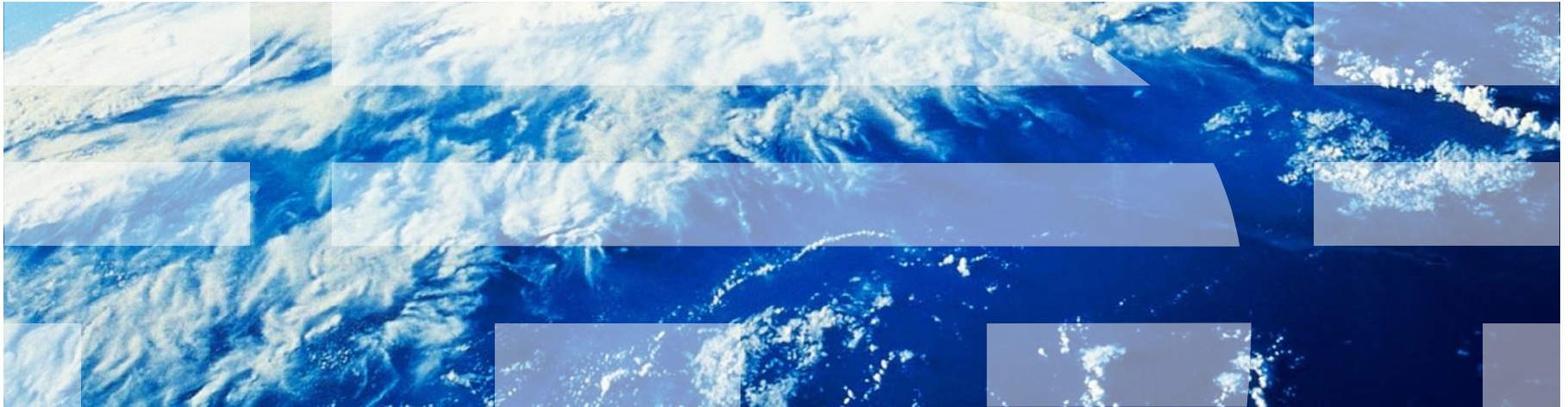


Battle of Neighborhoods



Introduction

- Neighborhoods of Chicago → which type of food in Chicago
- Clustering
- new brand restaurant → which is the best place to do it → collect some information about the neighborhoods such as number of restaurants, type of food and their location.
- Customers → one kind of food to eat → which neighborhood would be the best to find it.

Data:

https://en.wikipedia.org/wiki/List_of_neighborhoods_in_Chicago

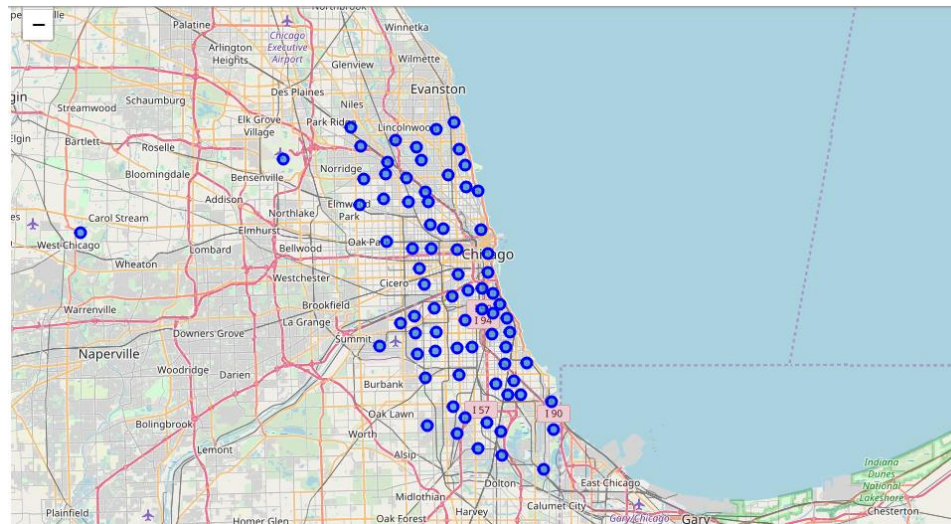
| Neighborhood | Community area | Neighborhood | Community area | Neighborhood | Borough |
|-------------------|----------------|-------------------|----------------|---|----------------|
| 0 Albany Park | Albany Park | 0 Albany Park | Albany Park | 0 Albany Park, Mayfair, North Mayfair, Ravenswo... | Albany Park |
| 1 Altgeld Gardens | Riverdale | 1 Altgeld Gardens | Riverdale | 1 Archer Heights | Archer Heights |
| 2 Andersonville | Edgewater | 2 Andersonville | Edgewater | 2 Armour Square, Chinatown, Wentworth Gardens | Armour Square |
| 3 Archer Heights | Archer Heights | 3 Archer Heights | Archer Heights | 3 Wrightwood, Scottsdale, Crestline, Beverly Vie... | Ashburn |
| 4 Armour Square | Armour Square | 4 Armour Square | Armour Square | 4 Auburn Gresham, Gresham | Auburn Gresham |

| Neighborhood | Borough | Latitude | Longitude |
|---|----------------|----------|-----------|
| 0 Albany Park, Mayfair, North Mayfair, Ravenswo... | Albany Park | 41.9719 | -87.7162 |
| 1 Archer Heights | Archer Heights | 41.8114 | -87.7262 |
| 2 Armour Square, Chinatown, Wentworth Gardens | Armour Square | 41.84 | -87.6331 |
| 3 Wrightwood, Scottsdale, Crestline, Beverly Vie... | Ashburn | 41.7475 | -87.7112 |
| 4 Auburn Gresham, Gresham | Auburn Gresham | 41.7505 | -87.6643 |

| Neighborhood | Borough | 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 |
|---|----------------|----------|-----------|----------------|-----------------------|-----------------------|-----------------------|---------------------------|-----------------------|-----------------------------|-----------------------|-----------------------|
| 0 Albany Park, Mayfair, North Mayfair, Ravenswo... | Albany Park | 41.9719 | -87.7162 | 4 | Mexican Restaurant | Sandwich Place | Korean Restaurant | Latin American Restaurant | Pizza Place | Chinese Restaurant | Fast Food Restaurant | Diner |
| 1 Archer Heights | Archer Heights | 41.8114 | -87.7262 | 4 | Mexican Restaurant | Wings Joint | Seafood Restaurant | Hot Dog Joint | Italian Restaurant | Pizza Place | Chinese Restaurant | Sandwich Place |
| 2 Armour Square, Chinatown, Wentworth Gardens | Armour Square | 41.84 | -87.6331 | 0 | Chinese Restaurant | Asian Restaurant | Bakery | Italian Restaurant | American Restaurant | Hot Dog Joint | Indian Restaurant | Breakfast Spot |
| 3 Wrightwood, Scottsdale, Crestline, Beverly Vie... | Ashburn | 41.7475 | -87.7112 | 3 | Food | BBQ Joint | Pizza Place | Italian Restaurant | Wings Joint | Eastern European Restaurant | Czech Restaurant | Deli / Bodega |
| 4 Auburn Gresham, Gresham | Auburn Gresham | 41.7505 | -87.6643 | 2 | Fast Food Restaurant | American Restaurant | Greek Restaurant | BBQ Joint | Dim Sum Restaurant | Wings Joint | Falafel Restaurant | Deli / Bodega |

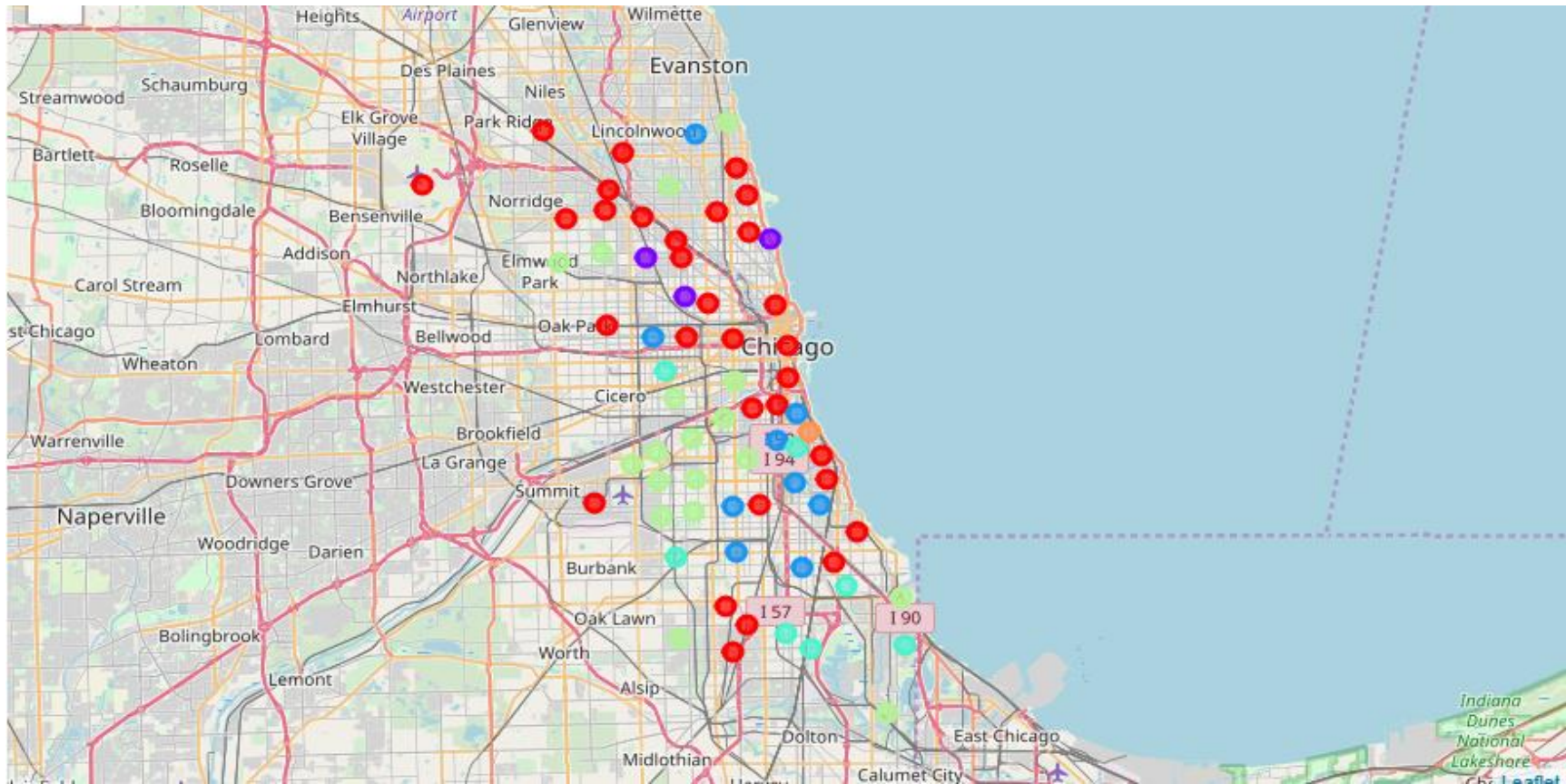
Methodology

- Data → Preprocessing
- Foursquare API
- Top venues in frequency
- Clustering → Kmeans → Six clusters



Results (1)

- A map: Here we can easily see the location of each neighborhood and its cluster.



Results (2): The data of each cluster

- Cluster 0: Pizza, Fast food, Bakery, Sandwich, Chinese and Italian

| | Borough | 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 | Armour Square | Chinese Restaurant | Asian Restaurant | Bakery | Italian Restaurant | American Restaurant | Hot Dog Joint | Indian Restaurant | Breakfast Spot | Sandwich Place | Café |
| 5 | Austin | Wings Joint | Italian Restaurant | Japanese Restaurant | Donut Shop | Ethiopian Restaurant | Czech Restaurant | Deli / Bodega | Dim Sum Restaurant | Diner | Eastern European Restaurant |
| 6 | Avalon Park | Food | Fast Food Restaurant | Burger Joint | Breakfast Spot | Pizza Place | Sandwich Place | Fish & Chips Shop | Diner | Cajun / Creole Restaurant | Donut Shop |
| 7 | Avondale | Food Truck | Sandwich Place | Chinese Restaurant | Bakery | Fast Food Restaurant | Diner | Donut Shop | Korean Restaurant | Restaurant | Hot Dog Joint |
| 9 | Beverly | Pizza Place | Chinese Restaurant | Italian Restaurant | Bakery | Burger Joint | Wings Joint | Ethiopian Restaurant | Deli / Bodega | Dim Sum Restaurant | Diner |

- Cluster 1: Food Truck, Latin American restaurant, Czech, Deli and Dim Sum

| | Borough | 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 |
|----|---------------|---------------------------|-----------------------|---------------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------------|
| 31 | Hermosa | Latin American Restaurant | Mexican Restaurant | Food Truck | Food | Diner | Czech Restaurant | Deli / Bodega | Dim Sum Restaurant | Donut Shop | Eastern European Restaurant |
| 32 | Humboldt Park | Food Truck | Café | Latin American Restaurant | Wings Joint | Ethiopian Restaurant | Czech Restaurant | Deli / Bodega | Dim Sum Restaurant | Diner | Donut Shop |
| 39 | Lincoln Park | Food Truck | Wings Joint | Ethiopian Restaurant | Cuban Restaurant | Czech Restaurant | Deli / Bodega | Dim Sum Restaurant | Diner | Donut Shop | Eastern European Restaurant |

Results (2): The data of each cluster

- Cluster 2: Fast food, Fried Chicken, Sandwich, Wings Joint, Dim Sum

| | Borough | 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 |
|----|--------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------------|-----------------------|---------------------------|-----------------------|-----------------------|-----------------------------|
| 4 | Auburn Gresham | Fast Food Restaurant | American Restaurant | Greek Restaurant | BBQ Joint | Dim Sum Restaurant | Wings Joint | Falafel Restaurant | Deli / Bodega | Diner | Donut Shop |
| 14 | Chatham | Fast Food Restaurant | Donut Shop | Wings Joint | Ethiopian Restaurant | Cuban Restaurant | Czech Restaurant | Deli / Bodega | Dim Sum Restaurant | Diner | Eastern European Restaurant |
| 17 | Douglas | Fast Food Restaurant | Sandwich Place | Wings Joint | Seafood Restaurant | Asian Restaurant | Chinese Restaurant | Donut Shop | Food | Pizza Place | African Restaurant |
| 25 | Fuller Park | Fast Food Restaurant | Sandwich Place | Chinese Restaurant | Wings Joint | Eastern European Restaurant | Czech Restaurant | Deli / Bodega | Dim Sum Restaurant | Diner | Donut Shop |
| 69 | Washington Park | Fast Food Restaurant | Fried Chicken Joint | Ethiopian Restaurant | Cuban Restaurant | Czech Restaurant | Deli / Bodega | Dim Sum Restaurant | Diner | Donut Shop | Eastern European Restaurant |
| 71 | West Englewood | Fast Food Restaurant | American Restaurant | Wings Joint | French Restaurant | Food Truck | Food Court | Food | Fish & Chips Shop | Filipino Restaurant | Creperie |
| 72 | West Garfield Park | Fast Food Restaurant | Fried Chicken Joint | Pizza Place | Sandwich Place | Food | Taco Place | Middle Eastern Restaurant | Donut Shop | Czech Restaurant | Deli / Bodega |

- Cluster 3: Food, Ethiopian restaurant Cuban, Czech, Eastern restaurant.

| | Borough | 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 | Ashburn | Food | BBQ Joint | Pizza Place | Italian Restaurant | Wings Joint | Eastern European Restaurant | Czech Restaurant | Deli / Bodega | Dim Sum Restaurant | Diner |
| 13 | Calumet Heights | Food | Deli / Bodega | Wings Joint | Ethiopian Restaurant | Cuban Restaurant | Czech Restaurant | Dim Sum Restaurant | Diner | Donut Shop | Eastern European Restaurant |
| 20 | East Side | Food | Wings Joint | Ethiopian Restaurant | Cuban Restaurant | Czech Restaurant | Deli / Bodega | Dim Sum Restaurant | Diner | Donut Shop | Eastern European Restaurant |
| 28 | Grand Boulevard | Food | Breakfast Spot | Pizza Place | Restaurant | Food Court | Fish & Chips Shop | Filipino Restaurant | Fast Food Restaurant | Falafel Restaurant | Ethiopian Restaurant |
| 52 | North Lawndale | Food | Fried Chicken Joint | Ethiopian Restaurant | Cuban Restaurant | Czech Restaurant | Deli / Bodega | Dim Sum Restaurant | Diner | Donut Shop | Eastern European Restaurant |

Results (2): The data of each cluster

- Cluster 4: Mexican, pizza, Chinese, fast food.

| | Borough | 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 | Albany Park | Mexican Restaurant | Sandwich Place | Korean Restaurant | Latin American Restaurant | Pizza Place | Chinese Restaurant | Fast Food Restaurant | Diner | Donut Shop | Deli / Bodega |
| 1 | Archer Heights | Mexican Restaurant | Wings Joint | Seafood Restaurant | Hot Dog Joint | Italian Restaurant | Pizza Place | Chinese Restaurant | Sandwich Place | Restaurant | Bakery |
| 8 | Belmont Cragin | Mexican Restaurant | Restaurant | Burger Joint | American Restaurant | BBQ Joint | Bakery | Middle Eastern Restaurant | Chinese Restaurant | Ethiopian Restaurant | Dim Sum Restaurant |
| 11 | Brighton Park | Mexican Restaurant | Pizza Place | Taco Place | Sandwich Place | Café | Burger Joint | Breakfast Spot | Food | Falafel Restaurant | Fast Food Restaurant |
| 15 | Chicago Lawn | Mexican Restaurant | Pizza Place | Fast Food Restaurant | American Restaurant | Fish & Chips Shop | Wings Joint | Czech Restaurant | Deli / Bodega | Dim Sum Restaurant | Diner |

- Cluster 5: Irish pub, wings.

| | Borough | 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 |
|----|---------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------------|------------------------|
| 56 | Oakland | Irish Pub | Wings Joint | Falafel Restaurant | Czech Restaurant | Deli / Bodega | Dim Sum Restaurant | Diner | Donut Shop | Eastern European Restaurant | Ethiopian Restaurant |

Discussion

- For example, if you want to go with your family to a Mexico restaurant, you'll may go to one of the boroughs of cluster 4, as you will have more possible options to choose. May be the cluster 5 is a good place to have a beer with your friends or you may want some fried chicken, the choose between all the neighborhoods in cluster 2.
- On the other hand, if you want to open a new fast food restaurant, you may choose cluster 3, and between all the neighborhoods that it has, you can go to the map and choose that is near the loop, near your house if you want more commodity, or may be near a location that you may think is strategic.

Conclusion

- In this project we have achieved the main goal of providing enough information to people to be able to choose where they may start a new restaurant or where we should go to eat.
- The tools provided are the neighborhood and their locations, the restaurants they have and the most common between them. In addition clustering helps to gather them and that way be able to choose the best borough for you.

