

# **DO MILLENNIALS SEE CLIMATE CHANGE AS MORE THAN JUST A MEME?**

by  
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## **Abstract**

This paper compares the climate change public opinion of Millennials—born between the years 1981 and 2000—to those of other generations (Generation X, Baby Boomers, the Silent Generation). Recent social and political campaigns have hinged their tactics on the widespread idea that young people are more likely to act on climate change than older Americans.

However, an analysis of 2009-2010 survey data from the Yale Project on Climate Change Communication and the George Mason University Center for Climate Change Communication concluded that there is, “no predictable portrait of young people when it comes to global warming.” As these individuals in the Millennial generation have aged, begun to pay taxes, purchase goods and services, and vote in elections, it is important to look again at their climate change beliefs and attitudes. Using the survey data from the Yale/Mason Climate Change in the American Mind project (conducted October 20-November 1, 2017), I show that Millennials have similar or less engagement on global warming than other generations. Millennials are less likely to discuss global warming with their friends and family than older Americans. They are also just as likely to believe that global warming is happening and is personally important to them as other generations. Additionally, fewer Americans in 2017 believe that humans can reduce global warming successfully than did in 2010; Millennials are equally pessimistic as are other generations that we will address climate change.

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## Introduction

Millennials have been touted as the generation that will do something about global warming (Thomas, 2015). Recent social and political campaigns have hinged their tactics on the widespread idea that young people are more likely to act on climate change than older Americans (NexGen America, 2015). Some social science supports the notion that members of younger generations care more about the community values of society like environmentalism than older generations, who are more concerned about their own economic welfare. As younger generations replace older generations, this theory postulates that society as a whole will care more about public concerns like climate change. Inglehart et. al. write that, “age reflects the process of long-term generational turnover, as the younger birth cohort with post-materialist values, who grew up in affluent Western welfare states, gradually come to replace their parents and grandparents, who had experienced less secure upbringings during the inter-war decades” (2016, p. 14).

Other social scientists studying generational difference disagree with this premise and have found evidence that younger generations, instead of becoming more societally engaged than their elders, are less likely to engage in civic matters like environmental activism. Twenge et. al. found that, “Millennials reported thinking about social problems less, having less interest in government, making less effort to conserve energy, and being less interested in taking ‘green’ actions to protect the environment, either personally or through government” (2012, p. 1056). Millennials who are not engaged civically may not be able to make a difference in reducing

global warming. Other studies have similarly shown that Millennials, “often do not affiliate with traditional political organizations or see their values reflected in them” (Wihbey, 2013). This latter argument is supported by an analysis of 2009-2010 survey data from the Yale Project on Climate Change Communication and the George Mason University Center for Climate Change Communication that concluded that there is, “no predictable portrait of young people when it comes to global warming” (Feldman et. al., 2010). The study defined young people as between the ages of 18 and 35 in 2010.

As these individuals in the Millennial generation have aged, begun to pay taxes, purchase goods and services, and vote in elections it is important to look again at their climate change beliefs and attitudes. The American public’s concern over global warming has fluctuated since 2010. Gallup found that in 2011 only 25% of respondents “worried a great deal” about global warming (Saad, 2017). In 2017, worry over global warming had risen to 45% of respondents.

### **Research questions and analysis**

In order to find out whether Millennials in 2017 are more engaged than other generations, I used the survey data collected between October 20-November 1, 2017 from the Yale/Mason Climate Change in the American Mind project to look for differences. The survey comprised of 1,304 American adult respondents and the average margin of error for the full sample was +/- 3 percentage points at the 95% confidence level (Leiserowitz et. al., 2017). Details on the survey can be found in the methodology section of this paper.

I hypothesized that Millennial attitudes on global warming in 2017 would mimic those of other generations. I additionally hypothesized that political ideology would differentially affect generational attitudes and beliefs on climate change. In order to assess the interaction of generation and political affiliation, I utilized a logistic regression model controlling for both generational membership and political ideology to examine the likelihood for how a generational member in a particular ideology would respond to global warming questions.

I used Pew Research Center’s definition of generational age spans (Pew Research Center, 2018), to identify the age range of each generation in 2017 (Table 1).

**Table 1** | Age range of each generation in 2017

<b>Generation</b>	<b>Ages</b>
Millennials (1981-2000)	<b>17—36</b>
Gen X (1965-1980)	<b>37—52</b>
Baby Boomer (1946-1964)	<b>53—71</b>
Silent (1928-1945)	<b>72—89</b>

## **Results and Discussion**

**Millennials are not more engaged with or concerned about global warming than older generations**



*Millennials are less likely to discuss global warming with those around them*

Almost a third of Millennials have never discussed global warming with their family and friends, compared to 24% of Gen Xers, 21% of Baby Boomers, and 23% of Silent Generation members (Table 2).

**Table 2** | Generational norms on discussing global warming

	National Average	Millennial (33%)	Gen X (25%)	Baby Boomer (33%)	Silent (9%)
How often do you discuss global warming with your family and friends?					
	%	%	%	%	%
<i>Often</i>	6	4 <sup>1</sup>	7	8	8
<i>Occasionally</i>	32	30	32	35	29
<i>Rarely</i>	37	36	37	36	40
<i>Never</i>	25	31	24	21	23
<b>n=</b>	<b>1304</b>	<b>427</b>	<b>323</b>	<b>434</b>	<b>120</b>

Chi-square  $p < .05$

*Global warming has equal personal importance across generations*

The issue of global warming is not of any greater importance to Millennials than it is to members of the other generations. Twenty-nine percent of Millennials say the issue of global warming is either “extremely important” or “very important” (29%), which is statistically equivalent to the 33% of Gen Xers, the 31% of Baby Boomers, and the 27% of Silent Generation members who say the same (Table 3).

**Table 3** | Personal importance of global warming

<sup>1</sup> Within the tables, percentages were rounded to the nearest whole number. Therefore, percentages within a category may total slightly higher or lower than 100%.

	National Average	Millennial (33%)	Gen X (25%)	Baby Boomer (33%)	Silent (9%)
How important is the issue of global warming to you personally?					
	%	%	%	%	%
<i>Extremely important</i>	12	12	13	12	8
<i>Very important</i>	19	17	20	19	19
<i>Somewhat important</i>	37	38	38	35	39
<i>Not too important</i>	19	20	17	20	17
<i>Not at all important</i>	14	13	12	15	17
<b>n=</b>	<b>1305</b>	<b>427</b>	<b>321</b>	<b>436</b>	<b>121</b>

Chi-square *n.s.*

*Almost 1 in 5 Millennials say they have not given any thought to global warming—the same as the Silent Generation*

Millennials (18%) are as likely as Silent Generation members to say that they had “not at all” thought about global warming before today (19%). Less than half of Millennials (47%) say that they had thought about global warming “a lot” (18%) or “some” (29%) compared to 58% of Gen Xers or 59% of Baby Boomers (Table 4).

**Table 4** | Amount of prior thought about global warming

	National Average	Millennial (33%)	Gen X (25%)	Baby Boomer (33%)	Silent (9%)
How much had you thought about global warming before today?					
	%	%	%	%	%
<i>A lot</i>	22	18	24	25	19
<i>Some</i>	32	29	34	34	34
<i>A little</i>	32	34	32	31	28
<i>Not at all</i>	14	19	11	11	19
<b>n=</b>	<b>1307</b>	<b>428</b>	<b>323</b>	<b>435</b>	<b>121</b>

Chi-square  $p < .01$

*Worry about global warming increases from 2009-2010*

In 2009-2010, there were no differences by generation on worry about climate (Feldman et. al., 2010, Table 3). By 2017, generational membership does make a significant difference in worry about global warming: younger generations are more worried than older generations. When it comes to concerns about global warming, 68% of Millennials are “very worried” (23%) or “somewhat worried” (45%), as are 68% of Gen Xers. Just over half of older generations are worried: 57% of Baby Boomers and the 56% of the Silent Generation. Among all age groups, respondents who are “very worried” have increased by 10% since 2010. The national average was 12% in 2010 and is now 22% (Table 5).

**Table 5 | Worry about global warming**

	<b>National Average</b>	<b>Millennial (33%)</b>	<b>Gen X (25%)</b>	<b>Baby Boomer (33%)</b>	<b>Silent (9%)</b>
How worried are you about global warming?					
	%	%	%	%	%
<i>Very worried</i>	22	23	25	20	15
<i>Somewhat worried</i>	42	45	43	37	41
<i>Not very worried</i>	23	19	21	26	27
<i>Not at all worried</i>	14	13	12	16	17
<b>n=</b>	<b>1304</b>	<b>426</b>	<b>322</b>	<b>435</b>	<b>121</b>

Chi-square  $p < .05$

Only 4 in 10 of Millennials believe that global warming is harming people in the U.S.

Forty percent of Millennials say that people in the United States are being harmed now. Less than half of other generations say the same: 47% of Gen Xers, 42% of Baby Boomers, and 36% of members of the Silent generation (Table 6).

**Table 6** | Timing of global warming harm

	National Average	Millennial (33%)	Gen X (25%)	Baby Boomer (33%)	Silent (9%)
When do you think global warming will start to harm people in the United States?					
	%	%	%	%	%
<i>They are being harmed now</i>	42	40	47	42	36
<i>In 10 years</i>	12	13	10	11	13
<i>In 25 years</i>	12	14	13	10	12
<i>In 50 years</i>	11	12	11	11	10
<i>In 100 years</i>	11	11	10	12	7
<i>Never</i>	12	10	10	14	22
<b>n=</b>	<b>1301</b>	<b>425</b>	<b>322</b>	<b>433</b>	<b>121</b>

Chi-square  $p < .05$

More than 1 in 10 Millennials say that “all” or “none” of their friends share their views on global warming

Twelve percent of Millennials say that their friends share “all” of their views on global warming compared to 5% of Gen Xers, 6% of Baby Boomers, and 6% of the members of the Silent Generation. Similarly, 17% of Millennials say that “none” of their friends share their views on global warming whereas 13% of Gen X’ers, 11% of Baby Boomers, and 14% of the Silent Generation say that they have “none” of their friends share their views (Table 7).

**Table 7** | Generational norms on sharing views on global warming

	National Average	Millennial (33%)	Gen X (25%)	Baby Boomer (33%)	Silent (9%)
How many of your friends share your views on global warming?					
	%	%	%	%	%
All	7	12	5	6	6
Most	28	23	31	31	28
Some	26	23	28	27	31
A few	24	25	23	25	22
None	14	17	13	11	14
<b>n=</b>	<b>1303</b>	<b>425</b>	<b>322</b>	<b>435</b>	<b>121</b>

Chi-square  $p < .05$

### Millennials are as likely as other generations to correctly perceive the reality and causes of global warming

#### *Belief in global warming is similar across the generations*

Like in 2010, there is currently no significant difference in belief about global warming between the generations. In 2009-2010, only 57% of people said that they believed that global warming is happening (Feldman et. al., 2010, Table 6). Since then, there have been massive gains. In 2017, 71% of adults believe that global warming is happening. Of the remaining 29% of adults, slightly more are unsure about the existence of global warming (15%) than think it does not exist (13%) (Table 8).

**Table 8 |** Belief in global warming

	National Average	Millennial (33%)	Gen X (25%)	Baby Boomer (33%)	Silent (9%)
Do you think that global warming is happening?					

	%	%	%	%	%
Yes	71	72	75	69	68
Don't know	15	14	16	16	18
No	13	13	10	15	13
<b>n=</b>	<b>1304</b>	<b>427</b>	<b>321</b>	<b>436</b>	<b>120</b>

Chi-square *n.s.*

*Only the Silent Generation is unconvinced that global warming is mostly human-caused*

Millennials (58%), Gen Xers (59%), and Baby Boomers (50%) are similar when it comes to believing that global warming is “caused mostly by human activities.” Half or more of those generations say that to be true. However, only a minority of members of the Silent Generation agree that global warming is “caused mostly by human activity” (38%) (Table 9).

**Table 9 | Beliefs about the causes of global warming**

	<b>National Average</b>	<b>Millennial (33%)</b>	<b>Gen X (25%)</b>	<b>Baby Boomer (33%)</b>	<b>Silent (9%)</b>
Assuming that global warming is happening, do you think it is...					
	%	%	%	%	%
<i>Caused mostly by human activities</i>	54	58	59	50	38
<i>Caused mostly by changes in the environment</i>	31	30	28	33	44
<i>Neither because global warming isn't happening</i>	6	5	5	7	7
<i>Other</i>	9	7	8	11	12
<b>n=</b>	<b>1302</b>	<b>427</b>	<b>322</b>	<b>434</b>	<b>119</b>

Chi-square  $p < .01$

**Across generations, Americans feel equally unsure that we can successfully address global warming**

There is no significant difference between the generations in believing that human action can reduce global warming. In fact, fewer adults overall (5%) believe that humans can reduce global warming and will do so successfully than they did in 2009-2010 (10%) (Feldman et. al., 2010, Table 9) (Table 10).

**Table 10** | Expected outcome of human action to reduce global warming

	National Average	Millennial (33%)	Gen X (25%)	Baby Boomer (33%)	Silent (9%)
Which of the following statements comes closest to you view?	%	%	%	%	%
<i>Humans can reduce global warming, and we are going to do so successfully</i>	5	6	6	5	4
<i>Humans could reduce global warming, but it's unclear at this point whether we will do what's needed</i>	48	46	51	46	51
<i>Humans could reduce global warming, but people aren't willing to change their behavior; so, we're not going to</i>	25	28	24	22	22
<i>Humans can't reduce global warming, even if it is happening</i>	15	13	13	19	16
<i>Global warming isn't happening</i>	7	7	7	8	7
	<b>n= 1304</b>	<b>426</b>	<b>323</b>	<b>434</b>	<b>121</b>

Chi-square *n.s.*

**Americans across generations are equally as likely to believe they have all the information needed on global warming**

*Millennials are as likely as other generations to change their mind about global warming*

Age is not a good indicator for predicting whether or not a person could easily change their mind about global warming. On average, 3% of Americans “strongly agree” that they could

easily change their minds about global warming and 35% of Americans “strongly disagree” that they could change their minds (Table 11).

**Table 11 |** Willingness to change mind about global warming

	National Average	Millennial (33%)	Gen X (25%)	Baby Boomer (33%)	Silent (9%)
I could easily change my mind about global warming.					
	%	%	%	%	%
<i>Strongly agree</i>	3	3	4	1	3
<i>Somewhat agree</i>	24	23	25	24	28
<i>Somewhat disagree</i>	38	42	35	37	38
<i>Strongly disagree</i>	35	33	36	38	32
<b>n=</b>	<b>1302</b>	<b>424</b>	<b>323</b>	<b>435</b>	<b>120</b>

Chi-square *n.s.*

*Millennials are just as likely to say there is a scientific consensus as other generations*

Millennials are just as likely to say that the vast majority of climate scientists believe that human-caused global warming is happening as are other generations. Just over half of Millennials (53%) say that more than 75% of scientists think that global warming is happening, as do 50% of Gen Xers, 51% of Baby Boomers, and 52% of the Silent Generation (Table 12).

**Table 12 |** Perception of a scientific consensus

	National Average	Millennial (33%)	Gen X (25%)	Baby Boomer (33%)	Silent (9%)
To the best of your knowledge, what percentage of climate scientists think that human-caused global warming is happening?					
	%	%	%	%	%
<i>Greater than 75%</i>	52	53	50	51	52
<i>50%-75%</i>	22	22	22	23	22
<i>Less than 50%</i>	26	25	28	26	27



n= 1303 426 322 435 120

Chi-square *n.s.*

## Modeled data

The following figures are comprised of modeled data from logistic regression analyses controlling for both generational membership and political ideology. The y-axis shows the estimated percent of respondents choosing a specific question response.

### **Political Ideology is a better indicator of global warming beliefs than generational membership**

In order to understand how political ideology plays a role in each generation's beliefs about climate change, we modeled the effects of both on climate change public opinion.<sup>2</sup>

#### *Liberals in older generations discuss global warming more than liberals in younger generations*

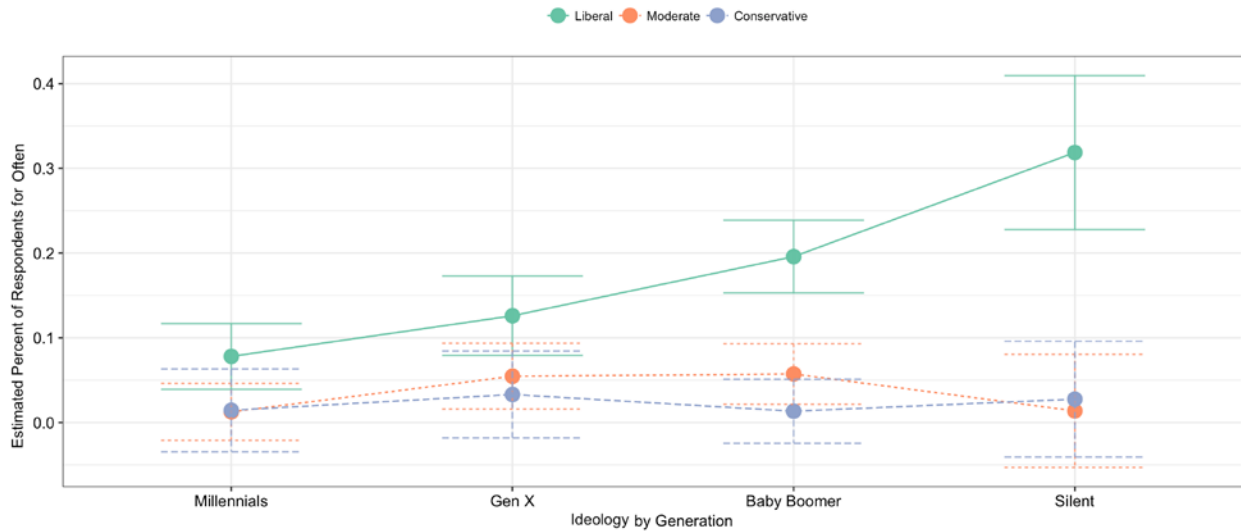
Liberals in the Silent Generation are the most likely to discuss global warming often with their friends and family (32%). There is little difference in the likelihood of moderates and conservatives of all generations to discuss global warming often. Furthermore, liberal Millennials (8%) respond more like their moderate (1%) and conservative (1%) generational counterparts than those of the same ideology that are older (Figure 1; Model, Appendix A).

#### **Figure 1 | Ideological differences in discussing global warming for the response**

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<sup>2</sup> The following generalized linear models were verified for good fit using the Wald test (which is used to evaluate the statistical significance of each coefficient in the model) and a Likelihood Ratio test (used to evaluate the goodness of fit between the null model and calculated model). The model test results are included in each figure's appendix.

**How often do you discuss global warming with your family and friends?**  
 [Response: "Often"]



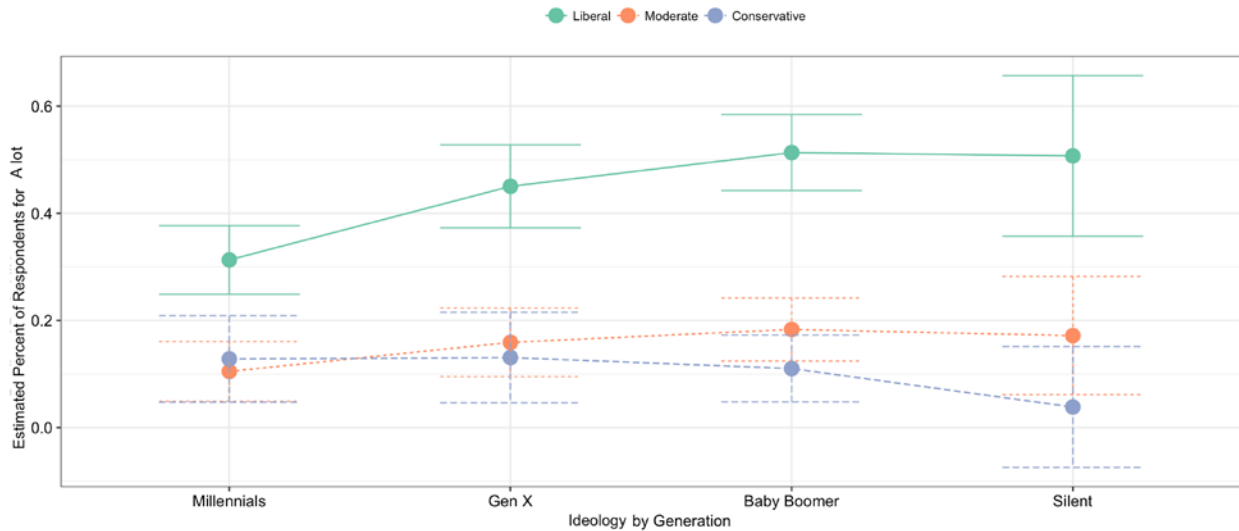
Source: Yale/Mason Climate Change in the American Mind project, Oct 2017  
 N = 1304

*Liberals of older generations say they have thought “a lot” about global warming before today.*

Thirty-one percent of Liberal Millennials say they have thought “a lot” about global warming before today while 45% of Gen Xers, 51% of Baby Boomers, and 51% of members of the Silent Generation say the same. Within moderates and conservatives, there is not much of a difference between the generations. Liberal Millennials resemble their moderate (10%) and conservative (13%) peers more than other liberals of older generations. Additionally, moderates and conservatives of all generations are about equally as likely to have thought “a lot” about global warming before today (Figure 2; Model, Appendix B).

**Figure 2** | Ideological differences in the amount of prior thought about global warming

### How much had you thought about global warming before today? [Response: "A lot"]



Source: Yale/Mason Climate Change in the American Mind project, Oct 2017  
N = 1307

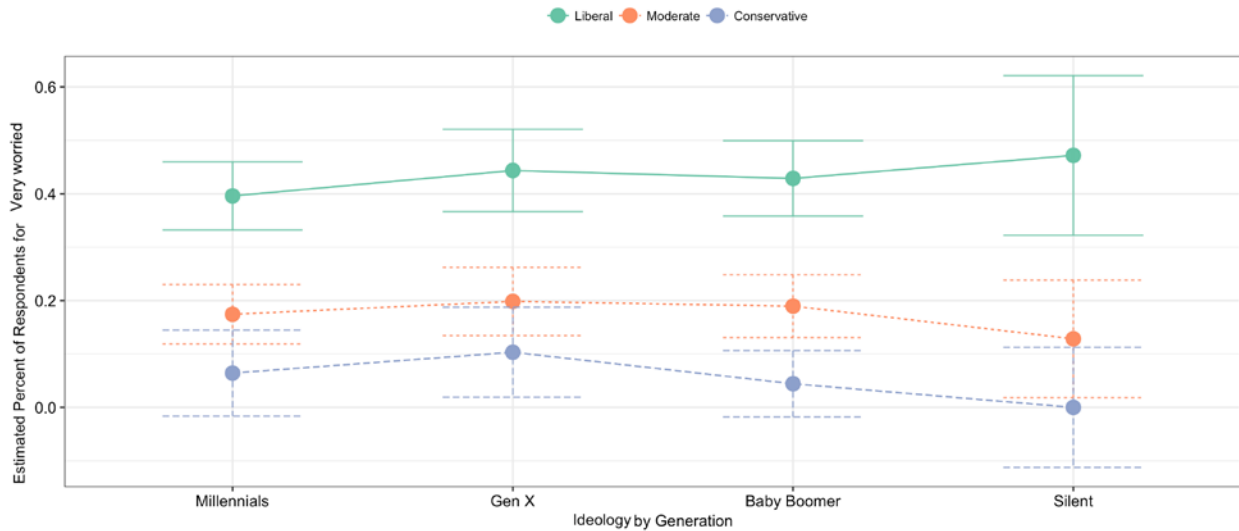
*Political ideology is a good predictor of those who are very worried about global warming*

While Figure 3 shows that there is a clear difference in ideology that contributes to how likely a person is “very worried” about global warming, it also demonstrates that generational membership is not a good predictor of those who are very worried. Millennials are about equally as likely as any other generation to be “very worried” about global warming (Figure 3; Model, Appendix C).

**Figure 3** | Ideological differences in worry about global warming

## How worried are you about global warming?

[Response: "Very worried"]



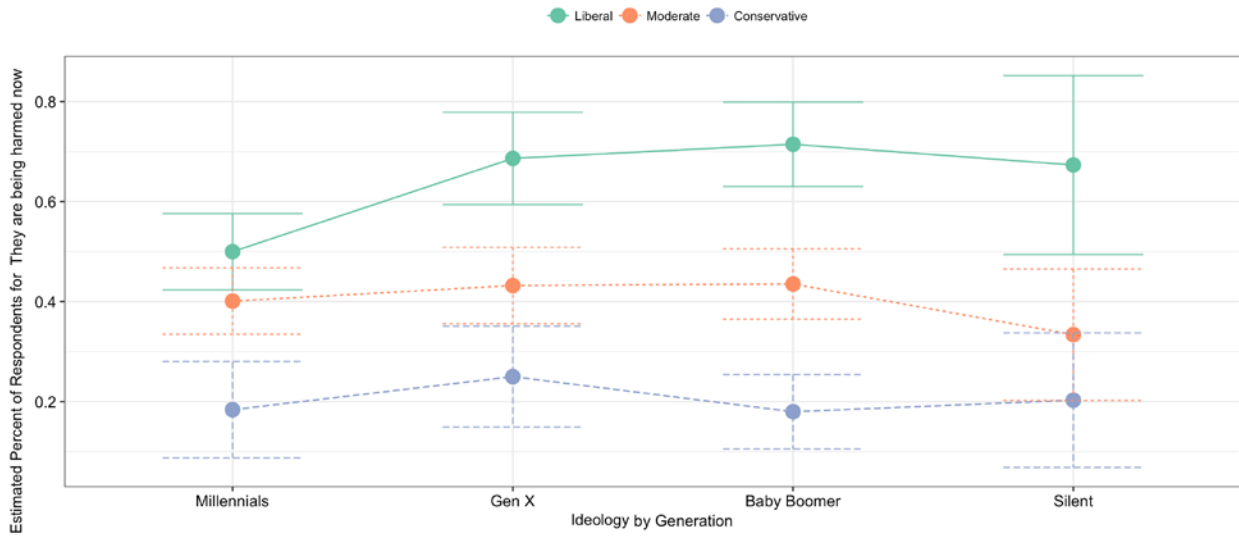
Source: Yale/Mason Climate Change in the American Mind project, Oct 2017  
N = 1304

*Liberals in older generations are more likely to think that global warming is harming Americans now*

Liberal Millennials (50%) are less likely to think that global warming is currently harming people in the United States than liberals of other generations (69% of Gen Xers, 71% of Baby Boomers, and 67% of members in the Silent Generation). Moderates and conservatives are about as likely to think that people in the U.S. are being harmed now regardless of generation (Figure 4; Model, Appendix D).

**Figure 4** | Ideological differences in timing of global warming harm

**When do you think global warming will start to harm people in the United States?**  
 [Response: "They are being harmed now"]



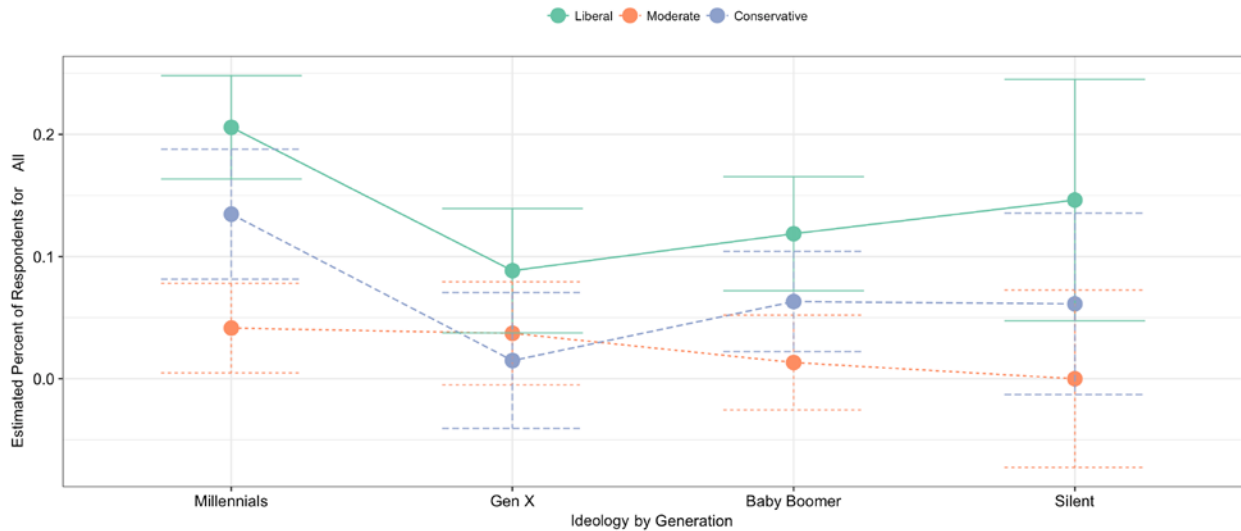
Source: Yale/Mason Climate Change in the American Mind project, Oct 2017  
 N = 1301

*About 2 in 10 liberal Millennials say that all their friends share their global warming views*

Twenty-one percent of liberal Millennials say that all their friends share their global warming views compared to 9% of liberal Gen Xers, 12% of liberal Baby Boomers, and 15% of liberal members of the Silent Generation. It is of note that even conservative Millennials (13%) are about as likely to think that all their friends share their global warming views as liberals from the other generations (Figure 5; Model, Appendix E).

**Figure 5** | Ideological differences in sharing views on global warming

**How many of your friends share your views on global warming?**  
 [Response: "All"]



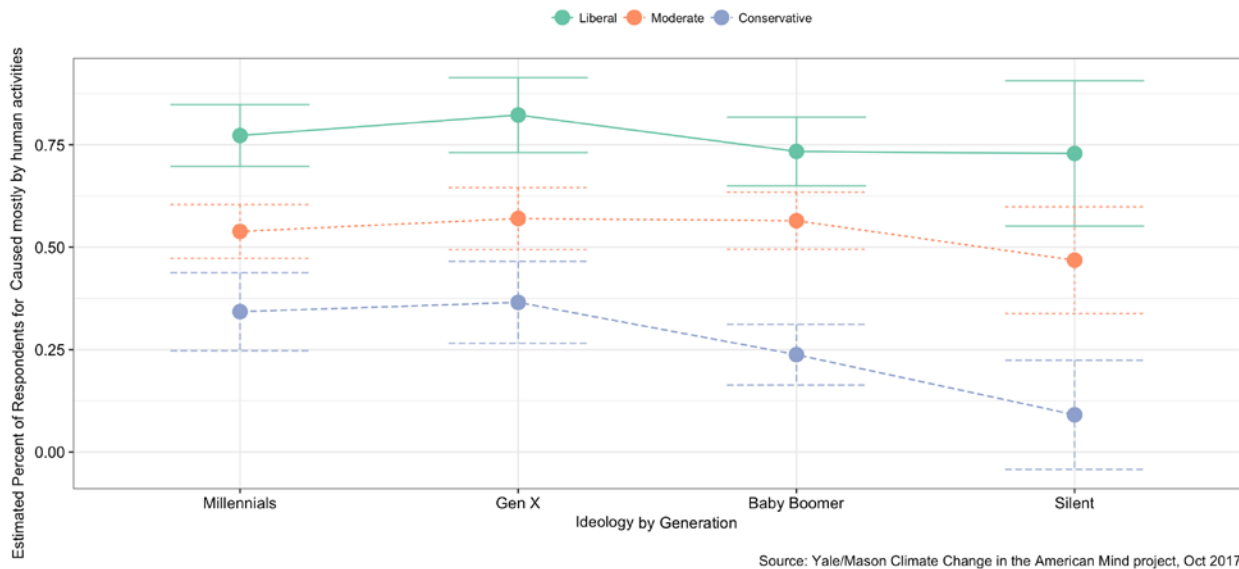
Source: Yale/Mason Climate Change in the American Mind project, Oct 2017  
 N = 1303

*Political ideology is a better indicator of whether a person believes that global warming is caused by human activity than generational membership*

Liberals of all generations are the most likely to believe that global warming is caused by human activity and with about the same statistical probability. Seventy-seven percent of liberal Millennials say that global warming is caused by human activity. This is similar to the 82% of Gen Xers, 73% of Baby Boomers, and 73% of members of the Silent generation (Figure 6; Model, Appendix F).

**Figure 6** | Ideological differences in beliefs about the causes of global warming

## Assuming that global warming is happening, do you think it is... [Response: "Caused mostly by human activities"]



## Conclusion

Overall, Millennials demonstrate similar or less engagement on global warming than older generations. Millennials are less likely to discuss global warming with their friends and family than the older generations (Table 2). Additionally, belief in global warming (Table 8), its importance (Table 3), and perceived efficacy in addressing the problem are no greater among Millennials than any other generation (Table 10).

One point of note, the Yale/Mason Climate Change in the American Mind surveys use the term global warming, widely thought of as the gradual warming of the entire earth's temperature, instead of climate change. Climate change refers to the many effects (ex. higher frequency of extreme weather and sea level rise) that the earth is undergoing due to increased greenhouse

gasses including carbon dioxide. Research by Schuldt et. al. found that liberals prefer to use “climate change” while conservatives prefer to use “global warming” (2011, p. 115). It would be interesting to see how generations differ from each other when asked about climate change.

The results of this research are of importance to environmental groups seeking to communicate with Millennial audiences to move the climate change movement forward, marketers learning how to best promote sustainable goods and services to Millennial customers, and policymakers trying to understand this voting demographic, advocate for their interests better, and augment political platforms.

## **Methodology**

The following methodology on conducting the survey comes from the *Politics and Global Warming, October 2017* report from the Yale Program on Climate Change Communication and the George Mason University Center for Climate Change Communication:

The data in this report are based on a nationally representative survey of 1,304 American adults, aged 18 and older, 1,109 of whom are registered to vote. The survey was conducted October 20-November 1, 2017. All questionnaires were self-administered by respondents in a web-based environment. The survey took, on average, about 23 minutes to complete.



The sample was 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, to match US Census Bureau norms.

The survey instrument was designed by Anthony Leiserowitz, Seth Rosenthal, and Matthew Cutler of Yale University, and Edward Maibach and Connie Roser-Renouf of George Mason University. Average margin of error for the full sample: +/- 3 percentage points at the 95% confidence level (Leiserowitz et. al., 2017).

### Sample demographics

	N (unweighted)	% (weighted)
<b>Total</b>	<b>1304</b>	<b>100</b>
Men	637	48
Women	667	52
Millennial (in 2017)	532	33
Generation X (in 2017)	209	25

Baby Boomer (in 2017)	305	33
Silent Generation (in 2017)	158	9
<hr/>		
Less than high school	80	11
High school graduate	340	29
Some college/ Associate degree/ Technical degree	386	29
College graduate	269	17
Post graduate	229	15
<hr/>		
<\$25K	167	15
\$25K-\$50K	267	20
\$50K-\$75K	225	17
\$75K-\$100K	202	14
\$100K-\$125K	156	11
>\$125K	287	23
<hr/>		
Northeast	227	18
Midwest	312	21
South	469	38
West	296	24

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## Appendices

For each appendix, the model shows the interaction between generation and political ideology.

### Appendix A

Wald test for Ideo3

in `glm(formula = x105NEW ~ AGE * Ideo3, data = dfTEMP, weights = dfTEMP$weight)`

F = 3.558891 on 2 and 1281 df: p= 0.028752

The model that combines age and ideology is significant by the Wald test

Descriptive statistics

```
=====
```

	Dependent variable:
	-----
	x105NEW
	How often do you discuss global warming with your family and friends? Response: Often
	-----
AGEGen X	0.05 (0.03)
AGEBaby Boomer	0.1*** (0.03)
AGESilent	0.2*** (0.1)
Ideo3Moderate	-0.1** (0.03)
Ideo3Conservative	-0.1** (0.03)
AGEGen X: Ideo3Moderate	-0.01 (0.04)
AGEBaby Boomer: Ideo3Moderate	-0.1* (0.04)
AGESilent:Ideo3Moderate	-0.2***

	(0.1)
AGEGen X:Ideo3Conservative	-0.03 (0.05)
AGEBaby Boomer:Ideo3Conservative	-0.1*** (0.04)
AGESilent:Ideo3Conservative	-0.2*** (0.1)
Constant	0.1*** (0.02)

---

Observations	1,293
Log Likelihood	-13.1
Akaike Inf. Crit.	50.1

---

Note: \*p<0.1; \*\*p<0.05; \*\*\*p<0.01

## Appendix B

Wald test for Ideo3

in glm(formula = x102NEW ~ AGE \* Ideo3, data = dfTEMP, weights = dfTEMP\$weight)

F = 12.59903 on 2 and 1281 df: p= 3.8145e-06

The model that combines age and ideology is significant by the Wald test

Descriptive statistics

---

Dependent variable:

-----  
x102NEW

How much had you thought about global warming before today? Response: A lot

---

AGEGen X	0.1*** (0.1)
AGEBaby Boomer	0.2*** (0.05)
AGESilent	0.2**

	(0.1)
Ideo3Moderate	-0.2*** (0.04)
Ideo3Conservative	-0.2*** (0.1)
AGEGen X:Ideo3Moderate	-0.1 (0.1)
AGEBaby Boomer:Ideo3Moderate	-0.1* (0.1)
AGESilent:Ideo3Moderate	-0.1 (0.1)
AGEGen X:Ideo3Conservative	-0.1* (0.1)
AGEBaby Boomer:Ideo3Conservative	-0.2*** (0.1)
AGESilent:Ideo3Conservative	-0.3*** (0.1)
Constant	0.3*** (0.03)
-----	
Observations	1,293
Log Likelihood	-661.5
Akaike Inf. Crit.	1,347.1
=====	
Note:	*p<0.1; **p<0.05; ***p<0.01

## Appendix C

Wald test for Ideo3

in glm(formula = x78NEW ~ AGE \* Ideo3, data = dfTEMP, weights = dfTEMP\$weight)

F = 23.08537 on 2 and 1281 df: p= 1.4145e-10

The model that combines age and ideology is significant by the Wald test

Descriptive statistics

Dependent variable:	
-----	
x78NEW	
How worried are you about global warming? Response: Very worried	
-----	
AGEGen X	0.05 (0.1)
AGEBaby Boomer	0.03 (0.05)
AGESilent	0.1 (0.1)
Ideo3Moderate	-0.2*** (0.04)
Ideo3Conservative	-0.3*** (0.1)
AGEGen X:Ideo3Moderate	-0.02 (0.1)
AGEBaby Boomer:Ideo3Moderate	-0.02 (0.1)
AGESilent:Ideo3Moderate	-0.1 (0.1)
AGEGen X:Ideo3Conservative	-0.01 (0.1)
AGEBaby Boomer:Ideo3Conservative	-0.1 (0.1)
AGESilent:Ideo3Conservative	-0.1 (0.1)
Constant	0.4*** (0.03)



```

-----
Observations                1,293
Log Likelihood              -657.1
Akaike Inf. Crit.          1,338.2
-----

```

Note: \*p<0.1; \*\*p<0.05; \*\*\*p<0.01

## Appendix D

Wald test for Ideo3

in glm(formula = x87NEW ~ AGE \* Ideo3, data = dfTEMP, weights = dfTEMP\$weight)

F = 12.85648 on 2 and 1280 df: p= 2.9638e-06

The model that combines age and ideology is significant by the Wald test

Descriptive statistics

```

=====
Dependent variable:
-----

```

x87NEW

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

They are being harmed now

```

-----
AGEGen X                    0.2***
                           (0.1)

```

```

AGEBaby Boomer             0.2***
                           (0.1)

```

```

AGESilent                  0.2*
                           (0.1)

```

```

Ideo3Moderate              -0.1*
                           (0.1)

```

```

Ideo3Conservative          -0.3***
                           (0.1)

```

```

AGEGen X:Ideo3Moderate     -0.2*
                           (0.1)

```

```

AGEBaby Boomer:Ideo3Moderate -0.2**
                           (0.1)

```

AGESilent:Ideo3Moderate	-0.2* (0.1)
AGEGen X:Ideo3Conservative	-0.1 (0.1)
AGEBaby Boomer:Ideo3Conservative	-0.2*** (0.1)
AGESilent:Ideo3Conservative	-0.2 (0.1)
Constant	0.5*** (0.04)

---

Observations	1,293
Log Likelihood	-888.1
Akaike Inf. Crit.	1,800.2

---

Note: \*p<0.1; \*\*p<0.05; \*\*\*p<0.01

## Appendix E

Wald test for Ideo3

in glm(formula = x106NEW ~ AGE \* Ideo3, data = dfTEMP, weights = dfTEMP\$weight)

F = 16.83396 on 2 and 1280 df: p= 6.0757e-08

The model that combines age and ideology is significant by the Wald test

Descriptive statistics

---

Dependent variable:

-----  
x106NEW

How many of your friends share your views on global warming? Response: All

---

AGEGen X	-0.1*** (0.03)
AGEBaby Boomer	-0.1*** (0.03)

AGESilent	-0.1 (0.1)
Ideo3Moderate	-0.2*** (0.03)
Ideo3Conservative	-0.1** (0.03)
AGEGen X:Ideo3Moderate	0.1** (0.04)
AGEBaby Boomer:Ideo3Moderate	0.1 (0.04)
AGESilent:Ideo3Moderate	0.02 (0.1)
AGEGen X:Ideo3Conservative	-0.002 (0.1)
AGEBaby Boomer:Ideo3Conservative	0.02 (0.05)
AGESilent:Ideo3Conservative	-0.01 (0.1)
Constant	0.2*** (0.02)

---

Observations	1,292
Log Likelihood	-120.9
Akaike Inf. Crit.	265.8

---

Note: \*p<0.1; \*\*p<0.05; \*\*\*p<0.01

## Appendix F

Wald test for Ideo3

in glm(formula = x67NEW ~ AGE \* Ideo3, data = dfTEMP, weights = dfTEMP\$weight)

F = 25.11733 on 2 and 1280 df: p= 1.9966e-11

The model that combines age and ideology is significant by the Wald test

Descriptive statistics

=====

Dependent variable:

-----

x67NEW

Assuming global warming is happening, do you think it is... Response: Caused mostly by human activities

-----	
AGEGen X	0.05 (0.1)
AGEBaby Boomer	-0.04 (0.1)
AGESilent	-0.04 (0.1)
Ideo3Moderate	-0.2*** (0.1)
Ideo3Conservative	-0.4*** (0.1)
AGEGen X:Ideo3Moderate	-0.02 (0.1)
AGEBaby Boomer:Ideo3Moderate	0.1 (0.1)
AGESilent:Ideo3Moderate	-0.03 (0.1)
AGEGen X:Ideo3Conservative	-0.03 (0.1)
AGEBaby Boomer:Ideo3Conservative	-0.1 (0.1)
AGESilent:Ideo3Conservative	-0.2 (0.1)

Constant	0.8*** (0.04)
----------	------------------

---

Observations	1,292
Log Likelihood	-877.5
Akaike Inf. Crit.	1,779.0

---

Note: \*p<0.1; \*\*p<0.05; \*\*\*p<0.01

## **Vita**

Shruti Kuppa has had an interest in furthering social science research in climate change since attending Carnegie Mellon University as an undergraduate student where she studied the field of social and decision sciences. She is currently a research associate at Climate Nexus where she examines emerging topic areas within the climate and energy science spaces. She brings experience in advancing environmental solutions across various audiences, including different industry sectors and departments of government while pursuing an MS in Energy Policy & Climate from Johns Hopkins University. Prior to joining Climate Nexus, she worked at a consulting firm supporting critical infrastructure security and resilience at the Office of Infrastructure Protection within the Department of Homeland Security. As a student, Shruti held volunteer positions on political campaigns and immediately after graduating undergrad took her passion for grassroots political organizing to Rhode Island and Kentucky.