Capstone Project Final Report

Neighbourhood Analysis in Scarborough, Toronto

By

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Problem statement

- This project is aimed to help those people migrating to a new city, state, country or place for their work or to start a new fresh life, explore these different facilities around their neighbourhood and make smart decisions based on that.
- The major purpose of this project, is to suggest a better neighbourhood in a new city for the people who are migrating there.
- This project mainly explores the average housing prices, good schools and common venues.

Location Used

- The neighbourhoods of Scarborough, Toronto is used as an example here which can be even extended to any other city or state.
- Scarborough is an area 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 Markhamin the north. Scarborough was named after the English town of Scarborough, North Yorkshire.

Location Used Contd

- Scarborough, Toronto 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.

Data Set Used

- The main data set used for web scraping here is https://en.wikipedia.org/wiki/List_of_postal_codes_of_Canada:_M

- This is a list of postal codes in Canada where the first letter is M. Postal codes beginning with M are located within the city of Toronto in the province of Ontario.

Data Set Used Contd

- 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.

Methodology

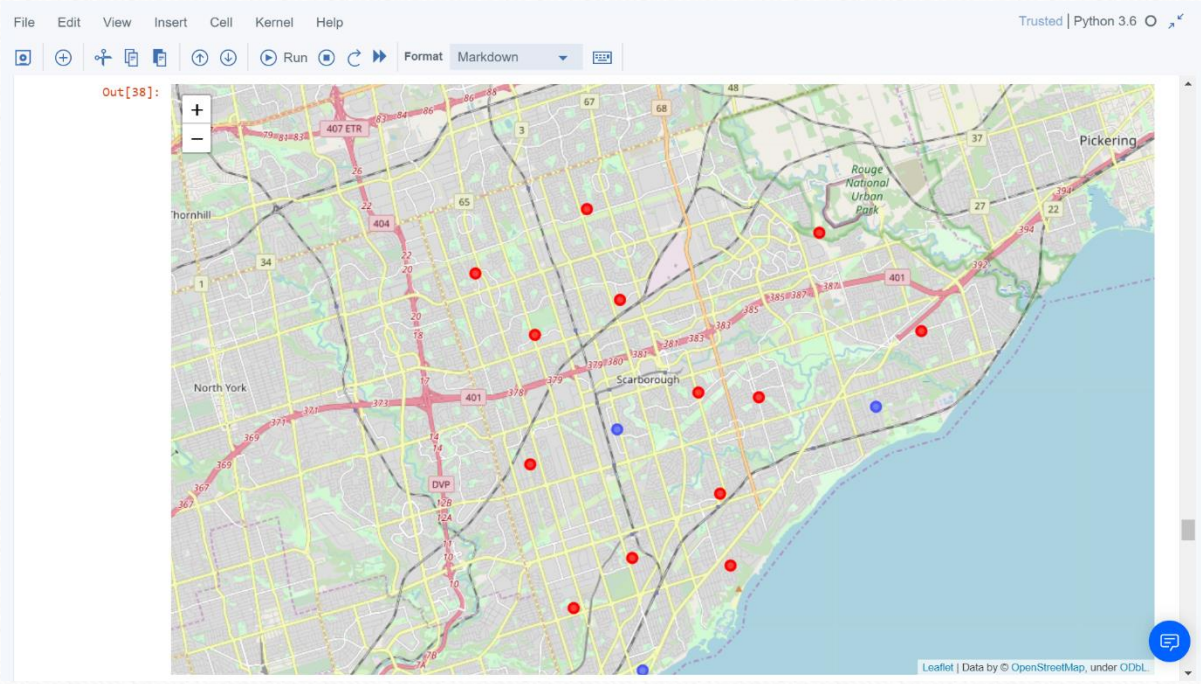
- Clustering Approach - To compare the similarities of two cities, we decided to explore neighbourhoods, segment them, and group them into clusters to find similar neighbourhoods in a big city like New York and Toronto.
- To be able to do that, we need to cluster data which is a form of unsupervised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

Work flow

- 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.

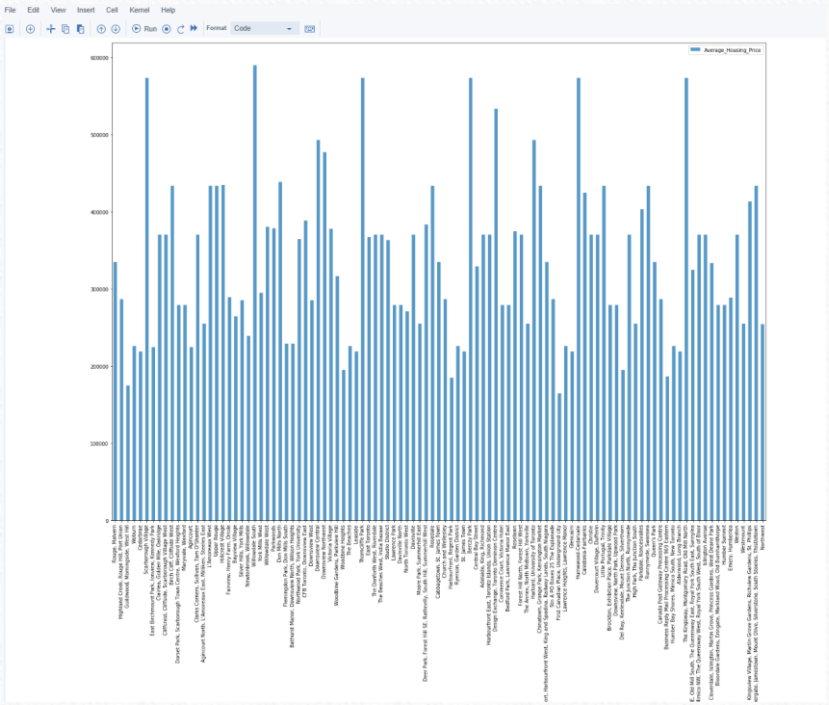
Visualization Of Results

Map of Clusters in Scarborough



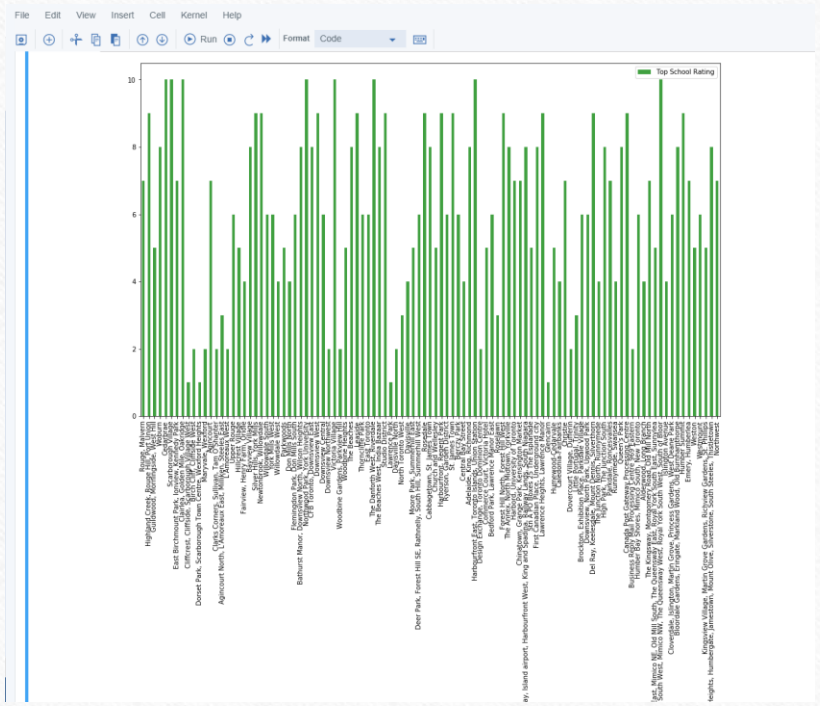
Visualization Of Results

Average Housing Price by Clusters in Scarborough



Visualization Of Results

School Ratings by Clusters in Scarborough



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 particular neighbourhood based on average house prices and school rating have been made.

- This project shows a practical application to resolve a real situation that has impacting personal and financial impact using Data Science tools. The mapping with Folium is a very powerful technique to consolidate information and make the analysis and decision better with confidence.

Future Scope

- This project can be continued for making it more precise in terms to find best house in Scarborough. Best means on the basis of all required things (daily needs or things we need to live a better life) around and also in terms of cost effective.
- This project can even be extended to any other migratable city or country and to analyse the different neighbourhoods of that country, city or state.

Thank You