

HELLO

my name is

~~Climate Change~~

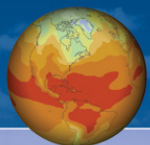
~~Global Warming~~

IT'S COMPLICATED

WHAT'S IN A NAME?

GLOBAL WARMING VERSUS CLIMATE CHANGE

May 2014



YALE PROJECT ON
**CLIMATE CHANGE
COMMUNICATION**

BRIDGING SCIENCE + SOCIETY



4C

George Mason University
Center for Climate Change Communication

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PREFACE

This report is based on findings from a bi-annual series of nationally representative survey studies – *Climate Change in the American Mind* – conducted by the Yale Project on Climate Change Communication (<http://environment.yale.edu/climate-communication>) and the George Mason University Center for Climate Change Communication (<http://www.climatechangecommunication.org>). The research was funded by the Energy Foundation, the 11th Hour Project, the Grantham Foundation, and the V.K. Rasmussen Foundation.

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Reading note

Some of the following analyses focus on differences between self-identified Democrats, Republicans, and Independents. For the purposes of this report, Independents who say they more closely identify with the Democratic party than with the Republican party are combined with the Democrats; Independents who more closely identify with the Republicans are combined with the Republicans; and those who say they identify with neither party are classified as Independents.

Some results are reported by generational cohort:

Generation Y = 18 to 30
Generation X = 31 to 48
Baby Boom = 49 to 67
Greatest Generation = 68 or older

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EXECUTIVE SUMMARY

This report provides results from three studies that collectively find that *global warming* and *climate change* are often *not* synonymous—they mean different things to different people—and activate different sets of beliefs, feelings, and behaviors, as well as different degrees of urgency about the need to respond.

- 1) An analysis of public information seeking via Google searches from 2004 to 2014 found that Americans have historically used *global warming* as a search term much more frequently than *climate change*.
- 2) A nationally representative survey (Survey Study 1) in January 2014 found that while Americans are equally familiar with the two terms, they are 4 times more likely to say they hear the term *global warming* in public discourse than *climate change*. Likewise, Americans are 2 times more likely to say they personally use the term *global warming* than *climate change* in their own conversations.
- 3) A separate nationally representative survey (Survey Study 2) in November-December 2013 found that almost without exception, *global warming* is more engaging than *climate change*. Compared to *climate change*, the term *global warming* generates:
 - Stronger ratings of negative affect (i.e., bad feelings), especially among women, Generation Y, the Greatest Generation, African-Americans, Hispanics, Democrats, Independents, Moderates, conservatives, and evangelicals.
 - Different top of mind associations and stronger negative affect, especially among political moderates:
 - Overall, *global warming* generates significantly more top of mind associations to Icemelt (e.g., “melting glaciers”), Alarm (e.g., “world catastrophe”), Flood (e.g., “coastal flooding”), and Ozone (e.g., “the ozone hole”) categories. *Climate change* generates significantly more associations to Weather (e.g., “storms”) and Global Warming (e.g., “global warming”) categories.
 - Within the Weather category, *global warming* generates a higher percentage of associations to “extreme weather” than does *climate change*, which generates more associations to general weather patterns.
 - Greater certainty that the phenomenon is happening, especially among men, Generation X, and liberals.
 - Greater understanding that human activities are the primary cause among Independents.
 - Greater understanding of the scientific consensus among Independents and liberals.
 - More intense worry about the issue, especially among men, Generation Y, Generation X, Democrats, liberals and moderates.
 - A greater sense of personal threat, especially among women, the Greatest Generation, African-Americans, Hispanics, Democrats, Independents, Republicans, liberals and moderates.
 - A greater sense of threat to one’s own family, especially among women, Generation Y, African-Americans, Hispanics, Democrats, Independents, and Republicans.
 - A greater sense of threat to future generations among Independents and Generation Y.
 - A greater sense that people in the U.S. are being harmed right now, especially among Independents, Generation Y, and Hispanics.

- Stronger belief that weather in the U.S. is being affected a lot, especially among Independents and Republicans.
- Higher issue priority ratings for action by the president and Congress, especially among women, Democrats, liberals and moderates.
- Greater support for a large or small-scale effort by the U.S. (although *climate change* generates more support for a medium-scale effort, especially among Republicans).
- Greater willingness to join a campaign to convince elected officials to take action, especially among men, Generation X, liberals and moderates.

These diverse results strongly suggest that *global warming* and *climate change* are used differently and mean different things in the minds of many Americans. Scientists often prefer the term *climate change* for technical reasons, but should be aware that the two terms generate different interpretations among the general public and specific subgroups. Some issue advocates have argued that the term *climate change* is more likely to engage Republicans in the issue, however, the evidence from these studies suggests that in general the terms are synonymous for Republicans – i.e., neither term is more engaging than the other, although in several cases, *global warming* generates stronger feelings of negative affect and stronger perceptions of personal and familial threat among Republicans; they are also more likely to believe that *global warming* is already affecting weather in the United States.

By contrast, the use of the term *climate change* appears to actually *reduce* issue engagement by Democrats, Independents, liberals, and moderates, as well as a variety of subgroups within American society, including men, women, minorities, different generations, and across political and partisan lines. In several cases, the differences in the effect of the two terms are large. For example, African Americans (+20 percentage points) and Hispanics (+22) are much more likely to rate *global warming* as a “very bad thing” than *climate change*. Generation X (+21) and liberals (+19) are much more likely to be certain *global warming* is happening. African-Americans (+22) and Hispanics (+30) are much more likely to perceive *global warming* as a personal threat, or that it will harm their own family (+19 and +31, respectively). Hispanics (+28) are much more likely to say *global warming* is already harming people in the United States right now. And Generation X (+19) is more likely to be willing to join a campaign to convince elected officials to take action to reduce *global warming* than *climate change*.

It is important to note, however, that connotative meanings are dynamic and change, sometimes rapidly. It is possible that with repeated use, *climate change* will come to acquire similar connotative meanings as *global warming*, that the two will eventually become synonymous for most people, or that *climate change* will supplant *global warming* as the dominant term in public discourse. In the meantime, however, the results of these studies strongly suggest that the two terms continue to mean different things to many Americans.

INTRODUCTION

What do the terms “global warming” and “climate change” mean to the American public? Are they synonyms? Does the public see and use each term equally? Do they interpret and respond to the two terms in the same way? Or do they view and respond to each term differently? When communicators use these two terms, how do different audiences interpret them? Over the years, these questions have generated much debate and controversy in the media and among scientists, educators, political analysts, advocates and citizens.

This report investigates these question in detail, drawing upon three related studies, including a recent national survey of Americans, in which half the sample was randomly assigned to a questionnaire measuring Americans’ beliefs, attitudes, policy support and behaviors using the term *global warming*, while the other half was randomly assigned to a questionnaire with identical questions, except using the term *climate change*.

The studies found that the two terms are often *not* synonymous—they mean different things to different people—and activate different sets of beliefs, feelings, and behaviors, as well as different degrees of urgency about the need to respond.

DEFINITIONS AND USE

The term *climate change* appeared in the scientific literature before the term *global warming*, and has been used more frequently in peer-reviewed articles for more than forty years.¹ For example, the closely-related term *climatic change* was first used in a seminal 1956 paper by Gilbert N. Plass,² whereas the term *global warming* wasn’t used until 1975 by author Wallace Broecker.³

Global warming and *climate change* have different technical definitions, although they are often used interchangeably in popular media.⁴ *Global warming* refers to the increase in the Earth’s average surface temperature since the Industrial Revolution, primarily due to the emission of greenhouse gases from the burning of fossil fuels and land use change, whereas *climate change* refers to the long-term change of the Earth’s climate⁵ including changes in temperature, precipitation, and wind patterns over a period of several decades or longer.⁶ Scientists have used both terms in the peer-reviewed literature for decades, but the scientific community generally prefers the term *climate change*, which refers to a wider range of phenomena than just the increase in global surface temperatures.⁷

¹ <http://bit.ly/1j7d4PV>

² Ibid.

³ <http://1.usa.gov/1mKJ2nt>

⁴ Wilson, K. M. (2000). Communicating climate change through the media: Predictions, politics, and perceptions of risk. In Allan, S., Adam, B., & Carter, C. (Eds), *Environmental risks and the media* (pp. 201-217). London: Routledge.

⁵ <http://1.usa.gov/1ICu6Cv>

⁶ Intergovernmental Panel on Climate Change. (2007). *WG I: Summary for Policymakers*. Geneva: Intergovernmental Panel on Climate Change.

⁷ Li, Y., Johnson, E., & Zaval, L. (2011). Local warming: Daily temperature change influences belief in global warming. *Psychological Science*, 22(4), 454-459. DOI: 10.1177/0956797611400913

The mass media, however, widely adopted the term *global warming* following James Hansen's widely reported testimony at a Senate hearing in 1988, in which he famously said:

*“Global warming has reached a level such that we can ascribe with a high degree of confidence a cause and effect relationship between the greenhouse effect and observed warming.”*⁸

Today, the news media often uses the terms interchangeably, with some sources stating that they do so explicitly (e.g., National Public Radio⁹). For at least some media outlets, this interchangeability may reflect the assumption that the two terms carry not only the same meaning for the general public, but have the same emotional and political impact. For example, in the words of NPR's ombudsman, choosing one term over the other does not “prescribe any action, or encourage any inaction” relative to the other.¹⁰

AN EARLY POLITICAL ANALYSIS IN THE U.S.

Prior to the 2002 mid-term elections, Frank Luntz, a Republican pollster and strategist, gave the George W. Bush administration the following advice in a secret memo about how to win the “environmental communications battle”, including global warming. Luntz's recommendation to Republicans was to use the term *climate change* instead of *global warming*:

*“It's time for us to start talking about ‘climate change’ instead of global warming... ‘climate change’ is less frightening than ‘global warming’. As one focus group participant noted, climate change ‘sounds like you’re going from Pittsburgh to Fort Lauderdale.’ While global warming has catastrophic connotations attached to it, climate change suggests a more controllable and less emotional challenge.”*¹¹

A *New York Times* analysis found that the term *global warming* appeared in a number of President Bush's environmental speeches in 2001, but after receiving Luntz's memo, the White House shifted to consistently use *climate change* instead.¹²

More recent research, however, on the use of the two terms by conservative and liberal think-tanks suggests that conservatives are no longer following Luntz's recommendation—the websites of conservative think tanks now use the term *global warming* more frequently than *climate change*. Conversely, the websites of liberal think tanks use the term *climate change* more frequently than *global warming*.¹³

⁸ Shabecoff, B. (1988, June 24). Global warming has begun, expert tells senate. *The New York Times*, Sec. A1. <http://nyti.ms/1g7Z9bZ>

⁹ <http://n.pr/1l3bxWD>

¹⁰ Ibid.

¹¹ <http://bit.ly/1l3bZnO>

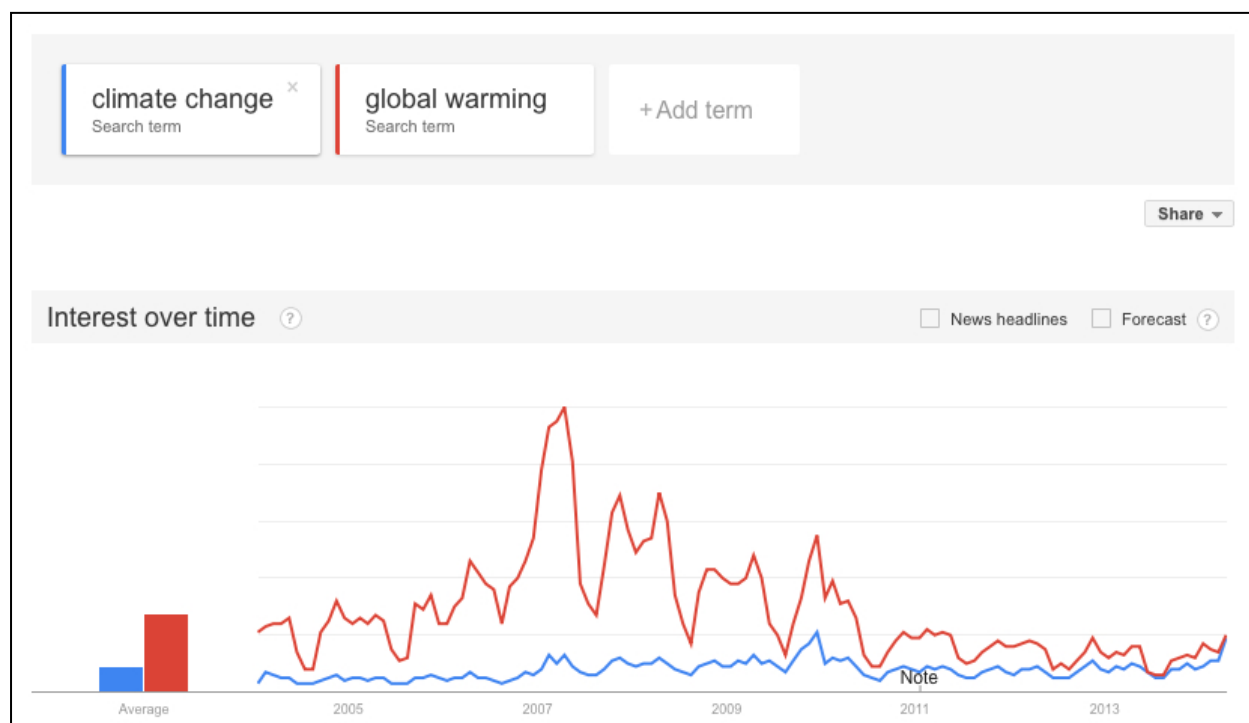
¹² <http://nyti.ms/1iBFuvr>

¹³ Schuldt, J. P., Konrath, S. H., & Schwarz, N. (2011). “Global warming” or “climate change”? Whether the planet is warming depends on question wording. *Public Opinion Quarterly*, 75(1), 115-124. doi: 10.1093/poq/nfq073

PUBLIC INFORMATION SEEKING ONLINE

Since at least 2004 (and probably well before), the general public in the United States has used the term *global warming* more often than *climate change*, at least as measured by Google searches.¹⁴ Beginning in January 2004, when the earliest data are available, Google searches using the term *global warming* greatly outnumbered searches using *climate change*. In the ten years since, the pattern of searches using the term *climate change* remained relatively flat and infrequent compared to *global warming*. By contrast, the term *global warming* was used in web searches both far more frequently overall and with great variability during this period.

The largest upward spike in Google searches for *global warming* occurred just after Earth Day in April, 2007, a few weeks after the U.S. Supreme Court ruled that the EPA has the authority to regulate carbon dioxide to protect human health, and two months after the film “An Inconvenient Truth” won an Academy Award for Best Documentary. Since 2007, however, Google searches for the term *global warming* have declined to almost the same flat, relatively low level of searches for *climate change*.



Relative Google searches for *climate change* and *global warming* in the United States, 2004-2014.

Data Source: Google Trends (www.google.com/trends).

¹⁴<http://bit.ly/QWrpSN> Also see: Anderegg & Goldsmith (2014) Public interest in climate change over the past decade and the effects of the ‘climategate’ media event. *Environmental Research Letters*. 9 054005 doi:10.1088/1748-9326/9/5/054005

NATIONAL SURVEY STUDY 1: CURRENT PUBLIC USE OF THE TWO TERMS

In January 2014, we conducted a nationally representative survey and found that while the American public is equally familiar with the two terms, they report hearing and using the term *global warming* more often than they do *climate change*.

Specifically, when Americans are asked how familiar they are with each of the two terms, the same percentage say they are “very” or “somewhat familiar” with each (67% for *global warming* and 68% for *climate change*), while the same percentage (8%) say they are “not familiar” with the term.

Please tell me whether you are very familiar, somewhat familiar, a little familiar, or not familiar with each of the following terms...			
	<u>Global warming</u>	<u>Climate change</u>	<u>Diff.</u>
(Base: Total respondents)	(1,027)	(1,027)	
	%	%	Pts.
Very/somewhat (sum)	67	68	-1
Very familiar	26	27	-1
Somewhat familiar	41	41	-
A little/not (sum)	32	32	-
A little familiar	24	24	-
Not familiar	8	8	-
Refused	1	1	-

However, when asked which term they “hear more often, whether in the media, in conversation, or anywhere else,” nearly four times more Americans say they “hear the term *global warming* more often” (45%) than say they “hear the term *climate change* more often” (12%). Another third of Americans say they hear both terms equally (37%). Six percent say they don’t hear either term.

Moreover, twice as many Americans say they personally use the term *global warming* (35%) more often than *climate change* (16%), while 14% use both terms equally, and 35% say that they don’t use either term.

Which of the following terms do you hear more often, whether in the media, in conversation, or anywhere else?		Which of the following terms do you personally use more often, if ever?	
	<u>Total</u>		<u>Total</u>
(Base: Total Americans)	(1,027)	(Base: Total Americans)	(1,027)
	%		%
Global warming	45	Global warming	35
Climate change	12	Climate change	16
Hear both equally	37	Use both equally	14
Hear neither	6	Use neither	35
Refused	1	Refused	1

NATIONAL SURVEY STUDY 2: GLOBAL WARMING VS. CLIMATE CHANGE

In November and December of 2013, we conducted a separate nationally representative survey of 1,657 American adults, aged 18 and older. Half of the sample (n=830) was randomly assigned to a questionnaire using the term *global warming* and the other half (n=827) was randomly assigned to a questionnaire with identical questions, except using the term *climate change*. All differences below are statistically significant, unless otherwise noted.

IS GLOBAL WARMING / CLIMATE CHANGE A BAD THING OR A GOOD THING?

The first use of either term that respondents were exposed to was a measure of their positive or negative affect – feelings of good or bad – associated with the term they were given. We found that the two terms evoke different affective reactions by the public.

Overall, **Americans are +13 percentage points** more likely to say that *global warming* is a “bad thing” (76%) than *climate change* (63%). In particular, they are +10 points more likely to say *global warming* is a “very bad thing” (33%) than *climate change* (23%). By contrast, **Americans are +12 points** more likely to perceive *climate change* as a good thing (33%) than *global warming* (21%).

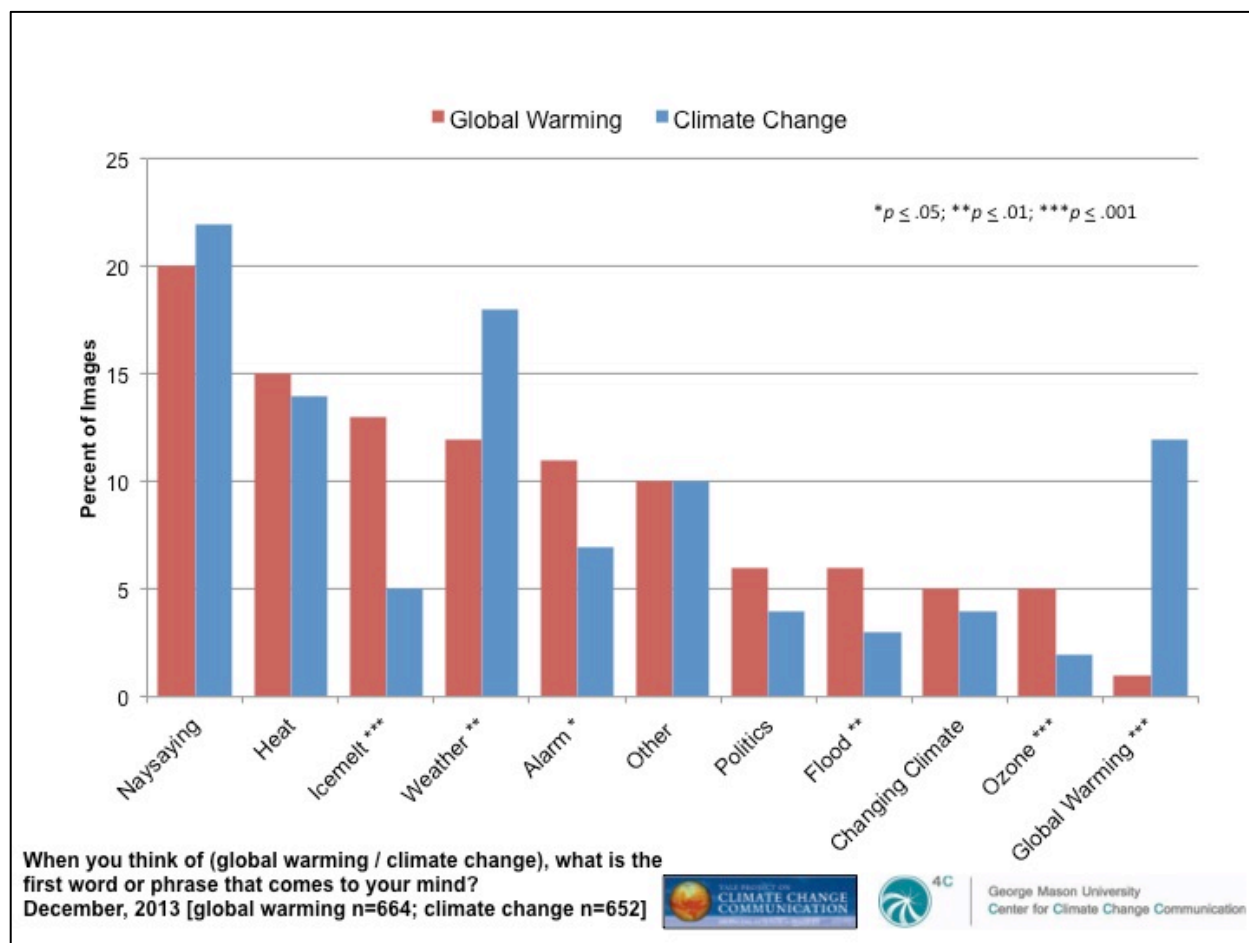
On a scale for -3 (very bad) to +3 (very good), do you think (global warming/climate change) is a bad thing or a good thing?			
	Global warming	Climate change	Diff.
(Base: Total respondents)	(830)	(827)	
	%	%	Pts.
Good (sum)	21	33	-12
+3 (Very Good)	1	6	-5
+2	4	5	+1
+1	16	22	-6
Bad (sum)	76	63	+13
-1	21	23	-2
-2	22	17	+5
-3 (Very Bad)	33	23	+10
Never heard of (global warming/climate change)	2	4	-2

There are also large differences in the ratings of the two terms among different subgroups; in all cases, *global warming* is more likely to be rated as “very bad” than *climate change*. **Women are +13 points** (35% vs. 22%), **Generation Y are +14 points** (38% vs. 24%), **the Greatest Generation are +15 points** (35% vs. 20%), **African-Americans are +20 points** (34% vs. 14%), **Hispanics are +22 points** (44% vs. 22%), **Democrats are +8 points** (45% vs. 37%), **Independents are +17 points** (32% vs. 15%), **moderates are +18 points** (36% vs. 18%), **conservatives are +8 points** (19% vs. 11%), and **evangelicals are +13 points** (30% vs. 17%) more likely to rate *global warming* as a “very bad” thing than *climate change*.

WHEN YOU THINK OF GLOBAL WARMING / CLIMATE CHANGE, WHAT COMES FIRST TO MIND?

This study also finds that the terms *global warming* and *climate change* evoke different free associations among the American public.

Respondents were next asked: “When you think of *global warming* / *climate change*, what is the first word or phrase that comes to your mind?” This technique generated a rich dataset of free associations that were then categorized into common themes.¹⁵



The term *global warming* elicits significantly more associations to Icemelt (e.g., “melting glaciers”), Alarm (e.g., “world catastrophe”), Flood (e.g., “coastal flooding”), and Ozone (e.g., “the ozone hole”) categories. *Climate change* elicits significantly more associations to Weather (e.g., “storms”) and Global Warming (e.g., “global warming”) categories. Both terms evoke similar numbers of associations to Naysaying (e.g., “hoax”), Heat (e.g., “rising temperatures”), Other (e.g., miscellaneous), Politics (e.g., “liberals”) and Changing Climate (e.g., “changing seasons”) categories.

¹⁵ For more about this method, please see: Leiserowitz, A. (2006) Climate change risk perception and policy preferences: The role of affect, imagery, and values. *Climatic Change*, 77(1-2), 45-72. DOI: 10.1007/s10584-006-9059-9; Smith, N. & Leiserowitz, A. (2012) The rise of global warming skepticism: Exploring affective image associations. *Risk Analysis*, 32(6), 1021-1032. DOI: 10.1111/j.1539-6924.2012.01801.x

While *climate change* evokes more associations to Weather, a content analysis within this category found that *global warming* evokes a higher percentage of associations to “extreme weather” (38%) than does *climate change* (27%), which evokes more associations to general weather patterns.

Breaking the results down by political ideology, liberals are significantly more likely to associate *global warming* with the Flood ($p \leq .01$) category. Conservatives are more likely to associate *global warming* with IceMelt ($p \leq .001$) and *climate change* with Weather ($p \leq .001$).

Political moderates are the most affected by the two different terms. Among moderates, *global warming* generates more IceMelt ($p \leq .001$), Ozone ($p \leq .001$), Flood ($p \leq .01$), Alarm ($p \leq .05$), and Heat ($p \leq .05$) associations. By contrast, *climate change* generates more Naysaying ($p \leq .01$) and Nature ($p \leq .05$) associations among moderates.

IS YOUR ASSOCIATION A BAD OR GOOD THING?

Another important finding, however, is how respondents feel about the responses they provided. After providing their free associations, respondents were then asked: “Please help us understand what that word or phrase means to you. On a scale from -3 (very bad) to +3 (very good), do you think that this is a bad thing or a good thing?” Overall, respondents in the *global warming* condition rate their open-ended responses as more negative than do respondents in the *climate change* condition.

For example, 49% in the *global warming* condition rate their own association as “very bad” compared to 40% in the *climate change* condition. Overall, 83% in the *global warming* condition rate their own association as “bad” (i.e., rated it as a -3, -2, or -1), whereas only 73% do so in the *climate change* condition. Political **moderates are +13 points** more likely (47% vs. 34%) to rate their own associations to *global warming* as a “very bad thing” than their associations to *climate change*. **Liberals are also +17 points** more likely (97% vs. 80%) to rate their own associations to *global warming* as negative (-1 to -3) than to *climate change*. There are no significant differences in the affect ratings for the associations provided by conservatives to the two terms.

Please help us understand what that word or phrase means to you. You said (insert open-ended response). On a scale from -3 (very bad) to +3 (very good), do you think that this is a bad thing or a good thing?			
	Global warming (830)	Climate change (827)	Diff.
	%	%	Pts.
Positive (sum)	15	26	-11
+3 (Very good)	4	6	-2
+2	2	8	-6
+1	9	12	-3
Negative (sum)	83	73	+10
-1	14	16	-2
-2	20	17	+3
-3 (Very bad)	49	40	+9
Refused	*	*	-

IS GLOBAL WARMING / CLIMATE CHANGE HAPPENING?

The survey then asked respondents an extensive set of questions about their knowledge, risk perceptions, policy support and behaviors regarding the issue. Respondents were first asked whether they thought *global warming* / *climate change* is happening. Overall, the two terms generate very similar response patterns. Sixty-two percent of Americans think *global warming* is happening, while sixty-three percent think *climate change* is happening.

There are also no significant differences in public responses to the two terms within specific subgroups, with two exceptions: **the Baby Boom Generation is +9 points** (28% vs. 19%) and **whites are +6 points** (25% vs. 19%) more likely to say “No” *global warming* is not happening, than to say “No” *climate change* is not happening.

Do you think that (global warming/climate change) is happening?			
	<u>Global warming</u>	<u>Climate change</u>	<u>Diff.</u>
(Base: Total respondents)	(830)	(827)	
	%	%	Pts.
Yes	62	63	-1
No	23	20	+3
Don't know	14	17	+3
Refused	1	-	+1

CERTAINTY THAT GLOBAL WARMING / CLIMATE CHANGE IS HAPPENING OR NOT HAPPENING

However, when respondents were then asked “How sure are you that *global warming* / *climate change* is / is not happening?” other significant differences emerge. Overall, Americans are +7 percentage points more likely to be “extremely sure” that *global warming* is happening (27%) than *climate change* (20%). Within specific subgroups **men are +12 points** (34% vs. 22%), **Generation X are +21 points** (37% vs. 16%), and **liberals are +19 points** (49% vs. 30%) more likely to be “extremely sure” that *global warming* is happening than *climate change*. No subgroups are more certain that *climate change* is happening than *global warming*. In addition, no subgroups are more certain that *global warming* is not happening than *climate change*, or vice versa.

WHAT CAUSES GLOBAL WARMING / CLIMATE CHANGE?

Equal numbers of Americans think *global warming* (47%) and *climate change* (45%) are caused mostly by human activities, or caused mostly by natural changes in the environment (37% each).

Assuming (global warming/climate change) is happening, do you think it is...			
	Global warming	Climate change	Diff.
(Base: Total respondents)	(830)	(827)	
	%	%	Pts.
Caused mostly by human activities	47	45	+2
Caused mostly by natural changes in the environment	37	37	-
Other (Please specify)	8	8	-
None of the above because (global warming/climate change) isn't happening	8	9	-1
Refused	1	1	-

On this measure there are almost no significant differences in public responses to the two terms, with one exception. While there are no significant differences between the two terms among Democrats or Republicans, **Independents are +8 points** more likely to think human activities are causing *global warming* (46%) than *climate change* (38%).

DO MOST CLIMATE SCIENTISTS THINK *GLOBAL WARMING* / *CLIMATE CHANGE* IS HAPPENING?

Americans are equally likely to say (correctly) that most scientists think *global warming* and *climate change* are happening (42% and 40%, respectively), while one in three incorrectly believes there is a lot of disagreement among scientists (33% respectively).

Which comes closest to your own view?			
	Global warming	Climate change	Diff.
(Base: Total respondents)	(830)	(827)	
	%	%	Pts.
Most scientists think (global warming/climate change) is happening	42	40	+2
There is a lot of disagreement among scientists about whether or not (global warming/climate change) is happening	33	33	-
Don't know enough to say	18	23	-5
Most scientists think (global warming/climate change) is not happening	6	5	+1
Refused	1	1	-

There are only two significant differences in public understanding of the scientific consensus with regard to the two terms. **Independents are +15 points** more likely to say most scientists think *global warming* (46%) is happening than *climate change* (31%). **Liberals are also +16 points** more likely to say there is a scientific consensus that *global warming* is happening (74%) than *climate change* is happening (58%). No subgroups are more likely to say there is a scientific consensus that *climate change* is happening than *global warming*.

HOW WORRIED ARE AMERICANS ABOUT GLOBAL WARMING / CLIMATE CHANGE?

Overall, Americans are slightly more worried about *global warming* (52% are very or somewhat worried about it) than they are about *climate change* (48%). Americans are +6 points more likely to be “very worried” about *global warming* (15%) than *climate change* (9%), which is a statistically significant difference.

How worried are you about (global warming/climate change)?			
	<u>Global warming</u>	<u>Climate change</u>	<u>Diff.</u>
(Base: Total respondents)	(830)	(827)	
	%	%	Pts.
Very/somewhat worried (sum)	52	48	+4
Very worried	15	9	+6
Somewhat worried	38	39	-1
Not very/at all worried (sum)	46	50	-4
Not very worried	26	30	+4
Not at all worried	20	20	-
Refused	1	1	-

Greater differences, however, are found between the two terms for several demographic and political groups. **Men are +7 points** (15% vs. 8%), **Generation Y is +10 points** (17% vs. 7%), **Generation X is +11 points** (22% vs. 11%), **Democrats are +9 points** (24% vs. 19%), **liberals are +13 points** (31% vs. 18%) and **moderates are +7 points** (15% vs. 8%) more likely to be “very worried” about *global warming* than *climate change*. No subgroups are more likely to be worried about *climate change* than *global warming*.

HOW MUCH DO AMERICANS THINK GLOBAL WARMING / CLIMATE CHANGE WILL HARM THEM PERSONALLY?

Overall, *global warming* evokes a greater sense of personal threat among Americans than does *climate change* (38% vs. 30%, respectively, say it will cause them a great deal or moderate amount of harm).

How much do you think (global warming/climate change) will harm you personally?			
	<u>Global warming</u>	<u>Climate change</u>	<u>Diff.</u>
(Base: Total respondents)	(830)	(827)	
	%	%	Pts.
A great deal/moderate amount (sum)	38	30	+8
A great deal	13	8	+5
A moderate amount	25	22	+3
Only a little/not at all (sum)	53	59	-6
Only a little	27	33	-5
Not at all	26	26	-
Don't know	8	11	-3
Refused	1	1	-

Likewise global warming evokes a greater sense of personal threat among different demographic and political groups than does climate change. **Women are +11 points** (39% vs. 28%), **the Greatest Generation are +15 points** (38% vs. 23%), **African-Americans are +22 points** (45% vs. 23%), **Hispanics are +30 points** (60% vs. 30%), **Democrats are +12 points** (51% vs. 39%), **Independents are +9 points** (37% vs. 28%), **Republicans are +4 points** (23% vs. 19%), **liberals are +12 points** (55% vs. 43%), and **moderates are +16 points** (46% vs. 30%) more likely to say that global warming will harm them personally a great deal or moderate amount than climate change. No subgroups are more likely to say that climate change will harm them personally than global warming.

HOW MUCH DO AMERICANS THINK GLOBAL WARMING / CLIMATE CHANGE WILL HARM THEIR FAMILY?

Americans are also +9 points more likely to say that *global warming* is a threat to their family members than *climate change* (42% versus 33%, respectively say it will cause a great deal/moderate amount of harm).

How much do you think (global warming/climate change) will harm your family?			
	<u>Global warming</u>	<u>Climate change</u>	<u>Diff.</u>
(Base: Total respondents)	(830)	(827)	
	%	%	Pts.
A great deal/moderate amount (sum)	42	33	+9
A great deal	17	10	+7
A moderate amount	25	23	+2
Only a little/not at all (sum)	49	54	-5
Only a little	25	31	-6
Not at all	24	23	+1
Don't know	8	12	-4
Refused	1	1	-

Women are +10 points (42% vs. 32%), **Generation Y is +15 points** (52% vs. 37%), **African-Americans are +19 points** (48% vs. 27%), **Hispanics are +31 points** (64% vs. 33%), **Democrats are +9 points** (54% vs. 45%), **Independents are +16 points** (44% vs. 28%), and **Republicans are +3 points** (24% vs. 21%) more likely to think that *global warming* will harm their family than *climate change*. No subgroups are more likely to think that *climate change* will harm their family than *global warming*.

HOW MUCH WILL GLOBAL WARMING / CLIMATE CHANGE HARM FUTURE GENERATION OF PEOPLE?

Overall, Americans think that *global warming* and *climate change* will harm future generations of people about the same (65% vs. 63% respectively, say it will cause a great deal or moderate amount of harm), a non-significant difference.

How much do you think (global warming/climate change) will harm future generations of people?			
	Global warming	Climate change	Diff.
(Base: Total respondents)	(830)	(827)	
	%	%	Pts.
A great deal/moderate amount (sum)	65	63	+2
A great deal	46	45	+1
A moderate amount	19	18	+1
Only a little/not at all (sum)	26	25	-1
Only a little	11	13	-2
Not at all	15	12	+3
Don't know	9	12	-3
Refused	1	1	-

However, the two terms elicit different perceptions of threat among two subgroups: **Independents are +10 points** more likely to think *global warming* (66%) will cause a great deal or a moderate amount of harm to future generations than *climate change* (56%). **Generation Y is +16 points** more likely to think *global warming* (78%) will cause a great deal or a moderate amount of harm to future generations than *climate change* (62%). No subgroups are more likely to think *climate change* will cause harm to future generations than *global warming*.

WHEN WILL GLOBAL WARMING / CLIMATE CHANGE START TO HARM PEOPLE IN THE UNITED STATES?

Overall, Americans are +5 points more likely to say people in the U.S. are being harmed “right now” by *global warming* (34%) than by *climate change* (29%).

When do you think (global warming/climate change) will start to harm people in the United States?			
	Global warming	Climate change	Diff.
(Base: Total respondents)	(830)	(827)	
	%	%	
They are being harmed right now	34	29	+5
In 10 years	10	10	-
In 25 years	14	17	-3
In 50 years	11	13	+2
In 100 years	12	9	+3
Never	18	21	-3
Refused	2	2	-

Independents are +18 points (44% vs. 26%), **Generation Y is +13 points** (38% vs. 25%), and **Hispanics are +28 points** (53% vs. 25%) more likely to say *global warming* is harming Americans right now than *climate change*. No subgroups are more likely to say *climate change* is harming Americans right now than *global warming*.

IS GLOBAL WARMING / CLIMATE CHANGE AFFECTING WEATHER IN THE U.S.?

Overall, Americans are +5 points more likely to think *global warming* is affecting weather in the United States “a lot” (33%) than to say *climate change* is doing so (28%).

How much do you think (global warming/climate change) is affecting weather in the United States?			
	<u>Global warming</u>	<u>Climate change</u>	<u>Diff.</u>
(Base: Believe GW/CC is affecting US weather)	(510)	(487)	
	%	%	
A lot	33	28	+5
Some	41	41	-
A little	16	22	+4
Don't know	9	8	+1
Prefer not to answer	-	1	-1

Independents are +10 points (40% vs. 30%) and **Republicans are +10 points** (27% vs. 17%) more likely to think that *global warming* is affecting weather in the United States a lot than *climate change*. No subgroups are more likely to think that *climate change* is affecting weather in the U.S. than *global warming*.

HOW IMPORTANT IS GLOBAL WARMING / CLIMATE CHANGE TO AMERICANS?

Global warming and *climate change* are about equally important to the American public with more than half saying each is “extremely,” “very,” or “somewhat important” (55% and 58% respectively). There are no significant differences between the two terms for any sub-groups.

How important is the issue of (global warming/climate change) to you personally?			
	<u>Global warming</u>	<u>Climate change</u>	<u>Diff.</u>
(Base: Total respondents)	(830)	(827)	
	%	%	Pts.
Extremely/very important (sum)	55	58	-3
Extremely important	8	6	+2
Very important	14	12	+2
Somewhat important	33	40	-7
Not too/at all important (sum)	45	41	+4
Not too important	26	24	+2
Not at all important	19	17	+2
Refused	1	1	-

HOW HIGH OF A PRIORITY SHOULD GLOBAL WARMING / CLIMATE CHANGE BE?

Overall, Americans are +6 points more likely (36% vs. 30%) to think *global warming* should be a “very high” or “high priority” for the president and Congress than *climate change*.

Do you think each of these issues should be low, medium, high, or very high priority for the president and Congress? (global warming/climate change)			
	<u>Global warming</u>	<u>Climate change</u>	<u>Diff.</u>
(Base: Total respondents)	(830)	(827)	
	%	%	
Very high/high (sum)	36	30	+6
Very high	14	9	+5
High	22	21	+1
Medium/low (sum)	63	69	-6
Medium	34	34	-
Low	29	35	-6
Refused	1	1	-

Women are +13 points (41% vs. 28%), **Democrats are +14 points** (56% vs. 42%), **liberals are +14 points** (63% vs. 49%), and **moderates are +10 points** (38% vs. 28%) more likely to say the president and Congress should make *global warming* a high or very high priority than *climate change*. No subgroups are more likely to say *climate change* should be a high priority than *global warming*.

HOW BIG OF AN EFFORT SHOULD THE U.S. MAKE TO REDUCE GLOBAL WARMING / CLIMATE CHANGE?

Overall, Americans are slightly more likely to say the United States should make a large (27% vs. 24%) or small-scale effort (22% vs. 17%) to reduce *global warming* than *climate change*. However, Americans are more likely to say the U.S. should make a medium-scale effort to reduce *climate change* (40% vs. 34%) than *global warming* (22%).

How big of an effort should the United States make to reduce (global warming/climate change)?			
	Global warming	Climate change	Diff.
(Base: Total respondents)	(830)	(827)	
	%	%	
Large-/medium-scale effort (sum)	61	64	-3
A large-scale effort, even if it has large economic costs	27	24	+3
A medium-scale effort, even if it has moderate economic costs	34	40	-6
Small-scale/no effort (sum)	39	35	+4
A small-scale effort, even if it has small economic costs	22	17	+5
No effort	17	18	-1
Refused	1	1	-

Republicans are +7 points more likely to say the U.S. should make a large- or medium-scale effort to reduce *climate change* (52%) than to reduce *global warming* (45%). Neither Democrats, Independents, nor any other groups differentiate between the two terms on this question.

WOULD AMERICANS PARTICIPATE IN A CAMPAIGN TO CONVINCE OFFICIALS TO TAKE ACTION TO REDUCE GLOBAL WARMING / CLIMATE CHANGE?

Americans overall are +6 points more likely to say they would join a campaign to convince elected officials to take action to reduce *global warming* (29%) than to reduce *climate change* (23%).

How willing or unwilling would you be to join a campaign to convince elected officials to take action to reduce (global warming/climate change)?			
	<u>Global warming</u>	<u>Climate change</u>	<u>Diff.</u>
(Base: Total respondents)	(830)	(827)	
	%	%	
Currently doing it/definitely/probably would (sum)	29	23	+6
I am participating in a campaign like this now	2	2	-
I definitely would do it	8	6	+2
I probably would do it	19	15	+4
Probably/definitely would not do it (sum)	42	46	-4
I probably would not do it	16	23	-7
I definitely would not do it	26	23	+3
Not sure	22	24	-2
Refused/prefer not to answer	7	7	-

Men are +9 points (32% vs. 23%), **Generation X is +19 points** (37% vs. 18%), **liberals are +16 points** (53% vs. 37%), and **moderates are +7 points** (30% vs. 23%) more likely to say they would join a campaign to convince elected officials to take action to reduce *global warming* than *climate change*. No subgroups are more likely to say they would join a campaign to reduce *climate change* than *global warming*.

HAVE AMERICANS CONTACTED AN ELECTED OFFICIAL ABOUT *GLOBAL WARMING* / *CLIMATE CHANGE*?

Americans are no more likely to say they have written a letter or email, or phoned a government official in the past 12 months about *global warming* (13%) than about *climate change* (13%). This behavior is relatively rare, with 83% of Americans reporting that they have never done this.

Over the past 12 months, how many times have you done the following? Written letters, emailed, or phoned government officials about (global warming/climate change)?			
	<u>Global warming</u>	<u>Climate change</u>	<u>Diff.</u>
(Base: Total respondents)	(830)	(827)	
	%	%	
Once or more often	13	13	-
Many times (6+)	1	-	+1
Several times (4-5)	2	2	-
A few times (2-3)	6	5	+1
Once	4	6	-2
Never	83	83	-
Don't know	2	3	-1
Refused	1	1	-

No demographic or political groups responded differently to the two terms with one exception: **Independents were +9 points** more likely to have contacted a government official about *global warming* (17%) than about *climate change* (8%) in the past 12 months.

HOW OFTEN DO AMERICANS DISCUSS *GLOBAL WARMING* / *CLIMATE CHANGE* WITH FRIENDS AND FAMILY?

Americans report that neither *global warming* nor *climate change* are common conversation topics among their own friends and family (73% and 71%, respectively, say they rarely or never discuss it).

Americans are slightly more likely (+4 points) to say they discuss *climate change* often or occasionally (30%) than *global warming* (26%).

How often do you discuss (global warming/climate change) with your family and friends?			
	<u>Global warming</u>	<u>Climate change</u>	<u>Diff.</u>
(Base: Total respondents)	(830)	(827)	
	%	%	
Often/occasionally (sum)	26	30	-4
Often	3	4	-1
Occasionally	23	26	-3
Rarely/never (sum)	73	71	+2
Rarely	39	39	-
Never	34	32	+2
Refused	1	1	-

SUMMARY & DISCUSSION

These studies found that *global warming* and *climate change* are often *not* synonymous—they mean different things to different people and activate different sets of beliefs, feelings, and behaviors, as well as different degrees of urgency about the need to respond.

An analysis of Google searches from 2004 to 2014 found that Americans have historically used *global warming* as a search term much more frequently than *climate change*.

A nationally representative survey (Survey Study 1) in January 2014 found that while Americans are equally familiar with the two terms, they are 4 times more likely to say they hear the term *global warming* in public discourse than *climate change*. Likewise, Americans are 2 times more likely to say they personally use the term *global warming* than *climate change* in their own conversations.

A separate nationally representative survey (Survey Study 2) in November-December 2013 found that almost without exception, *global warming* is more engaging than *climate change*. Compared to *climate change*, the term *global warming* generates:

- Stronger ratings of negative affect (i.e., bad feelings), especially among women, Generation Y, the Greatest Generation, African-Americans, Hispanics, Democrats, Independents, Moderates, conservatives, and evangelicals.
- Different top of mind associations and stronger negative affect, especially among political moderates:
 - Overall, *global warming* generates significantly more top of mind associations to Icemelt (e.g., “melting glaciers”), Alarm (e.g., “world catastrophe”), Flood (e.g., “coastal flooding”), and Ozone (e.g., “the ozone hole”) categories. *Climate change* generates significantly more associations to Weather (e.g., “storms”) and Global Warming (e.g., “global warming”) categories.
 - Within the Weather category, *global warming* generates a higher percentage of associations to “extreme weather” than does *climate change*, which generates more associations to general weather patterns.
- Greater certainty that the phenomenon is happening, especially among men, Generation X, and liberals.
- Greater understanding that human activities are the primary cause among Independents.
- Greater understanding of the scientific consensus among Independents and liberals.
- More intense worry about the issue, especially among men, Generation Y, Generation X, Democrats, liberals and moderates.
- A greater sense of personal threat, especially among women, the Greatest Generation, African-Americans, Hispanics, Democrats, Independents, Republicans, liberals and moderates.
- A greater sense of threat to one’s own family, especially among women, Generation Y, African-Americans, Hispanics, Democrats, Independents, and Republicans.
- A greater sense of threat to future generations among Independents and Generation Y.
- A greater sense that people in the U.S. are being harmed right now, especially among Independents, Generation Y, and Hispanics.
- Stronger belief that weather in the U.S. is being affected a lot, especially among Independents and Republicans.

- Higher issue priority ratings for action by the president and Congress, especially among women, Democrats, liberals and moderates.
- Greater support for a large or small-scale effort by the U.S. (although *climate change* generates more support for a medium-scale effort, especially among Republicans).
- Greater willingness to join a campaign to convince elected officials to take action, especially among men, Generation X, liberals and moderates.

These diverse results strongly suggest that *global warming* and *climate change* are used differently and mean different things in the minds of many Americans. Scientists often prefer the term *climate change* for technical reasons, but should be aware that the two terms generate different interpretations among the general public and specific subgroups. Some issue advocates have argued that the term *climate change* is more likely to engage Republicans in the issue, however, the evidence from these studies suggests that in general the terms are synonymous for Republicans – i.e., neither term is more engaging than the other, although in several cases, *global warming* generates stronger feelings of negative affect and stronger perceptions of personal and familial threat among Republicans; they are also more likely to believe that *global warming* is already affecting weather in the United States.

By contrast, the use of the term *climate change* appears to actually *reduce* issue engagement by Democrats, Independents, liberals, and moderates, as well as a variety of subgroups within American society, including men, women, minorities, different generations, and across political and partisan lines. In several cases, the differences in the effect of the two terms are large. For example, African Americans (+20 percentage points) and Hispanics (+22) are much more likely to rate *global warming* as a “very bad thing” than *climate change*. Generation X (+21) and liberals (+19) are much more likely to be certain *global warming* is happening. African-Americans (+22) and Hispanics (+30) are much more likely to perceive *global warming* as a personal threat, or that it will harm their own family (+19 and +31, respectively). Hispanics (+28) are much more likely to say *global warming* is already harming people in the United States right now. And Generation X (+19) is more likely to be willing to join a campaign to convince elected officials to take action to reduce *global warming* than *climate change*.

It is important to note, however, that connotative meanings are dynamic and change, sometimes rapidly. It is possible that with repeated use, *climate change* will come to acquire similar connotative meanings as *global warming*, that the two will eventually become synonymous for most people, or that *climate change* will supplant *global warming* as the dominant term in public discourse. In the meantime, however, the results of these studies strongly suggest that the two terms continue to mean different things to many Americans. As Kathleen Hall Jamieson and Paul Waldman argue in their analysis of media coverage of political affairs:

Language choices not only reflect individual disposition but influence the course of policy as well. Tax cuts or tax relief? Religious or faith-based? Death penalty or execution? Estate tax or death tax? Civilian deaths or collateral damage? In the early stages of almost any policy debate, one can find a battle over which terms will be chosen. Because the terms we use to describe the world determine the ways we see it, those who control the language control the argument, and those who control the argument are more likely to successfully translate belief into policy.¹⁶

¹⁶ Jamieson, K. H., & Waldman, P. (2003). *The press effect: Politicians, journalists and the stories that shape the political world*. New York: Oxford University Press.

APPENDIX I: METHODS

The data for National Survey Study 1 are based on a nationally representative survey of 1,021 American adults (18+) conducted January 17 to 19, 2014. The survey was conducted by GfK, using their online KnowledgePanel, on behalf of Yale and George Mason Universities, as part of an omnibus survey containing questions on other topics furnished by other GfK clients.

The data for National Survey Study 2 are based on a nationally representative survey of 1,657 American adults (18+) conducted from November 23 – December 9, 2013. Half of the sample (n=830) was administered questions containing the term *global warming* and the other half (n=827) was asked identical questions, except with the term *climate change* substituted in the question wording. All questionnaires were self-administered by respondents in a web-based environment. The survey took, on average, about 34 minutes to complete.

Both national survey samples were drawn from GfK's KnowledgePanel®, an online panel of members drawn using probability sampling methods. Prospective members are recruited using a combination of random digit dial and address-based sampling techniques that cover virtually all (non-institutional) resident phone numbers and addresses in the United States. Those contacted who would choose to join the panel but do not have access to the Internet are loaned computers and given Internet access so they may participate.

The sample therefore includes a representative cross-section of American adults – irrespective of whether they have Internet access, use only a cell phone, etc. Key demographic variables were weighted, post survey and *within* the “global warming” and “climate change” samples, to match US Census Bureau norms on key demographic variables (e.g., sex, age, region).

The survey instruments were designed by Anthony Leiserowitz, Geoff Feinberg, and Seth Rosenthal, of Yale University, and Edward Maibach and Connie Roser-Renouf of George Mason University.

Margins of error

All samples are subject to some degree of sampling error—that is, statistical results obtained from a sample can be expected to differ somewhat from results that would be obtained if every member of the target population were interviewed. Average margins of error, at the 95% confidence level, are as for +/- 3 percentage points for both the “global warming” (n=830) and “climate change” (n=827) total samples.

Rounding error

For tabulation purposes, percentage points are rounded off to the nearest whole number. As a result, percentages in a given chart may total slightly higher or lower than 100%.

APPENDIX II: SAMPLE DEMOGRAPHICS

Global Warming Sample

Total	N (unweighted) 830	% (weighted) 100
Sex		
Men	424	48
Women	406	52
Age		
Generation Y (18-30)	175	28
Generation X (31-48)	165	24
Baby Boomers (49-67)	350	35
WWII (68+)	140	13
Education		
Less than high school	60	12
High school graduate	265	30
Some college/tech	244	29
College graduate	158	18
Post graduate	103	12
Household Income		
<\$25K	146	18
\$25K - <\$50K	190	23
\$50K - <\$75K	171	18
\$75K - <\$100K	113	16
\$100K - <\$125K	97	12
\$125K+	113	13
Hispanic		
Yes	83	15
Race/Ethnicity		
White, non-Hispanic	626	66
Black, African-American non-Hispanic	74	12
Other non-Hispanic	47	7
Region		
Northeast	150	18
Midwest	198	22
South	297	37
West	185	23

Climate Change Sample

	N (unweighted)	% (weighted)
Total	827	100
Sex		
Men	408	48
Women	419	52
Age		
Generation Y (18-30)	171	27
Generation X (31-48)	168	24
Baby Boomers (49-67)	347	36
WWII (68+)	141	13
Education		
Less than high school	61	12
High school graduate	288	30
Some college/tech	233	29
College graduate	164	21
Post graduate	81	9
Household Income		
<\$25K	146	18
\$25K - <\$50K	190	23
\$50K - <\$75K	170	19
\$75K - <\$100K	117	16
\$100K - <\$125K	92	12
\$125K+	112	13
Hispanic		
Yes	68	15
Race/Ethnicity		
White, non-Hispanic	645	66
Black, African-American non-Hispanic	60	12
Other non-Hispanic	54	7
Region		
Northeast	161	18
Midwest	204	22
South	288	37
West	174	23