

A decorative graphic on the left side of the slide consisting of white lines and circles on a blue gradient background, resembling a circuit board or a stylized tree structure.

COMPARISON OF NEIGHBORHOODS OF NEW YORK AND TORONTO

INTRODUCTION

- New York and Toronto are both most populous cities in the United States and Canada respectively. New York - the most densely populated city in the US, a Global power city which has been described as the Cultural, Financial and media capital of the World. On the other hand, Toronto is also a global city which lies as the centre of business, finance, arts, and culture, and is recognized as one of the most multicultural and cosmopolitan cities in the world.
- With this analysis we will get to know which one is better over the other or which city has more venues in nearby distance and details on those venues in which one may be interested to have a visit. We will get to know if both cities are similar with respect to these venues or totally different!!!.

DATA

- To do the comparison of NY and Toronto Neighborhoods, we first need the neighborhood details of NY and Toronto.
- NY and Toronto neighbourhood details are readily available in various websites.
- NY - [New York Data](#)
- Toronto - [Toronto Data\(Wiki page\)](#)
- NY data is in proper format which can be processed. Toronto data is available in Wikipedia page from where we have to segregate and pick the required neighborhood data alone. So, pre-processing of data is required.

ANALYSIS

- Below are the dataframes created from NY and Toronto Data

	Borough	Neighborhood	Latitude	Longitude
0	Bronx	Wakefield	40.894705	-73.847201
1	Bronx	Co-op City	40.874294	-73.829939
2	Bronx	Eastchester	40.887556	-73.827806
3	Bronx	Fieldston	40.895437	-73.905643
4	Bronx	Riverdale	40.890834	-73.912585

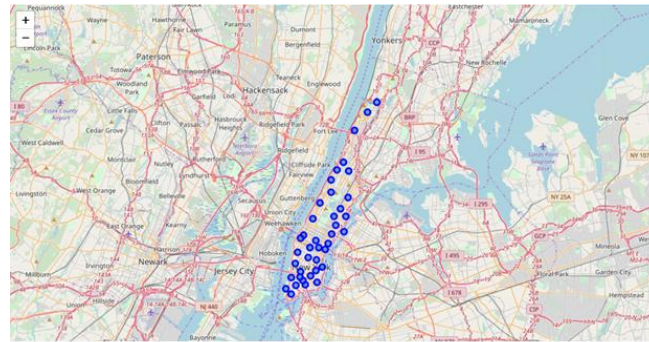
NY DataFrame

	Postcode	Borough	Neighbourhood
0	M1B	Scarborough	Rouge, Malvern
1	M1C	Scarborough	Highland Creek, Rouge Hill, Port Union
2	M1E	Scarborough	Guildwood, Morningside, West Hill
3	M1G	Scarborough	Woburn
4	M1H	Scarborough	Cedarbrae

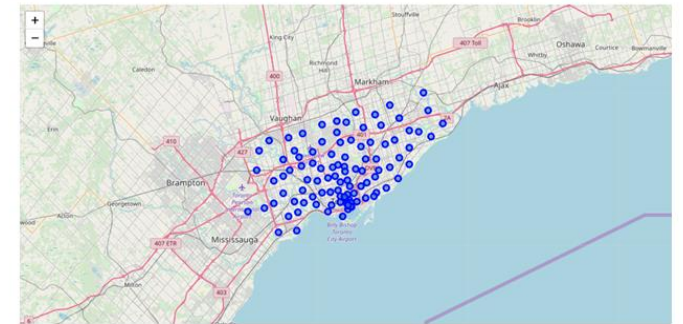
Toronto DataFrame

MAPS GENERATED USING FOLIUM MAPS

- Generated NY and Toronto maps with its neighborhoods superimposed on top



NY Map

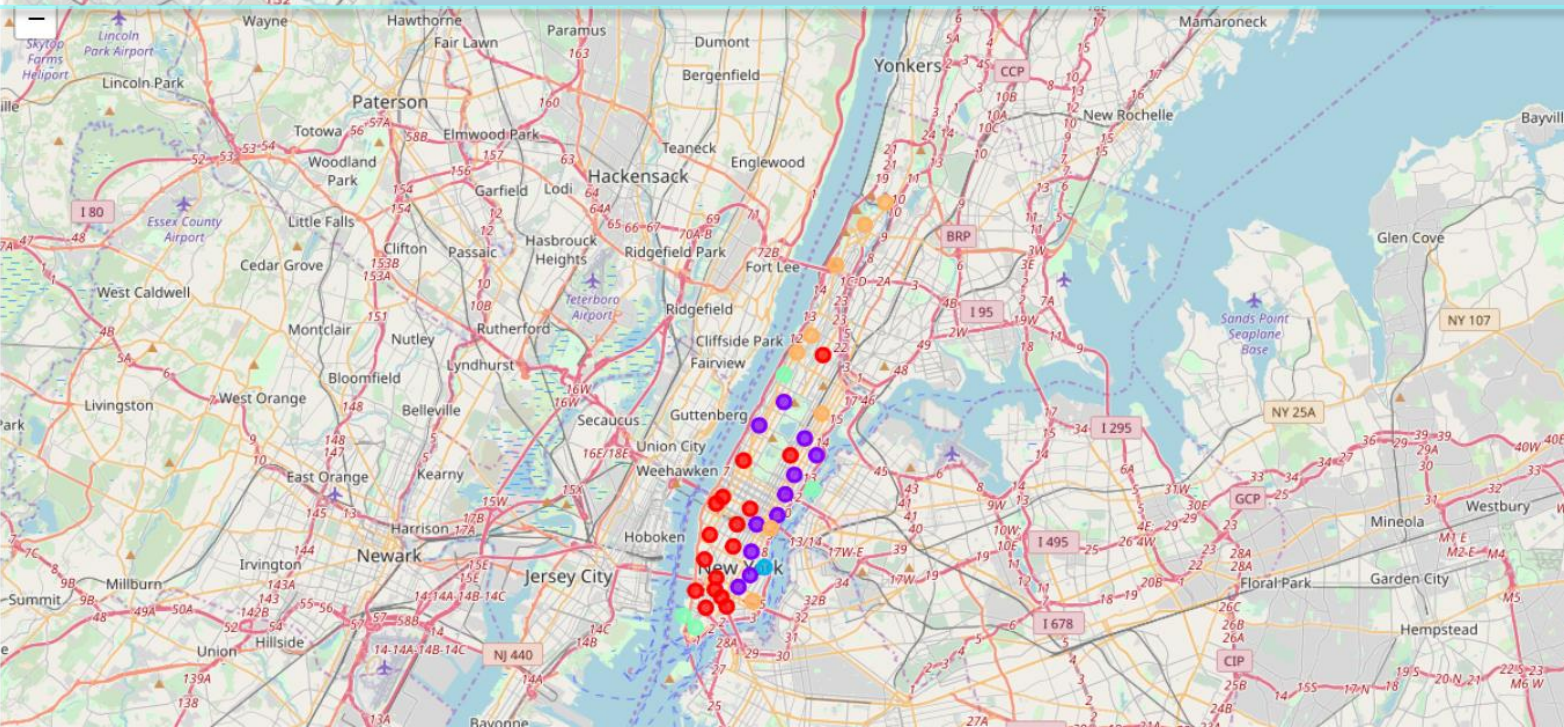
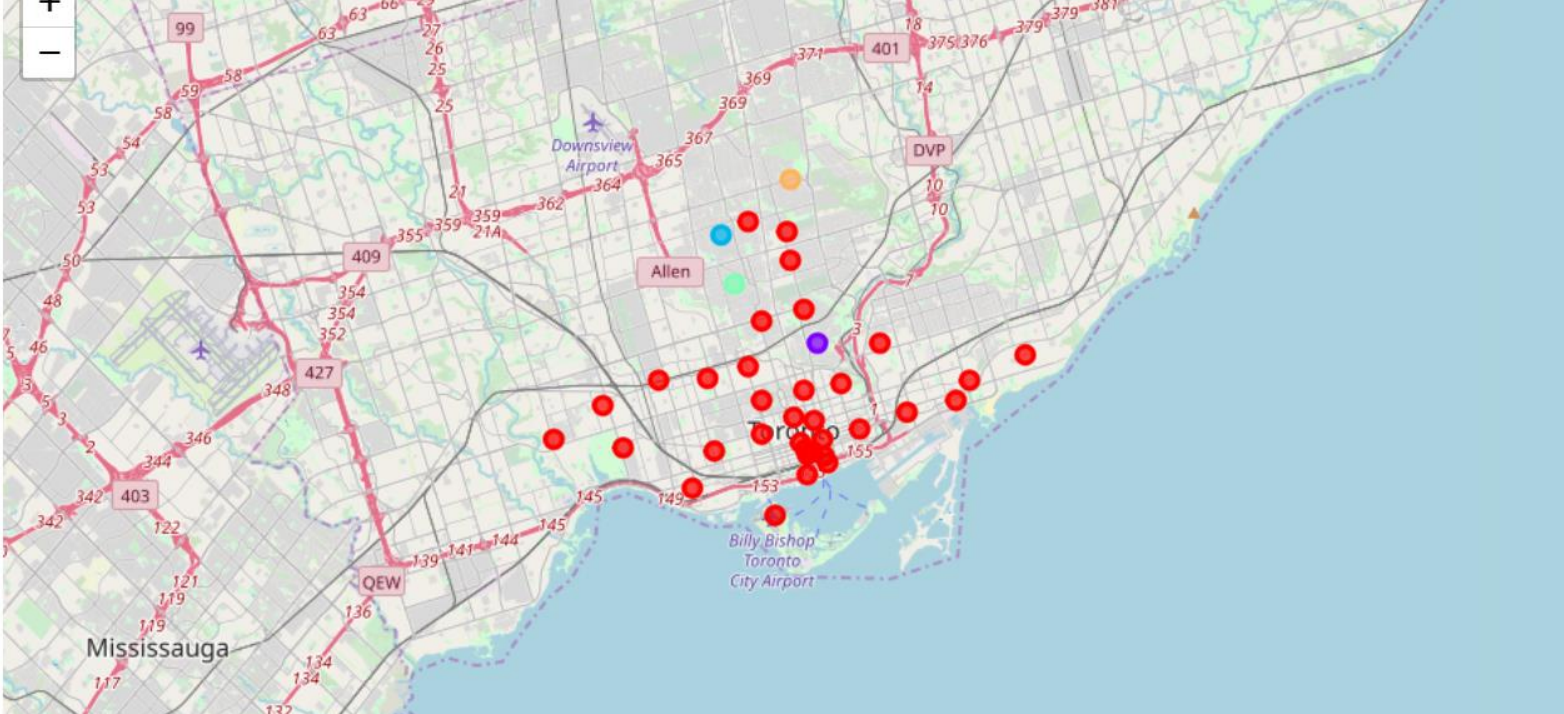


Toronto Map

	Neighborhood	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
0	Adelaide, King, Richmond	Coffee Shop	Café	American Restaurant	Thai Restaurant	Steakhouse	Gym	Clothing Store	Asian Restaurant	Bakery	Bar
1	Berczy Park	Coffee Shop	Cocktail Bar	Restaurant	Seafood Restaurant	Bakery	Italian Restaurant	Steakhouse	Farmers Market	Café	Pub
2	Brockton, Exhibition Place, Parkdale Village	Breakfast Spot	Café	Coffee Shop	Pet Store	Climbing Gym	Performing Arts Venue	Stadium	Burrito Place	Bar	Caribbean Restaurant
3	Business Reply Mail Processing Centre 969 Eastern	Light Rail Station	Yoga Studio	Garden	Park	Pizza Place	Recording Studio	Restaurant	Butcher	Burrito Place	Brewery
4	CN Tower, Bathurst Quay, Island airport, Harbo...	Airport Lounge	Airport Terminal	Airport Service	Boutique	Sculpture Garden	Plane	Boat or Ferry	Airport Gate	Airport Food Court	Airport

	Borough	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
0	Manhattan	Marble Hill	40.876551	-73.910660	4	Discount Store	Coffee Shop	Yoga Studio	Deli / Bodega	Supplement Shop	Steakhouse	Shopping Mall	Shoe Store	Seafood Restaurant	Sandwich Place
1	Manhattan	Chinatown	40.715618	-73.994279	0	Chinese Restaurant	Bubble Tea Shop	American Restaurant	Cocktail Bar	Vietnamese Restaurant	Dim Sum Restaurant	Hotpot Restaurant	Salon / Barbershop	Noodle House	Bakery
2	Manhattan	Washington Heights	40.851903	-73.936900	4	Café	Bakery	Mobile Phone Shop	Pizza Place	Tapas Restaurant	Sandwich Place	Chinese Restaurant	Shoe Store	Mexican Restaurant	Grocery Store
3	Manhattan	Inwood	40.867684	-73.921210	4	Lounge	Mexican Restaurant	Café	Pizza Place	Park	Bakery	Frozen Yogurt Shop	Restaurant	Deli / Bodega	Chinese Restaurant
4	Manhattan	Hamilton Heights	40.823604	-73.949688	4	Mexican Restaurant	Deli / Bodega	Coffee Shop	Café	Pizza Place	Liquor Store	Cocktail Bar	Sandwich Place	School	Chinese Restaurant

- First Dataframe shows the 10 most common venues in the neighborhoods of NY
- Second Dataframe shows the 10 most common venues in the neighborhoods of Toronto



K-MEANS ANALYSIS

- We used k-means to cluster both the cities neighborhoods into 5 clusters and generated map for better visualization
- First map shows NY neighborhood clusters and second shows Toronto neighborhood clusters

COMPARISON OF THE VENUES

- We fetched around 100 venues in both the neighborhoods using the FourSquare API. But we cannot compare all the venues. So for sample analysis we have taken 3 most common venues – Restaurants, Coffee shops, Studios.

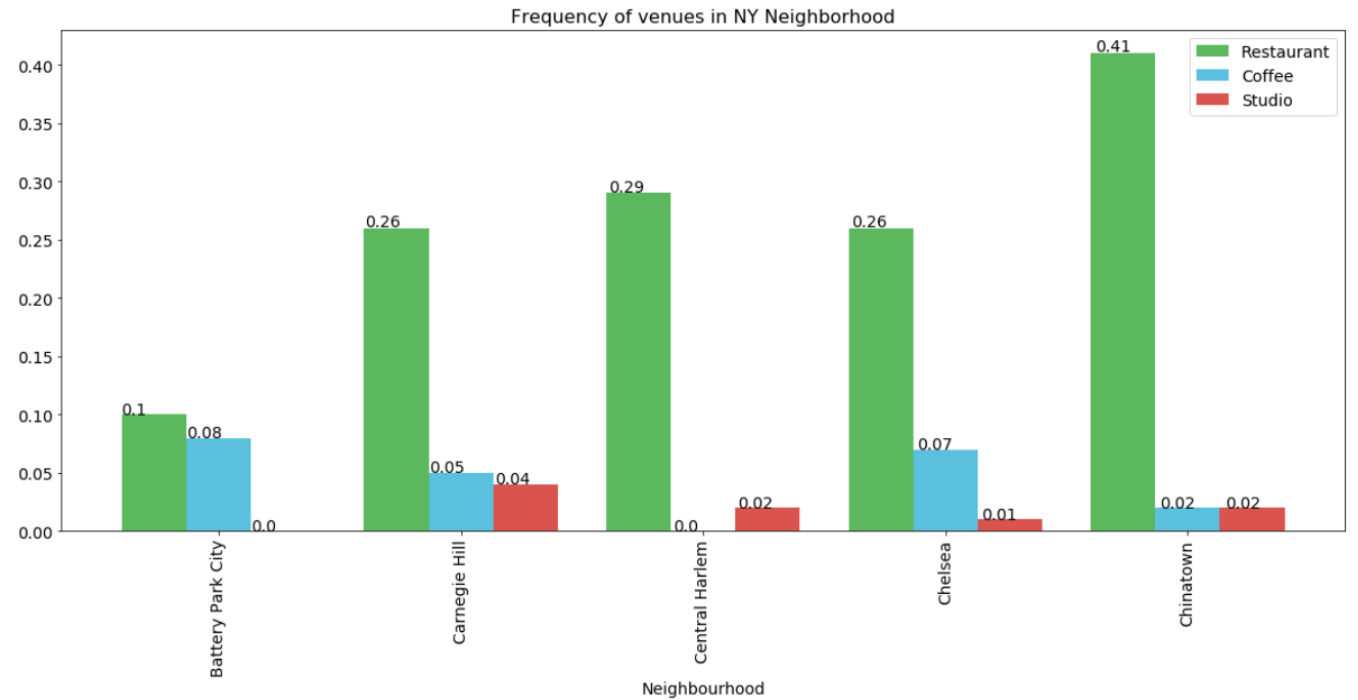
	Restaurant	Coffee	Studio
Neighbourhood			
Battery Park City	0.10	0.08	0.00
Carnegie Hill	0.26	0.05	0.04
Central Harlem	0.29	0.00	0.02
Chelsea	0.26	0.07	0.01
Chinatown	0.41	0.02	0.02

	Restaurant	Coffee	Studio
Neighbourhood			
Adelaide, King, Richmond	0.27	0.06	0.00
Berczy Park	0.23	0.07	0.00
Brockton, Exhibition Place, Parkdale Village	0.10	0.11	0.00
Business Reply Mail Processing Centre 969 Eastern	0.12	0.00	0.12
CN Tower, Bathurst Quay, Island airport, Harbourfront West, King and Spadina, Railway Lands, South Niagara	0.00	0.00	0.00

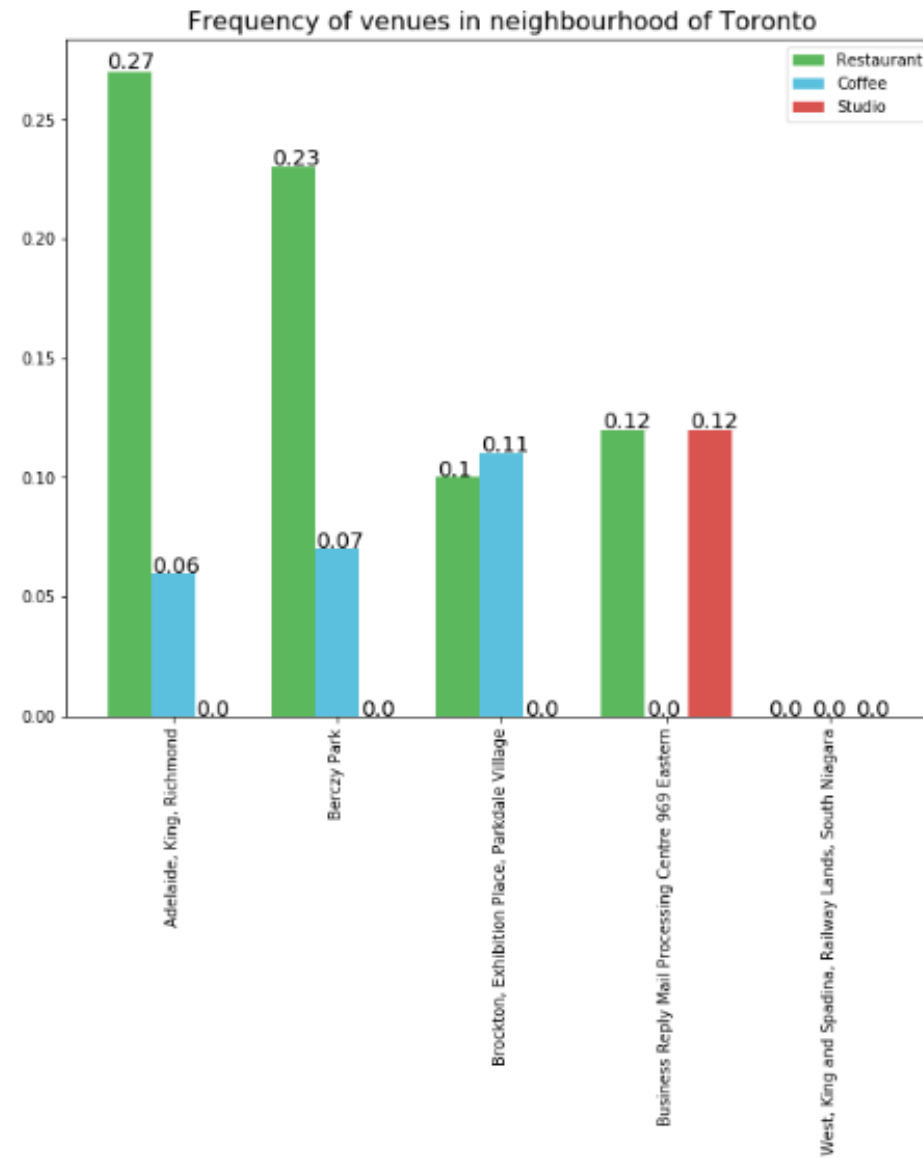
- Dataframe shows the first 5 neighborhoods with 3 most common venues.
- First represents NY and second Toronto

GENERATING BAR CHART FOR COMPARISON

- NY Neighborhood common venues



- Toronto Neighborhood common venues



RESULTS

- From the above bar graphs, we see that Restaurants(which includes all types of restaurants) are equally distributed in both the city neighbourhoods. So taking Restaurant as comparison parameter, we can say both cities are similar
- Taking Coffee shops are comparison parameter, we see that Toronto has more coffee shops in its neighborhoods than Manhattan NY. We can say its somewhat dissimilar with this criteria.
- Taking Studios(Yoga,Cycle,Dance,Music,et.,) as comparison parameter, we see NY neighborhoods has evenly distributed studios though less in number but Toronto has more number of studios in one particular neighborhood only. So we can say both cities are dissimilar regards to studios.

CONCLUSION

- Comparing New York and Toronto neighborhoods and the most common venues in those neighborhoods, we can conclude that both cities are similar with respect to few venues like restaurants and dissimilar with respect to other venues like Studios. We can take more venues as comparison parameter and repeat the process to get a better understanding of the similarity of the both cities.