SELECTING THE MOST DESIRABLE LOCATION FOR A NEW COFFEE SHOP

BY TAL S.

BUSINESS PROBLEM

- Portland is well known for having an established coffee culture.

- Portland currently has over 30 coffee roasters.

- Thus, it is a desirable location for any small business owner to open a coffee shop.

- Despite it's desirable location, Portland is considered the second most dangerous city in Oregon

- The aim of this project is to find a spot where a small business in Portland Oregon can safely open a coffee shop by finding neighborhoods in Portland with low crime rates that will welcome a new coffee shop.

DATA STEPS

(1) Use the data set from Kaggle to find the safest neighbourhoods: https://www.kaggle.com/katzwigmore/portland-oregon-crime-data

(2) Gather additional information about the neighbourhoods from wikipedia: https://en.wikipedia.org/wiki/Neighborhoods_of_Portland,_Oregon

(3) Create a new consolidated dataset of the Neighborhoods, along with their boroughs, crime data and the respective Neighbourhood's co-ordinates

(4) Create a new consolidated dataset of the Neighborhoods, boroughs, and the most common venues using the Four-Square API. Cluster the neighbourhoods and present the findings by plotting it on maps using Folium.

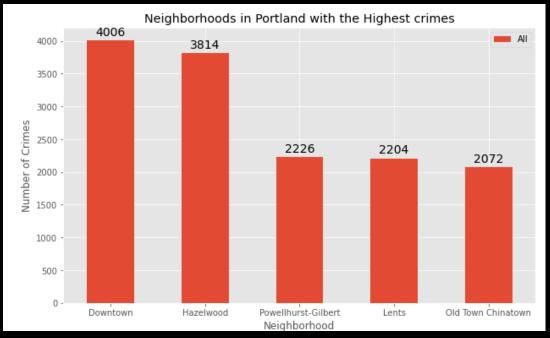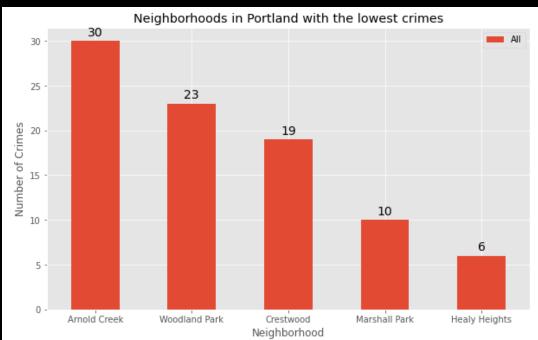|	Neighborhood	Occur Date	Offense Type	Section
0	South Portland	12/31/2017	Identity Theft	Southwest Portland
1	South Portland	12/30/2017	Vandalism	Southwest Portland
2	South Portland	12/30/2017	Theft From Motor Vehicle	Southwest Portland
3	South Portland	12/29/2017	All Other Larceny	Southwest Portland
4	South Portland	12/29/2017	Theft From Motor Vehicle	Southwest Portland
...	...	...	...	...
58666	Markham	3/17/2017	Identity Theft	Southwest Portland
58667	Markham	2/16/2017	All Other Larceny	Southwest Portland
58668	Markham	2/7/2017	Identity Theft	Southwest Portland
58669	Markham	2/6/2017	Motor Vehicle Theft	Southwest Portland
58670	Markham	1/20/2017	Theft From Motor Vehicle	Southwest Portland

GLIMPSE OF THE DATA SET

Methodology

- Part One: Using exploratory data analysis to help with visualizing the crime reports in different sections to identify the safest section. Further explore this section for common venues
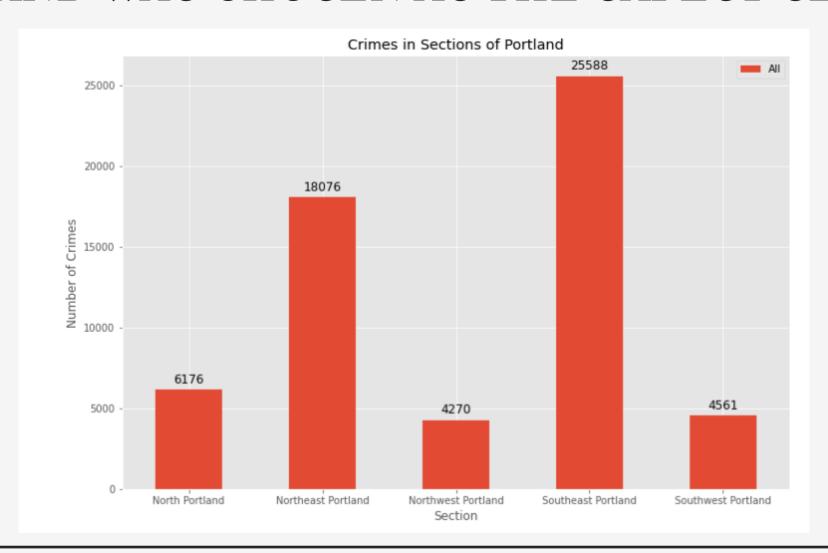
- Part Two: Using k-means clustering as a form of machine learning to group data based on existing venues.
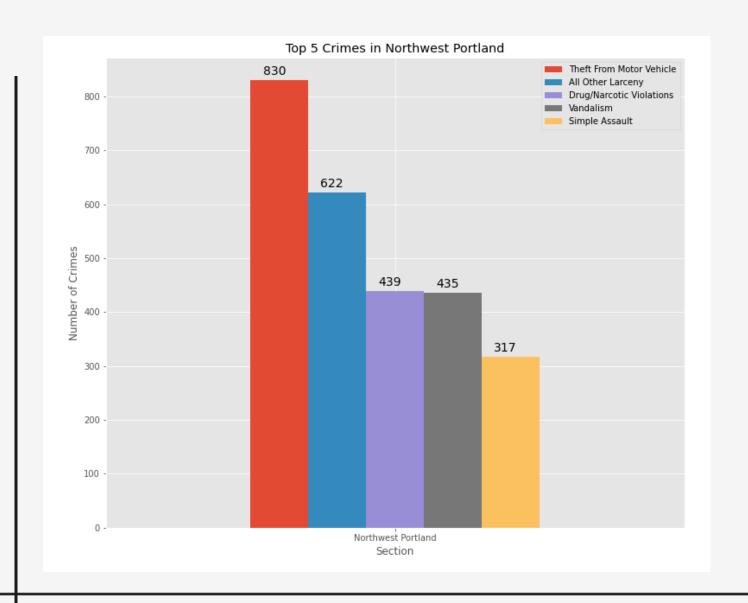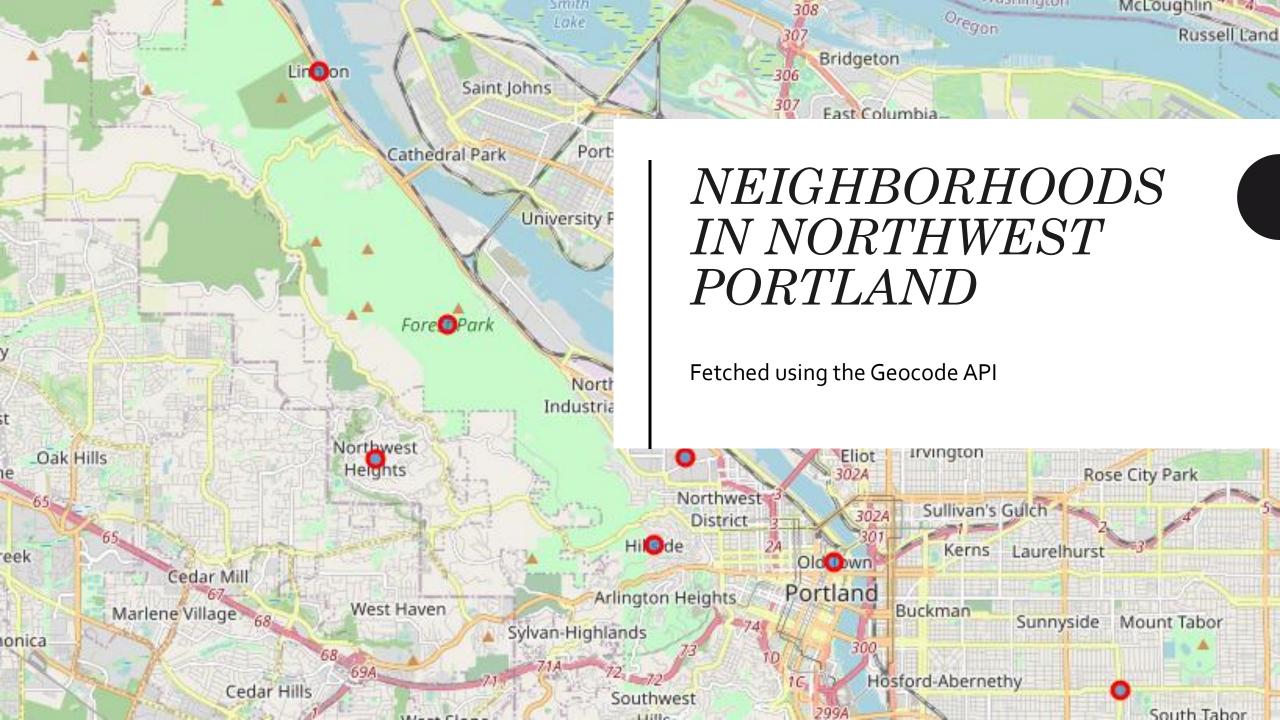
ANALYSIS OF CRIMES IN NEIGHBOR-HOODS

BASED ON CRIME BY SECTION. NORTHWEST PORTLAND WAS CHOSEN AS THE SAFEST SECTION

TOP 5 CRIMES IN NORTHWEST PORTLAND

NEIGHBORHOODS IN NORTHWEST PORTLAND

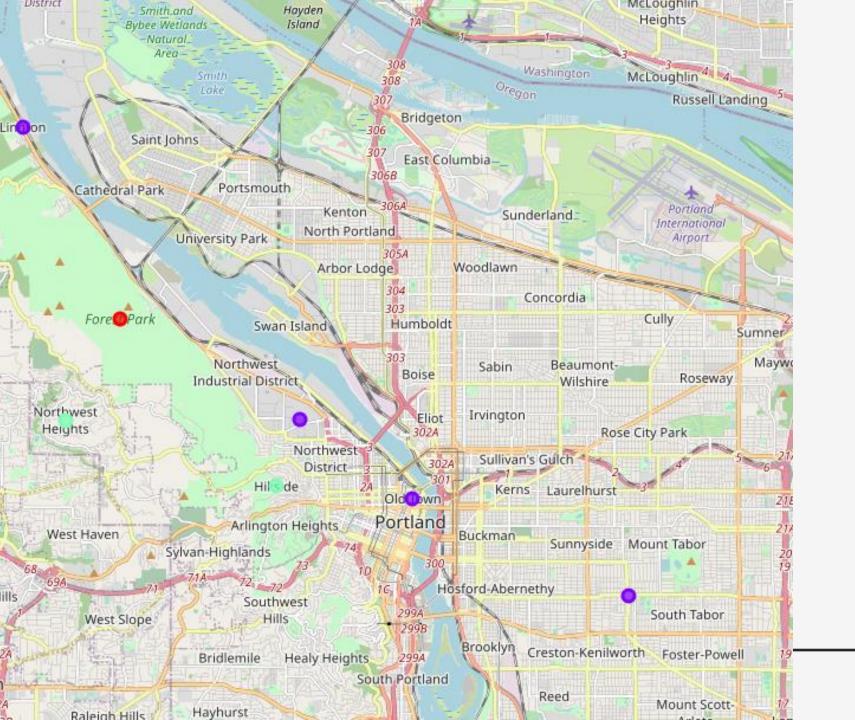Fetched using the Geocode API

MODELING

Create a new consolidated dataset of the Neighborhoods, Sections, and the most common venues using the Four-Square API. Cluster the neighborhoods and present the findings by plotting it on maps using Folium.

VENUES WERE FOUND FOR THE NEIGHBORHOODS IN NORTHWEST PORTLAND

Fetched using the Four-square API

	Neighbourhood	Neighborhood Latitude	Neighborhood Longitude	Venue	Venue Category
0	Old Town Chinatown	45.524934	-122.673516	The Hoxton	Hotel
1	Old Town Chinatown	45.524934	-122.673516	Cycle Portland Bike Tours & Rentals	Bike Shop
2	Old Town Chinatown	45.524934	-122.673516	Lan Su Chinese Garden	Garden
3	Old Town Chinatown	45.524934	-122.673516	Tope	Taco Place
4	Old Town Chinatown	45.524934	-122.673516	Voodoo Doughnut	Donut Shop

RESULTS

Neighborhoods were split into 3 k-means clusters

RESULTS

	Section	Longitude	Cluster Labels	1st Most Common Venue	2nd Most Common Venue	3rd Most Common Venue	4th Most Common Venue	5th Most Common Venue	6th Most Common Venue	7th Most Common Venue	8th Most Common Venue	9th Most Common Venue	10th Most Common Venue
0	Northwest Portland	-122.673516	1	Hotel	American Restaurant	Sandwich Place	Coffee Shop	Beer Store	Bike Shop	Market	Latin American Restaurant	Bus Stop	Japanese Curry Restaurant
1	Northwest Portland	-122.610850	1	Food Truck	Mexican Restaurant	Bar	Coffee Shop	Convenience Store	Massage Studio	Japanese Restaurant	Ice Cream Shop	Vietnamese Restaurant	Grocery Store
2	Northwest Portland	-122.706469	1	Sporting Goods Shop	Café	Brewery	ATM	Salad Place	Gym	BBQ Joint	Arts & Crafts Store	Arcade	Bagel Shop
3	Northwest Portland	-122.786779	1	Bar	Food	Gas Station	Convenience Store	Sandwich Place	College Bookstore	Dive Bar	Donut Shop	Ethiopian Restaurant	Yoga Studio

CLUSTER CONTENT

DISCUSSION

The objective of this business problem was to help a small business in Portland Oregon figure out the most ideal location to open a coffee shop. This has been achieved by analyzing crime data in Portland from 2017 to help find the safest Section for a business to open. After finding this Section, the right neighborhood cluster was found using k-means clustering and show existing popular venues in the Section.

Based on the data, it seems that the safest Section to open a business is in Northwest Portland, as it has the least amount of crime.

It would be best to open a business somewhere in cluster 1 of this section, therefore the ideal location for a coffee shop to open would be in the Linnton neighborhood. It has the lowest crime and based on the top venues seems to gather a population that would be receptive to a local coffee shop

CONCLUSION

Crime data was explored to understand what kind and where crime is most frequent in Portland Oregon, this helped to choose the safest Section. Finally, the top venues of each neighborhood in the Section were explored to figure out which neighborhood would be most suited for a new coffee shop.

The Linnton neighborhood came out as the ideal choice for a new coffee shop