Spatial Analysis of Fire Stations relative to Historical Wildfires in Oregon

By Addison Atkin and Freya Lee

Motivation:
In mid-January, 40,300 acres of land and thousands of houses were set ablaze across multiple fires in and surrounding the LA area in California. This incident left many residents homeless and underscored the potential for devastation if such fires are not kept under control. The increased incidence of large wildfires on the United States' western coast has sparked concerns over the ramifications of climate change and the longer dry seasons in those areas. Our project seeks to uncover any patterns within the wildfire data and analyze one aspect of Oregon's fire-fighting preparedness by determining how many fire stations are near areas with a history of wildfires.

Data:

- Oregon Fire Stations: https://geohub.oregon.gov/datasets/oregon-geo::fire-stations/explore?location=44.179698%2C-121.199144%2C7.46
- Fire Perimeter (Pacific area North America): https://catalog.data.gov/dataset/blm-natl-fire-perimeters-polygon
- Github Repo: https://github.com/addisonia/geog573_final

Analysis Methods:
Our analysis will primarily be done through both ArcGIS and Jupyter Notebooks. ArcGIS is good for data visualization and identifying visual patterns that may be harder to notice through looking at the raw data. For more in depth and complex analysis, jupyter notebook scripts and google collab will be used. If suitable and applicable with our data, these can also be used for machine learning (K-Means clustering, etc.). Using geopandas we could for example create buffers for each wildfire zone and then determine the fire stations that are within a certain distance who could likely respond to similar wildfires in the future.