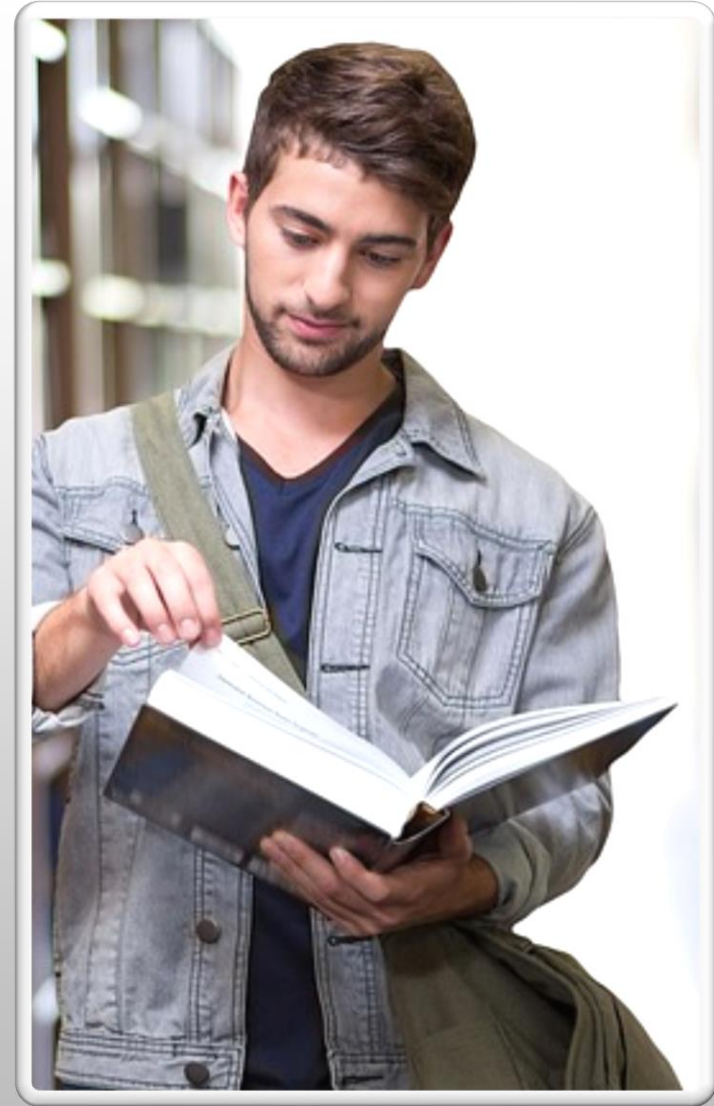


The background of the slide is a light gray gradient. It is decorated with numerous realistic water droplets of various sizes. Some droplets are large and prominent, while others are small and subtle. They are scattered across the slide, with a higher concentration in the top-left and bottom-right corners. The droplets have highlights and shadows, giving them a three-dimensional appearance.

CAPSTONE PROJECT BROOKLYN CLUSTERING ANALYSIS

PROBLEM

- FIND A LOCATION IN BROOKLYN FOR FOREIGN STUDENTS
- DETECT THE NEIGHBORHOODS WHERE HAVE GOOD ENVIRONMENT FOR THEIRS STUDYING

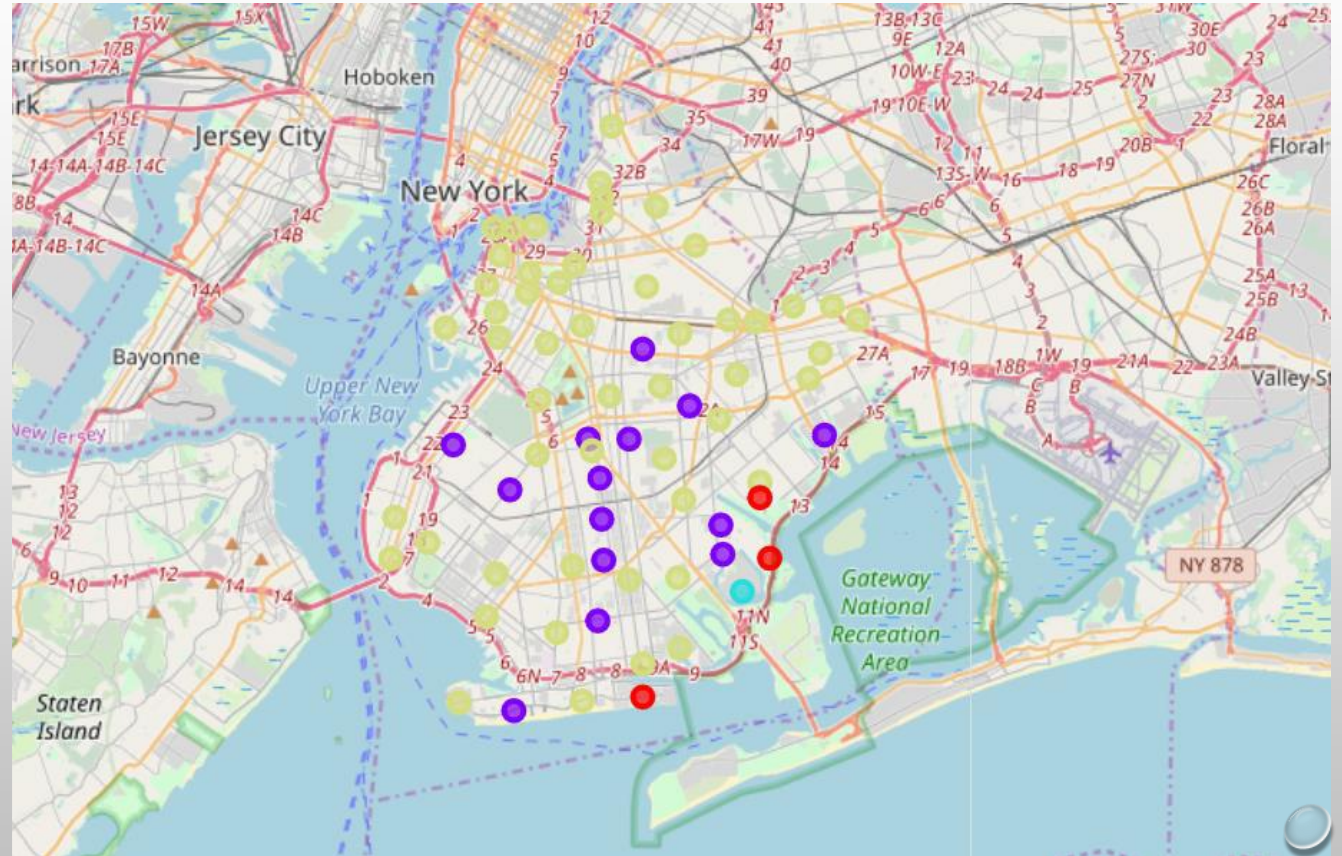


DATA ACQUISITION AND CLEANING

- NEW YORK BOROUGHES & NEIGHBORHOOD DATASET FROM [HTTPS://COCL.US/NEW YORK DATASET](https://cocl.us/new_york_dataset)
- VENUE CATEGORIES IN EACH NEIGHBORHOOD WILL BE OBTAINED USING FOURSQUARE API

• K-MEAN CLUSTERING

- CREATE CLUSTERS (USING K-MEANS CLUSTERING) OF THOSE LOCATIONS
- EXAMINE EACH CLUSTER AND DETERMINE THE LOCATION FOR FOREIGN STUDENTS.



EXAMINE EACH CLUSTER

Cluster 1

```
brooklyn_merged.loc[brooklyn_merged['Cluster Labels'] == 0, brooklyn_merged.columns[[1] + list(range(5, brooklyn_merged.shape[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
31	Manhattan Beach	Sandwich Place	Harbor / Marina	Ice Cream Shop	Playground	Pizza Place	Food	Bus Stop	Beach	Café	Factory
45	Bergen Beach	Harbor / Marina	Baseball Field	Playground	Athletics & Sports	Donut Shop	Food & Drink	Food	Flower Shop	Fish Market	Fish & Chips
59	Paerdegat Basin	Child Care Service									

Cluster 2

```
brooklyn_merged.loc[brooklyn_merged['Cluster Labels'] == 1, brooklyn_merged.columns[[1] + list(range(5, brooklyn_merged.shape[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
2	Sunset Park	Bank	Bakery	Latin American Restaurant	Mexican Restaurant	Pizza Place	Pharmacy	Gym	Fried Chicken Joint	Mobile Phone Shop	Deli / Bodega
7	Manhattan Terrace	Pizza Place	Donut Shop	Bagel Shop	Convenience Store	Ice Cream Shop	Mobile Phone Shop	Chinese Restaurant	Steakhouse	Coffee Shop	Grocery Store
8	Flatbush	Coffee Shop	Deli / Bodega	Caribbean Restaurant	Bank	Pharmacy	Mexican Restaurant	Plaza	Lounge	Chinese Restaurant	Juice Bar
9	Crown Heights	Pizza Place	Café	Museum	Playground	Burger Joint	Electronics Store	Candy Store	Bakery	Bagel Shop	Coffee Shop

Cluster 3

```
brooklyn_merged.loc[brooklyn_merged['Cluster Labels'] == 2, brooklyn_merged.columns[[1] + list(range(5, brooklyn_merged.shape[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
30	Mill Island	Pool	Filipino Restaurant	Factory	Falafel Restaurant	Farm	Farmers Market	Fast Food Restaurant	Field	Fish & Chips Shop	Event Service

Cluster 4

```
brooklyn_merged.loc[brooklyn_merged['Cluster Labels'] == 3, brooklyn_merged.columns[[1] + list(range(5, brooklyn_merged.shape[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	Bay Ridge	Italian Restaurant	Spa	Greek Restaurant	Pizza Place	Grocery Store	American Restaurant	Bar	Pharmacy	Sandwich Place	Sushi Restaurant
1	Bensonhurst	Dessert Shop	Italian Restaurant	Ice Cream Shop	Sushi Restaurant	Pizza Place	Donut Shop	Chinese Restaurant	Liquor Store	Supermarket	Cha Chean Teng
3	Greenpoint	Bar	Pizza Place	Cocktail Bar	Coffee Shop	Yoga Studio	Mexican Restaurant	Café	Record Shop	Sushi Restaurant	French Restaurant
4	Gravesend	Bus Station	Deli / Bodega	Pizza Place	Chinese Restaurant	Italian Restaurant	Bakery	Lounge	Donut Shop	Gym	Bar
5	Brighton Beach	Russian Restaurant	Restaurant	Beach	Eastern European Restaurant	Pharmacy	Gourmet Shop	Sushi Restaurant	Bank	Mobile Phone Shop	Convenience Store
6	Sheepshead Bay	Dessert Shop	Turkish Restaurant	Sandwich Place	Yoga Studio	Buffet	Italian Restaurant	Harbor / Marina	Karaoke Bar	Grocery Store	Miscellaneous Shop
10	East Flatbush	Department	Pharmacy	Movin' Target	Supermarket	Fast Food	Caribbean	Chinese	Park	Haircare Store	Food & Drink

CONCLUSION

- RECOMMEND FOREIGN STUDENTS TO LIVE IN THE NEIGHBORHOODS IN CLUSTER 2 BECAUSE THERE ARE VENUE CATEGORIES FOR THEM.