



Identifying the Best Neighborhoods to Live in Seattle

IBM Applied Data Science Capstone

Why Seattle

- Seattle is becoming one of the fastest growing tech hubs in United States
- With its lower cost of living than Bay Area, and low-to-no income tax, it's becoming more attractive to software developers to pursue their career



Criteria for Where to Live

- Desirable qualities of a neighborhood can be subjective
 - Young professionals may prefer more vibrant and diverse neighborhoods
 - Those with families may prefer quiet neighborhoods with good schools
- Some common criteria include safety, and types of venues in nearby area




Data Source

- List of Neighborhoods in Seattle scraped from Wikipedia
 - https://en.wikipedia.org/wiki/List_of_neighborhoods_in_Seattle
- 2020 Crime Data published by Seattle Police Department
 - <https://www.seattle.gov/police/information-and-data/crime-dashboard>
- List of Venues for each Neighborhood by using Foursquare API
 - <https://developer.foursquare.com/>



Data Wrangling of 2020 Seattle Crime Dataset

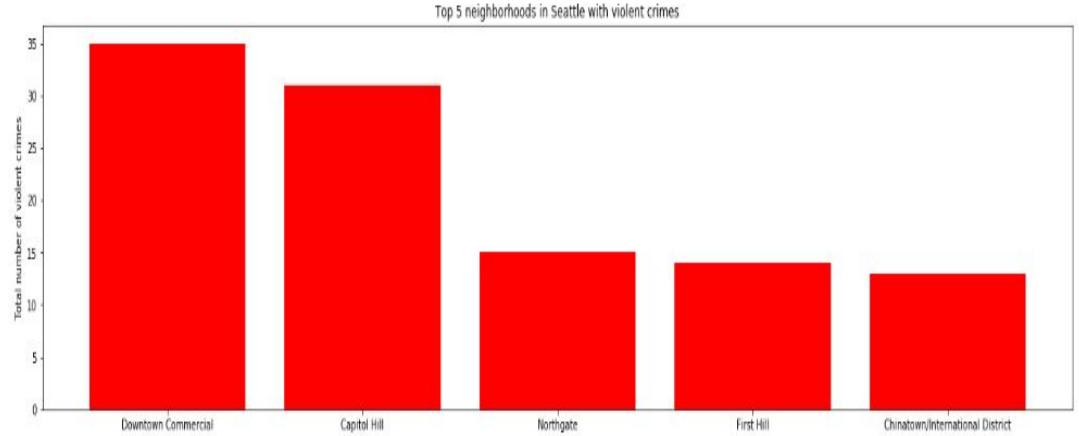
- Relevant columns of data (i.e. “Neighborhood”, “Category”, “Offense”) were extracted
 - Unknown neighborhoods were dropped
 - Neighborhood names were properly formatted
 - List of crime incidents were grouped into categories (Violent Crime vs Property Crime)
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Data Analysis of 2020 Seattle Crime Dataset

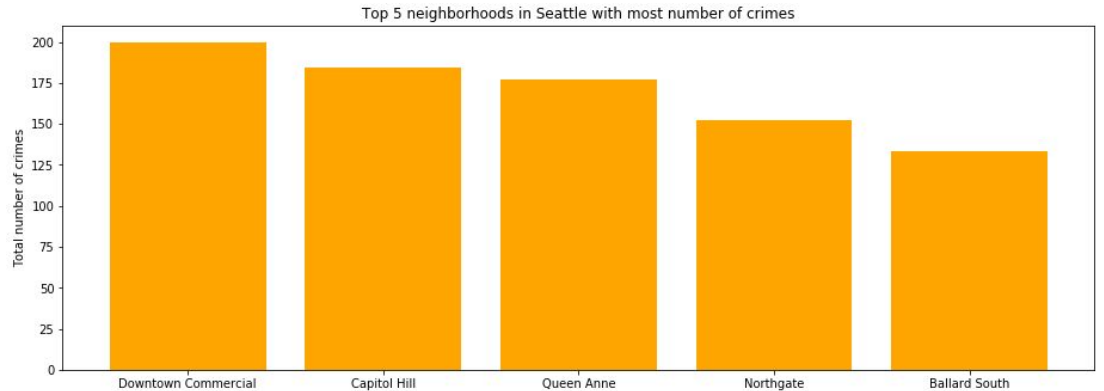
- Top 5 neighborhoods with most & least crimes were identified and plotted respectively
- Choropleth maps were generated to illustrate the distribution of crimes across different neighborhoods



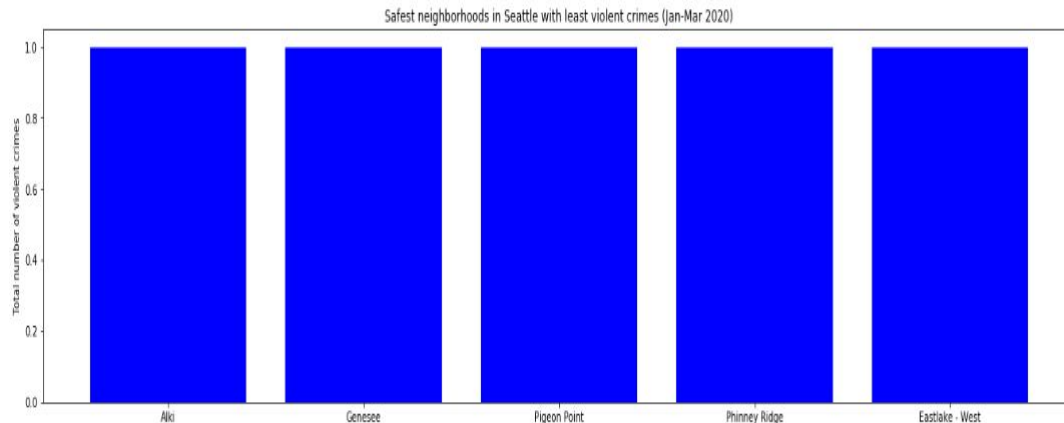
Top 5 Neighborhoods in Seattle with Most Violent Crimes (Jan-Mar 2020)



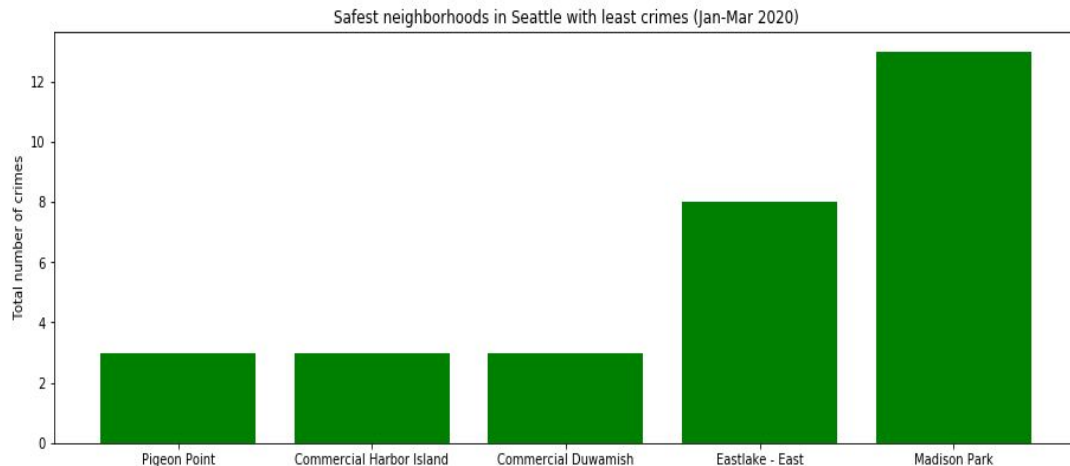
Top 5 Neighborhoods in Seattle with Most Crimes (Jan-Mar 2020)



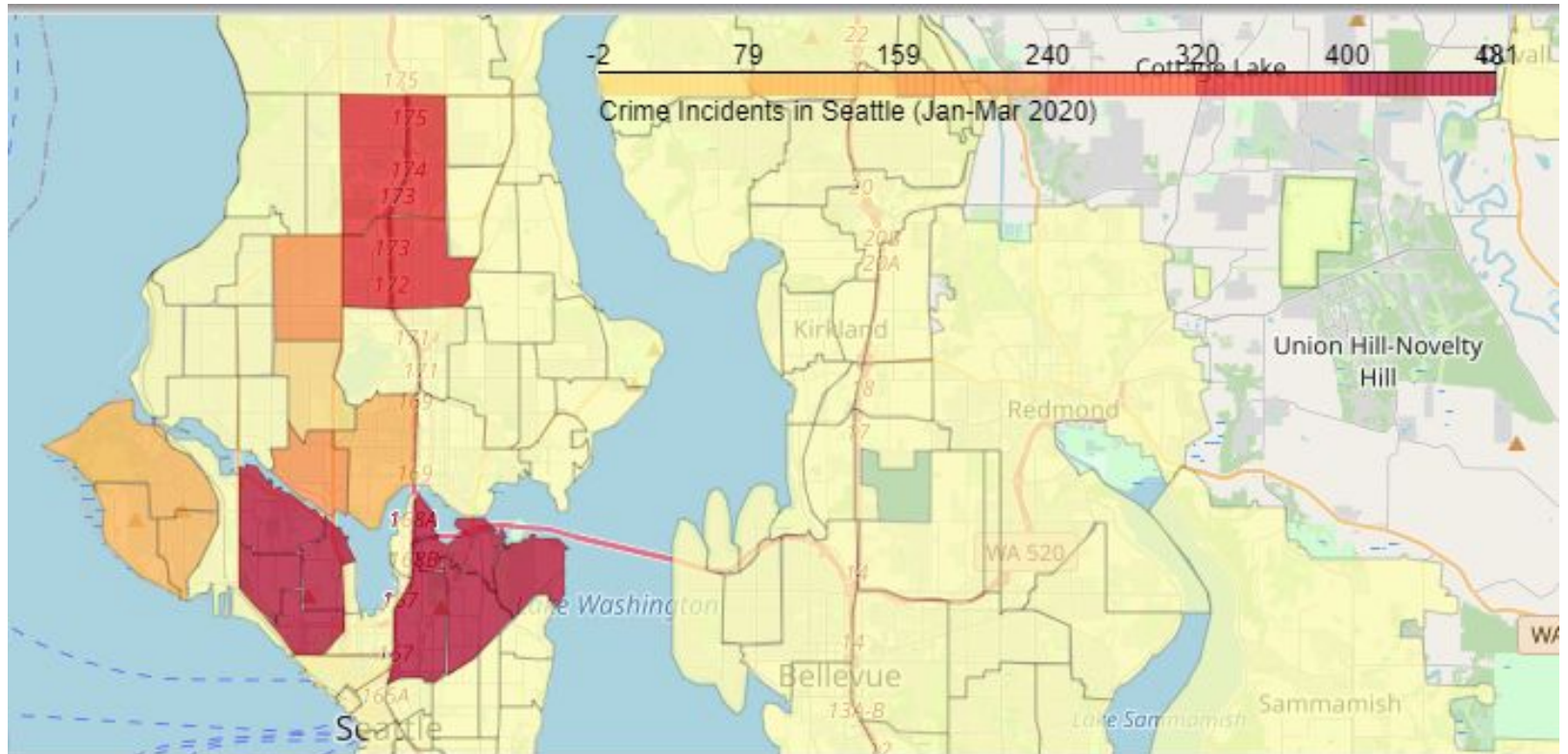
Safe Neighborhoods in Seattle with Least Violent Crimes (Jan-Mar 2020)



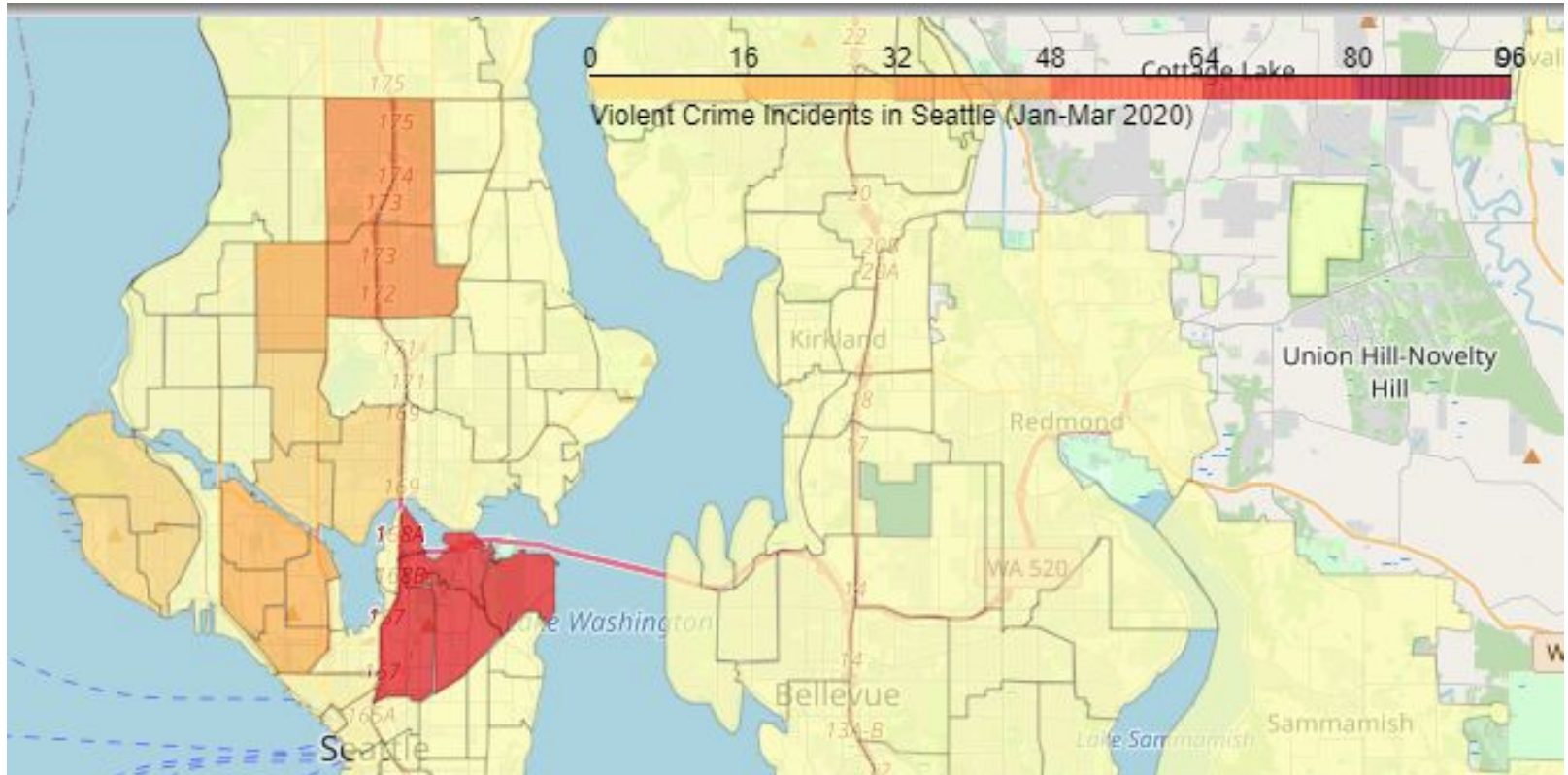
Safest Neighborhoods in Seattle with Least Crimes (Jan-Mar 2020)



Distribution of crimes in Seattle (Jan-Mar 2020)



Distribution of Violent Crimes in Seattle (Jan-Mar 2020)

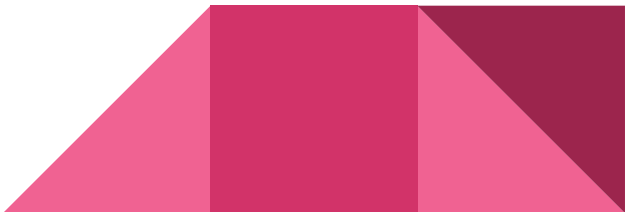


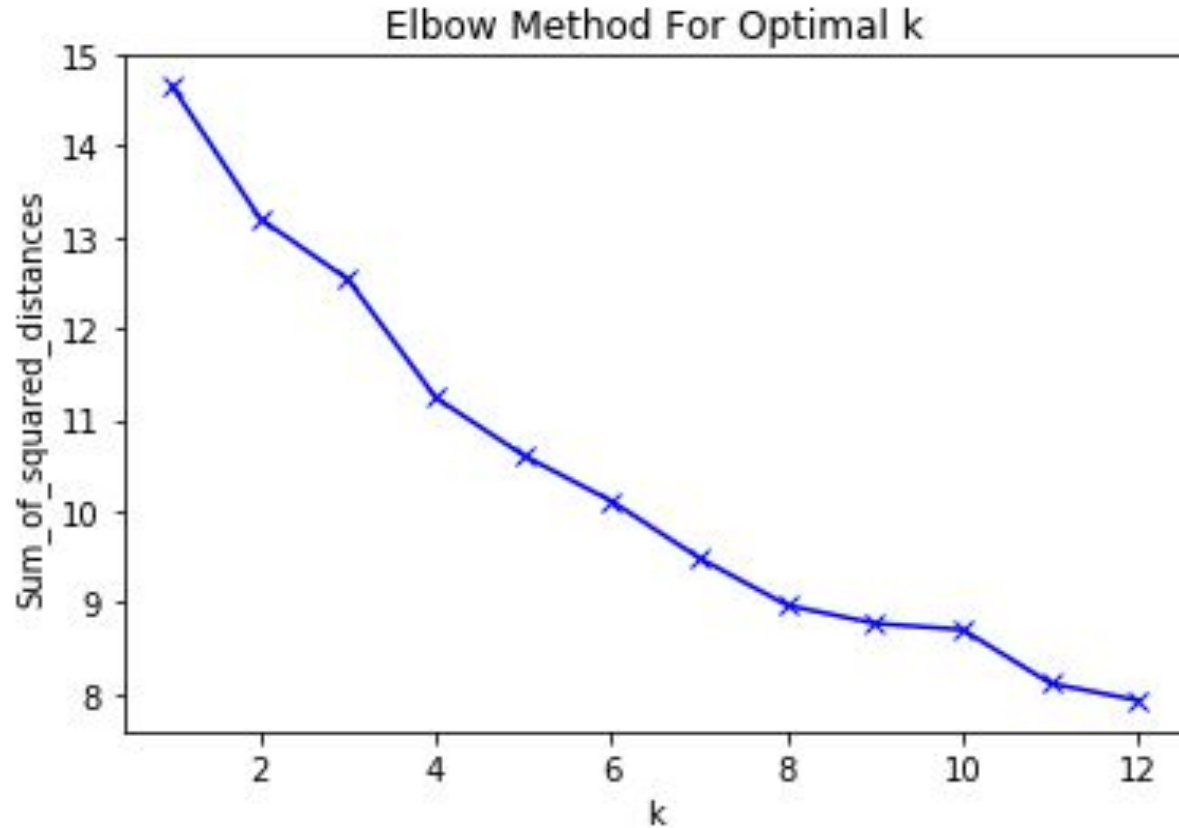
Data Wrangling of Seattle Neighborhood Dataset

- “Neighborhood” and “District” data were extracted
- In-text citation in neighborhood names were removed
- Overlapping neighborhoods were consolidated
- Corresponding latitude and longitude data were acquired

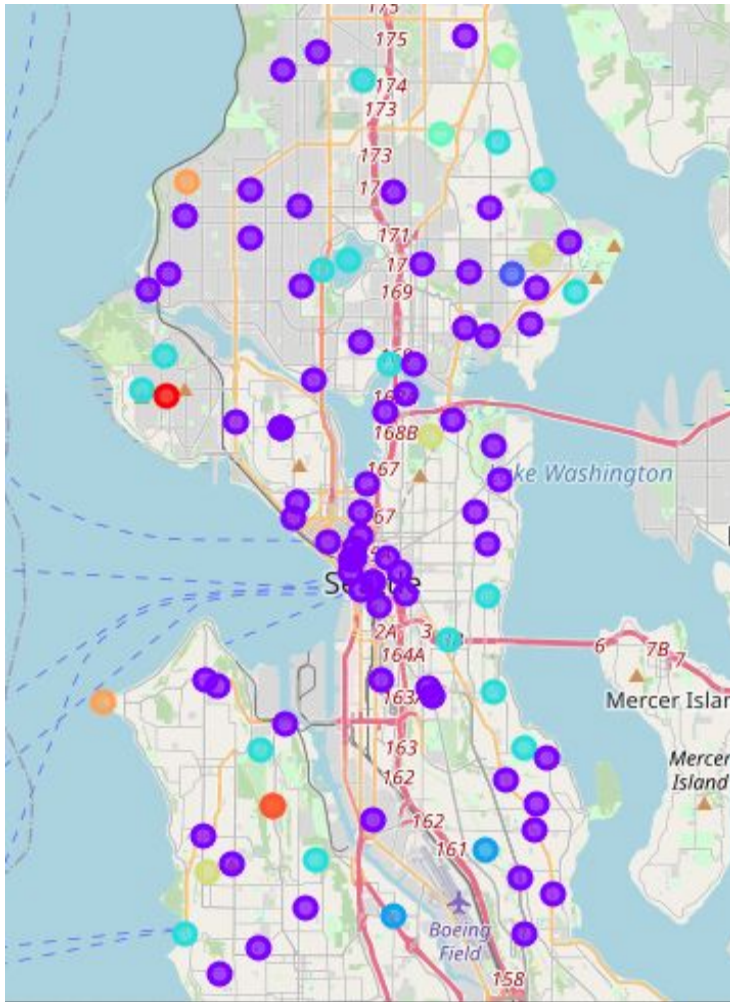


Data Analysis of Seattle Neighborhood Dataset

- Top 10 most common venues were identified for each neighborhood using Foursquare API
 - K-means clustering was used to segment neighborhoods with similar characteristics
 - Folium map was generated to visualize resulting 10 clusters with labels of most common venue in each neighborhood
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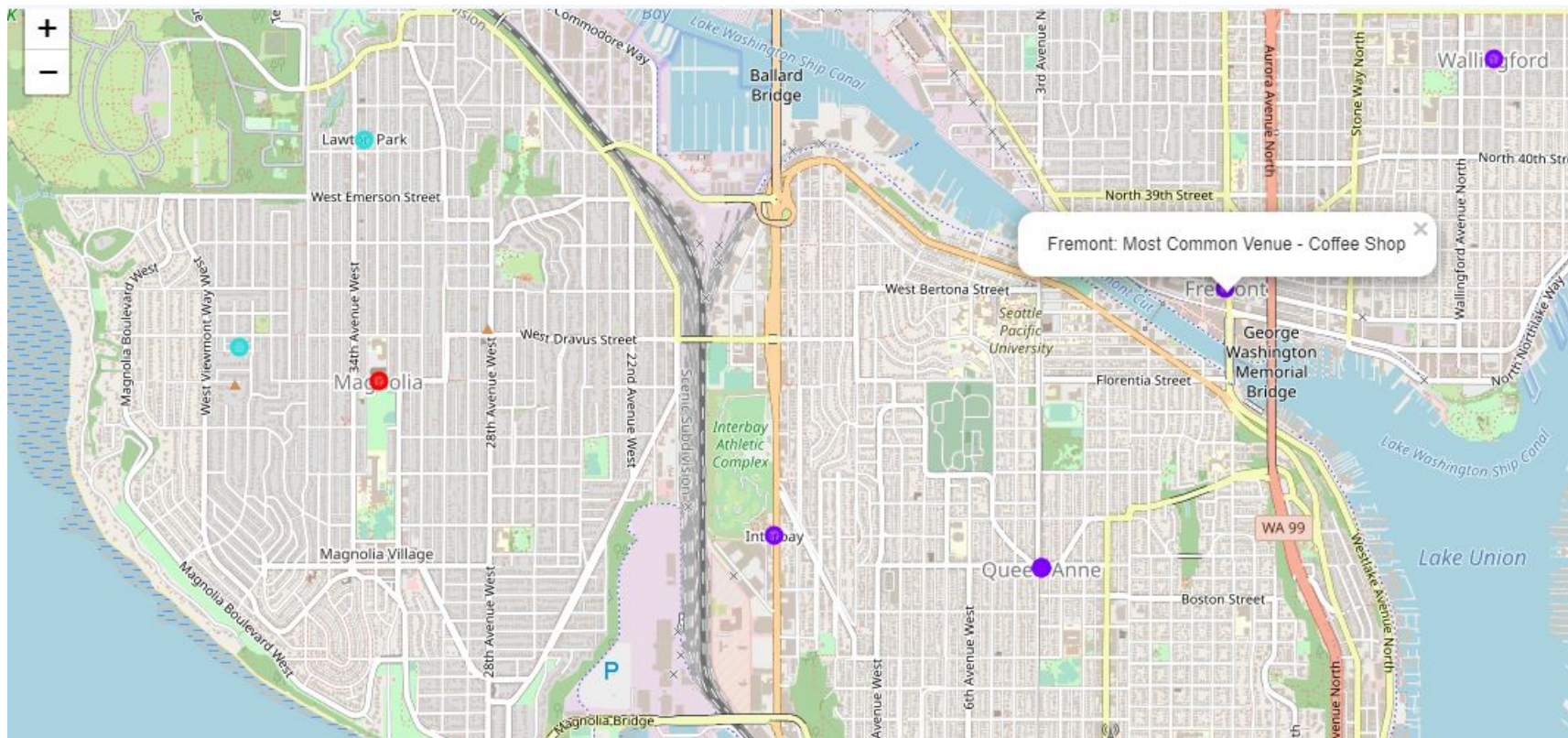


Elbow method
was used to find
optimal k for
k-means
clustering



- Using k-means clustering, different neighborhoods in Seattle were segmented into 10 clusters with similar characteristics
 - Markers with same color represents same cluster
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Map zoomed in with popup indicating most common venue for each neighborhood



Conclusion

- This report gathered 2020 crime dataset to identify safely levels of Seattle neighborhoods, and explored top 10 venues in each neighborhood
- Resulting maps were generated illustrating the distribution of crime levels in each neighborhood, and clusters of neighborhoods with similar characteristics
- These results would be useful for those looking to settle down in Seattle, and those considering making a big move to Seattle



Further Enhancements

- Classify neighborhoods according to specific interests (e.g. nature lover, health conscious, foodie, etc)
- Breaking down crime incidents into more granular categories for further analysis (e.g. women more concerned with rape crimes than men)
- Obtain average housing price for each neighborhood

