

The importance of analyzing data sets regarding annual carbon emissions and ozone air quality in tandem with one another tackles questions and explanations regarding relationships between human activity, environmental health, and climate change. Carbon dioxide accounts for the majority of greenhouse gas emissions as it largely comes from man made institutions and various other human activities. Rising carbon emissions can lead to more extreme weather patterns and temperature shifts, affecting the chemical reactions that regulate the ozone layer. In a more humanistic point of view, the lowering air quality from the influx of carbon emissions also largely impacts lower income, often black and brown, communities who do not have the privilege for systems that provide air purification or are in the direct line of national disaster without humanitarian aid.

Both files are CSV, with the data themselves almost identical in their quantitative rather than qualitative properties. One of the files needed to be cleaned as there were descriptions and words corrupting the columns, but each set interacts with the mean/average numerical data of either the Air concentration (ppm) or the CO<sub>2</sub> mole fractions (ppm). We expect the insights to correlate with the Ozone numbers depleting as the numbers for the carbon emissions in the atmosphere grow larger and larger.

- With the inciting question, ““Can predictive models be developed to forecast air quality and ozone layer depletion based on current emission trends?””
- Rising carbon dioxide contributes to poor air quality by enhancing the greenhouse effect, trapping heat and altering weather patterns, which can increase the frequency of stagnant air and smog formation.
- Attempting to prove or provide evidence on how CO<sub>2</sub>'s warming effects can accelerate chemical reactions that break down ozone, particularly in polar regions, and contribute to ground-level ozone formation, which is harmful to human health and ecosystems.
- Knowing the inciting question and what we wanted to find, we searched for quantitative heavy data, tracking annually the average ozone concentration levels and carbon dioxide levels spanning across an entire year
  - Data was identical, three rows, columns all the way down in years ranging within 1979 and 2024
- Data-driven insights into how rising carbon emissions affect ozone levels and air quality can influence environmental regulations, the creations of policies, and the overall education on keeping from the destruction of entire ecosystems—or providing aid in knowing which communities are most vulnerable to