

Analysis of type of venues and average income in London

CAPSTONE PROJECT

Content

1. Introduction

- Background
- Problem
- Aim
- Audience

2. Methodology

- Data
- Analysis

3. Results

4. Discussion

- Recommendations

5. Conclusion

Introduction

Background

- Income inequality has increased in the last decades, becoming a major economic and social issue in both developed and developing countries.
- Income inequality is a significant problem in the United Kingdom (UK). The UK is the fifth most unequal developed country and the fourth most unequal in Europe.

Problem

London is one of the richest regions in the UK, however deep inequalities are observed across its inhabitants.

Aim

Explore whether the type of venues found in London's boroughs is associated to the average income of households located there.

Audience

- Policy makers and NGOs
- Businesses

Source: Mayor of London (2020), The Equality Trust (2019).

Methodology

Data

- Venue data of London boroughs is obtained through Places API – Foursquare. The data extracted include the location (latitude and longitude) and the category of venue. The top 100 venues were obtained, within a 500m radius of the centroid of each Borough.
- Annual income data is obtained from the 'income estimates for small areas, England and Wales' published by the UK Office for National Statistics (ONS.) Income is measured in net terms after deducting housing costs.

Methods

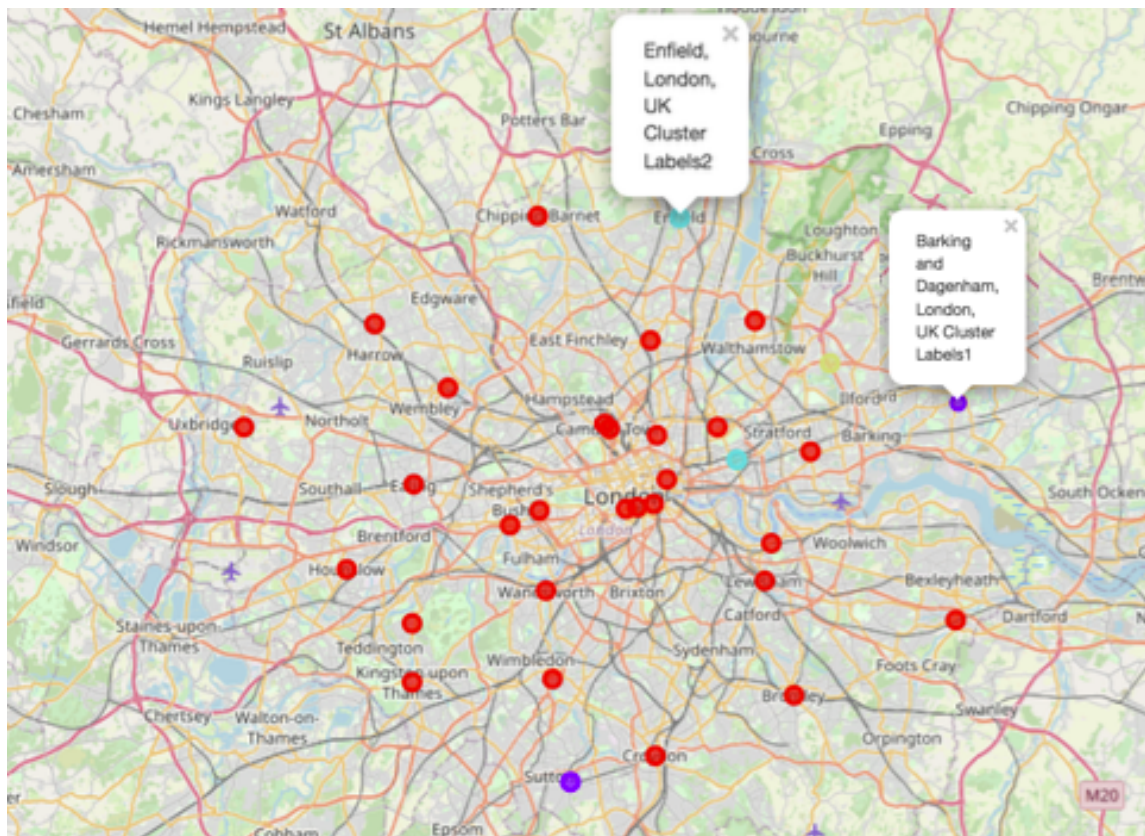
- Descriptive statistics
- Mapping
- K-modes clustering
- Analysis of variance (ANOVA)

Results

- Large differences were observed in the average net annual income of London boroughs.
- Differences in the type of most common venues across London boroughs were less evident, venues are very similar across boroughs.
- Food establishments, such as pubs, coffee shops and restaurants were the most common venues across the 33 London boroughs.
- It was also possible to identify boroughs where the most common venues were more likely to serve locals rather than tourists, such as Enfield where optical shops and supermarkets were among the most common venues.
- Non-significant association was identified between the geospatial distribution of household's annual incomes and the most common type of venues available in the area.

Net annual income	
count	33.000000
mean	32069.384795
std	3748.531588
min	25722.727273
25%	30000.000000
50%	31211.363636
75%	33486.666667
max	41800.000000

Source: Author's based on ONS data.



Discussion

- Although some differences were identified in the type of most common venues, more commonalities than differences were found across boroughs.
- This finding is related with the fact that London is a popular tourist attraction. Tourism is an important source of employment and income in London; however, this also means that locals may be paying higher prices when eating out.
- Since venues were similar across boroughs, cluster analysis generated uneven groups. However, the smaller clusters (purple, green and blue) tended to be located at the edges of London (region).
- These clusters group the boroughs that showed the main differences in the type of venues. These included Barking and Dagenham and Enfield, two of the poorest boroughs in London.

Recommendations

- The main recommendation of this report is to conduct further analysis to study the geospatial inequality across London boroughs and its implications.
- One potential direction of analysis is to reclassify the venues depending on the function performed, for example: food preparation, medical services, accommodation, etc.

Conclusion

- This project explored whether the type of venues found in London's boroughs is associated to the average income of households located there. As a popular tourist destination, London is a challenging case to identify differences in the type of venues across boroughs. Nonetheless, some indication was found of poorer boroughs located at the edges of London (region) and showing venues different than in other areas. These venues included supermarkets and optical shops, while in other boroughs the most common venues were pubs, coffee shops and restaurants.
- The analysis presented in this report provided exploratory evidence on how income inequality may be associated with the type of venues available in London boroughs. Businesses may use these findings to identify which are the best areas (at the edges) to locate shops targeting demand of London residents with lower incomes. Nonetheless, further analysis would be needed to provide specific policy recommendations.