

## Capstone Project - The Battle of Neighborhoods

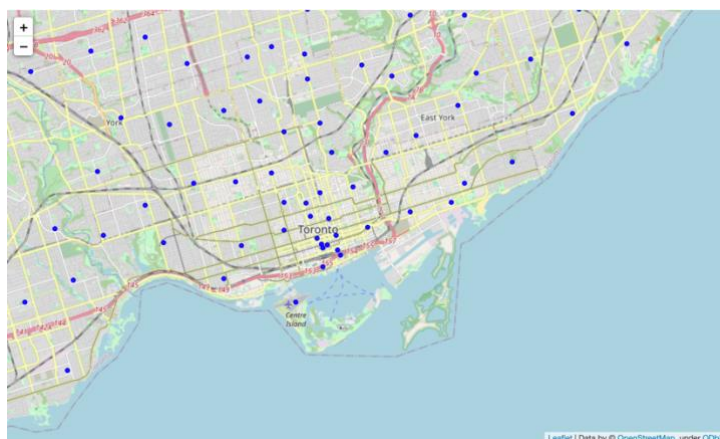
### Introduction

When a person is relocating to another city/neighbors due to various reasons like career development, family gathering and/or other personal reasons, it is of his/her preference to find the similar living environment as previous live. Therefore, in this task, I will use the two cities (New York and Toronto)'s information to try to find out the similar neighbors/boroughs across cities or boroughs. Therefore, in this capstone project, I will use the data of both Toronto and New York (boroughs, neighborhoods, latitude and longitude, venues, etc), which extracted from the Wikipedia and the venues information by using API from Foursquare to help further analysis. This analysis will finally come to the conclusion that the similar neighbors/boroughs of these two cities in order for the people who has the previous described situation's selection.

### Data

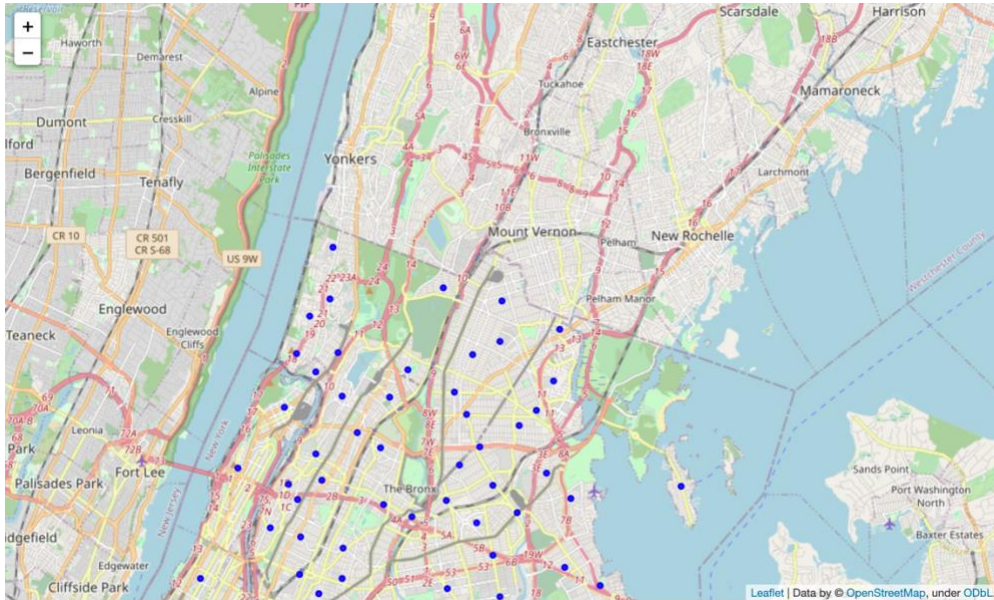
At first, for the Toronto data, it is extract from the following Wikipedia page, [https://en.wikipedia.org/wiki/List\\_of\\_postal\\_codes\\_of\\_Canada:\\_M](https://en.wikipedia.org/wiki/List_of_postal_codes_of_Canada:_M), which includes the neighbors, postcode and boroughs of Toronto. By using the methods of web scrap of BeautifulSoup, the data can be extracted as the pandas data frame for further usage. The shape of the data is (180, 3), which means that the data has 180 different categories with three dimensions. For further usage, I conducted some adjustment and assigned the postcode as the keys of the data frame, which enables the (103, 3). Therefore, the number of keys are 103. Further, I use the Geospatial data of the Toronto and append it into the previous data frame to enrich it with the latitude and longitude information.

	Postal Code	Borough	Neighbourhood
0	M3A	North York	Parkwoods
1	M4A	North York	Victoria Village
2	M5A	Downtown Toronto	Regent Park, Harbourfront
3	M6A	North York	Lawrence Manor, Lawrence Heights
4	M7A	Downtown Toronto	Queen's Park, Ontario Provincial Government



For the New York data, I use the New York data provided by the project and extracted it into the data frame with the similar format of the Toronto.

	Borough	Neighbourhood	Latitude	Longitude
0	North York	Parkwoods	43.753259	-79.329656
1	North York	Victoria Village	43.725882	-79.315572
2	Downtown Toronto	Regent Park, Harbourfront	43.654260	-79.360636
3	North York	Lawrence Manor, Lawrence Heights	43.718518	-79.464763
4	Downtown Toronto	Queen's Park, Ontario Provincial Government	43.662301	-79.389494



After extracted the data into the above data frame, I use the Foursquare API to extract the venues information of the two cities. The below graph is the data frame include the venue information of New York and Toronto.

	Neighborhood	Borough	Latitude	Longitude	VenueName	VenueLatitude	VenueLongitude	VenueCategory
0	Wakefield	Bronx	40.894705	-73.847201	Lollipops Gelato	40.894123	-73.845892	Dessert Shop
1	Wakefield	Bronx	40.894705	-73.847201	Ripe Kitchen & Bar	40.898152	-73.838875	Caribbean Restaurant
2	Wakefield	Bronx	40.894705	-73.847201	Ali's Roti Shop	40.894036	-73.856935	Caribbean Restaurant
3	Wakefield	Bronx	40.894705	-73.847201	Jackie's West Indian Bakery	40.889283	-73.843310	Caribbean Restaurant
4	Wakefield	Bronx	40.894705	-73.847201	Rite Aid	40.889062	-73.842993	Pharmacy
5	Wakefield	Bronx	40.894705	-73.847201	Carvel Ice Cream	40.890487	-73.848568	Ice Cream Shop
6	Wakefield	Bronx	40.894705	-73.847201	Jimbo's	40.891740	-73.858226	Burger Joint
7	Wakefield	Bronx	40.894705	-73.847201	Dunkin'	40.890459	-73.849089	Donut Shop
8	Wakefield	Bronx	40.894705	-73.847201	Walgreens	40.896528	-73.844700	Pharmacy
9	Wakefield	Bronx	40.894705	-73.847201	Rite Aid	40.896649	-73.844846	Pharmacy
10	Wakefield	Bronx	40.894705	-73.847201	Subway	40.890468	-73.849152	Sandwich Place
11	Wakefield	Bronx	40.894705	-73.847201	Walgreens	40.898757	-73.854446	Pharmacy
12	Wakefield	Bronx	40.894705	-73.847201	Shell	40.894187	-73.845862	Gas Station
13	Wakefield	Bronx	40.894705	-73.847201	T-Mobile	40.893216	-73.857251	Mobile Phone Shop
14	Wakefield	Bronx	40.894705	-73.847201	Popeyes Louisiana Kitchen	40.898292	-73.854719	Fried Chicken Joint

	Neighborhood	Borough	Latitude	Longitude	VenueName	VenueLatitude	VenueLongitude	VenueCategory
0	Parkwoods	North York	43.753259	-79.329656	Allwyn's Bakery	43.759840	-79.324719	Caribbean Restaurant
1	Parkwoods	North York	43.753259	-79.329656	Brookbanks Park	43.751976	-79.332140	Park
2	Parkwoods	North York	43.753259	-79.329656	Tim Hortons	43.760668	-79.326368	Café
3	Parkwoods	North York	43.753259	-79.329656	Bruno's valu-mart	43.746143	-79.324630	Grocery Store
4	Parkwoods	North York	43.753259	-79.329656	High Street Fish & Chips	43.745260	-79.324949	Fish & Chips Shop