



Capstone Project - The Battle of the Neighborhoods (Week 2)

Student exchange in Toronto



Business Problem

Every year hundreds of students from around the world conduct school exchanges in the city of Toronto from the most different kinds of cities, and most of them don't have a clue about what is to live in Toronto.

Typically, college students desire to live in places near bus stops, subway stations, convenience stores, markets, and preferably close to the university.



Objective

With this in mind, I intend to use Foursquare API data to indicate the most suitable neighborhoods to live in during the exchange. Also, I want to rank the neighborhoods with the highest crime rates, that maybe newbies in the city should take extra care.



Data

- Mean value for Bus Stations, Bus Stops, Convenience Stores, Train Stations, Markets, Parks, Pharmacies and Supermarkets nearby;
- Crime rate based on Major Crime Indicator dataset.
- All Toronto neighbors latitude and longitude, using **BeautifulSoup** and IBM/Coursera Geospatial dataset provided in previous labs
- Every venue within 1 km from each neighborhood in Toronto using **Foursquare API**



Work flow

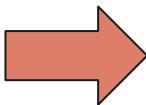
- Generate Toronto neighborhoods latitude and longitude data;
- Get all venue names within 1km from each neighborhood;
- One hot encoding to measure the frequency of each category of venue and clustering;
- Create rank of top10 neighborhoods with best mean score value;
- Create rank of top10 highest Major Crime Indicator score value;

Web Scrapping and data wrangling

Beautiful Soup

Collecting
Neighborhood/Postal code

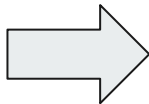
<http://seattlearea.com/zip-codes/>



	Postcode	Borough	Neighborhood	Latitude	Longitude
0	M1B	Scarborough	Rouge	43.806686	-79.194353
1	M1B	Scarborough	Malvern	43.806686	-79.194353
2	M1C	Scarborough	Port Union	43.784535	-79.160497
3	M1C	Scarborough	Rouge Hill	43.784535	-79.160497
4	M1C	Scarborough	Highland Creek	43.784535	-79.160497

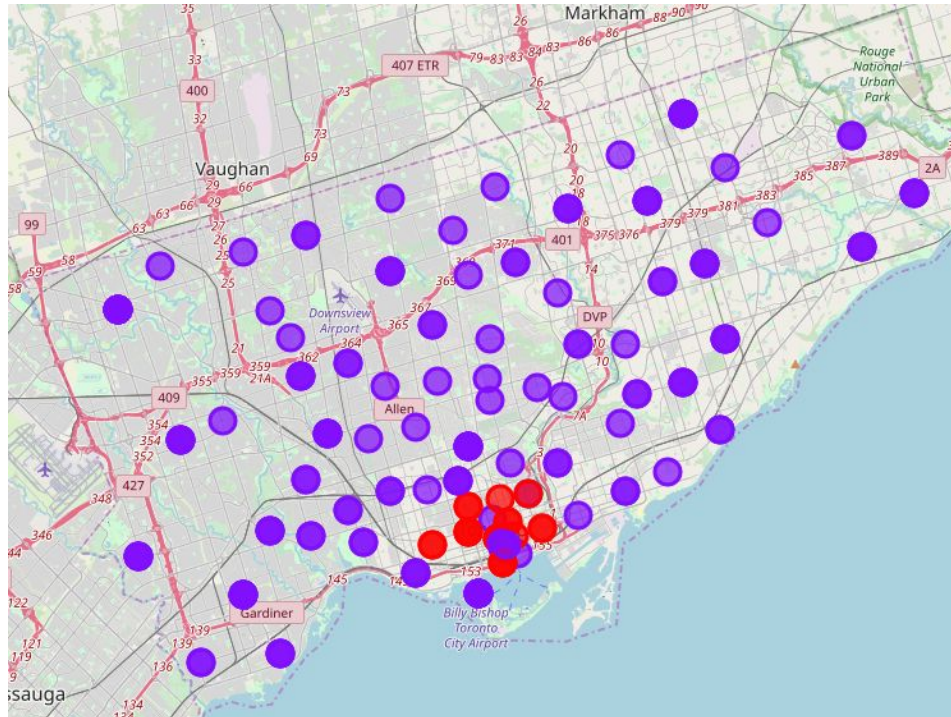
Foursquare API

Getting all venue names
within 1km from each
neighborhood



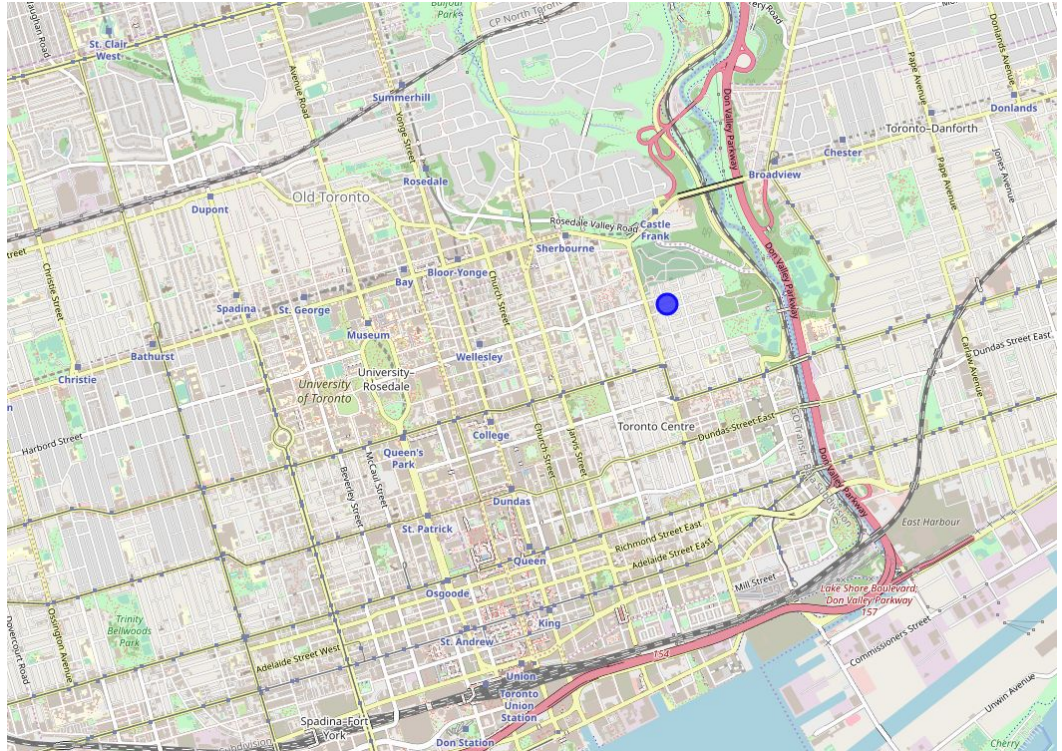
	name	categories	postalCode	lat	lng
0	195 Jane Rocket	Bus Line	M6N	43.672335	-79.492634
1	241 Pizza	Pizza Place	M6N	43.672351	-79.492631
2	306 Yonge Street - Jordan Store	Sporting Goods Shop	M5B	43.656495	-79.381015
3	360 Restaurant	Wine Bar	M5V	43.642537	-79.387042
4	4 Life Natural Foods	Farmers Market	M5T	43.655275	-79.402374

Clusters based on venues



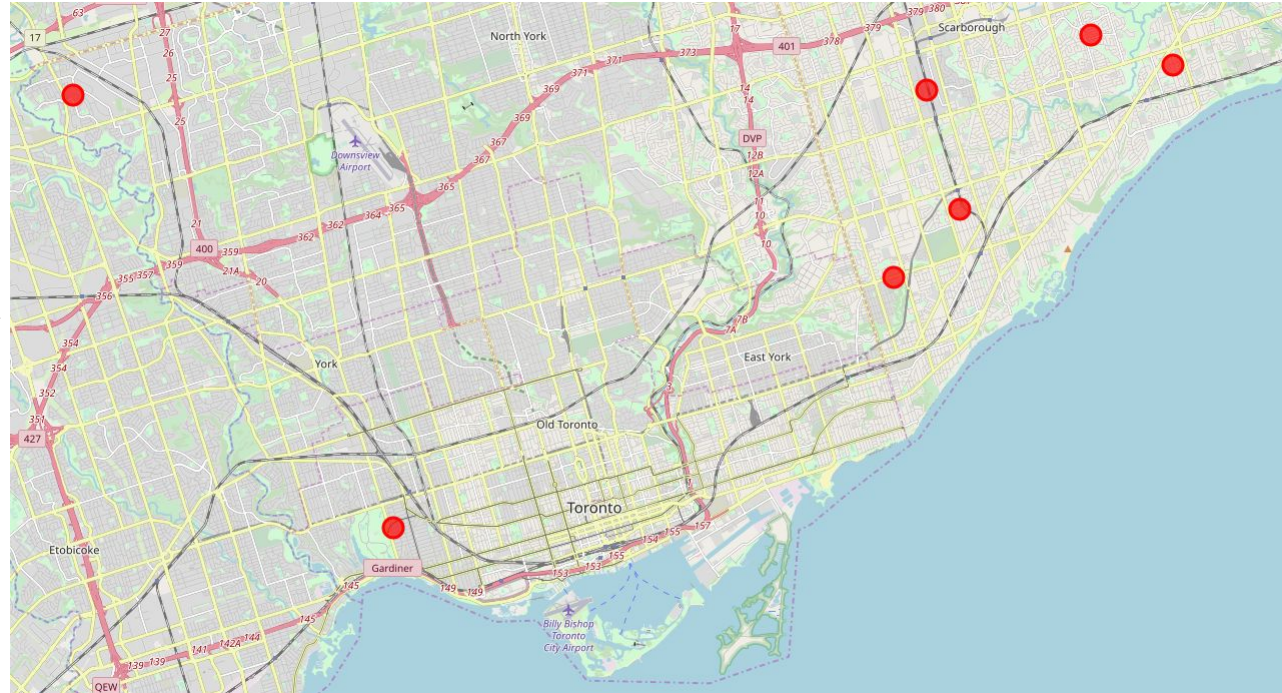
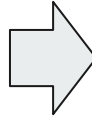
Top 10 Neighborhoods with best location score

	Neighborhood	Borough	Rank
0	St. James Town	Downtown Toronto	0.625
1	Harbourfront East	Downtown Toronto	0.500
2	Union Station	Downtown Toronto	0.500
3	Toronto Islands	Downtown Toronto	0.500
4	India Bazaar	East Toronto	0.375
5	The Beaches West	East Toronto	0.375
6	York Mills West	North York	0.375
7	Harbourfront	Downtown Toronto	0.375
8	Caledonia-Fairbanks	York	0.375
9	Cabbagetown	Downtown Toronto	0.375



Top10 Major Crime Indicators

	Neighbourhood	MCI	Postcode	Borough
0	Woburn	3158.0	M1G	Scarborough
1	West Hill	2857.0	M1E	Scarborough
2	Malvern	2024.0	M1B	Scarborough
3	Rouge	1940.0	M1B	Scarborough
4	Dorset Park	1756.0	M1P	Scarborough
5	Humber Summit	1590.0	M9L	North York
6	Kennedy Park	1577.0	M1K	Scarborough
7	Oakridge	1427.0	M1L	Scarborough
8	Roncesvalles	1416.0	M6R	West Toronto
9	Milliken	1414.0	M1V	Scarborough





Conclusion

- Purpose of this project was to identify the best suitable neighborhood to exchange students, based on the mean quantity distribution of the target venues we selected, such as bus stops, train stations and supermarkets.
- From the data collected and data crossing, it was possible to identify that there are places with far better localization than others, based on venues categories distribution. The best place selected was St. James Town, and, based on the Major Crime Indicators, Woburn, West Hill and Malvern are neighborhoods that deserve extra care.