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Capstone Project Report
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The Battle of Neighborhoods

Introduction: Business Problem

In a city, finding the optimal location for a restaurant is the key point of the business. This key point affects the revenue, the popularity and all of the parts of the business. To find the optimal location for a new restaurant, analyzing the data of the restaurants around that city is very important. Therefore, the main aim of that project is to solve this problem for a specific restaurant type, which is for a Mediterranean restaurant in Downtown Toronto. We should be interested in the areas that have very less Mediterranean restaurants with a good score. This condition can give us the optimal location where people love the Mediterranean restaurants.

Data

The data is provided in the link: "https://en.wikipedia.org/wiki/List_of_postal_codes_of_Canada:_M". The data provides us boroughs with neighborhoods and postal codes. In addition to that dataset, I will use the Toronto data csv file that is provided previous assignment to get the latitudes and longitudes of the locations and geocoder library. We will use the Foursquare api with this dataset to obtain the restaurants around Toronto.

This data will be used to determine the optimal location for a Mediterranean restaurant in Toronto. For this purpose, we will be looking for an area that have very less Mediterrranean restaurant with high scores. Therefore, the data that will affect our recommendations are: number of restaurants around the neighborhood, number and distance of Mediterranean restaurans and the proportion of the distance of the location to the city center to the distance between city center to the border of the city.

First of all, I cleaned the not assigned rows from the dataset since we can't work on them. After that, I get the neighborhoods in downtown Toronto, and I obtain the latitudes and longitudes of these neighborhoods. To visualize and understand the data, I created maps and clusters of these neighborhoods. At the end, I analyzed the data according to the number of the Mediterenean Restaurants, Morrocan Restaurants and Greek Restaurants in every neighborhood compared to the total number of restaurants in the existing neighborhood.

There are some visual things to demonstrate the data and understand it.

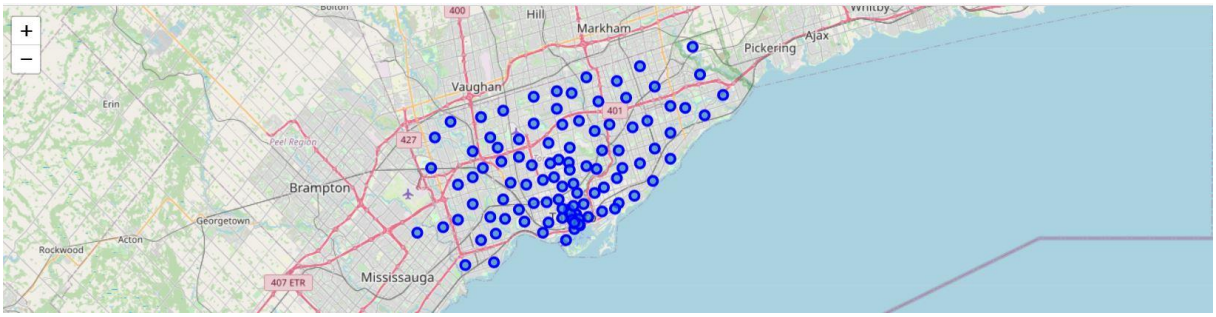

Figure 1: All Neighborhoods in Toronto

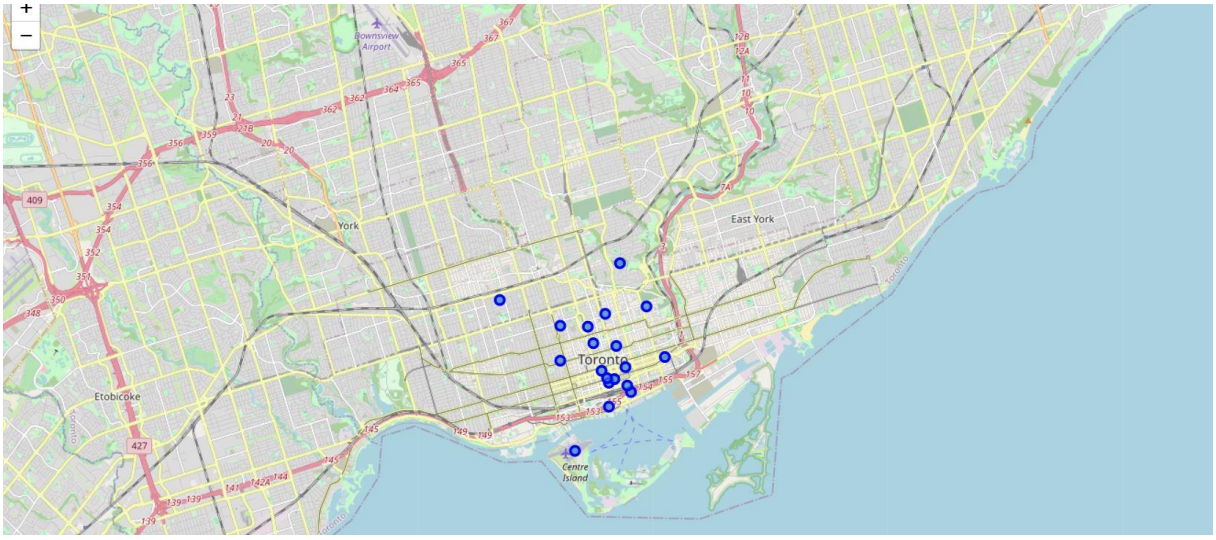

Figure 2: All Neighborhoods in Downtown Toronto

Neighborhood	Neighborhood Latitude	Neighborhood Longitude	Venue	Venue Latitude	Venue Longitude	Venue Category
Berczy Park	50	50	50	50	50	50
CN Tower, King and Spadina, Railway Lands, Harbourfront West, Bathurst Quay, South Niagara, Island airport	2	2	2	2	2	2
Central Bay Street	69	69	69	69	69	69
Christie	6	6	6	6	6	6
Church and Wellesley	63	63	63	63	63	63
Commerce Court, Victoria Hotel	100	100	100	100	100	100
First Canadian Place, Underground city	100	100	100	100	100	100
Garden District, Ryerson	95	95	95	95	95	95
Harbourfront East, Union Station, Toronto Islands	83	83	83	83	83	83
Kensington Market, Chinatown, Grange Park	56	56	56	56	56	56
Queen's Park, Ontario Provincial Government	28	28	28	28	28	28
Regent Park, Harbourfront	23	23	23	23	23	23
Richmond, Adelaide, King	94	94	94	94	94	94
Rosedale	1	1	1	1	1	1
St. James Town	68	68	68	68	68	68
St. James Town, Cabbagetown	29	29	29	29	29	29
Stn A PO Boxes	97	97	97	97	97	97
Toronto Dominion Centre, Design Exchange	100	100	100	100	100	100
University of Toronto, Harbord	28	28	28	28	28	28

Figure 3: Number of All Restaurants in Downtown Toronto by Neighborhoods

After cleaned the dataset and obtain the venues that we need, we can summarize the dataset with the figure above.

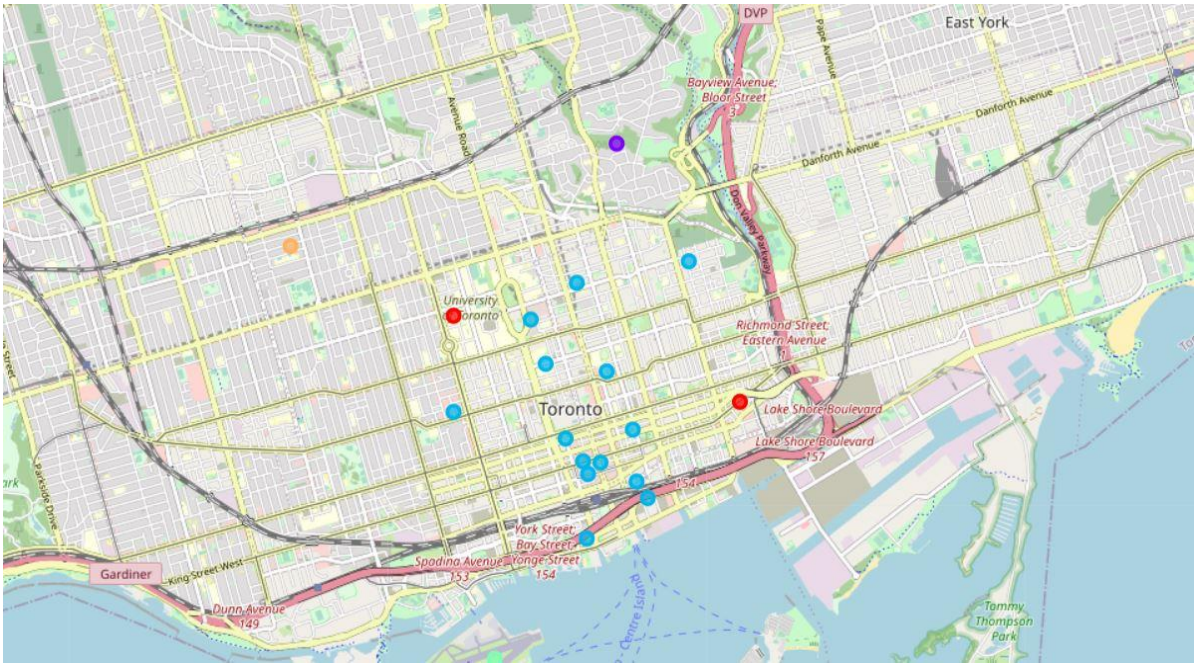

Figure 4: Clustered Neigborhoods in Downtown Toronto

Methodology

First of all, I determined the business problem. This is the most important step. To open a new Mediterenean restaurant in Downtown Toronto, we have to find a neighborhood that have some Mediterenean restaurant. If there are some Mediterenean restaurant already, then this data says that, in this neighborhood, some people tried to open Mediterenean restaurant already and they are still exist. Therefore, there is not so much risk for opening a new Mediterenean restaurant.

In the second step, we have to find a neighborhood which shouldn't have too much Mediterenean restaurant. The reason for that is to avoid the saturation of the Mediterenean restaurant population in a neighborhood. These two steps are the main concept of the methodology. Therefore, I obtained the most 10 types of venues in all neighborhoods in Downtown Toronto, then I found the neighborhoods which don't have any Mediterenean restaurant types in its first five most common nevune types. I used the dataset that I have created after the first step that I have mentioned at the beginning of the methodology. By this way, I tried to find the most risk-free neighborhoods.

Lastly, in my methodology and also according to the categories in the Foursquare api, Greek foods and Morrocan foods are also type of Mediterenean foods.

Results

As a result, I have found 3 different neighborhoods in Downtown Toronto according to the methodology that I have described above.

	Postal Code	Borough	Neighborhood	Latitude	Longitude	Cluster Labels	1st Most Common Venue	2nd Most Common Venue	3rd Most Common Venue	4th Most Common Venue	5th Most Common Venue	6th Most Common Venue	7th Most Common Venue	8th Most Common Venue	9th Most Common Venue	10th Most Common Venue
4	M5E	Downtown Toronto	Berczy Park	43.644771	-79.373306	2	Bakery	Sandwich Place	Restaurant	Italian Restaurant	Sushi Restaurant	Moroccan Restaurant	Greek Restaurant	Diner	Bistro	Seafood Restaurant
4	M5E	Downtown Toronto	Berczy Park	43.644771	-79.373306	2	Bakery	Sandwich Place	Restaurant	Italian Restaurant	Sushi Restaurant	Moroccan Restaurant	Greek Restaurant	Diner	Bistro	Seafood Restaurant
3	M5C	Downtown Toronto	St. James Town	43.651494	-79.375418	2	Restaurant	Café	Italian Restaurant	Sushi Restaurant	Bakery	American Restaurant	Breakfast Spot	Gastropub	Moroccan Restaurant	Seafood Restaurant
18	M4Y	Downtown Toronto	Church and Wellesley	43.665860	-79.383160	2	Sushi Restaurant	Japanese Restaurant	Pizza Place	Burger Joint	Café	Restaurant	Fast Food Restaurant	Mexican Restaurant	Vietnamese Restaurant	Mediterranean Restaurant

Figure 5: The Optimal Neighborhoods in Downtown Toronto

According to this result, the optimal neighborhoods are Berczy Park, St. James Town, Church and Wellesley. In these neighborhoods, there are some Mediterenean restaurants but not that much.

Discussion

In this project, we have found three different neighborhoods as the optimal neighborhoods for opening new Mediterenean restaurant in Downtown Toronto. However, this can't be the perfect solution fort hat business problem. Fort his problem, making a field research can make the predictions and results better. However, we can say that these three different neighborhoods have the best probability to be successful as a Mediterenean restaurant owner in Downtown Toronto.

Conclusion

As a conclusion, in this Project, we tried to find the one of the best solution for a business problem. This problem was finding the optimal location for a new Mediterenean type restaurant in Downtown Toronto. For this problem, we used the data from Wikipedia to obtain the boroughs and neighborhoods and the venue data from Foursquare api to make some analysis on it to find the optimal neighborhoods. According to the result of this Project, the optimal neighborhoods are Berczy Park, St. James Town, Church and Wellesley in Downtown Toronto.