# Compare the Most Common Places between New York and Toronto

By

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## Introduction

- In this project, I will compare the similarity/dissimilarity between the two cities: New York and Toronto.
- I will try to find what are the top 10 most common venues in each neighborhood of each city
- This finding will help people determine which is the best place to visit, study, or do business.
- I will use Python and Foursquare API to assist my analysis.

## Data

Based on the introduction that I stated above, I need data for each city, including:

- Borough and neighborhood of each city
- Latitude and longitude of each neighborhood in each city

**Data sources**:

1. New York City https://cf-courses-data.s3.us.cloud-object-storage.appdomain.cloud/IBMDeveloperSkillsNetwork-DS0701EN-SkillsNetwork/labs/newyork_data.json

2. Toronto City https://en.wikipedia.org/wiki/List_of_postal_codes_of_Canada:_M

   https://cocl.us/Geospatial_data

### Data processing

**For New York data:**

I get the json file from the server https://cf-courses-data.s3.us.cloud-object-storage.appdomain.cloud/IBMDeveloperSkillsNetwork-DS0701EN-SkillsNetwork/labs/newyork_data.json. Then, I transformed the data into a dataframe using pandas library.

After that, I looped through the data and fill the dataframe one row at a time. Below is the output of the 5 rows of the dataframe:

| | 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 |

**For Toronto data**:

I did the slightly different processing. The first difference was that I used BeautifulSoup library to scape data from https://en.wikipedia.org/wiki/List_of_postal_codes_of_Canada:_M for Toronto city.

Another different was that, Toronto data has some "Not assigned" inputs in the Borough column, and I need to remove them.

*Here is the dataset before removing "Not assigned" in the Borough column.*

| | PostalCode | Borough | Neighborhood |
|---|---|---|---|
| 0 | M1A | Not assigned | Not assigned |
| 1 | M2A | Not assigned | Not assigned |
| 2 | M3A | North York | Parkwoods |
| 3 | M4A | North York | Victoria Village |
| 4 | M5A | Downtown Toronto | Regent Park, Harbourfront |

*After removing "Not assigned" in the Borough column*

| | PostalCode | Borough | Neighborhood |
|---|---|---|---|
| 2 | M3A | North York | Parkwoods |
| 3 | M4A | North York | Victoria Village |
| 4 | M5A | Downtown Toronto | Regent Park, Harbourfront |
| 5 | M6A | North York | Lawrence Manor, Lawrence Heights |
| 6 | M7A | Downtown Toronto | Queen's Park, Ontario Provincial Government |

I grouped the data by "PostalCode"

| | PostalCode | Borough | Neighborhood |
|---|---|---|---|
| 0 | M1B | Scarborough | Malvern, Rouge |
| 1 | M1C | Scarborough | Rouge Hill, Port Union, Highland Creek |
| 2 | M1E | Scarborough | Guildwood, Morningside, West Hill |
| 3 | M1G | Scarborough | Woburn |
| 4 | M1H | Scarborough | Cedarbrae |

Since, the latitude and longitude of Toronto data are not available in the above data. I need to get the those coordinates from https://cocl.us/Geospatial_data.

| | Postal Code | Latitude | Longitude |
|---|---|---|---|
| 0 | M1B | 43.806686 | -79.194353 |
| 1 | M1C | 43.784535 | -79.160497 |
| 2 | M1E | 43.763573 | -79.188711 |
| 3 | M1G | 43.770992 | -79.216917 |
| 4 | M1H | 43.773136 | -79.239476 |

Then, I merged those two datasets to get a new dataframe with columns: "Borough", "Neighborhood", "Latitude", and "Longitude" same as New York data.

Lastly, since the original data contains many boroughs in Canada, but we only want data for Toronto. So that I sliced the data to get information for Toronto only.

| | PostalCode | Borough | Neighborhood | Latitude | Longitude |
|---|---|---|---|---|---|
| 0 | M4E | East Toronto | The Beaches | 43.676357 | -79.293031 |
| 1 | M4K | East Toronto | The Danforth West, Riverdale | 43.679557 | -79.352188 |
| 2 | M4L | East Toronto | India Bazaar, The Beaches West | 43.668999 | -79.315572 |
| 3 | M4M | East Toronto | Studio District | 43.659526 | -79.340923 |
| 4 | M4N | Central Toronto | Lawrence Park | 43.728020 | -79.388790 |

## Methodology

In this project, I will compare the similarity/dissimilarity between New York and Toronto cities.

First, I will get data for each city including their neighborhood and common venues in each neighborhood. We also get latitudes and longitudes of each city.
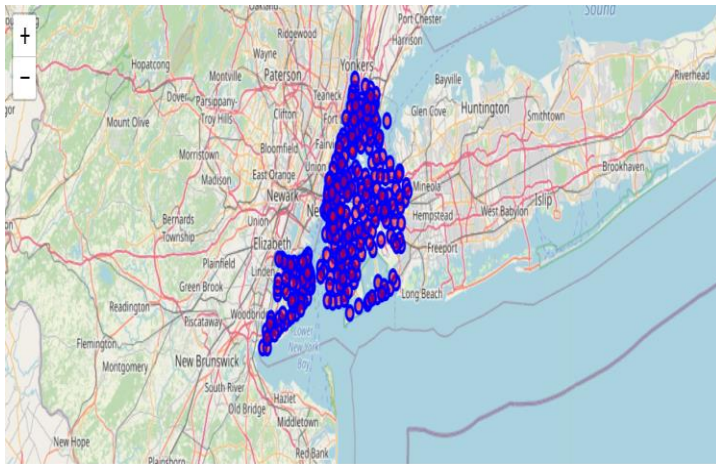
Second, I explore and analyze data and find most common places in each city.

Finally, I will compare between the two cities to see what are the most famous places of each city.

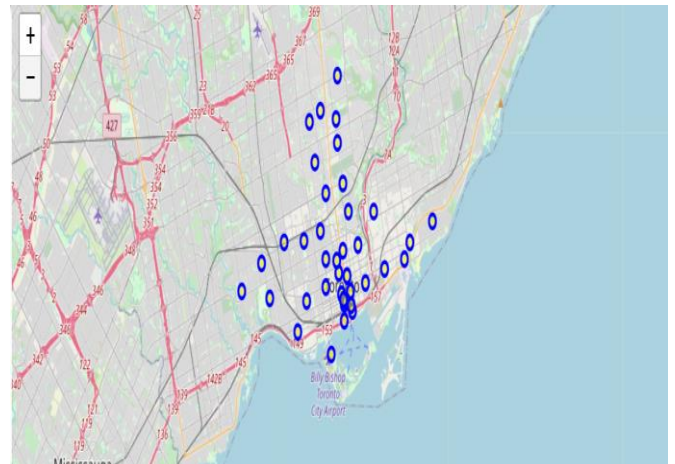## Analysis

I created a map of New York and Toronto to get an overview of the two cities using the latitudes and longitudes values.

New York                                                    Toronto



Then, I did some processing to get nearby venues for each neighborhood in each city. There are 470 unique categories for New York city and 280 unique categories for Toronto.

Below is the first few rows of nearby venues after grouping by "Neighborhood" column.

**New York:**

| Neighborhood | Neighborhood Latitude | Neighborhood Longitude | Venue | Venue Latitude | Venue Longitude | Venue Category |
|---|---|---|---|---|---|---|
| Allerton | 67 | 67 | 67 | 67 | 67 | 67 |
| Annadale | 16 | 16 | 16 | 16 | 16 | 16 |
| Arden Heights | 21 | 21 | 21 | 21 | 21 | 21 |
| Arlington | 24 | 24 | 24 | 24 | 24 | 24 |
| Arrochar | 23 | 23 | 23 | 23 | 23 | 23 |
| Arverne | 30 | 30 | 30 | 30 | 30 | 30 |
| Astoria | 100 | 100 | 100 | 100 | 100 | 100 |
| Astoria Heights | 79 | 79 | 79 | 79 | 79 | 79 |
| Auburndale | 100 | 100 | 100 | 100 | 100 | 100 |
| Bath Beach | 100 | 100 | 100 | 100 | 100 | 100 |

**Toronto:**

| Neighborhood | Neighborhood Latitude | Neighborhood Longitude | Venue | Venue Latitude | Venue Longitude | Venue Category |
|---|---|---|---|---|---|---|
| Berczy Park | 100 | 100 | 100 | 100 | 100 | 100 |
| Brockton, Parkdale Village, Exhibition Place | 100 | 100 | 100 | 100 | 100 | 100 |
| Business reply mail Processing Centre, South Central Letter Processing Plant Toronto | 50 | 50 | 50 | 50 | 50 | 50 |
| CN Tower, King and Spadina, Railway Lands, Harbourfront West, Bathurst Quay, South Niagara, Island airport | 14 | 14 | 14 | 14 | 14 | 14 |
| Central Bay Street | 100 | 100 | 100 | 100 | 100 | 100 |
| Christie | 100 | 100 | 100 | 100 | 100 | 100 |
| Church and Wellesley | 100 | 100 | 100 | 100 | 100 | 100 |
| Commerce Court, Victoria Hotel | 100 | 100 | 100 | 100 | 100 | 100 |
| Davisville | 100 | 100 | 100 | 100 | 100 | 100 |
| Davisville North | 100 | 100 | 100 | 100 | 100 | 100 |
| Dufferin, Dovercourt Village | 64 | 64 | 64 | 64 | 64 | 64 |
| First Canadian Place, Underground city | 100 | 100 | 100 | 100 | 100 | 100 |

Next, I analyzed each neighborhood of each city, and here is summary of the output.

**New York:**

| | Neighborhood | Zoo Exhibit | Accessories Store | Adult Boutique | Afghan Restaurant | African Restaurant | Airport Lounge | Airport Service | Airport Terminal | American Restaurant | Amphitheater | Animal Shelter | Antique Shop |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | Allerton | 0.000000 | 0.000000 | 0.00 | 0.000000 | 0.000000 | 0.000000 | 0.000000 | 0.000000 | 0.014925 | 0.000000 | 0.000000 | 0.000000 |
| 1 | Annadale | 0.000000 | 0.000000 | 0.00 | 0.000000 | 0.000000 | 0.000000 | 0.000000 | 0.000000 | 0.125000 | 0.000000 | 0.000000 | 0.000000 |
| 2 | Arden Heights | 0.000000 | 0.000000 | 0.00 | 0.000000 | 0.000000 | 0.000000 | 0.000000 | 0.000000 | 0.000000 | 0.000000 | 0.000000 | 0.000000 |
| 3 | Arlington | 0.000000 | 0.000000 | 0.00 | 0.000000 | 0.000000 | 0.000000 | 0.000000 | 0.000000 | 0.000000 | 0.000000 | 0.000000 | 0.000000 |
| 4 | Arrochar | 0.000000 | 0.000000 | 0.00 | 0.000000 | 0.000000 | 0.000000 | 0.000000 | 0.000000 | 0.000000 | 0.000000 | 0.000000 | 0.000000 |
| 5 | Arverne | 0.000000 | 0.000000 | 0.00 | 0.000000 | 0.000000 | 0.000000 | 0.000000 | 0.000000 | 0.000000 | 0.000000 | 0.000000 | 0.000000 |
| 6 | Astoria | 0.000000 | 0.000000 | 0.00 | 0.000000 | 0.000000 | 0.000000 | 0.000000 | 0.000000 | 0.000000 | 0.000000 | 0.000000 | 0.000000 |
| 7 | Astoria Heights | 0.000000 | 0.000000 | 0.00 | 0.000000 | 0.000000 | 0.012658 | 0.050633 | 0.025316 | 0.000000 | 0.000000 | 0.000000 | 0.000000 |
| 8 | Auburndale | 0.000000 | 0.000000 | 0.00 | 0.000000 | 0.000000 | 0.000000 | 0.000000 | 0.000000 | 0.020000 | 0.000000 | 0.000000 | 0.000000 |

**Toronto:**

| | Neighborhood | Zoo | Accessories Store | Airport | American Restaurant | Amphitheater | Animal Shelter | Antique Shop | Aquarium | Art Gallery | Art Museum | Arts & Crafts Store | Asian Restaurant | Athletics & Sports |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | Berczy Park | 0.00 | 0.00 | 0.000000 | 0.010000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.010000 | 0.00 | 0.00 | 0.000000 | 0.000000 |
| 1 | Brockton, Parkdale Village, Exhibition Place | 0.00 | 0.01 | 0.000000 | 0.010000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.010000 | 0.00 | 0.02 | 0.000000 | 0.010000 |
| 2 | Business reply mail Processing Centre, South C... | 0.00 | 0.00 | 0.000000 | 0.020000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.000000 | 0.00 | 0.02 | 0.000000 | 0.000000 |
| 3 | CN Tower, King and Spadina | 0.00 | 0.00 | 0.071429 | 0.000000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.000000 | 0.00 | 0.00 | 0.000000 | 0.000000 |

I then created a dataframe and show the top 10 most common venues of each neighborhood in New York and Toronto. Below is the summary of the first 5 rows of the top 10 common places.

## New York:

| | 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 | Fried Chicken Joint | Deli / Bodega | Donut Shop | Caribbean Restaurant | Pharmacy | Bus Station | Mexican Restaurant | Fast Food Restaurant | Sandwich Place |
| 1 | Annadale | Pizza Place | Restaurant | Trail | American Restaurant | Dance Studio | Deli / Bodega | Home Service | Bus Stop | Diner | Train Station |
| 2 | Arden Heights | Park | Bus Stop | Italian Restaurant | Spa | Bank | Bagel Shop | Trail | Pharmacy | Coffee Shop | Sandwich Place |
| 3 | Arlington | Boat or Ferry | Bus Stop | Hardware Store | Fast Food Restaurant | Discount Store | Rental Service | Convenience Store | Snack Place | Grocery Store | Coffee Shop |
| 4 | Arrochar | Italian Restaurant | Bus Stop | Beach | Baseball Field | Plaza | Supermarket | Outdoors & Recreation | Park | Grocery Store | Middle Eastern Restaurant |

## Toronto:

| | Neighborhood | 1st Most common venues | 2nd Most common venues | 3rd Most common venues | 4th most common venues | 5th most common venues | 6th most common venues | 7th most common venues | 8th most common venues | 9th most common venues | 10th most common venues |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | Berczy Park | Coffee Shop | Café | Hotel | Japanese Restaurant | Park | Restaurant | Beer Bar | Gastropub | Bakery | Gym |
| 1 | Brockton, Parkdale Village, Exhibition Place | Coffee Shop | Café | Bar | Restaurant | Furniture / Home Store | Bakery | Tibetan Restaurant | Gift Shop | Soccer Stadium | Indian Restaurant |
| 2 | Business reply mail Processing Centre, South C... | Park | Coffee Shop | Pizza Place | Brewery | Italian Restaurant | Sushi Restaurant | Fast Food Restaurant | Bakery | Snack Place | Bistro |
| 3 | CN Tower, King and Spadina, Railway Lands, Har... | Harbor / Marina | Coffee Shop | Café | Scenic Lookout | Sculpture Garden | Dog Run | Park | Track | Garden | Dance Studio |
| 4 | Central Bay Street | Coffee Shop | Ramen Restaurant | Park | Café | Japanese Restaurant | Sushi Restaurant | Gastropub | Plaza | Mexican Restaurant | Juice Bar |
| 5 | Christie | Korean | Café | Coffee Shop | Grocery | Mexican | Cocktail | Vegetarian / Vegan | Comedy | Sandwich | Ice Cream |

Next step, I clustered the above data into 5 different clusters, and below is the summary of the first 5 rows:

## New York:

| Neighborhood | Latitude | Longitude | Cluster | 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Wakefield | 40.894705 | -73.847201 | 1 | Pharmacy | Fried Chicken Joint | Donut Shop | Supermarket | Gas Station | Fast Food Restaurant | Caribbean Restaurant | Pizza Place | Mobile Phone Shop | Chinese Restaurant |
| Co-op City | 40.874294 | -73.829939 | 2 | Department Store | Pizza Place | Mobile Phone Shop | Shopping Mall | Shoe Store | Bakery | Pharmacy | Furniture / Home Store | Chinese Restaurant | Mattress Store |
| Eastchester | 40.887556 | -73.827806 | 1 | Caribbean Restaurant | Diner | Pizza Place | Shopping Mall | Fast Food Restaurant | Grocery Store | Mobile Phone Shop | Asian Restaurant | Bus Station | Supplement Shop |
| Fieldston | 40.895437 | -73.905643 | 2 | Deli / Bodega | Pizza Place | Bar | Sandwich Place | Bank | Plaza | Mexican Restaurant | Bagel Shop | Bakery | Coffee Shop |
| Riverdale | 40.890834 | -73.912585 | 2 | Pizza Place | Bank | Bar | Deli / Bodega | Mexican Restaurant | Park | Coffee Shop | Japanese Restaurant | Plaza | Playground |

## Toronto:

| h | Neighborhood | Latitude | Longitude | Cluster | 1st Most common venues | 2nd Most common venues | 3rd Most common venues | 4th most common venues | 5th most common venues | 6th most common venues | 7th most common venues | 8th most common venues | 9th most common venues | 10th most common venues |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| st o | The Beaches | 43.676357 | -79.293031 | 0 | Pub | Coffee Shop | Pizza Place | Beach | Japanese Restaurant | Breakfast Spot | Grocery Store | Bar | Bakery | Burger Joint |
| st o | The Danforth West, Riverdale | 43.679557 | -79.352188 | 0 | Greek Restaurant | Coffee Shop | Café | Pub | Italian Restaurant | Bank | Yoga Studio | Spa | Bookstore | Fast Food Restaurant |
| st o | India Bazaar, The Beaches West | 43.668999 | -79.315572 | 0 | Indian Restaurant | Coffee Shop | Grocery Store | Restaurant | Park | Beach | Gym | Bakery | Butcher | Café |
| st o | Studio District | 43.659526 | -79.340923 | 3 | Coffee Shop | Brewery | American Restaurant | Bar | Vietnamese Restaurant | Bakery | Diner | French Restaurant | Sushi Restaurant | Italian Restaurant |
| al o | Lawrence Park | 43.728020 | -79.388790 | 1 | Park | Trail | Café | Coffee Shop | Bookstore | College Gym | College Quad | Gym / Fitness Center | Electronics Store | Elementary School |

Finally, I examined the results for each clusters.

# Cluster 1:

## New York:

| | 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 28 | Throgs Neck | Italian Restaurant | Deli / Bodega | Pizza Place | Donut Shop | Beach | Bar | Tennis Court | Asian Restaurant | Coffee Shop | Park |
| 34 | Belmont | Italian Restaurant | Pizza Place | Bakery | Deli / Bodega | Zoo | Shoe Store | Latin American Restaurant | Dessert Shop | Café | Mexican Restaurant |
| 39 | Edgewater Park | Italian Restaurant | Pizza Place | Bar | Deli / Bodega | Donut Shop | Latin American Restaurant | Diner | Asian Restaurant | Sandwich Place | Pharmacy |
| 91 | Bergen Beach | Sushi Restaurant | American Restaurant | Stables | Bus Station | Peruvian Restaurant | Pizza Place | Liquor Store | Supermarket | Italian Restaurant | Deli / Bodega |
| 153 | Little Neck | Italian Restaurant | Chinese Restaurant | Deli / Bodega | Coffee Shop | Bank | Spa | Bagel Shop | Train Station | Pharmacy | Greek Restaurant |

## Toronto:

| | Borough | Cluster | 1st Most common venues | 2nd Most common venues | 3rd Most common venues | 4th most common venues | 5th most common venues | 6th most common venues | 7th most common venues | 8th most common venues | 9th most common venues | 10th most common venues |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | East Toronto | 0 | Pub | Coffee Shop | Pizza Place | Beach | Japanese Restaurant | Breakfast Spot | Grocery Store | Bar | Bakery | Burger Joint |
| 1 | East Toronto | 0 | Greek Restaurant | Coffee Shop | Café | Pub | Italian Restaurant | Bank | Yoga Studio | Spa | Bookstore | Fast Food Restaurant |
| 2 | East Toronto | 0 | Indian Restaurant | Coffee Shop | Grocery Store | Restaurant | Park | Beach | Gym | Bakery | Butcher | Café |
| 10 | Downtown Toronto | 0 | Coffee Shop | Park | Grocery Store | Playground | BBQ Joint | Filipino Restaurant | Metro Station | Candy Store | Breakfast Spot | Bistro |
| 11 | Downtown Toronto | 0 | Café | Park | Diner | Japanese Restaurant | Gastropub | Thai Restaurant | Italian Restaurant | Restaurant | Taiwanese Restaurant | Garden |

# Cluster 2:

## New York:

| | 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 | Wakefield | Pharmacy | Fried Chicken Joint | Donut Shop | Supermarket | Gas Station | Fast Food Restaurant | Caribbean Restaurant | Pizza Place | Mobile Phone Shop | Chinese Restaurant |
| 2 | Eastchester | Caribbean Restaurant | Diner | Pizza Place | Shopping Mall | Fast Food Restaurant | Grocery Store | Mobile Phone Shop | Asian Restaurant | Bus Station | Supplement Shop |
| 9 | Williamsbridge | Pizza Place | Caribbean Restaurant | Fried Chicken Joint | Bakery | Sandwich Place | Bus Station | Restaurant | Pharmacy | Supermarket | Bar |
| 14 | University Heights | Grocery Store | Pizza Place | Donut Shop | Fried Chicken Joint | Spanish Restaurant | Mexican Restaurant | Playground | Bank | Sandwich Place | Latin American Restaurant |
| 15 | Morris Heights | Deli / Bodega | Grocery Store | Food Truck | Pharmacy | Pizza Place | Fast Food Restaurant | Supermarket | Chinese Restaurant | Fried Chicken Joint | Bus Station |

## Toronto:

| | Borough | Cluster | 1st Most common venues | 2nd Most common venues | 3rd Most common venues | 4th most common venues | 5th most common venues | 6th most common venues | 7th most common venues | 8th most common venues | 9th most common venues | 10th most common venues |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 4 | Central Toronto | 1 | Park | Trail | Café | Coffee Shop | Bookstore | College Gym | College Quad | Gym / Fitness Center | Electronics Store | Elementary School |

## Cluster 3:

### New York:

| | 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Co-op City | Department Store | Pizza Place | Mobile Phone Shop | Shopping Mall | Shoe Store | Bakery | Pharmacy | Furniture / Home Store | Chinese Restaurant | Mattress Store |
| 3 | Fieldston | Deli / Bodega | Pizza Place | Bar | Sandwich Place | Bank | Plaza | Mexican Restaurant | Bagel Shop | Bakery | Coffee Shop |
| 4 | Riverdale | Pizza Place | Bank | Bar | Deli / Bodega | Mexican Restaurant | Park | Coffee Shop | Japanese Restaurant | Plaza | Playground |
| 5 | Kingsbridge | Pizza Place | Mexican Restaurant | Bar | Sandwich Place | Coffee Shop | Donut Shop | Bank | Park | Diner | Pharmacy |
| 6 | Marble Hill | Park | Pizza Place | Mexican Restaurant | Spanish Restaurant | Café | Donut Shop | Sandwich Place | Bakery | Coffee Shop | Bus Station |

### Toronto:

| | Borough | Cluster | 1st Most common venues | 2nd Most common venues | 3rd Most common venues | 4th most common venues | 5th most common venues | 6th most common venues | 7th most common venues | 8th most common venues | 9th most common venues | 10th most common venues |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 15 | Downtown Toronto | 2 | Coffee Shop | Café | Restaurant | Gastropub | Italian Restaurant | Bakery | Beer Bar | Hotel | Seafood Restaurant | American Restaurant |
| 16 | Downtown Toronto | 2 | Coffee Shop | Café | Hotel | Japanese Restaurant | Park | Restaurant | Beer Bar | Gastropub | Bakery | Gym |
| 18 | Downtown Toronto | 2 | Coffee Shop | Café | Theater | Hotel | Gastropub | Restaurant | American Restaurant | Plaza | Gym | Sushi Restaurant |
| 19 | Downtown Toronto | 2 | Coffee Shop | Hotel | Café | Restaurant | Park | Brewery | Scenic Lookout | Japanese Restaurant | Theater | Gym |
| 20 | Downtown Toronto | 2 | Coffee Shop | Hotel | Café | Restaurant | Japanese Restaurant | Theater | Concert Hall | Deli / Bodega | Beer Bar | Plaza |

## Cluster 4:

### New York:

| | 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 85 | Sea Gate | Beach | Supermarket | American Restaurant | Donut Shop | Fried Chicken Joint | Chinese Restaurant | Basketball Court | Spa | Pharmacy | Pizza Place |
| 172 | Breezy Point | Trail | American Restaurant | Beach | Surf Spot | Frozen Yogurt Shop | Fish & Chips Shop | Eye Doctor | Factory | Falafel Restaurant | Farm |
| 178 | Rockaway Beach | Beach | Bar | Boat or Ferry | Pharmacy | Latin American Restaurant | Arepa Restaurant | Beach Bar | Bagel Shop | BBQ Joint | Fast Food Restaurant |
| 179 | Neponsit | Beach | Deli / Bodega | Spa | Pub | Pizza Place | Burger Joint | Boutique | Bus Stop | Park | Chinese Restaurant |
| 190 | Belle Harbor | Beach | Pub | Deli / Bodega | Donut Shop | Italian Restaurant | Bakery | Harbor / Marina | Bagel Shop | Spa | Boutique |

### Toronto:

| | Borough | Cluster | 1st Most common venues | 2nd Most common venues | 3rd Most common venues | 4th most common venues | 5th most common venues | 6th most common venues | 7th most common venues | 8th most common venues | 9th most common venues | 10th most common venues |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 3 | East Toronto | 3 | Coffee Shop | Brewery | American Restaurant | Bar | Vietnamese Restaurant | Bakery | Diner | French Restaurant | Sushi Restaurant | Italian Restaurant |
| 5 | Central Toronto | 3 | Coffee Shop | Italian Restaurant | Café | Dessert Shop | Restaurant | Pizza Place | Fast Food Restaurant | Gym | Sushi Restaurant | Supermarket |
| 6 | Central Toronto | 3 | Italian Restaurant | Sporting Goods Shop | Coffee Shop | Diner | Café | Restaurant | Skating Rink | Mexican Restaurant | Park | Flower Shop |
| 7 | Central Toronto | 3 | Coffee Shop | Italian Restaurant | Sushi Restaurant | Pizza Place | Café | Gym | Middle Eastern Restaurant | Restaurant | Dessert Shop | Indian Restaurant |
| 8 | Central Toronto | 3 | Coffee Shop | Grocery Store | Italian Restaurant | Gym | Restaurant | Thai Restaurant | Park | Playground | Pizza Place | Café |

**Cluster 5:**

**New York:**

| | 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 12 | City Island | Seafood Restaurant | Harbor / Marina | Boat or Ferry | Italian Restaurant | American Restaurant | Thrift / Vintage Store | Park | Bar | Hobby Shop | Smoke Shop |
| 19 | High Bridge | Baseball Stadium | Lounge | Park | Historic Site | Sandwich Place | Plaza | Sculpture Garden | Baseball Field | Bar | Caribbean Restaurant |
| 24 | Hunts Point | Park | Food | Bakery | Fish Market | Travel & Transport | Farmers Market | Paintball Field | Fast Food Restaurant | Market | Chinese Restaurant |
| 46 | Bay Ridge | Pizza Place | Spa | Italian Restaurant | Bar | Chinese Restaurant | Cosmetics Shop | American Restaurant | Greek Restaurant | Bagel Shop | Department Store |
| 49 | Greenpoint | Bar | Coffee Shop | Cocktail Bar | Pizza Place | French Restaurant | Yoga Studio | Café | Bagel Shop | Record Shop | Thrift / Vintage Store |

**Toronto:**

| | Borough | Cluster | 1st Most common venues | 2nd Most common venues | 3rd Most common venues | 4th most common venues | 5th most common venues | 6th most common venues | 7th most common venues | 8th most common venues | 9th most common venues | 10th most common venues |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 27 | Downtown Toronto | 4 | Harbor / Marina | Coffee Shop | Café | Scenic Lookout | Sculpture Garden | Dog Run | Park | Track | Garden | Dance Studio |

# Results and Discussions

From the above analysis, I found the most common venues of New York and Toronto are as follows:

**New York:**

```
array(['Pharmacy', 'Department Store', 'Caribbean Restaurant',
       'Deli / Bodega', 'Pizza Place', 'Park', 'Clothing Store',
       'Seafood Restaurant', 'Grocery Store', 'Italian Restaurant',
       'Donut Shop', 'Baseball Stadium', 'Baseball Field',
       'Fast Food Restaurant', 'Supermarket', 'Bank', 'Bakery', 'Bar',
       'Beach', 'Russian Restaurant', 'Café', 'Discount Store',
       'Coffee Shop', 'Mobile Phone Shop', 'Harbor / Marina',
       'Theme Park Ride / Attraction', 'Fried Chicken Joint',
       'Sushi Restaurant', 'Wine Bar', 'Ice Cream Shop',
       'Latin American Restaurant', 'Southern / Soul Food Restaurant',
       'Mexican Restaurant', 'Exhibit', 'Gym', 'Theater',
       'Korean Restaurant', 'Art Gallery', 'Indian Restaurant',
       'Food Truck', 'Thai Restaurant', 'Chinese Restaurant',
       'Airport Service', 'Furniture / Home Store', 'Surf Spot', 'Trail',
       'Greek Restaurant', 'Bus Station', 'Cosmetics Shop', 'Bus Stop',
       'Boat or Ferry', 'Hotel', 'American Restaurant',
       'Convenience Store', 'Kids Store', 'Pool', 'Bagel Shop',
       'Japanese Restaurant', 'Sandwich Place', 'Gym / Fitness Center',
       'Golf Course'], dtype=object)
```

**Toronto:**

```
array(['Pub', 'Greek Restaurant', 'Indian Restaurant', 'Coffee Shop',
       'Park', 'Italian Restaurant', 'Café', 'Harbor / Marina',
       'Korean Restaurant'], dtype=object)
```

**Discussion**

Based on our analysis on the data, I summarized the top 10 most common venues in the city of New York and Toronto.

I found that New York city is more diverse compared to Toronto. While the most common venues of New York are diverse including restaurants, coffee shop, beach, bar, sport places, Art gallery, Theater,..., the most common venues of Toronto are pub, restaurant, coffee shop, park, Harbor.

This finding is interesting because it is a useful guide for travelers who want to travel to those cities. Or, it is also useful for businessmen, for example: to decide whether they should open a new Italian or Indian restaurant in Toronto, ...

This analysis also provides an idea for those who want to decide which city to live, study, or do business.

For those who prefer a multicultural city, then New York would be a better choice.

## Conclusion

This analysis mainly focuses on finding most common places in New York and Toronto cities, and compare the most common places between the two cities. Also, it will help people to decide which city to visit, study or do business...