

REPORT

CAPSTONE - THE BATTLE OF NEIGHBORHOODS

Introduction

New York is the largest city in the United States with a large population of immigrants. With an estimated 2020 population of 8,253,213 distributed over about 302.6 square miles (784 km²), New York City is also the most densely populated major city in the United States. New York City has been described as the cultural, financial, and media capital of the world, significantly influencing commerce, entertainment, research, technology, education, politics, tourism, art, fashion, and sports, and is the most photographed city in the world. Home to the headquarters of the United Nations, New York is an important center for international diplomacy, and has sometimes been called the capital of the world.

New York City is also called “melting pot” as it is very ethnically diverse. As many as 800 languages are spoken in New York, making it the most linguistically diverse city in the world. With its diverse culture, there are many restaurants in New York which serve many different cuisines.

Problem

To find the answers to the following questions:

1. What are best location in New York City for Indian Cuisine?
 2. Which areas have potential Indian Restaurant Market?
 3. Which all areas lack Indian Restaurants?
 4. Which is the best place to stay if you prefer Indian Cuisine?
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Data

For this project we need the following data:

- New York City data that contains list Boroughs, Neighbourhoods along with their latitude and longitude.

Data source : https://cocl.us/new_york_dataset

Description: This data set will be used to explore various neighbourhoods of New York City

- Indian restaurants in each neighbourhood of New York City.

Data source : Foursquare API

Description: By using this API we will get all the venues in each neighbourhood. We can filter these venues to get only Indian restaurants.

- GeoSpace data

Data source :

<https://data.cityofnewyork.us/City-Government/Borough-Boundaries/tqmj-j8zm>

Description: By using this geo space data we will get the New York Borough boundaries that will help us visualize the map using Folium.

Methodology

1. We collect the New York City data from "https://cocl.us/new_york_dataset"
2. Find all venues for each neighborhood using Foursquare API

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

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

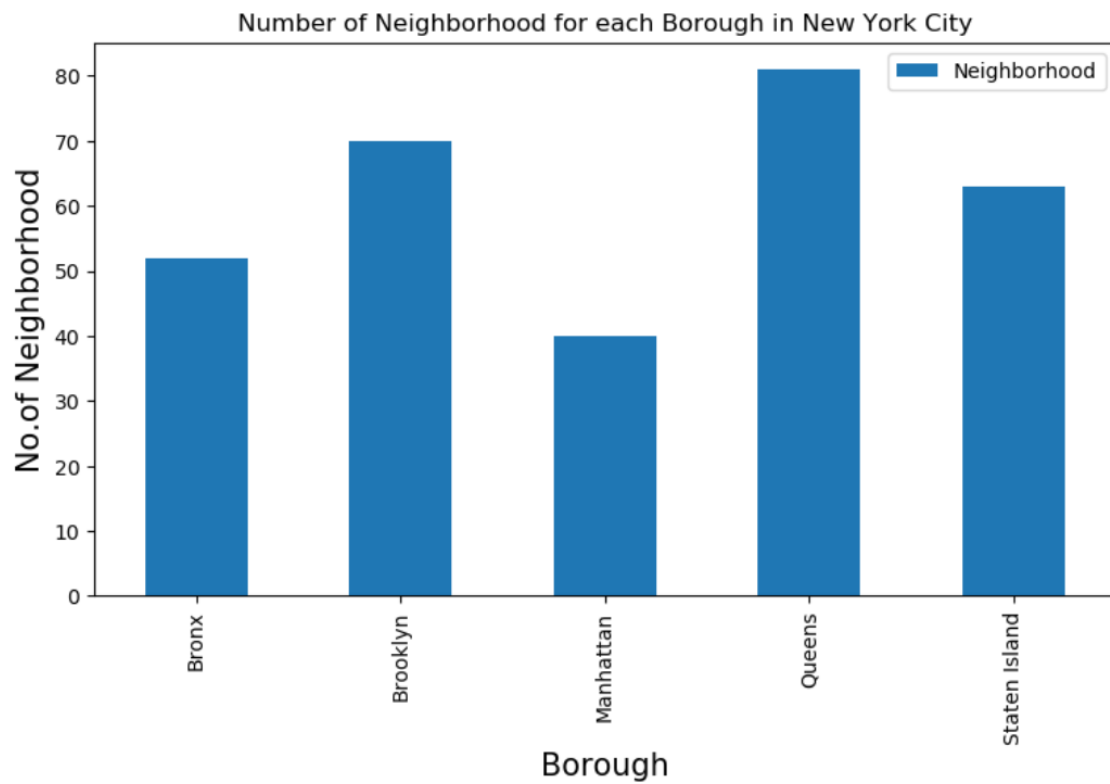
```
Out[ ]:
```

	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 [ ]: new_york_data.shape
```

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

The above result shows that there are 306 different Neighborhoods in New York.



3.All the Indian restaurants can be filtered for 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
( 16 / 306 ) Indian Resturants in Morris Heights, Bronx:0
( 17 / 306 ) Indian Resturants in Fordham, Bronx:0
( 18 / 306 ) Indian Resturants in East Tremont, Bronx:0
( 19 / 306 ) Indian Resturants in West Farms, Bronx:0
( 20 / 306 ) Indian Resturants in High Bridge, Bronx:0
( 21 / 306 ) Indian Resturants in Melrose, Bronx:0
( 22 / 306 ) Indian Resturants in Mott Haven, Bronx:0
( 23 / 306 ) Indian Resturants in Port Morris, Bronx:0
( 24 / 306 ) Indian Resturants in Longwood, Bronx:0
( 25 / 306 ) Indian Resturants in Hunts Point, Bronx:0
( 26 / 306 ) Indian Resturants in Morrisania, Bronx:0

```

4.The likes,ratings and tips could be found for the restaurants using Foursquare API.

	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.The Neighborhoods and Boroughs could be sorted.

	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.The neighborhoods with an average rating equal to or greater than 9.0 could be found.

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

7.This result could be combined with the New York data to obtain latitude and longitude.

	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.This data could be visualized on a map using the Folium library.

Results

- 1) Astoria(Queens), Blissville(Queens), Civic Center(Manhattan) are some of the best neighborhoods for Indian cuisine.
- 2) Manhattan is a popular market for Indian Cuisine.
- 3) Staten Island ranks last in average rating of Indian Resturants.
- 4) Manhattan is the best place to stay if you prefer Indian Cuisine.

Discussion

The purpose of this project was to find neighborhoods in New York City with good Indian restaurants and the best place for Indian restaurants in New York City.

Conclusion

This project has shown me how to use data science tools and Folium to analyze geo-spatial data.