The Battle of Neighborhoods Report (Week 2)

Coursera Capstone Project

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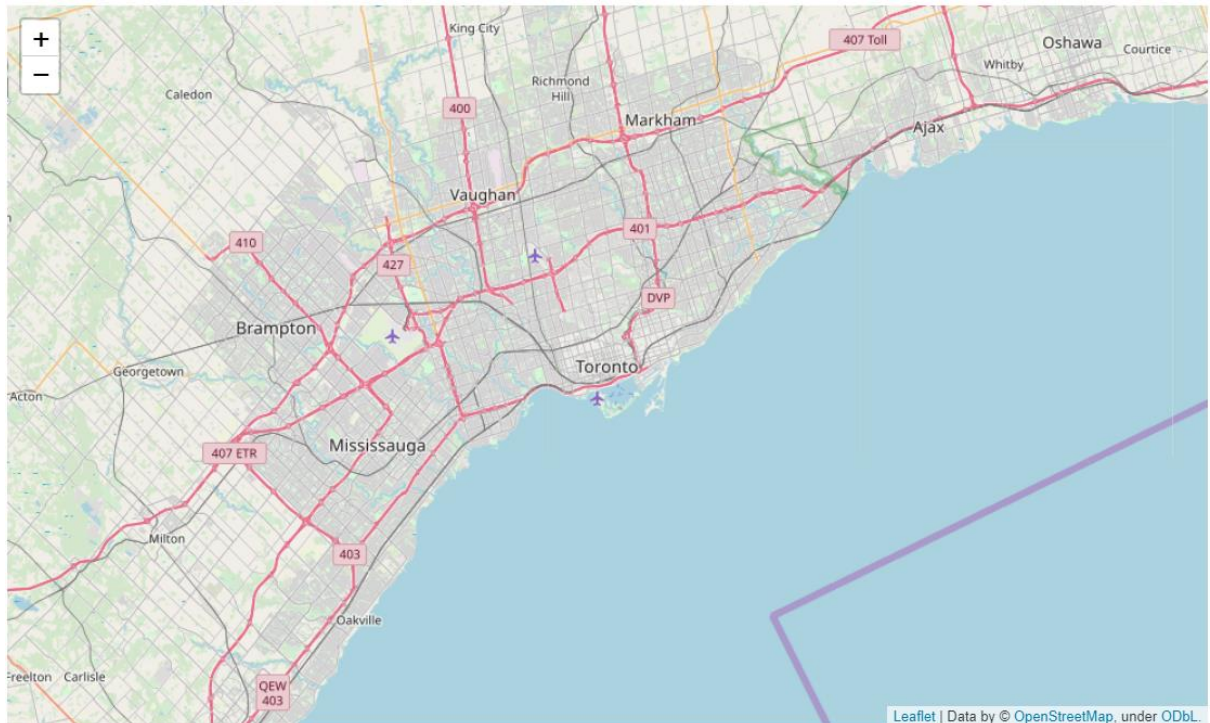## 1. Introduction

1.1) Background

This report is for those who are planning to start a new restaurant in the city of Toronto. I will provide a suggestion for the best venue to start a new restaurant in a highly visited city with already many good people.

Toronto, city, capital of the province of Ontario, southeastern Canada. It is the most populous city in Canada, a multicultural city, and the country's financial and commercial center. Its location on the northwestern shore of Lake Ontario, which forms part of the border between Canada and the United States, and its access to Atlantic shipping via the St. Lawrence Seaway and to major U.S. industrial centers via the Great Lakes have enabled Toronto to become an important international trading center. Moreover, the city is positioned on the edge of some of the best farmland in Canada, with a climate favorable to growing a wide range of crops, thereby making Toronto a transportation, distribution, and manufacturing center. Most importantly, its central location, along with a host of political policies favoring international trade, places this city with the greatest economic ties to, and influence from, the United States.

Since the second half of the 20th century, the city has grown phenomenally from a rather sedate provincial town—"Toronto the Good"—to a lively, thriving, cosmopolitan metropolitan area. Area 244 square miles (632 square km); metro. Area, 2,280 square miles (5,905 square km). Pop. (2011) 2,615,060; metro. area, 5,583,064; (2016) 2,731,571; metro. area, 5,928,040.

Toronto is a city with scores of neighborhoods, some of which have identities that have been imposed upon them by realtors, whereas others are of much longer standing and have a more distinctive character. West of the central business district, following Queen Street W, is West Queen West, once a trendy bohemian section, now a more mainstream shopping district. Northeast of this area is two of Toronto's best-known neighborhoods, Chinatown and Kensington Market, the latter of which features an eclectic mix of shops and restaurants that reflect the city's multicultural diversity. Still farther north, beyond the campus of the University of Toronto, is the Annex, a residential area that is home to many students and is the site of several attractive 19th-century homes. North of the Annex, on a hill overlooking Davenport Road, is Casa Loma, the turreted castlelike mansion built-in 1911–14 for $3.5 million (Canadian) by Sir Henry Pellatt. East of the Annex is the fashionable Yorkville-Cumberland boutique shopping area, to the south of which are

Queen's Park and the Ontario parliament building. Large expanses of grass and tall shade trees make this a pleasant area, complementing the ravines that form so important an element in the metropolitan parks system.

1.2) Business Problem

In this report, I will focus on the issue of where to open a new restaurant in a city like Toronto. At first, I will check the information, and the first important decision will be the location for its new restaurant.

1. What is the basis that can decide its new restaurant's location?
2. While selecting the place, there are key points to consider like they need to check out like where the most well-visited venues of the city are?
3. If incase there are already other luxury restaurants that have good ratings, will it be risky to open a new one near these restaurants?

1.3) Data Setup

Next step, I would use Foursquare API that as its prime data gathering as it has a database of place. The API can provide the ability to perform location search, location sharing, and information business details. The researcher would use HTTP request limitations, the number of places per neighborhood parameter would reasonably beset to 100, and the radius parameter set to 1000. Another step is to search the other restaurants, the neighborhood information, and the restaurants rating for comparison to find a suitable location opening the new restaurant.

The data retrieved from Foursquare contained information of venues within a specified distance of the longitude and latitude of the postcodes. The information obtained per venue as follows:

1. Number of neighborhoods

1. Latitude and Longitude of restaurant in each venue

3. Name of the venue e.g. the name of a store or restaurants

1.4) Analysis

We will discuss data with libraries python are following.

- pandas and numpy for handling data.
- request module for using Foursquare API.
- geopy to get co-ordinates of City of Toronto.
- folium to visualize the results on a map

2. Analytic Processes

2.1) Data Source and Data Cleaning

We scarped the data from Wikipedia page by read_html and clean data following to the venue in Toronto. (https://en.wikipedia.org/wiki/List_of_postal_codes_of_Canada:_M,)

	Postcode	Borough	Neighborhood	Latitude	Longitude
0	M3A	North York	Parkwoods	43.753259	-79.329656
1	M4A	North York	Victoria Village	43.725882	-79.315572
2	M5A	Downtown Toronto	Harbourfront	43.654260	-79.360636
3	M6A	North York	Lawrence Heights, Lawrence Manor	43.718518	-79.464763
4	M7A	Queen's Park	Not assigned	43.662301	-79.389494
5	M9A	Queen's Park	Queen's Park	43.667856	-79.532242
6	M1B	Scarborough	Rouge, Malvern	43.806686	-79.194353
7	M3B	North York	Don Mills North	43.745906	-79.352188
8	M4B	East York	Woodbine Gardens, Parkview Hill	43.706397	-79.309937

2.2) Restaurants in Toronto

The researcher used Foursquare API to get the venues in Toronto, based on the restaurants of each place. we observe the number of venues in each borough, each neighborhood, and rating of restaurants.

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( 1 / 103 )  Resturants in Parkwoods, North York : 0
( 2 / 103 )  Resturants in Victoria Village, North York : 0
( 3 / 103 )  Resturants in Harbourfront, Downtown Toronto : 4
( 4 / 103 )  Resturants in Lawrence Heights, Lawrence Manor, North York : 2
( 5 / 103 )  Resturants in Not assigned, Queen's Park : 2
( 6 / 103 )  Resturants in Queen's Park, Queen's Park : 0
( 7 / 103 )  Resturants in Rouge, Malvern, Scarborough : 0
( 8 / 103 )  Resturants in Don Mills North, North York : 1
( 9 / 103 )  Resturants in Woodbine Gardens, Parkview Hill, East York : 0
( 10 / 103 )  Resturants in Ryerson, Garden District, Downtown Toronto : 3
( 11 / 103 )  Resturants in Glencairn, North York : 2
( 12 / 103 )  Resturants in Cloverdale, Islington, Martin Grove, Princess Gardens, West Deane Park, Etobicoke : 0
( 13 / 103 )  Resturants in Highland Creek, Rouge Hill, Port Union, Scarborough : 0
( 14 / 103 )  Resturants in Flemingdon Park, Don Mills South, North York : 3
( 15 / 103 )  Resturants in Woodbine Heights, East York : 0
( 16 / 103 )  Resturants in St. James Town, Downtown Toronto : 4
( 17 / 103 )  Resturants in Humewood-Cedarvale, York : 1
( 18 / 103 )  Resturants in Bloordale Gardens, Eringate, Markland Wood, Old Burnhamthorpe, Etobicoke : 0
( 19 / 103 )  Resturants in Guildwood, Morningside, West Hill, Scarborough : 0
( 20 / 103 )  Resturants in The Beaches, East Toronto : 1
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3.   Exploratory Data Analysis

After that, the researcher creates bar graph in term following Number of neighborhoods in each Borough, Number of Restaurants in each Borough and Average rating restaurants in each Borough
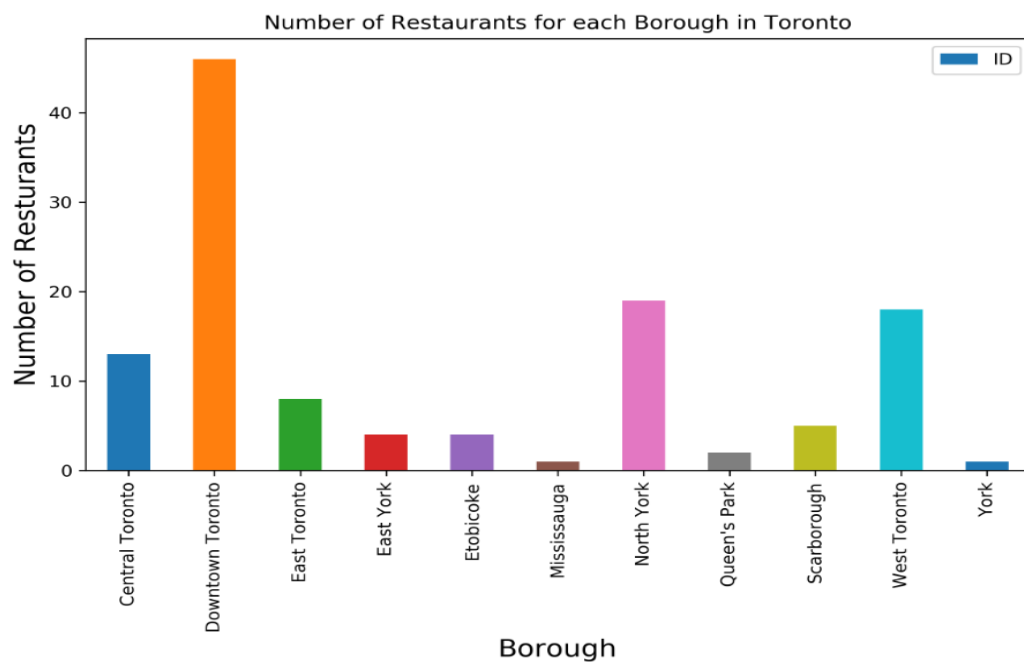

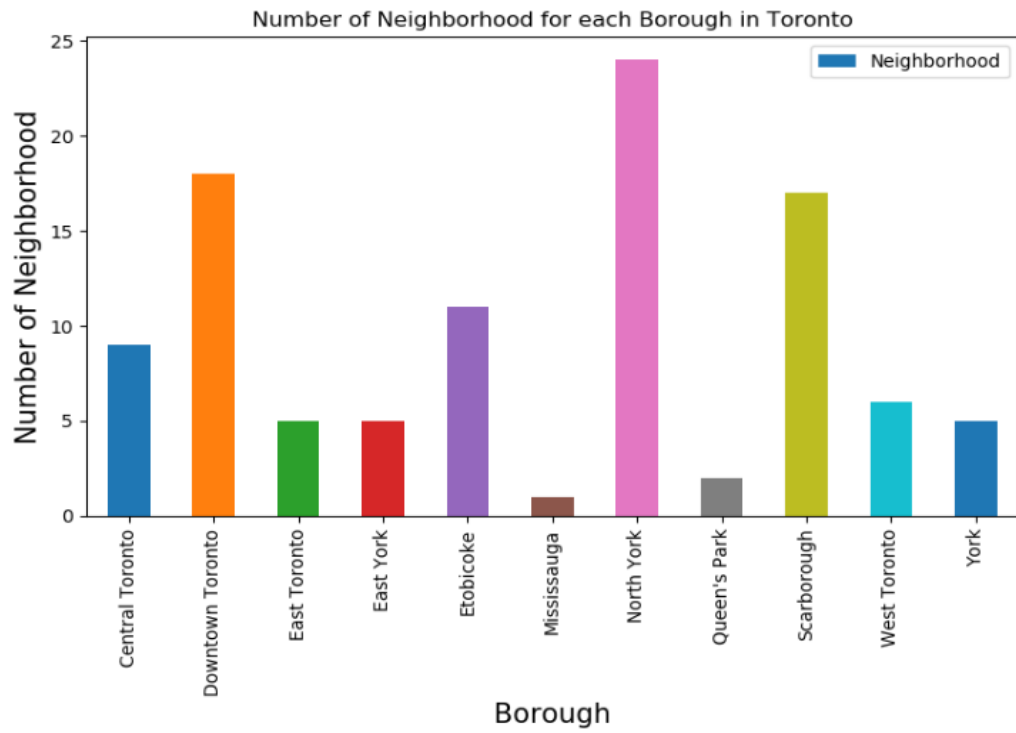Fig.1 Number of Restaurants for each Borough in Toronto

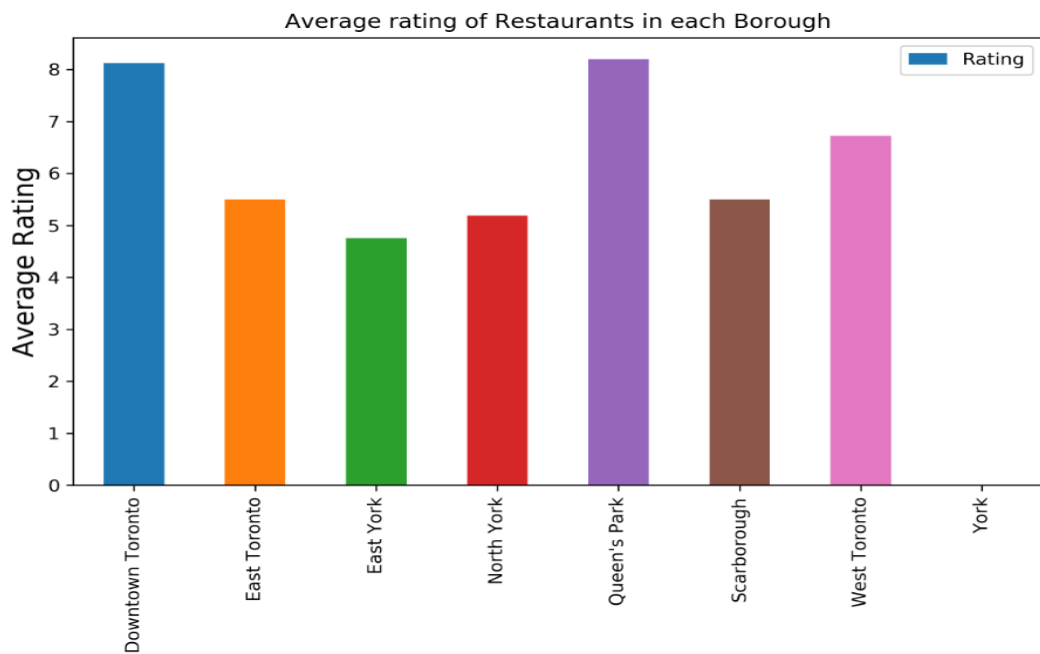Fig.2 Number of Neighborhood for each Borough in Toronto

Fig.3 Number of Restaurants for each Borough in Toronto

After that, the research looking the relationship between the number of restaurants and neighborhood in term of population and restaurants. Another choice is the great restaurants in each venue are helping the tourist attraction which it is good place for open restaurants. The researcher use folium which the map presents the great restaurants having an average score in Foursquare more than 7.0 point. The researcher finds restaurants group by Borough following:

- Downtown Toronto 8

- North York 2
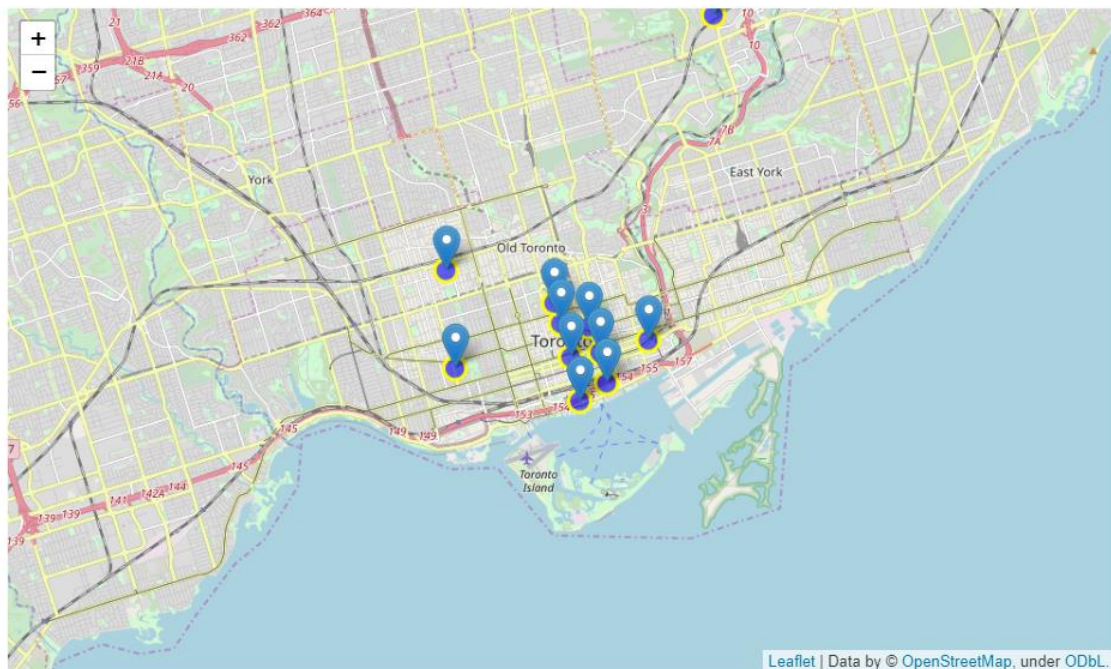
- Queen's Park 1

- West Toronto 1

Fig.4 Most high rating Restaurants are place in Downtown Toronto

4. Prediction

The first choice is Downtown Toronto. The researcher predicted a great place near most restaurants. Another option, the researcher used the optional opposite, is a good place that has few restaurants or nearing the low rating restaurants. The research looks at the North York Borough, which having more neighborhoods. The researcher set high rating restaurants must consider more significant than 7.0 point in Foursquare, which are following in Figure 5.

	Borough	Neighborhood	ID	Name	Likes	Rating	Tips
4	North York	Lawrence Heights, Lawrence Manor	4b3113e0f964a520b3ff24e3	Swiss Chalet Rotisserie & Grill	15.0	7.5	2.0
5	North York	Lawrence Heights, Lawrence Manor	4af3820ef964a5203dee21e3	Shoeless Joe's	11.0	5.9	3.0
8	North York	Don Mills North	4b53b917f964a52038a927e3	Swiss Chalet Rotisserie & Grill	12.0	5.7	11.0
14	North York	Flemingdon Park, Don Mills South	4b6315b6f964a520d6612ae3	Swiss Chalet Rotisserie & Grill	8.0	7.0	7.0
15	North York	Flemingdon Park, Don Mills South	4c02b933310fc9b64fe1c461	JOEY Don Mills	193.0	8.3	128.0
16	North York	Flemingdon Park, Don Mills South	4b4bd8c0f964a52078a926e3	Jack Astor's Bar & Grill	83.0	6.6	49.0
31	North York	Bathurst Manor, Downsview North, Wilson Heights	4b65c410f964a52050fe2ae3	Bagel Plus	11.0	7.7	4.0
38	North York	Northwood Park, York University	4d02ddfbc2e53704abf9ad67	Elite Restaurant	4.0	7.2	5.0

Fig.5 The restaurants in North York Borough

The research compares the number of high rating restaurants and neighborhood which is very low and insufficient for people. Finally, the researcher choose North York in the second choice.

5. Conclusion

We search the number of restaurants in Toronto, which we interest in Downtown and North York with reasoning by

- The number of Restaurants in Borough or Neighborhood
- Rating and Like restaurants

Also, we find high rating restaurants in Downtown, which we interest in opening the restaurants. On the other hand, we look at North York, the number of restaurants is less than Downtown Toronto. However, neighborhoods in North York are over than Downtown Toronto.

We decide the potential opening the restaurants following:

- Downtown Toronto has a great location and reputation of restaurants because most restaurants placed in Downtown Toronto. If you want a good location, Downtown Toronto is an appropriate place for opening restaurants.
- Another choice is North York, which having many neighborhoods but having few restaurants.

6. Future Work and Limitation of Work

Finally, we don't use the population in Toronto, salary, and housing prices because I can't find these. Therefore, the results represent the data that the accuracy of data depends on the pure data provided by Foursquare.