



Examining Perceptual Disparities Associated with Climate Change

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Abstract

With the rise of more environmental issues as a result of climate change, concerns over climate change deniers are becoming more prevalent. To better understand this group's way of thinking, connections can be drawn from political affiliation, religion, and gender. Doing so will allow for adequate changes in policy and education to be made, lessening any current disparities between different demographics. Due to constantly changing worldviews, stereotypes, and biological factors, I believe that republicans, males, and Christians are more likely to experience climate change denial, therefore making them less likely to support environmentally friendly policies; meanwhile, democrats, women, and other religious beliefs not centered around a Christ figure are more likely to believe in climate change. To prove this point, my survey will be asking questions about an individual's belief on various climate topics, in addition to identifying information such as their gender; my survey will be given to high school students in America and will be released via social media platforms, school administration, and other forms of communication. With the data received from the survey, I hope to discern what future steps can be taken to compensate for these groups' deficiencies, in order to ensure a more uniform way of thinking on climate change action.

Introduction

In recent years, the effects of climate change have intensified with the proliferation of greenhouse gasses; these GHG emissions come mainly in the form of carbon dioxide, which is predominantly emitted from fossil fuel usage. These fossil fuels are found in nearly every aspect of routine life, including with transportation, agriculture, and industry. As such, the transition away from these fossil fuels has proven difficult, despite the passage of various international agreements, such as the Paris Agreement. With governments having little to no incentive to address climate change on a large scale, due to the economic benefits brought by fossil fuels, the state of the environment has continued to deteriorate; some of the most pressing issues include rising sea levels, which are projected to rise an additional 12 inches in the next 25 years, and global warming, which will continue to devastate vulnerable populations, species, and habitats. These factors also contribute to an increase in the number and severity of various natural disasters, including hurricanes, floods, tsunamis, wildfires, and earthquakes. As the state of the world continues to industrialize, many developed countries have been able to establish the infrastructure to protect against such disasters, while many of the developing nations continue to lag behind. With around 37 billion metric tons of carbon dioxide being released into the atmosphere in 2022 alone, the push for adequate legislation becomes more imperative than ever.

Despite around 97% of scientists agreeing with the existence of climate change, there remains a population who continue to deny it or the anthropogenic causes that have precipitated it. These deniers can be referred to as "climate change deniers," and they are most often found in the conservative party, who fear that climate change is a result of liberal propaganda. Other common demographics that may find climate change deniers include men and various religious groups. Previous studies have found that men attempt to resist climate change and eco-friendly

actions because they view it as "unmanly," and as an attempt to maintain their perception of their masculinity, many men will avoid taking environmentally friendly steps altogether. With religious groups, the difference lies in their perception of the world and how their religion impacts this. I hypothesized that religious groups, specifically Christians, would be less likely to believe in climate change because it clashes with their idea that God is fully in control of the world; essentially, the belief in climate change could threaten this because many scientists continue to explain how without action, climate change will destroy the world. While the number of current climate change deniers is not known, correlations and connections can be drawn between certain demographics and these beliefs.

Methods

My survey was distributed to high school students, aged 14-18, across the United States. Within my own school, students were encouraged by their teachers to complete the survey, preventing any sampling bias and allowing a wide range of individuals from differing demographics to participate. The survey was sent out through email or school communication platforms, including Canvas. Widening the scope of the project, I engaged more individuals through the utilization of social media platforms. Invitations to fill out the survey were active from February 1st - March 15th, allowing ample time for completion. The survey itself was created on Google Forms and it includes a disclaimer and consent notice at the top of the form; the description essentially states the purpose of the study, in addition to the voluntary nature of the survey and the participants' ability to stop the survey or skip a question at any time. Immediately following this description is a consent question, which reaffirms the anonymity of the survey and has participants agree to have their answers used in my paper. Once agreeing to these terms, the participant answers questions relating to their demographic identity, with questions ranging from gender, race, political party, and religion. Following this section are the climate knowledge questions, which measure the individual's general knowledge of the environment and climate related issues. An example question may ask if burning oil produces CO₂, to which the participant would answer with either "true" or "false." After the 5 true or false questions, the survey progresses to the climate concern questions, which assesses the participant's concern levels regarding the effects and acceleration of climate change. An example question from this section may ask the participant if they've been personally affected by climate change, with the answers varying from "true," "somewhat true," "a little true," or "not at all true." Succeeding these questions are ones that pry into the political aspect of the issue, as they measure the participant's feelings about their government and its actions against climate change; these questions also help to tie into the analysis and connections taken between political affiliation and general climate concern. An example question may ask if the individual feels that their government has taken adequate measures to avoid a climate catastrophe, with the answer choices including "yes," "no," and "somewhat." The final section of questions measures the extent to which the participant is actively attempting to combat climate change and live sustainably within their own life. An example question may ask how much effort they put into reducing climate change, a question that will have a larger range of answers from "a lot of effort," "some effort," "a little effort," or "no effort." With around 20 questions, my survey attempts to discern the many factors relating to climate change knowledge, concern, and how it is further impacted by the demographics of the individual.

Results

After gathering the data, 10 different statistical tests were run to determine if there were any significant differences between varying demographics, their climate knowledge, and their climate concern. First, an independent sample t-test was performed to compare climate knowledge scores between those who identify with a religion and those who do not. Results indicated that there is no significant difference between scores of those who are religious ($M=3.89$, $SD=1.05$) and those who are not ($M=4.13$, $SD=0.85$); $t(115)=1.36$, $p=0.08$). Next, another independent sample t-test was conducted, comparing climate knowledge scores between democrats and republicans. As predicted, democrats scored higher ($M=4.07$, $SD=0.91$) than republicans ($M=3.17$, $SD=0.98$); $t(58)=2.31$, $p=0.01$). The p value of 0.01 for this t-test demonstrates a significant difference in knowledge between democrats and republicans on climate change. For the final demographic comparison, another independent sample t-test was performed to compare climate change knowledge differences in men and women. In this test, there were no significant differences, although females tended to score a bit higher ($M=4.05$, $SD=0.94$) than men ($M=3.92$, $SD=0.95$); $t(105)=0.60$, $p=0.55$). After looking at the differences in climate knowledge, climate concern levels were also analyzed. First, religion as a binary was considered. An independent sample t-test was conducted to see if there were any significant differences and the results indicated that there were because religious individuals, on average, score less on the climate concern questions ($M=9.73$, $SD=2.80$) than non religious individuals ($M=10.40$, $SD=2.45$); $t(115)=-1.63$, $p=0.05$). To look into religion even further, another independent sample t-test was performed to compare Christians and non Christians. Significant results showed that Christians tend to have lower climate concern scores ($M=9.47$, $SD=2.93$) than non Christians ($M=10.31$, $SD=2.42$); $t(115)=1.69$, $p=0.05$). After looking at religion, political affiliation was examined to see if republicans or democrats demonstrated more concern towards the environment. An independent sample t-test was performed to compare their climate concern scores and there were no significant differences between democrat scores ($M=10.63$, $SD=2.47$) and republican scores ($M=9$, $SD=2.68$); $t(58)=1.52$, $p=0.06$). Finally, the last independent sample t-test was conducted to compare climate concern scores of men and women. Results were significant with women scoring higher ($M=10.41$, $SD=2.30$) than men ($M=8.68$, $SD=3.29$); $t(105)=2.97$, $p=0.003$).

Discussion

According to my study, there were some significant differences between different demographics and their perception of climate change, which encompasses both their knowledge on climate change and their concerns with it. Within my study, I aimed to understand how different genders, political parties, and religions viewed the environment and what impact, if any, these disparities would have on a larger scale.

When looking at the climate knowledge questions, which included a variety of questions on the causes and impacts of climate change, there was one main significant difference between the demographics tested. My results indicated that democrats knew significantly more than republicans about climate change, while there were no other significant differences regarding climate knowledge between various religious affiliations or with gender. Because climate change has become an issue that is deeply politicized and the democrat party is considered to be the more "environmentally friendly party," many republicans shy away from learning about the environment. Therefore, in order to compensate for this, environmental

issues need to be completely disconnected from politics and climate change needs to be viewed as more of a moral issue with a clear right and wrong. Because there are many republicans who still do believe in climate change, a nonpartisan collection of individuals from both parties can help spread awareness on the issue. Regarding the other results yielded from my statistical tests, I was surprised that there were no major differences in knowledge between men and women, and between those who identify with a religion versus those who don't.

The second section of my survey was examining climate concern between each demographic, through asking questions on how much the individual worries for the future of the environment and how they feel about current policy decisions on the environment. More significant differences were seen with these questions, as my results indicated that those who are non religious knew significantly more than those who are religious, and non Christians knew significantly more than Christians. The only results that were found to be insignificant were between men and women, and democrats and republicans, with there not being any clear separation or distinctions between their climate knowledge levels. While this disproves my initial hypothesis, I assume that some of the issues with these demographics may have occurred due to sample size issues. Because the population of women and democrats that answered my survey was much greater than the population of men and republicans, the statistical tests may not reflect the knowledge of the entire population. With the religious populations, however, my findings indicate that those who believe in a religion, especially Christianity, are more likely to know less about the environment and climate change. I assume this is attributed to general unawareness on the issue, as the belief in a higher power or God often causes individuals to dismiss their involvement or participation in activities that cause harm to the environment. For instance, a study points out that the frequency of prayer and worship by a religious individual impacts the intensity of their perspective on climate change, with many religious people having contrasting beliefs on what God wants and expects from them. The apocalyptic mood induced by climate change activists may also play a role in the climate change denial of religious individuals. Like with the intense politicization of climate change, specific actions must be taken to combat religious individuals' perception of climate change. By having religious leaders (who also believe in climate change) preach to their followers, the gaps in these climate concern scores may be able to be bridged.

Conclusion

In conclusion, there are some significant differences between various demographics and how they view climate change, whether directly or indirectly. As climate change becomes an even more pressing issue, these disparities must be addressed in order to create the best possible solutions and policies. More education that specifically targets vulnerable populations may help with this and simply spreading more awareness on the topic can help disprove any misconceptions surrounding the problem. Through focusing on creating a more unified view on climate change, bipartisan policies are more likely to be passed and the issue can be addressed on a global level.

References

- Capstick, Stuart Bryce, and Nicholas Frank Pidgeon. "What Is Climate Change Scepticism? Examination of the Concept Using a Mixed Methods Study of the UK Public." *Global Environmental Change*, vol. 24, Jan. 2014, pp. 389–401, <https://doi.org/10.1016/j.gloenvcha.2013.08.012>.
- Clayton, Susan. "Climate Anxiety: Psychological Responses to Climate Change." *Journal of Anxiety Disorders*, vol. 74, no. 102263, Aug. 2020, <https://doi.org/10.1016/j.janxdis.2020.102263>.
- Hickman, Caroline, et al. "Climate Anxiety in Children and Young People and Their Beliefs about Government Responses to Climate Change: A Global Survey." *The Lancet Planetary Health*, vol. 5, no. 12, Dec. 2021, pp. 863–873, [www.thelancet.com/journals/lanplh/article/PIIS2542-5196\(21\)00278-3/fulltext](http://www.thelancet.com/journals/lanplh/article/PIIS2542-5196(21)00278-3/fulltext), [https://doi.org/10.1016/s2542-5196\(21\)00278-3](https://doi.org/10.1016/s2542-5196(21)00278-3).
- Hope, Aimie L.B., and Christopher R. Jones. "The Impact of Religious Faith on Attitudes to Environmental Issues and Carbon Capture and Storage (CCS) Technologies: A Mixed Methods Study." *Technology in Society*, vol. 38, Aug. 2014, pp. 48–59, www.sciencedirect.com/science/article/pii/S0160791X14000177, <https://doi.org/10.1016/j.techsoc.2014.02.003>.
- Lawson, Danielle F., et al. "Evaluating Climate Change Behaviors and Concern in the Family Context." *Environmental Education Research*, vol. 25, no. 5, 21 Jan. 2019, pp. 678–690, <https://doi.org/10.1080/13504622.2018.1564248>.
- Momsen, Janet Henshall. "Gender Differences in Environmental Concern and Perception." *Journal of Geography*, vol. 99, no. 2, Mar. 2000, pp. 47–56, <https://doi.org/10.1080/00221340008978956>.
- Norton, Andrew, and John Leaman. *The Day after Tomorrow: Public Opinion on Climate Change*. 2004.
- Van Boven, Leaf, et al. "Psychological Barriers to Bipartisan Public Support for Climate Policy." *Perspectives on Psychological Science*, vol. 13, no. 4, July 2018, pp. 492–507, <https://doi.org/10.1177/1745691617748966>.