

# The Battle of Neighbourhoods

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Capstone Project  
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# INTRODUCTION

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With a rising cases of crimes every year, it is very important to understand the crime rates in the nearby locality before buying a house. So, considering that I want to move to London, I will be looking for a safe locality to stay where the crime rate is low and safe environment for me to stay.

It can also be used by expats who are looking for safe localities to shift in London.

Also, it is important to consider the trending venues and the host spots of the city to understand places that are most important for you to consider when you want to move. I will also be looking at the Top 10 Common Venues each and around the neighbourhood using k-means clustering.

# DATA SOURCES

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Data for this project will be from references over the internet



## Crime Data for London

The crime data for London will be picked from Kaggle:

<https://www.kaggle.com/jboysen/london-crime>.

The data set contains the following fields:

Isoa\_code, borough, major\_category, minor\_category, value, year, month



## List of Localities in Royal Borough of Kingston upon Thames

Post analysis, the data of neighbourhoods is being picked from Wikipedia:

[https://en.wikipedia.org/wiki/List\\_of\\_districts\\_in\\_the\\_Royal\\_Borough\\_of\\_Kingston\\_upon\\_Thames](https://en.wikipedia.org/wiki/List_of_districts_in_the_Royal_Borough_of_Kingston_upon_Thames). The data set contains

Neighbourhood, borough, latitude & longitude data.



## List of Boroughs in London

The data for the same is being picked from Wikipedia:

[https://en.wikipedia.org/wiki/List\\_of\\_London\\_boroughs](https://en.wikipedia.org/wiki/List_of_London_boroughs). The data set contains the following fields:

Borough, Inner, Status, Local authority, Political control, Headquarters, Area (sq mi), Population (2013 est)[1], Co-ordinates & Nr. in map



## Foursquare API

The Foursquare API will be used for the project as well.

# METHODOLOGY

## Statistical Summary of Data

	Burglary	Criminal Damage	Drugs	Other Notifiable Offences	Robbery	Theft and Handling	Violence Against the Person	Total
count	33.000000	33.000000	33.000000	33.000000	33.000000	33.000000	33.000000	33.000000
mean	2069.242424	1941.545455	1179.212121	479.060606	682.666667	8913.121212	7041.848485	22306.696970
std	737.448644	625.207070	586.406416	223.298698	441.425366	4620.565054	2513.601551	8828.228749
min	2.000000	2.000000	10.000000	6.000000	4.000000	129.000000	25.000000	178.000000
25%	1531.000000	1650.000000	743.000000	378.000000	377.000000	5919.000000	5936.000000	16903.000000
50%	2071.000000	1989.000000	1063.000000	490.000000	599.000000	8925.000000	7409.000000	22730.000000
75%	2631.000000	2351.000000	1617.000000	551.000000	936.000000	10789.000000	8832.000000	27174.000000
max	3402.000000	3219.000000	2738.000000	1305.000000	1822.000000	27520.000000	10834.000000	48330.000000

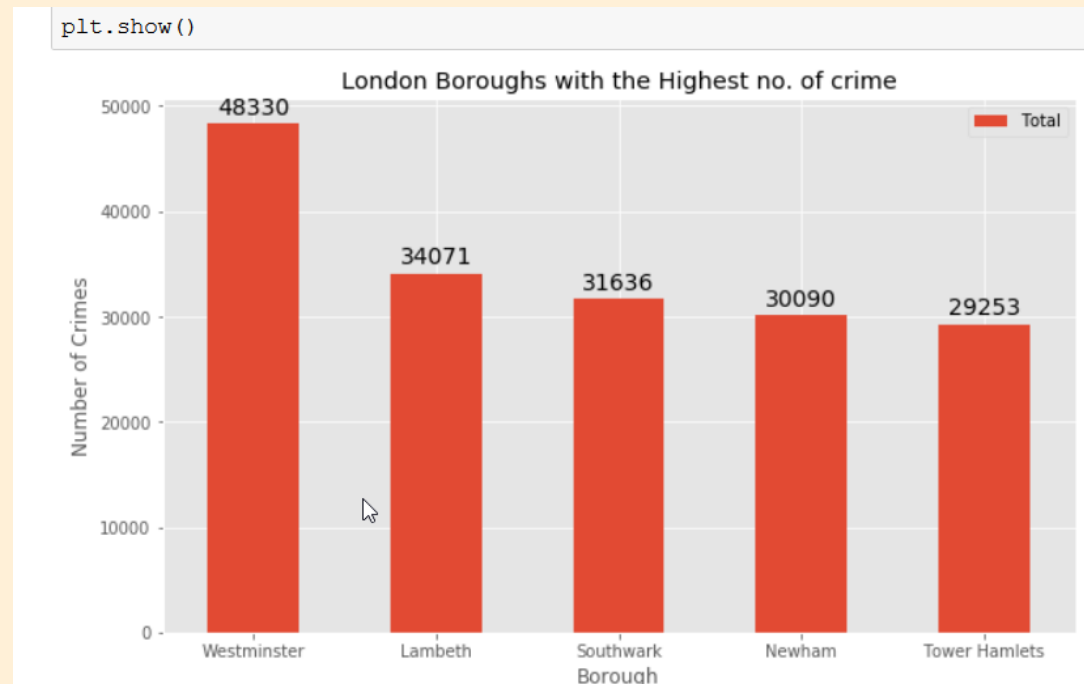




# METHODOLOGY

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- Crime Rate Analysis – Highest Crime Rate Borough-wise Data



# METHODOLOGY

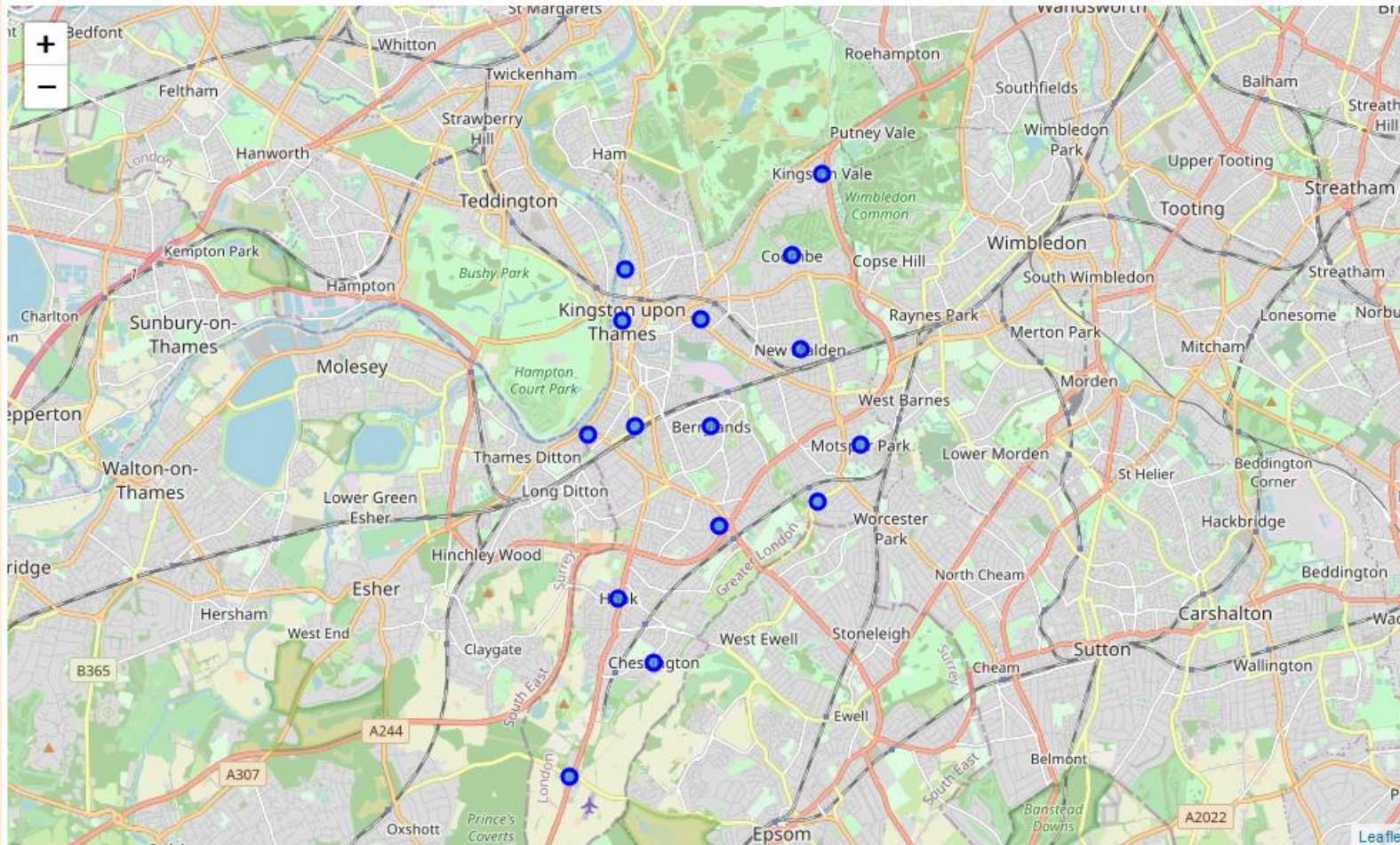
- Crime Rate Analysis – Lowest Crime Rate Borough-wise Data





# METHODOLOGY

## Neighbourhoods in Kingston upon Thames



# Neighbourhood Analysis

## Neighbourhoods in Kingston upon Thames

	Neighborhood	Borough	Latitude	Longitude
0	Berrylands	Kingston upon Thames	51.393781	-0.284802
1	Canbury	Kingston upon Thames	51.417499	-0.305553
2	Chessington	Kingston upon Thames	51.358336	-0.298622
3	Coombe	Kingston upon Thames	51.419450	-0.265398
4	Hook	Kingston upon Thames	51.367898	-0.307145
5	Kingston upon Thames	Kingston upon Thames	51.409627	-0.306262
6	Kingston Vale	Kingston upon Thames	51.431850	-0.258138
7	Malden Rushett	Kingston upon Thames	51.341052	-0.319076
8	Motspur Park	Kingston upon Thames	51.390985	-0.248898
9	New Malden	Kingston upon Thames	51.405335	-0.263407
10	Norbiton	Kingston upon Thames	51.409999	-0.287396
11	Old Malden	Kingston upon Thames	51.382484	-0.259090
12	Seething Wells	Kingston upon Thames	51.392642	-0.314366
13	Surbiton	Kingston upon Thames	51.393756	-0.303310
14	Tolworth	Kingston upon Thames	51.378876	-0.282860



# RESULTS

## Neighbourhoods and their nearby venues

```
neighborhoods_venues_sorted.head()
```

Out[68]:

	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	Berrylands	Gym / Fitness Center	Park	Bus Stop	Turkish Restaurant	Fish & Chips Shop	Department Store	Discount Store	Farmers Market	Fast Food Restaurant	Food
1	Canbury	Pub	Park	Café	Supermarket	Spa	Gym / Fitness Center	Shop & Service	Fish & Chips Shop	Plaza	Hotel
2	Chessington	Construction & Landscaping	Food	Deli / Bodega	Department Store	Discount Store	Farmers Market	Fast Food Restaurant	Fish & Chips Shop	French Restaurant	Grocery Store
3	Hook	Bakery	Supermarket	Indian Restaurant	Fish & Chips Shop	Turkish Restaurant	Food	Department Store	Discount Store	Farmers Market	Fast Food Restaurant
4	Kingston Vale	Grocery Store	Sandwich Place	Bar	Soccer Field	Department Store	Discount Store	Farmers Market	Fast Food Restaurant	Fish & Chips Shop	Food

# RESULTS

## K-means clustering on neighbourhoods and their nearby venues

### Cluster 1

```
In [77]: kut_merged[kut_merged['Cluster Labels'] == 0]
```

```
Out[77]:
```

	Neighborhood	Borough	Latitude	Longitude	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
6	Kingston Vale	Kingston upon Thames	51.431850	-0.258138	0	Grocery Store	Sandwich Place	Bar	Soccer Field	Department Store	Discount Store	Farmers Market	Fast Food Restaurant
7	Malden Rushett	Kingston upon Thames	51.341052	-0.319076	0	Grocery Store	Pub	Garden Center	Restaurant	Fish & Chips Shop	Deli / Bodega	Department Store	Discount Store
11	Old Malden	Kingston upon Thames	51.382484	-0.259090	0	Construction & Landscaping	Grocery Store	Food	Train Station	Bagel Shop	Department Store	Golf Course	Gift Shop
14	Tolworth	Kingston upon Thames	51.378876	-0.282860	0	Grocery Store	Restaurant	Pharmacy	Pizza Place	Train Station	Hotel	Indian Restaurant	Italian Restaurant

# RESULTS

## K-means clustering on neighbourhoods and their nearby venues

### Cluster 2

```
In [78]: kut_merged[kut_merged['Cluster Labels'] == 1]
```

```
Out[78]:
```

	Neighborhood	Borough	Latitude	Longitude	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 Common Venue
2	Chessington	Kingston upon Thames	51.358336	-0.298622	1	Construction & Landscaping	Food	Deli / Bodega	Department Store	Discount Store	Farmers Market	Fast Food Restaurant	Fish & Chips Shop	F Resta



# RESULTS

## K-means clustering on neighbourhoods and their nearby venues

### Cluster 3

```
In [79]: kut_merged[kut_merged['Cluster Labels'] == 2]
```

```
Out[79]:
```

	Neighborhood	Borough	Latitude	Longitude	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
4	Hook	Kingston upon Thames	51.367898	-0.307145	2	Bakery	Supermarket	Indian Restaurant	Fish & Chips Shop	Turkish Restaurant	Food	Department Store	Discount Store
9	New Malden	Kingston upon Thames	51.405335	-0.263407	2	Gym	Gastropub	Office	Sushi Restaurant	Supermarket	Bar	Korean Restaurant	Indian Restaurant

# RESULTS

## K-means clustering on neighbourhoods and their nearby venues

### Cluster 4

```
In [80]: kut_merged[kut_merged['Cluster Labels'] == 3]
```

```
Out[80]:
```

	Neighborhood	Borough	Latitude	Longitude	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
0	Berrylands	Kingston upon Thames	51.393781	-0.284802	3	Gym / Fitness Center	Park	Bus Stop	Turkish Restaurant	Fish & Chips Shop	Department Store	Discount Store	Farmers Market	Fast Food Restaurant
8	Motspur Park	Kingston upon Thames	51.390985	-0.248898	3	Gym	Park	Bus Stop	Soccer Field	Fish & Chips Shop	Department Store	Discount Store	Farmers Market	Fast Food Restaurant

# RESULTS

## K-means clustering on neighbourhoods and their nearby venues

### Cluster 5

```
In [81]: kut_merged[kut_merged['Cluster Labels'] == 4]
```

```
Out[81]:
```

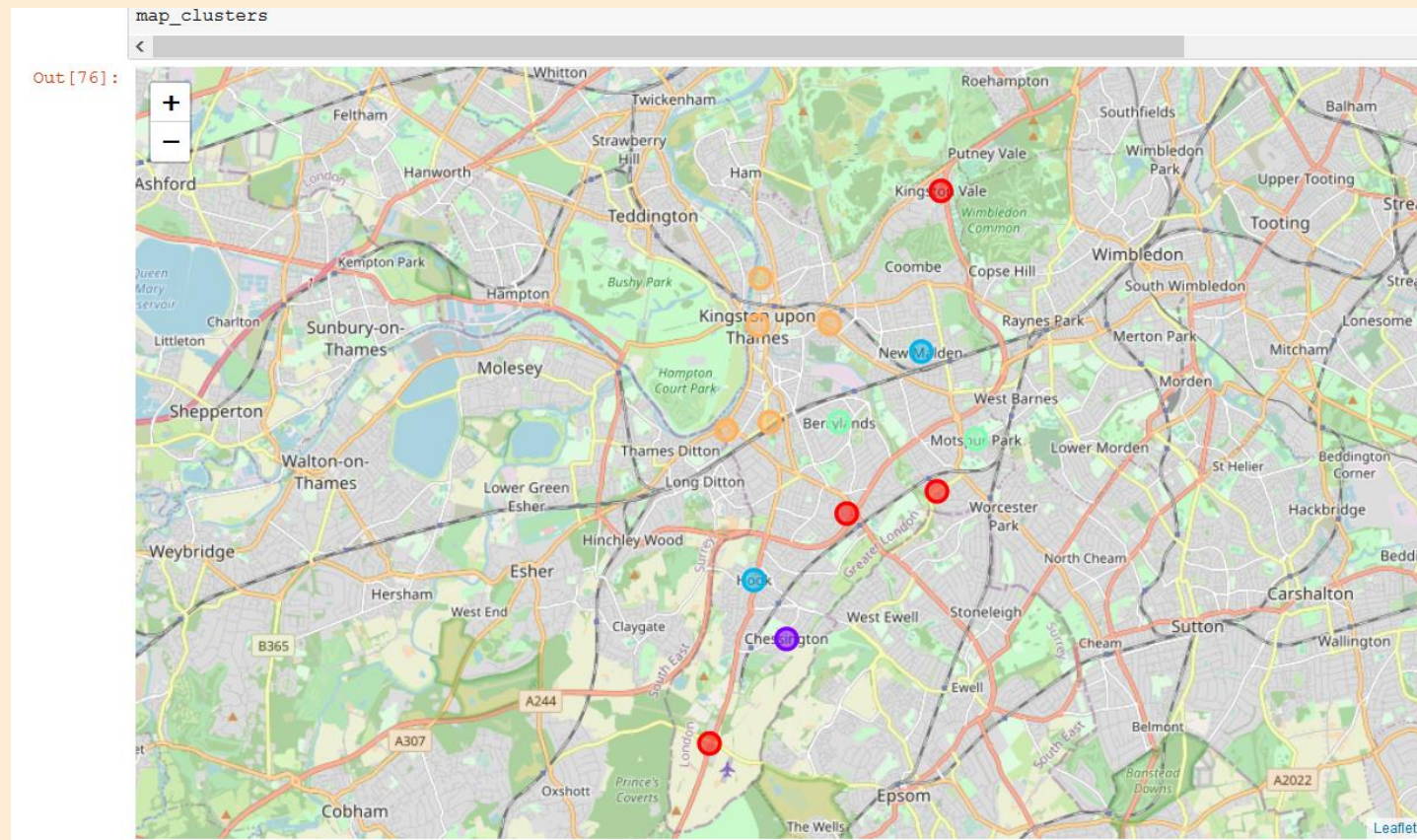
	Neighborhood	Borough	Latitude	Longitude	Cluster Labels	1st Most Common Venue	2nd Most Common Venue	3rd Most Common Venue	4th Most Common Venue	5th Most Common Venue	6th Most Common Venue	7th Most Common Venue	8th Most Common Venue
1	Canbury	Kingston upon Thames	51.417499	-0.305553	4	Pub	Park	Café	Supermarket	Spa	Gym / Fitness Center	Shop & Service	Fish & Chips Shop
5	Kingston upon Thames	Kingston upon Thames	51.409627	-0.306262	4	Café	Pub	Burger Joint	Sushi Restaurant	Coffee Shop	Turkish Restaurant	French Restaurant	Gym / Fitness Center
10	Norbiton	Kingston upon Thames	51.409999	-0.287396	4	Indian Restaurant	Italian Restaurant	Food	Platform	Pub	Japanese Restaurant	Hotel	Coffee Shop
12	Seething Wells	Kingston upon Thames	51.392642	-0.314366	4	Indian Restaurant	Coffee Shop	Pub	Café	Gym	Chinese Restaurant	Fast Food Restaurant	Fish & Chips Shop
13	Surbiton	Kingston upon Thames	51.393756	-0.303310	4	Coffee Shop	Pub	Pharmacy	Grocery Store	Italian Restaurant	Breakfast Spot	French Restaurant	Train Station



# RESULTS

## K-means clustering on neighbourhoods and their nearby venues

### Cluster Map



# Discussion

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This project has helped me choose my preferred locality in London which has a safe neighbourhood along with venues around the neighbourhood which I would prefer. This can also be used by expats who would want to shift to London in a safe neighbourhood.

For a family relocating to London, I would recommend them shifting to Tolworth (Within Cluster 1) which has a grocery store nearby along with restaurant, pharmacy, pizza place and train station.

For a bachelor who is a health freak and likes to explore the city on weekends and chill, I would prefer New Malden (Within Cluster 2) which has a gym, gastro pub, office and super market nearby.

# Conclusion

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This project can help people relocating to London find the most suitable safe neighbourhood for them which will lead to easy accessibility and safety. Technology & data has contributed to make this decision easier for people which is why would recommend this project.