Retail concentration – Deliberate or not?

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Summary

This study investigates the notion of deliberate concentration and targeting of deprived neighbourhoods by alleged anti-social retailers (AASRs) in England at neighbourhood geography. To measure deprivation, this paper adopts the principles of geodemographics to build an area classification using variables extracted from the 2011 UK Census Data. It thereafter compares the location of both AASRs and food and grocery retailers (FGRs) across the different classification to understand the similarities and differences in their location preferences in order to investigate the notion of targeting ascribed to these retailers. Results reveal complex patterns and emphasise the need for micro-scale analysis.

Keywords: gambling, high yield interest lenders, rent-to-own, food and grocery retailers, geodemographics

1. Introduction

The environmental landscape in deprived areas has received attention from scholars and policy makers (Wardle et al., 2014; Barth et al., 2015). These studies unearthed a disproportionate concentration of gambling, fringe banks, high yield interest lenders and rent-to-own retailers (which this paper refers to as "alleged anti-social retailers (AASRs)" due to the nature of their services) in deprived communities. Studies attributed the patterns to a deliberate attempt to target vulnerable populations (Stegman and Faris, 2003; Portas, 2011). Unfortunately, these AASRs have been linked to serious consequences (Graves, 2003; Wheeler, 2006). Therefore, this research seeks to investigate the notion of deliberate targeting of AASRs by carrying out a comparative analysis of the location of these AASRs and socio-economic deprivation with food and grocery retailers (FGRs), a more ubiquitous retail group.

2. Methods

A recent study (Adeniyi et al., 2019) examined the notion of deliberate targeting by carrying out a comparative analysis of AASRs and FGRs across England. This study advances existing literature by investigating three different cities across England. Research show that geodemographics can be adopted to delineate areas based on health characteristics (Dedman et al., 2006; Shelton et al., 2006). Hence, this study developed a tailored geodemographic classification in line with retail demand using UK 2011 Census. Although, there is an official

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Output Area Classification (Vickers and Reeves, 2006), this is a multipurpose classification similar to the Index of Multiple Deprivation (IMD). Hence, the need for a more tailored approach. This study thereby extends existing literatures that adopted the IMD (Wardle et al., 2014; Adeniyi et al., 2020). The classification was thereafter validated and then compared to the patterns of AASRs and FGRs. The cities selected for this study are Leeds, Nottingham[2] and Bristol because they are classified as Core City Group (Core Cities, 2006) and represent a North, Midland and South divide.

2.1 Data

Table 1 shows the data and sources for this paper. Previous research identified variables such as housing tenure, car ownership, age, family composition, ethnicity, educational qualifications and occupational status as drivers of deprivation (Bradshaw et al., 2004). Not only that, these socio-economic characteristics are also determinants of AASRs (Graves, 2003; Burkey and Simkins, 2004; Wheeler, 2006; Robitaille and Herjean, 2008) as well as FGR locations (Smoyer-Tomic et al., 2008; Lu and Qui, 2015; Bower at al., 2014). Therefore, these variables were selected from the UK 2011Census Data.

Table 1 Data and sources

	Data	Sources
1	Gambling Outlets (September 2015)	Gambling Commission, UK
2	Payday Loans, Pawn Brokers, Rent to Own outlets (October 2016)	Payday Loans, RTO Retailers websites
3	Major food and grocery retailers (April 2016)	Geolytix limited (www.geolytix.com)
4	Socio-economic characteristics	Census Data 2011 – Official Labour market Statistics (NOMIS)
5	English Indices of Multiple Deprivation Data (IMD) 2015	Ministry of Housing, Communities & Local Government.
6	Boundary Data LSOA, Wards and boundary outlines for Leeds, Nottingham, Rushcliffe, Broxtowe, Leeds	UK Data Service (https://borders.ukdataservice.ac.uk/)

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[2] The findings for Nottingham City were not comparable to other cities and no significant relations with key variables from literature review. An in-depth examination of the Nottingham situation revealed that out of the 182 LSOAs, 90% are in decile 1 – 4, the most deprived deciles. This very high skewness towards deprivation was attributed to its tightly drawn borders with its affluent suburbs not included in its boundaries (Punter, 2009; Porter and Smith, 2013; Nottingham City Council, 2018). This was corrected by including 2 of its suburbs Broxtowe and Rushcliffe in the analysis. Hence, Nottingham refers to LSOAs in Nottingham, Rushcliffe and Broxtowe in this paper.

3. Area Classification

The K-means clustering technique was adopted for the classification (see Harris et al., 2005; Vickers and Reeves, 2007; Burns, 2017 for details). Some variables were merged together to improve overall variable representation e.g. never worked and long-term unemployed persons. Table 2 shows the seven selected variables and reason for their selection.

Table 2 Selected variables and the reason for their selection

Variable	Reason for Selection/
Private Renters	Represents housing tenure in the classification. Housing is also an important driver of deprivation based on evidence from literature review
Black	Very important ethnic minority in relation to socio-economic deprivation in the UK and demand for AASRs and evidence from review of literature
No qualifications	Has relationship with AASRs and very strong evidence from review of the literature. Also has a strong link to demand for AASRs
Fulltime Students	Very important variable with a good representation of young people and good variation across the study areas
No Car	Strong correlation with AASRs, a proxy for low income which has very strong evidence from review of literature.
Managers and Professional	A good indicator of high status and affluence and relatively high education
Never Worked/Long term Unemployed	Very important socio-economic variable with strong evidence from literature review.

Table 3 Correlation between AASRs, FGRs and selected area social-economic Characteristics

	Leeds		Nottingham		Bristol	
	FGRs	AASRs	FGRs	AASRs	FGRs	AASRs
Private Renters	.173**	.236**	.160**	.169**	.100	.244**
Black	.041	.129**	.025	.105	-.029	.073
No qualifications	.040	.098*	-.075	.066	-.122*	-.071
No Car	.112*	.228**	.092	.188**	.050	.195**
Managers and Professionals	-.045	-.108*	-.006	-.127*	.046	-.121
Never worked/Long-term Unemp.	.054	.127**	-.026	.106	.009	-.100
Fulltime students	.072	.090*	.065	.162**	.073	.127*

**Correlation is significant at the 0.01 level (2-tailed).
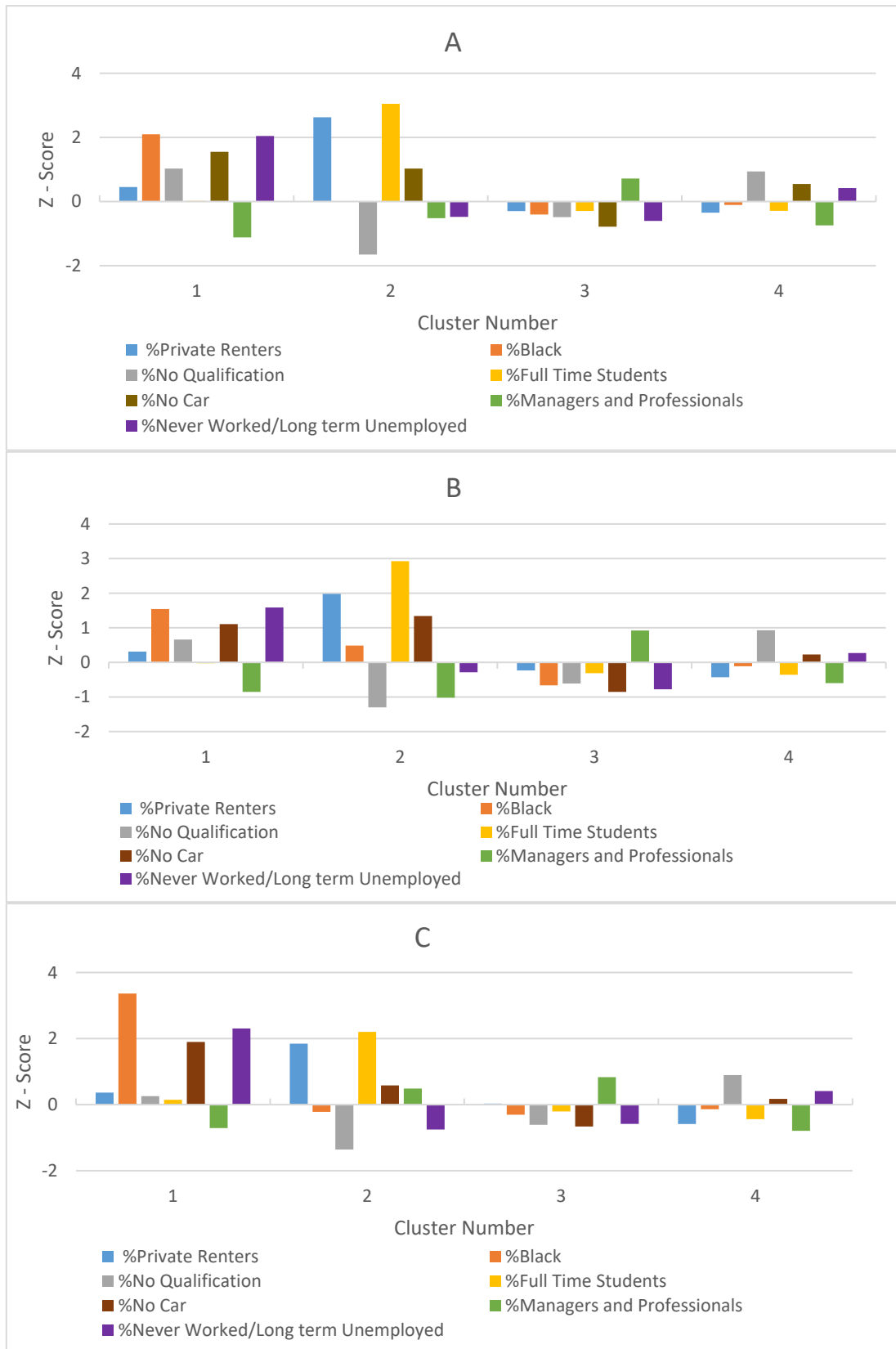*Correlation is significant at the 0.05 level (2-tailed).

Figure 1 Four cluster classification for Leeds (a), Nottingham* (b) and Bristol (c)

Table 3 shows the association between the seven selected variables and both retail groups. There are clear patterns showing that characteristics which are signifiers of deprivation and affluence show positive and negative associations respectively with the retailers especially in Leeds. Private renters show a positive correlation with both retail groups of retailers which is relatively consistent across the three cities.

Finally, a 4-cluster solution was executed for each city using the selected variables. Figure 1 shows the 4-cluster classification and the variables which typify them. The name of each cluster is explained in table 4 based on the most dominant variables and does not imply that the cluster is made up of only this variable.

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Table 4 The dominant characteristics and name of each cluster

Cluster	Dominant Characteristics	Name
Cluster 1	Black, No Car Households and Never worked/Long-term Unemployed Persons	Ethnic and Unemployed Cluster
Cluster 2	Fulltime Students and Private Renters and No Car Households	Student Cluster
Cluster 3	Managers and Professionals	Affluent Cluster
Cluster 4	No qualifications, No Car and Never worked/Long-term Unemployed	No qualifications and Unemployed Cluster

3.1 Validation of Area Classification

The classification is validated against the index of multiple deprivation (IMD) 2015. From Table 5, all the LSOAs in the ethnic and unemployed clusters are within decile 1 – 3, the most deprived deciles. In addition, 77.3% of these LSOAs are in decile 1. For the student clusters, 67.4% of the LSOAs are in decile 1 – 5. From The affluent clusters across all the cities have no LSOA in the most deprived decile (decile 1) and 80.23% are in deciles 6 – 10. The no qualifications and unemployed cluster have 77.2% of their LSOAs in decile 1 – 3, the most deprived deciles. From the validation, the ethnic and unemployed clusters contain the most deprived LSOAs, followed by the no qualifications and unemployed cluster, while the student cluster has mixed characteristics. From the maps in Figure 2, the classification seems to have performed well in classifying the least deprived, most deprived, student(mixed) and affluent areas visually.

Table 5 Validation of the 4-cluster classification in Leeds, Nottingham and Bristol.

	Cross tabulation of IMD 2015 deciles and the 4 clusters in the 3 Areas				
IMD Decile	Ethnic and Unemployed	Student	Affluent	No Quals. and Unemployed	Total
Leeds					
1	51	0	0	54	105
2	5	4	0	34	43
3	0	8	10	27	45
4	0	7	15	12	34
5	0	9	26	3	38
6	0	4	32	4	40
7	0	2	47	1	50
8	0	2	44	0	46
9	0	1	39	0	40
10	0	0	41	0	41
Total	**56**	**37**	**254**	**135**	**482**
Nottingham*					
1	39	4	0	18	61
2	16	5	0	32	53
3	5	7	3	11	26
4	0	5	5	11	21
5	0	2	11	13	26
6	0	1	16	5	22
7	0	3	22	0	25
8	0	0	17	0	17
9	0	0	23	0	23
10	0	0	47	0	47
Total	**60**	**27**	**144**	**90**	**321**
Bristol					
1	12	1	0	29	42
2	2	2	1	30	35
3	2	3	5	26	36
4	0	2	14	16	32
5	0	5	9	6	20
6	0	4	16	3	23
7	0	6	22	2	30
8	0	4	17	1	22
9	0	4	8	0	12
10	0	0	11	0	11
Total	**16**	**31**	**103**	**113**	**263**

*LSOAs in Nottingham, Broxtowe and Rushcliffe
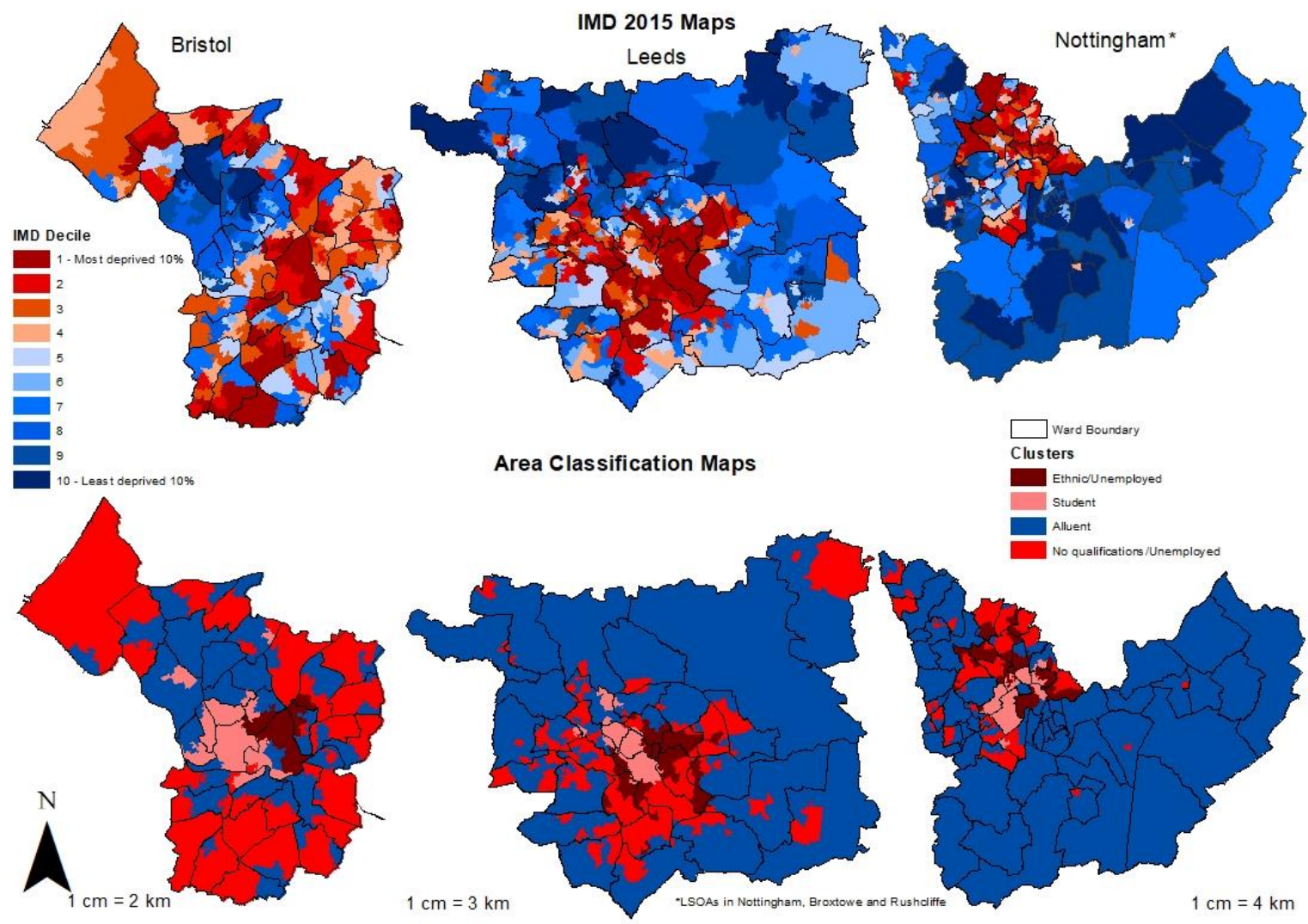1 – most deprived 10% LSOAs
10 – least deprived 10% LSOAs

Figure 2 Comparison of the IMD 2015 and the 4 -Cluster Solution in Leeds, Bristol and Nottingham

4. Area Classification, FGR and AASRs locations

A kernel density estimation (KDE) procedure was executed on both FGR and AASR outlet data across the areas to show the patterns of clustering. From Figure 3 and 4, AASRs are concentrated around the centre of the city and its periphery in Leeds and Nottingham, which coincide with the ethnic and unemployed, no qualifications and unemployed as well as student cluster. Whereas, the periphery with mostly affluent LSOAs have low incidence of AASRs. The patterns in Bristol is similar, but the concentrations are more profound in the students and ethnic and unemployed areas with some affluent areas also having high AASRs (Figure 5). In comparison (Figure 3, 4 and 5), although FGRs also have dense presence at the centre across the 3 areas, the high-density spreads to other parts, especially in Bristol (Figure 5) with notable deprived and affluent clusters having high incidence of FGRs.

Table 6 Distribution of FGRs and AASRs outlets per '000 households across the 4 neighbourhood clusters in Leeds, Nottingham and Bristol

		Leeds			Nottingham			Bristol		
	Cluster	**Outlets**	**Mean**	**Sdv**	**Outlets**	**Mean**	**Sdv**	**Outlets**	**Mean**	**Sdv**
AASRs	Ethnic and Unemployed	22	0.63	1.53	23	0.59	2.25	4	0.25	0.45
	Student	48	1.88	9.28	20	1.16	3.47	30	1.16	2.08
	Affluent	39	0.21	0.76	27	0.25	0.84	21	0.30	0.75
	No qualifications and Unemployed	68	0.67	1.88	31	0.49	1.47	41	0.54	1.77
	Total	**177**	**0.52**	**2.86**	**101**	**0.46**	**1.70**	**96**	**0.50**	**1.46**
FGRs	Ethnic and Unemployed	14	0.37	0.77	20	0.49	1.47	3	0.19	0.54
	Student	32	1.32	3.65	18	1.02	1.38	29	1.21	1.61
	Affluent	71	0.39	0.90	53	0.52	1.06	36	0.53	0.96
	No qualifications and Unemployed	56	0.61	1.19	34	0.55	1.17	37	0.47	0.96
	Total	**173**	**0.52**	**1.39**	**125**	**0.57**	**1.21**	**105**	**0.56**	**1.06**

Table 6 shows the mean of AASRs and FGRs across the clusters. It confirms the results of the KDE with AASRs having the highest mean in the student, no qualifications and unemployed in the three cities. In addition, the mean of AASRs is highest in the no qualification and unemployed clusters compared to the affluent. Similarly, FGRs have the highest mean in the student cluster across the 3 cities, but the mean is lower compared to the AASRs. FGRs have almost similar means in the affluent cluster compared to the ethnic and unemployed and no qualifications and unemployed clusters in Leeds and Nottingham. In Bristol, affluent areas have higher means compared to the 2 most deprived clusters for FGRs.
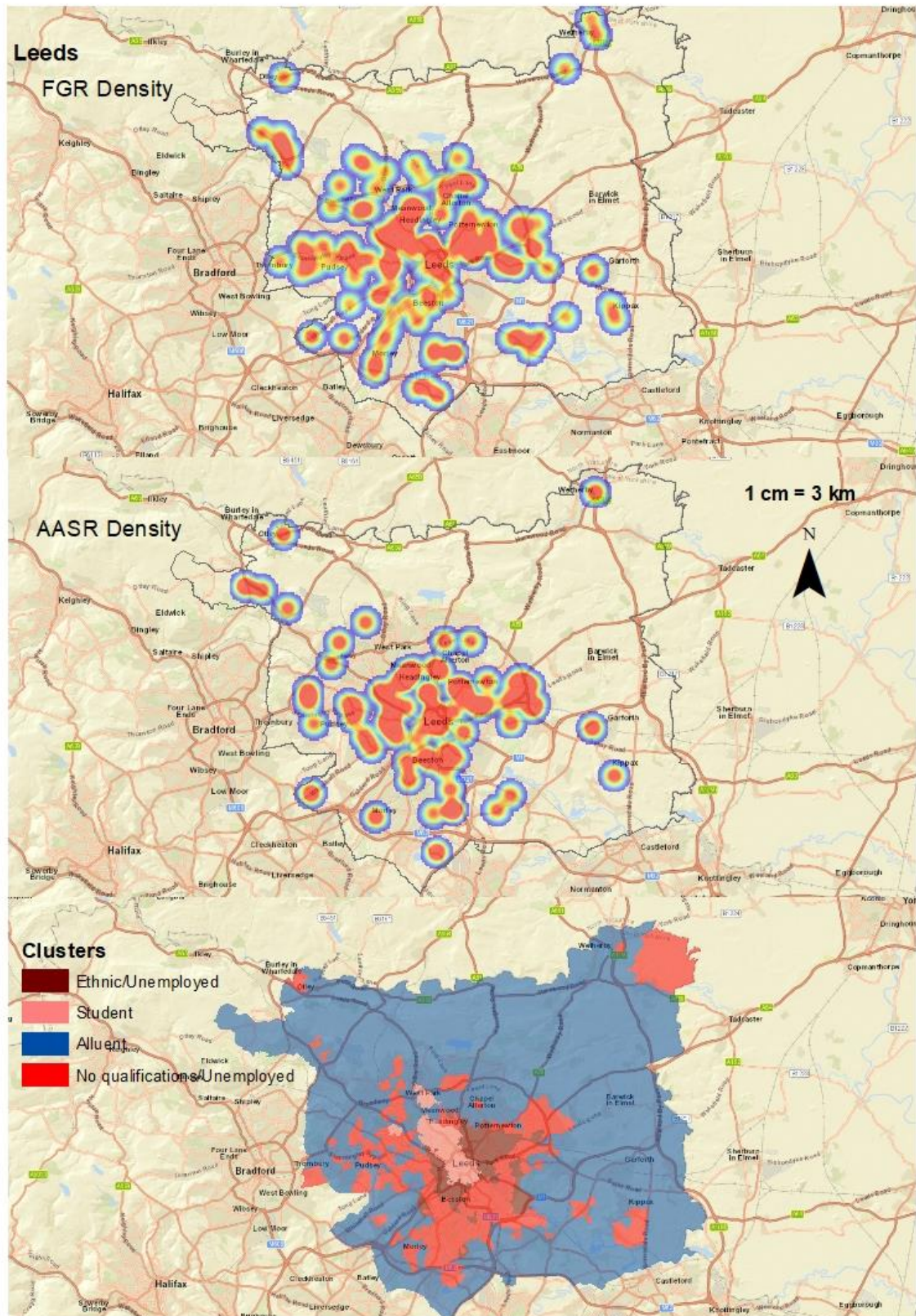
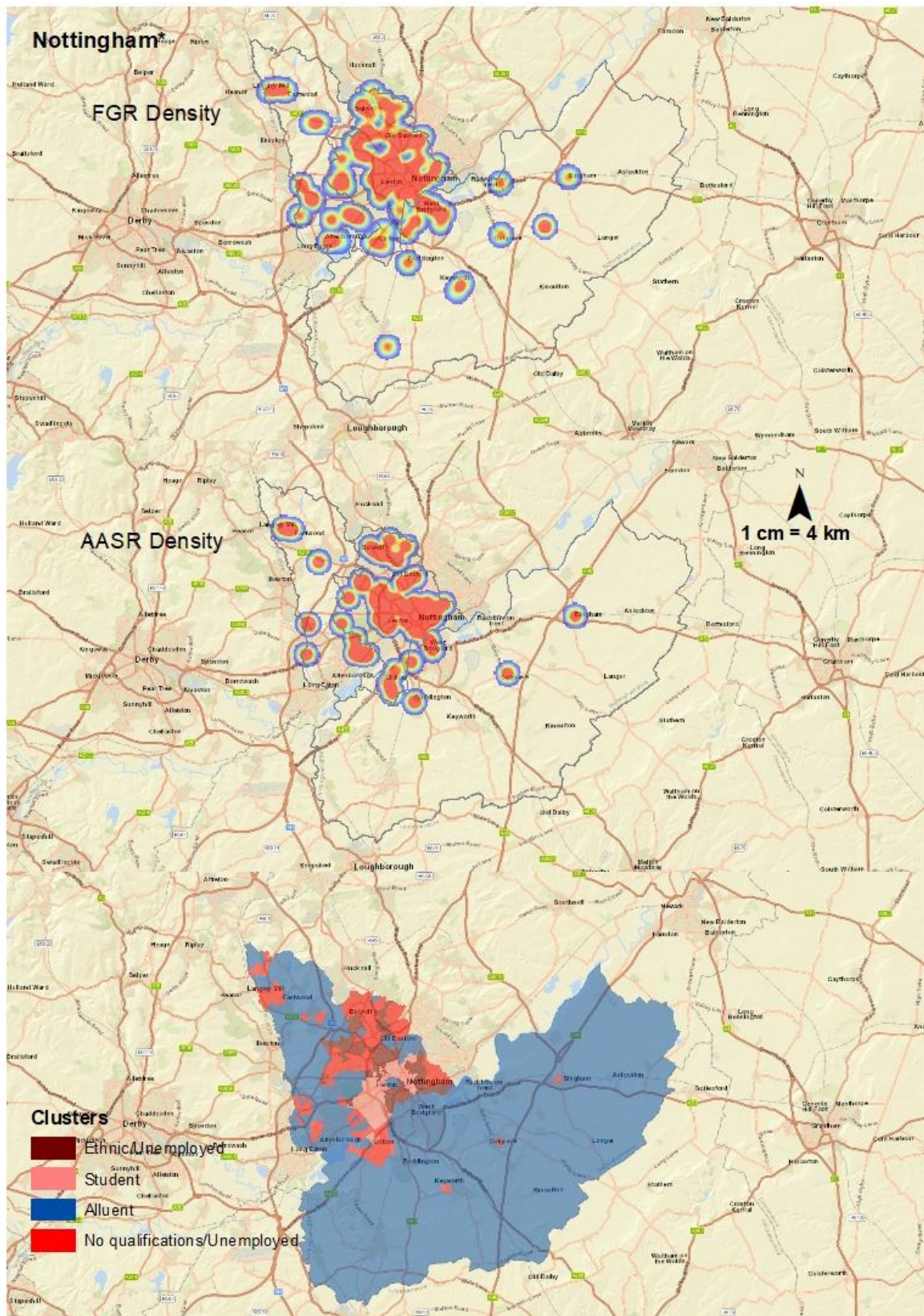Figure 3 – Comparison of clusters, FGR and AASRs locations in Leeds

Figure 4 – Comparison of clusters, FGR and AASRs locations in Nottingham*
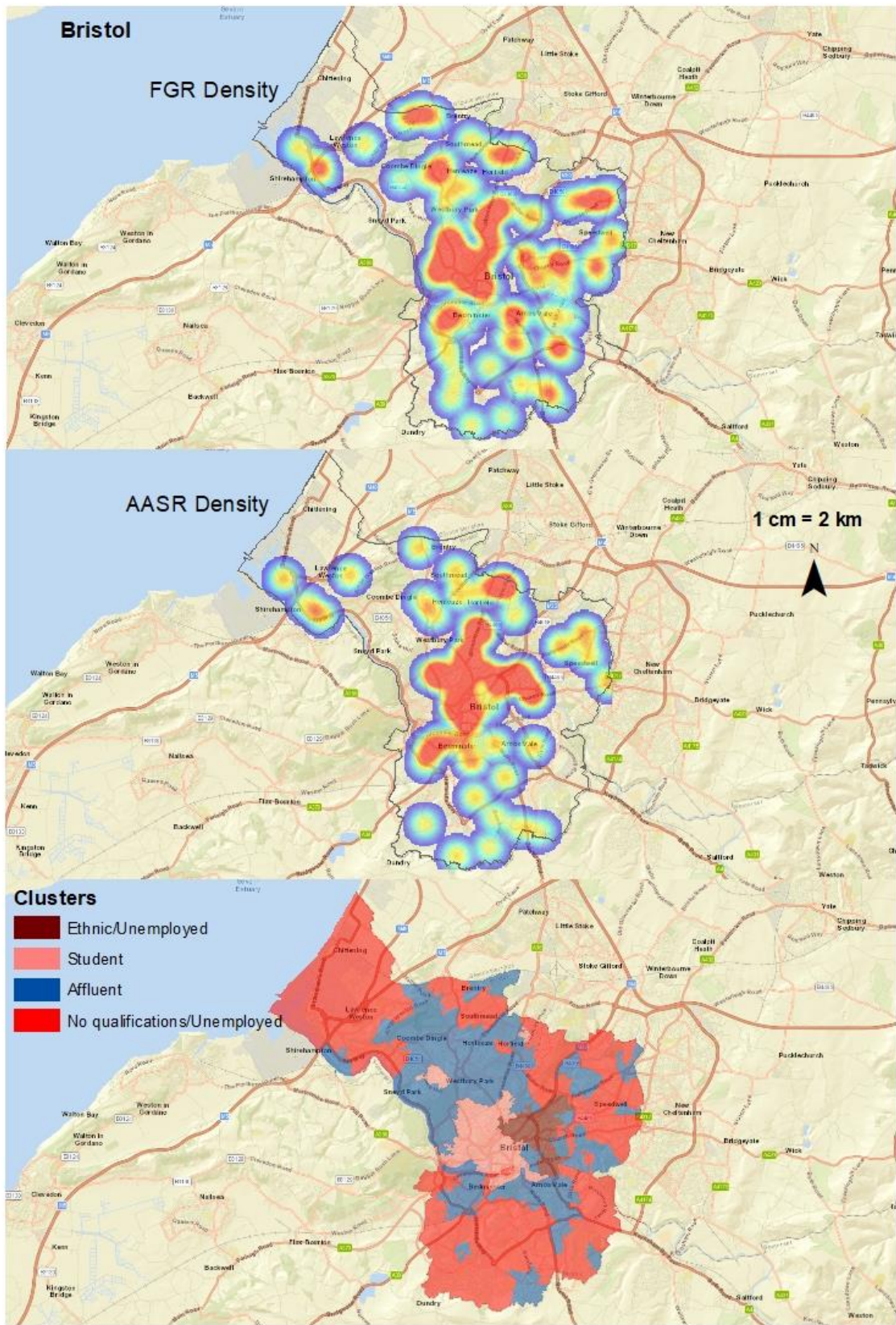*Nottingham* - LSOAs in Nottingham, Broxtowe and Rushcliffe*

Figure 5 – Comparison of clusters, FGR and AASRs locations in Bristol

Table 7 Odds ratio a of the presence or absence of FGRs and AASRs in the different clusters in Leeds, Nottingham and Bristol

	Leeds			Nottingham			Bristol		
	Exp(B)	*95% C.I.*		**Exp(B)**	*95% C.I.*		**Exp(B)**	*95% C.I.*	
		Lower	*Upper*		*Lower*	*Upper*		*Lower*	*Upper*
AASRs									
Ethnic & Unemp.	2.614**	*1.217*	*5.613*	1.931	*.830*	*4.493*	1.686	*.485*	*5.859*
Student	2.236†	*.888*	*5.633*	2.457†	*.857*	*7.044*	3.195*	*1.311*	*7.784*
No Qua & Unemp.	2.508**	*1.388*	*4.531*	2.003†	*.945*	*4.245*	1.223	*.608*	*2.458*
Constant	.104			.116			.198		
FGRs									
Ethnic & Unemp.	1.113	*.547*	*2.262*	.750	*.359*	*1.566*	.365	*.078*	*1.705*
Student	1.511	*.687*	*3.325*	2.400*	*1.028*	*5.602*	2.722*	*1.193*	*6.211*
No Qua & Unemp.	1.540†	*.945*	*2.511*	1.030	*.562*	*1.885*	.763	*.413*	*1.408*
Constant	.245			.333			.392		

Exp(B) – Odds ratio
**p < .01, *p < .05, †p < .10,
C.I. – confidence intervals
Reference cluster: Affluent

A binary logistic regression (BLR) was used to examine the effect of the cluster characteristics on the presence or absence of FGRs and AASRs. From Table 7, the likelihood of presence of AASRs in the ethnic and unemployed and no qualification and unemployed clusters are 2.6 and 2.5 times higher respectively compared to the affluent cluster in Leeds (p < .01) and no significant effect on FGR presence (p > .05). In Bristol, likelihood of AASRs and FGRs in the student cluster are 3.1 and 2.7 times higher respectively compared to the affluent cluster (p < .05) with AASRs having the highest likelihood compared to FGRs. The likelihood of FGRs in student cluster is 2.4 times compared to the affluent clusters, while no effect on AASRs in Nottingham. Maps in Figure 6 show the local indicators of spatial association (LISA) for both AASRs and FGRs (for only Bristol) and shows significant groups of high clustering around the student and ethnic areas across the centre of the city for both retail groups, but with AASRs showing clustering of high values in the ethnic areas and FGRs in the student areas. Similarly, low value clustering can also be identified in the no qualification and ethnic areas for both AASRs and FGRs.

5. Discussion and Conclusion

The results from the classification confirms that deprivation classification can also be derived from the UK decennial census (Burns, 2017). From the different analysis, salient patterns are unearthed. The geographical locations of the LSOAs in the student clusters with good accessibility and proximity to city centres make them viable locations for both AASRs and FGRs. This is in line with previous literatures which emphasise the importance of proximity and accessibility in optimum retail location selection (Clarke et al., 1997). The student cluster also has the highest presence of AASRs compared to FGRs. These LSOAs are highly characterised by renters, fulltime students, households with no car in Leeds, Nottingham and Bristol. These deprived characteristics might be acting as a pull factor for AASRs (Burkey and Simkins, 2004; Robitaille and Herjean, 2008) compared to FGRs.
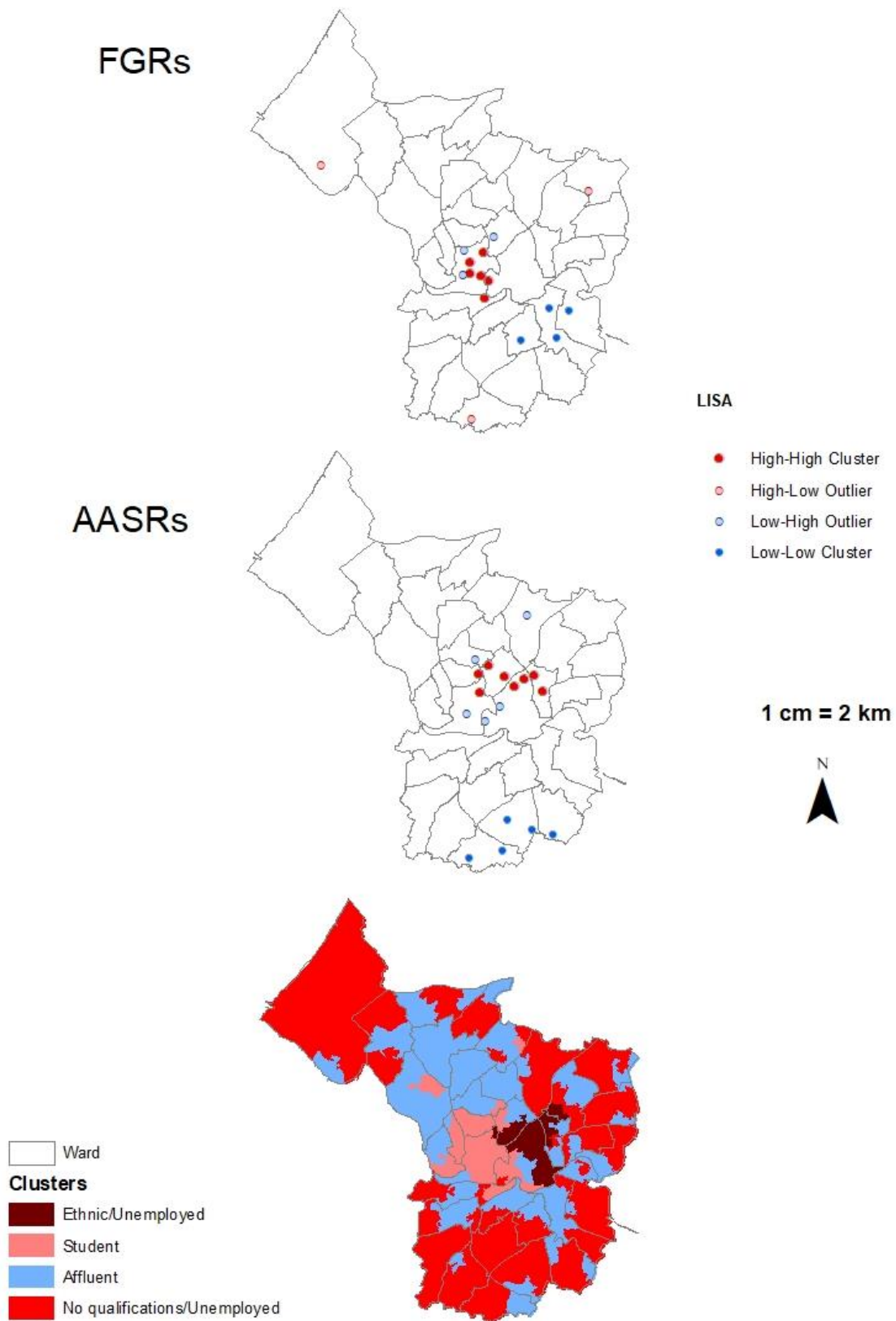
Figure 6 Comparison of the local indicator of spatial (LISA) for FGRs and AASRs in relation to the area classification in Bristol.

the results of the different analysis further reveal high presence of AASRs in the ethnic and unemployed and no qualifications and unemployed clusters made up of neighbourhoods with high deprivation characteristics. The BLR further shows that these clusters have the highest likelihood of AASRs compared to their counterparts in the affluent clusters especially in Leeds. In comparison the likelihood of FGRs across these clusters compared to the affluent cluster is statistically similar. This is in line with previous literatures which argued that deprivation characteristics is an attraction for AASRs and these retailers deliberately targeting these communities (Graves, 2003; Stegman and Faris, 2003).

In addition, there is no systematic evidence of higher likelihood of FGRs in affluent areas compared to deprived areas from this paper, so at local level, food provisioning seems to be evenly distributed (Maguire et al., 2015). More importantly, a major evidence from this paper is the importance of local analysis in retail policy planning. In Nottingham and Bristol, the LSOAs in ethnic and unemployed and no qualifications and unemployed clusters do not have significant effect on AASRs while the opposite is the case for Leeds from the BLR results. Thus, the notion that all deprived areas in England are targeted by AASRs might be false and developing a one-policy fits all solution should be avoided. Rather, policies should be tailored based on the dynamics of each locality. There are some limitations to this study due to the adoption of floorspace to measure food availability, but the comparative nature of this study required that similar provision measures be adopted, hence, the use of outlets.

5. Biography

Oluwole Adeniyi is a PhD researcher at Nottingham Trent University. He holds a B.Sc. degree in Geography and a MSc. degree in GIS with interest in retailing, inequality and health.

Professor. Paul Whysall is a Professor of Retailing. His major role in Nottingham Business School is as programme leader of the PhD programme, a role which causes him also to represent the School on a number of College and University committees concerning research degrees and research policy. His teaching interests have tended to focus around my research interests in ethics in retailing and marketing, social responsibility, and aspects of retailing.

Dr Abraham Brown is a lecturer at Nottingham Business School. He leads core business modules at undergraduate and postgraduate levels. He is the Internal Assessor of Market Research Society's Advanced Certificate in Market & Social Research. Additionally, he supervises undergraduate and postgraduate dissertations. He conducts public health research, with particular focus on tobacco marketing and policy effects on smokers.

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