Battle Of the Neighbors

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April 30, 2021

Overview

Lots of people are migrating to various states of Canada and needed lots of research for good housing prices and reputed schools for their children.

This Capstone Project aim to create an analysis of features for a people migrating to Scarborough to search a best neighborhood as a comparative analysis between neighborhoods.

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

Data:

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 neighborhoods of that specific borough.

In order to gain that information we will use "Foursquare" locational information.

The information obtained per venue as follows:

1. Neighborhood

2. Neighborhood Latitude

3. Neighborhood Longitude

4. Venue

5. Name of the venue e.g. the name of a store or restaurant

6. Venue Latitude

7. Venue Longitude

8. Venue Category

Map Of Scarborough

Format   Code

Leaflet | Data by © OpenStreetMap, under ODbL.

Methodology

To compare the similarities of two cities, we decided to explore neighborhoods, segment them, and group them into clusters to find similar neighborhoods 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.

```python
In [36]: neighborhoods_venues_sorted.insert(0, 'Cluster Labels', kmeans.labels_)

Scarborough_merged =df_2.iloc[:16,:]

# merge toronto_grouped with toronto_data to add Latitude/Longitude for each neighborhood
Scarborough_merged = Scarborough_merged.join(neighborhoods_venues_sorted.set_index('Neighborhood'), on='Neighborhood')

Scarborough_merged.head()# check the last columns!
```

Out[36]:

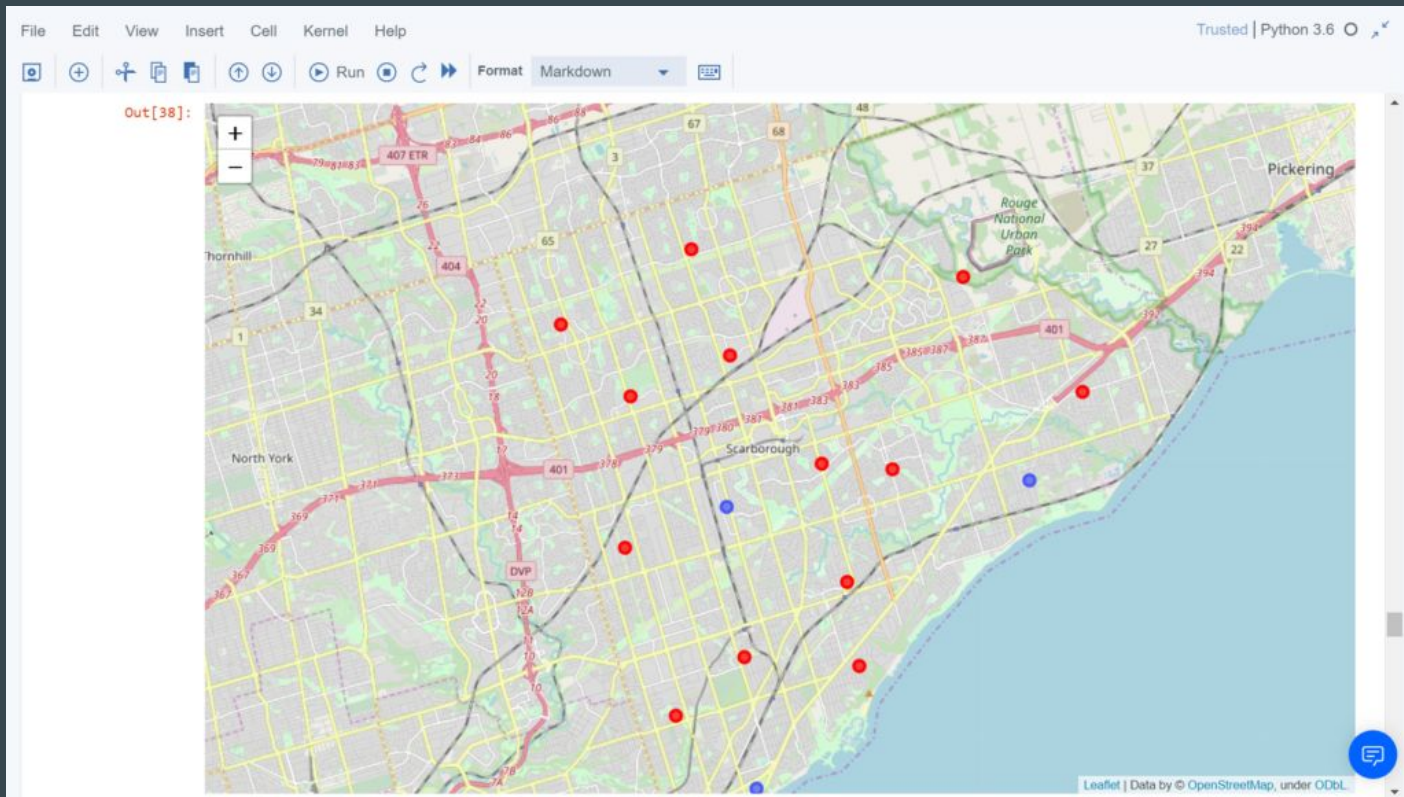| rough	Neighborhood	Latitude	Longitude	Cluster Labels	1st Most Common Venue	2nd Most Common Venue	3rd Most Common Venue	4th Most Common Venue	5th Most Common Venue	6th Most Common Venue	7th Most Common Venue	8th Most Common Venue	9th Most Common Venue	10th Most Common Venue
brough	Rouge, Malvern	43.811525	-79.195517	0	Zoo Exhibit	Financial or Legal Service	Fast Food Restaurant	Construction & Landscaping	Fish & Chips Shop	Filipino Restaurant	Field	Fish Market	Farmers Market	Doner Restaurant
brough	Highland Creek, Rouge Hill, Port Union	43.785665	-79.158725	0	Bar	Falafel Restaurant	Donut Shop	Dumpling Restaurant	Eastern European Restaurant	Electronics Store	Elementary School	Ethiopian Restaurant	Event Space	Yoga Studio
brough	Guildwood, Morningside, West Hill	43.765815	-79.175193	2	Park	Gym / Fitness Center	Pool	Fried Chicken Joint	Indian Restaurant	Athletics & Sports	Ethiopian Restaurant	Donut Shop	Dumpling Restaurant	Eastern European Restaurant
brough	Woburn	43.768369	-79.217590	0	Coffee Shop	Fast Food Restaurant	Business Service	Park	Yoga Studio	Dumpling Restaurant	Eastern European Restaurant	Electronics Store	Elementary School	Ethiopian Restaurant
brough	Cedarbrae	43.769688	-79.239440	0	Flower Shop	Athletics & Sports	Thai Restaurant	Bank	Bakery	Caribbean Restaurant	Hakka Restaurant	Indian Restaurant	Eastern European Restaurant	Electronics Store

Map of Clusters
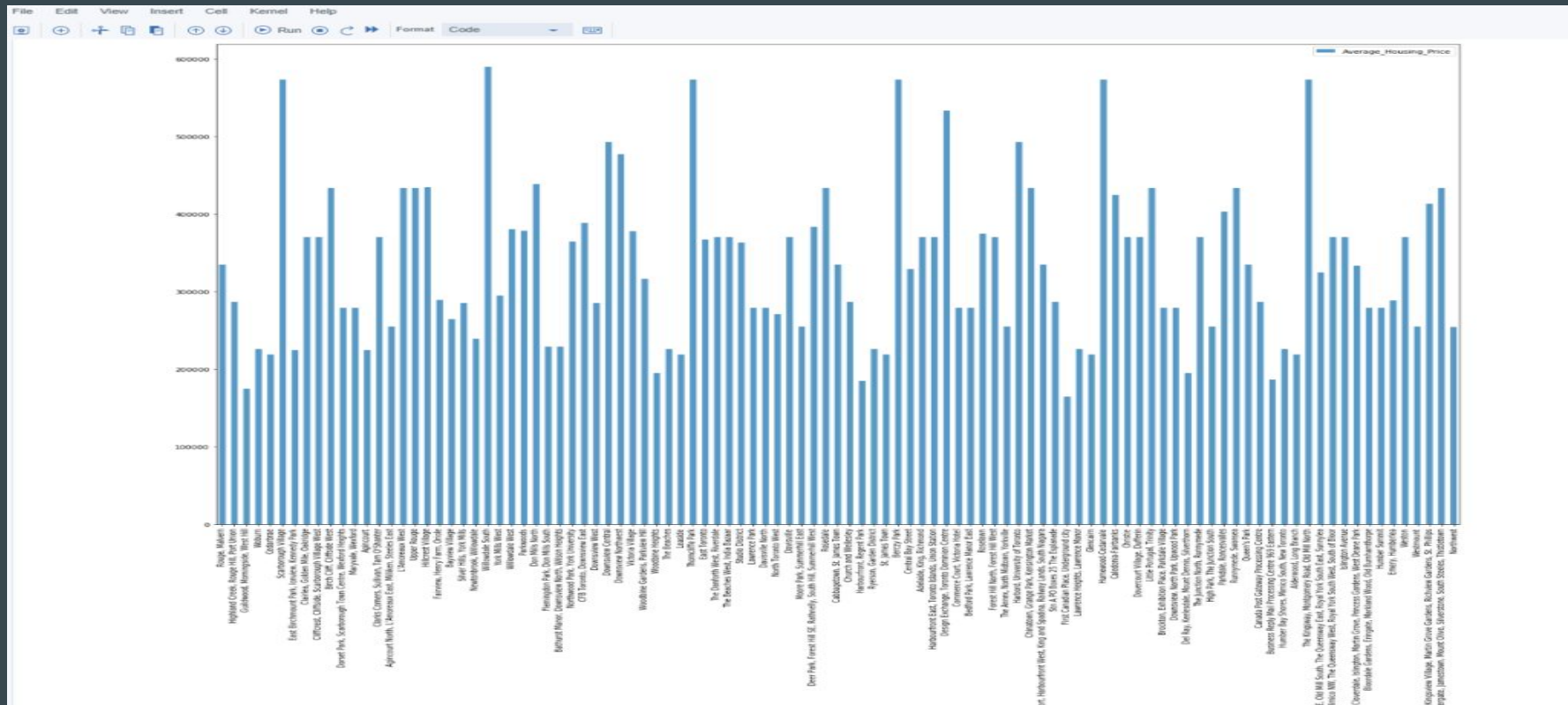
```python
In [37]: kclusters = 10
```
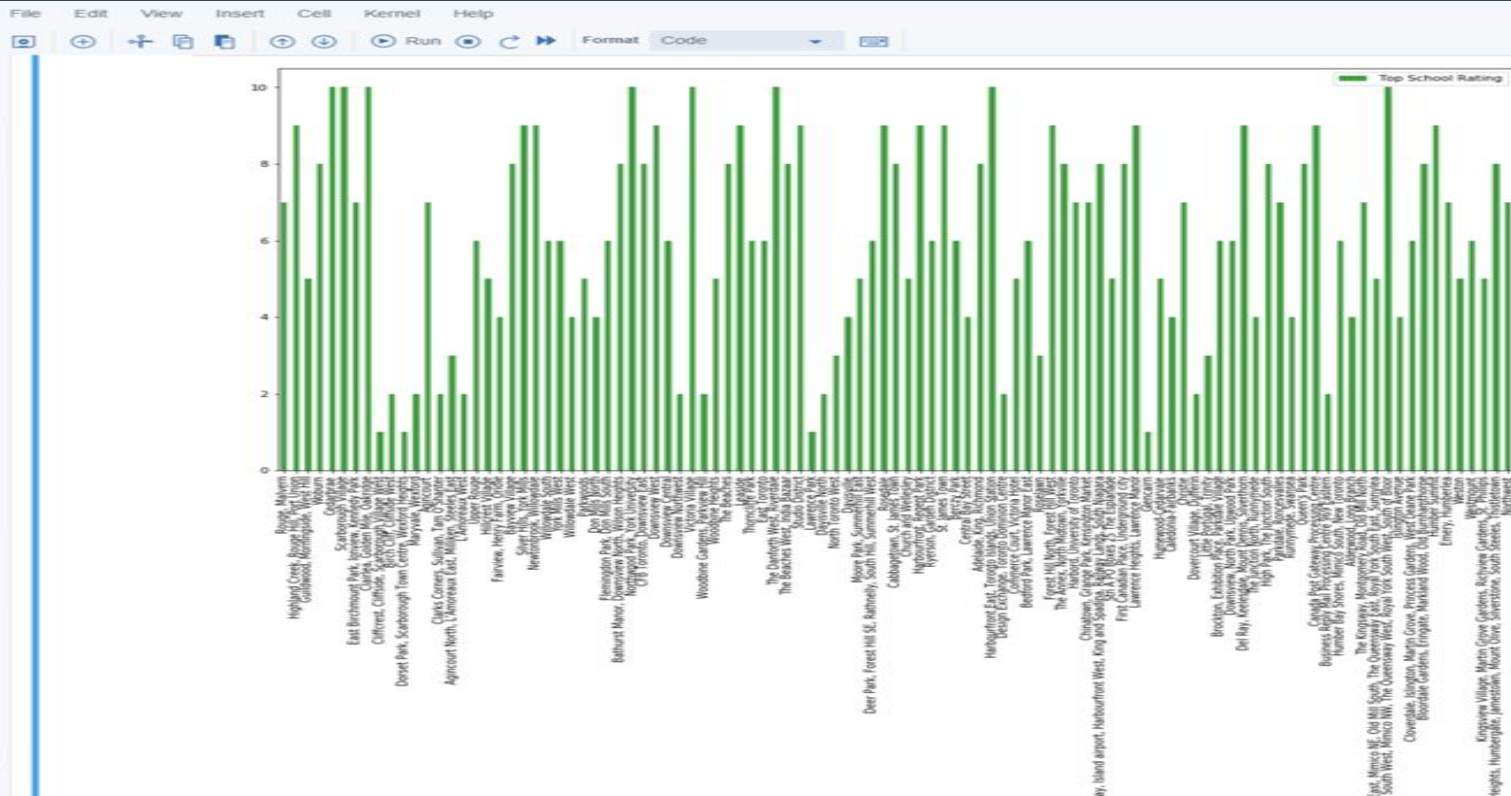
Results

Map of Clusters in Scarborough

Avg. House Pricing by cluster

School Rating by cluster

Conclusion

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