Project 1 Presentation

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Overview of project and goals

Project Description

The purpose of the project is to analyze the impact of climate change and increasing temperatures in the western US and the incidence of wildfires and air quality in the Portland metro area over the last five years (2017-2022)

Hypothesis:
Increasing temperatures in Oregon are a contributing factor to the increase in wildfires throughout the state.

Research Questions to Answer

- 🔥 What counties in Oregon regularly experience wildfires?
- 🔥 What was the cause of the wildfires?
- 🔥 How many acres have been burned each wildfire season?
- 🔥 What is the temperature trend in Portland over time?
- 🔥 What is the precipitation trend in Portland time?
- 🔥 What is the trend in air quality in Portland over time?

Overview of data collection

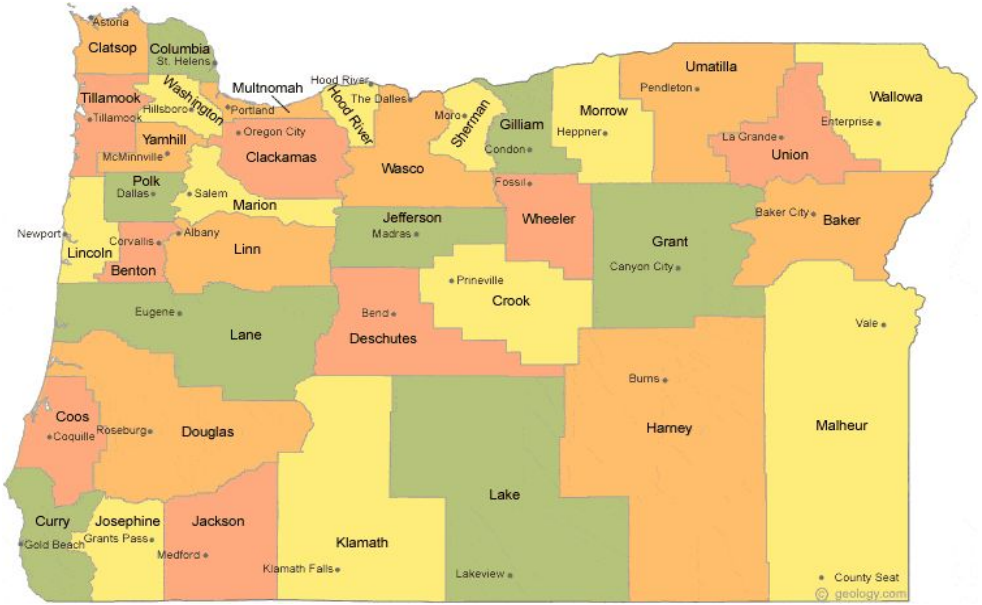
Datasets

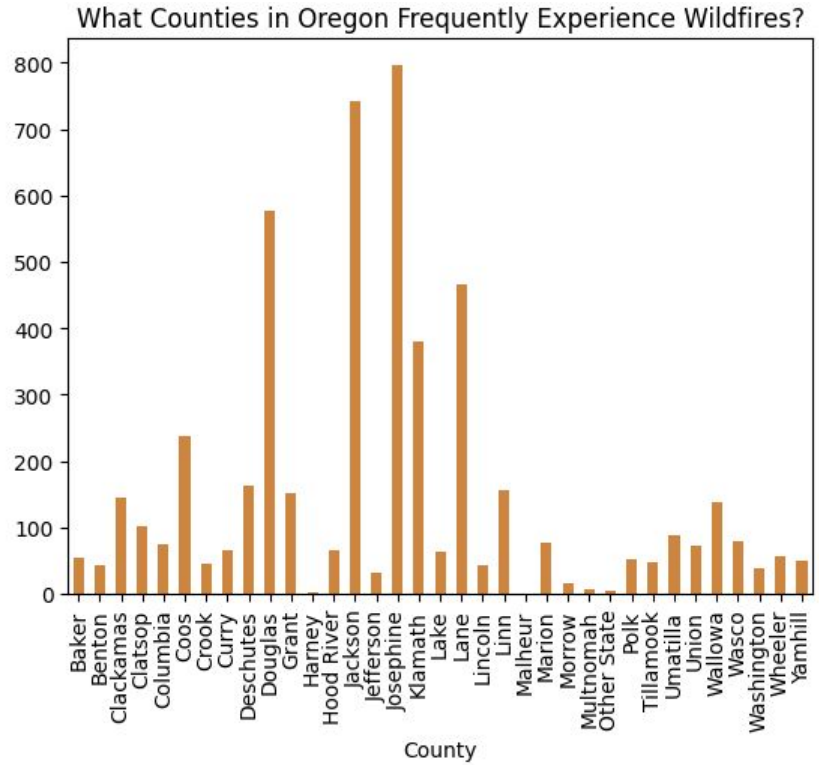
- OpenWeather
  - Location, Air pollution/quality https://openweathermap.org/api/air-pollution
- Oregon Department of Forestry
  - Location, # of wildfires, acres burned https://data.oregon.gov/Natural-Resources/ODF-Fire-Occurrence-Data-2000-2022/fbwv-q84y
- NOAA
  - https://www.ncei.noaa.gov/cdo-web/datatools/findstation
  - Daily Summaries Dataset
  - Max temperature in F and inches of precipitation by day by location

Once the topic was determined, we worked together to figure out what datasets would be needed. We individually found CSVs and API datasets that would be needed to research our topic.

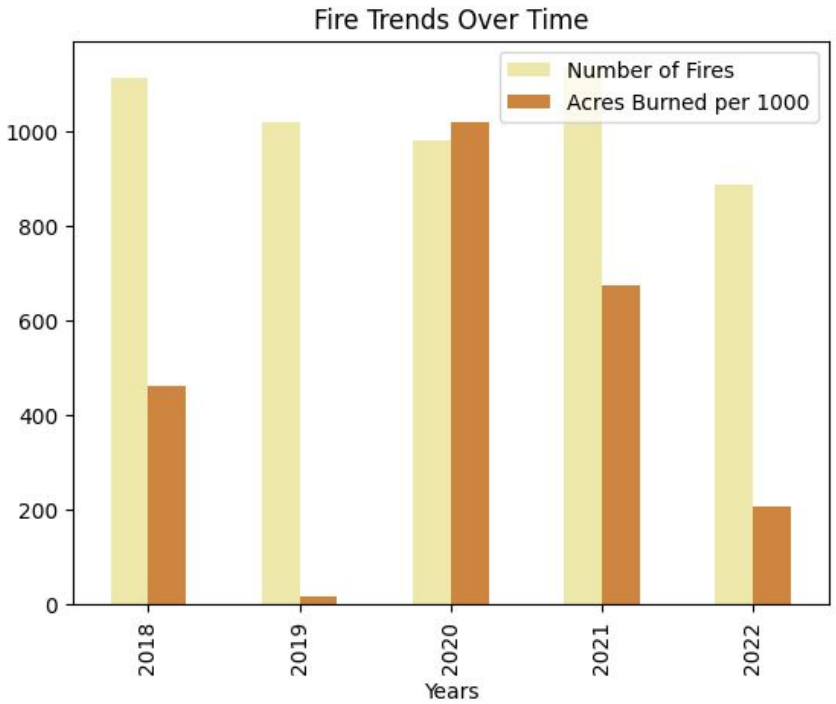
- The Oregon Department of Forestry CSV needed to be reduced and cleaned to only incorporate data for the last five years.
- OpenWeather API were pulled to look at how the temperate, precipitation impact the Portland Metro area. In addition, we looked at the air pollution data to see how wildfires affect the air in the surrounding areas.

What counties in Oregon regularly experience wildfires?



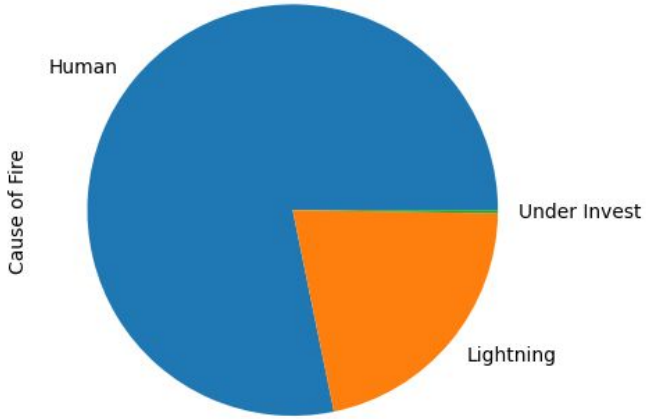


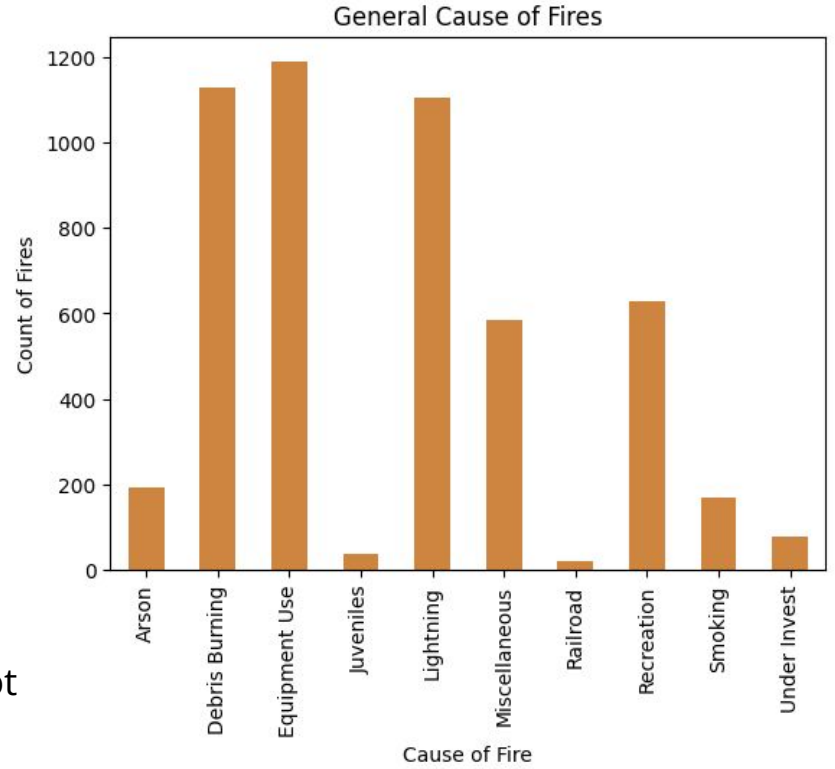
Fire Trends 2018-2022



While the number of fires has stayed steady, the acres of fire damage has increased over the last few years.

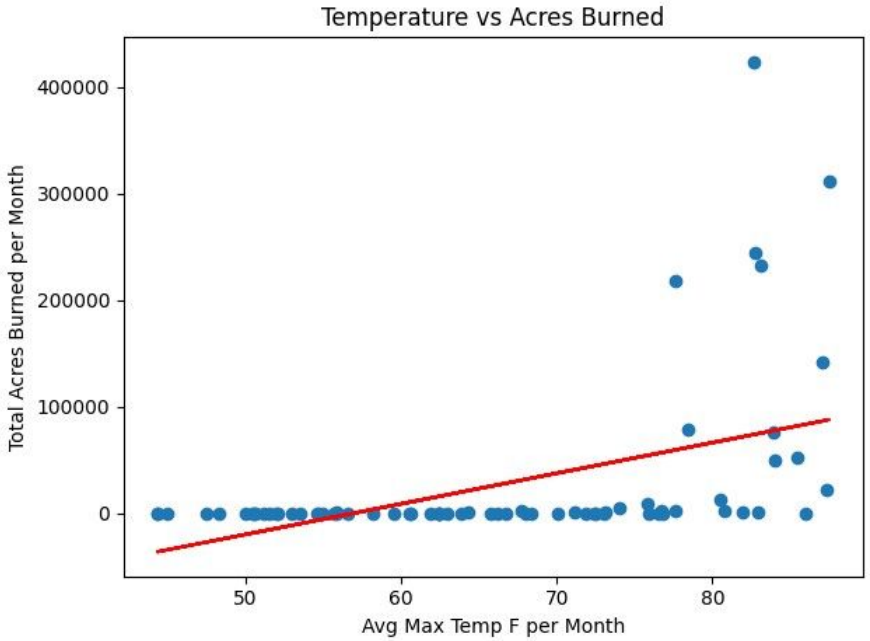
What was the cause of the wildfires?





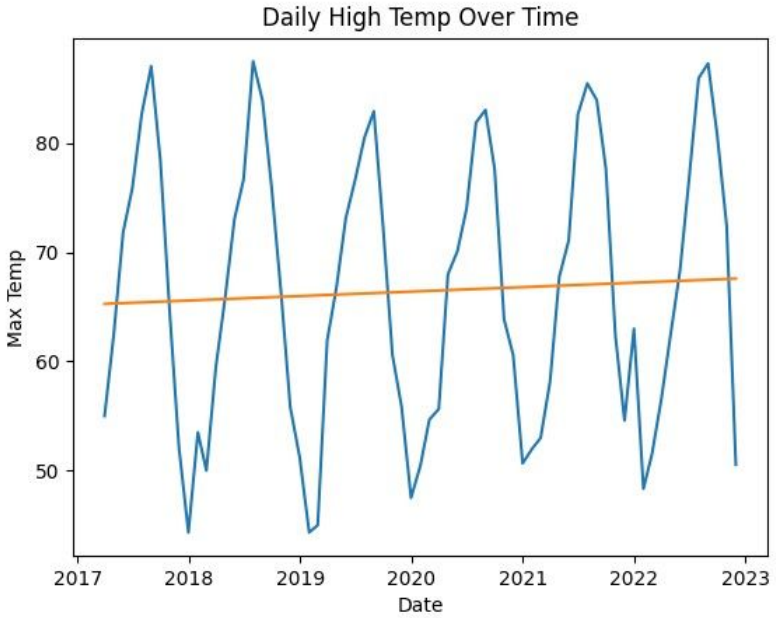
While we thought that climate change and high temperatures would be drastic factors in what is causing the increase of wildfires throughout the State of Oregon, research showed that it does not have a direct correlation.

Portland Temperature Analysis 2017-2022



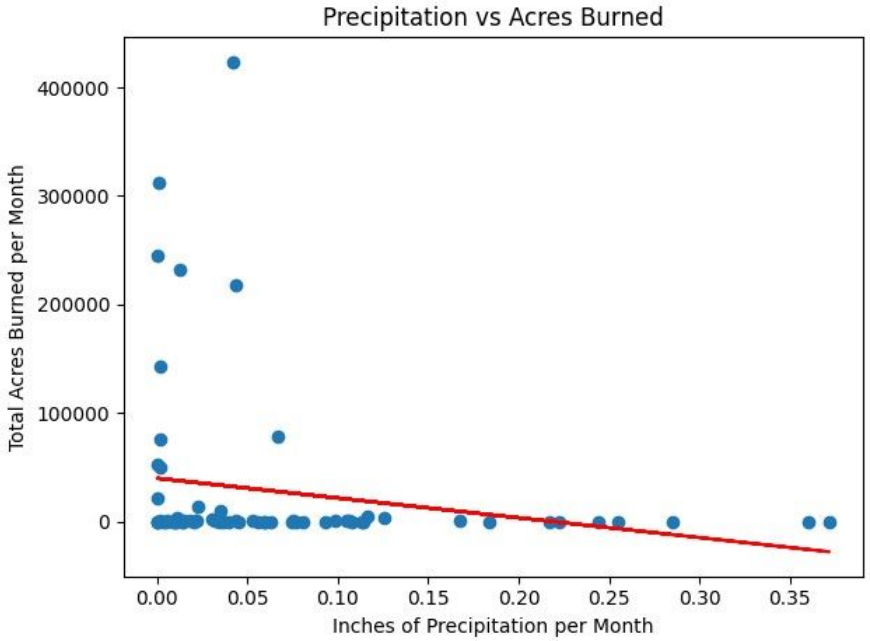
Correlation coefficient is 0.46 for average temperature vs total acres burned by wildfires by month. The correlation coefficient indicates a moderate positive correlation (as temperature increases, the severity of wildfires increases).

Portland Temperature Analysis 2017-2022



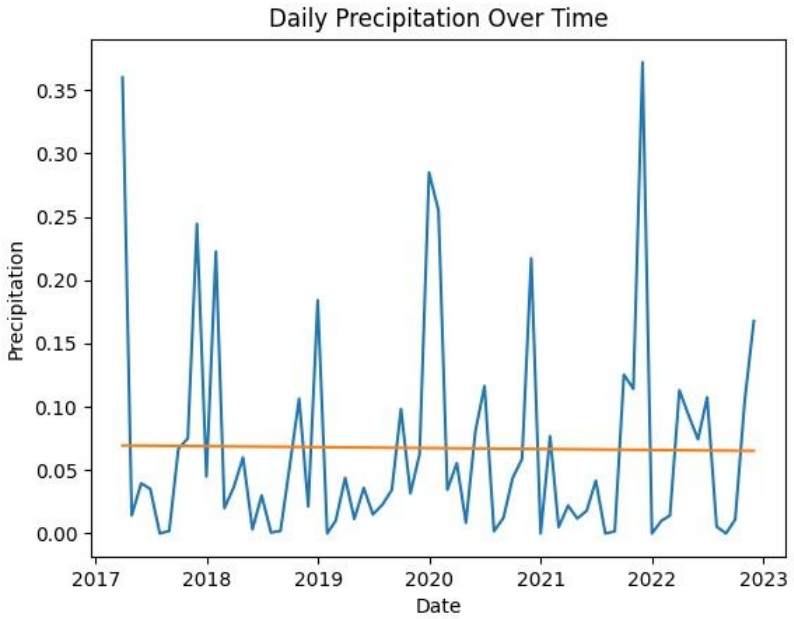
The daily high temperature averaged by month in fahrenheit has increased over time (slope of the regression line is 0.035).

Portland Precipitation Analysis 2017-2022



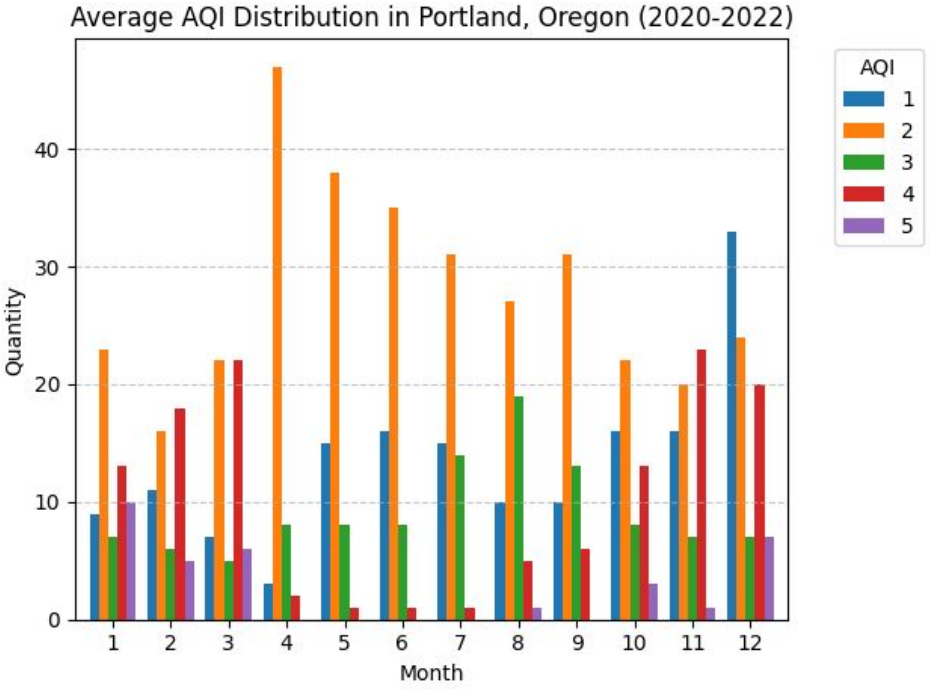
Correlation coefficient is -0.20 for average daily precipitation vs total acres burned by wildfires by month. The correlation coefficient indicates a weak negative correlation (as precipitation increases, the severity of wildfires decreases).

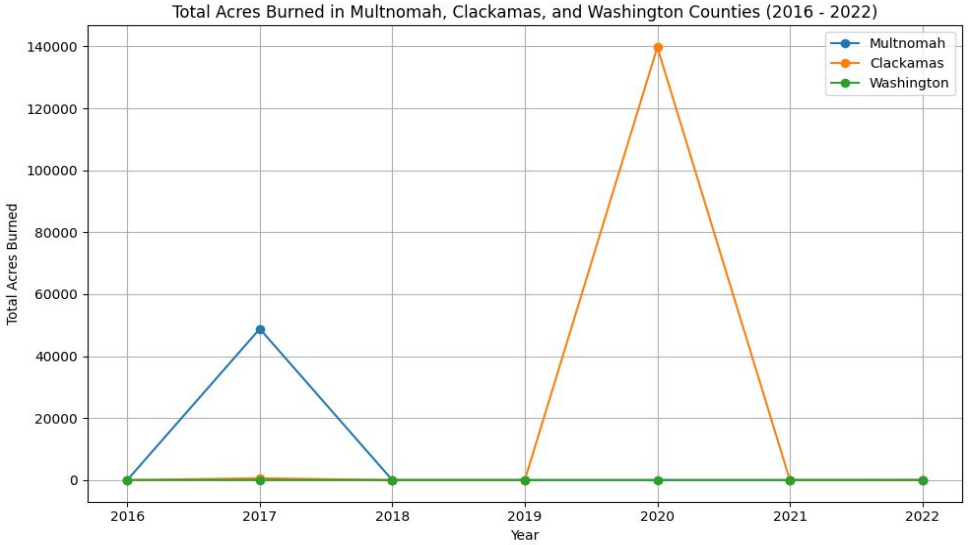
Portland Precipitation Analysis 2017-2022



The daily inches of precipitation averaged by month has stayed the same over time (slope of the regression line is -6.23 x 10^-5).

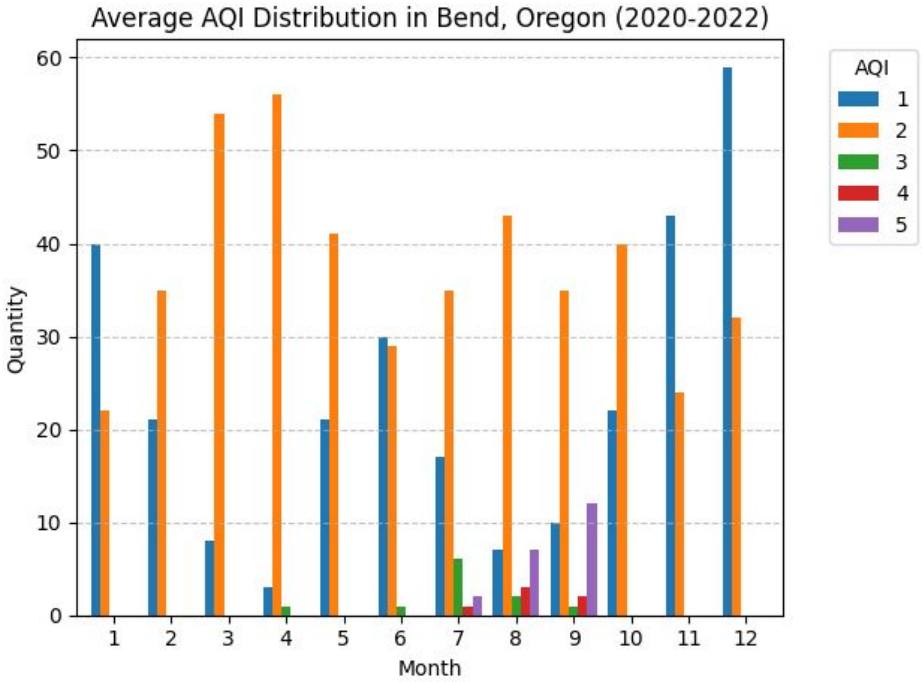
Air Quality For Portland, OR

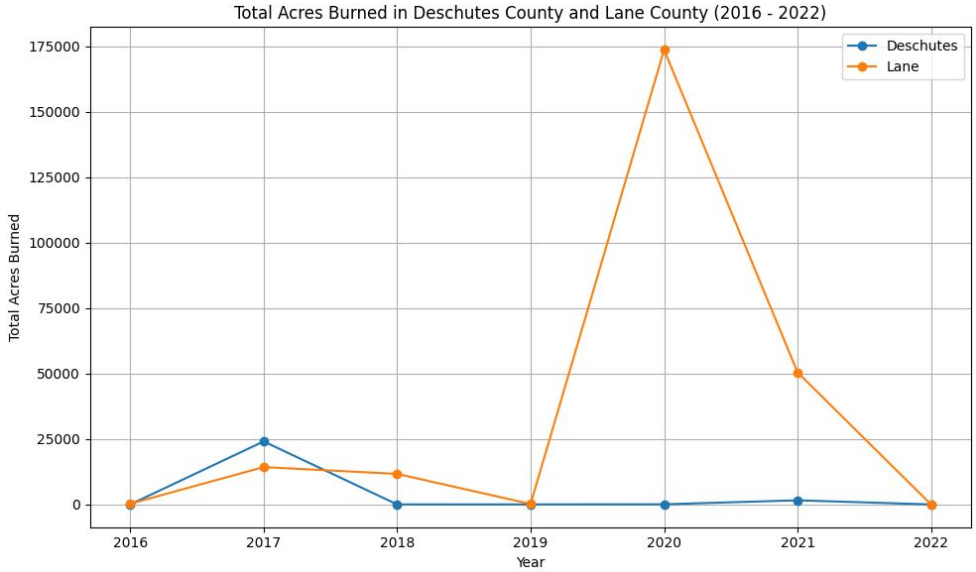




- AQI for portland is a sum of many different values.
- The data does show that as we enter the mid to late summer months that there is a decline in the air quality
- Two fires to note is the eagle creek fire in Multnomah County and the Riverside Incident in Clackamas County (50,000, and 138,000 acres)

Air Quality For Bend, OR





- Bend was included to show a different data table. It provides information more relevant to a decrease in air quality during the summer months.
- 2020 Lane County fire was the Holiday Farm Fire (173,000 acres)

Air Pollution Conclusion

- The data gathered for Portland shows a decrease in AQI in the winter months which is not what we hypothesised.
- The data gathered for Bend more accurately shows a decrease in AQI in the summer months for which fire season is at its height
- Lane County shares a border with Deschutes County where Bend is located and based off the total acres burned in Lane county we can assume that based on the two graphs that those fires burning in Lane county caused a decrease in the AQI for Bend.

Final Conclusion

- With yearly precipitation staying level over the years, the number and severity of wildfires has not increased which goes against our hypothesis.

- Temperature has increased over time and fire severity correlates with high temperatures.