Capstone Project - The Battle of Neighbourhoods

Final Report

INTRODUCTION

Situated on one of the world's largest natural harbours, New York City, is the most populous city in the United States. Composed of five boroughs, Brooklyn, Queens, Manhattan, the Bronx, and Staten Island, each of which is a county of the State of New York. As many as 800 languages are spoken in New York, making it the most linguistically diverse city in the world. New York is home to more than 3.2 million residents born outside the United States. The city is renowned for its diversity, also reflected in food and beverage industry, with cuisines from France, Italy, India, Hungary, China and other parts of the world.

A business entrepreneur would like to expand his restaurant business to the United States and requested data that would help him make an informed decision on the best location in New York city to open a unique Indian restaurant.

APPROACH

To answer the above task, we will need answers to the following questions:

Q1 - List/visualise all major parts of the city of New York with restaurants serving Indian cuisine.

Q2 - Which areas lack restaurants serving Indian cuisine?

Q3 - Which areas have potential Indian cuisine market?

Q4 - What is the best location to open a new unique Indian cuisine restaurant?

DATA SECTION

New York City's demographics show that it is a large and ethnically diverse metropolis. With its diverse culture, comes diverse food items. There are many restaurants in New York City, each belonging to different categories like Chinese, Indian, and French etc.

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

neighbourhood. We can filter these venues to get only Indian restaurants.

  - GeoSpace data
  - Data source : https://data.cityofnewyork.us/City-Government/BoroughBoundaries/tqmj-j8zm
  - Description: By using this geo space data we will get the New York Borough boundaries that will help us visualize choropleth map.

1. We begin by collecting the New York city data from the following link:

"https://cocl.us/new_york_dataset"

2. We will find all venues for each neighbourhood using Foursquare API:

```
In [6]: new_york_data=get_new_york_data()
```
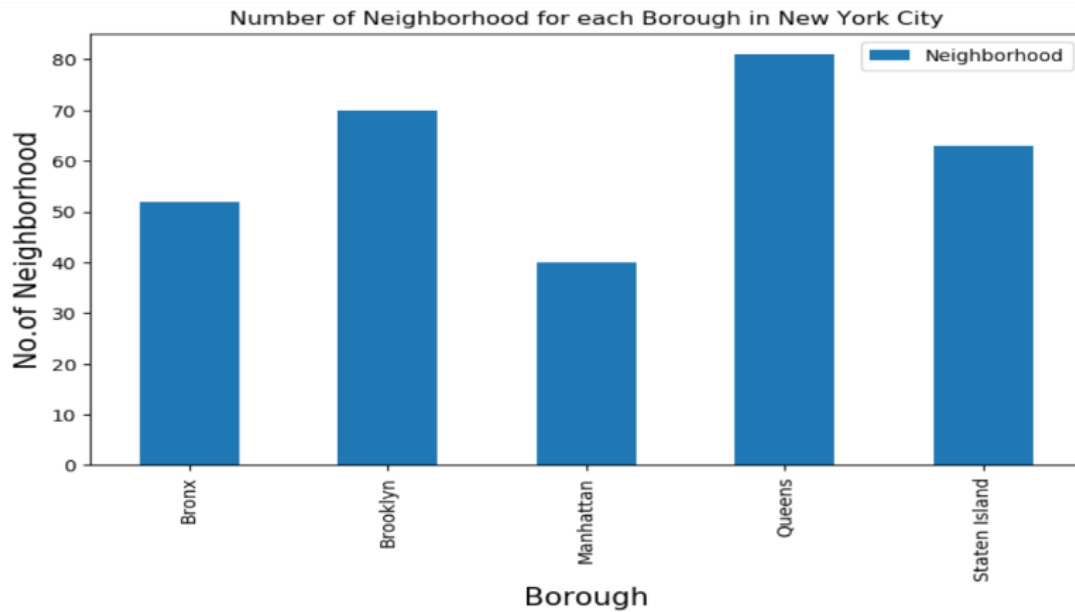
```
In [7]: new_york_data.head()
```

Out[7]:

	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 [8]: new_york_data.shape
```

Out[8]: (306, 4)

Number of Neighborhood for each Borough in New York City

3. We will then filter out all venues with Indian restaurant for further 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
```

4. Using Foursquare API, we will find the Ratings, Tips, and Number of Likes for all the Indian Restaurants.
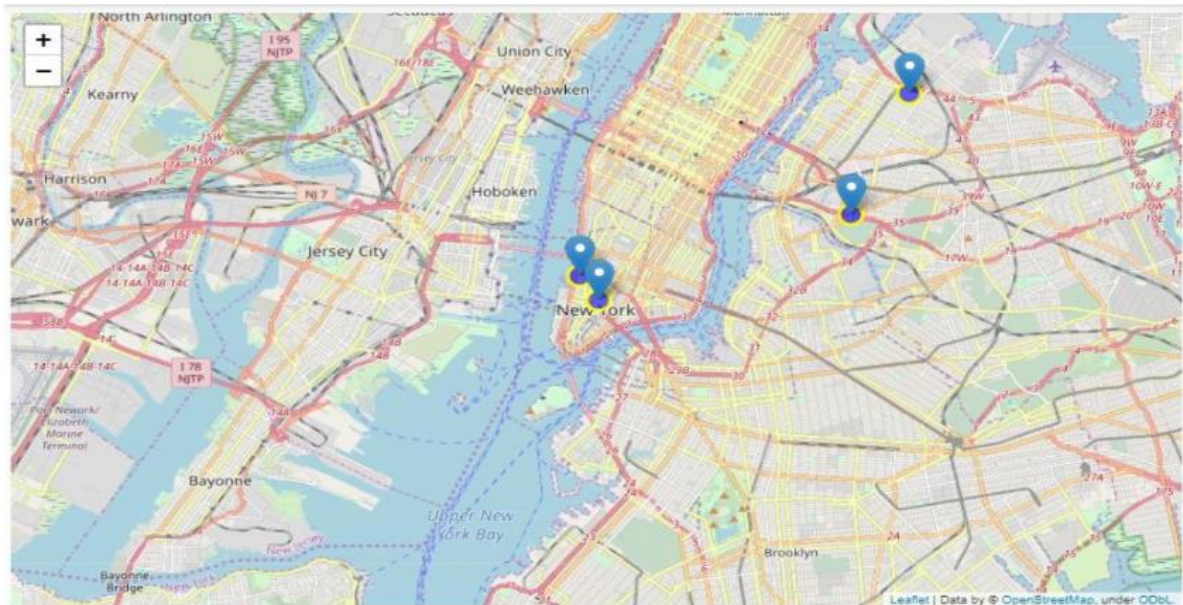
	Borough	Neighborhood	ID	Name	Likes	Rating	Tips
0	Bronx	Woodlawn	4c0448d9310fc9b6bf1dc761	Curry Spot	5	7.6	10
1	Bronx	Parkchester	4c194631838020a13e78e561	Melanies Roti Bar And Grill	3	5.8	2
2	Bronx	Spuyten Duyvil	4c04544df423a593ac83d116	Cumin Indian Cuisine	13	6.1	9
3	Bronx	Concourse	551b7f75498e86c00a0ed2e1	Hungry Bird	8	6.9	3
4	Bronx	Unionport	4c194631838020a13e78e561	Melanies Roti Bar And Grill	3	5.8	2

5. We will then sort Neighbourhoods and Borough the data keeping Ratings as the constraint.

	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. Finally, we will visualize the Neighbourhoods and Borough based on average rating using python's Folium library.

Borough based on average rating:

RESULT:

Q1 - List/visualise all major parts of the city of New York with restaurants serving Indian cuisine.

A1 - See the above maps.

Q2 - Which areas lack restaurants serving Indian cuisine?

A2 - Staten Island ranks last in average rating of Indian Restaurants.

Q3 - Which areas have potential Indian cuisine market?

A3 - Manhattan have potential Indian Restaurant Market.

Q4 - What is the best location to open a new unique Indian cuisine restaurant?

A4 - Astoria (Queens), Blissville (Queens), Civic Center (Manhattan) are some of the best neighbourhoods for Indian cuisine.

CONCLUSION:

The result is based upon currently available data. These can change over time so time span needs to be considered when using this report as a basis for any business decisions.