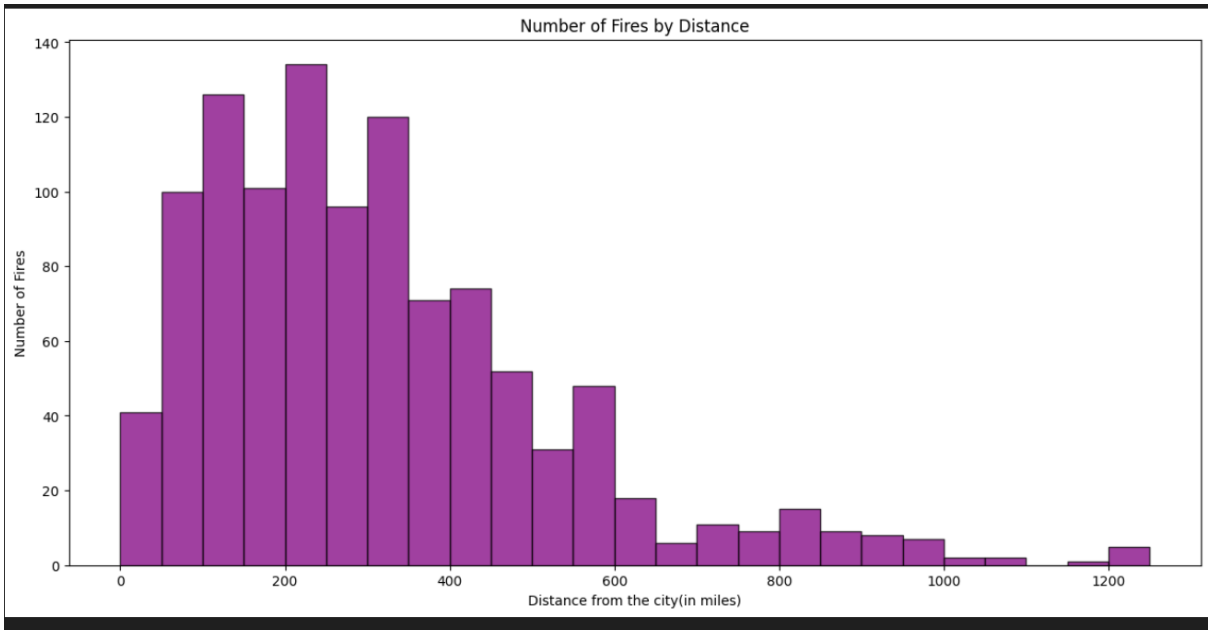
Analysis of the Visualizations

Viz 1



For this project, I had the opportunity to run my analysis for **Klamath Falls, Oregon**.

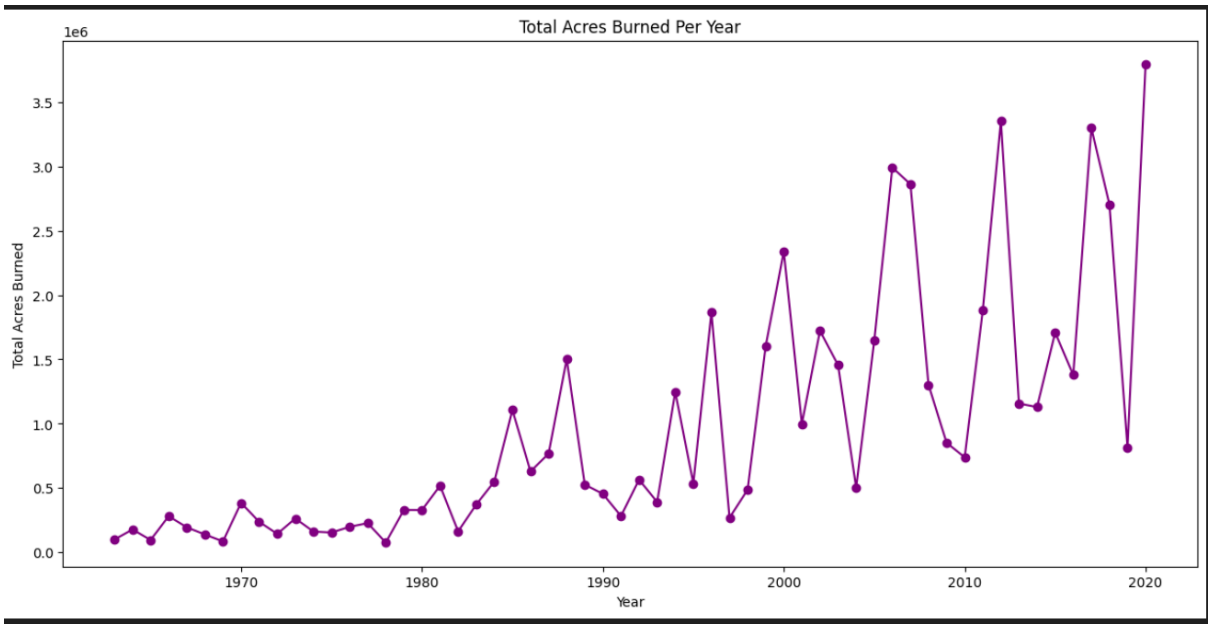
We can see that as we go away from the city, the number of wildfires steadily keep on decreasing.

This particular visualization depicts the number of wildfires which were present near the city in totality over the years. The x-axis shows the Distance from the city in miles and the y-axis shows the Number for fires.

If we dig a bit deeper into the data, the distance of the wildfires from the city was calculated using the functions which have been defined in the python notebook which is part of this repository (*DATA 512 Wildfire Part 1.ipynb*). The code to generate this graph is also part of the same notebook. We have used matplotlib to generate this graph. This library provides a specific function, 'hist,' designed for creating histograms. It accepts parameters defining the number of bins, the values to be binned (in this case, distances), and various styling options such as transparency and edge colour.

This graph's foundational information comes from the USGS dataset on combined wildfires in the USA, which includes details on fires that have occurred all throughout the nation. The data was restricted to wildfires that happened between 1963 and 2023 and within a radius of 1250 miles from the source city in order to fulfil the requirements of this project. But after using this filter, it was discovered that the years 2021, 2022, and 2023 were not covered by any data.

Viz 2



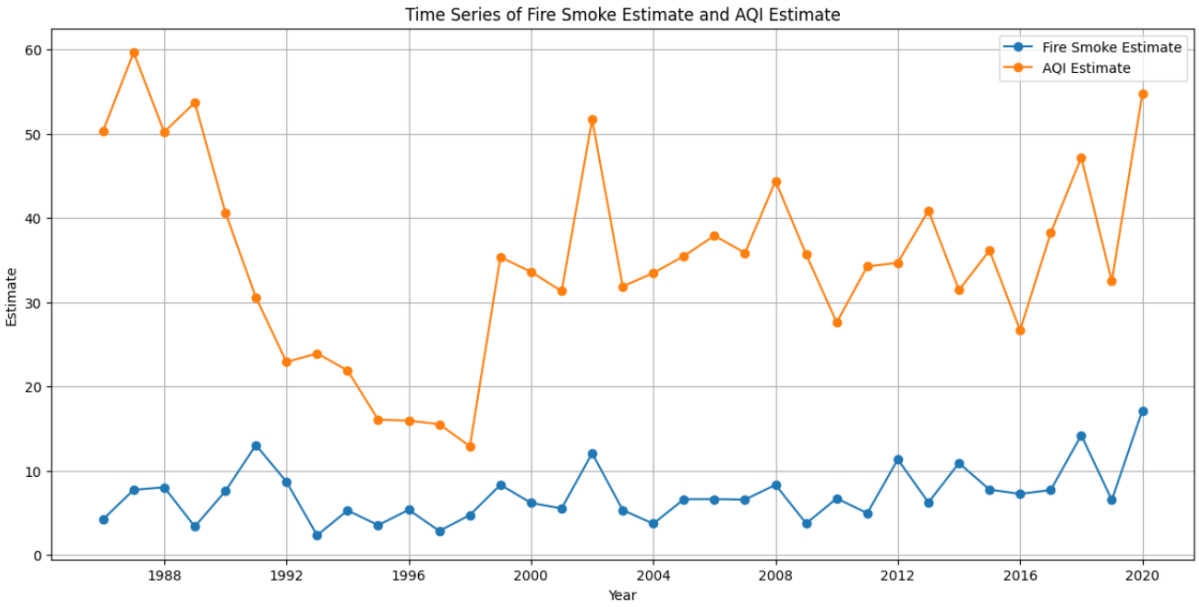
The total acres burned annually within a 1250-mile radius of the originating city are depicted in the graph above. The years 1963 through 2020 are represented on the x-axis. I found that there was no data accessible for the years 2021, 2022, and 2023, despite the original plan to offer data for the years 1963 through 2023.

The general trend of this graph seems to be slightly increasing with large peaks and valleys towards the later years which is quite interesting.

The total acres burned during a wildfire is shown on the y-axis. The USGS dataset on combined wildfires in the USA, which includes details on wildfires that have happened in the nation, is the source of the data that powers this graph. The data was restricted to wildfires that happened between 1963 and 2023 and that were contained within a 1,250-mile radius of the source city in order to fulfil the requirements of this assignment. An attribute named "GIS_Hectares" was converted to acres and used to determine how many acres were burned by a wildfire. The conversion is recorded in the data gathered by the USGS for every wildfire.

We again used the matplotlib library of Python to plot these values and the data was prepared using the ‘groupby’ function of python itself.

Viz 3



The aforementioned graph contrasts the AQI estimate from the US Environmental Protection Agency's (EPA) Air Quality Service (AQS) API with the computed fire smoke estimates. Since there was no data available for the years 2021, 2022, and 2023, the fire smoke estimations were acquired for the years 1963 to 2020. The USGS data on combined wildfires in the USA, which includes details on wildfires that have happened in the nation, was used to compute these estimates. The following formula is used to get the smoke estimates: smoke_estimate = Assigned_Fire_Type_Code * (GIS_Hectares/distance).

The AQI data was collected via the API exposed by the EPA. The stations were found in a 50-mile radius of Klamath Falls, having the same FIPS code as the city which means the proximity to the city itself was quite close.

Though the data from these stations only spans the years 1986 to 2023, two stations were used for varying lengths of time. As a result, data from 1986 to 2020 is included in the graph above.

The Python Matplotlib library and its 'plot' function were utilized to generate this graph. Different colours were assigned to the lines using different stylistic options.