IBM Data Science

Where to stay in London?

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I. Introduction

London- a vibrant city with cultural diversity which has attracted thousands of international students each year. According to UK Council for International Student Affairs, international students accounts for 26% of its student population. Well- known with a world- class education, London has became a second home for lots of international students.

One of the biggest concern for oversea students to settle down in this beautiful country is where to find a good area for studying and living.

This project analyses various locations across London and find out which is the safest location for students.

II. Targeted audiences

People who want to travel or move in London.

III. Data source:

Following data is needed in this project

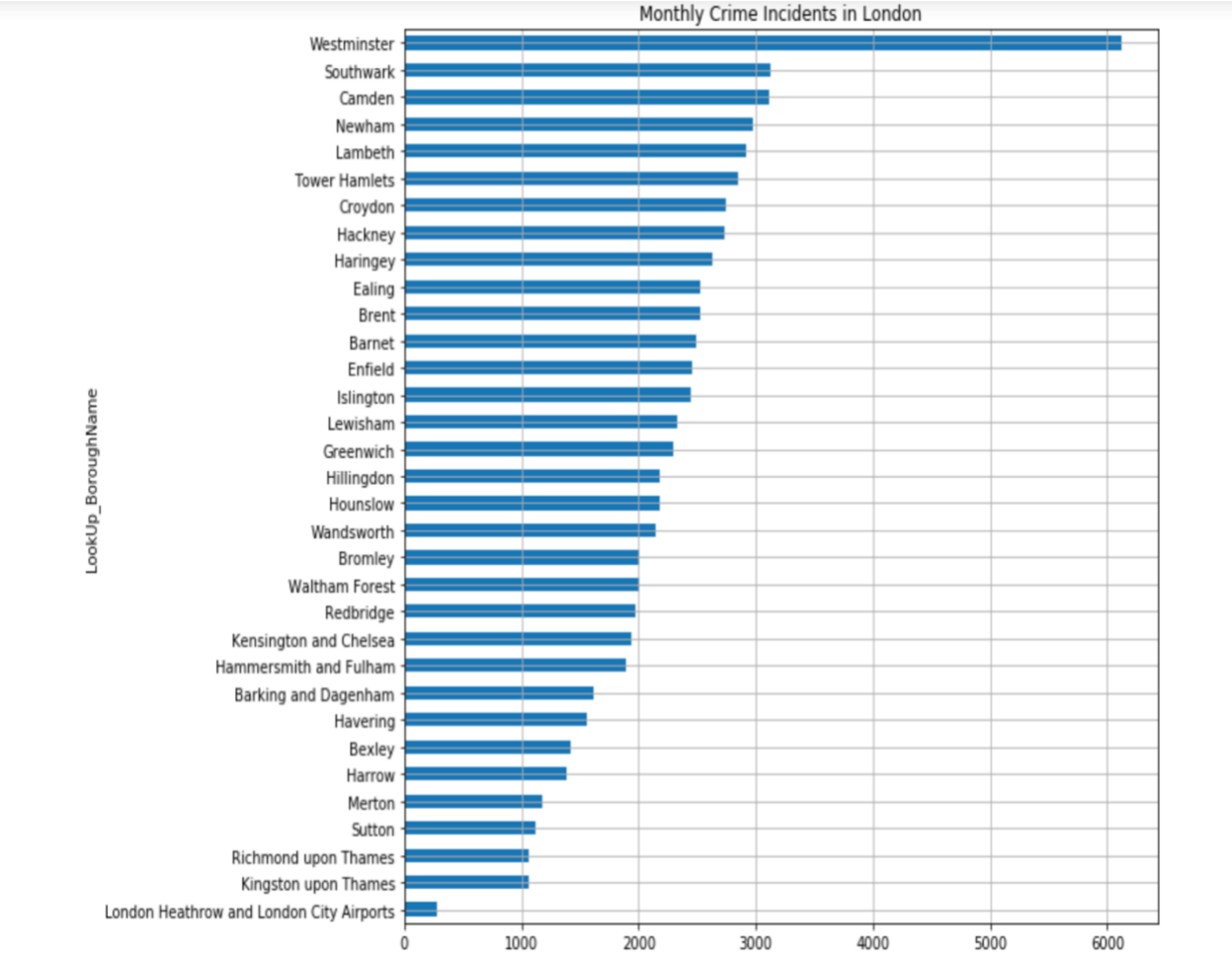
1. London data contains its Boroughs, Crimes happened over time. (Source: https://data.london.gov.uk/dataset/recorded_crime_summary)

2. Borough names, populations and geographical coordinates of London.
   (https://en.wikipedia.org/wiki/List_of_London_boroughs)
3. Foursquare API.

VI. Methodology:

- From the “Crime Summary” data, using the read_csv function to transfer into data frame. Data includes details about crime and time when it took place.
- For the purpose of finding safest place, calculate the total crimes and montly average for all boroughs to get an overview

	BoroughName	MonthlyAverage
0	Barking and Dagenham	1616.083333
1	Barnet	2494.875000
2	Bexley	1412.791667
3	Brent	2524.333333
4	Bromley	2009.791667



- Using the Beautiful Soup to import data about borough and population from website https://en.wikipedia.org/wiki/List_of_London_boroughs

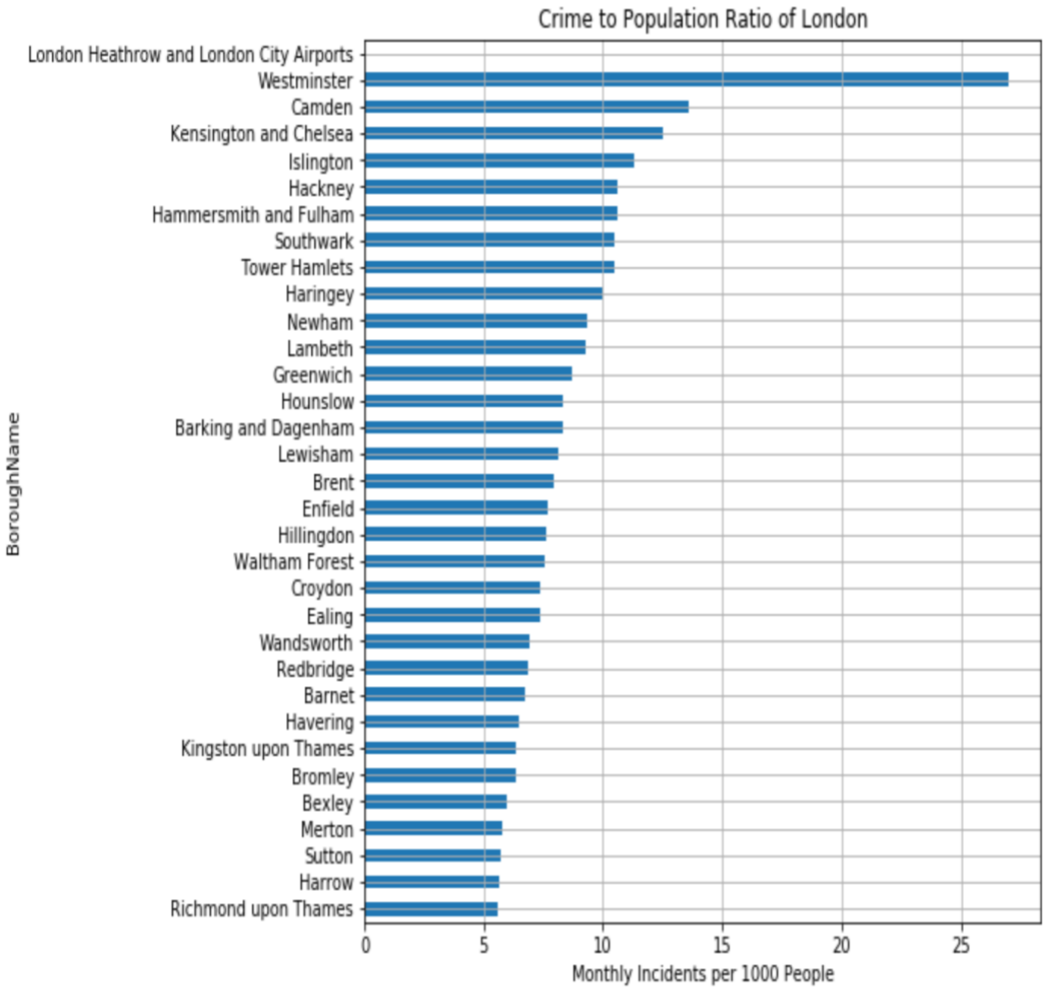
  After a few line codes for cleaning data, we can get a dataframe showing boroughs, population, latitude and longitude as shown below

	BoroughName	Population	Coordinates3	Latitude	Longitude
0	Barking and Dagenham	194,352	51.5607; 0.1557 (Barking and Dagenham)	51.5607	0.1557 (Barking and Dagenham)
1	Barnet	369,088	51.6252; -0.1517 (Barnet)	51.6252	-0.1517 (Barnet)
2	Bexley	236,687	51.4549; 0.1505 (Bexley)	51.4549	0.1505 (Bexley)
3	Brent	317,264	51.5588; -0.2817 (Brent)	51.5588	-0.2817 (Brent)
4	Bromley	317,899	51.4039; 0.0198 (Bromley)	51.4039	0.0198 (Bromley)

Total crimes **and** average may not be able to reflect how safety the borough is, because there is another factor that we should consider, which is population. In order to get more information, Crime to Population should be evaluated.

```
df['Population'].astype(float)
df['CrimeToPop'] = df['MonthlyAverage'] / df['Population'] * 1000
df.head()
```

	BoroughName	MonthlyAverage	Population	Latitude	Longitude	CrimeToPop
0	Barking and Dagenham	1616.083333	194352.0	51.5607	0.1557	8.315239
1	Barnet	2494.875000	369088.0	51.6252	-0.1517	6.759567
2	Bexley	1412.791667	236687.0	51.4549	0.1505	5.969029
3	Brent	2524.333333	317264.0	51.5588	-0.2817	7.956570
4	Bromley	2009.791667	317899.0	51.4039	0.0198	6.322108



V. Results and recommendations:

As showned in the graph above, it can be seen that Westminster has the highest crime ratio. In addtion, compared with Camden, the second highest ratio, Wastminster ratio is two times higher.

Besides, the safest areas are Richmond upon Thames, Harrow and Sutton, all three of these area have similar ratio rate.