Battle of Neighbourhood

1. Business Proposal

The purpose of this Project is to help people in exploring better facilities around their neighbourhood. It will help people making smart and efficient decision on selecting great neighbourhood out of numbers of other neighbourhoods in Scarborough, Toronto.

Lots of people are migrating to various states of Canada and needed lots of research for good housing prices and reputated schools for their children. This project is for those people who are looking for better neighbourhoods. For ease of accessing to Cafe, School, Supermarket, medical shops, grocery shops, mall, theatre, hospital, likeminded people, etc.

This Project aim to create an analysis of features for a people migrating to Scarborough to search a best neighbourhood as a comparative analysis between neighbourhoods. The features include median housing price and better school according to ratings, crime rates of that area, road connectivity, weather conditions, good management for emergency, water resources both fresh and wastewater and excrement conveyed in sewers and recreational facilities.

It will help people to get awareness of the area and neighbourhood before moving to a new city, state, country or place for their work or to start a new fresh life.

Problem Which Tried to Solve: The major purpose of this project, is to suggest a better neighbourhood in a new city for the person who are shifting there. Social presence in society in terms of likeminded people. Connectivity to the airport, bus stand, city centre, markets and other daily needs things nearby.

Sorted list of houses in terms of housing prices in an ascending or descending order Sorted list of schools in terms of location, fees, rating and reviews The Location: 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. Although immigration has become a hot topic over the past few years with more governments seeking more restrictions on immigrants and refugees, the general trend of immigration into Canada has been one of on the rise.

Foursquare API: This project would use Four-square API as its prime data gathering source as it has a database of millions of places, especially their places API which provides the ability to perform location search, location sharing and details about a business.

Workflow: Using credentials of Foursquare API features of near-by places of the neighbourhoods would be mined. Due to http request limitations the number of places per neighbourhood parameter would reasonably be set to 100 and the radius parameter would be set to 500.

Clustering Approach: To compare the similarities of two cities, we decided to explore neighbourhoods, segment them, and group them into clusters to find similar neighbourhoods in a big city like New York and Toronto. To be able to do that, we need to cluster data which is a form of unsupervised machine learning: k-means clustering algorithm

2. 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 on Week 3. Dataset consisting of latitude and longitude, zip codes.

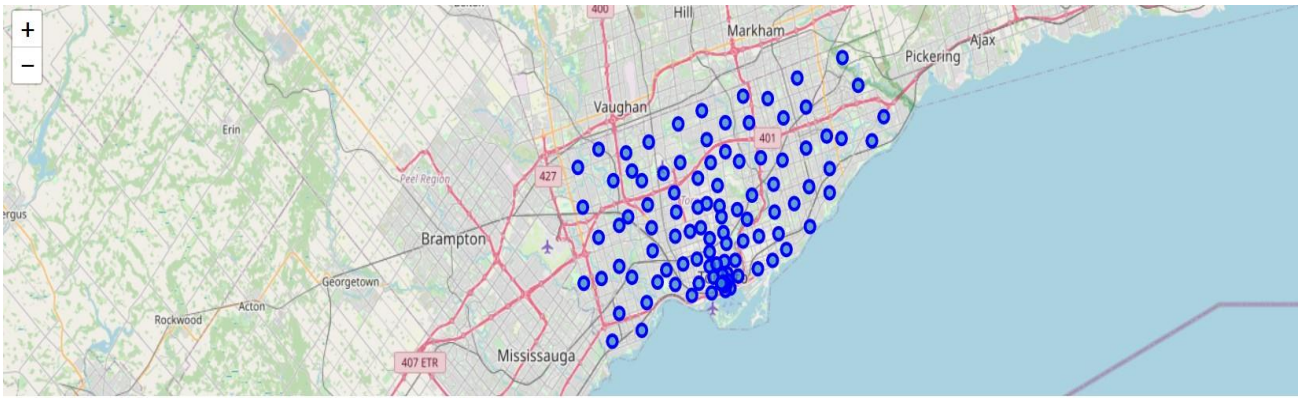
Foursquare API Data: We will need data about different venues in different neighbourhoods of that specific borough. In order to gain that information, we will use "Foursquare" locational information. Foursquare is a location data provider with information about all manner of venues and events within an area of interest. Such information includes venue names, locations, menus and even photos. As such, the foursquare location platform will be used as the sole data source since all the stated required information can be obtained through the API.

After finding the list of neighbourhoods, we then connect to the Foursquare API to gather information about venues inside each neighbourhood. For each neighbourhood, we have chosen the radius to be 100 meters.

3. Methodology

This section discusses the data analysis that I conducted in order to arrive at the results.

3.1. Visualizing the Special Wards on a Map



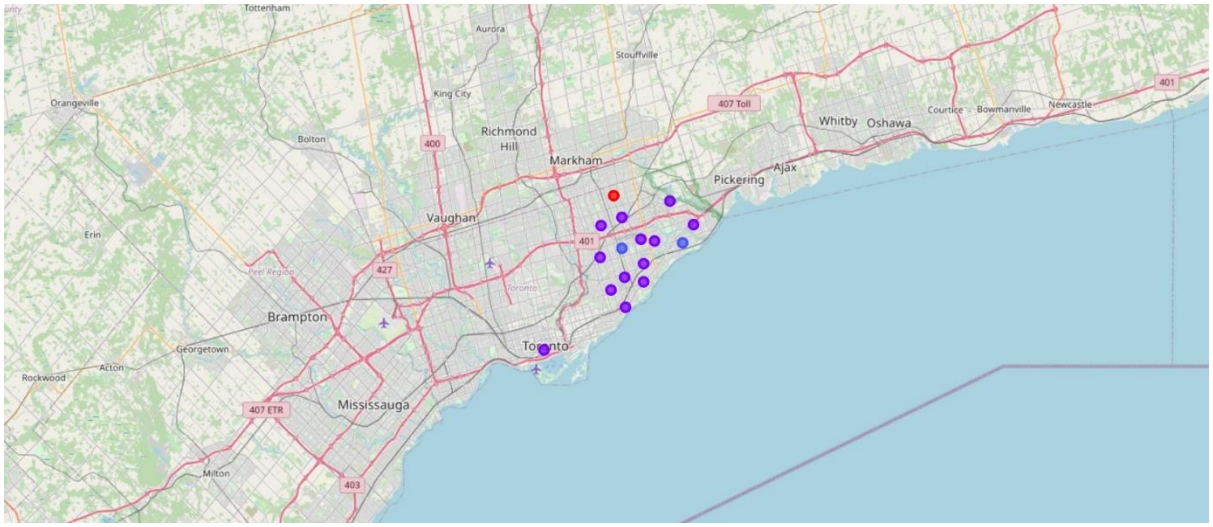
3.2 Most Common venues near neighbourhood

	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	Agincourt	Shopping Mall	Pizza Place	Chinese Restaurant	Bank	Print Shop	Sandwich Place	Sushi Restaurant	Discount Store	Bakery	Seafood Restaurant
1	Alderwood, Long Branch	Coffee Shop	Pizza Place	Sandwich Place	Gym	Gas Station	Print Shop	Pub	Convenience Store	Ethiopian Restaurant	Doner Restaurant
2	Bathurst Manor, Wilson Heights, Downsview North	Park	Convenience Store	Other Great Outdoors	Creperie	Farm	Dumpling Restaurant	Eastern European Restaurant	Electronics Store	Ethiopian Restaurant	Event Space
3	Bayview Village	Dog Run	Park	Asian Restaurant	Trail	Falafel Restaurant	Dumpling Restaurant	Eastern European Restaurant	Electronics Store	Ethiopian Restaurant	Event Space
4	Bedford Park, Lawrence Manor East	Pizza Place	Pet Store	Restaurant	Coffee Shop	Italian Restaurant	Sandwich Place	Comfort Food Restaurant	Intersection	Sushi Restaurant	Liquor Store

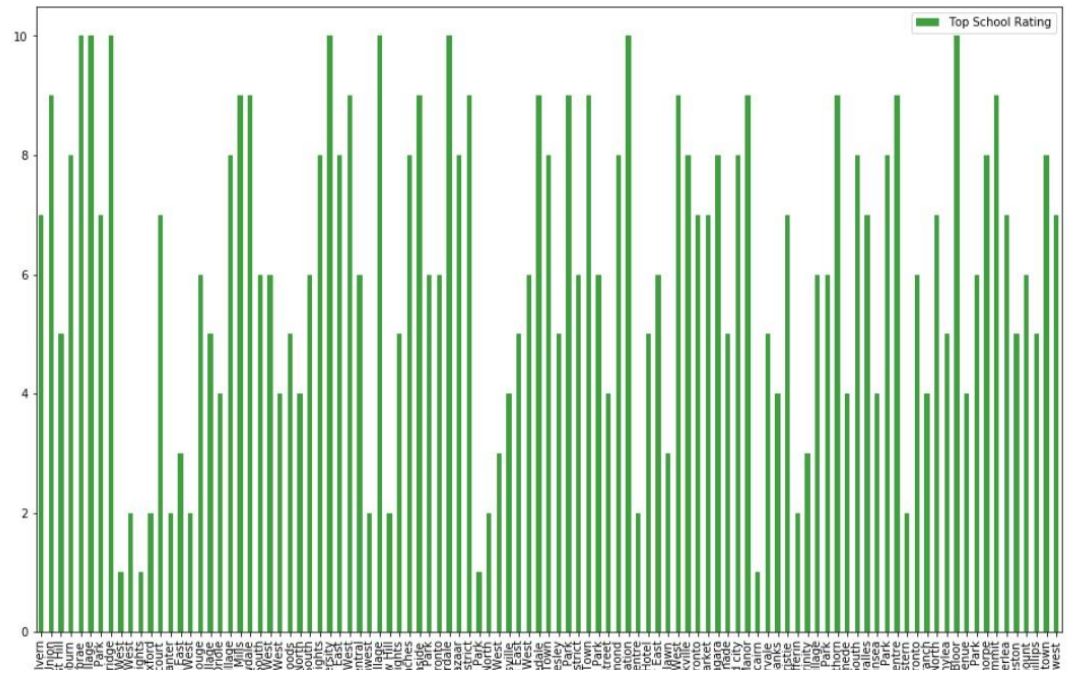
3.3 K-Means Clustering Approach

	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	9th Most Common Venue	10th Most Common Venue
0	M1A\n	Not assigned\n	Not assigned\n	43.64869	-79.38544	1	Coffee Shop	Hotel	Café	Japanese Restaurant	Beer Bar	Restaurant	Italian Restaurant	Gym	Steakhouse	Monument / Landmark
1	M1B\n	Scarborough\n	Malvern, Rouge	43.81153	-79.19552	1	Zoo Exhibit	Fast Food Restaurant	Farmers Market	Flea Market	Fish Market	Fish & Chips Shop	Filipino Restaurant	Field	Flower Shop	Doner Restaurant
2	M1C\n	Scarborough\n	Rouge Hill, Port Union, Highland Creek	43.78564	-79.15871	1	Bar	Fish & Chips Shop	Yoga Studio	Farmers Market	Eastern European Restaurant	Electronics Store	Ethiopian Restaurant	Event Space	Falafel Restaurant	Farm
3	M1E\n	Scarborough\n	Guildwood, Morningside, West Hill	43.76575	-79.17520	2	Park	Gym / Fitness Center	Athletics & Sports	Yoga Studio	Doner Restaurant	Dumpling Restaurant	Eastern European Restaurant	Electronics Store	Ethiopian Restaurant	Event Space
4	M1G\n	Scarborough\n	Woburn	43.76820	-79.21761	1	Coffee Shop	Park	Chinese Restaurant	Fast Food Restaurant	Falafel Restaurant	Dumpling Restaurant	Eastern European Restaurant	Electronics Store	Ethiopian Restaurant	Event Space

Map of Clusters



School Rating by Clusters



Conclusion:

In this project, using k-means cluster algorithm I separated the neighbourhood into 10(Ten) different clusters and for 103 different latitude and longitude from dataset, which have very-similar neighbourhoods around them. Using the charts above results presented to a neighbourhood based on average house prices and school rating have been made.