

Coursera Capstone

IBM Applied Data Science Capstone

***Finding Best Neighbourhoods for a New Home in Toronto,
Canada***

By: Suhail Ur Rahman

February 2020

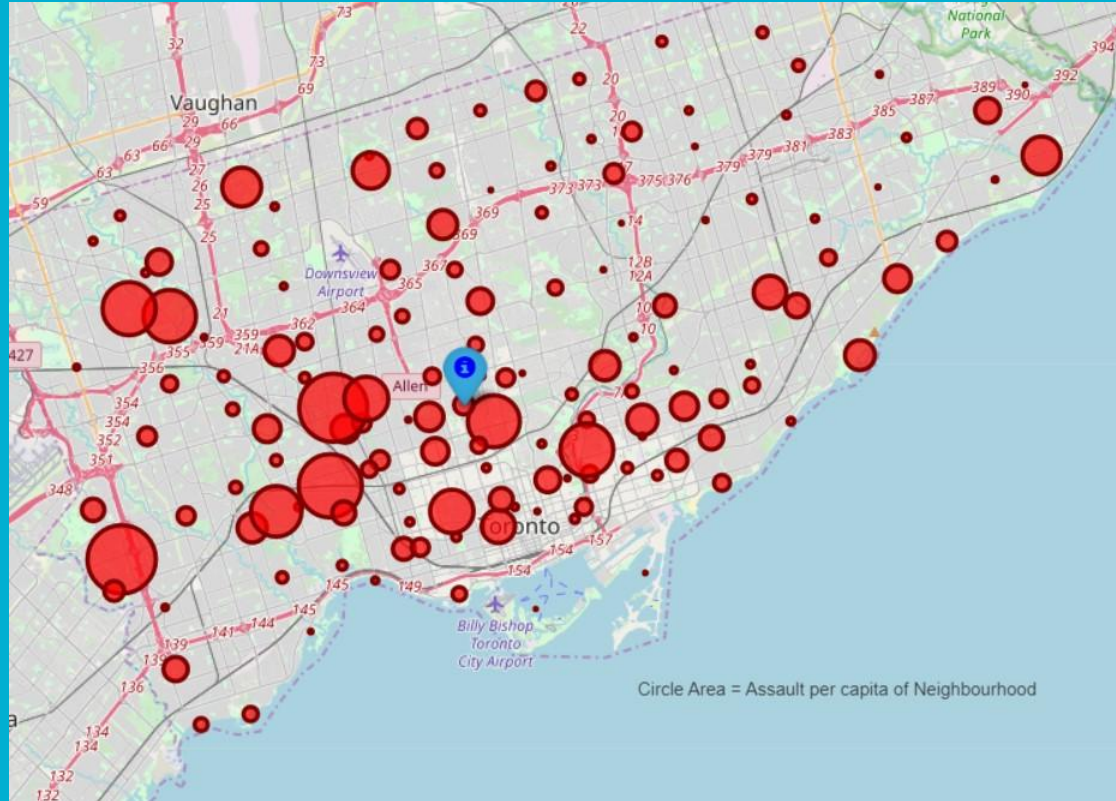
Business Problem

- Finding a new home is intimidating especially in diverse city such as Toronto, Canada.
- Here the objective is to find a suitable neighbourhood similar to that of the customer's choice of Forest Hill South.
- Unfortunately, homes in Forest Hill South exceed the customer's budget of 800,000 Canadian Dollars.
- Here we need to find out which neighbourhoods are within the customer's budget as well as with low crime rates and access to venues.

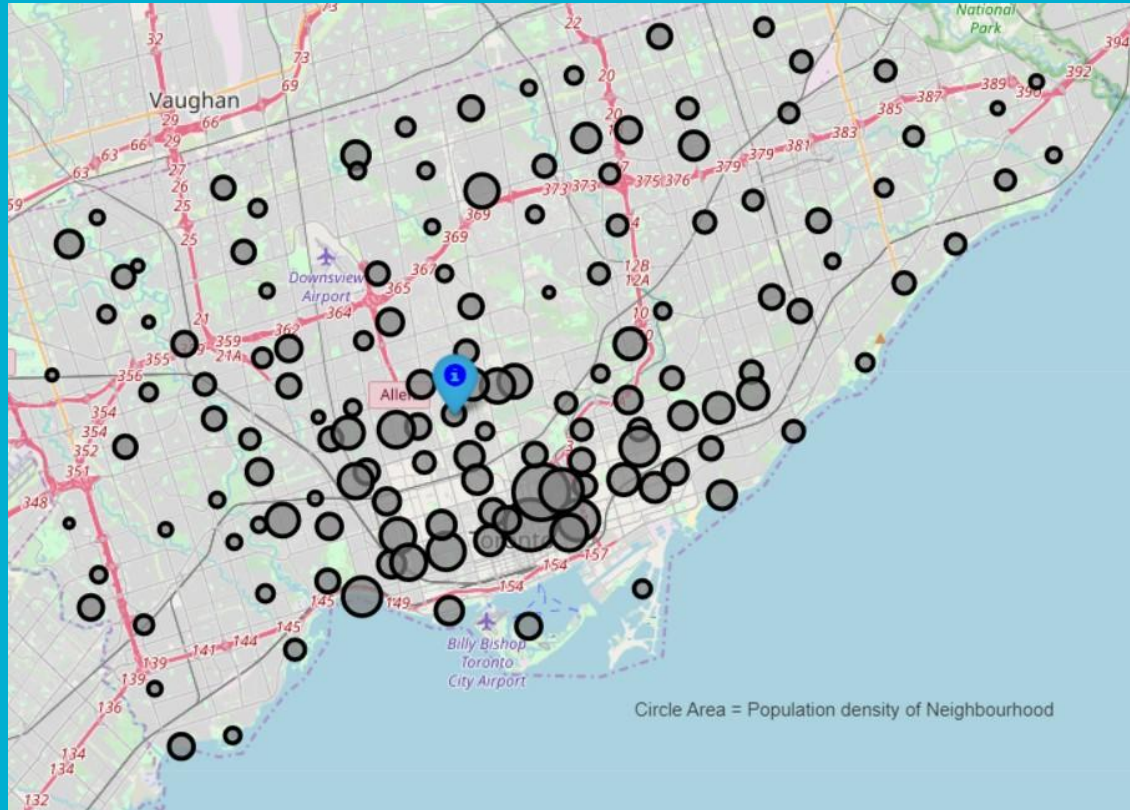
Data

- Crime rate and population from Toronto Police open data portal.
https://opendata.arcgis.com/datasets/af500b5abb7240399853b35a2362d0c0_0.geojson
- Foursquare API to get Venues in the neighbourhood.
<https://developer.foursquare.com>
- Average Home Price for each neighbourhood.
<https://www.moneysense.ca/spend/real-estate/where-to-buy-2019-toronto/>

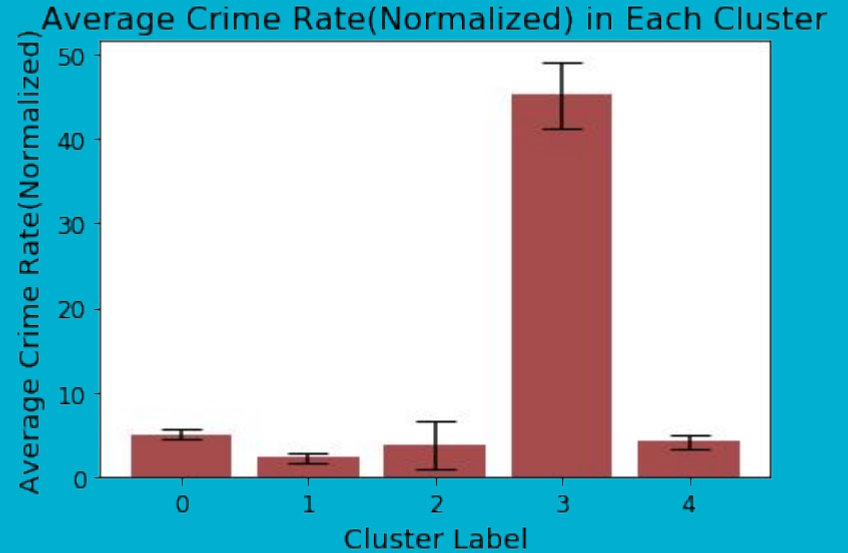
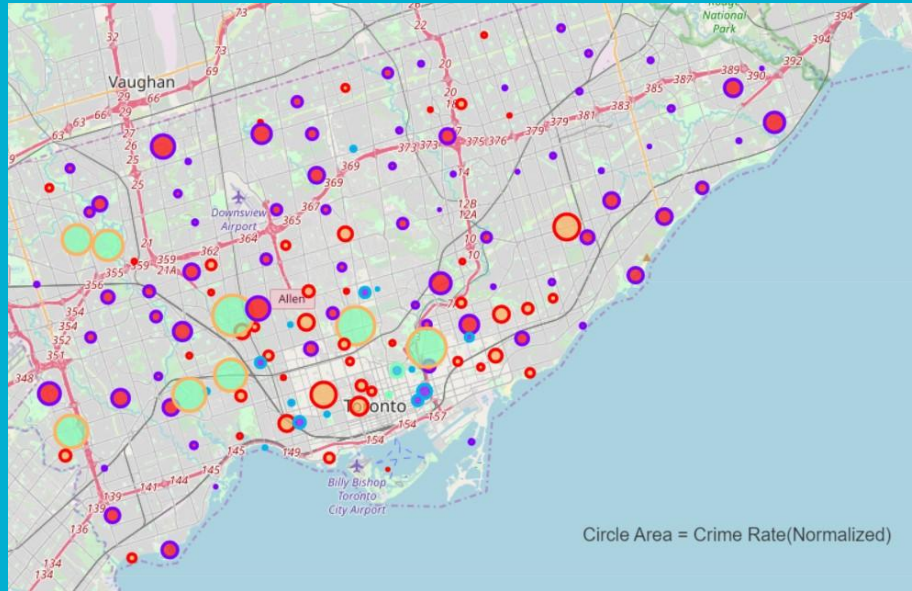
Neighbourhoods vary immensely by their crime rates. Below is the example of Assault Rate per capita as one of the five examples.



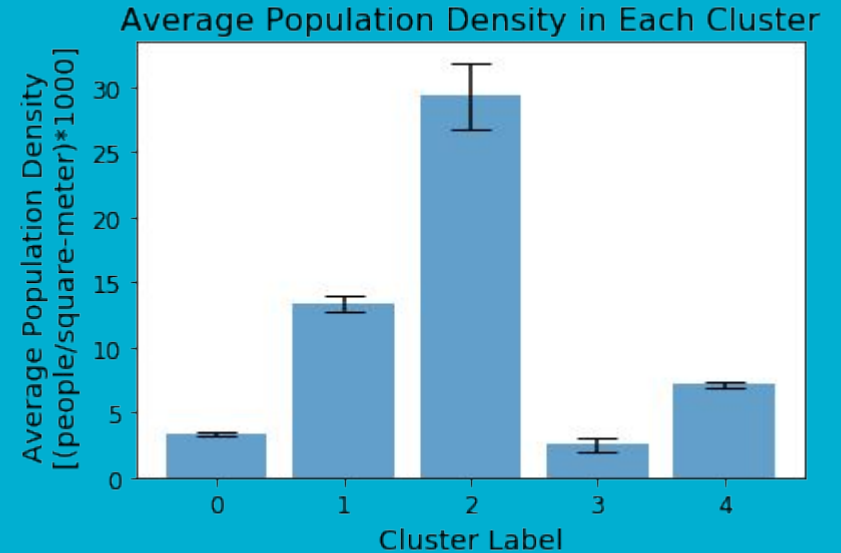
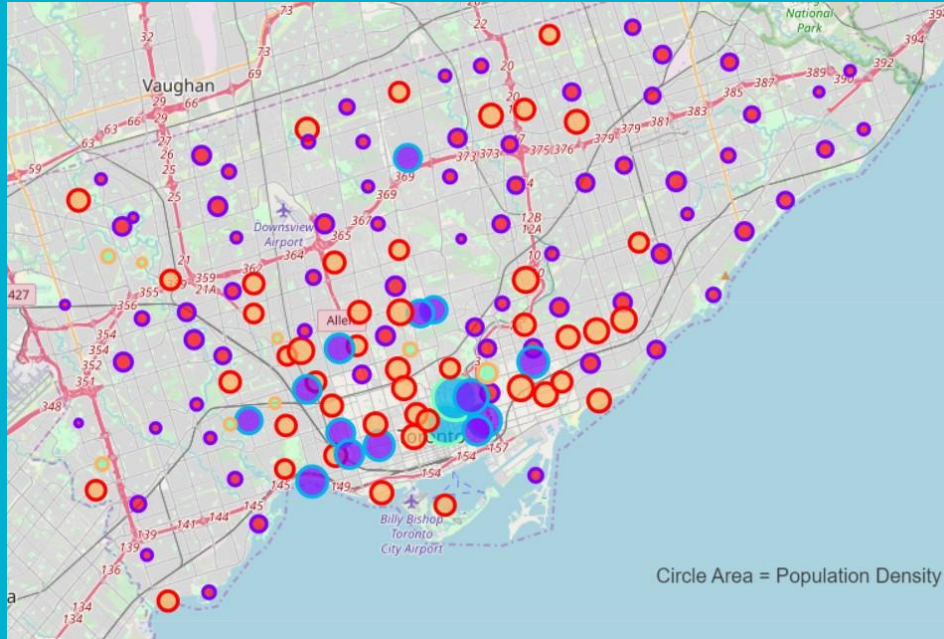
Here, Population Density also varies with neighbourhoods



The K-Means clustering segments the neighbourhoods into 5 clusters, and they differ in crime rates

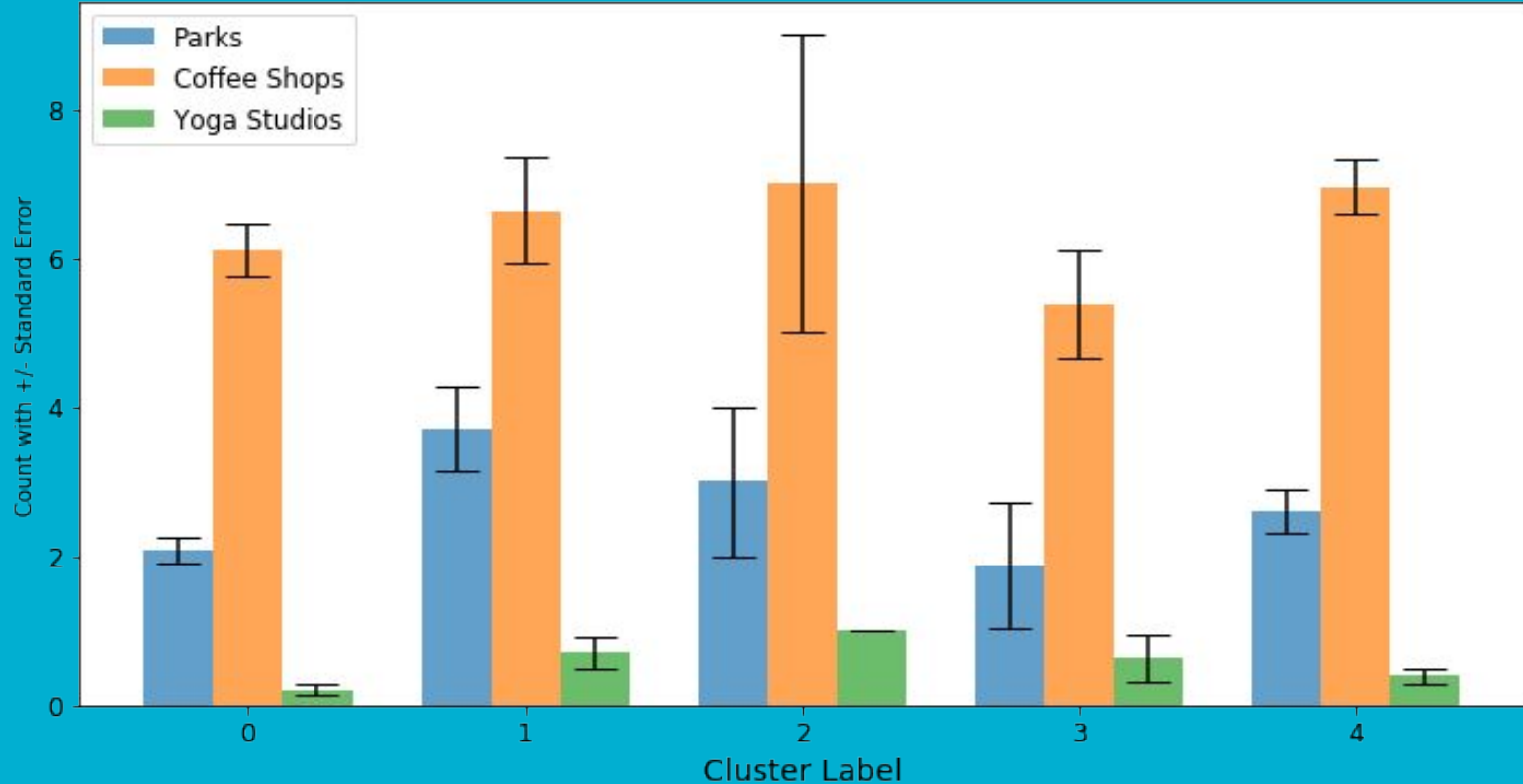


Clusters also vary differently in case of population density

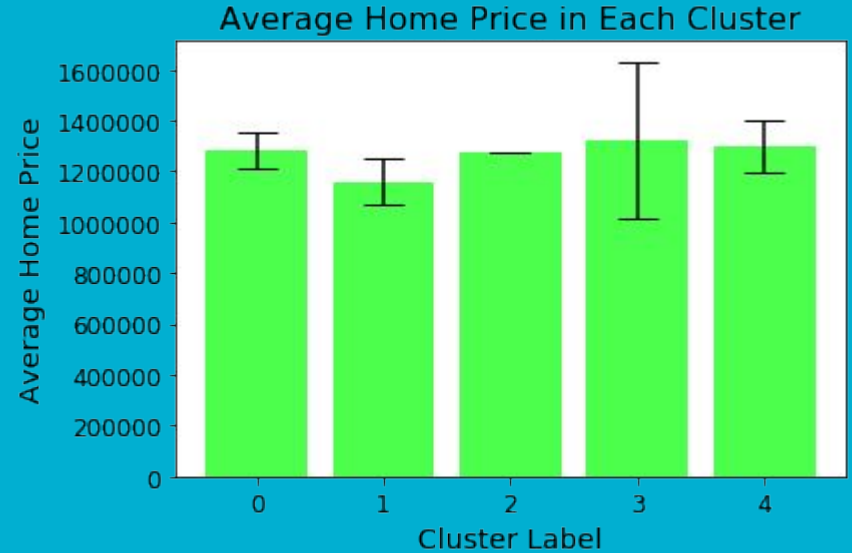
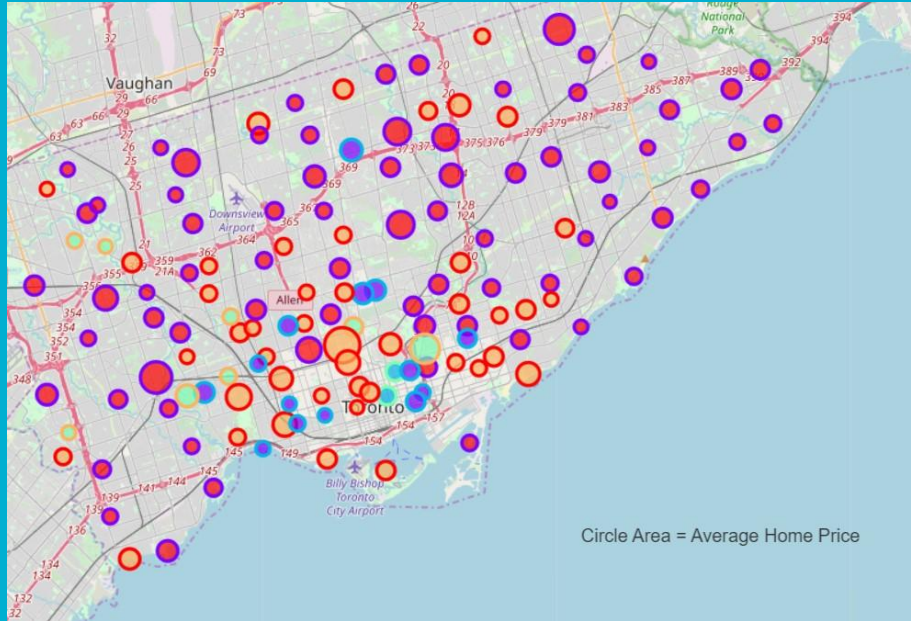


Venue Categories did not differ significantly between the clusters

Average Venue Category Counts in each cluster



When the average home price data were added to the dataset after the clustering, each clustering had wide range of home prices, and the means between the clusters were quite similar



The neighbourhoods in the cluster containing Forest Hill South within the budget of 800k CAD comprised of 11 neighbourhoods. Out of those 11, 6 neighbourhoods had crime rate less than 4.

Home Price < 800k CAD



Crime Rate < 4



The neighbourhood list in Toronto the customer should look at while buying a new home

	Neighbourhood	Population_Density	Average_Crime	Average home price (2017)	1st Most Common Venue	2nd Most Common Venue	3rd Most Common Venue	4th Most Common Venue	5th Most Common Venue
19	Humber Summit	1.780867	2.251131	706722.0	Electronics Store	Bank	Coffee Shop	Asian Restaurant	Park
34	Glenfield-Jane Heights	5.074424	1.547167	745701.0	Pizza Place	Coffee Shop	Grocery Store	Gas Station	Park
83	L'Amoreaux	4.154920	0.529240	784794.0	Fast Food Restaurant	Chinese Restaurant	Coffee Shop	Pharmacy	Park
89	Birchcliffe-Cliffside	4.332918	0.846891	725980.0	Coffee Shop	Restaurant	Grocery Store	Gym	Diner
111	Woburn	2.830533	0.206713	746787.0	Coffee Shop	Fast Food Restaurant	Pizza Place	Pharmacy	Sandwich Place
122	Malvern	4.042411	0.872694	692097.0	Fast Food Restaurant	Grocery Store	Pizza Place	Pharmacy	Sandwich Place

Thank You!!