



IBM Capstone Project

18-05-2021

Agenda

- 1.0 Introduction
- 2.0 Business Context
- 3.0 Data
- 4.0 Data Analysis
- 5.0 Conclusion

1.0 Introduction

- Set the criteria for recommending a location for a property acquisition in Preston, UK
- Explain the decision-making criteria
- Explain the serviced accommodation model
- Explore how the K-Means algorithm and the FourSquare API have grouped the postcodes into five clusters

2.0 Business Context – Preston

- Preston is located in the northwest of England
- Roughly 313,332 people who lived in Preston in 2018
- The University of Central Lancashire is located in the city and states that it has roughly 38,000 students and staff
- Social care and retail are the largest employers with 16,000 and 17,000 employees respectively
- Most people work for micro-enterprises (organisation with nine employees or less)

3.0 Serviced Accommodation

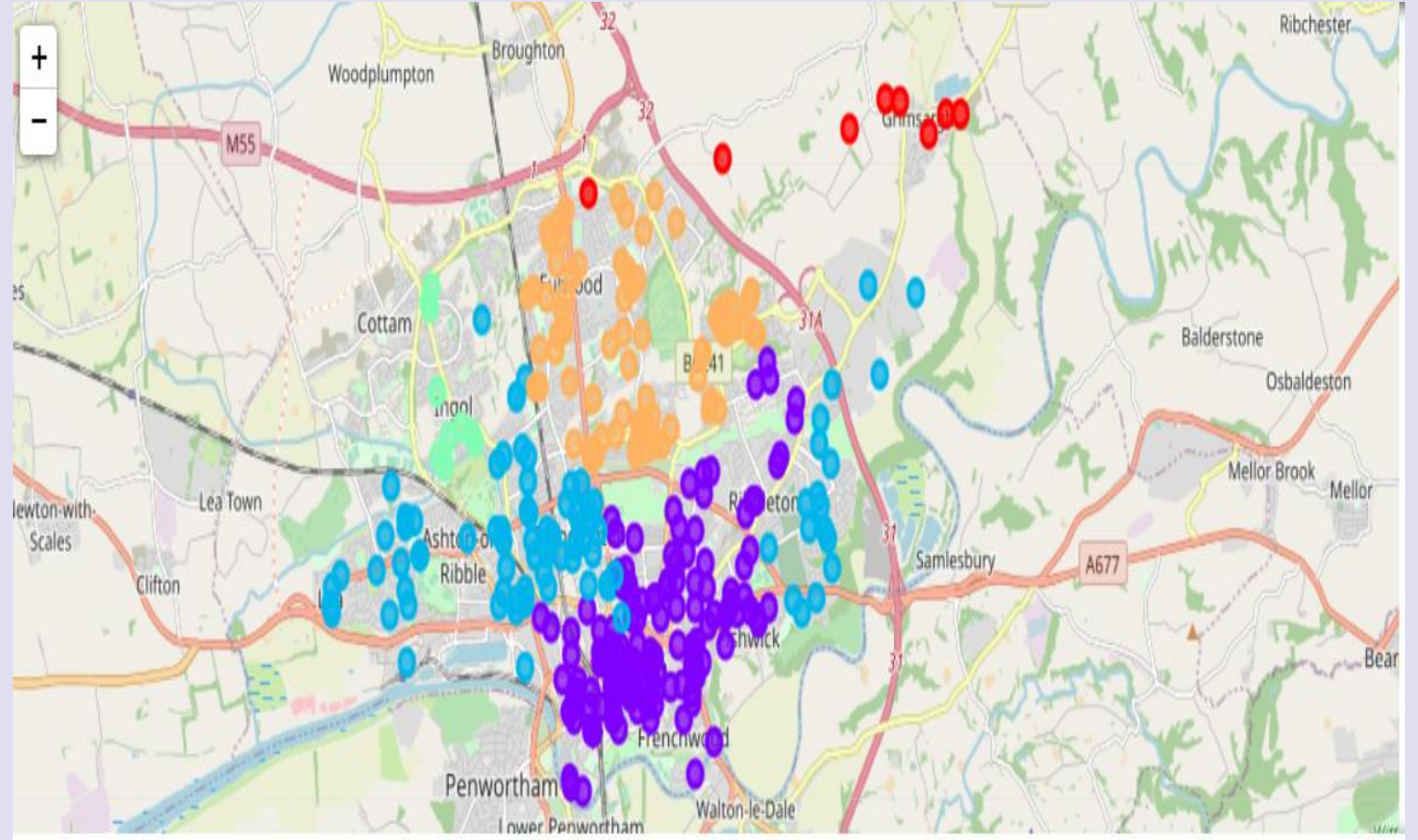
- A serviced accommodation is a type of short-term where the guest or travellers occupies a property for days or months
- Preston attracts guests from smaller towns in the county of Lancashire
- The city has experienced notable development projects such as the conversion of the Royal Mail Sorting Office into luxury apartments

4.0 Data

1. FourSquare API
2. K-Means Clustering
3. Doogal.co.uk
4. HM Land Registry Open Data

4.0 Data Analysis - Folium Map

1. Cluster One: Purple
2. Cluster Two: Blue
3. Cluster Three: Orange
4. Cluster Four: Green
5. Cluster Five: Red



4.0 Data Analysis - Cluster One

- Postcodes in the City Centre, Deepdale and Fishwick & Frenchwood
- Food venues are common in this cluster
- The entry for Deepdale may be an outlier
- Most of the entries for the Deepdale entry differ

	Neighbourhood	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
5009	Sharoe Green	Coffee Shop	Pub	Grocery Store	Trail	Café	Newsagent	Indian Restaurant	Warehouse Store	Pharmacy	Italian Restaurant
4177	Greyfriars	Gym / Fitness Center	Pub	Italian Restaurant	Coffee Shop	Grocery Store	Indian Restaurant	Weight Loss Center	Gym	Sporting Goods Shop	Pharmacy
5068	Garrison	Indian Restaurant	Pub	Sculpture Garden	Grocery Store	Trail	Lake	Italian Restaurant	Rental Car Location	Tennis Court	Spa
4133	Sharoe Green	Coffee Shop	Pub	Grocery Store	Trail	Café	Newsagent	Indian Restaurant	Warehouse Store	Pharmacy	Italian Restaurant
3996	Sharoe Green	Coffee Shop	Pub	Grocery Store	Trail	Café	Newsagent	Indian Restaurant	Warehouse Store	Pharmacy	Italian Restaurant
3643	Greyfriars	Gym / Fitness Center	Pub	Italian Restaurant	Coffee Shop	Grocery Store	Indian Restaurant	Weight Loss Center	Gym	Sporting Goods Shop	Pharmacy

4.0 Data Analysis - Cluster Two

- Ashton and Plungington are grouped together
- A mixture of dining venues, daytime activities, fitness centres and supermarkets
- The algorithm does include Preston Docks, a key attraction
- It highlights the fact that algorithm focuses on the number of venues

	Neighbourhood	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
2959	Ashton	Convenience Store	Pub	Fish & Chips Shop	Grocery Store	Park	Lebanese Restaurant	Food Truck	Soccer Field	Gym / Fitness Center	Supermarket
3393	Ashton	Convenience Store	Pub	Fish & Chips Shop	Grocery Store	Park	Lebanese Restaurant	Food Truck	Soccer Field	Gym / Fitness Center	Supermarket
1989	Plungington	Grocery Store	Pub	Pizza Place	Sandwich Place	Trail	Liquor Store	Italian Restaurant	Chinese Restaurant	Gym / Fitness Center	Fish & Chips Shop
130	Plungington	Grocery Store	Pub	Pizza Place	Sandwich Place	Trail	Liquor Store	Italian Restaurant	Chinese Restaurant	Gym / Fitness Center	Fish & Chips Shop
3402	Ashton	Convenience Store	Pub	Fish & Chips Shop	Grocery Store	Park	Lebanese Restaurant	Food Truck	Soccer Field	Gym / Fitness Center	Supermarket

4.0 Data Analysis - Cluster Three

- Only postcodes in Ingol & Cottam are included
- Shops are amongst the most common venues
- There are more smaller stores in this cluster than larger stores
- Postcodes are close proximity to the canal lock
- The canal lock is complemented by gastropubs and parks

	Neighbourhood	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
3870	Ingol & Cottam	Newsagent	Grocery Store	Soccer Field	Canal Lock	Gastropub	Gas Station	Bakery	Convenience Store	Event Service	Park
3852	Ingol & Cottam	Newsagent	Grocery Store	Soccer Field	Canal Lock	Gastropub	Gas Station	Bakery	Convenience Store	Event Service	Park
3856	Ingol & Cottam	Newsagent	Grocery Store	Soccer Field	Canal Lock	Gastropub	Gas Station	Bakery	Convenience Store	Event Service	Park
4900	Ingol & Cottam	Newsagent	Grocery Store	Soccer Field	Canal Lock	Gastropub	Gas Station	Bakery	Convenience Store	Event Service	Park
3790	Ingol & Cottam	Newsagent	Grocery Store	Soccer Field	Canal Lock	Gastropub	Gas Station	Bakery	Convenience Store	Event Service	Park
3794	Ingol & Cottam	Newsagent	Grocery Store	Soccer Field	Canal Lock	Gastropub	Gas Station	Bakery	Convenience Store	Event Service	Park
3799	Ingol & Cottam	Newsagent	Grocery Store	Soccer Field	Canal Lock	Gastropub	Gas Station	Bakery	Convenience Store	Event Service	Park
4860	Ingol & Cottam	Newsagent	Grocery Store	Soccer Field	Canal Lock	Gastropub	Gas Station	Bakery	Convenience Store	Event Service	Park
3843	Ingol & Cottam	Newsagent	Grocery Store	Soccer Field	Canal Lock	Gastropub	Gas Station	Bakery	Convenience Store	Event Service	Park
4824	Ingol & Cottam	Newsagent	Grocery Store	Soccer Field	Canal Lock	Gastropub	Gas Station	Bakery	Convenience Store	Event Service	Park

4.0 Data Analysis - Cluster Four

- Sharoe Green, Greyfriars and Garrison have been clustered together
- The postcodes in this cluster do not seem well clustered
- This clusters highlights the fact that users may not understand how the algorithm cluster the postcodes

	Neighbourhood	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
5009	Sharoe Green	Coffee Shop	Pub	Grocery Store	Trail	Café	Newsagent	Indian Restaurant	Warehouse Store	Pharmacy	Italian Restaurant
4177	Greyfriars	Gym / Fitness Center	Pub	Italian Restaurant	Coffee Shop	Grocery Store	Indian Restaurant	Weight Loss Center	Gym	Sporting Goods Shop	Pharmacy
5068	Garrison	Indian Restaurant	Pub	Sculpture Garden	Grocery Store	Trail	Lake	Italian Restaurant	Rental Car Location	Tennis Court	Spa
4133	Sharoe Green	Coffee Shop	Pub	Grocery Store	Trail	Café	Newsagent	Indian Restaurant	Warehouse Store	Pharmacy	Italian Restaurant
3996	Sharoe Green	Coffee Shop	Pub	Grocery Store	Trail	Café	Newsagent	Indian Restaurant	Warehouse Store	Pharmacy	Italian Restaurant
3643	Greyfriars	Gym / Fitness Center	Pub	Italian Restaurant	Coffee Shop	Grocery Store	Indian Restaurant	Weight Loss Center	Gym	Sporting Goods Shop	Pharmacy

4.0 Data Analysis - Cluster Five

- It only contains postcodes in Preston Rural East
- There are limits venues near these postcodes because of their rural location
- The lack of venues may therefore lead to these postcodes being clustered together

	Neighbourhood	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
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5.0 Conclusion

- The property developer should purchase a property in Cluster Two.
- Cluster Two has diverse venues and is relatively close to the city centre
- It would appeal to the fictitious independent property developer's dual target market
- The other clusters either lack venues or have venues that may generate too much noise for guests who are working during the week
- The data analysis could be improved by including property prices and comparing the footfall for each of the areas