PRESENTATION

Capstone Project – Battle of the Neighborhoods

Problem:-

"How to choose the Best Place to start a Pizza Restaurant in Bronx, New York?"

*Solution:-*

**First Step:** Data Gathering, Exploration and Visualization for Neighborhoods

Data Frame - Exploration

	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 Map - Visualization
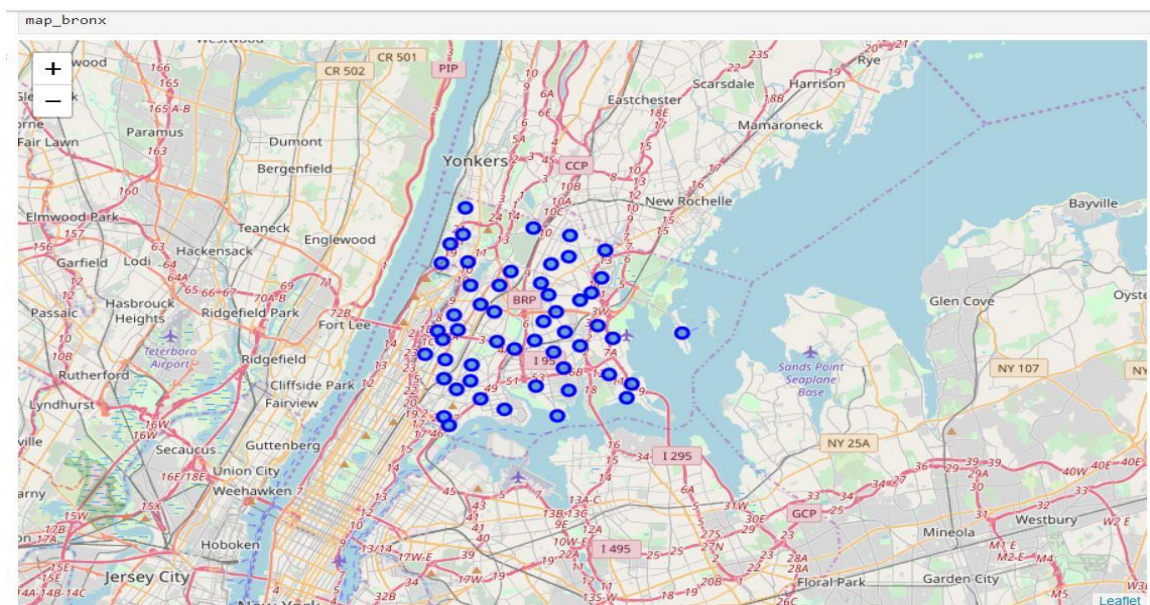
Data Map – Visualization with labels
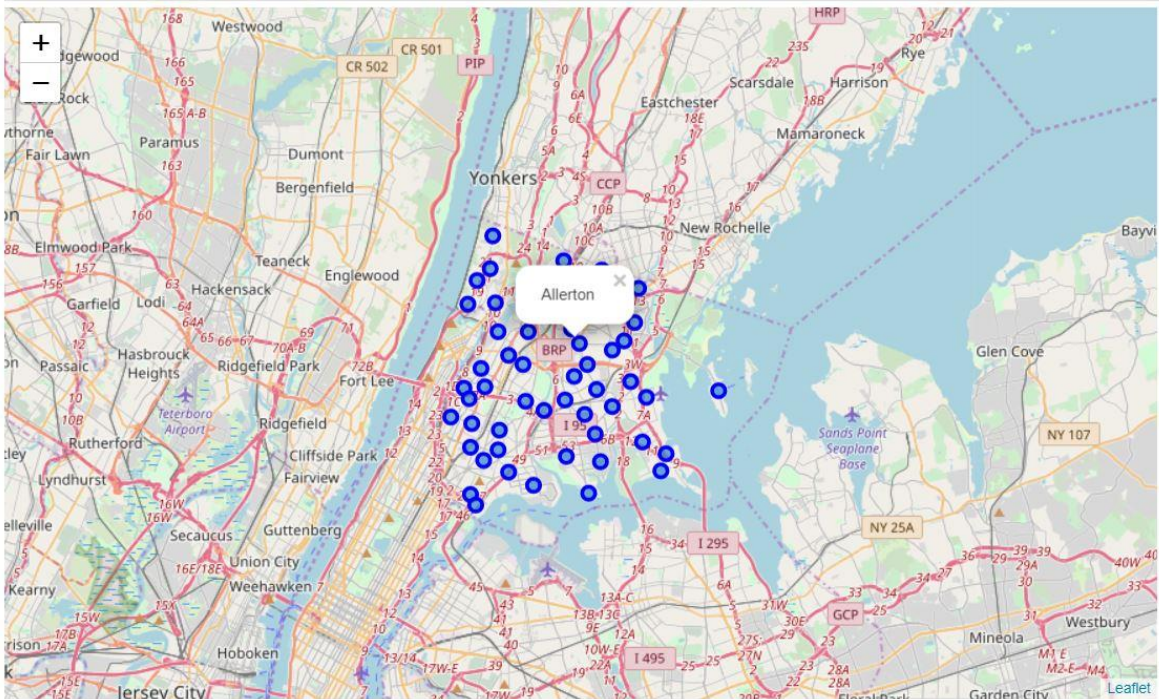
Second Step: Data Exploration for the venues of the Neighborhood

Data Frame of Neighborhoods with Venue details

	Neighborhood	Neighborhood Latitude	Neighborhood Longitude	Venue	Venue Latitude	Venue Longitude	Venue Category
0	Wakefield	40.894705	-73.847201	Lollipops Gelato	40.894123	-73.845892	Dessert Shop
1	Wakefield	40.894705	-73.847201	Rite Aid	40.896649	-73.844846	Pharmacy
2	Wakefield	40.894705	-73.847201	Cooler Runnings Jamaican Restaurant Inc	40.898276	-73.850381	Caribbean Restaurant
3	Wakefield	40.894705	-73.847201	Shell	40.894187	-73.845862	Gas Station
4	Wakefield	40.894705	-73.847201	Carvel Ice Cream	40.890487	-73.848568	Ice Cream Shop

Data Frame of grouped Neighborhoods based on Venue frequency

	Neighborhood	Accessories Store	African Restaurant	Airport Tram	American Restaurant	Arcade	Arepa Restaurant	Art Gallery	Art Museum	Asian Restaurant	Athletics & Sports	Automotive Shop	BBQ Joint
0	Allerton	0.0	0.0	0.0	0.000000	0.000000	0.0	0.0	0.0	0.0	0.0	0.0	0.000000
1	Baychester	0.0	0.0	0.0	0.045455	0.045455	0.0	0.0	0.0	0.0	0.0	0.0	0.045455
2	Bedford Park	0.0	0.0	0.0	0.000000	0.000000	0.0	0.0	0.0	0.0	0.0	0.0	0.000000
3	Belmont	0.0	0.0	0.0	0.010417	0.000000	0.0	0.0	0.0	0.0	0.0	0.0	0.000000
4	Bronxdale	0.0	0.0	0.0	0.000000	0.000000	0.0	0.0	0.0	0.0	0.0	0.0	0.000000

Data Frame of most common venues among Neighborhoods

	Neighborhood	1st Most Common Venue	2nd Most Common Venue	3rd Most Common Venue
0	Allerton	Pizza Place	Supermarket	Deli / Bodega
1	Baychester	Breakfast Spot	Donut Shop	Sandwich Place
2	Bedford Park	Diner	Pizza Place	Deli / Bodega
3	Belmont	Italian Restaurant	Pizza Place	Deli / Bodega
4	Bronxdale	Italian Restaurant	Park	Eastern European Restaurant

Third Step: Data Clustering for the Neighborhoods

## Data Frame of most common venue data with cluster labels

	Borough	Neighborhood	Latitude	Longitude	Cluster Labels	1st Most Common Venue	2nd Most Common Venue	3rd Most Common Venue
0	Bronx	Wakefield	40.894705	-73.847201	2	Pharmacy	Sandwich Place	Ice Cream Shop
1	Bronx	Co-op City	40.874294	-73.829939	2	Baseball Field	Restaurant	Bus Station
2	Bronx	Eastchester	40.887556	-73.827806	2	Caribbean Restaurant	Bus Station	Deli / Bodega
3	Bronx	Fieldston	40.895437	-73.905643	0	River	High School	Playground
4	Bronx	Riverdale	40.890834	-73.912585	1	Park	Bus Station	Home Service

Cluster Map for the Neighborhoods based on venues
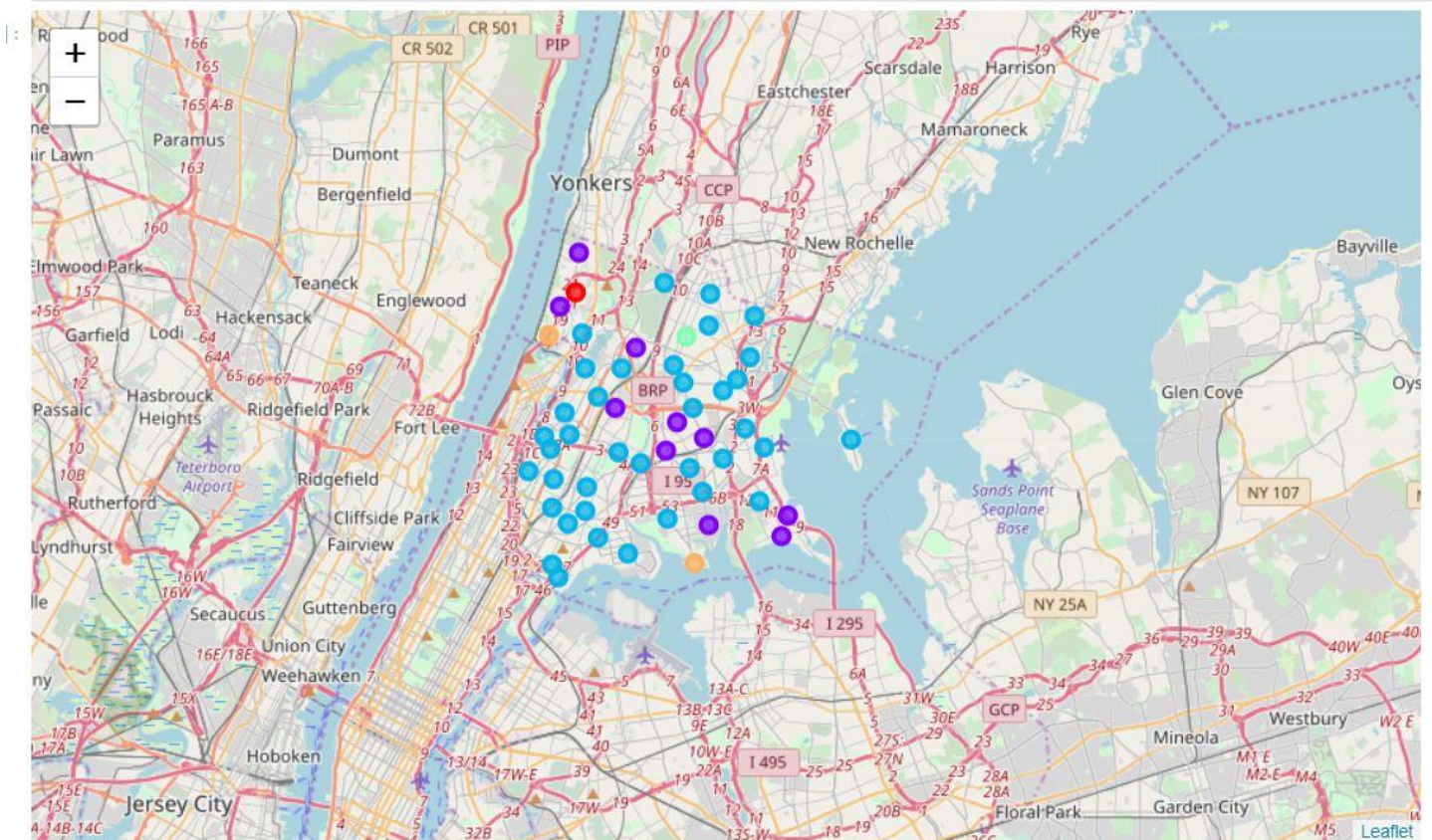
Cluster Map for the Neighborhoods with label
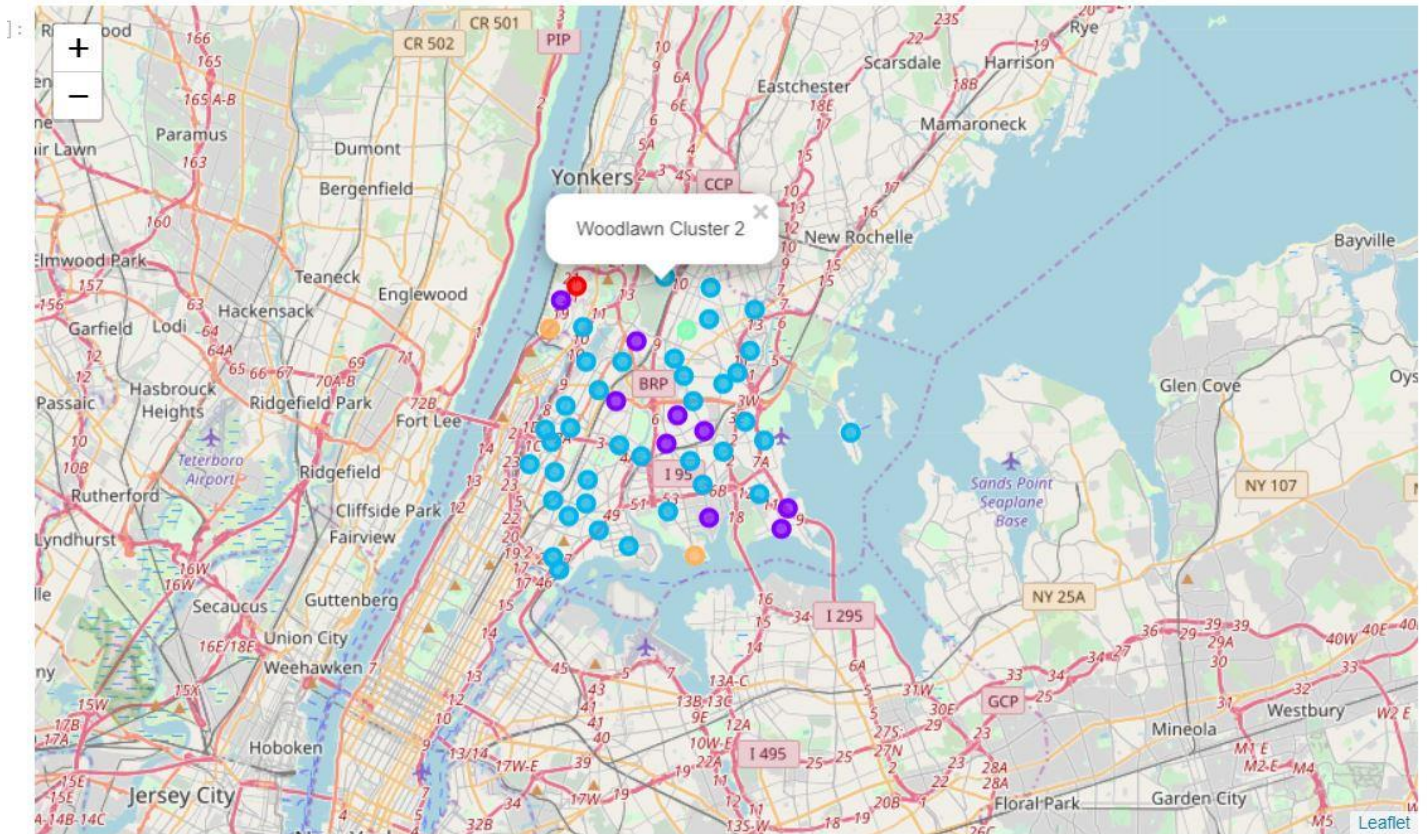
Final Step: Cluster Examination

Data Frame for Cluster 1

	Neighborhood	1st Most Common Venue	2nd Most Common Venue	3rd Most Common Venue
4	Riverdale	Park	Bus Station	Home Service
7	Norwood	Pizza Place	Deli / Bodega	Park
27	Throgs Neck	Deli / Bodega	Pizza Place	Coffee Shop
31	Van Nest	Deli / Bodega	Pizza Place	Supermarket
32	Morris Park	Pizza Place	Burger Joint	Bakery
33	Belmont	Italian Restaurant	Pizza Place	Deli / Bodega
35	North Riverdale	Pizza Place	Italian Restaurant	Coffee Shop
38	Edgewater Park	Italian Restaurant	Deli / Bodega	Pizza Place
39	Castle Hill	Pizza Place	Pharmacy	Market
49	Bronxdale	Italian Restaurant	Park	Eastern European Restaurant

Data Frame for Cluster 2

	Neighborhood	1st Most Common Venue	2nd Most Common Venue	3rd Most Common Venue
0	Wakefield	Pharmacy	Sandwich Place	Ice Cream Shop
1	Co-op City	Baseball Field	Restaurant	Bus Station
2	Eastchester	Caribbean Restaurant	Bus Station	Deli / Bodega
5	Kingsbridge	Pizza Place	Sandwich Place	Supermarket
6	Woodlawn	Pub	Playground	Deli / Bodega
9	Baychester	Breakfast Spot	Donut Shop	Sandwich Place
10	Pelham Parkway	Pizza Place	Italian Restaurant	Bus Station
11	City Island	Harbor / Marina	Thrift / Vintage Store	Ice Cream Shop
12	Bedford Park	Diner	Pizza Place	Deli / Bodega
13	University Heights	Pizza Place	Food	Bakery
14	Morris Heights	Grocery Store	Playground	Bank
15	Fordham	Pizza Place	Donut Shop	Chinese Restaurant
16	East Tremont	Pizza Place	Café	Breakfast Spot
17	West Farms	Bus Station	Metro Station	Coffee Shop
18	High Bridge	Pizza Place	Pharmacy	Bus Station
19	Melrose	Pizza Place	Pharmacy	Discount Store
20	Mott Haven	Pizza Place	Spanish Restaurant	Gym
21	Port Morris	Peruvian Restaurant	Distillery	Flower Shop
22	Longwood	Donut Shop	Fast Food Restaurant	Community Center
23	Hunts Point	Pizza Place	Gourmet Shop	Restaurant

Note: We are displaying only two clusters because the most common venue for both is the Pizza place, which is our target value.

Recommendation: Choose the Neighborhood from the below to open up the Pizza restaurant

Data Frame for the list of recommended Neighborhoods

15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
Kingsbridge Heights	Allerton	Edenwald	Hunts Point	Mott Haven	Melrose	High Bridge	East Tremont	Fordham	University Heights	Pelham Parkway	Kingsbridge	Castle Hill	North Riverdale	Morris Park	Norwood