

Assignment 2

Given below is a sample statistical report. I have included several major statistical inaccuracies in the report. Identify the statistical fallacies as discussed in class lecture, and explain how they could have been corrected. Upload a single PDF to canvas before the deadline.

Evaluating Public Understanding of Climate Change

Climate change is a critical global issue, but public understanding of its causes, impacts, and solutions varies widely. This study aims to evaluate the general public's knowledge of climate change, their perceptions of its consequences, and their willingness to take action. We conducted a comprehensive survey across diverse demographics and regions in New Jersey to capture a broad spectrum of opinions. Additionally, we analyzed data and reviewed recent research from various scientific journals to gain insights into the current state of climate change research and ongoing efforts to address this challenge.

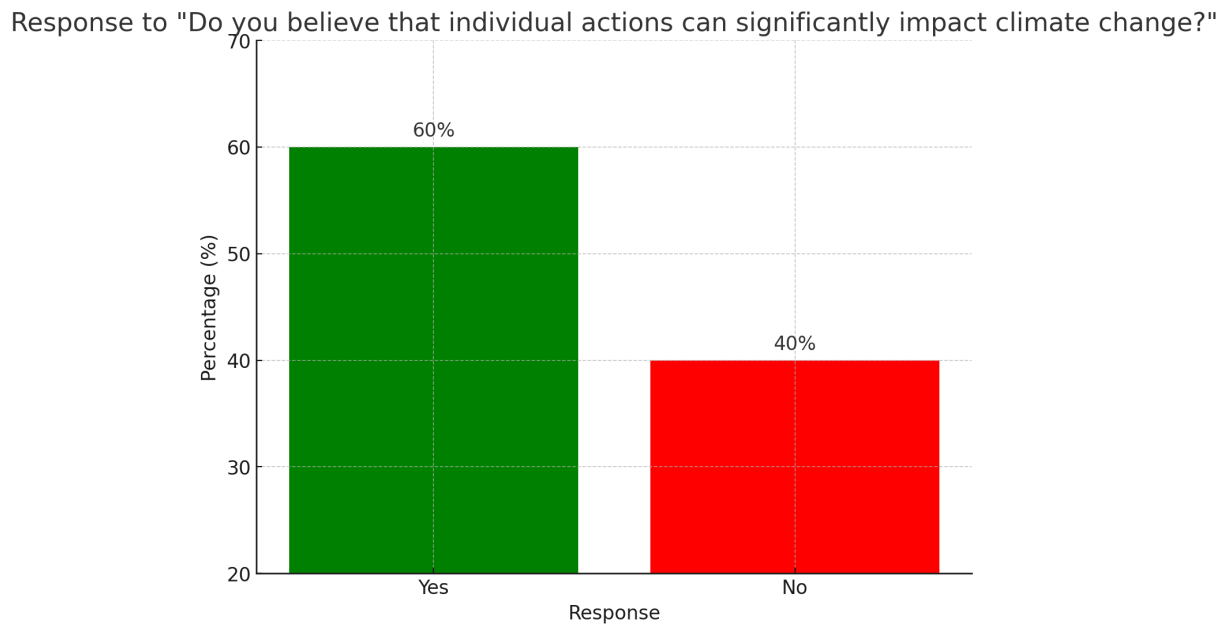
Methodology for data collection: Firstly, to collect public opinion on climate change, we launched a series of polls on popular social media platforms, such as Twitter, Instagram, and Facebook, using hashtags like #ClimateChange, #GlobalWarming, and #EcoWarriors to attract a huge and diverse audience. The following five survey questions were asked.

- “What do you believe is the most pressing issue related to climate change? (Options: rising temperatures, extreme weather events, sea level rise, deforestation)”
- “On a scale of 1 to 10 with 1 being the lowest and 10 being the highest, how often do you take steps to reduce your carbon footprint, like recycling or using public transportation?”
- “Given that climate change is a serious threat to our planet, how likely are you to support government policies that reduce carbon emissions, even if it means higher taxes? (Response on a scale of 1-10 as above)”
- “Do you believe that individual actions can significantly impact climate change? (Yes/No)”
- “How concerned are you about the impact of climate change on future generations? (Scale: 1-10)”

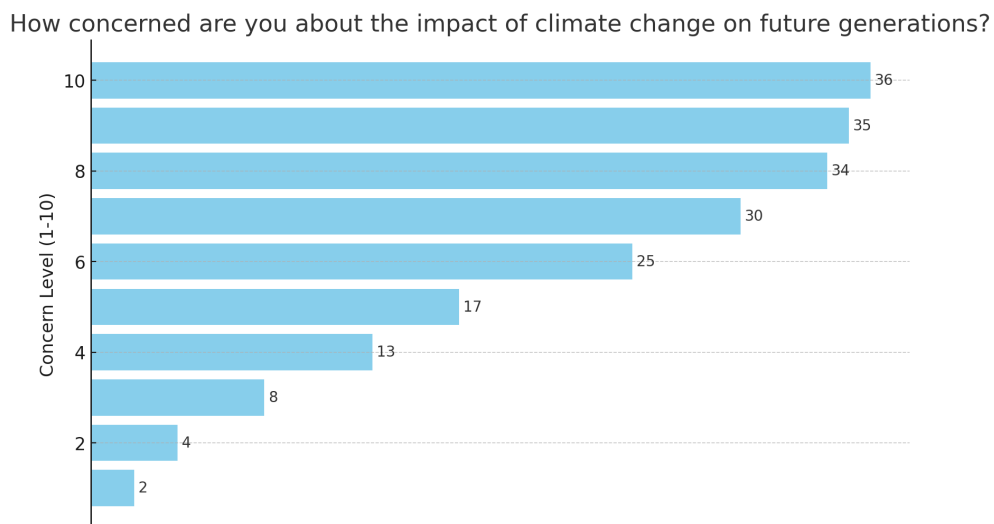
Participants were encouraged to share the poll with their networks, further expanding the reach. Similarly, we conducted in-person surveys at environmental and climate change related events, such as Earth Day celebrations, and sustainability fairs. These events were selected for their likelihood of attracting environmentally conscious individuals and to ensure a greater sampling variability in the survey responses.

The researchers also collected survey responses at nearby public spaces (e.g., parks, cafes) to capture a broader sample. Hence we collected 200 survey responses, making the sample representative of the New Jersey population.

We will discuss in detail each survey questions in this article. We firstly start with response the question “Do you believe that individual actions can significantly impact climate change? (Yes/No)”. Among 200 participants, 120 of them said “Yes” and 80 of them said “No.” Their response is illustrated in a bar chart below.



Similarly, the responses to the survey question “How concerned are you about the impact of climate change on future generations? (Scale: 1-10)” is illustrated in the visualization below. We can see that a lot more people are concerned about the impact of climate change on future generations, with more than half of scores being 8 and above.



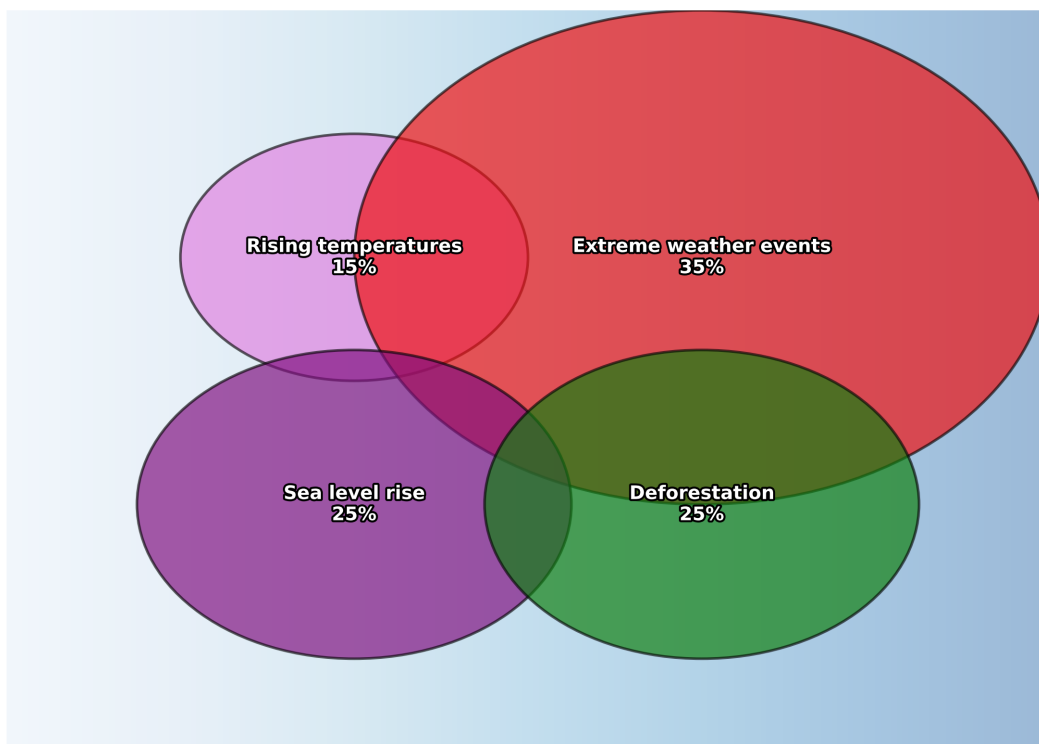
By judging the response to the two afore discussed survey questions, we can see that people in New Jersey are worried about the climate changes and its impact on future generations.

In response to the question “What do you believe is the most pressing issue related to climate change?”:

- 35% of people responded extreme weather events
- 25% of people responded rising sea levels
- 25% of people were concerned about deforestation
- 15% of people responded that rising temperatures was the most pressing issue.

It is not that surprising to see extreme weather events being the biggest concern among New Jersey residents as New Jersey has been hit with hurricane Ida not so long so.

Pressing Issues Related to Climate Change

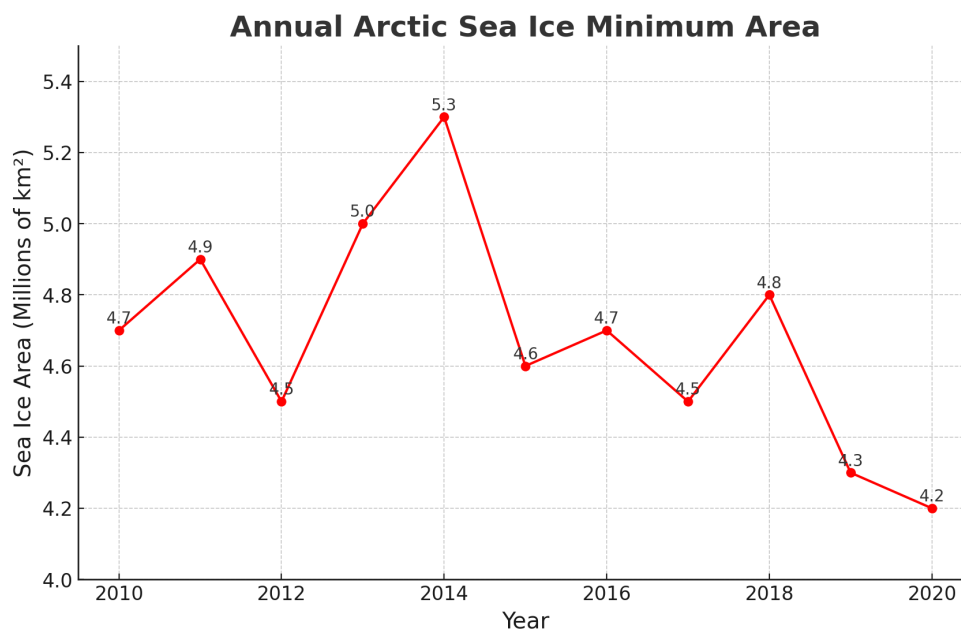


While these concerns are real and immediate, they are closely connected to the broader and sometimes less visible effects of climate change, like what’s happening in the Arctic and the Antarctic. The Arctic Sea is one of the strong indicators of the planet’s overall health.

Over the past decade, the amount of Arctic Sea ice has shown worrying trends, reflecting the bigger consequences of global warming. This steady loss of sea ice is not just a sign of rising temperatures but also plays a key role in affecting global weather patterns, including the extreme weather events that are of such concern to New Jersey residents.

The graph below illustrates the changes in the Arctic Sea ice (in millions of square kilometers) over the past decade, based on data obtained from NASA. Key observations from the graph are as follows:

- Although the graph shows some fluctuations, with minor increases in certain years, the overall trend is clear: the Arctic Sea ice is steadily declining which highlights the ongoing impact of global warming on the polar regions..
- The y -axis of the graph, which starts at 4.0 million square kilometers, helps emphasize these small year-to-year variations, but it's important to note that these changes are part of a larger, more troubling trend.
- The area in the Arctic Sea has decreased by 0.5 million of square kilometers since 2010 which is a worrying case which is almost a 12% decrease..
- The reduction in sea ice not only affects the Arctic ecosystem but also has far-reaching consequences for global climate patterns, contributing to the very extreme weather events that are increasingly affecting places like New Jersey.



In summary, this report has explored public perceptions of climate change, highlighting the most pressing concerns among respondents and discussed the broader impacts of climate change. As climate change continues to affect various aspects of our environment, it remains crucial to address these issues through informed policies and collective action. This concludes the part one of this report.

In Part 2 of this report, we will explore the remaining sample survey questions with a more statistical approach.