**Battle of the Neighborhoods**

Business Problem

Toronto is often referred to as "New York City run by the Swiss." The department of tourism says that you can find world-class theater, shopping and restaurants in Toronto. Anyone who would like to open a business in Toronto would need to know where they should open the business. What is the most popular type of venue/business to open in Toronto?

Data

For the Toronto neighborhood data, a Wikipedia page exists that has all the information we need to explore and cluster the neighborhoods in Toronto. I will scrape the Wikipedia page and wrangle the data, clean it, and then read it into a *pandas* dataframe.

Methodology

First, I sorted the Postal Codes by Borough and Neighborhood.  I had to remove the data that was not assigned data and consolidate the neighborhoods that share the same postal code.

A screenshot of a cell phone

Description automatically generated

Next, I built the data frame of the postal code of each neighborhood, the borough name, neighborhood name and latitude and the longitude coordinates of each neighborhood. This was necessary in order to utilize the Foursquare location data.

A screenshot of a cell phone

Description automatically generated

Results

I had to limit the number of venues returned from the Foursquare API to the top 209 venues.

For each neighborhood, returning the top 5 venues:

----First Canadian Place,Underground city----

venue freq

0 Coffee Shop 0.09

1 Café 0.07

2 Hotel 0.04

3 Restaurant 0.04

4 Steakhouse 0.04

----Harbord,University of Toronto----

venue freq

0 Café 0.13

1 Bookstore 0.08

2 Restaurant 0.05

3 Bakery 0.05

4 Sandwich Place 0.05

----Harbourfront----

venue freq

0 Coffee Shop 0.16

1 Park 0.06

2 Bakery 0.06

3 Pub 0.06

4 Breakfast Spot 0.04

----Harbourfront East,Toronto Islands,Union Station----

venue freq

0 Coffee Shop 0.13

1 Hotel 0.05

2 Aquarium 0.05

3 Café 0.04

4 Restaurant 0.03

----Rosedale----

venue freq

0 Park 0.50

1 Playground 0.25

2 Trail 0.25

3 Yoga Studio 0.00

4 Music Venue 0.00

----Ryerson,Garden District----

venue freq

0 Coffee Shop 0.09

1 Clothing Store 0.07

2 Cosmetics Shop 0.04

3 Middle Eastern Restaurant 0.03

4 Fast Food Restaurant 0.03

----St. James Town----

venue freq

0 Café 0.06

1 Coffee Shop 0.06

2 Restaurant 0.05

3 Clothing Store 0.04

4 Hotel 0.04

----Stn A PO Boxes 25 The Esplanade----

venue freq

0 Coffee Shop 0.10

1 Café 0.04

2 Restaurant 0.04

3 Hotel 0.03

4 Japanese Restaurant 0.03

I used Foursquare API to get the most common venues of Toronto.

A screenshot of a cell phone

Description automatically generated

I used python folium library to visualize geographic details of Toronto and its boroughs using latitude and longitude values to get the visual as below:

A close up of a map

Description automatically generated

Next, I created a table which shows list of top 10 venue category for each borough in below table.

A screenshot of a cell phone

Description automatically generated

Then, I determined the Most Common Venue in each cluster.

Cluster 1: the most common venue type is Coffee Shop, followed by restaurants and bars.

A screenshot of a computer

Description automatically generated

Cluster 2: the most common venue type is Park or Playground.

A screenshot of a cell phone

Description automatically generated

Cluster 3: the most common venue type is Airport Service.

A screenshot of a cell phone

Description automatically generated

Cluster 4: the most common venue type is Grocery Store.

A screenshot of a cell phone

Description automatically generated

Discussion

In cluster 1, a breakfast spot has the least saturation.

In cluster 2, a discount store has the least saturation.

In cluster 3, a plane has the least saturation.

In cluster 4, a restaurant has the least saturation.

Conclusion

In conclusion in Toronto I would open a breakfast spot in cluster one do to the population and saturation.