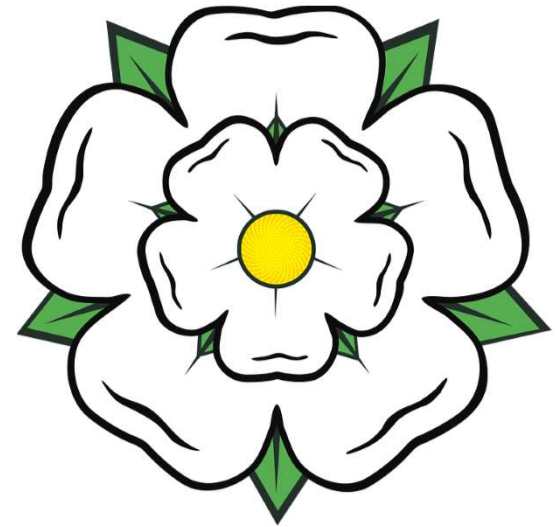# Opening a New Bar in Leeds – A Location Analysis

LEVERAGING THE FOURSQUARE PLACES API TO INFORM BUSINESS STRATEGY

Business Problem

- A local business owner is looking to open up a new drinking establishment within the city of Leeds

  - They are unsure **where** within Leeds they wish to open (central, more rural, etc.)

  - They do not know **what type** of place they would like to open (bar, pub, speakeasy, etc.)

- They have reached out to a Data Scientist for assistance in making this decision

  - Foursquare Places API to be used to help highlight potential areas to open

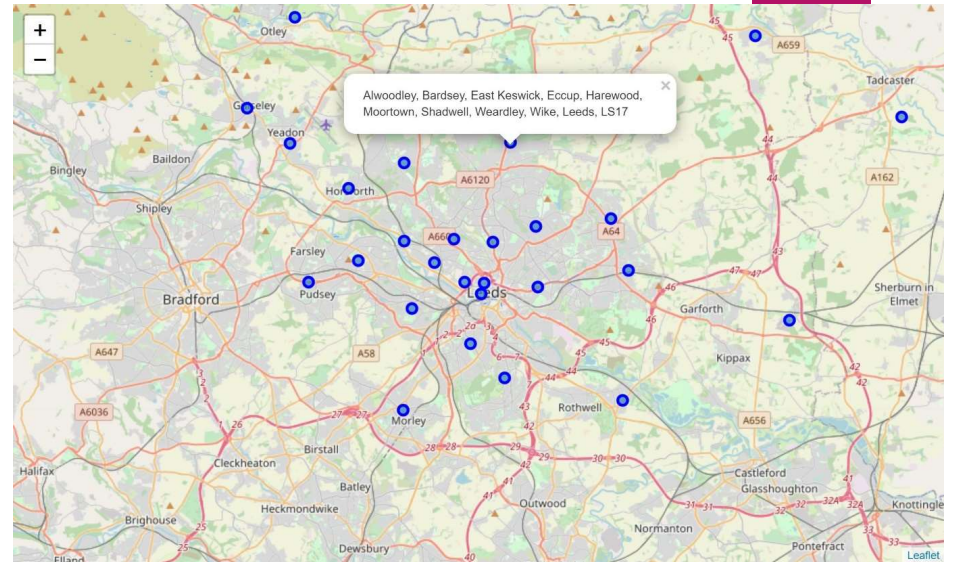 - Also used to see what venues currently exist within Leeds to inform a type of venue to open
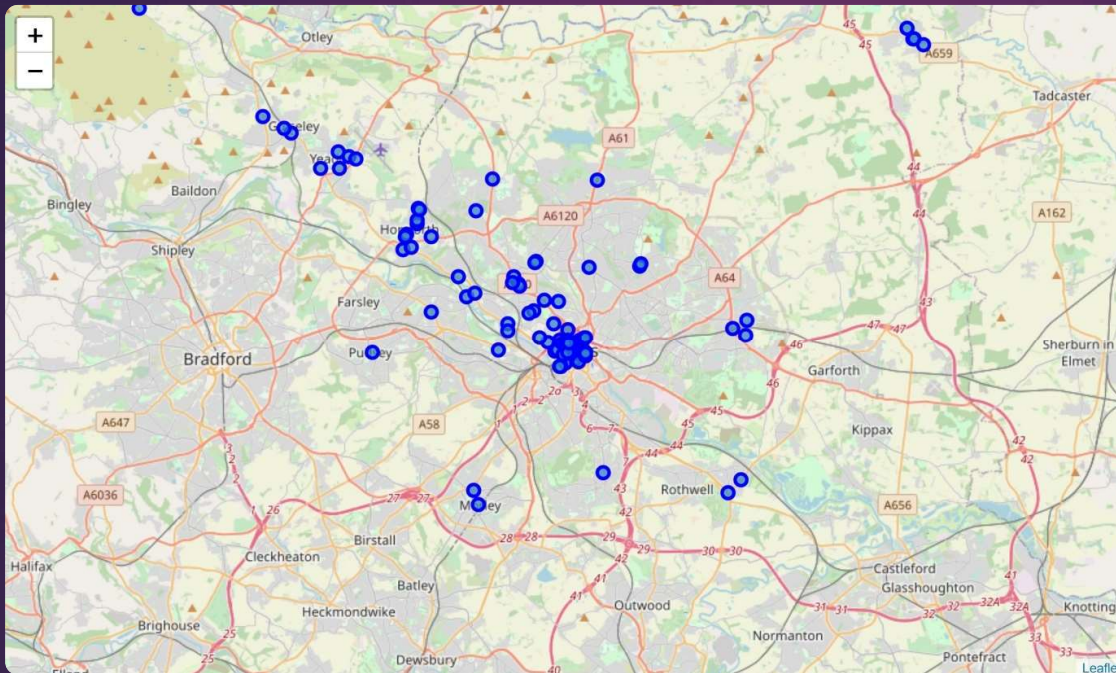
Data Acquisition & Cleaning

▶ Data scraped from the Wikipedia article detailing the Leeds postcodes, linked here

▶ Further data obtained from freemaptools.com containing the postcodes of all of England, including latitude / longitude values for each.

▶ Data from both sources cleaned and combined to provide us our dataset

▶ Containing the location data for each postcode and the neighbourhoods found within them.

▶ Cleaned dataset containing **29 rows and 5 columns**

▶ Foursquare Places API utilised to find the different venues within these postcodes

▶ Venues filtered to show all bars/pubs as well as left unfiltered for clustering analysis
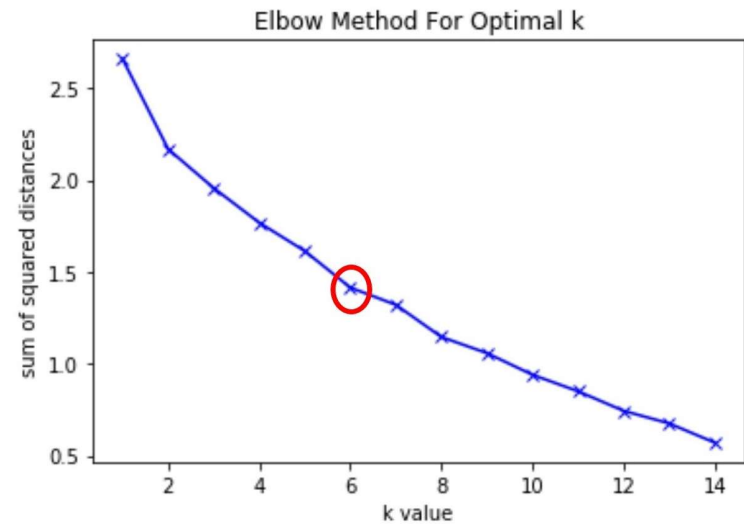
Snapshot of DataFrame & Postcode Map
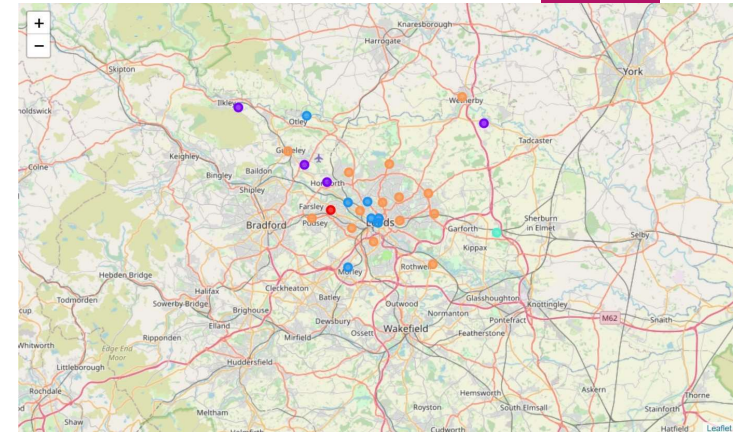
Location of all bars / pubs around Leeds

Clustering Algorithm

▶ **K-means Clustering** used for this report, in order to cluster the different postcodes of Leeds based in the venues found within them

   ▶ Optimal value for K found using the Elbow Method (pictured)

Clustering Algorithm – Cont'd

► Clusters colour coded and showed on the map of Leeds

  ► Different areas of Leeds cluster together based on the density of similar venues found within them

► Results also viewed in tabular form

  ► Show most common venues in each postcode and each cluster

	PostCode	Town	Cluster Labels	1st Most Common Venue	2nd Most Common Venue	3rd Most Common Venue	4th Most Common Venue	5th Most Common Venue
17	LS18	Leeds	1	Pub	Coffee Shop	Pizza Place	Bar	Cricket Ground
18	LS19	Leeds	1	Pub	Lake	Cricket Ground	Fish & Chips Shop	Supermarket
22	LS23	Wetherby	1	Pub	Bar	Convenience Store	Cricket Ground	Chinese Restaurant
28	LS29	Ilkley	1	Pub	Train Station	Scenic Lookout	Trail	Gastropub

Observations

- **98 venues** found which met the criteria of pubs, bars, etc.
- High density of venues found within the centre of Leeds, compared to the rest of the area
- Cluster 1 contained pubs as the most common venue, all of which found in rural areas of Leeds
  - This trend continues in other clusters, where pubs are more likely in rural areas
- Conversely, bars much more likely to be found within the city centre
  - Due to the nature of patrons visiting multiple bars in a city in one night
- No instance of a speakeasy appearing as a common venue in the clusters
  - May highlight a potentially fruitful endeavour and a gap in the market

Practical Applications

▶ This approach can be taken in future for further projects

　▶ Simple refinement of parameters will find venues of any kind from the Foursquare results

▶ I would recommend opening a **pub** in areas more rural to Leeds, especially within the four postcodes in **cluster 1**

▶ A **bar** would be more profitable to open towards the city centre of Leeds

　▶ Especially within postcodes LS1, LS2 and LS3

▶ ***If looking for a gap in the market…***

　▶ A speakeasy may be the way to go – only **2** instances of these found within the 98 venues highlighted

Future Improvements

- More data may be gathered concerning Leeds postcodes

  - For example, a .geojson file showing each postcode area to enable deeper analysis

- Different clustering methods could be explored, such as DBSCAN

  - Results from either model or a mixture of the two, to provide more useful recommendations to business owners

- Financial information on local venues could be included

  - Provides a better picture of the problem and helps to highlight profitable endeavours