



# EDA (EXPLORATORY DATA ANALYSIS) OF AIRBNB LONDON

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**Introduction**

**Methodology**

**Results**

**Conclusions**

**Future Work**

**Business Need:**

Finding best location to buy a new property for investment that host on Airbnb. Total Budget : **£750.000**, Preferred Location: **Inner London**

**Solution:**

Using **Airbnb London** data, **House Prices Index (House Price, Sales Volume, Yearly Increment)** data, **Council Tax** data, **GIS Boundary** data and analyse to find best location for buying new house.

**Objectives:**

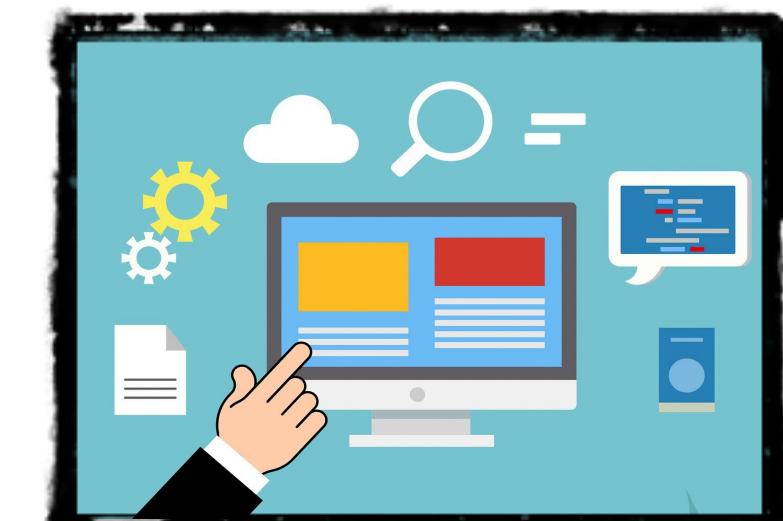
- Answering these questions for each borough
- **Number of properties** that host on Airbnb
  - **Average price** per night
  - Estimate **Occupancy** day per year
  - Calculate **annual income, annual expense and annual return, initial expense** etc.
  - Calculate **return of investment rate and total profit**

“Exploratory Data Analysis is a detective work”  
“EDA can never be the whole story, but nothing else can serve as  
the foundation stone--as the first step ”

*–John W. Tukey, 1970*



**Business Need**



**Data Acquire**



**Data Wrangling**



**Analyse**



**Visualisation**

## Data Sources

### Inside Airbnb

Adding data to the debate

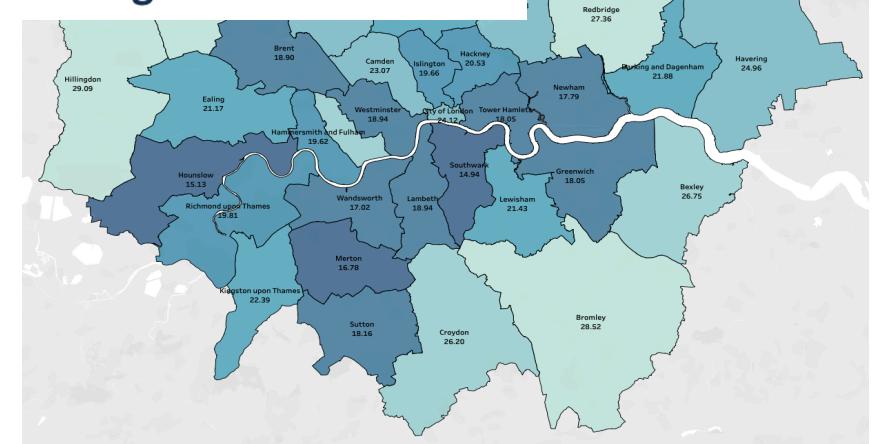


### MAYOR OF LONDON



### Inside Airbnb

Adding data to the debate



### Inside Airbnb

- 09 January, 2020
- Detail Listings data (csv)

### Mayor of London

- Average House Price (1996-2019) (xlsx)
- Sales Volume (1996-2019) (xlsx)
- Council Tax (2020) (xlsx)

### Spatial Data

- Borough Border (geojson)
- Airbnb Point (csv)

## Tools

### Data

pandas

scikit learn

Seaborn

matplotlib



### Analytics Platform

tableau<sup>®</sup>  
SOFTWARE

QGIS

### Thematic Map

## Brief Insight from Data

- **Number of Borough: 33**
- **Number of Properties: 87235**
- **Number of Host: 14783**
- **Average Price for All London: £129.61**
- **Most Expensive Borough for Airbnb Properties: Kensington and Chelsea / £220.92**
- **Cheapest Borough for Airbnb Properties: Bexley / £58.05**
- **Most Hosted Borough: Westminster / 9925 / %11.4**
- **Least Hosted Borough: Bexley / 255 / %0.3**
- **Most have room type: Entire home / apt %56**
- **Most Expensive Average House Price: Kensington and Chelsea / £1 243 722**
- **Cheapest Average House Price: Barking and Dagenham / £298 620**

#	Column	Non-Null Count	Dtype
0	id	87235 non-null	int64
1	name	87210 non-null	object
2	host_id	87235 non-null	int64
3	host_name	87055 non-null	object
4	neighbourhood_group	0 non-null	float64
5	neighbourhood	87235 non-null	object
6	latitude	87235 non-null	float64
7	longitude	87235 non-null	float64
8	room_type	87235 non-null	object
9	price	87235 non-null	int64
10	minimum_nights	87235 non-null	int64
11	number_of_reviews	87235 non-null	int64
12	last_review	67050 non-null	object
13	reviews_per_month	67050 non-null	float64
14	calculated_host_listings_count	87235 non-null	int64
15	availability_365	87235 non-null	int64

dtypes: float64(4), int64(7), object(5)  
memory usage: 10.6+ MB

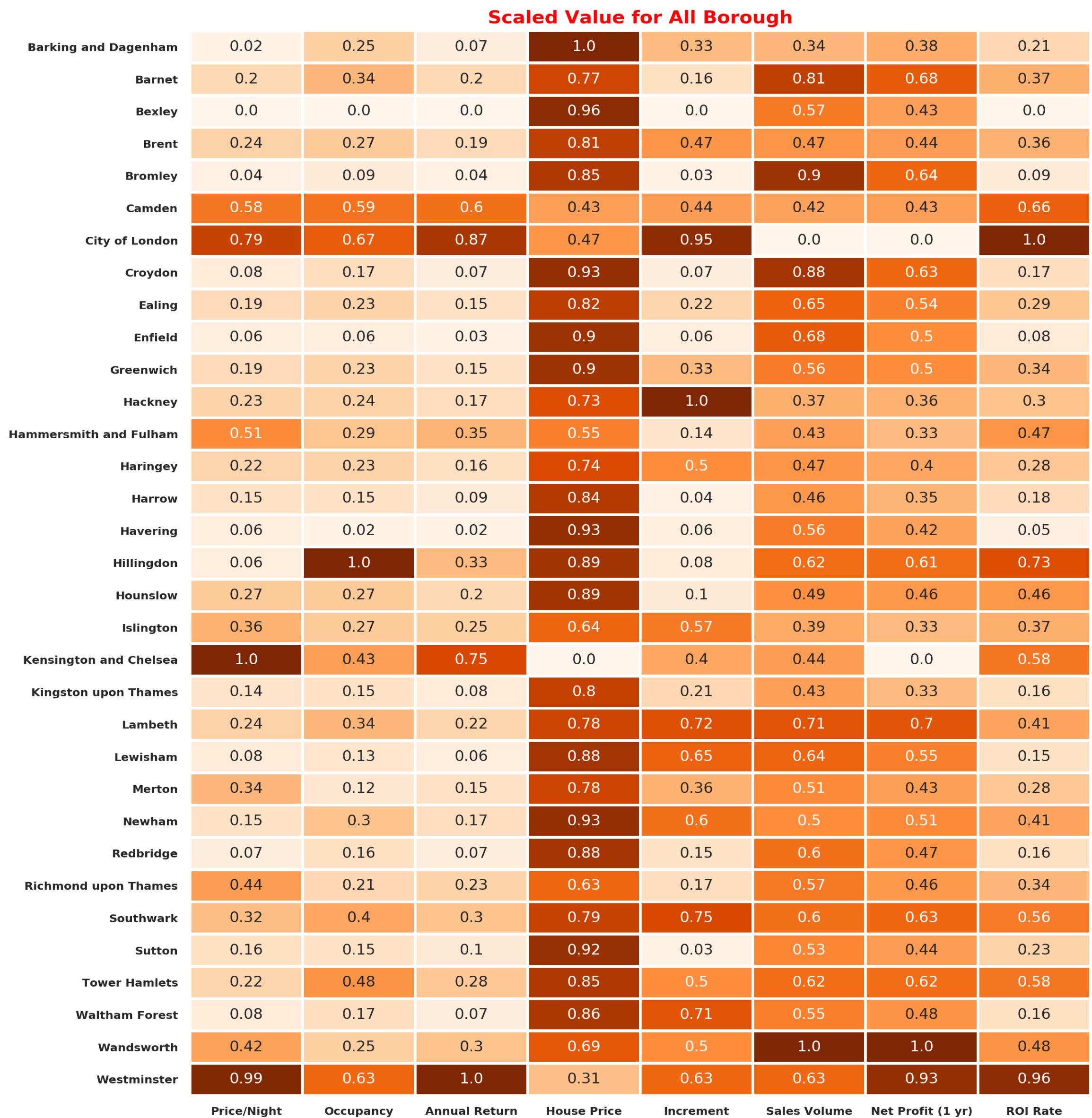
## ROI Rate:

- City of London** and **Westminster** are most suitable boroughs for buying new property.  
Because of metrics that shown below:
  - Price/Night
  - Occupancy
  - Annual Return (Income - Expense)
  - House Price
  - Initial Expenses

## Net Profit (After 1 year)\*

- Wandsworth** and **Westminster** are most suitable boroughs for buying new property.  
Because of ROI Rate's metrics + metrics that below:
  - Annual Increment
  - Sales Volume

\* If you have to sell the property



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## Methodology

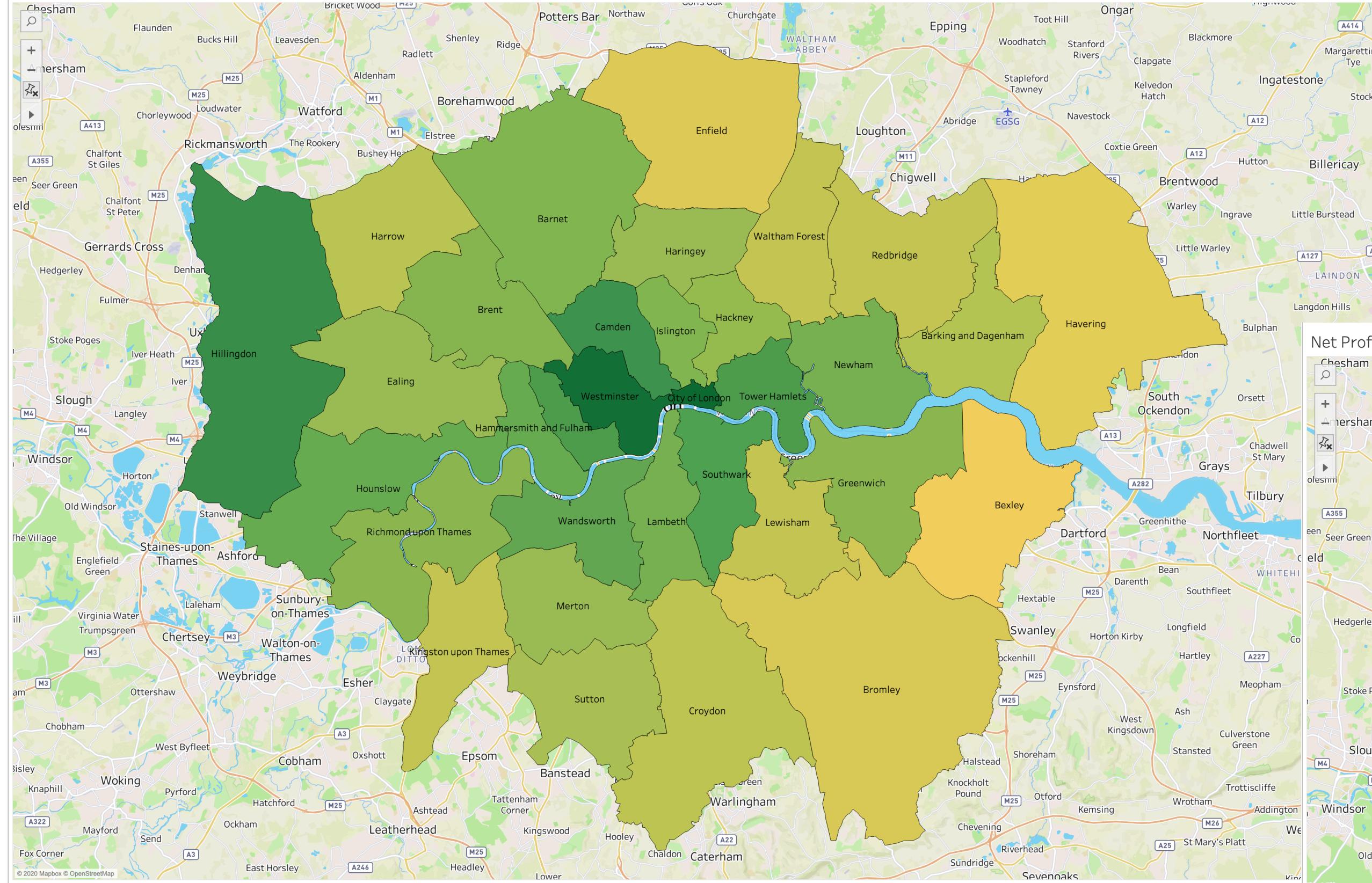
## Results

## Conclusions

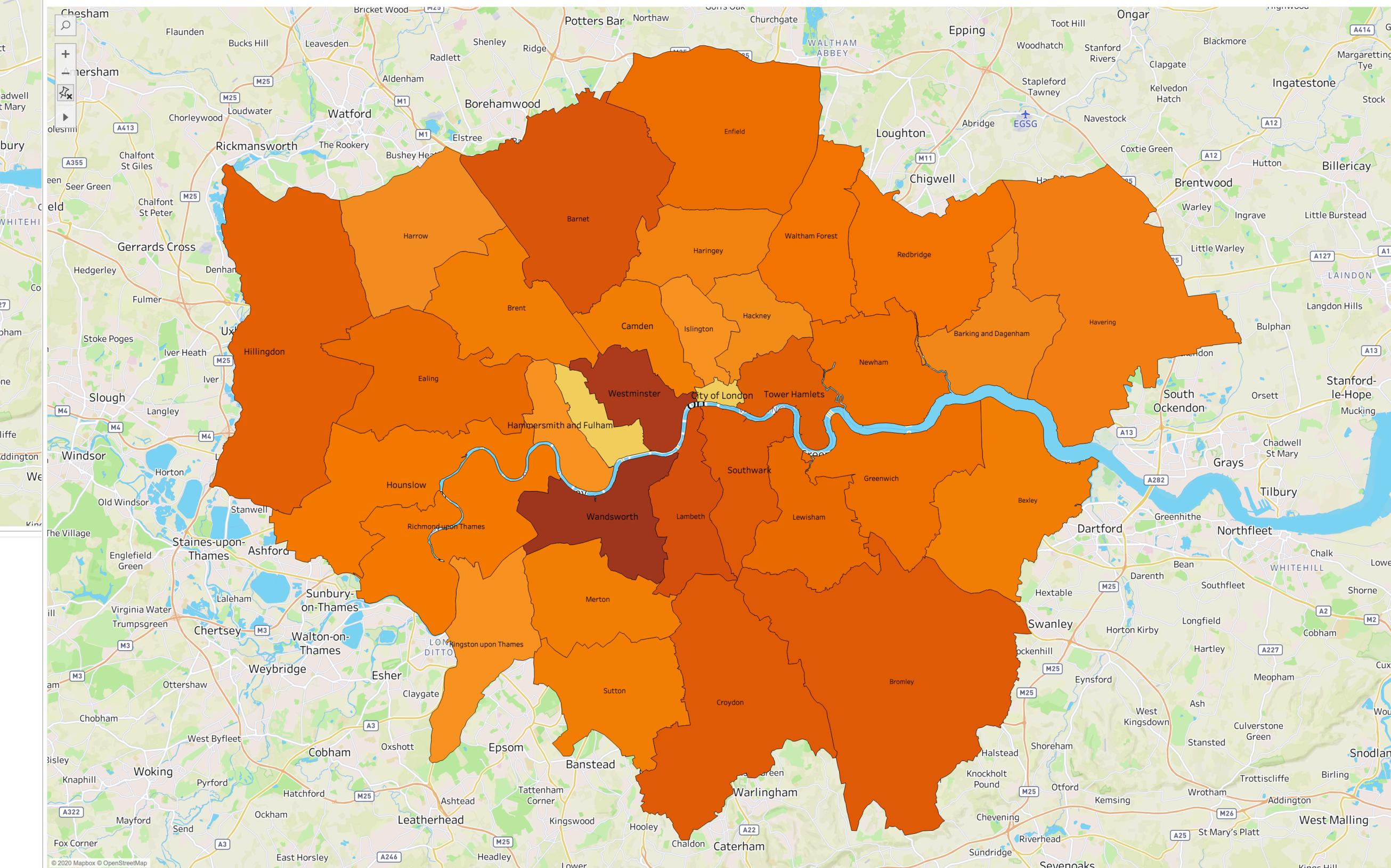
## Future Work

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Return Of Investment



Net Profit



## **Client Constraint:** Total Budget : £750.000, Preferred Location: Inner London

borough	annual_return	avg_house_price	avg_increment	avg_volume/year	initial_expense	total_budget	profit_aft1	ROI
Greenwich	3000.37	393062.0	8.35	3838.92	19653.10	412715.10	-2419.39	0.73
Hackney	3506.30	555655.0	9.76	2673.79	27782.75	583437.75	-9727.48	0.60
Islington	5354.50	634610.0	8.84	2782.42	31730.50	666340.50	-10968.62	0.80
Lambeth	4788.26	508419.0	9.17	4789.29	25420.95	533839.95	7032.89	0.90
Southwark	6743.13	499247.0	9.24	4073.54	24962.35	524209.35	4015.39	1.29
Tower Hamlets	6269.83	438461.0	8.69	4203.88	21923.05	460384.05	3229.61	1.36
Wandsworth	6654.41	588613.0	8.69	6623.08	29430.65	618043.65	21976.60	1.08

### **ROI Rate:**

1. Tower Hamlets
2. Southwark
3. Wandsworth

### **Net Profit:**

1. Wandsworth
2. Lambeth
3. Southwark

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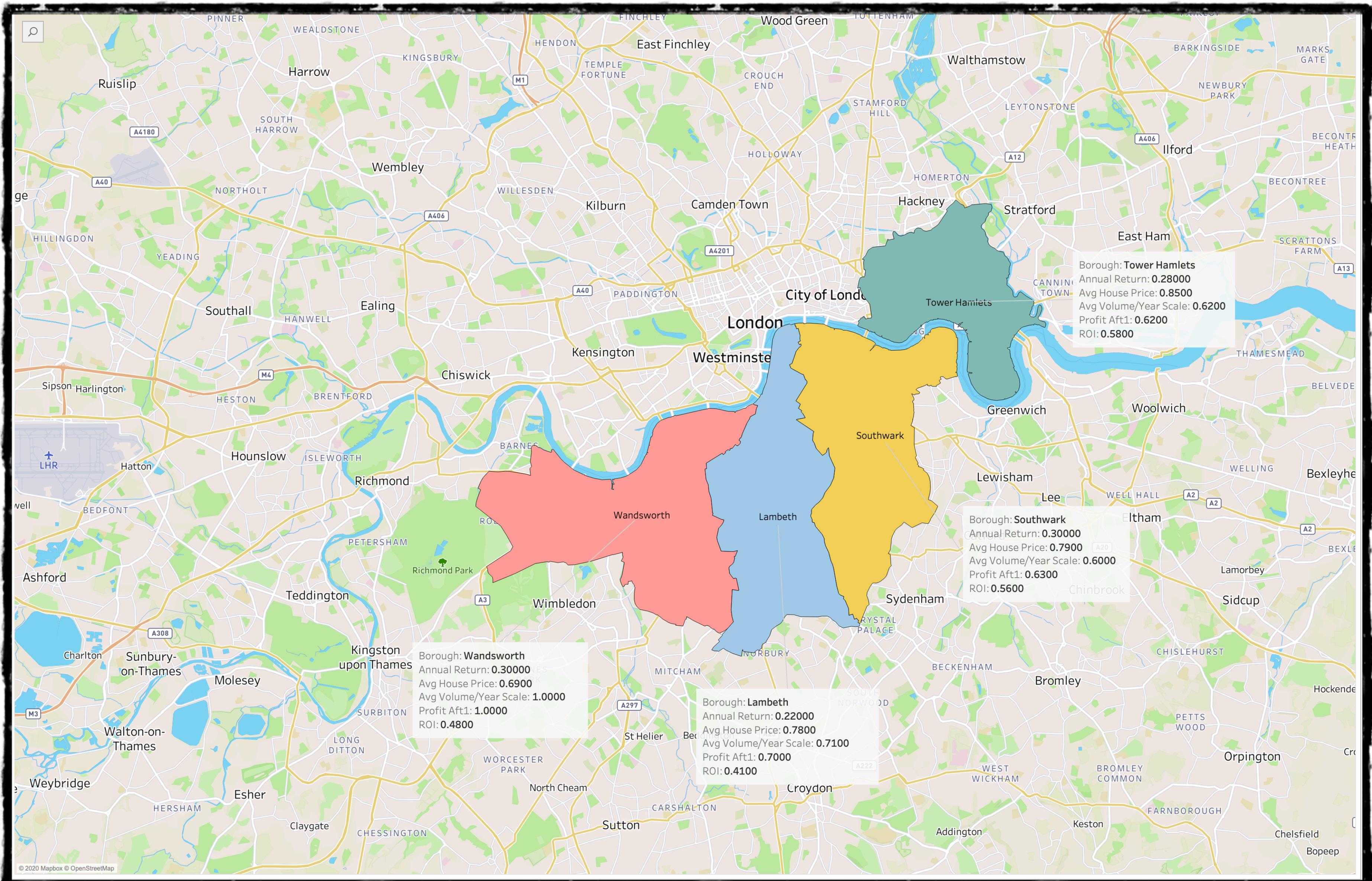
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This project can be extended further by;

- Analysing **UK House Price Index** based on **zip code** on **Wandsworth , Tower Hamlets, Lambeth and Southwark.**
- Using **booking.com** data for average **accommodation price.**
- Using **reviews data** (airbnb, booking) & **social media** (Instagram, Twitter, Foursquare) and acquire comments about location.

# THANK YOU

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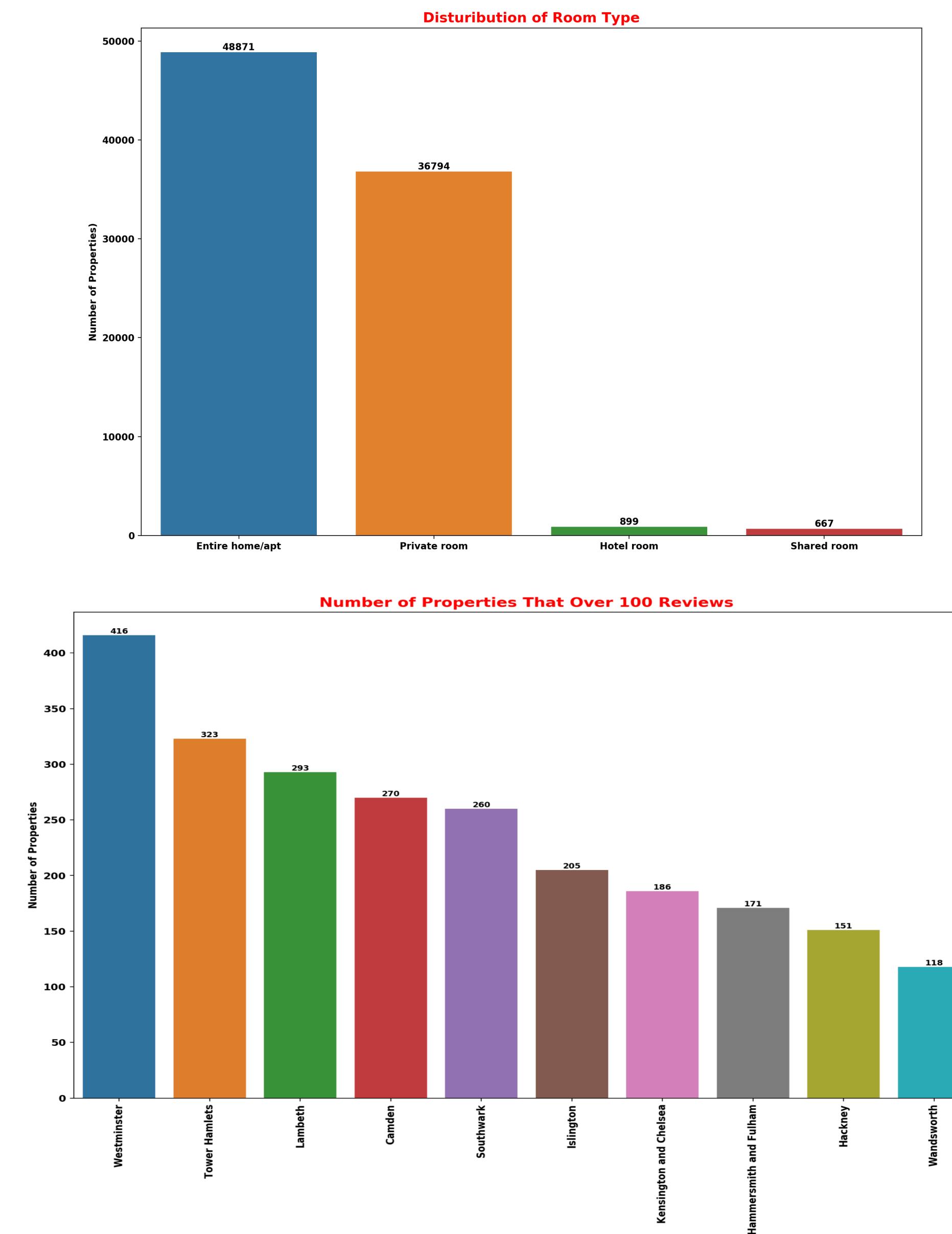
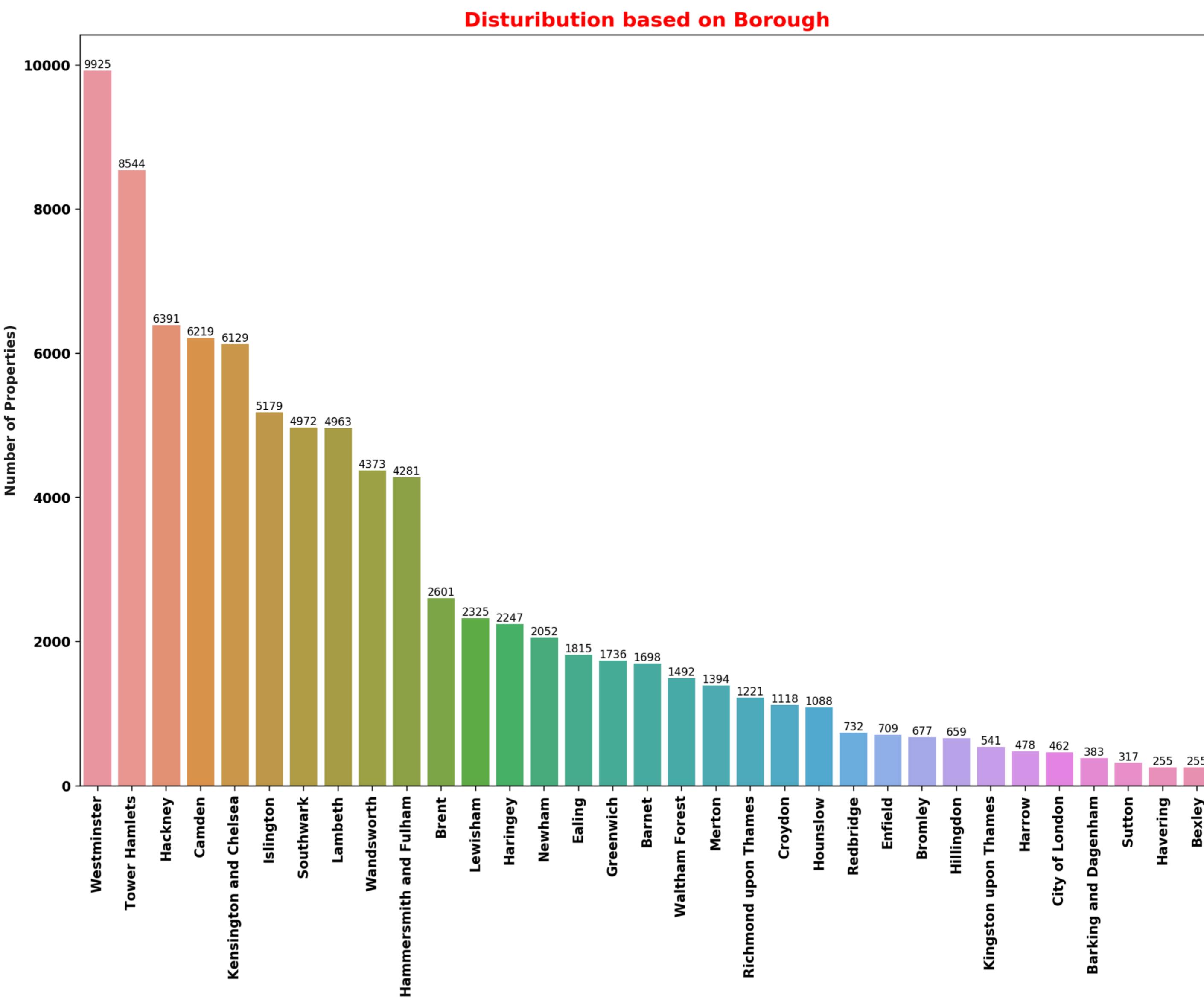
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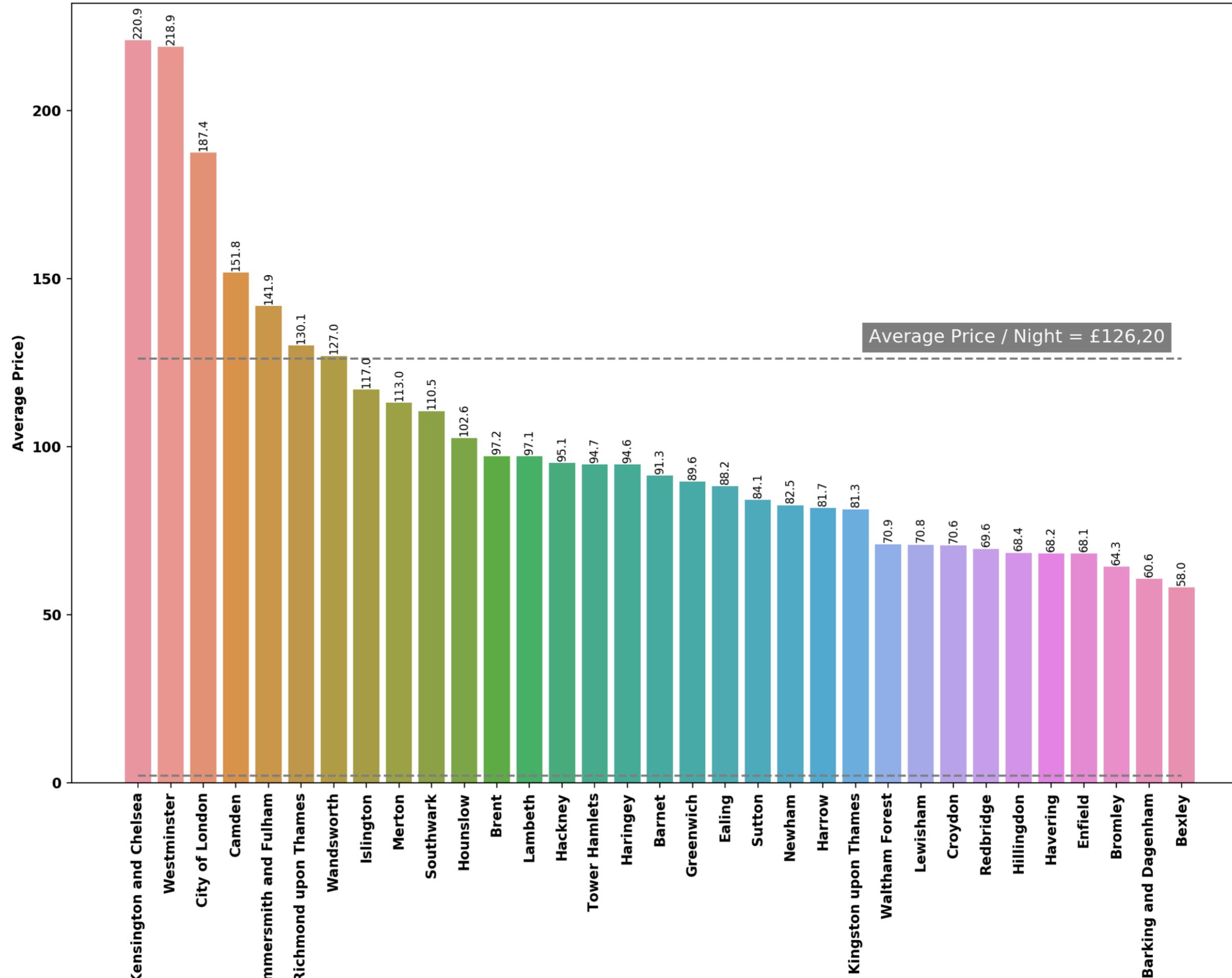
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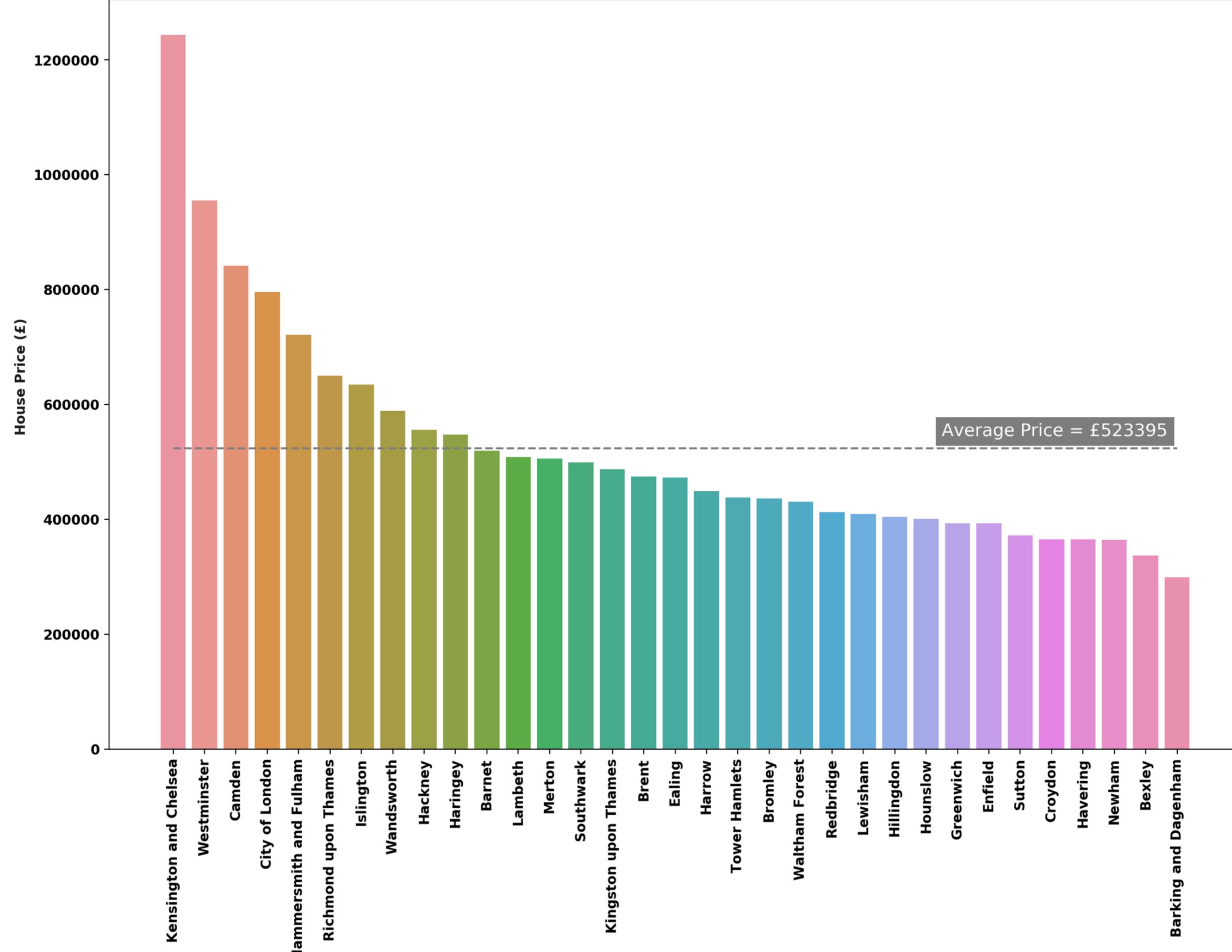
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Average Price / Night by Borough



House Price of Borough



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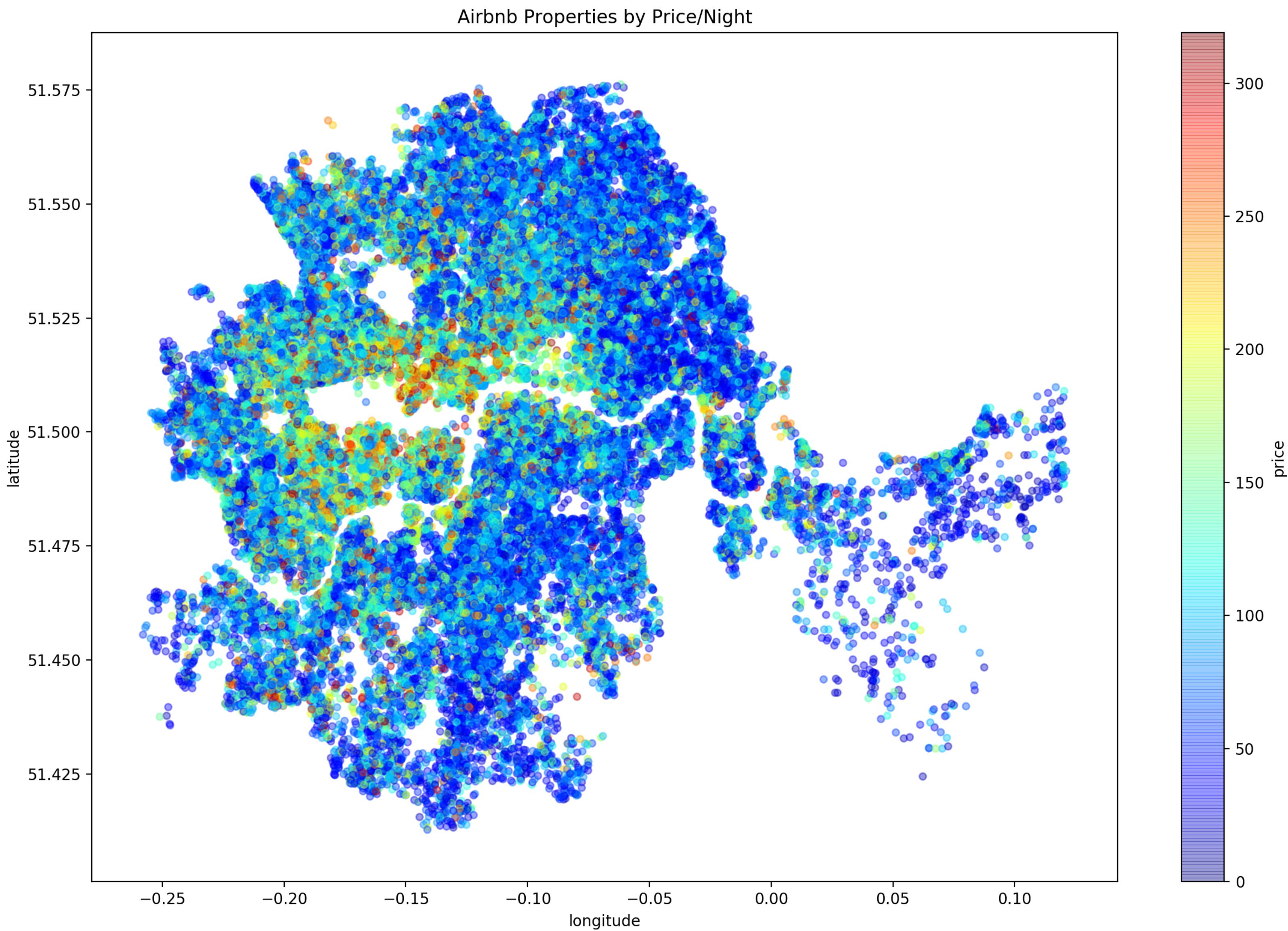
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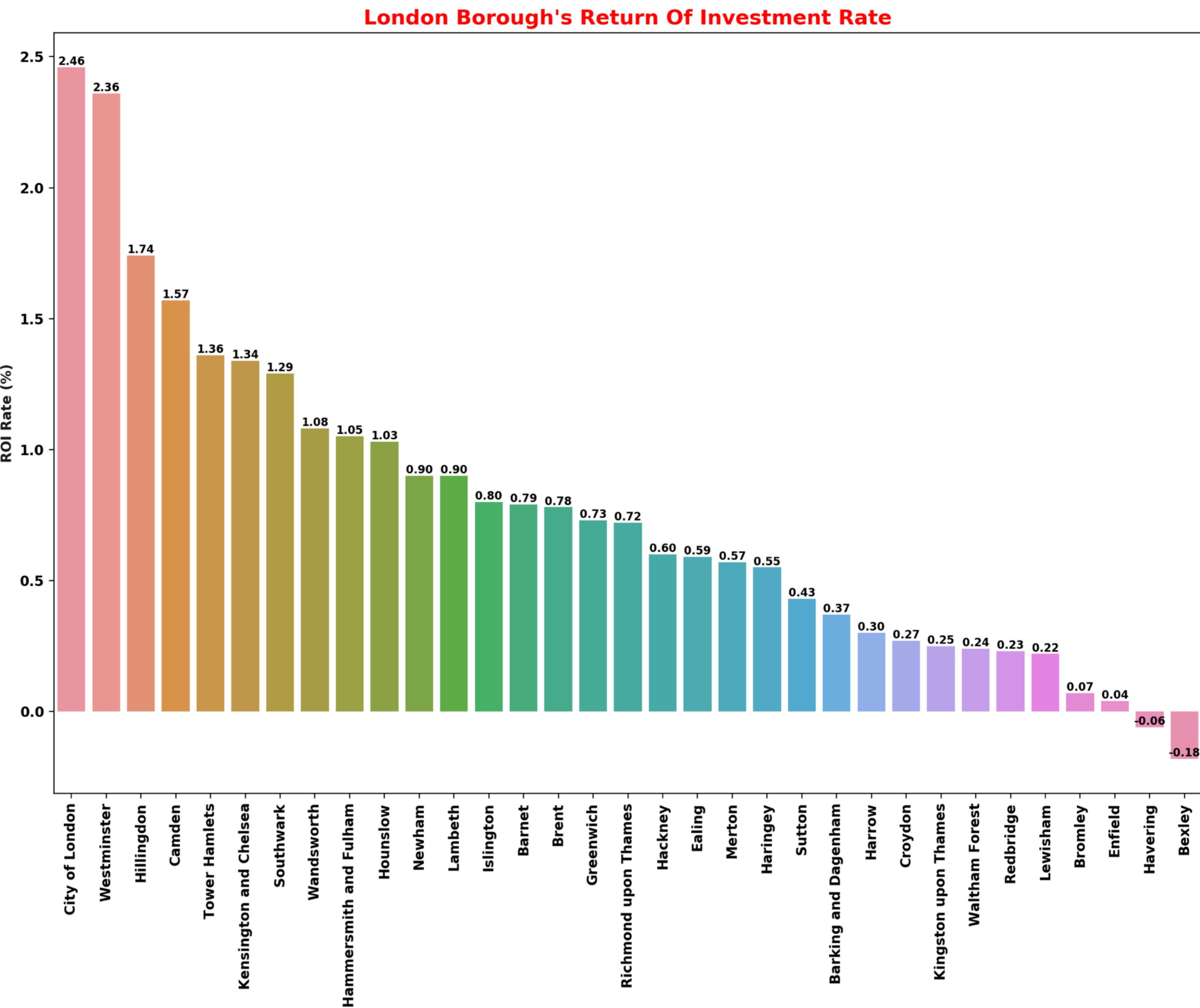
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