

# **Capstone Project - The Battle of London Neighbourhoods**

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# Objectives

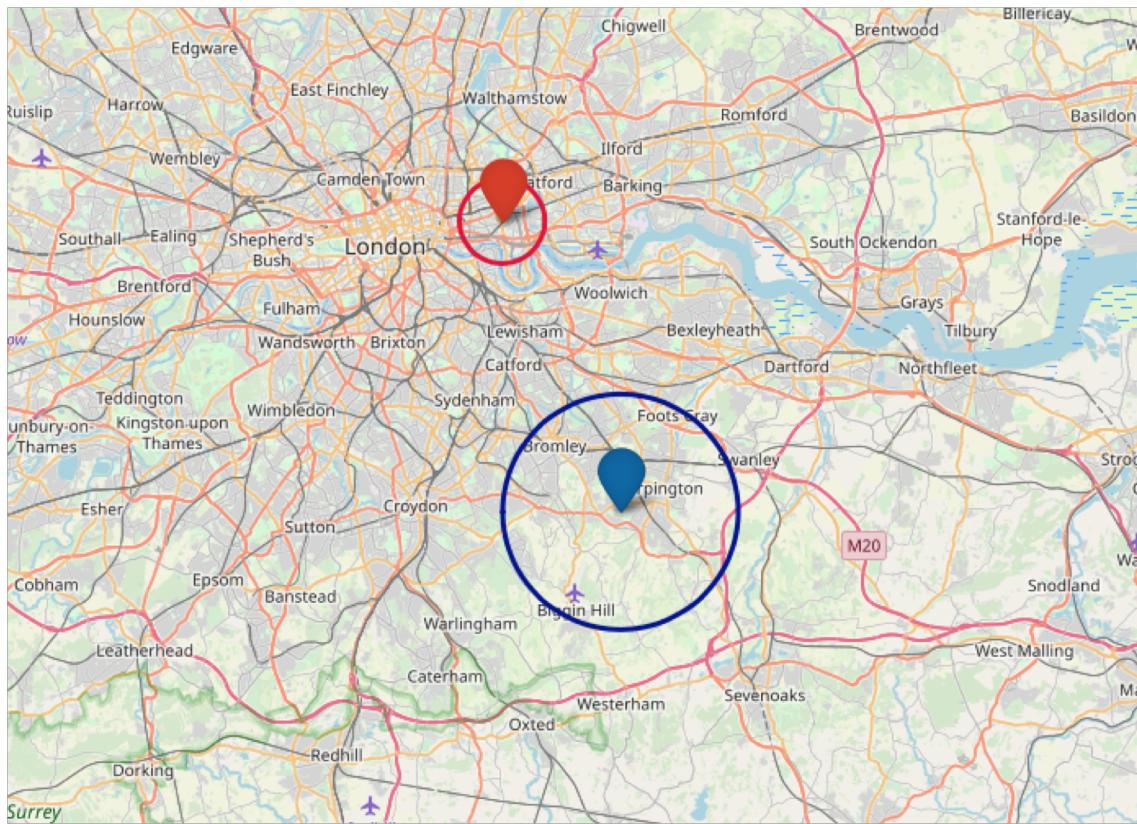
- ▶ This project aims to address this by carried out a comparative study on the facilities and amenities between the two boroughs with the highest income rate and the lowest in London.

# Questions to answer

- ▶ What types of facilities (venues) and amenities are available in the area with different poverty line?
- ▶ How venues changing based on the spending power?
- ▶ What are the distinctive venues that represent in these boroughs

By answering the above questions, the findings can be used for the targeting development for the rest of the London Boroughs so that unnecessary development can be avoided and overall budget can be sustained.

# Boroughs Locations



# Data Generations

## ► Tower Hamlet:

	Neighbourhood	Neighbourhood Latitude	Neighbourhood Longitude	Venue	Venue Latitude	Venue Longitude	Venue Category
0	Bethnal Green	51.526962	-0.06674	The King's Arms	51.525754	-0.065868	Pub
1	Bethnal Green	51.526962	-0.06674	Sam's Cafe	51.526424	-0.065056	Café
2	Bethnal Green	51.526962	-0.06674	Woolidando	51.526377	-0.066518	Café
3	Bethnal Green	51.526962	-0.06674	Jonestown	51.526092	-0.067936	Coffee Shop
4	Bethnal Green	51.526962	-0.06674	E Pellicci	51.526516	-0.063426	Café

# Data Generations

	Neighbourhood	Neighbourhood Latitude	Neighbourhood Longitude	Venue	Venue Latitude	Venue Longitude	Venue Category
0	Bickley	51.401740	0.043712	Bickley Railway Station (BKL)	51.400032	0.045351	Train Station
1	Bickley	51.401740	0.043712	Bickley Park Cricket Club	51.401508	0.046263	Cricket Ground
2	Bickley	51.401740	0.043712	J Henry Flooring	51.401227	0.040652	Home Service
3	Bickley	51.401740	0.043712	Village Sandwich Bar	51.399301	0.047951	Café
4	Biggin Hill	51.331959	0.029057	Biggin Hill Airport (BQH) (Biggin Hill Airport)	51.331794	0.028845	Airport

Using the data, we successfully retrieved the following:

- Total venues in Tower Hamlet neighbourhoods returned by Foursquare: **520**
- Total venues in Bromley neighbourhoods returned by Foursquare: **193**
- Total unique venue categories in Tower Hamlet = **156**
- Total unique venue categories in Bromley = **76**

# Analysis of Results and Discussions: Most Common Venues

## Tower Hamlet

```
Pub          7
Coffee Shop   3
Indian Restaurant  2
Name: 1st Most Common Venue, dtype: int64
Pub          3
Hotel         2
Bike Rental / Bike Share  2
Name: 2nd Most Common Venue, dtype: int64
Hotel         2
Sandwich Place  2
Boat or Ferry    1
Name: 3rd Most Common Venue, dtype: int64
```

## Bromley

```
Pub          4
Coffee Shop   2
Park          2
Name: 1st Most Common Venue, dtype: int64
Italian Restaurant  2
Train Station   2
Clothing Store  2
Name: 2nd Most Common Venue, dtype: int64
Park          2
Gym / Fitness Center  2
Pub           2
Name: 3rd Most Common Venue, dtype: int64
```

# Analysis of results

- ▶ **Tower Hamlet:** referring to the first 3 most common venues in Tower Hamlet, we can easily identify that most venues are food and beverage venues, with 84% of the venues. It is seeming that in most of the Tower Hamlet venues are for essential sustenance providers. Furthermore, due to the location of the borough, the boroughs have provided bike rental and bike share venues for the residents to commute within the area.
- ▶ **Bromley:** However, in Bromley, although also includes food and beverage venues, the venues also includes clothing stores, gyms, parks and Italian restaurants, as such that these are life style luxuries that are mostly common for area that have low poverty rates.
- ▶ Majority of the venues in Tower Hamlets are food and beverage or sustenance venues, such as cafe, pubs restaurant, grocery stores etc. However,
- ▶ Bromley provides more lifestyle venues such as Gyms, massage studios, health and beauty studio, golf course, theatre and garden centre just to name a few.

# Clustering Analysis:

## Cluster 1

Cluster Label	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
16	0 Hayes & Coney Hall	Park	Pub	Hardware Store	Grocery Store	Yoga Studio	Falafel Restaurant	Flower Shop	Flea Market	Fishing Store	Fish Market
18	0 Kelsey & Eden Park	Café	Tennis Court	Park	Yoga Studio	Fast Food Restaurant	Food Court	Food & Drink Shop	Flower Shop	Flea Market	Fishing Store
25	0 Plaistow & Sunbridge	Chinese Restaurant	Diner	Supermarket	Other Repair Shop	Fast Food Restaurant	Food Court	Food & Drink Shop	Flower Shop	Flea Market	Fishing Store
26	0 Poplar	Park	Steakhouse	Pizza Place	Light Rail Station	Café	Fried Chicken Joint	Intersection	Tunnel	Chinese Restaurant	English Restaurant
31	0 Stepney Green	Park	Chinese Restaurant	Pub	Dessert Shop	Thrift / Vintage Store	Sandwich Place	Fried Chicken Joint	Farm	Supermarket	Italian Restaurant
33	0 West Wickham	Park	Furniture / Home Store	Business Service	Food Truck	Food Court	Food & Drink Shop	Flower Shop	Flea Market	Fishing Store	Fish Market

# Clustering Analysis: Cluster 2 & 4

Cluster Label	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
14	1 Darwin	Farm	History Museum	Bar	Yoga Studio	Food Stand	Food Court	Food & Drink Shop	Flower Shop	Flea Market	Fishing Store

Cluster Label	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
11	3 Copers Cope	Athletics & Sports	Soccer Field	Indoor Play Area	Yoga Studio	Farm	Food Court	Food & Drink Shop	Flower Shop	Flea Market	Fishing Store

# Clustering Analysis: Cluster 5

Cluster Label	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
2	4 Biggin Hill	Airport	Airport Service	Pub	Massage Studio	Farm	Food Court	Food & Drink Shop	Flower Shop	Flea Market	Fishing Store
4	4 Bow East	Pub	Hotel	Bar	Burger Joint	Metro Station	Office	Fast Food Restaurant	Bike Rental / Bike Share	Convenience Store	Gym
5	4 Bow West	Pub	Hotel	Bar	Burger Joint	Metro Station	Office	Fast Food Restaurant	Bike Rental / Bike Share	Convenience Store	Gym
6	4 Bromley Common & Keston	Bus Station	Indian Restaurant	Pub	Bar	Fast Food Restaurant	Farm	Food Stand	Food Court	Food & Drink Shop	Flower Shop
9	4 Chelsfield & Pratts Bottom	Pub	Health & Beauty Service	Fishing Store	Yoga Studio	Falafel Restaurant	Food Court	Food & Drink Shop	Flower Shop	Flea Market	Fish Market
10	4 Chislehurst	Pub	Indian Restaurant	Pizza Place	Italian Restaurant	Gastropub	Yoga Studio	Farm	Food & Drink Shop	Flower Shop	Flea Market
15	4 Farnborough & Croftton	Pub	American Restaurant	Coffee Shop	Theater	Yoga Studio	Farm	Food Court	Food & Drink Shop	Flower Shop	Flea Market
17	4 Island Gardens	Pub	History Museum	Boat or Ferry	Park	Portuguese Restaurant	Church	Restaurant	Rugby Pitch	Chinese Restaurant	Food & Drink Shop
20	4 Limehouse	Pub	Chinese Restaurant	Café	Indian Restaurant	Italian Restaurant	Park	Bus Stop	Convenience Store	Light Rail Station	Gastropub
21	4 Mottingham & Chislehurst North	Pub	Pizza Place	Fish & Chips Shop	Grocery Store	Yoga Studio	Falafel Restaurant	Food & Drink Shop	Flower Shop	Flea Market	Fishing Store
23	4 Penge & Cator	Pub	Pizza Place	Supermarket	Convenience Store	Shopping Mall	Fast Food Restaurant	Furniture / Home Store	Garden Center	Coffee Shop	Italian Restaurant
28	4 Shortlands	Chinese Restaurant	Pub	Café	Train Station	Golf Course	Yoga Studio	Food & Drink Shop	Flower Shop	Flea Market	Fishing Store
30	4 St Katharine's and Wapping	Pub	Bus Stop	Middle Eastern Restaurant	Sandwich Place	Coffee Shop	Thrift / Vintage Store	Bar	Grocery Store	Breakfast Spot	Metro Station
32	4 Weavers	Pub	Supermarket	Ice Cream Shop	Portuguese Restaurant	Burger Joint	Brewery	Sandwich Place	Chinese Restaurant	Recreation Center	Thrift / Vintage Store

# Conclusions

- ▶ In conclusion, based on the poverty rate, we can clearly see there are discrepancies in terms of the venues at each borough. At Tower Hamlet, it is clearly shown that most venues provided are essential venues for day-to-day life as in Bromley, much of the venues are lifestyle venues and required certain level of incomes.