RESTAURANTS IN TORONTO

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May 12, 2019

1. Introduction

1.1 Background

Food industry is one of the biggest industries in the world. Everyday hundreds of new restaurants open worldwide and hundreds of them close down, because of many factors. Location of a restaurant is one of the key factors which determine its success and failure. A restaurant in a good, well-chosen location will get a large number of customers and will generate more revenue as compared to a restaurant in a bad location. Therefore, it would be advantageous to determine which location would help in the success of a restaurant.

1.2 Problem

The problem which stands in front of us is to how to determine the location which would help a restaurant to succeed. Data of locations of various restaurants in a city (in our case the city of Toronto), in which the new restaurant is to be opened might help us in solving this problem.

1.3 Interest

Any person who wishes to open a new restaurant would be interested in knowing which location would help him/her in succeeding in the business.

2. Data Acquisition and Cleansing

2.1 Data Acquisition

The data about the various boroughs of Toronto was collected from a Wikipedia page, which contained the latitude and longitude values of the borough along with their names, postal codes and neighborhoods.

The data about the restaurants of Toronto was collected from the Foursquare website using their API. The website returned a data of various venues out of which we used the data of the restaurants which included the restaurant's name, category, and, latitude and longitude values

2.3 Data Cleansing

The data acquired from the Wikipedia page required to drop some postal codes to which did not have any boroughs assigned to them. Also we had to merge various postal codes.
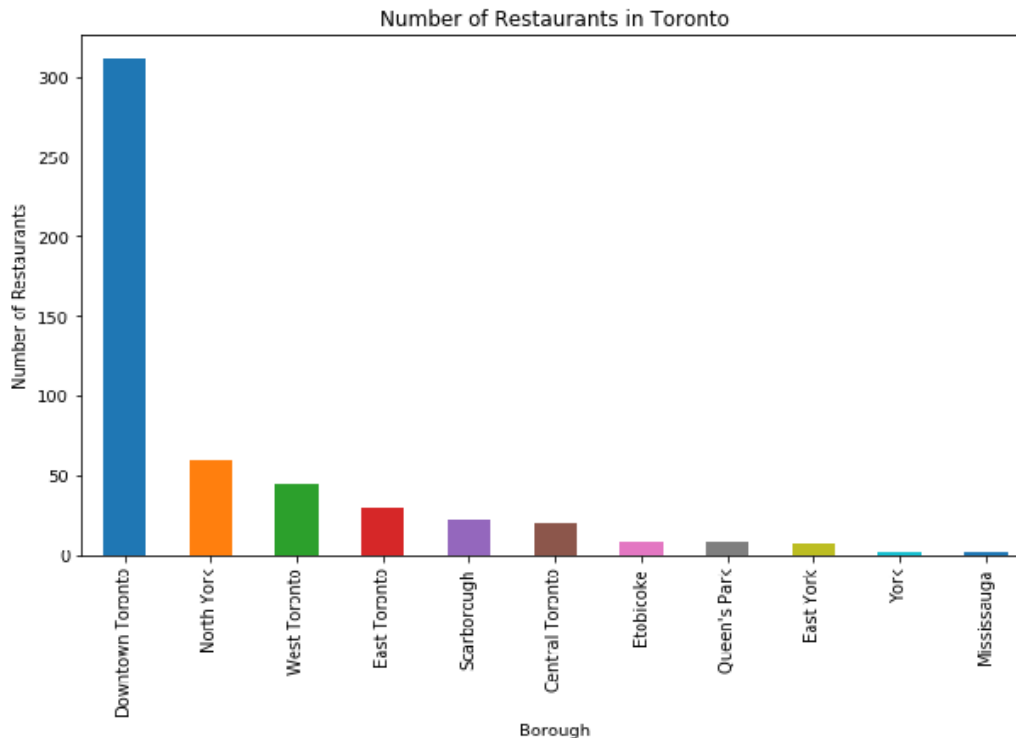
The data returned by the Foursquare website consisted of different venue out of which we only required the data of restaurants so we dropped all the other data. Also the data of the restaurant had many attributes out of which we only kept the restaurant's name, category, and, latitude and longitude values.

Our final data looked like this.

	Borough	Borough Latitude	Borough Longitude	Venue	Venue Latitude	Venue Longitude	Venue Category
0	Scarborough	43.806686	-79.194353	Wendy's	43.807448	-79.199056	Fast Food Restaurant
5	Scarborough	43.763573	-79.188711	Big Bite Burrito	43.766299	-79.190720	Mexican Restaurant
12	Scarborough	43.770992	-79.216917	Korean Grill House	43.770812	-79.214502	Korean Restaurant
14	Scarborough	43.773136	-79.239476	Federick Restaurant	43.774697	-79.241142	Hakka Restaurant
15	Scarborough	43.773136	-79.239476	Drupati's Roti & Doubles	43.775222	-79.241678	Caribbean Restaurant

3. Exploratory Analysis

After doing the basic exploratory analysis, I found out that the highest number of restaurants were in Downtown Toronto borough (311) followed by North York (60), which is a huge difference. The least were in Mississauga and York both had only 2 restaurants.
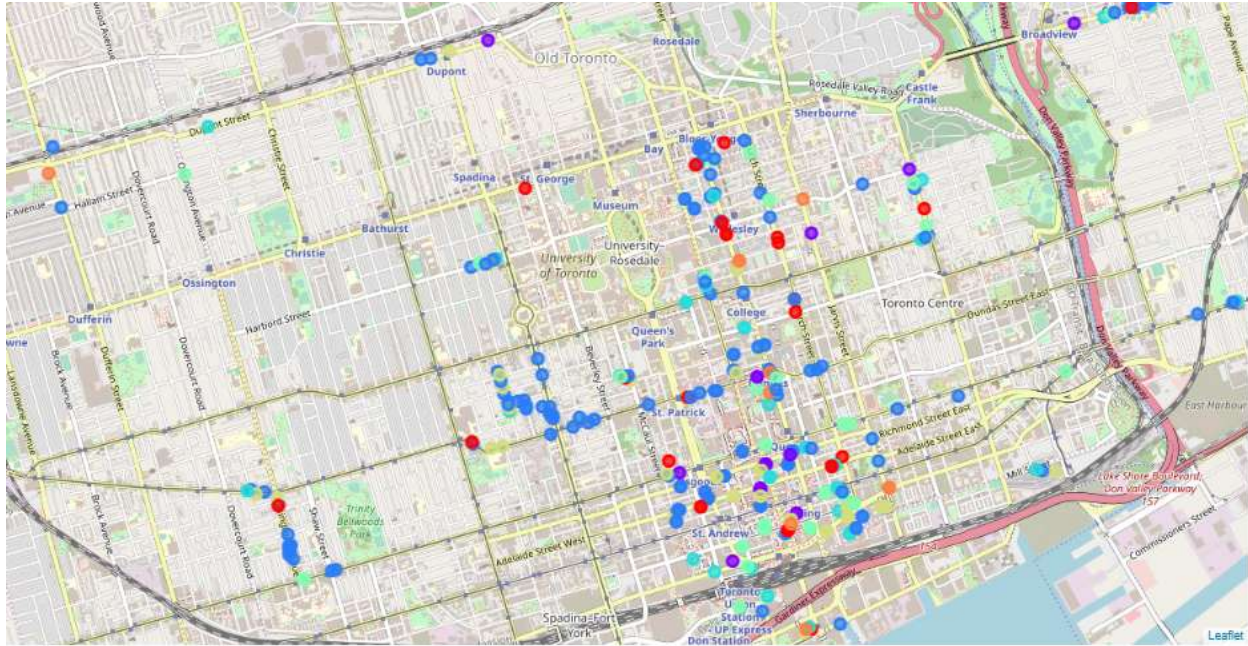

This bar chart supports our findings.

We can see the difference between the length of the bars of Downtown Toronto and North York. This means that in Toronto City the best place to open a restaurant would be Downtown Toronto followed by North York where the highest number of restaurants are already present as these are the most popular places in the city of Toronto.

4. Modeling

K-Means algorithm was used to segment restaurant and cluster them based on their types. This model helped us to find the clusters of likewise restaurants which occur together.

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You can see mostly similar restaurants occur together. This again shows how concentrated the restaurants are in the city of Toronto. This map again supports our finding that the highest numbers of restaurants are in Downtown Toronto which is according to our findings the best place to open a restaurant.

5. Results

The result of this project report is that the best location to open a new restaurant in the city of Toronto is the Downtown Toronto borough since it has the highest number of restaurants in the city.

6. Conclusion

We can now conclude from our report that we can find the a good location to open a new restaurant by analyzing the locations of existing restaurants in the city, also by clustering the restaurants to see how densely they are packed, which will make it easier for us to choose a good location.