

COURSERA CAPSTONE PROJECT

THE BATTLE OF NEIGHBORHOODS

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INTRODUCTION

I have been offered a great opportunity to work for a leader firm in Manhattan, NY.

The key question is:

How can I find a convenient and enjoyable place similar to mine now in Dubai, UAE?

In order to make a comparison and evaluation of the rental options in Manhattan NY, I must set some basis, therefore the apartment in Manhattan must meet the following demands:

- Apartment must be 2 or 3 bedrooms
- Desired location is near a metro station in the Manhattan area and within 1.0 mile (1.6 km) radius
- Price of rent not exceed \$7,000 per month
- Top amenities in the selected neighborhood shall be similar to current residence
- Desirable to have venues such as coffee shops, restaurants Asian Thai, gym and food shops

(As a reference, I have included a map of venues near current residence in Dubai)

INTRODUCTION

Business Problem:

The challenge is to find a suitable apartment for rent in Manhattan NY that complies with the demands on location, price and venues.

INTRODUCTION

Interested Audience:

I believe this is a relevant challenge with valid questions for anyone moving to other large city whether in US, EU, Africa or Asia.

The same methodology can be applied in accordance to demands as applicable.

This case can also be applicable for anyone interested in exploring starting or locating a new business in any city.

Lastly, it can also serve as a good practical exercise to develop Data Science skills.

DATA

Description of the Data:

The following data is required to answer the issues of the problem:

- List of Boroughs and neighborhoods of Manhattan with their geodata (lat and long).
- List of Subway metro stations in Manhattan with their address location.
- List of apartments for rent in Manhattan area with their addresses and price.
- Preferably, a list of apartment for rent with additional information, such as price, address, area, No. of bedrooms, etc.
- Venues for each Manhattan neighborhood (then can be clustered).
- Venues for subway metro stations, as needed.

DATA

How the data will be used to solve the problem

The data will be used as follows:

- Use Foursquare and geopy data to map top 10 venues for all Manhattan neighborhoods and clustered in groups (as per Course LAB)
- Use foursquare and geopy data to map the location of subway metro stations, separately and on top of the above clustered map in order to be able to identify the venues and amenities near each metro station, or explore each subway location separately
- Use Foursquare and geopy data to map the location of rental places, in some form, linked to the subway locations.
- create a map that depicts, for instance, the average rental price per square ft, around a radius of 1.0 mile (1.6 km) around each subway station, or a similar metrics (I will be able to quickly point to the popups to know the relative price per subway area).
- Addresses from rental locations will be converted to geodata (lat, long) using Geopy-distance and Nominatim.
- Data will be searched in open data sources if available, from real estate sites (if open to reading), libraries or other government agencies such as Metro New York MTA, etc.

DATA

The processing of these DATA will allow to answer the key questions to make a decision:

- What is the cost of rent (per square ft) around a mile radius from each subway metro station?
- What is the area of Manhattan with best rental pricing that meets criteria established?
- What is the distance from work place (Park Ave and 53 rd St) and the tentative future home?
- What are the venues of the two best places to live in? How the prices compare?
- How venues distribute among Manhattan neighborhoods and around metro stations?
- Are there tradeoffs between size and price and location?
- Any other interesting statistical data findings of the real estate and overall data.

METHODOLOGY

Mapping of Data:

The following maps were created to facilitate the analysis and the choice of the place to live:

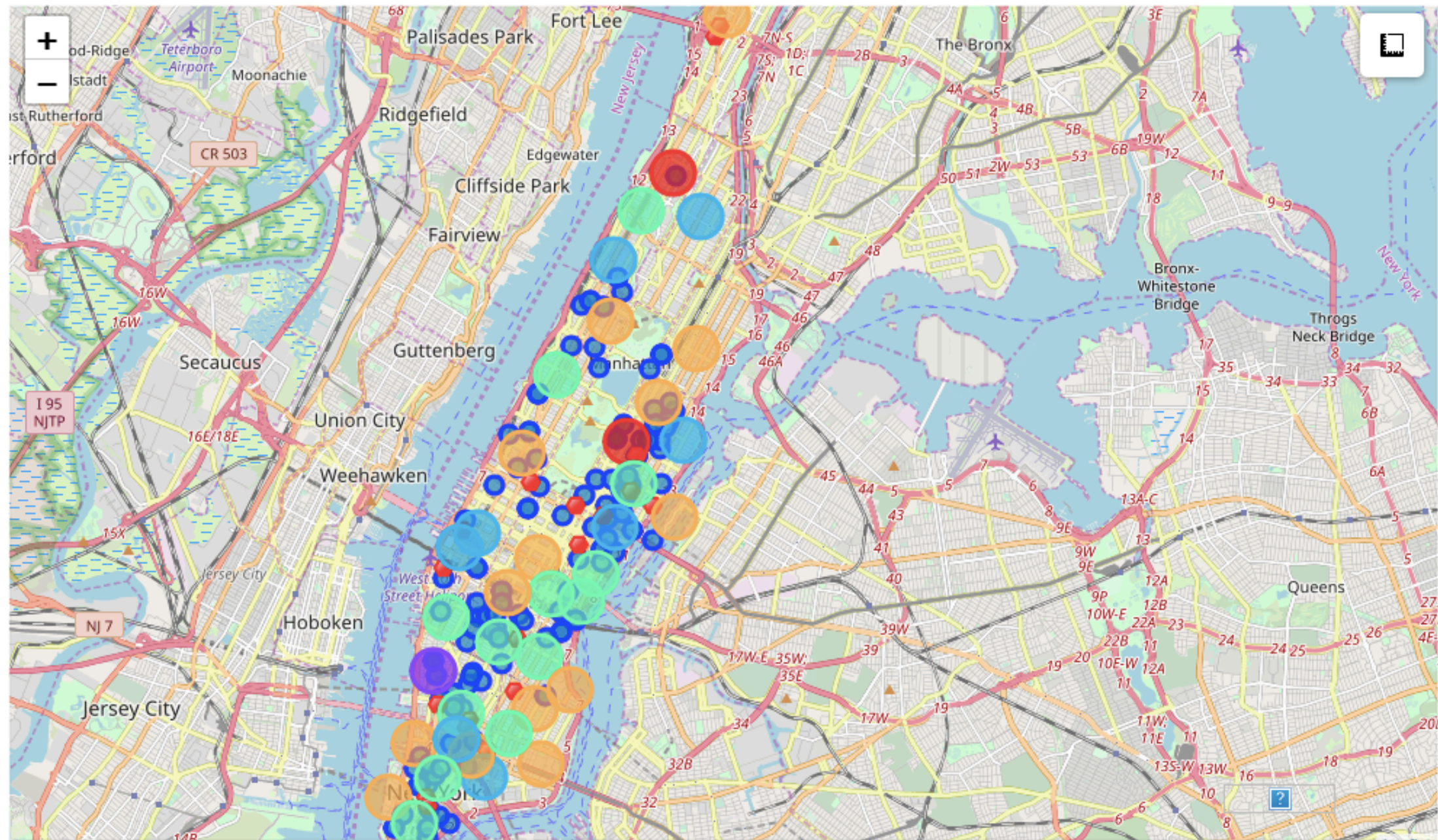
- Manhattan map of Neighborhoods
- manhattan subway metro locations
- Manhattan map of places for rent
- Manhattan map of clustered venues and neighborhoods
- Combined maps of Manhattan rent places with subway locations
- Combined maps of Manhattan rent places with subway locations and venues clusters

RESULTS

ONE CONSOLIDATE MAP:

Let's consolidate all the required information to make the apartment selection in one map (with rental places, subway locations and cluster of venues):

RESULTS



(The “One Map” of Manhattan - Red dots are Subway stations, Blue dots are apartments available for rent, Bubbles are the clusters of venues)

RESULTS

Problem Resolution

After examining, I have chosen two locations that meet the requirements which will assess to make a choice:

- **Apartment 1:** 305 East 63rd Street in the Sutton Place Neighborhood and near 'subway 59th Street' station, Cluster # 2
Monthly rent : 7500 Dollars
- **Apartment 2:** 19 Dutch Street in the Financial District Neighborhood and near 'Fulton Street Subway' station, Cluster # 3
Monthly rent : 6935 Dollars

RESULTS

Apartment Selection - Comparison

Using the "one map", I was able to explore all possibilities since the popups provide the information needed for a good decision.

Apartment 1:

Rent:

US7500 (slightly above the US7000 budget).

Location:

400 meters from subway station at 59th Street

600 meters away from work place (Park Ave and 53rd)

Venues:

Displayed in Cluster 2

RESULTS

Apartment Selection - Comparison (cont'd)

Apartment 2:

Rent:

US6935 (just under the US7000 budget).

Location:

60 meters from subway station at Fulton Street

But I will have to ride the subway daily to work (possibly 40-60 min ride).

Venues:

Displayed in Cluster 3.

RESULTS

Apartment Selection - Final Decision

Based on current Dubai venues, I feel that Cluster 2 type of venues is a closer resemblance to my current place.

That means that **APARTMENT I** is a better choice since the extra monthly rent is worth the conveniences it provides.

DISCUSSION

I can positively say that this this Capstone Project presented me a great opportunity to practice and apply the Data Science tools and methodologies learned.

I have created a good project that I can present as an example to show my potential.

I feel I have acquired a good starting point to become a professional Data Scientist and I will continue exploring to creating examples of practical cases.

CONCLUSIONS

I feel rewarded with the efforts, time and money spent. I believe this course with all the topics covered is well worthy of appreciation.

This project has shown me a practical application to resolve a real situation that has impacting personal and financial impact using Data Science tools.

The mapping with Folium is a very powerful technique to consolidate information and make the analysis and decision thoroughly and with confidence. I would recommend for use in similar situations.

One must keep abreast of new tools for DS that continue to appear for application in several business fields.

THANK YOU

