

Where to live in New York

----Capstone Project

Problem Discussion

- More and more people are going to New York for business or traveling or maybe for studying. They may have trouble deciding where to live in the New York City because different neighbors have their own features.
- So this project will help thoses people finding the best place for them to live in New York City.
- We will use data about the restaurant, coffee shops, hotel and so on in New York City and cluster the whole city into different sections.

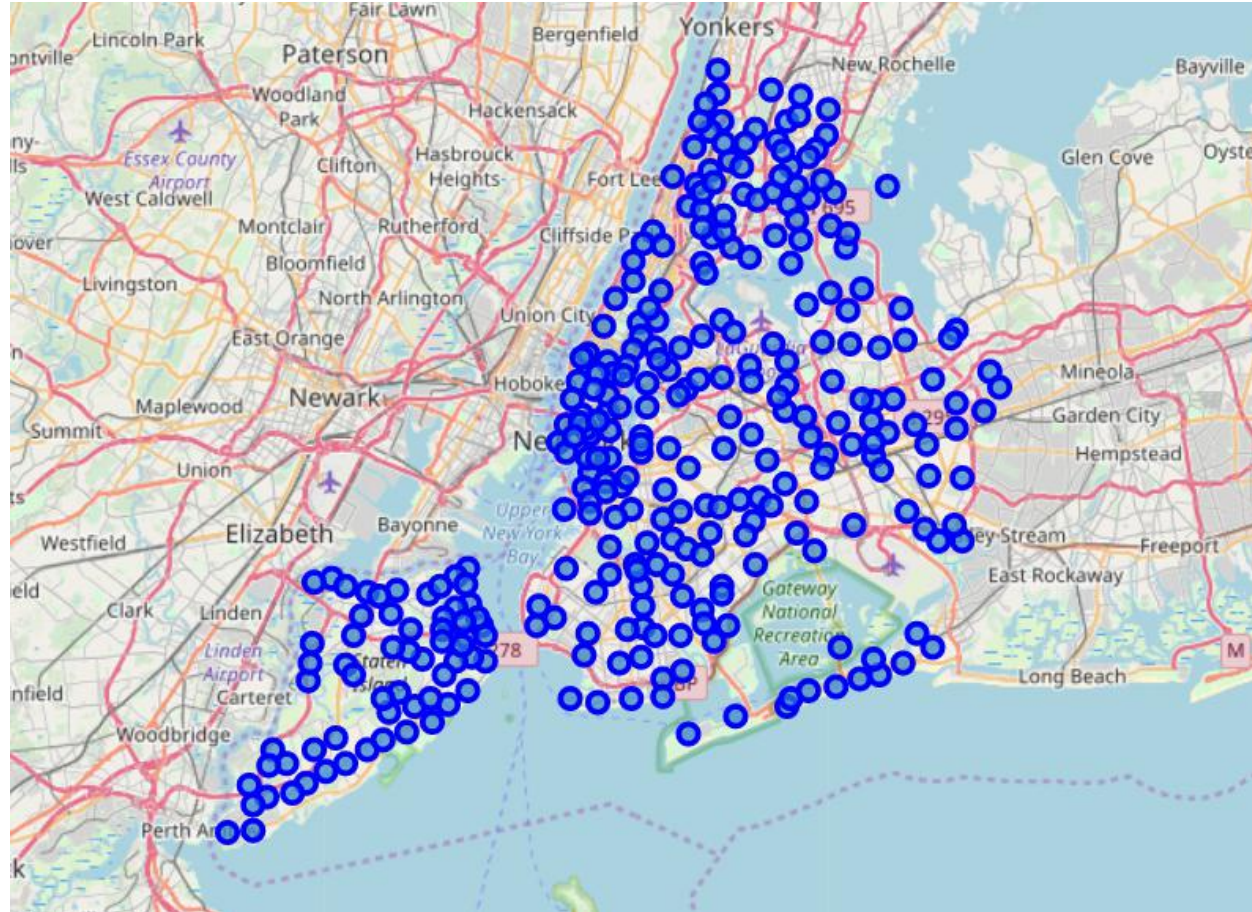
Data Preparation

- Our data is coming from https://cocl.us/new_york_dataset
- The API we use is from <https://foursquare.com>
- We will get the information about the restaurants, hotels or shops from API provided from FourSquare.

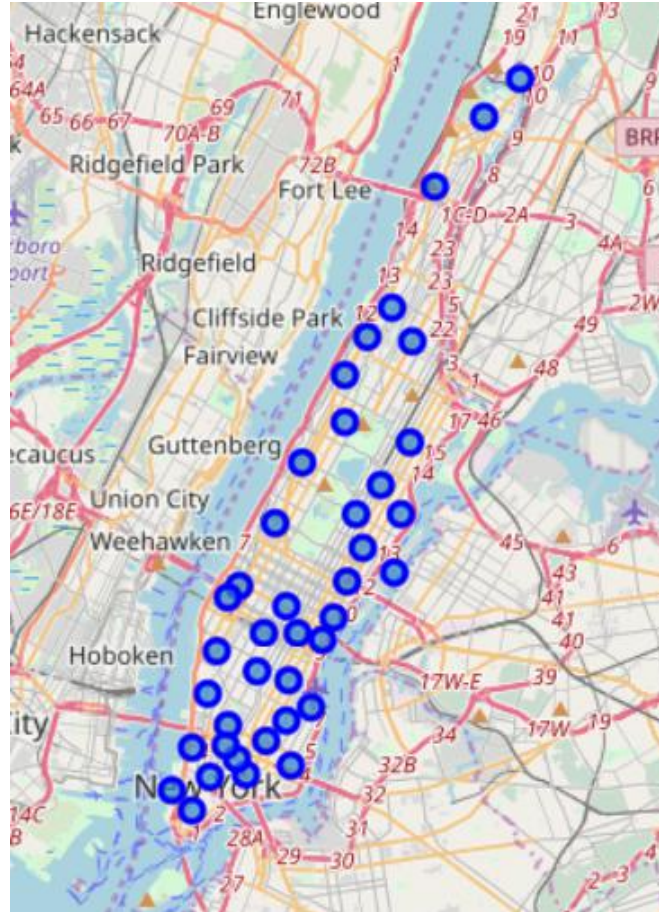
Methodology

- We will mainly use machine learning algorithm to analyze this problem.
- To be more specify, we will use clustering K means.

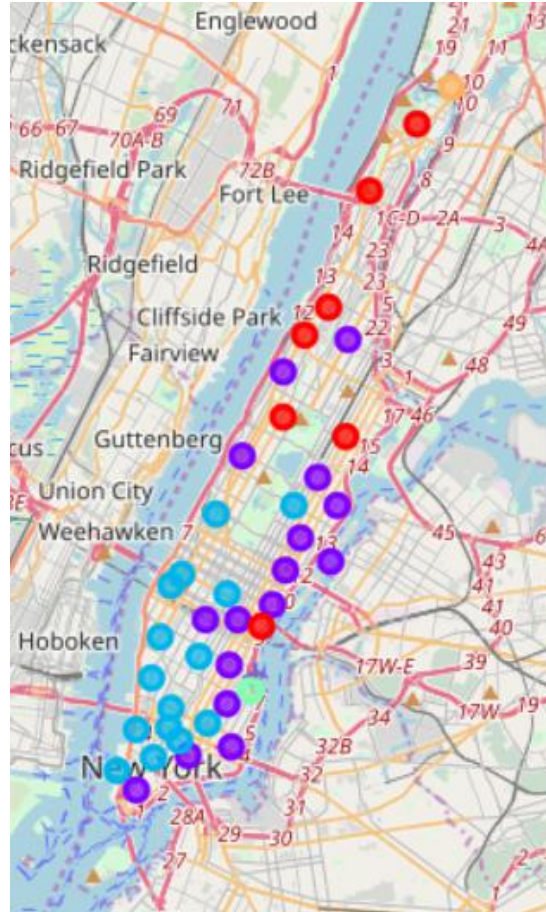
Create a map of New York with neighborhoods



Visualize neighborhoods of Manhattan



Cluster Neighborhoods in 5 clusters



Cluster1

	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
2	Washington Heights	Café	Bakery	Mobile Phone Shop	Grocery Store	Sandwich Place	Chinese Restaurant	Latin American Restaurant	Mexican Restaurant	Tapas Restaurant	Coffee Shop
3	Inwood	Café	Mexican Restaurant	Pizza Place	Lounge	Spanish Restaurant	Park	Chinese Restaurant	Restaurant	Deli / Bodega	Frozen Yogurt Shop
4	Hamilton Heights	Mexican Restaurant	Café	Pizza Place	Coffee Shop	School	Indian Restaurant	Sandwich Place	Bakery	Sushi Restaurant	Deli / Bodega
5	Manhattanville	Park	Coffee Shop	Mexican Restaurant	Italian Restaurant	Seafood Restaurant	Ramen Restaurant	Bus Stop	Bike Trail	Lounge	Sushi Restaurant
7	East Harlem	Mexican Restaurant	Bakery	Deli / Bodega	Pizza Place	Thai Restaurant	Latin American Restaurant	Sandwich Place	Donut Shop	Coffee Shop	Cocktail Bar
25	Manhattan Valley	Indian Restaurant	Pizza Place	Coffee Shop	Yoga Studio	Deli / Bodega	Playground	Café	Bar	Thai Restaurant	Mexican Restaurant
36	Tudor City	Park	Mexican Restaurant	Café	Pizza Place	Greek Restaurant	Deli / Bodega	Sushi Restaurant	Dog Run	Restaurant	Garden

Cluster2

	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
1	Chinatown	Chinese Restaurant	Cocktail Bar	Salon / Barbershop	American Restaurant	Vietnamese Restaurant	Bubble Tea Shop	Spa	Dumpling Restaurant	Bakery	Ice Cream Shop
6	Central Harlem	African Restaurant	Cosmetics Shop	Gym / Fitness Center	American Restaurant	French Restaurant	Bar	Chinese Restaurant	Public Art	Seafood Restaurant	Boutique
9	Yorkville	Italian Restaurant	Gym	Bar	Coffee Shop	Pizza Place	Japanese Restaurant	Ice Cream Shop	Sushi Restaurant	Wine Shop	Deli / Bodega
10	Lenox Hill	Coffee Shop	Pizza Place	Italian Restaurant	Sushi Restaurant	Sporting Goods Shop	Gym	Cosmetics Shop	Gym / Fitness Center	Burger Joint	Cocktail Bar
11	Roosevelt Island	Sandwich Place	Coffee Shop	Park	Playground	Restaurant	Plaza	Food Truck	Farmers Market	Supermarket	Outdoors & Recreation
12	Upper West Side	Italian Restaurant	Wine Bar	Bar	Coffee Shop	Mediterranean Restaurant	Bakery	Cosmetics Shop	Indian Restaurant	Vegetarian / Vegan Restaurant	Café
16	Murray Hill	Coffee Shop	Sandwich Place	Japanese Restaurant	Hotel	Gym / Fitness Center	Bar	Gym	Italian Restaurant	French Restaurant	Steakhouse
19	East Village	Bar	Wine Bar	Chinese Restaurant	Ice Cream Shop	Pizza Place	Mexican Restaurant	Speakeasy	Ramen Restaurant	Japanese Restaurant	Coffee Shop
20	Lower East Side	Coffee Shop	Pizza Place	Café	Chinese Restaurant	Japanese Restaurant	Sandwich Place	Art Gallery	Bakery	Cocktail Bar	Ramen Restaurant
26	Morningside Heights	Park	Coffee Shop	American Restaurant	Bookstore	Food Truck	Tennis Court	Sandwich Place	Burger Joint	Deli / Bodega	Indian Restaurant

Cluster3

	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
8	Upper East Side	Italian Restaurant	Exhibit	Bakery	Coffee Shop	Juice Bar	Art Gallery	Gym / Fitness Center	French Restaurant	Spa	Hotel
13	Lincoln Square	Theater	Gym / Fitness Center	Café	Concert Hall	Plaza	Italian Restaurant	Indie Movie Theater	Performing Arts Venue	Park	Opera House
14	Clinton	Theater	Gym / Fitness Center	American Restaurant	Hotel	Italian Restaurant	Sandwich Place	Wine Shop	Coffee Shop	Spa	Mediterranean Restaurant
15	Midtown	Hotel	Theater	Coffee Shop	Cocktail Bar	Clothing Store	Japanese Restaurant	Steakhouse	Bakery	Bookstore	Sporting Goods Shop
17	Chelsea	Coffee Shop	Ice Cream Shop	Italian Restaurant	Nightclub	Bakery	Art Gallery	Seafood Restaurant	American Restaurant	Theater	Hotel
18	Greenwich Village	Italian Restaurant	Sushi Restaurant	Clothing Store	Chinese Restaurant	Café	Seafood Restaurant	Indian Restaurant	French Restaurant	Cosmetics Shop	Cocktail Bar
21	Tribeca	Park	Café	Italian Restaurant	Boutique	American Restaurant	Spa	Gym	Wine Bar	Greek Restaurant	Wine Shop
22	Little Italy	Bakery	Café	Bubble Tea Shop	Ice Cream Shop	Italian Restaurant	Clothing Store	Sandwich Place	Salon / Barbershop	Mediterranean Restaurant	Yoga Studio
23	Soho	Clothing Store	Boutique	Shoe Store	Art Gallery	Women's Store	Furniture / Home Store	Bakery	Italian Restaurant	Men's Store	Mediterranean Restaurant

Cluster4

	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
37	Stuyvesant Town	Boat or Ferry	Park	Bar	Playground	Basketball Court	Baseball Field	Harbor / Marina	Cocktail Bar	Coffee Shop	Farmers Market

Cluster5

	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	Marble Hill	Sandwich Place	Coffee Shop	Discount Store	Yoga Studio	Diner	Steakhouse	Supplement Shop	Shopping Mall	Seafood Restaurant	Tennis Stadium

Conclusion

- From the analysis above, perhaps we should choose cluster 2 or cluster 3 to live in.
- Cluster 4 and 5 have relative small neighborhoods
- This is only the analysis of Manhattan, if we use the same method to the whole New York, maybe the result is different.