



Capstone Project Report

The Battle of Neighborhoods

Business Problem

GONE is a successful grab-and-go restaurant that is established in Regent Park, Toronto.

Recently, an opportunity to establish a franchise in Manhattan, New York appeared through their network of friends and USA collaborators.

Background

Neighborhood dynamics are one of the most important success factors of its venue in Canada;

Can we find a similar neighborhood in Manhattan?

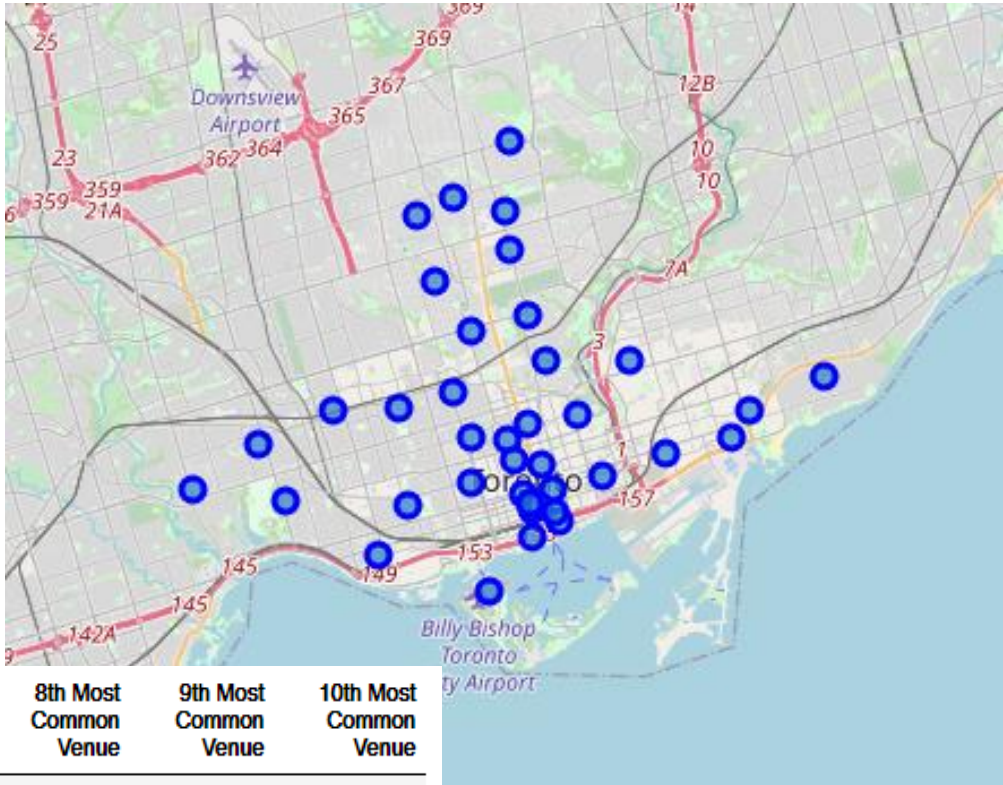
Data acquisition and cleaning

- Neighborhoods location data provided in the course;
- Fetch additional data regarding venues from Foursquare API.
 - For each neighborhood we collected the data of 100 venues within a radius of 500 meters from the given location.

In principle, this data will allow to characterize each neighborhood in terms of lifestyle and dynamics

Data for Toronto

- 39 neighborhoods;
- total of 1619 venues falling in 235 unique categories;

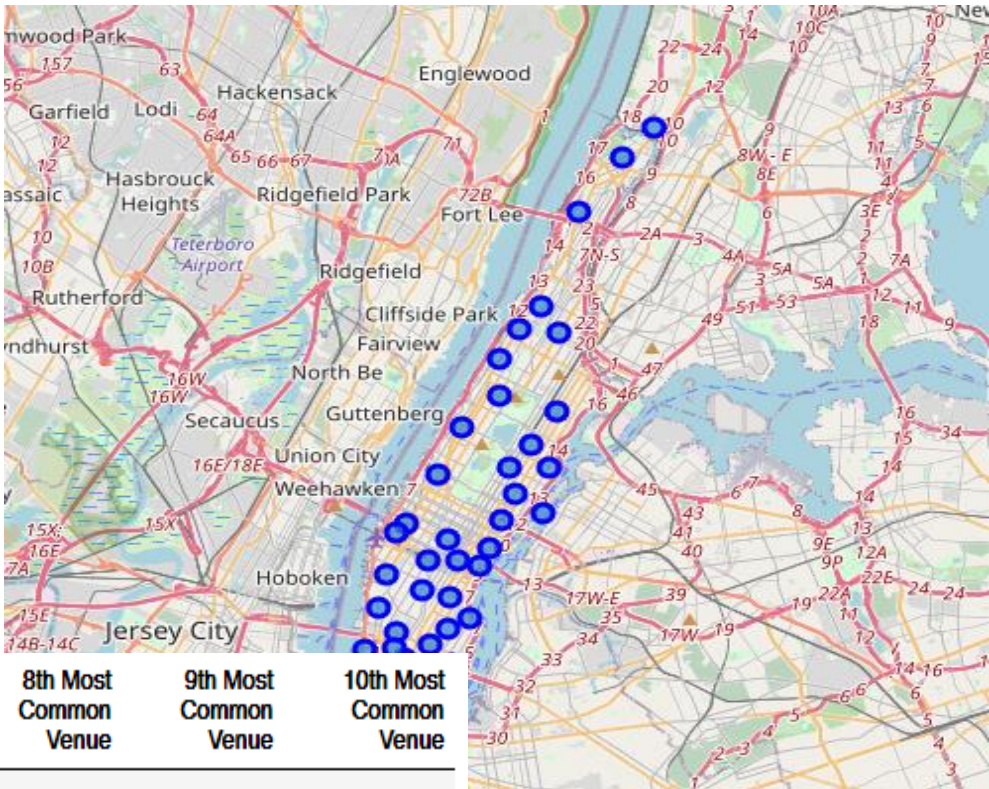


	Neighborhood	1st Most Common Venue	2nd Most Common Venue	3rd Most Common Venue	4th Most Common Venue	5th Most Common Venue	6th Most Common Venue	7th Most Common Venue	8th Most Common Venue	9th Most Common Venue	10th Most Common Venue
0	Berczy Park	Coffee Shop	Cocktail Bar	Beer Bar	Farmers Market	Pharmacy	Cheese Shop	Bakery	Restaurant	Seafood Restaurant	Butcher
1	Brockton, Parkdale Village, Exhibition Place	Café	Coffee Shop	Breakfast Spot	Grocery Store	Bakery	Bar	Italian Restaurant	Restaurant	Climbing Gym	Burrito Place
2	Business reply mail Processing Centre, South C...	Light Rail Station	Yoga Studio	Auto Workshop	Gym / Fitness Center	Garden Center	Garden	Fast Food Restaurant	Farmers Market	Comic Shop	Pizza Place
3	CN Tower, King and Spadina, Railway Lands, Har...	Airport Service	Airport Terminal	Airport Lounge	Harbor / Marina	Sculpture Garden	Plane	Rental Car Location	Boat or Ferry	Bar	Airport Gate
4	Central Bay Street	Coffee Shop	Italian Restaurant	Sandwich Place	Café	Burger Joint	Salad Place	Bubble Tea Shop	Thai Restaurant	Ramen Restaurant	Portuguese Restaurant

Data for Manhattan

- 40 neighborhoods;
- total of 3217 venues falling in 331 unique categories;

	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	Battery Park City	Coffee Shop	Hotel	Park	Clothing Store	Memorial Site	Gym	Shopping Mall	Plaza	Playground	Food Court
1	Carnegie Hill	Coffee Shop	Pizza Place	Café	Yoga Studio	Gym / Fitness Center	Bookstore	Gym	Bar	Wine Shop	Grocery Store
2	Central Harlem	French Restaurant	Chinese Restaurant	Gym / Fitness Center	Public Art	Bar	Seafood Restaurant	American Restaurant	African Restaurant	Cafeteria	Grocery Store
3	Chelsea	Coffee Shop	Bakery	Art Gallery	Ice Cream Shop	French Restaurant	Café	Italian Restaurant	Wine Shop	American Restaurant	Cycle Studio
4	Chinatown	Chinese Restaurant	Bakery	Cocktail Bar	American Restaurant	Spa	Optical Shop	Vietnamese Restaurant	Shanghai Restaurant	Supermarket	Salon / Barbershop

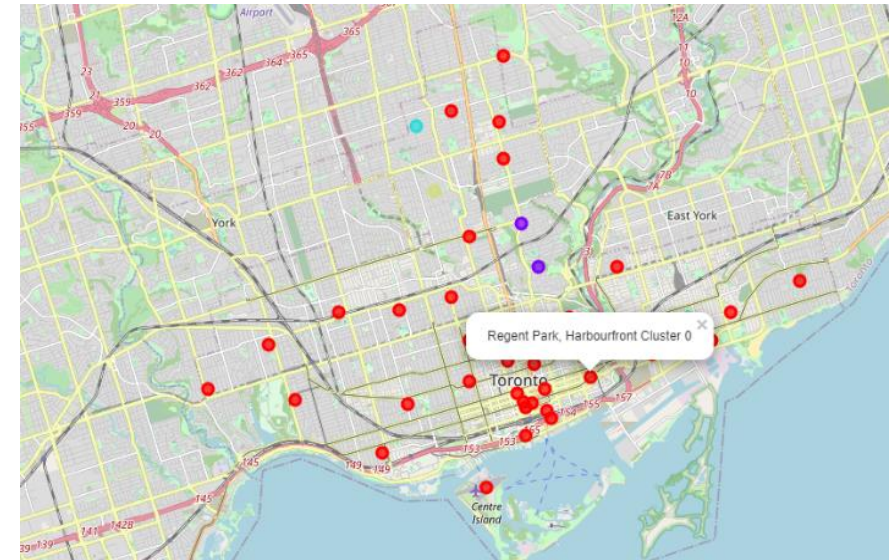
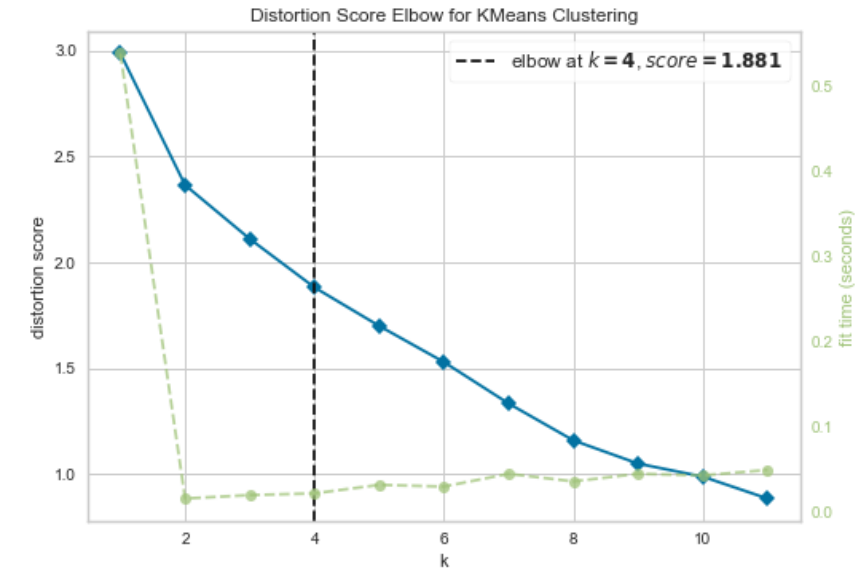


Methodology

- Clustering using k-means algorithm from sklearn library;
- Yellowbrick's KElbowVisualizer to determine optimal number of clusters k ;

Clusters in Toronto

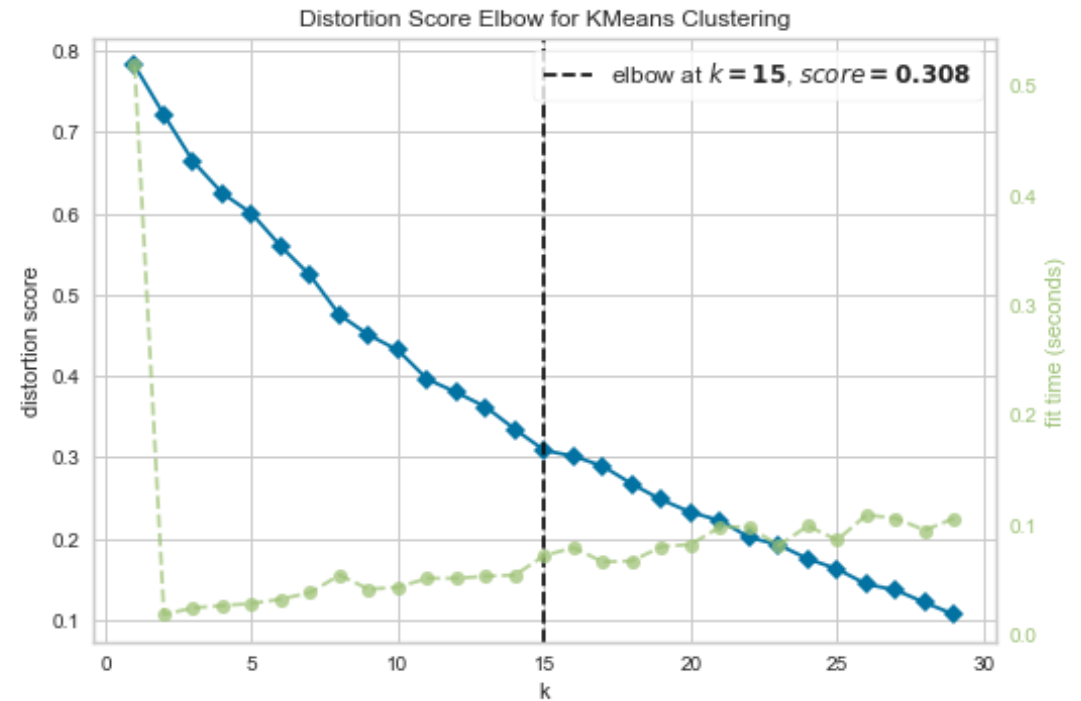
- Optimal k at k=4;
- Regent Park seems to have many similar neighborhoods in Toronto;



Clusters in Manhattan

- Optimal k at $k=15$;
- Suggests more diversity than in Toronto.

Can we still find one similar to Regent Park here?



Clustering the neighborhoods of both cities together

- Optimal k at k=14;
- Regent Park belongs to a diverse cluster that contains 2 neighborhoods in Manhattan:
Marble Hill and Financial District.

	Neighborhood	City	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	Regent Park, Harbourfront	Toronto	Coffee Shop	Café	Park	Bakery	Pub	Theater	Breakfast Spot	Electronics Store	Spa	Beer Store
1	Queen's Park, Ontario Provincial Government	Toronto	Coffee Shop	Sushi Restaurant	Yoga Studio	Diner	Smoothie Shop	Italian Restaurant	Beer Bar	Sandwich Place	Burrito Place	Discount Store
6	Central Bay Street	Toronto	Coffee Shop	Italian Restaurant	Sandwich Place	Café	Burger Joint	Salad Place	Bubble Tea Shop	Thai Restaurant	Ramen Restaurant	Portuguese Restaurant
8	Richmond, Adelaide, King	Toronto	Coffee Shop	Café	Hotel	Restaurant	Gym	Deli / Bodega	Thai Restaurant	American Restaurant	Steakhouse	Lounge
10	Harbourfront East, Union Station, Toronto Islands	Toronto	Coffee Shop	Aquarium	Hotel	Café	Scenic Lookout	Brewery	Italian Restaurant	Fried Chicken Joint	Restaurant	Music Venue
13	Toronto Dominion Centre, Design Exchange	Toronto	Coffee Shop	Hotel	Café	Salad Place	Restaurant	American Restaurant	Seafood Restaurant	Japanese Restaurant	Italian Restaurant	Beer Bar
14	Brockton, Parkdale Village, Exhibition Place	Toronto	Café	Coffee Shop	Breakfast Spot	Grocery Store	Bakery	Bar	Italian Restaurant	Restaurant	Climbing Gym	Burrito Place
16	Commerce Court, Victoria Hotel	Toronto	Coffee Shop	Restaurant	Café	Hotel	American Restaurant	Gym	Italian Restaurant	Seafood Restaurant	Deli / Bodega	Japanese Restaurant
31	Summerhill West, Rathnelly, South Hill, Forest...	Toronto	Coffee Shop	Pizza Place	Liquor Store	Restaurant	Bank	Pub	Bagel Shop	Supermarket	Sushi Restaurant	Fried Chicken Joint
34	Stn A PO Boxes	Toronto	Coffee Shop	Seafood Restaurant	Italian Restaurant	Japanese Restaurant	Cocktail Bar	Beer Bar	Café	Restaurant	Hotel	Creperie
36	First Canadian Place, Underground city	Toronto	Coffee Shop	Café	Hotel	Restaurant	Gym	Japanese Restaurant	American Restaurant	Seafood Restaurant	Asian Restaurant	Salad Place
37	Church and Wellesley	Toronto	Coffee Shop	Japanese Restaurant	Sushi Restaurant	Restaurant	Gay Bar	Yoga Studio	Café	Men's Store	Mediterranean Restaurant	Hotel
39	Marble Hill	New York	Gym	Discount Store	Coffee Shop	Sandwich Place	Yoga Studio	Pizza Place	Deli / Bodega	Department Store	Diner	Pharmacy
68	Financial District	New York	Coffee Shop	Pizza Place	American Restaurant	Cocktail Bar	Bar	Park	Gym	Italian Restaurant	Falafel Restaurant	Mexican Restaurant

Conclusions

- Clustering techniques suggest that Marble Hill and Financial District are a good option to establish a new venue in Manhattan based on neighborhood similarity with Regent Park, Toronto;
- To better explore and confirm these results additional search involving venues rate and popularity would be beneficial for more solid conclusions.