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Project Title: The Battle of Neighborhood

Company: All-Fit YK Center

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1. INTRODUCTION

Note: Throughout the project, I use All Fit YK Center¹ which is a fictitious business name chosen for this capstone project.

Each year, millions of people join fitness centers to get fit and lose weight. The global health club industry rakes in a cool \$85 billion each year. American fitness centers alone enjoy a market size of just under \$26 billion a year and they're not struggling for customers, either. Approximately one in six adults have got at least one gym membership. But just because the market is great does not mean you should dive into the industry without doing a bit of research and planning.

Opening a fitness center could potentially be a great business opportunity, but there are quite a few factors you'll need to bear in mind before you're ready to start up. One key factor is the strategic location to attract members.

The location will most likely be a key factor within your business plan since location is often critical to its survival. First and foremost, you'll want to do a bit of market research about:

1. What is/are the best locations for the fitness center in New York City.
2. Analyze existing fitness centers (like Gyms, Gyms/Fitness. Yoga Studio) and their locations.

New York City is a major center for banking and finance, retailing, world trade, transportation, tourism, real estate, new media, traditional media, advertising, legal services, accountancy, insurance, theater, fashion, and the arts in the United States. And also, it is the most populous city in the United States, one of the greatest metropolises over the world, is a dream place for the millennials.

Target Audience:

To recommend the correct location, All-Fit YK Center has appointed me as a business consultant. The objective is to locate and recommend to the management which neighborhood of New York city will be the best choice to invest in the Fitness Center.

The criteria of the project will be a good recommendation of borough/Neighborhood choice to the fitness centers.

2. DATASETS

The following are the data sets that will be using for this project:

Dataset#1:

The data of the Boroughs, Neighbourhoods, Latitudes, and Longitudes of New York City: https://cocl.us/new_york_dataset. This data set contains the required information. And we will

use this data set to explore various neighborhoods of new york city and combine with Foursquare API data.

Dataset#2:

All the relevant Newyork City Fitness centers information from the Foursquare API.

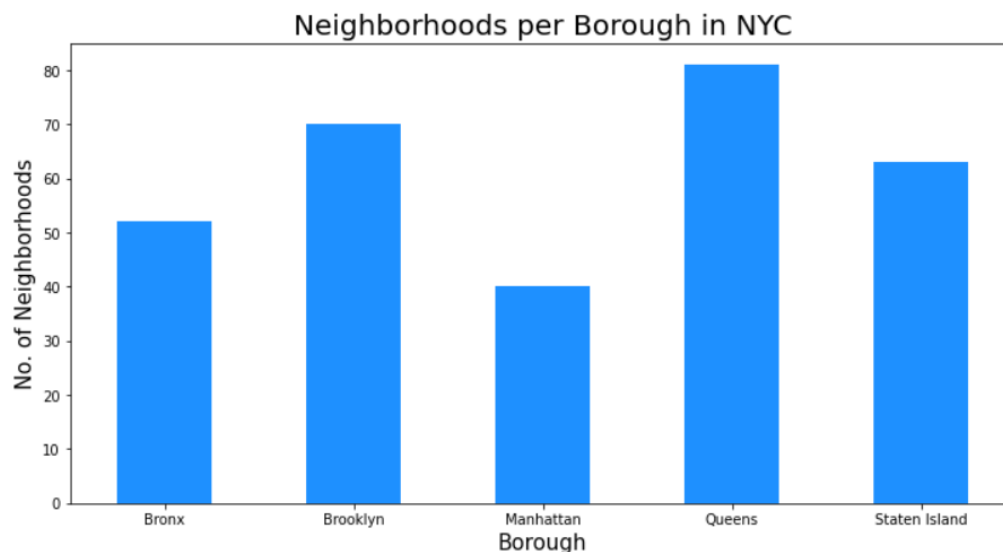
3. METHODOLOGY

In order to find the best location, we will explore the demographics of the neighborhoods in New York City by segmenting the data and conducting descriptive analysis using Panda.

Collecting the NY neighborhood data from the Dataset#1 and create a data frame using the panda's library.

	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

Visualize the data using the matplotlib library. From the bar chart below, it is evident that NYC has the total number of 5 neighborhoods with Queens has the most and Manhattan has the less.



Using the geographical coordinates (latitudes and longitudes) of each neighborhood in NYC, calls are made to the Foursquare API to return the top 100 venues in a radius of 500 meters. And then the data is saved and read as a panda's data frame.

	Neighborhood	Neighborhood Latitude	Neighborhood Longitude	Venue	Venue Latitude	Venue Longitude	Venue_Category	Borough
0	Wakefield	40.894705	-73.847201	Lollipops Gelato	40.894123	-73.845892	Dessert Shop	Bronx
1	Wakefield	40.894705	-73.847201	Carvel Ice Cream	40.890487	-73.848568	Ice Cream Shop	Bronx
2	Wakefield	40.894705	-73.847201	Walgreens	40.896528	-73.844700	Pharmacy	Bronx
3	Wakefield	40.894705	-73.847201	Rite Aid	40.896649	-73.844846	Pharmacy	Bronx
4	Wakefield	40.894705	-73.847201	Dunkin'	40.890459	-73.849089	Donut Shop	Bronx

Venue category descending order and find Gyms place.

The main aim of this project is to find the fitness center data. So filtered and created a new data frame with only Fitness categories.

```
All_Fit_Gym = ['Yoga Studio', 'Gym', 'Gymnastics Gym', 'Boxing Gym', 'Climbing Gym', 'Yoga Studio']
```

	Neighborhood	Neighborhood Latitude	Neighborhood Longitude	Venue	Venue Latitude	Venue Longitude	Venue_Category	Borough
2527	Clinton Hill	40.693229	-73.967843	CKO Kickboxing	40.696496	-73.968389	Boxing Gym	Brooklyn
4407	Midtown	40.754691	-73.981669	Everybody Fights	40.752087	-73.979450	Boxing Gym	Manhattan
9219	Turtle Bay	40.752042	-73.967708	iLoveKickboxing	40.750580	-73.971540	Boxing Gym	Manhattan
4536	Murray Hill	40.748303	-73.978332	Everybody Fights	40.752087	-73.979450	Boxing Gym	Manhattan
2661	Downtown	40.690844	-73.983463	iLoveKickboxing	40.688255	-73.982155	Boxing Gym	Brooklyn

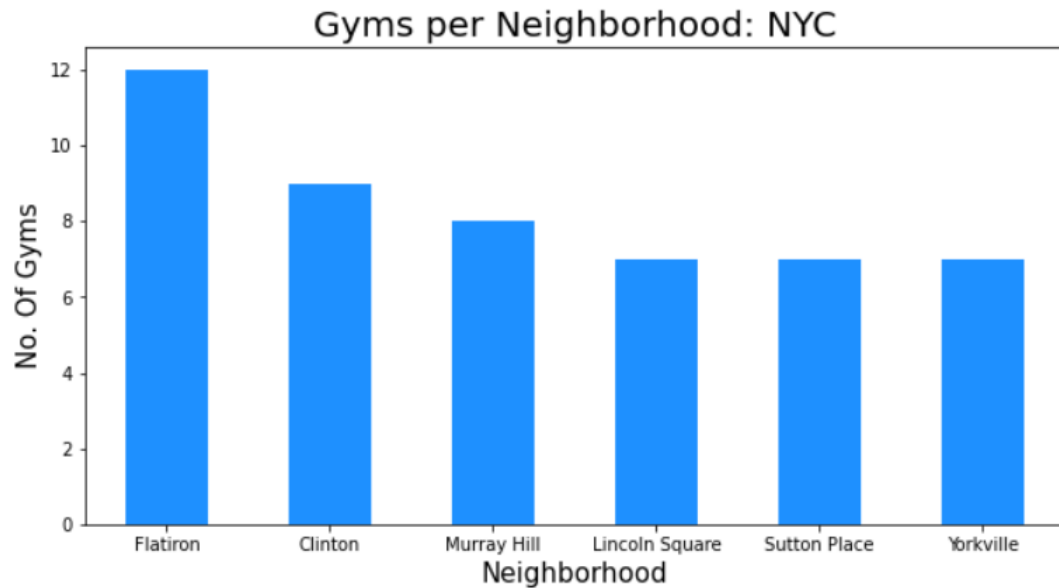
	Neighborhood	Neighborhood Latitude	Neighborhood Longitude	Venue	Venue Latitude	Venue Longitude	Borough
Venue_Category							
Boxing Gym	16	16		16	16	16	16
Climbing Gym	3	3		3	3	3	3
Gym	241	241		241	241	241	241
Gymnastics Gym	4	4		4	4	4	4
Yoga Studio	76	76		76	76	76	76

Based on the above data, it is evident that the Gym and Yoga Studio are the top two gym venue categories in NYC.

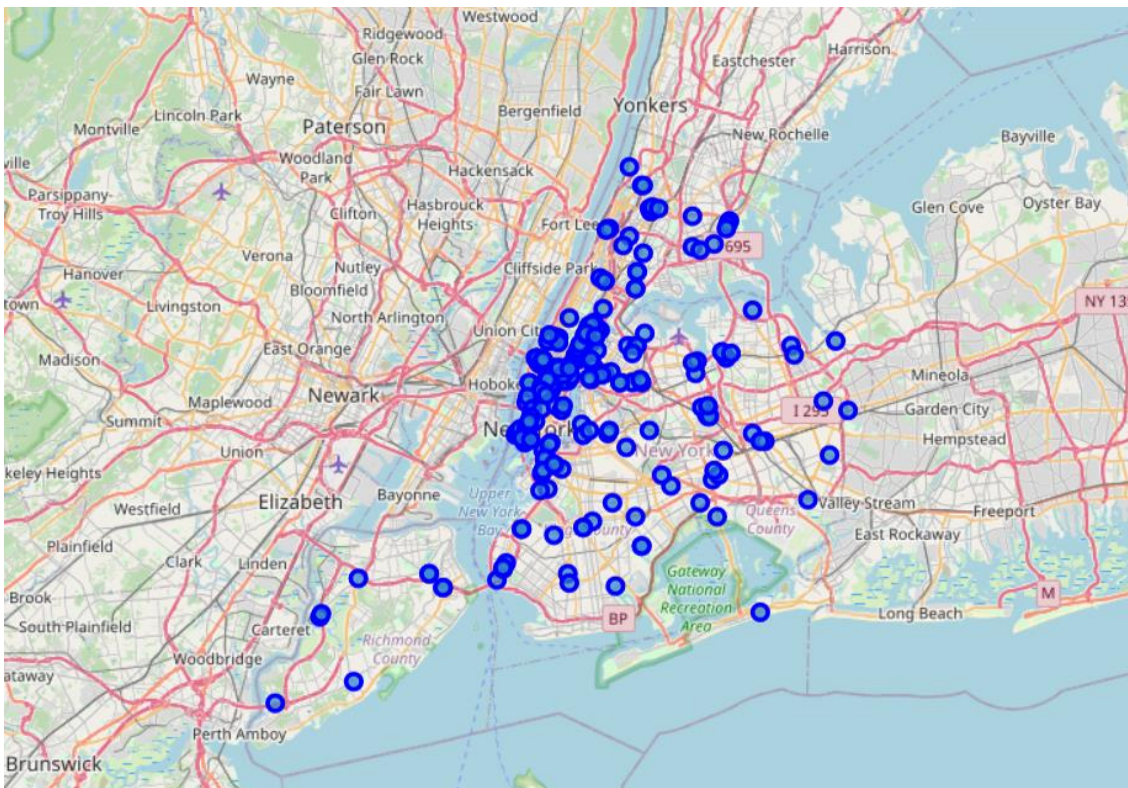
4. RESULTS

With the data now ready, we run exploratory data analysis to find the best location for thenGyms and Yoga Studios.

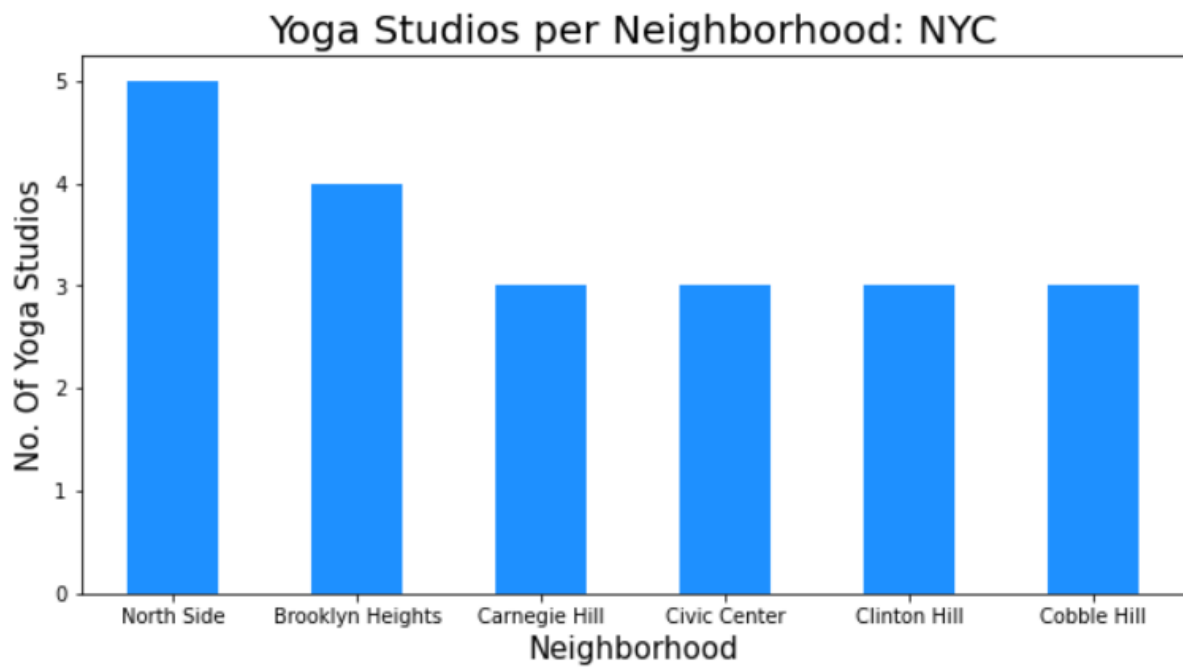
Visualize the Gym data using the matplotlib library for the top 6 neighborhood in the NYC.



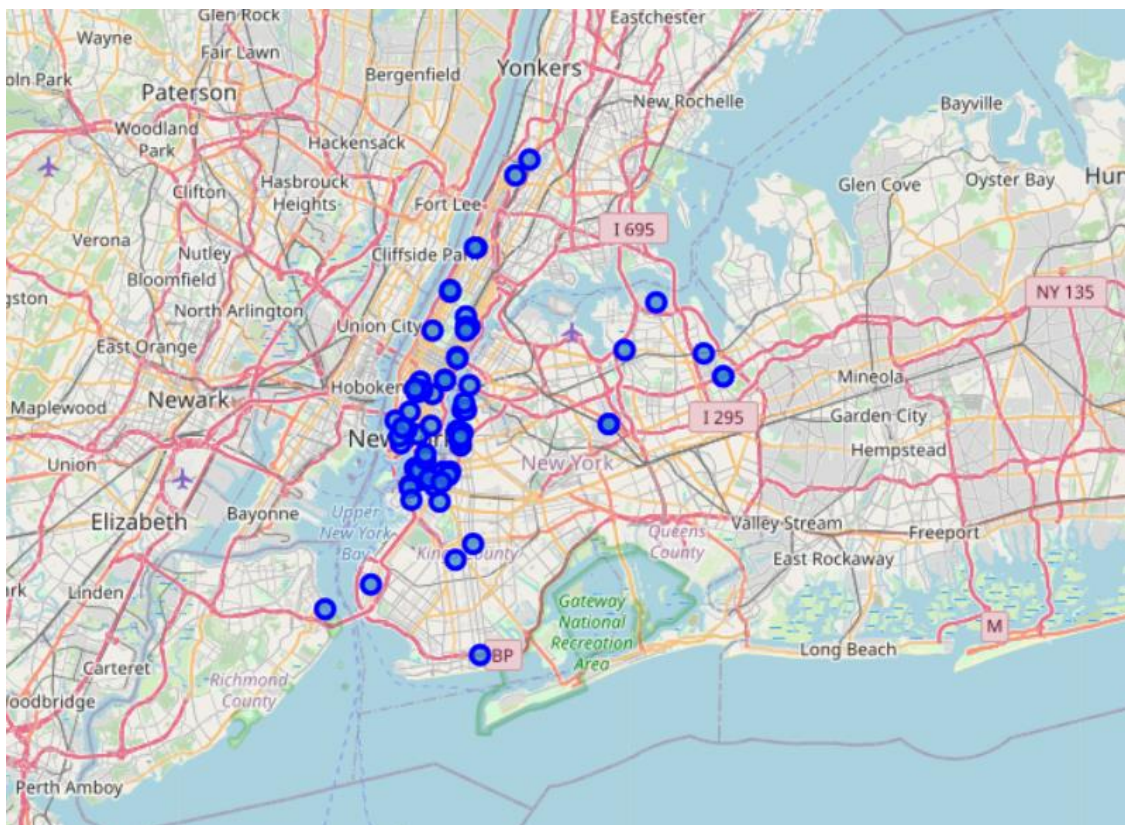
Visualize the location of Gyms in the NYC neighborhood using the folium library.



Visualize the Yoga Studio data using the matplotlib library for the top 6 neighborhood in the NYC



Visualize the location of Yoga Studios in the NYC neighborhood using the folium library.



5. OBSERVATIONS

From the results discovered and presented, the following observations and recommendations can be made:

Based on the criteria given by the All-Fit YK Center, the main neighborhood recommendation would be for the neighborhood of the Flatiron for the Gyms and Northside for the Gym Studios. These two areas will be the prime location for opening the Gym and Yoga Studio.

A secondary recommendation is made for the neighborhood of Clinton for Gyms and Brooklyn Heights for the Yoga Studio.

6. CONCLUSION

In conclusion, the scope of this analysis is only in the first stage. The second stage is to compare the user ratings and consider the account of the population in the neighborhoods. The Fitness industry is ever-changing, and the information afforded us may be dated due to relying on user information via Foursquare. Overall though, the model created can easily be replicated again and again with monitored data via the Foursquare API.