Location Optimization for Italian Restaurant in Toronto

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Introduction

Background

For this Capstone project, I am providing a solution for people who want to open an Italian restaurant in Toronto area. Because Italian food is very popular, the entrepreneur wants to open the restaurant in locations where many Italian restaurants around. My purpose is to find the most suitable location for the entrepreneur to open an Italian restaurant in Toronto.

Business Problem

The objective of this capstone project is to find the most suitable location for the entrepreneur to open an Italian restaurant in Toronto, Canada.

Data

- List of neighborhoods in Toronto, China
    - https://en.wikipedia.org/wiki/List_of_postal_codes_of_Canada:_M
- Latitude and Longitude of Toronto
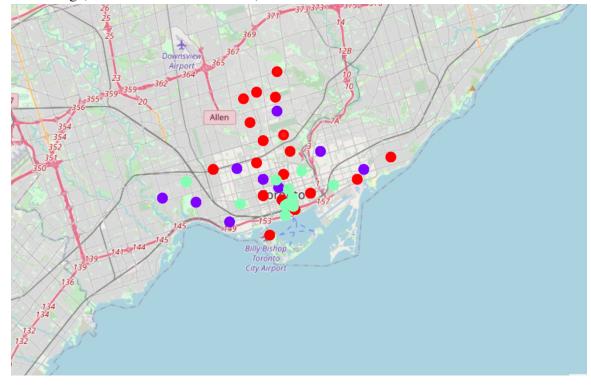- Venue data related to Italian restaurants

Methodology

Firstly, I will scrap Toronto neighborhoods via Wikipedia. Then, I need to get Latitude and Longitude data of these neighborhoods via Geocoder package. Finally, I will use Foursquare API to get venue data related to these neighborhoods.

- Latitude and Longitude of Toronto

- Clustering (based on Italian restaurant)

Results

```
#Cluster 0
to_merged.loc[to_merged['Cluster Labels'] == 0].head()
```

	Neighborhood	Italian Restaurant	Cluster Labels	Neighborhood Latitude	Neighborhood Longitude	Venue	Venue Latitude	Venue Longitude	Venue Category
0	Berczy Park	0.0	0	43.644771	-79.373306	LCBO	43.642944	-79.372440	Liquor Store
24	Regent Park, Harbourfront	0.0	0	43.654260	-79.360636	The Abnormal Beauty Company	43.649892	-79.361005	Cosmetics Shop
25	Richmond, Adelaide, King	0.0	0	43.650571	-79.384568	Rosalinda	43.650252	-79.385156	Vegetarian / Vegan Restaurant
25	Richmond, Adelaide, King	0.0	0	43.650571	-79.384568	Four Seasons Centre for the Performing Arts	43.650592	-79.385806	Concert Hall
25	Richmond, Adelaide, King	0.0	0	43.650571	-79.384568	Nathan Phillips Square	43.652270	-79.383516	Plaza

```
#Cluster 1
to_merged.loc[to_merged['Cluster Labels'] == 1].head()
```

	Neighborhood	Italian Restaurant	Cluster Labels	Neighborhood Latitude	Neighborhood Longitude	Venue	Venue Latitude	Venue Longitude	Venue Category
4	Central Bay Street	0.061538	1	43.657952	-79.387383	California Sandwiches	43.660825	-79.382888	Sandwich Place
4	Central Bay Street	0.061538	1	43.657952	-79.387383	Reds Midtown Tavern	43.659128	-79.382266	Wine Bar
4	Central Bay Street	0.061538	1	43.657952	-79.387383	W Burger Bar	43.661331	-79.383557	Burger Joint
4	Central Bay Street	0.061538	1	43.657952	-79.387383	Midi Bistro	43.655871	-79.392091	French Restaurant
4	Central Bay Street	0.061538	1	43.657952	-79.387383	Krispy Kreme Doughnut Cafe	43.655772	-79.391993	Donut Shop

```
#Cluster 2
to_merged.loc[to_merged['Cluster Labels'] == 2].head()
```

	Neighborhood	Italian Restaurant	Cluster Labels	Neighborhood Latitude	Neighborhood Longitude	Venue	Venue Latitude	Venue Longitude	Venue Category
15	High Park, The Junction South	0.04	2	43.661608	-79.464763	Isaan Der	43.665311	-79.468078	Thai Restaurant
15	High Park, The Junction South	0.04	2	43.661608	-79.464763	Junction City Music Hall	43.665334	-79.466253	Music Venue
15	High Park, The Junction South	0.04	2	43.661608	-79.464763	Silk	43.665291	-79.466238	Thai Restaurant
15	High Park, The Junction South	0.04	2	43.661608	-79.464763	Tim & Sue's No Frills	43.664243	-79.468643	Grocery Store
15	High Park, The Junction South	0.04	2	43.661608	-79.464763	Playa Cabana Cantina	43.665315	-79.465548	Mexican Restaurant

Conclusion

Most of Italian restaurants are in Cluster 1. In Cluster 1, Italian restaurants are most likely to locate around Central Bay Street, Runnymede Swansea and the Beaches Street where many restaurants shops around. There are some Italian restaurants in Cluster 2 which is also business areas especially restaurant area. Looking at nearby venues, it seems Cluster

1 might be a better location comparing to Cluster 2 as there are a lot of restaurants in these areas. Therefore, the entrepreneur should open the Italian restaurant in Cluster 1 areas. However, one thing that the entrepreneur should consider is the competition. The entrepreneur would better to seek more information about the market competition to decide the location and maximize the profits.