

THE BATTLE OF

NEIGHBORHOODS

ABCompany Limited

BY:

Hrishita Goyal

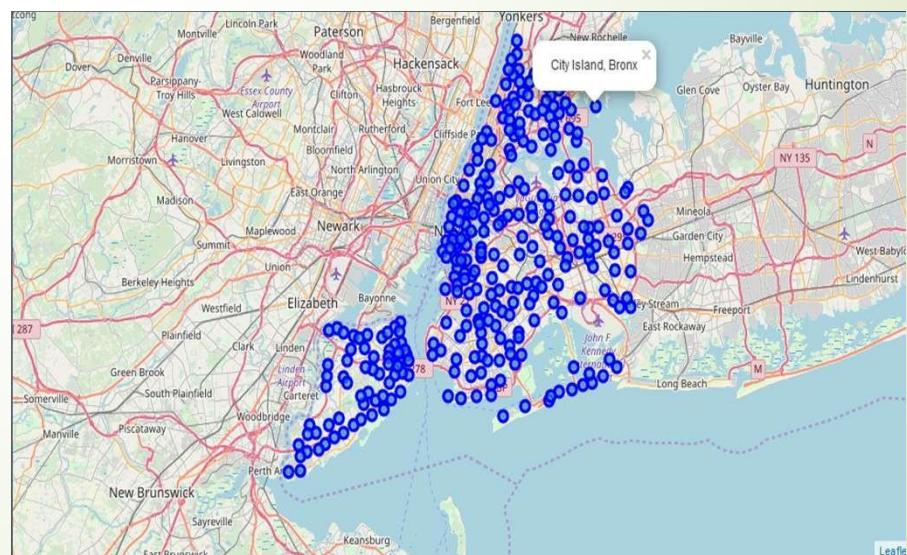


- 1. Manhattan**
- 2. Brooklyn**
- 3. Queens**
- 4. The Bronx**
- 5. Staten Island**



INTRODUCTION

- New York city review for AB Company
- Optimum location for new Restaurant business
- **Business Problem :**
 - Choice of first neighborhood to start restaurant business.
 - Easy to replicate.
 - Low competition
 - High demand
 - Choice of Menu
- **Success Criteria :**
 - Best neighborhood which meets above criteria.



NEW YORK CITY - FACTS

- Most populous city in the United States
- It is diverse and is the financial capital of USA
- It is multicultural
- Provides lot of business opportunities
- Business friendly environment
- Attracted many different players into the market
- Global hub of business and commerce.
- The city is a major centre for banking and finance, retailing, world trade, transportation, tourism, real estate, new media, traditional media, advertising, legal services, accountancy, insurance, theatre, fashion, and the arts in the United States.



NEW YORK CITY – BUSINESS ENVIRONMENT

- Market is highly competitive
- Highly developed city so cost of doing business is also one of the highest
- New business venture or expansion needs to be analysed carefully
- One should strategically targeting the market inorder to –
 - This will help in reduction of risk.
 - The Return on Investment will be reasonable.

NEW YORK CITY - CUISINE

The City of New York is famous for its excellent cuisine. It's food culture includes an array of international cuisines influenced by the city's immigrant history.

- Central and Eastern European immigrants, especially Jewish immigrants - bagels, cheesecake, hot dogs, knishes, and delicatessens
- Italian immigrants - New York-style pizza and Italian cuisine
- Jewish immigrants and Irish immigrants - pastrami and corned beef
- Chinese and other Asian restaurants, sandwich joints, trattorias, diners, and coffeehouses are ubiquitous throughout the city
- Mobile food vendors - Some 4,000 licensed by the city
- Middle Eastern foods such as falafel and kebabs examples of modern New York street food
- Famous for fine dining Michelin starred restaurants. The city is home to "nearly one thousand of the finest and most diverse haute cuisine restaurants in the world", according to Michelin.
- So it is evident that to survive in such competitive market it is very important to strategically plan.

FACTORS TO STUDY TO DECIDE ON RESTAURANT LOCATION

- New York Population
- New York City Demographics
- Are there any Farmers Markets, Wholesale markets etc nearby so that the ingredients can be purchased fresh to maintain quality and cost?
- Are there any venues like Gyms, Entertainment zones, Parks etc nearby where floating population is high etc
- Who are the competitors in that location?
- Cuisine served / Menu of the competitors
- Segmentation of the Borough
- Untapped markets
- Saturated markets etc

DATA DESCRIPTION - 1

- Data 1 : Neighborhood has a total of 5 boroughs and 306 neighborhoods. In order to segment the neighborhoods and explore them, we will essentially need a dataset that contains the 5 boroughs and the neighborhoods that exist in each borough as well as the latitude and longitude coordinates of each neighborhood.
- This dataset exists for free on the web. Link to the dataset is :
https://geo.nyu.edu/catalog/nyu_2451_34572

| | 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 |

DATA DESCRIPTION - 2

- Data 2 :Farmers Markets data -
- <https://data.cityofnewyork.us/dataset/DOHMH-Farmers-Markets-and-Food-Boxes/8vkw-6iz2>
- A farmers' market is often defined as a public site used by two or more local or regional producers for the direct sale of farm products to consumers. In addition to fresh fruits and vegetables, markets may sell dairy products, fish, meat, baked goods, and other minimally processed foods.

| | FacilityName | Service Category | Service_Type | Address | Address_2 | Borough | ZipCode | Latitude | Longitude | AdditionalInfo | StartDate | EndDate | Monday | Tuesday | Wednesday | Thursday | |
|---|-----------------------------|--------------------------------|-----------------|--|-----------|---------|-----------|----------|-----------|----------------|--|------------|------------|---------|-----------|---------------|---------|
| 0 | Inwood Park Greenmarket | Farmers Markets and Food Boxes | Farmers Markets | Isham St bet Seaman & Cooper | | NaN | Manhattan | 10034 | 40.869009 | -73.920320 | Open year-round | NaN | NaN | NaN | NaN | NaN | |
| 1 | 82nd Street Greenmarket | Farmers Markets and Food Boxes | Farmers Markets | 82nd St bet 1st & York Aves | | NaN | Manhattan | 10028 | 40.773448 | -73.948954 | Open year-round | NaN | NaN | NaN | NaN | NaN | |
| 3 | 125th Street Farmers Market | Farmers Markets and Food Boxes | Farmers Markets | 125th St & Adam Clayton Powell Jr Blvd | | NaN | Manhattan | 10027 | 40.808981 | -73.948327 | Market open dates: 6/13/2017 to 11/21/2017 | 06/13/2017 | 11/21/2017 | NaN | 10am-7pm | NaN | NaN |
| 4 | 170 Farm Stand | Farmers Markets and Food Boxes | Farmers Markets | 170th St & Townsend Ave | | NaN | Bronx | 10452 | 40.840095 | -73.916827 | Market open dates: 7/5/2017 to 11/22/2017 | 07/05/2017 | 11/22/2017 | NaN | NaN | 2:30pm-6:30pm | NaN |
| 5 | 175th Street Greenmarket | Farmers Markets and Food Boxes | Farmers Markets | 175th St bet Wadsworth Ave & Broadway | | NaN | Manhattan | 10033 | 40.845956 | -73.937813 | Market open dates: 6/29/2017 to 11/30/2017 | 06/29/2017 | 11/30/2017 | NaN | NaN | NaN | 8am-5pm |

DATA DESCRIPTION - 3

Data 3 : Data from Wikipedia pages as given below :

- New York Population
- New York City Demographics
- Cuisine of New York city

https://en.wikipedia.org/wiki/New_York_City

https://en.wikipedia.org/wiki/Economy_of_New_York_City

https://en.wikipedia.org/wiki/Portal:New_York_City

https://en.wikipedia.org/wiki/Cuisine_of_New_York_City

| | Racial composition | 2010 | 1990 | 1970 | 1940 |
|---|----------------------------------|-------|-------|-------|-------|
| 0 | White | 44.0% | 52.3% | 76.6% | 93.6% |
| 1 | —Non-Hispanic | 33.3% | 43.2% | 62.9% | 92.0% |
| 2 | Black or African American | 25.5% | 28.7% | 21.1% | 6.1% |
| 3 | Hispanic or Latino (of any race) | 28.6% | 24.4% | 16.2% | 1.6% |
| 4 | Asian | 12.7% | 7.0% | 1.2% | — |

DATA DESCRICTION - 4

- Data from foursquare.com

Newyork city geographical coordinates data will be utilized as input for the Foursquare API, that will be leveraged to provision venues information for each neighborhood. We will use the Foursquare API to explore neighborhoods in New York City. The below is image of the Foursquare API data.

| | Neighborhood | NeighborhoodLatitude | NeighborhoodLongitude | Venue | VenueLatitude | VenueLongitude | VenueCategory |
|---|--------------|----------------------|-----------------------|-----------------------------|---------------|----------------|----------------------|
| 0 | Wakefield | 40.894705 | -73.847201 | Lollipops Gelato | 40.894123 | -73.845892 | Dessert Shop |
| 1 | Wakefield | 40.894705 | -73.847201 | Ripe Kitchen & Bar | 40.898152 | -73.838875 | Caribbean Restaurant |
| 2 | Wakefield | 40.894705 | -73.847201 | Jackie's West Indian Bakery | 40.889283 | -73.843310 | Caribbean Restaurant |
| 3 | Wakefield | 40.894705 | -73.847201 | Ali's Roti Shop | 40.894036 | -73.856935 | Caribbean Restaurant |
| 4 | Wakefield | 40.894705 | -73.847201 | Rite Aid | 40.896521 | -73.844680 | Pharmacy |

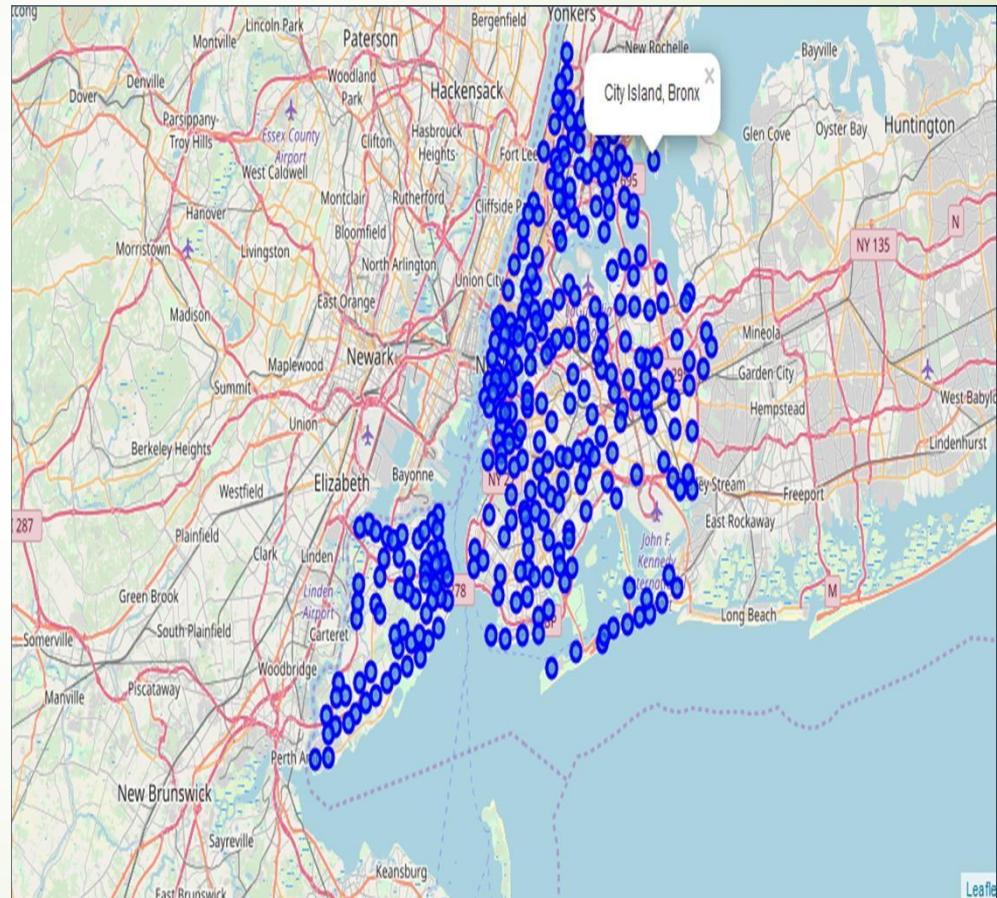
ANALYTIC APPROACH

- New York city neighbourhood has a total of 5 boroughs and 306 neighborhoods
- PART1 - Clustering of Manhattan and Brooklyn
- PART2 - Clustering of Bronx, Queens and Staten Island.
- Only restaurant data is filtered from foursquare.com venues data and utilized for this project.
- This is done because of the following Exploratory data analysis.

METHODOLOGY - 1

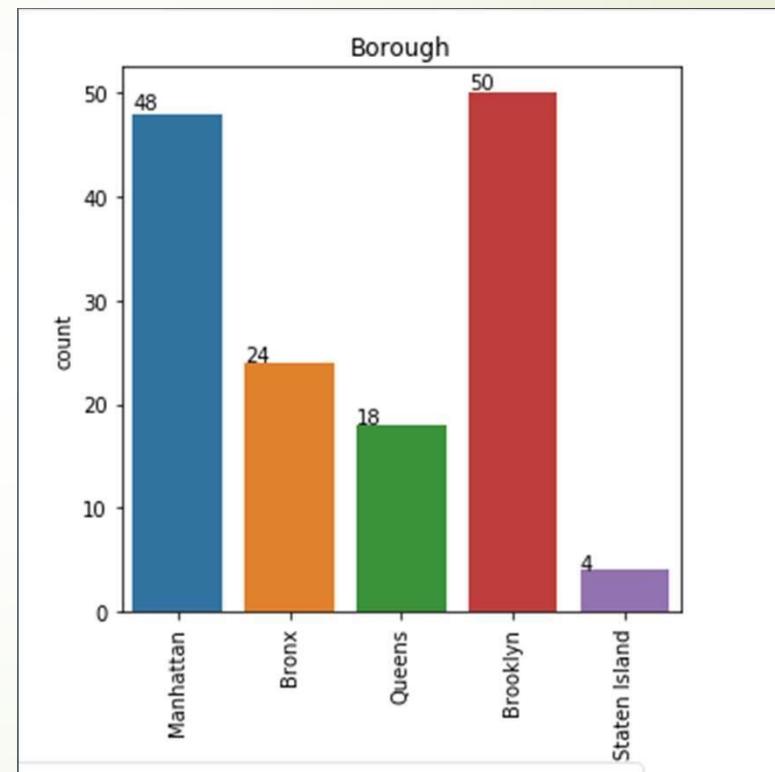
Data 1- New york city Geographical Coordinates Data.

- Load the data and explore data - newyork_data.json
- Transform the data of nested python dictionaries into a pandas dataframe.
- Dataframe contains the geographical coordinates of New York city neighborhoods.
- Data will used to get Venues data from Foursquare.
- Geopy and folium libraries used to create a map of New York city with neighborhoods superimposed on top.



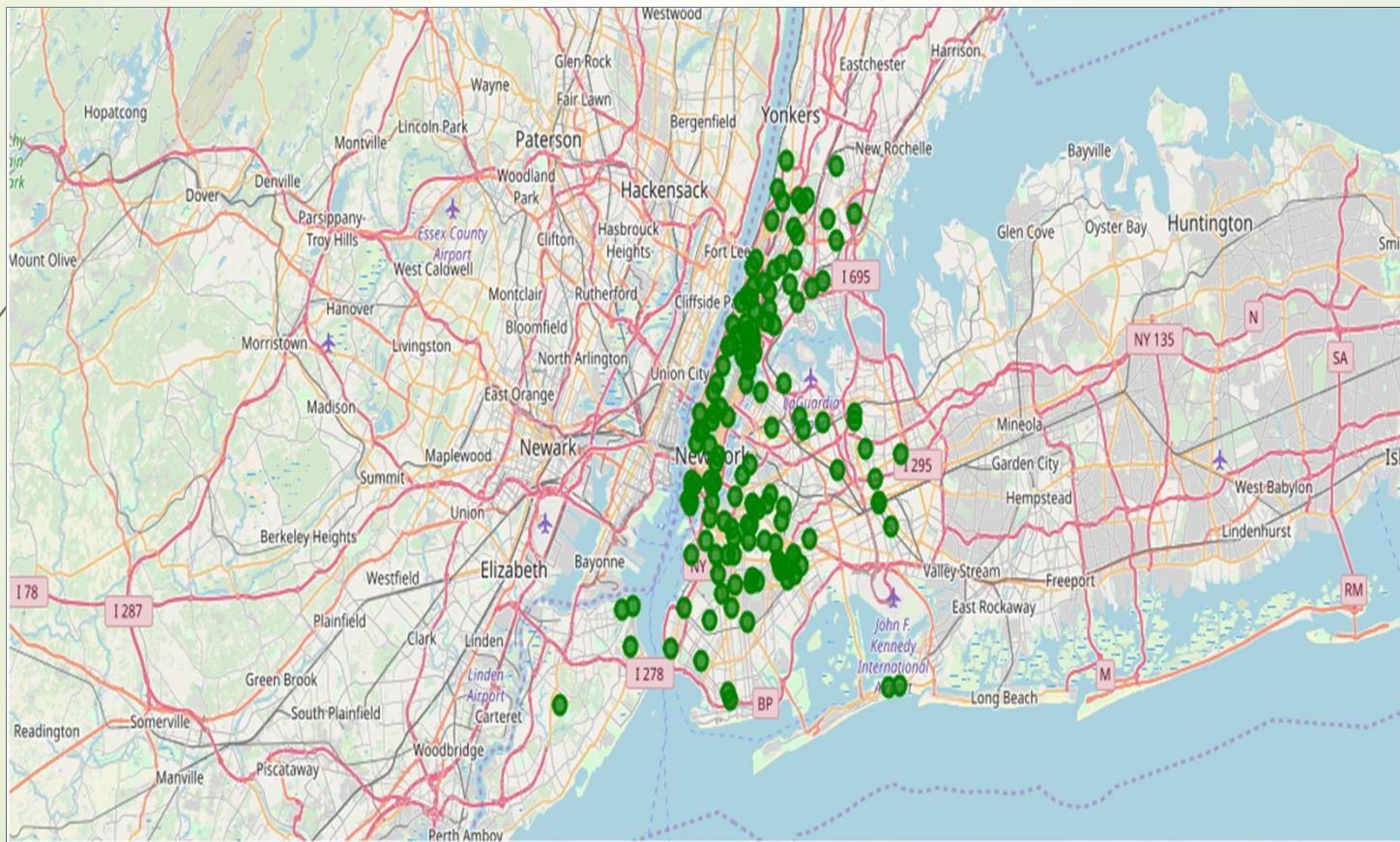
METHODOLOGY - 2

- Data 2- DOHMH Farmers Markets and Food Boxes dataset.
- In this we will be using the data of Farmers Markets
- There are totally 144 Farmers Markets in New York city.
- Highest number are in Manhattan and Brooklyn. And lowest in Queens, Bronx and Staten Island.



METHODOLOGY - 2

- Farmers Market visualisation-New York City



METHODOLOGY - 3

- Data 3 : To analyze New York city Population, Demographics and Cuisine , scrapped the data from Wikipedia pages given above in the data section.
- We used BeautifulSoup python library.
- Beautiful Soup is a Python package for parsing HTML and XML documents (including having malformed markup, i.e. non-closed tags, so named after tag soup).
- It creates a parse tree for parsed pages that can be used to extract data from HTML, which is useful for web scraping

METHODOLOGY – 3 - New York Population

- Manhattan (New York County) is the geographically smallest and most densely populated borough.
- Manhattan's (New York County's) population density of 72,033 people per square mile (27,812/km²) in 2015 makes it the highest of any county in the United States and higher than the density of any individual American city.
- Brooklyn (Kings County), on the western tip of Long Island, is the city's most populous borough.
- Queens (Queens County), on Long Island north and east of Brooklyn, is geographically the largest borough.

| | Borough | County | Estimate_2017 | square_miles | square_km | persons_sq_mi | persons_sq_km |
|---|---------------|-------------------|---------------|--------------|-----------|---------------|---------------|
| 0 | Manhattan | New York | 1,664,727 | 22.83 | 59.13 | 72,033 | 27,826 |
| 1 | The Bronx | Bronx | 1,471,160 | 42.10 | 109.04 | 34,653 | 13,231 |
| 2 | Brooklyn | Kings | 2,648,771 | 70.82 | 183.42 | 37,137 | 14,649 |
| 3 | Queens | Queens | 2,358,582 | 108.53 | 281.09 | 21,460 | 8,354 |
| 4 | Staten Island | Richmond | 479,458 | 58.37 | 151.18 | 8,112 | 3,132 |
| 5 | | City of New York | 8,622,698 | 302.64 | 783.83 | 28,188 | 10,947 |
| 6 | | State of New York | 19,849,399 | 47,214 | 122,284 | 416.4 | 159 |

METHODOLOGY – 3 - New York City Demographics

- New York City is the most populous city in the United States , with an estimated record high of 8,622,698 residents as of 2017,incorporating more immigration into the city than outmigration since the 2010 United States Census.
- The racial composition is as given below. This is the reason New York city has restaurants serving cuisine from many countries such as India, Africa, Japan etc. This also increases the scope for restaurants business in New York City.

| | Racialcomposition | 2010 | 1990 | 1970 | 1940 |
|---|----------------------------------|-------|-------|-------|-------|
| 0 | White | 44.0% | 52.3% | 76.6% | 93.6% |
| 1 | —Non-Hispanic | 33.3% | 43.2% | 62.9% | 92.0% |
| 2 | Black or African American | 25.5% | 28.7% | 21.1% | 6.1% |
| 3 | Hispanic or Latino (of any race) | 28.6% | 24.4% | 16.2% | 1.6% |
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METHODOLOGY – 3 - Cuisine of New York city

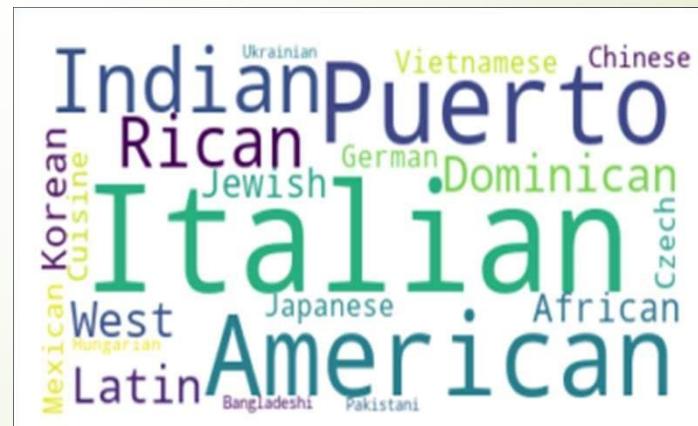
- This data has been manually prepared. Data is taken from Wikipedia page
- https://en.wikipedia.org/wiki/Cuisine_of_New_York_City
- Data used to create word cloud.

NEW YORK CITY CUISINE : Most Preferred Food in New York City – Italian, Puerto Rican, Mexican, Jewish, Indian, Pakistani & Dominican



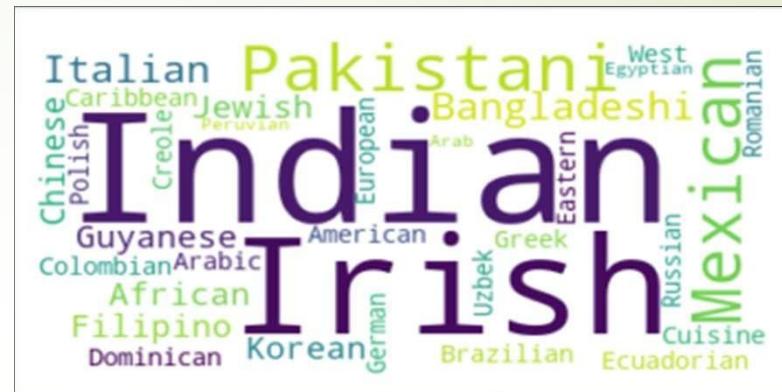
METHODOLOGY – 3 - Cuisine of New York city

- **BROOKLYN CUISINE** - Most Preferred Food in Brooklyn is – Italian, Puerto Rican & Mexican
- **MANHATTAN CUISINE** - Most Preferred Food in Manhattan is – Italian, American, Puerto Rican and Indian.



METHODOLOGY – 3 - Cuisine of New York city

- QUEENS CUISINE - Most Preferred Food in Queens is – Indian, Irish, Pakistani and Mexican.
- THE BRONX CUISINE - Most Preferred Food in The Bronx is – Italian, Puerto Rican, Albanian and Dominican.



METHODOLOGY - 4 - Foursquare.com

- New York city geographical coordinates data has been utilized as input for the Foursquare API, that has been leveraged to provision venues information for each neighborhood.
- We used the Foursquare API data to explore neighborhoods in New York City.
- Using the geographical coordinates of each neighbourhood foursquare API calls are made to get top 200 venues in a radius of 1000 meters

PART– 1 Brooklyn and Manhattan

PART– 2 Bronx, Queens and Staten Island

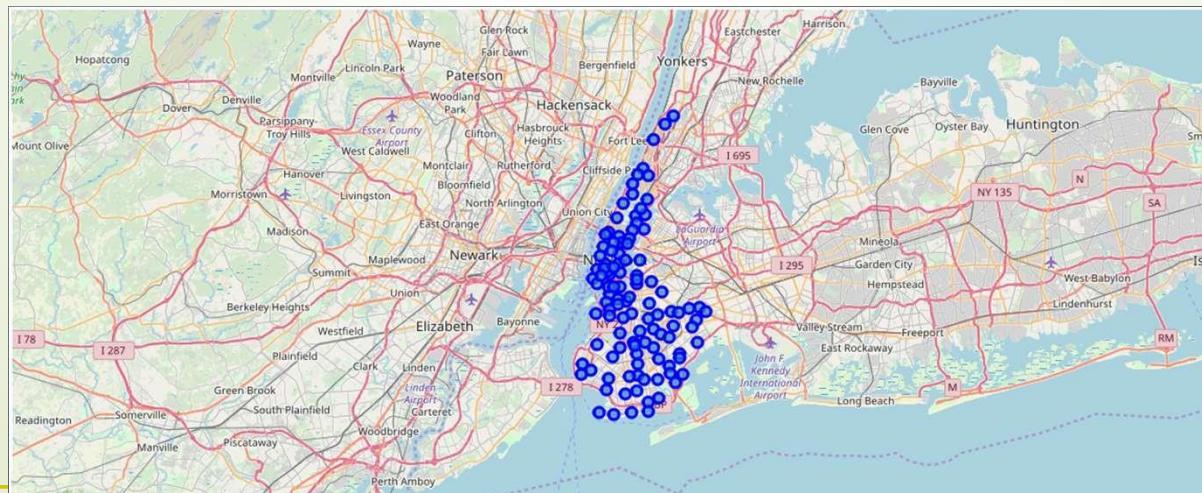
METHODOLOGY – 4

PART – 1 Brooklyn and Manhattan

Brooklyn and Manhattan Venues

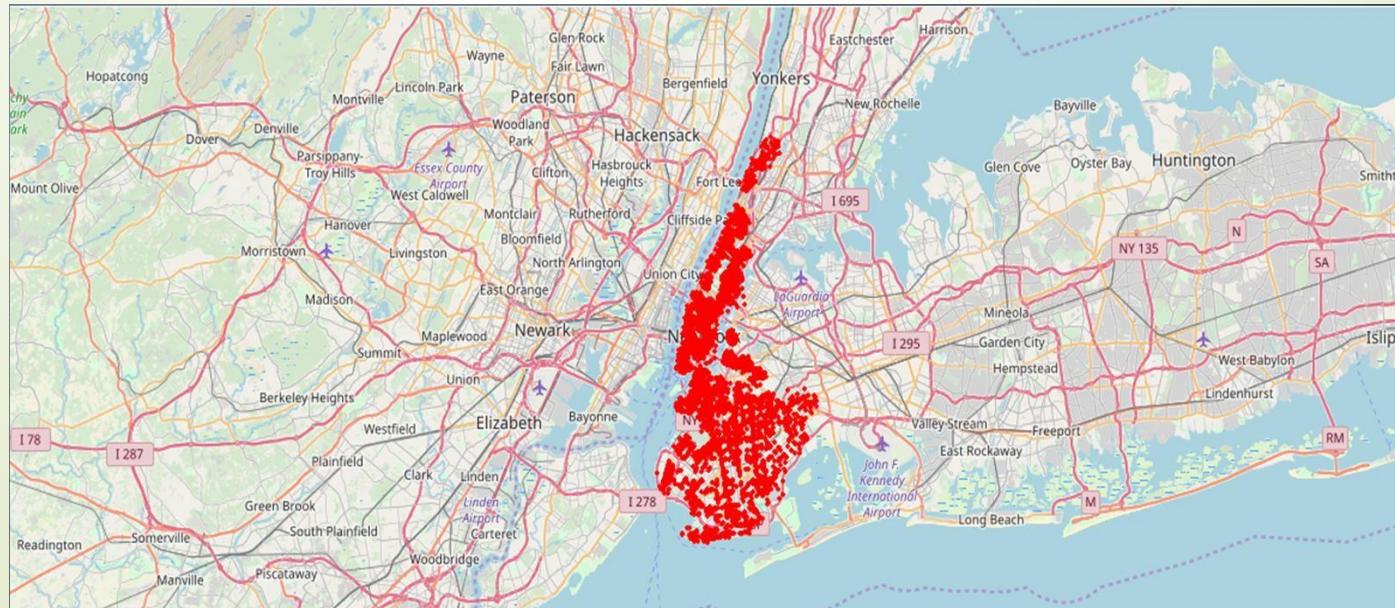
| Neighborhood | NeighborhoodLatitude | NeighborhoodLongitude | Venue | VenueLatitude | VenueLongitude | VenueCategory | |
|--------------|----------------------|-----------------------|-----------|-----------------------|----------------|---------------|----------------|
| 0 | Marble Hill | 40.876551 | -73.91066 | Arturo's | 40.874412 | -73.910271 | Pizza Place |
| 1 | Marble Hill | 40.876551 | -73.91066 | Bikram Yoga | 40.876844 | -73.906204 | Yoga Studio |
| 2 | Marble Hill | 40.876551 | -73.91066 | Tibbett Diner | 40.880404 | -73.908937 | Diner |
| 3 | Marble Hill | 40.876551 | -73.91066 | Sam's Pizza | 40.879435 | -73.905859 | Pizza Place |
| 4 | Marble Hill | 40.876551 | -73.91066 | Loeser's Delicatessen | 40.879242 | -73.905471 | Sandwich Place |

Brooklyn and Manhattan Visualization



PART – 1 Brooklyn and Manhattan

Brooklyn and Manhattan Venues
Visualization : Generated the below
Brooklyn and Manhattan Venues Visualization.
The "BM_venues" dataframe has 9708
venues and 397 unique venue types.



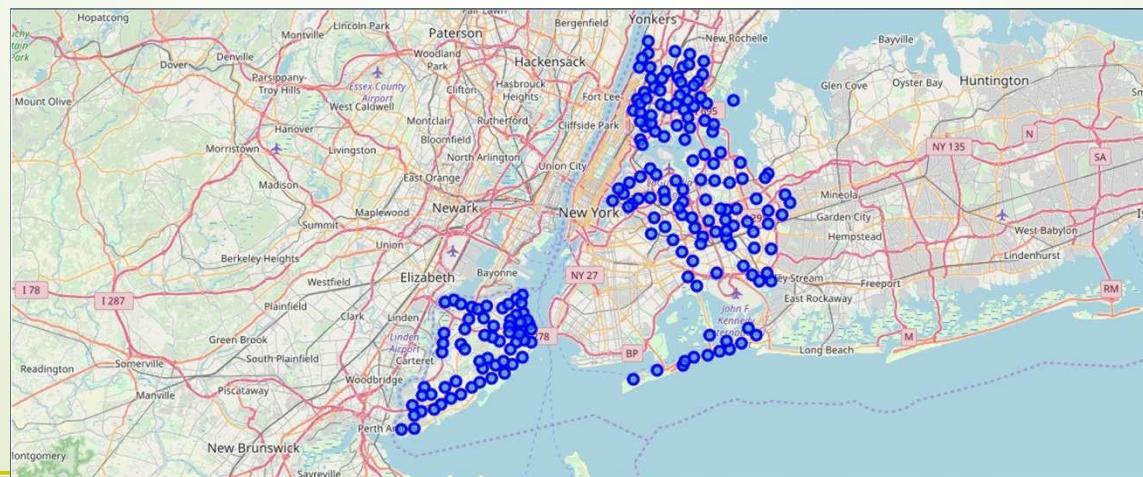
METHODOLOGY – 4

PART – 2 Bronx, Queens and Staten Island

Bronx, Queens and Staten Island Venues

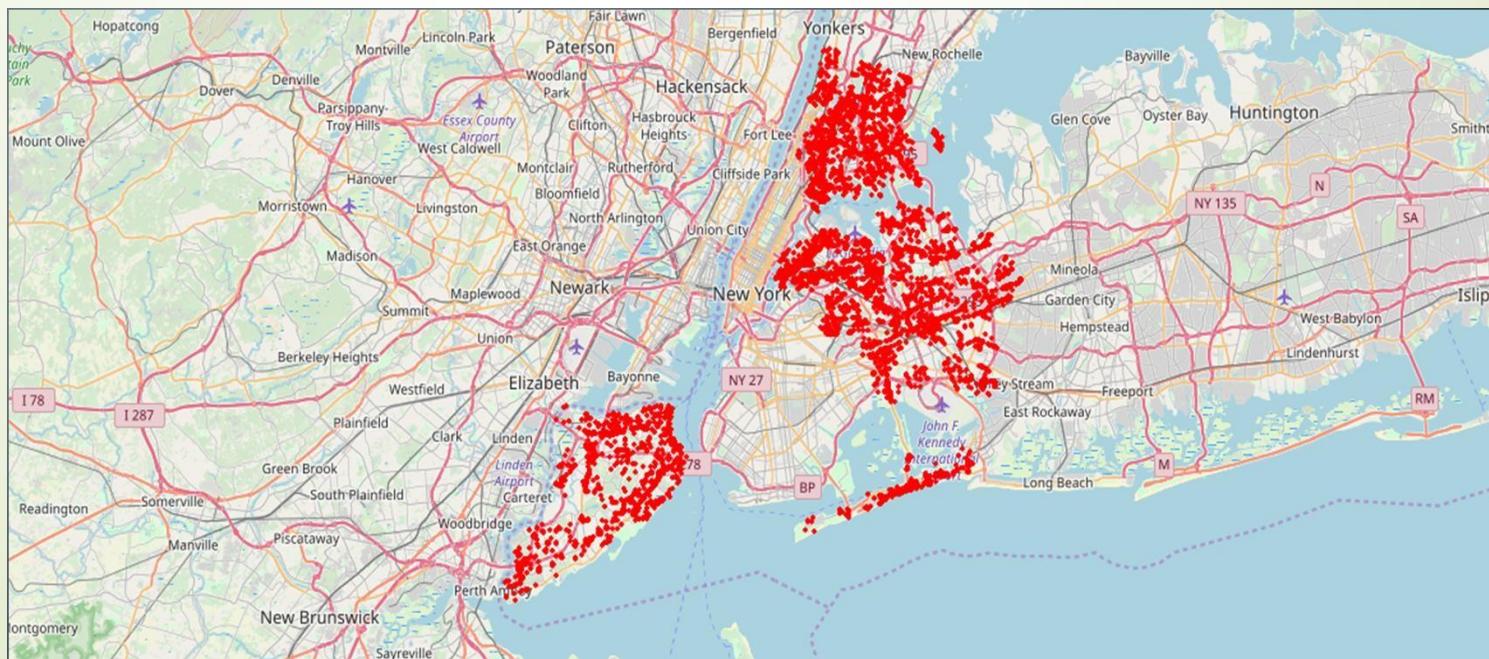
| | Neighborhood | NeighborhoodLatitude | NeighborhoodLongitude | Venue | VenueLatitude | VenueLongitude | VenueCategory |
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Bronx, Queens and Staten Island Visualization



PART – 2 Bronx, Queens and Staten Island

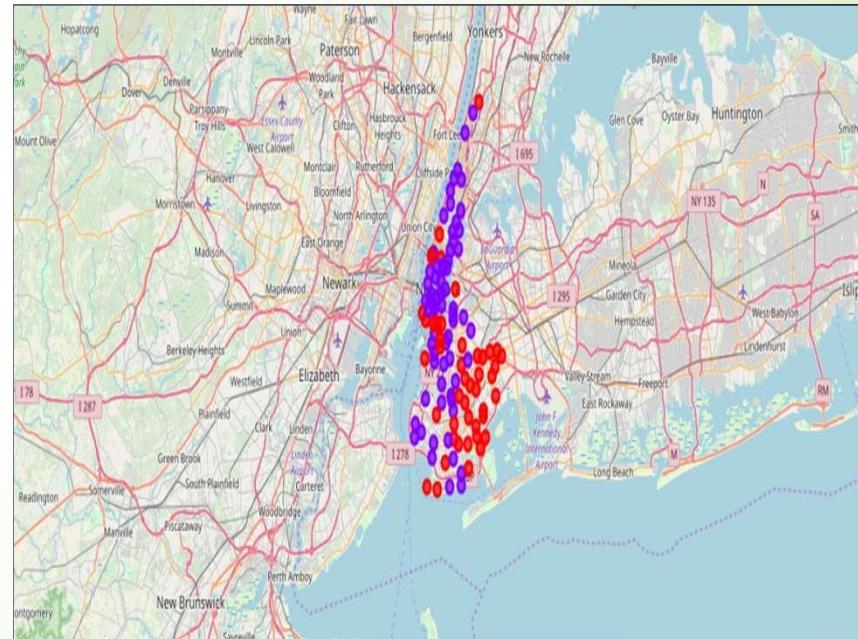
Bronx, Queens and Staten Island Venues
Visualization : The "BQS_venues" dataframe
has 10805 venues and 387 unique venue
types.



RESULT

PART – 1 Brooklyn and Manhattan

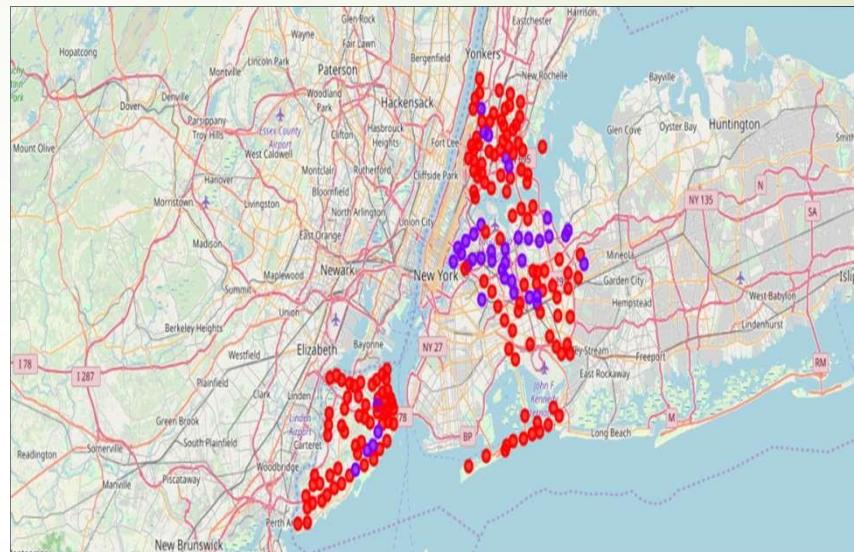
- Segmenting and Clustering Neighborhoods
- Cluster0 : The Total and Total Sum of cluster0 has smallest value. It shows that the market is not saturated.
- Cluster1 : The Total and Total Sum is very high. Lot of competition. Saturated neighborhoods.



RESULT

PART – 2 Bronx , Queens and Staten Island

- Segmenting and Clustering Neighborhoods
- Cluster0 : The Total and Total Sum of cluster0 has smallest value. It shows that the market is not saturated. There are untapped markets.
- Cluster1 : The Total and Total Sum is very high. Lot of competition. Saturated neighborhoods.



| Borough | Neighborhood | Latitude | Longitude | Total | Cluster_Labels |
|---------|---------------|-----------|------------|-------|----------------|
| 0 | Staten Island | 40.597069 | -74.111329 | 0 | 0 |
| 1 | Staten Island | 40.639683 | -74.174645 | 0 | 0 |
| 2 | Staten Island | 40.605779 | -74.187256 | 0 | 0 |

DISCUSSION

- Scope to explore cuisines of various countries in Bronx, Queens and Staten Island
- In Manhattan and Brooklyn restaurants , cuisines of many countries are part of their Menu. Risk can be taken with great menu on board. It also shows people love and explore cuisines of various countries.
- Scope to increase Farmers markets in Bronx, Queens and Staten Island.
 - Region - Cluster0
 - Neighborhood – Staten Island – Tod Hill, Port Ivory, Bloomfield



CONCLUSION

- Analysis performed on limited data
- Re-run program with updated information
- Brooklyn and Manhattan has high concentration of restaurant business. Very competitive market.
- Bronx, Queens and Staten Island also has good number of restaurants but not as many as required. So this can be explored.
- As per the neighbourhood or restaurant type mentioned like Indian Restaurant, analysis can be checked. Avenue with lowest risk and competition can be identified

