Project Name: Perspective on Historical and Future Consequences of Climate Change.
Research questions: How climate change is affecting us? What are people's beliefs about climate change? How population affects climate change beliefs?

Background/significance of this project: I am interested in data science and environment. I decided to make a project on climate change, one of the most crucial issues in this world. This project analyzes the historical and future consequences due to climate change and people's beliefs about climate change in the United States. The historical consequences of climate change are indicated by extreme heat days and events by counties in the United States and measured by number of extreme heat days occurring from 2013-16. The extreme heat days are counted when the daily maximum temperature goes beyond a relative threshold of 90th Percentile. Then I analyzed relative data to predict the future projection of extreme heat across the United States within the next decade and how it will impact people's lives. I collected data from National Environmental Public Health Tracking Network to make my analysis on above mentioned areas.
Additionally, I accessed data from Yale Climate Opinion Maps from "Geographic variation in opinions on climate change at state and local scales in the USA" to analyze the climate change beliefs of people. Then I created a model using linear regression to analyze if population affects people's beliefs about climate change.
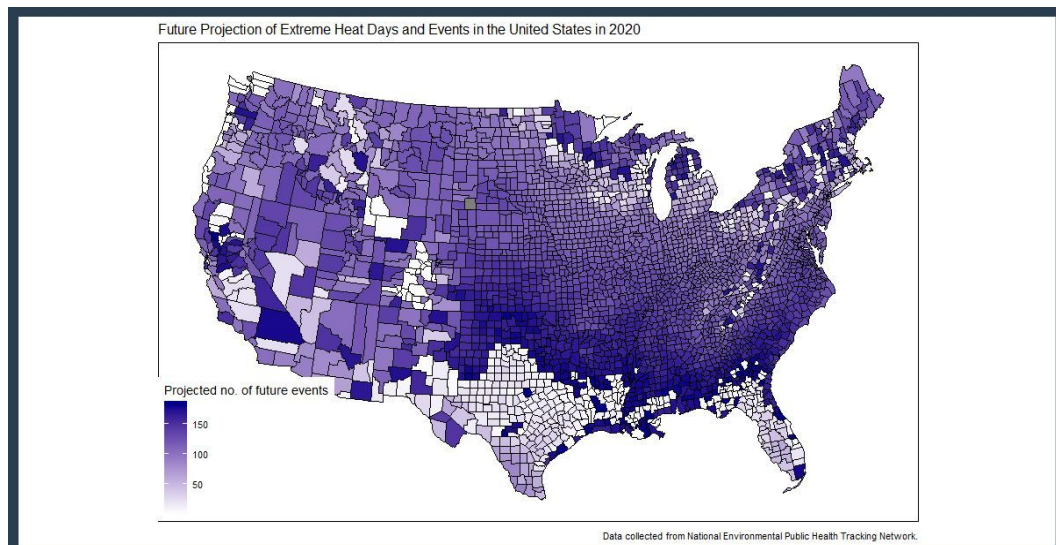
The methods used to obtain and analyze the data: I used static and interactive data visualization, Bayesian regression and confidence intervals.

The results of the analysis (tables, charts, graphs, significance, confidence intervals, descriptive text):
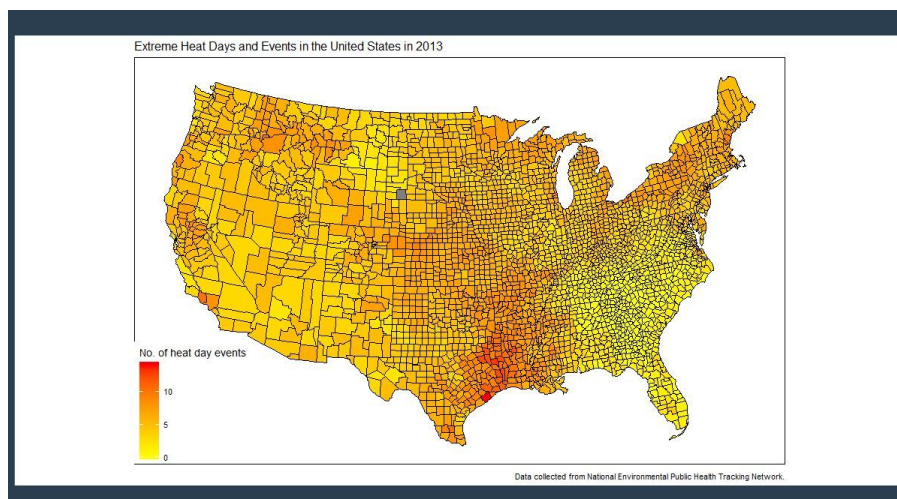
In 2013, it can be analyzed that extreme high heat day events occurred in some of the counties in the South, which are represented by the dark red color. In 2014, the extreme heat day events spread across the midwest and northeast region of the United States. There is a similar

increasing trend of extreme heat day events from 2013 to 2016. This shows how extreme heat day events are increasing due to climate change in the United States.

Future Projection of Extreme Heat Days and Events in the United States in 2020

Projected no. of future events

150
100
50

Data collected from National Environmental Public Health Tracking Network.

The future projection of heat days and events compared to the past heat day events show that the numbers highly escalated. The range for past heat day events was from (low) zero to (high) fifteen but the range for projected number of future events are from (low) fifty to (high) one hundred and fifty. This projected map shows what negative and enormous impact climate change has.


Concerns about Global Warming in the United States
Measure of how worried people are about consequences of global warming and their support for climate change actions

Percentage

75
70
65
60
55
50
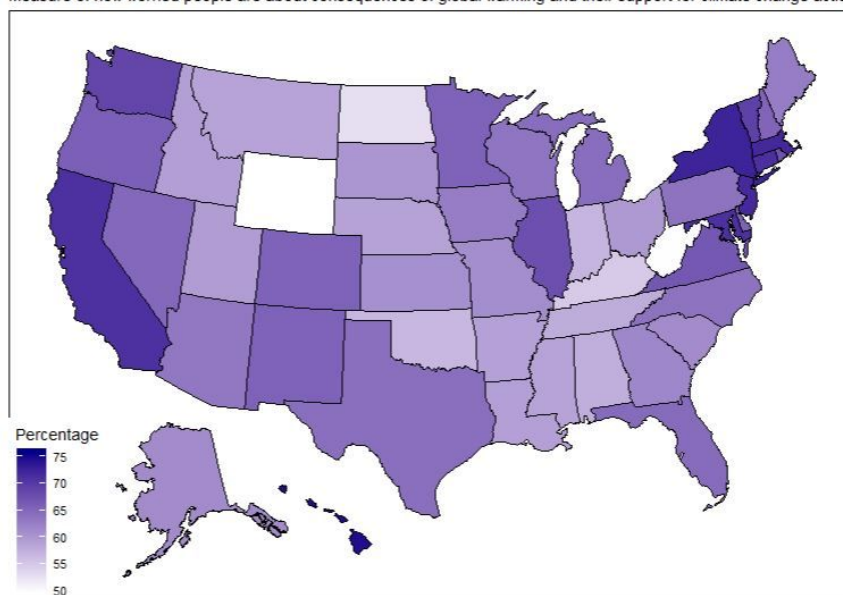
Howe, P., Mildenberger, M., Marlon, J., & Leiserowitz, A. (2015), Geographic variation in opinions on climate change at state and local scales in the USA.

This map represents data collected from Yale Climate Opinion Maps from "Geographic variation in opinions on climate change at state and local scales in the USA." It maps the average concern variable that I created from this dataset. Average concern variable is the average results of how worried people are about global warming, how they think that global warming is going to affect their future generations and how strongly they support setting strict limits on existing coal-fired power plants. It can be analyzed from the map that people living in the northeast and west region are very concerned about climate change. The rest of the concern variable is mostly and evenly distributed all over the United States. However, this analysis arises a concern that people need to be more aware of climate change and be worried about its consequences.

How population affects climate change beliefs?
Regression of population on average concern of climate change
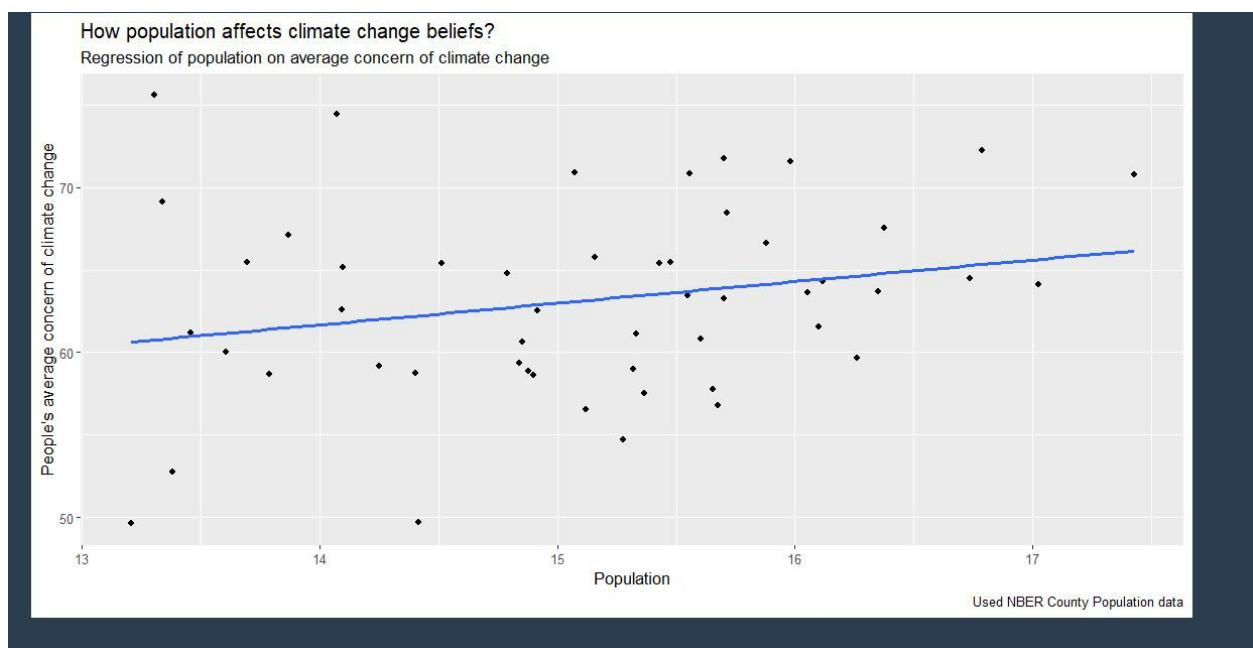
I wanted to explore if population affects climate change. So I used population data of 2009 in the United States and merged it with my climate change belief dataset. Using this merged dataset, I created a model to run regression of population on climate change beliefs. From this scatterplot, it can be analyzed that there is a very weak but positive correlation between population and climate change concerns. Therefore, it can be concluded that there is no strong evidence that population affects people's climate change concerns.