

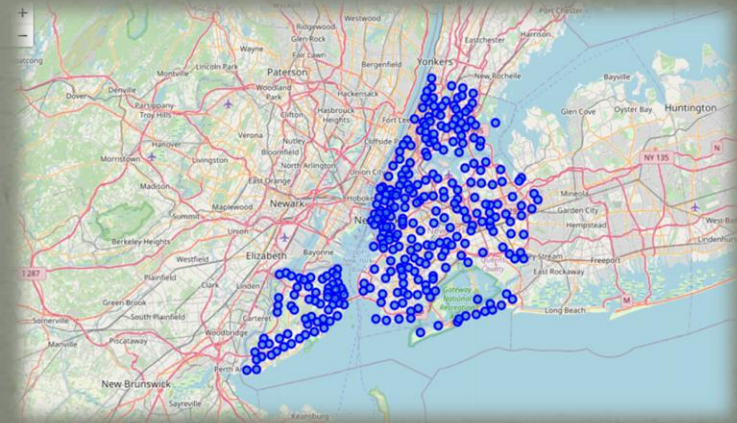
# “The Battle Of Neighborhoods”

Brooklyn

ABC Company Ltd.

# Introduction

- New York city review for ABC company Ltd.
- Optimum location for opening a restaurant.
- **Business Problem**
  - Choice of first neighborhood to start restaurant business.
  - Easy to replicate.
  - Low competition
  - High demand
  - Choice of Menu





# Factors to decide on the location to be chosen:

- ❖ New York Population
- ❖ New York Demographics
- ❖ New York Boroughs and Neighborhoods
- ❖ Markets nearby
- ❖ Cuisine / Menu Severed

# Data Description

**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.

	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 2: Farmers Markets data –

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.

	Borough	Market Name	Street Address	Latitude	Longitude	Days of Operation	Hours of Operations	Season Dates	Accepts EBT	Open Year-Round	Stellar Cooking Demonstrations	Food Activities for Kids	Location Point
0	Brooklyn	Woodhull Hospital Youthmarket	Broadway & Flushing Ave	40.700726	-73.941932	Wednesday	9 a.m. - 2 p.m.	07/10/2019-11/27/2019	Yes	No	No	No	(40.700726, -73.941932)
1	Manhattan	Mount Sinai Hospital Greenmarket	E 99th St bet Madison & Park Aves	40.789169	-73.952743	Wednesday	8 a.m. - 5 p.m.	06/12/19-11/27/19	Yes	No	No	No	(40.789169, -73.952743)
2	Bronx	170 Farm Stand	E 170th St & Townsend Ave	40.839882	-73.916783	Wednesday	2:30 - 6:30 p.m.	07/10/2019-11/27/2019	Yes	No	No	Yes	(40.839882, -73.916783)
3	Manhattan	Greenmarket at Oculus Plaza	Church & Fulton Sts, on Oculus Plaza	40.711535	-74.010464	Tuesday	7 a.m. - 7 p.m.	07/09/2019-11/30/19	Yes	Yes	No	No	(40.711535, -74.010464)
4	Queens	Ditmars Park Youthmarket	Steinway St bet Ditmars Blvd & 23rd Ave, at Di...	40.772854	-73.906061	Saturday	8 a.m. - 3 p.m.	07/13/2019-11/23/2019	Yes	No	No	No	(40.772854, -73.906061)



**Data 3**: Data from Wikipedia pages as given below :

- New York Population
- Cuisine of New York city

The data has been taken from the following links

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

[https://en.wikipedia.org/wiki/Cuisine\\_of\\_New\\_York\\_City](https://en.wikipedia.org/wiki/Cuisine_of_New_York_City)

#### Data 4: Data from foursquare.com

New York 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	Neighborhood Latitude	Neighborhood Longitude	Venue	Venue Latitude	Venue Longitude	Venue Category
0	Marble Hill	40.876551	-73.91066	Bikram Yoga	40.876844	-73.906204	Yoga Studio
1	Marble Hill	40.876551	-73.91066	Arturo's	40.874412	-73.910271	Pizza Place
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	Starbucks	40.877531	-73.905582	Coffee Shop

# Analytical Approach

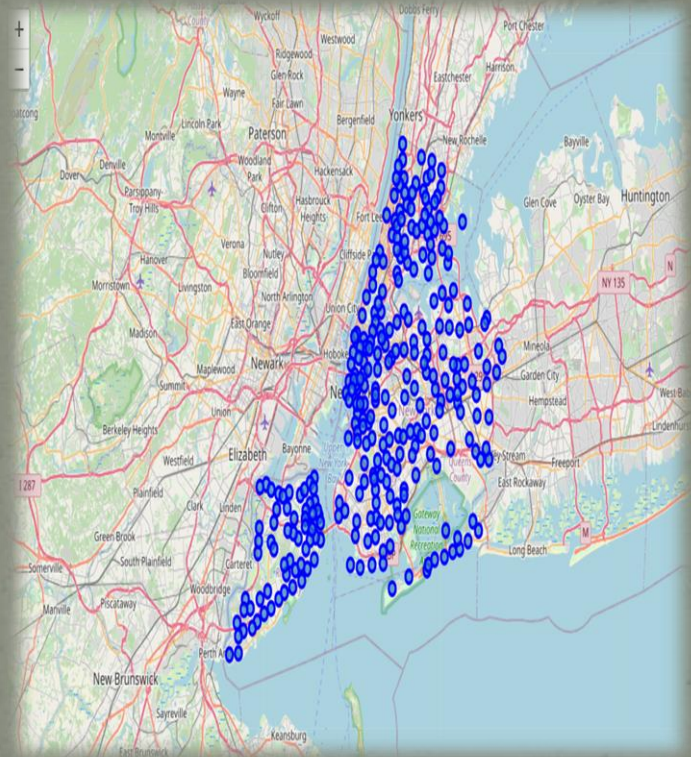
- New York city neighborhood has a total of 5 boroughs and 306 neighborhoods.
- PART 1 - Clustering of Manhattan and Brooklyn
- PART 2 - Clustering of Bronx, Queens and Staten Island
- Only restaurant data is filtered from foursquare.com venues data and utilized for this project.
- This is done because of the following Exploratory data analysis.



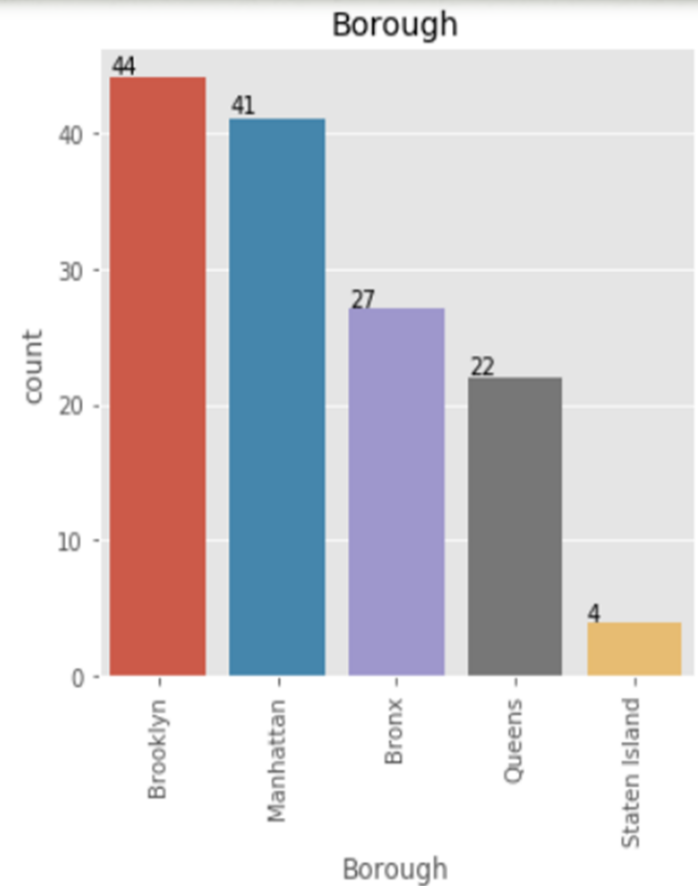
# Methodology

## Data 1-New York city Geographical Coordinates Data

1. In this we load the data and explore data from `newyork_data.json` file.
2. Transform the data of nested python dictionaries into a pandas dataframe.
3. This dataframe contains the geographical coordinates of New York city neighborhoods.
4. This data will be used to get venues data from foursquare.
5. We used `geopy` and `folium` libraries to create a map of New York city with neighborhoods superimposed on top.

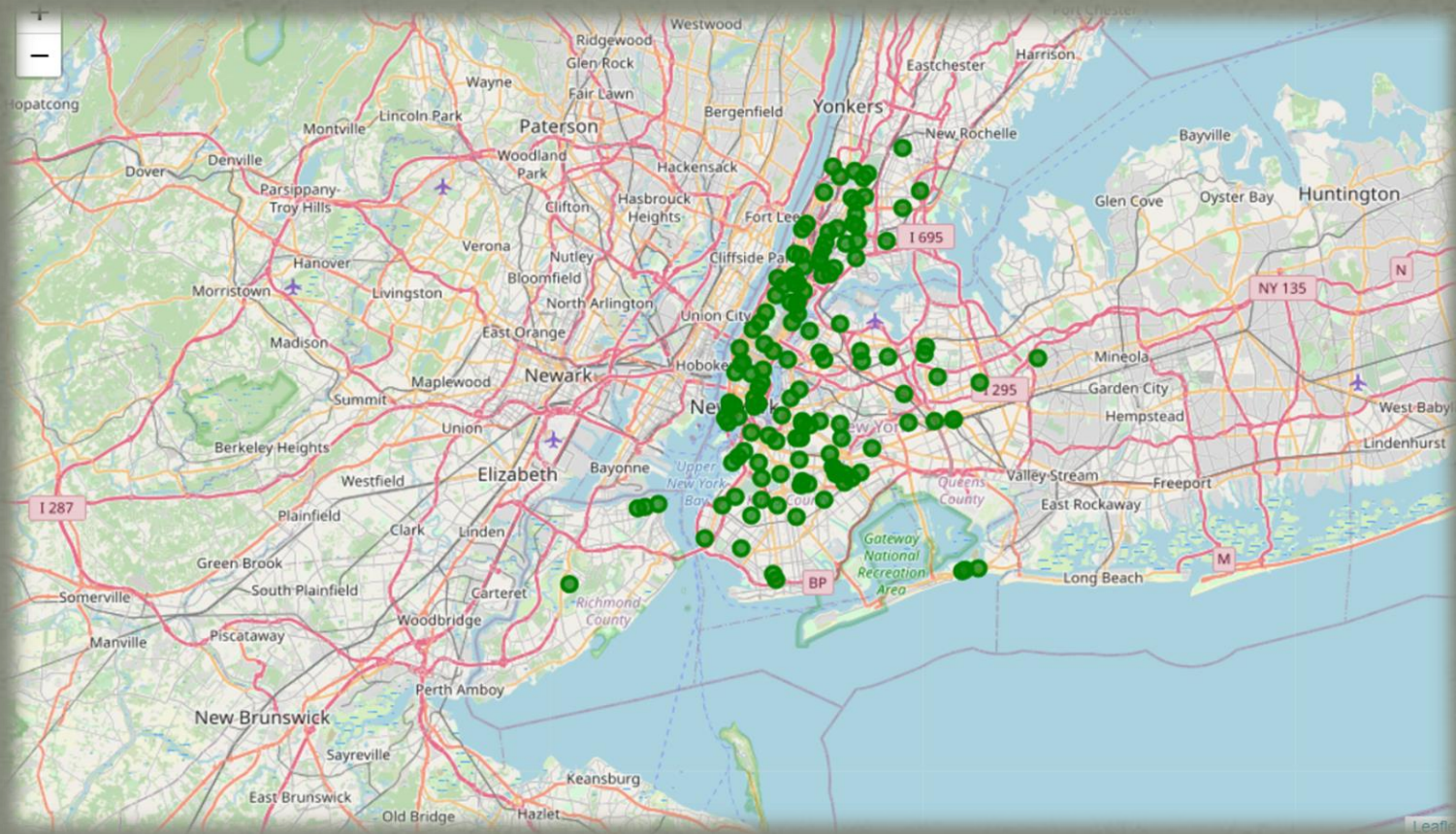


- Data 2- DOHMH Farmers Markets and Food Boxes dataset.
- In this we will be using the data of Farmers Markets
- There are totally 137 Farmers Markets in New York city.
- Highest number are in Manhattan and Brooklyn. And lowest in Queens, Bronx and Staten Island.





- Farmers Market visualization-New York City. Using geopy function.





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

## 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 368,000 people per square mile 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.

[illegible]

## 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](https://en.wikipedia.org/wiki/Cuisine_of_New_York_City)
- Data used to create word cloud.

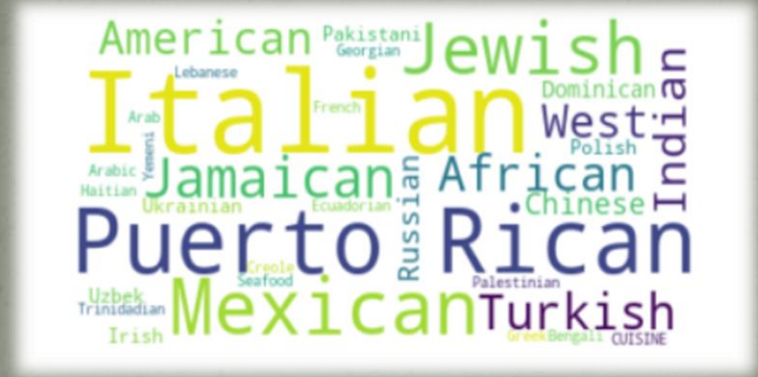
NEW YORK CITY CUISINE : Most Preferred Food in New York City –Italian, Puerto Rican, Mexican, Jewish, Indian, Pakistani & Irish





## BROOKLYN CUISINE –

Most Preferred Food in Brooklyn is – Italian, Puerto Rican, Mexican and Jewish.



## MANHATTAN CUISINE –

Most Preferred Food in Manhattan is – Italian, Chinese, Indian, Jewish and Puerto Rican.



### QUEENS CUISINE –

Most Preferred Food in Brooklyn is –  
Italian, Irish, Mexican and Jewish.



### BRONX CUISINE –

Most Preferred Food in Manhattan is –  
Italian, Dominican, Albanian and  
Puerto Rican.



## FourSquare data of New York city

- New York city geographical coordinates data has be 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 neighborhood foursquare API calls are made to get top 200 venues in a radius of 1000 meters

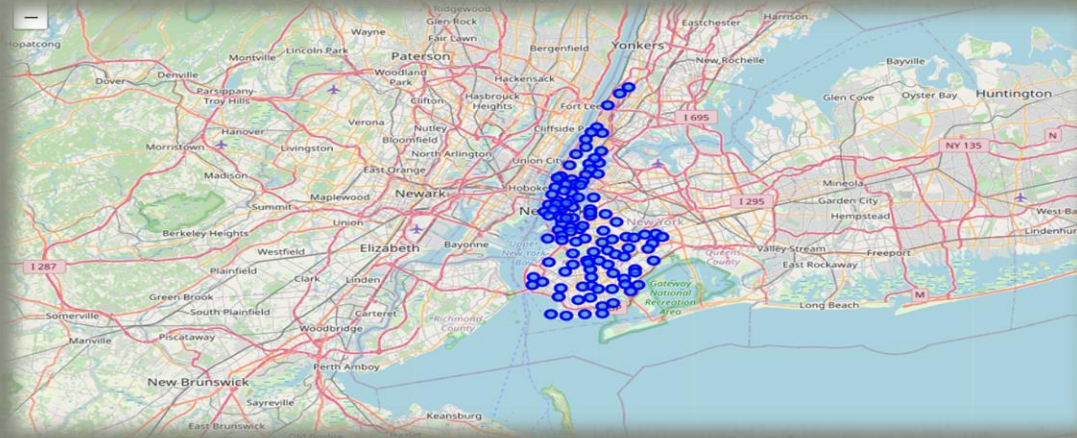
PART – 1 Brooklyn and Manhattan

PART – 2 Bronx, Queens and Staten Island

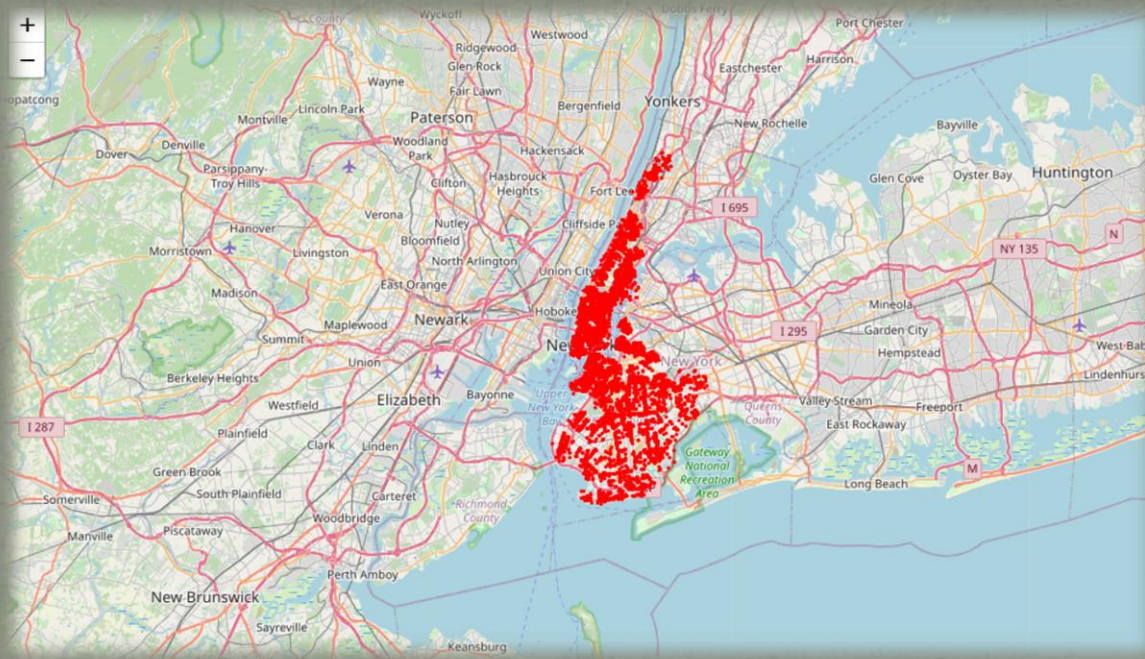


## Brooklyn and Manhattan Venues data

# Brooklyn and Manhattan Visualization



**Brooklyn and Manhattan Visualization:** Generated the below Brooklyn and Manhattan Venues Visualization. The “BM\_venues” data frame has 9708 venues and 397 unique venue types.



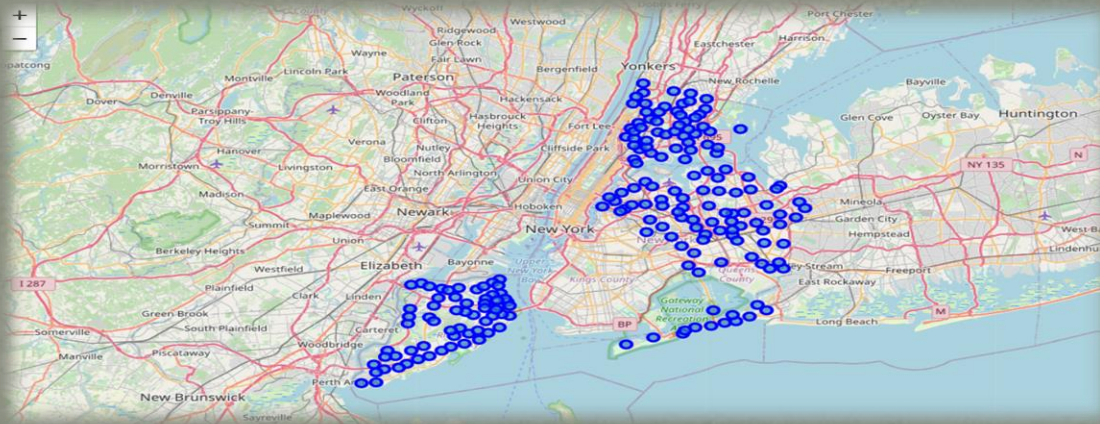


# PART – 2 Bronx, Queens and Staten Island

## Bronx, Queens and Staten Island Venues data

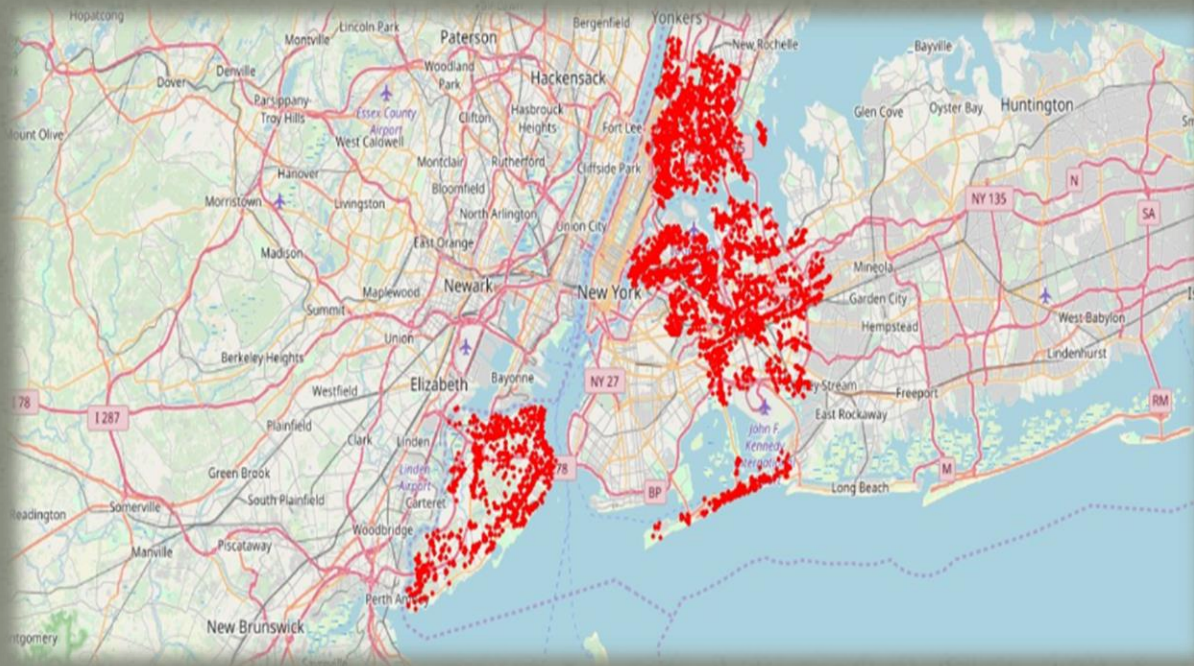
	Neighborhood	NeighborhoodLatitude	NeighborhoodLongitude	Venue	VenueLatitude	VenueLongitude	VenueCategory
0	Wakefield	40.894705	-73.847201	Lollipops Gelato	40.894123	-73.845892	Dessert Shop
1	Wakefield	40.894705	-73.847201	Ripe Kitchen & Bar	40.898152	-73.838875	Caribbean Restaurant
2	Wakefield	40.894705	-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

## Bronx, Queens and Staten Island Visaulaization





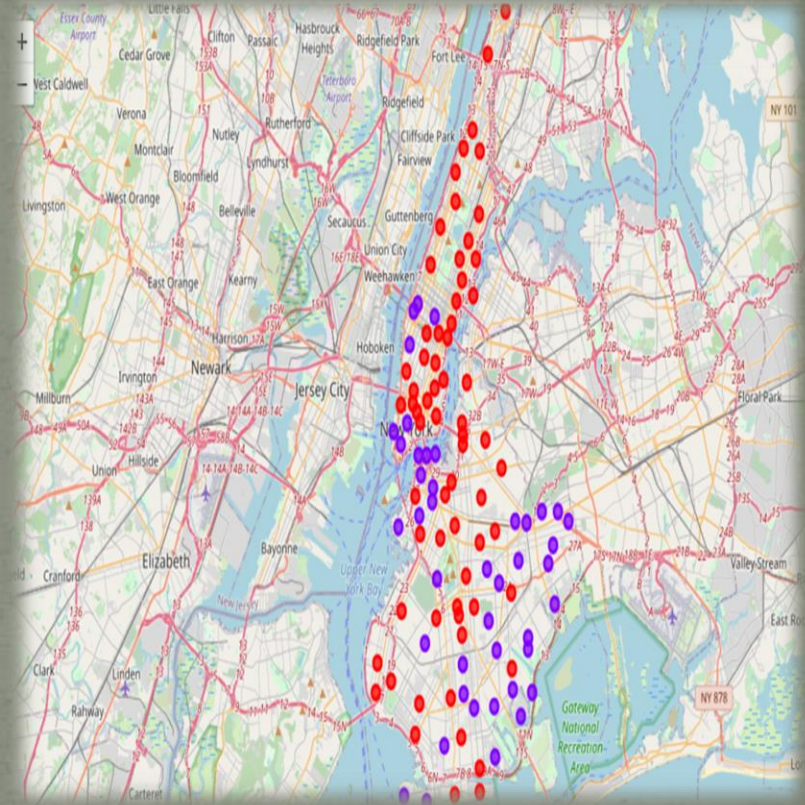
**Bronx, Queens and Staten Island Venues Visualization** : The "BQS\_venues" data frame has 10805 venues and 387 unique venue types.



# Result

## PART – 1 Brooklyn and Manhattan

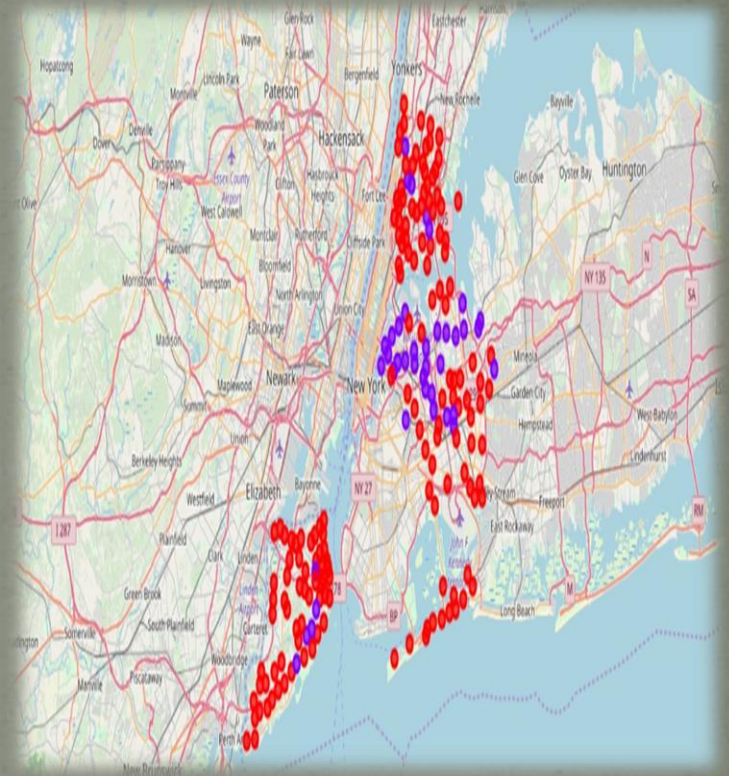
- Segmenting and Clustering Neighborhoods
  - Cluster<sub>0</sub> : The Total and Total Sum of cluster<sub>0</sub> has smallest value. It shows that the market is not saturated.
  - Cluster<sub>1</sub> : The Total and Total Sum is very high. Lot of competition. Saturated neighborhoods.





## PART – 2 Bronx, Queens and Staten Island

- Segmenting and Clustering Neighborhoods
  - Cluster<sub>0</sub> : The Total and Total Sum of cluster<sub>0</sub> has smallest value. It shows that the market is not saturated. There are untapped markets.
  - Cluster<sub>1</sub> : The Total and Total Sum is very high. Lot of competition. Saturated neighborhoods.



# Discussion

1. The farmers market can be started in Bronx, Queens and Staten Island.
2. The Italian and Puerto Rican restaurants can be started in Bronx, Queens and Staten Island as there numbers of restaurants are less.
3. If you are risk taker then you can start a restaurant in Brooklyn and Manhattan of cuisine like Italian, Irish, Jewish. The risk is high as there are many restaurants in the same area.



# Conclusion

1. This analysis is performed on limited data.
2. This may be right or maybe not. But if good data is available there is scope to come up with much better result
3. If there are lots of restaurants then probably there is lot of demand and risk can be taken by open a restaurant in an area like Brooklyn and Manhattan.
4. As per neighborhood and demand Italian restaurant can be much preferred.