

Capstone Project-The Battle of Neighborhoods

Introduction/Business Problem

- This report will help to determine which neighborhood in Toronto is the best neighborhood to open a coffee shop in terms of customer traffic
- The targeted audience will be people who wants to open a coffee shop and the data analysis implemented in this project will help them to make their coffee shop more profitable and will give them ability to compete with other coffee shops

Data

- The Foursquare location data will be used in order to explore the venues of each neighborhood in Toronto. The data obtained from Foursquare will be used to find out the most common venues in each neighborhood and the frequency of customers visit for each venue by using data science techniques
- The venues will be explored within 1000 radius of each neighborhood and total number of analyzed venues will be 100 for each neighborhood
- The main data features will be boroughs and neighborhoods of Toronto, longitude and latitude of each neighborhood, venue name, venue locations and category

Methodology

- Data from Wikipedia was obtained as a html and converted into the table
- Data is scrapped and cleaned
 - By excluding Toronto boroughs that are not assigned
 - By merging Toronto neighborhoods that have the same boroughs
 - By finding neighborhoods that are not named and by giving the same name to them with their assigned borough names

Methodology

- The geographic coordinates of each neighborhood was then extracted from provided datasheet('Geospatial_Coordinates.csv') as an table and merged with previously created table

[11]:

	PostalCode	Borough	Neighborhood	Latitude	Longitude
0	M1B	Scarborough	Rouge,Malvern	43.806686	-79.194353
1	M1C	Scarborough	Highland Creek,Rouge Hill,Port Union	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
5	M1J	Scarborough	Scarborough Village	43.744734	-79.239476
6	M1K	Scarborough	East Birchmount Park,Ionview,Kennedy Park	43.727929	-79.262029
7	M1L	Scarborough	Clairlea,Golden Mile,Oakridge	43.711112	-79.284577
8	M1M	Scarborough	Cliffcrest,Cliffside,Scarborough Village West	43.716316	-79.239476
9	M1N	Scarborough	Birch Cliff,Cliffside West	43.692657	-79.264848
10	M1P	Scarborough	Dorset Park,Scarborough Town Centre,Wexford He...	43.757410	-79.273304

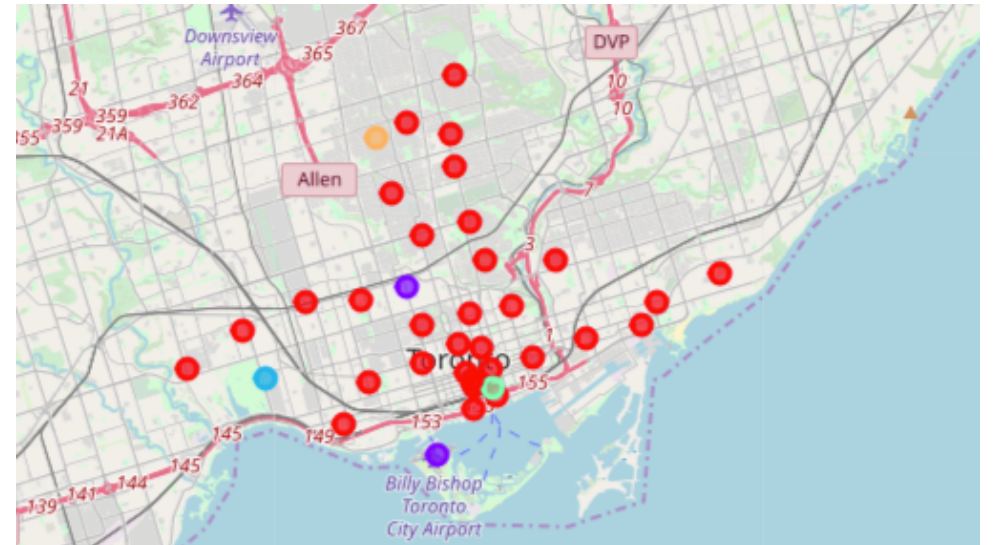
Methodology

- New table was created with only Toronto City boroughs (West Toronto, East Toronto, Downtown Toronto, Central Toronto)
- Toronto neighborhoods are mapped in each Toronto city borough



Methodology

- Foursquare API was used to get 100 venues of each neighborhood within 1000 radius and converted to the table
- The venues table then was cleaned and transformed to be ready for one-hot coding
- By using one-hot coding top 5 venue categories were extracted to learn frequency of customer visits for each venue
- All Toronto neighborhoods were then categorized into 5 clusters based on their common features by using k-means method



Results

- Based on results obtained, it seems that 'The Beaches' neighborhood has the most frequent visit to coffee shops
- People who lives in 'The Beaches' neighborhood mostly visited "Starbucks" venue among other venue categories

----The Beaches----		
	venue	freq
0	Coffee Shop	0.50
1	Pub	0.25
2	Gym / Fitness Center	0.25
3	Yoga Studio	0.00
4	Office	0.00

Discussion

- Based on data analysis, 'The Beaches' neighborhood is an optimal neighborhood to open coffee shop among other Toronto neighborhoods
- One of the advantages of that neighborhood is that owner of coffee shop will be able to attract customer traffic easily, since majority of population prefer to drink coffee
- The second advantage is that the owner will have less competition, since there is only one coffee shop in that neighborhood
- Apart from advantages, there might be downsides of opening coffee shop in that neighborhood such as renting or owning land to open the coffee shop might be costly compared to other neighborhoods

Conclusion

- 'The Beaches' neighborhood seems better place to open a coffee shop for owners/contractors in terms of profitability and customer traffic
- Owners were advised to do cost/benefit analysis to get further insights about cost of opening a coffee shop in that neighborhood