The Battle of the Neighborhoods Week 1 & 2

Final Version

Coursera Capstone Project

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Introduction

1.1 Scenario

I have friend who lives in Singapore, she has been offered by her employer to relocate to Manhattan NY. She is very excited about it but she is also hesitant because she loves her current residence in Singapore and doubts she will find a similarly convenient place in NYC.

She lives within walking distance to an MRT metro station, different kinds of restaurants, cafes, shop and many kinds of entertainment.

I am excited for this opportunity to help my friend find a place in NY similar to her place in Singapore now while also applying what I learned in the Coursera Applied Data Science Capstone course.

1.2 Business Problem

To find an apartment in Manhattan NY that meets the following:

- 2 or 3 bedrooms
- a metro station within a 1.0-mile radius
- rent: USD7,000 per month
- accessible places: coffee shop, Asian restaurants, groceries, gym

1.3 Interested Audience

Aside from my friend and me, this study may also be useful to anyone interested in moving to Manhattan NY. It is also a good reference for anyone wanting to practice and develop their Data Science skills

Data

2.1 Current Residence Data

- Foursquare to identify the venues around the current Singapore residence

2.2 Future Residence Data - Required to Resolve Problem

- List of neighborhoods in Manhattan with their Geodata
- List of subway metro stations in Manhattan with geodata
- Listed apartments for rent in Manhattan area with descriptions - beds, price, location, address
- Venues and ammenities in the Manhattan neighborhoods

2.3 Data Sources and Data Manipulation

- https://en.wikipedia.org/wiki/List_of_New_York_City_Subway_stations_in_Manhattan)
- https://www.google.com/maps/search/manhattan+subway+metro+stations/@40.7837297,-74.1033043,11z/data=!3m1!4b1) :http://www.rentmanhattan.com/index.cfm?page=search&state=results https://www.nestpick.com/search?city=new-york&page=1&order=relevance&district=manhattan&gclid=CjwKCAiAjNjgBRAgEiwAGLlf2hkP3A-cPxjZYkURqQEswQK2jKQEpv_MvKcrIhRWRzNkc_r-fGi0lxoCA7cQAvD_BwE&type=apartment&display=list https://www.realtor.com/apartments/Manhattan_NY
- Maps Created:
  - ✓ 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

Methodology

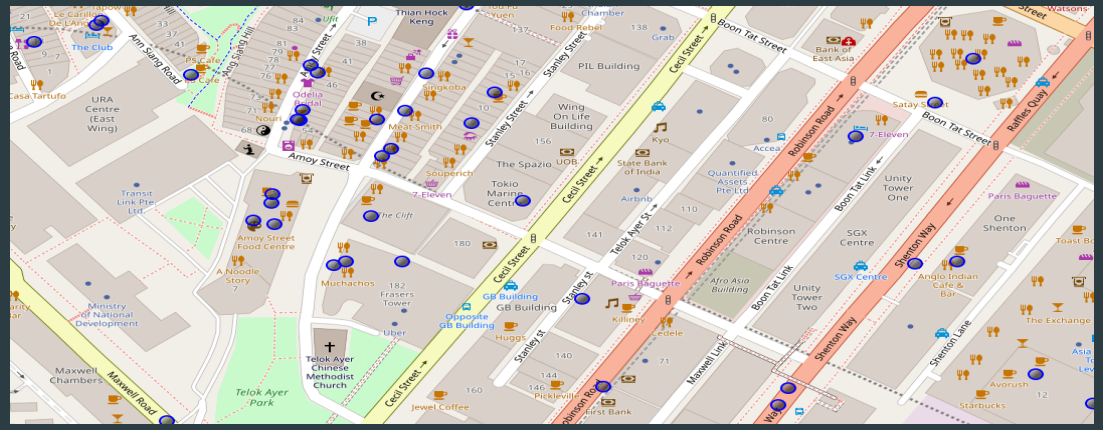
Analysis and Strategy

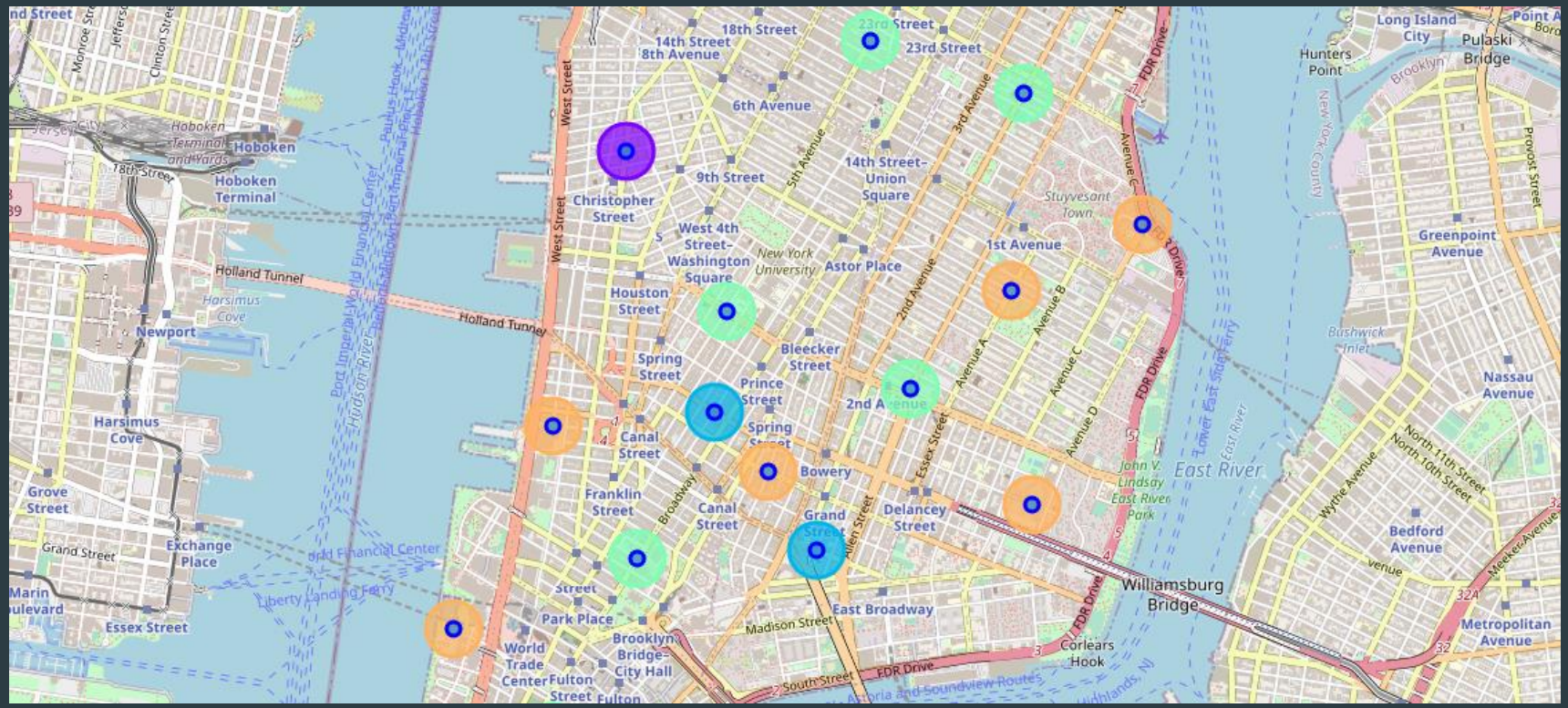
Our choice will largely depend on the maps we will create as stated in the Data Section. Using the maps we will try our best to answer the following questions:

- what is the cost of available rental places that meet the demands?
- what is the cost of rent around a mile radius from each subway metro station?
- what is the area of Manhattan with best rental pricing that meets our requirements?
- what are the venues of the two best places to live? How do the prices compare?
- how venues distribute among Manhattan neighborhoods and around metro stations?
- any other interesting statistical data findings of the real estate and overall data.

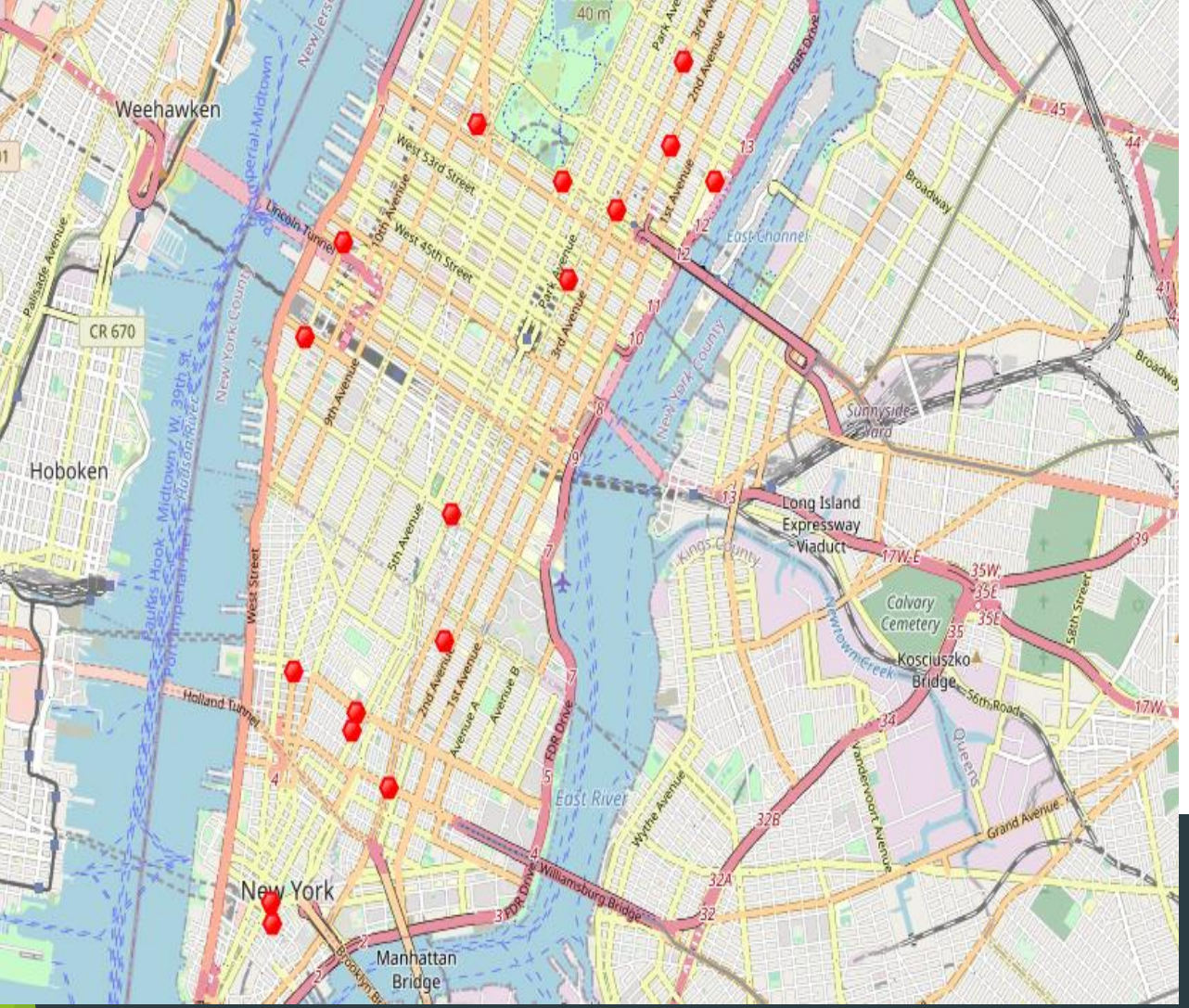
Current Neighborhood Details (Singapore)

	name	categories	lat	lng
0	Napoleon Food & Wine Bar	Wine Bar	1.279925	103.847333
1	Native	Cocktail Bar	1.280135	103.846844
2	Park Bench Deli	Deli / Bodega	1.279872	103.847287
3	Freehouse	Beer Garden	1.281254	103.848513
4	Pepper Bowl	Asian Restaurant	1.279371	103.846710
5	Meat Smith	Southern / Soul Food Restaurant	1.280205	103.847410
6	Anglo Indian Cafe & Bar	Indian Restaurant	1.279084	103.850127
7	Mellower Coffee	Café	1.277814	103.848188
8	PS.Cafe	Café	1.280468	103.846264
9	Lau Pa Sat Satay Street	Street Food Gathering	1.280261	103.850235

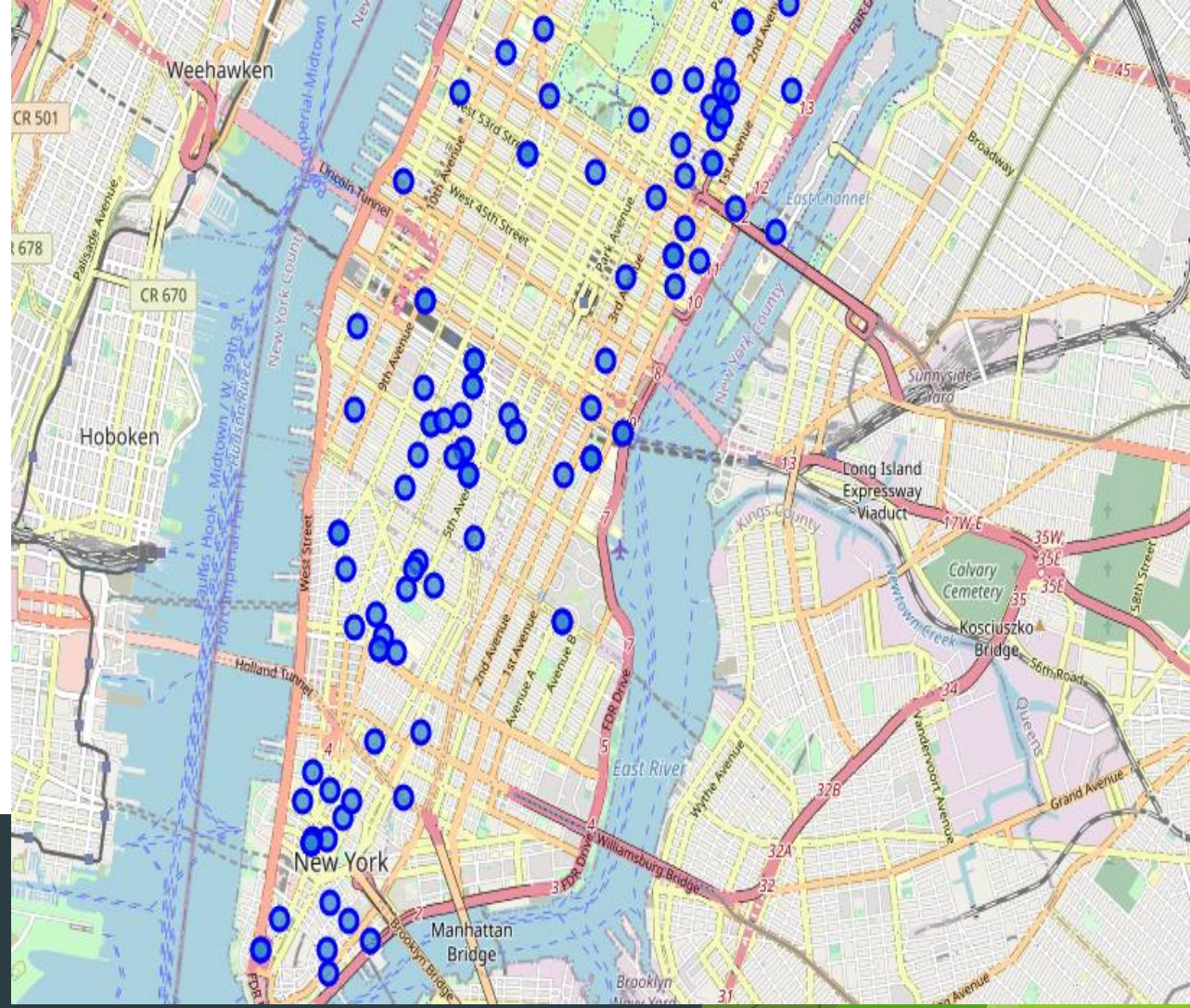




Manhattan Neighborhoods - Clusters



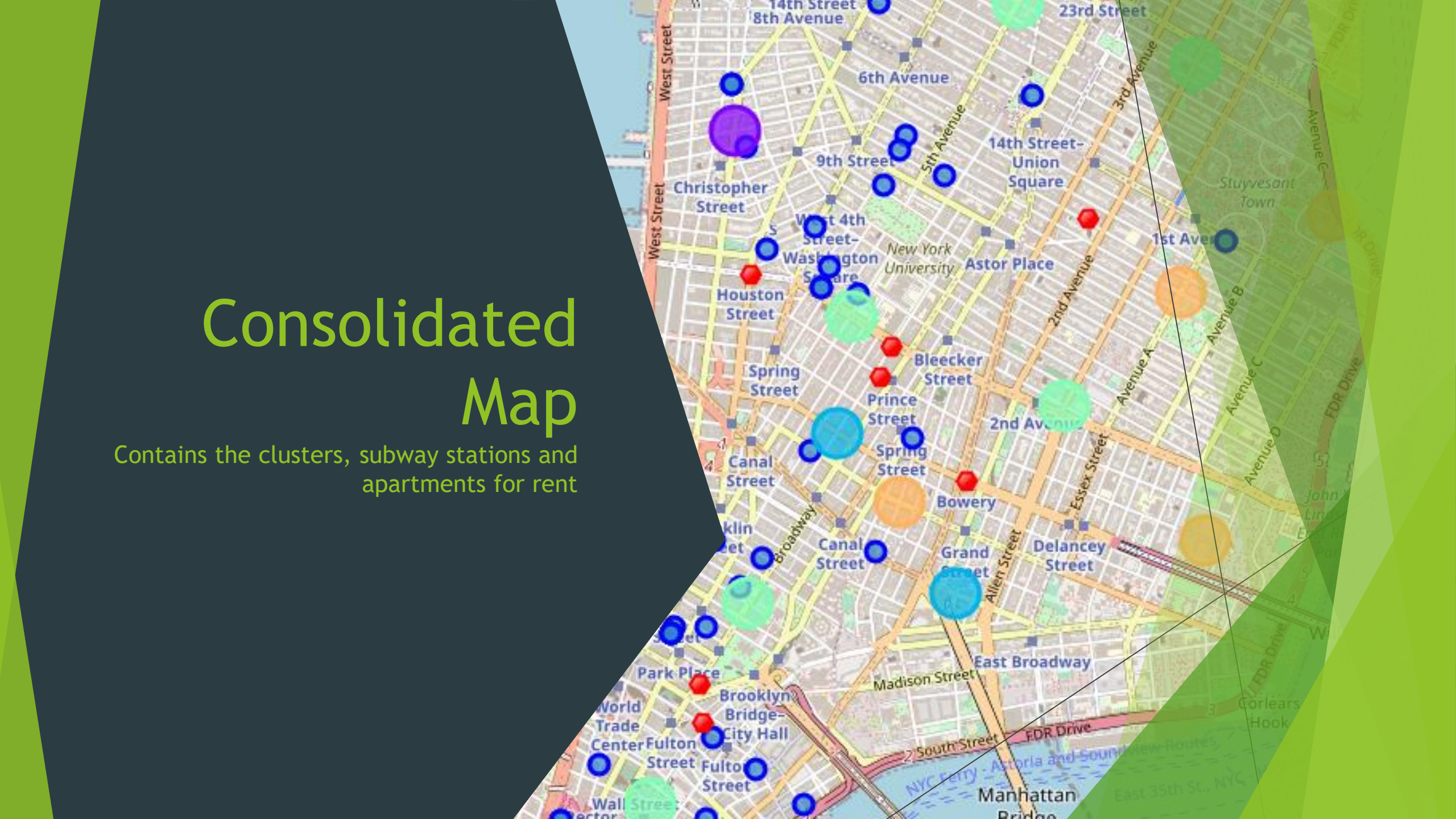
Map of Subway Stations



Map of Apartments for Rent

Consolidated Map

Contains the clusters, subway stations and apartments for rent



Problem Resolution - Apartment Selection

After studying the consolidated map above, we have 2 locations that meet our set requirements. We'll take a closer look at these two locations so we can make a better choice.

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

Venues Comparison

Option 1

	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
0	Marble Hill	Coffee Shop	Discount Store	Yoga Studio	Steakhouse	Supplement Shop	Tennis Stadium	Shoe Store	Gym	Bank	Seafood Restaurant
1	Chinatown	Chinese Restaurant	Cocktail Bar	Dim Sum Restaurant	American Restaurant	Vietnamese Restaurant	Salon / Barbershop	Noodle House	Bakery	Bubble Tea Shop	Ice Cream Shop
6	Central Harlem	African Restaurant	Seafood Restaurant	French Restaurant	American Restaurant	Cosmetics Shop	Chinese Restaurant	Event Space	Liquor Store	Beer Bar	Gym / Fitness Center
9	Yorkville	Coffee Shop	Gym	Bar	Italian Restaurant	Sushi Restaurant	Pizza Place	Mexican Restaurant	Deli / Bodega	Japanese Restaurant	Pub
14	Clinton	Theater	Italian Restaurant	Coffee Shop	American Restaurant	Gym / Fitness Center	Hotel	Wine Shop	Spa	Gym	Indie Theater
23	Soho	Clothing Store	Boutique	Women's Store	Shoe Store	Men's Store	Furniture / Home Store	Italian Restaurant	Mediterranean Restaurant	Art Gallery	Design Studio
26	Morningside Heights	Coffee Shop	American Restaurant	Park	Bookstore	Pizza Place	Sandwich Place	Burger Joint	Café	Deli / Bodega	Tennis Court
34	Sutton Place	Gym / Fitness Center	Italian Restaurant	Furniture / Home Store	Indian Restaurant	Dessert Shop	American Restaurant	Bakery	Juice Bar	Boutique	Sushi Restaurant
39	Hudson Yards	Coffee Shop	Italian Restaurant	Hotel	Theater	American Restaurant	Café	Gym / Fitness Center	Thai Restaurant	Restaurant	Gym

Option 2

	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	Deli / Bodega	Italian Restaurant	Seafood Restaurant	Mexican Restaurant	Sushi Restaurant	Beer Garden	Coffee Shop	Falafel Restaurant	Bike Trail	Other Nightlife
10	Lenox Hill	Sushi Restaurant	Italian Restaurant	Coffee Shop	Gym / Fitness Center	Pizza Place	Burger Joint	Deli / 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
16	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	Thrift / 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

Apartment Selection

Using the consolidated map, I was able to explore all possibilities as the popups provide the information needed for the best decision.

Option 1

- Rent: 7500USD
- Located 400 meters from subway station at 59th Street
- Venues for this apt are shown above in Cluster 2 and it is in a fine district in the East side of Manhattan

Option 2

- Rent: 6935USD
- Located 60 meters from subway station at Fulton Street
- Venues for this apt are shown above in Cluster 3

Discussion

Apartment 2 falls within our rent budget and is closer to a subway station than Apartment 1. Also, Apartment 2 is in Cluster 3, which closely resembles the current neighborhood in Singapore.

Conclusion

Based on our observation and analysis. We are choosing Apartment #2 as it meets all the requirements we have set in the beginning:

- 19 Dutch Street in the Financial District Neighborhood
- near 'Fulton Street Subway' station
- fantastic neighborhood venues - Cluster # 3
- Monthly rent: 6935 Dollars

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Terma Kasih
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