STARTING INDONESIAN RESTAURANT IN TRAFFORD, GREATER MANCHESTER, ENGLAND

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INTRODUCTION

Indonesian cuisine is one of the richest culinary traditions in the world, and is full of strong flavors. The richness of its cuisine is a reflection of the diversity of cultures and traditions of the archipelago, which consists of around 6,000 inhabited islands, and plays an important role in Indonesia's national culture in general. Almost all Indonesian dishes are rich in spices such as candlenuts, chilies, temu Kunci, galangal, ginger, kencur, turmeric, coconut and palm sugar, followed by the use of cooking techniques according to ingredients, and traditions that have an influence. through trade originating from India, China, the Middle East, and Europe (especially the Netherlands, Portugal and Spain).

In this project we will try to find an optimal location for a restaurant. Specifically, this report will be targeted to stakeholders interested in opening an **Indonesian restaurant** in **Trafford**, Greater Manchester, England.

Since there are lots of restaurants in Trafford we will try to detect **locations that are not already crowded with restaurants**. We are also particularly interested in **areas with no Indonesian restaurants in vicinity**. We would also prefer locations **as close to city center as possible**, assuming that first two conditions are met.

We will use our data science powers to generate a few most promissing neighborhoods based on this criteria. Advantages of each area will then be clearly expressed so that best possible final location can be chosen by stakeholders.

DATA

Based on definition of our problem, factors that will influence our decission ar**e:**

- number of existing restaurants in the neighborhood (any type of restaurant)
- number of and distance to Indonesian restaurants in the neighborhood, if any
- restaurant density in the neighborhood

We decided to use regularly spaced grid of locations, centered around city center, to define our neighborhoods.

Following data sources will be needed to extract/generate the required information:

- centers of candidate areas will be generated algorithmically and approximate addresses of centers of those areas will be obtained using **Google Maps API reverse geocoding**

- number of restaurants and their type and location in every neighborhood will be obtained using **Foursquare API**
- coordinate of Trafford center will be obtained using **Google Maps API geocoding.**

METHODOLOGY

In this project we will direct our efforts on detecting areas of Trafford that have low restaurant density, particularly those with low number of Indonesian restaurants.

In first step we have collected the required **data: location and type (category) of every restaurant**.

Second step in our analysis will be calculation and exploration of '**restaurant density**' across different areas of Trafford - we will use **map** to identify a few promising areas with low number of restaurants in general (**and** no Indonesian restaurants in vicinity) and focus our attention on those areas.

In third and final step we will focus on most promising areas. We will take into consideration locations with **as few restaurants as possible**, and we want locations **without Indonesian restaurants**. We will present map of all such locations of those locations to identify neighborhoods which should be a starting point for final exploration and search for optimal venue location by stakeholders.

RESULT AND DISCUSSION

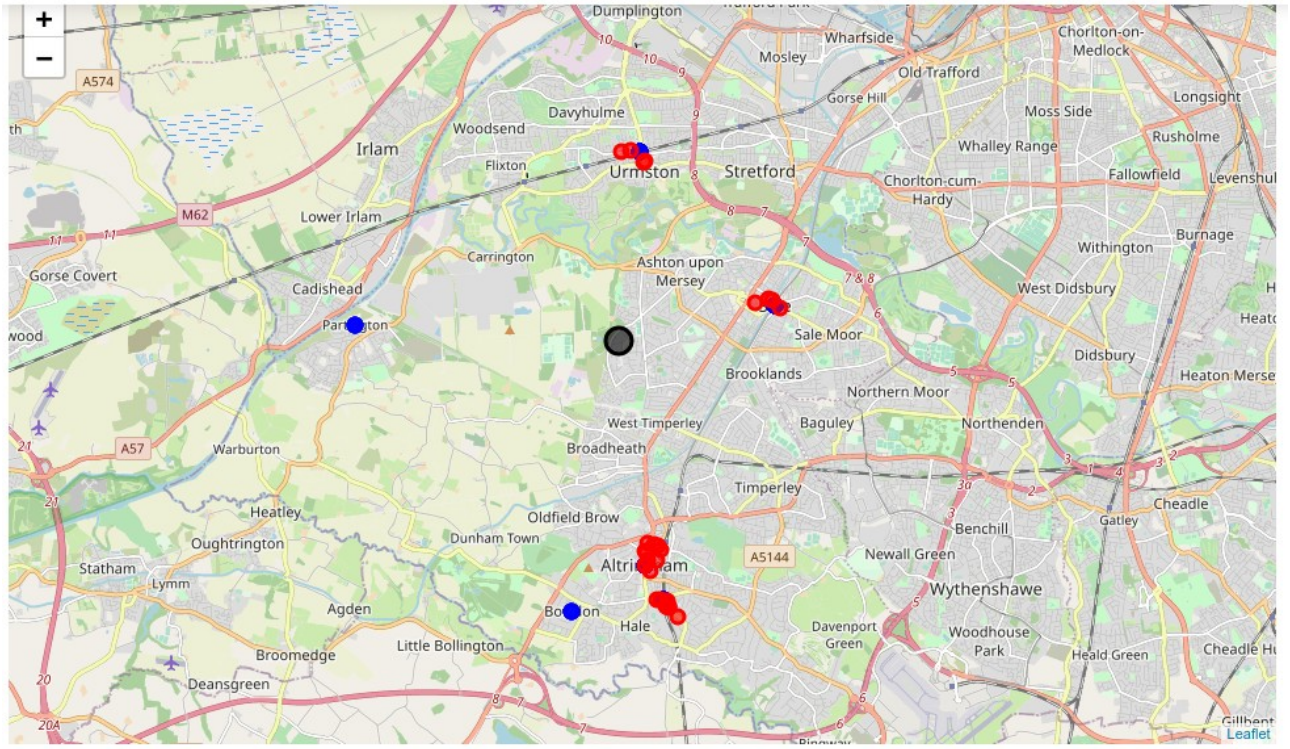
Neighborhood data was taken from https://en.wikipedia.org/wiki/Greater_Manchester. From this url and after used Google Maps API reverse geocoding , we get list of Trafford neighborhood of Greater Manchester and their latitude and longitude as follows:

No	Borough	Centre	Neighborhood	Latitude	Longitude
1	Trafford	Stretford	Altrincham	53.38397	-2.35255
2	Trafford	Stretford	Bowdon	53.37688	-2.37153
3	Trafford	Stretford	Hale	53.37852	-2.34750
4	Trafford	Stretford	Sale	53.42449	-2.31842
5	Trafford	Stretford	Urmston	53.44832	-2.35366
6	Trafford	Stretford	Partington	53.42148	-2.42825

After using **Foursquare API,** we calculate number of restaurant in Trafford's neighborhood as follows:

No.	Neighboorhood	Number of Restaurant	Number of Indonesian Restaurant
1	Altrincham	10	-
2	Bowdon	-	-
3	Hale	9	-
4	Sale	4	-
5	Urmston	4	-
6	Partington	-	-

We can see restaurant density from the map as follow:



Our analysis shows that there are a number of restaurants in Trafford in a radius of 500. Of these restaurants, not a single restaurant serves Indonesian cuisine. The highest restaurant density was in Altrincham, followed by Hale. As for Sale and Urmston were the same density. What is interesting is that, in Parlington and Bowdon our analysis shows the absence of any restaurants in a radius of 500. So that in this case Parlington and Bowdon can be candidates to start an Indonesian restaurant business at Trafford.

However, Bowdon is located closer to Altrincham and Hale, which, when combined, will have a fairly high restaurant density. Therefore, from the results of the analysis, we suggest opening an Indonesian restaurant in the **Parlington** area.

CONCLUSION

Purpose of this project was to identify Trafford areas close to center with low number of restaurants (particularly Indonesian restaurants) in order to aid stakeholders in narrowing down the search for optimal location for a new Indonesian restaurant. By calculating restaurant density distribution from Foursquare data we have first identified general boroughs that justify further analysis.

Final decission on optimal restaurant location will be made by stakeholders based on specific characteristics of neighborhoods and locations, and we suggest opening an Indonesian restaurant in the **Parlington** area