The Hotel For Nightlife

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Introduction

New York is the most populous city in the United States. Also, the heart of the global financial market and This project will analyze which Hotel would be appropriate for the tourist to have nightlife on the trip to New York. For those who want to have a nice experience of hotel service after their nightlife, the content of this report is also suitable. This project will analyze the location of the convenience store, bar, and hostel.

Data collection:
The report will use the data from the Foursquare API.the data will include the location of the hotel, bar, and convenience store in NewYork City. Then, The hostel, bar, and convenience store will be mapped by the folium library. The map visualizes the location of the venues above that will demonstrate the distribution of the bar and hotel. The hostel close to the bar and the convenience store would be selected. The selected group of hotels would be compared by the rating from Foursquare. Finally, the recommendation will be made by these processes.

Data cleaning:

	name	categories	address	cc	city	country	crossStreet	distance	formattedAddress	labeledLatLngs	lat	lng	neighborhood	postalCode	state
0	The Beekman, A Thompson Hotel	Hotel	123 Nassau St	US	New York	United States	Beekman St	182	[123 Nassau St (Beekman St), New York, NY 1003...	[{'label': 'display', 'lat': 40.7111725, 'lng'...	40.711173	-74.006702	NaN	10038	NY
1	Moxy NYC Downtown	Hotel	26 Ann St	US	New York	United States	NaN	283	[26 Ann St, New York, NY 10038, United States]	[{'label': 'display', 'lat': 40.71066152473766...	40.710662	-74.007969	NaN	10038	NY
2	Aloft Manhattan Downtown - Financial District	Hotel	49-53 Ann St	US	New York	United States	NaN	266	[49-53 Ann St, New York, NY 10038, United States]	[{'label': 'display', 'lat': 40.71039382975258...	40.710394	-74.006704	NaN	10038	NY
3	Millennium Hilton	Hotel	55 Church St	US	New York	United States	at Fulton St	406	[55 Church St (at Fulton St), New York, NY 100...	[{'label': 'display', 'lat': 40.711114, 'lng':...	40.711114	-74.010333	Financial District	10007	NY
4	Artezen Hotel	Hotel	24 John St	US	New York	United States	NaN	420	[24 John St, New York, NY 10038,	[{'label': 'display', 'lat': 40.709585, 'lng':...	40.709585	-74.008780	NaN	10038	NY

Data downloaded or scraped from the Foursquare were combined into 3 tables. The separation of table is accepted because the target of the project is only to analyze the hotel.There were a lot of missing values even in the latest version, it may be raised from lack of record keeping. The missing values of the neighborhood is important to the analysis of the location of the hostel which is shoved by the classification of the postal code.
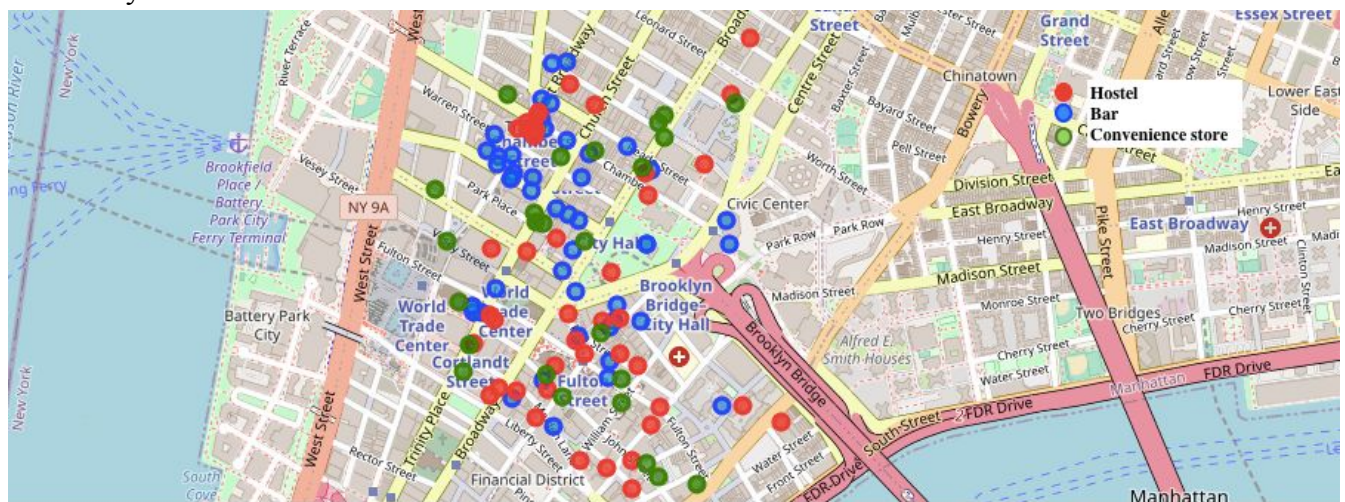
Manhattan	Central Harlem	10026, 10027, 10030, 10037, 10039
	Chelsea and Clinton	10001, 10011, 10018, 10019, 10020, 10036
	East Harlem	10029, 10035
	Gramercy Park and Murray Hill	10010, 10016, 10017, 10022
	Greenwich Village and Soho	10012, 10013, 10014
	Lower Manhattan	10004, 10005, 10006, 10007, 10038, 10280
	Lower East Side	10002, 10003, 10009
	Upper East Side	10021, 10028, 10044, 10065, 10075, 10128
	Upper West Side	10023, 10024, 10025
	Inwood and Washington Heights	10031, 10032, 10033, 10034, 10040

(Department of Health,2020)

From the table of postal code of the Department of Health in New York. The postal code of the data can be transformed at neighborhood as below.

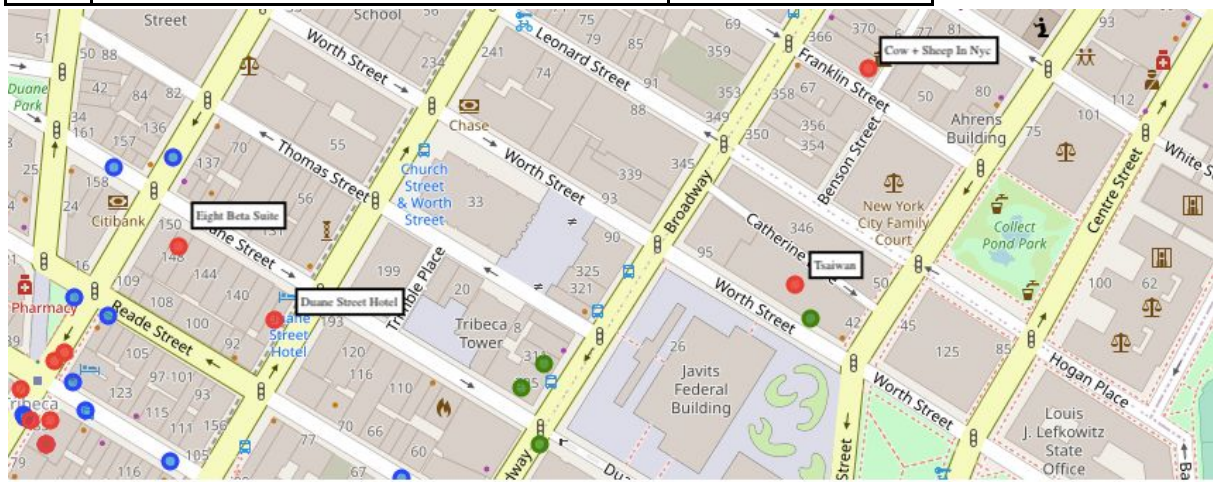|	name	address	district	id
0	The Beekman, A Thompson Hotel	123 Nassau St	Lower Manhattan	56d8c0f8498edb854f926e6a
1	Moxy NYC Downtown	26 Ann St	Lower Manhattan	5bd4cc646adbf5002c1ced5c
2	Aloft Manhattan Downtown - Financial District	49-53 Ann St	Lower Manhattan	547dc381498ec37f84f01439
3	Millennium Hilton	55 Church St	Lower Manhattan	510ad6e2e4b0a2ecec03b322
4	Artezen Hotel	24 John St	Lower Manhattan	5a91fa58e679bc57ca94db72
5	Duane Street Hotel	130 Duane St	Greenwich Village and Soho	4ae77379f964a5206cab21e3

Data analysis:

From the map above, The red marker is the hostel/hotel,the blue marker is the bar and the green marker is the convenience store. The hotels are all located in Manhattan and the hostel and The bar are close. There are 42 hotels in this area. The hostel surrounded by the bar and convenience store will be first selected. The hostels on west Broadway are close to the bars. There are at least 20 bars close to the hostels at Broadway.Also, they are also equipped with

the convenience store. Therefore, The Hotel at west Broadway will be firstly analyzed. These hostels are listed as follows.

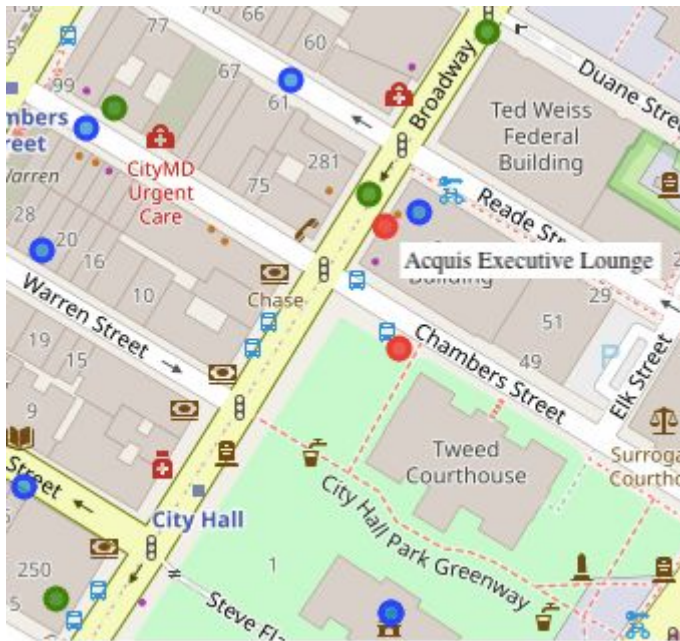|	Name	Address
12	Aka Tribeca	85 W Broadway
16	Smythe Thompson Hotel	86 W Broadway
18	Smyth Hotel	85 W Broadway
19	The Frederick Hotel	95 W Broadway
20	Cosmopolitan Hotel - TriBeCa	95 W Broadway
25	The Frederick Hotel	95 West Broadway
40	Red lipstick	95 W Broadway

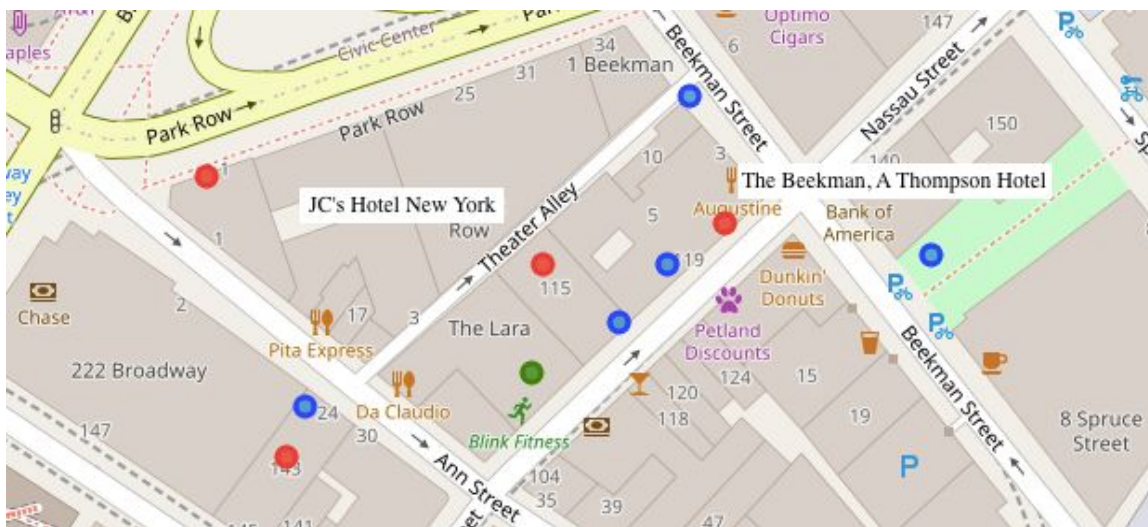| Name	Address	District
Duane Street Hotel	130 Duane St	Greenwich Village and Soho
Eight Beta Suite	146 Duane St Apt 5A	Greenwich Village and Soho
Cow + Sheep In Nyc	2-8 Cortlandt Alley	Greenwich Village and Soho
Tsaiwan	95 Worth St	Greenwich Village and Soho

Secondly, There are 4 hotels located at Greenwich Village and Soho. which is shown above. Only the
Duane Street Hotel and Eight Beta Suite achieved the requirement, close to the bar and the convenience store. Therefore. These 2 hostels will also be evaluated.

Also, The Four Season Hotel and Millennium Hilton as a big brand and which also access the requirement will also be selected.

The Acquis Executive Lounge has a good package.

Also nice package for the JC's Hotel New York and The Beekman, A Thompson Hotel

Result:
This part will deal with the evaluation of the hotel above by checking their rating.

Hostel in West Broadway	
Aka Tribeca	has not been rated yet.
Smythe Thompson Hotel	has not been rated yet.
Smyth Hotel	has not been rated yet.
The Frederick Hotel	8.2
Cosmopolitan Hotel - TriBeCa	6.1
The Frederick Hotel	has not been rated yet.
Red lipstick	has not been rated yet.
Greenwich Village and Soho	
Duane Street Hotel	6.8
Eight Beta Suite	has not been rated yet.
Particular selected hotels	
Four Seasons Hotel	9.2
Millennium Hilton	7.0
Acquis Executive Lounge	has not been rated yet.
JCs Hotel New York	has not been rated yet.
The Beekman, A Thompson Hotel	has not been rated yet.

<u>The K-Clustering</u>
Then, from the selected hostel above, many of them are located in lower manhattan. That may be too concentrated of the clutter group. Therefore, i re-grouped the selected hostel by their street as follow:

	street	Hotel	Latitude	Longitude
0	Barclay	1	40.707314	-74.005450
1	Broadway	1	40.712842	-74.007740
2	Church St	1	40.707800	-74.012900
3	Greenwich Village and Soho	2	40.715858	-74.007446
4	Nassau street	2	40.709300	-74.008700
5	West Broadway	7	40.715285	-74.009151

And then run the K-Clustering function and visualize it on the map. It shows the distribution of the selected group of hostels. It showed that Barclay,Broadway and Church St are one Cluster, Greenwich Village and Soho and Nassau street are one Cluster, and West Broadway as one group.

Cluster Labels	Street	Hotel
2	Barclay	1
2	Broadway	1
2	Church St	1
0	Greenwich Village and Soho	2
0	Nassau street	2
1	West Broadway	7

And here is the map show the Clustering result:

Discussion:

From the result above, it can be observed that many selected hotels have not been rated yet. However, it can still make some progress. If you want to stay in West Broadway, The Frederick Hotel should be a good choice based on our limited information. For Greenwich Village and Soho, it seems that it is not a place to compare with others. If the customer doesn't want to live in a crowded bar area, Four Seasons Hotel and Millennium Hilton would be recommended. Also, It can be observed that in the particular area, The hotel is quite close to the bar. it may be due to the complement relationship between these 2 services.

Difficulty:
Data searching and clearing is time-consuming. My original idea is to find out the distribution of the Michelin restaurant in Hong Kong/Tokyo. However, there are not the categories of "Michelin" in the foursquare. The data from foursquare.com is not enough for doing this research, there are only a few ratings of the hotel that can be used:(

Conclusion:
All in All, this project is finished. If someone follows the suggestion of this report which I suppose no one will do, please tell me about the experience. there are also some new ideas after doing this report. For example, is there a positive relationship between the number of the hostel and the bar. Does the hostel close to the bar will have higher attendance than the hotel routine from the bar? I think it is an interesting question to investigate. I hope you would like this project:)