FINAL REPORT

Capstone Project - The Battle of Neighbourhoods
Best Pizza in New York

Introduction:

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.

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. 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 neighbourhoods such as Flushing, Sunset Park, and Corona.

With its diverse culture, comes diverse food items. One of which is Pizza and who in the world is not familiarized with pizza considered by some the most appetizing food item that ever existed. New York City has always been famous for its Pizza and we tend to hear about the NY Style pizza in news and food review shows for a reason. The goal in this project is to familiarize ourselves with the density of pizza places in the city ans try to find out where the best places for pizza are located.

Problem:

To find the first insights to the following problems:

-Find the Borough with least neighbourhoods (We narrow down our research to a specific Borough because we will assume that less neighbourhoods means less traffic for someone visiting New York and wanting to take the pizza journey)

-Find the different pizza places in the found Borough

-Depending on the rate and number of likes, finding the best pizza places

-Suggest an area to stay in in new york to easily visit the nicest pizza places outthere

-Suggest an area where to open a new Pizza PlaceQ5) which is the best place to stay if you prefer Indian Cuisine?

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

- Pizza places in each neighbourhood a specific Borough 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/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.

Methodology:

1. We begin by collecting the New York city data from the following link "https://cocl.us/new_york_dataset"

2. We will explore the different neighbourhoods using Foursquare API and realise that Manhattan is the Borough with least neighbourhoods. We will only consider Manhattan for further exploration like mentioned before.
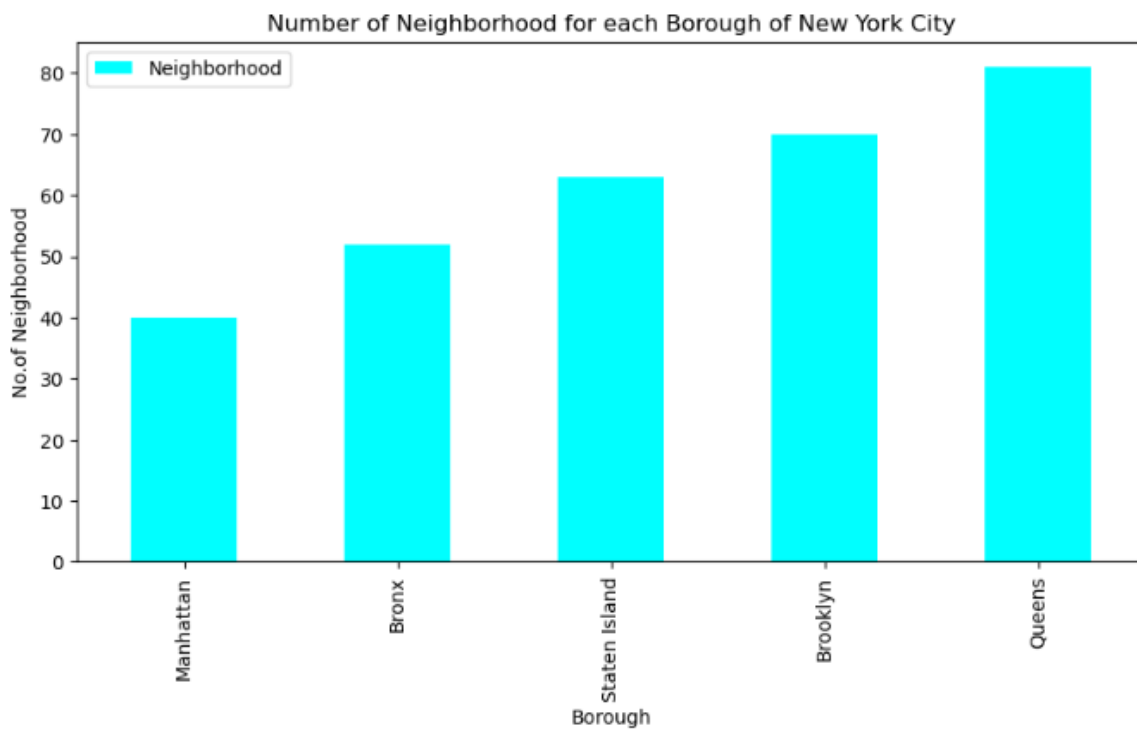
We will call the above funtion to get the new york city data.
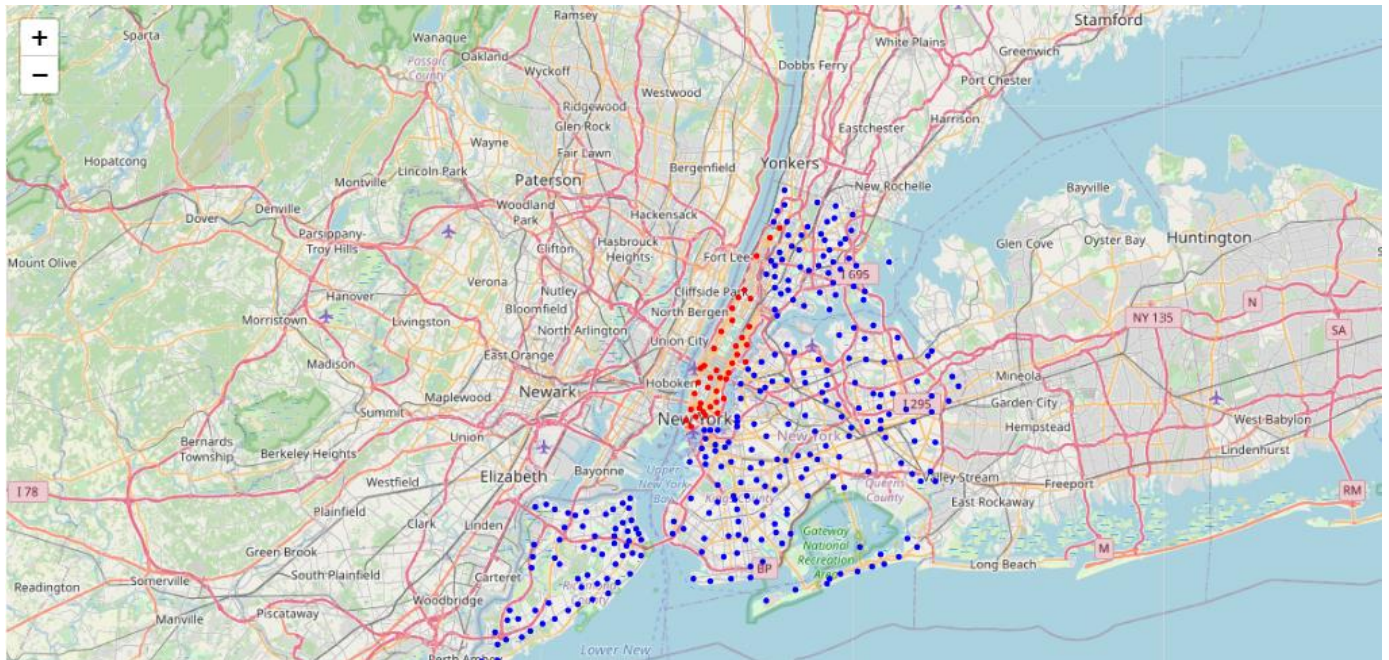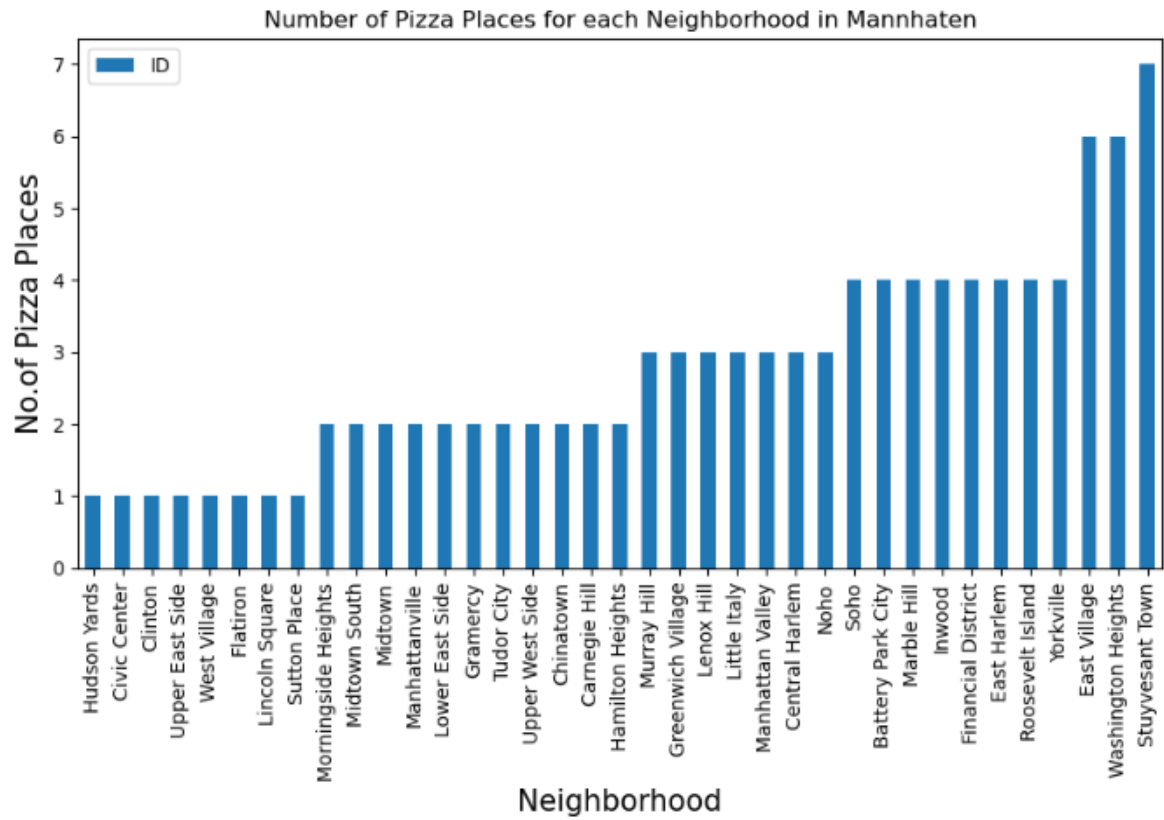
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[10]: new_york_data=get_new_york_data()
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[11]: new_york_data.head(10)
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[11]:

	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
5	Bronx	Kingsbridge	40.881687	-73.902818
6	Manhattan	Marble Hill	40.876551	-73.910660
7	Bronx	Woodlawn	40.898273	-73.867315
8	Bronx	Norwood	40.877224	-73.879391
9	Bronx	Williamsbridge	40.881039	-73.857446

Number of Neighborhood for each Borough of New York City

3. We will then try to investigate the popularity of pizza or rather the localisation of the different pizza places inside the different neighbourhoods and visually represent them in the New York map

Number of Pizza Places for each Neighborhood in Mannhaten

4. Next using Foursquare API, we will find the Ratings, Tips, and Number of Likes for all the pizza places

Borough	Neighborhood	ID	Name	Likes	Rating	Tips
Manhattan	Greenwich Village	45ebc982f964a52091431fe3	Joe's Pizza	1461.0	8.9	451.0
Manhattan	Little Italy	4f045eeb00399761c77301e3	Prince Street Pizza	1440.0	9.2	365.0
Manhattan	Soho	4f045eeb00399761c77301e3	Prince Street Pizza	1440.0	9.2	365.0
Manhattan	Noho	4f045eeb00399761c77301e3	Prince Street Pizza	1440.0	9.2	365.0
Manhattan	Little Italy	55ea9f4d498ed46db0383483	Champion Pizza	1233.0	9.2	149.0
Manhattan	Soho	55ea9f4d498ed46db0383483	Champion Pizza	1233.0	9.2	149.0
Manhattan	Gramercy	51351c3fe4b0c58b63965114	Joe's Pizza	965.0	9.1	167.0
Manhattan	Midtown South	4a639f9ff964a52077c51fe3	New York Pizza Suprema	889.0	8.9	335.0
Manhattan	East Village	4aaec606f964a5203d6320e3	Motorino	780.0	8.8	322.0
Manhattan	Stuyvesant Town	4aaec606f964a5203d6320e3	Motorino	780.0	8.8	322.0
Manhattan	Murray Hill	44ae8bc6f964a52027351fe3	Vezzo Thin Crust Pizza	778.0	8.7	271.0
Manhattan	West Village	43b9adf1f964a520e22c1fe3	John's of Bleecker Street	686.0	8.9	218.0
Manhattan	Financial District	4a455daff964a52014a81fe3	Adrienne's Pizza Bar	607.0	8.5	233.0
Manhattan	Greenwich Village	593332f9123a1963f539daa0	Emily West Village	505.0	9.1	130.0
Manhattan	East Harlem	46615a4ff964a52064471fe3	Patsy's Pizza - East Harlem	386.0	8.8	138.0
Manhattan	Little Italy	56bbc58e498eed7b2c402556	Pasquale Jones	357.0	8.9	106.0
Manhattan	Soho	56bbc58e498eed7b2c402556	Pasquale Jones	357.0	8.9	106.0

5. We will order the Neighbourhoods of Manhattan, depending on the popularity (avg Rating and Likes) of the pizza places located within and will consider the ones having an average rating superior to 9 and average number of likes surpassing 100
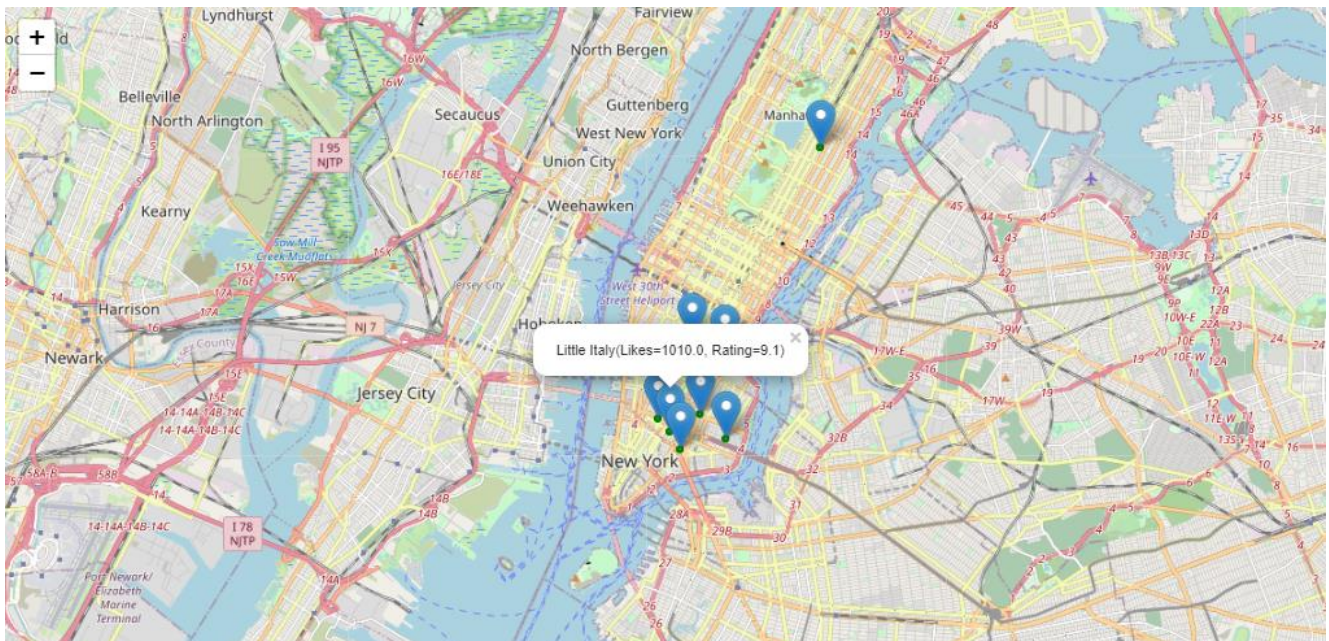
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[98]: ny_neigh_stats= ny_neigh_stats[(ny_neigh_stats['Average Rating']>=9) & (ny_neigh_stats['Average Likes'] > 100) ]
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[99]: ny_neigh_stats.head(5)
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[99]:

	Neighborhood	Latitude	Longitude	Average Rating	Average Likes
1	Carnegie Hill	40.782683	-73.953256	9.00	174.5
3	Chinatown	40.715618	-73.994279	9.15	239.5
9	Flatiron	40.739673	-73.990947	9.10	225.0
10	Gramercy	40.737210	-73.981376	9.10	657.5
17	Little Italy	40.719324	-73.997305	9.10	1010.0

6. Finally, we will visualize those Neighbourhoods

Result:

-Find the Borough with least neighbourhoods (We narrow down our research to a specific Borough because we will assume that less neighbourhoods means less traffic for someone visiting New York and wanting to take the pizza journey)

→ Manhattan

-Find the different pizza places in the found Borough

→ This is represented in the first map

-Depending on the rate and number of likes, finding the best pizza places

→ Best pizza places are situated in neighbourhoods located in the south of Manhattan

-Suggest an area to stay in in new york to easily visit the nicest pizza places outthere

→ Book a hostel in south Manhattan for sure

-Suggest an area where to open a new Pizza PlaceQ5) which is the best place to stay if you prefer Indian Cuisine?

→ Since the north est of Manhattan does not contain too many famous pizza places and people might travel around for some time to get their hands on a good Pizza slice,

it would be nice to have a business opened in that area because of the lack of competition

Conclusion:

There is always room for improvement. Because of the API restrictions we only focused on Manhattan and hence the above solution provided can also be improved to include all the Boroughs of New York. Also, the solution does not include the traffic and nature of populations focused on certain regions of New York. People in certain area may have a less preference for pizza. One observation was that some of the best New York pizza places are located in China Town.