Name**: Report on Selecting Borough for Starting Restaurant Business**

Introduction:

Manhattan in New York and Scarborough in Toronto are both busy commercial areas. The objective of this analysis is to start a restaurant business either in a borough of the City of Toronto or of New York. Let's select Scarborough in Toronto and Manhattan in New York for analysis. Selection of the best option between these two depends on many factors; population in each borough, numbers of restaurants in each borough, types of restaurant in each borough etc. If there are more people live in that area in comparison to requirement of restaurant, it would be suggested to start restaurant there, Similarly, income-level and social environment of these areas also plays an important role. Location of restaurant in each borough is important for selecting place for restaurant for which we need to take assistance from Foursquare App.

Data Source:

We like to start a restaurant business either in a borough of the City of Toronto or of New York. Let us select Scarborough in Toronto and Manhattan in New York. Now, we are to select the best option between these two for which we need following data.

a. Population in each borough.

b. Numbers of restaurant in each borough.

c. Types of restaurant in each borough

d. Population size in each borough.

e. Income level of people in each borough.

f. Purchasing power of people in each borough.

g. Social Environment of each borough.

h. Location Map of restaurant in each borough; for these we need to take assistance from Foursquare App.

A. For relevant data of Manhattan, we use the following link

"https://cf-courses-data.s3.us.cloud-object-storage.appdomain.cloud/IBMDeveloperSkillsNetwork-DS0701EN-SkillsNetwork/labs/newyork_data.json"

which gives us 'Borough', 'Neighborhood', 'Latitude', 'Longitude'

B. For population data we use kaggle's borough-wise population in new york. https://www.kaggle.com/new-york-city/new-york-city-population

C. For data of Toronto we use the following link.

"https://en.wikipedia.org/wiki/List_of_postal_codes_of_Canada:_M"

D. For all the geographical coordinates of the neighborhoodswe used “https://cocl.us/Geospatial_data” csv file

E. For getting the distribution of population “Demographics of Toronto” (https://en.m.wikipedia.org/wiki/Demographics_of_Toronto#Ethnic_diversity) wiki page.

Methodology:

 # why are we considering all these factors?

a. If population size is comparatively higher then more people will go for eating in the restaurant.

b. If number of restaurants is comparatively lower, the proportion of the customer will be more.

c. If average income is more, purchasing power will be more resulting more customer tends to go to restaurant.

d. In the better social environment people can comfortably enjoy passing times, going to restaurants.

 # *How these data will solve the problems?*

a. By analyzing these data we will find ratio of number of restaurants to the population of each borough. Assuming other factors like- purchasing power, social environment and the others remain same, we can reach to conclusion.

 # *What we did?*

Data acquisition and cleaning.

Using the data source relevant web page was scrapped and cleaned using python pandas libraries. Location of venues, that is restaurants are retrieved using Foursquare API

New York has a total of 5 boroughs and 306 neighborhoods. In order to segement the neighborhoods and explore them, we will essentially need a dataset that contains the 5 boroughs and the neighborhoods that exist in each borough as well as the latitude and longitude coordinates of each neighborhood.

Toronto has a total of 15 boroughs in Toronto City. In order to segement the neighborhoods and explore them, we will essentially need a dataset that contains the 15 boroughs and the neighborhoods that exist in each borough as well as the latitude and longitude coordinates of each neighborhood.

Results:

Our objective was to select the borough where a restaurant would be started. We initially took two boroughs; Manhattan in New York and Scarborough in Toronto. Population size and number of existing restaurants was considered the major factor. For population size we used published data sets from Kaggle. “Demographics of Toronto”. Number of restaurants including its location was retrieved using Foursquare API. The dataset used for Scarborough published in 2016. This is a gap for this analysis. We assumed that all other factor will remain same. We found that there are 472 restaurants

for 475665 people in Scarborough whereas the number of restaurants in Manhattan is 886 for 1638281 people. The ratio of number of restaurants to population size in Manhattan is 0.00054 while it is 0.00099 for Scarborough. The ratio of restaurant to population in Scarborough is 1.835 times higher than that of Manhattan

Conclusion:

From the above discussion it concluded for starting restaurant in Manhattan is better than starting at Scarborough.