The Battle of the Neighborhoods

Toronto and Brooklyn, NY

► Analyzing the neighborhood of any capital city is important for stakeholders as well as for new immigrants for various reasons

► During Applied Data Science Capstone coursework, through weekly assignments and hands-on we explored New York City and the city of Toronto and segmented and clustered their neighborhoods.

► Both cities are very diverse and are the financial capitals of their respective countries. One interesting idea would be to compare the neighborhoods of the two cities and determine how similar or dissimilar they are. Is New York City more like Toronto or Paris or some other multicultural city

► In a city of your choice, if someone is looking to open a restaurant, where would you recommend that they open it? Similarly, if a contractor is trying to start their own business, where would you recommend that they setup their office?

Data acquisition and cleaning

- For my analysis I have used the following datalinks to download the data:
  - for NY, source: https://geo.nyu.edu/catalog/nyu_2451_34572
  - for Toronto, source: https://en.wikipedia.org/wiki/List_of_postal_codes_of_Canada:_M
- Get rid of 'Not assigned' Boroughs.
- Edit the names of Not assigned Neighbourhoods.
- NY dataframe has 5 boroughs and 306 neighborhoods.
- Toronto dataframe has 10 Boroughs.

Toronto vs Brooklyn, NY

- Toronto: 99 unique neighborhoods, 6 features
  - Total unique venue category: 234
- Brooklyn: 70 unique neighbourhoods, 6 features
  - Total unique venue category: 248
- Toronto[Longitude, Latitude]: [43.653963 , -79.387207]
- Brooklyn[Longitude, Latitude]: [40.6501038 , -73.9495823]

Top-10 most common venues in Toronto neighborhoods

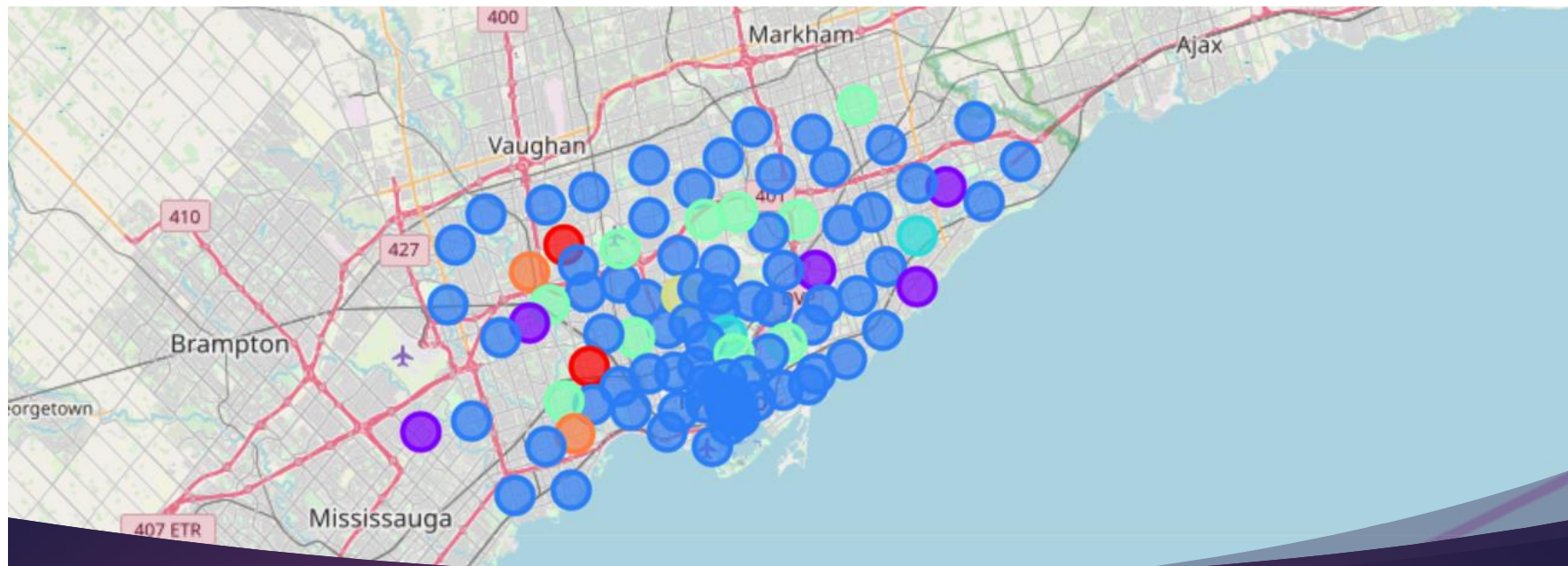|	Neighborhood	1st Most Common Venue	2nd Most Common Venue	3rd Most Common Venue	4th Most Common Venue	5th Most Common Venue	6th Most Common Venue	7th Most Common Venue	8th Most Common Venue	9th Most Common Venue	10th Most Common Venue
0	Adelaide, King, Richmond	Seafood Restaurant	Hotel	Café	Sushi Restaurant	Asian Restaurant	Coffee Shop	Noodle House	Plaza	Smoke Shop	Speakeasy
1	Agincourt	Skating Rink	Latin American Restaurant	Breakfast Spot	Lounge	Wings Joint	College Arts Building	Drugstore	Donut Shop	Dog Run	Distribution Center
2	Agincourt North, L'Amoreaux East, Milliken, St...	Park	Playground	Coffee Shop	Gastropub	Gas Station	Donut Shop	Dog Run	Distribution Center	Discount Store	Diner
3	Albion Gardens, Beaumond Heights, Humbergate, ...	Grocery Store	Pharmacy	Fast Food Restaurant	Japanese Restaurant	Video Store	Sandwich Place	Beer Store	Pizza Place	Fried Chicken Joint	Discount Store
4	Alderwood, Long Branch	Pizza Place	Coffee Shop	Pharmacy	Pub	Skating Rink	Pool	Dance Studio	Gym	Sandwich Place	Dim Sum Restaurant
5	Bathurst Manor, Downsview North, Wilson Heights	Coffee Shop	Middle Eastern Restaurant	Bank	Sushi Restaurant	Deli / Bodega	Sandwich Place	Ice Cream Shop	Pizza Place	Pharmacy	Bridal Shop
6	Bayview Village	Japanese Restaurant	Chinese Restaurant	Bank	Café	Wings Joint	Department Store	Eastern European Restaurant	Dumpling Restaurant	Drugstore	Donut Shop
7	Bedford Park, Lawrence Manor East	Coffee Shop	Italian Restaurant	Restaurant	Sushi Restaurant	Sandwich Place	Grocery Store	Fast Food Restaurant	Pub	Café	Pizza Place
8	Berczy Park	Coffee Shop	Beer Bar	Farmers Market	Café	Bakery	Cocktail Bar	Seafood Restaurant	Restaurant	Fish Market	Liquor Store
9	Birch Cliff, Cliffside West	General Entertainment	Skating Rink	College Stadium	Café	Wings Joint	Deli / Bodega	Dumpling Restaurant	Drugstore	Donut Shop	Dog Run

Top-10 most common venues in Brooklyn neighborhoods

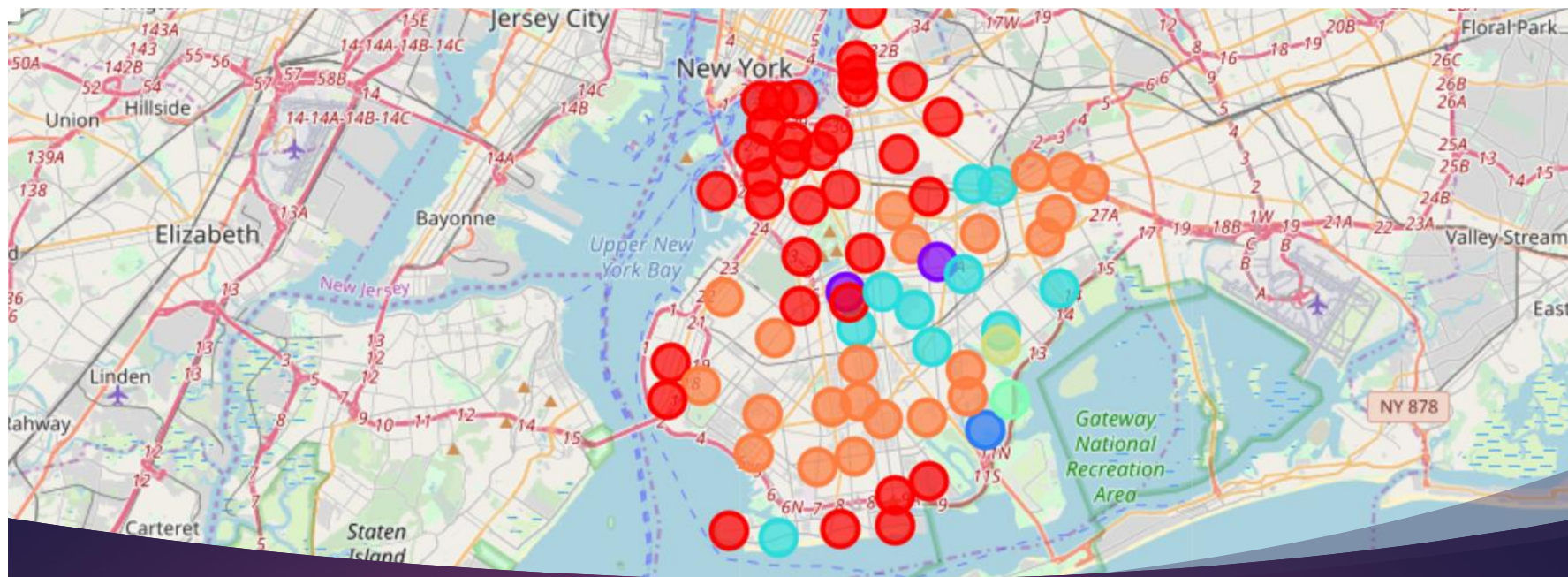|	Neighborhood	1st Most Common Venue	2nd Most Common Venue	3rd Most Common Venue	4th Most Common Venue	5th Most Common Venue	6th Most Common Venue	7th Most Common Venue	8th Most Common Venue	9th Most Common Venue	10th Most Common Venue
0	Bath Beach	Bubble Tea Shop	Pharmacy	Fast Food Restaurant	Chinese Restaurant	Italian Restaurant	Bank	Cantonese Restaurant	Burger Joint	Peruvian Restaurant	Coffee Shop
1	Bay Ridge	Spa	Pizza Place	Grocery Store	Greek Restaurant	Caucasian Restaurant	Chinese Restaurant	Lounge	Sports Bar	Breakfast Spot	Bookstore
2	Bedford Stuyvesant	Deli / Bodega	Pizza Place	Coffee Shop	Café	Bar	Japanese Restaurant	Park	Cocktail Bar	New American Restaurant	Bus Station
3	Bensonhurst	Italian Restaurant	Chinese Restaurant	Donut Shop	Sushi Restaurant	Ice Cream Shop	Grocery Store	Bridal Shop	Noodle House	Butcher	Cosmetics Shop
4	Bergen Beach	Harbor / Marina	Baseball Field	Playground	Hockey Field	Park	Donut Shop	Athletics & Sports	Farm	Farmers Market	Fast Food Restaurant
5	Boerum Hill	Bar	Yoga Studio	Furniture / Home Store	Coffee Shop	Spa	Bakery	Japanese Restaurant	Seafood Restaurant	Sandwich Place	Middle Eastern Restaurant
6	Borough Park	Bank	Pizza Place	Pharmacy	Fast Food Restaurant	Deli / Bodega	Restaurant	Coffee Shop	Chinese Restaurant	Café	Hotel
7	Brighton Beach	Restaurant	Sushi Restaurant	Russian Restaurant	Other Great Outdoors	Food & Drink Shop	Mediterranean Restaurant	Lounge	Bookstore	Supermarket	Supplement Shop
8	Broadway Junction	Diner	Donut Shop	Gas Station	Bus Stop	Burger Joint	Fried Chicken Joint	Nightclub	Metro Station	Caribbean Restaurant	Seafood Restaurant
9	Brooklyn Heights	Yoga Studio	Pet Store	Diner	Scenic Lookout	Coffee Shop	Cosmetics Shop	History Museum	Playground	Pizza Place	Pilates Studio

Model: k-means clustering

- Number of clusters used 7
- Labels 10 (10 most common venue)

Toronto_map_clusters

Brooklyn_map_clusters

Conclusion and future directions:

- During this analysis 7 clusters were defined.

- We have analyzed Toronto and Brooklyn, NY for best 10 most common Venues.

- Both cities are very diverse and are the financial capitals of their respective countries.

- The most common places for both the cities are restaurants and/or coffee shops.

- Therefore, for any Stakeholder due to the high number of competitors, the placement of any new restaurant in that area is too risky venture.

- Though, both cities are very diverse and are the financial capitals of their respective countries but most common place that people often visit is restaurants and coffee shops. We can see the availability of diverse cuisines in both cities.

- Accuracy of the models has room for improvement. Number of clusters are not optimized.