

IBM Data Science (Capstone Week 5)

Exploring a neighborhood in Toronto to open a new Mexican Restaurant

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Introduction

Business problem:

- Analyzing neighborhoods in Scarborough, Toronto to open a Mexican restaurant

Target Audience:

- Hospitality entrepreneurs, especially immigrants from latin american countries

Data description/acquisition

Data Sources:

- List of postal codes and corresponding neighborhoods were scrapped from a Wikipedia https://en.wikipedia.org/wiki/List_of_postal_codes_of_Canada:_M
- The latitude and longitude of the neighborhoods corresponding to the postal codes in Scarborough, Toronto, Canada were acquired from http://cocl.us/Geospatial_data

Foursquare API

Foursquare API has been used to get:

- a. name of the venues (Mexican Restaurants)
- b. locations of the venues
- c. categories of the venues
- d. Latitude of the Venues
- e. Longitude of the venues

Methodology/Workflow

1. Installing all the required library packages like Pandas, Numpy, Folium, JSON, XML, Geocoder, Scikit Learn
2. Scraping the data from wikipedia page
https://en.wikipedia.org/wiki/List_of_postal_codes_of_Canada:_M
3. Cleaning and formatting the scraped data
4. Assigning latitude and longitude of the neighborhoods from
http://cocl.us/Geospatial_data
5. Using Foursquare API to get venues and their longitude and latitude
6. Using kmeans for clustering the neighborhoods
7. Grouping Mexican Restaurants in all the clusters

Results

Table 1: Imported html data from Wikipedia (first five rows)

	Postal Code	Borough	Neighbourhood
0	M1A	NaN	NaN
1	M2A	NaN	NaN
2	M3A	North York	Parkwoods
3	M4A	North York	Victoria Village
4	M5A	Downtown Toronto	Regent Park, Harbourfront

Results

Table 2: Neighborhoods with latitude & longitude (first five rows)

	PostalCode	Borough	Neighbourhood	Latitude	Longitude
0	M1B	Scarborough	Malvern, Rouge	43.806686	-79.194353
1	M1C	Scarborough	Rouge Hill, Port Union, Highland Creek	43.784535	-79.160497
2	M1E	Scarborough	Guildwood, Morningside, West Hill	43.763573	-79.188711
3	M1G	Scarborough	Woburn	43.770992	-79.216917
4	M1H	Scarborough	Cedarbrae	43.773136	-79.239476

Results

Table 3: Venues and neighborhoods using Foursquare API (first 10 rows)

	Neighborhood Latitude	Neighborhood Longitude	Venue	Venue Latitude	Venue Longitude	Venue Category
Neighborhood						
Berczy Park	57	57	57	57	57	57
Brockton, Parkdale Village, Exhibition Place	22	22	22	22	22	22
Business reply mail Processing Centre, South Central Letter Processing Plant Toronto	14	14	14	14	14	14
CN Tower, King and Spadina, Railway Lands, Harbourfront West, Bathurst Quay, South Niagara, Island airport	17	17	17	17	17	17
Central Bay Street	64	64	64	64	64	64
Christie	18	18	18	18	18	18
Church and Wellesley	76	76	76	76	76	76
Commerce Court, Victoria Hotel	100	100	100	100	100	100
Davisville	32	32	32	32	32	32
Davisville North	9	9	9	9	9	9

Results

Mapping Clusters using Folium map



Results

Table 4: Mexican Restaurant in cluster 0

	Neighborhood	Mexican Restaurant	Cluster Labels	Neighborhood Latitude	Neighborhood Longitude	Venue	Venue Latitude	Venue Longitude	Venue Category
14	Harbourfront East, Union Station, Toronto Islands	0.010000	0	43.640816	-79.381752	Chipotle Mexican Grill	43.64489	-79.383050	Mexican Restaurant
6	Church and Wellesley	0.013158	0	43.665860	-79.383160	Como En Casa	43.66516	-79.384796	Mexican Restaurant
13	Garden District, Ryerson	0.010000	0	43.657162	-79.378937	Chipotle Mexican Grill	43.65686	-79.380910	Mexican Restaurant

Results

Table 5: Mexican Restaurant in cluster 1

	Neighborhood	Mexican Restaurant	Cluster Labels	Neighborhood Latitude	Neighborhood Longitude	Venue	Venue Latitude	Venue Longitude	Venue Category
17	Kensington Market, Chinatown, Grange Park	0.042254	1	43.653206	-79.400049	Torteria San Cosme	43.654702	-79.400646	Mexican Restaurant
17	Kensington Market, Chinatown, Grange Park	0.042254	1	43.653206	-79.400049	Seven Lives - Tacos y Mariscos	43.654418	-79.400545	Mexican Restaurant
17	Kensington Market, Chinatown, Grange Park	0.042254	1	43.653206	-79.400049	El Trompo	43.655832	-79.402561	Mexican Restaurant
24	Regent Park, Harbourfront	0.022222	1	43.654260	-79.360636	El Catrin	43.650601	-79.358920	Mexican Restaurant
21	North Toronto West, Lawrence Park	0.052632	1	43.715383	-79.405678	Tio's Urban Mexican	43.714630	-79.400000	Mexican Restaurant
23	Queen's Park, Ontario Provincial Government	0.032258	1	43.662301	-79.389494	Como En Casa	43.665160	-79.384796	Mexican Restaurant

Results

Table 6: Mexican Restaurant in cluster 2

	Neighborhood	Mexican Restaurant	Cluster Labels	Neighborhood Latitude	Neighborhood Longitude	Venue	Venue Latitude	Venue Longitude	Venue Category
15	High Park, The Junction South	0.08	2	43.661608	-79.464763	La Revolucion	43.665460	-79.464308	Mexican Restaurant
15	High Park, The Junction South	0.08	2	43.661608	-79.464763	Playa Cabana Cantina	43.665315	-79.465548	Mexican Restaurant

Conclusion

- Most of the Mexican restaurants are in cluster 1 which is around Kensington Market, Chinatown, Grange Park, Regent Park, Harbourfront, North Toronto West, Lawrence Park, Queen's Park, and Ontario Provincial Government.
- The lowest number of Mexican restaurants are in Cluster 2 areas which are High Park and The Junction South, which makes the neighborhoods in Cluster 2 an optimum choice for opening a Mexican Restaurants.
- The neighborhoods in cluster 0 can be another ideal location after cluster 2 for opening the Mexican Restaurant.