

**Final Project Report**

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**Class: ALY 6020 – Predictive Analytics**

**Professor**: Dr. Marco Montes de Oca

**Topic**: Predicting Air Quality Index

Summary

For this term’s project, we decided to focus on predicting the Air Quality Index (AQI) for a city. We ultimately chose this problem because we found it highly relevant given the current dismal state of air quality across the globe. One report estimated that there was a 15% increase in 2018’s AQI than in the 4 years prior.

The AQI is an index for reporting daily air quality. It tells you how clean or unhealthy your air is, and what associated health effects might be a concern. It’s range is from 0 to 500.

There are multiple sources of pollution that can contribute to poor air quality; however, it is important to note that for the purpose of this project, we will be focusing on fine particles (PM2.5). Fine particles are defined as particles that are 2.5 micrometers or less in diameter (for comparison, a single human hair is approximately 50-70 micrometers in diameter). Fine particles are most often produced as a result of a combustion reaction; the most common combustion reactions include everything from motor vehicles and power plant emissions to residential wood burning and forest fires (“Particle Pollution”). Some of the most recent (and ongoing) examples of natural causes of fine particle air pollution are the wildfires.

The AQI focuses on health affects you may experience within a few hours or days after breathing unhealthy air. The higher the AQI value, the greater the level of air pollution and the greater the health concern. In the final project, we hope to create an informative set of models that and visualizations that will not only help us predict future air quality trends, but that will also help to inform any future environmentally focused policies and actions.

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