

# Informal Science Education on the NASA Climate Change Website:

Addressing the Challenge of Educating Diverse Audiences



GEORGE MASON UNIVERSITY  
CENTER for CLIMATE CHANGE  
COMMUNICATION



# INFORMAL SCIENCE EDUCATION ON THE NASA CLIMATE CHANGE WEBSITE: *ADDRESSING THE CHALLENGE OF EDUCATING DIVERSE AUDIENCES*

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# I. INTRODUCTION

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## A. OBJECTIVES

Informal science educators who wish to educate the public about climate change seek to inform broad audiences, regardless of their level of education or prior familiarity with scientific concepts and facts. This presents a challenge for educators online: audiences may vary widely in their awareness of facts relating to climate change. They may have different questions, differing levels of ability to search for and understand scientific information, and differing levels of interest in learning.

Some of these differences may arise from disparities in formal education. Information that is straight-forward and easy-to-understand may serve the needs of those with less education, while not providing more educated visitors with in-depth information that provides answers to their questions. Conversely, complex information serving the needs of those who are more familiar with climate change may be inaccessible to audiences with less education, leading them to lose interest in the topic. Educational differences therefore require informal science communicators to provide information that is neither too complex nor too simple, balancing the needs of all their audience members.

With these challenges in mind, we examined how visitors' education levels affect their uses of and responses to an online source that seeks to educate the public on climate change: NASA's website *climate.nasa.gov*. Our goal is to assess whether audiences with varying levels of education find the website accessible and interesting, whether it provides them with answers to the questions they have about climate change, and whether it changes their understanding of the issue.

In the following pages, we examine the similarities and differences between people with differing levels of education on their:

- Questions about climate change;
- Success in finding information at the NASA climate change website that answers their questions;
- Evaluations of the website, in terms of its ease of use, ability to engage their interest, and accessibility;
- Assessments of NASA's climate research and its scientists; and
- Changes in knowledge and attitudes in response to visiting the website.

The report's findings are intended to support NASA's efforts to inform and educate the American public on the issue of climate change, and has been funded by NASA.

## B. METHODS

The report summarizes the results of a nationally representative survey of 1,050 American adults conducted online in 2018. Participants were sent to the website *climate.nasa.gov* and instructed to search for information on a question they have about climate change. After visiting the site, participants were asked to evaluate the website’s appeal and effectiveness.

The survey employed a split-half design: Half the participants were asked questions about climate change and NASA’s climate-related research *before* they visited the website, while the other half were asked these same questions *after* they visited the site. A few questions were asked of all respondents both before and after the site visit. Comparisons of pre- and post-website responses reveal the impacts of the site on visitors’ knowledge and attitudes.

Education has been divided into three levels:

- (1) A high school degree or less (N=461);
- (2) Some college or an AA degree (N=355); and
- (3) A Bachelor’s degree or more (N=334).<sup>1</sup>

More details on the survey’s methods are provided in the Methods section on p. 27. For the main results of the survey, please see Myers, T., Roser-Renouf, C., & Maibach, E. (2020). *Americans’ Views of Climate Change, NASA, and NASA’s Climate Website*. George Mason University. Fairfax, VA: Center for Climate Change Communication. Available at: [https://www.climatechangecommunication.org/all/nasa\\_adults2018\\_1/](https://www.climatechangecommunication.org/all/nasa_adults2018_1/). DOI: [10.13021/ve4g-8356](https://doi.org/10.13021/ve4g-8356).

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<sup>1</sup> In tables, figures and texts, the three groups are referred to as “High school,” “Some college,” and “BA+” for brevity.

## C. PRIMARY FINDINGS

### *Information sought and found:*

- People with less education are more likely to have questions about the reality and causes of climate change, while those who have graduated from college are more likely to have questions about solutions to climate change and scientific research on the issue.
- Education is not a barrier to finding information at NASA's climate change website: all visitors to the website were equally likely to find the information they were seeking, and to say that it answered their questions, regardless of their level of education.

### *Evaluations of the website:*

- While all visitors to the NASA website rated it highly, differences were apparent:
  - Visitors with more education rated the website more highly: they found it more engaging, easier to use and understand, and they trusted it more.
  - Visitors with less education were as likely as those with more education to say that they were going to visit the NASA climate website again and that they were going to seek additional climate change information elsewhere; they were, however, less likely to sign up for NASA's climate change newsletter.

### *Impacts of the website on perceptions of NASA:*

- Prior to visiting NASA's climate change website, people with more education were more likely than people with less education to say NASA's scientists are competent, they conduct a great deal of climate change research, and they can be trusted to use their research for the benefit of the U.S.
- Visiting the website increased people's ratings of NASA on all of these dimensions. This was true of people across all education levels, but especially among those with less education, greatly reducing the differences in perceptions between people with more or less formal education.

### *Impacts of the website on climate change knowledge and attitudes:*

- Prior to visiting the website college graduates had greater understanding of climate change: they were more aware that human-caused climate change is real, harmful, solvable, and that there is a scientific consensus on the issue's reality and causes. They had greater understanding of climate science and more awareness of climate change impacts.
- Visiting the website did not eliminate this knowledge gap among people of different education levels. However, people with less education learned more from the site, and thus the pre-existing differences in climate knowledge between more and less educated people were lessened by spending time on the website.

## II. WHAT PEOPLE WANT TO KNOW

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### D. QUESTIONS ABOUT CLIMATE CHANGE

Prior to visiting the NASA climate change website, all participants were asked what they would most like to ask a climate expert (Table 1). Results show that Americans' questions about climate change differ according to their level of education ( $p \leq .001$ ).

- At all education levels, participants were more likely to ask about solutions than any other topic, but college graduates were 8 percentage points more likely to ask about solutions than participants with a high school education.
- College graduates were also more likely to ask about climate change research or to specify their own question (+9 percentage points, as compared to those with a high school education).
- Conversely, participants with a high school education were more likely to ask whether climate change is real (+10 percentage points, as compared to college graduates).
- College graduates were less likely to ask about the causes of climate change (-5 percentage points, as compared to people with some college or a high school education), and slightly less likely to ask about climate change impacts (-4 percentage points, as compared to people with a high school education).

Thus, people with less education are more likely to have questions about the reality and causes of climate change, while those who have graduated from college are more likely to have questions about solutions to climate change and scientific research on the issue.

<b>Table 1. Top Questions about Climate Change</b>				
<b>Question Topic</b>	<b>Specific Question</b>	<b>BA+</b>	<b>Some College</b>	<b>High School</b>
<b>Solutions</b>	<b><i>Solutions Total</i></b>	<b>36%</b>	<b>34%</b>	<b>28%</b>
	Is there still time to reduce climate change, or is it too late?	14%	16%	9%
	What can I do to reduce climate change?	7%	5%	5%
	What can the United States do to reduce climate change?	5%	6%	6%
	What can the nations of the world do to reduce climate change?	8%	5%	4%
	How much would it cost the United States to reduce climate change?	2%	2%	3%
<b>Causes</b>	<b><i>Cause Total</i></b>	<b>22%</b>	<b>27%</b>	<b>27%</b>
	How do you know that climate change is caused mostly by human activities, not natural changes in the environment?	19%	23%	18%
	What causes climate change?	3%	4%	8%
<b>Impacts</b>	<b><i>Impacts Total</i></b>	<b>11%</b>	<b>12%</b>	<b>15%</b>
	When will climate change begin to harm people?	4%	3%	4%
	What harm will climate change cause?	2%	4%	3%
	What benefit will climate change cause?	2%	2%	3%
	On the whole, will climate change be more harmful or beneficial?	2%	1%	3%
	Will climate change harm people?	1%	1%	3%
<b>Reality</b>	<b><i>Reality Total</i></b>	<b>6%</b>	<b>12%</b>	<b>16%</b>
	Is climate change really happening?	3%	5%	9%
	How do you know that climate change is happening?	4%	6%	7%
<b>Other Questions</b>	<b><i>Other Questions Total</i></b>	<b>24%</b>	<b>16%</b>	<b>15%</b>
	What kind of research are you conducting on climate change?	15%	9%	10%
	Other (Specify)	9%	7%	5%

Question topic:  $p \leq 001$ ; specific question:  $p \leq 001$ , using chi-square tests.

Question wording: If you could ask an expert on climate change one question, which question would you ask?<sup>2</sup>

<sup>2</sup> The questions were derived from a content analysis, in which respondents stated their top question in an open-ended format.



## E. SUCCESS IN FINDING INFORMATION

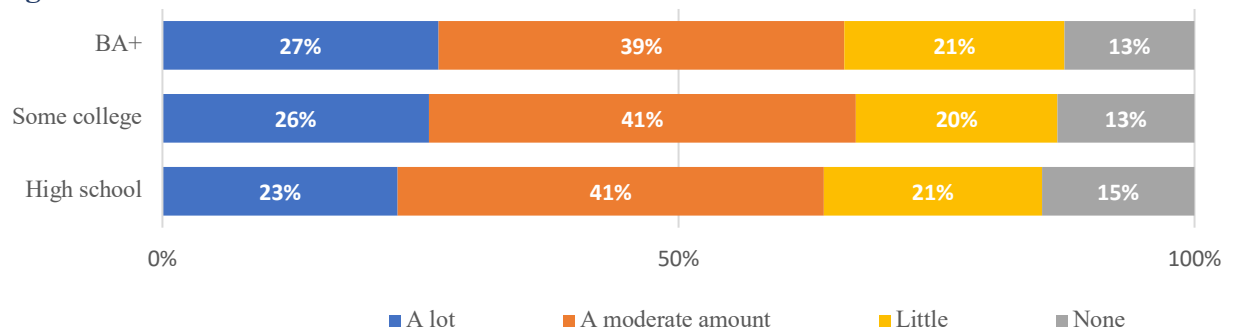
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After the study’s participants specified the question they’d most like to ask an expert about climate change, they were sent to NASA’s climate change website and told to search for the answer to their question.

Results show that education was unrelated to participants’ success in finding the information they were searching for – everyone was able to negotiate the website successfully.

- People with less education said they’d found as much information as those with more education (Figure 1), and they were equally likely to say the information fully answered their question (Figure 2).
- Those with less education were slightly less likely, however, to say that the information was useful (Figure 3;  $p \leq .10$ ).
- These results show that the organization and design of the website are not barriers to information searches by less educated visitors.

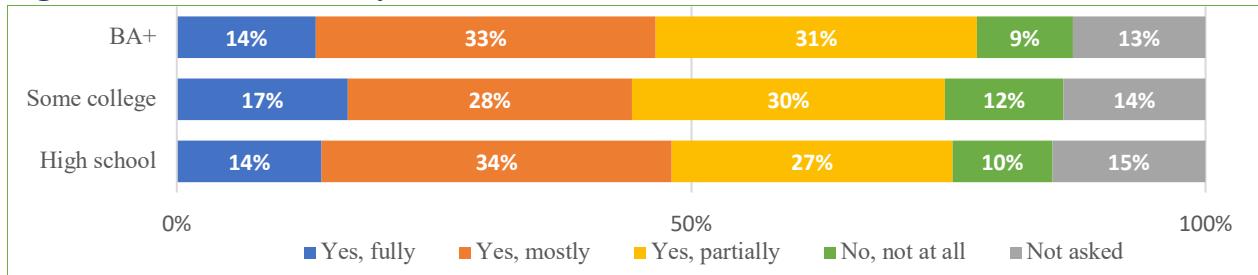
**Figure 1. Amount of Information Found**



*Question wording: How much information on NASA’s website did you find about your question: [insert question?]*

*Note: Differences were not significant, using an analysis-of-variance test, controlling for age, gender, race (White/other), and income.*

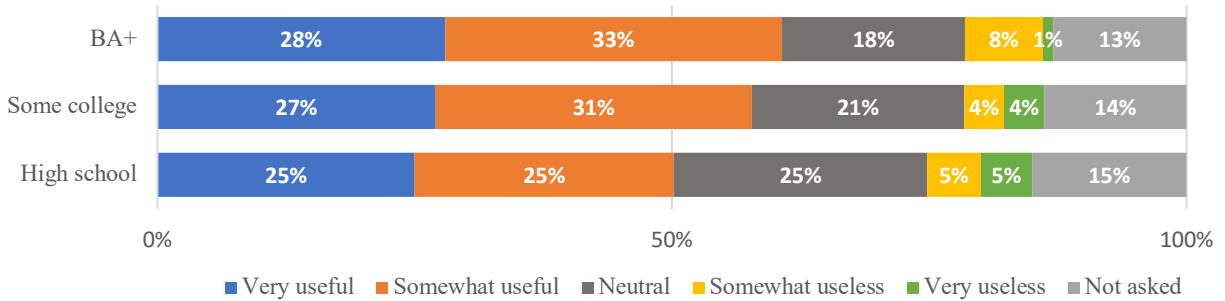
**Figure 2. Information Fully Answered Question**



*Question wording: Did the information on NASA's website that you found fully answer your question: [insert question]?*

*Note: Differences were not significant, using an analysis-of-variance test, controlling for age, gender, race (White/other), and income. Respondents who said they found no information on their question were not asked this question.*

**Figure 3. Usefulness of Information Found**



*\*p ≤ 10, using an analysis-of-variance test, controlling for age, gender, race (White/other), and income.*

*Question wording: How useful was the information on NASA's website that you found about your question: [insert question]?*

*Note: Respondents who said they found no information on their question were not asked this question.*

### III. REACTIONS TO NASA’S CLIMATE CHANGE WEBSITE

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#### F. WEBSITE EVALUATIONS

Following their visit to NASA’s climate change website, participants were asked to evaluate the site on a number of dimensions. As shown in Table 2, all visitors to the site, regardless of educational level, evaluated it positively: responses averaged above 5 (out of 7) on all measures in all three education groups, indicating positive assessments of the website. However, those with more education rated it more highly than those with less education. Participants with more education:

- Had higher trust in the website, and found the imagery more engaging ( $p \leq .001$  for both comparisons<sup>3</sup>);
- Were more likely to say the site was easy to use and they enjoyed looking at it; they had more confidence that the site is accurate, and they said the information on the site was effective for informing people like them about climate change ( $p \leq .01$  on all four comparisons);
- Were more likely to say that the text was easy to understand, and that the images helped them understand climate change ( $p \leq .05$  for both comparisons).
- Were slightly more likely to say that they learned a lot from visiting the website, and that the information at the site helped them understand climate change ( $p < .10$  for both comparisons).

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<sup>3</sup>All testing reported on this page used analysis-of-variance tests, controlling for age, gender, race (White/other), and income.

**Table 2. Website Evaluations**

	<b>BA+</b>	<b>Some college</b>	<b>High school</b>
I found the website easy to use.**	6.00	5.76	5.71
The images on the website are engaging.***	6.00	5.58	5.55
The text on the website is easy to understand.*	5.89	5.64	5.61
I enjoyed looking at this website.**	5.76	5.40	5.38
I feel confident that the information on this website is accurate.**	5.68	5.25	5.27
I trust this website.***	5.66	5.23	5.21
The information on the website is effective for informing people like me about climate change.**	5.49	5.22	5.26
The website fits with my image of (how I think about) NASA.	5.46	5.26	5.16
The information on the website helped me understand climate change.†	5.45	5.20	5.22
The images on the website helped me understand climate change.*	5.45	5.17	5.27
I learned a lot from visiting this website.†	5.39	5.16	5.25

† $p \leq .10$ ; \* $p \leq .05$ ; \*\* $p \leq .01$ ; \*\*\* $p \leq .001$ , using analysis-of-variance tests, controlling for age, gender, race (White/other), and income.

Question wording and scale: Now, thinking about the NASA global climate change website overall, how much do you agree or disagree with each of the following statements? Scale: 1=strongly disagree to 7=strongly agree.



## G. FUTURE INFORMATION-SEEKING ON CLIMATE CHANGE

While visitors with less education evaluated the website slightly less positively than those with more education, this did not translate into lower intentions to seek additional information on climate change in the future (Table 3).

- People with less education were as likely as those with more education to say they were going to visit the NASA climate website again and/or to seek additional climate change information elsewhere.

	<b>BA+</b>	<b>Some college</b>	<b>High school</b>
Likelihood of visiting website again	3.45	3.28	3.43
Likelihood of seeking additional information about climate change from other sources	3.28	3.17	3.29

*Question wording and scale: (1) How likely are you to visit this website on your own time? (2) How likely are you to seek additional information about climate change from any other source in the next few days or weeks? Scale: 1=definitely will not to 5=definitely will.*

*Note: Differences were not significant, using analysis-of-variance tests, controlling for age, gender, race (White/other), and income.*

## H. SUBSCRIPTIONS TO NASA’S NEWSLETTER

Although respondents’ plans to seek more information in the future did not differ by education, those with more education were more likely to sign up to receive the NASA newsletter.

BA+	21%
Some college	18%
High school	12%

*p* ≤ .05, using analysis-of-variance test, controlling for age, gender, race (White/other), and income

*Question wording: If you would like to sign up for NASA’s Global Climate Change monthly newsletter, please visit the website below: <http://climate.nasa.gov/ccNewsletter/>*

## IV. IMPACT OF THE WEBSITE ON PERCEPTIONS OF NASA

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All questions in the prior sections of this report were asked of the entire sample either before or after their visit to the climate change website. The remainder of the report details results from questions that were asked of half the participants before they visited the website, and half after the site visit (a split sample). A few questions were also asked of all participants twice – both before and after their visit to the website (repeated measures).

The split sample and repeated measures allow us to assess (1) the extent to which website visitors bring different levels of understanding of climate change and NASA’s climate research to the site, and (2) whether visiting the site reduces existing educational differences, closing knowledge gaps between people with more or less education. More specifically, the results below describe:

- (1) *Education*: Differences between the education groups that existed before and/or after the website visit;
- (2) *Website Impact*: The effects of the website visit on the participants overall; and
- (3) *Differences in Website Impacts by Education*: Differences in the website visit’s effects on different education groups; i.e., whether one group was significantly more affected by the website visit than other groups (for example, the degree to which the website visit did or did not close knowledge gaps allowing the less-educated audience to catch up to the knowledge levels held by more educated members).

To assist readers in understanding the results, results are numbered below to indicate which type of effect is being reported; i.e., (1) education differences before and after visiting the website; (2) impacts of the website on the entire sample; (3) differential effects of the website on different education groups.

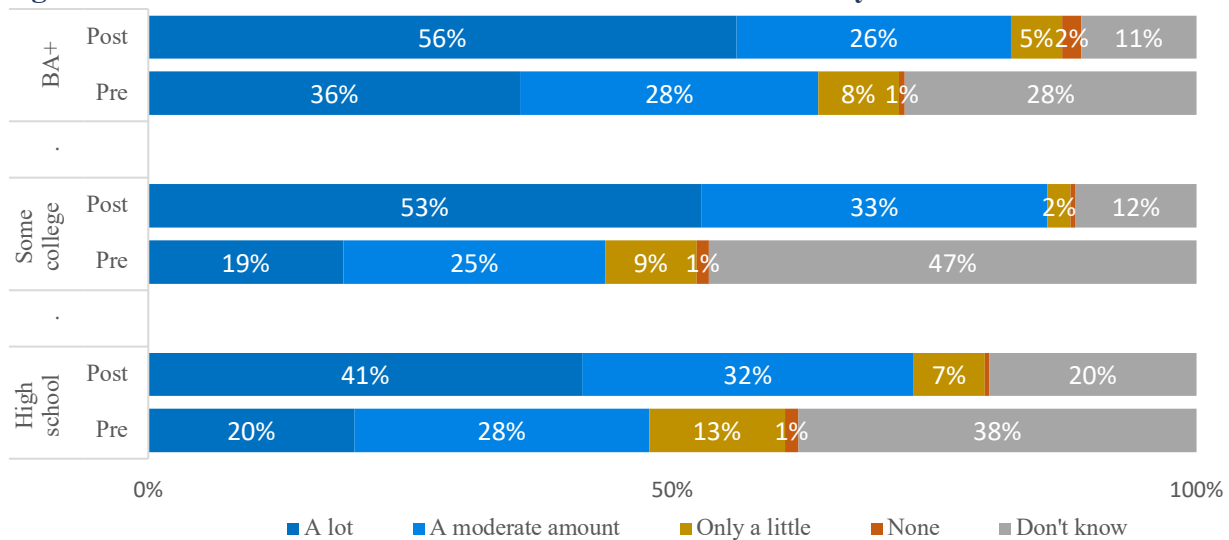
## I. AMOUNT OF CLIMATE RESEARCH CONDUCTED BY NASA

In this section we report the results for four questions that assess the degree to which Americans are aware of the climate science conducted by NASA, and trust NASA’s science and scientists.

In the first question, we asked participants to estimate how much climate change research NASA conducts (Figure 4).

- (1) *Education*: Before visiting the website, educational differences were apparent among the three groups. People with more education made higher estimates of the amount of climate research NASA engages in. After visiting the site, educational differences were no longer significant; i.e., people with less education had caught up to the understanding held by the more educated group (*Education pre-site visit:  $p \leq 0.05$ ; post-site visit:  $p = n.s.$* ).
- (2) *Website Impact*: Visiting the website led to large increases in estimates of the amount of climate research conducted by NASA among all participants ( *$p \leq 0.001$* ).
- (3) *Differences in Website Impacts by Education*: The impact of the website visit varied widely by education group:
  - Among participants who had some college, the proportion that thought NASA conducts “a lot” of climate research was 34 percentage points higher among those who had visited the website (19% pre site visit and 54% post visit).
  - The difference was +20 percentage points among the college graduates, and +21 points among the high school group. Thus, all three groups were significantly affected by visiting the site, but the group with some college courses was most affected.

**Figure 4. Perceived Amount of Climate Research Conducted by NASA**



*Question wording: How much scientific research on climate change does NASA conduct?*

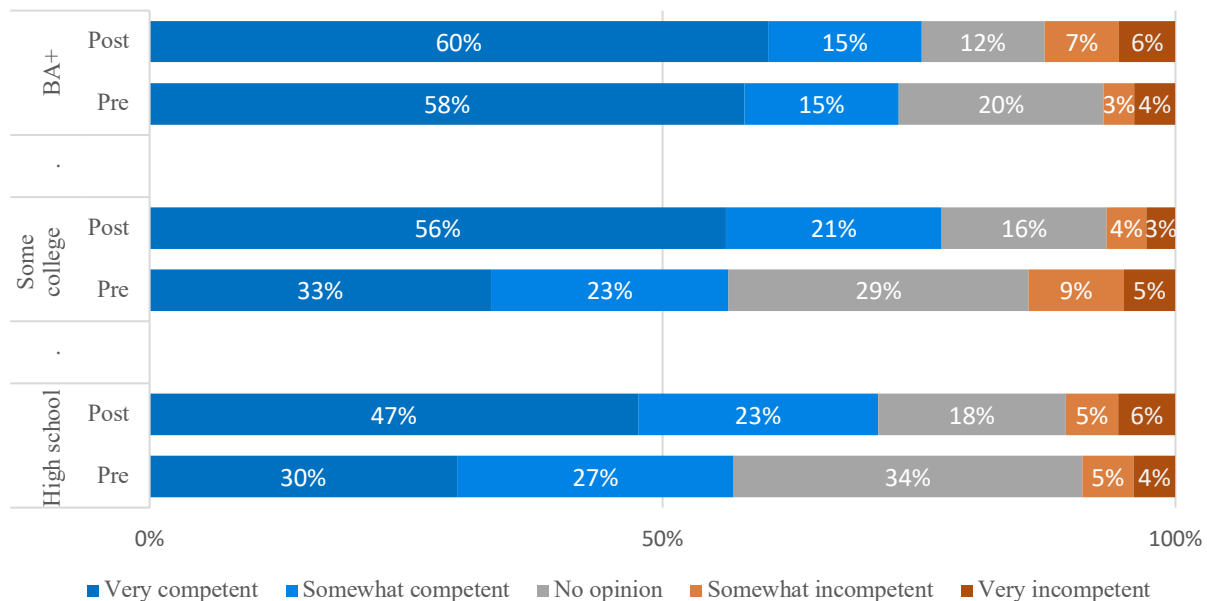
*Note: Tested using chi-square tests.*

## J. COMPETENCY OF NASA SCIENTISTS

Differences in the education groups' perceptions of the competency of NASA scientists were reduced by visiting the website (Figure 5):

- (1) *Education*: The groups with more education had higher perceptions of the competence of NASA scientists before visiting the website, but after visiting the website educational differences were only marginally significant (*Education pre-site visit:  $p \leq .05$ ; post-site visit:  $p < .10$* ).
- (2) *Website Impact*: Perceptions of the competency of NASA's scientists were significantly higher following the website visit among all participants ( $p < .001$ ).
- (3) *Differences in Website Impacts by Education*: Visiting the website had a greater impact on the participants with less education ( $p \leq .01$ ).
  - Among college graduates, the proportion saying NASA's scientists are highly competent was two percentage points higher if they'd visited the website; among those with some college, the difference was 23 points; and among those with a high school education, the difference was 17 points.
  - In spite of the very small changes among college graduates, they still made the highest estimates of NASA scientists' competency after the website visit, i.e., 60 percent said NASA's scientists are highly competent, as compared to 47 percent in the high school group and 56 percent in the group with some college.

**Figure 5. Perceived Competency of NASA Scientists**



*Question wording: On average, how competent are the climate change research scientists at NASA?*

*Note: Testing used analysis-of-variance, controlling for age, gender, race (White/other) and income.*

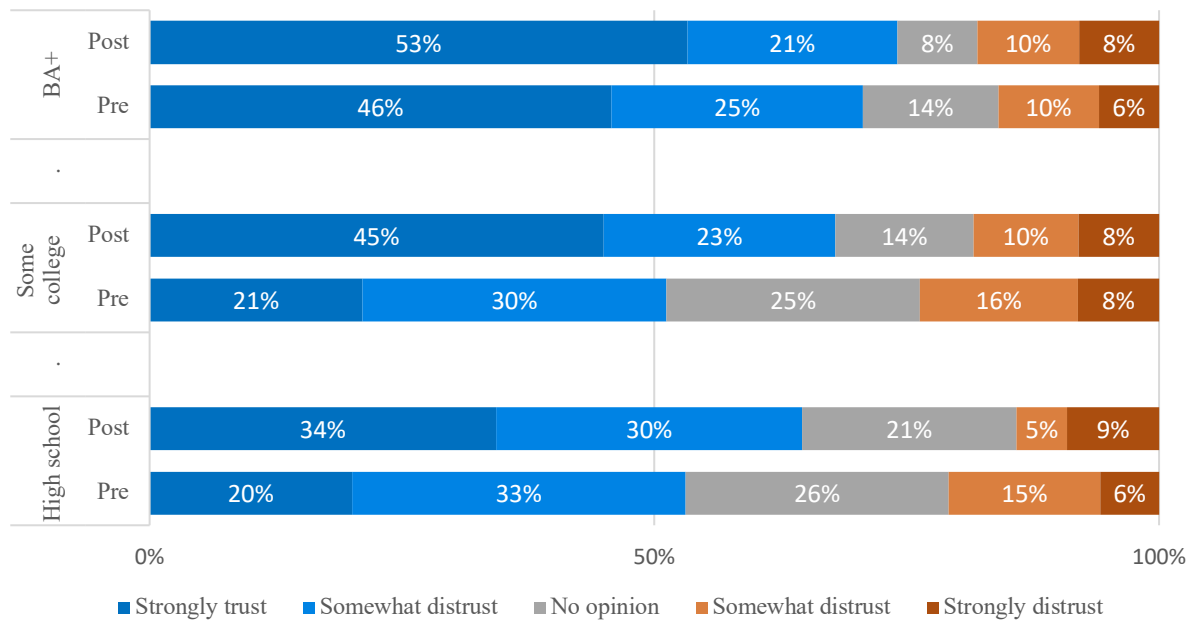


## K. TRUST IN NASA’S CLIMATE CHANGE RESEARCH

Trust in NASA’s climate research increased among people with less education after visiting the website, and the gaps between the three educational groups diminished (Figure 6):

- (1) *Education*: Those with more education had greater trust in NASA’s climate research, before the website visit; after the website visit, this was no longer the case (*Education pre-site visit:  $p \leq 01$ ; post-site visit:  $p = n.s.$* ).
- (2) *Website Impact*: Visitors to the website expressed much greater trust in NASA’s climate change research than those who had not visited the site ( $p < .001$ ).
- (3) *Differences in Website Impacts by Education*: Participants with less education gained significantly more trust in NASA’s research than those with more ( $p \leq .05$ ).

**Figure 6. Trust in NASA’s Climate Research**

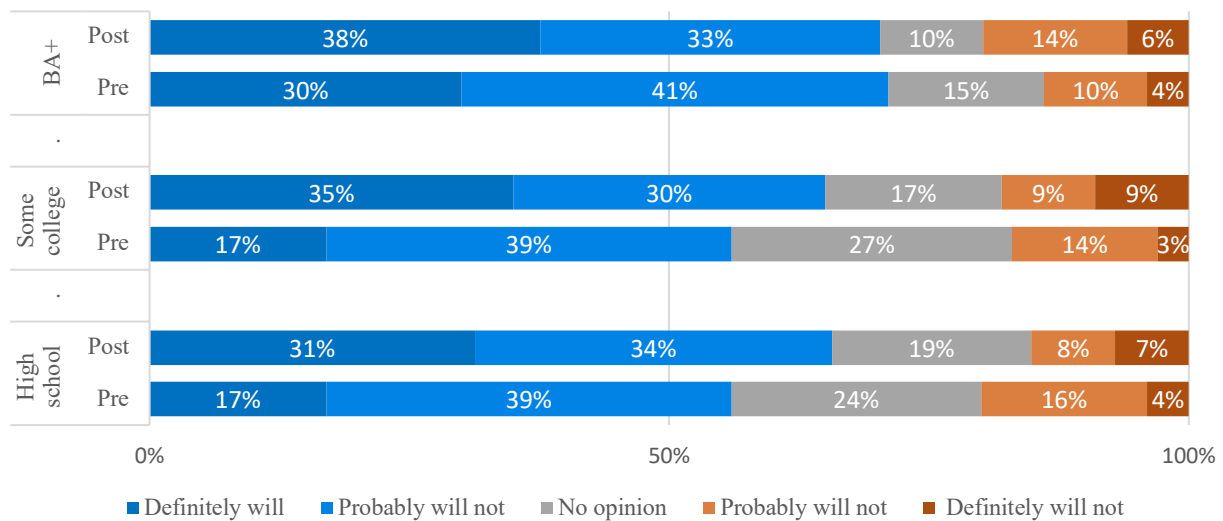


*Question wording: How much do you trust the climate change scientific research conducted at NASA?  
 Note: Testing used analysis-of-variance, controlling for age, gender, race (White/other) and income.*

Trust that NASA will use its research to benefit the U.S. was also significantly affected by the website visit (Figure 7).

- (1) *Education*: Trust differed among education groups before respondents visited the website; those with more education trusted NASA’s use of its research more than those with less education. Following the website visit, however, the educational groups no longer differed significantly (*Education pre-site visit:  $p \leq .05$ ; post-site visit:  $p = n.s.$* ).
- (2) *Website Impact*: Visiting the website significantly increased trust that NASA will use its research to benefit the U.S. ( $p \leq .01$ ).
- (3) *Differences in Website Impacts by Education*: The groups with less education again tended to change more than those with more education, though the difference was only marginally significant ( $p = .06$ ).

**Figure 7. Trust that NASA Will Use Research to Benefit U.S.**



*Question: To what degree do you believe NASA will use the findings from its climate change scientific research in ways that benefit America?*

*Note: Testing used analysis-of-variance, controlling for age, gender, race (White/other) and income.*

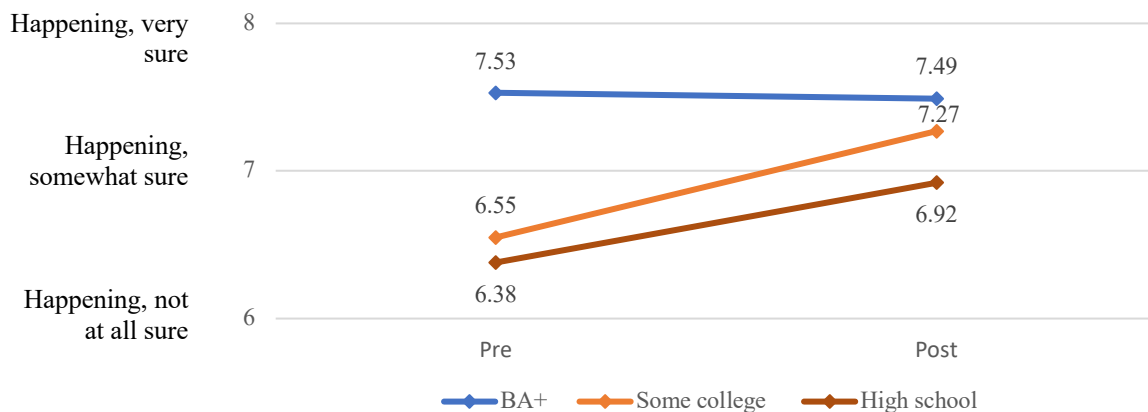
## V. IMPACT OF THE WEBSITE ON CLIMATE CHANGE KNOWLEDGE AND ATTITUDES

Visiting the website had a smaller impact on participants' climate change knowledge and attitudes than on their perceptions of NASA and its research. Nonetheless, impacts of the website visit are apparent: knowledge gaps associated with education shrank on several key indicators, while increases in understanding of climate science occurred across education levels.

### L. CERTAINTY THAT CLIMATE CHANGE IS HAPPENING

- (1) *Education*: Certainty that climate change is happening was higher among the groups with more education, regardless of whether they had visited the website or not (Figure 8; *Education pre-site visit:  $p \leq .001$ ; post-site visit:  $p \leq .001$* ).
- (2) *Website Impact*: Overall, the website visit led to significant increases in certainty that climate change is happening ( $p \leq .05$ ).
- (3) *Differences in Website Impacts by Education*: The interaction between education group and website visit was significant ( $p \leq .01$ ), reflecting the fact that participants with less education were more affected by the site visit than college graduates were.<sup>4</sup> Thus, visiting the website fostered greater certainty that climate change is happening among visitors with less education, although they remained less certain than visitors with college degrees.

**Figure 8. Certainty that Climate Change Is Happening**



*Note: Figure does not include the full scale, which ranges from 1 to 9. See coding below.*

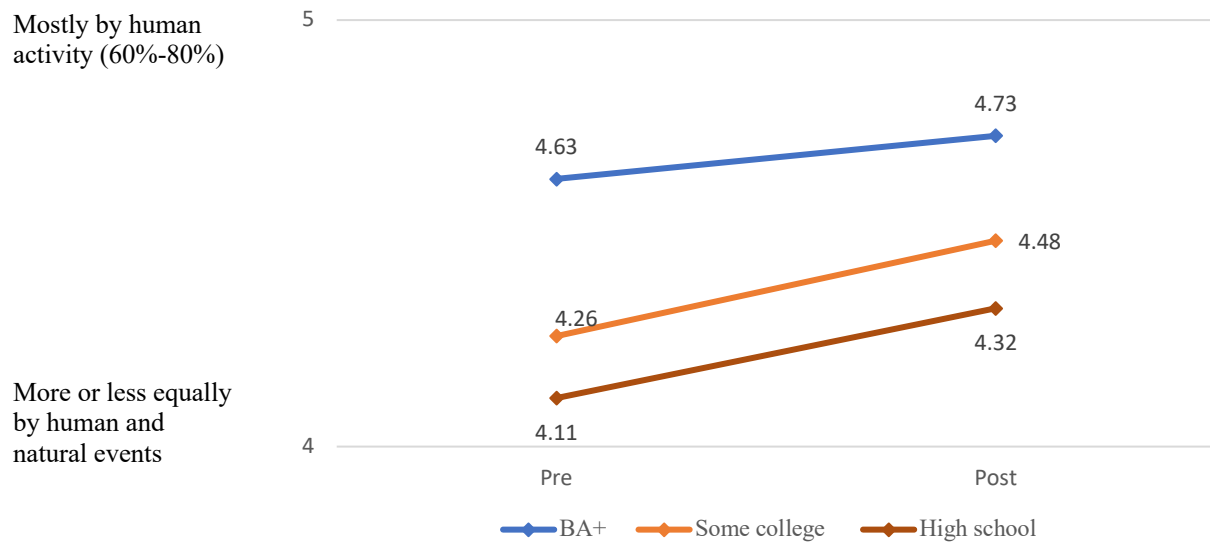
*Question wording: Responses to two questions were combined: (1) Do you think that climate change is happening? [Yes; No; Don't know], and (2) How sure are you that climate change is/is not happening? [Not at all sure; Somewhat sure; Very sure; Extremely sure]. Measures were combined into a 9-point scale: 1=Extremely sure climate change is not happening; 5= Don't know; to 9=Extremely sure climate change is happening.*

<sup>4</sup> Testing used analysis-of-variance, controlling for age, gender, race (White/other) and income.

## M. UNDERSTANDING THAT HUMAN ACTIVITIES ARE CAUSING CLIMATE CHANGE

- (1) *Education*: Participants with more education were more likely to recognize that climate change is caused by human activities, both before and after visiting the NASA website (Figure 9; *Education pre-site visit:  $p \leq .01$ ; post-site visit:  $p \leq .01$* ).
- (2) *Website Impact*: Overall, the website visit led to a significant increase in understanding that human activities are causing climate change ( $p \leq .05$ ).
- (3) *Differences in Website Impacts by Education*: The knowledge gap between the three groups shrank somewhat in response to the visit, with more change among the two groups with less education; this difference was not statistically significant, however.<sup>5</sup>

**Figure 9. Understanding that Human Activity Is Causing Climate Change**



*Note: Figure does not include the full scale, which ranges from 1 to 6. See coding below.*

*Question wording for human causation: Do you think that the climate change that has occurred over the past 50 years has been caused...? Six-point response scale: (1) There has been no climate change; (2) Largely or entirely by natural events (80%-100%); (3) Mostly by natural events (60%-80%); (4) More or less equally by human and natural events; (5) Mostly by human activity (60%-80%); (6) Largely or entirely by human activity (80%-100%).*

<sup>5</sup>Testing used analysis-of-variance, controlling for age, gender, race (White/other) and income.



## N. UNDERSTANDING OF CLIMATE SCIENCE

A series of six assertions about the mechanisms underlying climate change and the endurance of its impacts assessed the degree to which participants understood the roles of fossil fuels, carbon dioxide and greenhouse gases in causing climate change (Table 5).

- (1) *Education*: People with more education had significantly higher understanding of climate science, both before and after visiting the website on four of the six measures. Those with more education were more likely to understand that:
  - Burning oil and other fossil fuels produces CO<sub>2</sub> (*pre: p<.001; post: p<.001*).
  - Greenhouse gases are like a blanket around the Earth (*pre: p<.001; post: p<.001*).
  - Reducing our emissions will not return the climate to its former stability (*pre: p<.001; post: p<.01*).
  - CO<sub>2</sub> traps heat in the atmosphere (*pre: p<.001; post: p<.01*).
  - Prior to visiting the website, people with more education were no more likely to understand that industrial activities have increased, rather than decreased, the concentration of greenhouse gases in the atmosphere; following the visit, however, education differences were apparent, largely because the high school group was *less* likely to respond correctly than they had in the pre-test (*pre: n.s.; post: p<.001*).
  - Recognition that there is more CO<sub>2</sub> in the atmosphere now than at any other time over the last 400,000 years did not differ by education either before or after visiting the website.
- (2) *Website Impact*: Overall, the website visit led to significant increases in knowledge on four of the six measures.
- (3) *Differences in Website Impacts by Education*: Overall, visiting the website did not significantly change the knowledge gap between educational groups; it neither decreased nor increased, with similar knowledge gains among people with the most and least education. Participants with some college courses made somewhat larger gains than college graduates or people with high school educations, but the difference was not significant.

**Table 5. Understanding of Climate Science**

		<b>Pre</b>	<b>Post</b>	<b>Difference</b>
T: Burning oil and other fossil fuels produces CO <sub>2</sub> (carbon dioxide).	BA or more	4.62	4.54	-.08
	Some college	4.08	4.27	+.19
	High school	3.88	3.87	-.01
F: Industrial activities have reduced the concentration of greenhouse gases in Earth's atmosphere.	BA or more	3.61	3.73	+.12
	Some college	3.28	3.56	+.28
	High school	3.18	3.05	-.13
T: Greenhouse gases are like a blanket around the earth, holding in heat. ***	BA or more	4.18	4.33	+.15
	Some college	3.76	3.95	+.19
	High school	3.63	3.84	+.21
F: If we take action now to reduce future climate change, the climate will go back to normal, and we won't have to adapt to any changes in the climate.**	BA or more	3.72	3.89	+.17
	Some college	3.41	3.68	+.27
	High school	3.20	3.23	+.03
T: CO <sub>2</sub> (carbon dioxide) traps heat in Earth's atmosphere.**	BA or more	4.26	4.25	-.01
	Some college	3.64	3.96	+.32
	High school	3.61	3.85	+.24
T: There is more CO <sub>2</sub> (carbon dioxide) in Earth's atmosphere now than at any other time over the last 400,000 years.***	BA or more	3.73	4.01	+.28
	Some college	3.56	3.77	+.21
	High school	3.49	3.77	+.28
Correct Responses Mean***	BA or more	4.02	4.13	+.11
	Some college	3.62	3.86	+.24
	High school	3.50	3.60	+.10

\*\* $p \leq .01$ ; \*\*\* $p \leq .001$  for website visit differences.

Question and response scale: To what extent do you think each of the following statements is true or false?

1=Definitely false; 2=Probably false; 3=Don't know; 4=Probably true; 5=Definitely true. The scale direction was reversed on the two false items, such that higher scores indicate higher understanding of climate science on all six measures.

Note: All testing used analysis-of variance, controlling for age, gender, income and race (White/other).

## O. AWARENESS OF THE HARMFULNESS OF CLIMATE CHANGE

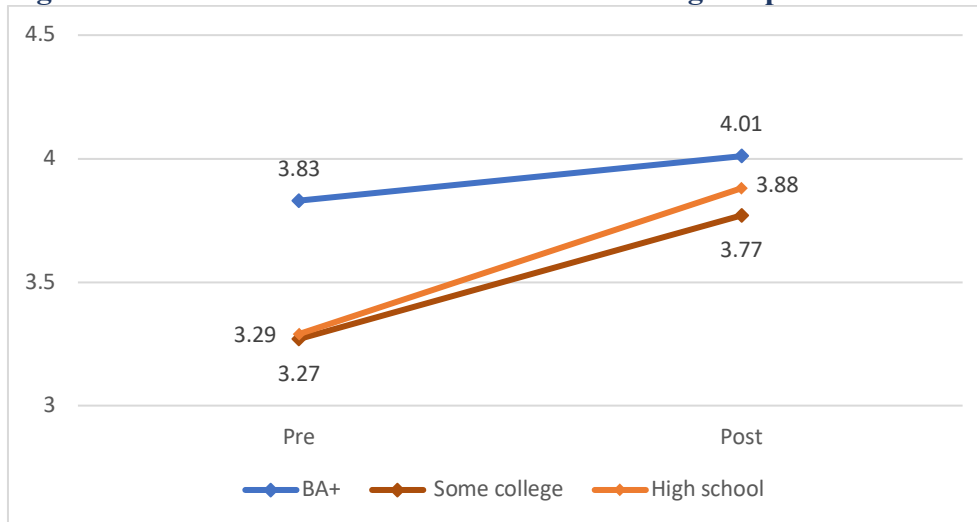
### *KNOWLEDGE ABOUT CLIMATE CHANGE IMPACTS*

Knowledge of the impacts of climate change was assessed by asking respondents to identify environmental threats that are evidence of climate change from a list of eight possible threats. Five of these were actual climate change impacts, while three were unrelated.<sup>6</sup>

Figure 10 shows differences in correct identification of impacts in each of the pre- and post-visit education groups.

- (1) *Education*: Knowledge differences between education groups diminished after spending time at the website.
  - a. *Before* visiting the website, awareness of the impacts of climate change was higher among people with college degrees ( $p < .05$ ).
  - b. *After* visiting the website, the difference between educational groups was reduced, but still marginally significant ( $p \leq .10$ ).
- (2) *Website Impact*: Visitors to the website had significantly higher awareness of the impacts of climate change ( $p < .001$ ).
- (3) *Differences in Website Impacts by Education*: The changes among the high school and some college groups associated with the website visit were larger than the changes among the BA+ group, although tests of the magnitude of the differential effects were not statistically significant.

**Figure 10. Correct Identification of Climate Change Impacts**



*Note: Figure does not include the full scale, which ranges from 0 to 5. The means are the average number of climate change impacts accurately identified by participants. All testing used analysis-of variance, controlling for age, gender, income and race (White/other).*

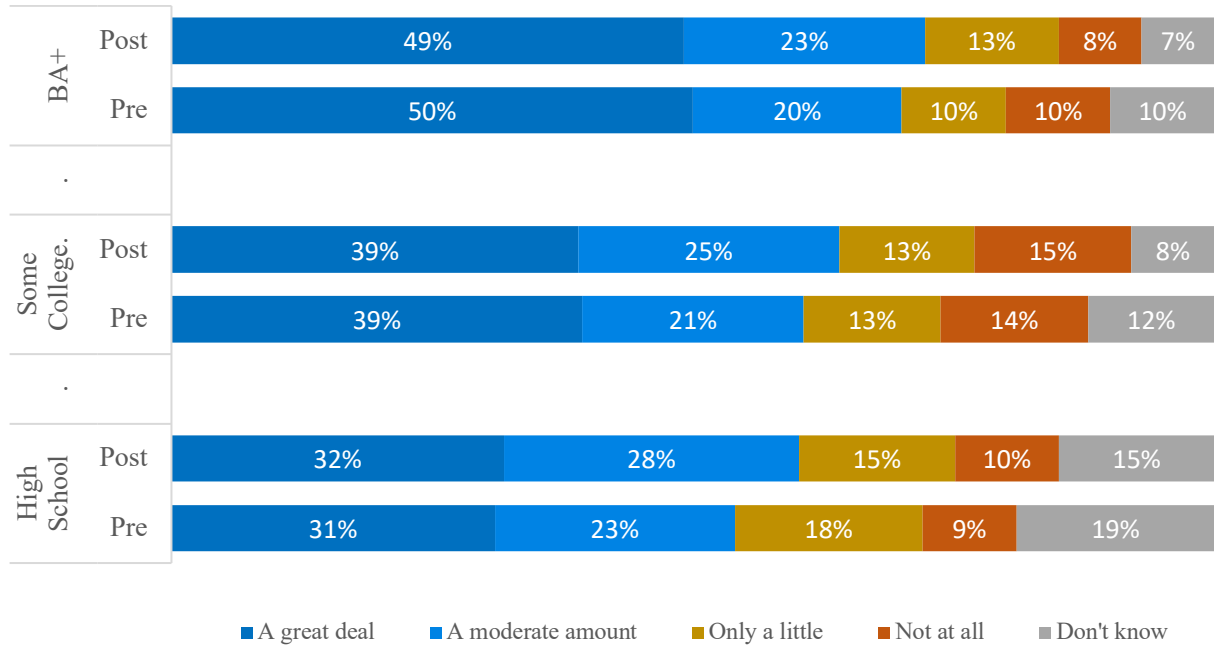
<sup>6</sup> The five impacts were: extreme weather events increasing; glaciers, ice sheets and sea ice decreasing; global temperatures increasing; ocean acidity increasing; and oceans becoming warmer.

*PERCEPTIONS OF THE HARM TO SELF AND OTHERS<sup>7</sup>*

Respondents with more education perceived climate change as more harmful, and prior to the website visit, close to a fifth of the high school group had no idea how much harm climate change will cause (Figures 11 and 12).

- (1) *Education*: Respondents with more education viewed climate change as more harmful to future generations and to themselves personally than did the groups with less education, both before and after the website visit. (*Education differences pre-site visit for future generations and personal harm:  $p \leq .001$ ; post-site visit for future generations ( $p \leq .001$ ; post-site visit for personal harm:  $p \leq .01$ ).*
- (2) *Website Impact*: Visiting the website significantly reduced the proportion of respondents who said they don't know how much harm climate change will cause to future generations or to themselves, and increased perceptions of the harm climate change causes ( *$p \leq .001$  for both comparisons).*
- (3) *Differences in Website Impacts by Education*: The website visit affected all education groups similarly.

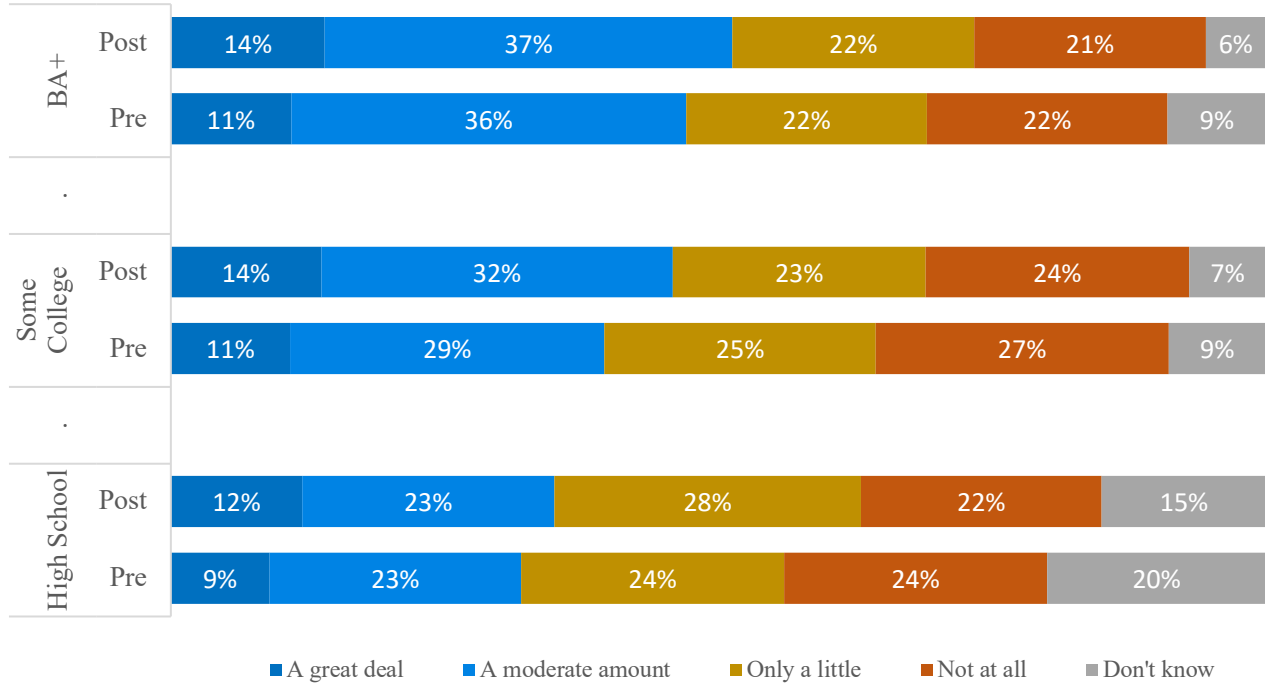
**Figure 11. Harm to Future Generations from Climate Change**



*Question wording: How much do you think climate change will harm future generations of people?  
 Note: All testing used chi-square tests.*

<sup>7</sup> Questions about the harmfulness of climate change were asked of all respondents twice, both before and after they visited the website. Hence, the results in Figures 10 and 11 show how the same respondents changed after they visited the website, rather than comparing respondents who had visited the website to those who had not.

**Figure 12: Personal Harm from Climate Change**



*Question wording: How much do you think climate change will harm you personally?*

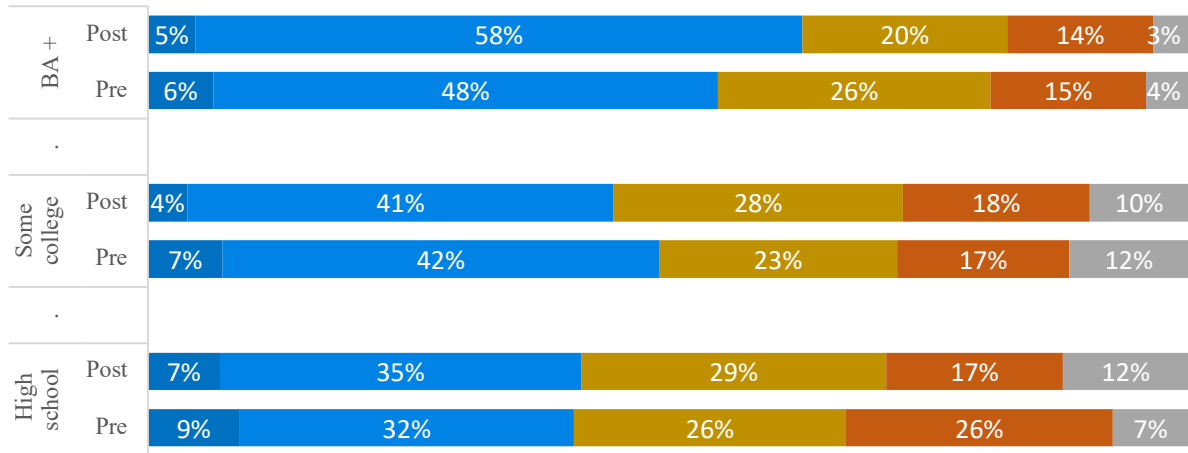
*Note: All testing used chi-square tests.*

## P. PERCEPTIONS THAT CLIMATE CHANGE IS SOLVABLE

Visiting the NASA website did not change visitors’ perceptions of the solvability of climate change (Figure 13). Regardless of whether they had visited the website, pluralities of all education groups said humans could reduce climate change, but it’s unclear whether we will.

- (1) *Education*: Both before and after the website visit, participants with more education were more likely to say that it’s possible for humans to reduce climate change, but it’s unclear whether we will do so (*Education pre-site visit:  $p \leq .05$ ; post-site visit:  $p \leq .01$* ).
- (2) *Website Impact*: The website visit did not significantly change views of the solvability of climate change.
- (3) *Differences in Website Impacts by Education*: Although the differences were not statistically significant, the education groups appeared to respond differently to their website visit.
  - Participants with high school educations were nine percentage points less likely to say that humans cannot reduce climate change if they had visited the website (26% pre; 17% post).
  - College graduates who had visited the website were ten percentage points more likely to say that humans could reduce climate change, but it’s unclear whether we will (48% pre; 58% post).

**Figure 13. Perceived Solvability of Climate Change**



- Humans can reduce climate change, and we are going to do so successfully
- Humans could reduce climate change, but it's unclear at this point whether we will do what's needed
- Humans could reduce climate change, but people aren't willing to change their behavior, so we're not going to
- Humans can't reduce climate change, even if it is happening
- Climate change isn't happening

*Question wording: Which of the following statements comes closest to your view?*

*Note: All testing used analysis-of-variance, controlling for age, gender, income and race (White/other).*

## Q. AWARENESS OF THE SCIENTIFIC CONSENSUS ON CLIMATE CHANGE

Recognition of the scientific consensus on climate change has been called a “gateway belief” because it leads people to become more certain that human-caused climate change is happening, and to worry more about the issue.<sup>8</sup>

To assess understanding of the consensus, respondents were asked to estimate the proportion of scientists who think that human-caused climate change is happening, using a slider bar with a scale from 0% to 100%.

The results in Table 6 show that:

- (1) *Education*: Respondents with a college degree made higher estimates of the scientific consensus, both before and after visiting the website (*Education pre-site visit:  $p \leq .01$ ; post-site visit:  $p \leq .05$* ).
- (2) *Website Impact*: Visiting the website slightly increased perceptions of the scientific consensus ( *$p < .10$* ).<sup>9</sup>
- (3) *Differences in Website Impacts by Education*: No interactions between website visit and education group were detected.

Table 6. Consensus Perceptions		
	Pre	Post
BA or more	84.3%	85.3%
Some college	73.0%	76.0%
High school ns	73.7%	74.1%

*Question wording: To the best of your knowledge, what percentage of climate scientists think that human-caused global warming is happening? Please click on the slider bar below to indicate your answer. You can slide the indicator on the bar anywhere from 0% (no climate scientists think it's happening) to 100% (all climate scientists think it's happening). [slider bar with: 0% (None), 50% (Half), and 100% (All); check box for “don't know.”*  
*Note: All testing used analysis-of variance, controlling for age, gender, income and race (White/other).*

<sup>8</sup> van der Linden, S., et. al. (2015). The scientific consensus on climate change as a gateway belief: Experimental evidence. *PloS one*, 10(2), e0118489

<sup>9</sup> In the topline report from these data, we reported a significant difference between the pre- and post-test groups on consensus perceptions ( $p < .05$ ). The discrepancy between those results and these is due to the addition of controls in the current analysis. (See Myers, T., Roser-Renouf, C., & Maibach, E. (2020). *Americans' Views of Climate Change, NASA, and NASA's Climate Website*. George Mason University. Fairfax, VA: Center for Climate Change Communication. Available at: [https://www.climatechangecommunication.org/all/nasa\\_adults2018\\_1/](https://www.climatechangecommunication.org/all/nasa_adults2018_1/). DOI: 10.13021/ve4g-8356, p. 27).



## METHODS

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In February of 2018, we employed YouGov, a sample provider, to survey a nationally representative cohort sample of adult Americans. The survey was fielded from February 5th to February 28th; 1,150 adults, aged 18 and older, responded, for a completion rate of 68.4 percent, and a margin of sampling error of 2.5% with 95% confidence. The average age of participants was 47.

Following a series of initial survey questions, survey participants were asked what they'd most like to ask an expert about climate change; they were then sent to the NASA climate change website and instructed to search for the answer to their question. The median time spent at the site was six minutes, 25 seconds.<sup>10</sup>

Half the respondents were asked a series of questions about NASA and climate change prior to their visit to the website (N=569), and half were asked these questions following the visit (N=581). The questions about the harm caused by climate change shown on pp. 23-24 were asked of all participants both before and after the site visit (N=1,150), and the scientific consensus question included three conditions, only two of which are reported here (p. 26; pre N= 367; post N= 369). See the main report for the full results.

The sample propensity weighting developed by YouGov to create a nationally representative data set has shaped the data analyses in this report.<sup>11</sup> We used the propensity weights to produce the means and frequencies. However, we had to make some analytical decisions about how to apply the weights for estimates of variance, which are central to testing for significant group differences. The primary difficulty was that education was both a main variable of interest in predicting the outcomes and also part of the sampling and weighting schema. As a result, testing for education differences with data weighted by education (as well as other demographics) would in essence be entering education twice into the same analysis, and it is not possible to estimate in SPSS, the program we used for analysis. Hence, the means and frequencies reported in this study use weighted data, but the significance testing was conducted using analysis-of-variance testing with the unweighted data and controlling for the variables that were originally used in weighting the sample. This procedure was followed for all ordinal variables; for nominal variables, which cannot be analyzed using analysis-of-variance, we conducted chi-square tests with the unweighted data, but were unable to use the controls.

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<sup>10</sup> The three education groups did not vary significantly in the length of time they spent at the website (median time spent at the website: high school = 6:23; some college = 6:42; BA+ = 6:11).

<sup>11</sup> YouGov interviewed 1313 respondents who were then matched down to a sample of 1150 to produce the final dataset. The respondents were matched to a sampling frame on gender, age, race, and education. The frame was constructed by stratified sampling from the full 2016 American Community Survey (ACS) 1-year sample with selection within strata by weighted sampling with replacements (using the person weights on the public use file). The matched cases were weighted to the sampling frame using propensity scores. The matched cases and the frame were combined and a logistic regression was estimated for inclusion in the frame. The propensity score function included age, gender, race/ethnicity, years of education, and region. The propensity scores were grouped into deciles of the estimated propensity score in the frame and post-stratified according to these deciles. The weights were then post-stratified on 2016 Presidential vote choice, and a four-way stratification on gender, age, race, and education, to produce the final weights.

# QUESTIONNAIRE

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You are being invited to participate in a survey being conducted by George Mason University. Please take a moment to read through the following information and to decide whether you want to participate in our survey. Clicking on the button at the bottom of the page will take you to the start of the survey.

## RESEARCH PROCEDURES

We are interested in learning how Americans think about science and scientists. If you agree to help with this research, you will be asked to complete a survey that will take you 20 minutes, and will include visiting a website and reporting back your impressions of the website. We will be able to identify which parts of that website you visit.

## RISKS

There are no foreseeable risks for taking part in this study.

## BENEFITS

There are no direct benefits to you as a participant.

## CONFIDENTIALITY

The data in this study will be confidential. Each participant will be given a study number so that his or her name will not be included in the data set, or summary reports.

## PARTICIPATION

To encourage you to participate, YouGov will provide you points for your participation. Your participation is voluntary, you need not answer any question that you prefer not to answer, and you may withdraw from the study at any time and for any reason. If you decide not to participate or to withdraw from the study, however, you will not receive compensation.

## CONTACT

Professor Teresa Myers at George Mason University is conducting this research. She can be reached at [tmyers6@gmu.edu](mailto:tmyers6@gmu.edu) if you have questions or wish to report a research-related problem. You may also contact the George Mason University Office of Research Integrity and Assurance at [irb@gmu.edu](mailto:irb@gmu.edu) if you have questions or comments regarding your rights as a participant in the research.

This research has been reviewed according to George Mason University procedures governing your participation in this research.

## CONSENT

1. By selecting "Yes" below, you are indicating that you have read this form and agree to participate in this study.
  - Yes
  - No

2. Thinking about science news – how often do you read, watch or listen to news about science?
- Nearly every day
  - A few times a week
  - A few times a month
  - Less often

3. Which statement best describes how you get science news?
- I mostly get science news because I'm looking for it
  - I mostly get science news because I happen to come across it

4. Now we would like to ask you about some reasons for why scientists might choose to communicate with the public.

How **important** do you think each of the following reasons is **to scientists** when they choose to communicate with the public? [PROGRAMMING NOTE: Response Options: 7 radio buttons, with labels at the first (Not at all important), fourth (Moderately important); and seventh (Very Important); ALSO, PLEASE RANDOMIZE THE STATEMENTS]

- To ensure that people are informed about scientific issues.
- To correct scientific misinformation.
- To defend science from those who spread falsehoods.
- To draw attention to their own research.
- To advance their career.
- To get more funding for their research.

5. If you could ask an expert on climate change one question, which question would you ask? [PROGRAMMING NOTE: RANDOMIZE RESPONSE OPTIONS, EXCEPT FOR OTHER]  
Is climate change really happening?

- How do you know that climate change is happening?
- What causes climate change?
- How do you know that climate change is caused mostly by human activities, not natural changes in the environment?
- What harm will climate change cause?
- What benefit will climate change cause?
- On the whole, will climate change be more harmful or beneficial?
- Will climate change harm people?
- When will climate change begin to harm people?
- What can I do to reduce climate change?
- What can the United States do to reduce climate change?
- How much would it cost the United States to reduce climate change?
- What can the nations of the world do to reduce climate change?
- Is there still time to reduce climate change, or is it too late?
- What kind of research are you conducting on climate change?
- Other \_\_\_\_\_ [SMALL TEXT BOX] \_\_\_\_\_

[PROGRAMMING NOTE: HALF OF PARTICIPANTS SHOULD VIEW Q6-14 AND 19-24 PRIOR TO VISITING THE WEBSITE; HALF SHOULD SEE QUESTIONS 6-14 AND 19-24 AFTER Q35; THIS VIEWING ORDER NEEDS TO BE RECORDED, AS WELL]

6. Which of the following is evidence that climate change is happening? [YES/NO FOR EACH STATEMENT IN A GRID; RANDOMIZE THE STATEMENTS WITH EXCEPTION OF LAST ONE – PUT THE LAST ITEM AS A CHECKBOX SEPARATE FROM THE GRID AND IF SELECTED, THEN BLANK OUT RESPONSES TO OTHER STATEMENTS]
- Increased global temperatures
  - Warmer oceans
  - Oceans becoming more acidic
  - Glaciers, ice sheets, and sea ice decreasing
  - Extreme weather events increasing
  - Volcanic eruptions increasing
  - Acid rain increasing
  - Hole in the ozone layer getting bigger
  - None of the above because climate change is not happening
7. To what extent do you think each of the following statements is true or false? [SCALE POINTS: Definitely true; Probably true; Probably false; Definitely false; Don't know; RANDOMIZE THE STATEMENTS]
- Burning oil and other fossil fuels produces CO<sub>2</sub> (carbon dioxide)
  - Industrial activities have reduced the concentration of greenhouse gases in Earth's atmosphere
  - Greenhouse gases are like a blanket around the earth, holding in heat
  - If we take action now to reduce future climate change, the climate will go back to normal, and we won't have to adapt to any changes in the climate
  - CO<sub>2</sub> (carbon dioxide) traps heat in Earth's atmosphere
  - There is more CO<sub>2</sub> (carbon dioxide) in Earth's atmosphere now than at any other time over the last 400,000 years

[PROGRAMMING NOTE: OF THE HALF THAT ARE SEEING THESE QUESTIONS BEFORE VISITING THE WEBSITE, ONE-THIRD OF THOSE SHOULD *ALSO* SEE Q8 REPEATED AFTER VISITING THE WEBSITE (JUST BEFORE Q35); ALSO, OF THE HALF THAT ARE SEEING THESE QUESTIONS AFTER VISITING THE WEBSITE, ONE-THIRD SHOULD *ALSO* SEE Q8 BEFORE VISITING THE WEBSITE (AFTER Q5) – THIS WORKS OUT TO ONE-THIRD SEEING Q8 PRIOR TO THE WEBSITE ONLY; ONE THIRD AFTER THE WEBSITE ONLY, AND ONE-THIRD BOTH BEFORE AND AFTER]

8. To the best of your knowledge, what percentage of climate scientists think that human-caused global warming is happening?  
Please click on the slider bar below to indicate your answer. You can slide the indicator on the bar anywhere from 0% (no climate scientists think it's happening) to 100% (all climate scientists think it's happening).  
[SLIDER BAR WITH LABELS FOR EACH 10%, WITH WORD LABELS OVER 0, 50, AND 100: 0% (None), 50% (Half), and 100% (All)]  
[CHECK BOX FOR] Don't know

9. Climate change 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 climate change is happening?

[PROGRAMMING NOTE: PLEASE RANDOMIZE THESE RESPONSE OPTIONS]

- Yes
  - No
  - Don't know
10. How sure are you that climate change is happening? [PROGRAMMING NOTE: ONLY SHOW THIS QUESTION IF THE RESPONSE TO Q9 WAS YES]
- Not at all sure
  - Somewhat sure
  - Very sure
  - Extremely sure
11. How sure are you that climate change is not happening? [PROGRAMMING NOTE: ONLY SHOW THIS QUESTION IF THE RESPONSE TO Q9 WAS NO]
- Not at all sure
  - Somewhat sure
  - Very sure
  - Extremely sure
12. Do you think that the climate change that has occurred over the past 50 years has been caused:
- Largely or entirely by human activity (81% to 100%)
  - Mostly by human activity (60% to 80%)
  - More or less equally by human activity and natural events
  - Mostly by natural events (60% to 80%)
  - Largely or entirely by natural events (81% to 100%)
  - There has been no climate change over the past 50 years
13. Which of the following statements comes closest to your view?
- Climate change isn't happening
  - Humans can't reduce climate change, even if it is happening
  - Humans could reduce climate change, but people aren't willing to change their behavior, so we're
  - not going to
  - Humans could reduce climate change, but it's unclear at this point whether we will do what's
  - needed
  - Humans can reduce climate change, and we are going to do so successfully
14. 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 climate change, where would you place yourself?
- I do not need any more information
  - I need a little more information
  - I need some more information
  - I need a lot more information

[PROGRAMMING NOTE: ALL PARTICIPANTS SHOULD SEE QUESTIONS 15-18 PRIOR TO VISITING THE WEBSITE. THEY ARE REPEATED IN Q36-39].

15. How much do you think climate change will harm future generations of people?
- Don't know
  - Not at all
  - Only a little
  - A moderate amount
  - A great deal
16. How important is the issue of climate change to you personally?
- Not at all important
  - Not too important
  - Somewhat important
  - Very important
  - Extremely important
17. How worried are you about climate change?
- Not at all worried
  - Not very worried
  - Somewhat worried
  - Very worried
18. How much do you think climate change will harm you personally?
- Don't know
  - Not at all
  - Only a little
  - A moderate amount
  - A great deal
19. We would like to get your impression of the scientific research on climate change conducted at various federal government agencies. For each agency, we will ask you the following questions:
- How much scientific research on climate change does the agency conduct?
  - On average, how competent are the climate change research scientists at the agency?
  - How much do you trust the climate change science research conducted at the agency?
  - To what degree do you believe the agency will use the findings of its climate change science research in ways that benefit Americas?
- [PRESENT QUESTIONS 21-24 TWO TIMES; ONCE FOR NASA [National Aeronautics & Space Administration] AND THEN RANDOMLY SELECT ONE OF THE FOLLOWING THREE AGENCIES: NOAA [National Oceanic & Atmospheric Administration, which includes the National Weather Service], EPA [Environmental Protection Agency], DOD [Department of Defense]]
20. How much scientific research on climate change does the [AGENCY NAME] conduct?
- None
  - A Little
  - A Moderate Amount

- A Lot
  - I Don't Know
  -
21. On average, how competent are the climate change research scientists at the [AGENCY NAME]
- Very Incompetent
  - Somewhat Incompetent
  - Somewhat Competent
  - Very Competent
  - I Have No Opinion About This
22. How much do you trust the climate change scientific research conducted at the [AGENCY NAME]?
- Strongly Trust
  - Somewhat Trust
  - Somewhat Distrust
  - Strongly Distrust
  - I Have No Opinion About This
23. To what degree do you believe the [AGENCY NAME] will use the findings from its climate change scientific research in ways that benefit America?
- Definitely Will Not
  - Probably Will Not
  - Probably Will
  - Definitely Will
  - I Have No Opinion About This
24. Next we'd like to show you a website designed by NASA to provide members of the public with information about climate change. Please spend up to ten minutes browsing this website. Specifically, we'd like you to attempt to find information that answers your question: "[ANSWER TO TOP QUESTION]".
- [PROGRAMMING NOTE: NEED TO GENERATE AND SEND OVER A PARTICIPANT ID TO NASA – MUST USE THE pid TAG]
- <http://climate.nasa.gov/?pid=>
- If you see a message like "The page you are on is trying to open a site in a new window," please click "Accept".
- Please come back to the survey after you have browsed the website. You can leave this survey window open while you look around the website-we'll alert you after ten minutes have passed. When you are done browsing the website and are ready to answer a few questions, please come back to this window and click the "Next" button that will appear shortly.
- [PROGRAMMING INSTRUCTIONS: HIDE "NEXT" BUTTON FOR 1 MINUTE. TIME HOW LONG UNTIL THE RESPONDENT HITS THE NEXT BOTTON; IF RESPONDENT HAS NOT CLICKED "NEXT" AFTER 10 MINUTES, POP- UP A REMINDER WINDOW WITH THE FOLLOWING TEXT]
25. [PROGRAMMING NOTE: SKIP IF THEY DON'T NEED THE REMINDER] Just as a reminder, please return to the survey when you are done browsing the website. We have just a few more questions for you!
26. Thank you. Now we'd like to ask a few questions about your experience on this website.



27. How interesting did you find the information on the website?

- Extremely interesting
- Very interesting
- Slightly interesting
- Not interesting at all

28. How clear did you find the information on the website?

- Extremely clear
- Very clear
- Moderately clear
- Slightly clear
- Not clear at all

29. How much information on NASA's website did you find about your question: "[INSERT TOP QUESTION]"

- None
- Little
- A Moderate Amount
- A Lot

[IF Q29 NE 1 "NONE" (BUT DO SHOW TO THOSE WHO SKIPPED Q29)]

30. How useful was the information on NASA's website that you found about your question: "[INSERT TOP QUESTION FROM Q5]"

- Very Useless
- Somewhat Useless
- Neutral
- Somewhat Useful
- Very Useful

[IF Q29 NE 1 "NONE" (BUT DO SHOW TO THOSE WHO SKIPPED Q29)]

31. Did the information on NASA's website that you found fully answer your question: [INSERT TOP QUESTION FROM Q5]"

- No, Not at All
- Yes, Partially
- Yes, Mostly
- Yes, fully

32. Now, thinking about the NASA global climate change website overall, how much do you agree or disagree with each of the following statements?

[PROGRAMMING NOTE: RESPONSE OPTIONS: Strongly disagree; Disagree; Somewhat disagree; Neither agree nor disagree; Somewhat agree; Agree; Strongly agree; ALSO, PLEASE RANDOMIZE STATEMENTS]

- The information on the website helped me understand climate change
- The information on the website is effective for informing people like me about climate change
- I enjoyed looking at this website
- The website fits with my image of (how I think about) NASA
- The text on the website is easy to understand

- The images on the website helped me understand climate change
  - The images on the website are engaging
  - I found the website easy to use
  - I feel confident that the information on this website is accurate
  - I trust this website
  - I learned a lot from visiting this website
  -
33. How likely are you to visit this website on your own time?
- Definitely will
  - Probably will
  - Not sure
  - Probably will not
  - Definitely will not
34. How likely are you to seek additional information about climate change from any other source in the next few days or weeks?
- Definitely will
  - Probably will
  - Not sure
  - Probably will not
  - Definitely will not
35. Now we have just a few additional questions about climate change. You may have seen some of these before, but please simply respond with what you think now.
36. How much do you think climate change will harm future generations of people?
- Don't know
  - Not at all
  - Only a little
  - A moderate amount
  - A great deal
  - Refused
37. How important is the issue of climate change to you personally?
- Not at all important
  - Not too important
  - Somewhat important
  - Very important
  - Extremely important
  - Refused
38. How worried are you about climate change?
- Not at all worried
  - Not very worried
  - Somewhat worried
  - Very worried
  - Refused

39. How much do you think climate change will harm you personally?

- Don't know
- Not at all
- Only a little
- A moderate amount
- A great deal

40. Now we have a few questions about you.

41. What is your age? (in years)

42. What is your gender?

- Female
- Male
- Non-binary/third gender
- Prefer to self-describe [text entry]; Prefer not to say

43. Please specify your ethnicity:

- Hispanic or Latino
- Not Hispanic or Latino
- Prefer not to answer

44. Please specify your race (check all that apply):

- American Indian or Alaska Native
- Asian
- Black or African American
- Native Hawaiian or Pacific Islander
- White
- Other [text entry]
- Prefer not to answer

45. What is your highest level of education?

- No formal education credentials
- High school diploma or equivalent
- Some college, no degree
- Associate's degree
- Bachelor's degree
- Master's degree
- Doctoral or professional degree

46. In general, do you think of yourself as...

- Very liberal
- Somewhat liberal
- Moderate, middle of the road
- Somewhat conservative
- Very conservative

47. Generally speaking, do you think of yourself as...

- Strong Republican

- Moderate Republican
- Independent, but Lean Republican
- Independent, no Lean; Independent, but Lean Democrat
- Moderate Democrat
- Strong Democrat
- Other (please specify) [text entry]
- No party/not interested in politics

[PROGRAMMING NOTE: PLEASE RECORD IF PARTICIPANTS FOLLOW THE LINK]

48. If you would like to sign up for NASA's Global Climate Change monthly newsletter, please visit the website below:

<http://climate.nasa.gov/ccNewsletter/>

Thank you for your participation!