



Capstone Project - The Battle of Neighborhoods

Analysis of Indian
Restaurants in New York

Background:

- The City of New York is the most populous city in the United States. With an estimated 2018 population of 8,398,748 distributed over a land area of about 302.6 square miles (784 km²), New York is also the most densely populated major city in the United States.
- A global power city, New York City has been described as the cultural, financial, and media capital of the world, and exerts a significant impact upon commerce, entertainment, research, technology, education, politics, tourism, art, fashion, and sports. ated major city in the United States.
- Indians in the New York City metropolitan region constitute one of the largest and fastest growing ethnicities in the New York City metropolitan area of the United States. The New York City region is home to the largest Indian American population among metropolitan areas by a significant margin.
- Indian cuisine is very popular among Asian Indians in the United States. The growth in the New York City metropolitan region's Asian Indian populace has been accompanied by growth in the number of Indian restaurants.
- In this capstone project we will explore the major part of the New York city with great Indian restaurants.

Data:

- To accomplish our task of exploring Indian restaurants in New work city, we need the datasets which covers the below:
- New York City data that contains list Boroughs, Neighborhoods along with their latitude and longitude.
 - Data Source: https://cocl.us/new_york_dataset
 - This data set contains the required information. And we will use this data set to explore various neighborhoods of New York city.
- Indian restaurants in each neighborhood of New York city.
 - Data source: Foursquare API
 - Description: By using this API we will get all the venues in each neighborhood. We can filter these venues to get only Indian resturants.
- 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 choropleth map.

Approach of the Study:

- Collect the New York city data from https://cocl.us/new_york_dataset
- Using FourSquare API we will find all venues for each neighborhood.
- Filter out all venues that are Indian Restaurants.
- Find ratings, tips and like count for each Indian Restaurants using FourSquare API.
- Using rating for each restaurant, we will sort that data.
- Visualize the Ranking of neighborhoods using folium library using python. (we will get the New York Borough boundaries that will help us visualize choropleth map and take proper decision for the entrepreneurs)

Business Problems:

- This will be applicable for the entrepreneurs who would like to set up an Indian restaurant in the New York city. Also it will be helpful for the people who want to live in NY and prefer an Indian Restaurant.
- **Questions to answer from datasets:**
 - What is the best location in New York City for Indian Cuisine?
 - Which areas have potential Indian Restaurant Market?
 - Which all areas lack Indian Restaurants?
 - Which is the best place to stay if I prefer Indian Cuisine?

Data Processing:

New York Location data:

- New York data set has the location information of New York Location. It has five Boroughs (Bronx, Manhattan, Brooklyn, Queens and Staten Island) along with their 306 Neighbourhoods with the Longitude and Latitude information

Indian Restaurants in New York:

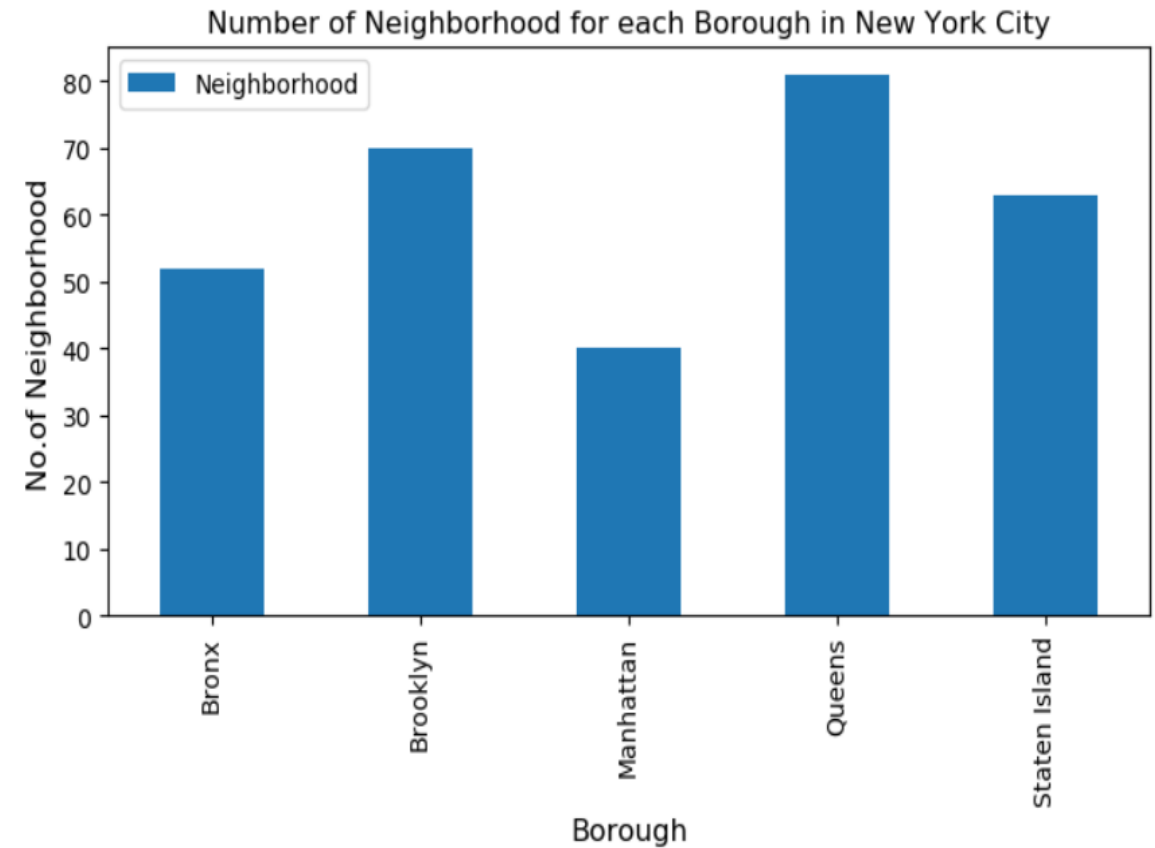
- Using FourSquare API we extracted the Indian restaurant from all the above neighborhoods. (Top 100 venues within a radius of 1000 metres for a given latitude and longitude – with setting radius=1000 and LIMIT=100 in API setting)
- We found 153 Indian restaurants from the API.

Ranking of NY Indian Restaurants:

- Using the FourSquare API we have extracted the rating related information for all mentioned Indian restaurant information in New York. Rating. The fields we got are Likes, Ratings (of Scale 10) and Tips

Analysis & Results: (1 of 7)

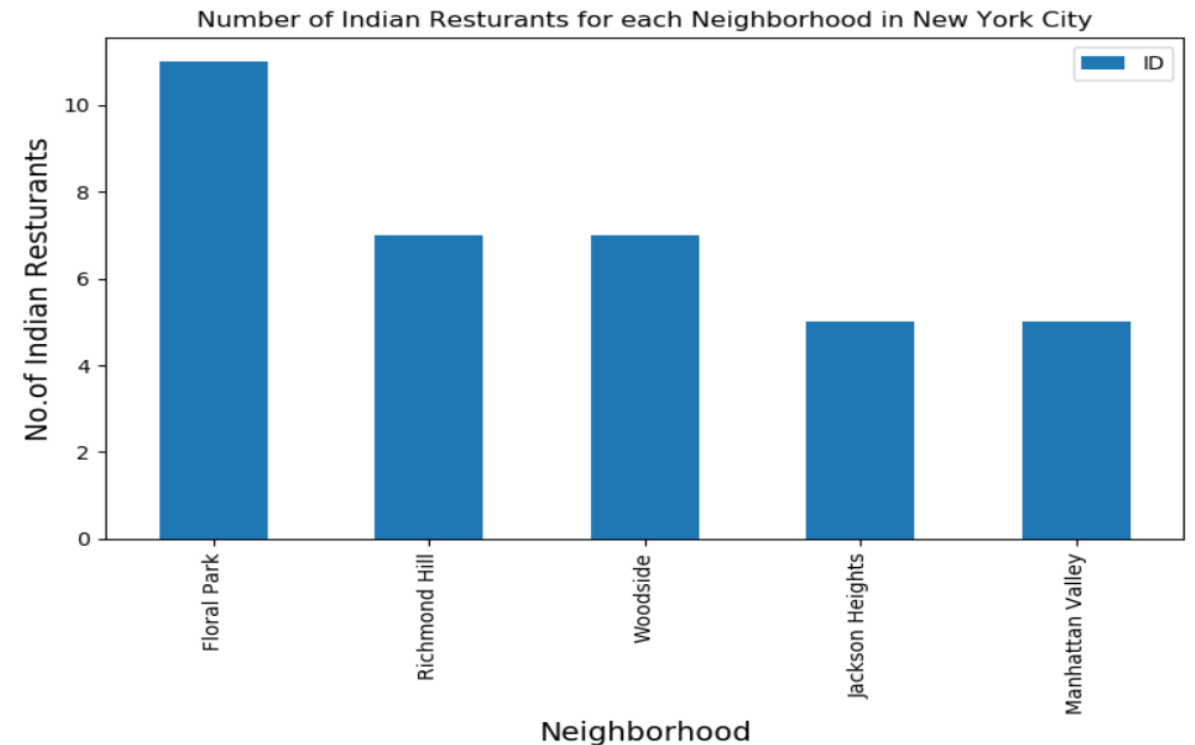
Map of the NY boroughs and Neighborhoods Distributions in NY



Analysis & Results: (2 of 7)

Indian Restaurants in NY boroughs and Neighborhoods

- Queens has the largest number of Indian restaurants
- Floral Park has the largest number of Indian restaurants (11)



Analysis & Results: (3 of 7)

Ranking of NY Indian Restaurant

- Using the FourSquare API we have extracted the rating related information for all mentioned Indian restaurant information in New York. Raring. The fields we got are Likes, Ratings (of Scale 10) and Tips

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indian_rest_stats_ny.head()
```

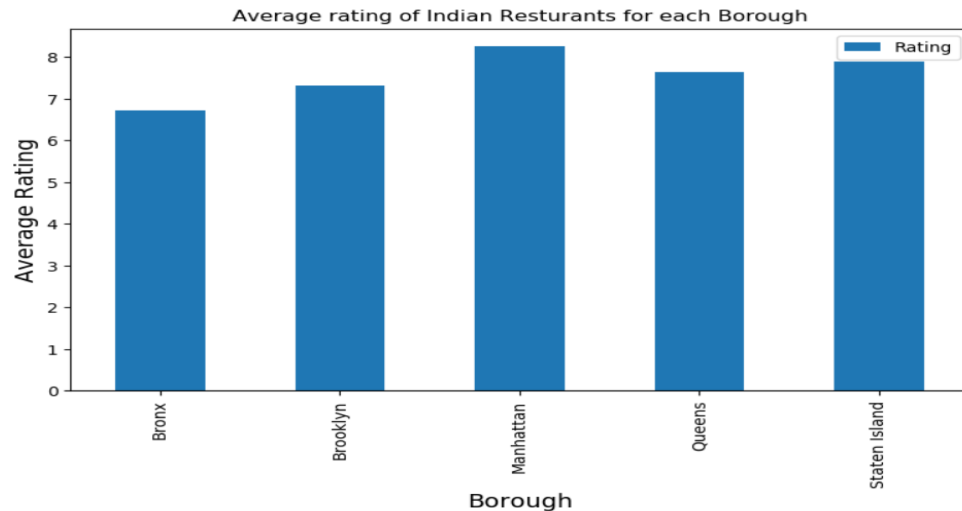
Unnamed: 0	Borough	Neighborhood	ID	dd	Name	Likes	Rating	Tips	
0	0	Bronx	Woodlawn	4c0448d9310fc9b6bf1dc761	1	Curry Spot	5.0	8.0	11.0
1	1	Bronx	Parkchester	4c194631838020a13e78e561	2	Melanies Roti Bar And Grill	3.0	5.9	2.0
2	2	Bronx	Parkchester	55dfa36a498e164ef19bef7b	1	Premium Sweets & Restaurant	18.0	7.4	5.0
3	3	Bronx	Spuyten Duyvil	4c04544df423a593ac83d116	1	Cumin Indian Cuisine	13.0	6.0	9.0
4	4	Bronx	Concourse	551b7f75498e86c00a0ed2e1	2	Hungry Bird	8.0	6.9	3.0

- The Restaurant “The Kati Roll Company” has the highest number of likes which is located in Midtown of Manhattan borough. (836 Likes)
- The Restaurant “Seva Indian Cuisine” has the highest rating which is located in Astoria of Queens borough. (9.2 of 10)
- The Restaurant “The Kati Roll Company” has the highest number of Tips which is located in Midtown of Manhattan borough. (259 Tips)

Analysis & Results: (4 of 7)

Average ratings of Indian Restaurants in Boroughs and Neighborhoods

	Borough	Average Rating
2	Manhattan	8.264286
4	Staten Island	7.900000
3	Queens	7.644068
1	Brooklyn	7.318519
0	Bronx	6.714286



	Neighborhood	Average Rating
0	Astoria	9.200000
6	Blissville	9.200000
64	Sunnyside	9.200000
68	Tribeca	9.000000
12	Civic Center	9.000000
30	Greenwich Village	8.900000
28	Gramercy	8.866667
74	West Village	8.850000
13	Clinton Hill	8.700000
42	Midtown	8.700000

Analysis & Results: (5 of 7)

Filtering the neighborhoods having a good average rating (more than 8.5)

- We got 16 neighborhoods which are having a good rating that is more than 8.5 in average

```
ny_neighborhood_stats
```

	Borough	Neighborhood	Latitude	Longitude	Average Rating	Label
0	Queens	Astoria	40.768509	-73.915654	9.200000	Astoria, Queens(9.2)
1	Queens	Blissville	40.737251	-73.932442	9.200000	Blissville, Queens(9.2)
2	Manhattan	Civic Center	40.715229	-74.005415	9.000000	Civic Center, Manhattan(9.0)
3	Brooklyn	Clinton Hill	40.693229	-73.967843	8.700000	Clinton Hill, Brooklyn(8.7)
4	Brooklyn	Fort Greene	40.688527	-73.972906	8.700000	Fort Greene, Brooklyn(8.7)
5	Manhattan	Gramercy	40.737210	-73.981376	8.866667	Gramercy, Manhattan(8.866666666666667)
6	Manhattan	Greenwich Village	40.726933	-73.999914	8.900000	Greenwich Village, Manhattan(8.9)
7	Manhattan	Midtown	40.754691	-73.981669	8.700000	Midtown, Manhattan(8.7)
8	Manhattan	Murray Hill	40.748303	-73.978332	8.600000	Murray Hill, Manhattan(8.6)
9	Queens	Murray Hill	40.764126	-73.812763	8.600000	Murray Hill, Queens(8.6)
10	Queens	Steinway	40.775923	-73.902290	8.600000	Steinway, Queens(8.6)
11	Queens	Sunnyside	40.740176	-73.926916	9.200000	Sunnyside, Queens(9.2)
12	Staten Island	Sunnyside	40.612760	-74.097126	9.200000	Sunnyside, Staten Island(9.2)
13	Manhattan	Sutton Place	40.760280	-73.963556	8.533333	Sutton Place, Manhattan(8.533333333333333)
14	Manhattan	Tribeca	40.721522	-74.010683	9.000000	Tribeca, Manhattan(9.0)
15	Manhattan	West Village	40.734434	-74.006180	8.850000	West Village, Manhattan(8.850000000000001)

Analysis & Results: (6 of 7)

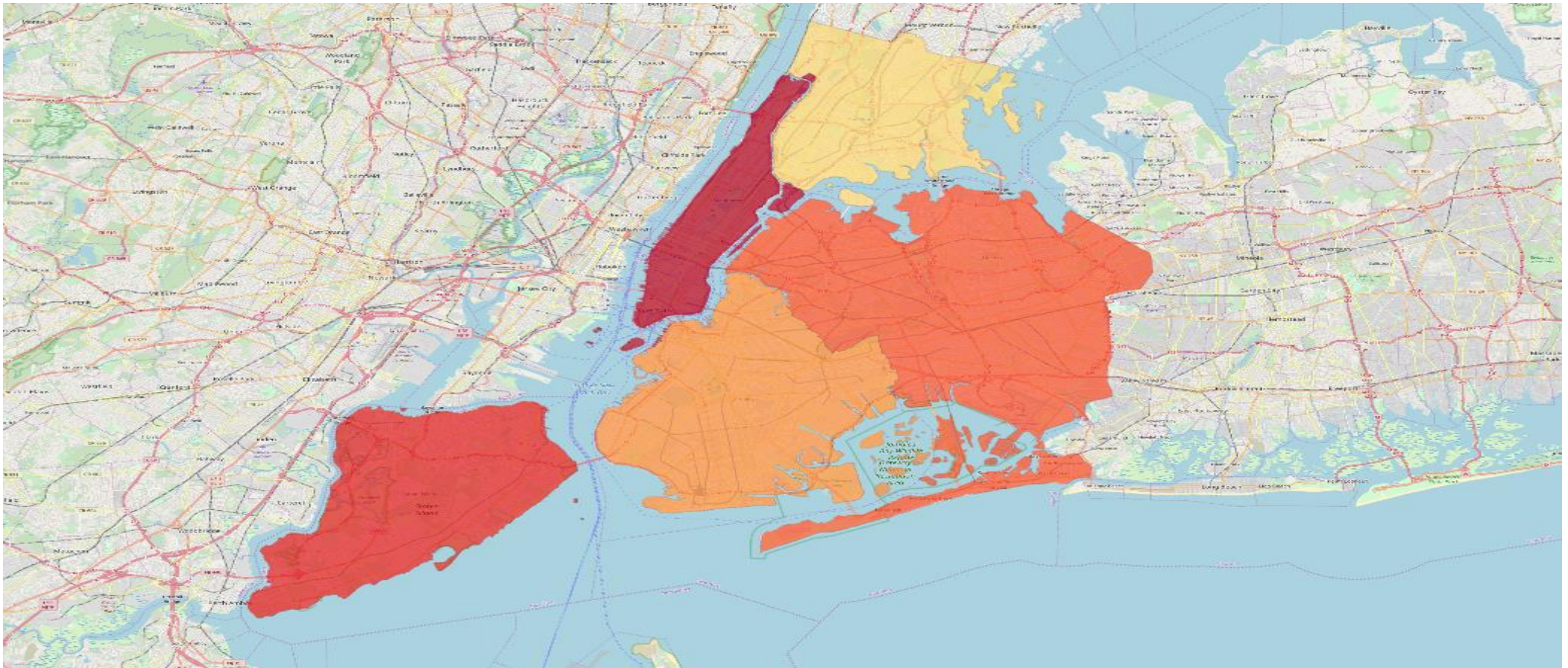
Plotting the Indian Restaurants having a good average rating (more than 8.5)



Analysis & Results: (7 of 7)

Identification of Borough based on their average ratings (more than 8.5 ratings restaurants)

- Manhattan (highlighted in deep red) has many good restaurants and Bronx (in yellow) lacks the same



Conclusion: Decision Points

It will be helpful for an entrepreneur who wish to keep a good Indian restaurant in the New York. He/she can identify the most demanding borough to set up an Indian restaurant and which area has a great scope.

Even the users' point of view, they can identify the best place to live in the New York city if they prefer Indian cuisine.

- Manhattan has many good Indian restaurants. It is the best place to stay if you prefer an Indian restaurant.
- Staten Island ranks lowest average ratings of Indian restaurants.
- Bronx is not having an Indian restaurant which is having more than 8.5 average rating.
- Manhattan have potential Indian Restaurant Market.
- Queens, Staten Island and Bronx lack of good Indian restaurants.
- Investors/entrepreneurs can look into the above areas for setting up Indian restaurants.