

An Indian Restaurant In New York

(IBM Data Science Capstone Project)

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Indian cuisine occupies a special place in the minds of food freaks across the world. So, opening an Indian restaurant in New York is a fruitful idea. This report would be helpful for those who are ready to open an Indian restaurant and for Indians who stay in the New York city.

Introduction:

In Coursera we work with real datasets to get experience of what a real data scientist go through in the real life. Objectives of the final assignments were to define a business problem, look for data in the web and, use Foursquare location data to compare different neighborhoods of New York city to figure out which neighborhood is suitable for starting a new Indian restaurant. In this project, I go through all the process in a step by step manner from problem designing, data preparation to final analysis and finally will provide a conclusion that can be leveraged by the business stakeholders to make their decisions.

New York City's demographics show that it is a large and ethnically diverse metropolis. It is the largest city in the United States with 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. Over the last decade the city has been growing faster than the region. The New York region continues to be by far the leading metropolitan gateway for legal immigrants admitted into the United States.

Throughout its history, New York City has been a major point of entry for immigrants; the term "melting pot" was coined to describe densely populated immigrant neighborhoods 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. English remains the most widely spoken language, although there are areas in the outer boroughs in which up to 25% of people speak English as an alternate language, and/or have limited or no English language fluency. English is least spoken in neighborhoods such as Flushing, Sunset Park, and Corona.

With its diverse culture, comes diverse food items. There are many restaurants in New York City, each belonging to different categories like Chinese, Indian, French etc.

So as part of this project, we will list and visualize all major parts of New York City that has great Indian restaurants.

Description of the Problem and Discussion of the Background:

Prospects of opening an Indian restaurant in New York city:

New York City comprises 5 boroughs sitting where the Hudson River meets the Atlantic Ocean. At its core is Manhattan, a densely populated borough that's among the world's major commercial, financial and cultural centers. Its iconic sites include skyscrapers such as the Empire State Building and sprawling Central Park. Broadway theater is staged in neon-lit Times Square. In this project we will go through a step by step process to decide where to open an Indian restaurant. We will analyse the real dataset of neighborhoods in New York City to identify the correct and profitable place for an Indian restaurant.

Target Audience:

Who will be more interested in this project? And who will be benefitted more?

1. Business personnel who wants to invest or open an Indian restaurant in New York city. This analysis will be a comprehensive guide to start or expand restaurants targeting the Indian crowd.
2. Freelancer who loves to have their own restaurant as a side business. This analysis will give an idea, how beneficial it is to open a restaurant and what are the pros and cons of this business.
3. Indian crowd who wants to find neighbourhoods with lots of options for Indian restaurants.
4. Business Analyst or Data Scientists, who wish to analyse the neighbourhoods of New York using Exploratory Data Analysis and other statistical & machine learning techniques to obtain all the necessary data, perform some operations on it and, finally be able to tell a story out of it.
5. For the food enthusiasts who are interested in multi cuisines.

Data Sources:

Data:

For this project we need the following data :

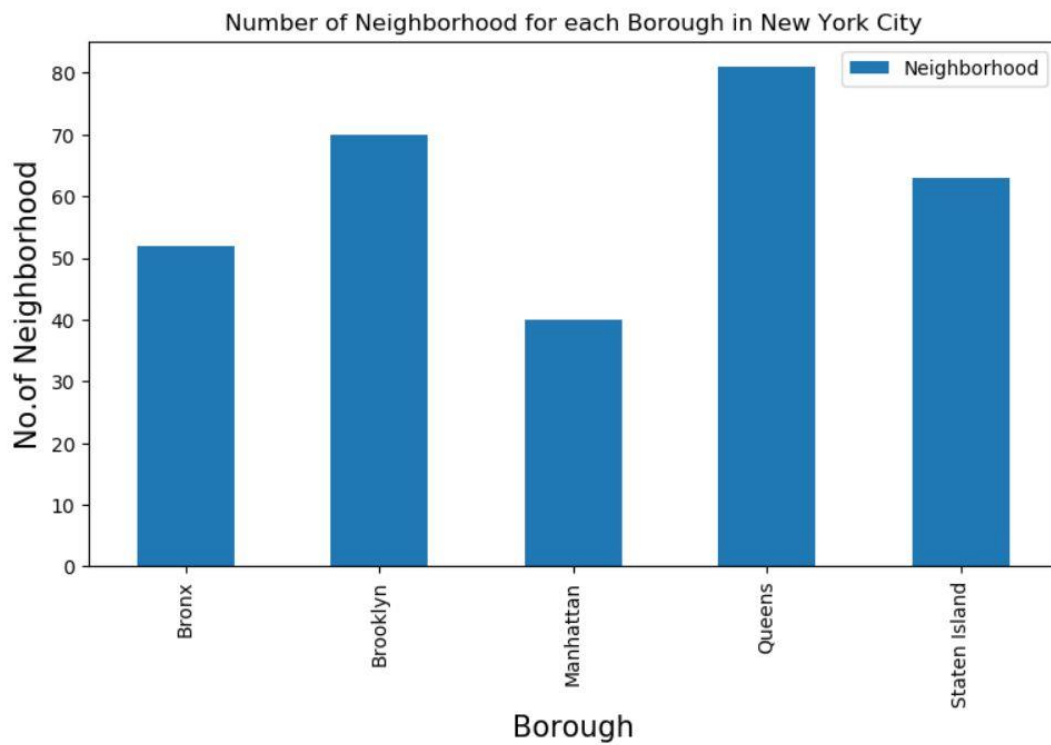
- New York City data that contains list Boroughs, Neighbourhoods along with their latitude and longitude.
 - Data source : https://cocl.us/new_york_dataset
 - Description : This data set contains the required information. And we will use this data set to explore various neighbourhoods of New York city.
- 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 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:

- 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 Resturants.
- Find rating , tips and like count for each Indian Resturants using FourSquare API.
- Using rating for each resturant , we will sort that data.
- Visualize the Ranking of neighborhoods using folium library(python)

Exploratory Data Analysis:

We used matplotlib library to explore the neighbourhoods of New York city



By using Foursquare we have explored some Indian venues in New York city and we plotted the number of Indian restaurants using bar graph.



We can see that Queens has the largest number of Indian restaurants in the New York city.

Now we used Foursquare API to explore ratings and likes for each Indian restaurant.

```
2]: indian_rest_stats_ny.head()
```

2]:

	Borough	Neighborhood	ID	Name	Likes	Rating
0	Bronx	Woodlawn	4c0448d9310fc9b6bf1dc761	Curry Spot	5	7.6
1	Bronx	Parkchester	4c194631838020a13e78e561	Melanies Roti Bar And Grill	3	6.2
2	Bronx	Spuyten Duyvil	4c04544df423a593ac83d116	Cumin Indian Cuisine	13	6.0
3	Bronx	Concourse	551b7f75498e86c00a0ed2e1	Hungry Bird	8	6.6
4	Bronx	Unionport	4c194631838020a13e78e561	Melanies Roti Bar And Grill	3	6.2

We took average ratings of the Indian restaurants

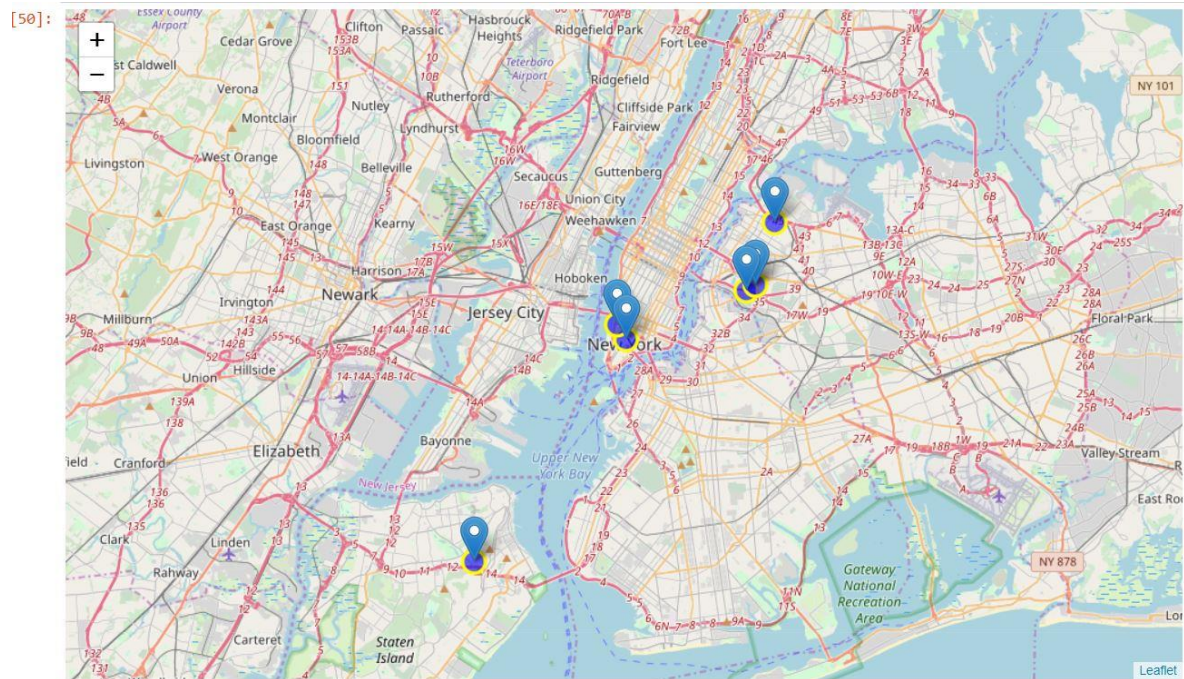
```
In [38]: ny_neighborhood_stats.sort_values(['Average Rating'],ascending=False).head(10)
```

Out[38]:

	Neighborhood	Average Rating
0	Astoria	9.0
13	Civic Center	9.0
66	Tribeca	9.0
5	Blissville	9.0
62	Sunnyside	9.0
72	West Village	8.8
67	Tudor City	8.7
43	Murray Hill	8.7
41	Midtown	8.7
11	Chelsea	8.7

Above are the top neighborhoods with top average rating of Indian restaurants

We will join the above dataset to original New York data to get the longitude and latitude. And then we will visualise a map using folium



Result section, Discussion section and Limitations:

Astoria(Queens), Blissville(Queens), Civic Center(Manhattan) are some of the best neighborhoods for indian cuisine.

Manhattan have potential Indian Resturant Market/

Staten Island ranks last in average rating of Indian Resturants.

Manhattan is the best place to stay if you prefer Indian Cuisine.

Limitations

The ranking is purely on basis of rating of resturants.

The accuracy of data depends purely depends on the data provided by FourSquare