Coursera Capstone Project

The Battle of Neighborhood Report

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- **2)Data Section:** Description of the data that will be used to solve the problem.
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- **4)Results section :** Discussion of the results.
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- **6)Conclusion section :** Report Conclusion.

1) INTRODUCTION

- **1.1 Background:** When someone or a family is trying to find the best places to live, it's always a good idea to compare cities and if possible, to compare neighborhoods to see if it suites your taste. After all, when you go to buy a car or a house or any big ticket item, you usually try out a few models or visit a few homes before you decide. The same tactic applies to finding the best places to live. It is always advisable to do it before you start planning your move or to help narrow down your choices.When thinking about the best place to live, lots of things are considered when trying to make a comparison between cities, towns, or neighborhoods.
- **1.2 Problem to be resolved:** How can I find a convenient and enjoyable place similar to mine now in Los Angeles? Certainly, I can use available real estate apps and Google but the idea is to use and apply myself the learned tools during the course. In order to make a comparison and evaluation of the rental options in Manhattan NY, I must set some basis configurations.

2) DATA SECTION

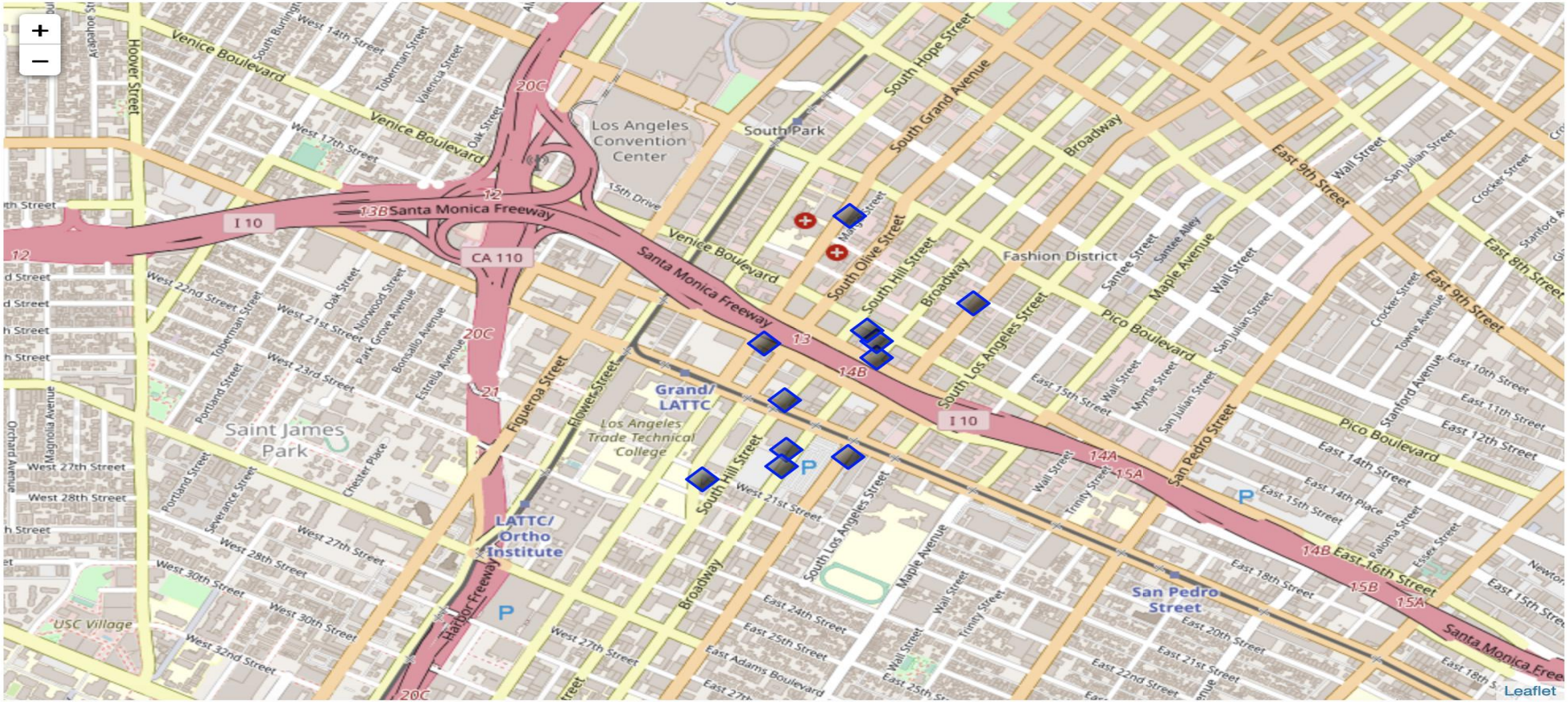
- **2.1 Description of the Data:** The following data is required to answer the issues of the problem: List of Boroughs and neighborhoods of Manhattan with their geodata (latitude and longitude) List of Subway metro stations in Manhattan with their address location List of apartments for rent in Manhattan area with their addresses and price Preferably, a list of apartment for rent with additional information, such as price, address, area, number of beds, etc Clustered venues for each Manhattan neighborhood Venues for subway metro stations
- **2.2 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 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 ammenities 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 radious of 1.0 miles(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.

3) METHODOLOGY

- **3.1 Process steps and strategy to resolve the problem :**
- The strategy is based on mapping the above described data in section 2, in order to facilitate the choice of at least two candidate places for rent. The choice is made based on the demands imposed : location near a subway, rental price and similar venues to Los Angeles. This visual approach and maps with popups labels allow quick identification of location, price and feature, thus making the selection very easy.

4) RESULTS

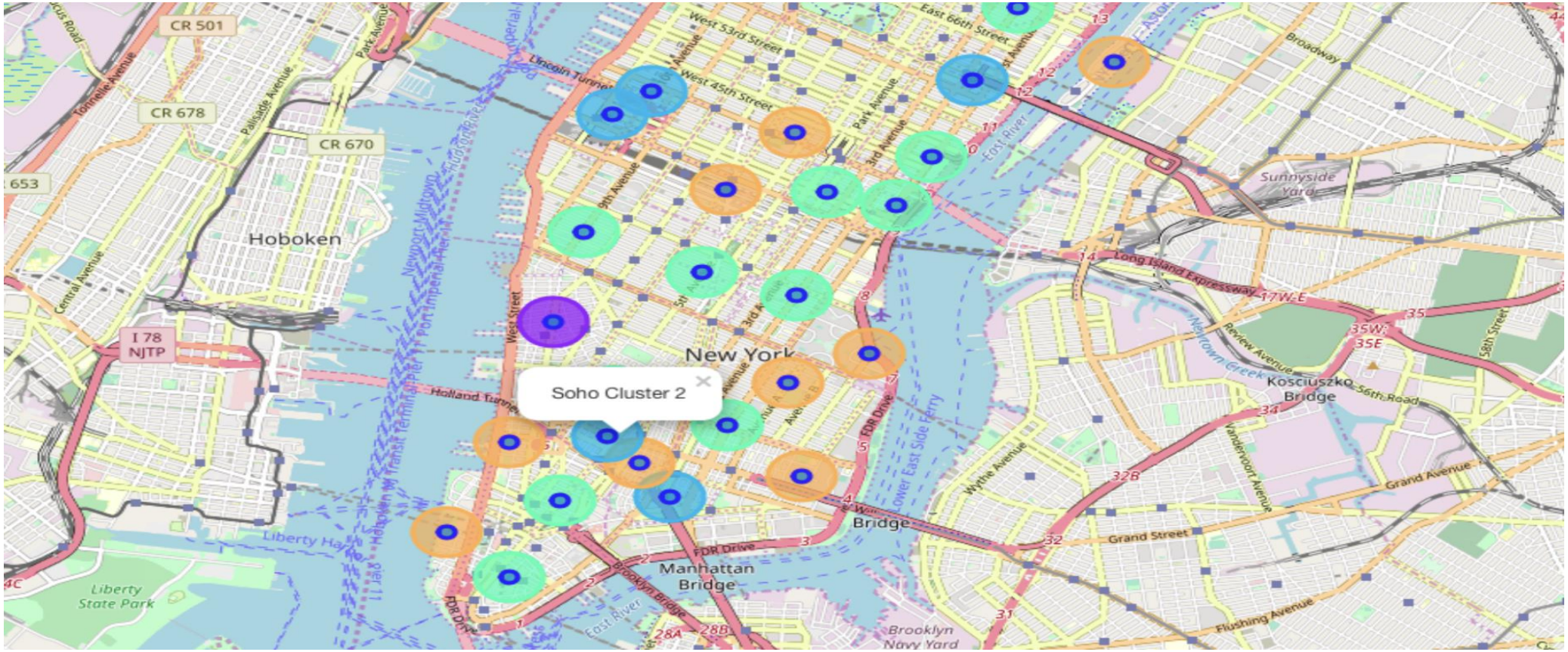
Map of S Olive St , Los Angeles with Venues



Venues around neighboorhood

	name	categories	lat	lng
0	Olde Good Things	Antique Shop	34.033974	-118.267079
1	Umami Truck	Food Truck	34.033558	-118.264034
2	(the) handbag factory	Music Venue	34.037844	-118.264778
3	SUBWAY	Sandwich Place	34.032289	-118.266522
4	Food Haus Cafè	Café	34.029887	-118.268778
5	Jack in the Box	Fast Food Restaurant	34.034064	-118.264046
6	L.A. Mart	Furniture / Home Store	34.030778	-118.266490
7	Downtown Collective	Pharmacy	34.034382	-118.264308
8	Artisanal LA	Street Art	34.030300	-118.266609
9	Sports Museum of Los Angeles	Museum	34.030572	-118.264829

Manhattan Map – Cluster of Venues



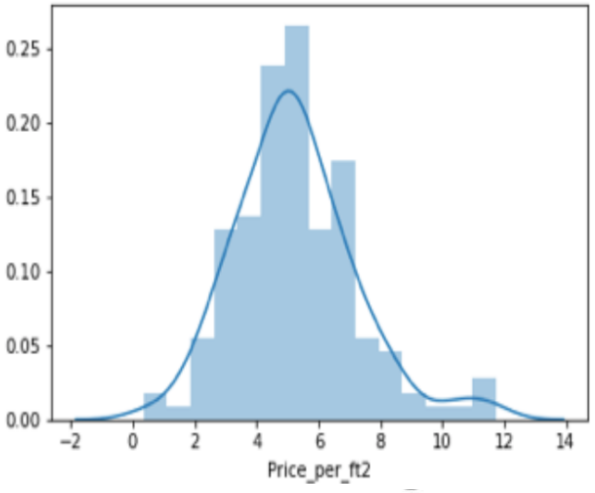
Manhattan Geodata for Renting

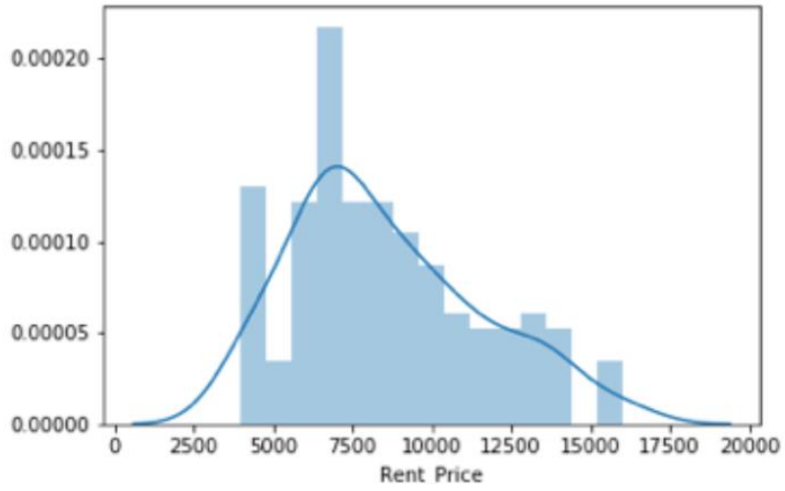
	Address	Area	Price_per_ft2	Rooms	Area-ft2	Rent_Price	Lat	Long
0	West 105th Street	Upper West Side	2.94	5.0	3400	10000	40.799771	-73.966213
1	East 97th Street	Upper East Side	3.57	3.0	2100	7500	40.788585	-73.955277
2	West 105th Street	Upper West Side	1.89	4.0	2800	5300	40.799771	-73.966213
3	CARMINE ST.	West Village	3.03	2.0	1650	5000	40.730523	-74.001873
4	171 W 23RD ST.	Chelsea	3.45	2.0	1450	5000	40.744118	-73.995299

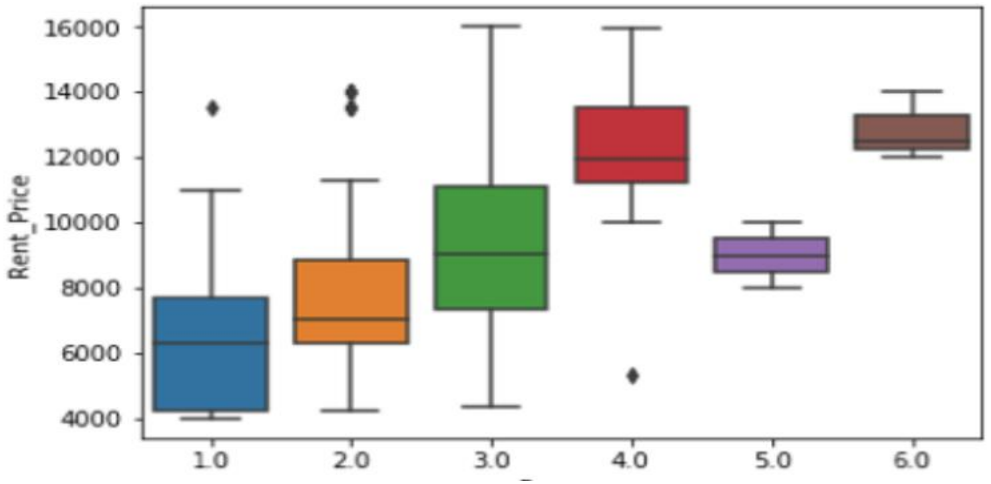
```
mh_rent.tail()
```

	Address	Area	Price_per_ft2	Rooms	Area-ft2	Rent_Price	Lat	Long
139	200 East 72nd Street	Rental in Lenox Hill	5.15	3.0	1700	8750	40.769465	-73.960339
140	50 Murray Street	No fee rental in Tribeca	7.11	2.0	1223	8700	40.714051	-74.009608
141	300 East 56th Street	No fee rental in Midtown East	3.87	3.0	2100	8118	40.758216	-73.965190
142	1930 Broadway	No fee rental in Central Park West	5.06	2.0	1600	8095	40.772474	-73.981901
143	33 West 9th Street	Rental in Greenwich Village	6.67	2.0	1500	10000	40.733691	-73.997323

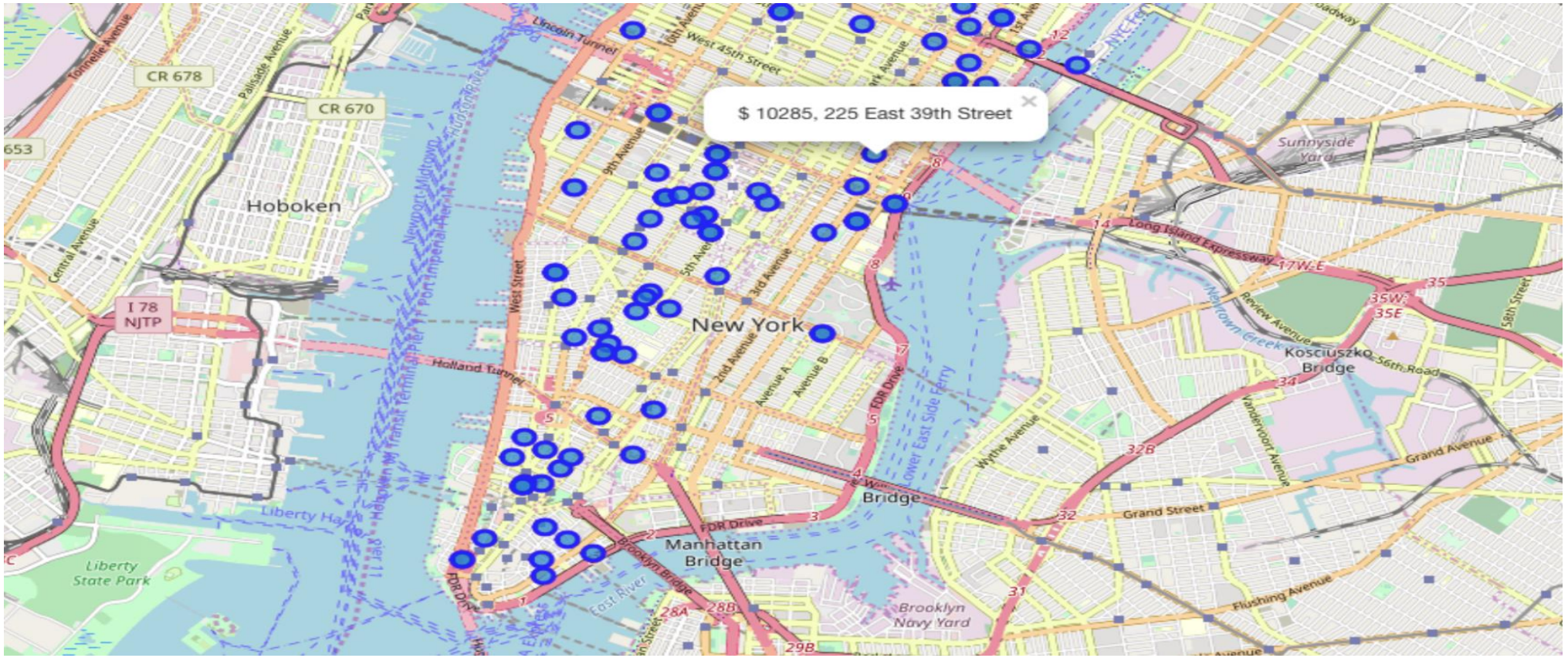
Rental price statistics for MH apartments



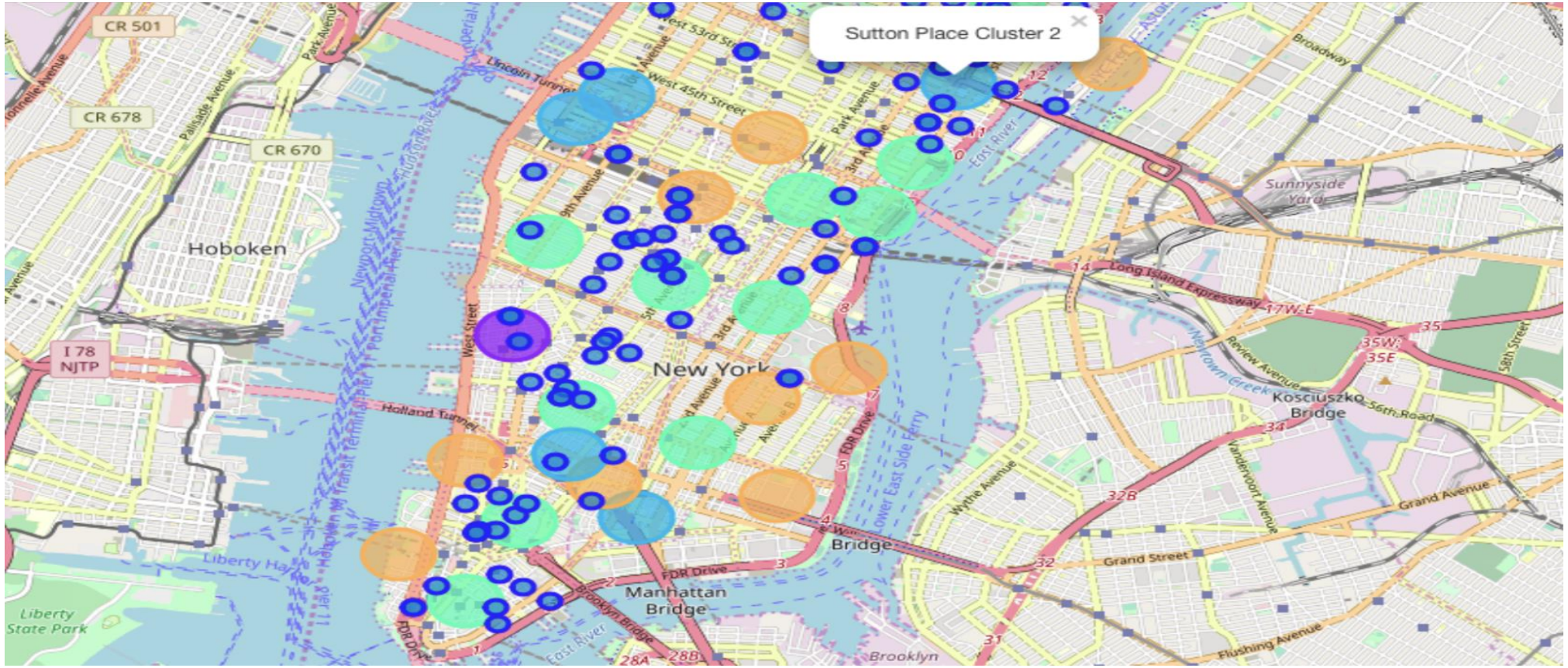




Manhattan apartments for rent



Manhattan apartments with venue clusters



Manhattan subway station geodata

click to scroll output; double click to hide

	sub_station	sub_address	lat	long
0	Dyckman Street Subway Station	170 Nagle Ave, New York, NY 10034, USA	40.861857	-73.924509
1	57 Street Subway Station	New York, NY 10106, USA	40.764250	-73.954525
2	Broad St	New York, NY 10005, USA	40.730862	-73.987156
3	175 Street Station	807 W 177th St, New York, NY 10033, USA	40.847991	-73.939785
4	5 Av and 53 St	New York, NY 10022, USA	40.764250	-73.954525

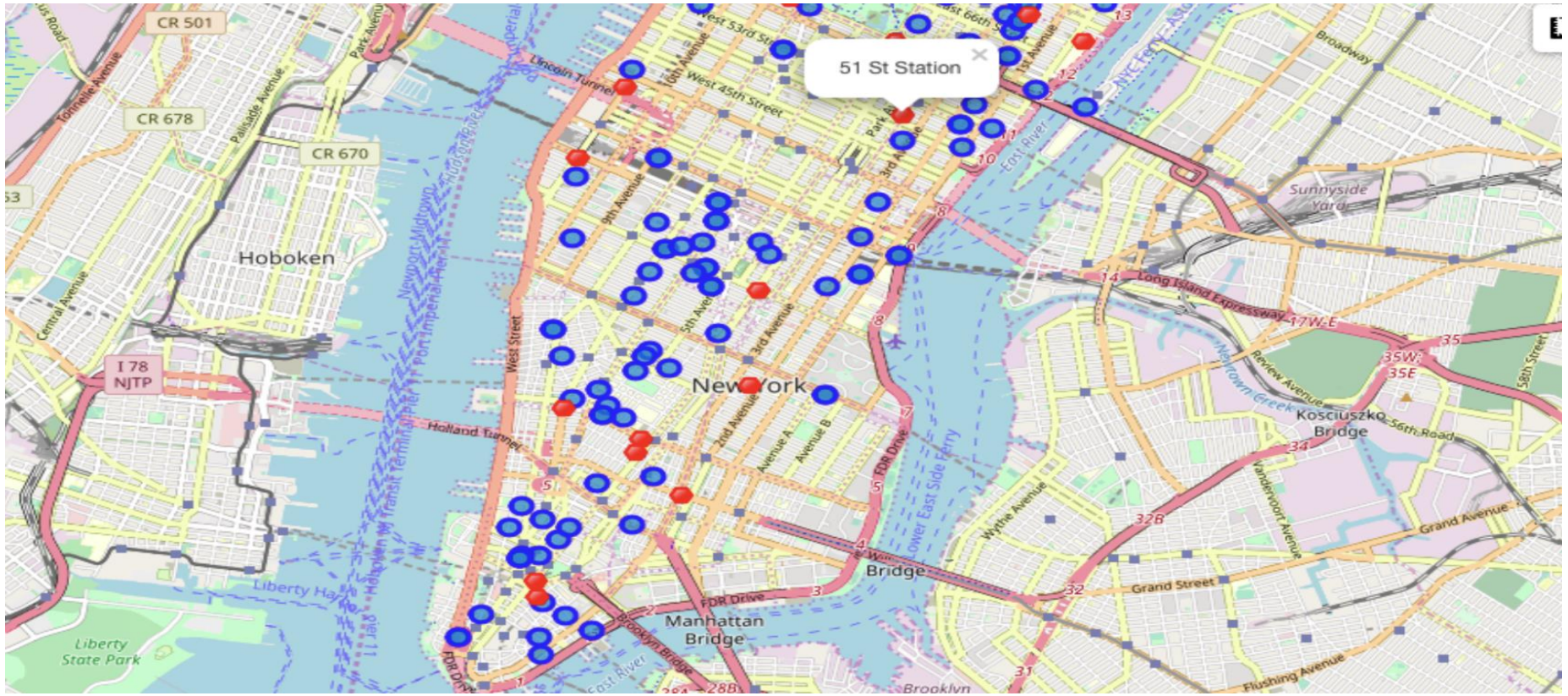
```
# removing duplicate rows and creating new set mhsub1
mhsub1=mh.drop_duplicates(subset=['lat','long'], keep="last").reset_index(drop=True)
mhsub1.shape
```

```
(22, 4)
```

```
mhsub1.tail()
```

	sub_station	sub_address	lat	long
17	190 Street Subway Station	Bennett Ave, New York, NY 10040, USA	40.858113	-73.932983
18	59 St-Lexington Av Station	E 60th St, New York, NY 10065, USA	40.762259	-73.966271
19	57 Street Station	New York, NY 10019, United States	40.764250	-73.954525
20	14 Street / 8 Av	New York, NY 10014, United States	40.730862	-73.987156
21	MTA New York City	525 11th Ave, New York, NY 10018, USA	40.759809	-73.999282

Apartments(blue) and Subway stations(red)



Selected apartment

Apartment Selection

- Using the "one map" above, I was able to explore all possibilities since the popups provide the information needed for a good decision.
- Apartment 1 rent cost is US7500 slightly above the US7000 budget. Apt 1 is located 400 meters from subway station at 59th Street and work place (Park Ave and 53rd) is another 600 meters way. I can walk to work place and use subway for other places aroung. Venues for this apt are as of Cluster 2 and it is located in a fine district in the East side of Manhattan. Apartment 2 rent cost is US6935, just under the US7000 budget.
- Apartment 2 is located 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 for this apt are as of Cluster 3.

5) DISCUSSION

- In general, while all of these tools are useful, there is nothing like visiting the actual city, seeing the neighborhoods, and speaking with residents. If it's possible, an in-person visit is highly recommended before making a big move.

6) CONCLUSION

- 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.