Introduction/Business Problem

London, the capital of England and the United Kingdom, London is considered to be one of the world's most important global cities and has been termed the world's most powerful, most desirable, most influential, most visited, most expensive, innovative, sustainable, most investment friendly, and most popular for work, London ranks 26th out of 300 major cities for economic performance, It is the most-visited city as measured by international arrivals and has the busiest city airport system as measured by passenger traffic. It is the leading investment destination

In respect to this I will be considering London as regards which location is suitable for to relocate to, since London is a big City and as such travelers who have different thought and purpose at heart should be able to make decision WHERE or which set of places is in my best interest, using **FourSquare Locations** to explore the city and borough around the city, giving information of the city her constituent.

This is targeted towards making decision as regards where is best to make a journey, where is best to have a tourist visit, where is best to set up a business.

Explanation of DataSets and How it would solve problem

The data set used includes the following:

1. london-borough-profiles.csv from the https://data.london.gov.uk/ : London Dataset, it is a csv file with 8 rows and 84 colums: which includes: *Area_name, Inner/_Outer_London, GLA_Population_Estimate_2017, Population_density_(per_hectare)_2017 Average_Age,_2017, Proportion_of_population_aged_0-15,_2015, Proportion_of_population_of_working-age,_2015, Proportion_of_population_aged_65_and_over,_2015, Net_internal_migration_(2015) Net_international_migration_(2015), Net_natural_change_(2015), %_of_resident_population_born_abroad_(2015) Largest_migrant_population_by_country_of_birth_(2011) , %_of_largest_migrant_population_(2011) Second_largest_migrant_population_by_country_of_birth_(2011) %_of_second_largest_migrant_population_(2011) Third_largest_migrant_population_by_country_of_birth_(2011) %_of_third_largest_migrant_population_(2011) %_of_population_from_BAME_groups_(2016) %_people_aged_3+_whose_main_language_is_not_English_(2011_Census, New_migrant_(NINo)_rates,_(2015/16), Largest_migrant_population_arrived_during_2015/16*

Second_largest_migrant_population_arrived_during_2015/16, Third_largest_migrant_population_arrived_during_2015/16, Employment_rate_(%)_(2015) Male_employment_rate_(2015), Female_employment_rate_(2015), Unemployment_rate_(2015) e.t.c

2. FourSquare Location Search: Exploring the area London: giving the Borough and the information of specified
3. https://en.wikipedia.org/wiki/List_of_London_boroughs which contained the list Borough in London alongside it's latitude and Longitude though in W & E format, therefore Cleaning the Data is paramount

This Above data would be used to solve the Problem such that it would be a pointer to decision making in the city and how travelers can make decision as regards Location to specified areas in the city to ensure, good decision making for business personnel's, to travelers, and visitors where can they visit as regards tourism

METHODOLOGY

As a database, I used GitHub repository in my study. My master data which has the main components *Borough Latitude, Longitude, Mortality rate from preventable cause, Median House, Price, Crime rates, Active businesses, Gross Annual Pay, Unemployment rate, Average Age.*

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In [51]: London.head()
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Out[51]:

	Borough	Latitude	Longitude	Mortality rate from preventable cause	Median House Price	Crime rates	Active businesses	Gross Annual Pay	Unemployment rate	Average Age
0	Barnet	51.6252	-0.1517	134	445000	62.7	26190	33443	8.5	37.3
1	Bexley	51.4549	-0.1505	164	275000	51.8	9075	34350	7.6	39.0
2	Brent	51.5588	-0.2817	169	407250	78.8	15745	29812	7.5	35.6
3	Bromley	51.4039	-0.0198	148	374975	64.1	15695	37682	5.3	40.2
4	Camden	51.5290	-0.1255	164	700000	123.5	31385	39796	4	36.4

I got the neighborhood data from Foursquare as regards the venue category of the City in relation to Borough.

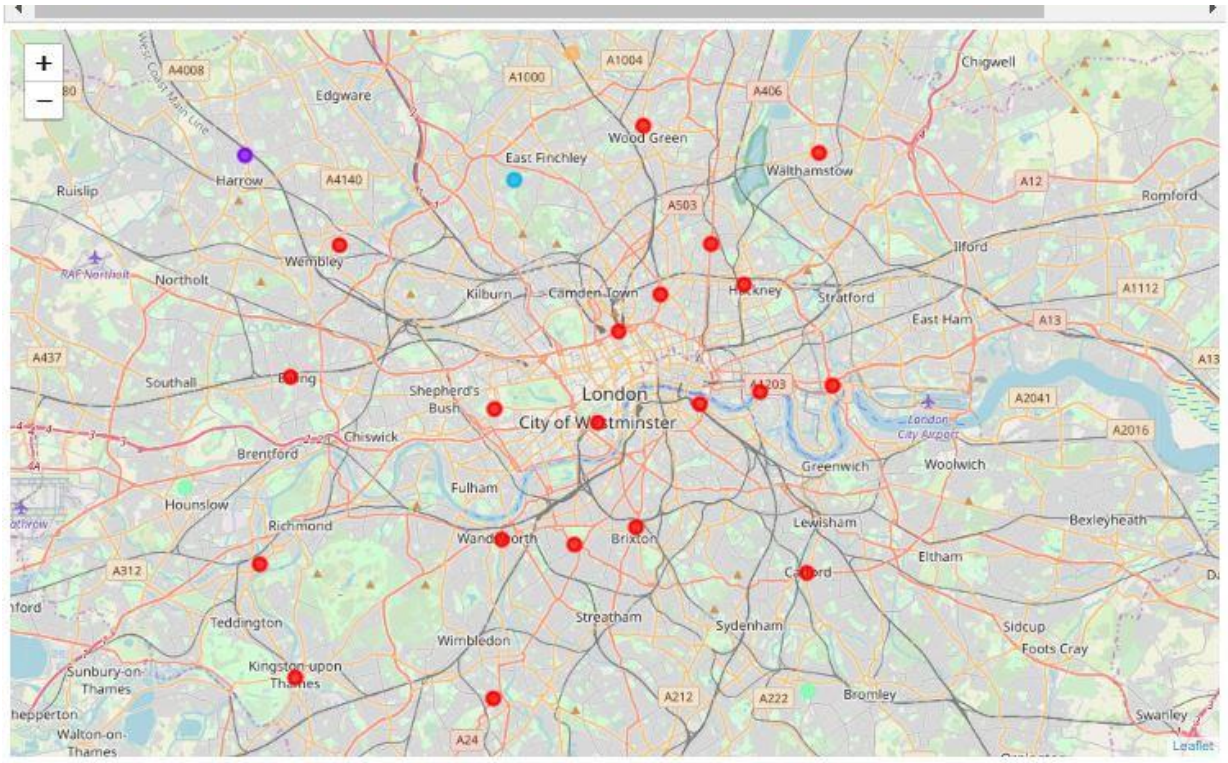
	Borough	Neighborhood Latitude	Neighborhood Longitude	Venue	Venue Latitude	Venue Longitude	Venue Category
0	Barnet	51.6252	-0.1517	The Atrium	51.624726	-0.151933	Café
1	Barnet	51.6252	-0.1517	JusDrive LTD	51.625563	-0.151963	Rental Car Location
2	Barnet	51.6252	-0.1517	Beaconsfield Road (BF)	51.622827	-0.151466	Bus Stop
3	Barnet	51.6252	-0.1517	Oakleigh Cafe	51.623412	-0.154899	Café
4	Barnet	51.6252	-0.1517	LGA Properties Ltd	51.625005	-0.156671	Construction & Landscaping

Then I grouped the visited places in a format of most visited venue within a Borough in London.

	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	Barnet	Café	Rental Car Location	Construction & Landscaping	Bus Stop	Yoga Studio	Film Studio	Fruit & Vegetable Store	Frozen Yogurt Shop	Fried Chicken Joint	French Restaurant
1	Bexley	Grocery Store	Pub	Fish & Chips Shop	Caucasian Restaurant	Coffee Shop	Plaza	Pizza Place	Park	Fast Food Restaurant	Fish Market
2	Brent	Coffee Shop	Hotel	Clothing Store	Bar	Sporting Goods Shop	Grocery Store	Sandwich Place	Italian Restaurant	Burger Joint	Indian Restaurant
3	Bromley	Café	Pub	Gastropub	Park	Furniture / Home Store	Frozen Yogurt Shop	Fried Chicken Joint	French Restaurant	Forest	Food Court
4	Camden	Pub	Hotel	Coffee Shop	Café	Sandwich Place	Burger Joint	Italian Restaurant	Bakery	Restaurant	Breakfast Spot

I used machine learning technique K Clustering to form a group the closely related venue together within Clustes in the Borough.

I used Follium to visualize it with different color indincating the various clusters.



Explore Clusters

1st Cluster

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London_merged.loc[London_merged['Cluster_Labels'] == 0, London_merged.columns[[0] + list(range(5, London_merged.shape[1]))]]
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	Borough	Crime rates	Active businesses	Gross Annual Pay	Unemployment rate	Average Age	Cluster_Labels	1st Most Common Venue	2nd Most Common Venue	3rd Most Common Venue	4th Most Common Venue	5th Most Common Venue	6tl Co
1	Bexley	51.8	9075	34350	7.6	39.0	0	Grocery Store	Pub	Fish & Chips Shop	Caucasian Restaurant	Coffee Shop	
2	Brent	78.8	16745	29812	7.5	35.6	0	Coffee Shop	Hotel	Clothing Store	Bar	Sporting Goods Shop	G
4	Camden	123.5	31385	39796	4	36.4	0	Pub	Hotel	Coffee Shop	Café	Sandwich Place	
5	Croydon	77	15540	32696	4.1	37.0	0	Pub	Coffee Shop	Portuguese Restaurant	Supermarket	Café	Bre
6	Ealing	75.5	18700	31331	5.8	36.2	0	Coffee Shop	Clothing Store	Bakery	Park	Pub	
7	Enfield	69.4	13925	31603	3.8	36.3	0	Coffee Shop	Clothing Store	Café	Gift Shop	Mobile Phone Shop	Sh
8	Hackney	99.6	18510	32056	5.9	33.1	0	Pub	Café	Coffee Shop	Bakery	Cocktail Bar	B
9	Haringey	90.2	12675	31063	5.7	35.1	0	Fast Food Restaurant	Pub	Supermarket	Indian Restaurant	Hotel Bar	Lig
12	Hillingdon	76.6	13505	33508	5.8	36.4	0	Coffee Shop	Clothing Store	Italian Restaurant	Fast Food Restaurant	Sandwich Place	Pha
14	Islington	121.2	22110	36592	4.5	34.8	0	Pub	Mediterranean Restaurant	Cocktail Bar	Theater	Furniture / Home Store	Bc
15	Kensington and Chelsea	120.9	14350	.	4.2	39.3	0	Café	Restaurant	Clothing Store	Bakery	Grocery Store	
16	Kingston upon Thames	58.5	8970	37979	4.5	37.1	0	Coffee Shop	Café	Clothing Store	Pub	Italian Restaurant	
17	Lambeth	104.8	17280	32441	5.0	34.5	0	Caribbean	Market	Pub	Coffee Shop	Mexican	

Data used to indicate Location with the first cluster which also includes information like the Crime rate, Average Age, Active Business, Employment Rate, all within the 1st cluster so that any individual who to migrate can also pick the best place within the cluster that will suit his/her purpose of migration into London.

DISCUSSION

London is considered to be one of the world's most important global cities, as I have mentioned above. This Project is aimed at equipping travelers to know adequately depending on his/her purpose of going to London to have a full view of what is attainable and also where is appreciated for the purpose of the journeying.

For Example: A young man coming from India to London for the purpose of tourism is likely to go to **Harrow**, where the most visited place is Indian Resturant and

Indiann Movie theather is the 3rd most visited, also a Yoga studio is also very visited. And the age bracket is about 40.

CONCLUSION

From this Project, people who are turning to big cities to start a business or work, to do tourism, to open a restaurant etc, can achieve better outcomes through their access to the platforms where such information is provided.

For them to make decision of where is suitable to accommodate them with utmost profit and Convenience.

References:

- [1] https://data.london.gov.uk/
- [2] https://en.wikipedia.org/wiki/List_of_London_boroughs
- [3] Forsquare API

Note: project choice: changed because Nigeria didn't have updated data on Foursquare