Peer-graded Assignment: Capstone Project - The Battle of Neighborhoods (Week 1 & 2)

●●●

Final Project

Where can we open a Yoga Studio in the borough of Manhattan?

- Now that the pandemic is slowly receding in the US, especially after vaccinations, New York City is opening up.
- Data analysis needs to be conducted for client who wants to open up a Yoga Studio in Manhattan.
- Location in Manhattan is important so we will analyze data to find the optimum location for yoga studio with maximum chance of success.
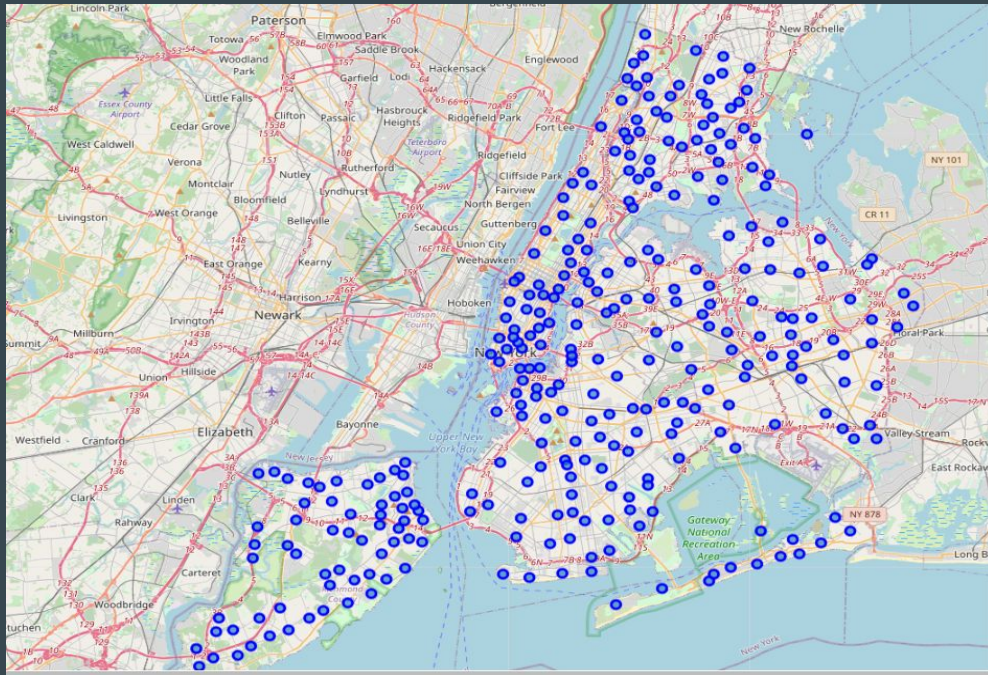
Data

- New York City data containing the neighborhoods and boroughs, latitudes, and longitudes will be obtained from the data source: https://cocl.us/new_york_dataset
- All data related to locations and other entertainment venues and/or other office complexes etc will be obtained via the FourSquare API utilized via the Request library in Python.

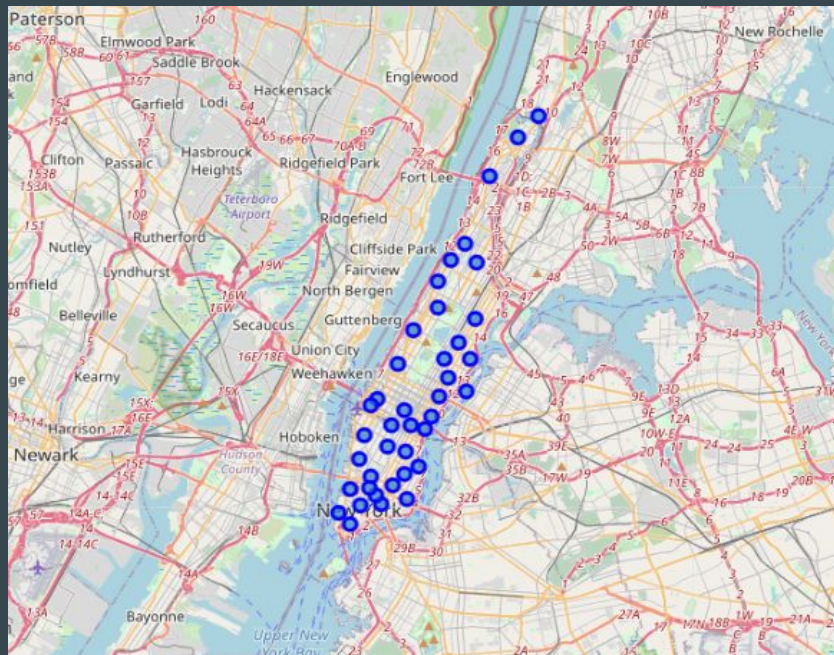- Only data from Manhattan will be analyzed.

Methodology

- Data will be collected from https://cocl.us/new_york_dataset and cleaned and processed into a Dataframe.

- Only Manhattan data will be used for the purpose answering the main questions.

- FourSquare app will be utilized via the Request library in Python to locate all venues and then filtered by optimum location by entertainment venues and added to the Dataframe.

- Data will be sorted based on rankings. We will explore the data using the data and ultimately visually assess the data using Python libraries.

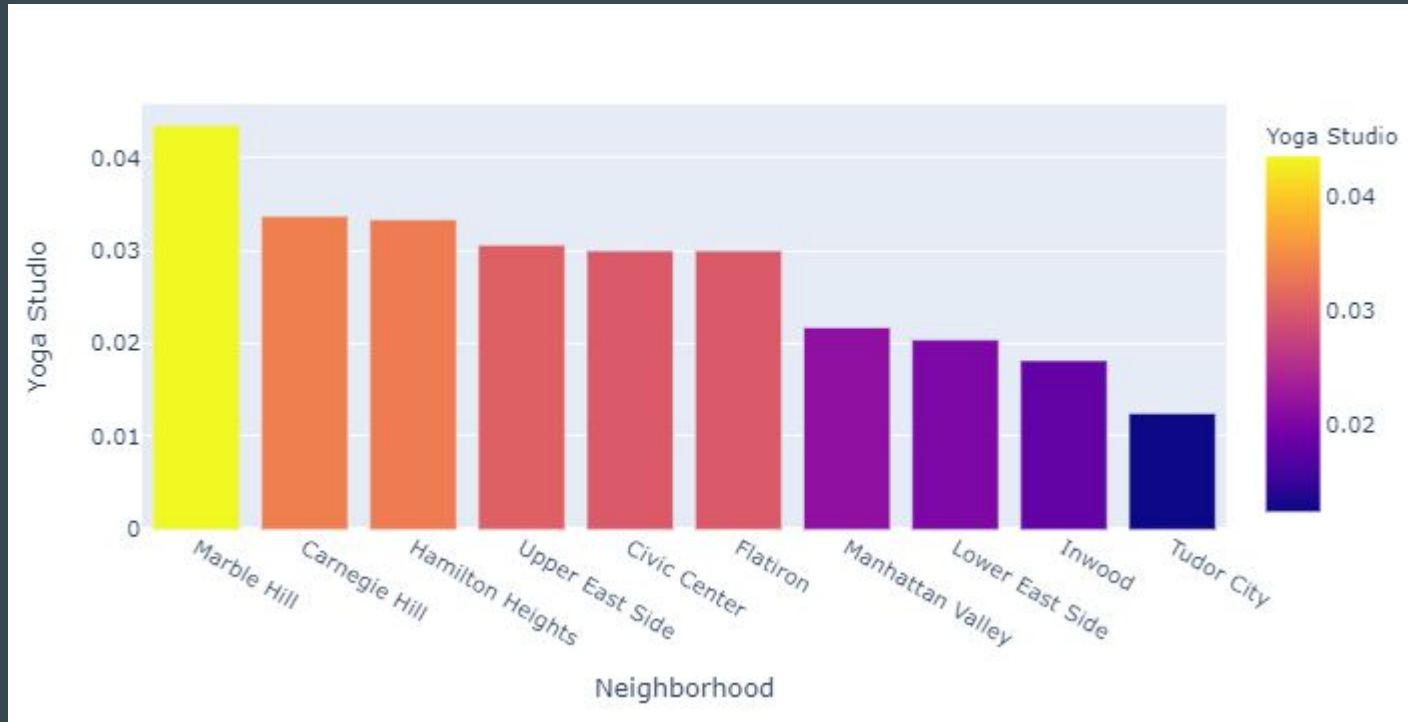# Map of New York City showing all Neighborhoods

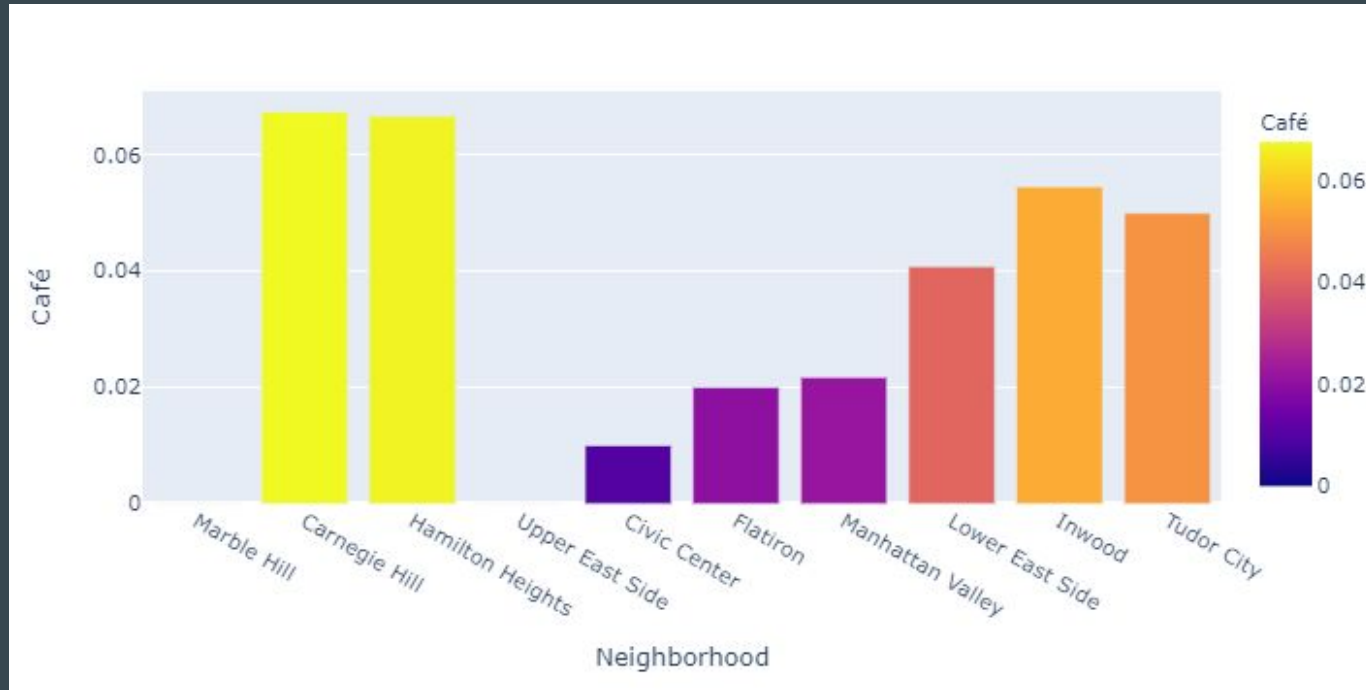# Map of Manhattan and its neighborhood using geolocator

5 Top Common Venues for Neighborhoods

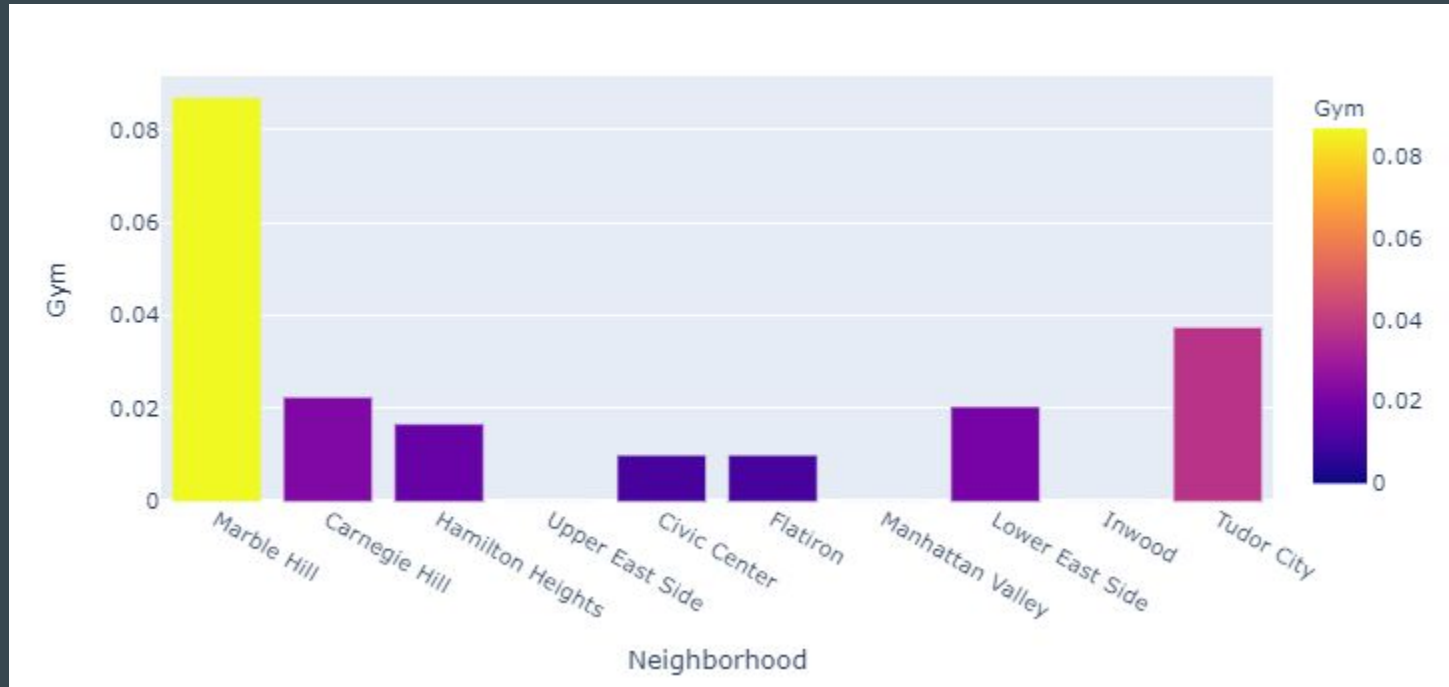|	Neighborhood	1st Most Common Venue	2nd Most Common Venue	3rd Most Common Venue	4th Most Common Venue	5th Most Common Venue
0	Battery Park City	Park	Coffee Shop	Hotel	Clothing Store	Women's Store
1	Carnegie Hill	Coffee Shop	Café	Wine Shop	Yoga Studio	Bar
2	Central Harlem	African Restaurant	Chinese Restaurant	Public Art	French Restaurant	American Restaurant
3	Chelsea	Coffee Shop	Bakery	Art Gallery	American Restaurant	Italian Restaurant
4	Chinatown	Chinese Restaurant	Bakery	Cocktail Bar	Dessert Shop	American Restaurant
5	Civic Center	Coffee Shop	Spa	Gym / Fitness Center	American Restaurant	French Restaurant
6	Clinton	Italian Restaurant	Theater	Gym / Fitness Center	Sandwich Place	Coffee Shop
7	East Harlem	Bakery	Mexican Restaurant	Thai Restaurant	Sandwich Place	Latin American Restaurant
8	East Village	Bar	Mexican Restaurant	Speakeasy	Pizza Place	Ice Cream Shop
9	Financial District	Coffee Shop	Pizza Place	Cocktail Bar	Park	Bar
10	Flatiron	Italian Restaurant	Japanese Restaurant	New American Restaurant	American Restaurant	Mediterranean Restaurant

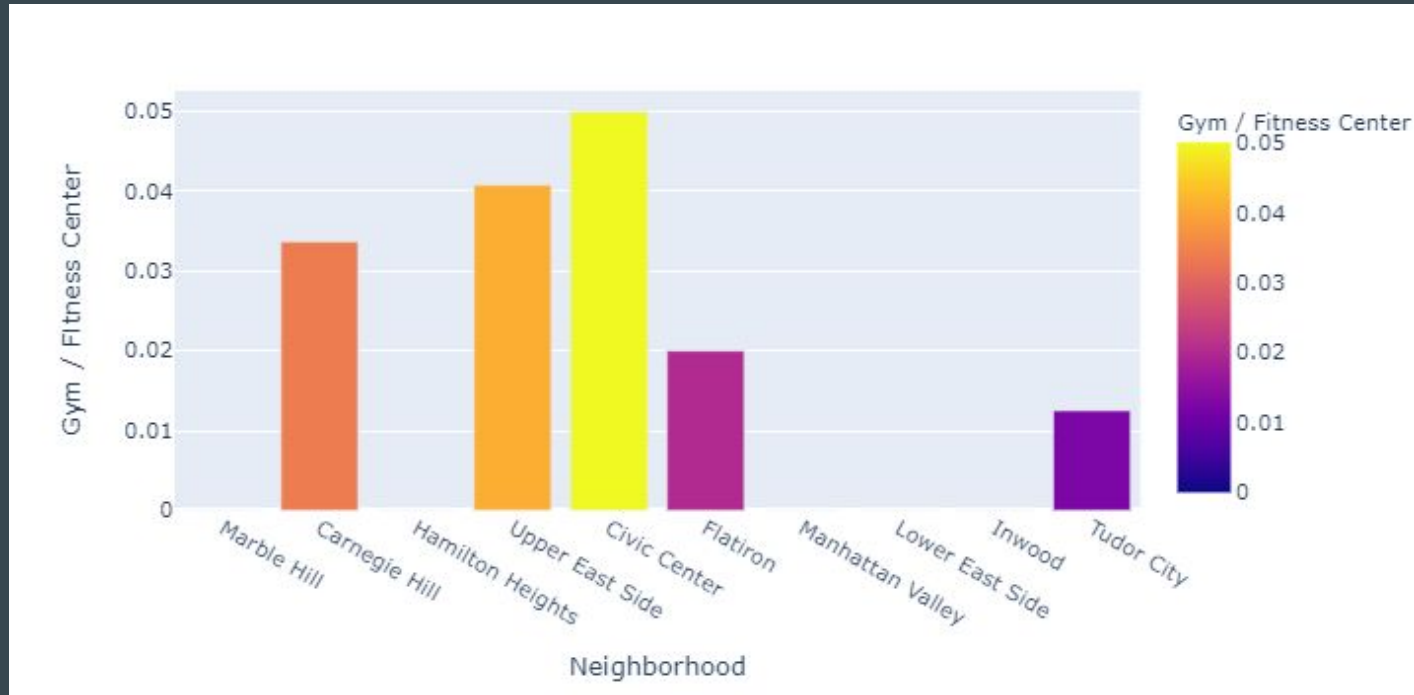# Yoga Studios in the neighborhoods of Manhattan

Cafes in the same Neighborhoods

Gyms in the same Neighborhoods

Gym/Fitness in the same Neighborhoods

Cluster and Visualize Neighborhoods

Examine Clusters

Cluster 1

```
manhattan_merged.loc[manhattan_merged['Cluster Labels'] == 0, manhattan_merged.columns[[1] + list(range(5, manhattan_merged.shape[1]))]]
```

	Neighborhood	1st Most Common Venue	2nd Most Common Venue	3rd Most Common Venue	4th Most Common Venue	5th Most Common Venue
2	Washington Heights	Café	Bakery	Bank	Mobile Phone Shop	Pizza Place
3	Inwood	Mexican Restaurant	Café	Restaurant	Lounge	Chinese Restaurant
4	Hamilton Heights	Pizza Place	Café	Mexican Restaurant	Deli / Bodega	Coffee Shop
7	East Harlem	Bakery	Mexican Restaurant	Thai Restaurant	Sandwich Place	Latin American Restaurant
20	Lower East Side	Chinese Restaurant	Art Gallery	Latin American Restaurant	Pharmacy	Pizza Place

Cluster 2

Cluster 2

```
manhattan_merged.loc[manhattan_merged['Cluster Labels'] == 1, manhattan_merged.columns[[1] + list(range(5, manhattan_merged.shape[
```

	Neighborhood	1st Most Common Venue	2nd Most Common Venue	3rd Most Common Venue	4th Most Common Venue	5th Most Common Venue
1	Chinatown	Chinese Restaurant	Bakery	Cocktail Bar	Dessert Shop	American Restaurant
6	Central Harlem	African Restaurant	Chinese Restaurant	Public Art	French Restaurant	American Restaurant
8	Upper East Side	Exhibit	Italian Restaurant	American Restaurant	Juice Bar	Gym / Fitness Center
14	Clinton	Italian Restaurant	Theater	Gym / Fitness Center	Sandwich Place	Coffee Shop
15	Midtown	Hotel	Sporting Goods Shop	Clothing Store	Coffee Shop	Bookstore
16	Murray Hill	Hotel	Coffee Shop	American Restaurant	Sandwich Place	Japanese Restaurant
17	Chelsea	Coffee Shop	Bakery	Art Gallery	American Restaurant	Italian Restaurant
19	East Village	Bar	Mexican Restaurant	Speakeasy	Pizza Place	Ice Cream Shop
22	Little Italy	Bakery	Café	Chinese Restaurant	Mediterranean Restaurant	Hotel
25	Manhattan Valley	Mexican Restaurant	Bar	Coffee Shop	Vietnamese Restaurant	Playground
27	Gramercy	Italian Restaurant	Bar	Pizza Place	Bagel Shop	Wine Shop
28	Battery Park City	Park	Coffee Shop	Hotel	Clothing Store	Women's Store
29	Financial District	Coffee Shop	Pizza Place	Cocktail Bar	Park	Bar
30	Carnegie Hill	Coffee Shop	Café	Wine Shop	Yoga Studio	Bar
32	Civic Center	Coffee Shop	Spa	Gym / Fitness Center	American Restaurant	French Restaurant
33	Midtown South	Korean Restaurant	Hotel	Dessert Shop	Gym / Fitness Center	Hotel Bar
34	Sutton Place	Italian Restaurant	Pizza Place	Gym / Fitness Center	Coffee Shop	Indian Restaurant
38	Flatiron	Italian Restaurant	Japanese Restaurant	New American Restaurant	American Restaurant	Mediterranean Restaurant
39	Hudson Yards	Gym / Fitness Center	Italian Restaurant	Hotel	American Restaurant	Thai Restaurant

Cluster 3


```
Cluster 3

manhattan_merged.loc[manhattan_merged['Cluster Labels'] == 2, manhattan_merged.columns[[1] + list(range(5, manhattan_merged.shape[1]))]]
```

	Neighborhood	1st Most Common Venue	2nd Most Common Venue	3rd Most Common Venue	4th Most Common Venue	5th Most Common Venue
5	Manhattanville	Coffee Shop	Mexican Restaurant	Italian Restaurant	Bar	Seafood Restaurant
9	Yorkville	Italian Restaurant	Gym	Coffee Shop	Deli / Bodega	Sushi Restaurant
10	Lenox Hill	Italian Restaurant	Coffee Shop	Sushi Restaurant	Pizza Place	Café
11	Roosevelt Island	Deli / Bodega	Coffee Shop	Park	Bus Line	Bubble Tea Shop
12	Upper West Side	Italian Restaurant	Bakery	Wine Bar	Bar	Café
13	Lincoln Square	Plaza	Performing Arts Venue	Concert Hall	Café	Theater
18	Greenwich Village	Italian Restaurant	Clothing Store	Boutique	Sushi Restaurant	Dessert Shop
21	Tribeca	American Restaurant	Park	Italian Restaurant	Wine Bar	Café
23	Soho	Clothing Store	Boutique	Italian Restaurant	Mediterranean Restaurant	Shoe Store
24	West Village	Italian Restaurant	New American Restaurant	Cocktail Bar	American Restaurant	Park
26	Morningside Heights	Coffee Shop	Park	Bookstore	American Restaurant	Burger Joint
31	Noho	Italian Restaurant	Cocktail Bar	French Restaurant	Pizza Place	Hotel
35	Turtle Bay	Italian Restaurant	Coffee Shop	Sushi Restaurant	Deli / Bodega	Café
36	Tudor City	Park	Mexican Restaurant	Café	Pizza Place	Gym

Cluster 4 and 5

Cluster 4

```
manhattan_merged.loc[manhattan_merged['Cluster Labels'] == 3, manhattan_merged.columns[[1] + list(range(5, manhattan_merged.shape[1]))]]
```

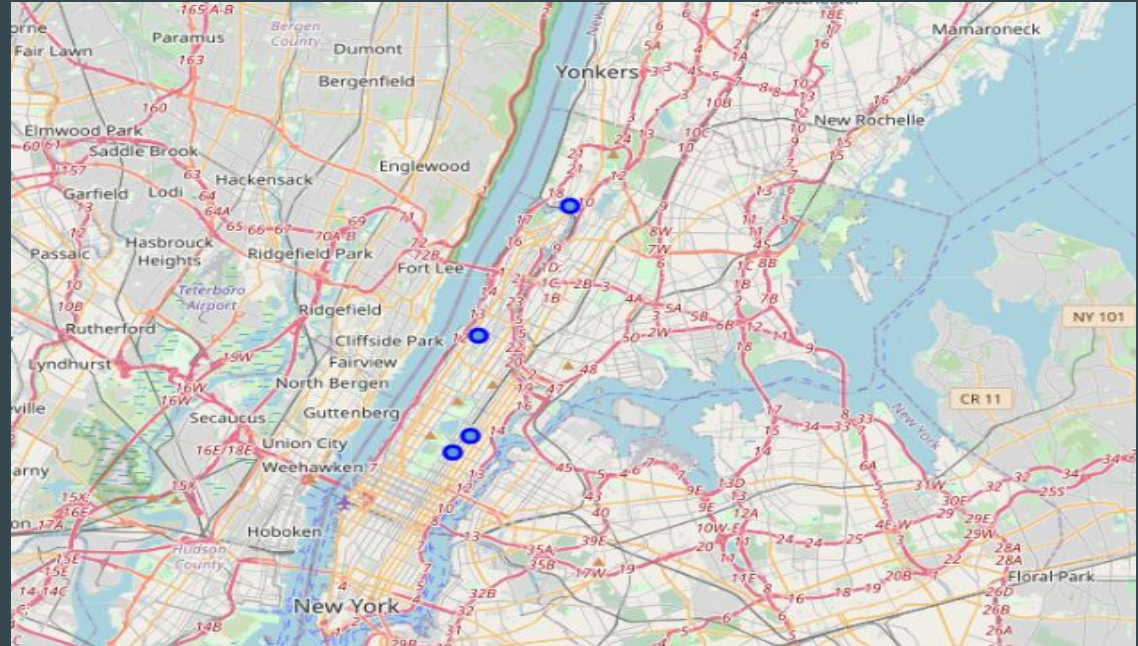|	Neighborhood	1st Most Common Venue	2nd Most Common Venue	3rd Most Common Venue	4th Most Common Venue	5th Most Common Venue
37	Stuyvesant Town	Bar	Park	Coffee Shop	Cocktail Bar	Playground

Cluster 5

```
manhattan_merged.loc[manhattan_merged['Cluster Labels'] == 4, manhattan_merged.columns[[1] + list(range(5, manhattan_merged.shape[1]))]]
```

	Neighborhood	1st Most Common Venue	2nd Most Common Venue	3rd Most Common Venue	4th Most Common Venue	5th Most Common Venue
0	Marble Hill	Coffee Shop	Sandwich Place	Gym	Yoga Studio	Bank

Data analysis narrows down the neighborhoods to 4 likely locations

- Marble Hill
- Carnegie Hill
- Upper East Side
- Hamilton Heights

Results/Conclusion:

- Initial data analysis has narrowed down the location to 4 like ly neighborhoods of Marble Hill, Carnegie Hill, Hamilton Heights and Upper East Side.
- As can be seen from mean data, Carnegie Hill would be the most optimum since it has cafes, gyms and yoga studios in the area. Likelihood of customer increases. Also close to Upper East Side
- Location is a very important factor in choosing any business especially a boutique business like a Yoga Studio.
- Post pandemic, new business like Yoga studio has increased chance of success since a lot of people have become very conscious of health and keeping fit.
- More analysis is need to map the proximity of Carnegie Hill to subway and bus stations.