

THE BATTLE OF THE NEIGHBOURHOODS

Toronto vs. New York City

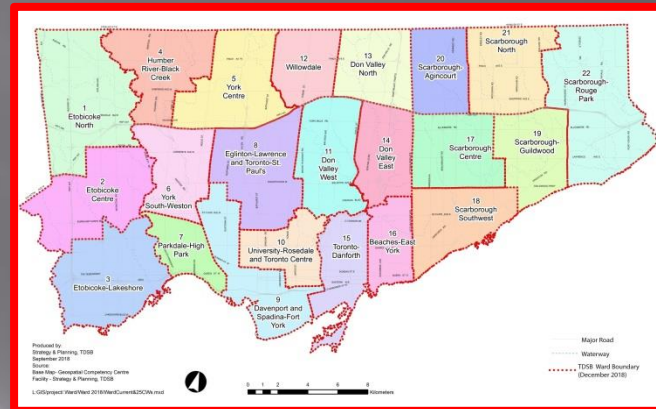
INTRODUCTION

TORONTO

7 Million Population

13th Best City

Well diverse in institutions, attractions, infrastructures and restaurants and well known for it's rate of immigrations and educational attainments.



NEW YORK CITY

20 Million Population

2nd Best City

Well diverse in arts, culture, entertainment, shopping, restaurants and well known for it's night life.



BUSINESS PROBLEM

- ▣ Invest to launch a new set of branches of a famous Asian Restaurant Chain.
- ▣ Geographical distribution of restaurants in Toronto & New York City.
- ▣ Prevalence of Covid-19 pandemic in neighbourhoods.

DESCRIPTION OF DATA

▣ Toronto Neighbourhood Data

	Postal Code	Borough	Neighborhood	Latitude	Longitude
0	M3A	North York	Parkwoods	43.753259	-79.329656
1	M4A	North York	Victoria Village	43.725882	-79.315572
2	M5A	Downtown Toronto	Regent Park, Harbourfront	43.654260	-79.360636
3	M6A	North York	Lawrence Manor, Lawrence Heights	43.718518	-79.464763
4	M7A	Downtown Toronto	Queen's Park, Ontario Provincial Government	43.662301	-79.389494

▣ Toronto Covid-19 Data

	_id	Assigned_ID	Outbreak Associated	Age Group	Neighbourhood Name	FSA	Source of Infection	Classification	Episode Date	Reported Date	Client Gender	Outcome	Currently Hospitalized
0	736701	1	Sporadic	50 to 59 Years	Willowdale East	M2N	Travel	CONFIRMED	22/01/2020	23/01/2020	FEMALE	RESOLVED	No
1	736702	2	Sporadic	50 to 59 Years	Willowdale East	M2N	Travel	CONFIRMED	21/01/2020	23/01/2020	MALE	RESOLVED	No
2	736703	3	Sporadic	20 to 29 Years	Parkwoods-Donaalda	M3A	Travel	CONFIRMED	05/02/2020	21/02/2020	FEMALE	RESOLVED	No
3	736704	4	Sporadic	60 to 69 Years	Church-Yonge Corridor	M4W	Travel	CONFIRMED	16/02/2020	25/02/2020	FEMALE	RESOLVED	No
4	736705	5	Sporadic	60 to 69 Years	Church-Yonge Corridor	M4W	Travel	CONFIRMED	20/02/2020	26/02/2020	MALE	RESOLVED	No

DESCRIPTION OF DATA

▣ New York City Neighbourhood 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

▣ New York City Covid-19 Data

	MODIFIED_ZCTA	NEIGHBORHOOD_NAME	BOROUGH_GROUP	COVID_CASE_COUNT	COVID_CASE_RATE	POP_DENOMINATOR	COVID_DEATH_COUNT
0	10001	Chelsea/NoMad/West Chelsea	Manhattan	786	2846.48	27613.09	24
1	10002	Chinatown/Lower East Side	Manhattan	2929	3888.60	75322.71	172
2	10003	East Village/Gramercy/Greenwich Village	Manhattan	1354	2508.44	53977.81	35
3	10004	Financial District	Manhattan	131	4407.63	2972.12	1
4	10005	Financial District	Manhattan	220	2512.21	8757.23	0

METHODOLOGY

- ▣ Aggregated Data
 - Toronto

	Postal Code	Borough	Neighborhood	Latitude	Longitude	Case Count
0	M3A	North York	Parkwoods	43.753259	-79.329656	511.0
1	M4A	North York	Victoria Village	43.725882	-79.315572	374.0
2	M5A	Downtown Toronto	Regent Park, Harbourfront	43.654260	-79.360636	838.0
3	M6A	North York	Lawrence Manor, Lawrence Heights	43.718518	-79.464763	788.0
4	M9A	Etobicoke	Islington Avenue, Humber Valley Village	43.667856	-79.532242	634.0

- New York City

	Borough	Neighborhood	Latitude	Longitude	Case Count
0	Bronx	Wakefield	40.894705	-73.847201	2364.0
1	Bronx	Co-op City	40.874294	-73.829939	1222.0
2	Bronx	Fieldston	40.895437	-73.905643	433.0
3	Bronx	Riverdale	40.890834	-73.912585	1365.0
4	Bronx	Kingsbridge	40.881687	-73.902818	4000.0

METHODOLOGY

- ▣ Explore Neighbourhoods
 - Toronto

	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	Agincourt	Lounge	Breakfast Spot	Latin American Restaurant	Skating Rink	Yoga Studio	Electronics Store	Doner Restaurant	Donut Shop	Drugstore	Eastern European Restaurant
1	Alderwood, Long Branch	Pizza Place	Pharmacy	Coffee Shop	Sandwich Place	Pub	Dance Studio	Gym	Concert Hall	Dim Sum Restaurant	Ethiopian Restaurant
2	Bathurst Manor, Wilson Heights, Downsview North	Coffee Shop	Bank	Pharmacy	Fried Chicken Joint	Shopping Mall	Sandwich Place	Diner	Supermarket	Middle Eastern Restaurant	Sushi Restaurant
3	Bayview Village	Japanese Restaurant	Bank	Chinese Restaurant	Café	Eastern European Restaurant	Dog Run	Doner Restaurant	Donut Shop	Drugstore	Yoga Studio
4	Bedford Park, Lawrence Manor East	Sandwich Place	Italian Restaurant	Coffee Shop	Grocery Store	Toy / Game Store	Liquor Store	Juice Bar	Butcher	Café	Restaurant

- New York City

	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	Allerton	Pizza Place	Chinese Restaurant	Deli / Bodega	Supermarket	Fried Chicken Joint	Breakfast Spot	Martial Arts School	Fast Food Restaurant	Gas Station	Donut Shop
1	Annadale	Pizza Place	Liquor Store	Train Station	Restaurant	Diner	Park	Filipino Restaurant	Ethiopian Restaurant	Event Service	Event Space
2	Arrochar	Pizza Place	Deli / Bodega	Italian Restaurant	Bus Stop	Bagel Shop	Sandwich Place	Pharmacy	Athletics & Sports	Outdoors & Recreation	Mediterranean Restaurant
3	Arverne	Surf Spot	Metro Station	Sandwich Place	Bus Stop	Board Shop	BBQ Joint	Beach	Café	Donut Shop	Pizza Place
4	Auburndale	Italian Restaurant	Sushi Restaurant	Toy / Game Store	Train	Miscellaneous Shop	Pet Store	Pharmacy	Fast Food Restaurant	Athletics & Sports	Mobile Phone Shop

METHODOLOGY

▣ K-Means Clustering

■ Toronto

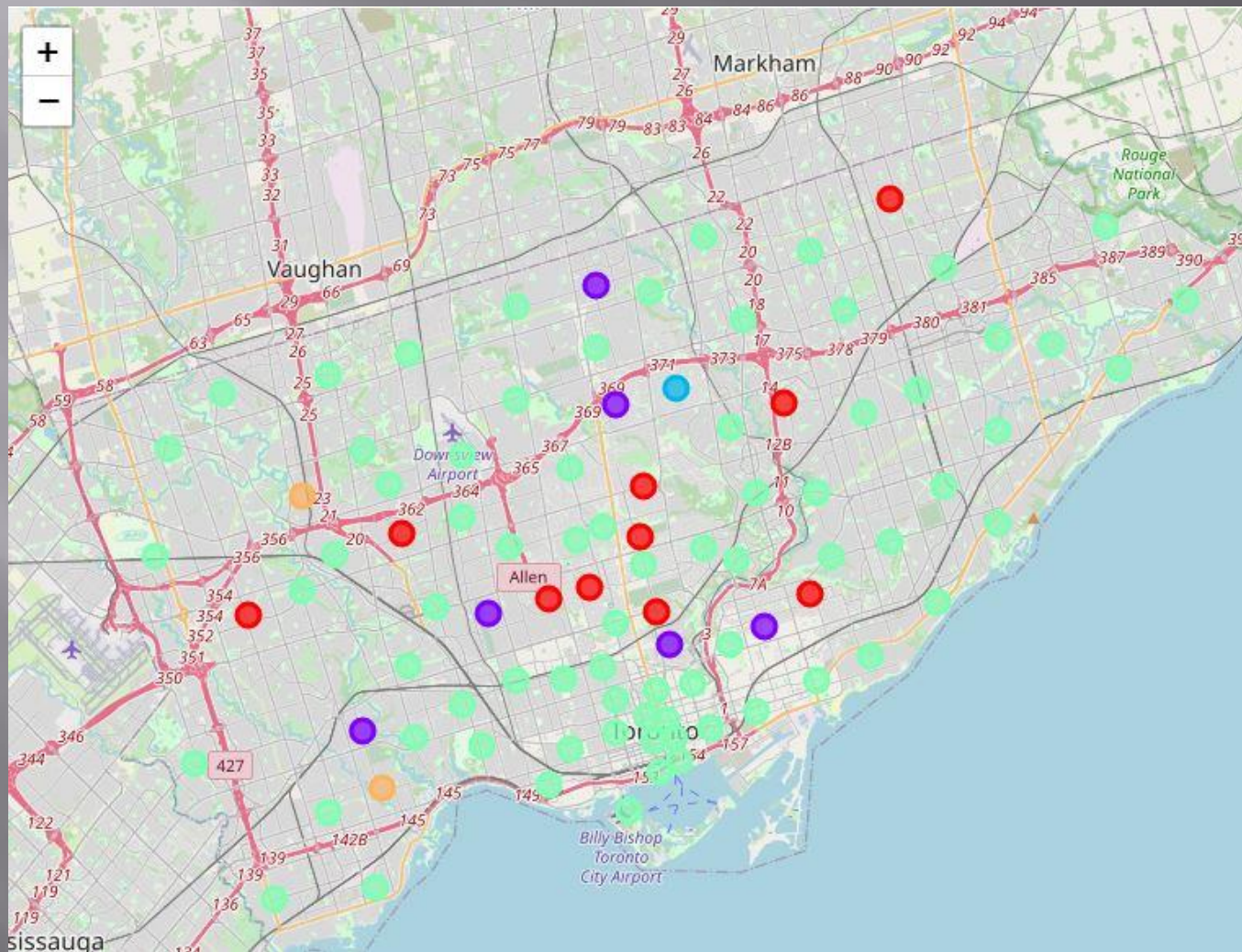
	Cluster Labels	Neighborhood	1st Most Common Venue	2nd Most Common Venue	3rd Most Common Venue	4th Most Common Venue	5th Most Common Venue	6th Most Common Venue	7th Most Common Venue	8th Most Common Venue	9th Most Common Venue	10th Most Common Venue
0	3	Agincourt	Lounge	Latin American Restaurant	Breakfast Spot	Chinese Restaurant	Drugstore	Distribution Center	Dog Run	Doner Restaurant	Donut Shop	Yoga Studio
1	3	Alderwood, Long Branch	Pizza Place	Gym	Sandwich Place	Coffee Shop	Skating Rink	Pub	Dog Run	Diner	Discount Store	Distribution Center
2	3	Bathurst Manor, Wilson Heights, Downsview North	Coffee Shop	Bank	Frozen Yogurt Shop	Bridal Shop	Sandwich Place	Diner	Restaurant	Intersection	Supermarket	Sushi Restaurant
3	3	Bayview Village	Café	Bank	Japanese Restaurant	Chinese Restaurant	Donut Shop	Distribution Center	Dog Run	Doner Restaurant	Drugstore	Diner
4	3	Bedford Park, Lawrence Manor East	Coffee Shop	Italian Restaurant	Sandwich Place	Thai Restaurant	Grocery Store	Indian Restaurant	Juice Bar	Liquor Store	Comfort Food Restaurant	Pharmacy

■ New York City

	Cluster Labels	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	4	Allerton	Deli / Bodega	Pizza Place	Supermarket	Fried Chicken Joint	Pharmacy	Breakfast Spot	Spa	Gas Station	Fast Food Restaurant	Martial Arts School
1	1	Annadale	Park	Food	Pharmacy	Diner	Sushi Restaurant	Restaurant	Bakery	Pizza Place	American Restaurant	Dance Studio
2	1	Arrochar	Bus Stop	Italian Restaurant	Deli / Bodega	Pizza Place	Food Truck	Middle Eastern Restaurant	Outdoors & Recreation	Athletics & Sports	Mediterranean Restaurant	Supermarket
3	1	Arverne	Surf Spot	Sandwich Place	Metro Station	Board Shop	Bus Stop	Beach	BBQ Joint	Coffee Shop	Donut Shop	Café
4	1	Auburndale	Italian Restaurant	Gymnastics Gym	Mobile Phone Shop	Mattress Store	Fast Food Restaurant	Toy / Game Store	Sushi Restaurant	Pet Store	Pharmacy	Noodle House

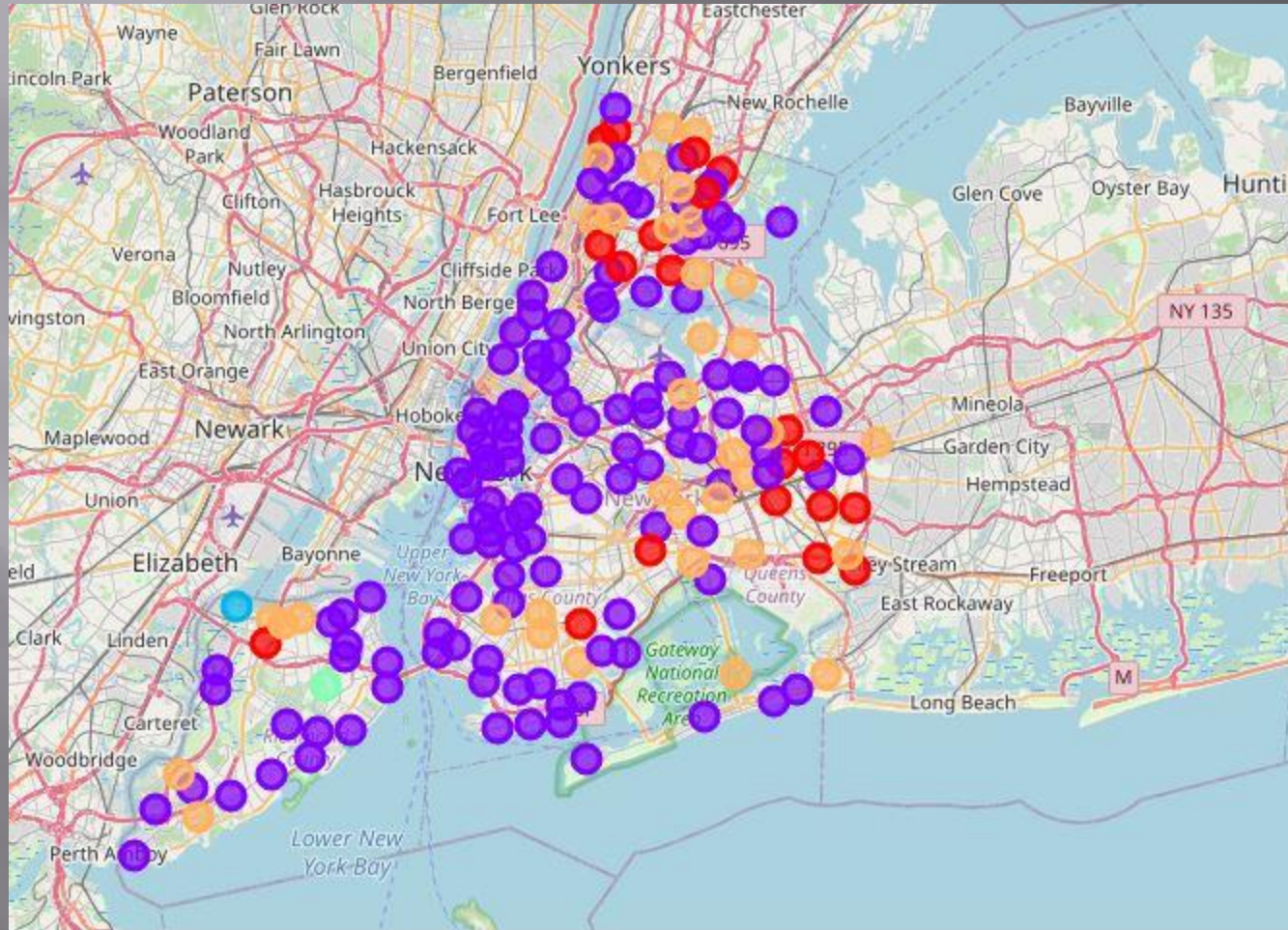
RESULTS

▣ Toronto



RESULTS

▣ New York City



DISCUSSION

▣ Toronto

CLUSTER	NATURE	NUMBER OF NEIGHBOURHOODS	AVG COVID-19 CASES PER NEIGHBOURHOOD
Cluster 1	Recreational cluster with parks, trails, swimming pools, hockey arenas, playgrounds with a few Asian Restaurants.	10	505
Cluster 2	Fitness cluster with yoga studios, parks, playgrounds, pools with no Asian Restaurants	6	374
Cluster 3	A mixed cluster with ample recreation centres, restaurants and other stores.	1	93
Cluster 4	The largest cluster with many banks, cafes, supermarkets and Japanese, Italian, Thai, Korean, Mexican restaurants.	74	687
Cluster 5	Services cantered cluster with a few Eastern European Restaurants and drug stores.	2	664

DISCUSSION

▣ New York City

CLUSTER	NATURE	NUMBER OF NEIGHBOURHOODS	AVG COVID-19 CASES PER NEIGHBOURHOOD
Cluster 1	Food cluster with a range of restaurants, food trucks, bakeries, cafes, pizza shops and ice cream shops	20	1930
Cluster 2	The largest and the competitive cluster with different types of restaurants, recreation centres and service centres	124	1685
Cluster 3	The entertainment cluster with a bar, yoga studio, event service, exhibit and an Ethiopian Restaurant.	1	570
Cluster 4	Fit & Food cluster with a park, trail and different set of restaurants	1	1495
Cluster 5	Pizza cluster with a large number of pizza shops and a range of recreational activity centres	35	1895

CONCLUSION

- ▣ Prevalence of Covid-19 pandemic has to be considered when prioritizing clusters and neighbourhoods in each city.

CITY	PRIORATISED CLUSTERS	DEPRIORATISED CLUSTERS
Toronto	Cluster 2 & Cluster 1	<i>Clusters 3, 4 & 5</i>
New York City	Cluster 5 & Cluster 3	<i>Clusters 1, 2 & 4</i>

REFERENCES

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THANK YOU