

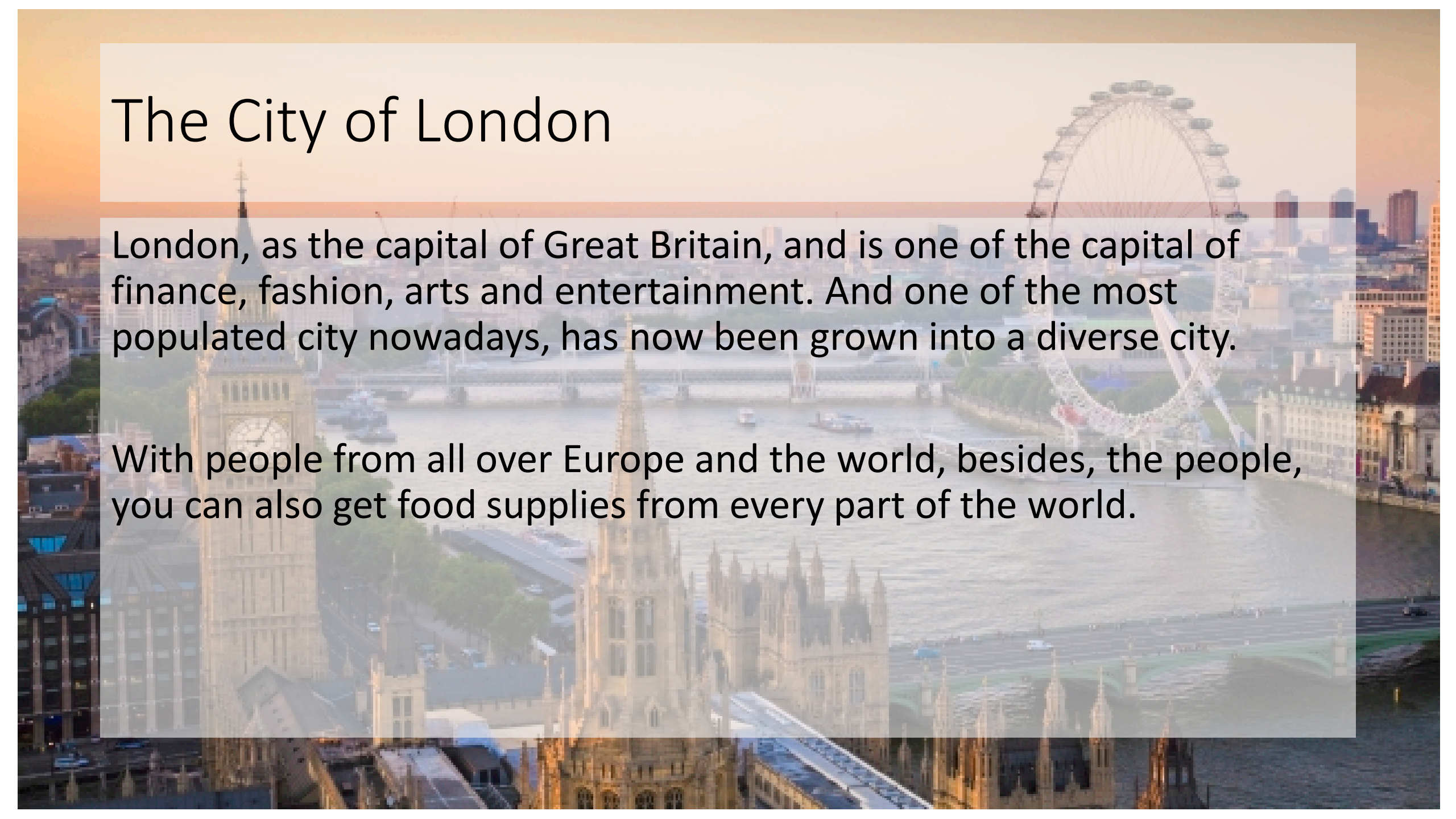
The Battle of Neighborhood

~ London ~

The City of London

London, as the capital of Great Britain, and is one of the capital of finance, fashion, arts and entertainment. And one of the most populated city nowadays, has now been grown into a diverse city.

With people from all over Europe and the world, besides, the people, you can also get food supplies from every part of the world.



Background

Our client is a successful chain restaurant original in US and looking forward for a business expansion in Europe, and would like to start in London.

And they would like to promote a special cultural cuisine of Africa to the busiest Londoner.

Although the busy city already have a wide range of choose for food, with the help of data, we can also find an ideal place for this business expansion.

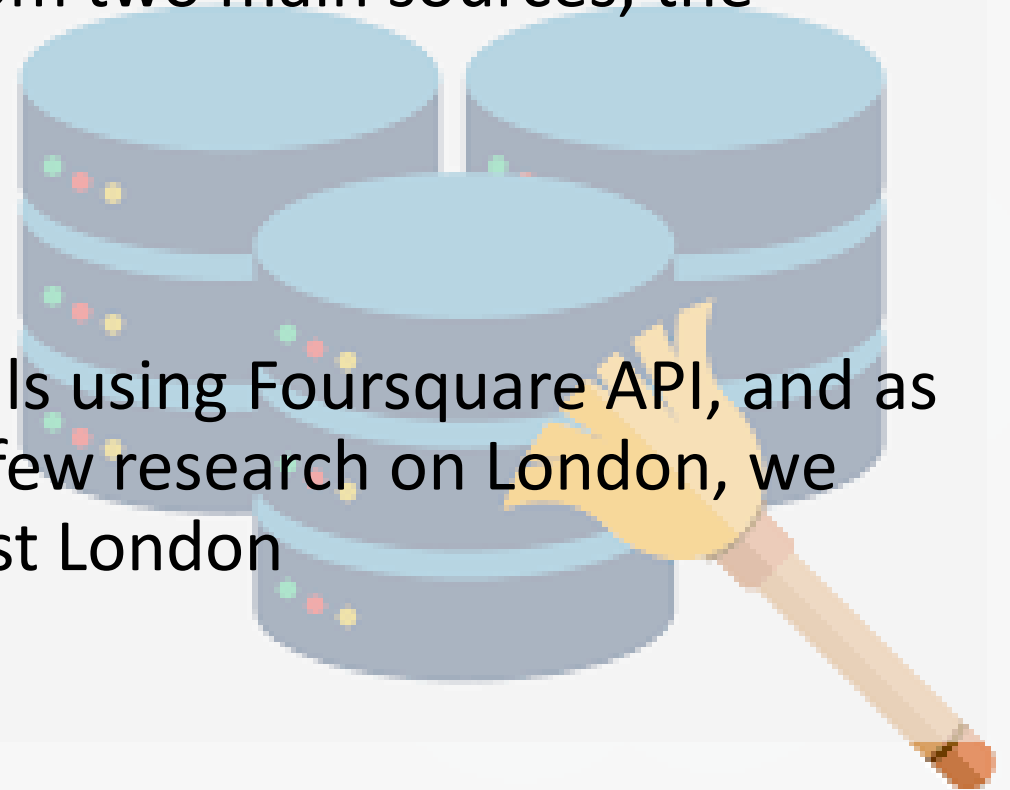
Data Acquisition and Cleaning

Data Source

The data of this project mainly come from two main sources, the Wikipedia and Foursquare.

Data Cleaning

Due the limitation for the number of calls using Foursquare API, and as London is a big place to handle, after a few research on London, we decided to limit the project to South East London



Datasets

	Location	Borough	Post-town	Dial-code	OSGridRef	Postcode
0	Abbey Wood	Bexley, Greenwich	LONDON	020	TQ465785	SE2
1	Acton	Ealing, Hammersmith and Fulham	LONDON	020	TQ205805	W3
1	Acton	Ealing, Hammersmith and Fulham	LONDON	020	TQ205805	W4

	Location	Borough	Postcode	Post-town
0	Abbey Wood	Bexley, Greenwich	SE2	LONDON
1	Acton	Ealing, Hammersmith and Fulham	W3	LONDON
2	Acton	Ealing, Hammersmith and Fulham	W4	LONDON
3	Angel	Islington	EC1	LONDON
10	Angel	Islington	N1	LONDON

Six assumptions have been made according to the current datasets.

1. Assign a column while postcode is more than one
2. Create new data frame by Location, Borough, Postcode and Post-town
3. Only include boroughs with London Post-town for search of location, and removed non-post town records
4. Focus the analysis to south east London on African markets and accessible facilities after studying the information about London
5. Focus on the demography of London where there will be more multicultural group
6. Find the top 5 areas with significantly high on races like Black, Mixed and other races.

	Local authority	White	Mixed	Asian	Black	Other
22	Lewisham	53.5	7.4	9.3	27.2	2.6
27	Southwark	54.3	6.2	9.4	26.9	3.3
21	Lambeth	57.1	7.6	6.9	25.9	2.4
11	Bromley	51.3	4.4	10.2	23.3	6.3
7	Croydon	55.1	6.6	16.4	20.2	1.8

	Location	Borough	Postcode
0	Crofton Park	Lewisham	SE4
1	Denmark Hill	Southwark	SE5
2	Deptford	Lewisham	SE8
1	Crofton Park	Lewisham	SE4
2	Crossness	Bexley	SE2
3	Crystal Palace	Bromley	SE19
4	Crystal Palace	Bromley	SE20
5	Crystal Palace	Bromley	SE26
6	Denmark Hill	Southwark	SE5
7	Deptford	Lewisham	SE8
8	Dulwich	Southwark	SE21
9	East Dulwich	Southwark	SE22

With the help of the Geocoder package and Foursquare API, to obtain the geographical location data.

	Location	Borough	Postcode	Post-town
0	Abbey Wood	Bexley, Greenwich	SE2	LONDON
1	Acton	Ealing, Hammersmith and Fulham	W3	LONDON
2	Acton	Ealing, Hammersmith and Fulham	W4	LONDON
3	Angel	Islington	EC1	LONDON
4	Angel	Islington	N1	LONDON

Methodology

Data Exploration

By analyzing the neighborhood, such as single neighbor and multiple neighbor and summarize it into different categories.

Clustering

The clustering is done based on the processed data during the data exploration.

Analyzing the neighborhood

One Hot Encoding

From the dataframe shows that the Lewisham and the demography has no African restaurant nearby.

[illegible]

Analyzing the neighborhood

Regrouping and Category

	Neighbourhood	African Restaurant	American Restaurant	Antique Shop	Aquarium	Argentinian Restaurant	Art Gallery	Art Museum	Arts & Crafts Store	Asian Restaurant	Athletics & Sports	Australian Restaurant	BBQ Joint	Bakery	Bar	Beach	Beer Bar	Beer Garden	Beer Store	Bike Shop	Bistro	Bookstore	Brazilian Restaurant	Breakfast Spot	Brewery	Burger Joint	Bus Station
0	Bankside	0.00	0.000000	0.0	0.0	0.000000	0.01	0.03	0.0	0.02	0.0	0.0	0.0	0.020000	0.020000	0.01	0.00	0.0	0.01	0.01	0.01	0.01	0.0	0.000000	0.01	0.02	0.0
1	Bellingham	0.00	0.000000	0.0	0.0	0.000000	0.00	0.00	0.0	0.00	0.0	0.0	0.0	0.014706	0.014706	0.00	0.00	0.0	0.00	0.00	0.00	0.00	0.0	0.000000	0.00	0.00	0.0
2	Bermondsey	0.00	0.000000	0.0	0.0	0.000000	0.01	0.03	0.0	0.02	0.0	0.0	0.0	0.020000	0.020000	0.01	0.00	0.0	0.01	0.01	0.01	0.01	0.0	0.000000	0.01	0.02	0.0
3	Blackheath	0.00	0.010989	0.0	0.0	0.010989	0.00	0.00	0.0	0.00	0.0	0.0	0.0	0.032967	0.010989	0.00	0.00	0.0	0.00	0.00	0.00	0.00	0.0	0.010989	0.00	0.00	0.0
4	Brixton	0.01	0.000000	0.0	0.0	0.000000	0.01	0.00	0.0	0.00	0.0	0.0	0.0	0.020000	0.030000	0.00	0.03	0.0	0.01	0.01	0.00	0.00	0.0	0.000000	0.03	0.02	0.0

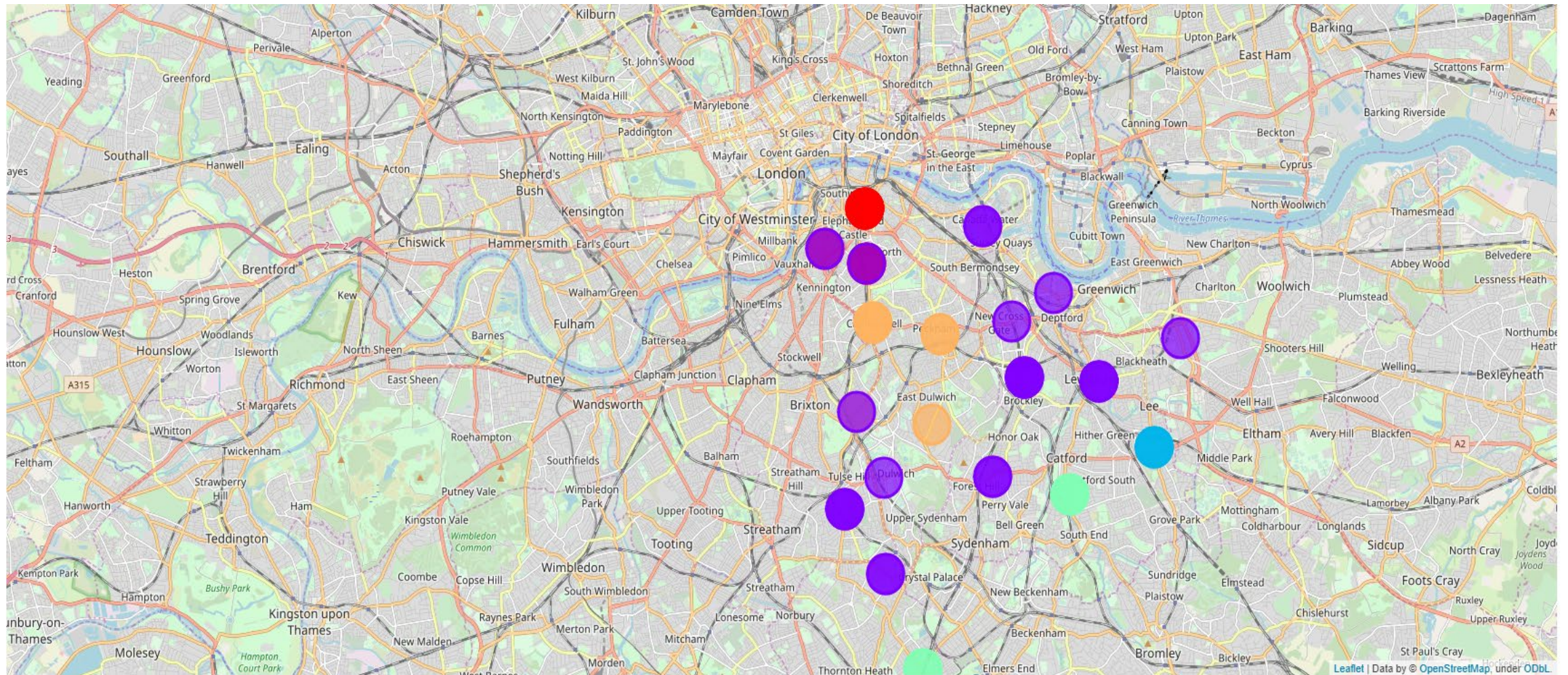
Analyzing the neighborhood

Creating New Dataframe

The new dataframe shows the ten most common locations.

	Neighbourhood	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	Bankside	Coffee Shop	Hotel	Pub	Italian Restaurant	Theater	Art Museum	Cocktail Bar	Scenic Lookout	Seafood Restaurant	Garden
1	Bellingham	Grocery Store	Supermarket	Park	Café	Fast Food Restaurant	Pub	Italian Restaurant	Coffee Shop	Train Station	Chinese Restaurant
2	Bermondsey	Coffee Shop	Hotel	Pub	Italian Restaurant	Theater	Art Museum	Cocktail Bar	Scenic Lookout	Seafood Restaurant	Garden
3	Blackheath	Pub	Grocery Store	Coffee Shop	Park	Clothing Store	Italian Restaurant	Supermarket	Garden	Bakery	Café
4	Brixton	Café	Coffee Shop	Park	Pub	Middle Eastern Restaurant	Indian Restaurant	Cocktail Bar	Italian Restaurant	Brewery	Pizza Place

Visualizing the Result Clusters



Result

The below clusters show that Pubs, Café and Coffee Shops are popular in the South East London area

Cluster 1

Borough	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	9th Most Common Venue	10th Most Common Venue
5 Southwark	0	Pub	Café	Coffee Shop	Hotel	Italian Restaurant	Theater	Park	Pizza Place	Street Food Gathering	Garden
6 Southwark	0	Pub	Café	Coffee Shop	Hotel	Italian Restaurant	Theater	Park	Pizza Place	Street Food Gathering	Garden
7 Southwark	0	Pub	Café	Coffee Shop	Hotel	Italian Restaurant	Theater	Park	Pizza Place	Street Food Gathering	Garden
8 Southwark	0	Coffee Shop	Hotel	Coffee Shop	Pub	Italian Restaurant	Art Museum	Cocktail Bar	Scenic Lookout	Seafood Restaurant	Garden
18 Lambeth	0	Coffee Shop	Hotel	Coffee Shop	Pub	Italian Restaurant	Theater	Cocktail Bar	Scenic Lookout	Seafood Restaurant	Garden
22 Southwark	0	Pub	Coffee Shop	Hotel	Italian Restaurant	Café	Theater	Cocktail Bar	Pizza Place	Brewery	Garden
23 Southwark	0	Pub	Coffee Shop	Hotel	Italian Restaurant	Café	Theater	Cocktail Bar	Pizza Place	Brewery	Garden
30 Southwark	0	Coffee Shop	Hotel	Pub	Italian Restaurant	Theater	Art Museum	Cocktail Bar	Scenic Lookout	Seafood Restaurant	Garden

Cluster 2

Borough	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	9th Most Common Venue	10th Most Common Venue
0 Lewisham	1	Pub	Coffee Shop	Café	Park	Gastropub	Bar	Indian Restaurant	Italian Restaurant	Cocktail Bar	Restaurant
2 Lewisham	1	Pub	Café	Coffee Shop	Bar	Park	Brewery	Sandwich Place	Italian Restaurant	History Museum	Historic Site
3 Southwark	1	Pub	Café	Bakery	Grocery Store	Park	Coffee Shop	Gym / Fitness Center	Italian Restaurant	Farmers Market	Pizza Place
9 Lewisham	1	Pub	Coffee Shop	Café	Grocery Store	Park	Supermarket	Gym / Fitness Center	Japanese Restaurant	Pizza Place	Pharmacy
10 Lambeth	1	Pub	Coffee Shop	Grocery Store	Café	Park	Bakery	Italian Restaurant	Pizza Place	Train Station	Gym / Fitness Center
11 Lambeth	1	Pub	Coffee Shop	Grocery Store	Café	Park	Bakery	Italian Restaurant	Pizza Place	Train Station	Gym / Fitness Center
14 Lewisham	1	Pub	Café	Gastropub	Park	Garden	Food Truck	Fish & Chips Shop	Coffee Shop	Restaurant	Turkish Restaurant
15 Lewisham	1	Pub	Coffee Shop	Café	Grocery Store	Park	Supermarket	Gym / Fitness Center	Japanese Restaurant	Pizza Place	Pharmacy
16 Lewisham	1	Pub	Coffee Shop	Café	Gastropub	Park	Restaurant	Italian Restaurant	Italian Restaurant	Food Truck	Fish & Chips Shop
17 Lewisham	1	Pub	Coffee Shop	Café	Gastropub	Park	Bar	Restaurant	Italian Restaurant	Food Truck	Fish & Chips Shop
20 Lewisham	1	Pub	Café	Gastropub	Park	Garden	Food Truck	Fish & Chips Shop	Coffee Shop	Restaurant	Turkish Restaurant
21 Lewisham	1	Pub	Coffee Shop	Café	Italian Restaurant	Bar	Pizza Place	Gastropub	Park	Brewery	Indian Restaurant
25 Lambeth	1	Café	Pub	Hotel	Park	Coffee Shop	Theater	Street Food Gathering	Gay Bar	Bar	Cricket Ground
28 Southwark	1	Pub	Brewery	Park	Coffee Shop	Bar	Beer Bar	Café	Gym / Fitness Center	Food Truck	Vietnamese Restaurant
33 Lewisham	1	Pub	Coffee Shop	Café	Park	Gastropub	Bar	Indian Restaurant	Italian Restaurant	Cocktail Bar	Restaurant
34 Southwark	1	Pub	Brewery	Park	Coffee Shop	Bar	Beer Bar	Café	Gym / Fitness Center	Food Truck	Vietnamese Restaurant
35 Lambeth	1	Coffee Shop	Pub	Café	Grocery Store	Bakery	Park	Pizza Place	Brewery	Gym / Fitness Center	Market
36 Lambeth	1	Coffee Shop	Pub	Café	Grocery Store	Bakery	Park	Pizza Place	Brewery	Gym / Fitness Center	Market
37 Croydon	1	Pub	Coffee Shop	Park	Café	Italian Restaurant	Train Station	Bakery	Grocery Store	Gastropub	Breakfast Spot
38 Southwark	1	Pub	Café	Coffee Shop	Italian Restaurant	Park	Pizza Place	Brewery	Art Gallery	Theater	Hotel
39 Lewisham	1	Pub	Grocery Store	Coffee Shop	Park	Clothing Store	Italian Restaurant	Supermarket	Garden	Bakery	Café
40 Lambeth	1	Pub	Coffee Shop	Grocery Store	Café	Bakery	Park	Gym / Fitness Center	Pharmacy	Pizza Place	Brewery
42 Lewisham	1	Pub	Coffee Shop	Café	Park	Gastropub	Bar	Indian Restaurant	Italian Restaurant	Cocktail Bar	Restaurant

Result

In the Lewisham area which is most condensed area of Africans in the South East London, and from the top 10 locations, which restaurants can hardly be seen in the top 5 locations.

Cluster 3

	Borough	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	9th Most Common Venue	10th Most Common Venue
12	Lewisham	2	Grocery Store	Pub	Park	Café	Supermarket	Italian Restaurant	Soccer Field	Coffee Shop	Train Station	Indian Restaurant
19	Lewisham	2	Grocery Store	Pub	Park	Café	Supermarket	Italian Restaurant	Soccer Field	Coffee Shop	Train Station	Indian Restaurant
45	Lewisham	2	Grocery Store	Pub	Park	Café	Supermarket	Italian Restaurant	Soccer Field	Coffee Shop	Train Station	Indian Restaurant

Cluster 4

	Borough	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	9th Most Common Venue	10th Most Common Venue
26	Lewisham	3	Grocery Store	Supermarket	Park	Café	Fast Food Restaurant	Pub	Italian Restaurant	Coffee Shop	Train Station	Chinese Restaurant
29	Croydon	3	Pub	Grocery Store	Platform	Café	Park	Supermarket	Coffee Shop	Clothing Store	Caribbean Restaurant	Chinese Restaurant
31	Croydon	3	Pub	Grocery Store	Platform	Café	Park	Supermarket	Coffee Shop	Clothing Store	Caribbean Restaurant	Chinese Restaurant
32	Lewisham	3	Grocery Store	Supermarket	Park	Café	Fast Food Restaurant	Pub	Italian Restaurant	Coffee Shop	Train Station	Chinese Restaurant
44	Lewisham	3	Grocery Store	Supermarket	Park	Café	Fast Food Restaurant	Pub	Italian Restaurant	Coffee Shop	Train Station	Chinese Restaurant

Result

Cluster 5

	Borough	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	9th Most Common Venue	10th Most Common Venue
1	Southwark	4	Café	Coffee Shop	Park	Pub	Middle Eastern Restaurant	Indian Restaurant	Cocktail Bar	Italian Restaurant	Brewery	Pizza Place
4	Southwark	4	Pub	Café	Pizza Place	Gastropub	Park	Italian Restaurant	Mediterranean Restaurant	Cocktail Bar	Restaurant	Coffee Shop
13	Lambeth	4	Coffee Shop	Pub	Café	Market	Pizza Place	Brewery	Tapas Restaurant	Bakery	Park	Restaurant
24	Southwark	4	Pub	Pizza Place	Café	Park	Coffee Shop	Bar	Gastropub	Burger Joint	Cocktail Bar	Italian Restaurant
27	Southwark	4	Pub	Pizza Place	Café	Park	Coffee Shop	Bar	Gastropub	Burger Joint	Cocktail Bar	Italian Restaurant
41	Lambeth	4	Café	Coffee Shop	Park	Pub	Middle Eastern Restaurant	Indian Restaurant	Cocktail Bar	Italian Restaurant	Brewery	Pizza Place
43	Southwark	4	Café	Coffee Shop	Park	Pub	Middle Eastern Restaurant	Indian Restaurant	Cocktail Bar	Italian Restaurant	Brewery	Pizza Place

Discussions

Here are some highlights about the above 5 clusters.

- Pubs, Café and Coffee Shops are popular in the South East London area.
- For the restaurants, the Italian Restaurants are very popular in the South East London, especially in Southwark and Lambeth areas.
- In the Lewisham area which is most condensed area of Africans in the South East London, and from the top 10 locations, which restaurants can hardly be seen in the top 5 locations.
- Although there are some variations in the clusters, but the pubs really got a dominate category in the cluster result.

Conclusion

The cluster 2 and 3 are the most viable cluster for creating a brand of African Restaurant. This two clusters do not have top restaurants that could rival their standards. And the proximity of resources needed is paramount as Lewisham and Lambeth are not far out from Southwark.

If more data are analysis in this project such as crime data, or the restaurants customers' feedback can be including in the analysis will be more helpful in order to provide more insight while select a better location.