

Capstone Project - The Battle of the Neighborhoods

Introduction

The aim of this project is to find an optimal location in Oxfordshire, Oxford, to open a pub offering a wide variety of foods and drinks. This report will focus on central Oxford, which is a very popular tourist destination.

As Oxford is always busy and the University of Oxford is located here, the city has numerous restaurants and pubs already, so finding a place for a pub is not easy. However as there is large demand on pubs and restaurants, it seems a good choice to invest – most of the pubs are crowded and during peak periods it can be impossible to find a place to sit in.

Oxford has a long history; the town has beautiful medieval narrow streets and historical buildings just as modern shopping centres and museums. The difficulty of finding a place is the lack of area in the city centre. The narrow paths and roads are sometimes overcrowded already making it more difficult to find a location for opening a pub.

We'll try to detect locations which are close to the city centre and not too crowded already – however as mentioned above, there is a large demand on pubs and restaurants so a crowded area does not mean instantly that we need to reject our project.

Data

In order to proceed with the project, we need to find location data (e.g. post code, city names, areas, neighbourhoods, coordinates). We can use the internet to gather this information, such as [Wikipedia](#) or [Doogal](#).

We'll consider the followings when trying to determine the ideal location for a pub:

- Number of existing pubs in the neighbourhood
- Distance from the city centre

Once we'll have our data from the defined data sources, we'll need to read them into a Pandas dataframe. This will help us work with the data. We'll use Foursquare API to find venues in the city centre of Oxford. We'll visualize the map of Oxford to help us identify potential places for opening a pub.

Methodology section

In the project we detect areas in central Oxford to find a location to open a pub. We concentrate on the city centre, however there must be a lot of pubs already there, the demand for these places are very high.

First we collect all the relevant required data (location, city, post code) and then we use Foursquare API to find the venues in the 500m neighbourhood of these locations (the Post Code of the city centre is OX1). We find out the most popular venues in each neighbourhood and order them by popularity – we create a Pandas dataframe with the above details.

We use k-means to cluster the neighbourhoods, and visualize the resulted clusters to identify neighbourhoods which should be a good starting point for optimal venue location.

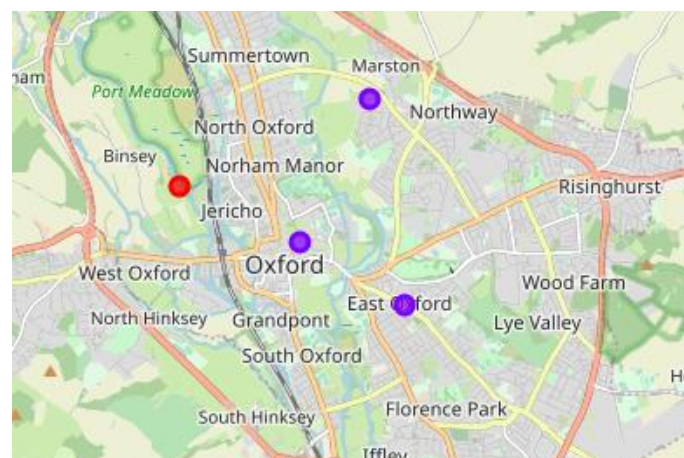
Results

The analysis shows that there are quite a few pubs in Oxford and they are in the top when checking venues by popularity. The city centre has lot of restaurants, coffee shops, pubs. As we move away from the city centre, the number of restaurants and pubs are decreasing and other venue's density increases (e.g. stores, shops). This is something we would expect as most of the tourists have an accommodation close to the city centre, close to the attraction hence more eating/drinking venues are needed in the city centre.

	Neighborhood	1st Most Common Venue	2nd Most Common Venue	3rd Most Common Venue	4th Most Common Venue	5th Most Common Venue	6th Most Common Venue	7th Most Common Venue	8th Most Common Venue	9th Most Common Venue	10th Most Common Venue
0	Central and South Oxford, Kennington, Boars Hi...	Coffee Shop	Pub	Café	Thai Restaurant	History Museum	Hotel	Sandwich Place	Bookstore	English Restaurant	Burger Joint
1	East Oxford, Cowley, Blackbird Leys, Littlemor...	Pub	Pizza Place	Turkish Restaurant	Burger Joint	Greek Restaurant	Moroccan Restaurant	Mediterranean Restaurant	Italian Restaurant	Indian Restaurant	Ice Cream Shop
2	North East Oxford, Beckley, Headington, Marsto...	Convenience Store	Bar	Pub	Furniture / Home Store	Turkish Restaurant	English Restaurant	Concert Hall	Deli / Bodega	Dessert Shop	Diner
3	North and West Oxford, Botley, North Hinksey, ...	Harbor / Marina	Farm	Bed & Breakfast	Concert Hall	Convenience Store	Deli / Bodega	Dessert Shop	Diner	English Restaurant	Farmers Market

Discussion

The k-means clustering segmented the areas into two parts. One noticeable difference between the two parts is that one is located on the east while the other is on the west side of the railway station. This is a strong indicator whether the area is populated enough to open a pub or not. The main attractions, museums, university buildings are in walking distance from each other and from the railway centre, on the east side. There are more large shopping centres on the west side of the railway.



Conclusion

Taking into account the vivid life of Oxford and that the city has a University (and it is a popular tourist destination) a pub which offers good quality food and drinks, and provides high quality service is a good investment. However the city centre has pubs already, these are often very crowded and it can be very hard to find a place for a drink without booking. The analysis could be continued by gathering more information on the prices, reviews, hotel locations, but as there is a limitation on requesting all these information with a free account from Foursquare, this is out of the scope at this project.

As the analysis suggests, it is better to open a place on the east side of the railway station, where there are more museums and other cultural halls, University colleges, indicating that there are more tourist and students in these areas. When opening a pub, the zone centres created by the clustering can be used as starting point for final exploration.