

# Capstone Project

## The Battle of Neighborhoods

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# Introduction

- Opening a boxing gym is one of those adventures carried out by passionate fitness, health and well-being.
- This project could be of interest to young entrepreneurs who want to create their own business.



# Business Problem

- There are around 200 gyms in Manhattan but not all of them are designed for boxers, that need another kind of training and environment
- Finding a suitable place for the target audience, thinking about accessibility and visibility, where customers are expected to park their vehicles and, above all, be in a quiet and safe area.

# Data

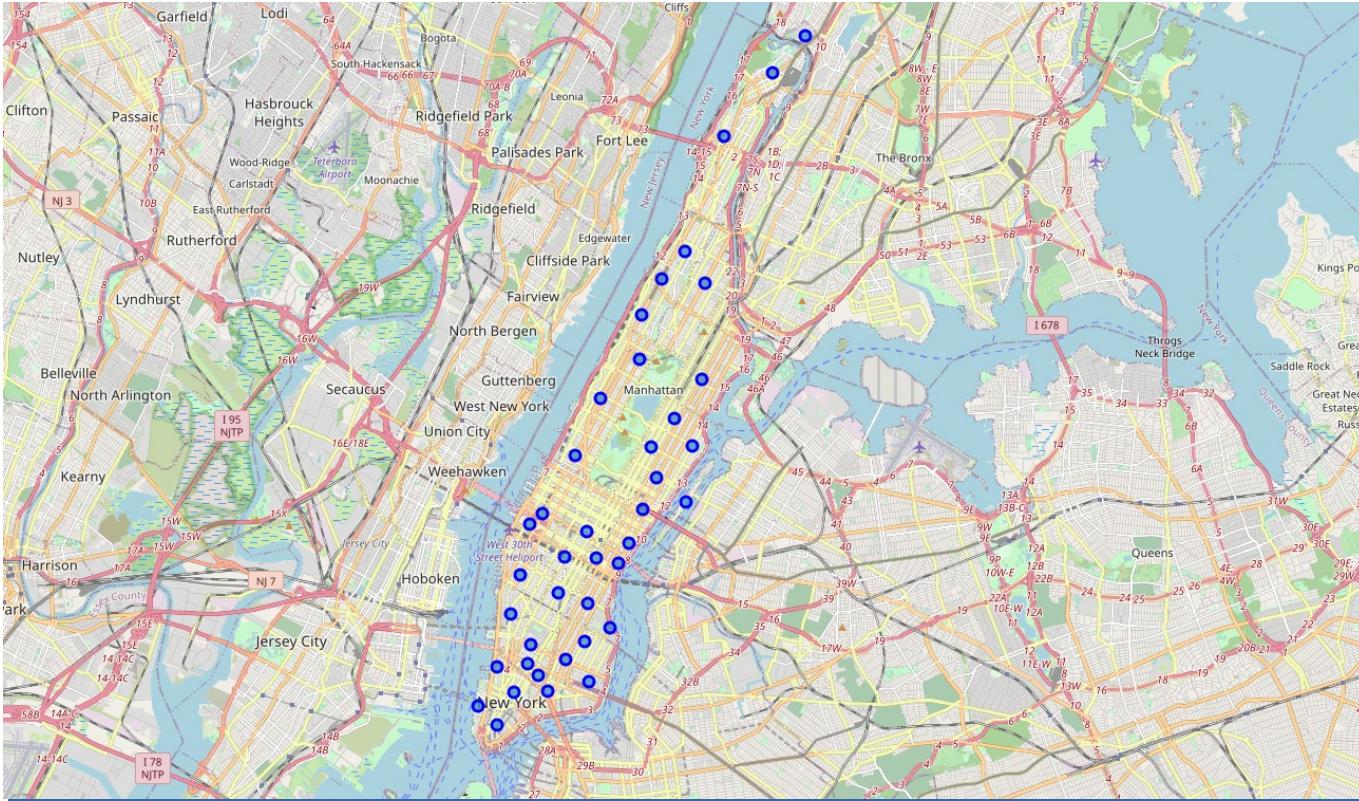
- We are going to use a json file that has New York data:  
[https://cf-courses-data.s3.us.cloud-object-storage.appdomain.cloud/IBMDriverSkillsNetwork-DS0701EN-SkillsNetwork/labs/newyork\\_data.json](https://cf-courses-data.s3.us.cloud-object-storage.appdomain.cloud/IBMDriverSkillsNetwork-DS0701EN-SkillsNetwork/labs/newyork_data.json).
- Implement the Foursquare API to explore the neighborhoods and segment them.



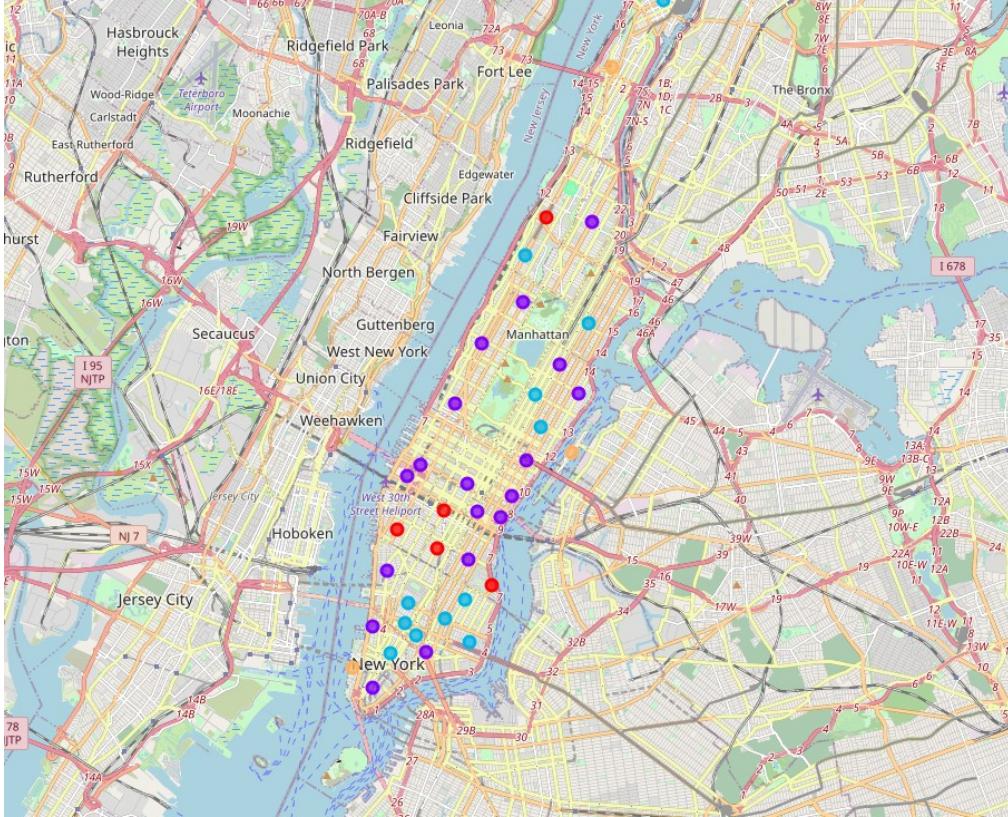
# Methodology

- Collect the information about the location of every gym located in Manhattan, we do this using Foursquare categorization.
- Create clusters of locations.
- Present map of all such locations but also create clusters (using k-means clustering).
- Identify a location which should be a starting point for explore and search for optimal venue location.

# Map generated with Neighborhoods of Manhattan



# Cluster Neighborhoods



Using 5 clusters as the number of cluster for Kmeans.

# Examine Clusters

- Cluster 1

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	Marble Hill	Gym / Fitness Center	Yoga Studio	Boxing Gym	Gym	College Gym	Doctor's Office	Deli / Bodega	Cycle Studio	Community Center	Club House
5	Manhattanville	Gym / Fitness Center	Climbing Gym	Yoga Studio	College Gym	Gym	Doctor's Office	Deli / Bodega	Cycle Studio	Community Center	Club House
17	Chelsea	Gym / Fitness Center	Yoga Studio	Gym	Martial Arts School	Cycle Studio	Weight Loss Center	Gym Pool	Pilates Studio	Clothing Store	Climbing Gym
33	Midtown South	Gym / Fitness Center	Gym	Martial Arts School	Yoga Studio	Boxing Gym	Building	Medical Center	Chiropractor	Climbing Gym	Clothing Store
37	Stuyvesant Town	Gym / Fitness Center	Yoga Studio	Gym	College Gym	Doctor's Office	Deli / Bodega	Cycle Studio	Community Center	Club House	Gymnastics Gym
38	Flatiron	Gym / Fitness Center	Gym	Yoga Studio	Pilates Studio	Residential Building (Apartment / Condo)	Women's Store	Martial Arts School	Athletics & Sports	Pool	Doctor's Office

# Examine Clusters

- Cluster 2

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 Chinatown	Gym / Fitness Center	Gym	Yoga Studio	Martial Arts School	Boxing Gym	Community Center	Doctor's Office	Deli / Bodega	Cycle Studio	College Gym
6 Central Harlem	Gym / Fitness Center	Gym	Martial Arts School	Cycle Studio	Yoga Studio	Gymnastics Gym	Doctor's Office	Deli / Bodega	Community Center	College Gym
9 Yorkville	Gym	Gym / Fitness Center	Gymnastics Gym	Martial Arts School	Gym Pool	Pilates Studio	Boxing Gym	Climbing Gym	Clothing Store	Club House
12 Upper West Side	Gym / Fitness Center	Gym	Yoga Studio	Gymnastics Gym	Pilates Studio	Boxing Gym	Chiropractor	Climbing Gym	Clothing Store	Club House
13 Lincoln Square	Gym / Fitness Center	Gym	Martial Arts School	Gym Pool	Cycle Studio	Residential Building (Apartment / Condo)	Yoga Studio	Climbing Gym	Pilates Studio	Clothing Store
14 Clinton	Gym / Fitness Center	Gym	Building	Chiropractor	Residential Building (Apartment / Condo)	Yoga Studio	Tennis Court	Track	Boxing Gym	Gym Pool
15 Midtown	Gym / Fitness Center	Gym	Yoga Studio	Pilates Studio	Martial Arts School	Weight Loss Center	Boxing Gym	Chiropractor	Cycle Studio	Hospital
16 Murray Hill	Gym / Fitness Center	Gym	Yoga Studio	Martial Arts School	Track	Nutritionist	Boxing Gym	Doctor's Office	Pilates Studio	Weight Loss Center
21 Tribeca	Gym / Fitness Center	Gym	Gym Pool	Yoga Studio	Pilates Studio	Cycle Studio	Gymnastics Gym	Athletics & Sports	Track	Doctor's Office
24 West Village	Gym	Gym / Fitness Center	Yoga Studio	Cycle Studio	Track	College Gym	Doctor's Office	Deli / Bodega	Community Center	Club House
25 Manhattan Valley	Gym / Fitness Center	Gym	Yoga Studio	Track	Martial Arts School	Boxing Gym	Building	Chiropractor	Climbing Gym	Clothing Store
27 Gramercy	Gym / Fitness Center	Gym	Yoga Studio	Pilates Studio	Gym Pool	Doctor's Office	Martial Arts School	Weight Loss Center	Bike Shop	Boxing Gym
29 Financial District	Gym	Gym / Fitness Center	Yoga Studio	Boxing Gym	Gym Pool	Doctor's Office	Weight Loss Center	Martial Arts School	Bike Shop	Building
30 Carnegie Hill	Gym / Fitness Center	Gym	Yoga Studio	Martial Arts School	Weight Loss Center	Pilates Studio	Gymnastics Gym	Deli / Bodega	Community Center	Gym Pool
34 Sutton Place	Gym / Fitness Center	Gym	Yoga Studio	Weight Loss Center	Pilates Studio	Martial Arts School	Cycle Studio	Spiritual Center	Doctor's Office	Chiropractor
35 Turtle Bay	Gym / Fitness Center	Gym	Martial Arts School	Residential Building (Apartment / Condo)	Gym Pool	Pilates Studio	Climbing Gym	Boxing Gym	Track	Weight Loss Center
36 Tudor City	Gym / Fitness Center	Gym	Climbing Gym	Nutritionist	Gym Pool	Yoga Studio	Boxing Gym	Weight Loss Center	Chiropractor	Building
39 Hudson Yards	Gym / Fitness Center	Gym	Building	Chiropractor	Residential Building (Apartment / Condo)	Cycle Studio	Yoga Studio	Community Center	Doctor's Office	Deli / Bodega

# Examine Clusters

- Cluster 3

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	
3	Inwood	Pilates Studio	Gym	Gym / Fitness Center	Yoga Studio	Building	Chiropractor	Climbing Gym	Clothing Store	Club House	Gymnastics Gym
7	East Harlem	Gym / Fitness Center	Martial Arts School	Yoga Studio	Boxing Gym	Building	Gym	Community Center	Doctor's Office	Deli / Bodega	Cycle Studio
8	Upper East Side	Gym / Fitness Center	Gym	Yoga Studio	Doctor's Office	Pilates Studio	Cycle Studio	Spa	Martial Arts School	Boxing Gym	Building
10	Lenox Hill	Gym / Fitness Center	Gym	Yoga Studio	Cycle Studio	Martial Arts School	Pilates Studio	Spa	Club House	Boxing Gym	Building
18	Greenwich Village	Gym / Fitness Center	Gym	Yoga Studio	Pilates Studio	Martial Arts School	Boxing Gym	Spa	Medical Center	Building	Chiropractor
19	East Village	Gym / Fitness Center	Gym	Pilates Studio	Yoga Studio	Outdoor Gym	Martial Arts School	Track	Weight Loss Center	Bike Shop	Boxing Gym
20	Lower East Side	Gym	Martial Arts School	Yoga Studio	Gym / Fitness Center	Pool	Community Center	Building	Chiropractor	Climbing Gym	Clothing Store
22	Little Italy	Gym / Fitness Center	Gym	Yoga Studio	Martial Arts School	Boxing Gym	Pilates Studio	Spa	Cycle Studio	Building	Chiropractor
23	Soho	Gym / Fitness Center	Gym	Yoga Studio	Pilates Studio	Boxing Gym	Martial Arts School	Office	Gymnastics Gym	Medical Center	Cycle Studio
26	Morningside Heights	Yoga Studio	Gym Pool	Gym	Medical Center	Park	College Gym	Gym / Fitness Center	Climbing Gym	Clothing Store	Club House
31	Noho	Gym / Fitness Center	Yoga Studio	Gym	Martial Arts School	Boxing Gym	Pilates Studio	Clothing Store	Bike Shop	Building	Chiropractor
32	Civic Center	Gym / Fitness Center	Gym	Yoga Studio	Martial Arts School	Pilates Studio	Boxing Gym	Climbing Gym	Spa	Gym Pool	Gymnastics Gym

# Examine Clusters

- Cluster 4

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
4 Hamilton Heights	Yoga Studio	Gym	College Gym	Gym / Fitness Center	Doctor's Office	Deli / Bodega	Cycle Studio	Community Center	Club House	Gymnastics Gym

# Examine Clusters

- Cluster 5

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
2 Washington Heights	Gym	Gym / Fitness Center	Pilates Studio	Gymnastics Gym	Doctor's Office	Deli / Bodega	Cycle Studio	Community Center	College Gym	Yoga Studio
11 Roosevelt Island	Gym	Gym / Fitness Center	Yoga Studio	College Gym	Doctor's Office	Deli / Bodega	Cycle Studio	Community Center	Club House	Gymnastics Gym
28 Battery Park City	Gym	Gym / Fitness Center	Boxing Gym	Gym Pool	Bike Shop	Gymnastics Gym	Community Center	Doctor's Office	Deli / Bodega	Cycle Studio

# Results and Discussion

- Our analysis shows that there are a large number of gyms in Manhattan, but we can find that boxing gyms are not very common.
- Few places that offer these services, so it would be ideal to open a gym either in cluster 4, which does not have a gym of this type.
- Reason of this investigation was to as it were give information on zones near to Manhattan but not swarmed with existing boxing exercise center.
- Prescribed zones ought to in this manner be considered as it were as a beginning point for more point by point investigation.

# Conclusion

- Reason of this project was to distinguish Manhattan regions near to center with moo number of boxing exercise centers in arrange to explore for an ideal location for a unused boxing exercise center.
- Final decision on ideal eatery area will be made by partners based on particular characteristics of neighborhoods and areas in each suggested zone.