Comparing Neighbourhoods in London

Data description:

The objective of this project is to see if these 4 neighbourhoods are similar to each other and what venues I would be able to find in each of these areas. Foursquare data is used to find the 100 closest venues to each of the London locations below:

Name	Longitude	Latitude
PUTNEY	-0.21547	51.46456
CHANCERY LANE	-0.11214	51.51802
MAYFAIR	-0.14271	51.50745
HAMMERSMITH	-0.22814	51.49244

Chancery Lane and Mayfair are in the centre of Zone 1, Hammersmith is more West (zone 2) and Putney is more South West (border zone 3).

After extracting Foursquare data for the 4 areas, the neighbourhood data is combined and a list of 400 points is formed from the data.

Below is an extract of what the Foursquare data looks like:

	Unnamed: 0	name	categories	lat	lng
0	0	Catalyst Cafe	Coffee Shop	51.519705	-0.112052
1	1	Scarfes Bar	Hotel Bar	51.517813	-0.118184
2	2	Rosewood London	Hotel	51.517468	-0.117810
3	3	Apex Temple Court Hotel	Hotel	51.513738	-0.108878
4	4	The Hoxton Holborn	Hotel	51.517145	-0.122030

For each point, the area is added to the list of 400 entries as per the following example:

	Unnamed: 0	name	categories	lat	lng	area
95	95	The Ginger Pig	Butcher	51.454584	-0.139801	Putney
96	96	BVLGARI Hotel London	Hotel	51.501467	-0.163548	Putney
97	97	Shirley Sherwood Gallery	Art Gallery	51.474788	-0.292470	Putney
98	98	L'ETO Caffè	Café	51.498651	-0.156969	Putney
99	99	Mari Vanna	Russian Restaurant	51.501793	-0.162479	Putney

The 400 points are then ranked by most common categories. In this case, Hotels are the most common venue, followed by Parks and then Pizza places. With Pizza places in the top 3, no wonder these areas are my favourite!!

Theatres, Gardens and Café's also appear high up on the list. In total, there are 94 unique categories of locations.

	Unnamed: 0
categories	
Hotel	38
Park	24
Pizza Place	14
Theater	13
Garden	11
Café	11
Indian Restaurant	10
Coffee Shop	10
Cocktail Bar	10
Bookstore	9
Steakhouse	9
Gym / Fitness Center	8
Department Store	8
Ice Cream Shop	8
Art Museum	8
Japanese Restaurant	7
Movie Theater	7
Plaza	7
Art Gallery	7
Botanical Garden	6

Then the data is divided into the most common categories in each area:

	area	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	Chancery Lane	Hotel	Theater	Coffee Shop	Steakhouse	Cocktail Bar	Indian Restaurant	Sushi Restaurant	Pizza Place	Bakery	Art Museum
1	Hammersmith	Hotel	Park	Botanical Garden	Garden	Pizza Place	Japanese Restaurant	Breakfast Spot	Café	Ice Cream Shop	Science Museum
2	Mayfair	Hotel	Theater	Bookstore	Park	Steakhouse	Art Museum	Lounge	Pizza Place	Cocktail Bar	Department Store
3	Putney	Park	Café	Pizza Place	Coffee Shop	Japanese Restaurant	Garden	Hotel	Ice Cream Shop	Museum	Art Gallery

It can be seen that Chancery Lane, Hammersmith and Mayfair all have Hotels as the number 1 most common venue, but Putney only has this as the 7th most common venue.

Here we can already see that Putney is not too similar to the other neighbourhoods.

Hammersmith and Putney seem to have Parks quite high up on common venues, so this could be giving an indication of them being similar.

Further investigations will include plotting each area's points on a map, plotting the most common venues on a map, doing k-means to see if the 4 areas would fall into 2 separate categories and looking at a few box plots to further investigate similarities or differences.