



The Battle of Neighborhoods

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Introduction

Two of the largest cities in the world, Manhattan and Toronto, are constantly receiving attention from potential businessmen/women. As many can simply physically fly over to the cities to see what they offer, it proves to be inconvenient to do so, especially in times like during the current pandemic. The project developed here will allow these people to view business in the areas of both cities with location data and visual aids to provide further details to them in order to assist in their decision. This project removes the need for constant research or physical travel by conveniently giving all the details in a well-designed manner.

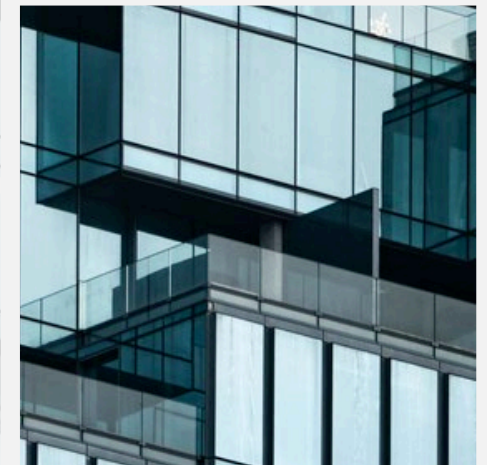
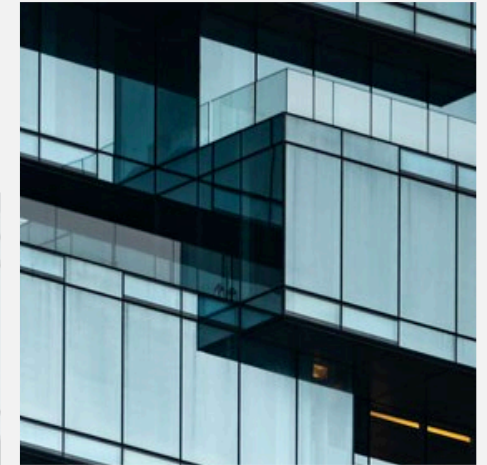
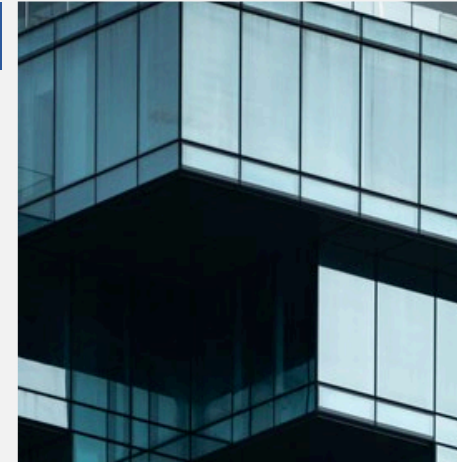


Data

We will begin by scraping the Wikipedia pages at:

- https://en.wikipedia.org/wiki/List_of_Manhattan_neighborhoods
- https://en.wikipedia.org/wiki/List_of_postal_codes_of_Canada:_M

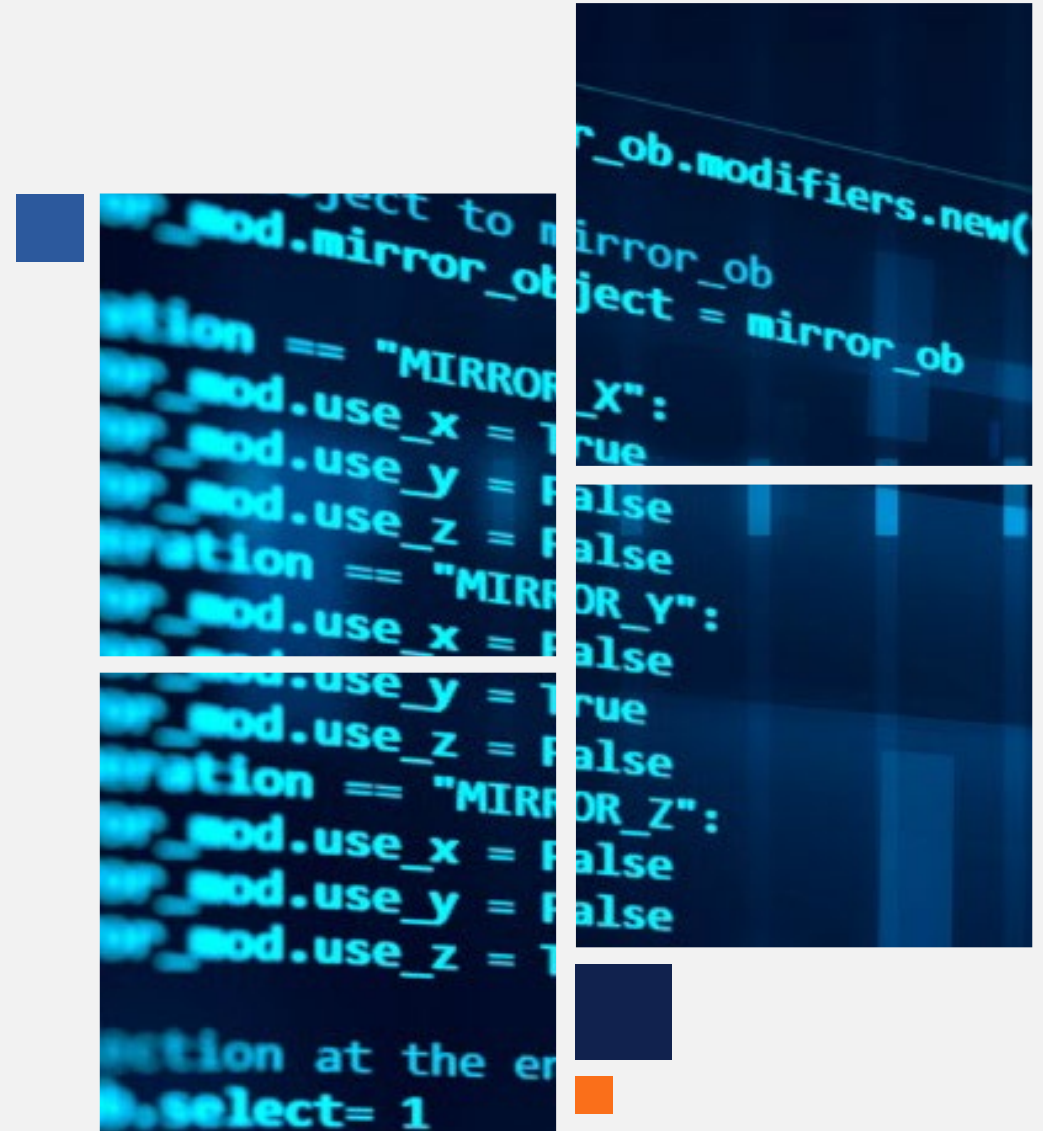
The Manhattan table will be mainly used for its "Name of the neighborhood" column while the Canada table will be used for "Postal Code", "Borough", and "Neighbourhood". We will also be using the ArcGIS API in order to develop longitude and latitude coordinates for each neighborhood and will then be using Foursquare location data to discover local business within each neighborhood. Neighbourhood, Neighbourhood Latitude, Neighbourhood Longitude, Venue, Venue Latitude, Venue Longitude, and Venue Category will all be collected using the Foursquare location data. We then cluster the neighborhoods based on similar values and present the information.



Data (cont.)

The data was cleaned and removed of any null or useless values that were incomplete.

The Canada data at the end of the process contained 12 features, while Manhattan data contained 13 after inclusion of altitude as a feature.





Why is this
information
useful?

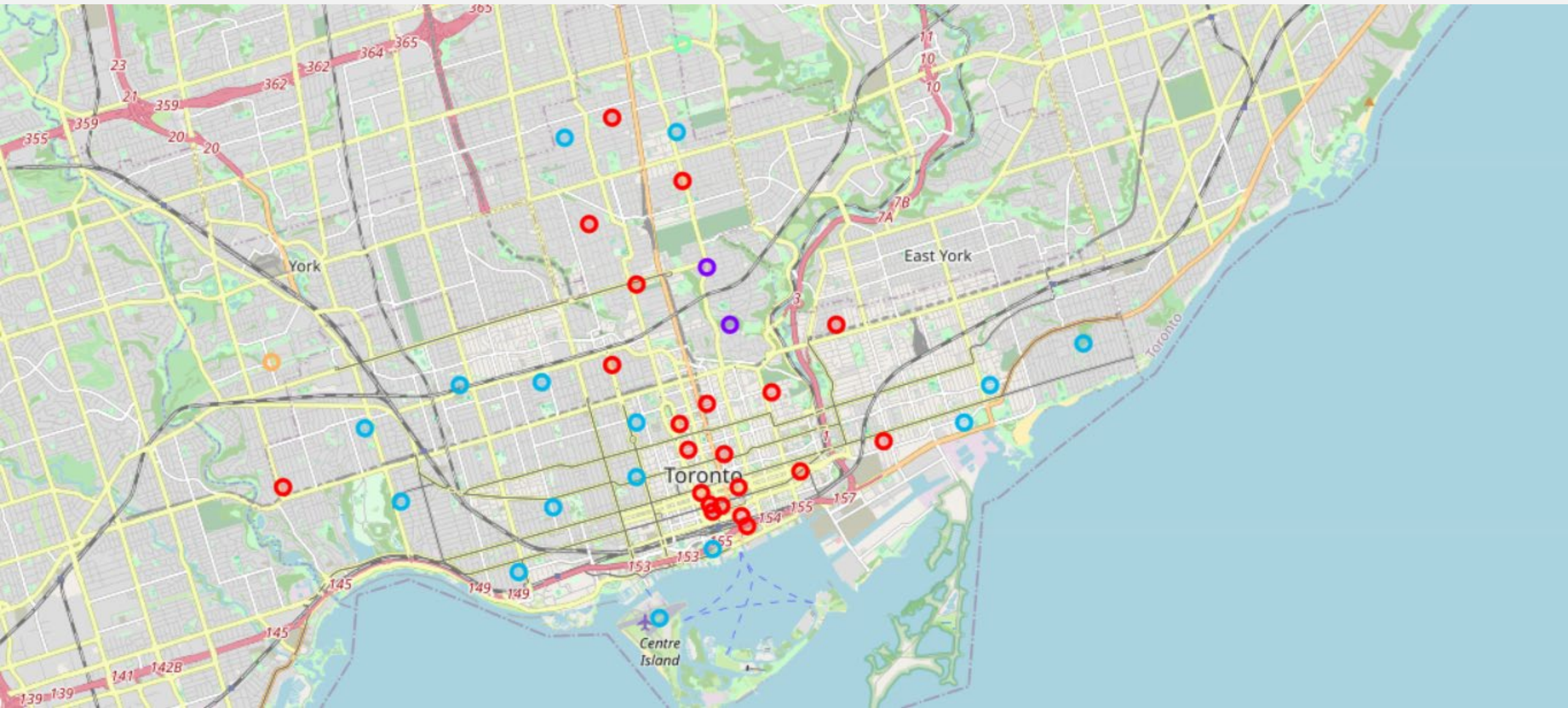
Let's dive in





This information can prove to be important for potential business owners looking to invest in their own business ventures within these two cities. The businessmen/women will be able to identify strong business presence and should be able to comfortably decide if these cities would be strong investment decisions, whether positive or negative.

Toronto Neighborhood/Venue Clusters



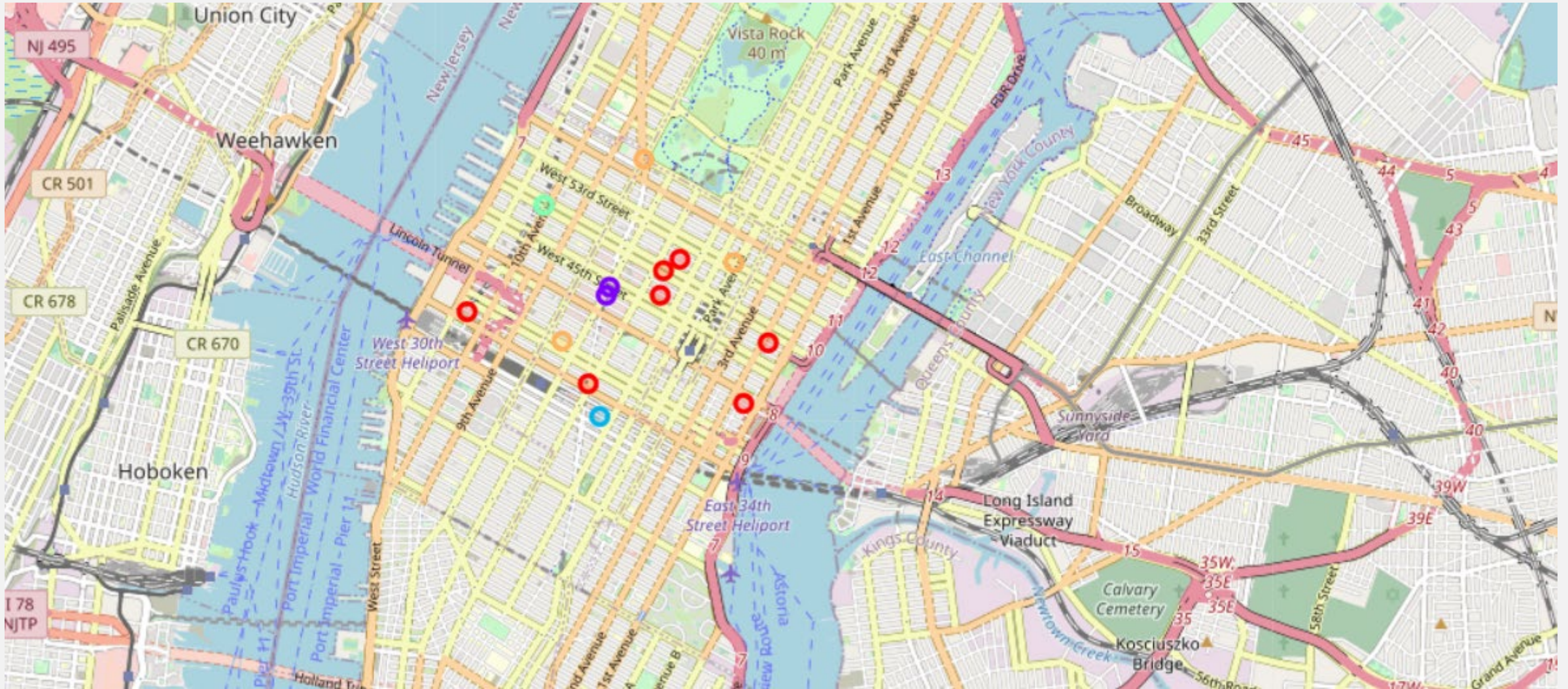
Toronto Venues Cluster

	Postal Code	Borough	Neighbourhood	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
2	M5A	Downtown Toronto	Regent Park, Harbourfront	43.654260	-79.360636	0	Coffee Shop	Park	Bakery	Breakfast Spot	Café	Theater	Yoga Studio	Gym / Fitness Center	Pub	Performing Arts Venue
4	M7A	Downtown Toronto	Queen's Park, Ontario Provincial Government	43.662301	-79.389494	0	Coffee Shop	Sushi Restaurant	Diner	Park	Beer Bar	Smoothie Shop	Sandwich Place	Burrito Place	Café	College Auditorium
9	M5B	Downtown Toronto	Garden District, Ryerson	43.657162	-79.378937	0	Café	Coffee Shop	Theater	Shopping Mall	Fast Food Restaurant	Sandwich Place	Bookstore	Diner	Burger Joint	Music Venue
15	M5C	Downtown Toronto	St. James Town	43.651494	-79.375418	0	Gastropub	Café	Coffee Shop	Farmers Market	BBQ Joint	New American Restaurant	Cocktail Bar	Movie Theater	Cosmetics Shop	Middle Eastern Restaurant
19	M4E	East Toronto	The Beaches	43.676357	-79.293031	2	Asian Restaurant	Trail	Health Food Store	Pub	Neighborhood	Coworking Space	Distribution Center	Discount Store	Diner	Dessert Shop

Example Of Information Within Clusters for Toronto

	Borough	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
2	Downtown Toronto	0	Coffee Shop	Park	Bakery	Breakfast Spot	Café	Theater	Yoga Studio	Gym / Fitness Center	Pub	Performing Arts Venue
4	Downtown Toronto	0	Coffee Shop	Sushi Restaurant	Diner	Park	Beer Bar	Smoothie Shop	Sandwich Place	Burrito Place	Café	College Auditorium
9	Downtown Toronto	0	Café	Coffee Shop	Theater	Shopping Mall	Fast Food Restaurant	Sandwich Place	Bookstore	Diner	Burger Joint	Music Venue
15	Downtown Toronto	0	Gastropub	Café	Coffee Shop	Farmers Market	BBQ Joint	New American Restaurant	Cocktail Bar	Movie Theater	Cosmetics Shop	Middle Eastern Restaurant
20	Downtown Toronto	0	Cocktail Bar	Farmers Market	Beer Bar	Coffee Shop	Seafood Restaurant	Restaurant	Basketball Stadium	Jazz Club	Breakfast Spot	Liquor Store
24	Downtown Toronto	0	Coffee Shop	Italian Restaurant	Café	Poke Place	Japanese Restaurant	Seafood Restaurant	Sandwich Place	Bubble Tea Shop	Ramen Restaurant	Comic Shop
30	Downtown Toronto	0	Coffee Shop	Café	Seafood Restaurant	Asian Restaurant	Vegetarian / Vegan Restaurant	Sushi Restaurant	Smoke Shop	Hotel	Lounge	Speakeasy
41	East Toronto	0	Greek Restaurant	Italian Restaurant	Coffee Shop	Ice Cream Shop	Furniture / Home Store	Pub	Pizza Place	Juice Bar	Grocery Store	Fruit & Vegetable Store
42	Downtown Toronto	0	Café	Coffee Shop	Japanese Restaurant	Bakery	Restaurant	Gym	Deli / Bodega	Steakhouse	Hotel	Sandwich Place
48	Downtown Toronto	0	Café	Hotel	Gastropub	Restaurant	American Restaurant	Coffee Shop	New American Restaurant	Tailor Shop	Seafood Restaurant	Japanese Restaurant
54	East Toronto	0	Coffee Shop	Bakery	Café	American Restaurant	Yoga Studio	Park	Seafood Restaurant	Brewery	Cheese Shop	Gastropub

Manhattan Neighborhoods/Venue Clusters



Manhattan Venues Cluster

	Name_of_the_neighborhood	location	point	latitude	longitude	altitude	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	Columbus Circle	(Columbus Circle, Broadway, Columbus Circle, M...	(40.76808045, -73.98189744682783, 0.0)	40.768080	-73.981897	0.0	4.0	Jazz Club	French Restaurant	Juice Bar	Bakery	Kitchen Supply Store	Spa	Grocery Store	Department Store	Community Center	Noodle House
1	Sutton Place	(Sutton Place, Bull Lane, Sutton Green, Woking...	(51.27196705, -0.5510324033859777, 0.0)	51.271967	-0.551032	0.0	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN
2	Rockefeller Center	(Rockefeller Center, 45, Rockefeller Plaza, Mi...	(40.75925755, -73.97995686116377, 0.0)	40.759258	-73.979957	0.0	0.0	American Restaurant	Steakhouse	Plaza	Food Truck	French Restaurant	Toy / Game Store	Concert Hall	Gym	Cosmetics Shop	Salad Place
3	Diamond District	(Diamond District, West 47th Street, Diamond D...	(40.757242, -73.9801423, 0.0)	40.757242	-73.980142	0.0	0.0	Plaza	American Restaurant	Sporting Goods Shop	Steakhouse	Toy / Game Store	Sandwich Place	Salad Place	Fast Food Restaurant	Concert Hall	Cosmetics Shop
4	Theater District	(Theater District, Manhattan Community Board 5...	(40.7579801, -73.9855452, 0.0)	40.757980	-73.985545	0.0	1.0	Theater	Hotel	Plaza	Accessories Store	Theme Restaurant	Seafood Restaurant	Sushi Restaurant	Taco Place	Office	Concert Hall

Example Of Information Within Clusters for Manhattan

	location	altitude	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
2	(Rockefeller Center, 45, Rockefeller Plaza, Mi...	0.0	0.0	American Restaurant	Steakhouse	Plaza	Food Truck	French Restaurant	Toy / Game Store	Concert Hall	Gym	Cosmetics Shop	Salad Place
3	(Diamond District, West 47th Street, Diamond D...	0.0	0.0	Plaza	American Restaurant	Sporting Goods Shop	Steakhouse	Toy / Game Store	Sandwich Place	Salad Place	Fast Food Restaurant	Concert Hall	Cosmetics Shop
5	(Turtle Bay, Manhattan Community Board 6, Manh...	0.0	0.0	Wine Bar	Japanese Restaurant	Sushi Restaurant	Karaoke Bar	Tailor Shop	Museum	Seafood Restaurant	Farmers Market	Roof Deck	Café
7	(Midtown, Manhattan Community Board 5, Manhatt...	0.0	0.0	American Restaurant	Plaza	Exhibit	Clothing Store	Steakhouse	Burrito Place	Sculpture Garden	Concert Hall	Gift Shop	Churrascaria
8	(Tudor City, Manhattan Community Board 6, Manh...	0.0	0.0	Coffee Shop	Park	Seafood Restaurant	Japanese Restaurant	Deli / Bodega	Sushi Restaurant	Yoga Studio	Sandwich Place	Garden	Sake Bar
11	(Hudson Yards, Manhattan Community Board 4, Ma...	0.0	0.0	American Restaurant	Gym / Fitness Center	Art Gallery	Hotel	Cycle Studio	Roof Deck	Music School	Cocktail Bar	Scenic Lookout	Salad Place
15	(Herald Square, Manhattan Community Board 5, M...	0.0	0.0	Burger Joint	Clothing Store	Korean Restaurant	Gym / Fitness Center	Scenic Lookout	Coffee Shop	Cosmetics Shop	Shoe Store	Snack Place	Indian Restaurant

Conclusion

- Useful models, visualizations, and clusters were produced that provide accurate information about businesses that operate within Toronto and Manhattan. The popularity was also ranked to provide more insight as to what business may succeed more.
- Provided details about both business and cultural diversity based on business types.
- There is room for improvement, some issues were had with the Foursquare API and inaccurate location readings, which were simply dropped in the process.
- Future goal would be to implement information about ethnicity by Neighborhood in order to provide more information to possible restaurant or cultural club owners.