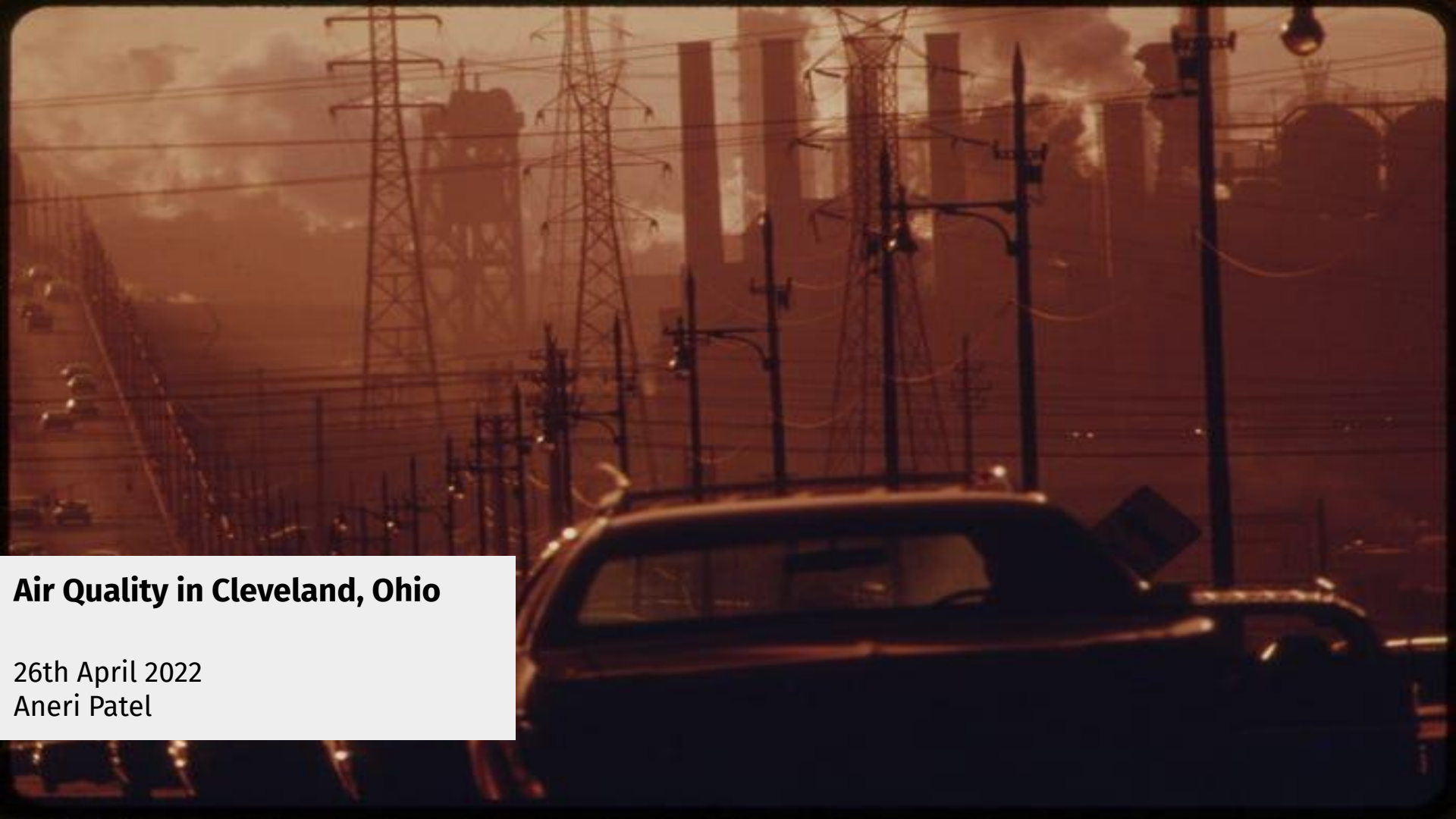


Air Quality in Cleveland, Ohio

26th April 2022

Aneri Patel

Air Quality in Cleveland

Cleveland has a long history as a prominent manufacturing hub for the Midwestern United States. Its historic location along numerous transportation routes and near large coal and iron ore deposits has helped rapidly develop and sustain the city's economy, but often at the cost of poor air quality.

Today, advanced **manufacturing, metal production and fabrication**, and **automotive** facilities remain prominent industries, contributing to city-wide emissions. However, the city has tightened emission limits on these industries, reducing air pollution levels by nearly 75% since monitoring began in 1990. Moreover, Cleveland has made pushes to diversify its industries toward other areas, such as biotechnology and information technology, while abandoning many of its polluting energy plants.

Ohio's **oil and gas** industry, however, remains problematic. As a state, Ohio produces more than 4.2 billion cubic feet of natural gas per day (a sevenfold increase since 2014). Tens of billions of dollars have been invested since 2010 to build the industry further, an investment that may further exacerbate Cleveland's troubles in reaching federal attainment levels for air pollution.

Other prominent emission sources include:

- the use of motor vehicles by over 385,000 residents
- diesel-powered commercial trucks and trains
- factories and power plants that use fossil fuels like coal and gas for energy
- construction sites and road repairs

https://www.iqair.com/us/usa/ohio/cleveland

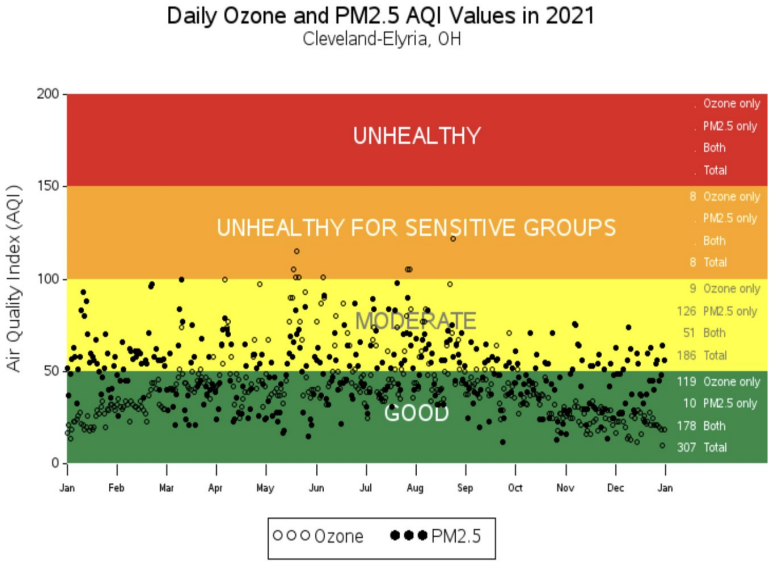
Major Pollutants

Cleveland air quality fails to meet U.S. Environmental Protection Agency (EPA) standards for ozone and PM2.5. Its non-attainment status for these air pollutants positions the city as one of the most polluted cities in the United States, ranking:

- #31 for high **ozone** days out of 226 U.S. metropolitan areas
- #14 for annual **particle pollution** out of 199 U.S. metropolitan areas

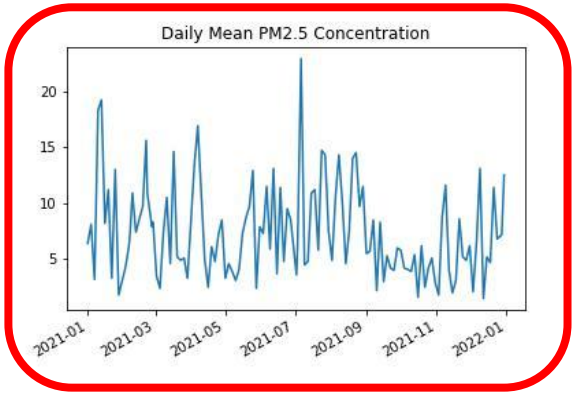
In Cleveland, PM2.5 (fine particulate matter) and ozone are of greatest health concern. The city has failed to meet EPA attainment standards for both of these main pollutants.

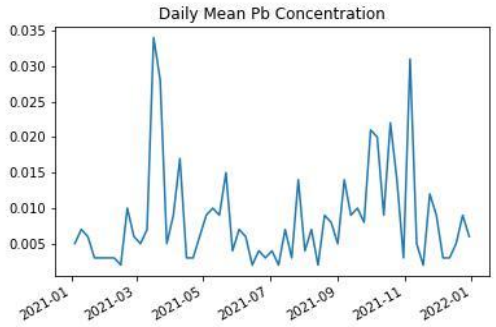
https://www.iqair.com/us/usa/ohio/cleveland

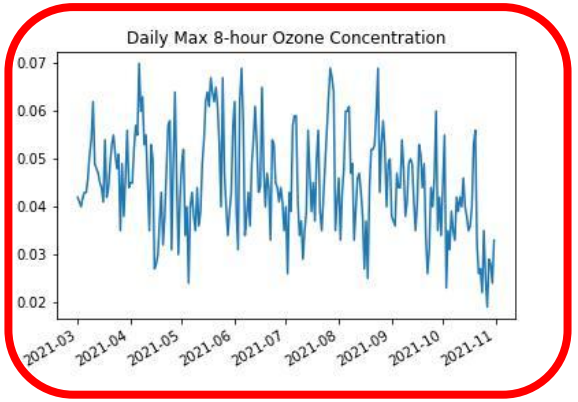


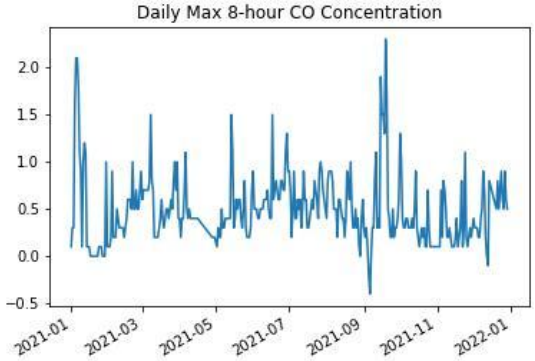
Graph generated on
https://www.epa.gov/outdoor-air-quality-data/air-data-aqi-plot

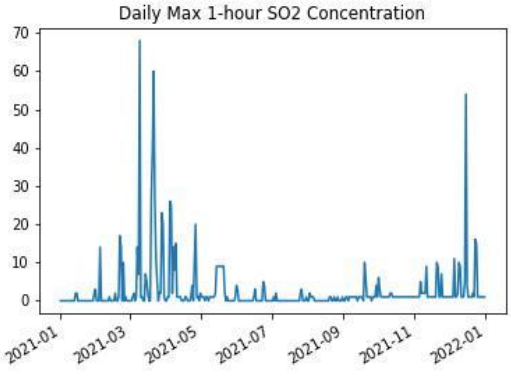
Daily Criteria Pollutant Levels - 2021

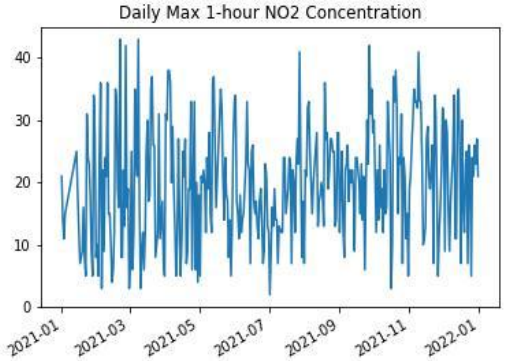












https://www.epa.gov/outdoor-air-quality-data/download-daily-data

Seasonal Pollution

Cleveland tends to experience periods of elevated PM2.5 air pollution in **both the summer and winter**.

In winter, Cleveland's elevated PM2.5 levels are attributable to:

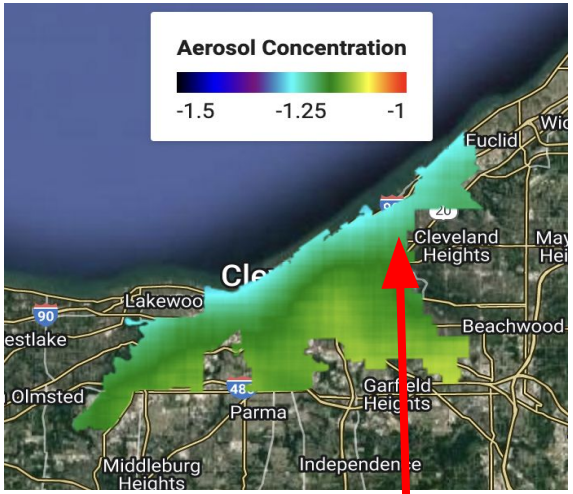
- cars idling while **defrosting**
- **winter wood-burning** for domestic heating and ambiance
- increased electricity consumption as a result of darker, colder evenings
- weather conditions—namely, cool air inversions—that can trap air pollution in the lower atmosphere, causing air pollution to accumulate to high levels

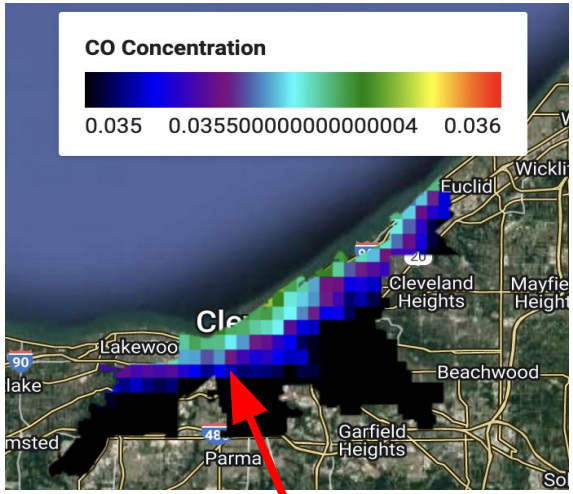
In the summer, elevated PM2.5 levels are typically attributed to:

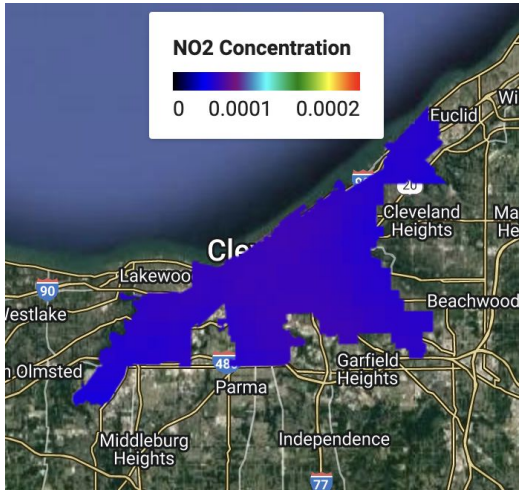
- resuspended dust from increased **construction**
- **wildfires**
- softer wind currents and stagnant air
- less frequent precipitation

https://www.gcbl.org/transform/sustainability-agenda/clean-air

Spatial Distribution of Pollutants (2021)







Higher CO and aerosol concentration along the coast