

The Battle of Neighbourhoods: Which City for a new Fitness Centre?

1. New York
2. Chicago
3. San Francisco
4. Jersey City
5. Boston

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Jun2020






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Introduction

- Hypothetical Global Client
ZZZ Fitness Studios
- Five major cities in the US
- To analyse these cities
and find the best one to
set up of a new Fitness
Studio



The Business Problem

- Applying Machine Learning techniques, can we recommend a city amongst the above five where “ZZZ Fitness Studios” could consider setting up a new Fitness studio?
- The target audience are those interested in opening a new Fitness Centre in one of the five cities

Data Section

Data Requirements

- Locations of Gyms/ Fitness Centres in five major cities in the USA: New York (NY), San Francisco (CA), Jersey City (NJ), Boston (MA) and Chicago (IL).

Collection, Understanding and Preparation

- **FourSquare API** used to collect the location data for the five selected cities.
- The Category ID for Gym/ Fitness centres is `"4bf58dd8d48988d175941735"`
- The city codes are "New York, NY", 'Chicago, IL', 'San Francisco, CA', 'Jersey City, NJ', 'Boston, MA'
- The URL is thus generated using the above parameters with the Foursquare API.

Methodology and Execution - 1

- Main target: to asses which city would have the highest Fitness Studio density.
- Use:
 - the **Four Square API** through the venues channel.
 - the near query to get venues in the cities.
 - the CategoryID to set it to show only Fitness Studio (4bf58dd8d48988d175941735 is the Id of the Gym/Fitness Centre Category).
- Repeat the request for each of the five cities and for the top 100 venues of the type Gym/Fitness Centre
- Consideration point: Foursquare limits to maximum of 100 venues per query

Methodology and Execution - 2

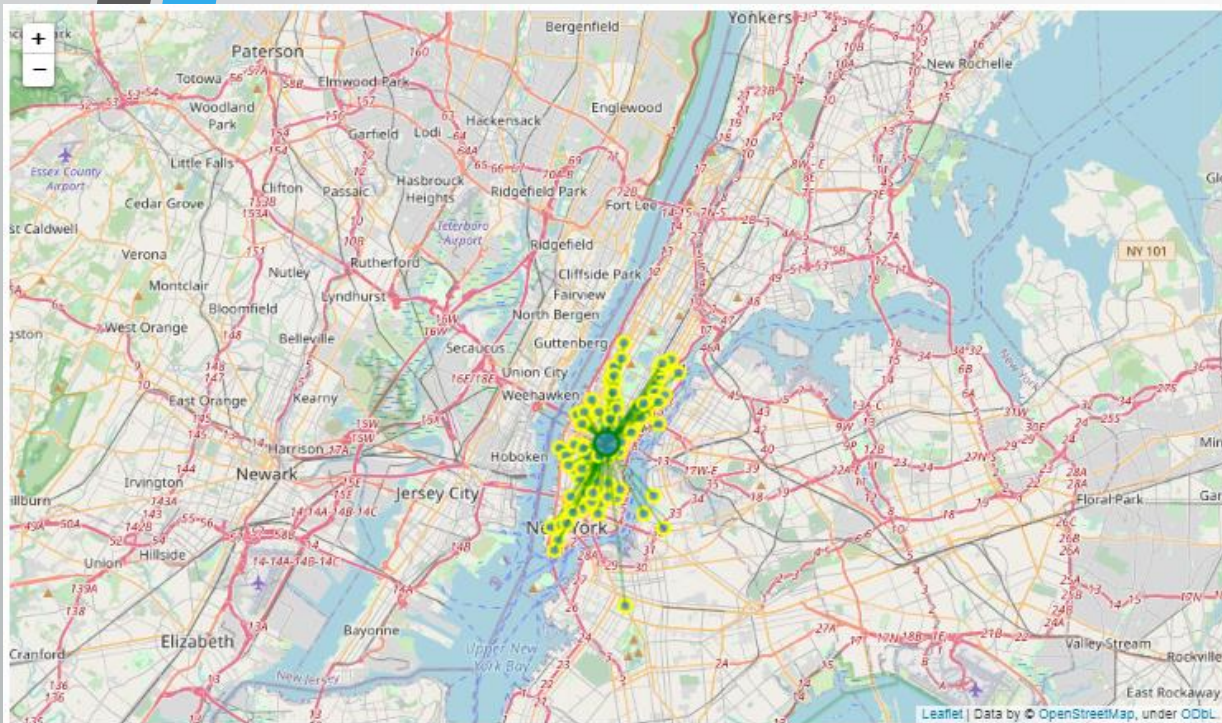
- Plot the name and coordinate data on the map using **Folium** for visual inspection
- Calculate the Mean distance to the mean coordinate (MDMC) as a quantitative metric of the indicator
 - Calculated a centre coordinate of the venues to get the mean longitude and latitude values.
 - Then calculated the mean of the Euclidean distance from each venue to the mean coordinates.
- An Example of the requests:

https://api.foursquare.com/v2/venues/explore?&client_id=&client_secret=&v=20180605&NewYork, NY&limit=100&categoryId=4bf58dd8d48988d1ca941735

Results - 1

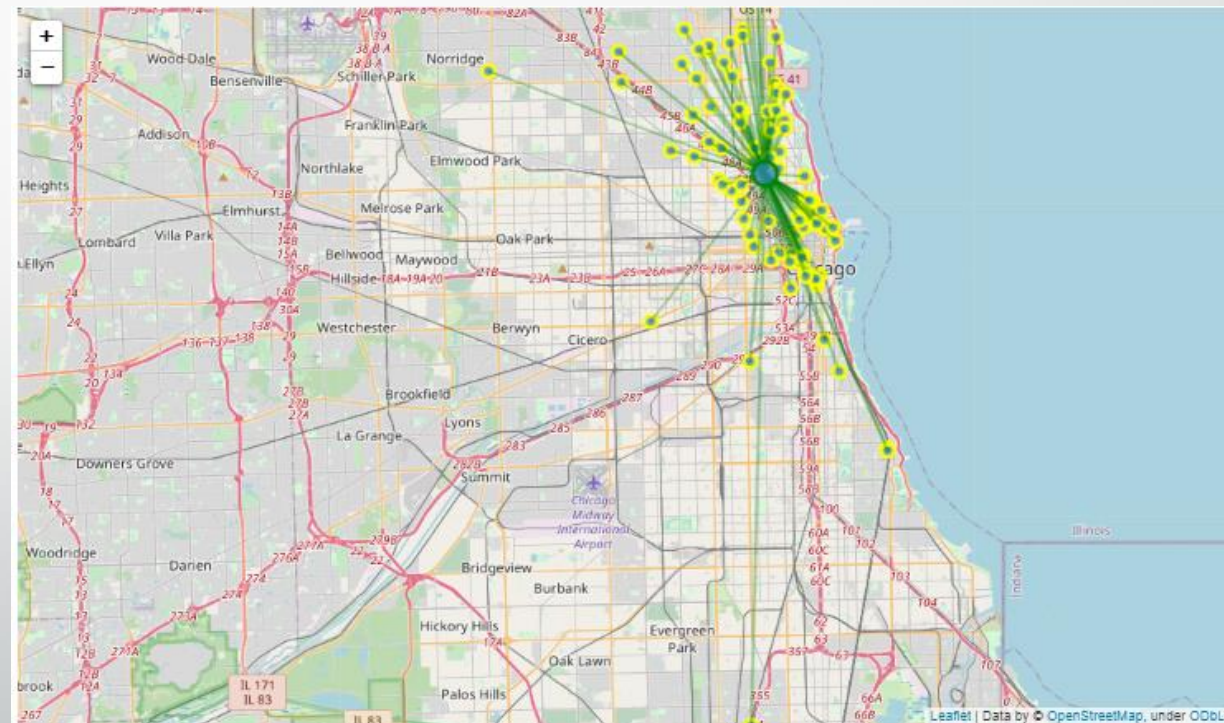
New York, NY

Mean Distance from Mean coordinates = 0.02592323858922523



Chicago, IL

Mean Distance from Mean coordinates = 0.0461274800911952

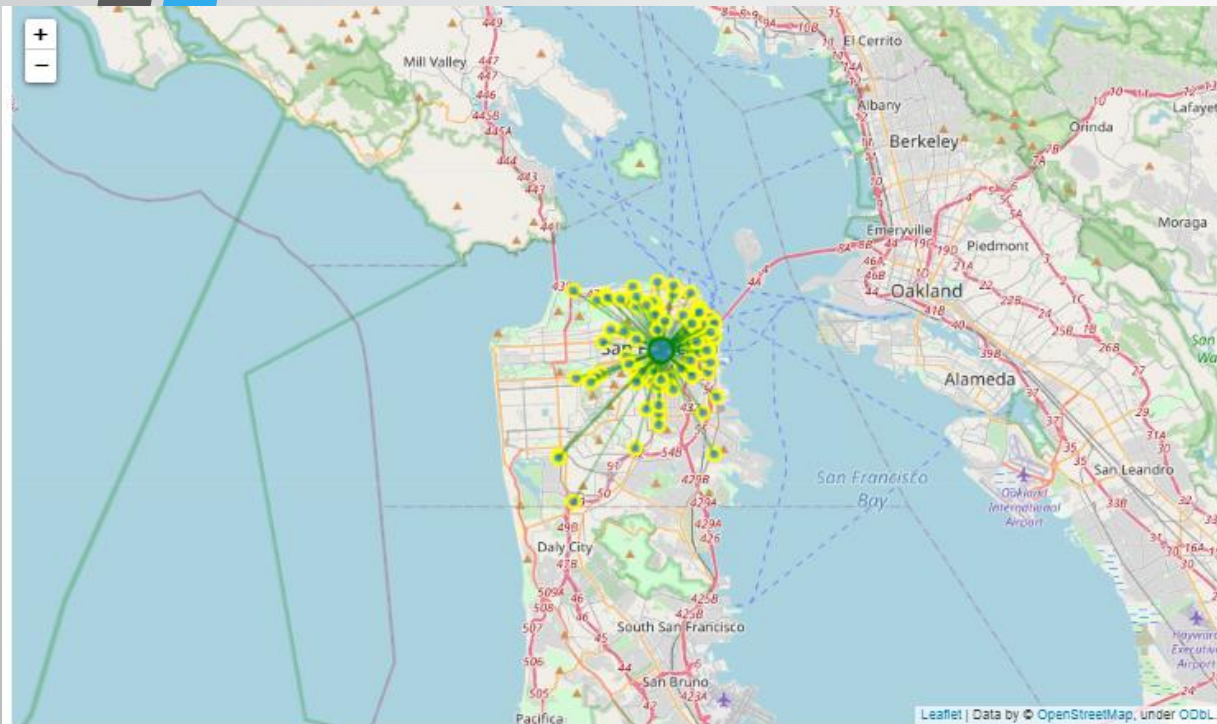


- For our initial visual inspection we see that they all have multiple Fitness Studios and often more than Foursquare would like to supply us.

Results - 2

San Francisco, CA

Mean Distance from Mean coordinates = 0.0255210180662777



Jersey City, NJ

Mean Distance from Mean coordinates = 0.012395944321890763

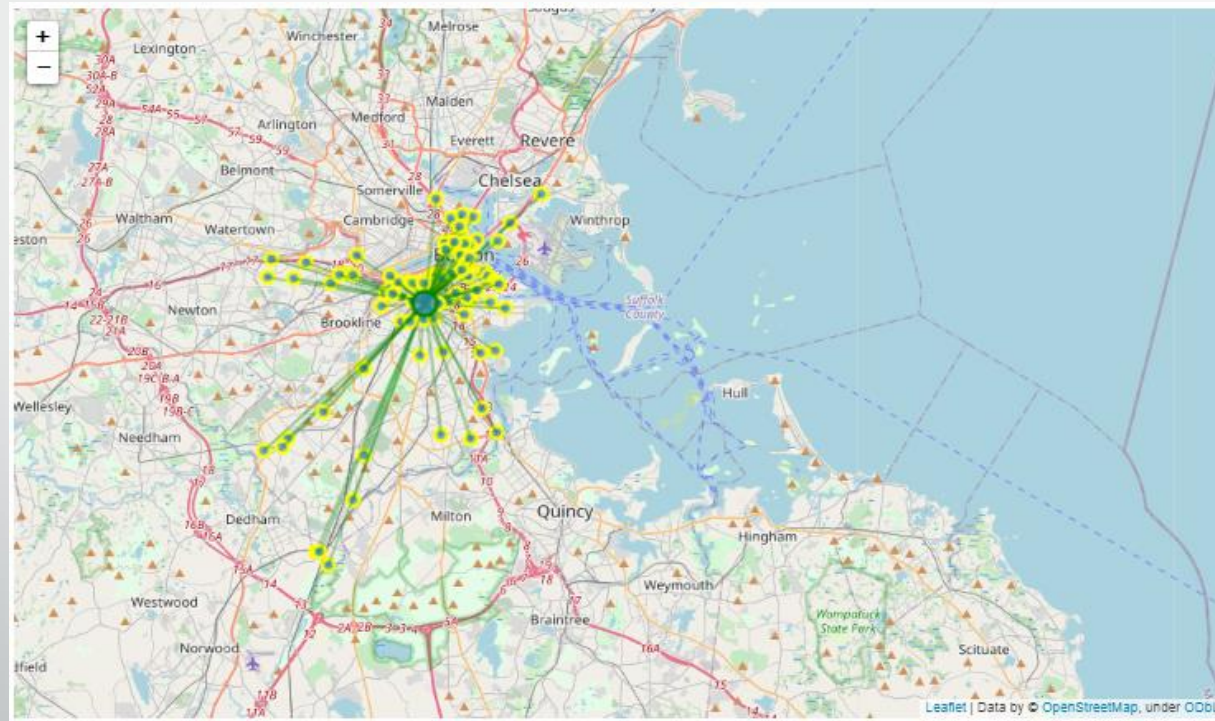


- For our initial visual inspection we see that they all have multiple Fitness Studios and often more than Foursquare would like to supply us.

Results - 3

Boston, MA

Mean Distance from Mean coordinates = 0.036915033621342415



- For our initial visual inspection we see that they all have multiple Fitness Studios and often more than Foursquare would like to supply us.

Discussion

- There are a few figures that are really far resulting in a higher Mean Distance from Mean Coordinates (MDMC). However, they are not one-off figures. Such figures can be observed in each of the maps. Hence these would more or less impact the MDMC for all cities and removing them not have much impact on the final conclusion.
- One consideration to do further work on is to move the location of the Foursquare API query until we get all the Fitness Studios in each city and do the calculations again.

Conclusion and Recommendations

- Chicago is the best city in the US to set up a new Fitness Centre for ZZZ Fitness Studios.
- Highest MDMC for Chicago suggests that the gyms located within Chicago are more scattered as compared to other cities. A new fitness centre setup in proximity of workplace/ residence will benefit employees/ residents as they would not need to travel far. This way, ZZZ fitness would also gain economically by attracting more customers.

*Thank
you*

A gold fountain pen nib is positioned at the end of the word "you", as if it has just finished writing it. The nib is gold with a black grip section visible on the right.