Comparison of London Boroughs for student housing

Introduction

Finding Neighbourhoods that have facilities that students would like to have. Let's say I am a property developer for student accommodation. I am interested in finding neighbourhoods that are near universities and located near the facilities that students would desire (gyms, convenience shops, nightclubs) whilst being affordable. So I will analyse areas surrounding universities, to find areas that would provide me with maximal profit whilst keeping being appealing to students in the area.

King's College which is in London will be the university investigated. London is known to have some of the highest rents in the world, so obtaining affordable yet characteristic accommodation for students is a difficult problem that could result in large financial gains as the ordinary student rent range between £135 - £210 per week [1]. However, due to the extraordinary prices of properties in London, the rent will need to be compared to the values of properties, to determine the yield of the investments.

While the income yield is a crucial measure of investment properties, the focus of this analysis will be on finding neighbourhoods with appealing amenities. There is a saying that is often preached within real estate agencies: 'location, location, location,' and in this report, the aims will be to find the right location, as that is all that matters.

With the soaring cost of living in London, It is no surprise that 44% of students struggle to pay their rent each month [2] and 31 % finding their studies affected. Combined with increasing tuition fees, the crippling student debt crisis is a real problem in London and the rest of the UK. How can this keep going on? Now while attempts are being made to control rents through legislation [3]. However, this option is lengthy and unlikely to be successful, largely due to political opposition. So, it is our responsibility to seek more desirable housing to reduce students cost, to help the next generation with the continual goal of learning and improving themselves. As it is today's student that will become tomorrows inventors, business owners and professors.

Method

We do not have the perfect conditions for students to find affordable places to live in, but we do have access to vast amounts of data relating to the location of venues in London using the Foursquare API, the commute times using Google's distance matrix API.

From the data, we can extract the ideal areas that students would live to live in, by looking at the number of and types of venues in each area. To determine the optimal location, we must first find acceptable boroughs, these are boroughs that are within a 45-minute commute of the university (King's College London). Finding budget areas where these amenities exist could prove to be valuable for students finding affordable accommodation and investors finding high yield properties.

To find ideal locations for students, areas will be clustered by venue and clusters will be compared to find the ones with the most ideal properties. Clusters with the most ideal areas will be extracted and rental prices will be compared to identify the areas where accommodation is affordable for students.

Locations were grouped by the London Boroughs. The commute times of these Boroughs was calculated using the Google Distance Matrix API, for a driving commute by car. Venue locations were determined using the search query in the Foursquare API. A K-mean algorithm was used to cluster the Boroughs by the type of venues in each Borough.
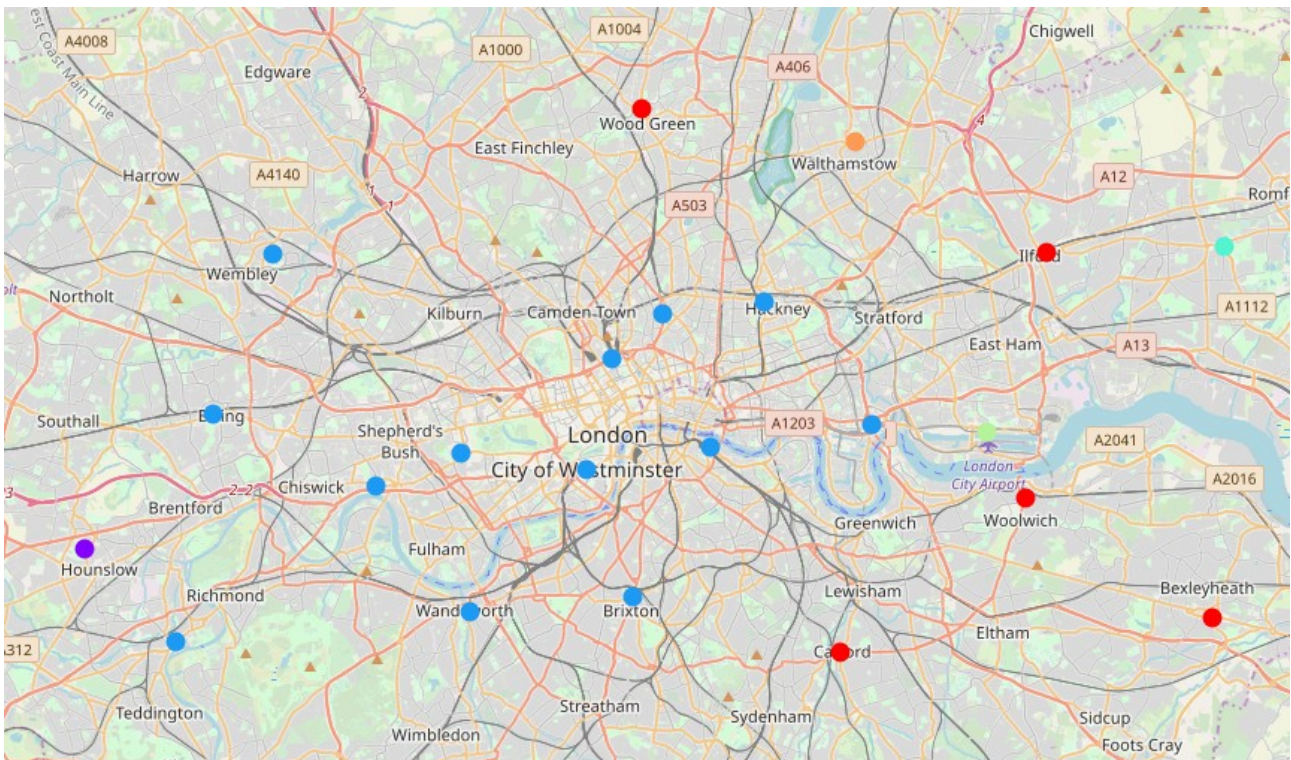
Results

Figure 1: Red - cluster 1, Purple - cluster 2, Blue - cluster 3, turquoise - cluster 4, Green - cluster 5, Orange - cluster 6. Clusters 1 and 3 were chosen to be the optimal boroughs. The map was created with Folium.

In Figure 1 we show the acceptable boroughs clustered by the different type of venues surrounding the boroughs. In Table 1, a list of the most common venues around each ideal borough is shown. Only cluster 1 and 3 are shown in Table 1, as those clusters were found to have the most ideal venues surrounding each borough, as they had the sorts of venues that would be ideal of students (shop, cafes, bars).

Borough	1st Most Common Venue	2nd Most Common Venue	3rd Most Common Venue	4th Most Common Venue	Latitude	Longitude
Bexley	Supermarket	Italian Restaurant	Coffee Shop	Pharmacy	51.4549	0.1505
Greenwich [note 2]	Supermarket	Grocery Store	Fast Food Restaurant	Plaza	51.4892	0.0648
Haringey	Movie Theater	Metro Station	Mediterranean Restaurant	Supermarket	51.6	-0.1119
Lewisham	Platform	Coffee Shop	Italian Restaurant	Train Station	51.4452	-0.0209
Redbridge	Bakery	Coffee Shop	Sandwich Place	Supermarket	51.559	0.0741
Brent	Bar	Sandwich Place	Sporting Goods Shop	Grocery Store	51.5588	-0.2817
Camden	Café	Burger Joint	Sandwich Place	Italian Restaurant	51.529	-0.1255
Ealing	Park	Pub	Italian Restaurant	Vietnamese Restaurant	51.513	-0.3089
Hackney	Cocktail Bar	Café	Middle Eastern Restaurant	Hotel	51.545	-0.0553
Hammersmith and Fulham [note 4]	Coffee Shop	Indian Restaurant	Italian Restaurant	Gastropub	51.4927	-0.2339
Islington	Cocktail Bar	Park	Middle Eastern Restaurant	Café	51.5416	-0.1022
Kensington and Chelsea	Burger Joint	Bakery	French Restaurant	English Restaurant	51.502	-0.1947
Lambeth	Mexican Restaurant	Market	Gym / Fitness Center	Pizza Place	51.4607	-0.1163
Richmond upon Thames	Indian Restaurant	Gym	Steakhouse	Platform	51.4479	-0.326
Southwark	Restaurant	Scenic Lookout	Hotel	Café	51.5035	-0.0804
Tower Hamlets	Pizza Place	Gym / Fitness Center	Coffee Shop	Fried Chicken Joint	51.5099	-0.0059
Wandsworth	Pizza Place	Burger Joint	Asian Restaurant	Breakfast Spot	51.4567	-0.191
Westminster	Theater	Pub	Sushi Restaurant	Italian Restaurant	51.4973	-0.1372

Table 1: Showing the most common venues around the ideal venues.

Discussion

From this analysis we have found the following boroughs to be ideal for students living in London: Bexley Greenwich, Brent, Camden, Ealing, Hackney, Haringey, Islington, Lambeth, Lewisham, Redbridge, Southwark, Tower Hamlets, Wandsworth, Westminster. These boroughs could be used as a guide to find affordable housing for students. Some of these boroughs are very well known among students, like Camden, but many are not, like Tower Hamlets, which has many rooms available in the £135 - £210 per week budget, even on the lower end.

Conclusion

As a whole, this project has been a success in finding affordable areas that would be suited to students. Especially in finding areas that are less well known, such as Tower Hamlets. This information could be used by students or housing organisations to find areas to rent in or to develop student accommodation.

Future work could attempt to quantify the cost of housing in each borough in Table 1, to find boroughs with the cheapest rents, whilst maintaining a useful number amenities. This would be essential to finding affordable accomodation. However, finding the cost of rent in each area is very difficult as there are many variables to consider when finding rooms to rent (e.g. size of room, en suite, shared or private). The difficulty lies in controlling the many variables across each boroughs, to make a like for like comparison. Some sort of averaging would have to be applied to factor in the large number of variables in renting a room.

In conclusion, the data analysis proved to be successful in find a number of areas that could be used or developed for student housing.