

To find a suitable
apartment for rent in
Manhattan NY

Scenario and Background

- A great opportunity to work for a leader firm in Manhattan, NY. I am very excited I am a bit stress toward the process to secure a comparable place to live in Manhattan.
- The challenge to resolve is being able to find a rental apartment unit in Manhattan NY that offers similar characteristics and benefits to my current situation.
- I believe this is a relevant project for a person or entity considering moving to a major city in Europe, US or Asia, since the approach and methodologies used here are applicable in all cases.

Data Section

- Data of Current Situation
- Data Required to resolve the problem
- Sources and manipulation
- How the data will be used to solve the problem
- Mapping of Data

Methodology

- The analysis and the strategy
- METHODOLOY EXECUTION - Mapping Data

Methodology

- Singapore Map - Current residence and venues in neighborhood



Methodology

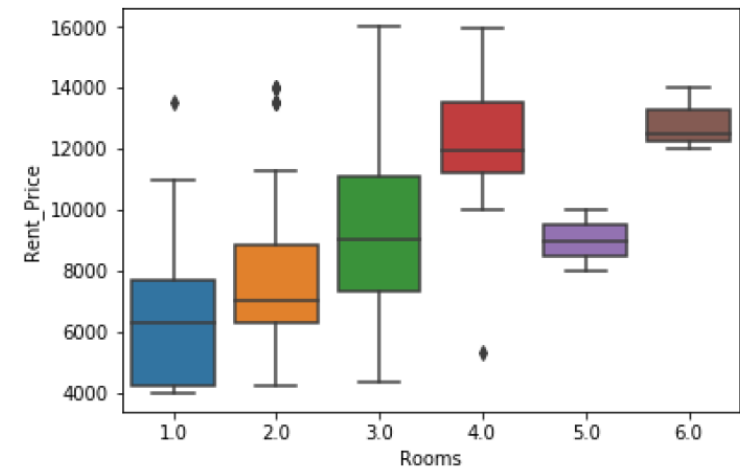
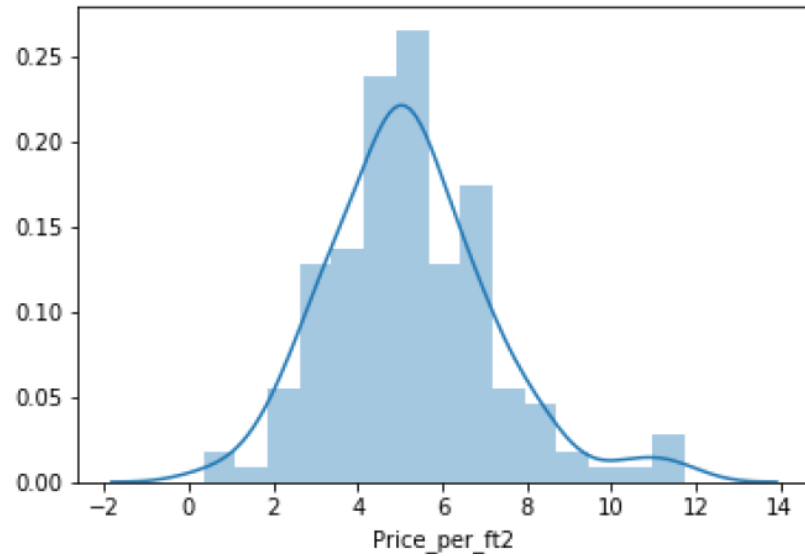
- Map of Manhattan neighborhoods with top 10 clustered venues

	Borough	Neighborhood	Latitude	Longitude	Cluster Labels	1st Most Common Venue	2nd Most Common Venue	3rd Most Common Venue	4th Most Common Venue	5th Most Common Venue	6th Most Common Venue	7th Most Common Venue	
0	Manhattan	Marble Hill	40.876551	-73.910660	2	Coffee Shop	Discount Store	Yoga Studio	Steakhouse	Supplement Shop	Tennis Stadium	Shoe Store	G3
1	Manhattan	Chinatown	40.715618	-73.994279	2	Chinese Restaurant	Cocktail Bar	Dim Sum Restaurant	American Restaurant	Vietnamese Restaurant	Salon / Barbershop	Noodle House	Ba
2	Manhattan	Washington Heights	40.851903	-73.936900	4	Café	Bakery	Mobile Phone Shop	Pizza Place	Sandwich Place	Park	Gym	La Ar Re
3	Manhattan	Inwood	40.867684	-73.921210	3	Mexican Restaurant	Lounge	Pizza Place	Café	Wine Bar	Bakery	American Restaurant	Pa
4	Manhattan	Hamilton Heights	40.823604	-73.949688	0	Mexican Restaurant	Coffee Shop	Café	Deli / Bodega	Pizza Place	Liquor Store	Indian Restaurant	St Re

- Map of Manhattan places for rent-
 - Several Manhattan real estate webs were web scrapped to collect rental data, as mentioned in section 2.0 . The result was summarized in a csv file for direct reading, in order to consolidate the process.
 - The initial data for 144 apartment did not have the latitude and longitude data.

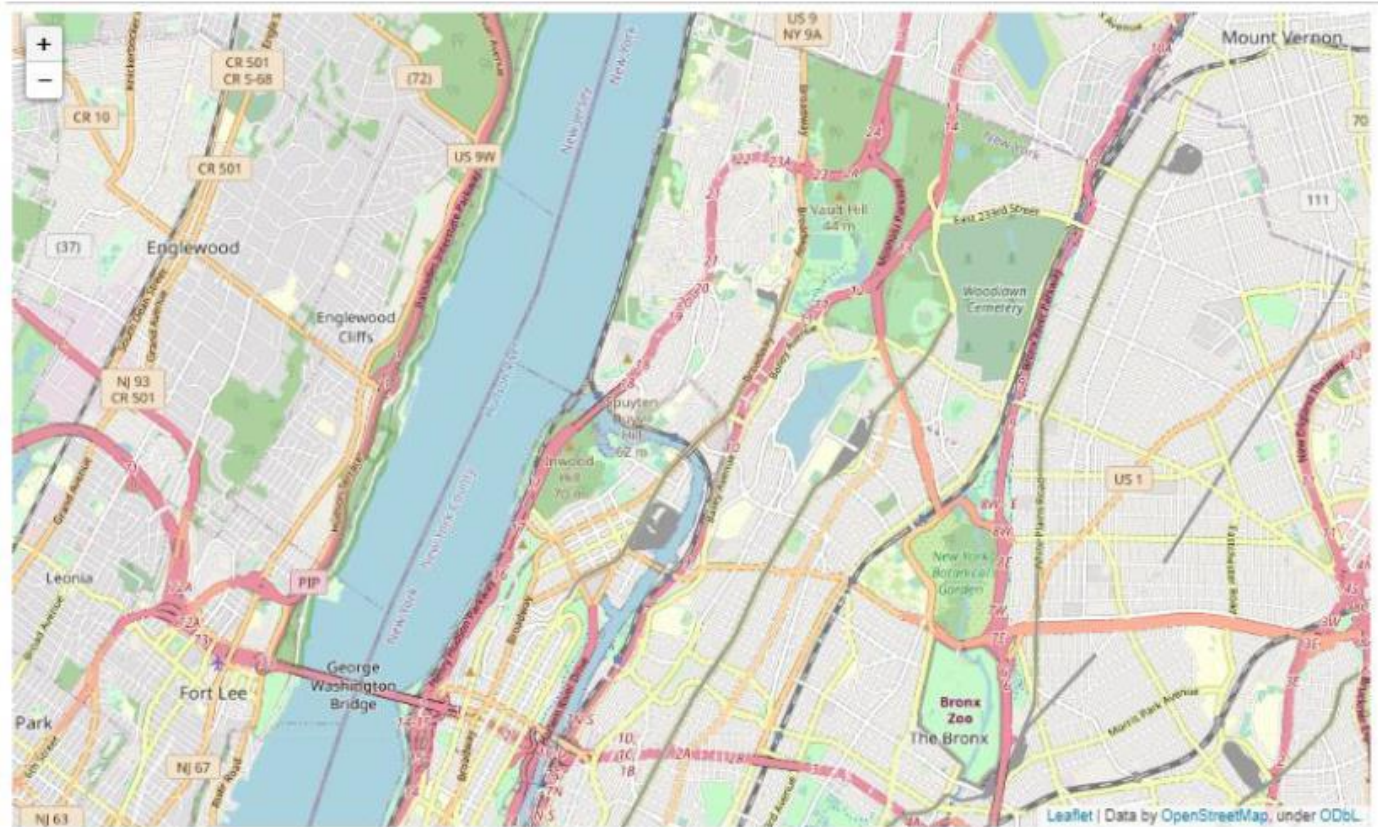
Manhattan apartment rent price statistics

- A US 7000 Dollar per month rent is actually around the mean value
- similar to Singapore! wow



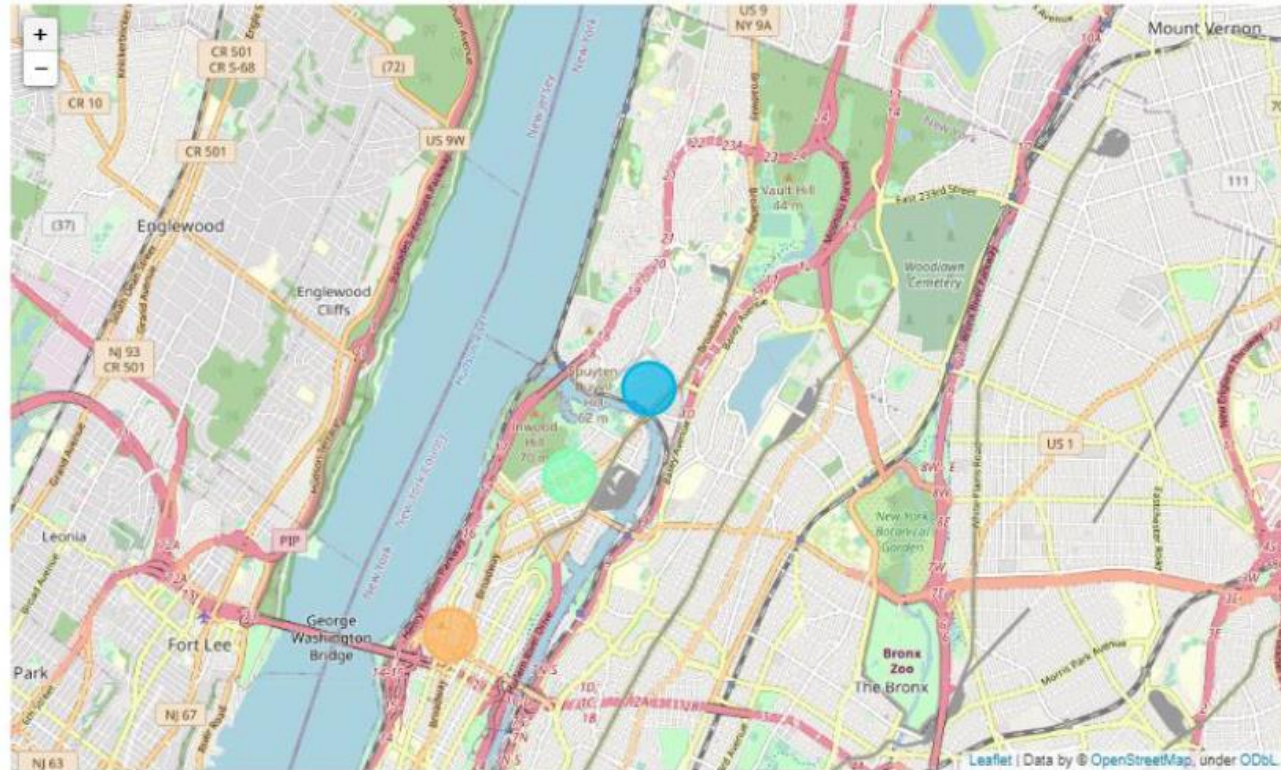
Map of Manhattan apartments for rent

- The popups will indicate the address and the monthly price for rent thus making it convenient to select the target apartment with the price condition estipulate (max US7000).



Map of Manhattan showing the places for rent and the cluster of venues

- Now, one can point to a rental place for price and address location information while knowing the cluster venues around it.



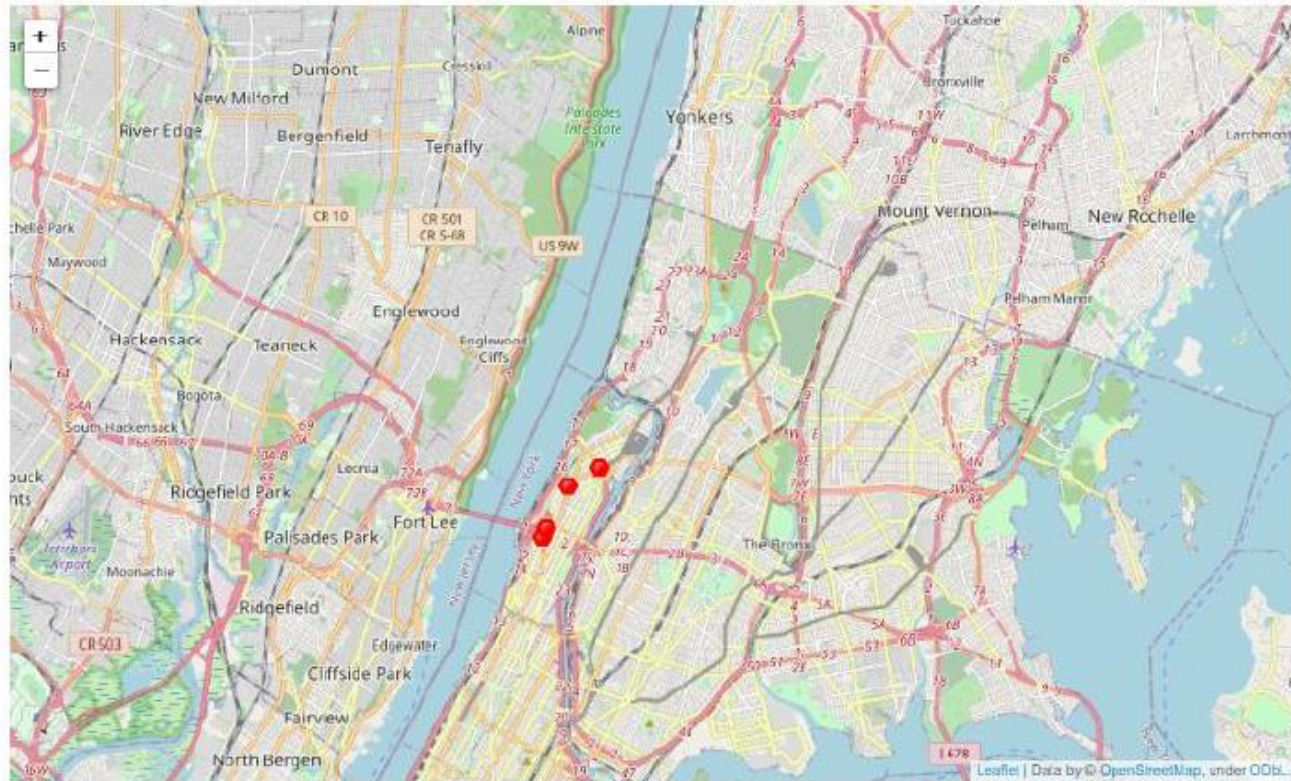
Now one can explore a particular rental place and its venues in detail.

- In the map above, examination of apartments with rental place below 7000/month is straight forward while knowing the venues around it.
- We could find an apartment with at the right price and in a location with desirable venues. The next step is to see if it is located near a subway metro station, in next cells work.

	Neighborhood	1st Most Common Venue	2nd Most Common Venue	3rd Most Common Venue	4th Most Common Venue	5th Most Common Venue	6th Most Common Venue	7th Most Common Venue	8th Most Common Venue	9th Most Common Venue	10th Most Common Venue
3	Inwood	Mexican Restaurant	Lounge	Pizza Place	Café	Wine Bar	Bakery	American Restaurant	Park	Frozen Yogurt Shop	Spanish Restaurant
5	Manhattanville	Del / Bodega	Italian Restaurant	Seafood Restaurant	Mexican Restaurant	Sushi Restaurant	Beer Garden	Coffee Shop	Falefel Restaurant	Elke Trail	Other Nightlife
19	Lenox Hill	Sushi Restaurant	Italian Restaurant	Coffee Shop	Gym / Fitness Center	Pizza Place	Burger Joint	Del / Bodega	Gym	Sporting Goods Shop	Thai Restaurant
12	Upper West Side	Italian Restaurant	Bar	Bakery	Vegetarian / Vegan Restaurant	Indian Restaurant	Coffee Shop	Cosmetics Shop	Wine Bar	Mexican Restaurant	Sushi Restaurant
15	Murray Hill	Sandwich Place	Hotel	Japanese Restaurant	Gym / Fitness Center	Coffee Shop	Salon / Barbershop	Burger Joint	French Restaurant	Bar	Italian Restaurant
17	Chelsea	Coffee Shop	Italian Restaurant	Ice Cream Shop	Bakery	Nightclub	Theater	Art Gallery	Seafood Restaurant	American Restaurant	Hotel
18	Greenwich Village	Italian Restaurant	Sushi Restaurant	French Restaurant	Clothing Store	Chinese Restaurant	Café	Indian Restaurant	Bakery	Seafood Restaurant	Electronics Store
27	Gramercy	Italian Restaurant	Restaurant	Tam / Vintage Store	Cocktail Bar	Bagel Shop	Coffee Shop	Pizza Place	Mexican Restaurant	Grocery Store	Wine Shop
29	Financial District	Coffee Shop	Hotel	Gym	Wine Shop	Steakhouse	Bar	Italian Restaurant	Pizza Place	Park	Gym / Fitness Center
31	NoHo	Italian Restaurant	French Restaurant	Cocktail Bar	Gift Shop	Bookstore	Grocery Store	Mexican Restaurant	Hotel	Sushi Restaurant	Coffee Shop
32	Civic Center	Gym / Fitness Center	Bakery	Italian Restaurant	Cocktail Bar	French Restaurant	Sandwich Place	Coffee Shop	Gym	Yoga Studio	Park
35	Turtle Bay	Italian Restaurant	Coffee Shop	Steakhouse	Wine Bar	Sushi Restaurant	Hotel	Noodle House	Indian Restaurant	Japanese Restaurant	French Restaurant
38	Tudor City	Café	Park	Pizza Place	Mexican Restaurant	Greek Restaurant	Sushi Restaurant	Hotel	Del / Bodega	Diner	Dog Run
39	Flushing	Italian Restaurant	American Restaurant	Gym	Yoga / Fitness Studio	Vegetarian / Vegan	Bakery	Clothing Store	Cosmetics Shop	Cycle Studio	

Mapping Manhattan Subway locations.

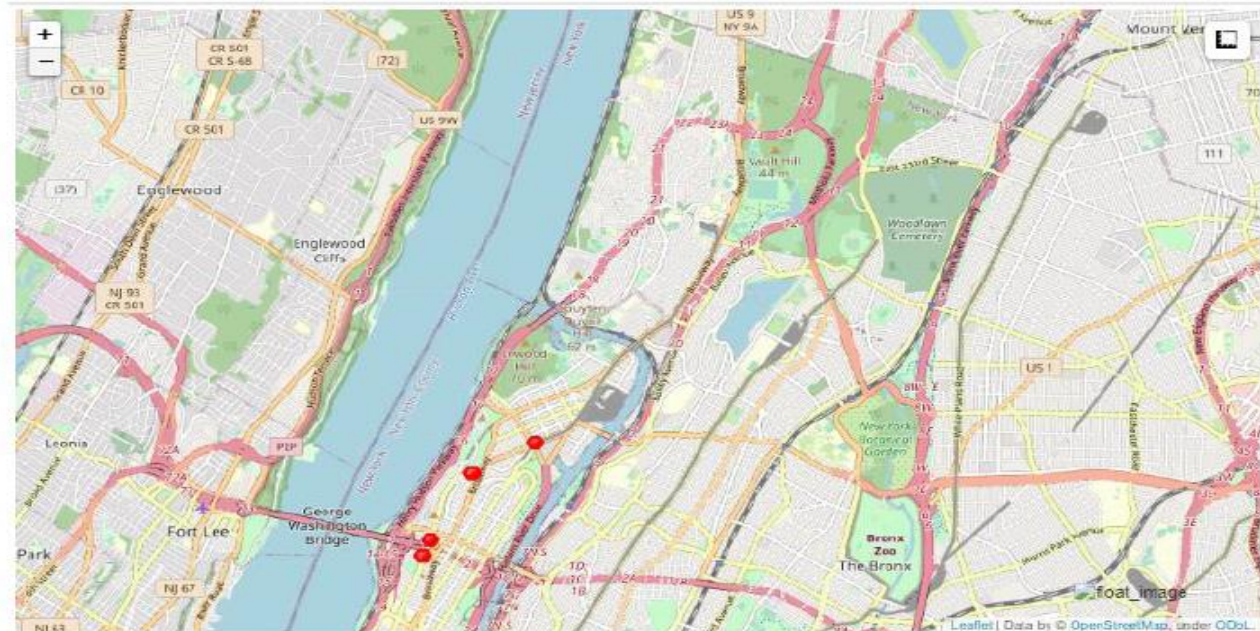
- Manhattan subway metro locations (address) was obtained from web scrapping sites such as Wikipedia, Google and NY Metro Transit. For simplification, a csv file was produced from the 'numbers' (Apple excel) so that the reading of this file is the starting point here



Map of Manhattan showing places for rent and the subway locations nearby

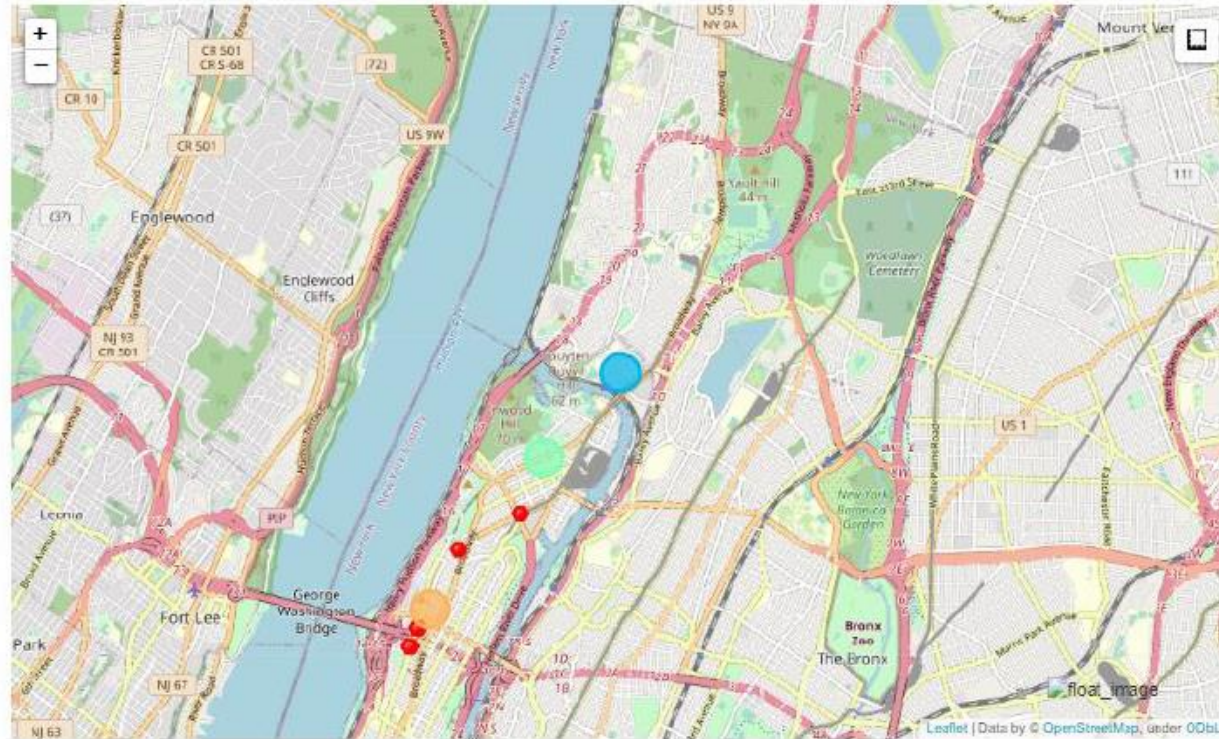
- Now, we can visualize the desirable rental places and their nearest subway station. Popups display rental address and monthly rental price and the subway station name.

	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



Results

- Map of Manhattan with rental places, subway locations and cluster of venues.
 - Red dots are Subway stations, Blue dots are apartments available for rent, Bubbles are the clusters of venues



Problem Resolution - Select the apartment for rent

- The above consolidate map was used to explore options.
- 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

Apartment Selection

- I am 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 around. 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. Apt 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.

DISCUSSION

- In general, I am positively impressed with the overall organization, content and lab works presented during the Coursera IBM Certification Course.
- I feel 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.

THANK YOU