



Coursera Capstone Project

Coursera IBM Data Science Certification

**Final Report By :
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Report Content

❑ Introduction Content:

"Business Problem" to be solved for Interested one.

❑ Data Section:

"Describe Data Requirement and Resources needed for problem solving.

❑ Methodology Section:

(Main Content of Report":))

1. Execute Data Processing
2. Expletory of Data Analysis
3. Inferential Statistical Testing
4. Machine Learning Used

Report Content

- ❑ Result Section:

Discussing of result and finding of answer.

- ❑ Discussion Section:

"Discussion of mentioned observation and recommendations.

- ❑ Conclusion Section:

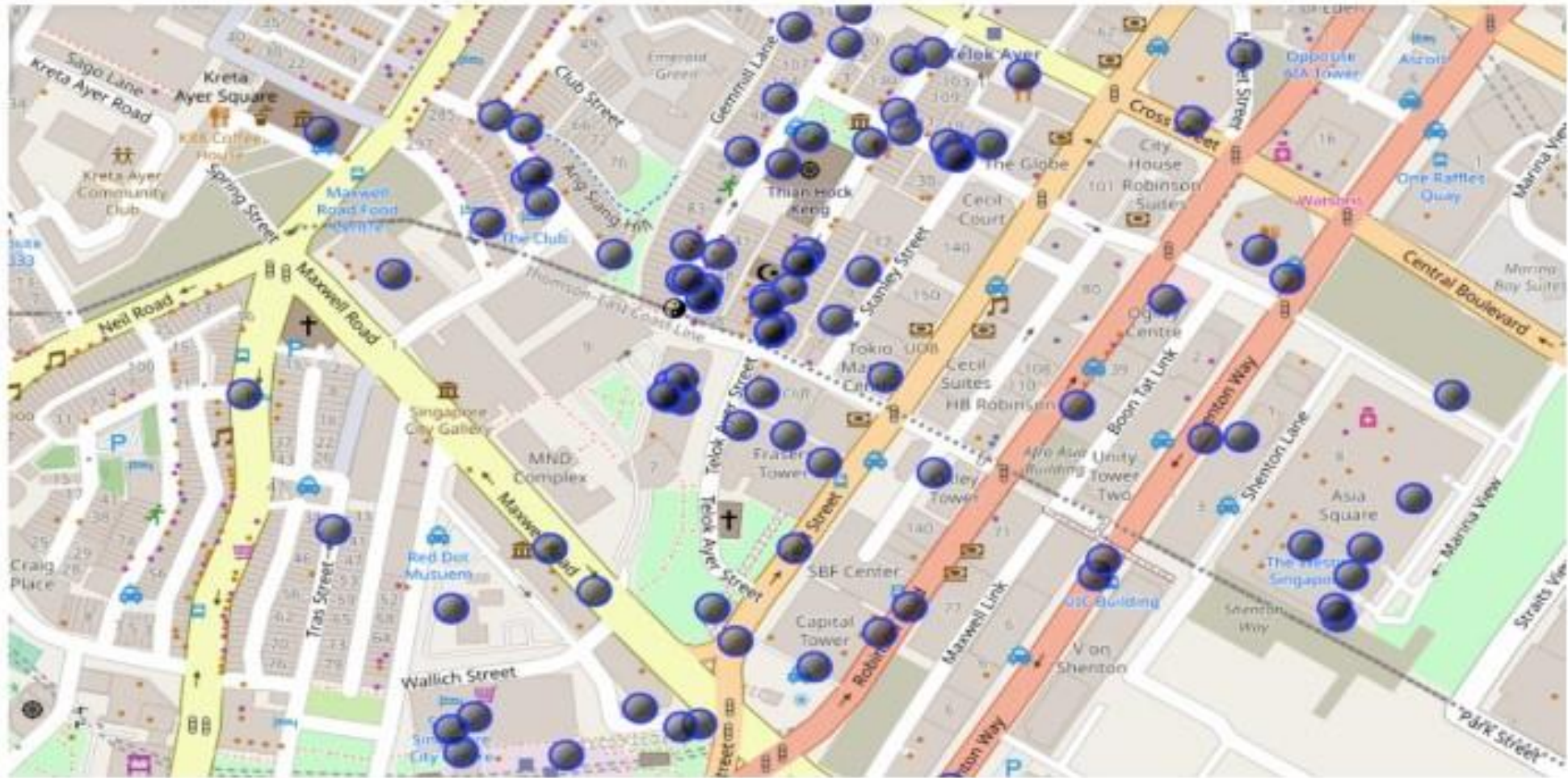
"Picking up answers and Conclusions"

Introduction

- ❑ Scenario and Background
- ❑ Problem to be resolved
- ❑ Interested Audience

Execution & Results

Current residence Neighborhood in Singapore



Execution & Results

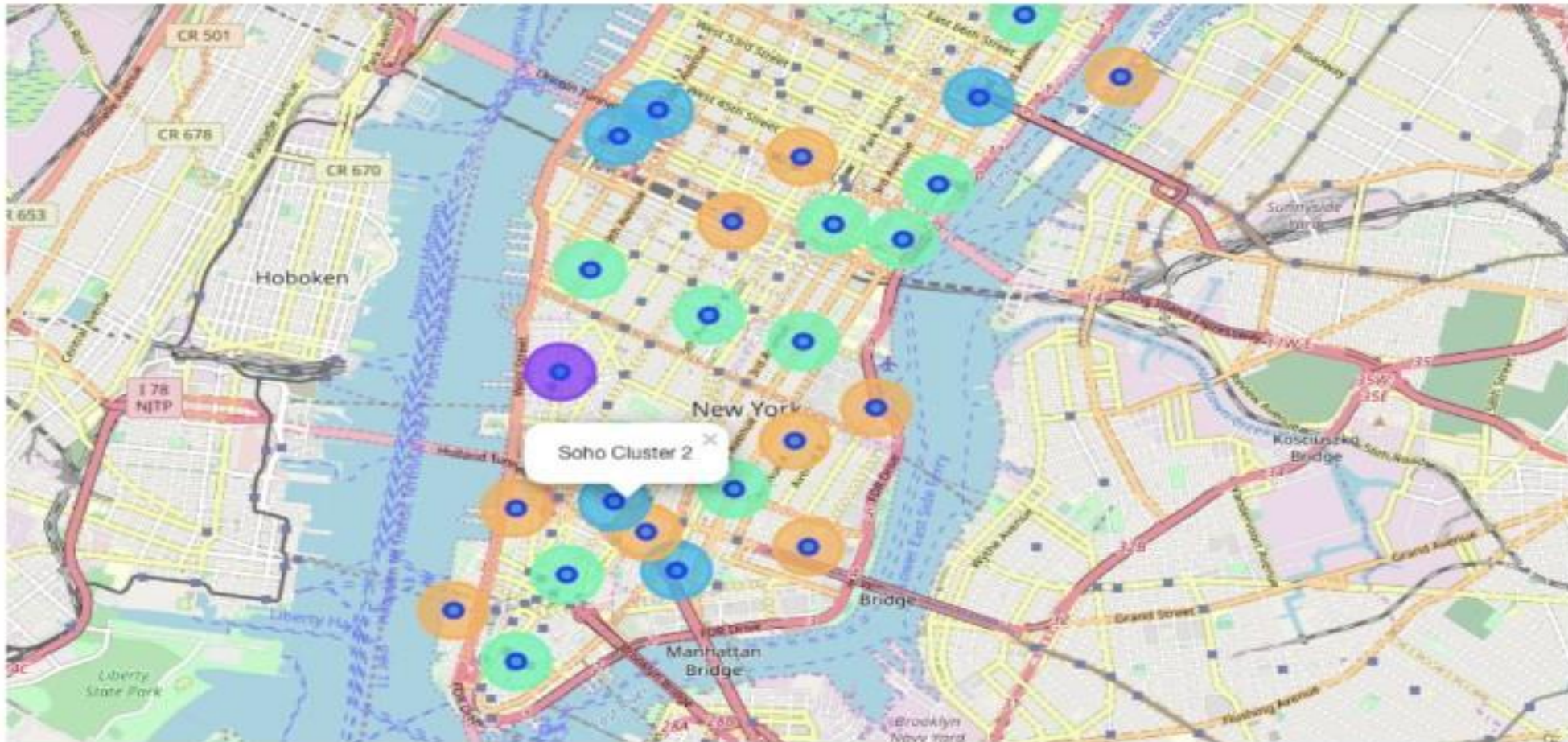
Venue Around Neighbourhood in

```
# Venues near current Singapore residence place  
SGnearby_venues.head(10)
```

	name	categories	lat	lng
0	Napoleon Food & Wine Bar	Wine Bar	1.279925	103.847333
1	Park Bench Deli	Deli / Bodega	1.279872	103.847287
2	Native	Cocktail Bar	1.280135	103.846844
3	Muchachos	Burrito Place	1.279175	103.847082
4	Matt's The Chocolate Shop	Dessert Shop	1.280462	103.846950
5	Freehouse	Beer Garden	1.281254	103.848513
6	PS.Cafe	Café	1.280468	103.846264
7	왕대박 Wang Dae Bak Korean BBQ Restaurant	Korean Restaurant	1.281345	103.847551
8	Ancient Therapy	Massage Studio	1.280413	103.847481
9	Oven & Fried Chicken	Korean Restaurant	1.280479	103.847522

Execution & Results

Manhattan Map - Neighborhoods and Cluster of Venues



Execution & Results

Geodata Manhattan apts for rent

```
mh_rent=pd.read_csv('MH_rent_latlong.csv')  
mh_rent.head()
```

	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

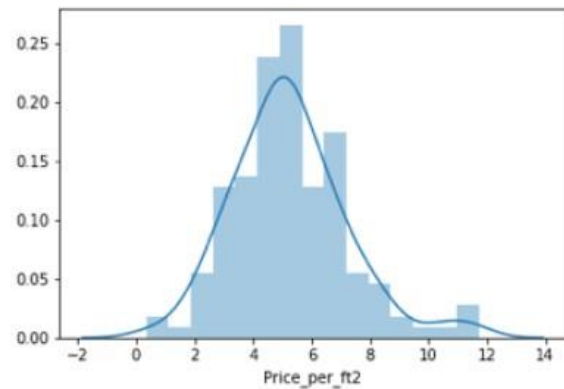
```
mh_rent.tail()
```

	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

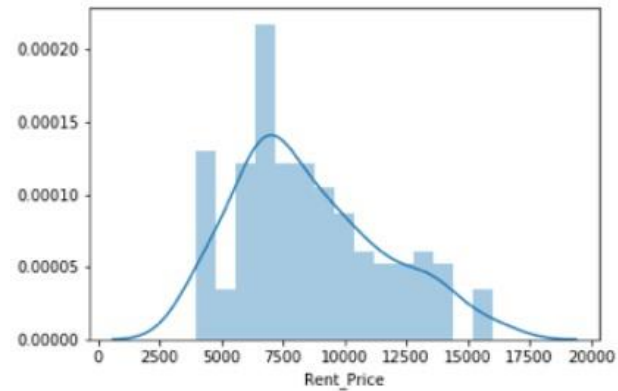
Execution & Results

Rental Price Statistics MH Apartments

```
<matplotlib.axes._subplots.AxesSubplot at 0x1a2415fc18>
```

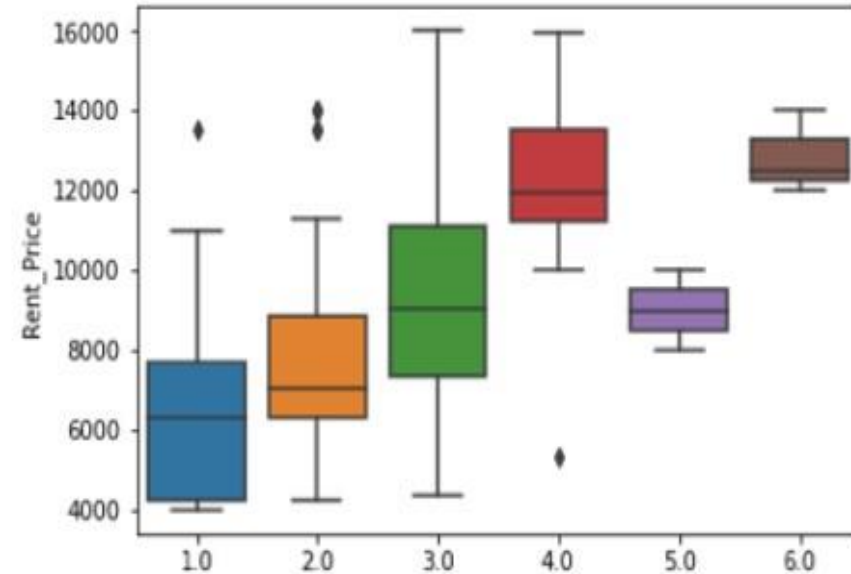


```
<matplotlib.axes._subplots.AxesSubplot at 0x1a25dd8400>
```



```
sns.boxplot(x='Rooms', y='Rent_Price', data=mh_rent)
```

```
<matplotlib.axes._subplots.AxesSubplot at 0x1a25f2a2b0>
```

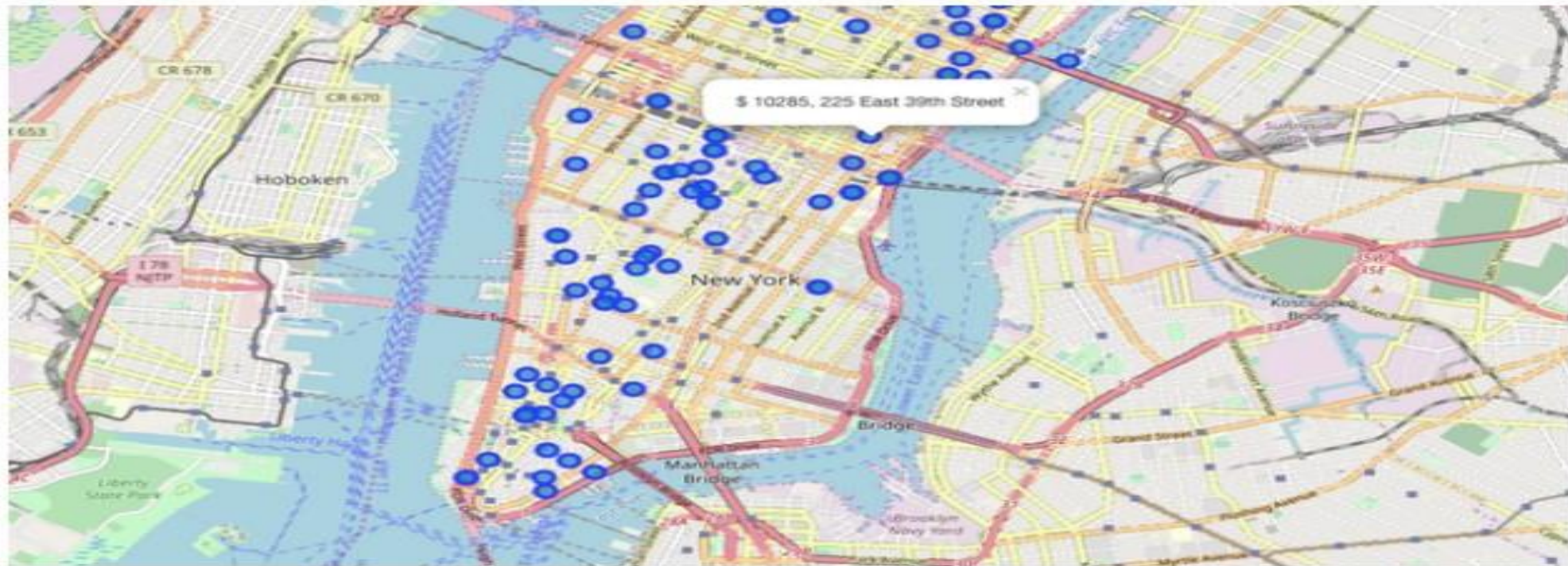


Execution & Results

MH apt for rent with venue clusters



Apartments for Rent in MH



Execution & Results

Venues of cluster 3

```
## kk is the cluster number to explore
kk = 3
manhattan_merged.loc[manhattan_merged['Cluster Labels'] == kk, manhattan_merged.columns[[1] + list(range(5, manhattan_m
```

	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	Fala'fel 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

Execution & Results

Manhattan subway stations geodata

click to scroll output; double click to hide		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
```

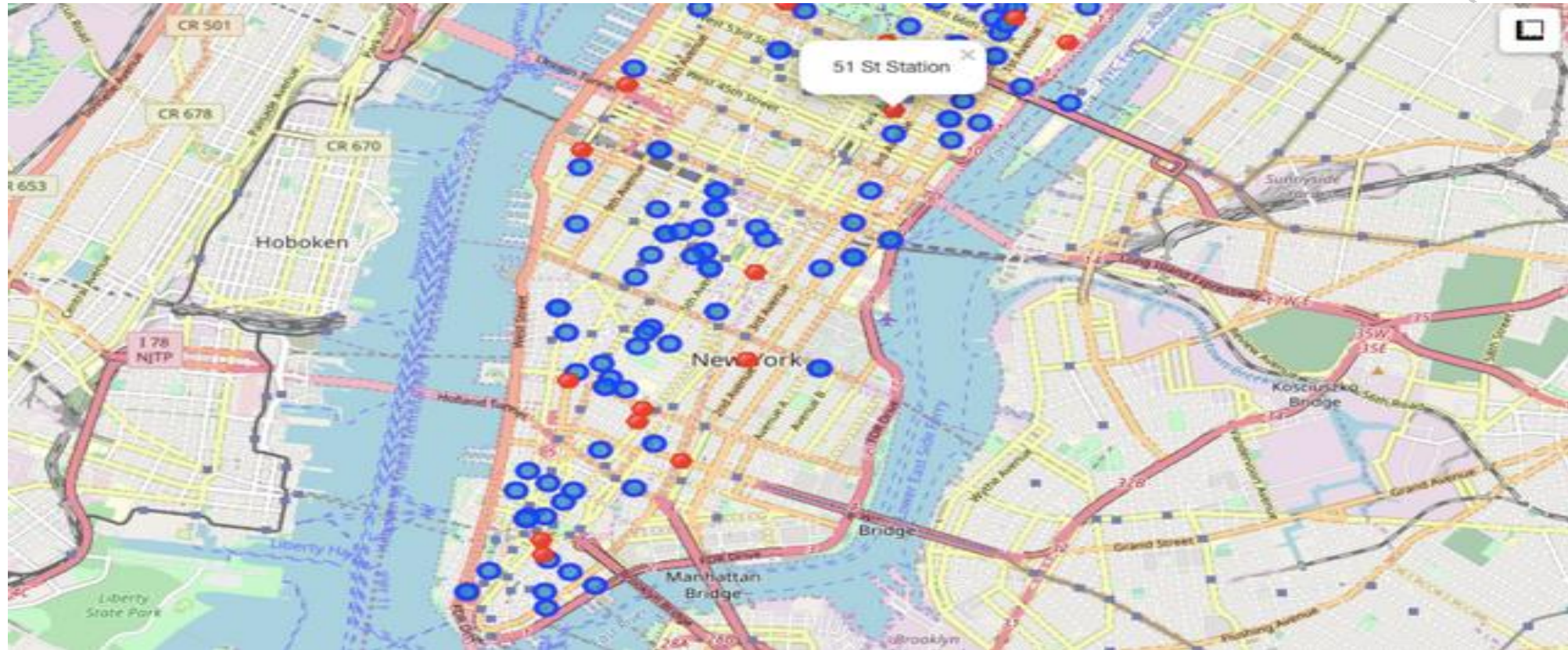
(22, 4)

```
: mhsub1.tail()
```

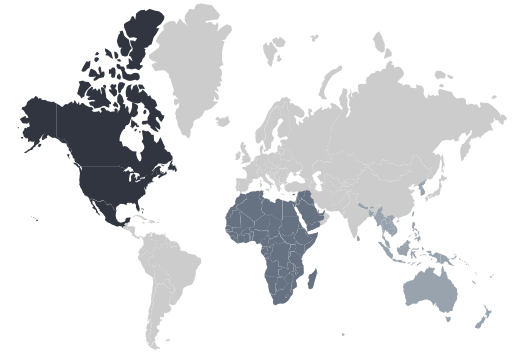
	sub_station	sub_address	lat	long
17	190 Street Subway Station	Bennett Ave, New York, NY 10040, USA	40.858113	-73.932983
18	59 St-Lexington Av Station	E 60th St, New York, NY 10065, USA	40.762259	-73.966271
19	57 Street Station	New York, NY 10019, United States	40.764250	-73.954525
20	14 Street / 8 Av	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

Execution & Results

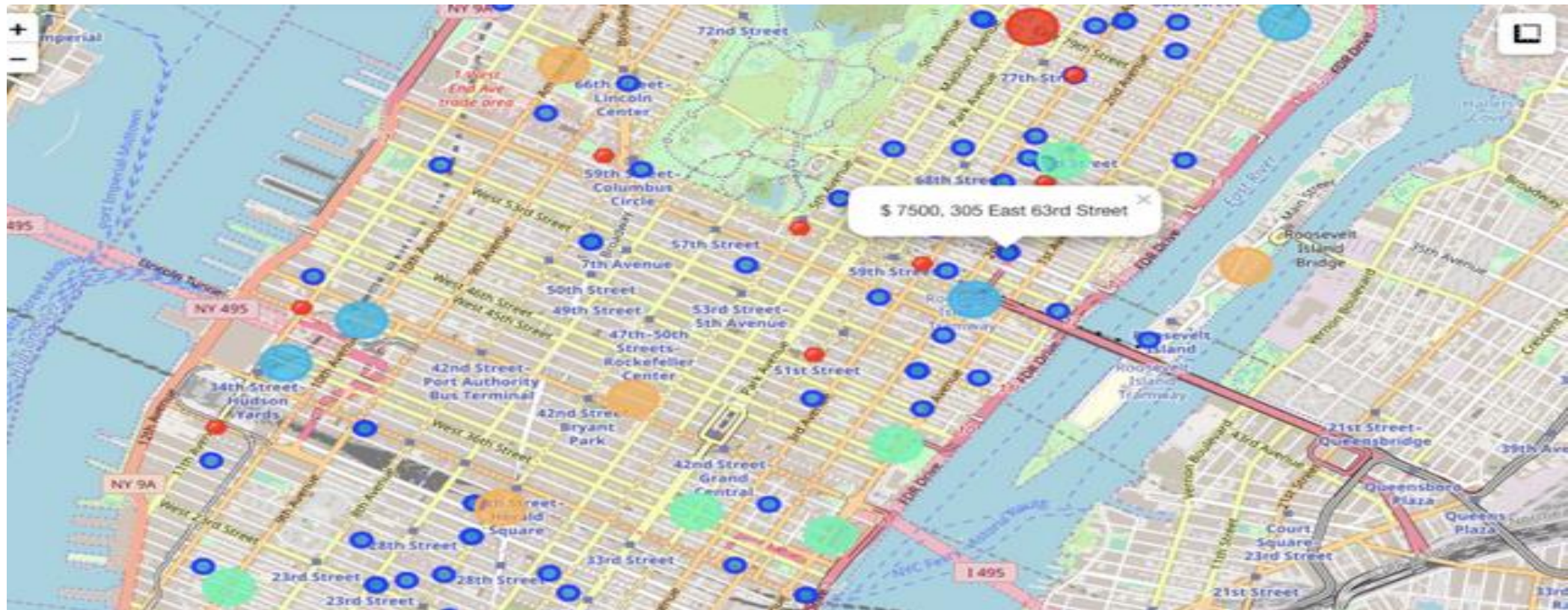
Apts for rent (blue) and subway stations (red)



Selected Apartment!

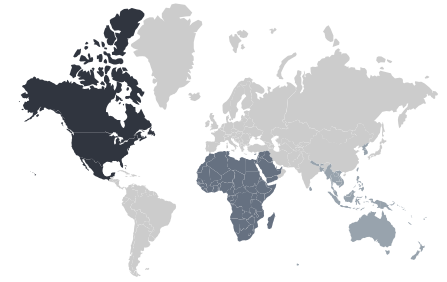


The ONE consolidated map shows all information for decision: Apartments address, price, neighborhood, a cluster of venues, and subway station nearby. Blue dots=apts ,
Red dots=Subway station, Bubbles=Cluster of Venues



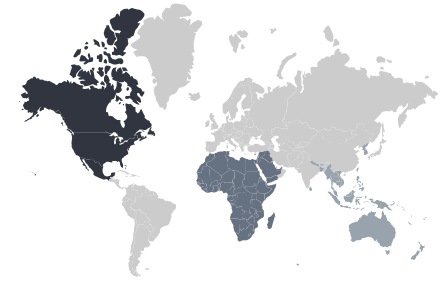
Selected Apartment!

Walk from home to work is less than 1 km



Selected Apartment!

Venus in Cluster 2 near future home



```
## kk is the cluster number to explore
kk = 2
manhattan_merged.loc[manhattan_merged['Cluster Labels'] == kk, manhattan_merged.columns[[1] + list(range(5, manhattan_
```

	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

Conclusions

- ❖ I feel rewarded with the efforts, time, and cash spent. I believe this course with all the topics lined is well worthy of appreciation.
- ❖ This project has shown Pine Tree State an employment to resolve a real scenario that has impacting personal and money impact mistreatment knowledge Science tools.
- ❖ The mapping with geological formation could be a terribly powerful technique to consolidate data and create the analysis and call thoroughly and confidently. I'd suggest for use in similar things.
- ❖ One should keep up with recent tools for DS that continue to appear for application in many business fields.



THANK YOU