# Vibrancy
# and Classification of Retail Areas

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February 15, 2021

**Summary**

The term 'retail vibrancy' encompasses the economic, social and community health of high streets. This research will develop a vibrancy classification of British high streets and their surrounding retail areas by utilising vacancy and occupier turnover data. The paper compares micro level cluster analysis of high street areas to wider regional and national trends in an attempt to pinpoint areas of high streets that need targeted intervention to meet the needs of the surrounding population.

**KEYWORDS:** Retail vibrancy, retail areas, high streets, classification

## 1. Introduction

British high streets are subject to unstable and challenging socio-economic conditions brought about by the 2008 recession, high business rates, competition from online retailers and now COVID-19. With Britain once again slipping into a recession this is a crucial time to quantify the changing composition of retail areas.

There is a huge capacity to capture and analyse information regarding specific premises and consumers (Hall, 2011). Previous studies that research the composition of high streets and their surrounding areas are oriented towards business composition and the spending power available to the local population (Vaughan et al. 2018; Ruggs et al. 2015; Wrigley and Lambiri 2015). Nevertheless, developing heuristics for high street success that incorporate store composition, the characteristics of surrounding retail areas and local consumer demographics remains under-researched. While high street spaces were in the process of being reimaged, the lockdowns in response to the current pandemic have perhaps shed light on the importance of community and wellbeing alongside its integration into the centre of towns and cities.

Therefore, this piece of research offers a new conceptualisation and measurement tool for high street success through the term 'vibrancy', cognisant of central and local government's policy orientation towards regeneration, residential building and creative placemaking (Forman and Creighton, 2012). It will create a definitive retail area classification that can be used in conjunction with retail performance data in an attempt to explore those high streets and high street areas that may be under greater threat. The classification system this paper uses is built upon England's retail lockdown restrictions in order to determine which areas were able to predominantly remain open throughout the majority of 2020.

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## 2. Research Design

The paper aims to uncover geo-spatial patterns which can be used to inform possible intervention strategies. Pavlis et al.'s (2018) modified DBSCAN clustering method has been utilised to create new retail centre boundaries using data provided by the Local Data Company (LDC). The DBSCAN clustering method has been used and adjusted to create additional smaller retail areas where there are 15 stores within 150m, to reflect localised shopping habits. A new typology of retail areas has been devised that considers the area's dominant proportion of independent/chain and necessity/leisure stores to facilitate an understanding of the retail landscape. Further cluster analysis will be applied within retail boundaries to identify specific areas that face degradation and could benefit from tailored intervention strategies.

### 2.1 Data

This research is made possible through use of the Local Data Company's (2020) dataset on retail type, address and vacancy across the whole of Britain. The LDC data records retail premises point locations and their corresponding occupier names, associated time period, coordinates of premises and category information to group premises type.

The retail location points in Quarter 1 of 2020 including vacant premises were used to apply Pavlis et al.'s (2018) modified DBSCAN clustering method and obtain Retail retail boundaries. Subsequently, the LDC data has been used to devise a measure for vacancy in Quarter 1 of 2020 and a rate of occupier change between Quarter 1 of 2017 to Quarter 1 of 2020.

There is no single definition of a 'high street', therefore, we have developed our own boundaries by including retail areas that fit the Ordnance Survey's (2019) definition of a high street that are "a cluster of 15 or more retail addresses within 150 metres, linked to roads (ONS, 2019: 3). Although, the OS bounded retail clusters purposefully exclude retail functions which consist of industrial estates, standalone shopping centres and retail parks, this paper aims to incorporate the smaller local necessity or leisure areas surrounding main high streets to gain a more accurate depiction of the high street and retail landscape.

### 2.2 Method

The new classifications developed in this paper are based on the proportion of stores which can be classed as a necessity (under the English Governments COVID-19 lockdown restrictions), the proportion of leisure premises and frequency of independent or chain stores. The areas are considered dominant if they have over 10% of the overall store classification. A store was considered as a chain if it had 5 or more stores in a franchise, to incorporate local chains. The resultant 6 retail categories are as follows: main high street, independent leisure, chain leisure, independent necessity, chain necessity and mixed or no dominant identity.

The boundaries have been used in conjunction with the LDC data to calculate rates of vacancy and occupier turnover. **Figure 1** displays the main high streets of Britain as defined as being part of towns or cities with a population above 75,000 and excluding London, alongside their vacancy and occupier turnover rates.

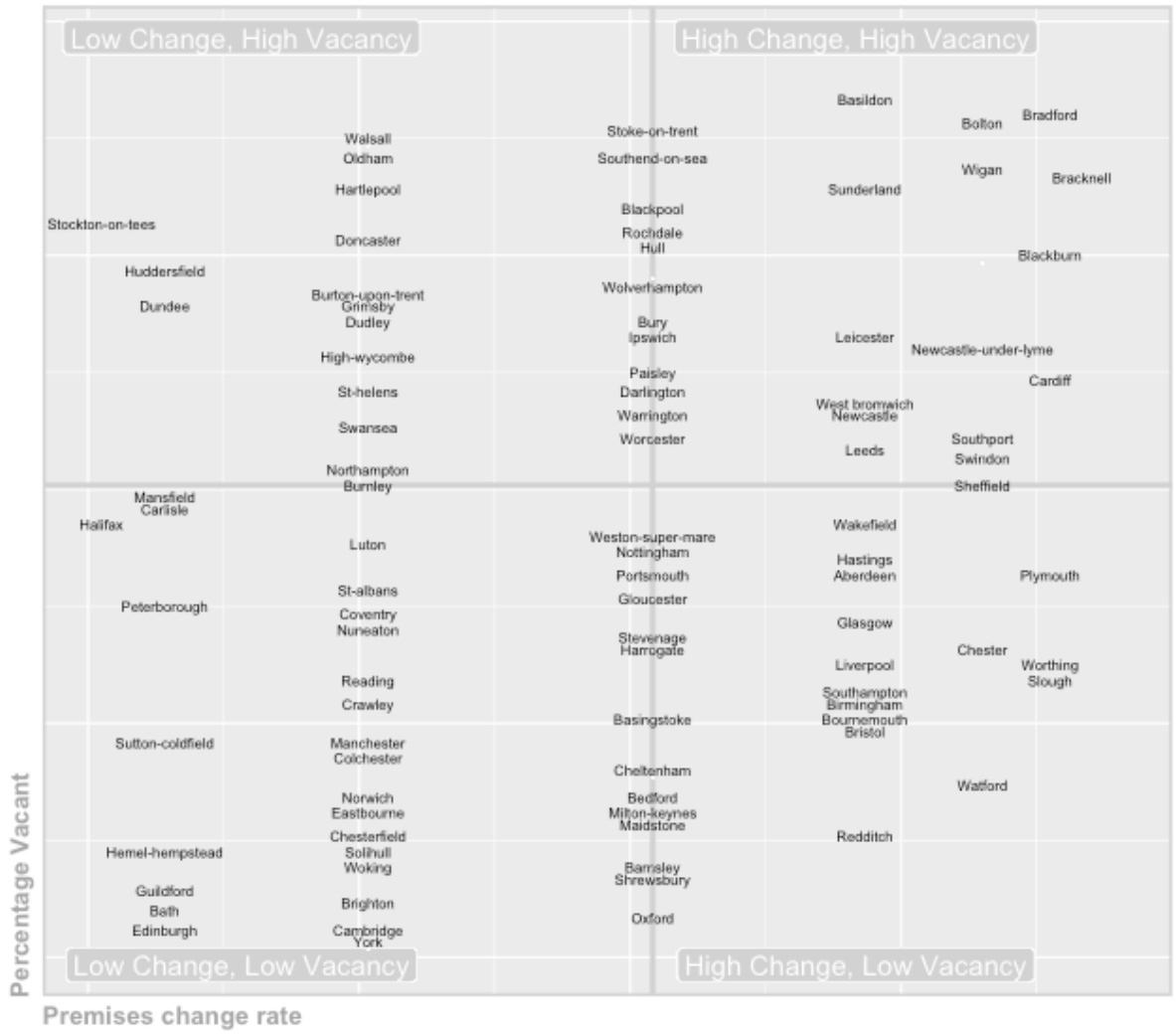



**Figure 1** Percentage vacant in Quarter 1 2020 and percentage of occupier change from Quarter 1 2017 to Quarter 1 2020 of the main high streets of Britain.

For the purpose of this abstract, Bradford (high vacancy and change) and Edinburgh (low change and low vacancy) have been extracted. The retail classification composition of the town and city are presented in **Figure 3 and 4**.

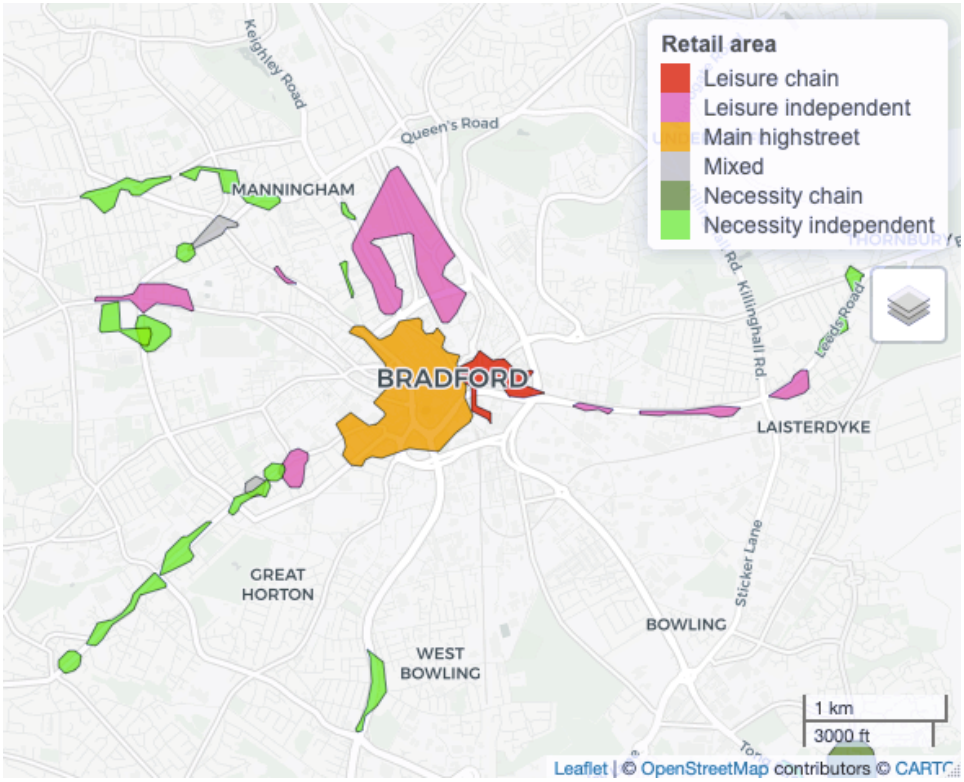



**Figure 3** Retail area classifications for Bradford main high street and surrounding clusters.

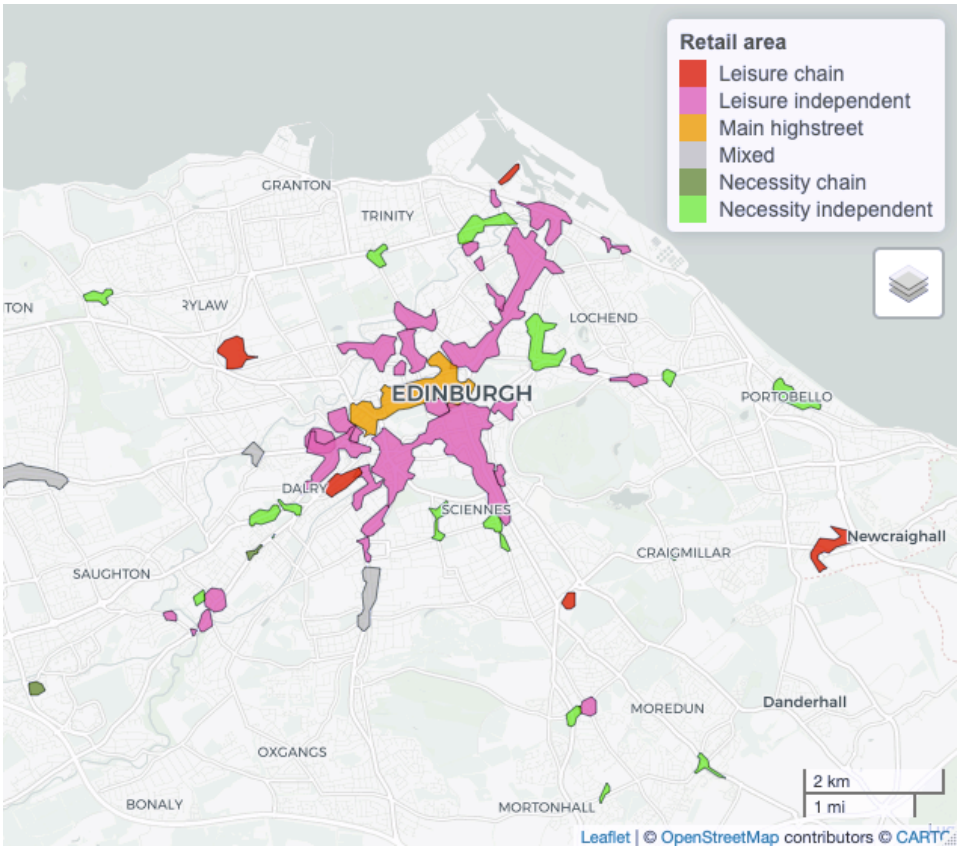
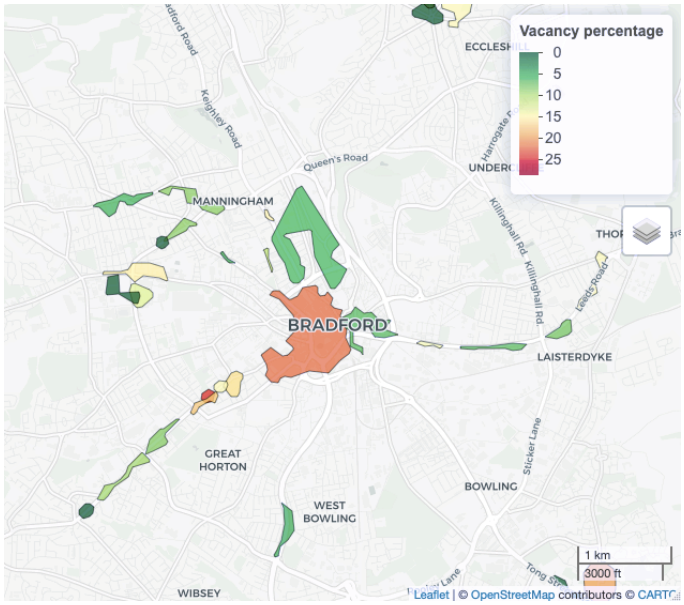
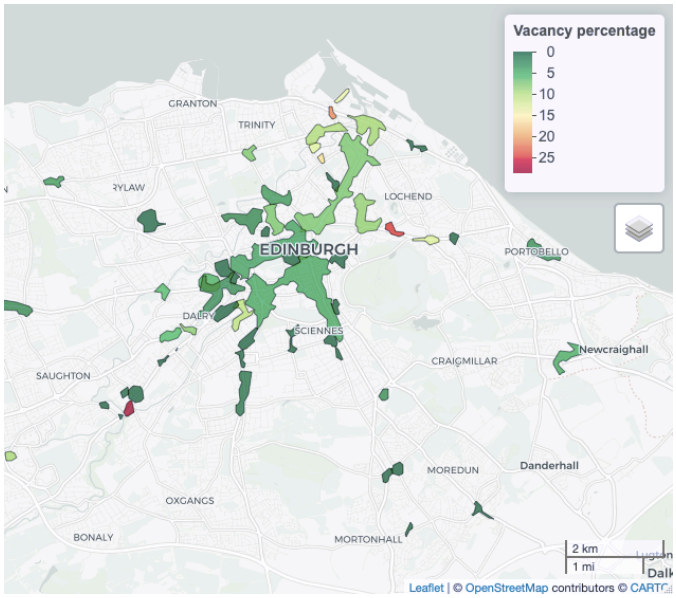



**Figure 4** Retail area classifications for Edinburgh main high street and surrounding clusters.

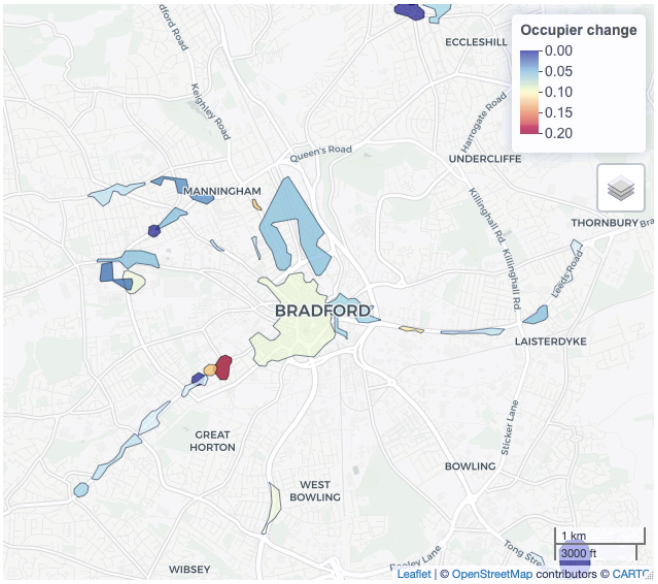
The vacancy percentage in Quarter 1 2020 of Bradford and Edinburgh's main high streets alongside the surrounding retail areas have been plotted and displayed in **Figures 5.**



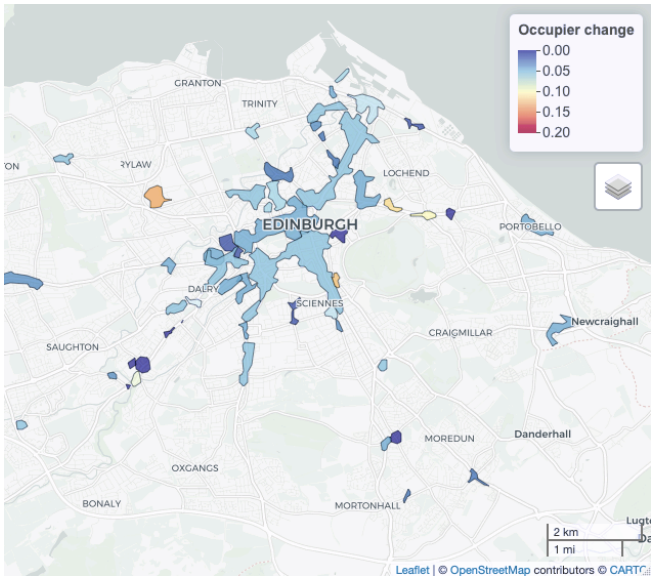

***Bradford: Vacancy rates***




***Edinburgh: Vacancy rates***




***Bradford: Occupier change***



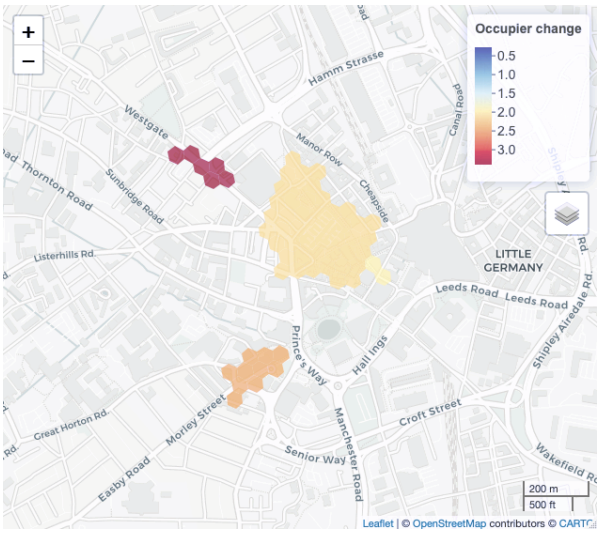

***Edinburgh: Occupier change***

**Figure 5** Retail area classifications for Edinburgh main high street and surrounding clusters.

### *Clustering with spatial constraints*

In order to explore variation of characteristics within the retail boundaries, DBSCAN and hierarchical clustering with spatial constraints have been applied. Polygons have been made which outline areas of stores which have similar rates of vacancy and occupier change within a close geographical proximity. Through applying Pavlis et al's (2018) modified DBSCAN clustering method, smaller clusters were derived from within the specific distance of 150m. These new clusters were then grouped with clusters with only ≥ 15 location points being included. **Figures 6 and 7** display the method for grouping together premises with similar characteristics within the retail area boundaries, the polygons have been transformed into H3 format, which is Uber's (2018) Hexagonal Hierarchical Spatial Index. The system takes data points and buckets them into hexagons, which allows for easy approximations of radiuses.

***Bradford clusters: Occupier turnover***




***Bradford clusters: Vacancy rates***

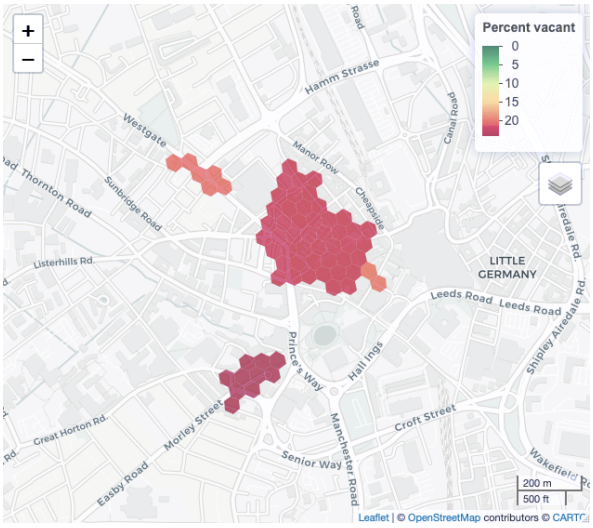
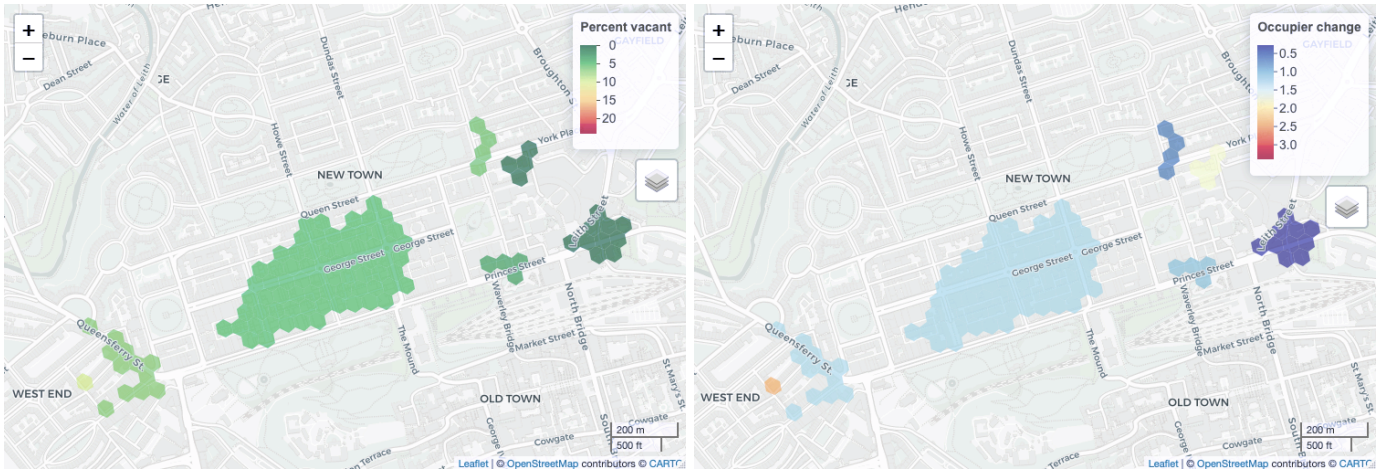



**Figure 6** Vacancy and occupier turnover rates in Quarter 1 2020 for areas of Bradford high street determined by DBSCAN and hierarchical clustering.




***Edinburgh clusters: Vacancy rates*** ***Edinburgh clusters: Occupier turnover***

**Figure 7** Vacancy and occupier turnover rates in Quarter 1 2020 for areas of high street determined by DBSCAN and hierarchical clustering.

## 3. Results

This research has developed new retail area boundaries and a classification system which includes small leisure and necessity areas. The development of a new classification system which incorporates the main legally defined consumption practices during multiple COVID-19 lockdowns is imperative to map changes in retail performance and composition following the global pandemic. The case studies Edinburgh and Bradford have been selected to display their retail classification and performance. Edinburgh is an example of a successful high street, with its low vacancy rate matched by the surrounding independent leisure areas. DBSCAN and clustering methods have then been used to select areas within the retail boundaries with similar attributes. Edinburgh high street was found to be comparatively stable compared to the higher occupier turnover in some of the surrounding leisure areas. However, some clusters within the high street, including West end have been identified as in a process of change. The area can be seen to have transformed from a core necessity area with relatively high vacancy following the 2008 recession to an area dominated by chain cafes. Nevertheless, despite West end's positive transformation it might be an area impacted by the COVID-19 restrictions and change in lockdown consumption patterns.

In contrast, Bradford high street has disproportionally high vacancy and occupier turnover compared to the surrounding independent and leisure areas. One area identified as having particularly high vacancy rate within the high street is Westgate. The area was previously dominated by music shops and other niche independent stores, now contains a large variety of different discount outlets and takeaways which do not appear to stay in business for long. Areas such as these may also struggle following a year of lockdowns due to the areas lack of classifiable identity.

## 4. Discussion

The two performance indicators, occupier change, and vacancy have been used as measures of retail vibrancy and mapped across newly classified retail areas. As the two case studies high streets in Bradford and Edinburgh have shown, different cities can have different patterns in terms of leisure/necessity landscape, store closures, openings and replacements. The classifications and performance trends may serve as an indication to which retail areas and smaller retail clusters may find it harder to recover following easing of lockdown restrictions. In particular, cluster analysis was able to identify smaller areas that have either deteriorated or were experiencing high levels of change as they developed into up-and-coming areas.

To achieve substantial outcomes from limited intervention funds in retail regeneration programs, it is important to identify areas that have already experienced degradation or are more prone to escalated vacancy. Pinpointing the start of area decay, such as the closure of a long-residing store, may inform decision-making for the area's future. The pandemic's influence on store closures in previously successful areas may need new, stable attractions or services in the form of necessities or cultural activities, in order to encourage people to return to the area.

The future objectives of this project are multiple and multi-dimensional, and include expansion in terms of validity and generalisability testing, exploration of more variables and indicators of vibrancy through using socio-economic and consumer data. A geographically more precise comparison between the cluster retail polygons and the surrounding population could also be made. Secondly, regression analysis will aid an exploration of the relationship between retail store turnover and vacancy rates with the vibrancy characteristics of the surrounding areas.

## 5. Acknowledgements

This piece of research was funded by the ESRC.

The retail location, type and vacancy data was provided by the Local Data Company and the Retail Catchment data was accessible via the Consumer Data Research Centre.

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## Biographies

Abigail Hill is a PhD student in Human Geography at University College London. Her research focuses on the spatio-temporal dynamics of the British retail high street industry.