

Project: Investigate possibility of opening a fitness studio in Manhattan.

## 1. Introduction

A client asked me to look into the possibility of opening a fitness studio in Manhattan. We are mainly interested in certain neighborhoods that meet our demographic. Gyms are becoming more and more like restaurants. There is one now on every corner. And like restaurants many go out of business. We understand the cost, so we are mainly interested in types of fitness studios and how many in each neighborhood of interest.

Some questions we need to ask and answer are the following:

- What is the total of all gyms in our surrounding neighborhoods of interest?
- What types of gyms are in each neighborhood?
- What is the total number of gyms broken down by each neighborhood?

## 2. Data

I used New York City Neighborhood Names point file that was created as a guide to New York City's neighborhoods that appear on the web resource, New York: A City of Neighborhoods. Foursquare was also used to obtain the necessary information for each neighborhood based on latitude and longitude.

The neighborhoods of interest that match our demographic are as follows:

**Upper West Side, Gramercy, Yorkville, Battery Park City, Tribeca, Soho, Greenwich Village, Chelsea, Upper East Side, East Village, Lincoln Square and Midtown.**

A subset dataframe of just these neighborhoods were created.

A number of gym categories were returned from foursquare that I was not interested in, so dropped all those rows. The remaining categories of interest from foursquare are as follows:

**Gym/Fitness Center, Gym, Pilates Studio, Yoga Studio, Cycle Studio, Martial Arts Dojo, Boxing Gym and Climbing Gym.**

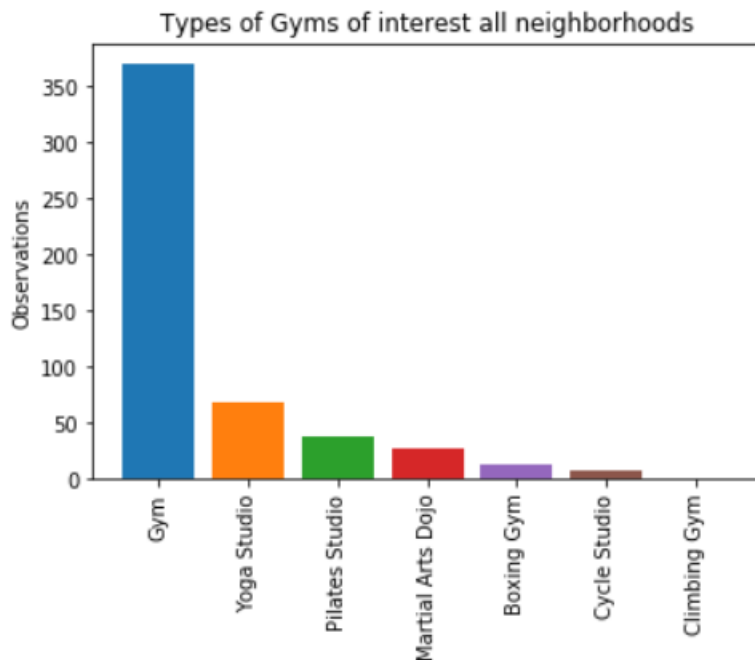
I combined the Gym/Fitness Center with just Gym, leaving 7 types of gyms to analyze.

I then obtained the gym category for each neighborhood to begin exploratory data

analysis.

### 3. Exploratory Data Analysis

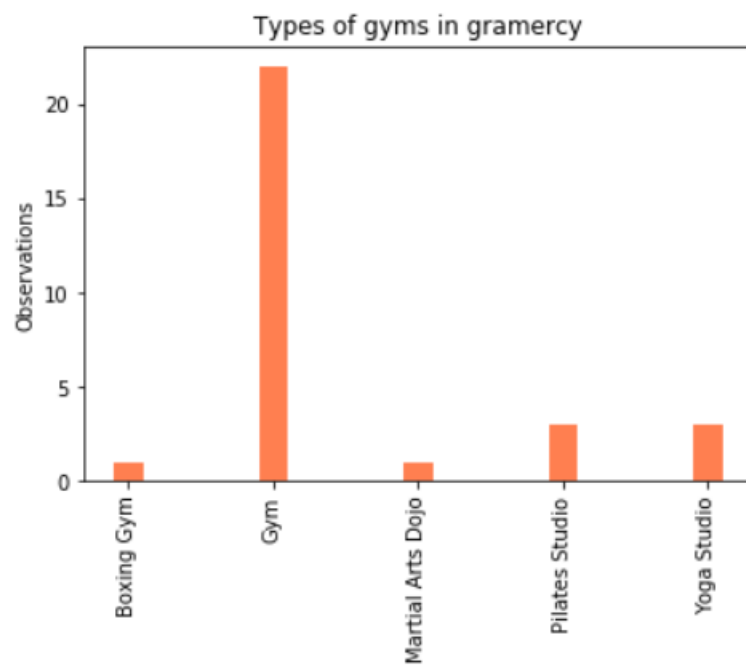
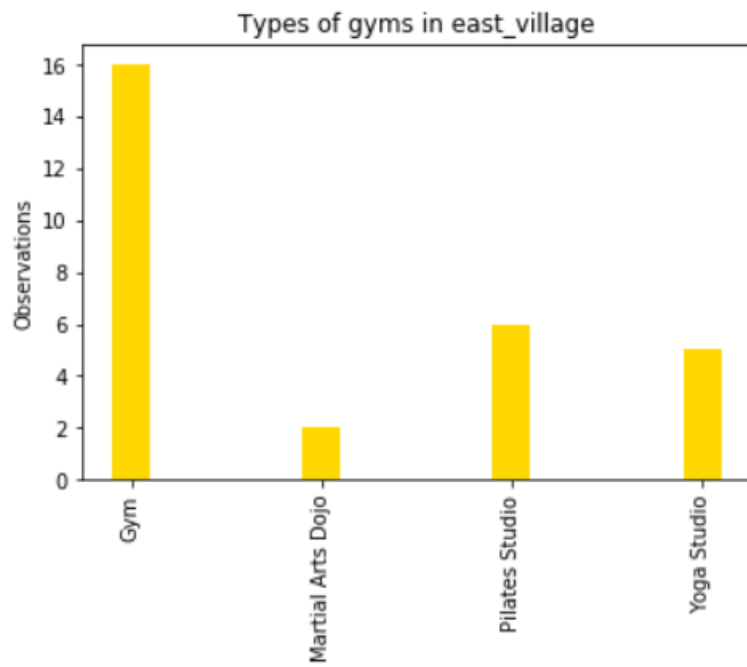
I created a bar chart to visualize total number of gyms for all neighborhoods as seen below.

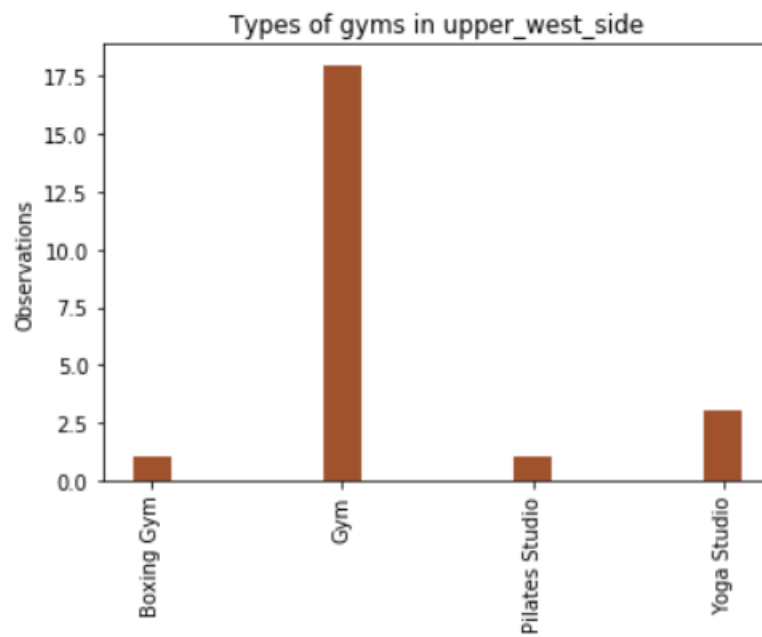
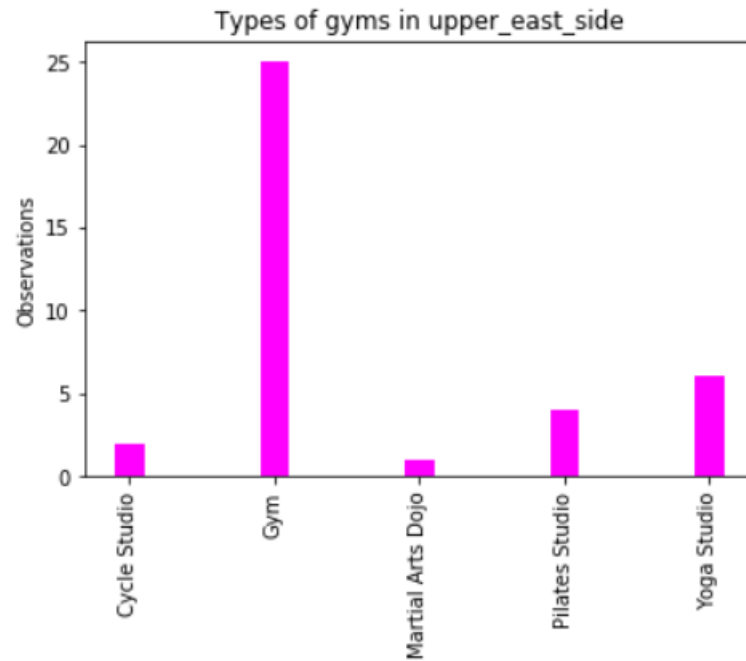


This chart shows regular gyms lead the way with over 350 . Foursquare doesn't give enough information to tell what type of gym it is. Is it a big box, boutique, crossfit, etc... I can make a reasonable guess from the name but, this is a limitation. I was also wondering why only 1 climbing gym, but after some research it comes down to getting permits and the space.

Once we had the neighborhoods broken down by gym categories as seen below, I am interested in places where a neighborhood has 25 or less number of gyms as well as a decent number of Yoga studios and Pilates. I am interested in Yoga and Pilates studios as they are a complement to our studio. We usually form partnerships as our typical client comes to us and Yoga/Pilates. Some of the neighborhoods of interest had over 50 gyms which tells me those neighborhoods are saturated.

Based on this I have narrowed down selection to the following four neighborhoods which is visualized below:





#### 4. Machine Learning

I used `k_means` to cluster the neighborhood into five clusters. This project was not a

good use for machine learning as there are too many variables to consider. In fact, the only statistic model that is perfect for this project is “PRACTICAL SIGNIFICANCE”. Good old human interaction. We need to walk the streets and see where everything is, talk to other owners, etc...

## 5. Results/Observation/Recommendations.

As mentioned above, the top four neighborhoods to observe further are East Village, Upper West Side, Upper East Side and Gramercy. These have best chance as they are not swamped with all types of gyms like soho and tribeca for example. But again, it will take a physical inspection. Also, as an outlier I would like to visit soho. They have over 50 gyms, so pretty crowded but they also have the largest Yoga studio population. The question is how many of those 50 gyms are profitable or just breaking even.

## 6. Conclusion/Limitations.

Our demographics fit perfectly with the neighborhoods of interest. The top neighborhood based on the initial questions answered is the East Village. With just 16 gyms and a large number of Pilates/Yoga studios to potentially partner with this might be the perfect location.

But as mentioned above we need to do “PRACTICAL SIGNIFICANCE”. This means we need to walk the neighborhood, talk to people, maybe some surveys and most importantly getting the right location. And then while in NYC, look at the other neighborhoods to get a feel. This project did a good job of getting some numbers of what’s out there per neighborhood

### Limitations

This project was based on the data from FourSquare. This can be outdated, some categories are mixed. We are interested in the boutique gyms which FourSquare doesn’t provide. So, this requires walking the pavement and getting a feel while talking with people.