

Battle of the neighborhood

DIRECTED BY YUNJIE XU

1 Introduction

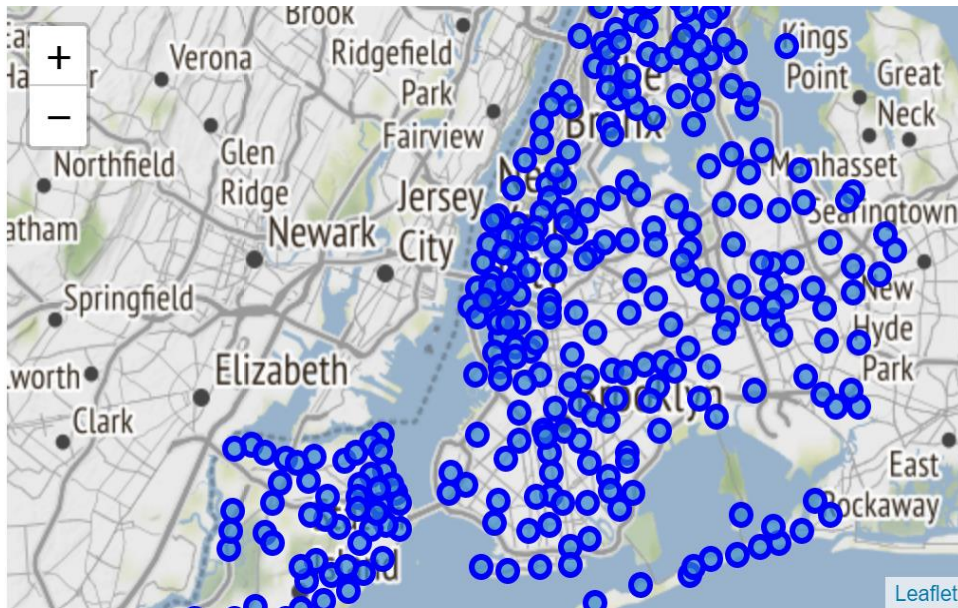
For a student who major in finance, just think about these two most famous cities in the world-- New York and London. They are both advanced, well-known, contained big malls and high-class restaurants. But except for their location, are they really similar? We all know that when exploring a city, especially when we are travelling, we definitely want to know whether this city contains some unique bakeries, coffee shops, distribution centers, etc. And are these two different cities have some multicultural features? And if you decide to move to one of them, which city is fit for your life style?

Hence, I decide to research two cities above standing on citizens' side. As citizens, they must care about common venues in their city and their distributions. The buildings in a city is what can best explain its culture. That's why I choose to explore city through maps. Also, based on my preference of New York, I will continue to explore every distinct of this city, and give advice on where to open a new kind of store to fit the new shopping complexes and malls there.

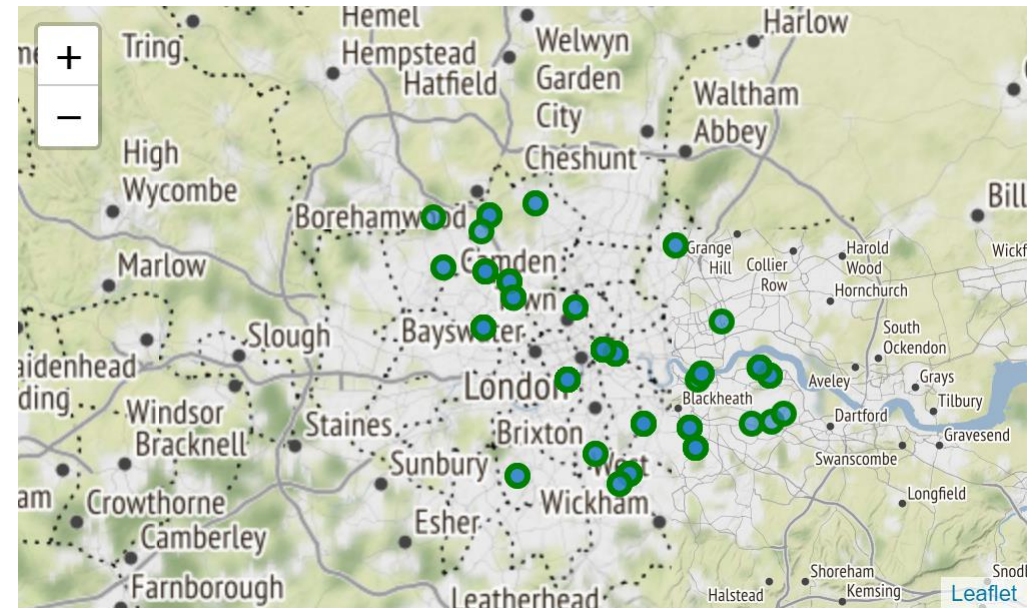
2 DATABASE

Map of two cities

Neighborhoods in NYU



Boroughs in London



Demography of two cities

As Asian, I am glad to see that the demography of Newham, London fits for my demand. Asian takes up 43.5% of the whole citizens there. Also, Harrow and Redbridge, take up 42.6% and 41.8% respectively. It's such a high percentage that I think racial discrimination may not become problem in these local authority, regarding its multiple demography. Another city, New York, contains 9.4% of Asian in Manhattan, which is a considerable percentage in this multi-cultural city.

Demography of NYU

Jurisdiction	%white	%blackorAfricanAmerican	%Asian	%Other	%mixedrace	%Hispanic/Latinoof anyrace
NYC Total	44.7	26.6	9.8	14.0	4.9	27.0
Manhattan	54.4	17.4	9.4	14.7	4.1	27.2
Brooklyn	41.2	36.4	7.5	10.6	4.3	19.8
Staten Island	77.6	9.7	5.7	4.3	2.7	12.1
NY State	67.9	15.9	5.5	7.5	3.1	15.1
USA	75.1	12.3	3.6	6.5	2.4	12.5
Bronx	29.9	35.6	3.0	25.7	5.8	48.4
Queens	44.1	20.0	17.6	12.3	6.1	25.0

Demography of London

	Local authority	White	Mixed	Asian	Black	Other
24	Newham	29.0	4.5	43.5	19.6	3.5
13	Harrow	42.2	4.0	42.6	8.2	2.9
25	Redbridge	42.5	4.1	41.8	8.9	2.7
29	Tower Hamlets	45.2	4.1	41.1	7.3	2.3
17	Hounslow	51.4	4.1	34.4	6.6	3.6

Top 10 Venues in two cities

New York

	Count
Pizza Place	445
Coffee Shop	315
Italian Restaurant	304
Deli / Bodega	269
Bar	231
Bakery	221
Chinese Restaurant	218
Grocery Store	192
Sandwich Place	185
Café	175

London

	Count
Hotel	1676
Café	1134
Coffee Shop	1127
Pub	1019
Italian Restaurant	817
Grocery Store	571
Bakery	546
Turkish Restaurant	487
Indian Restaurant	435
Pizza Place	388

To be more specific, I counted the top10 venue category in each city. Statistics suggest that in London **hotel** is the commonest place, whereas in NewYork, there are 445 **Pizza Place**, which is what you can often see in this city.

Analysing each neighborhood to find the proper location for business

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Clustering

Regrouping and Category Statistics

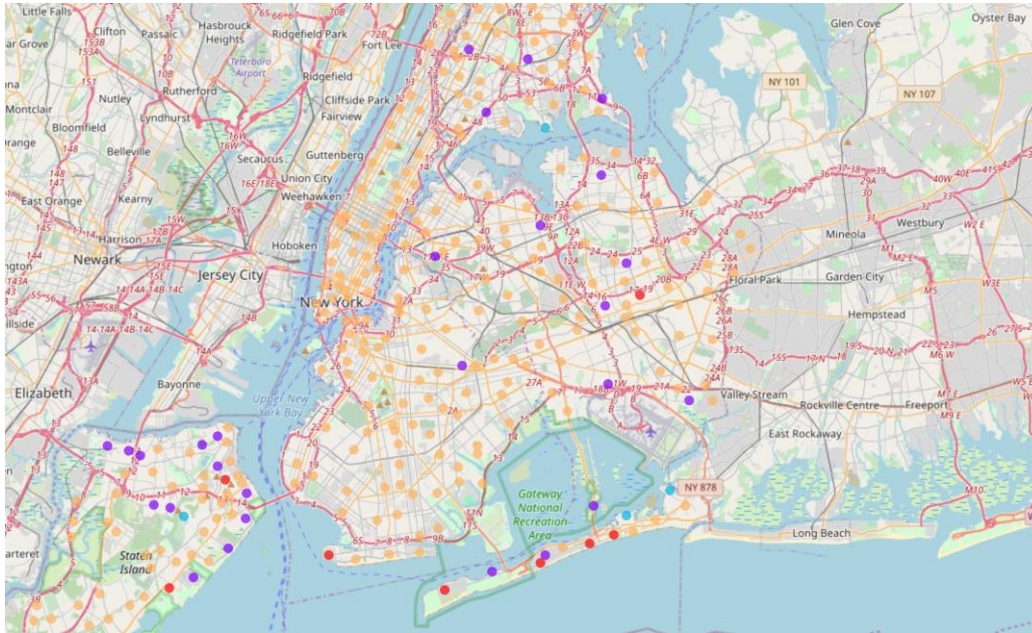
For this section, the neighborhoods in New York will be clustered based on the processed data obtained above. Map Visualization — Using the geopy library, the latitude and longitude values of NYU is obtained.

Then we create a new panda dataframe with 10 most common venues as shown below:

	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	Allerton	Pizza Place	Supermarket	Deli / Bodega	Chinese Restaurant	Spanish Restaurant	Donut Shop	Check Cashing Service	Grocery Store	Martial Arts Dojo	Pharmacy
1	Annadale	Pizza Place	American Restaurant	Dance Studio	Pub	Train Station	Sports Bar	Diner	Pharmacy	Food	Restaurant
2	Arden Heights	Pharmacy	Coffee Shop	Bus Stop	Home Service	Pizza Place	Field	Event Service	Event Space	Exhibit	Eye Doctor
3	Arlington	Deli / Bodega	American Restaurant	Intersection	Bus Stop	Grocery Store	Yoga Studio	Fish & Chips Shop	Eye Doctor	Factory	Falafel Restaurant
4	Arrochar	Italian Restaurant	Deli / Bodega	Bus Stop	Hotel	Supermarket	Outdoors & Recreation	Middle Eastern Restaurant	Mediterranean Restaurant	Pharmacy	Bagel Shop

Visualizing the Resulting Clusters

To visualize the clusters, we have the following:



It can be clearly seen that cluster 4 takes up for most locations, which means most of the New York Neighborhoods is similar, containing some pubs, restaurants, coffee shops, etc.

Visualizing the Resulting Clusters

Take Cluster 4 as an example:

	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	Wakefield	Pharmacy	Dessert Shop	Donut Shop	Laundromat	Gas Station	Caribbean Restaurant	Ice Cream Shop	Sandwich Place	Factory	Eye Doctor
61	Williamsburg	Bar	Coffee Shop	Grocery Store	Bagel Shop	Taco Place	Liquor Store	Lounge	Gym	Greek Restaurant	Tapas Restaurant
66	Carroll Gardens	Italian Restaurant	Coffee Shop	Pizza Place	Cocktail Bar	Bakery	Wine Shop	Bar	Gym / Fitness Center	Spa	Gift Shop
65	Cobble Hill	Coffee Shop	Bakery	Pizza Place	Bar	Playground	Yoga Studio	Deli / Bodega	Italian Restaurant	Cocktail Bar	Mediterranean Restaurant
64	Brooklyn Heights	Yoga Studio	Park	Deli / Bodega	Pharmacy	Pizza Place	Mexican Restaurant	Italian Restaurant	Gym	Bakery	American Restaurant
63	Bedford Stuyvesant	Pizza Place	Café	Bar	Coffee Shop	Thrift / Vintage Store	Cocktail Bar	Tiki Bar	Bus Station	Basketball Court	Park
62	Bushwick	Bar	Mexican Restaurant	Coffee Shop	Deli / Bodega	Bakery	Pizza Place	Thrift / Vintage Store	Discount Store	Vegetarian / Vegan Restaurant	French Restaurant
42	Pelham Gardens	Donut Shop	Bus Station	Pharmacy	Deli / Bodega	Spanish Restaurant	Boat or Ferry	Grocery Store	Chinese Restaurant	Bank	Sandwich Place
41	Olinville	Supermarket	Caribbean Restaurant	Laundromat	Convenience Store	Chinese Restaurant	Food	Fried Chicken Joint	Metro Station	Basketball Court	Deli / Bodega
40	Castle Hill	Bank	Diner	Pharmacy	Market	Pizza Place	Baseball Field	Food Court	Food Stand	French Restaurant	Event Service

4 Discussion and Conclusion

Results

The following are the highlights of the 5 clusters above:

1. Restaurants, Coffee shops, Parks are popular in the NYU.
2. The whole city remains similar lifestyle, so the venues like pub and food store is common everywhere. Only some places near the sea look different.
3. Although Pizza Place becomes most familiar venues, you can hardly see them in some distinct of NYU.
4. Although, the Clusters have variations, a very visible presence is the predominance of different restaurants. And it is obvious that in the area which Asian takes up high percentage, Chinese Restaurant (Asian Restaurant) is likely to be seen.

It is very important to note that Clusters 4 is the most viable clusters to create a restaurant, and in the neighborhood 'Manhattan', Asian restaurant is easy to succeed.

Of course, if you want to open a restaurant which contains the element: 'unique', 'view of the sea', I strongly recommend you the location of Cluster 0.

In conclusion, this project would have had better results if there were more data in terms of crime data within the area, traffic access and allowance of more venues exploration with the Foursquare (limited venues for free calls).

Also, getting the ratings and feedback of the current restaurants within the clusters would have helped in providing more insight into the best location.

Thank You

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