POSSIBLE LOCATIONS FOR AFRICAN RESTAURANT IN TORONTO

1.0 INTRODUCTION

1.1 Background

Toronto is a major Canadian commercial city and it has a large population with significant African migrant. The city population of African origin is projected to increase significantly as Canada overtakes USA as the preferred country in immigration. Therefore, as African population increases, there is corresponding increase in demand for African dishes. As more people relocate to live and working in Canada with their family, this study evaluations the best borough where new African restaurant can be sited. The choice of location is usually influenced by several factors but the study will use number of already existing restaurant to rank suitable of locations.

1.2 Problem

Data is needed to categorize all the restaurants in different borough of Toronto. Their location, the type of restaurant and number of restaurant in a neighborhood. This project will leverage on Foursquare location data and machine learning to find appropriate neighborhoods in Toronto were new African restaurant can be located.

1.3 Interest

This project is for those who plan to state restaurant in Toronto. It will help them make choice of neighborhood to site their business based by recommending neighborhood with less concentration of restaurants. This will guide them in determining the best neighborhood that have the possibility of high demands and less competition for African dishes.

2.0 DATA REQUIREMENT

2.1 Data Source

The data for this problem and their sources are:

1. The Borough in Toronto and their neighborhood, their latitude and longitude which was scrapped from https://en.wikipedia.org/wiki/List_of_postal_codes_of_Canada:_M
2. The location of Restaurants in Toronto neighborhood shall be gotten through foursquare API

By using Foursquare API, all the venues in each Borough of Toronto was accessed. Then filter was used to get restaurants in different districts.

2.2 Data cleaning and Feature Extraction

By using Foursquare API, location data and clustering method to group neighborhood based othe presence of restaurant. The project found latitude & longitude of Restaurant locations of Toronto, well known address and Google Maps geocoding API.

3.0 EXPLORATION DATA ANALYSIS

Table 3.1 Toronto Borough and their latitude and longitude

	Post Code	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	Regent Park, Harbourfront	43.654260	-79.360636
3	M6A	North York	Lawrence Manor, Lawrence Heights	43.718518	-79.464763
4	M7A	Downtown Toronto	Queen's Park, Ontario Provincial Government	43.662301	-79.389494

Figure 3.2: Map of Toronto Neighborhood

3.3 Downtown Toronto Neighborhood

	Post Code	Borough	Neighborhood	Latitude	Longitude
0	M5A	Downtown Toronto	Regent Park, Harbourfront	43.654260	-79.360636
1	M7A	Downtown Toronto	Queen's Park, Ontario Provincial Government	43.662301	-79.389494
2	M5B	Downtown Toronto	Garden District, Ryerson	43.657162	-79.378937
3	M5C	Downtown Toronto	St. James Town	43.651494	-79.375418
4	M5E	Downtown Toronto	Berczy Park	43.644771	-79.373306

3.4 Map of Downtown Toronto

4.0 RESULTS AND DISCUSSION

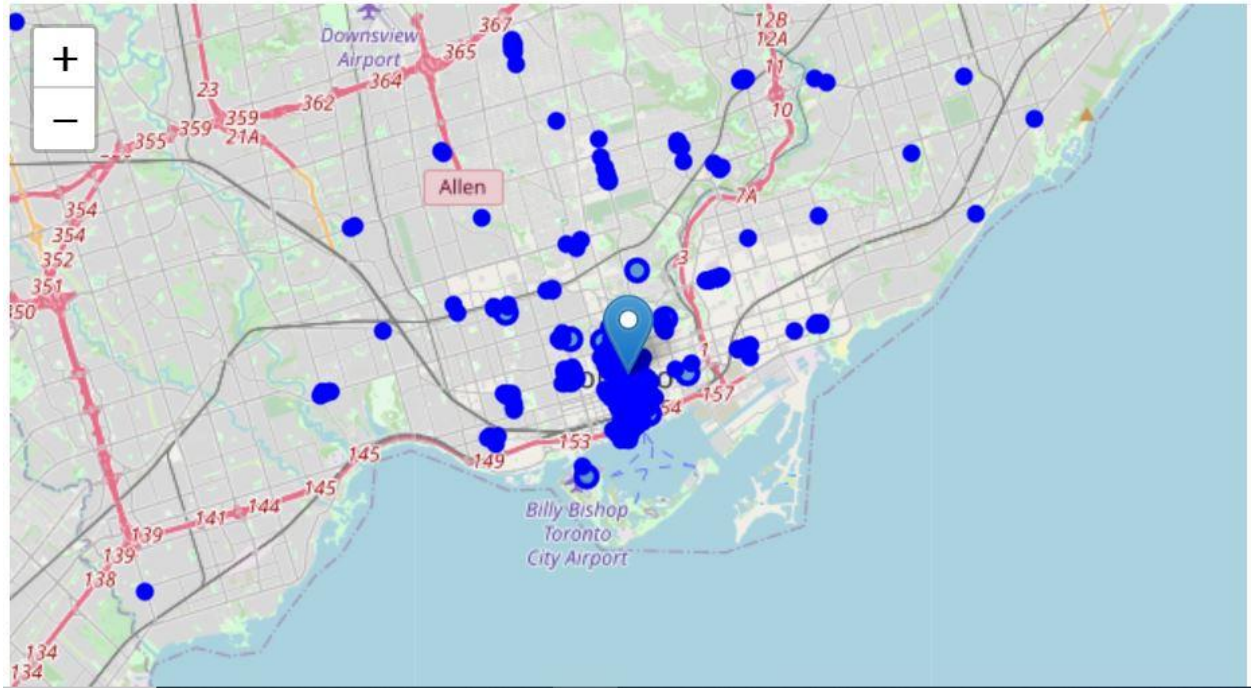
The result analysis of the restaurant distribution in Toronto shows some neighborhood in Toronto have high restaurant distributions while others little or no restaurant. Seven neighborhoods were identified to have low restaurant distribution in Downtown Toronto. Toronto Boroughs have on only two identified restaurants.

The purpose of this project was to use location data to find boroughs in Toronto that have low number of restaurants were African restaurant can be sited. Downtown Toronto was found to have highest number of restaurant but there were some borough with low restaurant. These borough are therefore recommended for further analysis.

It is expected that these locations would be studied to check if they meet other criteria besides the lack of competitors.

	Post Code	Borough	Neighborhood	Latitude	Longitude	Restaurants in area
0	M3A	North York	Parkwoods	43.753259	-79.329656	0
1	M4A	North York	Victoria Village	43.725882	-79.315572	2
2	M5A	Downtown Toronto	Regent Park, Harbourfront	43.654260	-79.360636	0
3	M6A	North York	Lawrence Manor, Lawrence Heights	43.718518	-79.464763	0
4	M7A	Downtown Toronto	Queen's Park, Ontario Provincial Government	43.662301	-79.389494	2
5	M9A	Etobicoke	Islington Avenue, Humber Valley Village	43.667856	-79.532242	0
6	M1B	Scarborough	Malvern, Rouge	43.806686	-79.194353	0

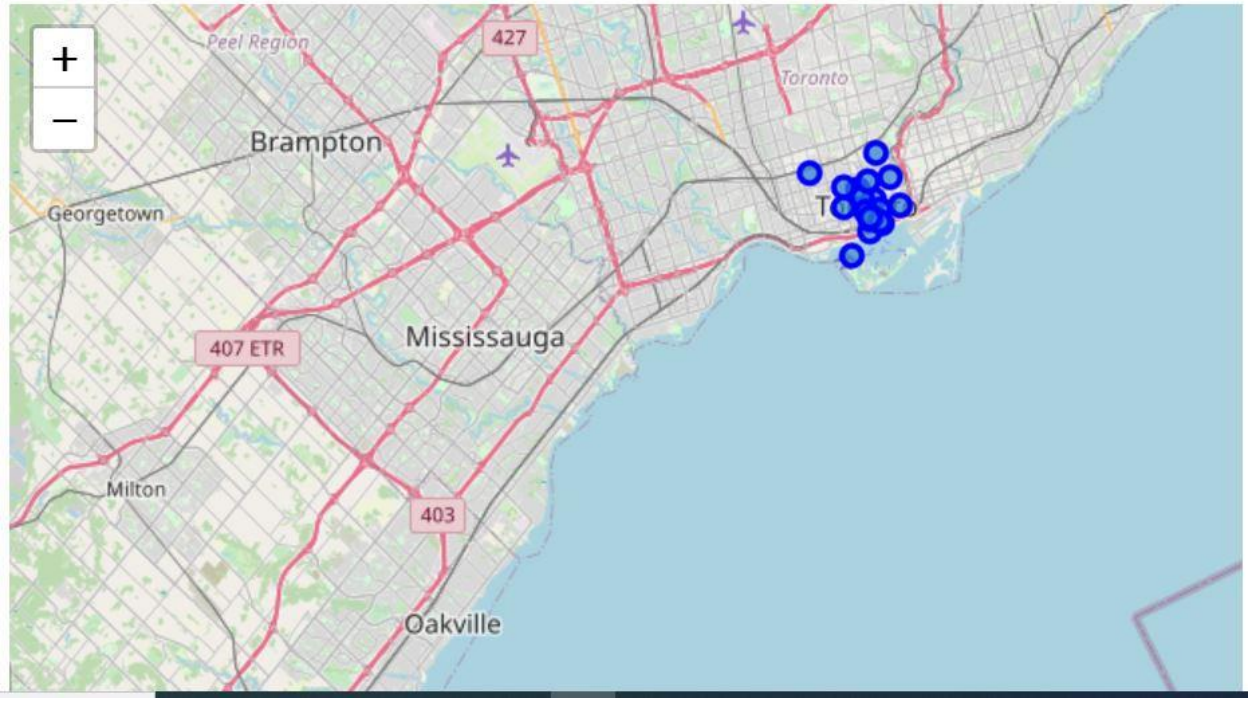
4.1 Number of Restaurant in Toronto



4.2Map of Restaurant

	Code	Borough	Neighborhood	Latitude	Longitude	in area
0	M5A	Downtown Toronto	Regent Park, Harbourfront	43.654260	-79.360636	0
1	M7A	Downtown Toronto	Queen's Park, Ontario Provincial Government	43.662301	-79.389494	2
2	M5E	Downtown Toronto	Berczy Park	43.644771	-79.373306	3
3	M6G	Downtown Toronto	Christie	43.669542	-79.422564	2
4	M5S	Downtown Toronto	University of Toronto, Harbord	43.662696	-79.400049	4
5	M5V	Downtown Toronto	CN Tower, King and Spadina, Railway Lands, Har...	43.628947	-79.394420	0
6	M4W	Downtown	Rosedale	43.679563	-79.377529	0

4.3 Downtown Toronto Restaurant Distribution



4.4 Map of Restaurant clustering in Downtown Toronto

5.0 CONCLUSION

Purpose of this project was to locate borough in Toronto with low number of restaurants where investor could locate an African restaurant. Foursquare APi was used to identify all the restaurant in Toronto. The boroughs were then further divided to areas with low and high number of restaurants. The region of low number of restaurant in Downtown Toronto was further analyzed to identify optimal locations.

The investor is expected to carry out feasibility studies to determine suitability of recommended locations to select those that match with his other business parameters.

The study also showed that Foursquare API may not have adequately identified African Restaurants in Toronto as search for African restaurant in google identified more than two restaurant Foursquare API returned. This may be due to bias or African restaurant in Toronto may have a low standard that made them not to be classified properly.