Executive Summary of Climate

Blue Cookie; Group B

Insights into Topic

The purpose of our project was to explore the trends of temperature and climate over different regions of the United States. In particular, we looked at temperature and precipitation over the span of centuries and decades. This topic is interesting to us because in recent times, we face the issue of climate change which affects many ecosystems and environment. It will be interesting to see if the changes over the past decades in temperature and precipitation are visible and to what extent in varying regions.

Data

The data we used were collected from the National Weather Service website (https://www.weather.gov/). Some variables in the data set are:

1. max_temp: Maximum temperature (in F) of a city for every month. This value is chosen by taking the highest maximum temperature among all of the days in a month.
2. min_temp: Minimum temperature (in F) of a city for every month. This value is chosen by taking the lowest minimum temperature among all of the days in a month.
3. avg_temp: Average temperature (in F) of a city for every month. This value is calculated by taking the mean of average temperatures for every day in a month.
4. precipitation: Precipitation (in inches) of a city for every month. This value is calculated by taking the sum of precipitation for everyday in a month.

The data can be collected at (https://www.weather.gov/wrh/Climate?wfo=box/) by clicking on the regions of interest and filtering for different years, variables, types of calculating output.

Shiny App

Link to published app: https://r.amherst.edu/apps/vnguyen24/ClimateProject231/

Our app has 3 interactive widgets: a time plot, a scatter plot, and a line graph.

![*pic*](*images/climate*$_t$*imeplot.png*)

The scatter plot allows users to choose a desired year (from 1869 to 2022). Then, this interactive value will be fed into the code, which will automatically filter and update which year to display (default is 2002). Users can then choose variables of interest for both the x and y axis to explore their relationship. These two interactive values will also be fed into the server, which will re-plot whenever users re-pick their choices. The main visual in this widget is a scatter plot. We chose to include a scatter plot because looking at the relationship between different variables is essentially a bivariate analysis, which is a topic that the scatter plot can convey findings effectively.

Results

Scatter plot: We found out that