**Are Pollution Levels in the U.S. Decreasing Over Time?**

As a nation, we continue to become more aware of environmental issues like pollution. The government imposes environmental standards to help mitigate pollution. There has been huge movement in both the public and private sectors, towards clean energy sources like electric, solar, and wind power. But are we making an impact? Are pollution levels in the U.S. decreasing over time?

The EPA has developed the U.S. Air Quality Index (AQI) standard to measure air pollution rates. This standard calculates AQI, based on the individual air quality indexes of six factors: ground-level Ozone (03), Carbon Monoxide (CO), Sulfur Dioxide (SO2), Nitrogen Dioxide (NO2), and particulate matter (PM2.5 & PM10).

A picture containing timeline

Description automatically generated

Figure : U.S. AQI Table (AirNow.gov, 2020).

I have chosen a data set that includes daily measurements of Ozone, Carbon Monoxide, Sulfur Dioxide, and Nitrogen Dioxide from all over the United States from 2000 – 2016. (So, B., 2016). I will use the variables for the daily IAQI’s to study the trends of individual pollutants over the course of time. However, even though one pollutant may decrease, others may increase so I will need to create a fifth variable that is the highest daily IAQI for each location and use that to determine if overall air pollution levels in the U.S. decrease over time.

My intention with this project is to work with AQI levels for the entire United States, however, this data set is quite large (1.4 million observations) and I recognize that I may need to scale it down. If this is necessary, I will use observations from my home state of Colorado and change my statistical question to: Are pollution levels in Colorado decreasing over time?

References:

AirNow.gov. (n.d.). AQI Basics. AirNow.gov. Retrieved from <https://www.airnow.gov/aqi/aqi-basics/#:~:text=Think%20of%20the%20AQI%20as,300%20represents%20hazardous%20air%20quality>.

So, B. (2016, November 4). U.S. Pollution Data: Pollution in the U.S. Since 2000, Version 1. Retrieved September 27, 2020 from <https://www.kaggle.com/sogun3/uspollution>.

Wikipedia contributors. (2020, September 20). Air quality index. In Wikipedia, The Free Encyclopedia. Retrieved from https://en.wikipedia.org/wiki/Air\_quality\_index#United\_States.