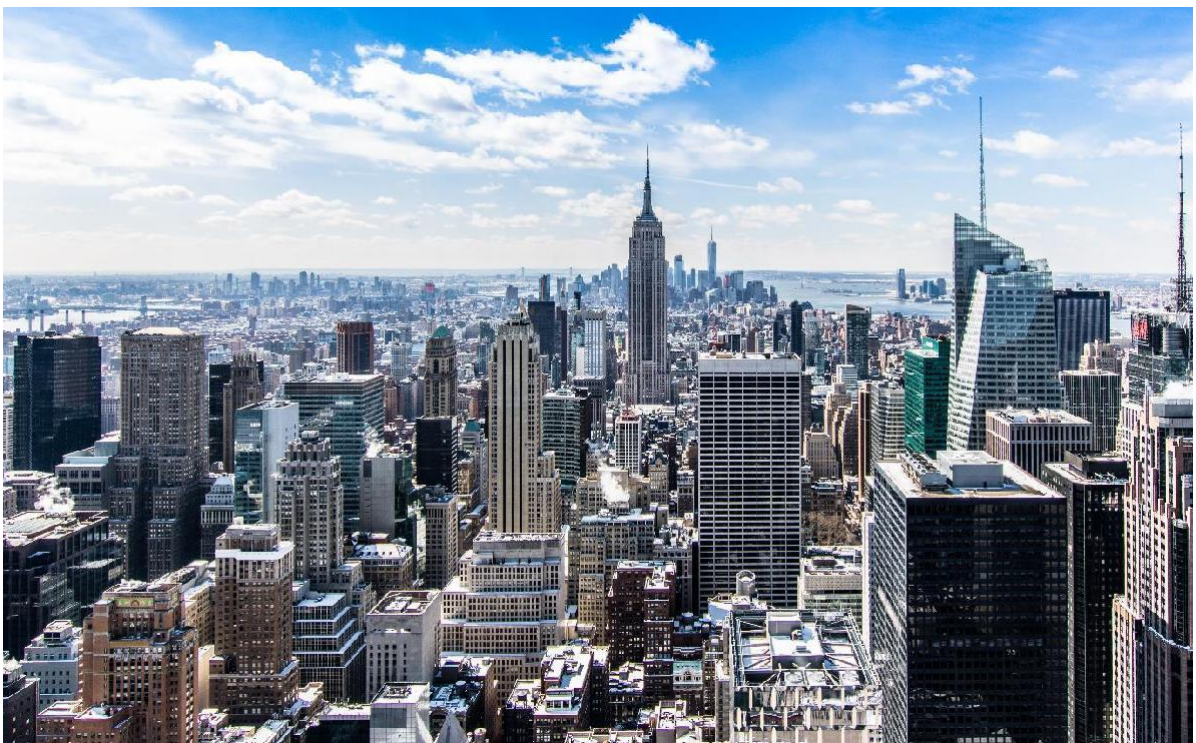# Coursera Capstone Project — The Battle of Neighbourhoods (Indian restaurants in NY)

IBM Data Science Professional Certificate Capstone

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As part of the final Capstone project, I have selected to explore Indian restaurants in one of my favorite city - New York.

Introduction

I have visited New York City (NY) in 1994 and it was amazing. I love NY a very much. NY demographics show that it is a huge and a very ethnically (200+ nations) diverse metropolis. It is the largest city in the USA with a long history of international immigration from almost countries around world. NY was home to 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 people. Over the last decade NY has been growing faster than the surrounding region. The Big NY continues to be by far the leading metropolitan gateway for legal immigrants admitted into the USA.

Target Audience of this project and some demographic facts

This project is particularly useful to developers and investors looking to open or invest in a Indian restaurant in the NY. Overall, NY is a great place to open a restaurant with an ethnical cuisine.

Throughout its history, NY has been a major point of entry for large crowd of immigrants from almost all parts of the world; 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 (but in US style and with many accents) remains the most widely spoken language, although there are areas in the outer boroughs in which only up to 25% of people speak English as an alternate language, and/or have limited or no English language fluency at all. English is least spoken language in several neighbourhoods such as: Flushing, Sunset Park, and Corona.

NY with it's extremely diverse culture, of course, comes with so wide diverse food items. There are numerous restaurants in NY, each belonging to different national categories like: Chinese, Indian, French, Russian, Thai, Spanish, etc. So as part of my project , I will list and visualize all major parts of NY that has great Indian restaurants. I work 5+ years with Indian consultants from Oracle and like Indian cuisine a very much. In 1993 I even have been visited the largest Indian restaurant in UK.

Data

For this project I need the following data:

- **New York City (NY) data that contains list Boroughs, Neighborhoods along with their latitude and longitude.**

NY data source located at: https://cocl.us/new_york_dataset

Description: This data set contains the all required information. And I will use this data set to explore various neighborhoods of NY.

- **Indian restaurants in each neighborhood of NY.**

Data source: Fousquare API

Description: By using this API I will get all the venues in each neighborhood. I 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 I will get the NY Borough boundaries that will help me visualize choropleth map.

Methodology

- Collect the NY data from https://cocl.us/new_york_dataset
- Using FourSquare API I 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 Indian resturant, I will sort that data.
- Visualize the ranking of neighborhoods using folium library(python).

Questions that can be asked using the above mentioned datasets

- What is best location in NY for Indian cuisine?
- Which areas have potential Indian restaurant Market?
- Which areas lack Indian restaurants?
- Which is the best place to stay if I prefer Indian cuisine?

Analysis

So I did the analysis and got exciting results. Below is example of NY city data for Bronx.

	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

Results

So there are total of 306 different Neighborhoods in New York.

You can see below that Queens has the highest number of Neighbourhoods.
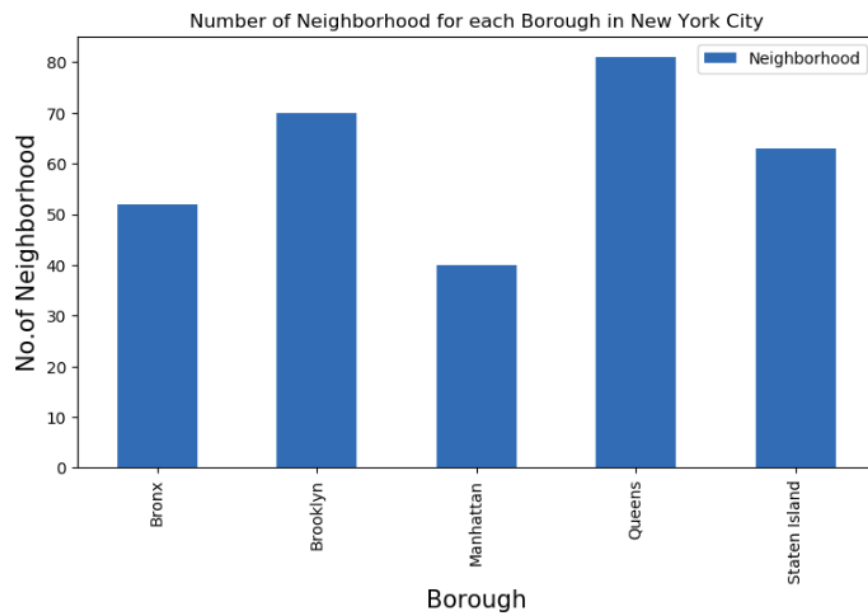
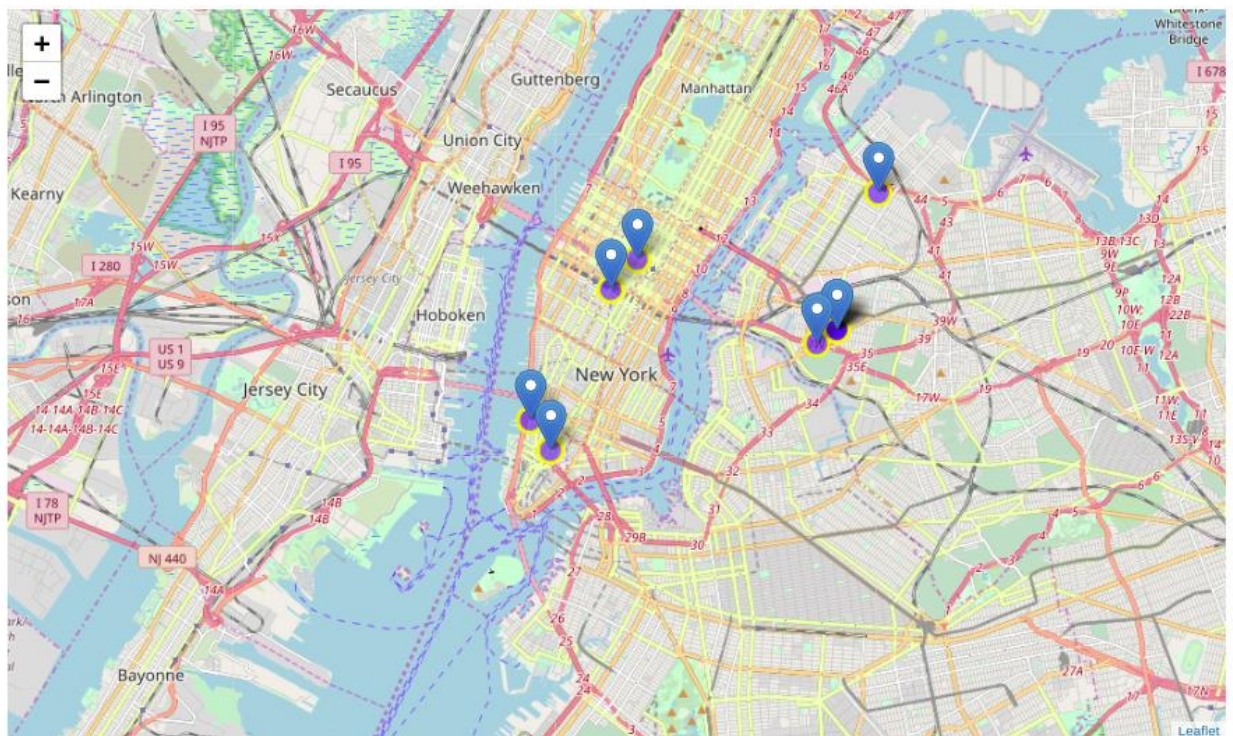Figure 1 – The number of Neighbourhoods for each borough in NY

Figure 2 – Borough Choropleth map based on average rating of Indian restaurants in NY.

Discussion

I have use the 2 main limitations

- The ranking is purely on basis of rating of resturants.
- The accuracy of data depends purely depends on the data provided by FourSquare.

It will be better to test FourSquare data more deeply.

Conclusion

Because the Manhattan has a minimum number of neighbourhoods and a good overall location, it has the highest potential Indian resturant market value in NY.