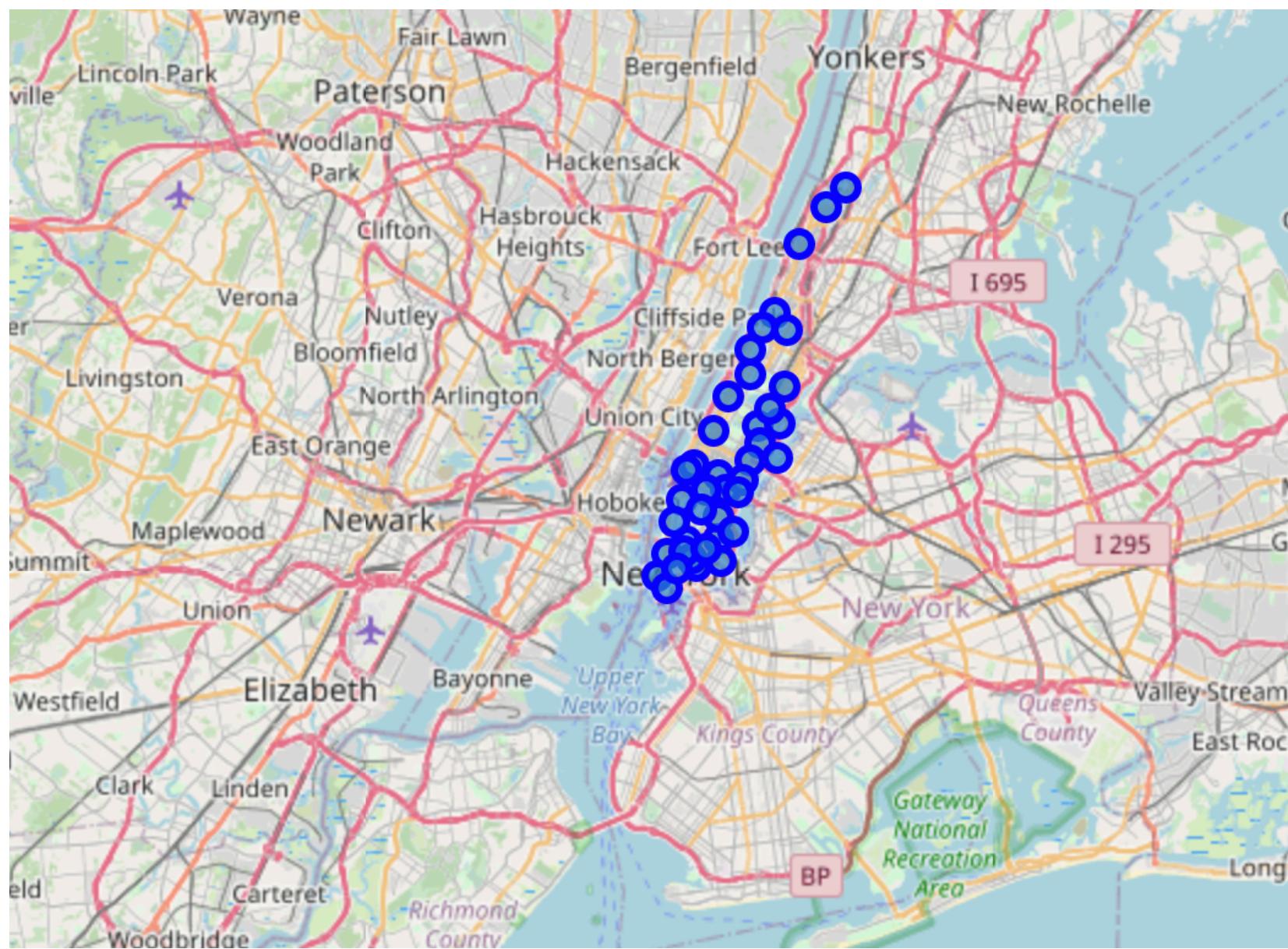




# ANALYZING OPTIMAL NEIGHBORHOODS TO OPEN A RESTAURANT IN MANHATTAN, NEW YORK

# Data Acquisition and Preparation

- The data obtained to do this project was easily accessible and consisted of a New York Data set in conjunction with the use of Foursquare API.
- The data was imported as a JSON file and converted to a pandas Data frame to allow analysis.
- A Foursquare API developer account was opened prior to this project to enable calls to be made to the API and obtain venue information for Manhattan.



## Segmentation of Manhattan

- Data segmented to cover Manhattan, data was grouped into the neighborhoods that were in this borough.

## Frequency of venues

American Restaurant	Antique Shop	Arepas Restaurant	Argentinian Restaurant	Art Gallery	Art Museum	Arts & Crafts Store	Asian Restaurant	Asian &...
0.000	0.000000	0.00	0.000000	0.000000	0.000000	0.000000	0.000000	0.
0.000	0.011236	0.00	0.000000	0.011236	0.000000	0.022472	0.000000	0.000000
0.182	0.045455	0.00	0.000000	0.000000	0.045455	0.000000	0.000000	0.
0.000	0.040000	0.00	0.000000	0.000000	0.050000	0.000000	0.000000	0.010000
0.000	0.030000	0.00	0.000000	0.000000	0.000000	0.000000	0.020000	0.
0.000	0.020000	0.01	0.000000	0.000000	0.000000	0.000000	0.010000	0.
0.000	0.040000	0.00	0.000000	0.000000	0.000000	0.000000	0.000000	0.
0.000	0.000000	0.00	0.000000	0.000000	0.000000	0.000000	0.000000	0.
0.000	0.010000	0.00	0.000000	0.010000	0.010000	0.000000	0.010000	0.
0.000	0.030000	0.00	0.000000	0.000000	0.000000	0.000000	0.000000	0.
0.000	0.050000	0.00	0.000000	0.000000	0.010000	0.000000	0.010000	0.

## Frequency of venues

- Calls made to Foursquare API to obtain venues for each borough and the mean frequency of each venue was represented as a data frame.
- The call to the API used a radius of 500m.

## Top 10 most common venues for each neighborhood

- Data frame presents most common venues for 40 neighborhoods in Manhattan
- Presents the type of each venue

3rd Most Common Venue	4th Most Common Venue	5th Most Common Venue	6th Most Common Venue	7th Most Common Venue	8th Most Common Venue	9th Most Common Venue	10th Most Common V
Park	Gym	Clothing Store	Memorial Site	Playground	Sandwich Place	Gourmet Shop	
Bookstore	French Restaurant	Cosmetics Shop	Yoga Studio	Gym	Wine Shop	Pizza Place	Japanese Restaurant
Seafood Restaurant	Bar	Chinese Restaurant	Art Gallery	Cosmetics Shop	American Restaurant	Fried Chicken Joint	Caribbean Restaurant
Art Gallery	American Restaurant	French Restaurant	Seafood Restaurant	Ice Cream Shop	Wine Shop	Cupcake Shop	Cosmetics
Dessert Shop	Cocktail Bar	Hotpot Restaurant	Spa	American Restaurant	Bubble Tea Shop	Salon / Barbershop	Ice Cream
Spa	Cocktail Bar	Hotel	Yoga Studio	French Restaurant	Italian Restaurant	Bakery	
Theater	American Restaurant	Sandwich Place	Coffee Shop	Wine Shop	Hotel	Cocktail Bar	
Bakery	Sandwich Place	Park	Deli / Bodega	Latin American Restaurant	Steakhouse	Cocktail Bar	Taco
Mexican Restaurant	Italian Restaurant	Wine Bar	Korean Restaurant	Coffee Shop	Ice Cream Shop	Seafood Restaurant	Salon / Barber
Cocktail Bar	Bar	Pizza Place	Gym / Fitness Center	Gym	Salad Place	American Restaurant	Meat Restaurant
Japanese Restaurant	Gym / Fitness Center	New American Restaurant	Wine Shop	Coffee Shop	Sporting Goods Shop	Spa	Furniture / Home
Pizza Place	American Restaurant	Bagel Shop	Cocktail Bar	Playground	Wine Shop	Grocery Store	Meat Restaurant
Restaurant	Café	Indian Restaurant	Gym	American Restaurant	Boutique	Bakery	Gourmet
Deli / Bodega	Café	Mexican Restaurant	Yoga Studio	Sushi Restaurant	Liquor Store	Caribbean Restaurant	Latin American Restaurant

## Applicable Neighborhoods

- The data showed three neighborhoods not containing a restaurant venue in the top 10.
- Battery Park City, Marble Hill and Stuyvesant Town.

Neighborhood	1st Most Common Venue	2nd Most Common Venue	3rd Most Common Venue	4th Most Common Venue	5th Most Common Venue	6th Most Common Venue	7th Most Common Venue	8th Most Common Venue	9th Most Common Venue	10th Most Common Venue
0	Battery Park City	Coffee Shop	Hotel	Park	Gym	Clothing Store	Memorial Site	Playground	Sandwich Place	Gourmet Shop
1	Marble Hill	Sandwich Place	Coffee Shop	Gym	Discount Store	Yoga Studio	Diner	Supplement Shop	Donut Shop	Steakhouse
2	Stuyvesant Town	Park	Bar	Coffee Shop	Harbor / Marina	Gas Station	Boat or Ferry	Farmers Market	Gym / Fitness Center	Cocktail Bar

# Results

- Through the use of segmentation and clustering techniques, three neighborhoods were identified as good locations for a new restaurant.
- **Battery Park City**
- **Marble Hill**
- **Stuyvesant Town**
- These 3 neighborhoods did not contain a restaurant venue in their top 10 most common venues within a 500 meter radius.