

Exploring Toronto Neighborhoods – to open a Restaurant

Introduction/Business Problem

Toronto, the capital of the province of Ontario, is the most populous Canadian city. Its diversity is reflected in Toronto's ethnic neighborhoods such as Chinatown, Corso Italia, Greektown, Kensington Market, Koreatown, Little India, Little Italy, Little Jamaica, Little Portugal & Roncesvalles.

In this project we will go through step by step process to make a decision on a good place to open a restaurant. We analyze the neighborhoods in Toronto to identify the most profitable area by using the income and population of each neighborhoods since the success of the restaurant depends on the people and ambience.

DATA

Data sources:

a) I'm using "List of Postal code of Canada: M"

(https://en.wikipedia.org/wiki/List_of_postal_codes_of_Canada:_M) wiki page to get all the information about the neighborhoods present in Toronto. This page has the postal code, borough & the name of all the neighborhoods present in Toronto.

b) Then I'm using "https://cocl.us/Geospatial_data" csv file to get all the geographical coordinates of the neighborhoods.

d) To get location and other information about various venues in Toronto I'm using Four square's explore API. Using the Four square's explore API (which gives

venues recommendations), I'm fetching details about the venues up present in Toronto and collected their names, categories and locations (latitude and longitude).

From Foursquare API (<https://developer.foursquare.com/docs>), I retrieved the following for each venue:

- Name: The name of the venue.
- Category: The category type as defined by the API.
- Latitude: The latitude value of the venue.
- Longitude: The longitude value of the venue.

Methodology

The first step of the project was to combine the Toronto dataset, containing the postal code, borough, neighborhood name, latitude and longitude for each postal code in Toronto, and the census dataset. The first four columns of combined data frame can be seen in Figure 7 of the Appendix. Using the income distribution for each neighborhood, the spending power of each area was calculated using the median of each category weighted by the number of people in that income category. Thus, the spending power represents the overall capital of each area (i.e. total income of the inhabitants). Since the spending power for each area is considerably large and the relative strength is difficult to visualize, the spending power for each area was standardized.

The next step was to visualize the location of the various postal codes within Toronto to obtain a general understanding the location (Figure 1). As seen from the map, the postal codes are densely clustered near downtown Toronto and spread out as the distance from downtown increases. This is important because while some postal codes might not have many restaurants, if the area is located near downtown, adjacent regions can heavily impact the profitability of the restaurant.

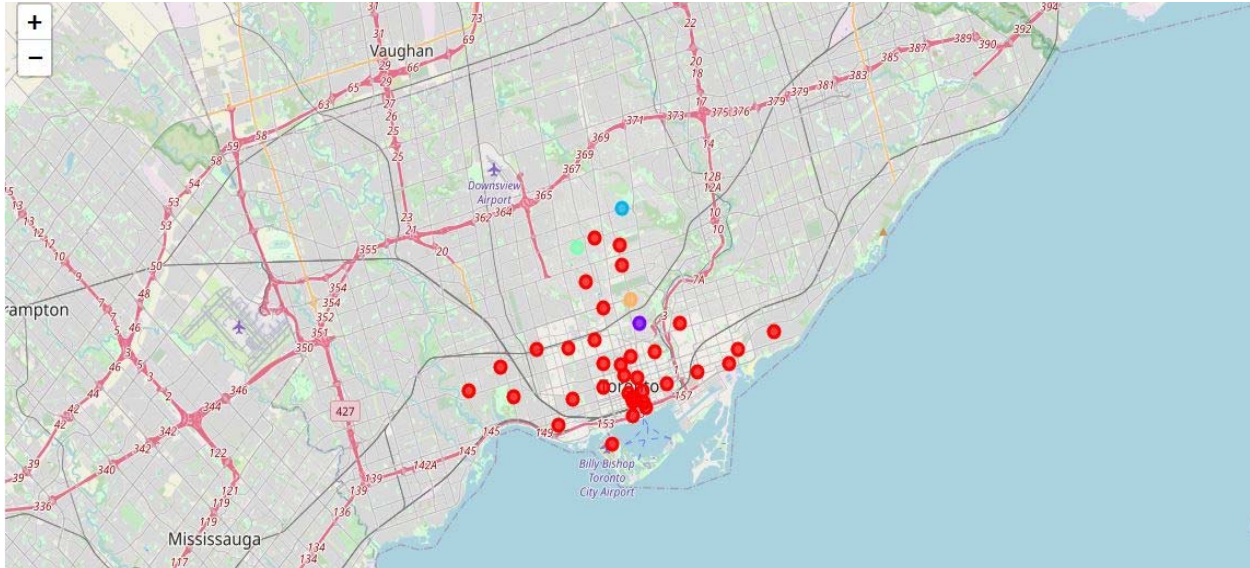


Figure 1: Location of each postal code within Toronto, Canada.

Discussion

From the results of the clustering algorithm, it was determined that neighborhoods corresponding to cluster 3 were the best choice for opening an Indian restaurant based on the normalized spending power and population. This narrowed down possible locations to six different areas. Using the results in Figure 5, the Agincourt North, L'Amoreaux East, Milliken, Steeles East region the Newtonbrook, Willowdale region and the Harbourfront, Regent Park region were eliminated due to the large number of restaurants in the area. From the three remaining regions, I would recommend that the client open his/her restaurant in either the Rouge, Malvern region or the Cloverdale, Islington, Martin Grove, Princess Gardens, West Deane Park region. Both regions have very few restaurants and are farther away from the downtown area. While the Cloverdale, Islington, Martin Grove, Princess Gardens, West Deane Park region has a higher spending power and population, the Rouge, Malvern region has a higher percentage of South Asians and thus the optimal region to open the Indian Restaurant.

Conclusion

Opening a restaurant is a complex task that can lead to a large monetary loss if not done properly. Thus, extensive research about the area would greatly increase the

likelihood of the restaurant succeeding. From the project above, I demonstrated the workflow necessary for a client to determine what area the restaurant should open. For specifically, I determined that the optimal location to open an Indian restaurant in Toronto should be in the Rouge, Malvern region.