

# Analysing Crime and Venue Data in London Boroughs

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# Introduction

- Crime rates in London have increased by over 23% from 2015-2020
- 15,590 knife crimes were reported across London from 2019-2020
- Real estate agents and individuals should be aware of crime rates when looking at residential property in London
- BUSINESS PROBLEM: which parts of London are safe and attractive for residential buyers/renters across various demographic groups?

# Data

- Metropolitan Police Service (MPS) Borough Level Crime from August 2018 to July 2020 (<https://data.london.gov.uk>)
- Foursquare venue data

MajorText	MinorText	LookUp_BoroughName	201808	201809
Arson and Criminal Damage	Arson	Barking and Dagenham	5	3
Arson and Criminal Damage	Criminal Damage	Barking and Dagenham	101	107
Burglary	Burglary - Business and Community	Barking and Dagenham	18	33
Burglary	Burglary - Residential	Barking and Dagenham	84	99
Drug Offences	Drug Trafficking	Barking and Dagenham	7	10
Drug Offences	Possession of Drugs	Barking and Dagenham	70	72
Miscellaneous Crimes Against Society	Bail Offences	Barking and Dagenham	0	0
Miscellaneous Crimes Against Society	Bigamy	Barking and Dagenham	0	0
Miscellaneous Crimes Against Society	Dangerous Driving	Barking and Dagenham	2	1
Miscellaneous Crimes Against Society	Disclosure, Obstruction, False or			
Miscellaneous Crimes Against Society	Misleading State	Barking and Dagenham	0	0
Miscellaneous Crimes Against Society	Exploitation of Prostitution	Barking and Dagenham	0	0
Miscellaneous Crimes Against Society	Fraud or Forgery Associated with Driver			
Miscellaneous Crimes Against Society	Records	Barking and Dagenham	0	0
Miscellaneous Crimes Against Society	Going Equipped for Stealing	Barking and Dagenham	1	0
Miscellaneous Crimes Against Society	Handling Stolen Goods	Barking and Dagenham	1	0

# Methodology

- I. Downloading and exploring the dataset
- II. Exploring neighborhoods in London
- III. Analysing each neighbourhood
- IV. Clustering neighborhoods
- V. Examining clusters

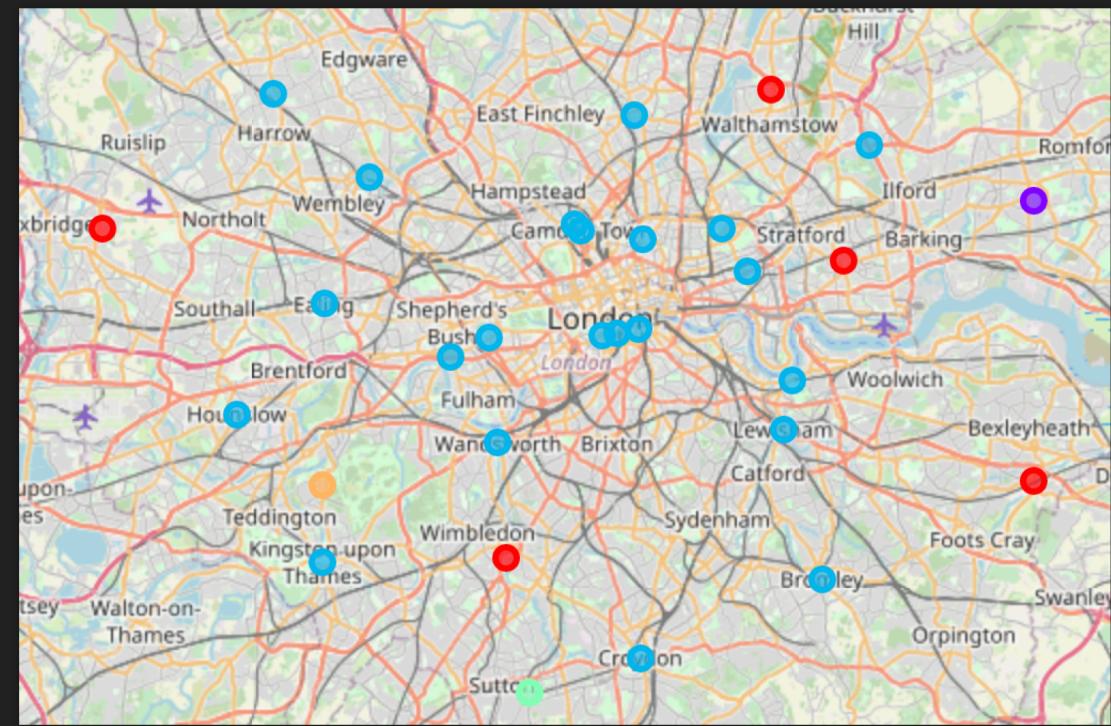
# Steps I. and II.

	<b>Address</b>	<b>Total_Crime</b>	<b>Latitude</b>	<b>Longitude</b>
<b>0</b>	Barking and Dagenham, London, UK	809.312500	51.554117	0.150504
<b>1</b>	Barnet, London, UK	1259.851064	51.653090	-0.200226
<b>2</b>	Bexley, London, UK	734.173913	51.441679	0.150488
<b>3</b>	Brent, London, UK	1244.416667	51.563826	-0.275760
<b>4</b>	Bromley, London, UK	1033.239130	51.402805	0.014814

	<b>Neighborhood</b>	<b>Neighborhood Latitude</b>	<b>Neighborhood Longitude</b>	<b>Venue</b>	<b>Venue Latitude</b>	<b>Venue Longitude</b>	<b>Venue Category</b>
<b>0</b>	Barking and Dagenham, London, UK	51.554117	0.150504	Tesco Express	51.551536	0.152784	Grocery Store
<b>1</b>	Barking and Dagenham, London, UK	51.554117	0.150504	Connor Road Bus Stop	51.554345	0.147162	Bus Stop
<b>2</b>	Barking and Dagenham, London, UK	51.554117	0.150504	Oglethorpe Road Bus Stop	51.555221	0.147136	Bus Stop
<b>3</b>	Barking and Dagenham, London, UK	51.554117	0.150504	Five Elms Off Licence	51.553878	0.145531	Liquor Store
<b>4</b>	Barking and Dagenham, London, UK	51.554117	0.150504	Post office	51.551411	0.155003	Convenience Store

# Steps III. and IV.

	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
0	Barking and Dagenham, London, UK	Bus Stop	Grocery Store	Convenience Store	Liquor Store	Event Space	Food & Drink Shop	Food Court
1	Barnet, London, UK	Coffee Shop	Pharmacy	Bookstore	Park	Convenience Store	Pizza Place	Restaurant
2	Bexley, London, UK	Pub	Fast Food Restaurant	Greek Restaurant	Chinese Restaurant	Toy / Game Store	Train Station	Tennis Court
3	Brent, London, UK	Coffee Shop	Hotel	Supermarket	Indian Restaurant	Pedestrian Plaza	Electronics Store	Sandwich Place
4	Bromley, London, UK	Clothing Store	Coffee Shop	Gym / Fitness Center	Pizza Place	Pub	Portuguese Restaurant	Burger Joint



# Step V.

## Cluster 1

```
london_merged.loc[london_merged['Cluster Labels'] == 0, london_merged.columns[[1] + list(range(5, london_merged.shape[1]))]]
```

Total_Crime	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	8 C
2 734.173913	Pub	Fast Food Restaurant	Greek Restaurant	Chinese Restaurant	Toy / Game Store	Train Station	Tennis Court	Re
15 1092.583333	Pub	Fast Food Restaurant	Park	Chinese Restaurant	Yoga Studio	English Restaurant	Food & Drink Shop	St
23 627.311111	Tram Station	Pub	Park	Dessert Shop	Farm	Sushi Restaurant	Fast Food Restaurant	Ste
24 1490.021277	Pub	Bus Station	Café	Park	Yoga Studio	Falafel Restaurant	Food & Drink Shop	St
30 1004.812500	Pub	Bus Stop	Café	Auto Garage	Yoga Studio	Falafel Restaurant	Food & Drink Shop	St

# Summary of Data

Three safest boroughs

Address	Total_Crime	Latitude	Longitude	Cluster Labels	1st Most Common Venue	2nd Most Common Venue	3rd Most Common Venue	4th Most Common Venue	5th Most Common Venue
Kingston upon Thames, London, UK	561.644444	51.409627	-0.306262	2	Coffee Shop	Café	Pub	Italian Restaurant	Clothing Store
Richmond upon Thames, London, UK	590.116279	51.440372	-0.305720	4	Sports Club	Home Service	Pub	Photography Studio	Bus Station
Sutton, London, UK	610.318182	51.357511	-0.173640	3	Bakery	Train Station	Park	Italian Restaurant	Grocery Store

Three least safe boroughs

Address	Total_Crime	Latitude	Longitude	Cluster Labels	1st Most Common Venue	2nd Most Common Venue	3rd Most Common Venue	4th Most Common Venue	5th Most Common Venue
Southwark, London, UK	1467.000000	51.502922	-0.103458	2	Hotel	Pub	Gym / Fitness Center	Coffee Shop	Bar
Newham, London, UK	1490.021277	51.530000	0.029318	0	Pub	Bus Station	Café	Park	Yoga Studio
Westminster, London, UK	2868.591837	51.500444	-0.126540	2	Coffee Shop	Historic Site	Outdoor Sculpture	Sandwich Place	Pub

# Results

The most common venues were as follows:

Cluster 1 – Pubs, fast food restaurants, parks.

Cluster 2 – Bus stops, grocery stores, convenience stores.

Cluster 3 – Coffee shops, pubs and clothing stores.

Cluster 4 – Bakeries, train stations, parks.

Cluster 5 – Sports clubs, home services, pubs.

Students / young professionals

Less attractive

Families and older people

# Conclusion

- Sutton and Richmond are attractive for family homes and older people.
- Merton and Bexley are appropriate for younger residential buyers/renters with more pubs, fast food restaurants and parks.
- Kingston upon Thames and Harrow are ideal for families and older people.
- Barking and Dagenham is safe but less attractive for buyers/renters.