Opening a restaurant in Toronto

Coursera Capstone Project

Table of contents

- Introduction
- Business Problem
- Target Audience
- Data
- Methodology
- Result
- Conclusion

Introduction:

The city of Toronto is one of the major cities of Canada. Therefore it might be great opportunity to open a restaurant in Toronto. As there are many restaurants in Toronto already opening a new can be a challenging task.

Business Problem:

The objective of the capstone project is to find a most suitable for the business owner to open a new restaurant in Toronto. And what type of restaurant will it be and where it should be opened.

Target Audience:

For any business owner/entrepreneur who wants to open a new restaurant in Toronto.

Data:

The following data will be required
1) List of neighborhoods in Toronto, Canada.
https://en.wikipedia.org/wiki/List_of_postal_codes_of_Canada:_M
2) Latitude and Longitude of these locations.
3) Venue data related to restaurants from Foursquare API.

Methodology:

Step 1. Using a table on https://en.wikipedia.org/wiki/List_of_areas_of_London, collect information about Toronto boroughs and locations.

Step 2. Use the Geopy and Folium libraries to get the coordinates of all locations and map geospatial data on a Toronto map.

Step 3. Using Foursquare API, collect the top 100 restaurants and their categories for each location within a 500 meter radius.
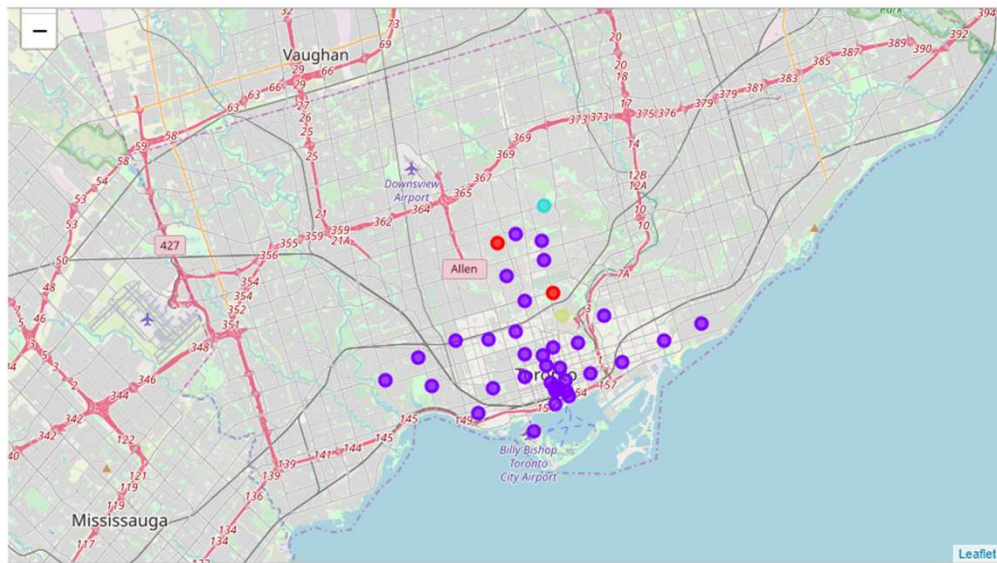
Step 4. Group collected restaurants by location and by taking the mean of the frequency of occurrence of each type, preparing them for clustering.

Step 5. Cluster restaurants by k-means algorithm and analyze the top 10 most common restaurants in each cluster.

Step 6. Visualize clusters on the map, thus showing the best locations for opening the chosen restaurant.

Results

▶ Visualizing the clusters.

Results

- Cluster 1

	Borough	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
count	2	2.0	2	2	2	2	2	2	2	2	2	2
unique	1	NaN	1	2	2	2	2	2	2	2	2	2
top	Central Toronto	NaN	Restaurant	French Restaurant	Sushi Restaurant	Wings Joint	Falafel Restaurant	Diner	Doner Restaurant	Donut Shop	Dumpling Restaurant	Donut Shop
freq	2	NaN	2	1	1	1	1	1	1	1	1	1

- Here the most common venue: Restaurant
- The 10th most common restaurant : Donut Shop

Results

▶ Cluster 2

	Borough	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
count	34	34.0	34	34	34	34	34	34	34	34	34	34
unique	4	NaN	10	13	19	21	19	22	23	23	25	26
top	Downtown Toronto	NaN	Café	Restaurant	Restaurant	Pizza Place	Italian Restaurant	Bakery	Gastropub	Burger Joint	Steakhouse	Doner Restaurant
freq	18	NaN	11	10	6	6	6	5	3	4	4	3

▶ Here the most common venue: Café

▶ The 10th most common restaurant : Doner Restaurant

Results

▶ Cluster 3

	Borough	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
count	1	1.0	1	1	1	1	1	1	1	1	1	1
unique	1	NaN	1	1	1	1	1	1	1	1	1	1
top	Central Toronto	NaN	Dim Sum Restaurant	Wings Joint	Cuban Restaurant	Diner	Doner Restaurant	Donut Shop	Dumpling Restaurant	Eastern European Restaurant	Ethiopian Restaurant	Falafel Restaurant
freq	1	NaN	1	1	1	1	1	1	1	1	1	1

▶ Here the most common venue: Dim sum Restaurant

▶ The 10th most common restaurant : Falafel restaurant

Results

▶ Cluster 4

	Borough	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
count	1	1.0	1	1	1	1	1	1	1	1	1	1
unique	1	NaN	1	1	1	1	1	1	1	1	1	1
top	Downtown Toronto	NaN	Japanese Restaurant	Wings Joint	Fast Food Restaurant	Dim Sum Restaurant	Diner	Doner Restaurant	Donut Shop	Dumpling Restaurant	Eastern European Restaurant	Ethiopian Restaurant
freq	1	NaN	1	1	1	1	1	1	1	1	1	1

▶ Here the most common venue: Japanese Restaurant

▶ The 10th most common restaurant : Ethopian restaurant

Recomendations

▶ The potential areas are:

○ Rosedale, Downtown Toronto

○ Forest Hill North,Forest Hill West, Central Toronto

○ Moore Park, Central Toronto

○ Lawrence Park, Central Toronto

▶ As there are very few reataurants in these locations a new restaurant can be opened here. In our recommendation we advise selecting from the 10th or 9th positions. The selection is a reasonable balance between being too popular and having no customers.

Conclusion

▶ In this report we established a methodology where a restaurant should be opened.

▶ This type of analysis can be applied to any city of your choice which has available geospatial information.

▶ This type of analysis can be applied to any type of venue(shopping malls, clubs, etc.) That is available in the foursquare database.