

Everyone loves the food that grew up with. A case study: Where to open a Caribbean food store in London?

Introduction/Business Problem

Cultivating culture in which you grew up is important for people who live abroad. Taste of things that you learnt as a child, will stay with you. You may discover new tastes, but they will not be replaced and you will come back to those acquired from your home over and over again. This is great, as this provides the strong point for cultivating and preserving the culture – and its culinary aspect -, which is an important part of it.

People have migrated throughout the history (Manning,2015). That is not a new phenomenon. However, these days especially, the world became readily accessible and the re-location is very common (<https://www.bbc.co.uk/bitesize/guides/z8x6wxs/revision/3>). Imagine, perhaps dues to career opportunity (economic migration) or you want to be closer to family or friends (social migration), you left and now you live in a foreign country. You have your own family and children and you want your children to know what is a typical food for breakfast, or what cake for holiday.

As an investor (whether you are a migrant yourself or not), you would like to open a specialized food-related business: a food store, or a small restaurant, where people can get fresh food. But, what is a right place to open your new business? There are few factors that you should consider:

- First, where are your customers?
- Second, where will your business have a good chance to be successful? (i.e. you might not want to open another bike shop on a street of full of bike shops, unless you have something really specific and unique to offer). In other words, what other similar venues already exist in the area.

These two aspects are integral part of the current analysis.

Overall, this project explicitly relates to investors who would like to open a new food- oriented business. Perhaps, wanted to invest in something that makes a personal connection with where they come from. This analysis would be of interest to them, as it is crucial to know where are customers, and where are already similar existing places.

Data

In order to approach this problem (and this is just a case example, that could be performed in other places and concerned different ethnic groups and cultures) we need to choose a big city and specify target customers (i.e. ethnic community members). For this case, I chose a city of London, which is a big city, known for its cultural diversity, and I decided to focus on Caribbean community and culture, since there is available data and there is a lot of migrants living in the city.

To characterize the distribution of the target community members, the most current dataset containing Percentage of Pupils by Ethnic Group in London Boroughs will be used (openly available at: <https://data.london.gov.uk/dataset/percentage-pupils-ethnic-group-borough>) Percentage of Pupils by Ethnic Group, Borough, in 2019 will be used in the analysis. This data set includes number of pupils by ethnic group

expressed as a percentage of the total number of pupils of compulsory school age and above (Here I will use data only of the younger pupils). Using this data set, it will be possible to understand in which boroughs of London, the Caribbean community and parents are likely to visit (e.g. to pick up children from primary school). This is a proxy of knowing where the potential customers are.

In addition, to investigate geographically based areas, the boundaries of the boroughs have to be defined. To that end, the JSON file of London Boroughs boundaries (<https://skgrange.github.io/data.html>) will be used.

After investigation of the distribution of the target community members (and potential customers) across London, the most likely attended boroughs will be investigated with more scrutiny. This will provide the information about similar existing businesses in the area. For this, the information from the Foursquare API will be utilized.

Methodology

The analysis that aims at investigating the right place to open a Caribbean food-oriented business in London, based on the two particular research questions: **[1] Where are your customers?** and **[2] What other similar places already exist there?** has been broken down into three parts.

Part 1: Select top 5 boroughs.

To understand the distribution of the Caribbean community (based on the numbers of pupils of compulsory school age), I will visualize how it varies across a geographic area (here the city of London). For this, I will use folium and Choropleth Maps, as these are particularly used for visualizing geospatial data. Choropleth Maps, specifically are thematic maps in which areas are shaded or patterned in proportion to the measurement of the statistical variable being displayed (here: the numbers of pupils by ethnic group expressed as a percentage of the total number of pupils of compulsory school age). Overall, there are 45 boroughs so this part of analysis will additionally allow focus on most attended areas by Caribbean community members.

Part 2: Examine the amount of existing businesses

After investigating the distribution of the Caribbean community across London, I will then investigate the amount of existing similar businesses in the sub-selected top five boroughs. This will be done based on the information about venues using Foursquare API. I will use the geolocator, in particular Nominatim, to obtain the coordinates of the boroughs. As such, I will be able to investigate how many similar venues already exist in a particular borough. I will investigate this for three different thresholds (i.e. a radius of 2km, 3km, 5km from each borough's address). This may give us a better understanding how these locations are spread, and it may give more detailed picture of the area, and influence the decision. The visualization will be done with heatmap form the seaborn: statistical data visualization library. Finally, I will examine and plot the number of pupils and the number of venues (using matplotlib), to understand the relationship between these two main variables.

Part 3: Investigate spatial distribution of existing businesses and visualize them

To finish off the analysis, I will Investigate the spatial distribution of existing businesses and visualize them on the map. I will use Folium for it. This step will allow the investor – to look through the area and more precisely select a potential - whether it wants to be located close or further away from the existing venues. Lastly, I will overlay the results with the results on distribution of the Caribbean community in London.

Before these steps, the data will be downloaded, and prepared for analysis. This will include transforming into appropriate formats (e.g. dataframe), removing unnecessary columns and rem, dealing with nan values, and will be performed with pandas.

Results

Part 1: The top 5 boroughs

The results of investigating the distribution of the Caribbean community (based on the numbers of pupils of compulsory school age) can be visualized in Figure 1.

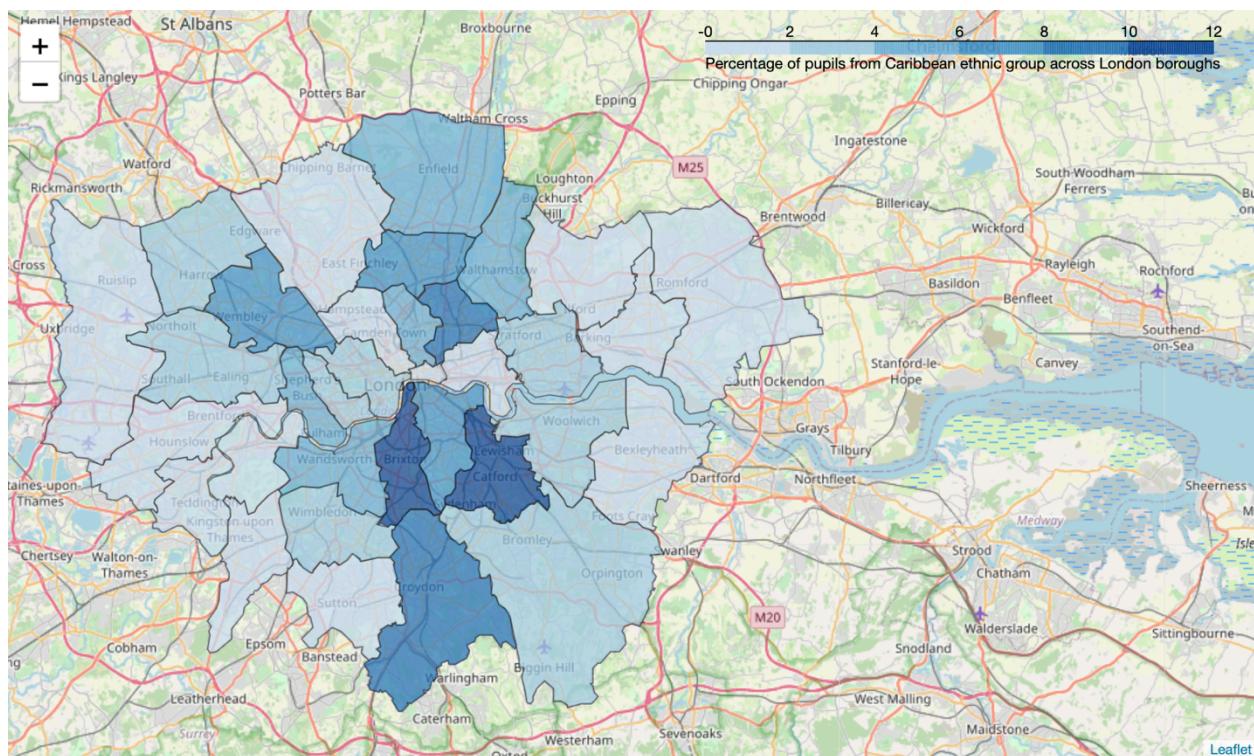


Figure 1. Distribution of the Caribbean community across London. This shows the number of pupils by ethnic group expressed as a percentage of the total number of pupils of compulsory school age.

The maximal percentage of the total number of pupils of the Caribbean pupils across 45 boroughs, was 12.198721 (Lambeth), and the lowest 0.031130 (North East).

count	45.000000
mean	3.034763
std	2.924321
min	0.031130
25%	1.032928
50%	2.069648
75%	4.284298
max	12.198721

Since we are interested in sub-selecting the areas that are most likely attended by Caribbean community, the analysis of the top five (out of 45) boroughs indicated the following areas: **Lambeth, Lewisham, Hackney,**

Croydon and **Southwark**, in this particular order. Based on these results, it is possible to understand in which boroughs of London, the Caribbean community and parents are likely to visit (e.g. to pick up children from primary school). As such, these results constitute a proxy of a measure of where the potential customers are likely to be.

Part 2: Existing similar businesses in the areas of interest

After sub-selecting the top five boroughs, the results of the Foursquare API indicated the following information about the similar venues already existing in a particular borough. Here are presented the findings for a middle threshold (radius of 3km from each borough's address):

Lambeth

Lewisham

	name	categories	address	crossStreet	lat	lng	labeledLatLngs	distance	cc	city	state	country	formattedAddress	
0	Caribbean Express	Caribbean Restaurant	Bromley Road	Downham Way	51.425640	-0.007510	[{"label": "display", "lat": 51.42564, "lng": -0.00751}...]	3113	GB	Downham	Greater London	United Kingdom	[Bromley Road (Downham Way), Downham, Greater ...]	
1	Lauries Afro Caribbean Food	Food & Drink Shop	86 Deptford High Street		NaN	51.477788	-0.025771	[{"label": "display", "lat": 51.477788, "lng": -0.025771}...]	2863	GB	London	Greater London	United Kingdom	[86 Deptford High Street, London, Greater Lon...]
2	El Khadijat International African Caribbean food	Food & Drink Shop	147 Deptford High Street		NaN	51.479178	-0.025921	[{"label": "display", "lat": 51.47917791961945, "lng": -0.025921}...]	3013	GB	London	Greater London	United Kingdom	[147 Deptford High Street, London, Greater Lon...]

Hackney

	name	categories	address	lat	lng	labeledLatLngs	distance	postalCode	cc	neighborhood	city	state	country
0	Swift Caribbean Delights	Caribbean Restaurant	27 Homerton High St	51.548103	-0.047738	[{"label": "display", "lat": 51.548103, "lng": ...}	86	E9 6AJ	GB	Hackney	London	Greater London	United Kingdom
1	R&B Caribbean Restaurant	Caribbean Restaurant	10 Clarence Rd	51.549804	-0.055125	[{"label": "display", "lat": 51.54980438949603...}	526	E5 8HB	GB	Nan	London	Greater London	United Kingdom
2	Josephine's Caribbean Cuisine	Caribbean Restaurant	NaN	51.551735	-0.043796	[{"label": "display", "lat": 51.551735, "lng": ...}	415	E9 6DE	GB	Nan	London	Greater London	United Kingdom
3	Tropical Eat Caribbean Takeaway	Caribbean Restaurant	1 Well St	51.542217	-0.048844	[{"label": "display", "lat": 51.542217, "lng": ...}	746	E9 7QX	GB	Nan	London	Greater London	United Kingdom
4	Caribbean Kitchen	Caribbean Restaurant	67 Mare Street	51.536745	-0.056801	[{"label": "display", "lat": 51.5367456776779...}	1491	E8 4RG	GB	Hackney	London	Greater London	United Kingdom
5	Caribbean Scene	Caribbean Restaurant	NaN	51.540283	-0.074398	[{"label": "display", "lat": 51.54028319986823...}	2083	Nan	GB	Nan	London	Greater London	United Kingdom
6	Hope Caribbean Cuisine	Caribbean Restaurant	NaN	51.537753	-0.044693	[{"label": "display", "lat": 51.537753, "lng": ...}	1255	Nan	GB	Nan	Nan	Nan	United Kingdom
7	Caribbean Scene	Caribbean Restaurant	Westfield Stratford City	51.543786	-0.005987	[{"label": "display", "lat": 51.54378624768893...}	2940	E20 1EJ	GB	Nan	London	Greater London	United Kingdom
8	Caribbean Market	None	NaN	51.522544	-0.047144	[{"label": "display", "lat": 51.522544, "lng": ...}	2932	Nan	GB	Nan	Nan	Nan	United Kingdom
9	Centerprise Caribbean Cuisine	Caribbean Restaurant	NaN	51.550181	-0.075166	[{"label": "display", "lat": 51.550181, "lng": ...}	1908	Nan	GB	Nan	Nan	Nan	United Kingdom
10	Hackney Caribbean Elderly Organisation	Non-Profit	NaN	51.559779	-0.072844	[{"label": "display", "lat": 51.559779, "lng": ...}	2123	Nan	GB	Nan	Nan	Nan	United Kingdom
	Pattv	-	-	504	-	-	-	-	-	-	-	-	-

*for Hackney there altogether were 15 venues, for details on this please refer to the notebook.

Croydon

	name	categories	address	lat	lng	labeledLatLngs	distance	postalCode	cc	city	state	country	formattedAddress
0	Caribbean Cafe	Caribbean Restaurant	78c Frith Road	51.373711	-0.102248	[{"label": "display", "lat": 51.37371092730135...}	3356	CR0 1TA	GB	Croydon	Greater London	United Kingdom	[78c Frith Road, Croydon, Greater London, CR0 ...]

Southwark

	name	categories	address	lat	lng	labeledLatLngs	distance	cc	city	state	country	formattedAddress	f
0	Caribbean Spice Bakery	Bakery	170 Bellenden Road	51.466963	-0.073079	[{"label": "display", "lat": 51.46696329824854...}	337	GB	Camberwell	Greater London	United Kingdom	[170 Bellenden Road, Camberwell, Greater London]	
1	Caribbean Spice	Caribbean Restaurant	NaN	51.470602	-0.068977	[{"label": "display", "lat": 51.47060238251512...}	592	GB	Nan	Nan	United Kingdom	[United Kingdom]	
2	Tops Caribbean Takeaway	Caribbean Restaurant	173 Queen's Rd.	51.473578	-0.056798	[{"label": "display", "lat": 51.47357813662353...}	1254	GB	Peckham	Greater London	United Kingdom	[173 Queen's Rd., Peckham, Greater London, SE...	
3	Caribbean Grill	Caribbean Restaurant	NaN	51.460875	-0.116761	[{"label": "display", "lat": 51.46087516501716...}	3345	GB	Nan	Nan	United Kingdom	[United Kingdom]	
4	Essential caribbean	None	NaN	51.474045	-0.047061	[{"label": "display", "lat": 51.47404523188644...}	1809	GB	Ealing	Greater London	United Kingdom	[Ealing, Greater London, United Kingdom]	
5	Gabby's Caribbean Takeaway	Caribbean Restaurant	207-247 Walworth Rd	51.488479	-0.096072	[{"label": "display", "lat": 51.48847869983657...}	3191	GB	Camberwell	Greater London	United Kingdom	[207-247 Walworth Rd, Camberwell, Greater London]	
6	Lauries Afro Caribbean Food	Food & Drink Shop	86 Deptford High Street	51.477788	-0.025771	[{"label": "display", "lat": 51.47778806148873...}	3307	GB	London	Greater London	United Kingdom	[86 Deptford High Street, London, Greater London]	
7	Big J Caribbean Cuisine	Caribbean Restaurant	264 Brixton Road	51.471956	-0.115508	[{"label": "display", "lat": 51.47195606996553...}	3306	GB	London	Greater London	United Kingdom	[264 Brixton Road, London, Greater London, SW9...]	
8	EI Khadijat International African Caribbean food	Food & Drink Shop	147 Deptford High Street	51.479178	-0.025921	[{"label": "display", "lat": 51.47917791961945...}	3366	GB	London	Greater London	United Kingdom	[147 Deptford High Street, London, Greater London]	
9	Turtle Bay	Caribbean Restaurant	382-384 Brixton Rd	51.465613	-0.113814	[{"label": "display", "lat": 51.46561299570411...}	3105	GB	Brixton	Greater London	United Kingdom	[382-384 Brixton Rd, Brixton, Greater London, ...]	

Importantly, as different thresholds may provide different results, and we do not want to limit ourselves to only one threshold, the analysis was run for three different thresholds (i.e. a radius of 2km, 3km, 5km from each borough's address). The results of this analysis are summarized in Figure 2.

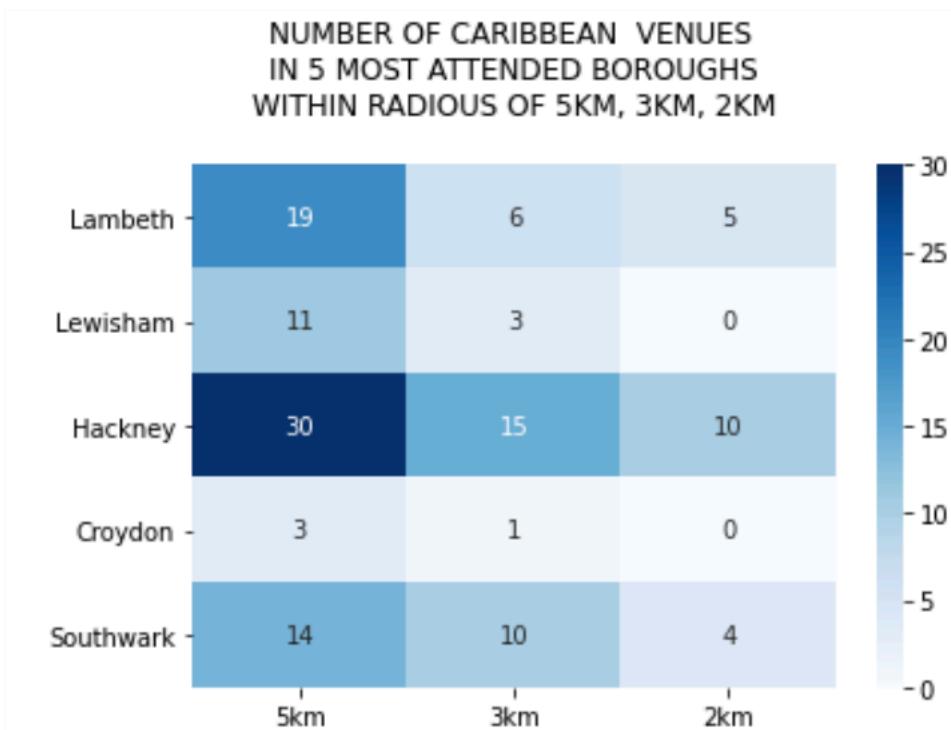


Figure 2. Numbers of Caribbean-related venues based on Foursquare API search, for top five boroughs and different thresholds.

Overall, these results show that Hackney is the borough that has consistently the most venues across all thresholds. On the second place in terms of number of existing venues could be selected Southwark and Lambeth, however here the results slightly differ when it comes to the thresholds applied. The boroughs with the lowest number of existing venues are Lewisham and Croydon.

To complement the analysis, the additional analysis was performed to understand the relationship between number of existing venues and number of students. The results are presented in Figure 3.

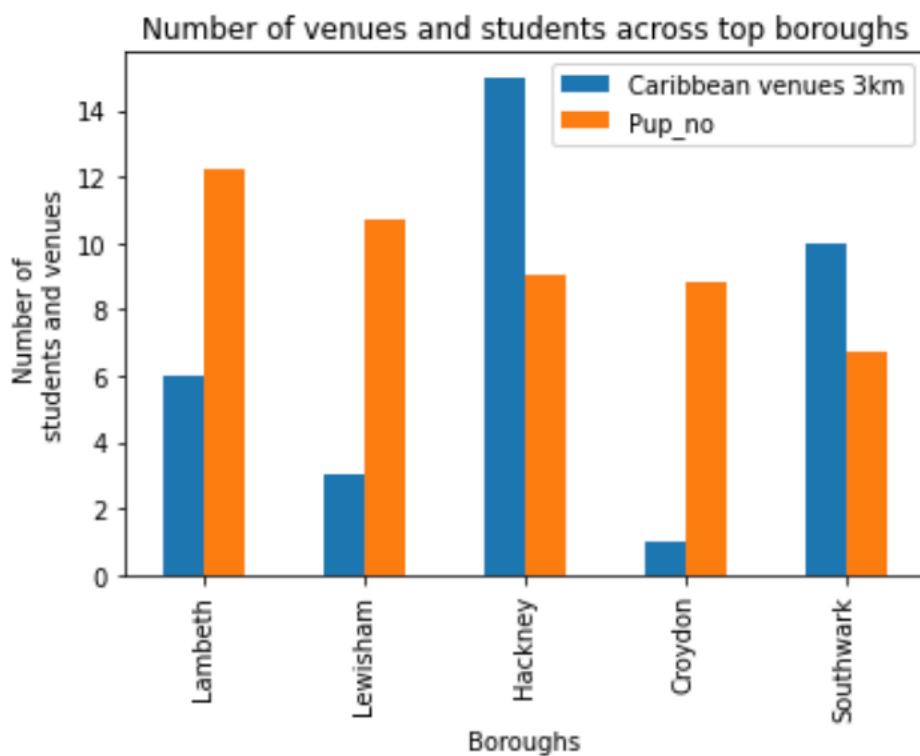
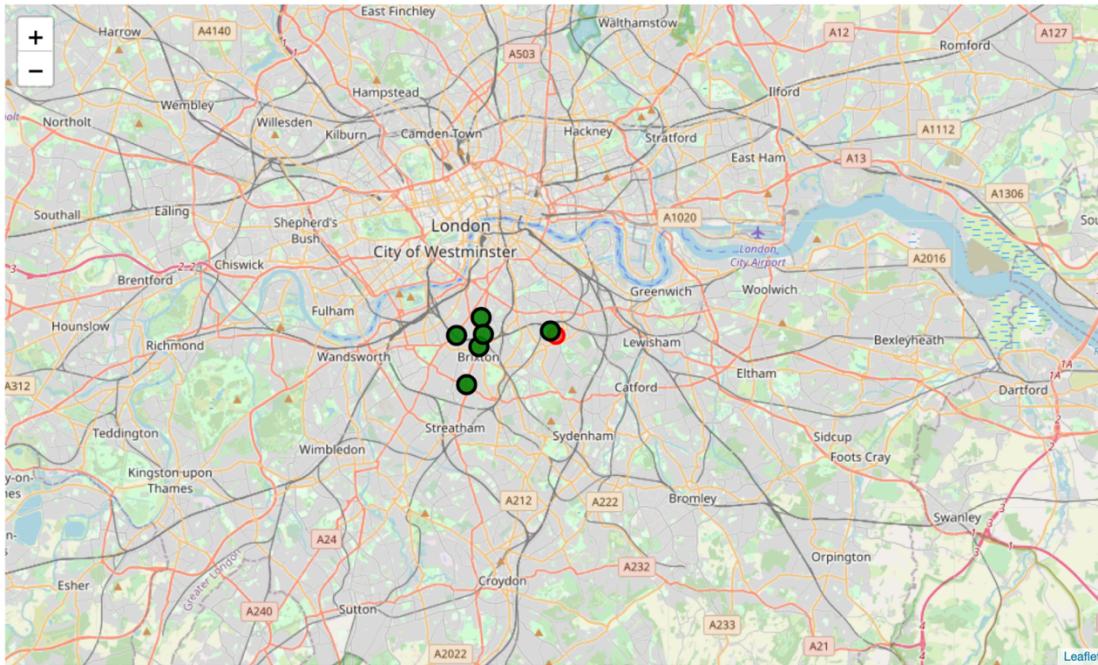


Figure 3. The relationship between numbers of Venues and number of pupils.

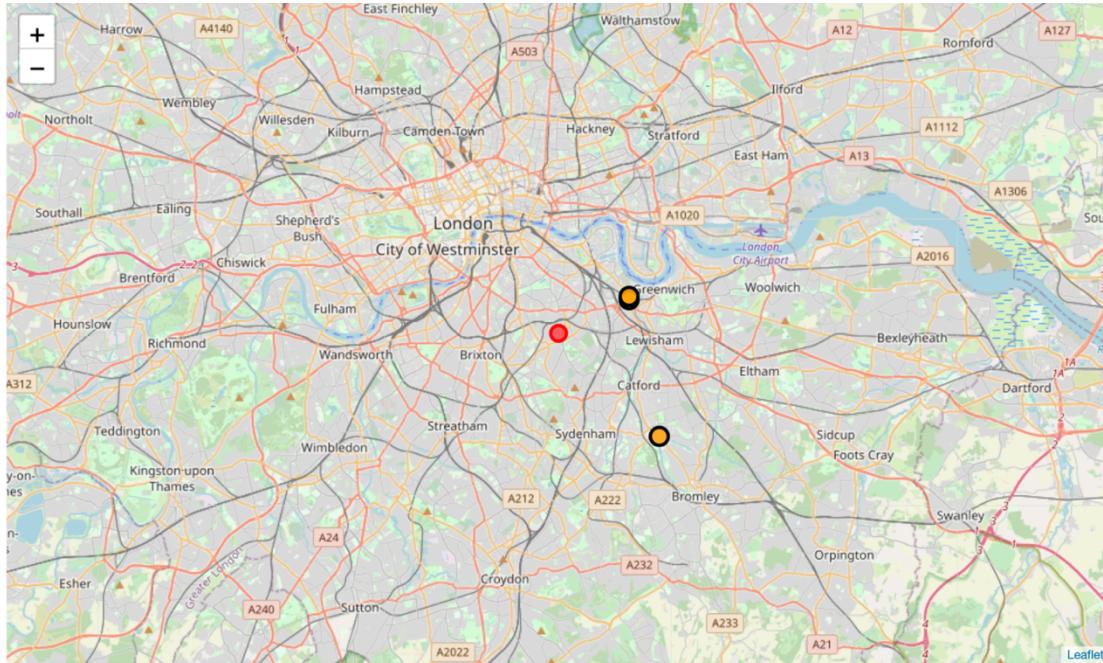
This data shows that the biggest difference between numbers of Venues and number of pupils is in Croydon. The two boroughs that showed an increase in number of students together with the proportional decrease in number of venues were Lambeth and Lewisham. The opposite pattern indicating a proportional decrease in number of students together with an increase in existing venues were Hackney and Southwark.

Part 3: Spatial distribution of existing businesses

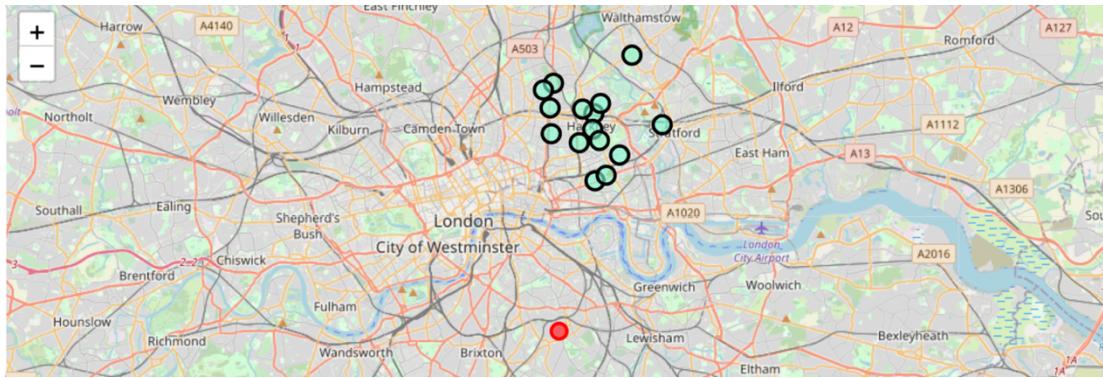
To complement the analysis of how many places already exist (in relation to how likely a particular borough is being visited by Caribbean community members), the final part of this analysis focused on visualizing specific locations of the existing venues. As such, the spatial distribution of existing businesses in the sub-selected boroughs can be illustrated below:



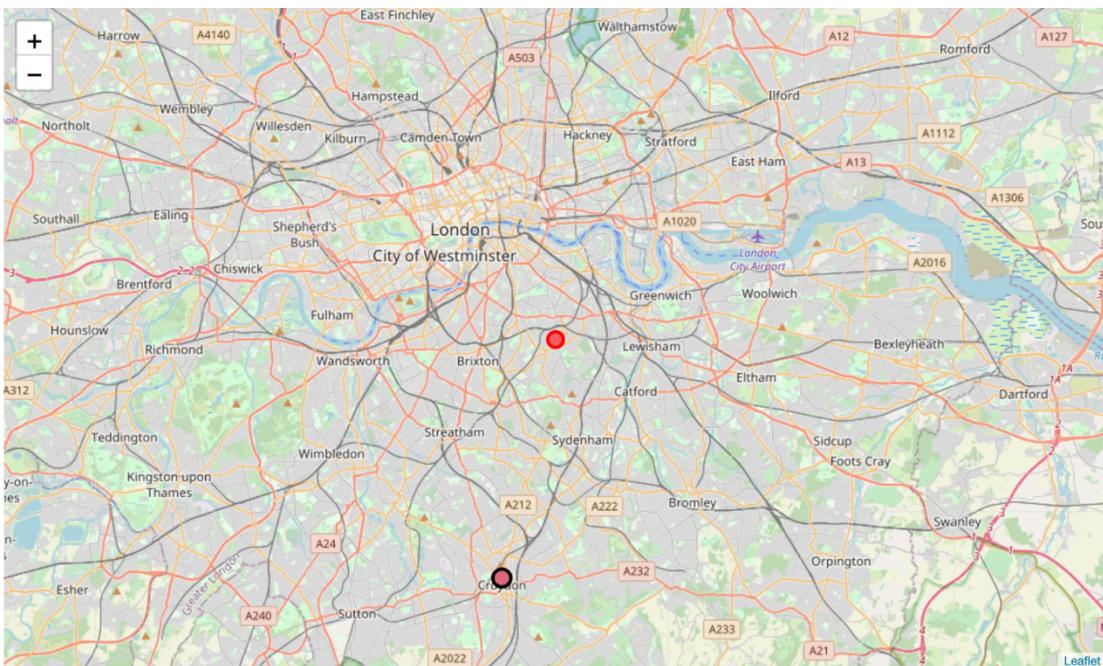
Lambeth: spatial distribution of the existing businesses. This figure illustrates the results for the 3km radius threshold. The red mark on the map is an arbitrary chosen point to provide reference across the visualizations. More details of precise locations of these venues can be obtained via the interactive map in the notebook.



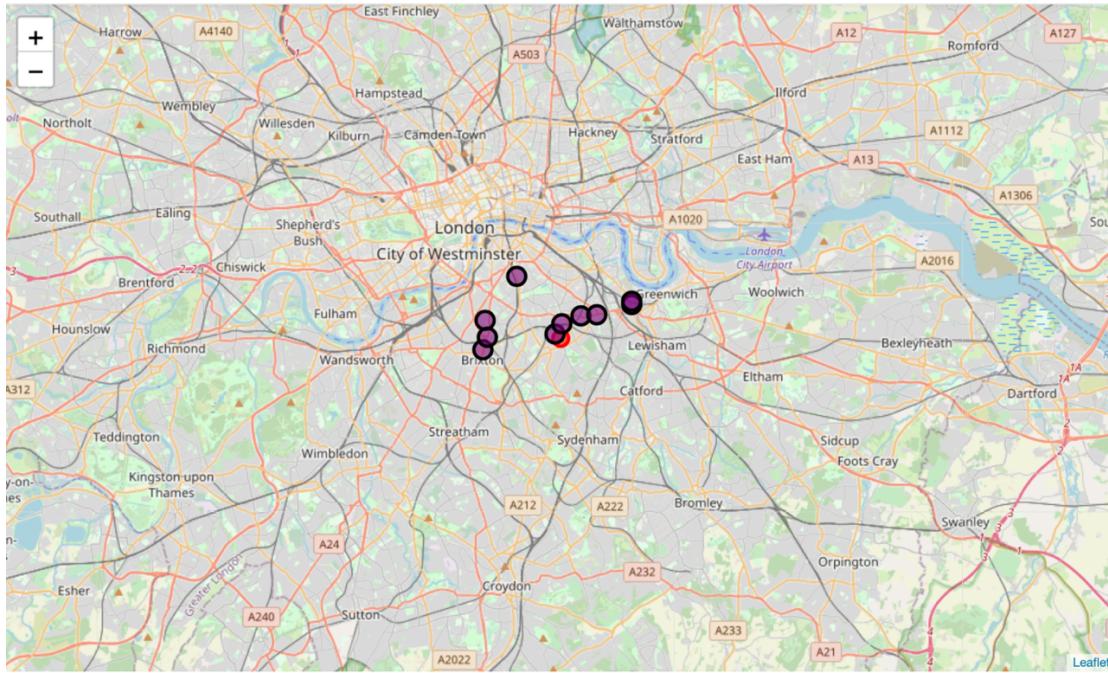
Lewisham: spatial distribution of the existing businesses. This figure illustrates the results for the 3km radius threshold. The red mark on the map is an arbitrary chosen point to provide reference across the visualizations. More details of precise locations of these venues can be obtained via the interactive map in the notebook.



Hackney: spatial distribution of the existing businesses. This figure illustrates the results for the 3km radius threshold. The red mark on the map is an arbitral chosen point to provide reference across the visualizations. More details of precise locations of these venues can be obtained via the interactive map in the notebook.



Croydon: spatial distribution of the existing businesses. This figure illustrates the results for the 3km radius threshold. The red mark on the map is an arbitral chosen point to provide reference across the visualizations. More details of precise locations of these venues can be obtained via the interactive map in the notebook.



Southwark: spatial distribution of the existing businesses. This figure illustrates the results for the 3km radius threshold. The red mark on the map is an arbitrary chosen point to provide reference across the visualizations. More details of precise locations of these venues can be obtained via the interactive map in the notebook.

These results allow to inspect the area and more precisely select a place for the new venue – depending on whether one wants to be located close or further away from the existing venues.

Lastly, the overlay the existing venue result with the results on distribution of the Caribbean community in London.

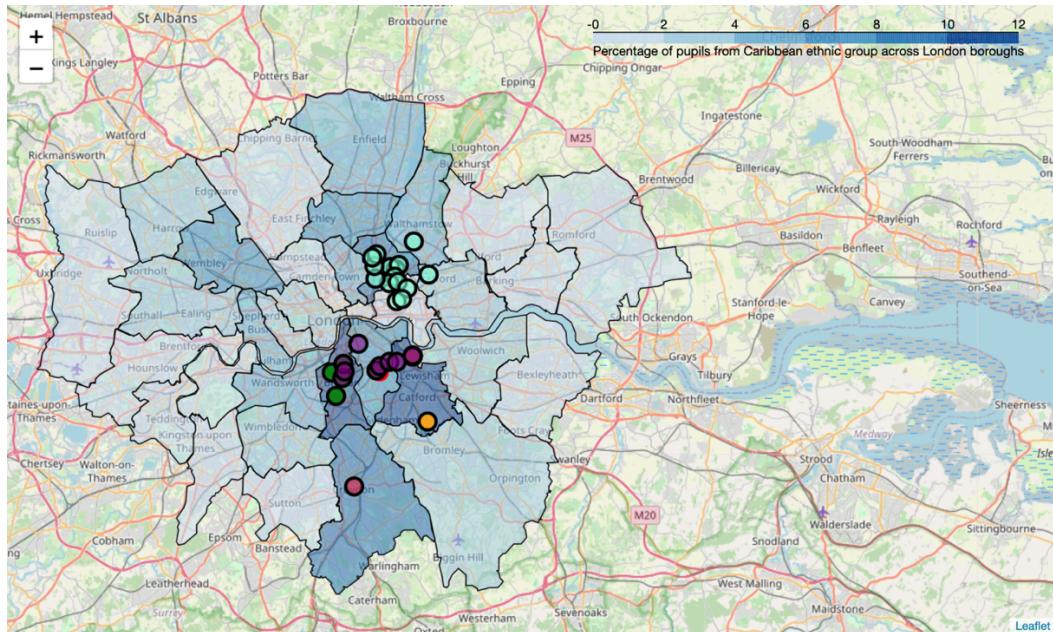


Figure 4. The spatial distribution of the Caribbean existing venues mapped on the distribution of the Caribbean community in London.

Discussion

The aim of this analysis was to estimate the best place to open a specialized, here a Caribbean food-related business: a food store, or a small restaurant, where people can get fresh food. The analysis was based on two important aspects: localization of the potential customers (which boroughs might be better i.e. which boroughs are more likely to be attended by Caribbean community members), and the number (and location) of already existing similar places.

Sub-selection of the London boroughs

The results of the analysis distribution of the Caribbean community analysis suggest that out of 45 boroughs **Lambeth, Lewisham, Hackney, Croydon and Southwark** are the areas, that are expected to be more likely to be attended and visited. This is based on the highest numbers of Caribbean pupils attending schools in these boroughs.

It is important that in this analysis, only one metric was indicated: the number of Caribbean pupils – as an estimate of which boroughs are likely to be attended. For this specific food-business it seems to be a reasonable estimation. However, there are many more metrics that could be used to estimate the most attended boroughs, for example the number of Caribbean firms. As such, perhaps the number of adults who travel to work every day would also provide another estimation to understand where individuals from the Caribbean community are likely to be.

Most Caribbean venues in Hackney

Furthermore, the results of the number of already existing similar places in these sub-selected areas indicated that in the top five potentially most attended boroughs, **Hackney** is the is the borough that has consistently the most venues across all thresholds. Thus, if we were open – a Caribbean food-related business (solely based on number of existing similar businesses), here we would have to provide some specialized and unique offer – as in this area there seem to be a lot of competing business. One the other hand, it could also be interpreted – than in case we have some unique business – Hackney might be a good place – as there might be generally more people to attend the area, for the sake of these other businesses (beside the estimation made based on the number of pupils).

Importantly, while discussing the results of this analysis, here the idea of threshold should be discussed and the impact of it acknowledged. As presented in Figure 2. different thresholds may provide different results. Generally, this is an aspect that should be taken into an account. To illustrate the problem, if we only constrained ourselves to the top two boroughs (Lambeth and Lewisham), there is a difference in increase of number of venues between 2k and 3km threshold. The difference for Lambeth is 1 venue, whereas for Lewisham is 3. Thus, understanding how the threshold may influence the number of already existing places might be an important factor while making final decision.

Two patterns for two different types of businesses

Now, while we aggregate the results of number of pupils and the number of already existing similar places (so we will not solely base our choice on the number of already existing similar places as indicated in Figure 3.) suggest two patterns: **pattern one** contains areas that have high number of students and low number of venues (these are Lambeth, Lewisham, and Croydon, respectively). The biggest difference between numbers of venues and number of pupils was observed in Croydon. It could be speculated that in these areas – it would be good to open the business as there is not much competition, while the number of Caribbean community members is high. The **second pattern** (a reverse one) contain areas that have high number venues and the low number of students (considering it locally and globally i.e. in respect to all five boroughs). This second pattern could be

observed for Hackney and for Southwark. It could be speculated that in these areas – it would be good to open the business - however – it would have to be a some very unique and specialized offer - as there is much competition, and the number of Caribbean community members steadily goes down.

Conclusion:

In conclusion, based on available data and analyses a recommendation could be made on where to open a Caribbean food-related business. This recommendation is based on two patterns revealed by the analysis.

Lambeth, Lewisham, and Croydon, respectively are the areas – that would be best suited for opening a new business, as there is not much competition, while the number of Caribbean community members is high. Hackney and Southwark, could potentially be also good places - however – the business would have to be a some very unique and specialized offer, as there is much competition, and the number of Caribbean community members steadily goes down. Thus, in order to make the final choice – an additional aspect could be considered (which is beyond of the scope of this analysis), namely the character of the new business (i.e. whether we have a very unique offer to make or not).

Finally, after the decision of the borough is made, further investigation of the precise location (as presented in Figure 4) is also recommended, as spatial location of the already existing businesses could be a factor in final decision.

References:

Manning, P. (2015). Migration in human history. In D. Christian (Ed.), *The Cambridge World History (The Cambridge World History, pp. 277-310)*. Cambridge: Cambridge University Press.
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