



CAPSTONE PROJECT - THE BATTLE OF NEIGHBORHOODS (WEEK 2)

BY AHMED ELBASHARY

SELECTING THE BEST NEIGHBORHOOD TO OPEN A BAKERY SHOP IN NEW YORK

INTRODUCTION

- People are usually on the go especially in a city like New York where everything is moving so fast.
- This gets us to food that needs to be taken away quickly so people would not waste their time on waiting for food to be done and just take it as the go.
- Bakery Shops are one of the most efficient places to take food as you go.
- Everything is small and fairly cheap and easy to get as you are going.

BUSINESS PROBLEM

- Starting a bakery shop business in New York will be very fruitful.
- You need to be unique as there are many bakeries.
- We found out that we want to open this bakery shop in Manhattan which is a great place to start due to the high traffic of people in the area.
- We need to start finding the best neighborhood to open a bakery which will be next to places that have already succeed in similar areas.
- The main objective of this analysis is to find the best suitable neighborhood in Manhattan for business where we can profit a lot from opening this bakery shop in that particular area.

DATA SELECTION

- First, we will have to get the New York dataset then extract the needed columns from this dataset.

https://cocl.us/new_york_dataset

- Second, find the latitude and longitude for New York to start finding the relevant neighborhoods using this data. Also, start mapping the neighborhoods to see it visually.

```
address = 'New York City, NY'

geolocator = Nominatim(user_agent="ny_explorer")
location = geolocator.geocode(address)
latitude = location.latitude
longitude = location.longitude
print('The geograpical coordinate of New York City are {}, {}'.format(latitude, longitude))
```

The geograpical coordinate of New York City are 40.7127281, -74.0060152.

DATA SELECTION

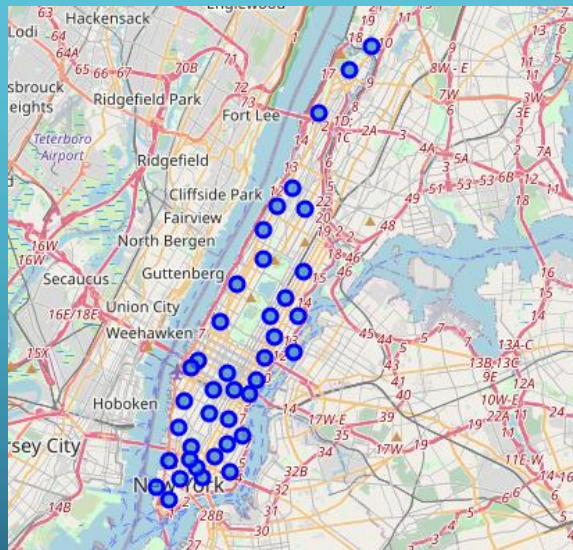
- FourSquare API will be used to explore New York neighborhoods and boroughs

```
# create the API request URL
url = 'https://api.foursquare.com/v2/venues/search?client_id={}&client_secret={}&v={}&ll={},{}&radius={}&limit={}'.format(CLIENT_ID, CLIENT_SECRET, VERSION, lat, lng, radius, LIMIT)
```

- Through the above URL.
- You use your client id and secret to get requests from the server.
- After that you start analyzing the data accordingly and cluster them to find the best neighborhoods for a new bakery shop.

METHODOLOGY

- Manhattan Borough neighborhoods



METHODOLOGY

- As mentioned above we used the url to get the venues that are nearby to every neighborhood.
- But this time we chose a specific category for analysis.
- The bakery shops which had a category id of 4bf58dd8d48988d16a941735

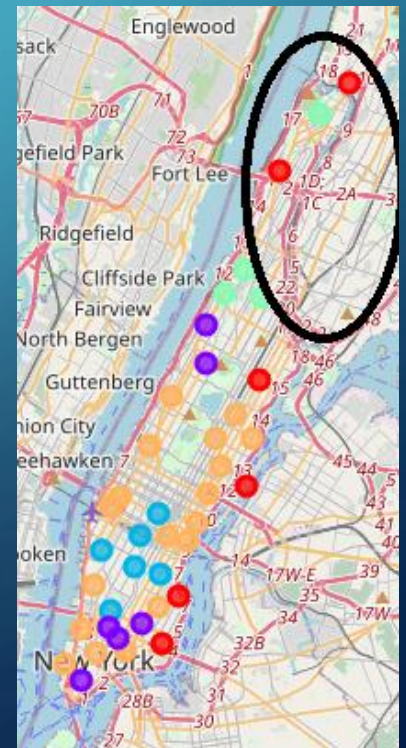
METHODOLOGY

- Machine Learning Technique: K-means Clustering
- The means of the venues category combined through the neighborhood

	Neighborhood	American Restaurant	Arcade	Bagel Shop	Bakery	Breakfast Spot	Bubble Tea Shop	Café	Caribbean Restaurant	Chinese Restaurant
0	Battery Park City	0.026316	0.000000	0.000000	0.710526	0.00	0.000000	0.052632	0.000000	0.000000
1	Carnegie Hill	0.041667	0.000000	0.000000	0.770833	0.00	0.000000	0.083333	0.000000	0.000000
2	Central Harlem	0.000000	0.000000	0.000000	0.857143	0.00	0.000000	0.000000	0.000000	0.000000
3	Chelsea	0.000000	0.000000	0.020408	0.551020	0.00	0.000000	0.142857	0.020408	0.000000
4	Chinatown	0.000000	0.000000	0.020000	0.720000	0.02	0.000000	0.060000	0.000000	0.020000
5	Civic Center	0.020000	0.000000	0.000000	0.720000	0.02	0.000000	0.100000	0.000000	0.020000
6	Clinton	0.020408	0.000000	0.000000	0.693878	0.00	0.000000	0.081633	0.000000	0.000000
7	East Harlem	0.000000	0.000000	0.000000	0.847826	0.00	0.000000	0.043478	0.000000	0.000000
8	East Village	0.022727	0.000000	0.022727	0.704545	0.00	0.000000	0.022727	0.000000	0.000000
9	Financial District	0.026316	0.026316	0.000000	0.657895	0.00	0.000000	0.078947	0.000000	0.000000
10	Flatiron	0.020000	0.000000	0.020000	0.500000	0.00	0.000000	0.120000	0.000000	0.000000

RESULTS

- This is where we think is the best neighborhood to open a bakery shop.
- The Upper West area of Manhattan.
- Due to less number of bakery for better advantage.
- But still these areas have successful bakery shops.



CLUSTER 1

	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	Bakery	Bagel Shop	Food	Vegetarian / Vegan Restaurant	Dessert Shop	Arcade	Breakfast Spot	Bubble Tea Shop	Café	Caribbean Restaurant
2	Washington Heights	Bakery	Ice Cream Shop	Vegetarian / Vegan Restaurant	Dessert Shop	Arcade	Bagel Shop	Breakfast Spot	Bubble Tea Shop	Café	Caribbean Restaurant
7	East Harlem	Bakery	Café	Ice Cream Shop	Mexican Restaurant	Italian Restaurant	Coffee Shop	Vegetarian / Vegan Restaurant	Deli / Bodega	Arcade	Bagel Shop
11	Roosevelt Island	Bakery	Ice Cream Shop	French Restaurant	Coffee Shop	Vegetarian / Vegan Restaurant	Deli / Bodega	Arcade	Bagel Shop	Breakfast Spot	Bubble Tea Shop
20	Lower East Side	Bakery	Bagel Shop	Donut Shop	Dessert Shop	Pie Shop	Café	Cocktail Bar	Coffee Shop	Arcade	Breakfast Spot
37	Stuyvesant Town	Bakery	Dessert Shop	Cupcake Shop	Vegetarian / Vegan Restaurant	Arcade	Bagel Shop	Breakfast Spot	Bubble Tea Shop	Café	Caribbean Restaurant

CLUSTER 2

	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
22	Little Italy	Bakery	Café	Dessert Shop	Bagel Shop	American Restaurant	Cocktail Bar	Chinese Restaurant	French Restaurant	Ice Cream Shop	Coffee Shop
23	Soho	Bakery	Café	Dessert Shop	American Restaurant	Cocktail Bar	Chinese Restaurant	French Restaurant	Ice Cream Shop	Bubble Tea Shop	Cupcake Shop
25	Manhattan Valley	Bakery	Ice Cream Shop	Pizza Place	Chinese Restaurant	Coffee Shop	Dessert Shop	Vegetarian / Vegan Restaurant	Deli / Bodega	Arcade	Bagel Shop
26	Morningside Heights	Bakery	Ice Cream Shop	Chinese Restaurant	French Restaurant	Coffee Shop	Dessert Shop	Vegetarian / Vegan Restaurant	Deli / Bodega	Arcade	Bagel Shop
29	Financial District	Bakery	Café	Dessert Shop	Ice Cream Shop	American Restaurant	Gourmet Shop	Coffee Shop	Arcade	Sandwich Place	Snack Place
31	Noho	Bakery	Café	Coffee Shop	Dessert Shop	Bagel Shop	Cocktail Bar	French Restaurant	Ice Cream Shop	Donut Shop	Cupcake Shop

CLUSTER 3

	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
15	Midtown	Bakery	Café	Coffee Shop	Cupcake Shop	Japanese Restaurant	Snack Place	Deli / Bodega	Dessert Shop	Pie Shop	Turkish Restaurant
17	Chelsea	Bakery	Café	Coffee Shop	Ice Cream Shop	French Restaurant	Cupcake Shop	Bagel Shop	Caribbean Restaurant	Dessert Shop	Vegetarian / Vegan Restaurant
18	Greenwich Village	Bakery	Coffee Shop	Café	Cupcake Shop	Dessert Shop	Cocktail Bar	French Restaurant	Ice Cream Shop	American Restaurant	Breakfast Spot
27	Gramercy	Bakery	Dessert Shop	Coffee Shop	Café	Ice Cream Shop	American Restaurant	Cupcake Shop	Japanese Restaurant	French Restaurant	Arcade
33	Midtown South	Bakery	Café	Coffee Shop	Dessert Shop	French Restaurant	Japanese Restaurant	Turkish Restaurant	Ice Cream Shop	Cupcake Shop	Bagel Shop
38	Flatiron	Bakery	Coffee Shop	Café	Dessert Shop	Cupcake Shop	French Restaurant	American Restaurant	Bagel Shop	Japanese Restaurant	Ice Cream Shop

CLUSTER 4

	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
3	Inwood	Bakery	Ice Cream Shop	Vegetarian / Vegan Restaurant	Dessert Shop	Arcade	Bagel Shop	Breakfast Spot	Bubble Tea Shop	Café	Caribbean Restaurant
4	Hamilton Heights	Bakery	Ice Cream Shop	Coffee Shop	Vegetarian / Vegan Restaurant	Dessert Shop	Arcade	Bagel Shop	Breakfast Spot	Bubble Tea Shop	Café
5	Manhattanville	Bakery	Ice Cream Shop	French Restaurant	Coffee Shop	Vegetarian / Vegan Restaurant	Deli / Bodega	Arcade	Bagel Shop	Breakfast Spot	Bubble Tea Shop
6	Central Harlem	Bakery	Ice Cream Shop	Vegetarian / Vegan Restaurant	Dessert Shop	Arcade	Bagel Shop	Breakfast Spot	Bubble Tea Shop	Café	Caribbean Restaurant

CLUSTER 5

	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	Bakery	Café	Dessert Shop	Donut Shop	Sandwich Place	Bagel Shop	Pie Shop	Breakfast Spot	Chinese Restaurant	Cocktail Bar
8	Upper East Side	Bakery	Café	American Restaurant	Dessert Shop	Cupcake Shop	Sandwich Place	Bagel Shop	Gourmet Shop	French Restaurant	Coffee Shop
9	Yorkville	Bakery	Café	Ice Cream Shop	Dessert Shop	French Restaurant	Gourmet Shop	American Restaurant	Sandwich Place	Coffee Shop	Bubble Tea Shop
10	Lenox Hill	Bakery	Coffee Shop	Cupcake Shop	Dessert Shop	French Restaurant	Gourmet Shop	Ice Cream Shop	American Restaurant	Bagel Shop	Sandwich Place
12	Upper West Side	Bakery	Dessert Shop	Vegetarian / Vegan Restaurant	Pizza Place	Israeli Restaurant	Ice Cream Shop	Coffee Shop	Cupcake Shop	Arcade	Bagel Shop
13	Lincoln Square	Bakery	Café	Dessert Shop	Donut Shop	French Restaurant	Coffee Shop	Cupcake Shop	American Restaurant	Italian Restaurant	Cocktail Bar
14	Clinton	Bakery	Café	Coffee Shop	Donut Shop	Ice Cream Shop	Cupcake Shop	French Restaurant	American Restaurant	Pizza Place	Snack Place
16	Murray Hill	Bakery	Café	Coffee Shop	Japanese Restaurant	Cupcake Shop	Turkish Restaurant	Dessert Shop	Vegetarian / Vegan Restaurant	Deli / Bodega	Arcade
19	East Village	Bakery	Coffee Shop	Dessert Shop	Cupcake Shop	American Restaurant	Bagel Shop	Café	Ice Cream Shop	French Restaurant	Deli / Bodega
21	Tribeca	Bakery	Café	American Restaurant	Dessert Shop	Sandwich Place	Bagel Shop	Breakfast Spot	Coffee Shop	Cupcake Shop	Arcade
24	West Village	Bakery	Coffee Shop	Dessert Shop	Café	Bagel Shop	Bubble Tea Shop	Caribbean Restaurant	Ice Cream Shop	Cupcake Shop	Vegetarian / Vegan Restaurant
28	Battery Park City	Bakery	Dessert Shop	Ice Cream Shop	Café	American Restaurant	Gourmet Shop	Coffee Shop	Sandwich Place	Snack Place	Breakfast Spot
30	Carnegie Hill	Bakery	Café	American Restaurant	Ice Cream Shop	Gourmet Shop	Coffee Shop	Cupcake Shop	Dessert Shop	Deli / Bodega	Arcade

DISCUSSION

- The best neighborhood to open the bakery shop is upper west side of Manhattan.
- The only 2 clusters that were inside the zone that we chose are clusters 1 and 4 and from these clusters.
- We observed that whenever bakery is the most common venue, the second most common venue is either ice cream shop or bagel shop.

RECOMMENDATION

- Anyone who wants to open a bakery shop in Manhattan it should be in the Upper West area where there are ice cream shops around it.
- This is the best possible option for a successful bakery business.



CONCLUSION

- I think we reached a very good estimate to the best possible neighborhood to open a bakery shop in Manhattan.
- This required a lot of machine learning and analyzing to the venues around the neighborhoods to see which one is the perfect scenario for opening a successfully bakery shop.

The background is a blue gradient with faint concentric circles. White circuit-like lines with circular nodes are positioned in the corners: top-left, top-right, bottom-left, and bottom-right.

THANK YOU