

FINAL REPORT

Capstone Project: The Battle of Neighbourhoods

Introduction:

Since the New York City's is the one of the largest city in the United States with diverse demographic and ethnicity. As the international immigration is raising every year in New York City and now it is home to nearly 8.3 million people in 2019, accounting for over 40% of the population of New York State and a slightly lower percentage of the New York metropolitan area, home to approximately 23.6 million. Over the last decade the city has been growing faster than the region.

This city has also been a main entry point for immigrants. The densely populated immigrants neighbourhood is termed "melting pot". Since this city's population is dense, so as the neighbourhood must be dense. Since this population ethnically diverse, so does the people culture and their traditions. Thus, people with different culture and tradition have different choice of food items and cuisines. Furthermore, there is an opportunity for different restaurants and food places such as Indian, French, etc. In current time, as the Indian cuisines are getting the popularity. People in New York City are trying reach out restaurants with Indian cuisines.

Problem:

To find the answers to the following questions:

- Q1) List and visualize all main parts of New York City that has great Indian restaurants.
- Q2) what is best location in New York City for Indian Cuisine?
- Q3) which is the best place to stay if you prefer Indian Cuisine?

Data Section:

The demography of the New York City shows the diverse ethnicity and culturally diverse metropolis with its diverse food cuisine. There are lots of restaurants in New York City's categorized to different food cuisines such as Chinese, Indian, Italian etc.

For the project, we need to the following data:

- New York City dataset that comprises Neighbourhoods, Boroughs along with their latitude and longitude.
 - Data source: https://cocl.us/new_york_dataset
 - Description: This data set comprises the information required to do analysis. Using this data set we will explore the different neighbourhoods.
- We will all also identify the Indian restaurant in each neighbourhood of New York City.
 - Data source: Foursquare API
 - Description: Using Foursquare API we will obtain the venues list in each neighbourhood. We can filter these venues to get only Indian restaurants.
 - Using the data, we will plot neighbourhood by the Indian restaurant rating as well as boroughs by the rating on the map.

Methodology:

1. We will start by collecting the data regarding the New York City from the link: "https://cocl.us/new_york_dataset"
2. Then, we use the Foursquare API to find the venue for each of the neighbourhood.

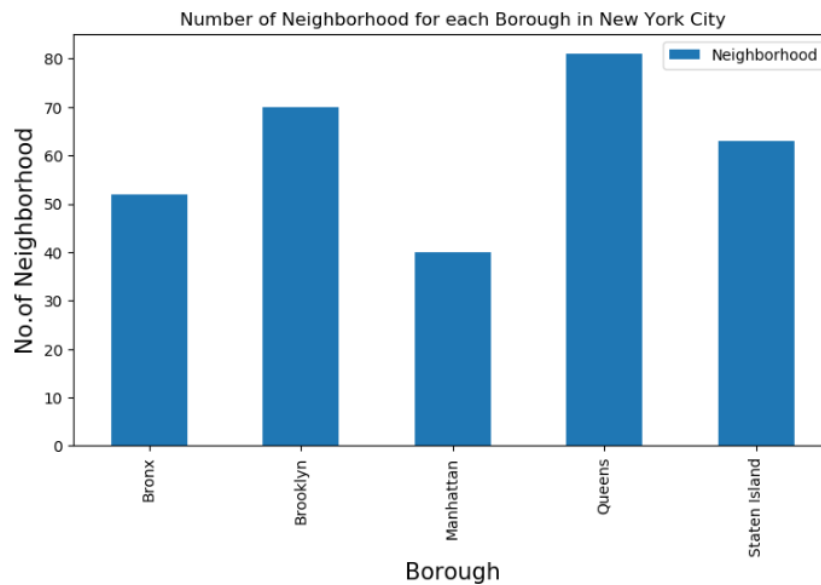
28	Bronx	Mt. Pleasant	40.813109	-73.810330
29	Bronx	Country Club	40.844246	-73.824099
30	Bronx	Parkchester	40.837938	-73.856003
31	Bronx	Westchester Square	40.840619	-73.842194
32	Bronx	Van Nest	40.843608	-73.866299
33	Bronx	Morris Park	40.847549	-73.850402
34	Bronx	Belmont	40.857277	-73.888452
35	Bronx	Spuyten Duyvil	40.881395	-73.917190
36	Bronx	North Riverdale	40.908543	-73.904531
37	Bronx	Pelham Bay	40.850641	-73.832074
38	Bronx	Schuylerville	40.826580	-73.826203
39	Bronx	Edgewater Park	40.821986	-73.813885

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In [44]: new_york_data.shape
```

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Out[44]: (306, 4)
```

The above results show that there are 306 neighbourhood in New York City.

```
#displays the plot
plt.show()
```



- Then, by using Foursquare API, we will find all the Indian Restaurants. Along with their Ratings, Tips, and Number of Likes.

Out[112]:

	Borough	Neighborhood	ID	Name	Likes	Rating	Tips
0	Bronx	Woodlawn	4c0448d9310fc9b6bf1dc761	Curry Spot	5	7.6	10
1	Bronx	Parkchester	4c194631838020a13e78e561	Melanies Roti Bar And Grill	3	5.8	2
2	Bronx	Spuyten Duyvil	4c04544df423a593ac83d116	Cumin Indian Cuisine	13	6.1	9
3	Bronx	Concourse	551b7f75498e86c00a0ed2e1	Hungry Bird	8	6.9	3
4	Bronx	Unionport	4c194631838020a13e78e561	Melanies Roti Bar And Grill	3	5.8	2
5	Bronx	Unionport	0	0	0	0.0	0
6	Brooklyn	Bay Ridge	4b5a4dc8f964a520a2bb28e3	Taj Mahal	38	8.4	26
7	Brooklyn	Brighton Beach	4af0d31bf964a5207ddf21e3	Pak Nasheman	9	7.5	4
8	Brooklyn	Flatbush	52213c4211d295d4c57a607c	Ashoka Grill	8	7.0	14
9	Brooklyn	Flatbush	564d283d498e6e851df79d87	Great Indian Curry	3	6.8	2
10	Brooklyn	East Flatbush	512a9ea9e4b004fb8eeb84e5	Silver Krust	12	8.1	3
11	Brooklyn	Kensington	4db0f4371e729fcc56497f20	Mashallah	19	7.5	7
12	Brooklyn	Kensington	4b718914f964a520c04b2de3	Madina Restaurant and Sweets	17	6.5	12
13	Brooklyn	Gowanus	52f18573498ec2c34e830ffd	Kanan's Indian Restaurant	23	7.7	8
14	Brooklyn	Fort Greene	57596dad498e732300496b23	Dosa Royale	75	8.7	22
15	Brooklyn	Clinton Hill	57596dad498e732300496b23	Dosa Royale	75	8.7	22
16	Brooklyn	Clinton Hill	568d3902498e619efcbc3f58	Spice & Grill	19	7.6	6
17	Brooklyn	Prospect Lefferts Gardens	4bb93b70cf2fc9b6fe64a002	Gandhi Fine Indian Cuisine	81	8.5	47
18	Brooklyn	Prospect Lefferts Gardens	4afdf78bf964a520862c22e3	King of Tandoor	25	7.3	23
19	Brooklyn	Ocean Hill	5539753f498edbae4746b67	Tandoori Masala	12	7.7	2

- Then plot a bar graph of Indian restaurant by neighbourhood as we well as boroughs.

plt.show()



```
plt.legend()
#displays the plot
plt.show()
```



- Then, we will sort data by neighbourhood and boroughs limiting the rating.

	Neighborhood	Average Rating
12	Civic Center	9.100000
69	Tribeca	9.100000
0	Astoria	9.000000
5	Blissville	9.000000
75	West Village	8.800000
44	Midtown South	8.800000
43	Midtown	8.800000
29	Gramercy	8.733333
25	Fort Greene	8.700000
11	Chelsea	8.700000

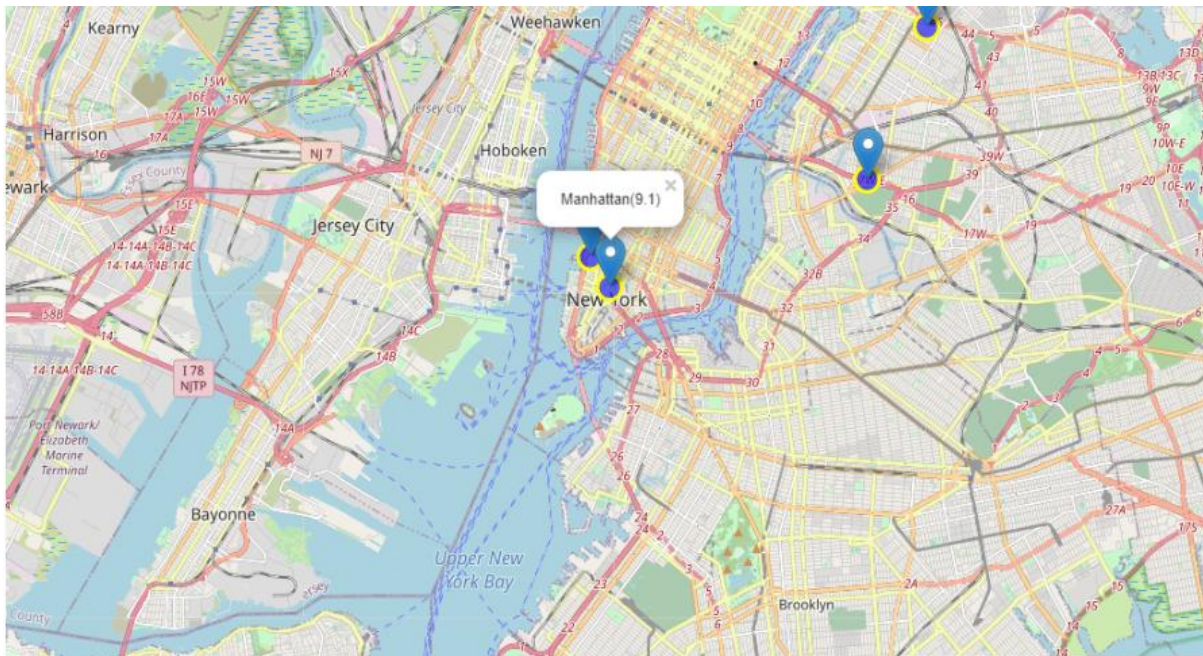
	Borough	Average Rating
2	Manhattan	8.210000
1	Brooklyn	7.700000
3	Queens	6.552113
0	Bronx	5.585714
4	Staten Island	3.533333

6. Then, we will consider the Neighbourhood and Borough with rating 9.0 and above.

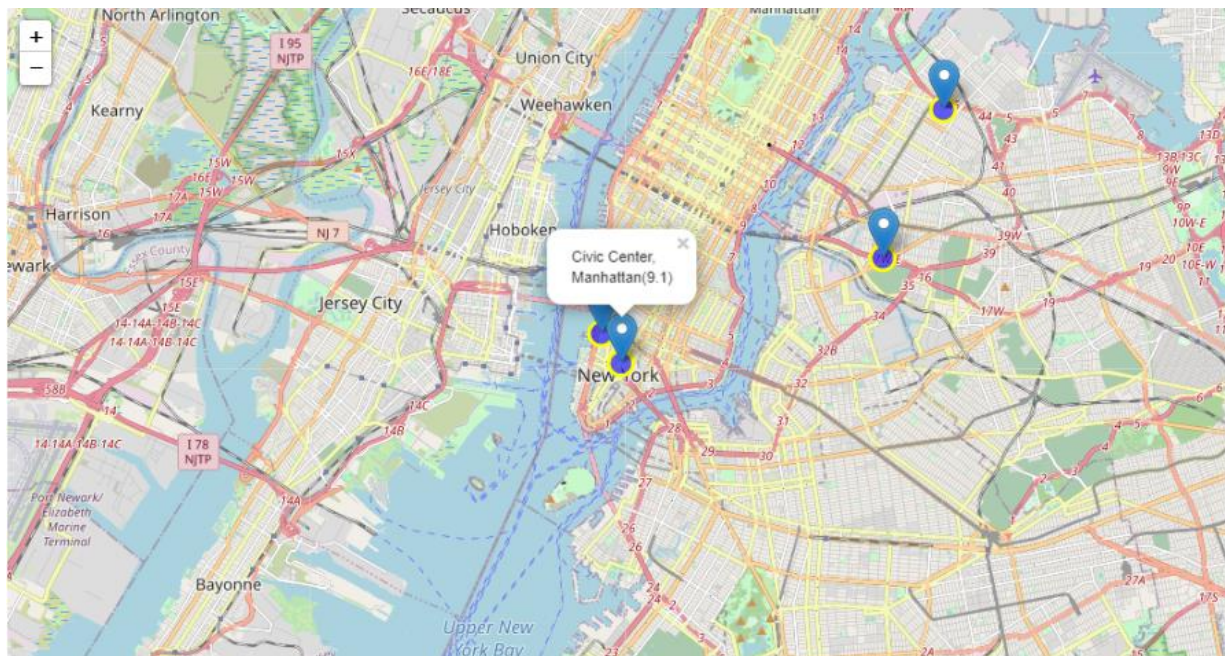
	Borough	Neighborhood	Latitude	Longitude	Average Rating
0	Queens	Astoria	40.768509	-73.915654	9.0
1	Queens	Blissville	40.737251	-73.932442	9.0
2	Manhattan	Civic Center	40.715229	-74.005415	9.1
3	Manhattan	Tribeca	40.721522	-74.010683	9.1

7. At last, we will use python's Folium library to visualize the Neighbourhoods and Borough based on average Rating.

Boroughs based on average rating:



Neighbourhoods based on average rating:



Result:

This shows the answers to the questions mentioned in the above section

1. The New York City got a lot of Indian restaurants with good rating.

	Borough	Neighborhood	Latitude	Longitude	Average Rating
0	Queens	Astoria	40.768509	-73.915654	9.0
1	Queens	Blissville	40.737251	-73.932442	9.0
2	Manhattan	Civic Center	40.715229	-74.005415	9.1
3	Manhattan	Tribeca	40.721522	-74.010683	9.1

2. Astoria (Queens), Civic Centre (Manhattan) are some of the good neighbourhoods for Indian cuisine.
3. From the above data, we can also find that Manhattan is the best place to have Indian Cuisine.

Conclusion:

This analysis can be improvised with lots of other techniques and tools. This data provides the list of the Indian restaurant with good rating along with the location. With this data, finding the answer to the question which were raise in the beginning section of the report. This provides a good approximation of places with good Indian restaurants.