



# COURSERA CAPSTONE PROJECT

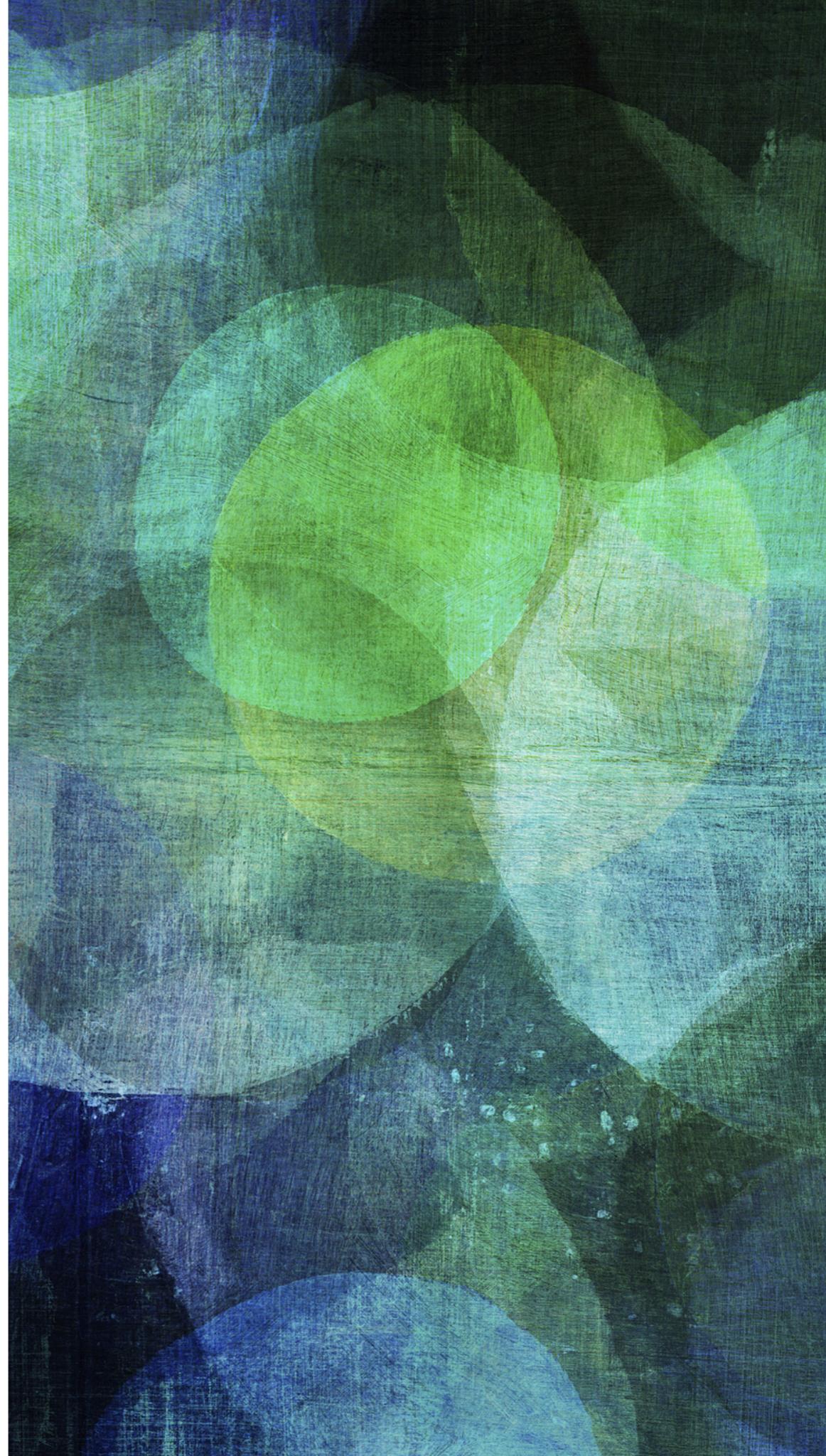
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*Battle of Neighbourhoods*

# BACKGROUND

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London is the capital and largest city in England and the United Kingdom. As of 2018 London accounted for 13.4% of the UK population with an estimated 8.9 million inhabitants and is an attractive location for property investors.



# BUSINESS PROBLEM & DATA ACQUISITION

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## Business Problem

For property developers interested in purchasing property within London, it is important to analyse the relationships between the neighbourhoods property prices. In this project the neighbourhoods in London will be segmented and clustered based on most common venues using data obtained from Foursquare. This data will be compared to area property prices and analysis will be done on the correlation between clusters and property trends.

## Data Acquisition:

The data for this project was derived from the following sources:

- 1) List of London Boroughs - [https://en.wikipedia.org/wiki/List\\_of\\_London\\_boroughs](https://en.wikipedia.org/wiki/List_of_London_boroughs)
- 2) Most common venues in London by borough - Foursquare API
- 3) London Average House prices (2020)- <https://data.london.gov.uk/dataset/uk-house-price-index>

# METHODOLOGY

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- In the first step we collected the required data: location and category of every venue within our Boroughs using the Foursquare API. We also collected data on the average house prices within said boroughs (from UK gov dataset). We then ran a machine learning unsupervised analysis on the venue data to group our Boroughs into 4 categories.

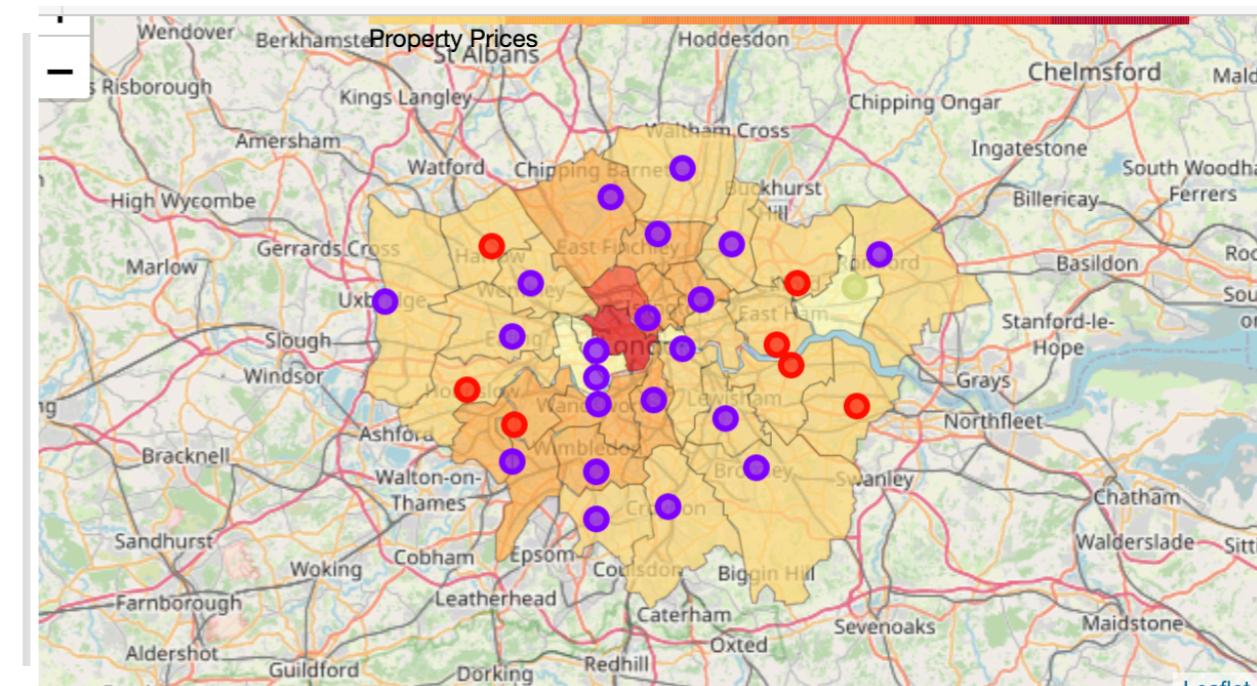
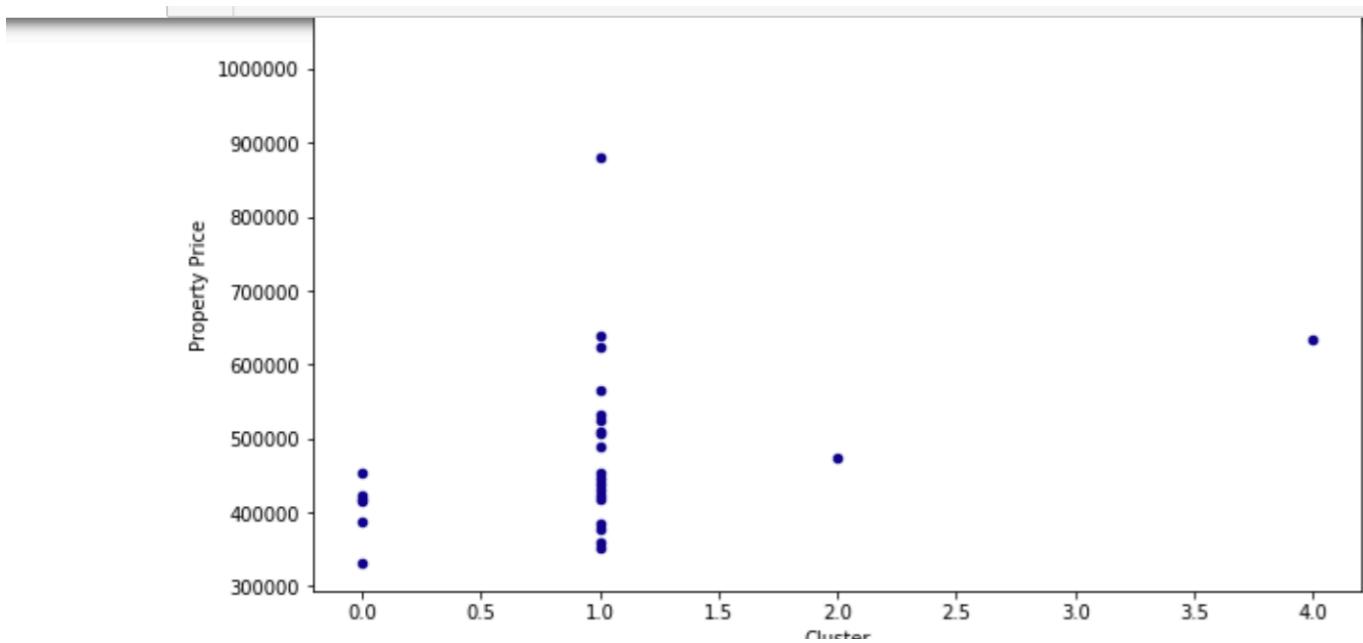
| Borough              | Latitude  | Longitude | Cluster Labels | 1st Most Common Venue | 2nd Most Common Venue | 3rd Most Common Venue | 4th Most Common Venue | 5th Most Common Venue |
|----------------------|-----------|-----------|----------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| Barking and Dagenham | 51.554117 | 0.150504  | 3              | Bus Stop              | Convenience Store     | Liquor Store          | Grocery Store         | Yoga Studio           |
| Barnet               | 51.629614 | -0.175143 | 1              | Coffee Shop           | Café                  | Italian Restaurant    | Pub                   | Park                  |
| Bexley               | 51.455668 | 0.153518  | 0              | Pub                   | Supermarket           | Chinese Restaurant    | Department Store      | Plaza                 |
| Brent                | 51.559102 | -0.282109 | 1              | Coffee Shop           | Hotel                 | Clothing Store        | Bar                   | Sporting Goods Shop   |
| Bromley              | 51.404289 | 0.018587  | 1              | Clothing Store        | Coffee Shop           | Pizza Place           | Burger Joint          | Pub                   |

|   | Borough            | Avg_House_Price_GBP |
|---|--------------------|---------------------|
| 0 | Barking & Dagenham | 327136              |
| 1 | Barnet             | 532569              |
| 2 | Bexley             | 331679              |
| 3 | Brent              | 446966              |
| 4 | Bromley            | 430033              |

# ANALYSIS

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- The second step will be the analysis of these clusters and an exploration into the relationship (if any) between the clusters and property prices



# RESULTS AND DISCUSSION

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## Results and Discussion

It appears that the properties in cluster 0 show a lower variance in property prices compared to those in cluster 1. It can also be seen that property prices in cluster 1 tend to be higher than those in cluster 0 which suggests that boroughs with more cafe's and pubs tend to have properties with a higher market value. This will be helpful for developers looking to invest in new upcoming areas as types of surrounding ammenties have a significant effect on property prices.

# CONCLUSION

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Property prices and most common borough venues have a correlation and so this should be factored into sales analysis when investing in a property.