University Faculty Perceptions of Climate Change in U.S.

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Abstract

The devastating consequences of climate change are worsening in all regions of the world, impacting all aspects of human and non-human life. In their 2021 report, the Intergovernmental Panel on Climate Change concluded that humans are responsible for climate change. University faculty have the opportunity to teach young people, who must understand the impacts of climate change. Because college faculty are extensively educated, we assume they agree with the scientific research on climate change, highlighting its detrimental effects. However, we cannot make this inference without empirical data supporting our claim. Thus, we designed a survey to better understand how university faculty across the U.S. perceive climate change, its causes and effects. We suspect that academic discipline and demographic characteristics will be associated with perceptions of climate change impacts. We organized the United States into eight geographic regions, based on climate zones, and then randomly selected colleges to participate in the study. The results of this study indicate that characteristics including demographics, academic discipline, having a terminal degree, and working in climate change-related fields are not significantly correlated with climate change perceptions. Nonetheless, these results will be crucial in developing future studies to target faculty who are less likely to participate in climate change related research, to establish an accurate estimate of national faculty perceptions.

Keywords: climate attitudes; academia; higher education faculty; climate risk perceptions

Introduction

The impacts of climate change are becoming even more devasting across the globe, affecting all aspects of human and non-human life (USGCRP 2018). Environmental impacts of climate change vary by region due to the physical characteristics of the region (USGCRP 2018). Generally, climate change causes changes in temperature, hurricanes, severe storms, precipitation, heat waves, flooding, droughts, wildfires, ice melt, water scarcity, and more (USGCRP 2018). Climate change affects public health by altering patterns of disease and mortality, food, water and sanitation, shelter and human settlements, extreme events, and migration (Costello et al. 2009). Although it is not as apparent, climate change directly worsens

human health by exacerbating existing health disparities and impacting both social and environmental determinants of health (Costello et al. 2009). According to the latest report by the Intergovernmental Panel on Climate Change (IPCC) (IPCC 2021), humans are responsible for climate change and its consequences. This is crucial for Americans understand and change their behaviors to ameliorate climate change impacts.

University faculty play a crucial role in educating a significant portion of young people in the United States (U.S.) who will shape the future by deciding rights, laws, policies, and regulations. Without evidence, researchers may assume that university faculty agree with the comprehensive scientific findings about climate change and its consequences because they are extensively educated. Previous studies indicate that most scientists agree with the impacts of climate change (Beck et al. 2013; Funk and Rainie 2015; Wojcik et al. 2014). However, this literature has mostly focused on surveying climate change scientists, excluding other disciplines (Funk and Rainie 2015). As a result, there is little empirical data to support the claim that university faculty understand, let alone agree with, the causes or impacts of climate change.

Thus, we designed an ex-post-facto questionnaire and administered it to university faculty at different institutions across the United States. We predict that field of study and demographic characteristics will affect climate change perceptions. The results of this study will be crucial in understanding misconceptions about climate change and public health in university settings. Targeting those misconceptions will be key in educating American college faculty about the consequences of climate change and sparking change in behavioral patterns.

Methods

Survey Development

We designed a questionnaire on Qualtrics to be sent to participants nation-wide via e-mail. The questionnaire consists of 40 questions, taking about 15 minutes to complete. Our survey includes questions on perceived impacts of climate change, its impacts on the environment and human health, possible solutions to climate change, field of study, and demographic characteristics (Appendix A). The questions about climate change perceptions are from the "Yale Climate Opinions Maps" research study, which asks about general beliefs on the reality of climate change, risk perceptions, and individual behaviors (Howe et al. 2015). Additional questions about climate change perceptions are from the "Six Americas Super Short Survey"

(SASSY) which sorts respondents into six different audience groups based on perceptions, political engagement, and behaviors regarding climate change (Chryst et al. 2019). All 3 authors collaboratively drafted survey questions based on the following sources to cover topics such as perceived impacts of climate change in each geographic region (USGCRP 2018), natural disasters (Howe et al. 2015), and public health (Costello et al. 2009). Other questions ask about gender identity, ethnicity, birth year, level of education, academic discipline, and if the participants' work is related to climate change.

We ran a pilot test with 4 other members of the Stofer Lab at the University of Florida to ensure proper flow of the survey, to check for spelling errors, and to verify that questions were clearly written. The pilot test proved that the survey questions were clearly written and that the survey only takes about 15 minutes to complete. In addition, participants pointed out spelling errors and minor formatting inconsistencies which the authors edited before sending the survey to completed by college faculty.

Institution Selection

We used the 2018 report from *The Carnegie Classification of Institutions of Higher Education* to categorize institutions across the United States (Commission on Higher Education 2018). This report contains empirical data on all of the institutions in the U.S., categorizing them based on type, size, location, classification, etc. The variables relevant to our study from the report are 2018 Basic Classification (BASIC2018), historically Black college or university (HBCU), Hispanic serving institution (HSI), land-grant institution (LANDGRNT), institution name (NAME), region code (OBERREG), and state abbreviation (STABBR) (Commission on Higher Education 2018).

We reassigned the listed colleges into a new variable: Condensed Classification (CLASS) which is derived from the BASIC2018 values. In the *Carnegie* report, the institutions are assigned a value between 0 and 33, depending on their classification. We grouped together similar classifications (i.e. all Associate's Colleges are grouped), condensed them, and reassigned all institutions with new values ranging from 1-8 (Appendix B). The condensed classifications provide a larger sample size of institutions within each category since institutions were further categorized by region.

Because climate change risk perceptions vary by geographic region of the U.S., climate zones must be considered. When analyzing the data, we considered the geographic regions from the *U.S. National Climate Assessment* (Table 2) rather than those from *The Carnegie Classification of Institutions of Higher Education* (2018) report. The eight geographic regions of the U.S. being examined here are Northeast, Southeast and Caribbean, Midwest, Great Plains, Southwest, Northwest, Alaska, and Hawaii (Table 2).

Table 2. U.S. National Climate Assessment region assignments (USGCRP, 2018):

Region	States Included
Northeast	ME, NH, VT, MA, RI, CT, NJ, DE, MD, WV, NY, PA
Southeast and Caribbean	VA, KY, LA, AR, TN, SC, MS, AL, GA, FL
Midwest	MN, IA, MO, WI, IL, MI, IN, OH
Great Plains	ND, SD, NE, KS, OK, TX, MT, WY
Southwest	CA, NV, UT, CO, AZ, NM
Northwest	WA, OR, ID
Alaska	AK
Hawaii	HI

To select institutions from which to recruit, we incorporated a systemic cluster sampling approach (Dillman et al. 2009). We sorted the colleges first by geographic region and then by classification. To ensure a truly random sample, we selected colleges via a generic random number generator. In each geographic region, we selected one college per classification, successively. At the end of the random selection for a particular region, at least one institution had to be land-grant (LANDGRNT), one Historically Black College and University (HBCU), and one Hispanic Serving Institution (HSI), to guarantee a representative sample. If this requirement was not fulfilled, we sorted the data within the appropriate geographic region by LANDGRNT, HBCU, and HSI, respectively, to randomly select an institution that did meet the requirement. The newly selected institution replaced the original selection with the same CLASS value.

Participants

The goal was to send the survey directly to faculty mailing lists to maximize the response rate. However, if the institutions do not list their faculty mailing list publicly, we contacted institution administrators to have our survey distributed. Institution administration contacts include the Dean of Academic Affairs, VP of Academic Affairs, Director of Institutional Effectiveness/Research, IRB Chairperson, Dean of Administration, etc. Administrators were always allotted two weeks to respond to our request. We did not send a follow-up email. Instead, if the administrators gave no response or were unwilling to participate, the institution was replaced with another institution of the same geographic region and classification, following the original selection process. We contacted the faculty at each institution a total of three times: the initial request, a reminder, and a final reminder (Dillman et al. 2009). The reminder was sent two weeks after the initial request, and the final reminder two weeks after that.

The first round of surveys was sent on February 15th, 2021, which included six institutions. The sample was limited to six institutions in the first wave to begin data collection and minimize history biases in our data, since the recruitment process was time-consuming. History biases occur due to unforeseen events during the research project which might influence participants' responses to the survey questions. Of those six institutions, we only made direct contact (via an all-faculty mailing list) with two institutions. The faculty at the other four institutions received the survey from the administrator we had been in communication with. Succeeding participation requests were sent on a rolling basis to hasten the recruitment process, minimizing biases in the data.

We paused the recruitment from May 2021 through August 2021 to avoid any possible biases due to summer break. Since the institutions in our random sample do not necessarily follow the same academic calendar (including summer breaks) and have the same faculty work schedule, our survey might not have reached a representative sample of institution faculty.

The goal was to have one participating institution per classification, per geographic region, totaling 64 institutions. We conducted three rounds of replacements of the entire list to replace institutions that did not respond or were unwilling to participate, totaling 200 contacted institutions. However, we struggled to obtain an appropriate sample size, so we amended our sampling strategy. Afterward, we only selected two institutions per geographic region. Those

institutions were often larger, research-based schools to maximize response rate. During this part of the recruitment process, we contacted an additional 44 institutions. In total, 244 institutions were contacted throughout the recruitment process.

Analysis

Participant responses to the 4 SASSY survey questions were uploaded to an online group scoring tool which analyzed each individual's responses and returned an overall "SASSY Segment" climate change perception category (Chryst et al. 2019) ranging from *Alarmed* to *Dismissive*. To classify respondents into one of the 6 SASSY segments, the scoring tool generates an odds-ratio for each of the 4 questions which predicts likelihood of membership into each of the categories (Chryst et al. 2019). We conducted further statistical analyses via SPSS (version 26). One-way ANOVA tests were used to analyze demographic characteristics and SASSY Segment category. The results of this one-way ANOVA test were not statistically significant. Chi-Square tests were used to compare academic discipline, having a terminal degree, and whether or not the faculty's work is related to climate change, to their SASSY Segment category, respectively.

Results

A total of 244 institutions were contacted during recruitment, however the majority of administrators gave no response or were unwilling to participate in the study. So, data from only 10 randomly selected institutions were included in the sample, representing 5 of the 8 U.S. geographic regions and 5 of the 7 *Carnegie* classifications (Table 3). Thus, the response rate of institutions who participated in this study was only 4.09%. Despite searching institution websites and online fact sheets, we were unable to find a source of data that provides university faculty numbers at each institution. The final sample consisted of data from 148 total faculty from the 10 selected institutions (n = 58 males, 83 females). The sample includes 24 respondents of Hispanic/Latinx descent and 109 non-Hispanic/Latinx individuals while 14 survey respondents declined to respond to this question. Racially, the sample is broken down as follows: White/Europeans make up the largest percentage of the sample at 74.0%, followed by 4.1% multiracial, 2.1% Asian, 1.4% Caribbean Islander, and 0.7% South American, 0.7% American Indian/Native American/Alaska Native, 0.7% Black/African American, and 0.7% biracial. Over 62% of participants have a terminal degree in their profession and only 23.3% of participants

reported that their work is related to climate change. The highest reported academic discipline was physical sciences at 14% of participants.

Table 3. Institutions Included in our Sample

Region Code	Region Name	# of Selected Institutions	CLASS Code
1	Northeast	2	2 and 4
2	Southeast & Caribbean	0	N/A
3	Midwest	2	2 and 7
4	Great Plains	2	1 and 3
5	Southwest	3	1, 3, and 4
6	Northwest	1	4
7	Alaska	0	N/A
8	Hawaii	0	N/A
Total		10	

As shown in Figure 1, according to the Six Americas Super Short SurveY (SASSY), 74.3% of participants are *Alarmed*, 14.2% are *Concerned*, 5.4% are *Cautious*, 5.4% are *Doubtful*, and 0.7% are *Dismissive* of climate change (Fig 1). As shown in Figure 2, our sample contains more *Alarmed* individuals than the national estimate in September 2021, but fewer *Concerned*, *Cautious*, *Disengaged*, *Doubtful*, and *Dismissive* individuals (Fig 2).
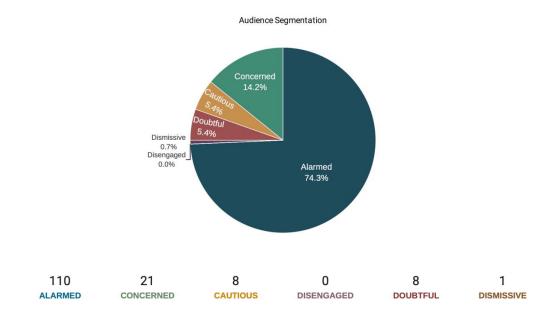
Six Americas Super Short Survey
Group Data

Figure 1. Audience Segmentation of Six Americas Super Short Survey
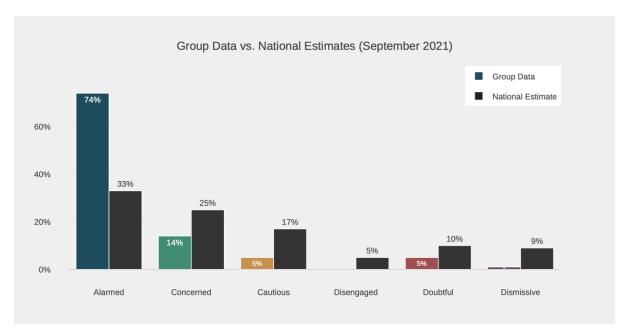

Figure 2. Faculty sample climate change perception compared to the national estimate in September 2021 (Chryst et al. 2019)

Demographic characteristics including age, gender, and ethnicity are not significantly correlated with SASSY Segment score (p=0.335, p=0.842, p=0.933, respectively). In addition, academic discipline, having a terminal degree, and conducting climate change related work are not significantly correlated with SASSY Segment score (p=0.694, p=0.725, p=0.398, respectively).

Discussion

The vast majority of respondents seem to agree with scientific findings and are alarmed about the effects of climate change. Various demographic characteristics do not seem to influence climate change perceptions in these university faculty. However, it could be the case that faculty who believe the scientific findings on the causes and effects of climate change are more likely to participate in this study. This could also explain the higher percentage of faculty who are *Alarmed* in regard to climate change, when compared to the 2021 national estimate (Chryst et al. 2019). Our results indicate a higher percentage of *Alarmed* individuals than the national estimate but much lower *Concerned*, *Cautious*, and *Dismissive* individuals, and no *Doubtful* individuals.

Although the results are not statistically significant, the statistical patterns might obscure individual cases with unique belief patterns. While we did not perform a complete qualitative analysis, we did find individual cases which warrant further investigation, such as an individual who scored *Alarmed* on the SASSY Segment but does not believe climate change is anthropogenic. Another interesting example is that of an individual who is *Doubtful* of climate change, does not believe it is anthropogenic and teaches in STEM. Therefore, both qualitative and quantitative analyses of the data will be important.

Furthermore, our sample is not necessarily representative of college faculty in the United States because our sample size is small, HBCU and HSI institutions were not included, and there was a low response rate. In addition, self-selection bias within our dataset is likely, so we are not capturing those faculty who are adamantly against climate change. We struggled to obtain an adequate sample size because few faculty listservs are public, the majority of our university administration contacts gave no response, and we were prohibited access to several faculty mailing lists, even at the institutions of our supervising faculty. Finally, even when we had

access to lists, we struggled to obtain responses. The low response rate is likely due to survey fatigue as a result of increased active research studies since the onset of the COVID-19 pandemic.

We will perform further data analysis, investigating the relationship between climate change perception scores and regional environmental concern as well as human public health concerns, respectively. We will also further investigate which groups of faculties are responding to the survey versus those who are not. Since one limitation to this study was the non-response bias encountered with a small response rate, future research should perform a variety of actions such as reducing survey length and diversifying questionnaire distribution methods to increase response rate and generate more representative survey samples. Although the overwhelming majority of our participants are *Alarmed* and *Concerned*, the results indicate that some institution faculty are *Cautious* and *Doubtful*, nonetheless. Those faculty are likely teaching classrooms, and we do not yet have data suggesting that they are conveying doubtful messages to their students regarding climate change. Since faculty have the opportunity to teach new generations of future professionals, future research should focus on effectively conveying the causes and effects of climate change to faculty in order for them to incorporate that information into their courses.

Acknowledgments

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Appendix A

Survey Questions

University Faculty Perceptions of Global Warming and Public Health

Start of Block: Consent

Q52 Do you agree to participate in this study?

○ I agree to participate (1)

○ I do not wish to participate (2)

Skip To: End of Survey If Do you agree to participate in this study? = I do not wish to participate

End of Block: Consent

Start of Block: Global Warming Perceptions

Sec. 1 In this section, we seek to determine your thoughts on global warming. Please answer each question by selecting your appropriate response.

Q1.1 How important is the issue of global warming to you personally?

○ Extremely important (1)

○ Very important (2)

○ Somewhat important (3)

○ Not too important (4)

○ Not at all important (5)

Q1.2 How worried are you about global warming?

◯ Very worried (1)

◯ Somewhat worried (2)

◯ Not very worried (3)

◯ Not at all worried (4)

Q1.3 How much do you think global warming will harm you personally?

◯ A great deal (1)

◯ A moderate amount (2)

◯ Only a little (3)

◯ Not at all (4)

◯ Don't know (5)

Q1.4 How much do you think global warming will harm future generations of people?

◯ A great deal (1)

◯ A moderate amount (2)

◯ Only a little (3)

◯ Not at all (4)

◯ Don't know (5)

Q47 Do you believe that global warming is currently affecting this planet?

◯ Yes (25)

◯ No (27)

Skip To: End of Block If Do you believe that global warming is currently affecting this planet? =

Q50 Do you believe global warming is anthropogenic (human-caused)?

○ Yes (1)

○ No (2)

Sec. 2 This section measures your views on public health issues in relation to global warming. Please respond to the best of your ability.

Q2.1 How likely do you think it is that global warming impacts your health?

○ Extremely likely (1)

○ Very likely (4)

○ Somewhat likely (6)

○ Not very likely (7)

○ Not at all likely (8)

Q2.2 How likely do you think global warming impacts the following:

	Extremely unlikely (1)	Unlikely (2)	Neither unlikely or likely (3)	Likely (4)	Extremely likely (5)
Heat waves (16)	○	○	○	○	○
Droughts (17)	○	○	○	○	○

Extreme weather events (18)

○ ○ ○ ○ ○

Flooding (19)

○ ○ ○ ○ ○

Sea level rise (20)

○ ○ ○ ○ ○

Loss of wildlife habitat (21)

○ ○ ○ ○ ○

Q2.3 Which global warming impacts are you most concerned about in your geographic region of residence?

	Not at all concerned (1)	Slightly concerned (2)	Somewhat concerned (3)	Moderately concerned (4)	Extremely concerned (5)
Heatwaves (1)	○	○	○	○	○
Drought (2)	○	○	○	○	○
Increased rainfall (3)	○	○	○	○	○
Flooding (4)	○	○	○	○	○
Hurricanes (5)	○	○	○	○	○
Wildfires (6)	○	○	○	○	○
Sea level rise (7)	○	○	○	○	○
Landslides (8)	○	○	○	○	○

	Not at all concerned (1)	Slightly concerned (2)	Somewhat concerned (3)	Moderately concerned (4)	Extremely concerned (5)
Ocean acidification (9)	○	○	○	○	○
Glacier melt (10)	○	○	○	○	○
Permafrost thawing (13)	○	○	○	○	○
Ice thinning (14)	○	○	○	○	○
Lower air quality (11)	○	○	○	○	○
Lower water quality (12)	○	○	○	○	○

Q48 Which global warming impacts are you most concerned about outside your geographic region of residence?

	Not at all concerned (1)	Slightly concerned (2)	Somewhat concerned (3)	Moderately concerned (4)	Extremely concerned (5)
Heatwaves (1)	○	○	○	○	○
Drought (2)	○	○	○	○	○
Increased rainfall (3)	○	○	○	○	○
Flooding (4)	○	○	○	○	○
Hurricanes (5)	○	○	○	○	○
Wildfires (6)	○	○	○	○	○

Sea level rise (7)

○　　　○　　　○　　　○　　　○

Landslides (8)

○　　　○　　　○　　　○　　　○

Ocean acidification (9)

○　　　○　　　○　　　○　　　○

Glacier melt (11)

○　　　○　　　○　　　○　　　○

Permafrost thawing (12)

○　　　○　　　○　　　○　　　○

Ice thinning (13)

○　　　○　　　○　　　○　　　○

Lower air quality (14)

○　　　○　　　○　　　○　　　○

Lower water quality (15)

○　　　○　　　○　　　○　　　○

Q2.4 Do you think human health will be worse because of global warming impacts in the next 10 years?

○ Yes (1)

○ Maybe (4)

○ No (3)

Q2.5 Do you think people will die because of global warming in the next 10 years?

○ Yes (1)

○ Maybe (2)

○ No (3)

Q2.7 Which global warming related public health concerns are you worried about in your geographic region of residence?

	Not at all concerned (1)	Slightly concerned (2)	Somewhat concerned (3)	Moderately concerned (4)	Extremely concerned (5)
Respiratory illness (1)	○	○	○	○	○
Allergies (4)	○	○	○	○	○
Cardiovascular disease (5)	○	○	○	○	○
Heat stroke (2)	○	○	○	○	○
Water quality (3)	○	○	○	○	○
Food quality (6)	○	○	○	○	○
Water quantity (11)	○	○	○	○	○
Food quantity (10)	○	○	○	○	○
Other (7)	○	○	○	○	○
None of the above (8)	○	○	○	○	○

Q49 Which global warming related public health concerns are you worried about outside your geographic region of residence?

	Not at all concerned (1)	Slightly concerned (2)	Somewhat concerned (3)	Moderately concerned (4)	Extremely concerned (5)
Respiratory illness (1)	○	○	○	○	○
Allergies (2)	○	○	○	○	○
Cardiovascular disease (3)	○	○	○	○	○
Heat stroke (4)	○	○	○	○	○
Water quality (5)	○	○	○	○	○
Food quality (6)	○	○	○	○	○
Water quantity (7)	○	○	○	○	○
Food quantity (8)	○	○	○	○	○
Other (9)	○	○	○	○	○
None of the above (10)	○	○	○	○	○

Q2.8 Who are you most concerned for due to the consequences of global warming?

○ You personally (1)

○ Your friends/family (2)

○ People in the USA (3)

○ People outside in the USA, in wealthy countries (6)

○ People in poor countries (4)

○ People in wealthy and poor countries equally (5)

Sec. 3 Thank you for your help with completing this survey. Here, we want to explore individuals' perceptions of hope in relation to climate change mitigation and adaptation. Please respond by stating your level of agreeance on the following survey items.

Q3.1 I believe people will be able to solve problems caused by climate change

○ Strongly disagree (1)

○ Disagree (2)

○ Slightly disagree (3)

○ Neutral (4)

○ Slightly agree (5)

○ Agree (6)

○ Strongly agree (7)

Q3.2 I believe scientists will be able to find ways to solve problems caused by climate change.

○ Strongly disagree (1)

○ Disagree (2)

○ Slightly disagree (3)

○ Neutral (4)

○ Slightly agree (5)

○ Agree (6)

○ Strongly agree (7)

Q3.3 Even when some people give up, I know there will be others who will continue to try to solve problems caused by climate change.

○ Strongly disagree (1)

○ Disagree (2)

○ Slightly disagree (3)

○ Neutral (4)

○ Slightly agree (5)

○ Agree (6)

○ Strongly agree (7)

Q3.4 If everyone works together, we can solve problems caused by climate change.

○ Strongly disagree (1)

○ Disagree (2)

○ Slightly disagree (3)

○ Neutral (4)

○ Slightly agree (5)

○ Agree (6)

○ Strongly agree (7)

Q3.5 I am willing to take actions to help solve problems caused by climate change.

○ Strongly disagree (1)

○ Disagree (2)

○ Slightly disagree (3)

○ Neutral (4)

○ Slightly agree (5)

○ Agree (6)

○ Strongly agree (7)

Q3.6 I believe others are willing to take actions to help solve problems caused by climate change.

○ Strongly disagree (1)

○ Disagree (2)

○ Slightly disagree (3)

○ Neutral (4)

○ Slightly agree (5)

○ Agree (6)

○ Strongly agree (7)

Q3.7 I know that there are things that I can do to help solve problems caused by climate change.

○ Strongly disagree (1)

○ Disagree (2)

○ Slightly disagree (3)

○ Neutral (4)

○ Slightly agree (5)

○ Agree (6)

○ Strongly agree (7)

Q3.8 I know what to do to help solve problems caused by climate change.

○ Strongly disagree (1)

○ Disagree (2)

○ Slightly disagree (3)

○ Neutral (4)

○ Slightly agree (5)

○ Agree (6)

○ Strongly agree (7)

Q3.9 Climate change is beyond my control, so I won't even bother trying to solve problems caused by climate change.

○ Strongly disagree (1)

○ Disagree (2)

○ Slightly disagree (3)

○ Neutral (4)

○ Slightly agree (5)

○ Agree (6)

◯ Strongly agree (7)

Q3.10 Climate change is so complex, we will not be able to solve problems that it causes.

◯ Strongly disagree (1)

◯ Disagree (2)

◯ Slightly disagree (3)

◯ Neutral (4)

◯ Slightly agree (5)

◯ Agree (6)

◯ Strongly agree (7)

Q3.11 The actions I can take are too small to help solve problems caused by climate change.

◯ Strongly disagree (1)

◯ Disagree (2)

◯ Slightly disagree (3)

◯ Neutral (4)

◯ Slightly agree (5)

◯ Agree (6)

◯ Strongly agree (7)

End of Block: Global Warming Perceptions

Start of Block: Environmental Actions

Sec. 4 You are almost finished with this questionnaire. This section examines your current and future environmental actions performed within a calendar year. Please complete each question to the best of your ability.

Q4.1 To what extent have you performed the following group(s) of environmental actions over the past year?

	Never or less than 10% of the chances when I could. (1)	Rarely, in 10-25% of the chances when I could. (2)	Occassionally, in 26-50% of the chances when I could. (3)	A moderate amount, in 51-75% of the chances when I could. (4)	A great deal, in 76% or more of the chances when I could. (5)
Environmental activism (e.g., protesting, petitioning, etc.) (1)	○	○	○	○	○
Public sphere environmentalism (e.g., volunteering for or donating money to conservation organizations) (2)	○	○	○	○	○
Private sphere environmentalism (e.g., reducing consumption or adopting sustainable behaviors) (3)	○	○	○	○	○

Organizational
actions (e.g.,
collective actions
as part of a larger
organization) (4)

○　　　○　　　○　　　○　　　○

Q4.2 How likely are you to increase your performance of the following group(s) of environmental actions within the next calendar year?

	Extremely unlikely (1)	Unlikely (2)	Neither unlikely or likely (3)	Likely (4)	Extremely likely (5)
Environmental activism (e.g., protesting, petitioning, etc.) (1)	○	○	○	○	○
Public sphere environmentalism (e.g., volunteering for or donating money to conservation organizations) (2)	○	○	○	○	○
Private sphere environmentalism (e.g., reducing consumption or adopting sustainable behaviors) (3)	○	○	○	○	○

Organizational actions (e.g., collective actions as part of a larger organization) (4)	○	○	○	○	○

End of Block: Environmental Actions

Start of Block: Demographic Items

Sec. 5 This is the last section of the survey. Thank you so much for help! Here, we present to you several demographic items to help with our analysis of the data. Please complete this section to the best of your ability.

Q5.1 What is the year of your birth?

_____

Q5.2 What is your gender identity?

○ Male (1)

○ Female (2)

○ Non-binary (4)

○ Other (5)

○ Prefer not to answer (7)

Q5.3 I identify as...

○ Hispanic or Latinx Descent (e.g., Spanish, Mexican, Colombian, Peruvian, Guatemalan, etc.) (1)

○ Non-Hispanic or Latinx Descent (2)

○ Prefer not to answer (3)

Q5.4 What is your ethnicity?

☐ African (e.g., Ghanaian, Kenyan, Nigerian, South Afrikaans, Tanzanian, Zimbabwean, etc.) (7)

☐ American Indian, Native American, or Alaska Native (1)

☐ Asian (e.g., Chinese, Indian, Japanese, Korean, Lao, Sri Lankan, etc.) (2)

☐ Black or African American (3)

☐ Caribbean Islander (e.g., Belizean, Cuban, Haitian, Jamaican, Trinidadian, etc.) (8)

☐ Native Hawaiian or Other Pacific Islander (4)

☐ South American (e.g., Argentinian, Bolivian, Guyanese, Peruvian, Uruguayans, etc.) (12)

☐ White or European (e.g., British, Dutch, Romanian, Swedish, etc.) (5)

☐ Biracial (9)

☐ Multiracial (10)

☐ Prefer not to answer (11)

Q5.5 Are you a 1st generation college graduate?

○ Yes (1)

○ No (2)

Q5.6 Do you have a terminal degree in your field/profession?

○ Yes (1)

○ No (2)

Q5.7 What type of university are you affiliated with out of the Carnegie Classification of Institutions of Higher Education?

○ Doctoral University (4)

○ Master's College & University (5)

○ Baccalaureate College (6)

○ Baccalaureate/Associate's College (7)

○ Associate's College (8)

○ Special Focus: Two-Year (9)

○ Special Focus: Four-Year (10)

○ Tribal College (11)

Q5.8 Which department within your university are you affiliated with?

_____

Q5.9 How much time do you spend teaching each of the audiences listed below within a typical school term?

	I do not teach this audience (1)	up to 10 hours per week (2)	11-20 hours per week (3)	21-30 hours per week (4)	31 or more hours per week (5)

Undergraduate Students (1)	☐	☐	☐	☐	☐
Masters Students (2)	☐	☐	☐	☐	☐
Doctoral Students (3)	☐	☐	☐	☐	☐
General Public (excluding students at a college/university) (4)	☐	☐	☐	☐	☐

Q5.10 Is your work related to global warming?

○ Yes (1)

○ No (2)

○ Prefer not to answer (4)

Q5.11 Please tell us about your sources of agriculture and natural resources experience as a youth or adult:

☐   I have no agricultural experience or background. (1)

☐   When I was growing up, I spent a significant amount of time living on a farm or other production operation. (2)

☐   As an adult, I have spent a significant amount of time living on a farm or other production operation. (3)

☐   I have spent a significant amount of time living in a rural area. (4)

☐   I work or have worked in agriculture or natural resources. (5)

☐   I have produced or raised food to feed myself and/or my family. (6)

☐   I do not work in agriculture or natural resources, but through my paid work, I have contact with agriculture and natural resources. (7)

☐   I have friends or family who work in agriculture or natural resources. (8)

☐   I learned about agriculture and natural resources from family members who did not work in agriculture. (9)

☐   I took classes in school (K-12, college, and/or non-degree) in agriculture or natural resources, or home economics that included topics of food preparation and preservation or similar. (10)

☐   I learn about agriculture and natural resources through learning in informal settings, such as visiting museums, participating in hobbyist clubs (4H/FFA, garden clubs, etc.), or participating in agritourism. (11)

☐   I learn about agriculture and natural resources by reading books or magazines. (12)

☐   I pay attention to news on agriculture and natural resources in the media, including newspapers, radio, television, and online or social media. (13)

☐   I participate in volunteer work related to agricultural or natural resources settings, such as in a garden, food bank, or as a 4-H leader,etc. (14)

☐   I participate in workshops (in-person or online) on agriculture and natural resources such as from Cooperative Extension or other community groups. (15)

Q5.12 Are you registered to vote in the United States?

◯ Yes (1)

◯ No (2)

Q5.13 Here is a 9-point scale on which the political views that people might hold are arranged from extremely liberal (i.e., left or "0") to centrist (i.e., "3-4") to extremely conservative (i.e., right or "8"). Where would you place yourself on this scale?

0   1   2   3   4   5   6   7   8

Political Ideology ()

Q5.14 What kind of setting did you grow up in?

○ Rural (1)

○ Urban (2)

○ Suburban (3)

Appendix B

Carnegie Classification Assignments and Condensed Classification Assignments

Table 1. Original *Carnegie* classification assignments and condensed classification assignments

BASIC2018 Value	BASIC2018 Assignment	CLASS Value	CLASS Assignment
1	Associate's Colleges: High Transfer-High Traditional	1	Associates Colleges
2	Associate's Colleges: High Transfer-Mixed Traditional/Nontraditional	1	Associates Colleges
3	Associate's Colleges: High Transfer-High Nontraditional	1	Associates Colleges
4	Associate's Colleges: Mixed Transfer/Career & Technical-High Traditional	1	Associates Colleges
5	Associate's Colleges: Mixed Transfer/Career & Technical-Mixed Traditional/Nontraditional	1	Associates Colleges
6	Associate's Colleges: Mixed Transfer/Career & Technical-High Nontraditional	1	Associates Colleges
7	Associate's Colleges: High Career & Technical-High Traditional	1	Associates Colleges
8	Associate's Colleges: High Career & Technical-Mixed Traditional/Nontraditional	1	Associates Colleges
9	Associate's Colleges: High Career & Technical-High Nontraditional	1	Associates Colleges

BASIC2018 Value	BASIC2018 Assignment	CLASS Value	CLASS Assignment
10	Special Focus Two-Year: Health Professions	2	Special Focus Two-Year
11	Special Focus Two-Year: Technical Professions	2	Special Focus Two-Year
12	Special Focus Two-Year: Arts & Design	2	Special Focus Two-Year
13	Special Focus Two-Year: Other Fields	2	Special Focus Two-Year
14	Baccalaureate/Associate's Colleges: Associate's Dominant	3	Baccalaureate/Associate's Colleges: Associate's Dominant
15	Doctoral Universities: Very High Research Activity	4	Doctoral Universities
16	Doctoral Universities: High Research Activity	4	Doctoral Universities
17	Doctoral/Professional Universities	4	Doctoral Universities
18	Master's Colleges & Universities: Larger Programs	5	Master's Colleges and Universities
19	Master's Colleges & Universities: Medium Programs	5	Master's Colleges and Universities
20	Master's Colleges & Universities: Small Programs	5	Master's Colleges and Universities
21	Baccalaureate Colleges: Arts & Sciences Focus	6	Baccalaureate Colleges

BASIC2018 Value	BASIC2018 Assignment	CLASS Value	CLASS Assignment
22	Baccalaureate Colleges: Diverse Fields	6	Baccalaureate Colleges
23	Baccalaureate/Associate's Colleges: Mixed Baccalaureate/Associate's	6	Baccalaureate Colleges
24	Special Focus Four-Year: Faith-Related Institutions	7	Special Focus Four-Year
25	Special Focus Four-Year: Medical Schools & Centers	7	Special Focus Four-Year
26	Special Focus Four-Year: Other Health Professions Schools	7	Special Focus Four-Year
27	Special Focus Four-Year: Engineering Schools	7	Special Focus Four-Year
28	Special Focus Four-Year: Other Technology-Related Schools	7	Special Focus Four-Year
29	Special Focus Four-Year: Business & Management Schools	7	Special Focus Four-Year
30	Special Focus Four-Year: Arts, Music & Design Schools	7	Special Focus Four-Year
31	Special Focus Four-Year: Law Schools	7	Special Focus Four-Year
32	Special Focus Four-Year: Other Special Focus Institutions	7	Special Focus Four-Year
33	Tribal Colleges	8	Tribal Colleges