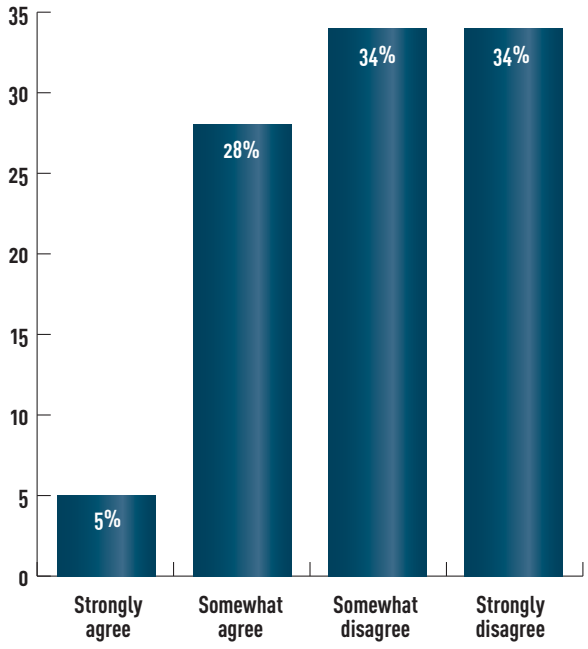
On some issues people feel that they have all the information they need in order to form a firm opinion, while on other issues they would like more information before making up their mind. For global warming, where would you place yourself?



N=2,164

Figure 34: Certainty of Opinion

I could easily change my mind about global warming.



N=2,164

PART 8:

Can the world reduce global warming? Can individuals make a difference? Will technology alone solve the problem or will Americans need to change their lifestyles? How will this affect their quality of life?

The survey also investigated whether Americans believed it is possible to reduce global warming and whether the world will actually do it. Only 6 percent of Americans said they were confident that humanity can and will reduce global warming successfully (Fig. 35). Over half (51%) were unsure and said that while humanity could reduce global warming, it is still unclear at this point whether we will do what is needed. By contrast, 22 percent said that even though humanity could reduce global warming, people are not willing to change their behavior, so the world is not going to act. Finally, 16 percent said that even if global warming is happening, humans cannot reduce it, while a smaller 5 percent simply said that global warming is not happening. Thus Americans appear relatively split between hope on the one hand and pessimism on the other.

At the same time, however, most Americans believed that individual action can make a difference. A large majority (69%) somewhat to strongly disagreed with the fatalistic statement, "The actions of a single person won't make any difference in global warming" (Fig. 36). Finally, most Americans did not believe that technology alone can solve the problem. Only 30 percent strongly (4%) or somewhat agreed (26%) with the statement: "New technologies can solve global warming without individuals having to make big changes to their lives" (Fig. 37). Thus 70 percent of Americans expected that the ultimate solution will require much more than just new technological innovations – it will also require significant changes in our lifestyles.

Respondents were then asked whether changing their own lifestyle to reduce their personal contribution to global warming would affect their quality of life. Nearly a third (31%) of Americans said that lifestyle changes to reduce global warming would actually improve their quality of life, while another third (32%) said these changes would have no impact (Fig. 38).

Figure 35: Can and Will the World Reduce Global Warming?

Which of the following statements comes closest to your view?

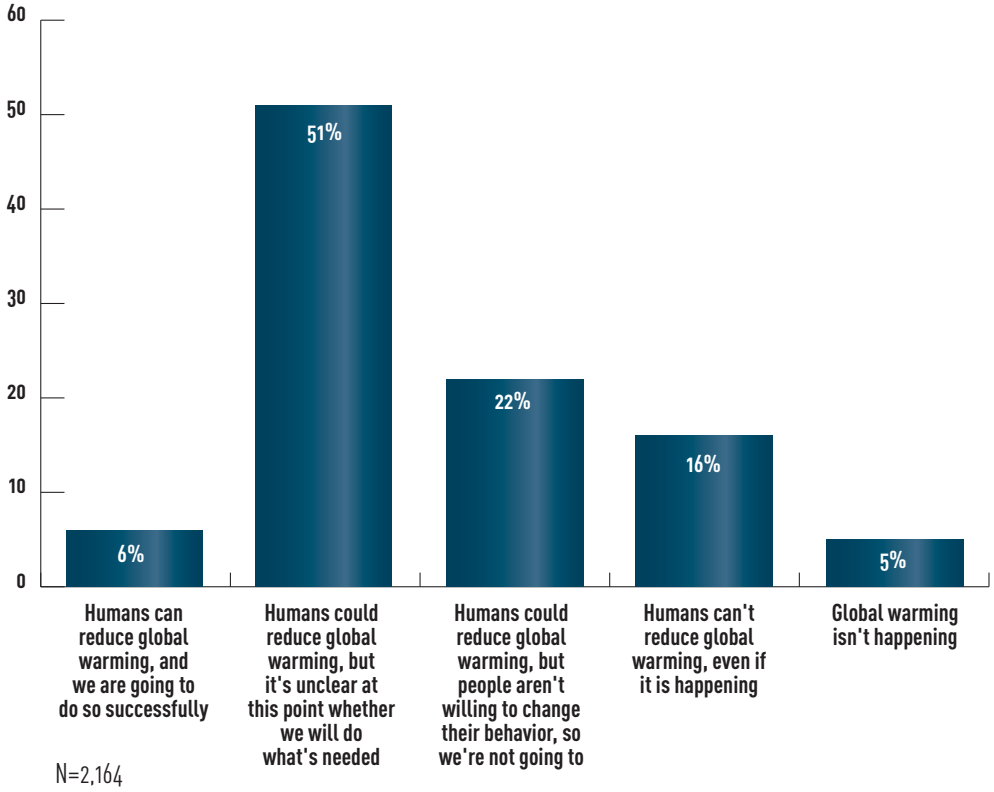


Figure 36: Can Individuals Make a Difference?

The actions of a single person won't make any difference in global warming.

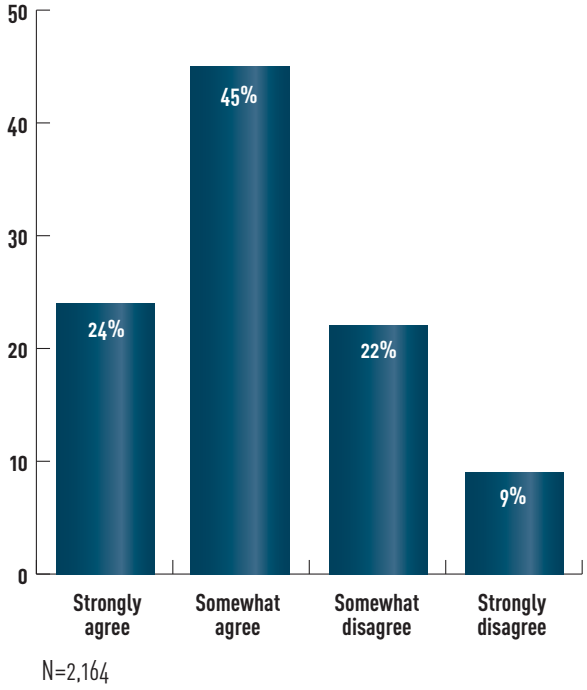
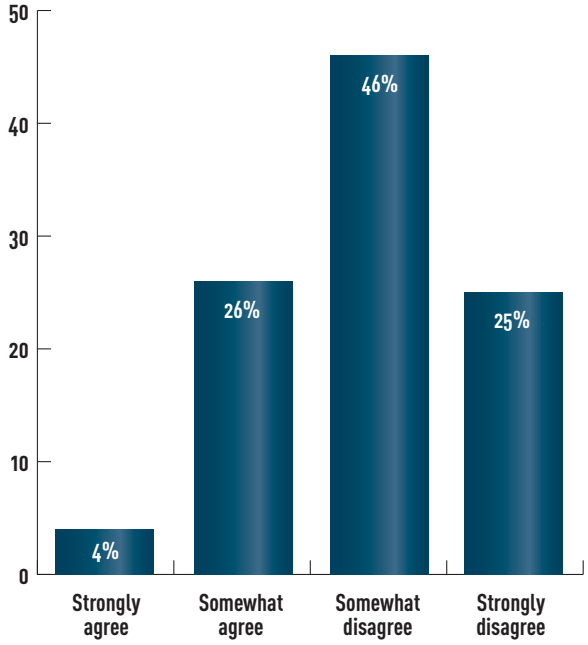


Figure 37: Will Technology Alone Solve the Problem?

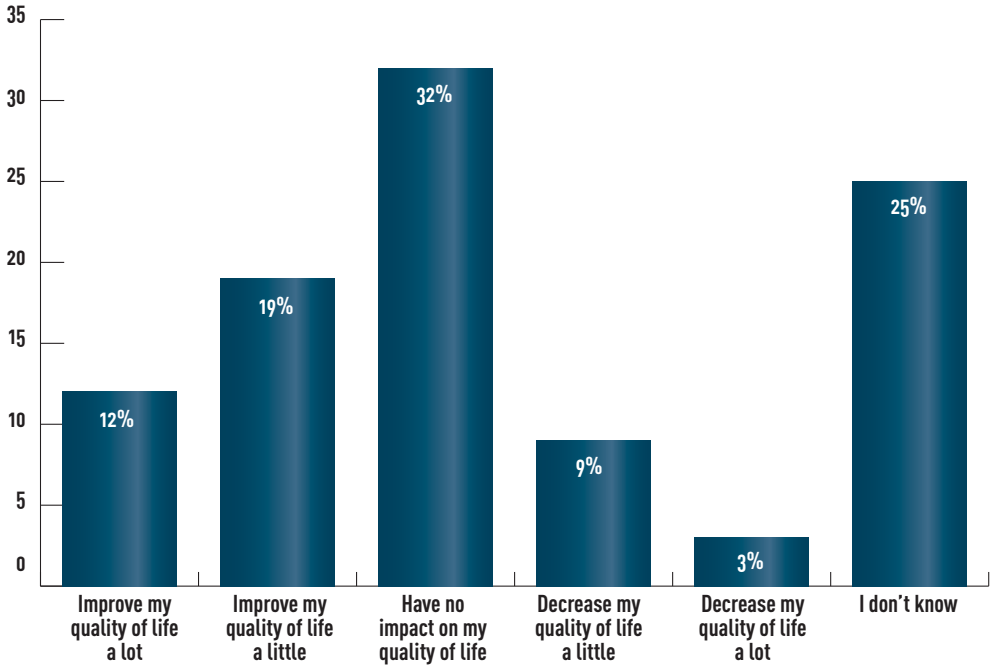
New technologies can solve global warming, without individuals having to make big changes in their lives.



N=2,164

Figure 38: How Would Lifestyle Changes to Reduce Global Warming Affect Your Quality of Life?

If you were to change your lifestyle to reduce your personal contribution to global warming, how do you think it would it affect your quality of life?



N=2,164

PART 9:

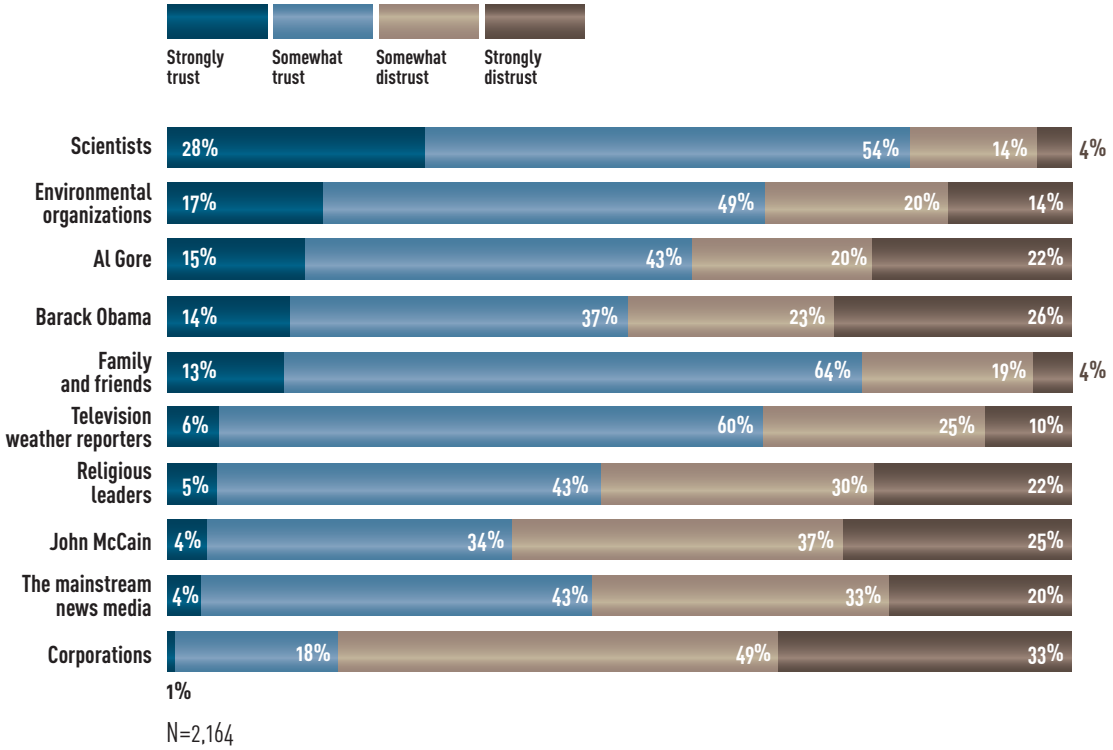
Whom do Americans trust for information about global warming?

Global warming joins a long list of other hazards of the modern world that are scientifically complex and uncertain, and about which most people know relatively little. Which risks should one be concerned about? How high of a priority are they? What should individuals and societies do about them? In these situations, many individuals look to trusted individuals, organizations, or institutions to help guide them through an uncertain landscape. Thus, the messenger is often just as important (if not more so) than the message itself.

Overall, the study found that 82 percent of Americans trusted scientists (Fig. 39), followed by family and friends (77%), environmental organizations (66%) and television weather reporters (66%) as a source of information about global warming. About half of Americans trusted religious leaders (48%) or the mainstream news media (47%). Only 19 percent of Americans, however, trusted corporations as a source of information, while 33 percent strongly distrusted them. Al Gore was trusted by 58 percent of Americans, leading both Barack Obama (51%) and John McCain (38%). Following President Obama's election, however, it is likely that trust in him as a source of information about global warming has grown.

Figure 39: Trust

How much do you trust or distrust the following as a source of information about global warming? (randomized)



APPENDIX A:
Survey questions

NOTE: Questions used in this report are selected from a longer survey containing over 300 questions. The question order shown below follows the results presented in this report and does not correspond to the order in which these questions were asked.

1. Here are some issues now being discussed in Washington, D.C. Do you think each of these issues should be a low, medium, high, or very high priority for the next president and Congress? *(randomized; results shown in Figure 1)*
   - Education
   - Health care
   - Social Security
   - The federal budget deficit
   - Terrorism
   - Global warming
   - Tax cuts
   - The economy
   - Illegal immigration
   - The wars in Iraq and Afghanistan
   - Abortion

2. Here are some environmental issues now being discussed in Washington, D.C. Do you think each of these issues should be a low, medium, high, or very high priority for the next president and Congress? *(randomized; results in Figure 2)*
   - Water pollution
   - Toxic waste
   - Air pollution
   - Damage to the earth's ozone layer
   - Loss of tropical rain forests
   - Extinction of plant and animal species
   - Urban sprawl and loss of open spaces
   - Global warming
   - Acid rain

3. How important is the issue of global warming to you personally? *(Figure 3)*
   - Not at all important
   - Not too important
   - Somewhat important
   - Very important
   - Extremely important

4. Do you think the following should be doing more or less to address global warming? Response options: Much less; less; currently doing the right amount; more; much more *(Figure 4)*
   - Your local government officials
   - Your state legislators
   - Your Governor
   - The U.S. Congress
   - Corporations and industry
   - Citizens themselves

5. How big of an effort should the United States make to reduce global warming? *(Figure 5)*
   - No effort
   - A small-scale effort, even if it has small economic costs
   - A medium-scale effort, even if it has moderate economic costs
   - A large-scale effort, even if it has large economic costs

6. People disagree whether the United States should reduce greenhouse gas emissions on its own, or make reductions only if other countries do too. Which of the following statements comes closest to your own point of view? *(Figure 6)*

   The United States should reduce its greenhouse gas emissions…
   - Regardless of what other countries do
   - Only if other industrialized countries (such as England, Germany and Japan) reduce their emissions
   - Only if other industrialized countries and developing countries (such as China, India and Brazil) reduce their emissions
   - The US should not reduce its emissions
   - Don't know

7. How much do you support or oppose the following policies? *(Response options: Strongly support; somewhat support; somewhat oppose; strongly oppose; randomized; Figure 7)*

Policies that Would Increase Energy and Fuel Efficiency:

- Require automakers to increase the fuel efficiency of cars, trucks, and SUVS, to 45 mpg, even if it means a new vehicle will cost up to $1,000 more to buy.
- Provide tax rebates for people who purchase energy-efficient vehicles or solar panels.
- Provide a government subsidy to replace old water heaters, air conditioners, light bulbs, and insulation. This subsidy would cost the average household $5 a month in higher taxes. Those who took advantage of the program would save money on their utility bills.
- Establish a special fund to help make buildings more energy efficient and teach Americans how to reduce their energy use. This would add a $2.50 surcharge to the average household's monthly electric bill.

Policies to Establish Regulations and International Treaties

- Regulate carbon dioxide (the primary greenhouse gas) as a pollutant.
- Sign an international treaty that requires the United States to cut its emissions of carbon dioxide 90% by the year 2050.

Policies that Would Support Renewable Energy

- Require electric utilities to produce at least 20% of their electricity from wind, solar, or other renewable energy sources, even if it cost the average household an extra $100 a year.
- Fund more research into renewable energy sources, such as solar and wind power.

Policies that Would Put a Price on Carbon

- Create a new national market that allows companies to buy and sell the right to emit the greenhouse gases said to cause global warming. The federal government would set a national cap on emissions. Each company would then purchase the right to emit a portion of this total amount. If a company then emitted more than its portion, it would have to buy more emission rights from other companies or pay large fines.
- Increase taxes on gasoline by 25 cents per gallon and return the revenues to taxpayers by reducing the federal income tax.

Policies that Would Exploit Existing Energy Sources

- Expand offshore drilling for oil and natural gas off the U.S. coast.
- Drill for oil in the Arctic National Wildlife Refuge.
- Build more nuclear power plants.

8. Please check all of the answers below that you believe are true.
   If our nation takes steps to reduce global warming, it will … *(Randomized; results shown in Figure 8.)*
   - Help free us from dependence on foreign oil
   - Improve people's health
   - Improve our national security
   - Create green jobs and a stronger economy
   - Save many plant and animal species from extinction
   - Protect God's creation
   - Save many people around the world from poverty and starvation
   - Provide a better life for our children and grandchildren
   - Prevent the destruction of most life on the planet
   - Protect the world's poorest people from harm caused by the world's richest people
   - Cost jobs and harm our economy
   - Lead to more government regulation
   - Undermine American sovereignty
   - Cause energy prices to rise
   - Interfere with the free market
   - Harm poor people more than it helps them
   - Other [text box]
   - Refusal

9. Which of the following reasons to reduce global warming are most important to you? Please select up to three [if only two responses were chosen, the screen said "two"] reasons. (Question was asked of respondents who had selected more than one positive outcome. Results not presented.)

10. Of the reasons you selected, which one is most important to you personally? (Positive outcomes from Question 9 were displayed; Figure 9)

11. Which of the following things that might result from taking steps to reduce global warming are of the greatest concern to you? Please select up to three [if only two negative outcomes were chosen, screen said "two"] things. (Question was asked of respondents who had selected more than one negative outcome. Results not presented.)

12. Of the things you selected which one is of greatest concern to you personally? *(Figure 10)*

13. Which of the following two statements do you find the most convincing? *(Figures 11 & 12)*
    - We should not take steps to reduce global warming because it will [insert respondent's top reason for action]
    - We should take steps to reduce global warming because it will [insert respondent's top concern about acting]

14. Over the past 12 months, how many times have you done each of the following? *(Response options: Never; once; a few times; several times; many times; don't know. Results in Figure 13.)*
    - Written letters, emailed, or phoned government officials to urge them to take action to reduce global warming?

15. Over the past 12 months, how many times have you done these things? *(Response options: Never; once; a few times; several times; many times; don't know. Results in Figure 14.)*
    - Rewarded companies that are taking steps to reduce global warming by buying their products.
    - Punished companies that are opposing steps to reduce global warming by NOT buying their products.

16. Over the next 12 months, would you like to do each of the following…. *(Response options: Less frequently, about the same, more frequently. Results in Figure 15.)*
    - Write letters, email, or phone government officials to urge them to take action to reduce global warming?

17. Over the next 12 months, would you like to punish companies that are opposing steps to reduce global warming by NOT buying their products… *(Response options: Less frequently, about the same, more frequently. Results in Figure 15.)*

18. Over the next 12 months do you intend to buy the products of companies that are taking steps to reduce global warming… *(Response options: Less frequently, about the same, more frequently. Results in Figure 15.)*

19. There are many reasons why people do not write letters, emails, or call their elected officials about global warming. Which of the following reasons might prevent you from taking these actions? Please check all that apply. *(Figure 16)*
    - It's too much effort
    - I would feel uncomfortable
    - It wouldn't make any difference if I did
    - I don't know how
    - I'm too busy
    - Someone else in my home would object
    - I don't think it's important
    - I am not an activist
    - I do not believe in global warming
    - Other [text box]
    - None of the above would prevent me from doing this

20. Which of the following reasons might prevent you from punishing companies that oppose steps to reduce global warming? Check all that apply. *(Figure 17)*
    - I don't know which companies to punish
    - I can't afford to do this
    - My actions won't have any influence on a company
    - It would be inconvenient
    - It's too much effort
    - I'm too busy
    - Someone else in my home would object if I did this
    - I don't think it's important to do this
    - We don't need to reduce global warming
    - Other [text box]

21. Recently, you may have noticed that global warming has been getting some attention in the news. Global warming refers to the idea that the world's average temperature has been increasing over the past 150 years, may be increasing more in the future, and that the world's climate may change as a result.
    What do you think? Do you think that global warming is happening? *(Response options: yes, no, don't know. Results in Figure 18.)*

22. How sure are you that global warming is happening? *(Asked if respondent answered "yes" to question 21. Response options: extremely sure; very sure; somewhat sure; not at all sure. Results in Figure 18.)*

23. How sure are you that global warming is not happening? *(Asked if respondent answered "no" to question 21. Response options: extremely sure; very sure; somewhat sure; not at all sure. Results in Figure 18.)*

24. Which comes closer to your own view? *(First and second response option rotated. Results in Figure 19.)*
    - Most scientists think global warming is happening.
    - Most scientists think global warming is not happening.
    - There is a lot of disagreement among scientists about whether or not global warming is happening.
    - Don't know enough to say

25. Assuming global warming is happening, do you think it is… *(Figure 20)*
    - Caused mostly by human activities
    - Caused mostly by natural changes in the environment
    - Other (Please specify)
    - None of the above because global warming isn't happening

26. How worried are you about global warming? *(Figure 21)*
    - Very worried
    - Somewhat worried
    - Not very worried
    - Not at all worried

27. How much do you think global warming will harm: *(Response options: Not at all; only a little; a moderate amount; a great deal; don't know. Results in Figure 22)*
    - You personally
    - Your family
    - Your community
    - People in the United States
    - People in other modern industrialized countries
    - People in developing countries
    - Future generations of people
    - Plant and animal species

28. I have personally experienced the effects of global warming. *(Figure 23)*
   - Strongly agree
   - Somewhat agree
   - Somewhat disagree
   - Strongly disagree

29. When do you think global warming will start to harm people in the United States? *(Figure 24)*
   - They are being harmed now
   - In 10 years
   - In 25 years
   - In 50 years
   - In 100 years
   - Never

30. When do you think global warming will start to harm other people around the world? *(Figure 24)*
   - They are being harmed now
   - In 10 years
   - In 25 years
   - In 50 years
   - In 100 years
   - Never

31. Worldwide over the next 20 years, do you think global warming will cause more or less of the following, if nothing is done to address it? *(Response options: Many less; a few less; no difference; a few more; many more; don't know. Results in Figure 25.)*
   - Intense hurricanes
   - Extinctions of plant and animal species
   - Famines and food shortages
   - Droughts and water shortages
   - People living in poverty
   - Refugees
   - Severe heat waves
   - Forest fires
   - Dease epidemics
   - Floods

32. Worldwide over the next 20 years, how likely do you think it is that global warming will cause each of the following if nothing is done to address it? *(Response options: Very unlikely; somewhat unlikely; somewhat likely; very likely; don't know. Results in Figure 26.)*
   - Expanding deserts
   - Melting ice caps and glaciers
   - Abandoning large coastal cities due to rising sea levels

33. Now please think about the human health effects of global warming. (Please choose the answer corresponding to your best estimate.)

   Worldwide, how many people do you think … *(Response options: None; hundreds, thousands; millions; don't know. Results in Figure 27 & 28.)*
   - Currently die each year due to global warming?
   - Are currently injured or become ill each year due to global warming?
   - Will die each year 50 years from now due to global warming?
   - Will be injured or become ill each year 50 years from now due to global warming?

34. Personally, how well informed do you feel you are about … *(Response options: Not at all informed; not very well informed; fairly well informed; very well informed. Results in Figure 29.)*
   - The different causes of global warming
   - The different consequences of global warming
   - Ways in which we can reduce global warming

35. How much had you thought about global warming before today? *(Figure 30)*
   - Not at all
   - A little
   - Some
   - A lot

36. How often do you discuss global warming with your family and friends? *(Figure 31)*
   - Never
   - Rarely
   - Occasionally
   - Very often

37. How many people have you spoken with about global warming in the last two weeks? *(Figure 32)*
   - 0
   - 1-4
   - 5-10
   - More than 10

38. On some issues people feel that they have all the information they need in order to form a firm opinion, while on other issues they would like more information before making up their mind. For global warming, where would you place yourself? *(Figure 33)*
   - I need a lot more information
   - I need some more information
   - I need a little more information
   - I do not need any more information

39. I could easily change my mind about global warming. *(Figure 34)*
   - Strongly agree
   - Somewhat agree
   - Somewhat disagree
   - Strongly disagree

40. Which of the following statements comes closest to your view? *(Figure 35)*
   - Global warming isn't happening
   - Humans can't reduce global warming, even if it is happening
   - Humans could reduce global warming, but people aren't willing to change their behavior, so we're not going to
   - Humans could reduce global warming, but it's unclear at this point whether we will do what's needed
   - Humans can reduce global warming, and we are going to do so successfully

41. The actions of a single individual won't make any difference in global warming. *(Figure 36)*
   - Strongly agree
   - Somewhat agree
   - Somewhat disagree
   - Strongly disagree

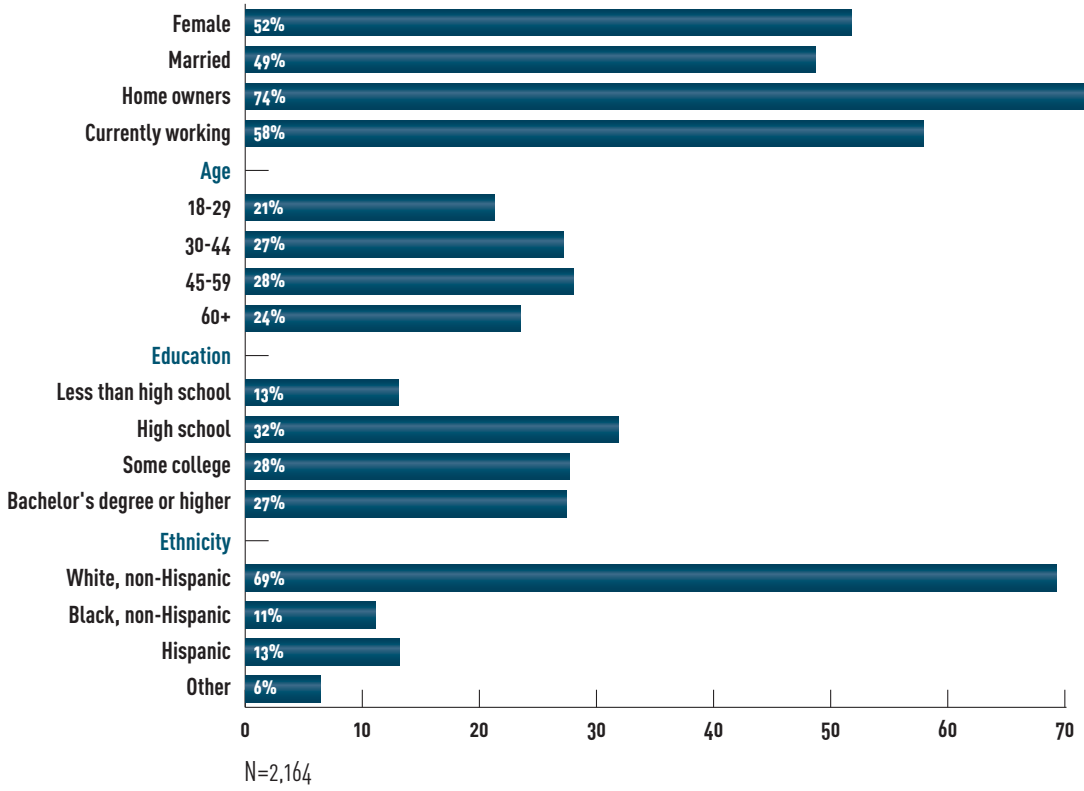
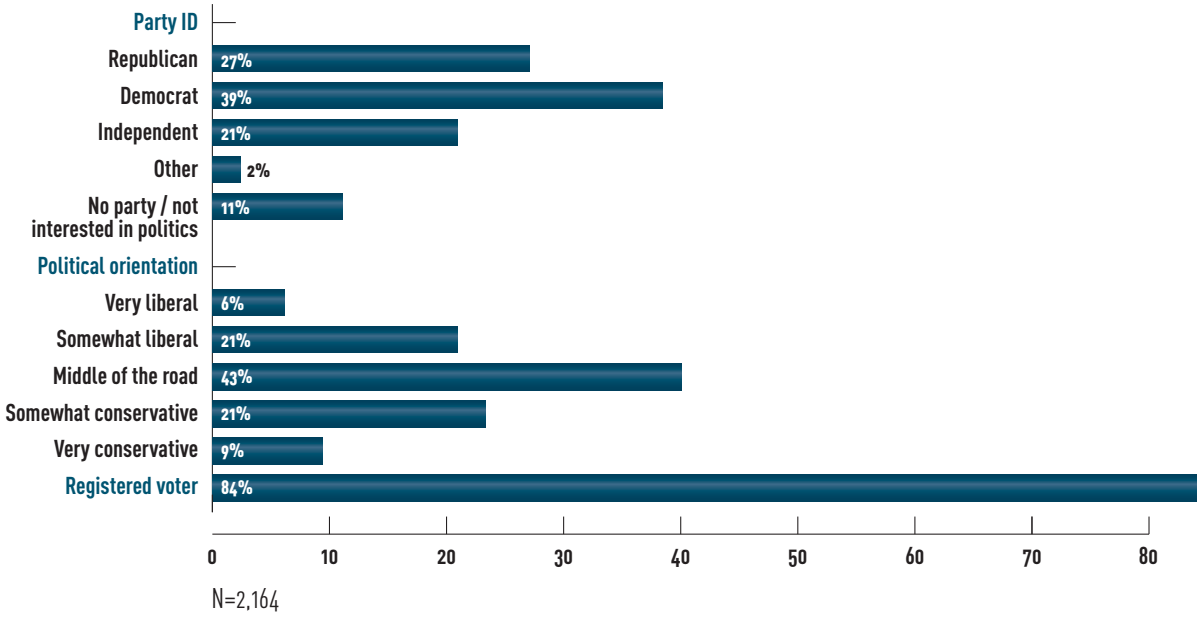
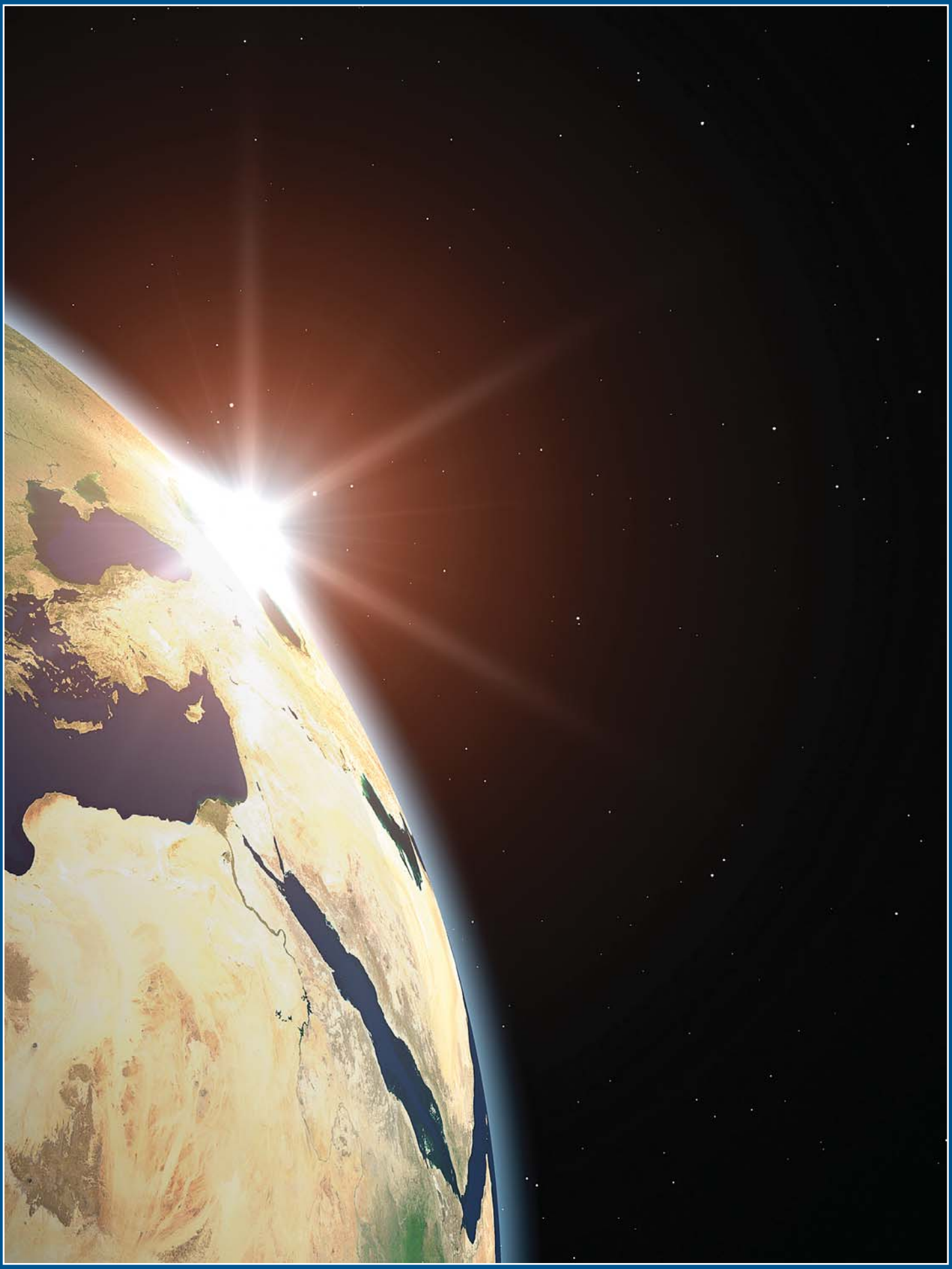
42. New technologies can solve global warming, without individuals having to make big changes in their lives. *(Figure 37)*
   - Strongly agree
   - Somewhat agree
   - Somewhat disagree
   - Strongly disagree

43. If you were to change your lifestyle to reduce your personal contribution to global warming, how do you think it would it affect your quality of life? *(Figure 38)*
   - Improve my quality of life a lot
   - Improve my quality of life a little
   - Have no impact on my quality of life
   - Decrease my quality of life a little
   - Decrease my quality of life a lot
   - I don't know

44. How much do you trust or distrust the following as a source of information about global warming? *(Response options: Strongly distrust; somewhat distrust; somewhat trust; strongly trust. Order of the first seven sources was randomized, and the list ended with Barack Obama & John McCain. Results in Figure 39.)*
   - Family & friends
   - Environmental organizations
   - Corporations
   - Religious leaders
   - Scientists
   - The mainstream news media
   - Television weather reporters
   - Barack Obama
   - John McCain

APPENDIX B:
Survey demographics

Demographics



Political Orientation