CAPSTONE PROJECT –THE BATTLE OF NEIGHBOURHOODS

SELECTING THE BEST LOCATION TO OPEN A SUSHI RESTAURANT IN CENTRAL TORONTO, TORONTO

INTRODUCTION/BUSINESS PROBLEM

- The city of Toronto is famous for its delicious cuisine. It's food culture includes an array of international cuisines influenced by city's immigrant history

- Sushi restaurants have become so popular in the Canada now it seems there is one on every corner. not only in major cities but also in smaller cities. Starting a sushi restaurant can be a great business opportunity , but you need to distinguish yourself from others to enjoy a resounding success

BUSINESS PROBLEM

- My clients wants to open his business in Central Toronto area, so I focus on that borough during my analysis. We define potential neighborhood based on the number of sushi bars which are operating right in each neighborhood. Central Toronto has full potential but also is a very challenging district to open a business because of high competition. New sushi bar should be open in an area that that has insufficient sushi bars int his way it can attract more customers. Therefore, this analysis is necessary to ensure that we have enough customers and that we are not so close to other sushi places.

DATA SELECTION

- To identify the characteristics of our competitor's venues in Central Toronto , we would first need to find out the number of sushi bars in Central Toronto and their location.

- We then used the foursquare api to find their geographic coordinates based on their postal code addresses.

- In Central, Toronto there are 60 sushi bars that are currently operating

```
centraltoronto_venues_sushi.shape

(60, 7)
```

DATA SELECTION

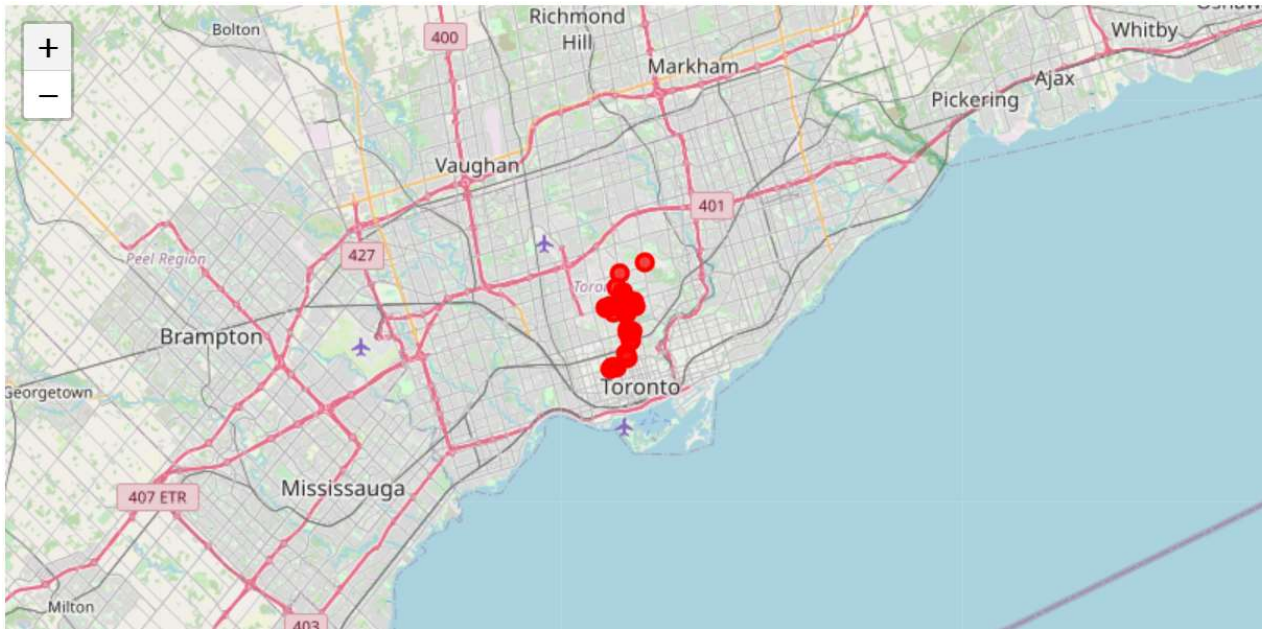- Next we also use foursquare api to find their geographic coordinates of the 5 location shortlisted for our sushi bar

	Neighborhood	Neighborhood Latitude	Neighborhood Longitude	Venue	Venue Latitude	Venue Longitude	Venue Category
0	Lawrence Park	43.728020	-79.388790	Shishimi Sushi	43.725458	-79.402575	Sushi Restaurant
1	Lawrence Park	43.728020	-79.388790	Wakame Sushi	43.732435	-79.380029	Sushi Restaurant
2	Davisville North	43.712751	-79.390197	Hokkaido Sushi	43.708082	-79.389995	Sushi Restaurant
3	Davisville North	43.712751	-79.390197	Sushi Mori	43.706959	-79.397525	Sushi Restaurant
4	Davisville North	43.712751	-79.390197	Sushi Shop (Yonge and Eglinton)	43.706657	-79.398375	Sushi Restaurant

METHODOLOGY

- Addresses are converted into their equivalent latitude and longitude values.

- Foursquare API is used to explore neighbourhoods in Central Toronto

- After that , explore function to get sushi restaurant categories in each neighbourhood

METHODOLOGY

Sushi bars in Central Toronto

METHODOLOGY

- Then using this feature to group the neighborhoods into cluster K-means clustering algorithm will be used to complete this task. And also, the folium library to visualize the neighborhoods in Central Toronto and its emerging clusters.

	Neighborhood	1st Most Common Venue	2nd Most Common Venue	3rd Most Common Venue
0	Davisville	Sushi Restaurant	Japanese Restaurant	Restaurant
1	Davisville North	Sushi Restaurant	Restaurant	Japanese Restaurant
2	Forest Hill North & West, Forest Hill Road Park	Sushi Restaurant	Japanese Restaurant	Restaurant
3	Lawrence Park	Sushi Restaurant	Japanese Restaurant	Restaurant
4	Moore Park, Summerhill East	Sushi Restaurant	Japanese Restaurant	Restaurant

RESULTS

- Using K-mean to clustering data area with less number of sushi bars
- Cluster 0

	Neighborhood	Cluster Labels	1st Most Common Venue	2nd Most Common Venue	3rd Most Common Venue
6	North Toronto West, Lawrence Park	0.0	Sushi Restaurant	Restaurant	Japanese Restaurant

RESULT

- Cluster 1

```
centraltoronto_merged.loc[centraltoronto_merged['Cluster Labels'] == 1, centraltoronto_merged.columns[[2] + list(ra
```

	Neighborhood	Cluster Labels	1st Most Common Venue	2nd Most Common Venue	3rd Most Common Venue
4	Lawrence Park	1.0	Sushi Restaurant	Japanese Restaurant	Restaurant
7	Davisville	1.0	Sushi Restaurant	Japanese Restaurant	Restaurant
24	The Annex, North Midtown, Yorkville	1.0	Sushi Restaurant	Japanese Restaurant	Restaurant

RESULTS

- Cluster 2

```
centraltoronto_merged.loc[centraltoronto_merged['Cluster Labels'] == 2, centraltoronto_merged.columns[[2] + list(rar
```

	Neighborhood	Cluster Labels	1st Most Common Venue	2nd Most Common Venue	3rd Most Common Venue
8	Moore Park, Summerhill East	2.0	Sushi Restaurant	Japanese Restaurant	Restaurant
22	Roselawn	2.0	Sushi Restaurant	Japanese Restaurant	Restaurant
23	Forest Hill North & West, Forest Hill Road Park	2.0	Sushi Restaurant	Japanese Restaurant	Restaurant

RESULTS

- Cluster 3

```
centraltoronto_merged.loc[centraltoronto_merged['Cluster Labels'] == 3, centraltoronto_merged.columns[[2] + list(ran
```

	Neighborhood	Cluster Labels	1st Most Common Venue	2nd Most Common Venue	3rd Most Common Venue
5	Davisville North	3.0	Sushi Restaurant	Restaurant	Japanese Restaurant

RESULTS

- Cluster 4

```
centraltoronto_merged.loc[centraltoronto_merged['Cluster Labels'] == 4, centraltoronto_merged.columns[[2] + list(ran
```

	Neighborhood	Cluster Labels	1st Most Common Venue	2nd Most Common Venue	3rd Most Common Venue
9	Summerhill West, Rathnelly, South Hill, Forest...	4.0	Sushi Restaurant	Japanese Restaurant	Restaurant

RESULTS

- Based on dataframe analysis above cluster 3 Davisville North and and cluster 4 Summerhill west areas are the best places to open a new sushi bar business.

DISCUSSION

- This analysis was performed on limited data. But if a decent amount of data is available there is a scope to come up with better results

- This is high competition in other areas so it is very risky to open business int hose areas.

- One can do more detailed analysis by adding other factors such as transportation , demographics and number of inhabitants.