Arizona Air Quality Analysis

Tracking changes in AQI over last 20 years

Easton Harrison, 2023

Business Obstacle

The senior management team wants an analysis of the last 20 years of air quality data to see trends and to better forecast health issues related to air quality.
More specifically:

1. Is there a clear trend in air quality readings for the state of Arizona?
2. Are there higher levels of more toxic air pollutants such as Nitrogen Dioxide (NO2) or Carbon Monoxide (CO) that cause more serious health issues?
3. Are high pollution days becoming more common?

Milestones & Deliverables

Milestones	Tasks	Deliverables/Reports	Relevant Stakeholder
1	Establish Structure & Workflow		Senior Data Manager
1.1	Create Project Proposal		Senior Project Manager
2	Compile summary data from EPA	Get files ready for EDA	Senior Data Analyst
2.1	Explore data		Data Analysis Manager
3	Data exploration & Cleaning	EDA Report Dashboard/vizualizations	Senior Data Analyst
3.1	Build Vizualizations		Senior Data Analyst
4	Compute Descriptive Statistics	Testing of results Sharing of results	Data Analysis Manager
5	Communicate Insights with Stakeholders		*All Stakeholders listed* Senior management

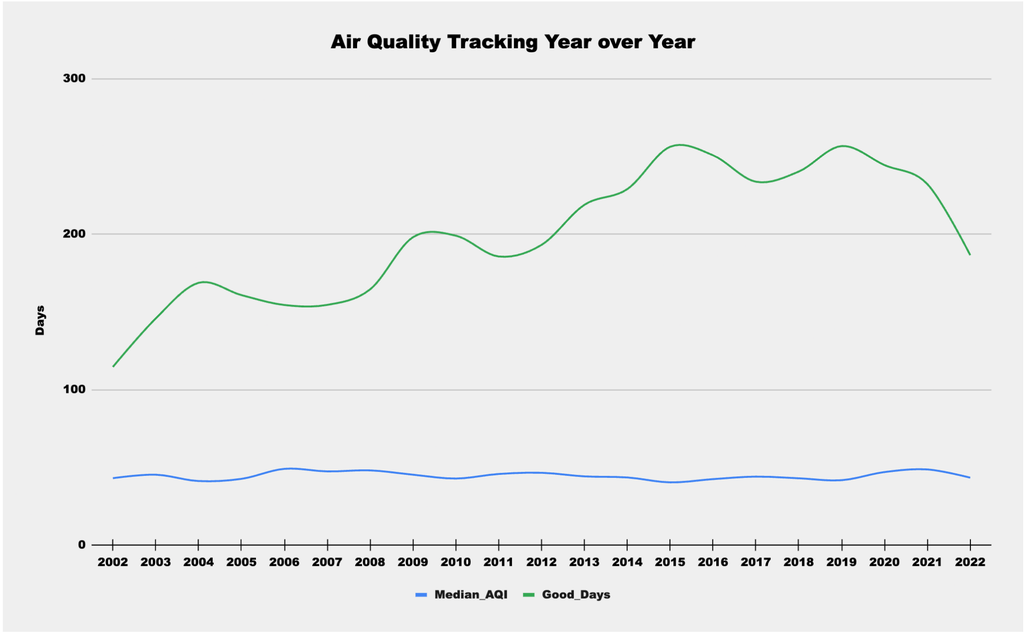
Data Source

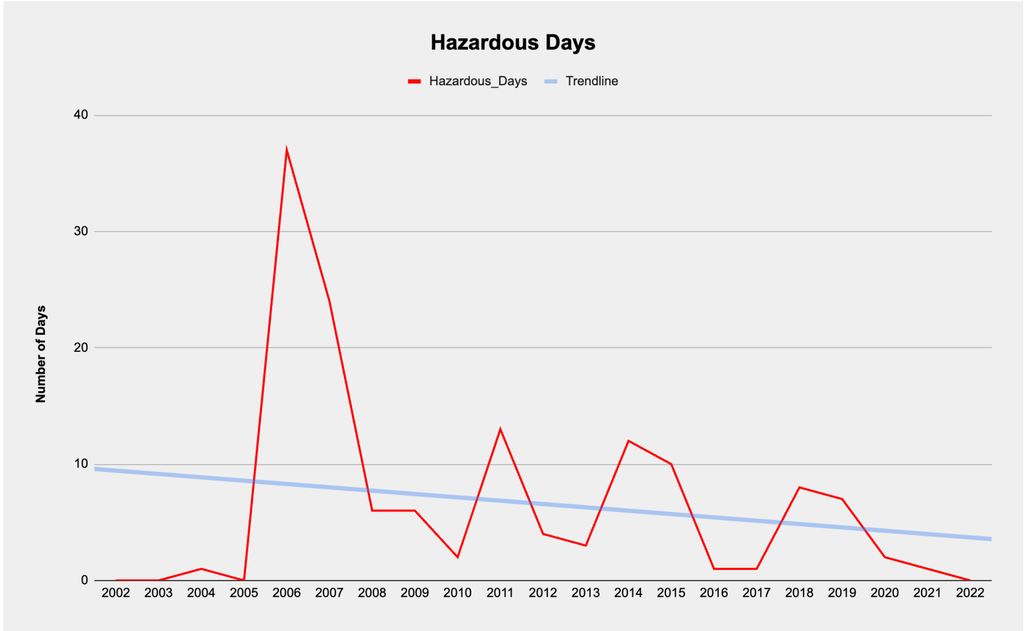
- Data pulled from Environmental Protection Agency (EPA)
- https://aqs.epa.gov/aqsweb/airdata/download_files.html

Question 1

Is there a clear trend in air quality readings over the last 20 years?

- Data does not show a clear trend in the median air quality for the State of Arizona
- Days with good air quality are happening more frequently
- The occurrence of hazardous days spiked in the early 2000's and is trending downwards

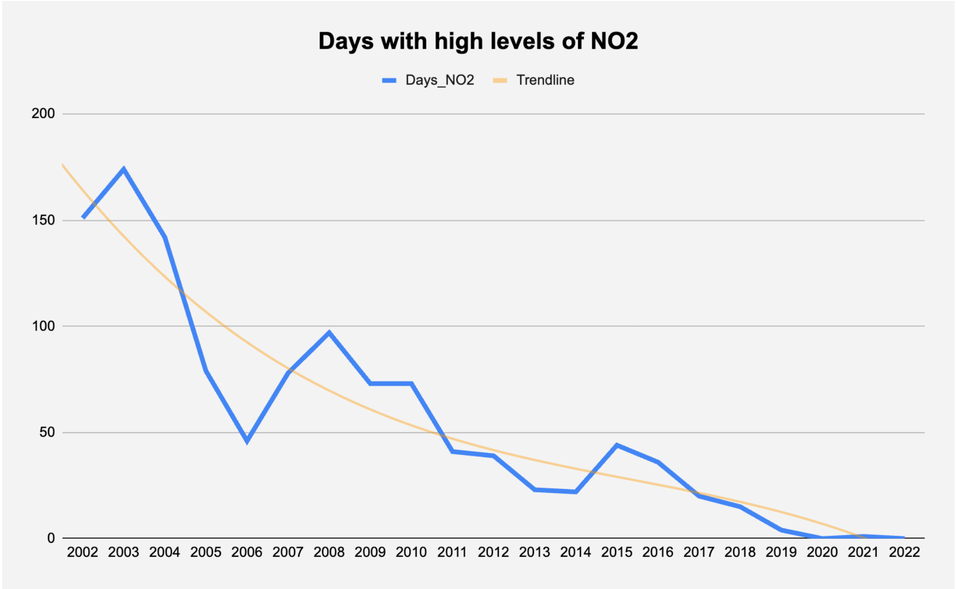


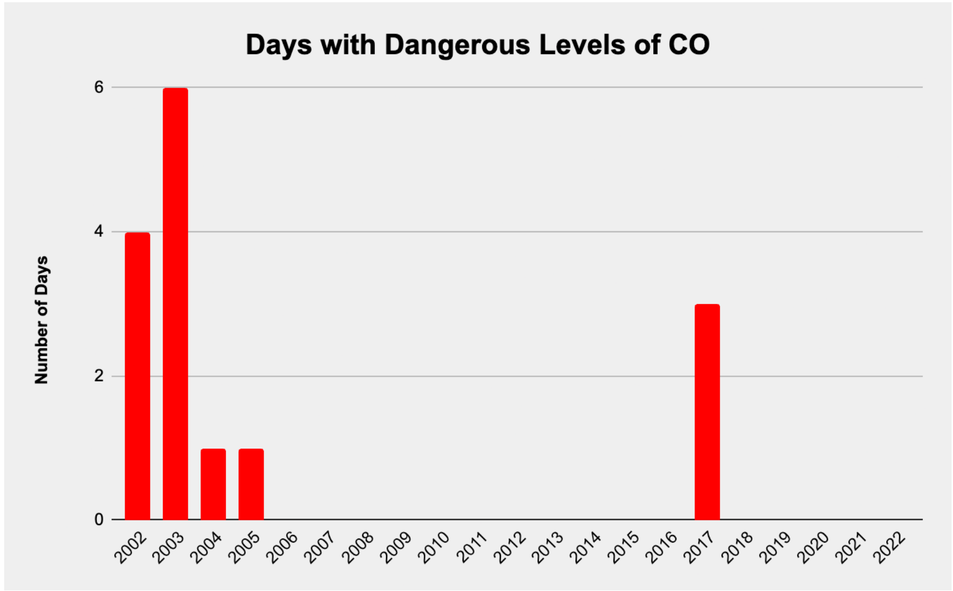


Question 2

1. Are there higher levels of more toxic air pollutants such as Nitrogen Dioxide (NO2) or Carbon Monoxide (CO) that cause more serious health issues?

- We can see a sharp decline in readings of the toxic gas NO2
- Carbon Monoxide readings are very irregular and have only happened 3 times in the last 16 years

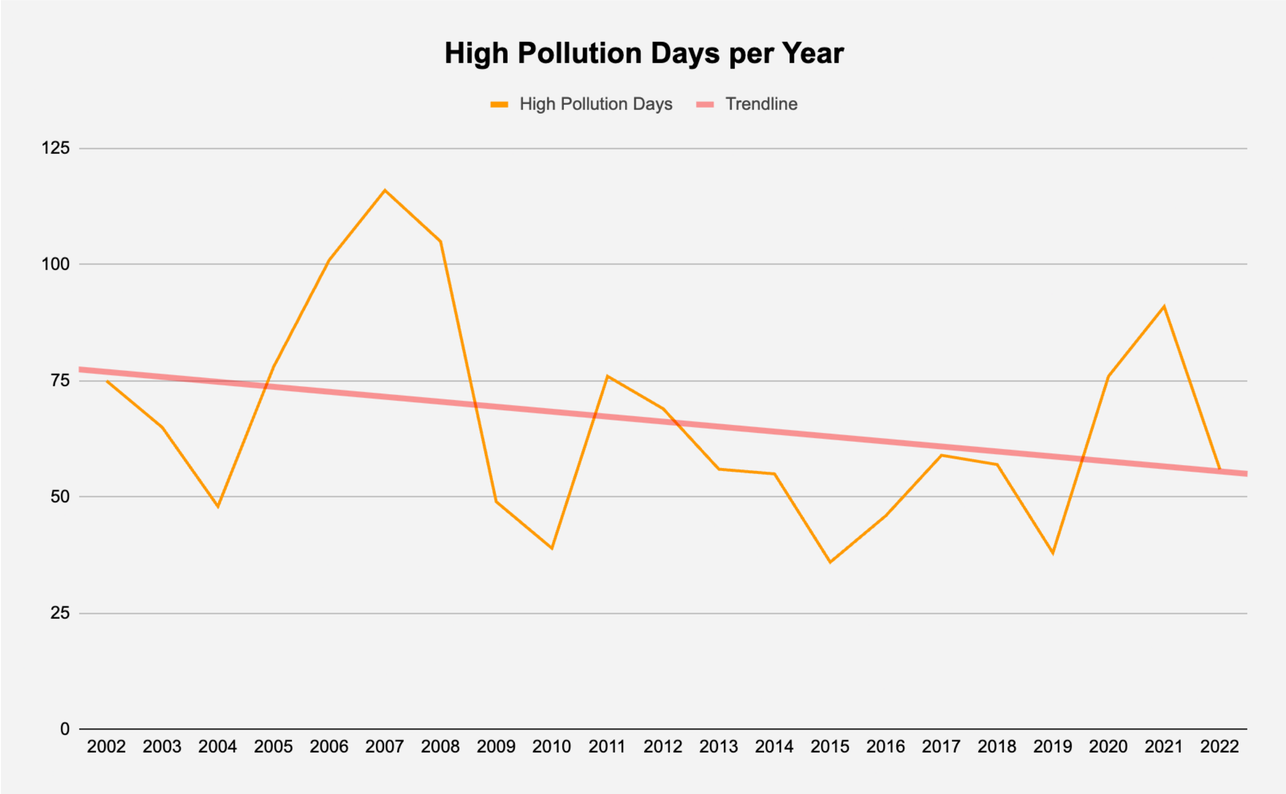




Question 3

Are high pollution days becoming more common?

- High pollution days can have adverse effects on those with underlying health conditions and children
- Data shows a slight decrease in occurrence of these days



Summary

- Median Air Quality readings for the State of Arizona do not indicate a trend
- Rates of Nitrous Dioxide (NO2) have fallen sharply over the last 20 years and the occurrence of dangerous Carbon Monoxide (CO) is extremely rare
- High pollution days that affect sensitive groups and children are on a slight decline but still occur between 45 and 100 days each year

Review & Next Steps

- We were able to answer the 3 questions for aggregated state level data
- To better forecast health issues for more specific areas we can filter these readings by county
- The next analysis I would recommend is to examine the same readings individually for Arizona’s 15 counties