The Battle of Neighborhoods

Capstone Project Presentation

Introduction

- A group of friends decide to travel to Toronto for their vacation and want to have only Italian or Chinese cuisine when they visit
- So they would like to stay in a neighborhood with a high density of Italian or Chinese restaurants with great ratings.
- Looking for places to eat while travelling is a tedious procedure and becomes harder when the visitors have preferences for a certain kind of cuisine.

Business Problem

- The problem the project aims to solve is to list and visualize all major parts of Toronto that have amazing Italian or Chinese restaurants.
- The neighborhood recommended should have a high average rating of restaurants to ensure a better experience for the visitors.
- Effectively the objective is to build a restaurant recommender for each neighborhood.

Target Audience

This would be a relevant challenge with valid questions for anyone looking for a specific kind of cuisine when visiting Toronto or any other city.

This case is also applicable for anyone interested in exploring, starting or locating a restaurant in any city.

Data Section

❖ A list of neighborhoods of Toronto

➢ Source : https://en.wikipedia.org/wiki/List_of_postal_codes_of_Canada:_M .

➢ Description : This contains a list of all neighborhoods of Toronto with the Borough and Postal Code information.

Example of list of neighborhoods of Toronto

	Postal Code	Borough	Neighborhood
0	M3A	North York	Parkwoods
1	M4A	North York	Victoria Village
2	M5A	Downtown Toronto	Regent Park, Harbourfront
3	M6A	North York	Lawrence Manor, Lawrence Heights
4	M7A	Downtown Toronto	Queen's Park, Ontario Provincial Government

Data Section

❖ Latitude and Longitude data of the neighborhoods

➢ Source : https://cocl.us/Geospatial_data .

➢ Description : This contains the map coordinates of all neighborhoods of Toronto with the Borough names.

Example of Latitude and Longitude data of the neighborhoods

	Borough	Neighborhood	Latitude	Longitude
0	North York	Parkwoods	43.753259	-79.329656
1	North York	Victoria Village	43.725882	-79.315572
2	Downtown Toronto	Regent Park, Harbourfront	43.654260	-79.360636
3	North York	Lawrence Manor, Lawrence Heights	43.718518	-79.464763
4	Downtown Toronto	Queen's Park, Ontario Provincial Government	43.662301	-79.389494

Methodology

- Use web scraping and geolocator to get the city data with map coordinates.
- Use the Foursquare API to get the top 100 venues that are within a 1 kilometer(1000 meters) radius.
- Extract the required fields from the result of the Foursquare API.
- Get venue details like rating, tips and like count are derived only for Italian and Chinese restaurants.

Methodology

- Ranking of neighborhoods is done based on the average ratings of italian and chinese restaurants in that area.
- Use folium to visualize the neighbourhoods with the highest density or italian and chinese restaurants which have very good ratings.
- Set minimum average rating equal to or greater than 8.0 to guarantee a good experience

Results

The ratings, like count and tips of all the italian or chinese restaurants in a neighborhood are obtained.

	Borough	ID	Likes	Name	Neighborhood	Rating	Tips
0	Downtown Toronto	4ad776eef964a520e20a21e3	77	Mangia and Bevi Resto-Bar	Regent Park, Harbourfront	8.4	40
1	Downtown Toronto	4cbdc6784495721ea262617a	57	Fusaro's	Regent Park, Harbourfront	8.7	22
2	Downtown Toronto	56d8dff7498eb4e5e661e78d	15	Ardo	Regent Park, Harbourfront	7.8	8
3	Downtown Toronto	4a8355bff964a520d3fa1fe3	56	Mercatto	Queen's Park, Ontario Provincial Government	8.1	26
4	Downtown Toronto	52f6816f11d24a43115dc834	171	Scaddabush Italian Kitchen & Bar	Queen's Park, Ontario Provincial Government	7.9	70

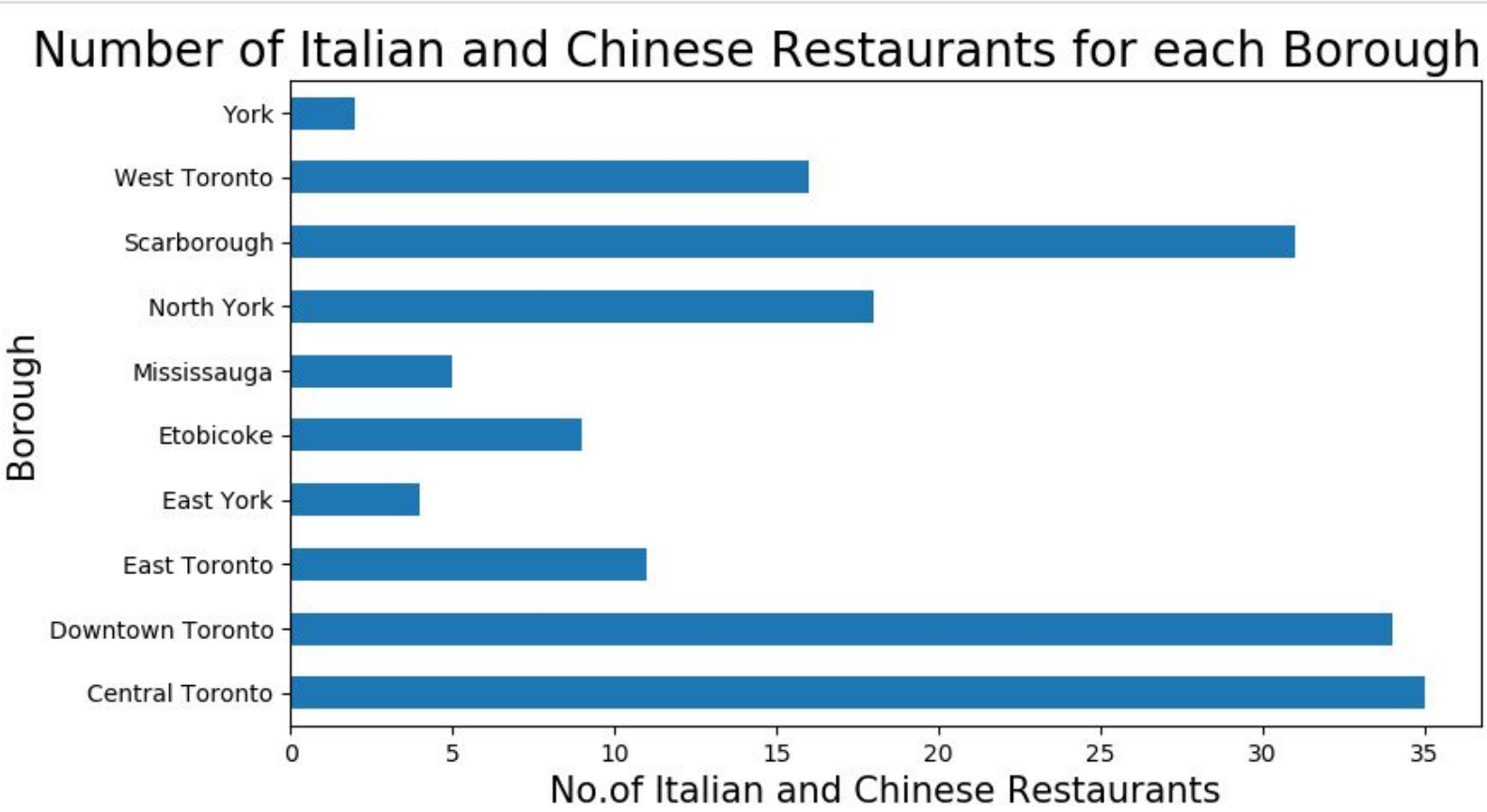
Results

The density of restaurants in each borough is found and plotted as a horizontal bar plot.

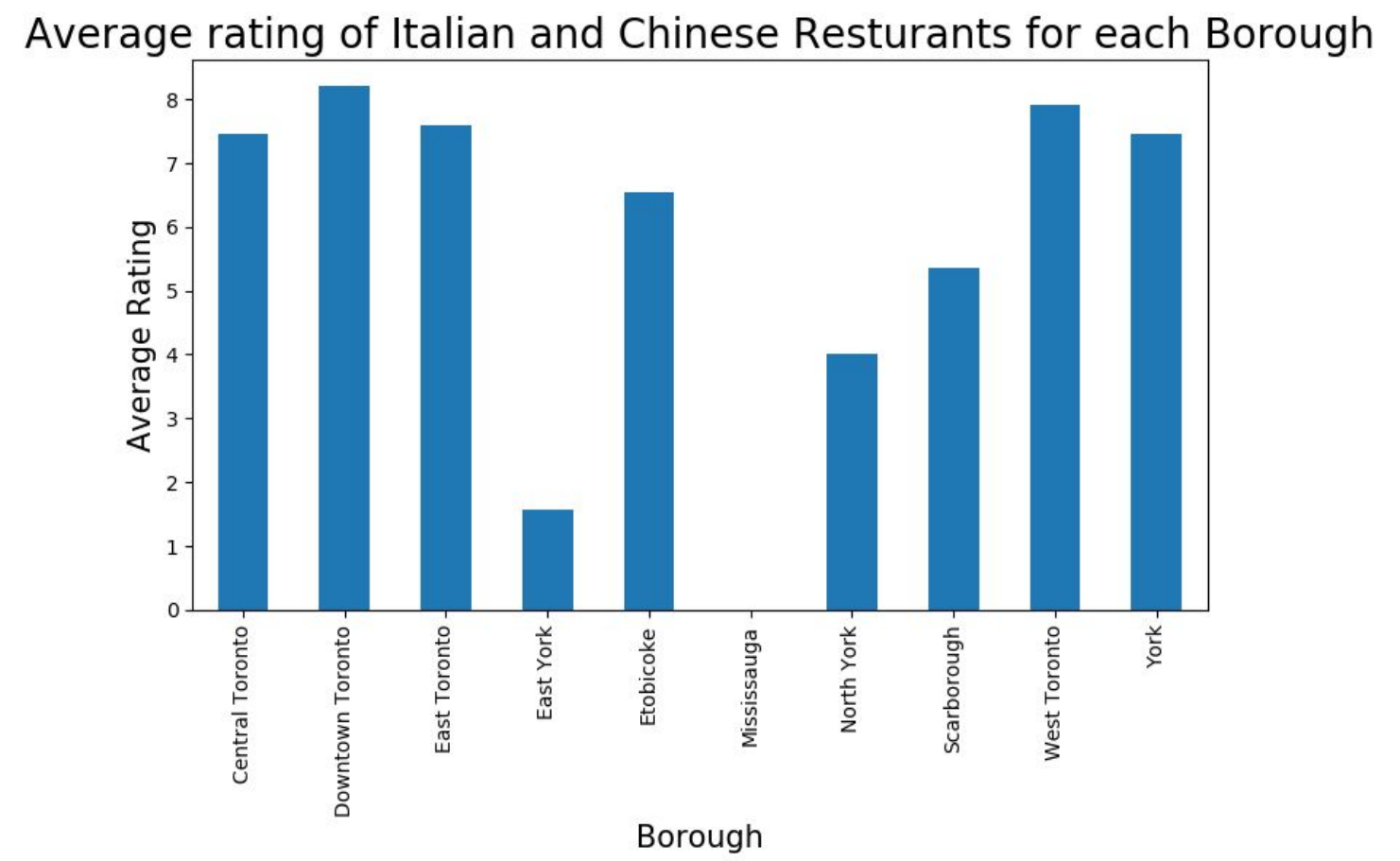
The borough with the highest density of italian and chinese restaurants is Central Toronto with 35 restaurants.

The borough with the least density of italian and chinese restaurants is York with 2 restaurants.

The plot is shown in the next slide


Number of Italian and Chinese Restaurants for each Borough in Toronto
Borough
York
West Toronto
Scarborough
North York
Mississauga
Etobicoke
East York
East Toronto
Downtown Toronto
Central Toronto
0
5
10
15
20
25
30
35
No.of Italian and Chinese Restaurants

Results


Average rating of Italian and Chinese Resturants for each Borough
Average Rating
0
1
2
3
4
5
6
7
8
Central Toronto
Downtown Toronto
East Toronto
East York
Etobicoke
Mississauga
North York
Scarborough
West Toronto
York
Borough

Neighborhoods with ratings equal to or above 8.0

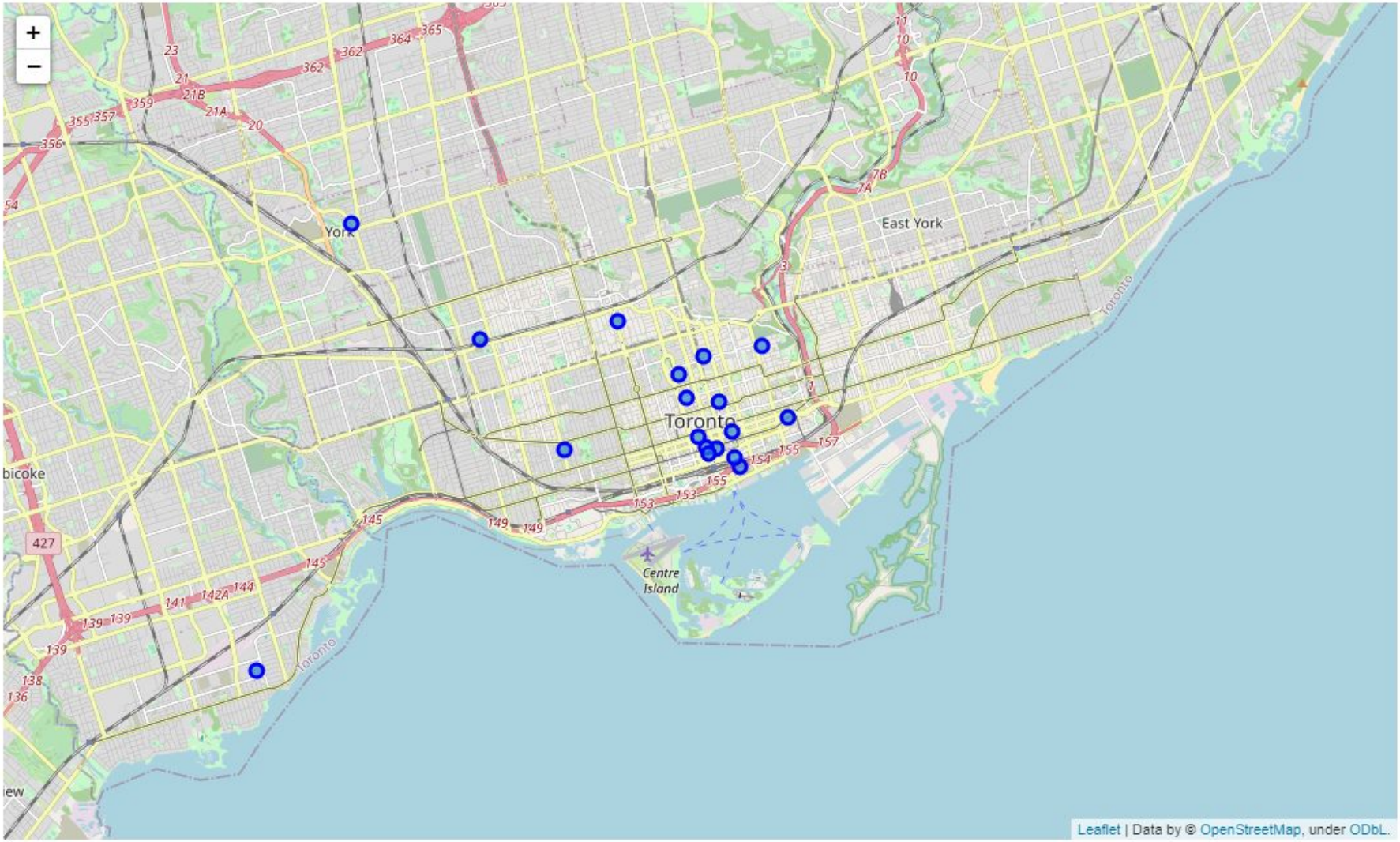
	Neighborhood	Average Rating
3	Berczy Park	8.400000
8	Central Bay Street	8.000000
10	Church and Wellesley	8.400000
12	Commerce Court, Victoria Hotel	8.400000
15	Del Ray, Mount Dennis, Keelsdale and Silverthorn	8.000000
19	Dufferin, Dovercourt Village	8.250000
21	First Canadian Place, Underground city	8.300000
23	Garden District, Ryerson	8.275000
34	Little Portugal, Trinity	8.433333
39	New Toronto, Mimico South, Humber Bay Shores	8.400000
46	Queen's Park, Ontario Provincial Government	8.233333
47	Regent Park, Harbourfront	8.300000
48	Richmond, Adelaide, King	8.300000
52	St. James Town	8.500000
53	St. James Town, Cabbagetown	8.300000
55	Stn A PO Boxes	8.400000
58	The Annex, North Midtown, Yorkville	8.000000
62	Toronto Dominion Centre, Design Exchange	8.200000

Results

The neighborhoods with an average rating equal to or above 8.0 are grouped.

The higher the rating the better the food experience and convenience.

We plot these neighborhoods using the folium package.


+
−
York
East York
Toronto
Centre Island
427
Leaflet | Data by © OpenStreetMap, under ODbL.

Discussion

The data sources can be further optimized and increased in quality and quantity to get better results.

The data, in this case, is solely dependent on the FourSquare API for the ranking algorithm hence it does not rank the venues without any ratings.

Optimize the ranking algorithm and apply density based clustering to get better results

Conclusion

St. James Town would be the best place to stay for visitors looking for italian and chinese cuisine

Other places to stay include Berczy Park, Little Portugal, Commerce Court as they are the in the top 5 neighborhoods with the highest average rating

The model built was able to determine a good set of recommendations to propose to the visitors. The model can be used, with a few minor changes, for finding different cuisines density and ratings in any city.