The Battle of Neighborhoods

(Toronto Vs New York)

1. Introduction

Canada's immigration destination has been increasing from past decade with a total of 313,580 immigrants in 2019 (Erin Duffin, 2019). Number of people immigrating from United States has also increased drastically and the main reason being politics. So let's see if moving to Canada from USA is a good option or not for a political neutral person and for a person who likes to explore places and meet new people.

The project's main focus will be on comparing the financial capitals of two countries being Toronto, CA and New York City, US. Let's draw some insights about the neighborhoods of two cities and see which city has rich culture, interesting places to explore and has wide variety of cuisines.

1.1 Problem Statement:

Analyze the data regarding venues in Toronto and New York City. Cluster their neighborhoods and draw insights on which city is better to live for a person who likes to explore and try different cuisines.

2. Data Acquisition and Cleaning:

2.1 Data Source:

The data set for New York City Neighborhood is downloaded from NYC OpenData. A csv file is downloaded from "**https://data.cityofnewyork.us/City-Government/Neighborhood-Names-GIS/99bc-9p23**" (York, 2019). The csv file is converted to a data frame which will be

transformed/cleaned. The cleaned up data frame is expected to contain Borough, Neighborhood, Latitude, Longitude.

The data set for Toronto will be downloaded from Wikipedia. The tables containing the neighborhood information of Toronto is scraped from "**https://en.wikipedia.org/wiki/List_of_postal_codes_of_Canada:_M**". The scraping of the data from web is done using Beautiful soup and html parser and the data frame for Toronto's neighborhood is created and cleaned according to the requirements. A csv file containing data about latitudes and longitudes will be downloaded from "**https://cocl.us/Geospatial_data**". The cleaned up data framed is expected to contain Postal Code, Borough, Neighborhood, Latitude, Longitude.

Using Foursquare, we will find latitudes, longitudes and venues for each neighborhood in both the cities. This information will form a dataset which will be used in drawing insights about the
 problem.

Using all the above data, neighborhoods are clustered and grouped to understand cities better. This is a project that uses many data science skills line web scraping, data cleaning, data wrangling, working with API(Foursquare), Machine learning algorithms(k-means) and map visualization (Folium). In the next section, we will present the Methodology section the data analysis, machine learning algorithms, map visualization techniques will be discussed.

2.2 Data Cleaning

For New York Dataset:

Firstly, the CSV file was read into a data frame called "nyc_df". The downloaded CSV file had 9 columns from which I have extracted three columns i.e. "the_geom" (contains latitude longitude data), Name (renamed it to "Neighborhood") and Borough. The other columns were objectId,

Stacked, AnnoLine1, AnnoLine2, AnnoLine3, AnnoAngle which were not very useful in solving the problem.

The "the_geom" column consisted of latitude longitude information together, so I was necessary to split up that column into two individual columns called "Latitude" and "Longitude". There were some unnecessary strings in the column which needed to be cleaned and the data types of the two columns are converted from object type to float type.

The final data frame consisted of 4 columns namely "Borough" (object type), "Neighborhood" (object type), "Latitude" (float type)", "Longitude" (float type).
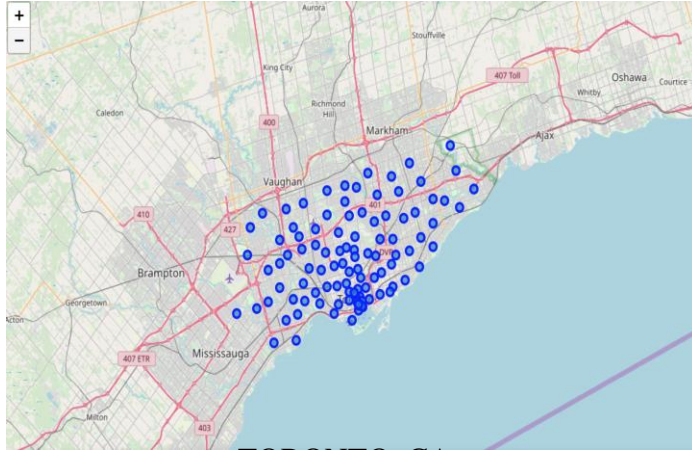
For Toronto Dataset:

The Toronto dataset was scraped out from Wikipedia using Beautiful soup. All the headers (extracted as List) and column information were extracted separately and cleaned. Once all the column information was cleaned, all the columns were concatenated into a final data frame with headers.

The rows whose borough was not assigned were dropped, rows with unassigned neighborhood were assigned with borough values and the dataset was grouped with respect to "postal code" and "borough". The longitude, latitude dataset was downloaded as csv file which was concatenated with the main data frame.
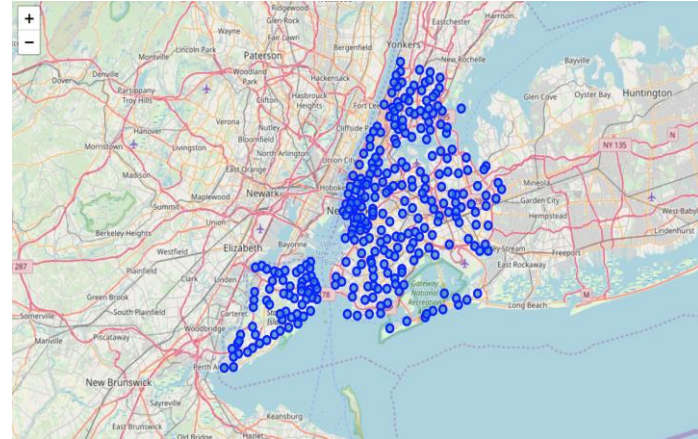
The final dataset consists of 5 columns "Postal code" (object type), "Borough" (object type), "Neighborhood" (object type), "Latitude" (float type), "Longitude" (float type).

3. Methodology

Firstly, the latitudes and longitudes of two cities were calculated using "Geopy" python library and maps of two cities were generated with neighborhoods superimposed on top using "Folium".

TORONTO, CA

NEW YORKCITY, USA

3.1 Using Foursquare API

Foursquare API is used to explore neighborhoods of two cities. Details of different venues in each neighborhood were generated using "getNearbyVenue()". The result obtained was grouped with respect to neighborhood. The resulting data frame consists of "Neighborhood Latitude", "Neighborhood Longitude", "Venue", "Venue Latitude", "Venue Longitude" and "Venue Category".

Insight: Toronto consists of 277 unique venues and New York consists of 430 unique venue categories.

3.2 Analyzing each neighborhood

Two cities were then analyzed for different venues/places available in and around each neighborhood. The resulting data frame was grouped by neighborhood by taking the mean of frequencies of each occurrence of the venue category. Using this grouped data, top 25 venues for each neighborhood of two cities were generated separately. From the resulting data frame unique restaurants were extracted for two cities.

Insight: Toronto consists of 44 different cuisines and New York consists of 67 different cuisines.

Toronto has 3 unique cuisines that are not present in New York City i.e. 'Portuguese Restaurant', 'Hakka Restaurant' and 'Doner Restaurant'.

In New York City there are about 29 cuisines that are not present in Toronto. The below screen shot shows unique cuisines in NYC.

['Filipino Restaurant', 'African Restaurant', 'Taiwanese Restaurant', 'Peruvian Restaurant', 'Spanish Restaurant', 'Cantonese Restaurant', 'Turkish Restaurant', 'Egyptian Restaurant', 'Kosher Restaurant', 'Argentinian Restaurant', 'Halal Restaurant', 'Polish Restaurant', 'Hotpot Restaurant', 'English Restaurant', 'Pakistani Restaurant', 'Tapas Restaurant', 'Sri Lankan Restaurant', 'Shabu-Shabu Restaurant', 'Malay Restaurant', 'Szechuan Restaurant', 'Shanghai Restaurant', 'Russian Restaurant', 'Arepa Restaurant', 'Paella Restaurant', 'Kebab Restaurant', 'Hawaiian Restaurant', 'Tex-Mex Restaurant', 'Afghan Restaurant', 'Caucasian Restaurant']
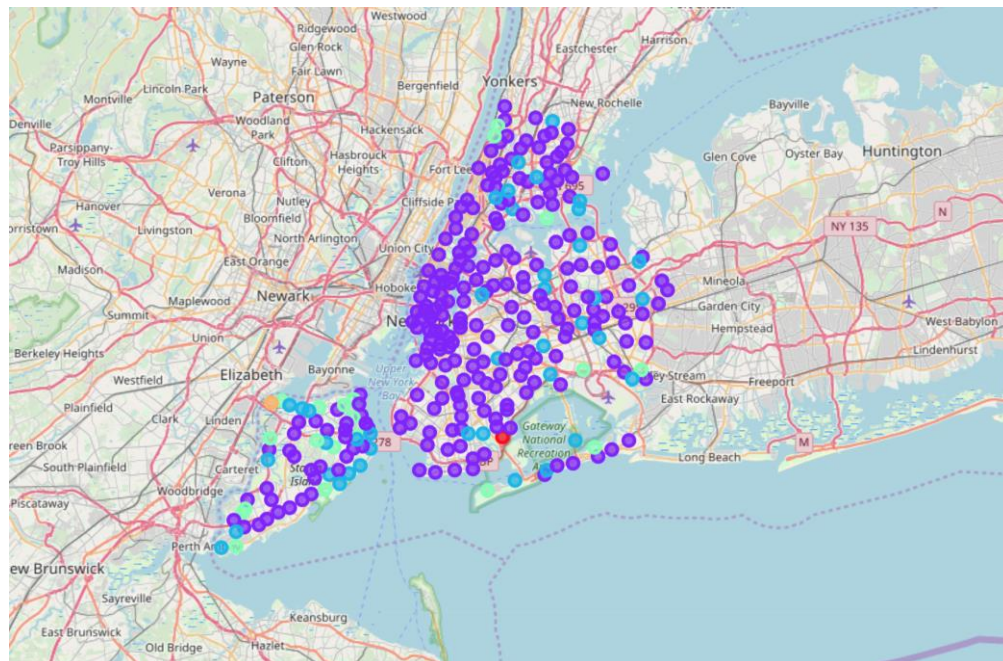
3.3 Clustering Neighborhood

In order to see which neighborhood in two cities contain maximum number of venues to explore let us cluster the neighborhoods and check see how many places are there to explore and what are they.

To cluster the neighborhoods, k-means clustering machine learning algorithm is used. Each city is clustered into 5 different neighborhoods and top 25 venues present in that particular neighborhoods are generated.

3.3.1 Clustering of New York City neighborhoods

After clustering New York City using k-means algorithm a map is generated using folium libarary which visualizes New York City into 5 different clusters which are represented by 5 different colors.

Cluster1

In the first cluster if New York City, there is only on neighborhood which is 'Mill Island'. In that island there are following venues.

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[('Mill Island', 1), ('Pool', 1), ('Financial or Legal Service', 1), ('Event Space', 1), ('Exhibit', 1), ('Eye Docto
r', 1), ('Factory', 1), ('Falafel Restaurant', 1), ('Farm', 1), ('Farmers Market', 1), ('Fast Food Restaurant', 1),
('Field', 1), ('Filipino Restaurant', 1), ('Film Studio', 1), ("Women's Store", 1), ('Ethiopian Restaurant', 1), ('Fi
sh & Chips Shop', 1), ('Fish Market', 1), ('Fishing Store', 1), ('Flea Market', 1), ('Flower Shop', 1), ('Food', 1),
('Food & Drink Shop', 1), ('Food Court', 1), ('Food Stand', 1), ('Food Truck', 1)]
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This neighborhood is a small island with just one store of each type. This could be a visiting
spot.

Cluster2

This cluster seems to be a big one with 233 neighborhoods and very wide variety of venues
present.

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[('Co-op City', 1), ('Bus Station', 49), ('Ice Cream Shop', 70), ('Fast Food Restaurant', 127), ('Park', 80), ('Chi
nese Restaurant', 103), ('Bagel Shop', 52), ('Grocery Store', 80), ('Discount Store', 41), ('Pizza Place', 164),
('Pharmacy', 94), ('Baseball Field', 12), ('Restaurant', 41), ('Mattress Store', 8), ('Falafel Restaurant', 110),
('Factory', 93), ('Eye Doctor', 73), ('Farm', 110), ('Farmers Market', 110), ("Women's Store", 61), ('Filipino Rest
aurant', 86), ('Field', 89), ('Event Space', 43), ('Film Studio', 77), ('Financial or Legal Service', 68), ('Fish &
Chips Shop', 65), ('Eastchester', 1), ('Caribbean Restaurant', 42), ('Deli / Bodega', 95), ('Diner', 50), ('Conveni
ence Store', 29), ('Seafood Restaurant', 41), ('Bakery', 95), ('Bowling Alley', 6), ('Metro Station', 19), ('Platfo
rm', 1), ('Donut Shop', 89), ('Cosmetics Shop', 41), ('Bus Stop', 29), ('Juice Bar', 16), ('Flea Market', 44), ('Fo
od Court', 36), ('Food Stand', 16), ('Fieldston', 1), ('River', 2), ('Plaza', 21), ('Exhibit', 55), ('Ethiopian Res
taurant', 18), ('Fish Market', 61), ('Fishing Store', 48), ('Flower Shop', 56), ('Food', 53), ('Food & Drink Shop',
60), ('Kingsbridge', 1), ('Bar', 72), ('Latin American Restaurant', 29), ('Supermarket', 74), ('Sandwich Place', 10
4), ('Mexican Restaurant', 75), ('Spanish Restaurant', 42), ('Fried Chicken Joint', 47), ('Pub', 22), ('Liquor Stor
e', 47), ('Supplement Shop', 14), ('Breakfast Spot', 21), ('Furniture / Home Store', 26), ('Burger Joint', 38), ('S
ports Bar', 8), ('Café', 64), ('Marble Hill', 1), ('Coffee Shop', 101), ('Yoga Studio', 30), ('Steakhouse', 24),
('Miscellaneous Shop', 9), ('Big Box Store', 3), ('Tennis Stadium', 1), ('Shopping Mall', 13), ('Gym', 56), ('Cloth
ing Store', 30), ('American Restaurant', 68), ('Department Store', 22), ('Kids Store', 9), ('Woodlawn', 1), ('Playg
round', 36), ('Train Station', 10), ('Indian Restaurant', 25), ('Food Truck', 33), ('Rental Car Location', 10), ('I
talian Restaurant', 87), ('Norwood', 1), ('Bank', 71), ('Cafeteria', 2), ('Athletics & Sports', 5), ('Williamsbridg
e', 1), ('Nightclub', 9), ('Soup Place', 3), ('Baychester', 1), ('Gym / Fitness Center', 51), ('Pet Store', 26),
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('Laundromat', 5), ('Electronics Store', 6), ("Men's Store", 13), ('Arcade', 2), ('Pelham Parkway', 1), ('Sushi Res
taurant', 53), ('Smoke Shop', 8), ('Track', 1), ('Performing Arts Venue', 10), ('Gas Station', 13), ('Frozen Yogurt
Shop', 10), ('City Island', 1), ('Harbor / Marina', 7), ('Thrift / Vintage Store', 8), ('Boat or Ferry', 7), ('Hist
ory Museum', 5), ('French Restaurant', 33), ('Art Gallery', 19), ('Music Venue', 9), ('Bedford Park', 1), ('Univers
ity Heights', 1), ('Shoe Store', 14), ('Burrito Place', 5), ('Wings Joint', 4), ('African Restaurant', 3), ('Morris
Heights', 1), ('Check Cashing Service', 5), ('Moving Target', 12), ('Recreation Center', 1), ('Fordham', 1), ('Mobi
le Phone Shop', 36), ('Video Game Store', 12), ('Sporting Goods Shop', 14), ('East Tremont', 1), ('Lounge', 25),
('Outdoors & Recreation', 3), ('Paella Restaurant', 1), ('West Farms', 1), ('Basketball Court', 5), ('Bus Line',
4), ('Dessert Shop', 27), ('Dosa Place', 3), ('High Bridge', 1), ('Sports Club', 1), ('Market', 14), ('Melrose',
1), ('Paper / Office Supplies Store', 5), ('Martial Arts Dojo', 15), ('Mott Haven', 1), ('Storage Facility', 4),
('Peruvian Restaurant', 11), ('Bookstore', 25), ('Port Morris', 1), ('Distillery', 3), ('Brewery', 13), ('Cupcake S
hop', 6), ('Hotpot Restaurant', 5), ('English Restaurant', 4), ('Event Service', 19), ('Indonesian Restaurant', 2),
('Hotel Bar', 4), ('Hunts Point', 1), ('BBQ Joint', 11), ('Gourmet Shop', 14), ('Waste Facility', 1), ('Morrisani
a', 1), ('Soundview', 1), ('Video Store', 6), ('Home Service', 3), ('Country Club', 1), ('Weight Loss Center', 3),
('Parkchester', 1), ('Shipping Store', 8), ('Westchester Square', 1), ('Health & Beauty Service', 6), ('Asian Resta
urant', 22), ('Indie Theater', 2), ('Building', 2), ('Morris Park', 1), ('Buffet', 3), ('Arepa Restaurant', 2), ('W
ine Shop', 38), ('North Riverdale', 1), ('Social Club', 1), ('Pool', 3), ('Pelham Bay', 1), ('Salon / Barbershop',
17), ('Thai Restaurant', 33), ('Spa', 44), ('Lawyer', 1), ('Schuylerville', 1), ('Hookah Bar', 5), ('Castle Hill',
1), ('Olinville', 1), ('Pelham Gardens', 1), ("Doctor's Office", 3), ('Concourse', 1), ('Art Museum', 4), ('Unionpo
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rt', 1), ('Dance Studio', 12), ('Comfort Food Restaurant', 1), ('Edenwald', 1), ('Bay Ridge', 1), ('Greek Restauran
t', 13), ('Caucasian Restaurant', 1), ('Snack Place', 5), ('Pool Hall', 1), ('Bensonhurst', 1), ('Butcher', 6), ('S
habu-Shabu Restaurant', 2), ('Cha Chaan Teng', 1), ('Bridal Shop', 3), ('Noodle House', 7), ('Sunset Park', 1), ('S
tadium', 1), ('Creperie', 2), ('Record Shop', 3), ('Hockey Field', 2), ('Empanada Restaurant', 5), ('Greenpoint',
1), ('Cocktail Bar', 41), ('Boutique', 15), ('New American Restaurant', 14), ('Polish Restaurant', 3), ('Coworking
Space', 3), ('Other Great Outdoors', 3), ('Gravesend', 1), ('Music Store', 3), ('Eastern European Restaurant', 8),
('Brighton Beach', 1), ('Beach', 10), ('Russian Restaurant', 3), ('Taco Place', 16), ('Mediterranean Restaurant', 2
2), ('Non-Profit', 2), ('Sheepshead Bay', 1), ('Turkish Restaurant', 2), ('Outlet Store', 1), ('Karaoke Bar', 6),
('Hotel', 26), ('Hostel', 2), ('Manhattan Terrace', 1), ('Jazz Club', 4), ('Japanese Restaurant', 41), ('Organic Gr
ocery', 3), ('Flatbush', 1), ('Middle Eastern Restaurant', 15), ('Crown Heights', 1), ('Museum', 4), ('Candy Stor
e', 6), ('East Flatbush', 1), ('Hardware Store', 8), ('Print Shop', 1), ('Kensington', 1), ('Lingerie Store', 9),
('Nail Salon', 5), ('Windsor Terrace', 1), ('Beer Store', 2), ('Antique Shop', 3), ('Arts & Crafts Store', 6), ('Di
m Sum Restaurant', 7), ('Insurance Office', 1), ('Prospect Heights', 1), ('Beer Bar', 4), ('Wine Bar', 20), ('Cajun
/ Creole Restaurant', 5), ('Business Service', 5), ('Southern / Soul Food Restaurant', 8), ('Brownsville', 1), ('Tr
ail', 3), ('Williamsburg', 1), ('Tapas Restaurant', 8), ('Bushwick', 1), ('Vegetarian / Vegan Restaurant', 13), ('P
akistani Restaurant', 1), ('Fruit & Vegetable Store', 4), ('Bedford Stuyvesant', 1), ('Brooklyn Heights', 1), ('Sce
nic Lookout', 15), ('Optical Shop', 10), ('Massage Studio', 4), ('Cobble Hill', 1), ('Dive Bar', 5), ('Carroll Gard
ens', 1), ('Motorcycle Shop', 4), ('Gift Shop', 19), ('Church', 2), ('Red Hook', 1), ('Gowanus', 1), ('Rock Club',
4), ('Ramen Restaurant', 7), ('Pie Shop', 1), ('Fort Greene', 1), ('Opera House', 2), ('Theater', 13), ('Beer Garde
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n', 3), ('German Restaurant', 3), ('Park Slope', 1), ('Pilates Studio', 3), ('Cypress Hills', 1), ('South American Restaurant', 12), ('East New York', 1), ('Starrett City', 1), ('Canarsie', 1), ('IT Services', 3), ('Flatlands', 1), ('Intersection', 7), ('Design Studio', 6), ('Manhattan Beach', 1), ('Coney Island', 1), ('Baseball Stadium', 2), ('Monument / Landmark', 3), ('Theme Park Ride / Attraction', 3), ('Skating Rink', 1), ('Bath Beach', 1), ('Bubble Tea Shop', 16), ('Bike Rental / Bike Share', 2), ('Surf Spot', 2), ('Kebab Restaurant', 1), ('Borough Park', 1), ('Dog Run', 5), ('Dyker Heights', 1), ('Golf Course', 2), ('Gerritsen Beach', 1), ('Clinton Hill', 1), ('Sea Gate', 1), ('Downtown', 1), ('Shanghai Restaurant', 4), ('Residential Building (Apartment / Condo)', 3), ('Boerum Hill', 1), ('Prospect Lefferts Gardens', 1), ('Gastropub', 8), ('City Line', 1), ('Cuban Restaurant', 6), ('Pedestrian Plaza', 1), ('Ski Area', 1), ('Bergen Beach', 1), ('Midwood', 1), ('Prospect Park South', 1), ('Georgetown', 1), ('Spring Creek', 1), ('East Williamsburg', 1), ('Concert Hall', 3), ('Gay Bar', 2), ('Taiwanese Restaurant', 2), ('Gymnastics Gym', 2), ('North Side', 1), ('Jewelry Store', 6), ('Movie Theater', 4), ('Boxing Gym', 3), ('Korean Restaurant', 11), ('Library', 7), ('South Side', 1), ('Cycle Studio', 7), ('Piercing Parlor', 1), ('Navy Yard', 1), ('Auto Workshop', 1), ('Historic Site', 2), ('Pier', 1), ('Ocean Parkway', 1), ('General Entertainment', 2), ('Sake Bar', 1), ('Fort Hamilton', 1), ('Board Shop', 7), ('Brazilian Restaurant', 4), ('Tennis Court', 4), ('Chinatown', 1), ('Vietnamese Restaurant', 10), ('Malay Restaurant', 2), ('Dumpling Restaurant', 3), ('Washington Heights', 1), ('Inwood', 1), ('Bistro', 5), ('Hamilton Heights', 1), ('School', 3), ('Manhattanville', 1), ('Climbing Gym', 2), ('Bike Trail', 1), ('Music School', 2), ('Central Harlem', 1), ('East Harlem', 1), ('Street Art', 1), ('Upper East Side', 1), ('Salad Place', 7), ('Yorkville', 1), ('Tea Room', 3), ('Lenox Hill', 1), ('Roosevelt Island', 1), ('Soccer Field', 2), ('Dry Cleaner', 4), ('Upper West Side', 1), ('Garden', 5), ('Speakeasy', 6), ('Lincoln Square', 1), ('Indie Movie Theater', 2), ('Circus', 1), ('Clinton', 1), ('Midtown', 1), ('Tailor Shop', 2), ('Murray Hill', 2), ('C

helsea', 2), ('Greenwich Village', 1), ('East Village', 1), ('Lower East Side', 1), ('Pet Café', 1), ('Tribeca', 1), ('Poke Place', 1), ('Little Italy', 1), ('Soho', 1), ('West Village', 1), ('Manhattan Valley', 1), ('Hawaiian Restaurant', 1), ('Szechuan Restaurant', 2), ('Morningside Heights', 1), ('Outdoor Sculpture', 2), ('College Cafeteria', 1), ('Gramercy', 1), ('Comedy Club', 1), ('Battery Park City', 1), ('Memorial Site', 1), ('Sculpture Garden', 1), ('Financial District', 1), ('Astoria', 1), ('Woodside', 1), ('Jackson Heights', 1), ('Elmhurst', 1), ('Colombian Restaurant', 2), ('Argentinian Restaurant', 1), ('Howard Beach', 1), ('Construction & Landscaping', 4), ('Forest Hills', 1), ('Kew Gardens', 1), ('Richmond Hill', 1), ('Pet Service', 2), ('Afghan Restaurant', 2), ('Downtown Flushing', 1), ('Cantonese Restaurant', 2), ('Roof Deck', 2), ('Long Island City', 1), ('Sunnyside', 2), ('East Elmhurst', 1), ('Lake', 1), ('Maspeth', 1), ('Ridgewood', 1), ('Egyptian Restaurant', 1), ('Glendale', 1), ('Rego Park', 1), ('Health Food Store', 2), ('Kosher Restaurant', 2), ('Ozone Park', 1), ('Shop & Service', 2), ('College Point', 1), ('Bayside', 1), ('Auburndale', 1), ('Toy / Game Store', 3), ('Train', 2), ('Little Neck', 1), ('Glen Oaks', 1), ('Bellerose', 1), ('Motel', 1), ('Kew Gardens Hills', 1), ('Fresh Meadows', 1), ('Jamaica Center', 1), ('Multiple x', 1), ('Oakland Gardens', 1), ('Queens Village', 1), ('Hollis', 1), ('St. Albans', 1), ('Rochdale', 1), ('Springfield Gardens', 1), ('Cambria Heights', 1), ('Rosedale', 1), ('Accessories Store', 5), ('Far Rockaway', 1), ('Steinway', 1), ('Irish Pub', 1), ('Auditorium', 1), ('Beechhurst', 1), ('Bay Terrace', 2), ('Edgemere', 1), ('Skate Park', 2), ('Arverne', 1), ('Bed & Breakfast', 1), ('Seaside', 1), ('Beach Bar', 1), ('Neponsit', 1), ('Fountain', 2), ('Floral Park', 1), ('Holliswood', 1), ('Jamaica Estates', 1), ('Queensboro Hill', 1), ('Hobby Shop', 1), ('Hillcrest', 1), ('College Academic Building', 1), ('College Basketball Court', 1), ('Ravenswood', 1), ('Lefrak City', 1), ('Warehouse Store', 1), ('Heliport', 2), ('Rockaway Park', 1), ('Forest Hills Gardens', 1), ('St. George', 1), ('Tourist Information Center', 1), ('Outlet Mall', 1), ('Hot Dog Joint', 1), ('Stapleton', 1), ('Sri Lankan Restauran

urist Information Center', 1), ('Outlet Mall', 1), ('Hot Dog Joint', 1), ('Stapleton', 1), ('Sri Lankan Restaurant', 1), ('Rosebank', 1), ('West Brighton', 1), ('Castleton Corners', 1), ('Tattoo Parlor', 4), ('Mini Golf', 1), ('New Springville', 1), ('Great Kills', 1), ('Eltingville', 1), ('Locksmith', 1), ('Annadale', 1), ('Tompkinsville', 1), ('Recording Studio', 1), ('Silver Lake', 1), ('Ditmas Park', 1), ('Wingate', 1), ('Rugby', 1), ('Westerleigh', 1), ('Graniteville', 1), ('Grasmere', 1), ('Old Town', 1), ('Dongan Hills', 1), ('Grant City', 1), ('Tanning Salon', 2), ('Huguenot', 1), ('Pleasant Plains', 1), ('Toll Plaza', 1), ('Charleston', 1), ('Rossville', 1), ('Arden Heights', 1), ('Greenridge', 1), ('Heartland Village', 1), ('Bulls Head', 1), ('Tex-Mex Restaurant', 1), ('Carnegie Hill', 1), ('Noho', 1), ('Whisky Bar', 2), ('Civic Center', 1), ('Midtown South', 1), ('Richmond Town', 1), ('Clifton', 1), ('Emerson Hill', 1), ('Remsen Village', 1), ('New Lots', 1), ('Paerdegat Basin', 1), ('Child Care Service', 1), ('Mill Basin', 1), ('Jamaica Hills', 1), ('Halal Restaurant', 1), ('Pomonok', 1), ('Astoria Heights', 1), ('Mount Eden', 1), ('Mount Hope', 1), ('Sutton Place', 1), ('Strip Club', 1), ('Hunters Point', 1), ('State / Provincial Park', 1), ('Turtle Bay', 1), ('Duty-free Shop', 1), ('Tudor City', 1), ('Bridge', 2), ('Stuyvesant Town', 1), ('Flatiron', 1), ('Sunnyside Gardens', 1), ('Laundry Service', 1), ('Fulton Ferry', 1), ('Roller Rink', 1), ('Leather Goods Store', 1), ('Vinegar Hill', 1), ('Weeksville', 1), ('Broadway Junction', 1), ('Dumbo', 1), ('Egbertville', 1), ('Tree', 1), ('Homecrest', 1), ('Other Repair Shop', 1), ('Middle Village', 1), ("Prince's Bay", 1), ('Lighthouse Hill', 1), ('Malba', 1), ('Rest Area', 1), ('Highland Park', 1)]

So, this neighborhood has everything. All restaurants, grocery stores, Farmers market, Flea market, Beaches, Art Galleries, Shopping centers etc. The neighborhoods in this clusters form the main area of New York. So for a person to explore New York this is where he finds most of it.

Cluster3

In the third cluster, there are about 40 neighborhoods.

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['Wakefield' 'Longwood' 'Throgs Neck' 'Van Nest' 'Belmont' 'Edgewater Park'
 'Marine Park' 'Ocean Hill' 'South Corona' 'Woodhaven' 'Whitestone'
 'Douglaston' 'Briarwood' 'South Jamaica' 'Broad Channel' 'Lindenwood'
 'Belle Harbor' 'Brookville' 'Bellaire' 'North Corona' 'South Beach'
 "Mariner's Harbor" 'Travis' 'New Dorp' 'Tottenville' 'Arlington'
 'Arrochar' 'Midland Beach' 'New Dorp Beach' 'Shore Acres' 'Concord'
 'Elm Park' 'Utopia' 'Claremont Village' 'Concourse Village' 'Blissville'
 'Manor Heights' 'Roxbury' 'Richmond Valley' 'Madison']
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[('Wakefield', 1), ('Donut Shop', 16), ('Pharmacy', 7), ('Deli / Bodega', 40), ('Sandwich Place', 9), ('Dessert Sho
p', 6), ('Laundromat', 1), ('Ice Cream Shop', 10), ('Gas Station', 3), ('Farmers Market', 33), ('Filipino Restauran
t', 28), ('Field', 29), ('Fast Food Restaurant', 34), ("Women's Store", 21), ('Film Studio', 26), ('Falafel Restauran
t', 34), ('Factory', 34), ('Eye Doctor', 31), ('Exhibit', 15), ('Farm', 36), ('Fish & Chips Shop', 24), ('Financial o
r Legal Service', 25), ('Event Service', 9), ('Fish Market', 26), ('Fishing Store', 26), ('Flea Market', 24), ('Longw
ood', 1), ('Grocery Store', 7), ('Diner', 6), ('Latin American Restaurant', 3), ('Flower Shop', 18), ('Food', 21),
('Throgs Neck', 1), ('Coffee Shop', 11), ('Asian Restaurant', 2), ('Sports Bar', 3), ('Chinese Restaurant', 14), ('Ba
r', 5), ('Pizza Place', 19), ('Italian Restaurant', 16), ('Juice Bar', 1), ('American Restaurant', 5), ('Dim Sum Rest
aurant', 2), ('Design Studio', 1), ('Van Nest', 1), ('Bus Station', 7), ('Spanish Restaurant', 4), ('Middle Eastern R
estaurant', 2), ('Caribbean Restaurant', 4), ('Hookah Bar', 2), ('Playground', 4), ('Supermarket', 11), ('Food Cour
t', 12), ('Food & Drink Shop', 17), ('Belmont', 1), ('Bakery', 12), ('Bank', 6), ('Shoe Store', 1), ('Restaurant',
7), ('Mexican Restaurant', 10), ('Liquor Store', 5), ('Fried Chicken Joint', 3), ('Miscellaneous Shop', 1), ('Café',
3), ('Mediterranean Restaurant', 2), ('Check Cashing Service', 2), ('Edgewater Park', 1), ('Park', 7), ('Bookstore',
2), ('Spa', 5), ('Pub', 2), ('Marine Park', 1), ('Baseball Field', 4), ('Gym', 7), ('Soccer Field', 1), ('Athletics &
Sports', 5), ('Basketball Court', 3), ('Event Space', 15), ('Food Stand', 6), ('Ocean Hill', 1), ('Bus Stop', 9), ('S
outhern / Soul Food Restaurant', 1), ('Seafood Restaurant', 1), ('Dry Cleaner', 1), ('Metro Station', 2), ('Convenien
ce Store', 5), ('South Corona', 1), ('Empanada Restaurant', 1), ('South American Restaurant', 3), ('Church', 1), ('Vi
deo Store', 1), ('Woodhaven', 1), ('Thai Restaurant', 1), ('Bagel Shop', 6), ('Dive Bar', 2), ('Arepa Restaurant',
1), ('Nail Salon', 2), ('Whitestone', 1), ('Bubble Tea Shop', 1), ('Dance Studio', 1), ('Candy Store', 2), ('Food Tru
ck', 4), ('Douglaston', 1), ('Greek Restaurant', 2), ('Shipping Store', 1), ('Lounge', 2), ('Korean Restaurant', 1),
('Briarwood', 1), ('Arts & Crafts Store', 1), ('Indian Restaurant', 3), ('South Jamaica', 1), ('Broad Channel', 1),
('Other Nightlife', 1), ('Sporting Goods Shop', 3), ('Lindenwood', 1), ('Fruit & Vegetable Store', 1), ('Hotel', 6),
('Japanese Restaurant', 1), ('Belle Harbor', 1), ('Beach', 5), ('Boutique', 1), ('Brookville', 1), ('Ethiopian Restau
rant', 3), ('Bellaire', 1), ('Moving Target', 1), ('Intersection', 3), ('North Corona', 1), ('Gym / Fitness Center',
3), ('Museum', 1), ('Mobile Phone Shop', 1), ('Hotel Bar', 1), ('South Beach', 1), ('Pier', 1), ("Mariner's Harbor",
1), ('Travis', 1), ('Bowling Alley', 1), ('Comedy Club', 1), ('Business Service', 1), ('Sports Club', 1), ('New Dor
p', 1), ('Hobby Shop', 1), ('Salon / Barbershop', 1), ('Train Station', 3), ('Taco Place', 2), ('Vietnamese Restauran
t', 1), ('Sushi Restaurant', 1), ('Tottenville', 1), ('Cosmetics Shop', 4), ('Lawyer', 1), ('Thrift / Vintage Store',
1), ('Fountain', 1), ('Arlington', 1), ('Boat or Ferry', 1), ('Arrochar', 1), ('Outdoors & Recreation', 1), ('Polish
Restaurant', 1), ('Midland Beach', 1), ('Electronics Store', 1), ('Pet Store', 2), ('New Dorp Beach', 1), ('Skating R
ink', 2), ('Scenic Lookout', 1), ('Shore Acres', 1), ('Gastropub', 1), ('Furniture / Home Store', 1), ('Music Store',
1), ('Yoga Studio', 1), ('Concert Hall', 1), ('Hockey Field', 1), ('Indie Movie Theater', 2), ('Concord', 1), ('Peruv
ian Restaurant', 1), ('Elm Park', 1), ('Laundry Service', 1), ('Toll Plaza', 1), ('Utopia', 1), ('History Museum',
1), ('Automotive Shop', 1), ('Afghan Restaurant', 1), ('Claremont Village', 1), ('Discount Store', 2), ('Gift Shop',
1), ('Concourse Village', 1), ('Shopping Mall', 1), ('Supplement Shop', 1), ('Buffet', 1), ('Blissville', 1), ('Movie
Theater', 1), ('Clothing Store', 1), ('Mattress Store', 1), ('Rental Service', 1), ('Daycare', 1), ('Department Stor
e', 1), ('Manor Heights', 1), ('Campground', 1), ('Roxbury', 1), ('Irish Pub', 1), ('Trail', 1), ('Richmond Valley',
1), ('Smoothie Shop', 1), ('Madison', 1), ('Pilates Studio', 1)]
```

This is a pretty decent neighborhood to explore. This looks mostly like industrial area with 34 factories. There are many fields and farms in this clusters, so may be the neighborhoods in this cluster form the country side of New York City.

Cluster4

This cluster consists of 20 neighborhoods.

```
['Riverdale' 'Clason Point' 'Spuyten Duyvil' 'South Ozone Park'
 'Breezy Point' 'Laurelton' 'Somerville' 'New Brighton' 'Grymes Hill'
 'Todt Hill' 'Port Richmond' 'Port Ivory' 'Oakwood' 'Woodrow' 'Park Hill'
 'Butler Manor' 'Bloomfield' 'Randall Manor' 'Willowbrook' 'Sandy Ground']
```

```
[('Riverdale', 1), ('Park', 10), ('Baseball Field', 2), ('Plaza', 1), ('Bus Station', 3), ('Gym', 2), ('Bank', 2),
('Home Service', 1), ('Playground', 5), ('Food Truck', 7), ('Distillery', 1), ('Financial or Legal Service', 20), ('F
alafel Restaurant', 20), ('Farm', 20), ('Design Studio', 3), ('Department Store', 2), ('Farmers Market', 20), ('Fast
Food Restaurant', 20), ('Field', 20), ('Filipino Restaurant', 20), ('Film Studio', 20), ('Fish & Chips Shop', 20),
('Eye Doctor', 17), ('Fish Market', 19), ('Fishing Store', 20), ('Flea Market', 19), ('Clason Point', 1), ('Bus Sto
p', 13), ('Grocery Store', 1), ('Moving Target', 1), ('Pool', 2), ('Boat or Ferry', 1), ('South American Restaurant',
1), ("Women's Store", 14), ('Factory', 18), ('Exhibit', 13), ('Flower Shop', 17), ('Food', 16), ('Food & Drink Shop',
15), ('Spuyten Duyvil', 1), ('Intersection', 3), ('Pharmacy', 1), ('Bus Line', 1), ('Thai Restaurant', 1), ('Tennis S
tadium', 1), ('Event Service', 8), ('South Ozone Park', 1), ('Bar', 6), ('Deli / Bodega', 3), ('Hotel', 2), ('Gym / F
itness Center', 3), ('Donut Shop', 2), ('Sandwich Place', 1), ('Discount Store', 3), ('Daycare', 1), ('Breezy Point',
1), ('Monument / Landmark', 1), ('Trail', 2), ('Beach', 1), ('Event Space', 8), ('Food Court', 13), ('Food Stand',
7), ('Laurelton', 1), ('Caribbean Restaurant', 1), ('Cosmetics Shop', 1), ('Train Station', 1), ('Somerville', 1),
('Fountain', 1), ('New Brighton', 1), ('Bowling Alley', 1), ('Grymes Hill', 1), ('Dog Run', 1), ('Todt Hill', 1), ('E
thiopian Restaurant', 1), ('Port Richmond', 1), ('Rental Car Location', 1), ('Martial Arts Dojo', 1), ('Port Ivory',
1), ('Business Service', 1), ('Fried Chicken Joint', 1), ('Oakwood', 1), ('Lawyer', 1), ('Woodrow', 1), ('Racetrack',
2), ('Park Hill', 1), ('Athletics & Sports', 1), ('Coffee Shop', 1), ('Butler Manor', 1), ('Convenience Store', 1),
('Bloomfield', 1), ('Recreation Center', 1), ('Theme Park', 1), ('Randall Manor', 1), ('Bagel Shop', 2), ('Pizza Plac
e', 2), ('Willowbrook', 1), ('Chinese Restaurant', 1), ('Sandy Ground', 1), ('Art Gallery', 1), ('Market', 1)]
```

There are about 20 'Financial or legal services' and 'Film Studios' in this area. There are very limited cuisines to try in this cluster.

Cluster 5

There is only one neighborhood present in this cluster i.e. "Howland Hook".
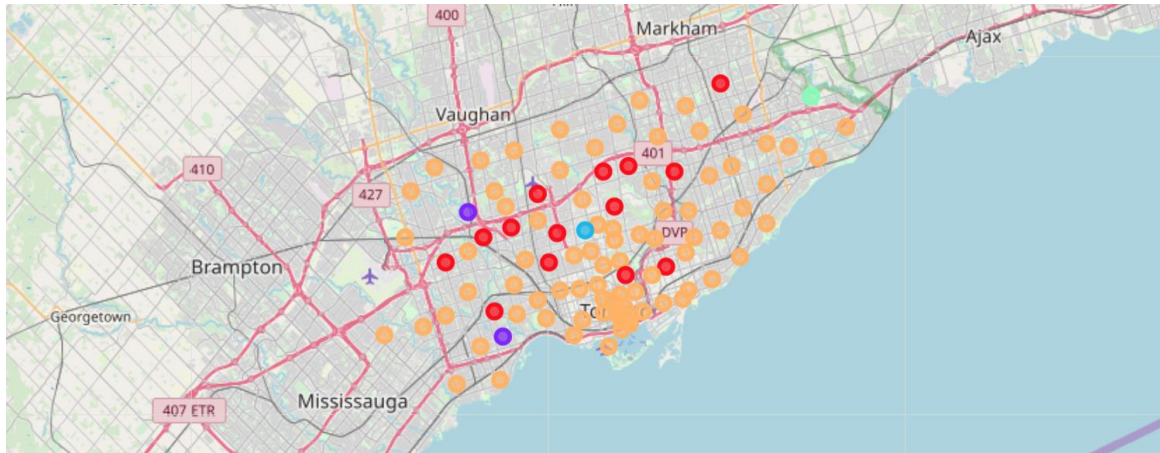
```
[('Howland Hook', 1), ('Boat or Ferry', 1), ("Women's Store", 1), ('Fish & Chips Shop', 1), ('Exhibit', 1), ('Eye Doc
tor', 1), ('Factory', 1), ('Falafel Restaurant', 1), ('Farm', 1), ('Farmers Market', 1), ('Fast Food Restaurant', 1),
('Field', 1), ('Filipino Restaurant', 1), ('Film Studio', 1), ('Financial or Legal Service', 1), ('Fish Market', 1),
('Frozen Yogurt Shop', 1), ('Fishing Store', 1), ('Flea Market', 1), ('Flower Shop', 1), ('Food', 1), ('Food & Drink
Shop', 1), ('Food Court', 1), ('Food Stand', 1), ('Food Truck', 1), ('Fountain', 1)]
```

This is a small neighborhood with only basic venues. It has stores just for survival.

Insight: So in New York City, neighborhoods in Cluster2 form the urban area of NYC and neighborhood in Cluster3 for the rural area of NYC.

3.3.2 Clustering of Toronto Boroughs

After clustering Toronto using k-means algorithm, a map is generated using folium library which visualizes Toronto into 5 different clusters which are represented by 5 different colors.

Cluster1

There are 7 boroughs in this cluster.

```
['Scarborough' 'North York' 'East York' 'Central Toronto'
 'Downtown Toronto' 'York' 'Etobicoke']
```

```
[('Scarborough', 1), (0, 14), ('Park', 14), ('Coffee Shop', 2), ('Playground', 2), ("Women's Store", 8), ('Drugstor
e', 14), ('Diner', 14), ('Discount Store', 14), ('Dog Run', 14), ('Doner Restaurant', 14), ('Donut Shop', 14), ('East
ern European Restaurant', 14), ('Dumpling Restaurant', 14), ('Dessert Shop', 11), ('Electronics Store', 14), ('Empana
da Restaurant', 14), ('Ethiopian Restaurant', 14), ('Event Space', 13), ('Falafel Restaurant', 12), ('Dim Sum Restaur
ant', 13), ('Deli / Bodega', 9), ('Department Store', 11), ('Dance Studio', 10), ('Curling Ice', 10), ('Cupcake Sho
p', 10), ('Cuban Restaurant', 9), ('North York', 6), ('Cafeteria', 1), ('Fast Food Restaurant', 6), ('Creperie', 3),
('Bank', 1), ('Bar', 1), ('Convenience Store', 2), ('Farmers Market', 6), ('Festival', 3), ('Coworking Space', 2),
('Colombian Restaurant', 4), ('Comfort Food Restaurant', 4), ('Comic Shop', 4), ('Concert Hall', 4), ('Food & Drink S
hop', 1), ('Airport', 1), ('East York', 1), ('Central Toronto', 1), ('Gym / Fitness Center', 1), ('Swim School', 1),
('Bus Line', 2), ('Downtown Toronto', 1), ('Trail', 1), ('Pub', 1), ('Metro Station', 1), ('Japanese Restaurant', 1),
('Cosmetics Shop', 1), ('York', 2), ('Market', 1), ('Greek Restaurant', 1), ('Gym', 1), ('Basketball Court', 1), ('Ba
kery', 1), ('Construction & Landscaping', 1), ('Etobicoke', 2), ('River', 1), ('Smoke Shop', 1), ('Mobile Phone Sho
p', 1), ('Pizza Place', 1)]
```

In this cluster there is a very unique restaurant "Doner Restaurant" and there are 14 of them.

There is not much to explore in this cluster.

Cluster2

There are 2 boroughs "Etobicoke", " North York". The venues are

```
[('Etobicoke', 1), (1, 2), ('Locksmith', 1), ('Baseball Field', 2), ("Women's Store", 2), ('Eastern European Restaura
nt', 2), ('Dog Run', 2), ('Doner Restaurant', 2), ('Donut Shop', 2), ('Drugstore', 2), ('Dumpling Restaurant', 2),
('Electronics Store', 2), ('Diner', 2), ('Empanada Restaurant', 2), ('Ethiopian Restaurant', 2), ('Event Space', 2),
('Falafel Restaurant', 2), ('Farmers Market', 2), ('Discount Store', 2), ('Dim Sum Restaurant', 2), ('Festival', 1),
('Coworking Space', 2), ('Comfort Food Restaurant', 2), ('Comic Shop', 2), ('Concert Hall', 2), ('Construction & Land
scaping', 2), ('Convenience Store', 2), ('North York', 1), ('Fast Food Restaurant', 1), ('Field', 1)]
```

There are different restaurants, couple of Concert halls and event spaces.

Cluster3

"Central Toronto" forms the third cluster and these are the venues present.

```
[('Central Toronto', 1), (2, 1), ('Garden', 1), ('Dumpling Restaurant', 1), ('Diner', 1), ('Discount Store', 1), ('Do
g Run', 1), ('Doner Restaurant', 1), ('Donut Shop', 1), ('Drugstore', 1), ('Eastern European Restaurant', 1), ('Desse
rt Shop', 1), ('Electronics Store', 1), ('Empanada Restaurant', 1), ('Ethiopian Restaurant', 1), ('Event Space', 1),
('Falafel Restaurant', 1), ('Farmers Market', 1), ('Dim Sum Restaurant', 1), ("Women's Store", 1), ('Festival', 1),
('Cosmetics Shop', 1), ('Colombian Restaurant', 1), ('Comfort Food Restaurant', 1), ('Comic Shop', 1), ('Concert Hal
l', 1), ('Construction & Landscaping', 1)]
```

Cluster4

"Scarborough" is the forth cluster and the venues in this area are:

```
[('Scarborough', 1), (3, 1), ('Fast Food Restaurant', 1), ('Dumpling Restaurant', 1), ('Diner', 1), ('Discount Stor
e', 1), ('Dog Run', 1), ('Doner Restaurant', 1), ('Donut Shop', 1), ('Drugstore', 1), ('Eastern European Restaurant',
1), ('Festival', 1), ('Electronics Store', 1), ('Empanada Restaurant', 1), ('Ethiopian Restaurant', 1), ('Event Spac
e', 1), ('Falafel Restaurant', 1), ('Farmers Market', 1), ('Dim Sum Restaurant', 1), ("Women's Store", 1), ('Departme
nt Store', 1), ('Deli / Bodega', 1), ('Dance Studio', 1), ('Curling Ice', 1), ('Cupcake Shop', 1), ('Cuban Restauran
t', 1), ('Creperie', 1)]
```

Cluster5

The fifth cluster consists of 11 boroughs.

```
['Scarborough', 'North York', 'East York', 'East Toronto',
 'Central Toronto', 'Downtown Toronto', 'York', 'West Toronto',
 "Queen's Park", 'Mississauga', 'Etobicoke'], dtype=object)
```

```
[('Scarborough', 14), (4, 83), ('History Museum', 3), ('Bar', 19), ("Women's Store", 30), ('Dumpling Restaurant', 5
1), ('Discount Store', 52), ('Dog Run', 49), ('Doner Restaurant', 54), ('Donut Shop', 53), ('Drugstore', 51), ('Easte
rn European Restaurant', 52), ('Dim Sum Restaurant', 42), ('Electronics Store', 55), ('Empanada Restaurant', 47), ('E
thiopian Restaurant', 48), ('Event Space', 39), ('Falafel Restaurant', 31), ('Farmers Market', 32), ('Diner', 61),
('Dessert Shop', 46), ('Festival', 10), ('Department Store', 36), ('Deli / Bodega', 34), ('Dance Studio', 27), ('Curl
ing Ice', 22), ('Cupcake Shop', 15), ('Medical Center', 1), ('Mexican Restaurant', 11), ('Rental Car Location', 4),
('Pizza Place', 29), ('Breakfast Spot', 18), ('Intersection', 7), ('Coffee Shop', 49), ('Korean Restaurant', 3), ('Ba
kery', 24), ('Bank', 12), ('Hakka Restaurant', 1), ('Fried Chicken Joint', 13), ('Caribbean Restaurant', 6), ('Athlet
ics & Sports', 8), ('Gas Station', 3), ('Thai Restaurant', 8), ('Playground', 3), ('Convenience Store', 12), ('Fast F
ood Restaurant', 25), ('Cuban Restaurant', 9), ('Chinese Restaurant', 16), ('Bus Station', 3), ('Colombian Restauran
t', 4), ('Bus Line', 3), ('Soccer Field', 1), ('Metro Station', 2), ('Park', 24), ('German Restaurant', 1), ('General
Travel', 1), ('Gourmet Shop', 2), ('Greek Restaurant', 5), ('Grocery Store', 17), ('Motel', 1), ('American Restauran
t', 11), ('College Stadium', 1), ('Skating Rink', 4), ('General Entertainment', 3), ('Café', 35), ('Indian Restauran
t', 8), ('Vietnamese Restaurant', 7), ('Brewery', 12), ('Light Rail Station', 3), ('Pet Store', 8), ('Middle Eastern
Restaurant', 8), ('Auto Garage', 3), ('Shopping Mall', 12), ('Sandwich Place', 27), ('Coworking Space', 5), ('Comfort
Food Restaurant', 11), ('Comic Shop', 11), ('Latin American Restaurant', 3), ('Lounge', 5), ('Concert Hall', 12), ('C
onstruction & Landscaping', 8), ('Pharmacy', 17), ('Italian Restaurant', 27), ('Noodle House', 3), ('Bubble Tea Sho
p', 5), ('North York', 16), ('Golf Course', 3), ('Mediterranean Restaurant', 3), ('Pool', 1), ('Clothing Store', 10),
('Japanese Restaurant', 16), ('Juice Bar', 6), ('Food Court', 1), ('Wings Joint', 2), ('Boutique', 3), ('Salon / Barb
ershop', 3), ('Restaurant', 31), ('Burger Joint', 17), ('Record Shop', 2), ('Burrito Place', 8), ('Candy Store', 2),
('Liquor Store', 13), ('Sporting Goods Shop', 6), ('Movie Theater', 5), ('Cosmetics Shop', 12), ('Creperie', 7), ('Ra
men Restaurant', 4), ('Sushi Restaurant', 14), ('Ice Cream Shop', 10), ('Steakhouse', 7), ('Hotel', 14), ('Indonesian
Restaurant', 1), ('Plaza', 5), ('Arts & Crafts Store', 6), ('Butcher', 4), ('Home Service', 2), ('Gym / Fitness Cente
r', 7), ('Basketball Court', 1), ('Baseball Field', 2), ('Asian Restaurant', 6), ('Beer Store', 8), ('Gym', 21), ('Bi
ke Shop', 2), ('Supermarket', 6), ('Frozen Yogurt Shop', 1), ('Video Store', 2), ('Bridal Shop', 1), ('Massage Studi
o', 1), ('Miscellaneous Shop', 4), ('Food Truck', 1), ('Hockey Arena', 2), ('Portuguese Restaurant', 4), ('East Yor
k', 4), ('Gastropub', 11), ('Spa', 6), ('Bus Stop', 1), ('East Toronto', 5), ('Health Food Store', 2), ('Pub', 12),
('Trail', 5), ('Furniture / Home Store', 5), ('Sports Bar', 3), ('Fish & Chips Shop', 3), ('Smoothie Shop', 4), ('Bag
el Shop', 3), ('Yoga Studio', 9), ('Housing Development', 1), ('Warehouse Store', 1), ('Airport Food Court', 2), ('Bo
okstore', 10), ('Fruit & Vegetable Store', 2), ('Food & Drink Shop', 3), ('Stationery Store', 1), ('Food', 1), ('Fish
Market', 2), ('Seafood Restaurant', 12), ('Cheese Shop', 3), ('Central Toronto', 7), ('Gift Shop', 3), ('BBQ Joint',
3), ('Indoor Play Area', 1), ('Toy / Game Store', 1), ('Tennis Court', 1), ('Summer Camp', 1), ('Downtown Toronto', 1
8), ('Snack Place', 1), ('Jewelry Store', 2), ('Market', 1), ('Gay Bar', 1), ("Men's Store", 2), ('Sake Bar', 1), ('S
hoe Store', 1), ('Chocolate Shop', 1), ('French Restaurant', 6), ('Art Gallery', 2), ('Antique Shop', 1), ('Historic
Site', 1), ('Tea Room', 4), ('Lingerie Store', 2), ('Theater', 5), ('Hookah Bar', 1), ('Other Great Outdoors', 1),
('Beer Bar', 8), ('Cocktail Bar', 5), ('Tailor Shop', 1), ('Wine Bar', 1), ('Bistro', 1), ('Jazz Club', 1), ('Irish P
ub', 2), ('Basketball Stadium', 2), ('Salad Place', 4), ('Poke Place', 2), ('Vegetarian / Vegan Restaurant', 9), ('Br
azilian Restaurant', 1), ('Aquarium', 1), ('Scenic Lookout', 1), ('Music Venue', 6), ('Baseball Stadium', 1), ('Monum
ent / Landmark', 1), ('Train Station', 1), ('Speakeasy', 2), ('Hotel Bar', 3), ('New American Restaurant', 3), ('Buil
ding', 1), ('Airport Gate', 3), ('Poutine Place', 1), ('College Gym', 1), ('Nightclub', 4), ('College Arts Building',
1), ('Organic Grocery', 1), ('Gaming Cafe', 1), ('Airport Lounge', 2), ('Airport Service', 1), ('Airport Terminal',
1), ('Harbor / Marina', 1), ('Plane', 1), ('Sculpture Garden', 1), ('Boat or Ferry', 1), ('Airport', 1), ('Opera Hous
e', 1), ('Accessories Store', 1), ('York', 3), ('Field', 2), ('Baby Store', 1), ('West Toronto', 6), ('Southern / Sou
l Food Restaurant', 1), ('Performing Arts Venue', 1), ('Climbing Gym', 1), ('Stadium', 1), ('Check Cashing Service',
1), ('Flea Market', 1), ('Cajun / Creole Restaurant', 1), ('Supplement Shop', 2), ('South American Restaurant', 1),
('Indie Movie Theater', 1), ("Queen's Park", 1), ('Hobby Shop', 2), ('Mississauga', 1), ('Smoke Shop', 1), ('Skate Pa
rk', 1), ('Recording Studio', 1), ('Auto Workshop', 1), ('Garden', 1), ('Garden Center', 1), ('Etobicoke', 8), ('Flow
er Shop', 2), ('Tanning Salon', 1), ('Thrift / Vintage Store', 1), ('Hardware Store', 1), ('Shopping Plaza', 1)]
```

So, it looks like cluster5 is the heart of the city. It has three history museum, eight athletics and sports centers, four skating rink along with many restaurants.

Insight: So, it looks like cluster5 forms the heart of the city with many restaurants and other places to explore.

4.Conclusion

For a person who wants to explore, his first choice would be New York city. There are 430 venues to explore and 67 different cuisines along with many fast food restaurants. There are many parks and central park being the largest park. Toronto also definitely has 233 unique venues and 44 different cuisines. It would also be a wonderful place to explore.

References:

1) Immigration Statistics: (Duffin, 2019)
2) NewYork OpenData: (York, NYC OpenData, 2019)