FINAL REPORT

The Battle of Neighborhoods

Background

New York City is the most populous city in United States. It has a population of approximately 8.4 million over 300 square miles. There are about 20 million people in the metropolitan area. New York City is the financial, cultural, tourism, arts and entertainment centre of United States. It is the center for international diplomacy and also called capital of the world.

New York city consists of five boroughs (Brooklyn, Queens, Manhattan, The Bronx and Staten Island). It is also called as the gateway to legal immigration to United States. About 800 languages are spoken in New York, with that comes people of various cultures that brings diverse food, entertainment from across the world. More than 3.2 million residents of New York are born outside United States. Because of diversity in culture comes food from across the world that includes Indian, Italia, French Spanish and many others.

Discussion

The project will delve into data of New York City and will get into details specific to Indian culture related to (a) Indian restaurants across the city (b) most favorite location of the Indian restaurants (c) Areas that have potential Indian Restaurant market (d) Areas that do not have Indian restaurants (e) most desired location to stay if Indian food is preferred.

Data Description

For the purpose of project following data sources will be used to retrieve data.

(a) New York City data that lists out the Boroughs (administrative divisions), Neighborhoods and their latitude-longitude details

a. Web Source: https://cocl.us/new_york_dataset. This data will be utilized to explore neighborhoods of New York City

(b) Indian Restaurants in each neighborhood

a. Web Source: Foursquare API. By using Foursquare API all the venues can be obtained in each neighborhood and can be subsequently filtered specifically for Indian restaurants.

(c) Geospace data

a. Web source: https://data.cityofnewyork.us/City-Government/Borough-Boundaries/tqmj-j8zm The choropleth map will help visualize the Borough boundaries

Steps to Analyze Data

1. The initial step consists of data collection ogf New York city from the follow link "https://cocl.us/new_york_dataset"

2. Following that we find venues for each neighborhood.

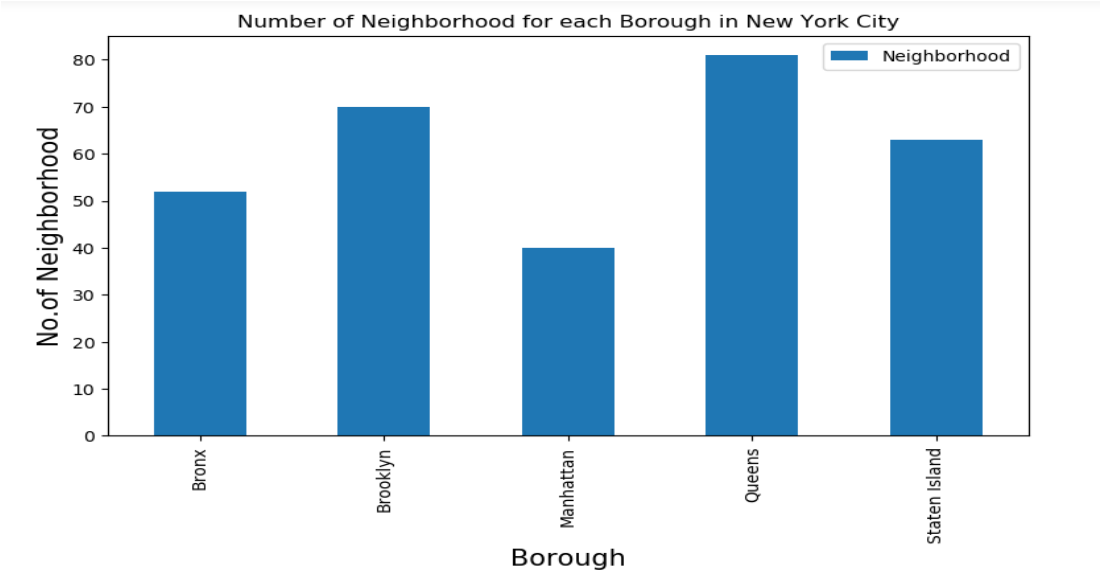
```
In [6]: new_york_data=get_new_york_data()

In [7]: new_york_data.head()
```

Out[7]:

	Borough	Neighborhood	Latitude	Longitude
0	Bronx	Wakefield	40.894705	-73.847201
1	Bronx	Co-op City	40.874294	-73.829939
2	Bronx	Eastchester	40.887556	-73.827806
3	Bronx	Fieldston	40.895437	-73.905643
4	Bronx	Riverdale	40.890834	-73.912585

```
In [8]: new_york_data.shape
Out[8]: (306, 4)
```

The result indicates there are 306 different neighborhoods in New York across five Boroughs.



3. Next, we will filter all the venues that have Indian restaurant for further analysis

```
( 1 / 306 ) Indian Resturants in Wakefield, Bronx:0
( 2 / 306 ) Indian Resturants in Co-op City, Bronx:0
( 3 / 306 ) Indian Resturants in Eastchester, Bronx:0
( 4 / 306 ) Indian Resturants in Fieldston, Bronx:0
( 5 / 306 ) Indian Resturants in Riverdale, Bronx:0
( 6 / 306 ) Indian Resturants in Kingsbridge, Bronx:0
( 7 / 306 ) Indian Resturants in Marble Hill, Manhattan:0
( 8 / 306 ) Indian Resturants in Woodlawn, Bronx:1
( 9 / 306 ) Indian Resturants in Norwood, Bronx:0
( 10 / 306 ) Indian Resturants in Williamsbridge, Bronx:0
( 11 / 306 ) Indian Resturants in Baychester, Bronx:0
( 12 / 306 ) Indian Resturants in Pelham Parkway, Bronx:0
( 13 / 306 ) Indian Resturants in City Island, Bronx:0
( 14 / 306 ) Indian Resturants in Bedford Park, Bronx:0
( 15 / 306 ) Indian Resturants in University Heights, Bronx:0
```

4. Using Fourquare API, we will find Ratings, Tips and number of Likes for all Indian restaurants

	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. Next step follows sorting Neighborhoods and Boroughs with respect to ratings for each.

	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. After sorting based on ratings, the neighborhoods with ratings greater than 9.0 are plotted on map.

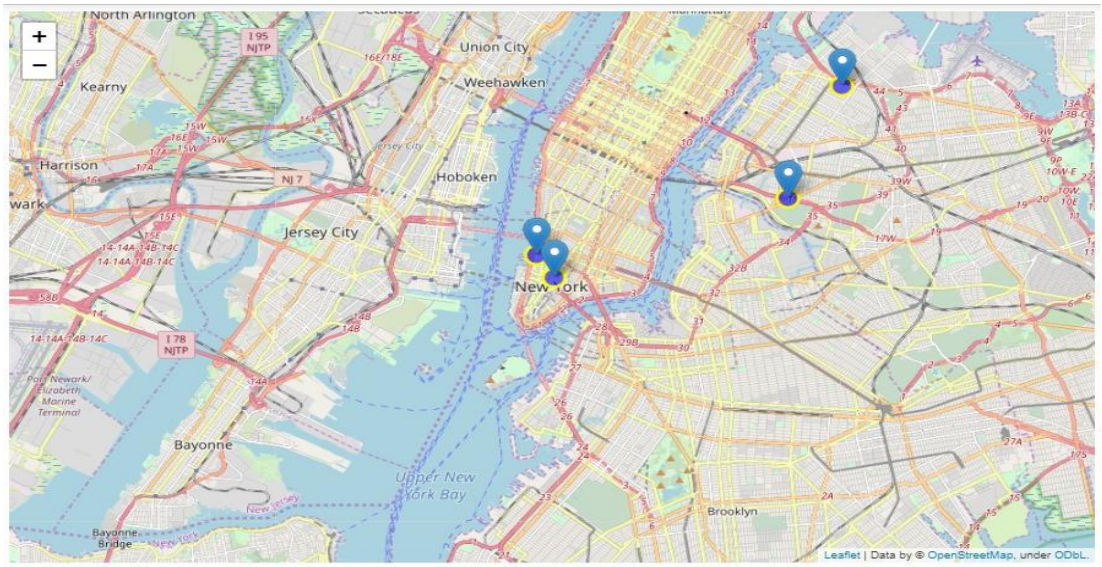
	Neighborhood	Average Rating
0	Astoria	9.0
5	Blissville	9.0
12	Civic Center	9.1
69	Tribeca	9.1

7. Merge the above dataset with original dataset to obtain laongitude and latitude.

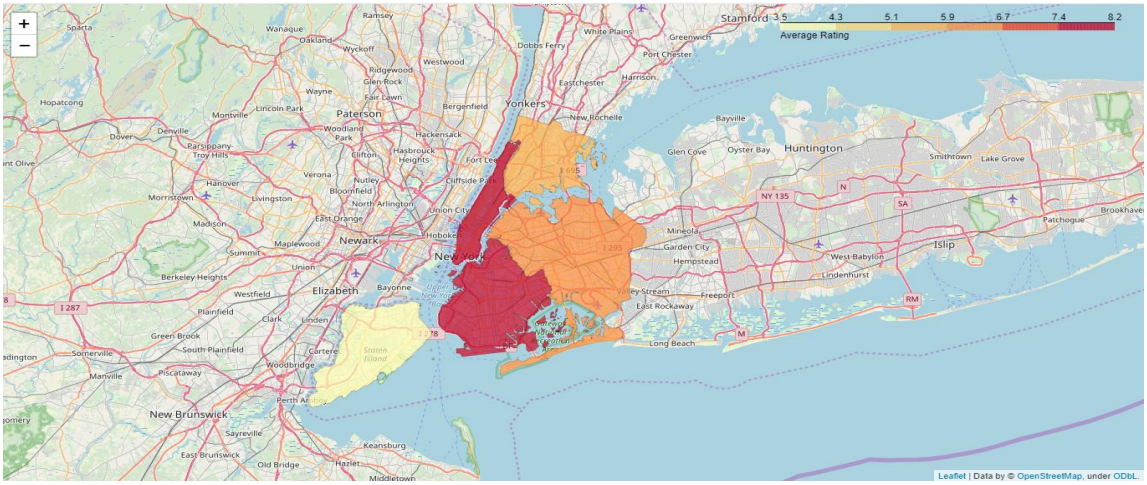
	Borough	Neighborhood	Latitude	Longitude	Average Rating
0	Queens	Astoria	40.768509	-73.915654	9.0
1	Queens	Blissville	40.737251	-73.932442	9.0
2	Manhattan	Civic Center	40.715229	-74.005415	9.1
3	Manhattan	Tribeca	40.721522	-74.010683	9.1

8. Visualize the neighborhood and Boroughs based on their latitude and longitude using Python's Folium Library

Neighbourhoods based on average rating:



Borough based on average rating:



Conclusion

Answers to the questions in the discussion section

1. List of locations in New York City that have great Indian restaurants.

	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), Blissville (Queens), Civic Center (Manhattan) were some of the best neighborhoods for Indian cuisine.
3. Manhattan has the potential Indian Restaurant Market.
4. Staten Island ranks last in average rating of Indian Restaurants.
5. Manhattan is the best place to stay if you prefer Indian cuisine.