

IBM Data Science Capstone

Analysis of Indian Restaurants in and around
Brick Lane, London

Introduction

- History of Brick Lane
 - NW of central London
 - Dates back >450 years
 - Jack the Ripper Murders
 - Truman Brewery
- Centre for authentic Indian Cuisine
- Close to hi-tech industry – Shoreditch

Target Audience

- Entrepreneurs interested in opening a new Indian restaurant close to Shoreditch
 - High Quality
 - Tap into affluent technology works
- Is Brick Lane a good location?
- Should other areas of London be considered?

Data Collection and Cleaning

- Foursquare API used to investigate existing restaurants in this area and around Shoreditch
 - Categories – what type of cuisine? Indian vs Other
 - Location – is it close to Brick Lane?
 - Customer Ratings – is it high quality?
- API limitations
 - Customer rating queries are a “premium query” and limited
 - Limited access due to Foursquare API restriction of 50 premium queries per day
 - Results from multiple queries stored in a CSV file
 - Venues without ratings will be dropped

Density Analysis

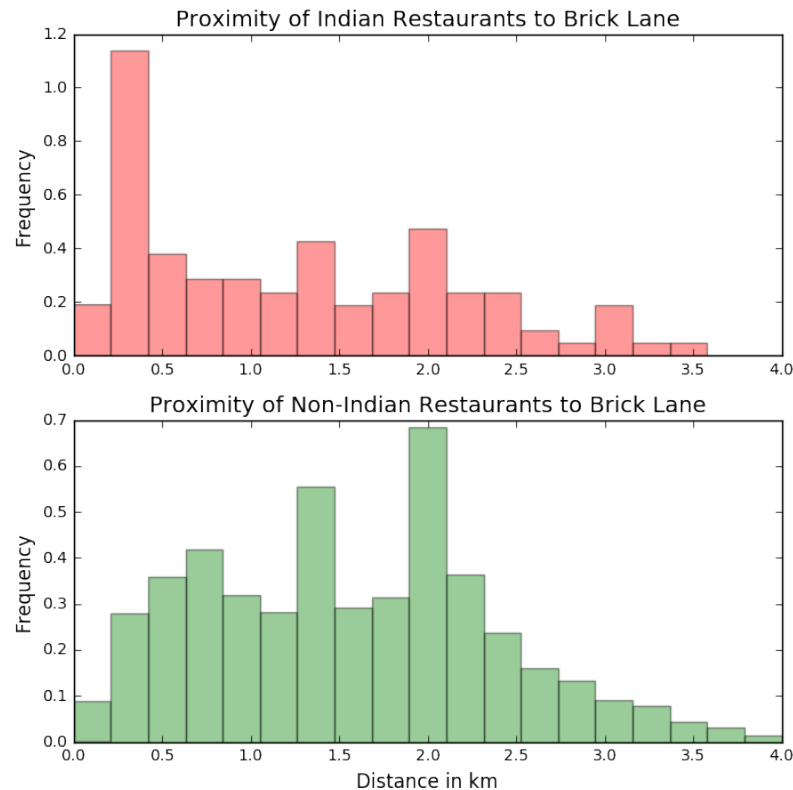
The distance from Brick Lane is calculated from longitude and latitude co-ordinates.

Histograms show density of Indian restaurants versus non-Indian restaurants in proximity to Brick Lane.

- Columns to the left are closer to Brick Lane

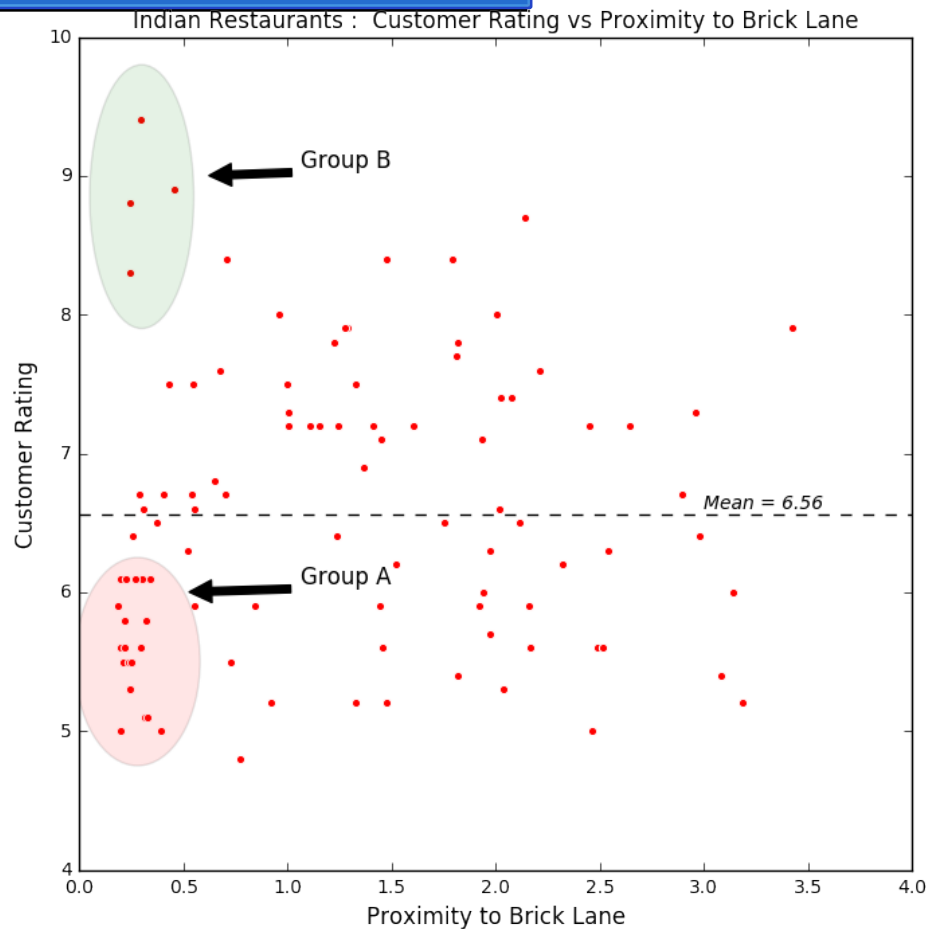
Clear peak in top histogram confirms Brick Lane is the centre of Indian Restaurants.

Histograms are normalized, showing density is comparative to all other restaurants combined in other areas of London.



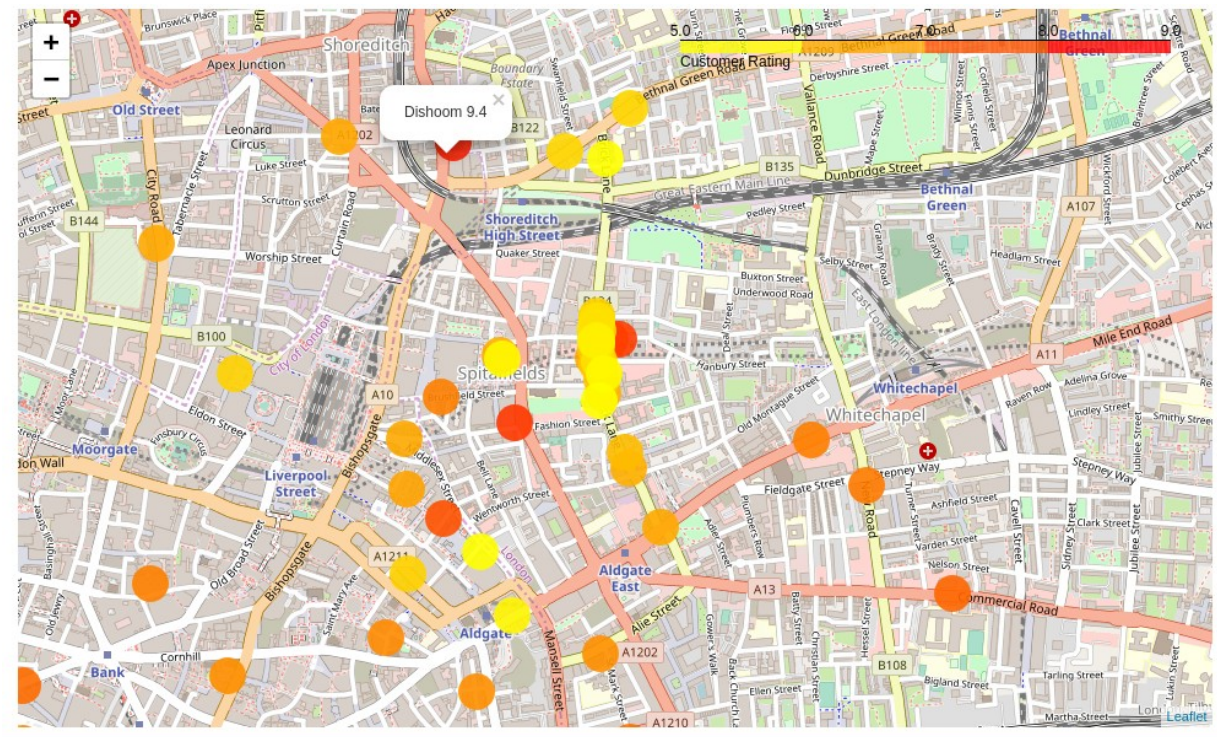
Ratings vs Proximity

- Plot of proximity to Brick Lane vs Customer Rating.
 - Are the Brick Lane Restaurants the highest rated?
- Scatter plot shows no strong relationship between proximity to Brick Lane and customer rating.
 - Points left most are close to Brick Lane
- Grouping suggests some very highly rated restaurants near Brick Lane (Group B) as well as many scoring well below average (Group A)
- The higher scoring venues (Group B) are amongst the highest scoring in the dataset.



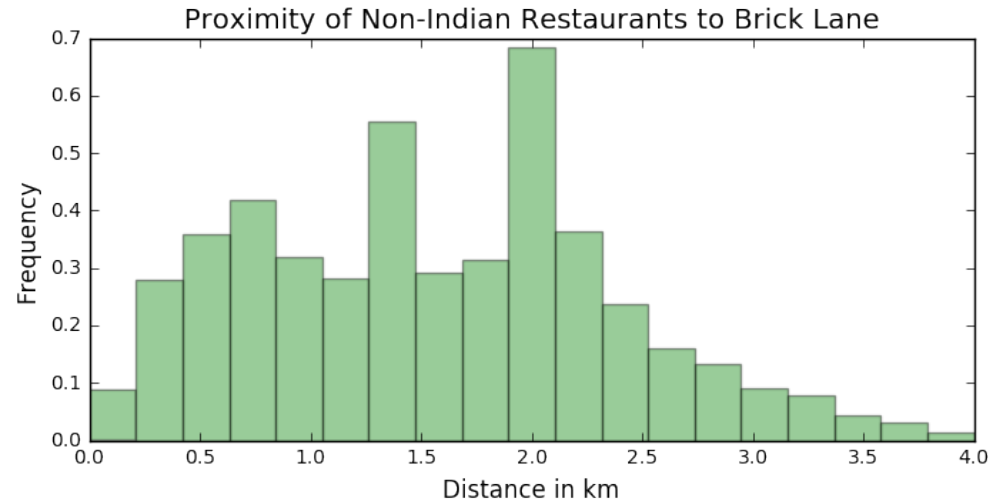
Ratings vs Proximity as Map

- Map centred on Brick Lane shows location of Indian Restaurants.
- Markers colour-coded by customer rating.
 - High count of yellow markers near centre
 - Red markers indicate higher rating are further out.
 - Example highlighted : Dishoom
- Visually, no obvious pattern in rating vs location



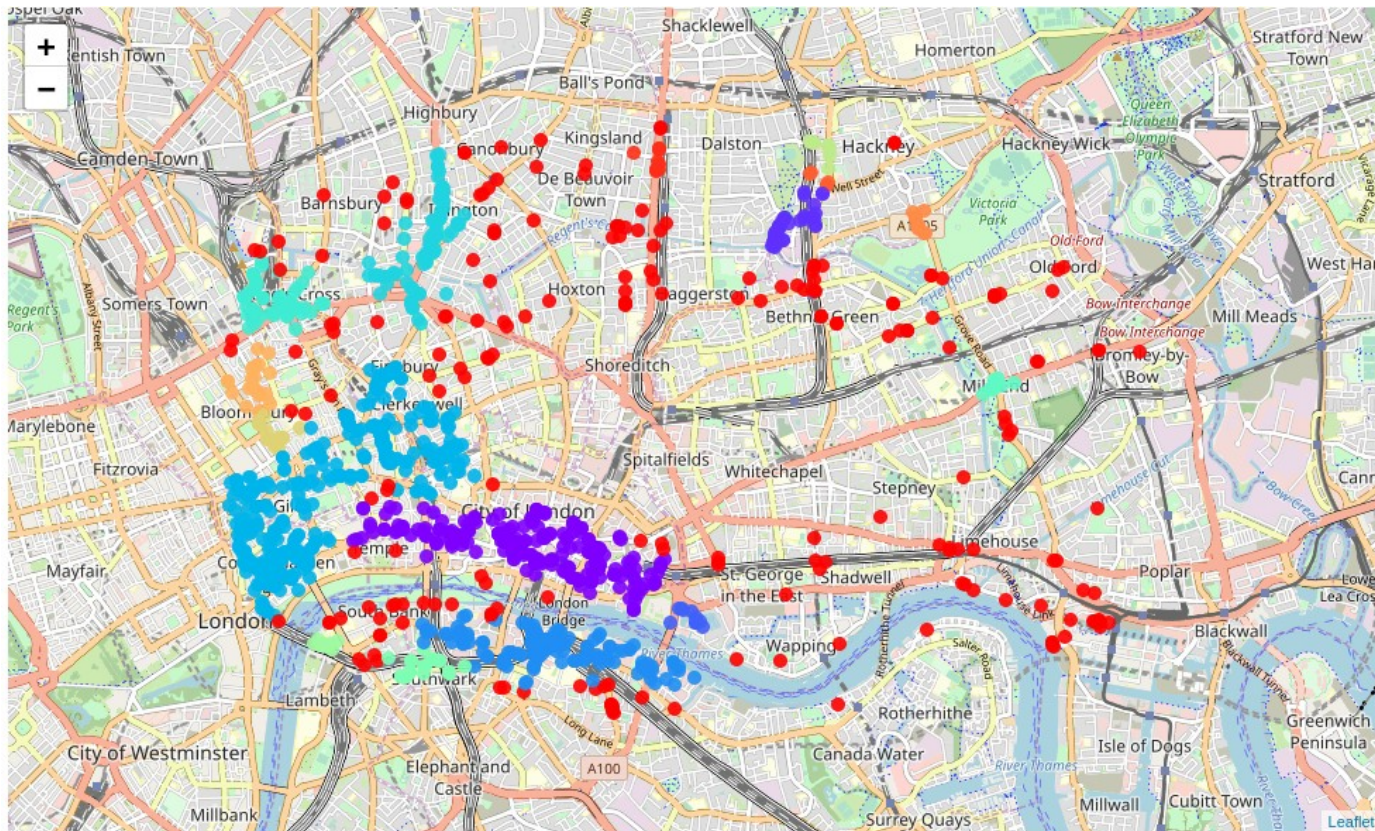
Geographic Clustering of Non-Indian Restaurants

- Earlier histogram, repeated on this slide, showing density of non-Indian restaurants suggested there may be other regions of London worth consideration.
 - Two or three clear peaks in the histogram
 - DBSCAN Clustering algorithm applied to dataset and plotted onto map (next slide)
 - DBSCAN = Density Based Spatial Clustering of Applications with Noise
 - DBSCAN chosen as no knowledge of how many clusters there are, and able to deal with “noise”, ie many venues not clustered



Geographic Clustering of Non-Indian Restaurants

- DBSCAN parameters were experimented with to produce useful clustering.
- Highlighted areas
 - Theatre District
 - Financial District
 - South Bank
 - King's Cross Railway
- Other potential locations for a restaurant, which relate to the histogram peaks have been found
- These regions are relatively far from the target area of Shoreditch, and therefore not preferable to Brick Lane.



Discussion of Results

- Geographic data confirms that there is a particularly high incidence of Indian Restaurants in the vicinity of Brick Lane.
- Other types of restaurant have been found to cluster in other regions of London.
 - These other regions are further from Shoreditch and therefore less preferable as a location for a restaurant intended to tap into the tech community.
 - Relative density of Indian restaurants in Brick Lane is very high
- No strong relationship between customer rating and proximity to Brick Lane was found
 - Many Brick Lane restaurants score well below the average rating
- However the highest rated Indian restaurants were in Brick Lane suggesting region can support high quality establishments

Conclusions

- Brick Lane is confirmed as a centre of Indian cuisine in London and therefore a good site for a potential new restaurant
 - Location should be towards the NW end, in the direction of Shoreditch.
- Brick Lane restaurants are not the highest rated but nevertheless this is a good location
 - Density will attract foot fall from Shoreditch and other regions
 - Highly rated restaurants do exist in this region although in a minority