

Toronto City Vs Manhattan City

Coursera Capstone Project



Why and What to Compare???

- To find better options for the newcomers
- To get better places to visit for the travelers
- To get better ideas or scopes to invest for the inverters/entrepreneurs
- What should be compared??
 - Peoples preference
 - Available resources
 - Cultural or historical aspects

Data collection & Cleaning

- The data collection has been done from the following sources:
 - https://en.wikipedia.org/wiki/List_of_postal_codes_of_Canada:_M
 - https://cocl.us/Geospatial_data
 - https://cocl.us/new_york_dataset
- After proper cleaning, some samples of data:

	Postal Code	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

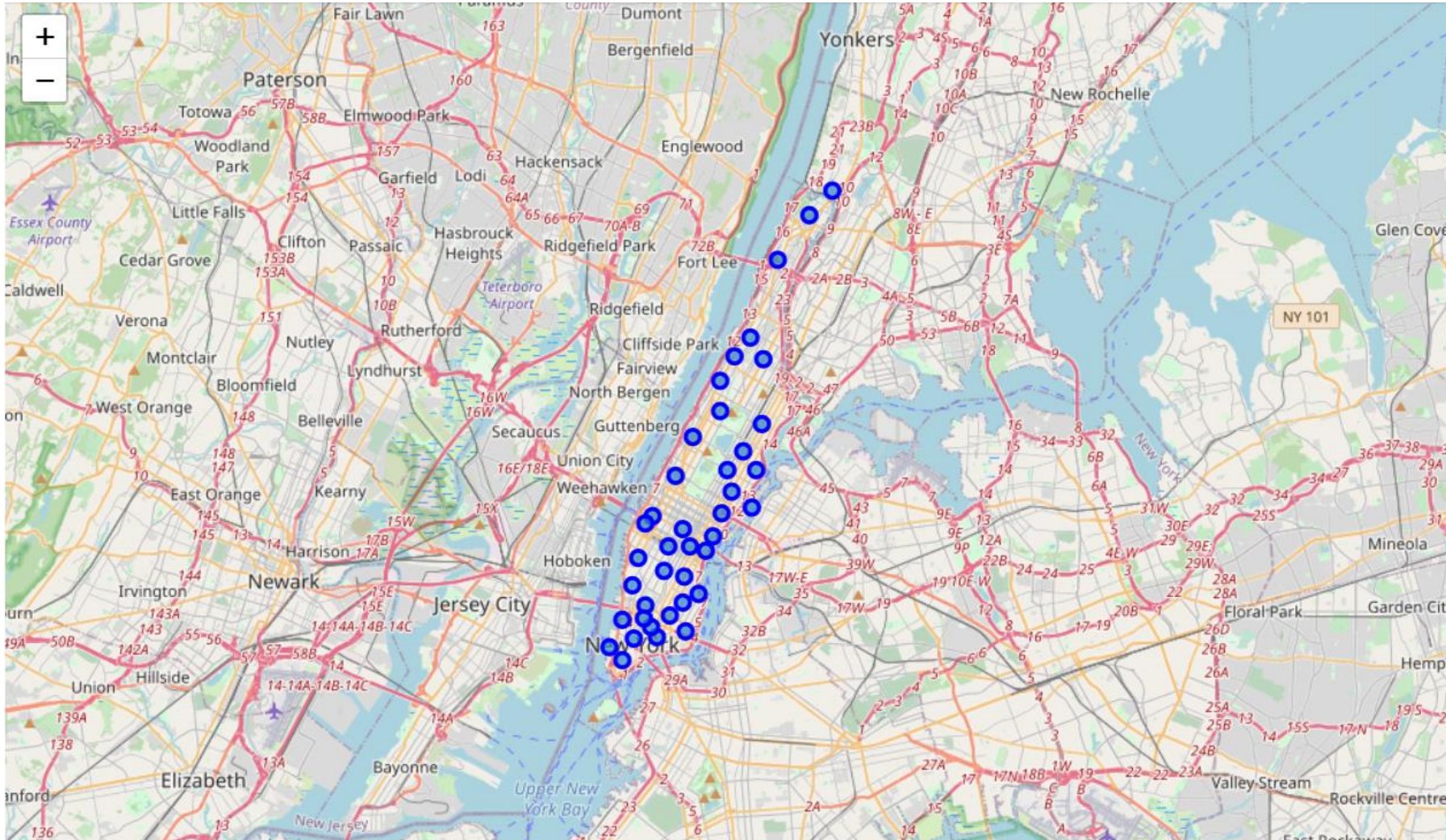
	Borough	Neighborhood	Latitude	Longitude
0	Manhattan	Marble Hill	40.876551	-73.910660
1	Manhattan	Chinatown	40.715618	-73.994279
2	Manhattan	Washington Heights	40.851903	-73.936900
3	Manhattan	Inwood	40.867684	-73.921210
4	Manhattan	Hamilton Heights	40.823604	-73.949688

Exploring the neighborhood-Toronto City



The map has been developed using folium library indicating some neighborhoods around Toronto city

Exploring the neighborhood-Manhattan City



The map has been developed using folium library indicating some neighborhoods around Manhattan city

Some of the neighbourhoods

- Neighborhood attributes has been found from **The Foursquare API**

Venues nearby Toronto:

The Beaches
The Danforth West, Riverdale
India Bazaar, The Beaches West
Studio District
Lawrence Park
Davisville North
North Toronto West, Lawrence Park
Davisville
Moore Park, Summerhill East
Summerhill West, Rathnelly, South Hill, Forest Hill SE, Deer Park
Rosedale
St. James Town, Cabbagetown
Church and Wellesley
Regent Park, Harbourfront
Garden District, Ryerson
St. James Town
Berczy Park
Central Bay Street
Richmond, Adelaide, King
Harbourfront East, Union Station, Toronto Islands
Toronto Dominion Centre, Design Exchange
Commerce Court, Victoria Hotel
Roselawn
Forest Hill North & West, Forest Hill Road Park
The Annex, North Midtown, Yorkville
University of Toronto, Harbord
Kensington Market, Chinatown, Grange Park
CN Tower, King and Spadina, Railway Lands, Harbourfront West, Bathurst Quay, South Niagara, Island airport
Stn A PO Boxes
First Canadian Place, Underground city
Christie
Dufferin, Dovercourt Village
Little Portugal, Trinity

Venues nearby Manhattan:

Marble Hill
Chinatown
Washington Heights
Inwood
Hamilton Heights
Manhattanville
Central Harlem
East Harlem
Upper East Side
Yorkville
Lenox Hill
Roosevelt Island
Upper West Side
Lincoln Square
Clinton
Midtown
Murray Hill
Chelsea
Greenwich Village
East Village
Lower East Side
Tribeca
Little Italy
Soho
West Village
Manhattan Valley
Morningside Heights
Gramercy
Battery Park City
Financial District
Carnegie Hill

Neighborhood Venue Sorting

Each of the neighborhood's venues are sorted according to their popularity/frequency of peoples' presence

Toronto Neighborhood:

	Neighbourhood	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	Seafood Restaurant	Bakery	Restaurant	Cheese Shop	Café	Beer Bar	Japanese Restaurant	Hotel
1	Brockton, Parkdale Village, Exhibition Place	Café	Performing Arts Venue	Breakfast Spot	Coffee Shop	Bakery	Stadium	Burrito Place	Restaurant	Climbing Gym	Pet Store
2	Business reply mail Processing Centre, South C...	Light Rail Station	Yoga Studio	Garden Center	Skate Park	Restaurant	Recording Studio	Pizza Place	Park	Garden	Spa
3	CN Tower, King and Spadina, Railway Lands, Har...	Airport Service	Airport Lounge	Boutique	Harbor / Marina	Plane	Coffee Shop	Boat or Ferry	Sculpture Garden	Rental Car Location	Airport Terminal
4	Central Bay Street	Coffee Shop	Italian Restaurant	Japanese Restaurant	Sandwich Place	Café	Salad Place	Dessert Shop	Middle Eastern Restaurant	Thai Restaurant	Department Store

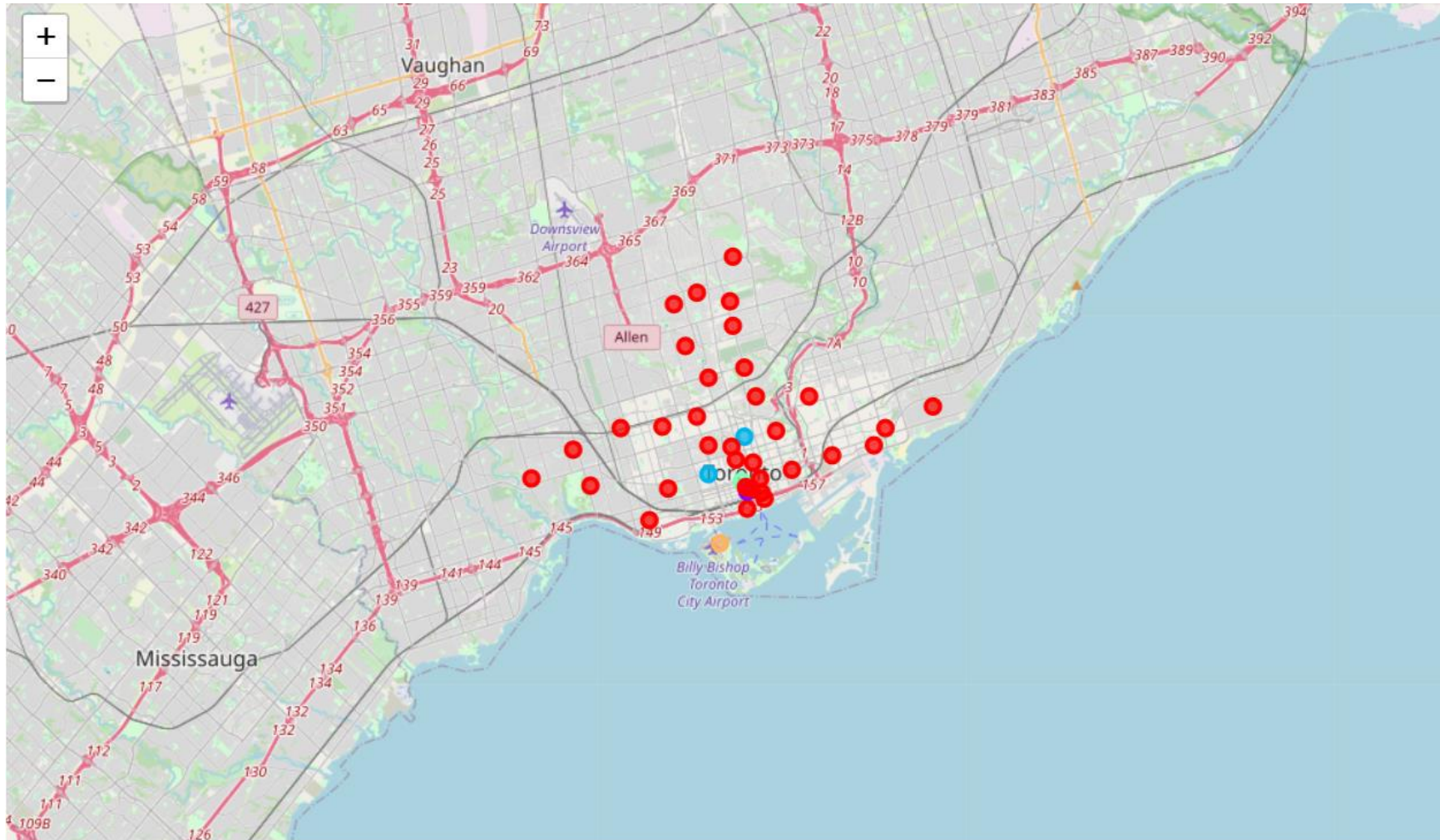
Neighborhood Venue Sorting

Each of the neighborhood's venues are sorted according to their popularity/frequency of peoples' presence

Manhattan Neighborhood:

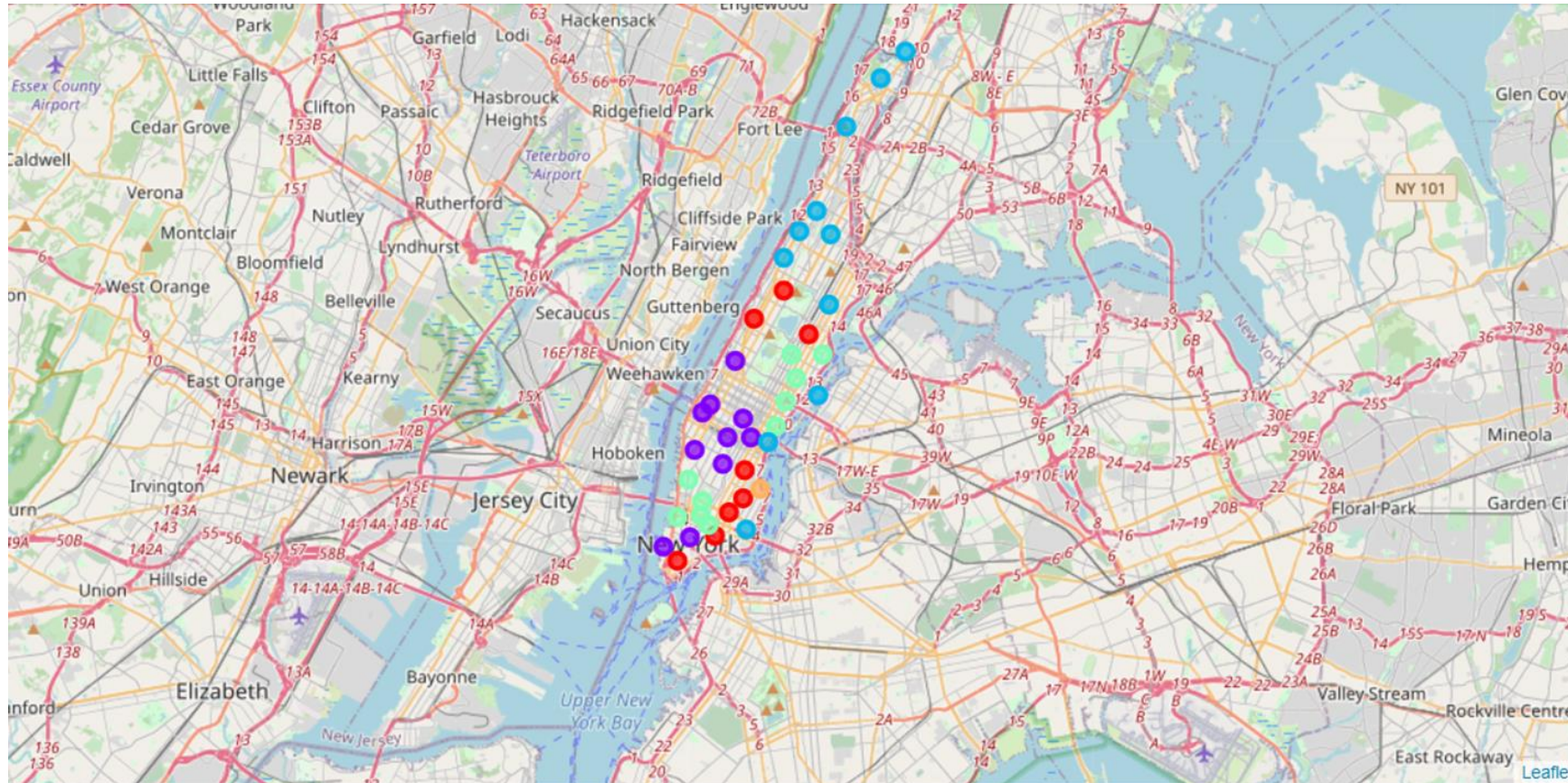
	Neighborhood	1st Most Common Venue	2nd Most Common Venue	3rd Most Common Venue	4th Most Common Venue	5th Most Common Venue	6th Most Common Venue	7th Most Common Venue	8th Most Common Venue	9th Most Common Venue	10th Most Common Venue
0	Battery Park City	Park	Hotel	Coffee Shop	Memorial Site	Gym	Boat or Ferry	Food Court	Shopping Mall	Gourmet Shop	Mexican Restaurant
1	Carnegie Hill	Coffee Shop	Café	Pizza Place	Italian Restaurant	Yoga Studio	Bookstore	Wine Shop	Gym / Fitness Center	Gym	French Restaurant
2	Central Harlem	Chinese Restaurant	Seafood Restaurant	Pizza Place	Bar	French Restaurant	Gym / Fitness Center	American Restaurant	African Restaurant	Deli / Bodega	Bookstore
3	Chelsea	Coffee Shop	Art Gallery	Ice Cream Shop	American Restaurant	French Restaurant	Bakery	Café	Cocktail Bar	Pizza Place	Market
4	Chinatown	Chinese Restaurant	Bakery	Dessert Shop	Vietnamese Restaurant	Cocktail Bar	Bar	Spa	Ice Cream Shop	Bubble Tea Shop	Hotpot Restaurant

Clustering -Toronto



- All the neighborhoods are clustered based on the popularity of the venues surrounding that.
- Total cluster is 5
- Color distinguished the clusters
- Toronto cluster is less uniformed

Clustering -Manhattan



- All the neighborhoods are clustered based on the popularity of the venues surrounding that.
- Total cluster is 5
- Color distinguished the clusters
- Manhattan cluster is more uniformed

Comparison

1st common venues in different clusters of Toronto

Popular Venues in various clusters of Toronto

```
[187]: ct1['1st Most Common Venue'].value_counts()
```

```
[187]: Coffee Shop      9
      Park            4
      Café            4
      Pizza Place     2
      Clothing Store  2
      Home Service    1
      Hotel           1
      Breakfast Spot  1
      Greek Restaurant 1
      Light Rail Station 1
      Mexican Restaurant 1
      Bakery          1
      Tennis Court    1
      Trail           1
      Grocery Store    1
      Sandwich Place  1
      Pub             1
      Bar             1
      Name: 1st Most Common Venue, dtype: int64
```

```
[188]: ct2['1st Most Common Venue'].value_counts()
```

```
[188]: Coffee Shop      1
      Name: 1st Most Common Venue, dtype: int64
```

```
[189]: ct3['1st Most Common Venue'].value_counts()
```

```
[189]: Café            1
      Coffee Shop    1
      Name: 1st Most Common Venue, dtype: int64
```

```
[190]: ct4['1st Most Common Venue'].value_counts()
```

```
[190]: Coffee Shop      1
      Name: 1st Most Common Venue, dtype: int64
```

```
[191]: ct5['1st Most Common Venue'].value_counts()
```

```
[191]: Airport Service    1
      Name: 1st Most Common Venue, dtype: int64
```

- Cluster 1 is well distributed, good for living
- Other clusters 1st common venue doesn't include basic regular thing i.e. grocery shops
- Better option for investments in other clusters

Comparison

1st common venues in different clusters of Manhattan

Popular Venues in various clusters of Manhattan

```
[192]: cm1['1st Most Common Venue'].value_counts()
```

```
[192]: Coffee Shop      3
      Bar              2
      Pizza Place     1
      Chinese Restaurant 1
      Italian Restaurant 1
      Name: 1st Most Common Venue, dtype: int64
```

```
[193]: cm2['1st Most Common Venue'].value_counts()
```

```
[193]: Coffee Shop      3
      Korean Restaurant 1
      Sandwich Place    1
      Café              1
      Park              1
      Theater           1
      Hotel             1
      Gym / Fitness Center 1
      Name: 1st Most Common Venue, dtype: int64
```

```
[194]: cm3['1st Most Common Venue'].value_counts()
```

```
[194]: Mexican Restaurant  2
      Café              2
      Chinese Restaurant  2
      Bookstore          1
      Sandwich Place     1
      Park              1
      Deli / Bodega      1
      Pizza Place        1
      Name: 1st Most Common Venue, dtype: int64
```

```
[195]: cm4['1st Most Common Venue'].value_counts()
```

```
[195]: Italian Restaurant  8
      Bakery           1
      Gym / Fitness Center 1
      Name: 1st Most Common Venue, dtype: int64
```

```
[196]: cm5['1st Most Common Venue'].value_counts()
```

```
[196]: Park      1
      Name: 1st Most Common Venue, dtype: int64
```

- Cluster 3 is well distributed, good for living
- None of the clusters 1st common venue doesn't include basic regular thing i.e. grocery shops
- Lots of Italian restaurants in these Neighbourhoods

Comparison & Conclusion

- According to neighborhood considered, Manhattan city is mostly populated with restaurants compared to some regular stuff such as grocery whereas Toronto doesn't have any 1st choice Italian restaurant.
- The comparison with data helps decision making.
- The comparison with data opens up opportunities for new scopes, ideas and improvement.