

Compare the neighborhoods
of Manhattan and Brooklyn
of New York City and its
venues data analysis

Introduction

- Manhattan & Brooklyn are boroughs of New York City
- Manhattan most densely populated with 72,033 people per square mile & geographically smallest
- Brooklyn second-most densely populated with 37,137 people per square mile & geographically second largest
- Both densely populated with high population density
- ✓ Whether Manhattan & Brooklyn are similar or dissimilar?
- ✓ Where to start a new business or restaurant?
- ✓ Which borough suitable for starting a new business or restaurant?

Data acquisition and cleaning

❖ Data Source

- Neighborhoods data of New York City obtained from Spatial Data Repository of NYU

❖ Data Cleaning

- Cleaned & reduced data to Manhattan and Brooklyn.

❖ Explore neighborhoods using Foursquare data

- Used Foursquare API for exploring the venues in Manhattan and Brooklyn.

Using geopy & Folium to visualise map of Manhattan & Brooklyn



- Latitude and Longitude values obtained using geopy library & visualized using Folium
- Manhattan geographically smaller with 40 neighborhoods
- Brooklyn second largest in New York with 70 neighborhoods

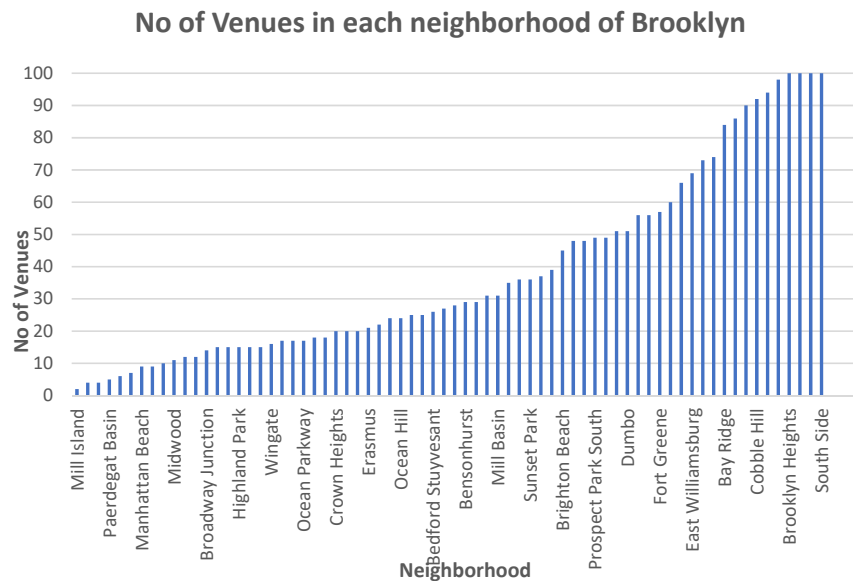
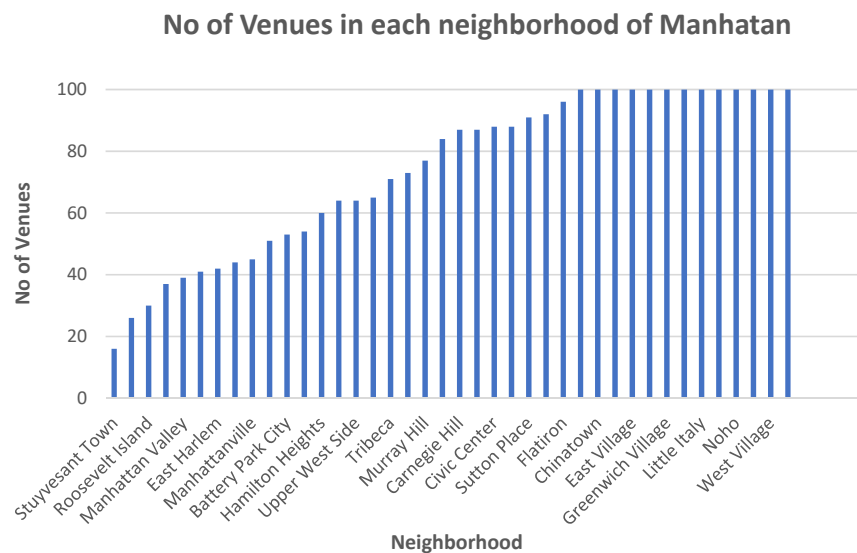
Using Foursquare API for exploring venues of Manhattan & Brooklyn

	Neighborhood	Neighborhood Latitude	Neighborhood Longitude	Venue	Venue Latitude	Venue Longitude	Venue Category
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	Starbucks	40.877531	-73.905582	Coffee Shop
4	Marble Hill	40.876551	-73.91066	Dunkin'	40.877136	-73.906666	Donut Shop

	Neighborhood	Neighborhood Latitude	Neighborhood Longitude	Venue	Venue Latitude	Venue Longitude	Venue Category
0	Bay Ridge	40.625801	-74.030621	Pilo Arts Day Spa and Salon	40.624748	-74.030591	Spa
1	Bay Ridge	40.625801	-74.030621	Bagel Boy	40.627896	-74.029335	Bagel Shop
2	Bay Ridge	40.625801	-74.030621	Leo's Casa Calamari	40.624200	-74.030931	Pizza Place
3	Bay Ridge	40.625801	-74.030621	Pegasus Cafe	40.623168	-74.031186	Breakfast Spot
4	Bay Ridge	40.625801	-74.030621	The Bookmark Shoppe	40.624577	-74.030562	Bookstore

Foursquare API was used for exploring the venues

Number of venues for each neighborhood



- 50% of neighborhoods in Manhattan had more than 80 venues
- 13 neighborhoods out of 40 in Manhattan, had reached 100 limits of venues
- Whereas 50% of neighborhoods in Brooklyn has less than 30 venues
- Only 4 neighborhoods in Brooklyn reached the limit of 100 for venues

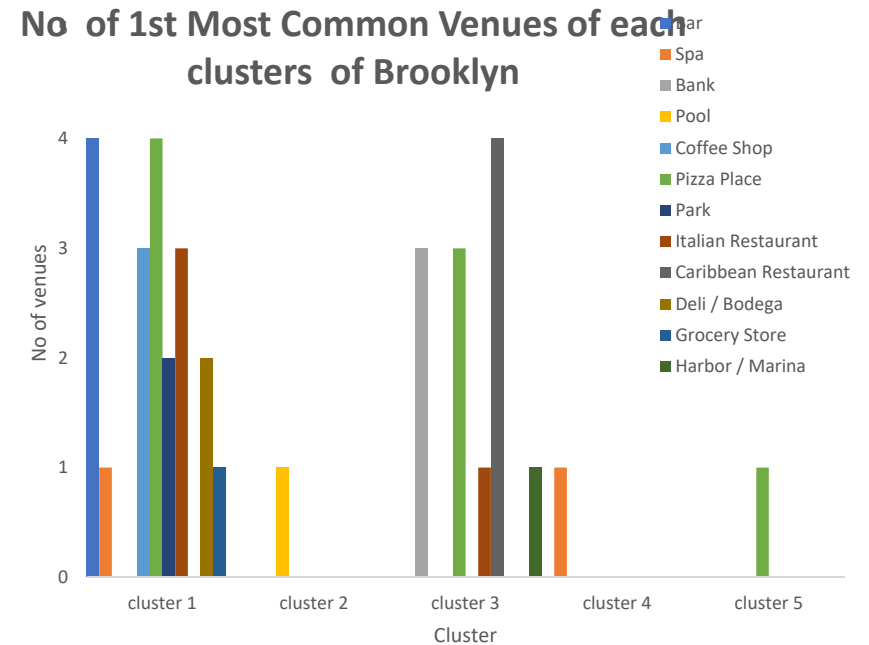
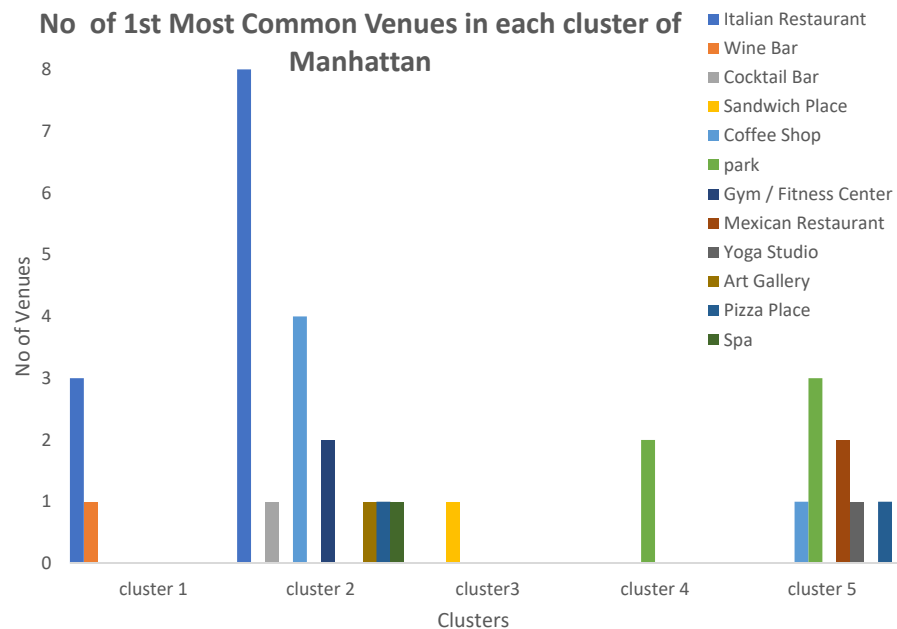
Clustering Neighborhoods

- Clustered using k Means clustering with k value as 5
- 5 clusters with 10 most common venues were derived

	Borough	Neighborhood	Latitude	Longitude	Cluster Label	Cluster Labels01	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	Manhattan	Marble Hill	40.876551	-73.910660	2	2	Sandwich Place	American Restaurant	Gym	Coffee Shop	Yoga Studio	Donut Shop	Tennis Stadium	Supplement Shop	Steakhouse	Seafood Restaurant
1	Manhattan	Chinatown	40.715618	-73.994279	1	1	Cocktail Bar	Chinese Restaurant	Bakery	Bar	Optical Shop	Coffee Shop	Spa	Salon / Barbershop	American Restaurant	Boutique
2	Manhattan	Washington Heights	40.851903	-73.936900	4	4	Café	Bakery	Deli / Bodega	Mobile Phone Shop	Chinese Restaurant	Grocery Store	Donut Shop	Tapas Restaurant	Mexican Restaurant	Supplement Shop
3	Manhattan	Inwood	40.867684	-73.921210	4	4	Mexican Restaurant	Bakery	Café	Pizza Place	Lounge	Restaurant	Park	Chinese Restaurant	Frozen Yogurt Shop	American Restaurant
4	Manhattan	Hamilton Heights	40.823604	-73.949688	4	4	Pizza Place	Coffee Shop	Café	Mexican Restaurant	Deli / Bodega	Cocktail Bar	Indian Restaurant	Sushi Restaurant	Park	Yoga Studio

	Borough	Neighborhood	Latitude	Longitude	Cluster Labels	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	Brooklyn	Bay Ridge	40.625801	-74.030621	0	Spa	Italian Restaurant	Pizza Place	American Restaurant	Greek Restaurant	Bar	Thai Restaurant	Sushi Restaurant	Cosmetics Shop	Bagel Shop
1	Brooklyn	Bensonhurst	40.611009	-73.995180	2	Sushi Restaurant	Ice Cream Shop	Grocery Store	Donut Shop	Italian Restaurant	Pet Store	Bagel Shop	Cha Chaan Teng	Liquor Store	Chinese Restaurant
2	Brooklyn	Sunset Park	40.645103	-74.010316	2	Latin American Restaurant	Pizza Place	Mexican Restaurant	Bank	Bakery	Ice Cream Shop	Mobile Phone Shop	Gym	Fried Chicken Joint	Women's Store
3	Brooklyn	Greenpoint	40.730201	-73.954241	0	Pizza Place	Coffee Shop	Bar	Cocktail Bar	Yoga Studio	Sushi Restaurant	Restaurant	Grocery Store	Tea Room	Salon / Barbershop
4	Brooklyn	Gravesend	40.595260	-73.973471	2	Pizza Place	Lounge	Bus Station	Chinese Restaurant	Bakery	Italian Restaurant	Furniture / Home Store	Hookah Bar	Pharmacy	Metro Station

1st Most Common venues of each cluster



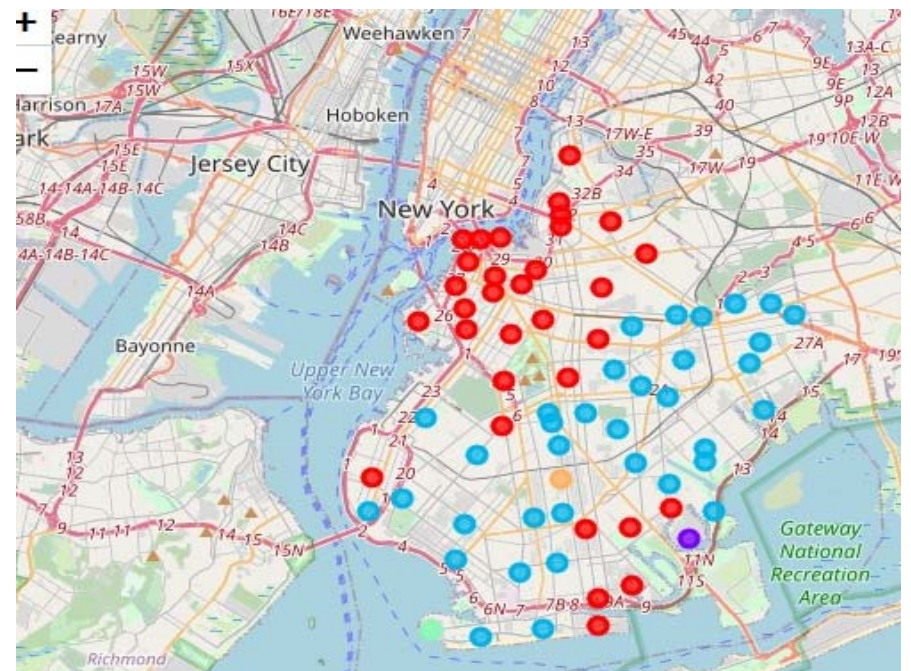
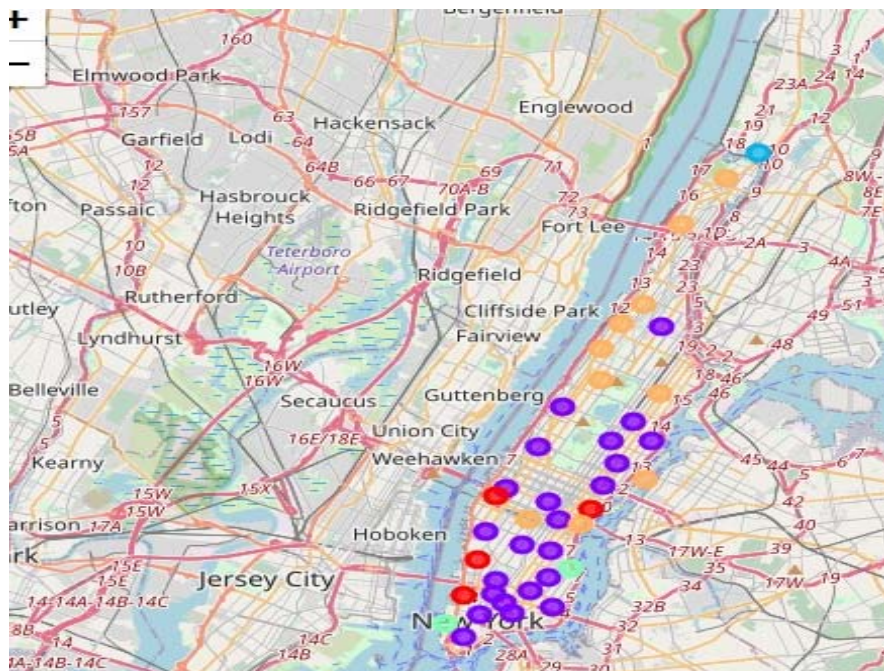
- Manhattan and Brooklyn were similar with type of venues
- Both had 2 clusters multiple kind of venues and remaining with either eateries or recreation venues

Clusters of Manhattan & Brooklyn

	Manhattan	Brooklyn
Cluster 1	Restaurants & Bar	Food & social venues
Cluster 2	All in one place	Recreation
Cluster 3	Eateries	All in one place
Cluster 4	Recreation	Recreation
Cluster 5	Food & social venues	Eateries

Both Manhattan and Brooklyn had similar kind of venues and segmented into similar clusters

Clustered map of Manhattan and Brooklyn



Both had two big clusters with all types of venues like restaurants, recreation, parks, fitness centers etc. and rest 3 with only 1 kind of venues either eateries or recreation or parks

Conclusion

- Both Manhattan & Brooklyn densely populated with high population density
- Manhattan & Brooklyn similar with type of venues
- Both had 2 clusters of multiple kind of venues & remaining with either eateries or recreation venues
- Manhattan & Brooklyn dissimilar with number of venues
- 50% of neighborhoods in Manhattan had more than 80 venues whereas Brooklyn has less than 30 venues
- 13 neighborhoods out of 40 in Manhattan reached limits of 100 venues whereas only 4 neighborhoods out of 70 in Brooklyn
- Both had large number of different kinds of restaurants and eateries
- Consider Brooklyn for starting a new business or restaurants
- Manhattan congested with venues ,hence face high competition if starting a new business or restaurants