

COMPARING NEW YORK CITY AND TORONTO'S NEIGHBOURHOODS

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IBM's Coursera Applied Data Science Capstone
Project

COMPARING AND CLUSTERING NEIGHBOURHOODS

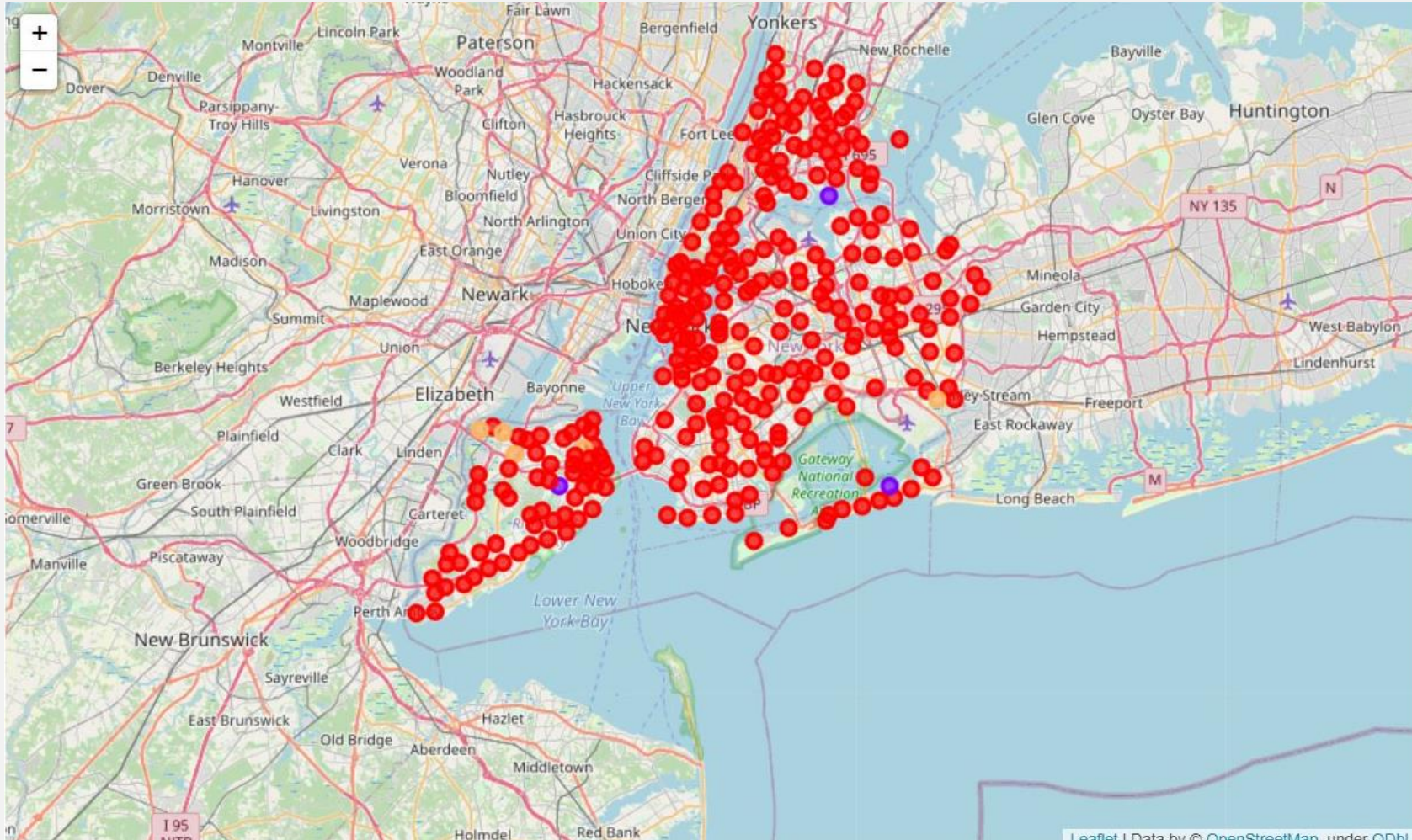
- Location is everything. There have been loads of studies on what made Starbucks successful, and a lot of experts claim that their key asset is their coffee shops locations.
- Imagine you own a restaurant or a coffee house in a certain city and you're doing very well. The idea of opening a second restaurant or coffee house wonders your head but, where should you put it? If you're doing well with the one that you already have, maybe you just want to replicate that in the other side of town. If your current one is not doing well, maybe you should move a different neighbourhood. Data science is a good way to solve this question.

DATA

- New York City's neighbourhoods names, boroughs, latitudes and longitudes (taken from https://cocl.us/new_york_dataset).
- Toronto's neighbourhoods names, boroughs and postal codes (taken from https://en.wikipedia.org/wiki/List_of_postal_codes_of_Canada:_M).
- Toronto's neighbourhoods latitudes and longitudes (taken from https://cocl.us/Geospatial_data).
- The Foursquare API was used to get information about the most popular venues around within a 500 meters radius of every neighbourhood's coordinates.

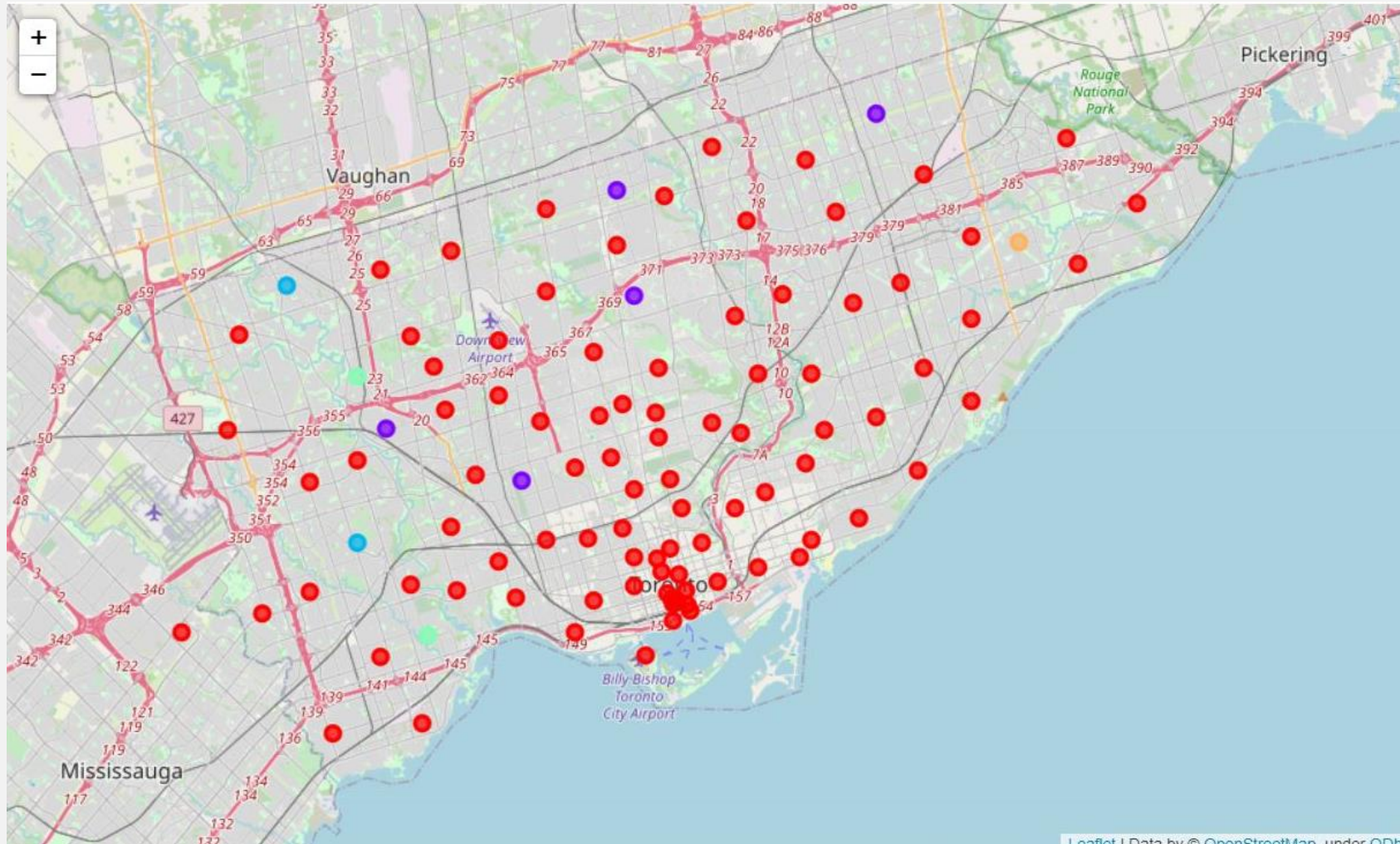
NEW YORK CITY

- Cluster 1
- Cluster 2
- Cluster 3
- Cluster 4
- Cluster 5

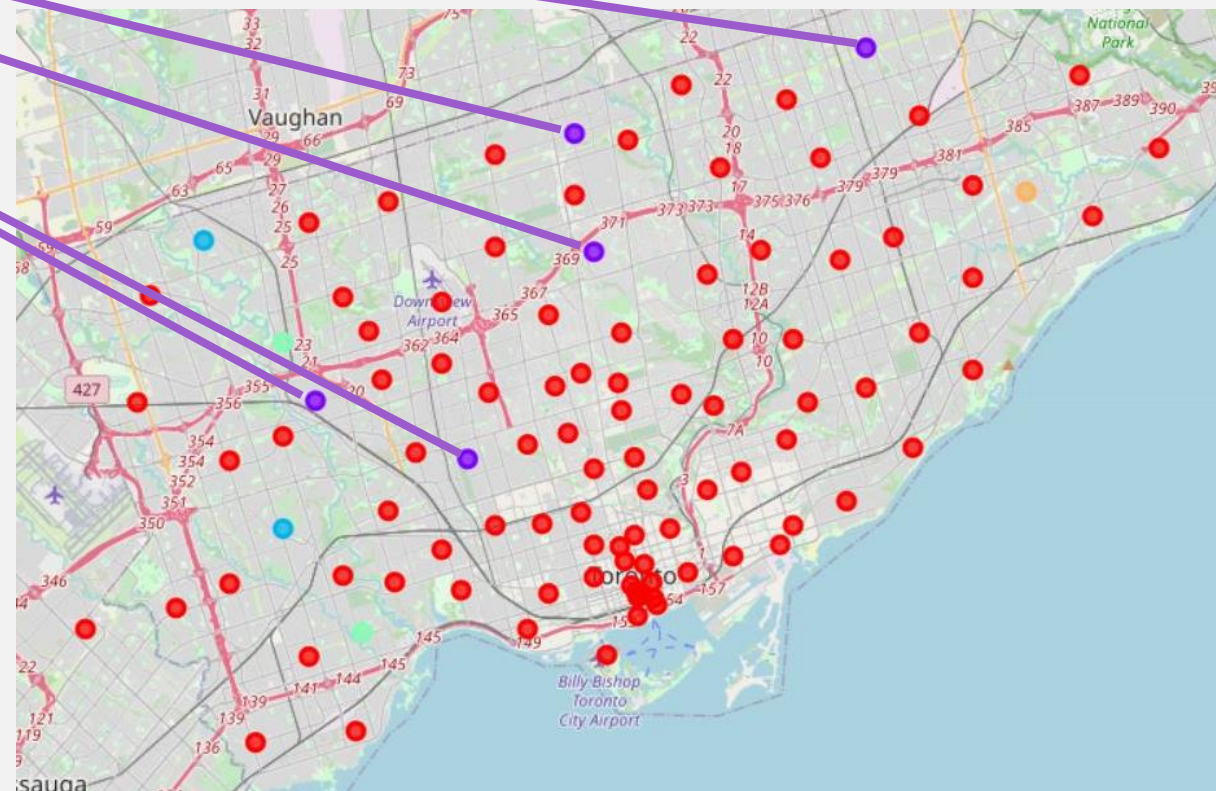
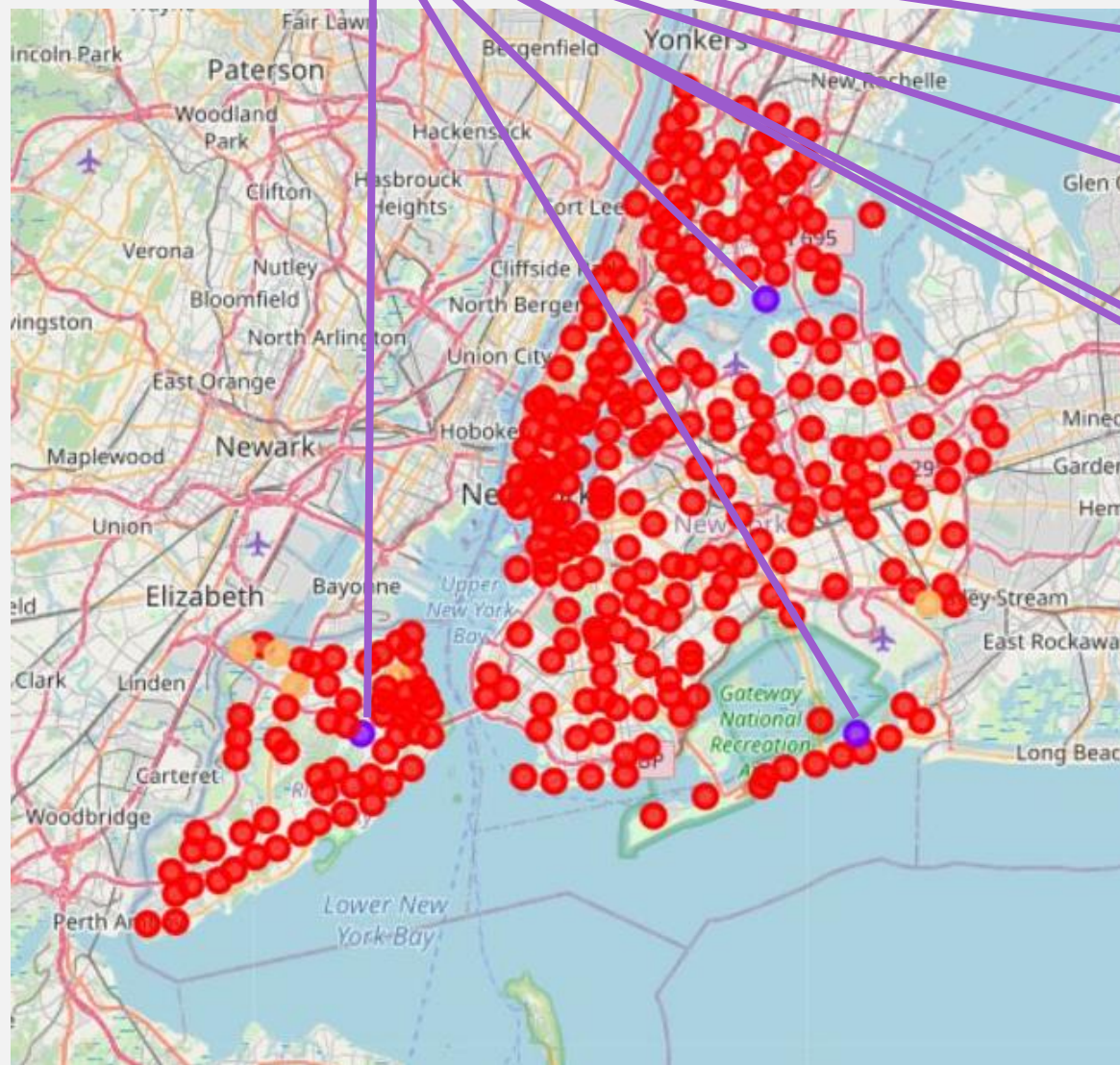


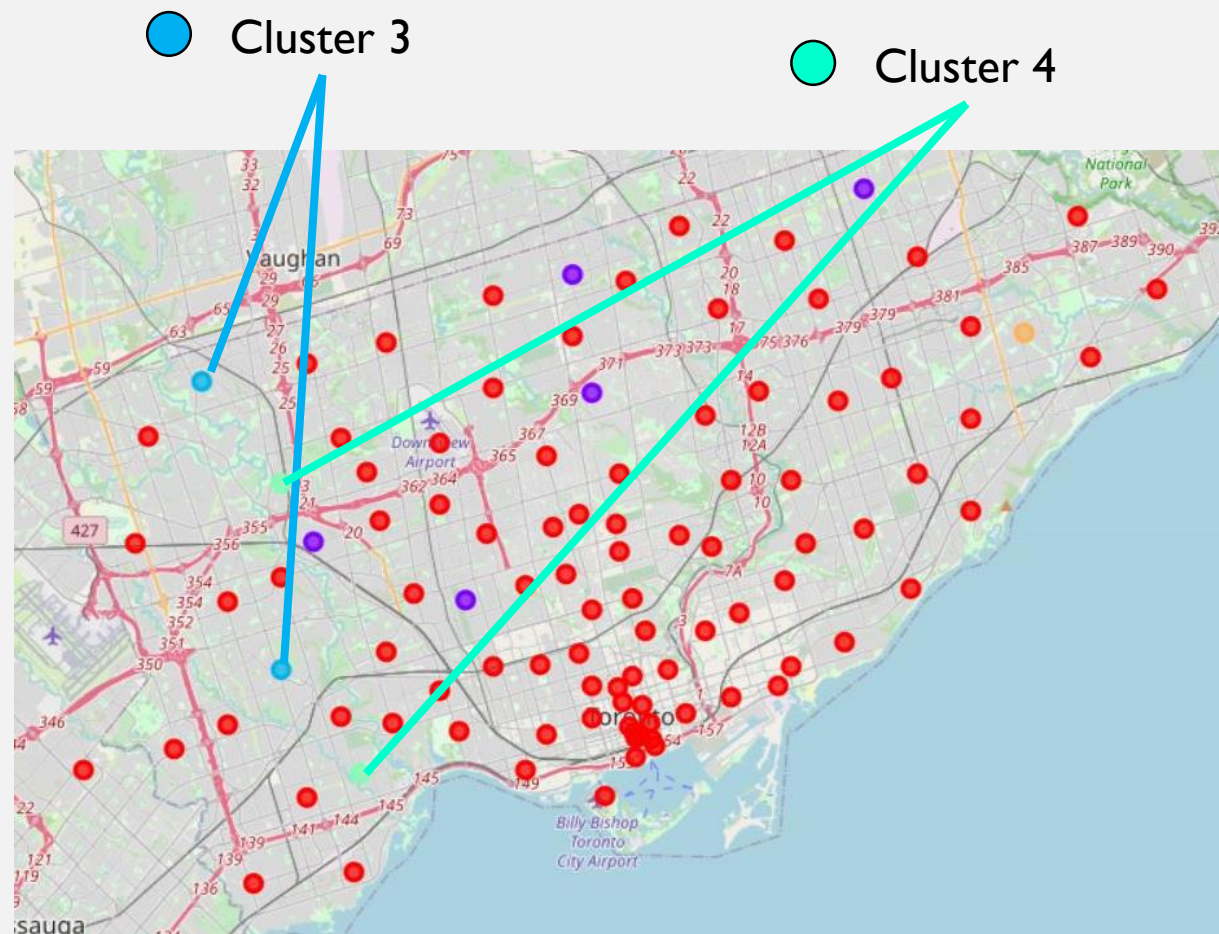
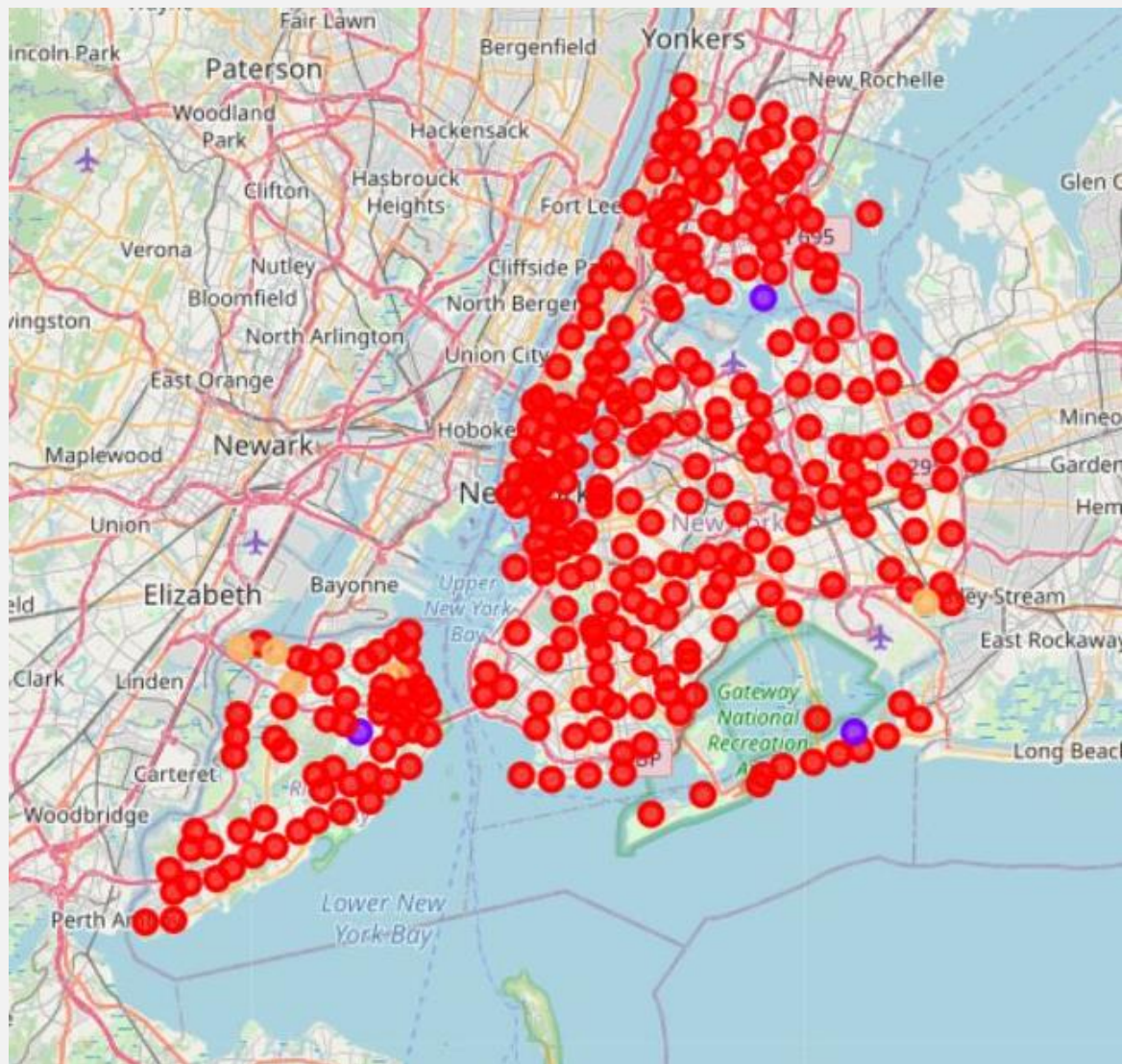
TORONTO

- Cluster 1
- Cluster 2
- Cluster 3
- Cluster 4
- Cluster 5

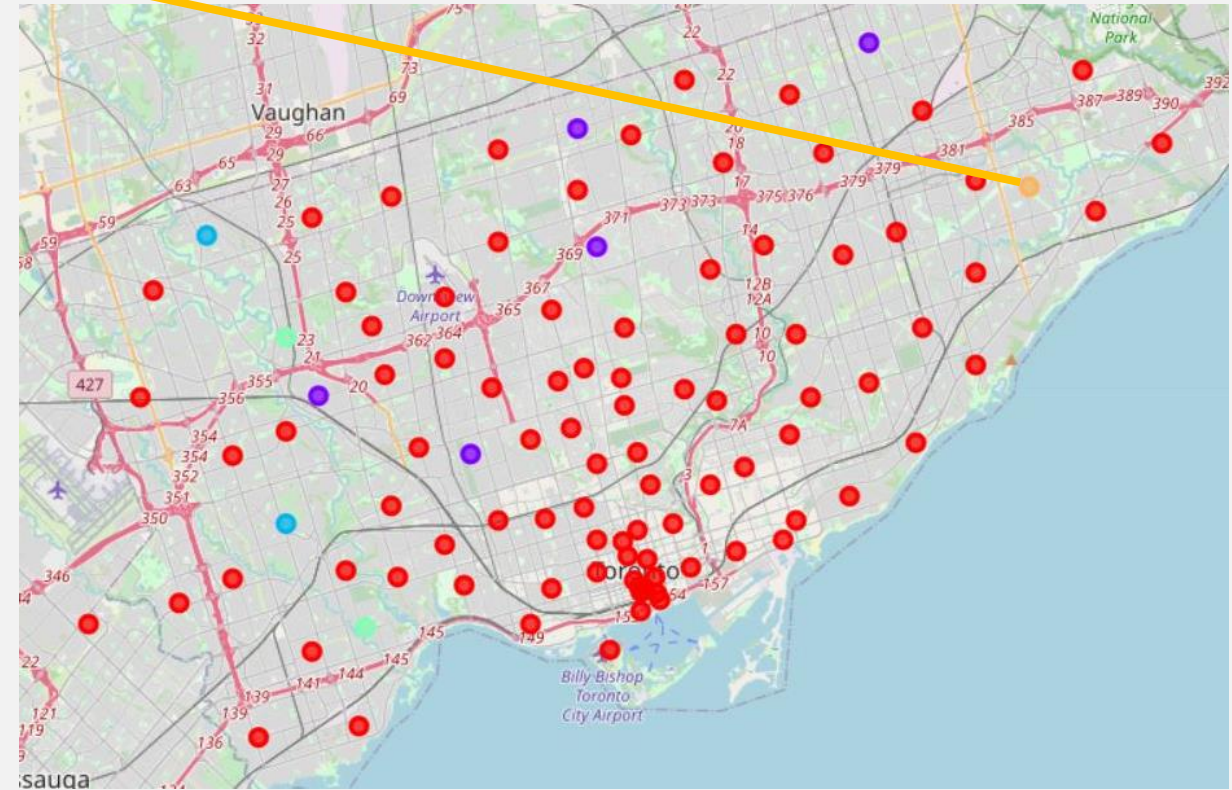
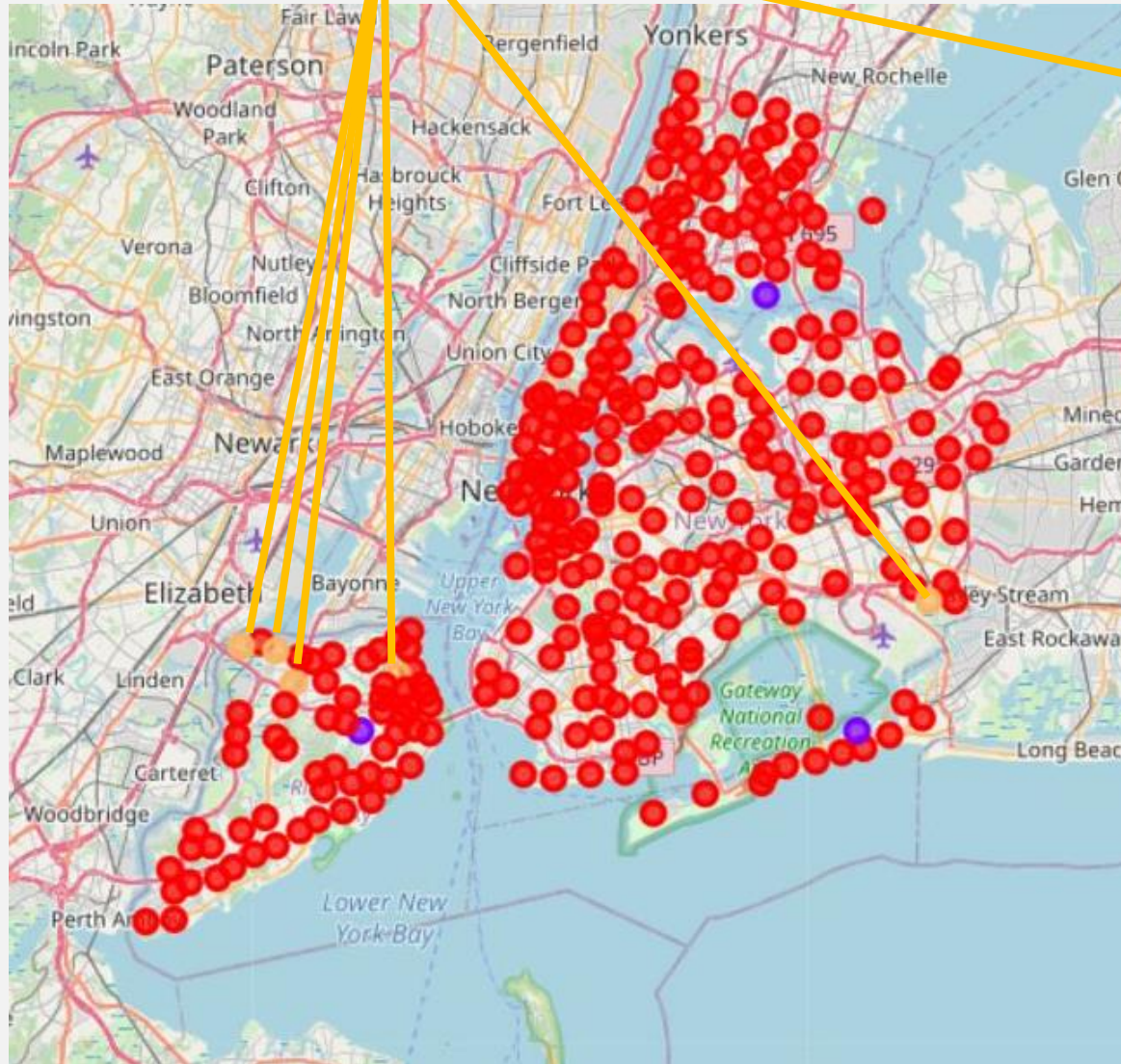


● Cluster 2





● Cluster 5



CLUSTER 2

index	Neighbourhood	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	City	
0	27	Clason Point	Park	Convenience Store	Bus Stop	Boat or Ferry	Grocery Store	Pool	South American Restaurant	Ethiopian Restaurant	Event Space	Farmers Market	New York
1	192	Somerville	Park	Yoga Studio	Egyptian Restaurant	Empanada Restaurant	English Restaurant	Entertainment Service	Ethiopian Restaurant	Event Space	Exhibit	Eye Doctor	New York
2	203	Todt Hill	Park	Yoga Studio	Egyptian Restaurant	Empanada Restaurant	English Restaurant	Entertainment Service	Ethiopian Restaurant	Event Space	Exhibit	Eye Doctor	New York
3	327	Caledonia-Fairbanks	Park	Women's Store	Pool	Fast Food Restaurant	Empanada Restaurant	English Restaurant	Entertainment Service	Ethiopian Restaurant	Event Space	Exhibit	Toronto
4	358	Willowdale, Newtonbrook	Park	Yoga Studio	Egyptian Restaurant	Empanada Restaurant	English Restaurant	Entertainment Service	Ethiopian Restaurant	Event Space	Exhibit	Eye Doctor	Toronto
5	370	Weston	Convenience Store	Park	Yoga Studio	Fast Food Restaurant	Empanada Restaurant	English Restaurant	Entertainment Service	Ethiopian Restaurant	Event Space	Exhibit	Toronto
6	372	York Mills West	Park	Convenience Store	Yoga Studio	Fast Food Restaurant	Empanada Restaurant	English Restaurant	Entertainment Service	Ethiopian Restaurant	Event Space	Exhibit	Toronto
7	391	Milliken, Agincourt North, Steeles East, L'Amo...	Park	Playground	Yoga Studio	Fast Food Restaurant	Empanada Restaurant	English Restaurant	Entertainment Service	Ethiopian Restaurant	Event Space	Exhibit	Toronto

CLUSTER 3

	index	Neighbourhood	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	City
0	311	Islington Avenue, Humber Valley Village	Pizza Place	Yoga Studio	Farmers Market	Electronics Store	Empanada Restaurant	English Restaurant	Entertainment Service	Ethiopian Restaurant	Event Space	Exhibit	Toronto
1	356	Humber Summit	Pizza Place	Yoga Studio	Farmers Market	Electronics Store	Empanada Restaurant	English Restaurant	Entertainment Service	Ethiopian Restaurant	Event Space	Exhibit	Toronto

CLUSTER 4

index	Neighbourhood	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	City	
0	363	Humberlea, Emery	Baseball Field	Yoga Studio	Electronics Store	English Restaurant	Entertainment Service	Ethiopian Restaurant	Event Space	Exhibit	Eye Doctor	Factory	Toronto
1	407	Old Mill South, King's Mill Park, Sunnylea, Hu...	Baseball Field	Business Service	Yoga Studio	Field	English Restaurant	Entertainment Service	Ethiopian Restaurant	Event Space	Exhibit	Eye Doctor	Toronto

CLUSTER 5

index	Neighbourhood	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	City	
0	193	Brookville	Recording Studio	Deli / Bodega	Fast Food Restaurant	Electronics Store	Empanada Restaurant	English Restaurant	Entertainment Service	Ethiopian Restaurant	Event Space	Exhibit	New York
1	202	Grymes Hill	Deli / Bodega	Dog Run	Yoga Studio	Field	English Restaurant	Entertainment Service	Ethiopian Restaurant	Event Space	Exhibit	Eye Doctor	New York
2	226	Graniteville	Boat or Ferry	Grocery Store	Yoga Studio	Field	English Restaurant	Entertainment Service	Ethiopian Restaurant	Event Space	Exhibit	Eye Doctor	New York
3	227	Arlington	Deli / Bodega	Bus Stop	Coffee Shop	Construction & Landscaping	Boat or Ferry	Eye Doctor	Farmers Market	Farm	Falafel Restaurant	Factory	New York
4	257	Howland Hook	Boat or Ferry	Yoga Studio	Field	English Restaurant	Entertainment Service	Ethiopian Restaurant	Event Space	Exhibit	Eye Doctor	Factory	New York
5	328	Woburn	Coffee Shop	Korean Restaurant	Fast Food Restaurant	Empanada Restaurant	English Restaurant	Entertainment Service	Ethiopian Restaurant	Event Space	Exhibit	Eye Doctor	Toronto

CONCLUSIONS AND FUTURE DIRECTIONS

- It can be concluded that there are a lot of neighbourhoods from both cities that are similar. And also, there's a lot of neighbourhoods that are very similar, even if they are not close from each other. This is a demonstration of how powerful and useful machine learning algorithms can be and how universally they can be used.
- It's important to clarify that the similarity that's been found it's based on the main venues categories from each neighbourhood. It would be interesting to conduct the same study but adding new features like population density, crime rates, human development index, men/women ratio, among others.