MUSA 550 Final Project Proposal

Topic: Analyze Parking Supply and Demand Trends in San Francisco, California

Team: 1. Samriddhi Khare - skhare@upenn.edu
2. Roshini Ganesh - rganesh@upenn.edu

Outline:

This project aims to utilize San Francisco's open parking data to map and visualize parking availability, occupancy, and clustering trends within the city over the recent months/years.
The project will use data from various sources, including but not limited to:

1. Open parking dataset with locations (the whole set has over 10,000,000 rows, but we will be filtering this data to include information from within the San Francisco County Boundaries for a limited number of years),
2. Parking meter data to cross-validate areas of high parking activity by recorded transactions.
3. On-Street Parking census, which provides counts of publicly available, on-street parking for each street segment.
4. Census data (using the API) for the selected geography, and
5. OSM Street Maps data for street network analysis

Methods:

1. Data collection through APIs,
2. Utilizing a dataset containing more than 1,000,000 rows,
3. Combining data collected from 3 or more different sources,
4. Geospatial joins and operations
5. Analysis of street network data
6. Interactive Data and Spatial Data Visualization (charts and maps)

Process:

1. Data collection and cleaning: As we were exploring the existing data, we learned that the datasets we intend to use are massive. We will spend some time on our project cleaning up the data and using portions of it that best fit our analyses.
2. Exploratory Analysis & Storytelling: We would like to frame the parking demand and supply trends within the larger framework of demographic and social patterns in San Francisco. Using the census data (and possibly other sources with neighborhood-level information), we expect to identify associations between high and low-demand areas with variables such as race, income, and employment.
3. Main Analysis: By conducting spatial joins for the data collected from various sets, we aim to present the patterns of occupancy and use over time for the given parking spaces.
4. Data Visualization: We would like to include interactive visualizations about parking demands and street networks comparing different San Francisco neighborhoods.