What's the Best Neighborhood for you?

Introduction:

- People would like to know more about the neighborhoods they are looking to move to.
- Having more info about the neighborhood will enable the person to make a more informed decision about where they move.
- Goal of this project is the analysis of the neighborhoods surrounding the Scarborough area.

Problem to solve:

- Main goal of this project is to inform a person who is not familiar with the area and who is looking to move, what the best neighborhood for them may be. Will provide the user with a list of homes in terms of price and a list of schools in terms of ratings, reviews, fees, and their location.

Foursquare API use:

- The API provided by Foursquare will be utilized, this is because of its database of millions of places. This will allow us to perform location based searches and details about the business in the area.

Clustering

- Two find a city that is equally diverse in it's neighborhoods, we will be doing a comparison between New York and Scarborough, Toronto.
- To compare them, there will be a need to segment and group them to find neighborhoods and to do that we will need to cluster the data using the k-means clustering algorithm.

Data

- For this project we will need data about different venues in the neighborhoods surrounding the area. From a list of the neighborhoods, we will utilize the Foursquare API to gather more information about the venues in each of the neighborhoods withing a radius of 100m.
- The following python libraries will also be used in this project: Matplotlib, Pandas, Folium, Scikit, JSON, XML, Geocoder, Beautiful.

Methodology

- To compare the two cities and their similarities, we explored their neighborhoods and grouped them into clusters to look for similar neighborhoods between Toronto and New York. Using a type of unsupervised machine learning the k-means clustering algorithm, we were able to cluster the data.
- The Scarborough location was chosen for being a diverse and popular location in Toronto.

k-means cluster

In [34]:
```
Scar_grouped_clustering = Scar_grouped.drop('Neighborhood', 1)
kmeans = KMeans(n_clusters=3, random_state=0).fit(Scar_grouped_clustering)
neighborhoods_loc_sorted.insert(0, 'Cluster Labels', kmeans.labels_)

Scar_merged =df_2.iloc[:16,:]
Scar_merged = Scar_merged.join(neighborhoods_loc_sorted.set_index('Neighborhood'), on='Neighborhood')
Scar_merged.head()
```

Out[34]:

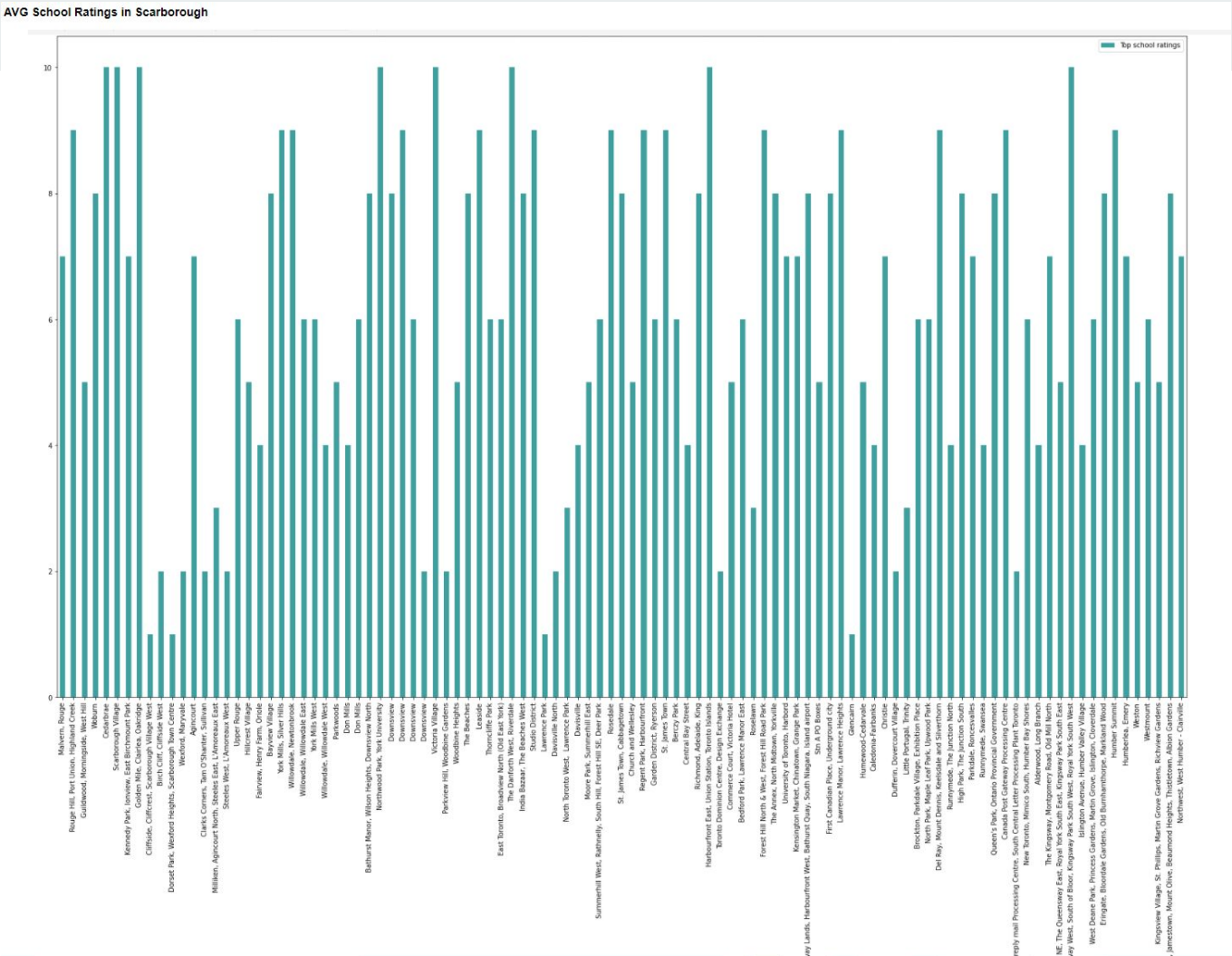
	Postalcode	Borough	Neighborhood	Latitude	Longitude	Cluster Labels	1st Most Common Venue	2nd Most Common Venue	3rd Most Common Venue	4th Most Common Venue	5th Most Common Venue	6th Most Common Venue	7th Most Common Venue	8th Most Common Venue	9th Most Common Venue	10th Most Common Venue
0	M1B	Scarborough	Malvern, Rouge	43.81139	-79.19662	0	Zoo Exhibit	Construction & Landscaping	Fast Food Restaurant	Paintball Field	Escape Room	Doner Restaurant	Donut Shop	Dumpling Restaurant	Eastern European Restaurant	Electronics Store
1	M1C	Scarborough	Rouge Hill, Port Union, Highland Creek	43.78574	-79.15875	1	Bar	Yoga Studio	Ethiopian Restaurant	Donut Shop	Dumpling Restaurant	Eastern European Restaurant	Electronics Store	Elementary School	Escape Room	Event Space
2	M1E	Scarborough	Guildwood, Morningside, West Hill	43.76575	-79.17470	2	Park	Gym / Fitness Center	Athletics & Sports	Gymnastics Gym	Yoga Studio	Dog Run	Doner Restaurant	Donut Shop	Dumpling Restaurant	Eastern European Restaurant
3	M1G	Scarborough	Woburn	43.76812	-79.21761	2	Fast Food Restaurant	Chinese Restaurant	Park	Coffee Shop	Yoga Studio	Elementary School	Doner Restaurant	Donut Shop	Dumpling Restaurant	Eastern European Restaurant
4	M1H	Scarborough	Cedarbrae	43.76944	-79.23892	0	Bakery	Bank	Caribbean Restaurant	Gas Station	Athletics & Sports	Hakka Restaurant	Thai Restaurant	Electronics Store	Doner Restaurant	Donut Shop

most commons venues near each neighborhood

Out[32]:

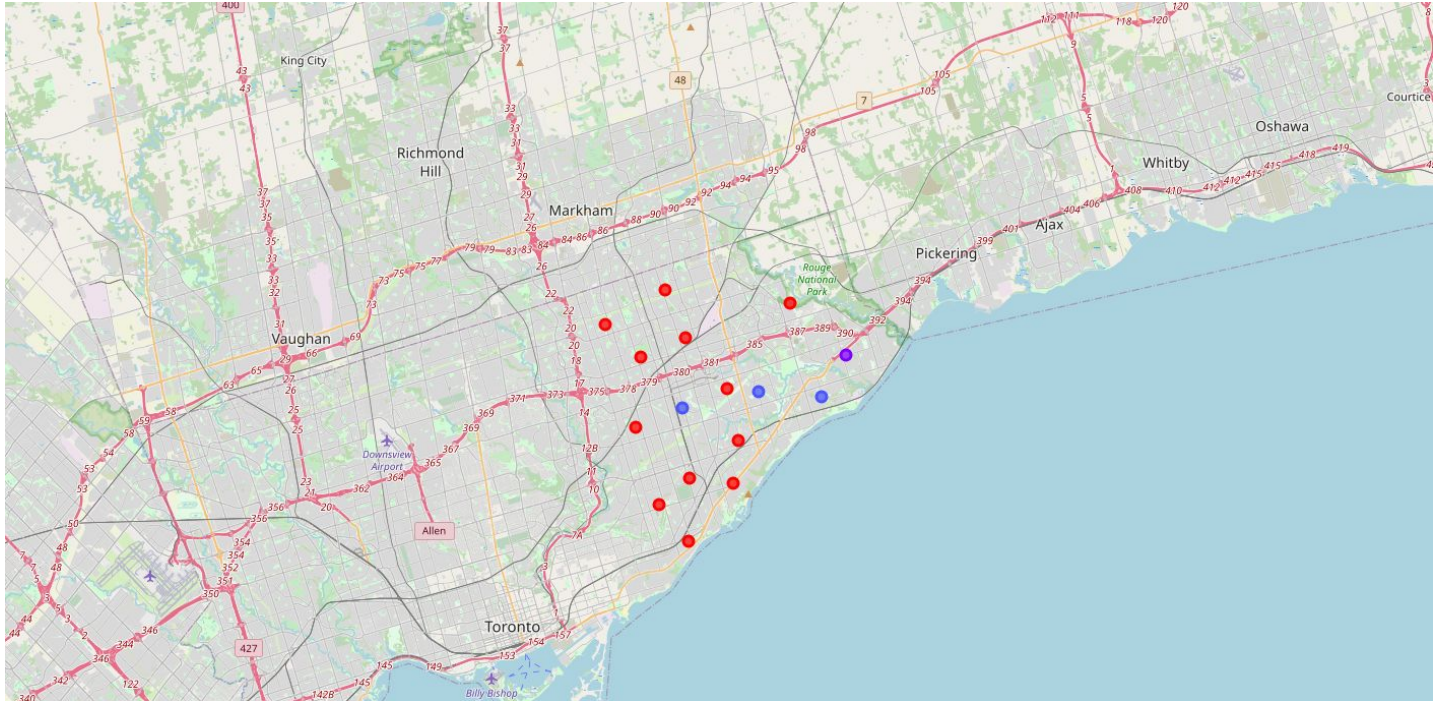
	Neighborhood	1st Most Common Venue	2nd Most Common Venue	3rd Most Common Venue	4th Most Common Venue	5th Most Common Venue	6th Most Common Venue	7th Most Common Venue	8th Most Common Venue	9th Most Common Venue	10th Most Common Venue
0	Agincourt	Chinese Restaurant	Shopping Mall	Hong Kong Restaurant	Sandwich Place	Sushi Restaurant	Supermarket	Latin American Restaurant	Pharmacy	Bubble Tea Shop	Newsagent
1	Alderwood, Long Branch	Gas Station	Sandwich Place	Pizza Place	Pub	Pharmacy	Coffee Shop	Gym	Eastern European Restaurant	Distribution Center	Dive Bar
2	Bathurst Manor, Wilson Heights, Downsview North	Coffee Shop	Park	Mediterranean Restaurant	Fried Chicken Joint	Convenience Store	Restaurant	Deli / Bodega	Sandwich Place	Middle Eastern Restaurant	Men's Store
3	Bayview Village	Dog Run	Flower Shop	Gas Station	Trail	Park	Asian Restaurant	Electronics Store	Doner Restaurant	Donut Shop	Dumpling Restaurant
4	Bedford Park, Lawrence Manor East	Coffee Shop	Sandwich Place	Italian Restaurant	Pet Store	Juice Bar	Restaurant	Sports Club	Thai Restaurant	Intersection	Pub

Results


AVG School Ratings in Scarborough
Top school ratings
0
2
4
6
8
10
Malvern, Rouge
Rouge Hill, Port Union, Highland Creek
Guildwood, Morningside, West Hill
Woburn
Cedarbrae
Scarborough Village
Kennedy Park, Ionview, East Birchmount Park
Golfdale, Cedarbrae, Cliffcrest
Cliffside, Cliffcrest, Scarborough Village West
Birch Cliff, Cliffside West
Dorset Park, Wexford Heights, Scarborough Town Centre
Wexford, Maryvale
Agincourt
Clarks Corners, Tam O'Shanter, Sullivan
Milliken, Agincourt North, Steeles East, L'Amoreaux East
Steeles West, L'Amoreaux West
Upper Rouge
Hillcrest Village
Fairview, Henry Farm, Oriole
Bayview Village
York Mills, Silver Hills
Willowdale, Newtonbrook East
Willowdale, Newtonbrook West
Willowdale, Willowdale West
Parkwoods
Don Mills
Don Mills
Bathurst Manor, Wilson Heights, Downsview North
Northwood Park, York University
Downsview
Downsview
Downsview
Victoria Village
Parkview Hill, Woodbine Gardens
Woodbine Heights
The Beaches
Leaside
Thorncliffe Park
East Toronto, Broadview North (Old East York)
The Danforth West, Riverdale
India Bazaar, The Beaches West
Studio District
Danforth Village
Danforth
North Toronto West, Lawrence Park
Davisville
Moore Park, Summerhill East
Summerhill West, Rathnelly, South Hill, Forest Hill SE, Deer Park
Rosedale
St. James Town, Cabbagetown
Church-Wellesley
Regent Park, Harbourfront
Garden District, Ryerson
St. James Town
Berczy Park
Central Bay Street
Richmond, Adelaide, King
Harbourfront East, Union Station, Toronto Islands
Toronto Dominion Centre, Design Exchange
Commerce Court, Victoria Hotel
Bedford Park, Lawrence Manor East
Roselawn
Forest Hill North & West, Forest Hill Road Park
The Annex, North Midtown, Yorkville
University of Toronto, Harbord
Kensington-Chinatown, Grange Park
Lawrence Manor, Lawrence Heights
First Canadian Place, Underground city
Glencairn
Humewood-Cedarvale
Caledonia-Fairbank
Christie
Dufferin, Dovercourt Village
Little Portugal, Trinity
Brockton, Parkdale Village, Exhibition Place
North Park, Maple Leaf Park, Upwood Park
Del Ray, Mount Dennis, Keelesdale and Silverthorn
Runnymede, The Junction North
High Park, The Junction South
Parkdale, Roncesvalles
Runnymede, Swansea
Queen's Park, Ontario Provincial Government
Canada Post Gateway Processing Centre
New Toronto, Mimico South, Humber Bay Shores
The Kingsway, Montgomery Road, Old Mill North
West Deane Park, Princess Gardens, Martin Grove, Islington, Cloverdale
Islington Avenue, Humber Valley Village
Eringate, Bloordale Gardens, Old Burnhamthorpe, Markland Wood
Humbermede
Humbertsta, Emery
Weston
Westmount
Kingsview Village, St. Phillips, Martin Grove Gardens, Richview Gardens
Northwest, West Humber - Clairville

AVG Housing Prices
Average Housing Price
600000
500000
400000
300000
200000
100000
0
Malvern, Rouge
Rouge Hill, Port Union, Highland Creek
Guildwood, Morningside, West Hill
Woburn
Cedarbrae
Scarborough Village
Kennedy Park, Ionview, East Birchmount Park
Golden Mile, Clairlea, Oakridge
Cliffside, Cliffcrest, Scarborough Village West
Birch Cliff, Cliffside West
Dorset Park, Wexford Heights, Scarborough Town Centre
Wexford, Maryvale
Agincourt
Clarks Corners, Tam O'Shanter, Sullivan
Milliken, Agincourt North, Steeles East, L'Amoreaux East
Steeles West, L'Amoreaux West
Upper Rouge
Hillcrest Village
Fairview, Henry Farm, Oriole
Bayview Village
York Mills, Silver Hills
Willowdale, Newtonbrook
Willowdale, Willowdale East
York Mills West
Willowdale, Willowdale West
Parkwoods
Don Mills
Don Valley
Bathurst Manor, Wilson Heights, Downsview North
Northwood Park, York University
Downsview
Downsview
Downsview
Downsview
Victoria Village
Parkview Hill, Woodbine Gardens
Woodbine Heights
The Beaches
Leaside
Thorncliffe Park
East Toronto, Broadview North (Old East York)
The Danforth West, Riverdale
India Bazaar, The Beaches West
Studio District
Lawrence Park
Davisville North
North Toronto West, Lawrence Park
Davisville
Moore Park, Summerhill East
Summerhill West, Rathnelly, South Hill, Forest Hill SE, Deer Park
Rosedale
St. James Town, Cabbagetown
Church and Wellesley
Regent Park, Harbourfront
Garden District, Ryerson
St. James Town
Berczy Park
Central Bay Street
Richmond, Adelaide, King
Harbourfront East, Union Station, Toronto Islands
Toronto Dominion Centre, Design Exchange
Commerce Court, Victoria Hotel
Bedford Park, Lawrence Manor East
Roselawn
Forest Hill North & West, Forest Hill Road Park
The Annex, North Midtown, Yorkville
Harbourfront West, King and Spadina
Kensington Market, Chinatown, Grange Park
y Lands, Harbourfront West, Bathurst Quay, South Niagara, Island airport
Stn A PO Boxes
First Canadian Place, Underground city
Lawrence Manor, Lawrence Heights
Glencairn
Humewood-Cedarvale
Caledonia-Fairbank
Orton
Dufferin, Dovercourt Village
Little Portugal, Trinity
Brockton, Parkdale Village, Exhibition Place
North Park, Maple Leaf Park, Upwood Park
Del Ray, Mount Dennis, Keelsdale and Silverthorn
Rainymede, The Junction North
High Park, The Junction South
Parkdale, Roncesvalles
Runnymede, Swansea
Queen's Park, Ontario Provincial Government
Canada Post Gateway Processing Centre
pply mail Processing Centre, South Central Letter Processing Plant Toronto
New Toronto, Mimico South, Humber Bay Shores
Alderwood, Long Branch
The Kingsway, Montgomery Road, Old Mill North
IE, The Queensway East, Royal York South East, Kingsway Park South East
y West, South of Bloor, Kingsway Park South West, Royal York South West
Islington Avenue, Humber Valley Village
West Deane Park, Princess Gardens, Martin Grove, Islington, Cloverdale
Eringate, Bloordale Gardens, Old Burnhamthorpe, Markland Wood
Humber Summit
Humbermede, Emery
Weston
Westmount
Kingsview Village, St. Phillips, Martin Grove Gardens, Richview Gardens
lamestown, Mount Olive, Beaumond Heights, Thistletown, Albion Gardens
Northwest, West Humber - Clairville

Clusters of the Scarborough Area



Discussion

- The problem that we tried to solve was to provide a person with the information they would need to make an informed decision before they decide to move to one of the areas. In addition to providig venues that they may be interested in, we also made sure to show the average housing prices and school ratings for each of the neighborhoods.

Conclusion

- With this project we set out to utilize the k-means cluster algorithm to separate the neighborhoods into clusters similar to the neighborhoods around them. With the charts provided above a new person looking to move to the area can make an imformed decision about what area is bets for them and their interests.