



# Find the Best borough location to Open an Indian Cuisine Restaurant in New York Area

Capstone Project - The Battle of Neighborhoods



# Background

- There are about 2.7 million Indians in the U.S. -- about half a million in New York City.
- Business decision makers need to consider different factors in finding the right location for the business, such as financial factors, market factors, and the factors that will affect their demand and revenue.
- This project can help those who are planning to open a new Indian cuisine restaurant in New York area.



# Business Problem

- To find the best borough in New York City to open an Indian Cuisine Restaurant. A suitable neighborhood which is close enough to some amenities and venues and has fewer competitors.
- An ideal location should be one where there is highest concentration of Indian Americans in New York.
- To extract the information such as which borough has the lowest number of restaurants per Indian American population, so that new venture would have minimum competition and maximum market potential.

# Data

- The elaborative New York City data containing the neighborhoods and boroughs, latitudes, and longitudes has been obtained from the data source:
- [https://cocl.us/new\\_york\\_dataset](https://cocl.us/new_york_dataset).
- To get authorized information about demography of the New York boroughs the US census bureau data from the Wikipedia page
- [https://en.wikipedia.org/wiki/Indians\\_in\\_the\\_New\\_York\\_City\\_metropolitan\\_region](https://en.wikipedia.org/wiki/Indians_in_the_New_York_City_metropolitan_region)
- Sent to approximately 295,000 addresses monthly (or 3.5 million per year), it is the largest household survey that the Census Bureau administers. Sent to approximately 295,000 addresses monthly (or 3.5 million per year), it is the largest household survey that the Census Bureau administers.
- All data related to locations and quality of Indian restaurants will be obtained via the Foursquare API utilized via the Request library in Python.



# Target Audience

- Business personnel who wants to invest or open an Indian restaurant in NY. This analysis will be a guide to start Indian restaurants targeting the Indian Americans.
- Freelancer who loves to have their own restaurant as a side business.
- Indian origin person who wants to move in the neighborhoods with lots of option for Indian restaurants in NY.

# Methodology

- The required data related to New York borough and neighborhood has been collected from [https://cocl.us/new\\_york\\_dataset](https://cocl.us/new_york_dataset) and then it was cleaned and processed into a data frame.
- Wikipedia webpage containing data regarding the New York Demographics has been scraped using urllib and BeautifulSoup libraries.
- Foursquare API has been used to locate all venues and then filtered by Indian restaurants. Ratings, tips, and likes by users will be counted and added to the data frame.
- The restaurant Likes and Tips data has been sorted based on rankings
- Finally, the data be will be visually assessed using graphing from various Python libraries.

# Analysis

Borough	Neighborhood	Latitude	Longitude
Bronx	Wakefield	40.894705	-73.847201
Bronx	Co-op City	40.874294	-73.829939
Bronx	Eastchester	40.887556	-73.827806
Bronx	Fieldston	40.895437	-73.905643
Bronx	Riverdale	40.890834	-73.912585

- A data frame is created with Borough, Neighborhood, Latitude and Longitude details of the New York City's neighborhood.
- Upon analysis, it is found that the data frame consists of 5 boroughs and 306 neighborhoods.
- Further, 'geopy' library is used to get the latitude and longitude values of New York City, which was returned to be Latitude: 40.71, Longitude: -74.01.

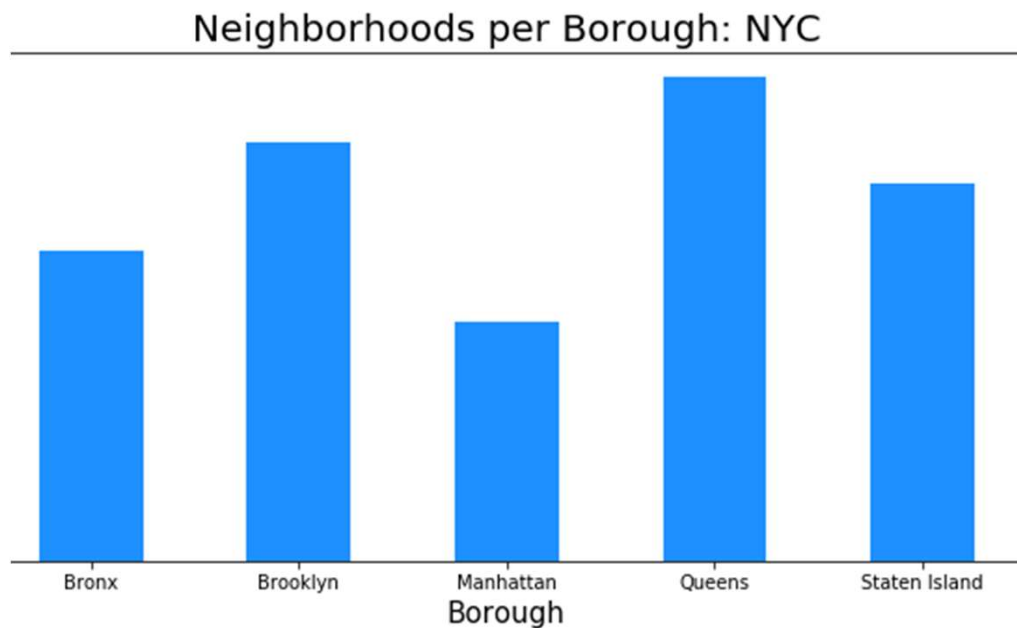
# Foursquare API

	id	name	categories	referralId	hasPerk	location.address
0	5072fe2eb0ed0fcce2497f30	Indian Biryani Delights (Cart)	'4bf58dd8d48988d1cb941735', [[{"id": "v-1592084761", "name": "F..."}]]	1592084761	False	Water
1	510aad1ae4b0bfb2583169b9	A Saffron Thread Fresh Indian	'4bf58dd8d48988d10f941735', [[{"id": "v-1592084761", "name": "I..."}]]	1592084761	False	98 Chambers
2	4a948b83f964a520f32120e3	Indian Express	'4bf58dd8d48988d10f941735', [[{"id": "v-1592084761", "name": "I..."}]]	1592084761	False	18 Murray
3	574eab2a498e3f5530cfdbca	Indian Beautiful Art (IBA) Crafts PVT Ltd	'4bf58dd8d48988d103951735', [[{"id": "v-1592084761", "name": "C..."}]]	1592084761	False	100 Church
4	574e8ba2cd10da9c722374fb	Indian Beautiful Art (IBA) Crafts PVT Ltd	'4bf58dd8d48988d1f4941735', [[{"id": "v-1592084761", "name": "D..."}]]	1592084761	False	100 Church

- The Foursquare API is used to explore the neighborhoods for search query “Indian Restaurants”. To access the API, ‘CLIENT\_ID’, ‘CLIENT\_SECRET’ and ‘VERSION’ is defined.
- As a result, a data frame is created with all the Indian restaurants in New York City registered in Foursquare with their Foursquare Id, Name, Category, Latitude and Longitude details.

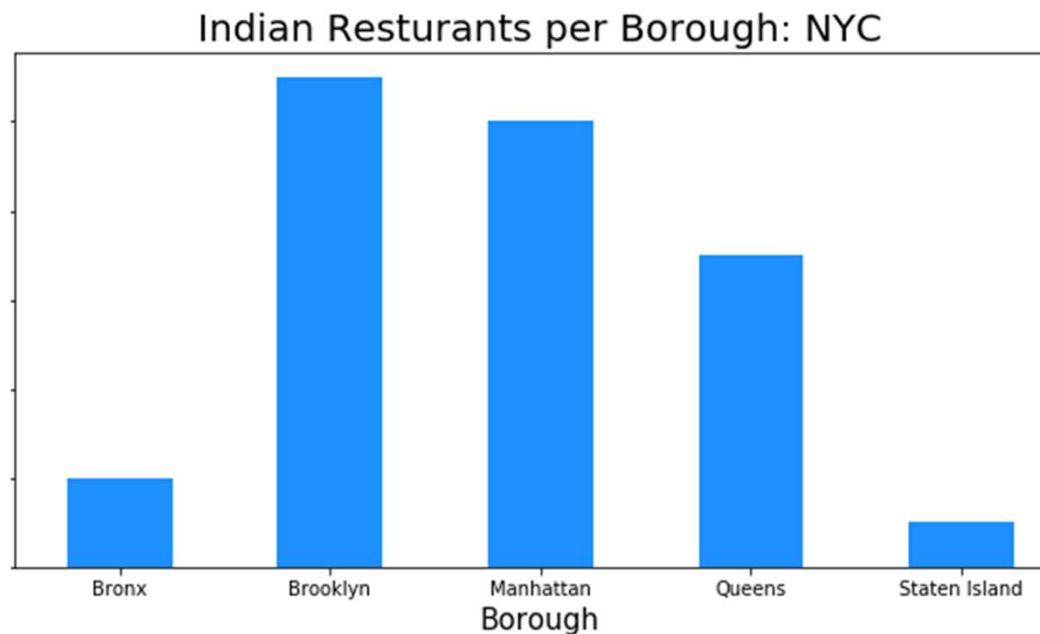


# Neighborhoods per boroughs



- Using Matplotlib a bar graph that shows Neighborhoods per boroughs in New York is plotted
- From the graph we can gather that there are maximum number of neighborhoods in Queens borough.

# Indian Restaurants per borough



- We know that there are maximum number of neighborhoods in Queens borough.
- And from the analysis we also know that the best rated restaurant is situated in Staten Island and not in Queens.
- So, using matplotlib restaurants per borough has been plotted.

# Hypothesis

- Queen borough has maximum number of neighborhood as well as decent population and amenities
- If it also has higher concentration of Indian Americans then it could become the most potential cluster for new Indian Restaurant
- To test our hypothesis we need to have two major data points
  1. Number of Indian Restaurants in Queens Borough
  2. Number of Indian Americans living in Queens Borough

## Number of Indian Restaurants in Queens Borough

- Using Foursquare API call we can find out total number of Indian restaurants in Queens borough as well as we can extract a list of the same
- From the graph above we came to know that there are only 7 Indian restaurants in Queens borough

```
l58]: indian_rest_ny[indian_rest_ny['Borough']=='Queens']
```

```
l58]:
```

Unnamed: 0		Borough	Neighborhood	ID		Name
21	21	Queens	Astoria	5d8d9c5e0a2ffc0008f28855		The Gully
22	22	Queens	Kew Gardens	5782c9ce498edde587f5aa14		Tikka Indian Grill
23	23	Queens	Long Island City	50a287a7e4b0033f830f06db		Raj's Indian Kitchen
24	24	Queens	Rego Park	4b3a8aa5f964a520996925e3		Sajni 026
25	25	Queens	Bayside	4f1f4996e4b01ff351a7a50c	Ayna Agra Indian Restaurant	
27	27	Queens	Jamaica Hills	4c434b2bd691c9b6ef8f8f0a		Sagar Restaurant
30	30	Queens	Sunnyside Gardens	4c48da9f3013a59356c5f0e1		Saffron Garden

# Indian Americans per borough

	Rank	Borough	City	Indian_Americans	Density_per_square_mile	Percentage_in_municipality's_population
0	1 <sup>st</sup>	Queens	New York City	144,896	1,326.5	6.2
1	2 <sup>nd</sup>	Brooklyn	New York City	25,270	357.9	1.0
2	3 <sup>rd</sup>	Manhattan	New York City	24,359	1,060.9	1.5
3	4 <sup>th</sup>	The Bronx	New York City	16,748	398.6	1.2
4	5 <sup>th</sup>	Staten Island	New York City	6,646	113.6	1.4
5	\n	Total (2014)	New York City	227,994	753.4	2.7

- We need to find number of Indian Americans living in the boroughs of New York to test our hypothesis.
- To find more about demography of New York boroughs I scrapped a table from the Wikipedia link already mentioned in the “Data” section.
- The required table showing Indian Americans per borough has been extracted

# Result

- As it is evident from the table extracted from the census data of the New York City, there are total of 227,994 Indian Americans living in 5 boroughs of New York. Out of these more than half that is 144,896 Indian Americans are living in Queens borough only! So, our hypothesis stood the test of data.
- *By analyzing the above data it was evident that we end up with rather smaller dataset with only 31 Indian Restaurant from Foursquare. So, instead of going for K means or any other clustering approach I decided to go with traditional approach of manual data crunching.*



## Discussion and Limitation

- This dataset only include Indian Americans meaning people of Indian Origin who are already citizens of USA.
- There is no proper data available of Indian professionals living in and around Queens borough on H1B visa and on Permanent Residence status, so they are not included in this dataset.
- if included it will only increase the number of people living in Queens borough who are financially well equipped to be our potential customers.
- The level of detail of this analysis is at Borough level, to find the exact location further drill down approach is required.

## Result / Conclusion

- The crux of the report is, based on data available on Foursquare there are only 7 Indian restaurants catering the needs of 144, 896 people of Queens borough, effectively meaning ***there is only one Indian Restaurant option available to approximately 21000 Indian Americans.***
- The JFK Airport which is used frequently by almost all Indian Americans living in New York area to travel to India and back, is added benefit to the location.
- Also as we have already examined out of seven restaurants situated in Queens, none of them is rated highest or liked by the customers, meaning there is huge potential and virtually unexplored market for Indian cuisine restaurants in Queens borough, New York.