Finding Out the Right Place for a Grocery Shop in Vancouver

- Capstone Project of the Battle of Neighborhood -

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INTRODUCTION AND BACKGROUND

Problem : Want to open a grocery store in Vancouver

Goal & Plan :

The goal of this project is to provide stakeholders, who would like open a grocery shop in Vancouver, advice and suggestions for a location of the shop. To fulfill the goal, I analyzed crime data in Vancouver and information of popular shops in Vancouver.

- I will make use of my skills I learned from this course to analyze data.

- I will focus on the safest borough and explore its neighborhoods.

- Then, I will list up the 10 most common venues in each neighborhood so that

   the best neighborhood for a new grocery store could be recommended.

DATA AND METHODOLOGY

I need to choose the safest borough by analyzing crime data as a location of a new grocery store, and shortlist a neighborhood where grocery stores are not amongst the most common venues, and yet as close to the city as possible.

The factors to be considered will be:

- finding the safest borough based on crime statistics

- finding the most common venues

- choosing the right neighborhood within the borough

DATA AND METHODOLOGY (CONT'D)

Datasets:

Dataset 1: A real world data set from Kaggle containing the Vancouver Crimes from 2003 to 2019.

Dataset 2: The list of officially categorized boroughs in Vancouver from Wikipedia. Borough information will be used to map the existing data where each neighborhood can be assigned with the right borough.

Dataset 3: A new consolidated dataset of the Neighborhoods, along with their boroughs, crime data and the respective Neighborhood's coordinates. This data will be fetched using OpenCage Geocoder to find the safest borough and explore the neighborhood by plotting it on maps using Folium and perform exploratory data analysis.

Dataset 4: A new consolidated dataset of the Neighborhoods, boroughs, and the most common venues and the respective Neighborhood along with co-ordinates. This data will be fetched using Four Square API to explore the neighborhood venues and to apply machine learning algorithm to cluster the neighborhoods and present the findings by plotting it on maps using Folium.

DATA EXPLORATION AND MANIPULATION

Looking for a safe and prospective area

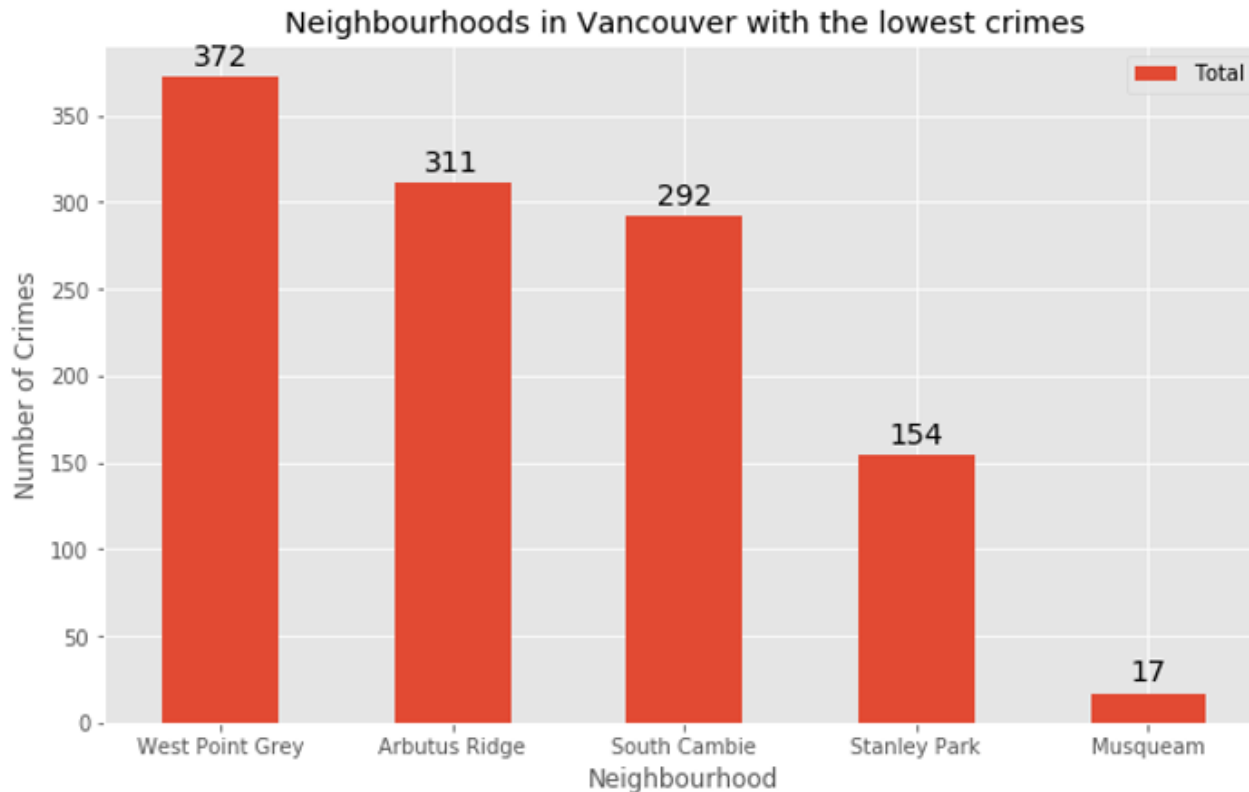Use Vancouver Crime Report https://www.kaggle.com/agilesifaka/vancouver-crime-report/version/2

to extract the number of crimes in respective neighborhood of Vancouver.

Table 1. Crime Category and Frequency for the respective Neighborhood

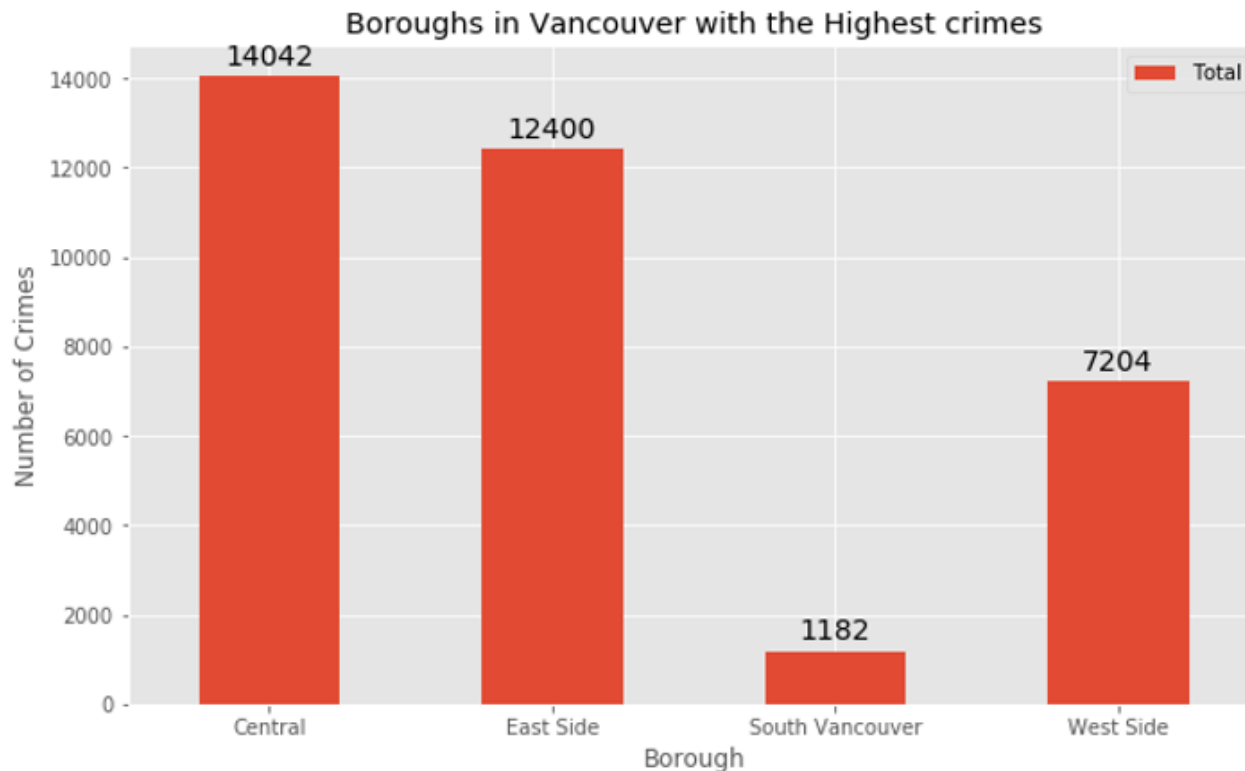|	Neighbourhood	YearBreak and Enter Commercial	YearBreak and Enter Residential/Other	YearMischief	YearOther Theft	YearTheft from Vehicle	YearTheft of Bicycle	YearTheft of Vehicle	YearVehicle Collision or Pedestrian Struck (with Fatality)	YearVehicle Collision or Pedestrian Struck (with Injury)	Total
0	Arbutus Ridge	12	78	49	18	111	12	12	1	18	311
1	Central Business District	551	124	1812	2034	5301	640	165	0	230	10857
2	Dunbar-Southlands	8	106	81	31	199	16	9	1	23	474
3	Fairview	138	73	233	297	692	245	55	0	62	1795
4	Grandview-Woodland	148	162	304	215	634	110	123	0	65	1761

DATA EXPLORATION AND MANIPULATION (CONT'D)

Top 5 neighborhoods in Vancouver with the lowest crime rates

DATA EXPLORATION AND MANIPULATION (CONT'D)

Number of Crimes in Each Boroughs in Vancouver

DATA EXPLORATION AND MANIPULATION (CONT'D)

South Vancouver – lowest # of crimes among 4 Boroughs!

Good enough? NO.

Only 3 Neighborhoods in South Vancouver!

On the other hand, West Side

has the second lowest crime rate even though there are 10 neighbors.

I recommend West Side as a borough for a new grocery shop.

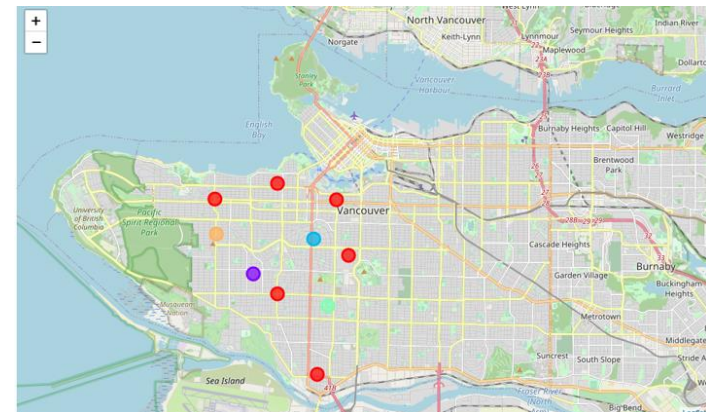# DATA EXPLORATION AND MANIPULATION (CONT'D)

Common Venues of the respective Neighborhood in West Side

Now, I know which area is safe and where it is located.

What else should be considered?

If there are already many grocery stores,
there is low possibility for a new grocery shop
to be successful.

→ **the 10 most common venues**
   in the respective neighborhood ?

10 Neighborhoods in West Side

DATA EXPLORATION AND MANIPULATION (CONT'D)

The 10 Most Common Venues in the respective Neighborhood in West Side

	Neighbourhood	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	Arbutus Ridge	Bakery	Grocery Store	Nightlife Spot	Spa	Pet Store	Yoga Studio	Gas Station	Dim Sum Restaurant	Diner	Falafel Restaurant
1	Dunbar-Southlands	Sushi Restaurant	Liquor Store	Indian Restaurant	Salon / Barbershop	Ice Cream Shop	Coffee Shop	Italian Restaurant	Japanese Restaurant	Fast Food Restaurant	Deli / Bodega
2	Fairview	Coffee Shop	Asian Restaurant	Park	Chinese Restaurant	Sandwich Place	Japanese Restaurant	Korean Restaurant	Malay Restaurant	Nail Salon	Falafel Restaurant
3	Kerrisdale	Coffee Shop	Chinese Restaurant	Sandwich Place	Sushi Restaurant	Tea Room	Pharmacy	Mediterranean Restaurant	Noodle House	Dessert Shop	Liquor Store
4	Kitsilano	Bakery	American Restaurant	Coffee Shop	Restaurant	Japanese Restaurant	Ice Cream Shop	French Restaurant	Food Truck	Sushi Restaurant	Thai Restaurant
5	Marpole	Pizza Place	Sushi Restaurant	Dessert Shop	Chinese Restaurant	Sandwich Place	Sporting Goods Shop	Noodle House	Plaza	Dim Sum Restaurant	Falafel Restaurant
6	Oakridge	Bubble Tea Shop	Sporting Goods Shop	Vietnamese Restaurant	Sandwich Place	Pharmacy	Fast Food Restaurant	Convenience Store	Sushi Restaurant	Dessert Shop	Dim Sum Restaurant
7	Shaughnessy	French Restaurant	Park	Yoga Studio	Gastropub	Dessert Shop	Dim Sum Restaurant	Diner	Falafel Restaurant	Fast Food Restaurant	Food Truck
8	South Cambie	Coffee Shop	Shopping Mall	Sushi Restaurant	Bus Stop	Vietnamese Restaurant	Park	Bank	Malay Restaurant	Juice Bar	Cafeteria
9	West Point Grey	Coffee Shop	Japanese Restaurant	Café	Bookstore	Bakery	Sushi Restaurant	Pub	Vegetarian / Vegan Restaurant	Asian Restaurant	Gastropub

CONCLUSION

The Vancouver is consisted of 4 Boroughs and 24 Neighborhoods.

Among the 4 boroughs, I recommend **'West Side'** considering its comparatively low crime rate and size of the area. The West Side is consisted of 10 neighborhoods. I looked up 10 most common venues for the respective neighborhood in West Side, and found out that there is a popular grocery shop in 'Arbutus Ridge' (purple make in the map above). Among the rest 9 neighborhoods, I recommend either **South Cambie** (1st choice) or **West Point Grey** (2nd choice) in West Side as a place for a new grocery shop after counting into account of the area's safety.