

Introduction: Business Problem

In this project, we are going to look for an optimal location to open a new Italian restaurant. Pizza and Pasta are one of the most bought dishes in Toronto originating from Italy. Toronto is the fourth largest home to Italians with a population of over 500k, there are numerous opportunities to open a new Italian restaurant. This report can provide a reference for stakeholders who are interested in opening a new restaurant in Toronto, Canada.

Target Audience

Business owners who want to open a new Restaurant or grow their current business.

Data overview

There are 3 data sources for this project:

- ❖ The list of neighbourhoods in Toronto (via Wikipedia),
- ❖ The Geographical location of the neighbourhoods (via Geocoder package)
- ❖ The Venue data pertaining to Italian restaurants (via Foursquare).

Toronto Neighbourhoods via Wikipedia

https://en.wikipedia.org/w/index.php?title=List_of_postal_codes_of_Canada:_M&oldid=1011037969

This Wikipedia site provide all the necessary information about the neighbourhoods. It includes the postal code; the borough; the name of the neighbourhoods in Toronto. Since the data is not in a format that is suitable for analysis, scraping of the data must be performed.

	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

Picture 1: The scraped data from the Wikipedia site

Geographical Location data

The second source of data provide us with the Geographical coordinates of the neighbourhoods with the respective Postal Codes of city Toronto. The Geographical coordinates (latitude and longitude) were added to the neighbourhood data frame.

	Postal Code	Borough	Neighbourhood	Latitude	Longitude
0	M3A	North York	Parkwoods	43.7545	-79.3300
1	M4A	North York	Victoria Village	43.7276	-79.3148
2	M5A	Downtown Toronto	Regent Park, Harbourfront	43.6555	-79.3626
3	M6A	North York	Lawrence Manor, Lawrence Heights	43.7223	-79.4504
4	M7A	Downtown Toronto	Queen's Park, Ontario Provincial Government	43.6641	-79.3889

Picture 2: The geographical data for neighbourhood

Venue data

The Foursquare API helps us to retrieve information about the Venue, Venue category with their longitudes and latitudes. The call returns a JSON file and we need to turn that into a data-frame.

	Neighborhood	Neighborhood Latitude	Neighborhood Longitude	Venue	Venue Latitude	Venue Longitude	Venue Category
0	Regent Park, Harbourfront	43.6555	-79.3626	Tandem Coffee	43.653559	-79.361809	Coffee Shop
1	Regent Park, Harbourfront	43.6555	-79.3626	Roselle Desserts	43.653447	-79.362017	Bakery
2	Regent Park, Harbourfront	43.6555	-79.3626	Figs Breakfast & Lunch	43.655675	-79.364503	Breakfast Spot
3	Regent Park, Harbourfront	43.6555	-79.3626	The Yoga Lounge	43.655515	-79.364955	Yoga Studio
4	Regent Park, Harbourfront	43.6555	-79.3626	Body Blitz Spa East	43.654735	-79.359874	Spa

Picture 3: The Venue data from Foursquare

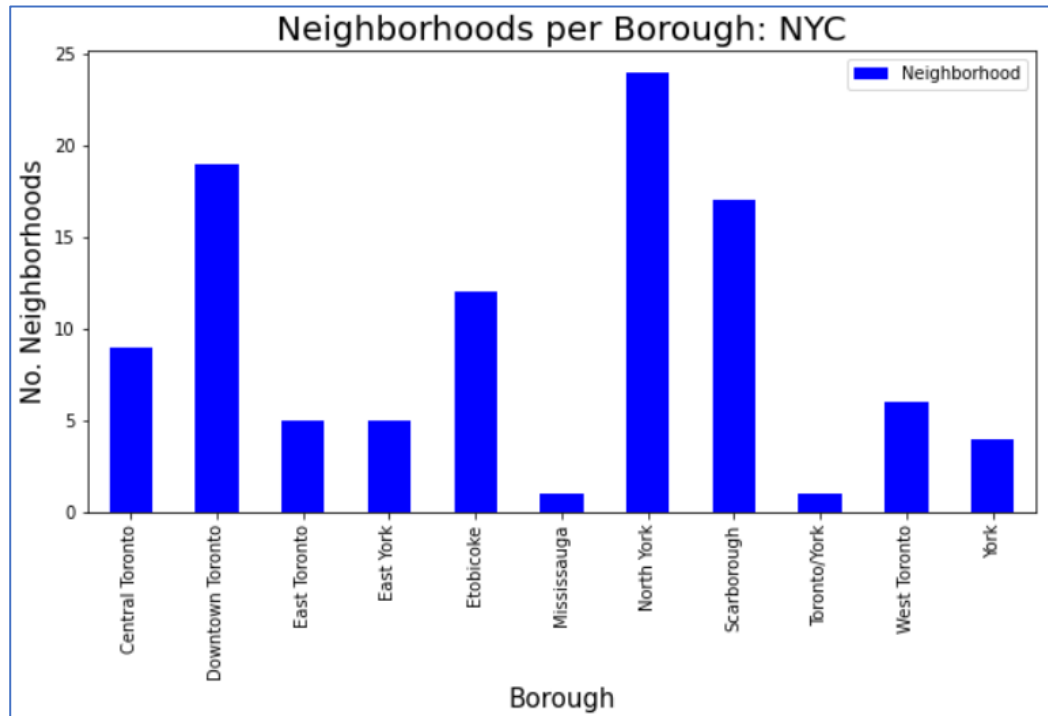
Methodology

- ❖ As mentioned in previous chapter data will be collected from Wikipedia, cleaned and processed into a dataframe.
- ❖ FourSquare be used to locate all venues and then filtered by Italian restaurants. Ratings, tips, and likes by users will be counted and added to the dataframe.
- ❖ Data will be sorted based on rankings.
- ❖ Finally, the data be will be visually assessed using map visualization (Folium).

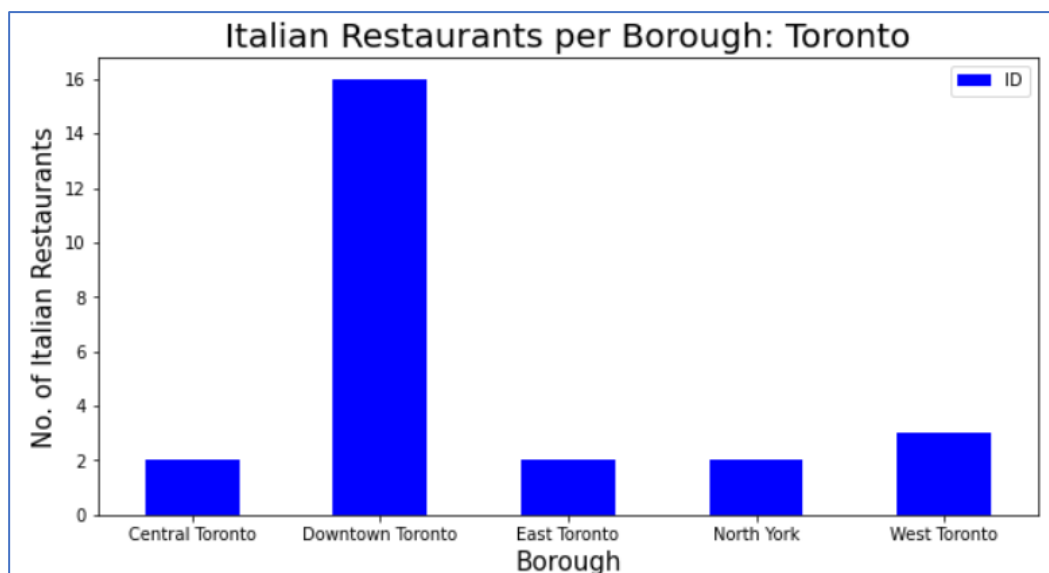
Results

The results of our analysis showed below:

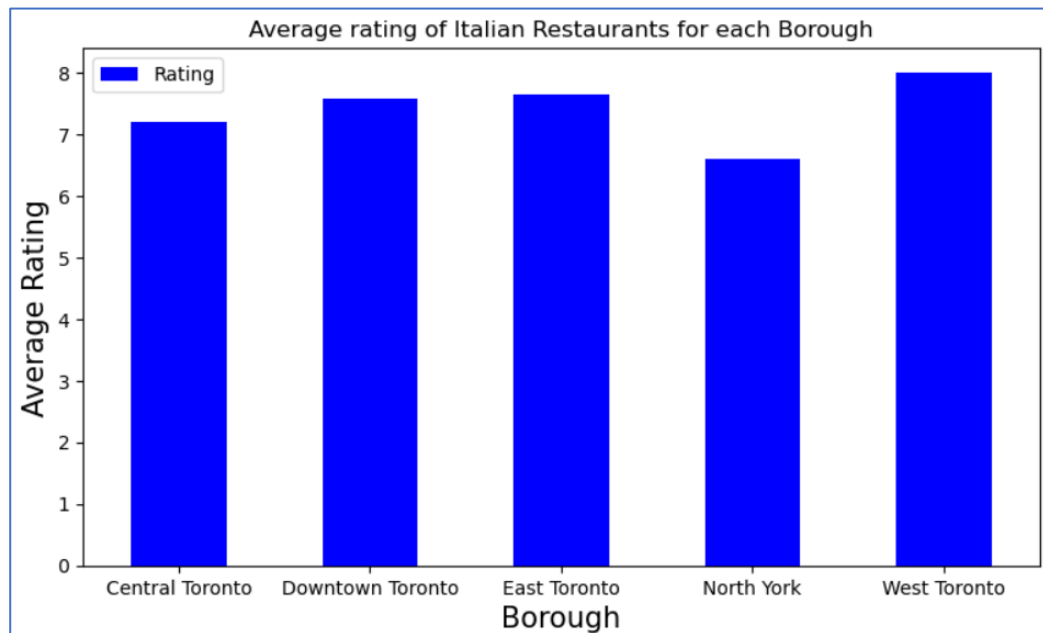
1. We see that North York has the highest number of Neighbourhoods.



2. Although Toronto Downtown have the highest number of Italian restaurants:



3. West Toronto has the highest average rating for Italian Restaurants. Downtown Toronto and East Toronto goes right behind the West Toronto with the average rating of its Italian restaurants only a little lower than West Toronto. Two neighbourhoods with the highest average rating for Italian Restaurants are St. James Town and Cabbagetown (both located in West Toronto).



	Neighborhood	Average Rating
15	St. James Town, Cabbagetown	8.6
17	The Danforth West, Riverdale	8.2
1	Brockton, Parkdale Village, Exhibition Place	8.2
10	Parkdale, Roncesvalles	8.0
14	St. James Town	8.0
13	Runnymede, Swansea	7.8
8	Garden District, Ryerson	7.8
4	Church and Wellesley	7.7
11	Queen's Park, Ontario Provincial Government	7.7

Top Ten neighbourhoods with Italian Restaurants with the best average rating

Discussion Section

Based on the results of our analysis, I would state that West Toronto is the best locations for Italian cuisine in Toronto. To have the best shot of success, I would open an Italian restaurant in Downtown Toronto. Downtown Toronto has multiple neighbourhoods with average ratings exceeding 8.0 on a scale of 1.0 to 10.0. In addition, we should keep in mind, that real estate prices in West Toronto are much cheaper than in Downtown Toronto. Particularly, I would recommend considering opening an Italian Restaurant either in St. James Town or Cabbagetown , because both neighbourhoods have the highest rating for Italian restaurants. All the above analysis is depended on the accuracy of FourSquare data. Besides, during this project, we used a free Sandbox Tier Account of Foursquare API that goes with limitations as to the number of API calls and results returned. To get better results, future research work and more comprehensive analysis could consider using a paid account to bypass these limitations as well as incorporating data from other external databases.

Conclusions

In the project we have gone through the process of identifying the business problem, specifying the data required, extracting and preparing the data, performing data analysis, and lastly providing recommendations to the investors/developers. During the project, we applied different data science methods and instruments to get the answer to our main question: "Where in the Toronto, should the investor open an Italian Restaurant?" The findings of this project will help the relevant investor better understand the advantages and disadvantages of different Toronto neighbourhoods/boroughs in terms of opening an Italian restaurant.