**Air Quality Index Rates in Colorado Over Time**

**Statistical Question:** As a nation, we continue to become more aware of environmental issues like pollution. The government imposes environmental standards to help mitigate pollution and there has been a 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?

**Hypothesis:** My hypothesis is that pollution levels will decrease over time?

**Outcome of EDA:** Mean Max AQI score decreased by 6.03 points from 2003 to 2010, however when other years of data were added into the calculation during hypothesis testing and regression testing the results indicated that pollution levels have decreased by 0.288 points annually from 2003 to 2010. Nonetheless, I am able to conclude that pollution levels are decreasing. This is mostly due to the decrease in NO2 as NO2 is the major contributing factor to calculating the Max AQI. NO2 has a causal relationship with Max AQI and the two have a Spearman’s rank correlation score of 0.69.

**Additional Analysis:** Within the time limitations and scope of this project, I was unable to conduct analysis on each individual AQI that contributes to Max AQI, so I only focused on NO2, that major contributor. But, given more scope and time, it would be interesting to understand the relationships between all these variables and their relationship with Max AQI to really understand what is happening with Max AQI over time. Also, the incorporation of particulate matter (PM2.5 & PM10) data would round out the calculation of AQI data and provide a complete picture for analysis.