**Applied Data Science Capstone - The Battle of Neighbourhoods (Week 1)**

**Introduction**

New York City is an ethnically diverse city. It is the has a long history of international immigration. New York City was home to nearly 8.5 million people in 2014, 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. The New York region continues to be by far the leading metropolitan gateway for legal immigrants admitted into the United States. New York City has also been a major point of entry for immigrants; the term "melting pot" was coined to describe densely populated immigrant neighbourhoods on the Lower East Side. As many as 800 languages are spoken in New York, making it the most linguistically diverse city in the world. With its diverse culture, comes a diverse food scene. There are many restaurants in New York City offering international cuisines such as Chinese, Indian, and French etc.

**Business Problem**

To find the answers to the following questions:
1. List and visualize all major parts of New York City that have Indian restaurants.
2. Which is location in New York City that has the best restaurant offering Indian Cuisine?
3. Which areas have potential Indian restaurant market?
4. Which all areas in the city have less Indian Restaurants?
5. Which is the best place to stay if you prefer Indian Cuisine?

**Data Section**

There are many restaurants in New York City offering various kinds of cuisines such as Chinese, Indian, and French etc. For this project the data was sources from the following databases:
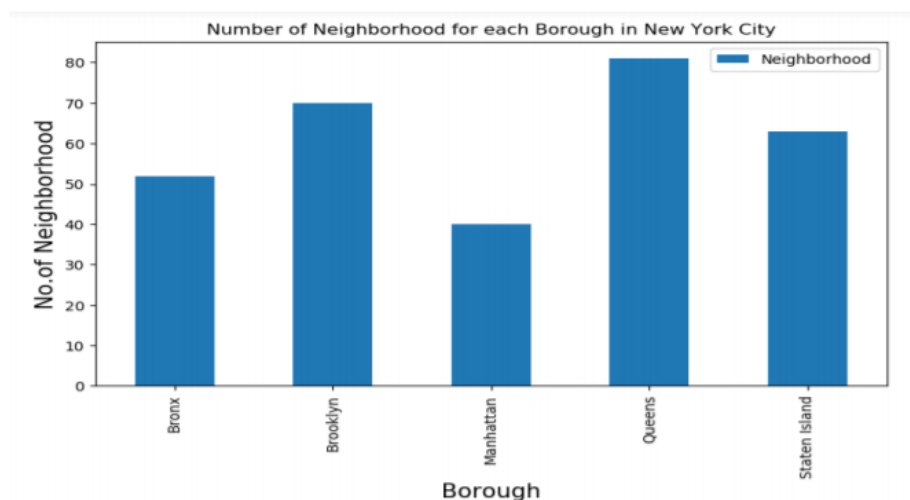1. New York City data that contains list Boroughs, Neighbourhoods along with their latitude and longitude.
   https://cocl.us/new_york_dataset
2. GeoSpace Data
   https://data.cityofnewyork.us/City-Government/BoroughBoundaries/tqmj-j8zm By using this geo space

data we will get the New York Borough boundaries that will help us visualize choropleth map

Using the Foursquare API we will obtain Indian restaurants in each neighbourhood of New York City.

**Methodology**

1. New York city data was acquired
2. All venues for each neighbourhood using Foursquare API



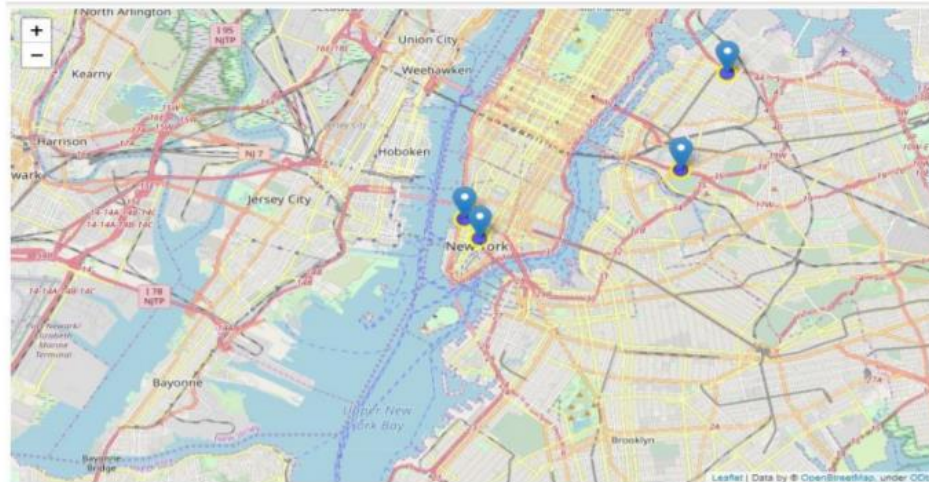Number of Neighborhood for each Borough in New York City

3. Venues with Indian restaurant were filtered out for further analysis.

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( 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. Next using Foursquare API, Ratings, Tips, and Number of Likes for all the Indian Restaurants were found out.

| | 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. Neighbourhoods and Borough the data keeping Ratings as the constraint were sorted.
6. Neighbourhoods and Borough based on average Rating using python's Folium library were visualized.



## Result

The business problem questions can now be answered.

1. The following location in New York City has 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) are some of the best neighbourhoods for Indian cuisine.
3. Manhattan have 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.

## Conclusion

There is always room for improvement and hence the above solution I have provided can also be improved for best results depending upon the data we have.