

The Battle of Neighborhoods – Final Report

Problem Definition

The objective is to help people explore better facilities around their neighborhood to help them make good and efficient choices. We will use the neighborhoods in Scarborough, Toronto from Week 3 assignment for this study.

People moving across different neighborhoods require careful consideration for good housing prices, reputed schools for their children, community engagement, crime rate, supermarkets, cafes, hospitals, etc. This study aims to create a comparative analysis of features for people migrating to Scarborough to search for the best neighborhood based on the factors mentioned above. For this project, only the Housing and the schooling are considered.

Scarborough is an administrative division of Toronto, Ontario, Canada. Situated atop the Scarborough Bluffs, it occupies the eastern part of the city. Scarborough is contained within the borders of Victoria Park Avenue on the west, Steeles Avenue to the north, Rouge River and the city of Pickering to the east, and Lake Ontario to the south. It borders Old Toronto, East York and North York in the west and the city of Markham in the north. Scarborough was named after the English town of Scarborough, North Yorkshire.

Scarborough is a popular destination for new immigrants in Canada to reside. As a result, it is one of the most diverse and multicultural areas in the Greater Toronto Area, being home to various religious groups and places of worship. It includes a number of natural landmarks, including the Toronto Zoo, Rouge Park and the Scarborough Bluffs. The northeast corner of Scarborough is largely rural with some of Toronto's last remaining farms, earning Scarborough its reputation of being greener than any other part of Toronto.^[3]

Data Description

Data Link: https://en.wikipedia.org/wiki/List_of_postal_codes_of_Canada:_M

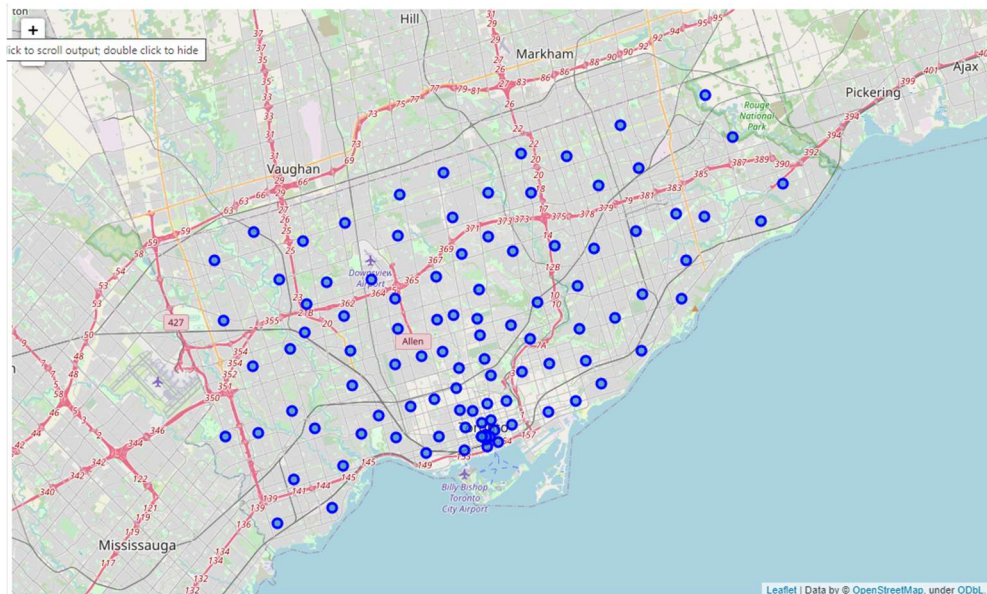
Will use Scarborough dataset which we scrapped from Wikipedia during Week 3. Dataset consisting of latitude and longitude, zip codes.

Foursquare API Data:

Foursquare - a location technology platform dedicated to improving how people move through the real world. We will use the Foursquare API to gather data about different venues in different neighborhoods of that specific borough. The kind of information that we will collect are venue names, locations, menus, tips and even photos.

The data retrieved from Foursquare contained information of venues within a specified distance of the longitude and latitude of the postcodes. The information obtained per venue as follows:

- Neighborhood
- Neighborhood Latitude
- Neighborhood Longitude
- Venue
- Name of the venue e.g. the name of a store or restaurant
- Venue Latitude
- Venue Longitude
- Venue Category



Methodology

I have used the clustering approach using the k-means algorithm.

Clustering Approach:

To compare the similarities of two cities, I decided to explore neighborhoods, segment them, and group them into clusters to find similar neighborhoods. To be able to do that, we need to cluster data which is a form of unsupervised machine learning: k-means clustering algorithm as shown below.

Libraries Which are Used to Develop the Project:

- Pandas: For creating and manipulating data frames.
- Folium: Python visualization library would be used to visualize the neighborhoods cluster distribution of using interactive leaflet map.
- Scikit Learn: For importing k-means clustering.
- JSON: Library to handle JSON files.
- XML: To separate data from presentation and XML stores data in plain text format.
- Geocoder: To retrieve Location Data.
- Beautiful Soup and Requests: To scrap and library to handle http requests.
- Matplotlib: Python Plotting Module.

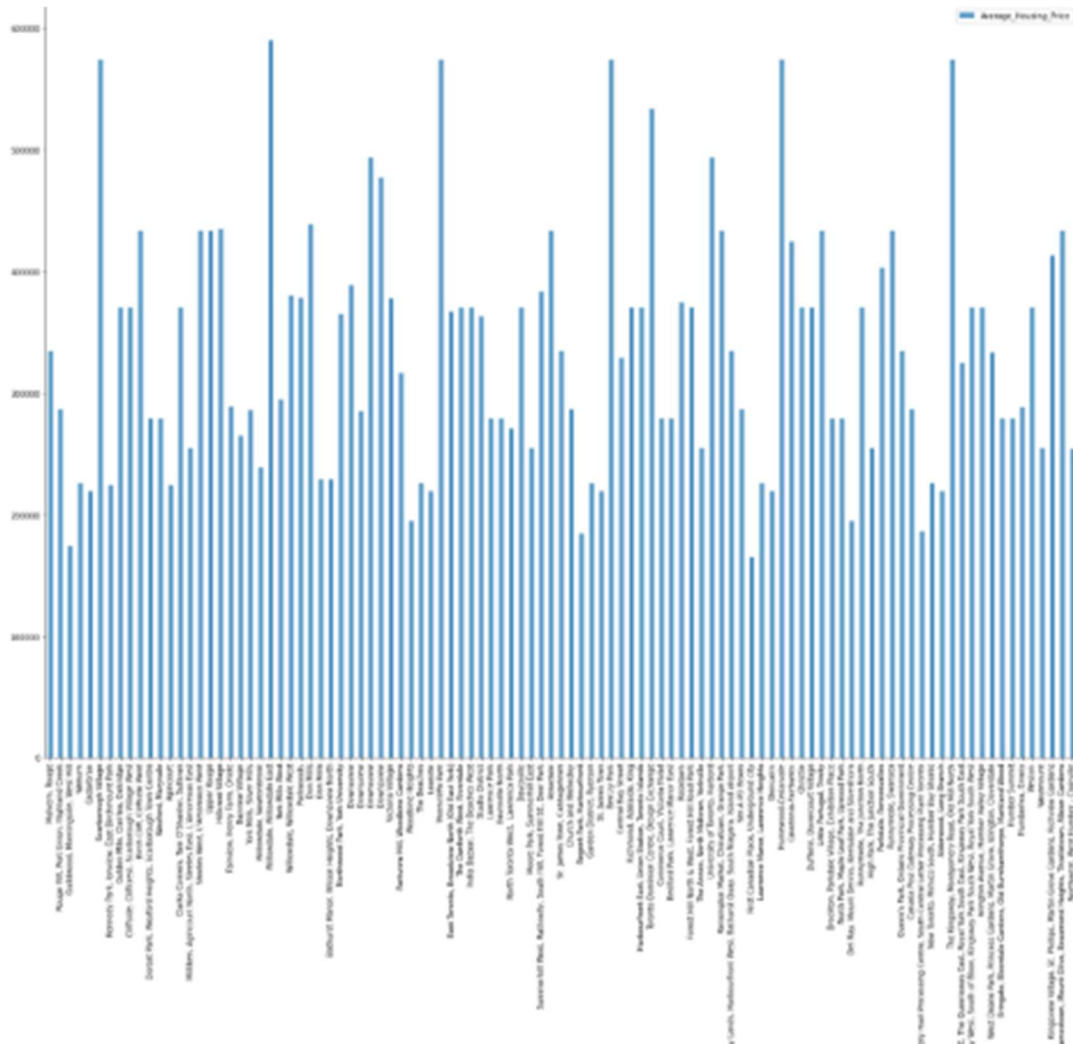
	Postalcode	Borough	Neighborhood	Latitude	Longitude	Cluster Labels	1st Most Common Venue	2nd Most Common Venue	3rd Most Common Venue	4th Most Common Venue	5th Most Common Venue	6th Most Common Venue	7th Most Common Venue	8th Most Common Venue
click to scroll output; double click to hide														
0	M1B	Scarborough	Malvern, Rouge	43.81139	-79.19662	0	Zoo Exhibit	Fast Food Restaurant	Paintball Field	Flea Market	Fish Market	Fish & Chips Shop	Filipino Restaurant	Field
1	M1C	Scarborough	Rouge Hill, Port Union, Highland Creek	43.78574	-79.15875	2	Bar	Construction & Landscaping	Fish & Chips Shop	Farm	Electronics Store	Elementary School	Escape Room	Ethiopian Restaurant
2	M1E	Scarborough	Guildwood, Morningside, West Hill	43.76575	-79.17470	1	Park	Gym / Fitness Center	Gymnastics Gym	Athletics & Sports	Donut Shop	Dumpling Restaurant	Eastern European Restaurant	Electronics Store
3	M1G	Scarborough	Woburn	43.76812	-79.21761	1	Park	Coffee Shop	Chinese Restaurant	Fast Food Restaurant	Eastern European Restaurant	Electronics Store	Elementary School	Escape Room
4	M1H	Scarborough	Cedarbrae	43.76944	-79.23892	2	Thai Restaurant	Gas Station	Caribbean Restaurant	Athletics & Sports	Hakka Restaurant	Bakery	Bank	Fast Food Restaurant

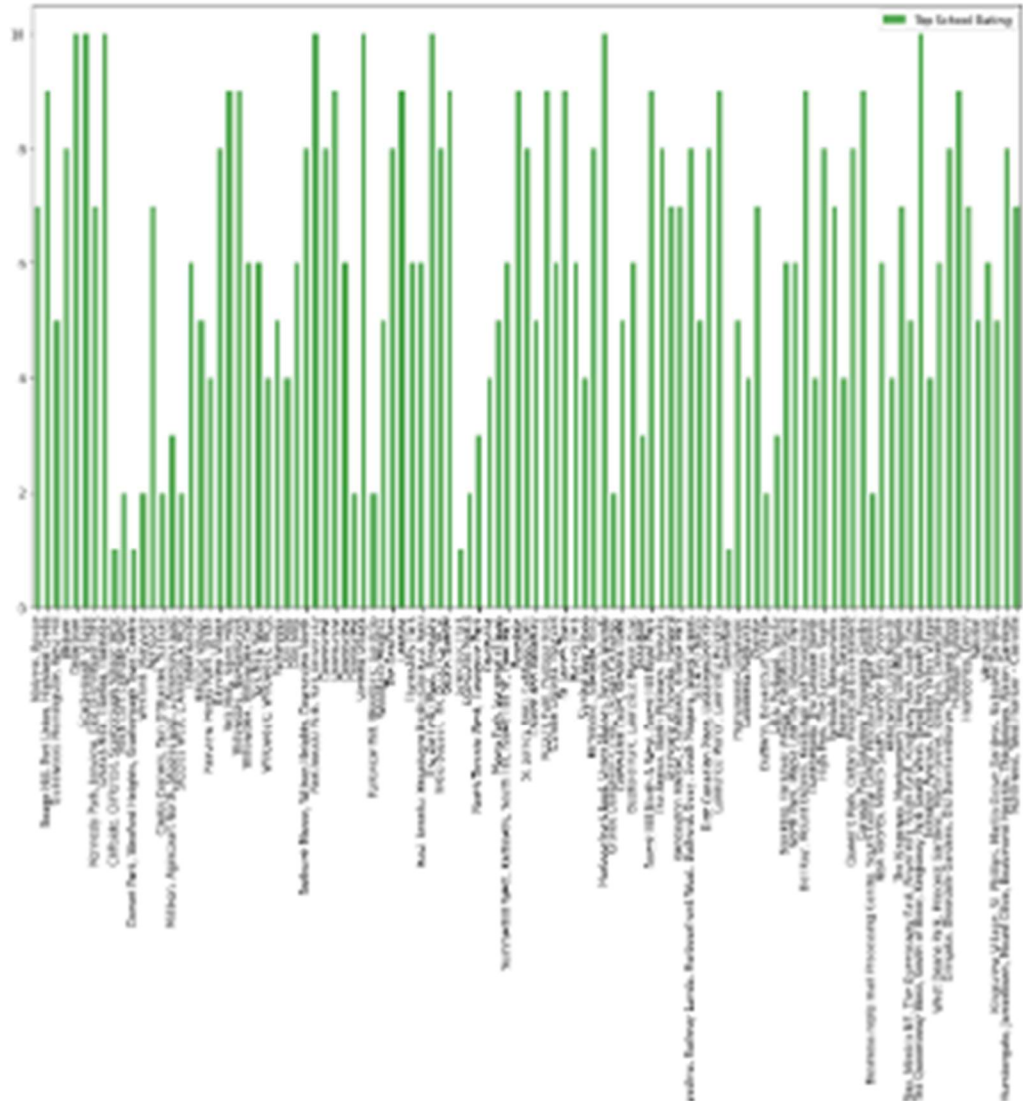
The Most common venues found are listed below:

	Neighborhood	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
0	Adelaide, King, Richmond	Coffee Shop	Café	Hotel	Gastropub	Burger Joint	Asian Restaurant	Bar	Restaurant	American Restaurant	Steakhouse
1	Agincourt	Chinese Restaurant	Shopping Mall	Pizza Place	Supermarket	Sushi Restaurant	Breakfast Spot	Print Shop	Mediterranean Restaurant	Coffee Shop	Pool
2	Agincourt North, L'Amoreaux East, Milliken, St...	Pharmacy	Sandwich Place	Sushi Restaurant	Doner Restaurant	Donut Shop	Dumpling Restaurant	Eastern European Restaurant	Electronics Store	Elementary School	Ethiopian Restaurant
3	Albion Gardens, Beaumont Heights, Humbergate, ...	Grocery Store	Park	Sandwich Place	Discount Store	Japanese Restaurant	Fried Chicken Joint	Beer Store	Hardware Store	Pizza Place	Fast Food Restaurant
4	Alderwood, Long Branch	Convenience Store	Pub	Sandwich Place	Coffee Shop	Gas Station	Dance Studio	Gym	Pharmacy	Pizza Place	Falafel Restaurant

Results

The average housing prices and the school ratings for the neighborhoods are shown:





Discussion

The objective is to help people explore better facilities around their neighborhood to help them make good and efficient choices. We used the neighborhoods in Scarborough, Toronto.

People moving across different neighborhoods require careful consideration for good housing prices, reputed schools for their children, community engagement, crime rate, supermarkets, cafes, hospitals, etc. This study aims to create a comparative analysis of features for people migrating to Scarborough to search for the best neighborhood based on the factors mentioned above. Although there are many factors to be considered for the move, only the Housing and the schooling are considered for this project.

A comparative study has been provided for these factors between the neighborhoods for the users to select the best option. Housing prices are shown in terms of increasing house prices and the schools are sorted in terms of location, fees, rating and reviews.

Conclusion

I feel confident that the insights given by this study will help users to decide about their upcoming relocation into Scarborough, Toronto. A comparative study has been provided for these factors between the neighborhoods for the users to select the best option. Housing prices are shown in terms of increasing house prices and the schools are sorted in terms of location, fees, rating and reviews. More detailed analysis can be performed if required, however outside the scope this work. Good luck for your relocation to Scarborough, Toronto