Finding a suitable location for ‘Home from Home’

Shirley Ng - August 2020

1. Introduction

1.1 Background

In the past year, Hong Kong has appeared on the world's newspaper headlines more often than the past decade combined. Unprecedented police brutality and violent conflicts in the street have unfortunately become part of everyday life. People in this former vibrant metropolitan city fear the loss of freedoms. Following the Chinese government’s decision to impose a new National Security Law, the UK government has committed to open a new immigration route to British National (Overseas) passport holders in Hong Kong.

1.2 Problem

Despite the fact that many well-travelled Hong Kongers have been to London for holidays, it is still a challenge to learn everything about life in the UK for an uprooting move. There are numerous videos, social media posts, blogs and forums flowing with varying subjective opinions and information of mixed quality.

1.3 Interest

Selecting a suitable location to settle down in a 'home from home' is an important and complex decision. There is a need to analyse more recent and widely trusted data sources to provide an objective data-led view to help them make an informed decision. This project will cover these criteria: a) top common venues, b) property price, c) crime rate, d) employment rate and e) education.

2. Data acquisition and cleaning

2.1 Data sources

This project analyses 42 cities in England that have data across all criteria. Data from Four Square, government sources like Office of National Statistics and Department of Education as well as some websites are used.

List of data sources

a) List of English cities and the coordinates: https://www.townscountiespostcodes.co.uk/cities-in-england/ and https://www.latlong.net/category/cities-235-15.html

b) Top 10 most common venues: data of up to 100 venues within 500m radius of each city are extracted from Four Square data for analysis.

c) Property price: The Annual Price Change by Local Authority for England data is used to get property price in January 2020: https://www.gov.uk/government/publications/uk-house-price-index-england-january-2020/uk-house-price-index-england-january-2020

d) Crime rate: Recorded crime data by Community Safety Partnership area, year ending March 2020 is used: https://www.ons.gov.uk/peoplepopulationandcommunity/crimeandjustice/datasets/recordedcrimedatabycommunitysafetypartnershiparea

e) Employment rate: The employment rate during January to December 2019 from nomis that provides official labour market is used: https://www.nomisweb.co.uk/query/construct/submit.asp?menuopt=201&subcomp=

f) Education: To compare school performance, the 2018-2019 Final Key Stage 2 percentage of pupils meeting expected standard and Final Key Stage 4 Attainment 8 score are used. https://www.compare-school-performance.service.gov.uk/download-data?currentstep=datatypes&regiontype=all&la=0&downloadYear=2018-2019&datatypes=ks2&datatypes=ks4

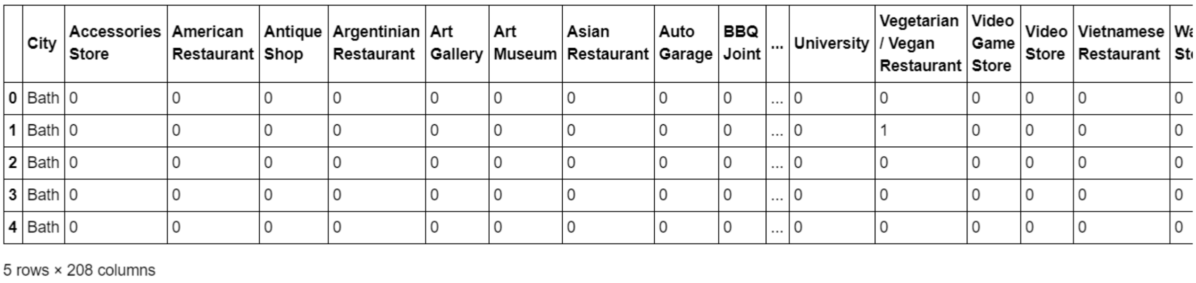
2.2 Data cleaning

Data downloaded and scraped from webpages as listed above. Some of the data are processed by Microsoft Excel VLOOKUP function to extract data of relevant cities. Since several data sources are based on local authority as unit instead of city name, data cleaning involves amending some of the naming like ‘Kingston upon Hull’ to ‘Hull’. The list started with 51 cities but eventually trimmed down to 42 cities to only keep those that have complete data across all criteria.

3. Methodology

K-means cluster segmentation is used to group the 42 cities into 5 clusters.

The analysis starts with Four Square data that up to 100 venues within 500m radius of each city are extracted. One Hot Encoding is used to convert venue category data into binary data.

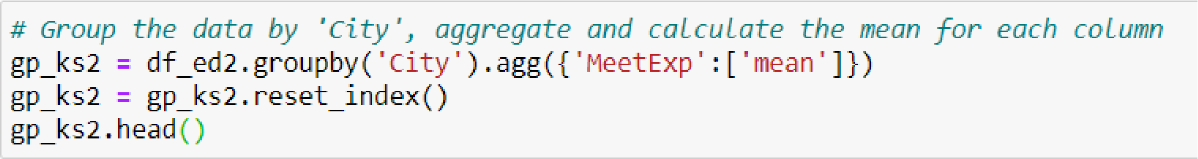


	City	Accessories Store	American Restaurant	Antique Shop	Argentinian Restaurant	Art Gallery	Art Museum	Asian Restaurant	Auto Garage	BBQ Joint	...	University	Vegetarian / Vegan Restaurant	Video Game Store	Video Store	Vietnamese Restaurant	Wa St
0	Bath	0	0	0	0	0	0	0	0	0	...	0	0	0	0	0	0
1	Bath	0	0	0	0	0	0	0	0	0	...	0	1	0	0	0	0
2	Bath	0	0	0	0	0	0	0	0	0	...	0	0	0	0	0	0
3	Bath	0	0	0	0	0	0	0	0	0	...	0	0	0	0	0	0
4	Bath	0	0	0	0	0	0	0	0	0	...	0	0	0	0	0	0

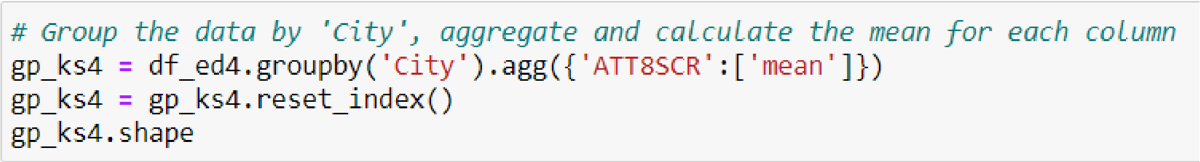
5 rows × 208 columns

Property price index of each city is relatively straightforward. Crime and employment data have to take each city’s varying population into account, so recorded crime per 1,000 population/household and employment rate are used.

Education is relatively tricky because the widely referenced Ofsted ratings only have data by region/local authority that don't match well with the English city list. Also, there is news report questioning its reliability.[1] For Key Stage 2 performance, percentage of pupils meeting expected standard is used to compare primary school performance. For Key Stage 4 performance, Attainment 8 score is used to compare secondary school performance.

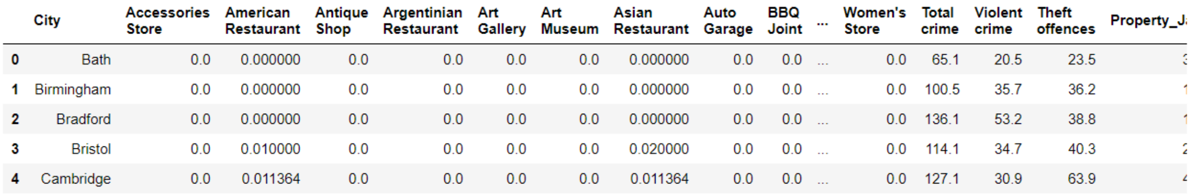


```
# Group the data by 'City', aggregate and calculate the mean for each column
gp_ks2 = df_ed2.groupby('City').agg({'MeetExp':['mean']})
gp_ks2 = gp_ks2.reset_index()
gp_ks2.head()
```



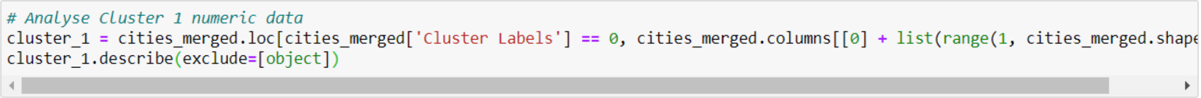
```
# Group the data by 'City', aggregate and calculate the mean for each column
gp_ks4 = df_ed4.groupby('City').agg({'ATT8SCR':['mean']})
gp_ks4 = gp_ks4.reset_index()
gp_ks4.shape
```

The One Hot Encoding result of nearby venues are combined with the above data regarding property price, crime rate, employment rate and education into one table for running k-means cluster segmentation.

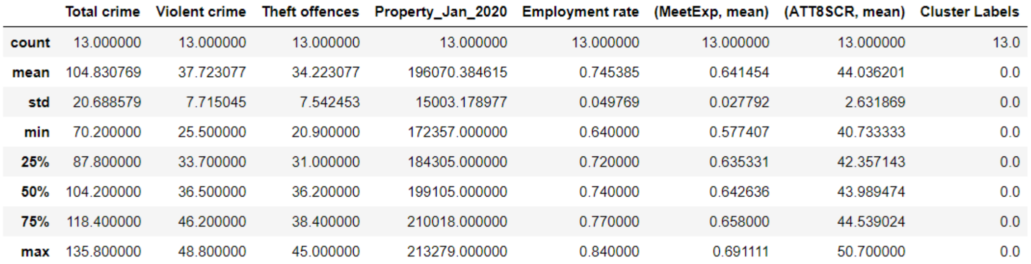


	City	Accessories Store	American Restaurant	Antique Shop	Argentinian Restaurant	Art Gallery	Art Museum	Asian Restaurant	Auto Garage	BBQ Joint	...	Women's Store	Total crime	Violent crime	Theft offences	Property_J
0	Bath	0.0	0.000000	0.0	0.0	0.0	0.0	0.000000	0.0	0.0	...	0.0	65.1	20.5	23.5	3
1	Birmingham	0.0	0.000000	0.0	0.0	0.0	0.0	0.000000	0.0	0.0	...	0.0	100.5	35.7	36.2	1
2	Bradford	0.0	0.000000	0.0	0.0	0.0	0.0	0.000000	0.0	0.0	...	0.0	136.1	53.2	38.8	1
3	Bristol	0.0	0.010000	0.0	0.0	0.0	0.0	0.020000	0.0	0.0	...	0.0	114.1	34.7	40.3	2
4	Cambridge	0.0	0.011364	0.0	0.0	0.0	0.0	0.011364	0.0	0.0	...	0.0	127.1	30.9	63.9	4

Each cluster's numeric data are analysed using the **.describe(exclude=[object])** function.



```
# Analyse Cluster 1 numeric data
cluster_1 = cities_merged.loc[cities_merged['Cluster Labels'] == 0, cities_merged.columns[[0] + list(range(1, cities_merged.shape
cluster_1.describe(exclude=[object])
```

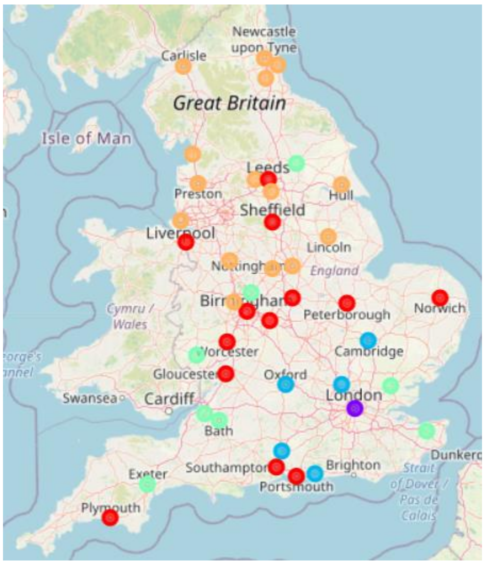


	Total crime	Violent crime	Theft offences	Property_Jan_2020	Employment rate	(MeetExp, mean)	(ATT8SCR, mean)	Cluster Labels
count	13.000000	13.000000	13.000000	13.000000	13.000000	13.000000	13.000000	13.0
mean	104.830769	37.723077	34.223077	196070.384615	0.745385	0.641454	44.036201	0.0
std	20.688579	7.715045	7.542453	15003.178977	0.049769	0.027792	2.631869	0.0
min	70.200000	25.500000	20.900000	172357.000000	0.640000	0.577407	40.733333	0.0
25%	87.800000	33.700000	31.000000	184305.000000	0.720000	0.635331	42.357143	0.0
50%	104.200000	36.500000	36.200000	199105.000000	0.740000	0.642636	43.989474	0.0
75%	118.400000	46.200000	38.400000	210018.000000	0.770000	0.658000	44.539024	0.0
max	135.800000	48.800000	45.000000	213279.000000	0.840000	0.691111	50.700000	0.0

[1] BBC News "Ofsted inspection grades challenged" https://www.bbc.co.uk/news/education-47816631

4. Results

42 English cities are segmented into 5 clusters as shown in the map and list below:



Cluster 1: Birmingham, Chester, Coventry, Gloucester, Leeds, Leicester, Norwich, Peterborough, Plymouth, Portsmouth, Sheffield, Southampton, Worcester.

Cluster 2: London.

Cluster 3: Cambridge, Chichester, Oxford, St Albans, Winchester.

Cluster 4: Bath, Bristol, Canterbury, Chelmsford, Exeter, Hereford, Lichfield, York.

Cluster 5: Bradford, Carlisle, Derby, Durham, Hull, Lancaster, Lincoln, Liverpool, Newcastle upon Tyne, Nottingham, Preston, Stoke-on-Trent, Sunderland, Wakefield, Wolverhampton.

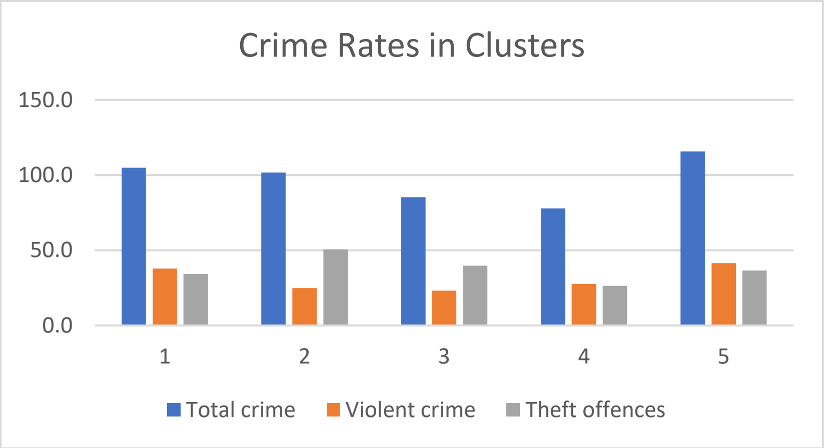
See Appendix section for more details about each cluster.

5. Discussion

5.1 Safety

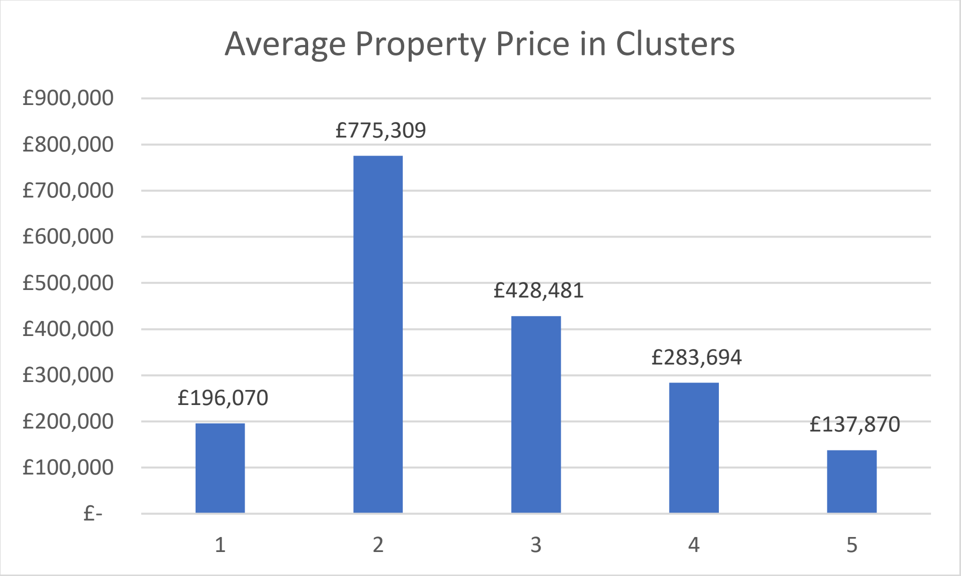
Crime statistics used in this project is based on recorded crime per 1,000 population/ household. Clusters have mean total crime below 100 are clusters 4 and 3. The lowest total crime recorded cities are Hereford (56) and Lichfield (57), where both are inside cluster 4. The highest total crime recorded cities are Hull (157) and Lincoln (150), where both are inside cluster 5.

Aligning with the ranking of total crime, clusters 5 and 1 are also top 2 in violent crime. Cluster 2 is the third in total crime, but it is top in theft offences; followed by cluster 3 that is the fourth in total crime but second in theft offences.

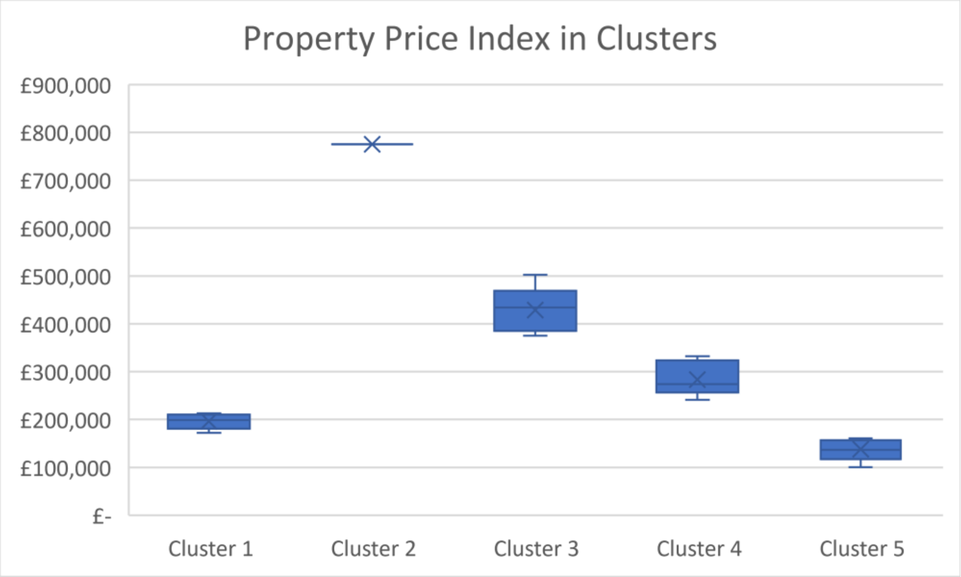


5.2 Property Price

Property price index in London (cluster 2) at £775,309 is over 5 times higher than the average of cluster 5, which has the lowest property price index at £137,870; and over 7 times higher than Durham, which is a city with the lowest property price index at £100,643.

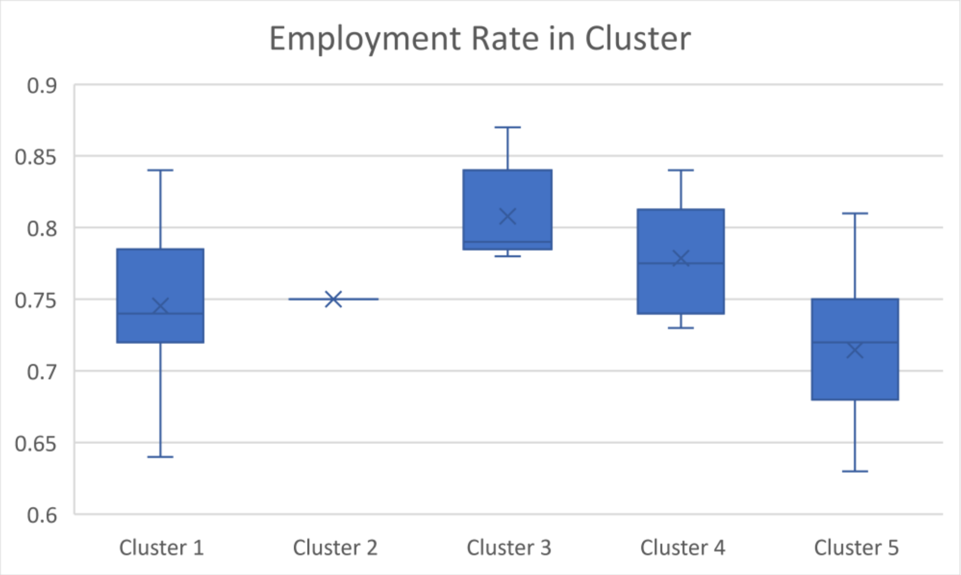


The box and whisker plot shows the price range in clusters 3 and 4 are wider than the other clusters. Property price index range from £375k in Chichester to £502k in St. Albans within cluster 3; and range from £241k in Hereford to £332k in Chelmsford within cluster 4.



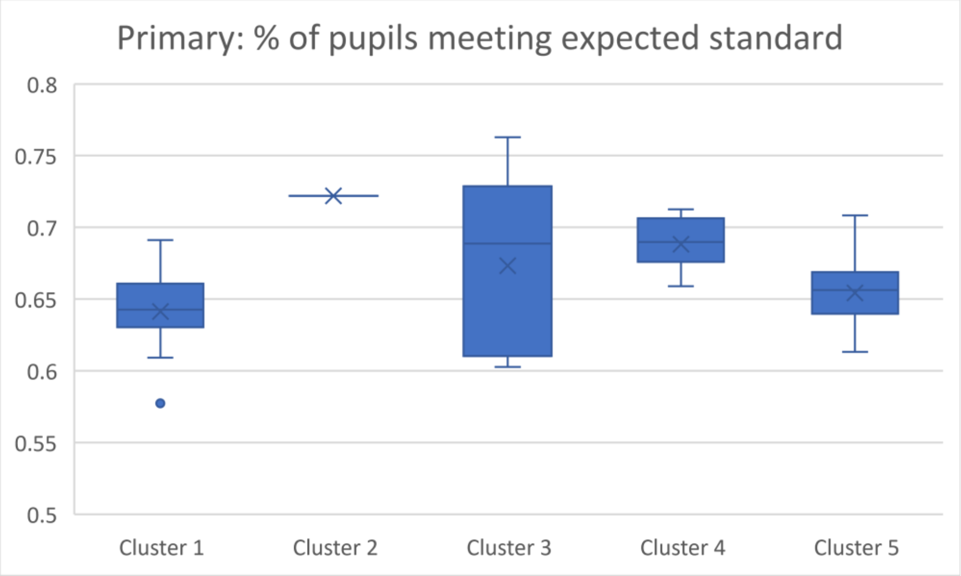
5.3 Employment Rate

Clusters 3 and 4 have the top 2 employment rate at 81% and 78%; while cluster 5 has the lowest employment rate at 71%. City with the highest employment rate is Chichester at 87% in cluster 3 and the lowest employment rate is Bradford at 63% in cluster 5.

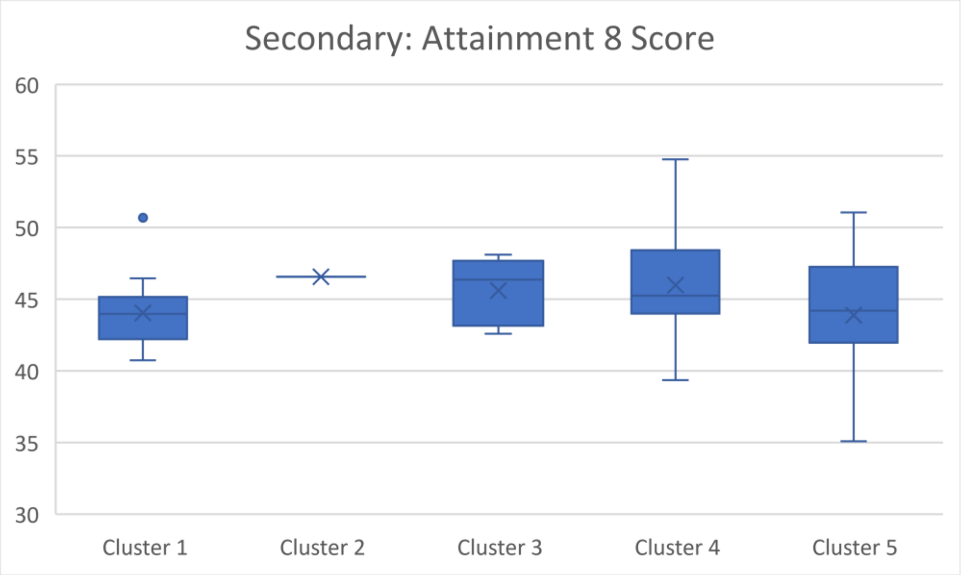


5.4 Education

Looking at the cluster’s mean primary education percentage of pupils meeting expected standard, it ranges from 64% in cluster 1 to 72% in cluster 2. The box and whisker plot reveal a huge disparity in cluster 3 with a mean value of 67% but ranging from Chichester at 60% to Winchester at 76%. The outlier in cluster 1 showing 57% is Portsmouth.



For secondary education performance, Attainment 8 score is used. The cluster’s mean values range from 43.9 in cluster 5 to 46.6 in cluster 2. Once again, the box and whisker plot reveal the disparity in clusters 4 that score range from 39.4 in Bath to 54.8 in Chelmsford. Cluster 5 has equally long whisker that scores range from the lowest 35.1 in Newcastle upon Tyne to second highest at 51.1 in Lancaster. Gloucester is an outlier in cluster 1 with 50.7.



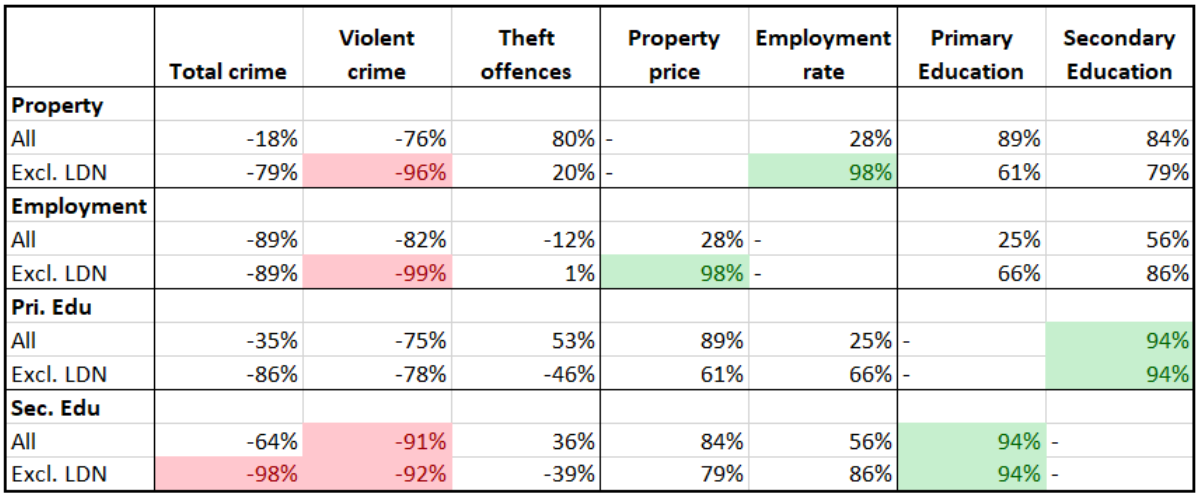
5.5 Top 10 Most Common Venues

Interesting to see ‘Platform’ from train station being the first most common venue in Peterborough and Plymouth within cluster 1. Cluster 2 is London that has ‘Theatre’ as its first most common venue. Pub, coffee shop and café are the first most common venue across clusters 3 and 4. Cluster 5 has 15 cities in it is the biggest, which also has a more diverse profile in its first most common venue. Apart from the popular pub and coffee shop, it has clothing store, supermarket, platform, hotel, discount store and Indian restaurant taking up the top most common venue.

6. Conclusion

The k-means cluster segmentation confirms that London is ‘one of a kind’. Therefore, the correlation analysis is performed across all clusters, as well as excluding London to reveal any correlations hidden by the unique London data.

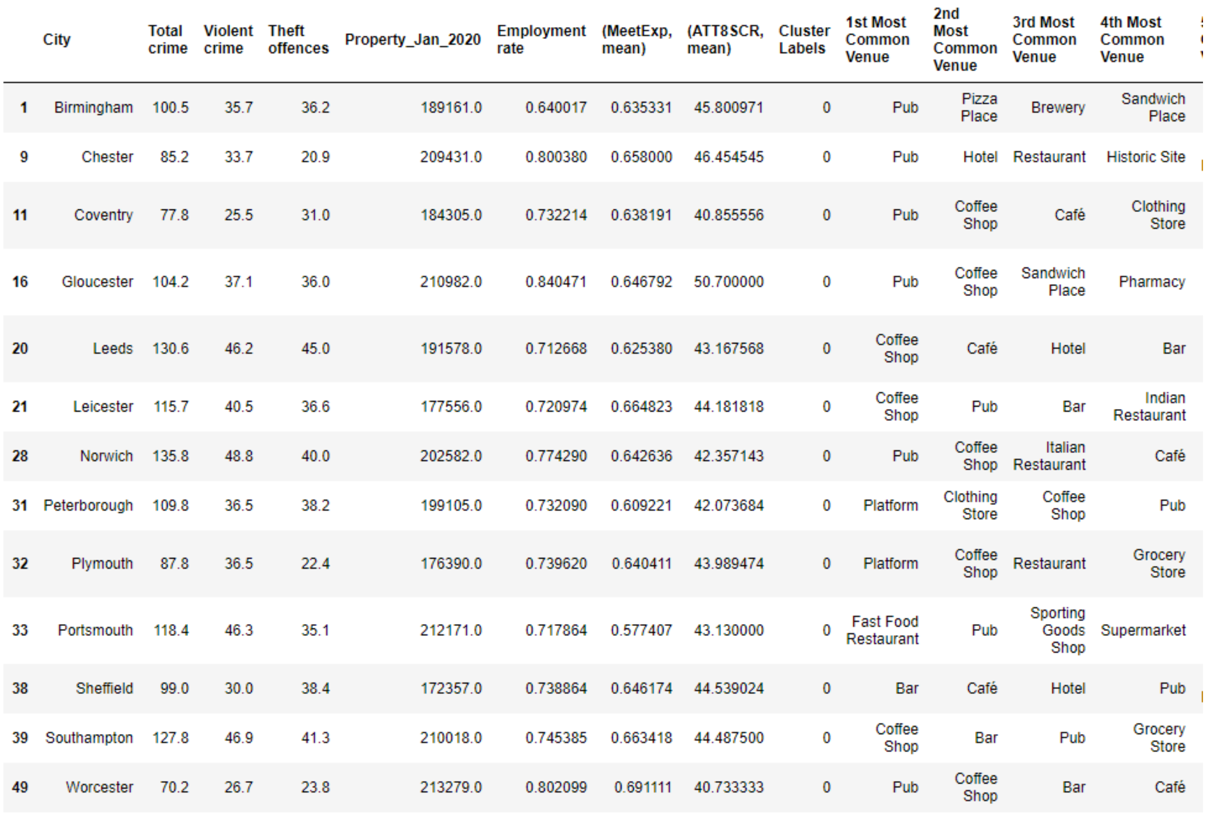
As shown in the table below, high violent crime is a strong predictor for low property price, low employment rate and lower secondary school performance. In contrast, employment rate and property price index are positively correlated outside of London. No surprise in the strong positive correlation between primary and secondary school performance as well.



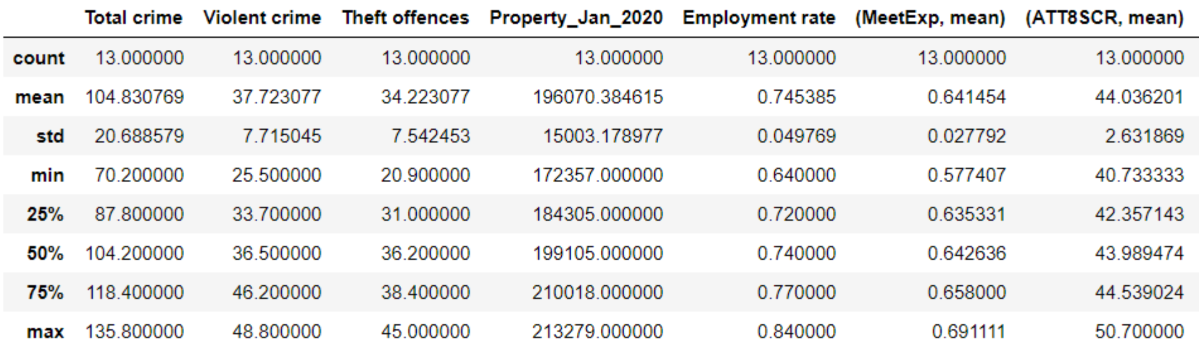
	Total crime	Violent crime	Theft offences	Property price	Employment rate	Primary Education	Secondary Education
Property							
All	-18%	-76%	80%	-	28%	89%	84%
Excl. LDN	-79%	-96%	20%	-	98%	61%	79%
Employment							
All	-89%	-82%	-12%	28%	-	25%	56%
Excl. LDN	-89%	-99%	1%	98%	-	66%	86%
Pri. Edu							
All	-35%	-75%	53%	89%	25%	-	94%
Excl. LDN	-86%	-78%	-46%	61%	66%	-	94%
Sec. Edu							
All	-64%	-91%	36%	84%	56%	94%	-
Excl. LDN	-98%	-92%	-39%	79%	86%	94%	-

Appendix – Clusters numeric data analysis

Cluster 1: Birmingham, Chester, Coventry, Gloucester, Leeds, Leicester, Norwich, Peterborough, Plymouth, Portsmouth, Sheffield, Southampton, Worcester.

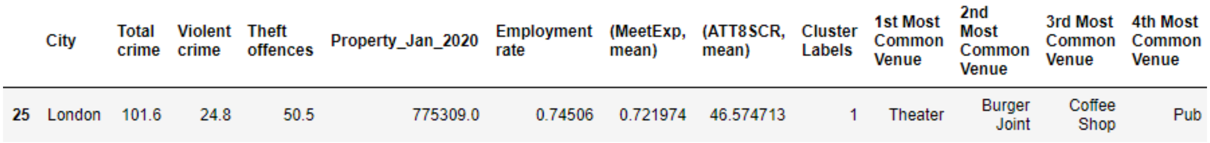


	City	Total crime	Violent crime	Theft offences	Property_Jan_2020	Employment rate	(MeetExp, mean)	(ATT8SCR, mean)	Cluster Labels	1st Most Common Venue	2nd Most Common Venue	3rd Most Common Venue	4th Most Common Venue
1	Birmingham	100.5	35.7	36.2	189161.0	0.640017	0.635331	45.800971	0	Pub	Pizza Place	Brewery	Sandwich Place
9	Chester	85.2	33.7	20.9	209431.0	0.800380	0.658000	46.454545	0	Pub	Hotel	Restaurant	Historic Site
11	Coventry	77.8	25.5	31.0	184305.0	0.732214	0.638191	40.855556	0	Pub	Coffee Shop	Café	Clothing Store
16	Gloucester	104.2	37.1	36.0	210982.0	0.840471	0.646792	50.700000	0	Pub	Coffee Shop	Sandwich Place	Pharmacy
20	Leeds	130.6	46.2	45.0	191578.0	0.712668	0.625380	43.167568	0	Coffee Shop	Café	Hotel	Bar
21	Leicester	115.7	40.5	36.6	177556.0	0.720974	0.664823	44.181818	0	Coffee Shop	Pub	Bar	Indian Restaurant
28	Norwich	135.8	48.8	40.0	202582.0	0.774290	0.642636	42.357143	0	Pub	Coffee Shop	Italian Restaurant	Café
31	Peterborough	109.8	36.5	38.2	199105.0	0.732090	0.609221	42.073684	0	Platform	Clothing Store	Coffee Shop	Pub
32	Plymouth	87.8	36.5	22.4	176390.0	0.739620	0.640411	43.989474	0	Platform	Coffee Shop	Restaurant	Grocery Store
33	Portsmouth	118.4	46.3	35.1	212171.0	0.717864	0.577407	43.130000	0	Fast Food Restaurant	Pub	Sporting Goods Shop	Supermarket
38	Sheffield	99.0	30.0	38.4	172357.0	0.738864	0.646174	44.539024	0	Bar	Café	Hotel	Pub
39	Southampton	127.8	46.9	41.3	210018.0	0.745385	0.663418	44.487500	0	Coffee Shop	Bar	Pub	Grocery Store
49	Worcester	70.2	26.7	23.8	213279.0	0.802099	0.691111	40.733333	0	Pub	Coffee Shop	Bar	Café



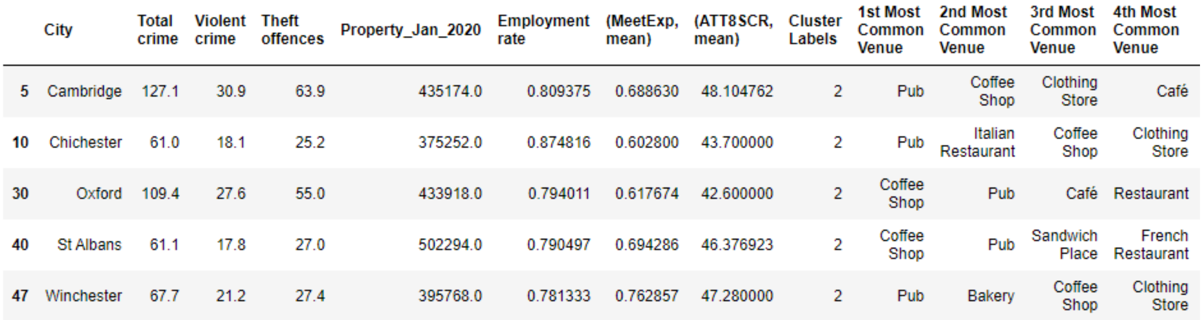
	Total crime	Violent crime	Theft offences	Property_Jan_2020	Employment rate	(MeetExp, mean)	(ATT8SCR, mean)
count	13.000000	13.000000	13.000000	13.000000	13.000000	13.000000	13.000000
mean	104.830769	37.723077	34.223077	196070.384615	0.745385	0.641454	44.036201
std	20.688579	7.715045	7.542453	15003.178977	0.049769	0.027792	2.631869
min	70.200000	25.500000	20.900000	172357.000000	0.640000	0.577407	40.733333
25%	87.800000	33.700000	31.000000	184305.000000	0.720000	0.635331	42.357143
50%	104.200000	36.500000	36.200000	199105.000000	0.740000	0.642636	43.989474
75%	118.400000	46.200000	38.400000	210018.000000	0.770000	0.658000	44.539024
max	135.800000	48.800000	45.000000	213279.000000	0.840000	0.691111	50.700000

Cluster 2: London. Since there is only one city in this cluster, no analysis is required.

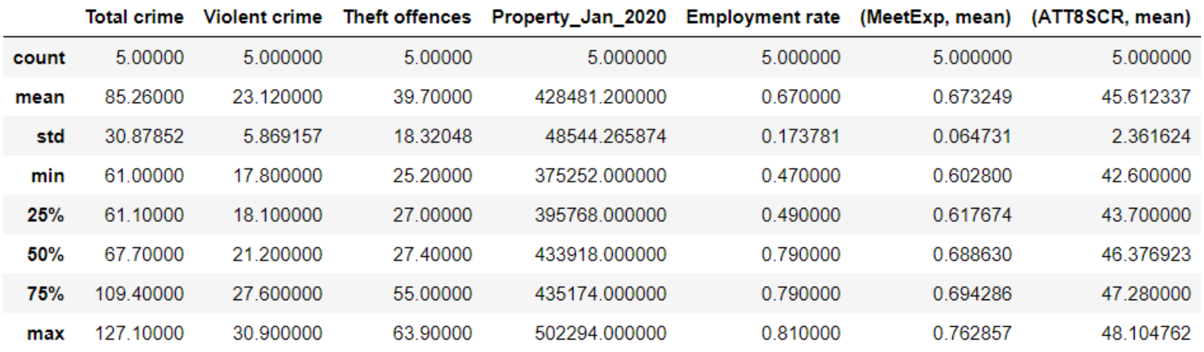


	City	Total crime	Violent crime	Theft offences	Property_Jan_2020	Employment rate	(MeetExp, mean)	(ATT8SCR, mean)	Cluster Labels	1st Most Common Venue	2nd Most Common Venue	3rd Most Common Venue	4th Most Common Venue
25	London	101.6	24.8	50.5	775309.0	0.74506	0.721974	46.574713	1	Theater	Burger Joint	Coffee Shop	Pub

Cluster 3: Cambridge, Chichester, Oxford, St Albans, Winchester.

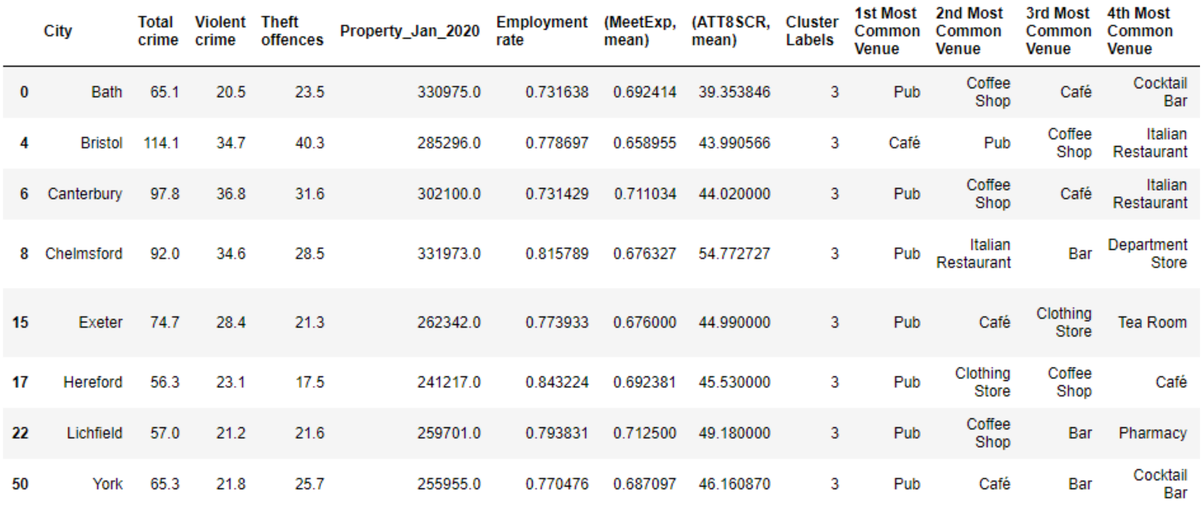


	City	Total crime	Violent crime	Theft offences	Property_Jan_2020	Employment rate	(MeetExp, mean)	(ATT8SCR, mean)	Cluster Labels	1st Most Common Venue	2nd Most Common Venue	3rd Most Common Venue	4th Most Common Venue
5	Cambridge	127.1	30.9	63.9	435174.0	0.809375	0.688630	48.104762	2	Pub	Coffee Shop	Clothing Store	Café
10	Chichester	61.0	18.1	25.2	375252.0	0.874816	0.602800	43.700000	2	Pub	Italian Restaurant	Coffee Shop	Clothing Store
30	Oxford	109.4	27.6	55.0	433918.0	0.794011	0.617674	42.600000	2	Coffee Shop	Pub	Café	Restaurant
40	St Albans	61.1	17.8	27.0	502294.0	0.790497	0.694286	46.376923	2	Coffee Shop	Pub	Sandwich Place	French Restaurant
47	Winchester	67.7	21.2	27.4	395768.0	0.781333	0.762857	47.280000	2	Pub	Bakery	Coffee Shop	Clothing Store

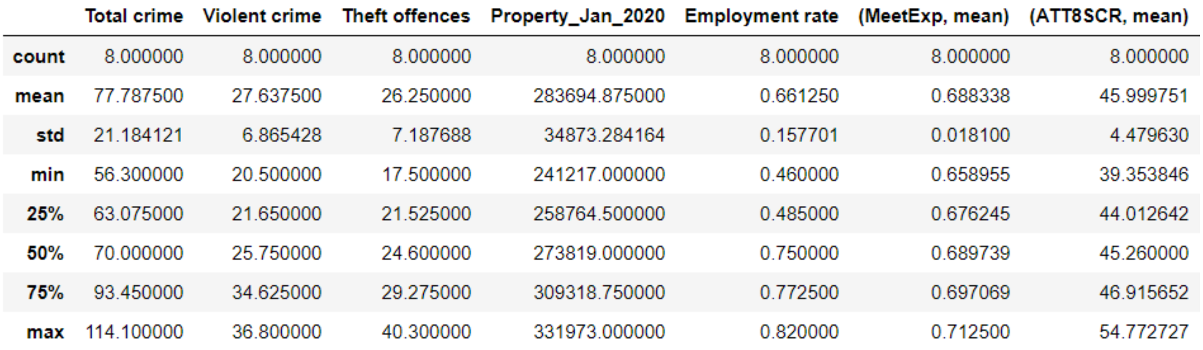


	Total crime	Violent crime	Theft offences	Property_Jan_2020	Employment rate	(MeetExp, mean)	(ATT8SCR, mean)
count	5.00000	5.000000	5.00000	5.000000	5.000000	5.000000	5.000000
mean	85.26000	23.120000	39.70000	428481.200000	0.670000	0.673249	45.612337
std	30.87852	5.869157	18.32048	48544.265874	0.173781	0.064731	2.361624
min	61.00000	17.800000	25.20000	375252.000000	0.470000	0.602800	42.600000
25%	61.10000	18.100000	27.00000	395768.000000	0.490000	0.617674	43.700000
50%	67.70000	21.200000	27.40000	433918.000000	0.790000	0.688630	46.376923
75%	109.40000	27.600000	55.00000	435174.000000	0.790000	0.694286	47.280000
max	127.10000	30.900000	63.90000	502294.000000	0.810000	0.762857	48.104762

Cluster 4: Bath, Bristol, Canterbury, Chelmsford, Exeter, Hereford, Lichfield, York.

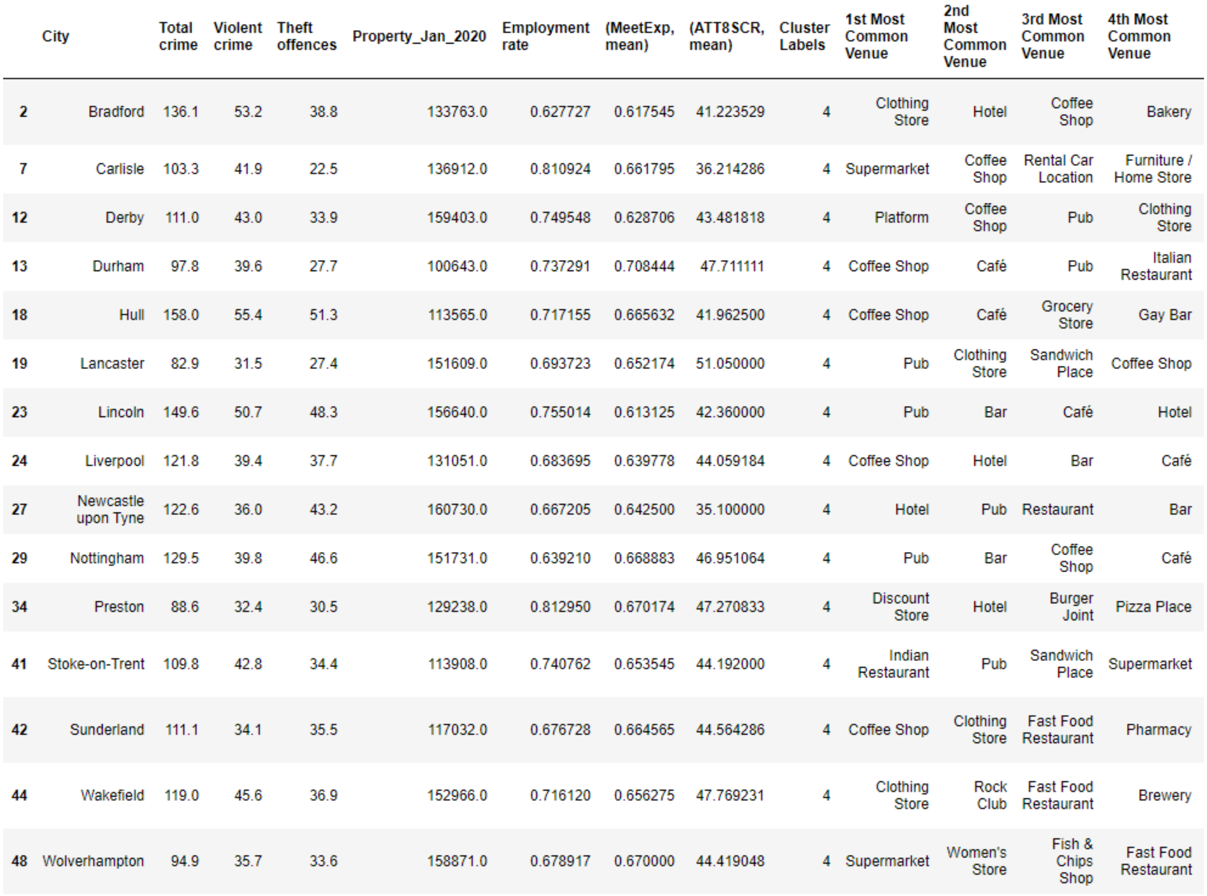


	City	Total crime	Violent crime	Theft offences	Property_Jan_2020	Employment rate	(MeetExp, mean)	(ATT8SCR, mean)	Cluster Labels	1st Most Common Venue	2nd Most Common Venue	3rd Most Common Venue	4th Most Common Venue
0	Bath	65.1	20.5	23.5	330975.0	0.731638	0.692414	39.353846	3	Pub	Coffee Shop	Café	Cocktail Bar
4	Bristol	114.1	34.7	40.3	285296.0	0.778697	0.658955	43.990566	3	Café	Pub	Coffee Shop	Italian Restaurant
6	Canterbury	97.8	36.8	31.6	302100.0	0.731429	0.711034	44.020000	3	Pub	Coffee Shop	Café	Italian Restaurant
8	Chelmsford	92.0	34.6	28.5	331973.0	0.815789	0.676327	54.772727	3	Pub	Italian Restaurant	Bar	Department Store
15	Exeter	74.7	28.4	21.3	262342.0	0.773933	0.676000	44.990000	3	Pub	Café	Clothing Store	Tea Room
17	Hereford	56.3	23.1	17.5	241217.0	0.843224	0.692381	45.530000	3	Pub	Clothing Store	Coffee Shop	Café
22	Lichfield	57.0	21.2	21.6	259701.0	0.793831	0.712500	49.180000	3	Pub	Coffee Shop	Bar	Pharmacy
50	York	65.3	21.8	25.7	255955.0	0.770476	0.687097	46.160870	3	Pub	Café	Bar	Cocktail Bar

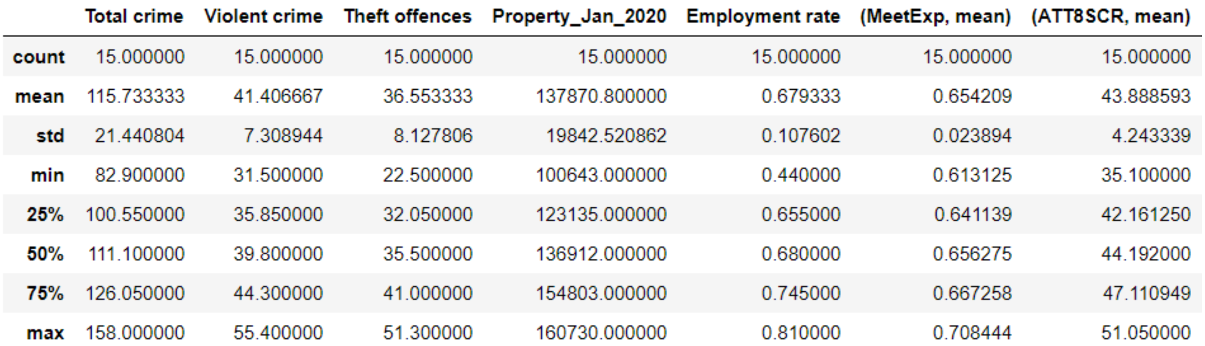


	Total crime	Violent crime	Theft offences	Property_Jan_2020	Employment rate	(MeetExp, mean)	(ATT8SCR, mean)
count	8.000000	8.000000	8.000000	8.000000	8.000000	8.000000	8.000000
mean	77.787500	27.637500	26.250000	283694.875000	0.661250	0.688338	45.999751
std	21.184121	6.865428	7.187688	34873.284164	0.157701	0.018100	4.479630
min	56.300000	20.500000	17.500000	241217.000000	0.460000	0.658955	39.353846
25%	63.075000	21.650000	21.525000	258764.500000	0.485000	0.676245	44.012642
50%	70.000000	25.750000	24.600000	273819.000000	0.750000	0.689739	45.260000
75%	93.450000	34.625000	29.275000	309318.750000	0.772500	0.697069	46.915652
max	114.100000	36.800000	40.300000	331973.000000	0.820000	0.712500	54.772727

Cluster 5: Bradford, Carlisle, Derby, Durham, Hull, Lancaster, Lincoln, Liverpool, Newcastle upon Tyne, Nottingham, Preston, Stoke-on-Trent, Sunderland, Wakefield, Wolverhampton.



	City	Total crime	Violent crime	Theft offences	Property_Jan_2020	Employment rate	(MeetExp, mean)	(ATT8SCR, mean)	Cluster Labels	1st Most Common Venue	2nd Most Common Venue	3rd Most Common Venue	4th Most Common Venue
2	Bradford	136.1	53.2	38.8	133763.0	0.627727	0.617545	41.223529	4	Clothing Store	Hotel	Coffee Shop	Bakery
7	Carlisle	103.3	41.9	22.5	136912.0	0.810924	0.661795	36.214286	4	Supermarket	Coffee Shop	Rental Car Location	Furniture / Home Store
12	Derby	111.0	43.0	33.9	159403.0	0.749548	0.628706	43.481818	4	Platform	Coffee Shop	Pub	Clothing Store
13	Durham	97.8	39.6	27.7	100643.0	0.737291	0.708444	47.711111	4	Coffee Shop	Café	Pub	Italian Restaurant
18	Hull	158.0	55.4	51.3	113565.0	0.717155	0.665632	41.962500	4	Coffee Shop	Café	Grocery Store	Gay Bar
19	Lancaster	82.9	31.5	27.4	151609.0	0.693723	0.652174	51.050000	4	Pub	Clothing Store	Sandwich Place	Coffee Shop
23	Lincoln	149.6	50.7	48.3	156640.0	0.755014	0.613125	42.360000	4	Pub	Bar	Café	Hotel
24	Liverpool	121.8	39.4	37.7	131051.0	0.683695	0.639778	44.059184	4	Coffee Shop	Hotel	Bar	Café
27	Newcastle upon Tyne	122.6	36.0	43.2	160730.0	0.667205	0.642500	35.100000	4	Hotel	Pub	Restaurant	Bar
29	Nottingham	129.5	39.8	46.6	151731.0	0.639210	0.668883	46.951064	4	Pub	Bar	Coffee Shop	Café
34	Preston	88.6	32.4	30.5	129238.0	0.812950	0.670174	47.270833	4	Discount Store	Hotel	Burger Joint	Pizza Place
41	Stoke-on-Trent	109.8	42.8	34.4	113908.0	0.740762	0.653545	44.192000	4	Indian Restaurant	Pub	Sandwich Place	Supermarket
42	Sunderland	111.1	34.1	35.5	117032.0	0.676728	0.664565	44.564286	4	Coffee Shop	Clothing Store	Fast Food Restaurant	Pharmacy
44	Wakefield	119.0	45.6	36.9	152966.0	0.716120	0.656275	47.769231	4	Clothing Store	Rock Club	Fast Food Restaurant	Brewery
48	Wolverhampton	94.9	35.7	33.6	158871.0	0.678917	0.670000	44.419048	4	Supermarket	Women's Store	Fish & Chips Shop	Fast Food Restaurant



	Total crime	Violent crime	Theft offences	Property_Jan_2020	Employment rate	(MeetExp, mean)	(ATT8SCR, mean)
count	15.000000	15.000000	15.000000	15.000000	15.000000	15.000000	15.000000
mean	115.733333	41.406667	36.553333	137870.800000	0.679333	0.654209	43.888593
std	21.440804	7.308944	8.127806	19842.520862	0.107602	0.023894	4.243339
min	82.900000	31.500000	22.500000	100643.000000	0.440000	0.613125	35.100000
25%	100.550000	35.850000	32.050000	123135.000000	0.655000	0.641139	42.161250
50%	111.100000	39.800000	35.500000	136912.000000	0.680000	0.656275	44.192000
75%	126.050000	44.300000	41.000000	154803.000000	0.745000	0.667258	47.110949
max	158.000000	55.400000	51.300000	160730.000000	0.810000	0.708444	51.050000