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Predicting the Success of Planning Applications in London

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Abstract

Despite the importance of planning permission for development of the built environment and the mitigation of urban challenges, there is a lack of existing research examining the factors that predict a successful planning application. Using planning applications submitted to 33 London planning authorities, this project assesses spatial variation within the number of planning applications and the success rate of planning applications in London LSOA, and identifies the factors that predict a successful application.

Systematic distributions of the number and success rate of planning applications between LSOA are found, and statistically significant associations between the number and success rate of planning applications in an LSOA and geodemographic characteristics are identified. Modal types of planning application in LSOA are visualised, showing spatial variability. Finally, applications for non-intrusive works such as noise assessments are found to be the strongest predictors of planning application success. Results indicate that the planning system has the capacity to compound urban challenges, suggesting the need for standardised planning policy across London and wider reform and digitalisation to enable the planning system to mitigate urban challenges.

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1. Introduction

Transformation and development of the built environment is required to meet many of the urban challenges facing English cities, which include the chronic shortage of affordable housing (Sharma et.al., 2021; Alves, 2022), declining high streets (Dolega and Lord, 2020), and widening socio-economic disparities (Carniero et.al., 2020; Salvatore and Grundy, 2021).

Development is a multifaceted process involving investors, construction firms, and local populations, but it is the planning authority that is the ultimate arbitrator. With planning permission required for the approval of new developments and most works to homes, businesses, and wider property, the planning system arguably plays a significant role in meeting urban challenges.

Yet, it is a role that is currently under-researched and poorly understood. There is a particular lack of research as to why and where planning applications are successful or unsuccessful, knowledge of which- with approximately 10% of planning applications rejected in 2022 alone (UK Government, 2023)- is pertinent for homeowners, businesses, and developers alike, but also for meeting and mitigating urban challenges.

Without such knowledge, applicants are effectively navigating the system blind, facing rejection that limits their development plans and, in many cases, opportunities to address urban challenges (Ferm et.al., 2020; Shepherd et.al., 2022).

2. Literature review

Within existing literature, three related but distinct themes are identifiable: the Localism Act 2011 and its consequences, digitalisation, and the role of the planning system in urban challenges.

2.1. Localism Act 2011

The Localism Act 2011 replaced regional planning authorities with local planning authorities (UK Government, 2011) and encouraged each Parish Council or Neighbourhood Forum within a local authority to devise a 'Neighbourhood Plan' to guide local planning policy. These reforms, introduced as part of the Coalition government's 'Big Society' policy, were ideologically intended to reduce the role of the state and give power to the people (UK Government, 2010; Bevan, 2014; Stanton and Bowes, 2014; Bailey, 2015). Pragmatically, they were designed to reform the existing inefficient system and allow planning policy to become responsive to the needs of local communities (Local Government Association, 2011).

Early research into the reforms suggested that they had encouraged participation in local democracy (Derounian, 2011), strengthened a sense of place identity by, for example, allowing neighbourhoods to reject uncharacteristic planning applications (Matthews et.al., 2014), and built community resilience (Wargent, 2017).

More recent work, however, has identified a number of detrimental consequences of the Act. One such consequence, Bevan (2014) argues, is that rather than fostering a sense of community partnership and solidarity, the reforms further consolidated the power of local

authorities and made participation in the planning system exclusionary and restricted to only the most committed local activists.

A second consequence is the rise of 'NIMBYism'. With Neighbourhood Plans concentrating local planning policy in the hands of small communities, space and legitimacy has been given to individuals and residents that object to development in their area (Wang et.al., 2021), or 'NIMBYs'. Whilst arguably positive for local democracy, 'NIMBYism' is a constraint on developers (Inch et.al., 2020) and growth and development (Foster and Warren, 2021), and has been shown to compound urban challenges such as the provision of affordable housing (Fallon and Price, 2023; Ramzanpour et.al., 2023).

A third consequence of the Localism Act 2011 is the fragmentation of the English planning policy landscape. As a result of the introduction of Neighbourhood Plans, the English planning system now arguably exists on a two-tiered basis: planning policy can be influenced and often decided at a small scale amongst local communities in which a Neighbourhood Plan exists, but is decided at a larger local authority scale where a Neighbourhood Plan does not exist. The work of Parker et.al. (2023) supports this idea, finding that a decade since the introduction of the Localism Act, only around 1000 communities had a Neighbourhood Plan.

2.2. Digitalisation

A second common theme within existing literature is that of the digitalisation of the planning system. Milz and Gervick (2021) conclude that the use of digital technologies in the planning system lags behind that of wider society, a sentiment supported by Ertiö (2015) and Sivarajah et.al. (2015). Similarly, Boland et.al., 2021 argues that the sustained focus on 'documents not data', as described in the Government's 'Planning for the Future' White Paper (UK Government, 2020, p.13), has resulted in an inefficient system.

2.3. Urban challenges

Considered together, the Localism Act, 'NIMBYism', and the lack of digitalisation suggests that England's planning system perpetuates and reinforces urban challenges. Davoudi and Cowie (2013) and Brookfield (2016) identify that participation in Neighbourhood Plans is limited to those with the advantages of affluence and time, whilst Geoghan (2013) and Parker and Salter (2017) found that areas of greater deprivation are less likely to have Neighbourhood Plans- meaning they have less control over their local planning policy- than less deprived areas.

Similarly, Matthews et.al. (2014) found that powerful Neighbourhood Forums make new housing development unlikely in their area. This issue is particularly problematic in the South of England, a region which faces significant housing pressures and a shortage of affordable housing (McAllister, 2018), detrimentally impacting those most in need of affordable housing such as young and disabled persons (Mackintosh and Heywood, 2015).

In response to these concerns, the UK Government announced in 2021 widescale reform of the planning system. These reforms began with the introduction of Permitted Development Rights, which removed the need for planning permission in the conversion of retail premises (House of Commons, 2021). With over 14% of high street retail units in England vacant in 2021 (Centre for Retail Research, 2021), the deregulation was designed to create mixed-use

environments and address the urban challenge of declining high streets, which limit access to goods and services (ONS, 2019) and restrict town centre vitality (Darwell, 2012; Wrigley and Lambiri, 2015).

Despite being called for by Morton and Ehrman (2011), Townshend (2016), and Carmona (2021), amongst others, the reform is now argued by some to perpetuate further urban challenges: Marsh et.al. (2020) conclude that the change has contributed to widening health inequalities, whilst Ferm et.al. (2020) suggest that it has allowed for the provision of substandard quality housing, worsening living conditions.

Additional reforms intended to combat the lack of digitalisation and encourage community participation in the planning process are also proposed, but these too are suggested to perpetuate urban challenges. Young et.al. (2020) argue that the reforms, which include a streamlining and digitalisation of the planning process (UK Government, 2020), will exclude individuals with poor literacy skills and so, much like the reforms of the Localism Act, exclude individuals from disadvantaged backgrounds (Geoghan, 2013; Parker and Salter, 2017). Moreover, Clifford et.al. (2020) suggest that the proposed reforms will limit democratic participation in the planning system, furthering the exclusion of disadvantaged communities.

3. Justification and research questions

Existing literature indicates the current and potential future role of the planning system in mitigating or exacerbating many of the urban challenges faced by English cities. However, existing works are largely theoretical and do not examine the crux of the planning system: planning applications. Consequently, there is currently a minimal understanding of the factors behind a successful application.

Such an understanding is valuable to various stakeholders within the planning system: applicants can tailor their applications for the best chance of approval, enabling greater growth and development, whilst local governments can identify areas of appropriate targeted investment to reduce socio-economic disparities or meet the affordable housing shortage. Ultimately, understanding the factors that predict a successful planning application can facilitate action towards meeting urban challenges.

As such, this project comprises the following research questions:

1. Are planning applications spatially variable across London?
2. What are the types of planning application in London?
3. Do planning application success rates differ across London?
4. What factors predict the success of planning applications?

London is chosen as the study site for this project for two reasons. First, the city consists of 35 individual planning authorities, each with their own remit and planning policies. This allows for a comparison of planning applications between planning authorities in the same area, making for more insightful analysis than would be possible if focusing on a city with one planning authority such as Leeds.

Second, London suffers from myriad urban challenges with a highly pressurised housing market and a chronic lack of affordable housing (Hackett, 2019), stark socio-economic disparities (Mayor of London, 2018; Trust for London, 2022), and declining high streets (Griffiths et.al., 2013). This means that insights can be understood and interpreted within the context of an environment facing significant urban challenges, allowing for more valuable policy recommendations to be developed.

4. Analysis overview

25,996 planning applications submitted to 33 of the 35 planning authorities in London between 01-01-2022 and 31-03-2022 were extracted using web scraping methods. This time period was chosen to maximise the number of applications that could be analysed. Data from 2023 was not used because it is more likely that some applications would not have a decided outcome and thus would be unsuitable for use in this project. Similarly, data from 2021 is likely to have been affected by the COVID-19 pandemic that caused a reduction in the number of planning applications submitted nationally (Planning Portal, 2020), and so would make insights less applicable to a contemporary context.

In addition, five geodemographic datasets pertaining to the deprivation, ethnic composition, housing tenure type, median house sale price, and population of a Lower Layer Super Output Area (LSOA) were utilised to understand whether the number and success of planning applications is associated with area geodemographic characteristics.

To address Research Question 1, the spatial distribution of planning applications amongst London LSOA was first assessed, and the clustering of the patterns in this distribution was examined. Based on these findings, the associations between the planning applications in an LSOA and the geodemographic characteristics of the LSOA were identified.

Research Question 2 provides an understanding of how the type of planning applications in London differ by planning authority and LSOA. To address Research Question 3, with knowledge of the number of planning applications in each LSOA, the success rate of applications in an area was calculated. The variation in success rate between planning authorities and LSOA was visualised and examined for clustered patterns that would indicate underlying spatial processes, and associations between the success rate in an LSOA and the geodemographic characteristics of an LSOA were assessed.

Finally, Research Question 4 builds upon the findings of the previous Research Questions, employing a range of machine learning techniques to identify the factors that predict a successful planning application and, ultimately, provide the main insights from this project.

5. Discussion

5.1. Are planning applications spatially variable across London, and are they associated with area geodemographic characteristics?

To account for the slight population differences between LSOA, the number of applications in each LSOA was standardised as the number of planning applications per 1,000 persons in an LSOA.

With a median number of planning applications per 1,000 persons in an LSOA of 2.4, and 489 LSOA without a single planning application, results indicate that, on the whole, the numbers of planning applications per 1,000 persons in London LSOA are low. This is illustrated in Figure 1, in which many LSOA are coloured light shades of red, and is likely a result of the sampling design of this project which used data from only a three-month period.

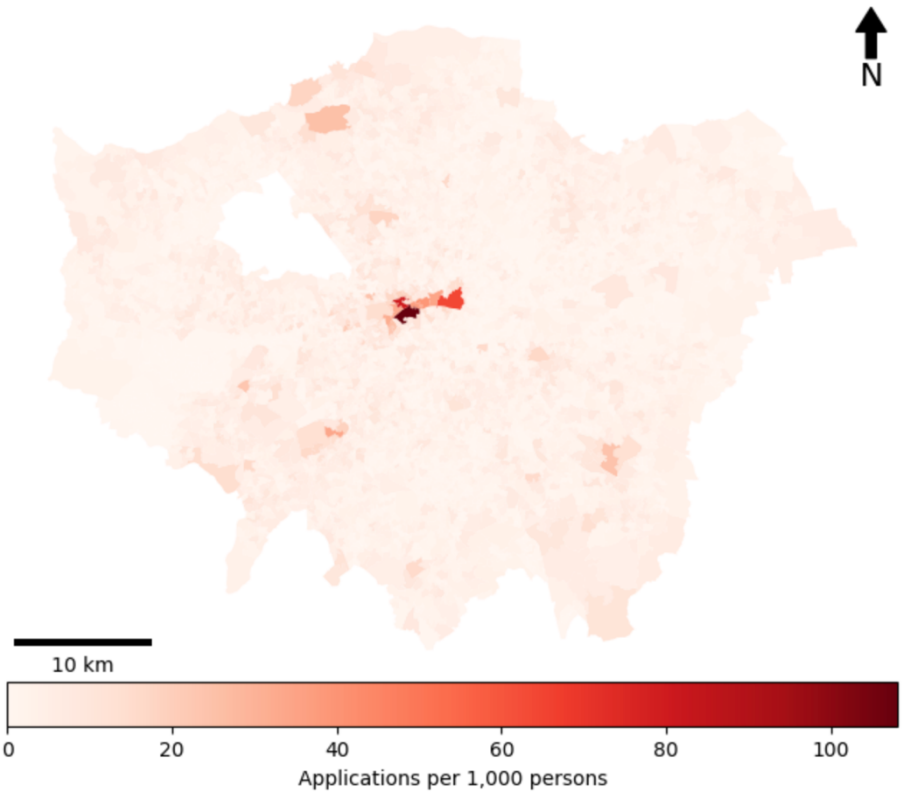

Figure 1- Spatial density of planning applications

Whilst the general numbers of planning applications per 1,000 persons in LSOA are relatively low, Figure 1 does highlight some spatial variation in this measure. Applications per 1,000 persons are concentrated in central LSOA such as Westminster 018C and City of London 001F, with LSOA in the periphery such as Croydon 025D and Kingston 020E generally seeing very few applications per 1,000 persons. This radial distribution of applications per 1,000 persons gives credence to the theory of core and peripheral differentiation set out by Krugman (1991) and domestically demonstrated by Pain (2008), in

which the core of an area becomes a zone of activity whilst the periphery sees limited investment and growth.

There are, however, a number of outliers to this trend, with LSOA such as Barnet 007C, Bromley 007E and Richmond upon Thames 023B in north, southeast, and west London respectively each having higher planning applications submitted per 1,000 persons than many of their neighbours.

To assess whether this spatial variation is due to chance or whether there are underlying spatial processes, a spatial clustering technique was performed. The results of this approach are visualised in Figure 2, in which it is apparent that there are non-random patterns within the data, meaning that LSOA are clustered in such a way that is unlikely to have occurred by chance alone.

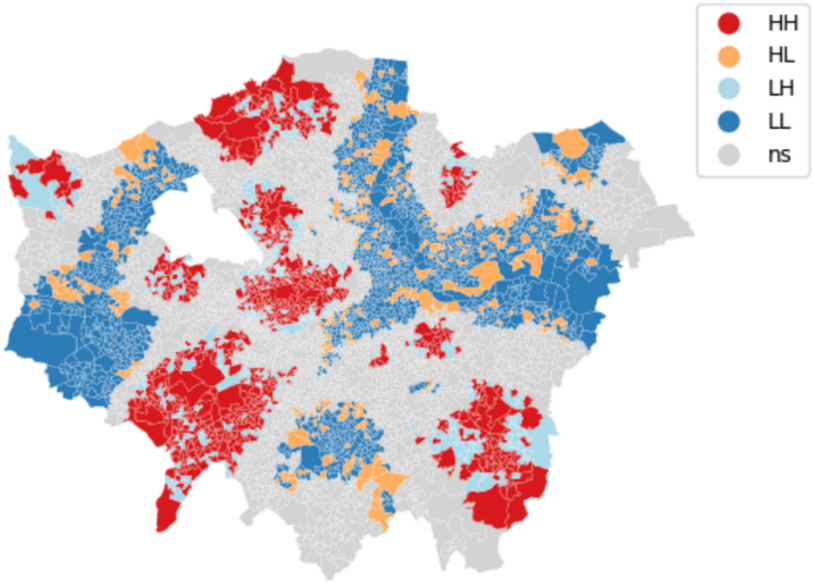

Figure 2- Spatial clustering of planning applications

The 'HH' clusters shaded red in Figure 2 represent LSOA with a high number of planning applications per 1,000 persons that are neighboured by LSOA with similarly high values. The opposite is true for clusters of the 'LL' type shaded blue.

Practically, this indicates that the numbers of planning applications per 1,000 persons in an LSOA are largely similar between LSOA and within wider areas, with one such area being the large cluster of 'HH' type seen in the northwest of the city. Combined with the statistically significant Moran's I value of 0.15, which suggests a level of spatial autocorrelation and thus systematic patterning, the results show that there are underlying spatial processes within the data that must be addressed.

This is complicated by the number of 'HL' and 'LH' cluster types which represent LSOA with high numbers of planning applications per 1,000 persons that are neighboured by LSOA with low values, and vice-versa, which indicate that the spatial processes are not uniform nor consistent.

With spatial autocorrelation present in the data, a Geographically Weighted Regression model was used to assess associations between the number of planning applications per 1,000 persons in an LSOA and geodemographic characteristics. The results of this are visualised in Figure 3.

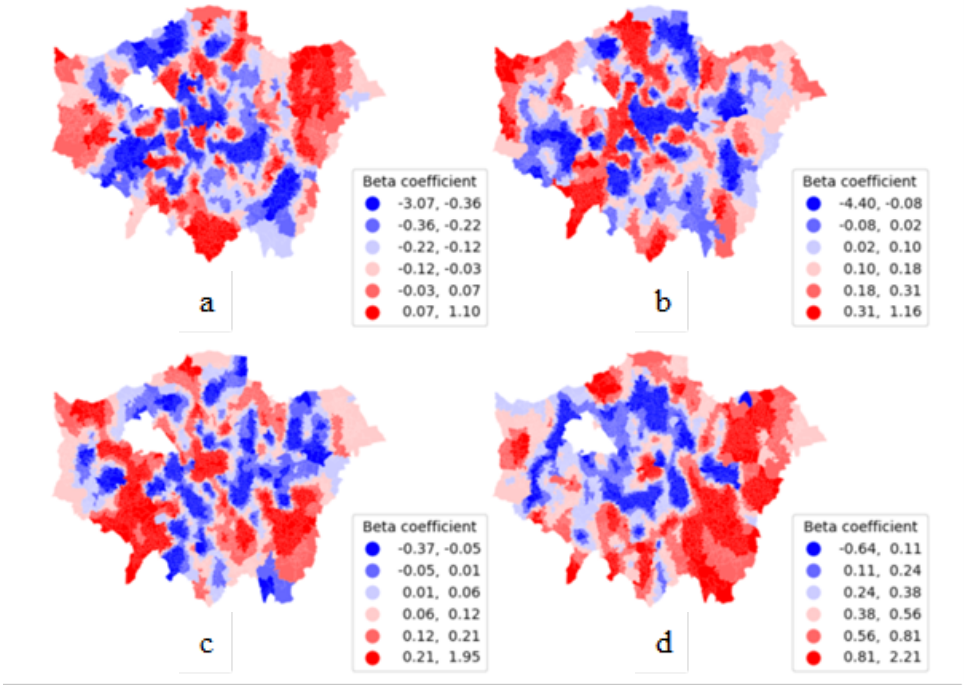

Figure 3- Spatial variation in the associations between the number of planning applications per 1,000 persons in an LSOA and geodemographic characteristics (a- the proportion of persons from a non-white ethnic background; b-the proportion of homes of owned tenure type; c- the proportion of homes of privately rented tenure type; d- median house sale price)

Results indicate that no statistically significant association exists between the Index of Multiple Deprivation (IMD) score of an LSOA and the number of planning applications per 1,000 persons in an LSOA. This is surprising given the range of literature (Castaño-Rosa et.al., 2019; Marchand et.al., 2019; Alexiou et.al., 2021) that finds socio-economic disparities in investment flows and home quality, as well as research from 2005 that suggests planning permission is more complex to achieve in deprived areas (Cabinet Office, 2005), but it may be a product of the small time period studied.

Conversely, the proportion of persons of non-white ethnic background in an LSOA is found to have a statistically significant association with the number of planning applications per 1,000 persons in an LSOA. As illustrated in Figure 3a, this association is variable across LSOA, with a one-unit increase in the proportion of persons of non-white ethnic background resulting in a decrease of -3.07 in the number of planning applications per 1,000 persons in some LSOA, but an increase of 1.10 in other LSOA.

A statistically significant association is also seen between the number of planning applications per 1,000 persons in an LSOA and the proportion of housing of owned tenure type. This association is spatially variable: a one-unit increase in the proportion of housing of owned tenure type is associated with an increase of 1.16 planning applications per 1,000 persons in LSOA shaded red in Figure 3b, but a reduction of -4.40 in LSOA shaded blue.

Similarly, Figure 3c illustrates how the same change in the proportion of housing of privately rented tenure type is significantly associated with an increase of 1.95 planning applications per 1,000 persons in some LSOA, but a reduction of -0.37 in others. Though with a smaller range between the upper and lower boundaries, the spatial variation of this association is less than that of the association between the number of planning applications per 1,000 persons in an LSOA and the proportion of housing of owned tenure type.

There are two potential explanations for this. First, renters are likely to feel a limited sense of place and identity in comparison to homeowners (Bates et.al., 2019; McKee et.al., 2019), which means that they are perhaps less likely to invest in a property to the extent that planning permission is required. Second, renters are more likely to be income poor than homeowners (Bailey, 2020) which, in turn, suggests that they are less active investors and thus less likely to submit a planning application, meaning that the spatial variation in the association between the proportion of housing of privately rented tenure type and the number of planning applications per 1,000 persons in an LSOA is limited.

Finally, results indicate that the median house sale price of an LSOA is significantly associated with the number of planning applications per 1,000 persons in an LSOA, with this association spatially variable in the range of -0.64 to 2.20 (Figure 3d). This is largely to be expected, given that investors favour areas with high and rising house prices (Lowe, 2019), making applications in such areas more likely.

Overall, Research Question 1 indicates that the number of planning applications submitted between 01-01-2022 and 31-03-2022 vary spatially amongst LSOA. This insight may give an indication as to the characteristics of an area- LSOA with higher planning applications per 1,000 persons are likely to be areas in which development is taking place or has been recently proposed, whilst LSOA with minimal planning applications per 1,000 persons may indicate either a lack of development or a lack of recently proposed development. This, in future research, could perhaps be extended as a measure of the vitality of an area.

Additionally, spatially variable and statistically significant associations between the number of planning applications submitted in an LSOA and the proportion of persons of non-white ethnic background, the proportions of housing of owned and privately rented tenure types, and the median house sale price of an LSOA were identified. The variability of these associations suggests that the planning system can both mitigate and exacerbate urban challenges.

5.2. What are the types of planning application in London?

At a high level, the types of planning applications vary between planning authorities. In Figure 4, it is clear that the majority of applications in many planning authorities are for the approval of extensions, often followed by applications for a premises change of use and tree works. In contrast, applications for works such as flood management or car or cycle parking are relatively uncommon in many authorities.

The notable exception to this trend is Hounslow, in which only 9.1% of applications were for an extension compared to over 52% in Ealing. This is likely because only 37 applications were sourced in Hounslow, making it the smallest sample. Surprisingly, applications for the approval of air conditioning installation or work were relatively common amongst the authorities, comprising 6.7% of all applications in Westminster and 4.7% in Kensington and Chelsea. This perhaps reflects the presence of business and commercial entities in these areas.

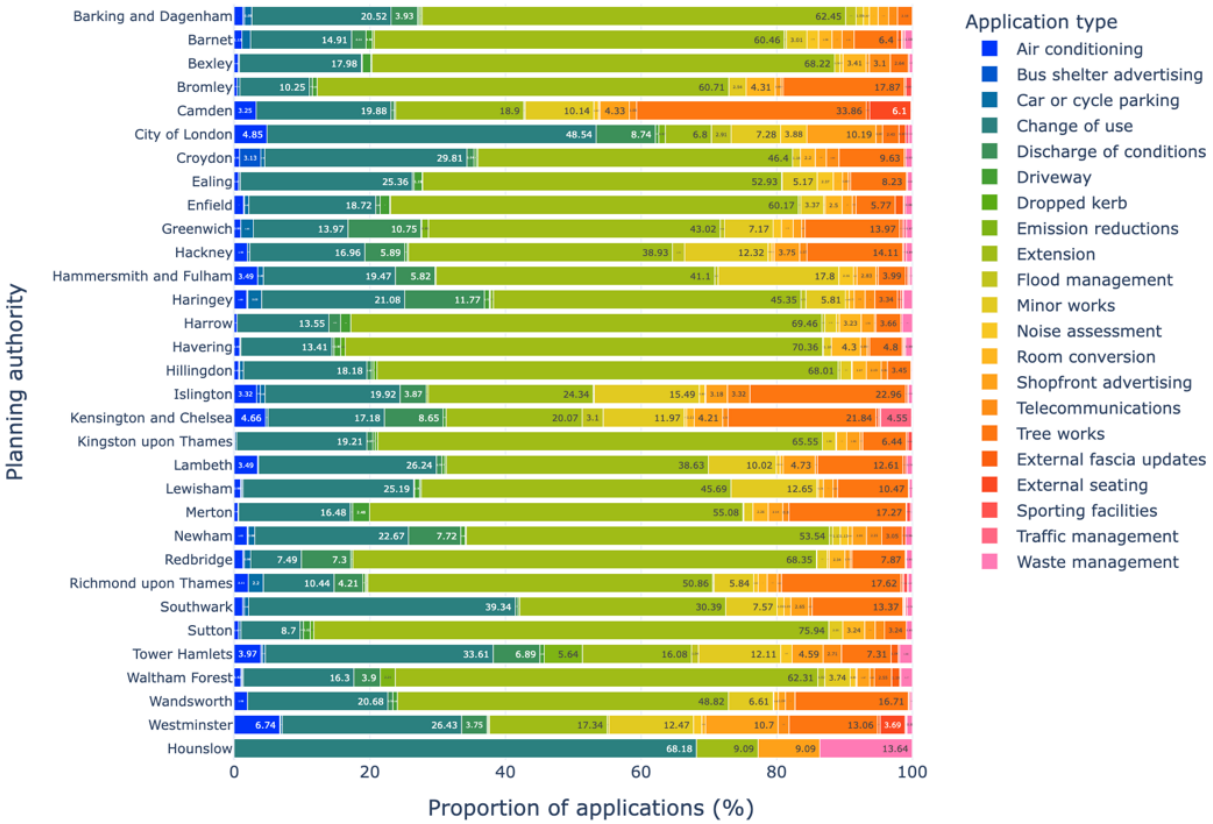

Figure 4- Types of planning application in London planning authorities

At an LSOA scale, similar trends are visible. In Figure 5 it is apparent that of the LSOA that had at least one submitted application, the most common modal application type relates to an extension. Large clusters of LSOA with a modal application type of a change of use are also present, particularly in the centre of the city reflecting the increased business presence (Roberts, 2017). However, there are no discernible patterns to this distribution- modal application types vary intermittently across LSOA. For instance, the modal application type in the Hammersmith and Fulham 010E LSOA is 'car or cycle parking', but the modal application type is 'minor works' in one neighbour, 'change of use' in another neighbour, and 'tree works' in a third neighbouring LSOA.

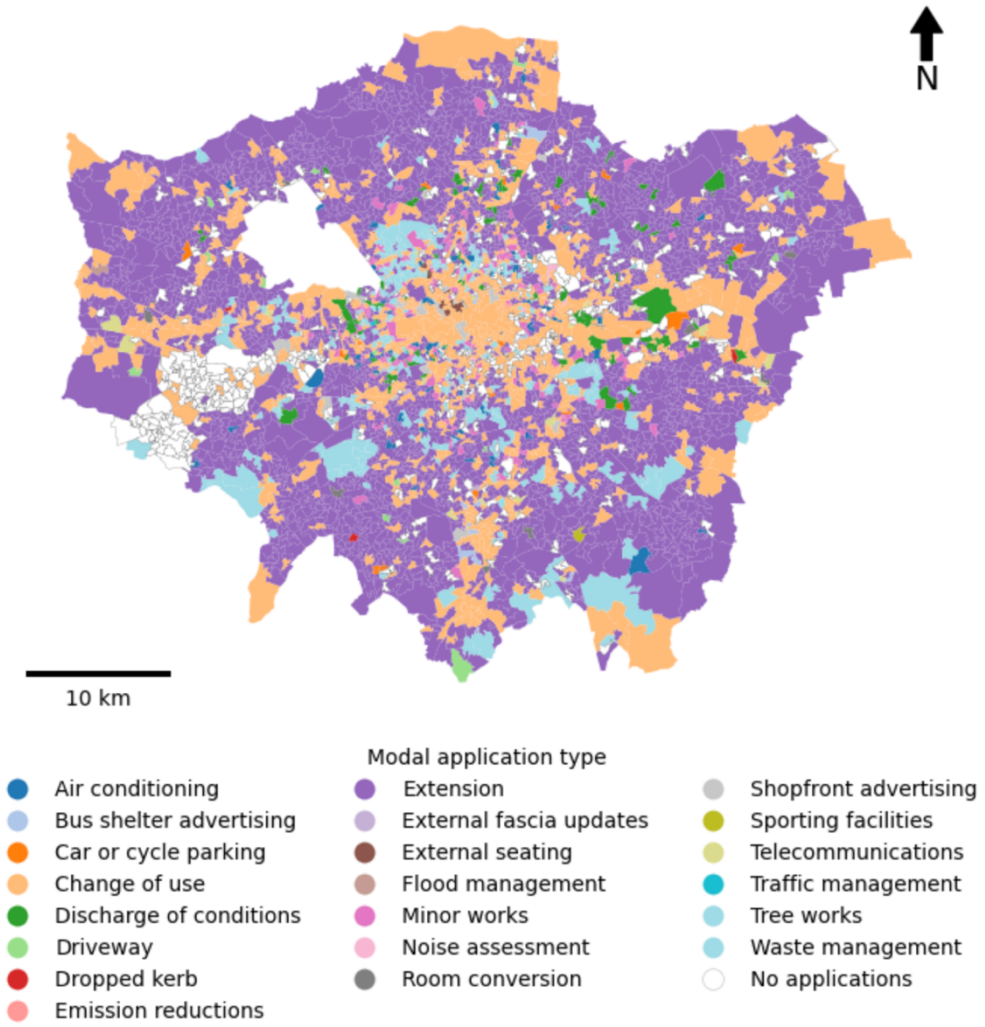

Figure 5- Modal application type of London LSOA

These insights have the potential to be used for commercial purposes: a home improvement firm, for instance, could identify and actively target areas where the modal application type is an extension or room conversion and thus where their services are likely to be in higher demand.

5.3. Are successful planning applications spatially variable across London, and are they associated with area geodemographic characteristics?

As evident in Figure 6, the success rates of planning applications vary at a high level by planning authority. Authorities such as Westminster, Harrow, and the City of London approved over 90% of applications in the three-month study period, whilst Bromley, Croydon, and Kingston upon Thames planning authorities each approved less than 75% of applications. Most authorities approved around 80% of applications, with a median success rate of 85.5%.

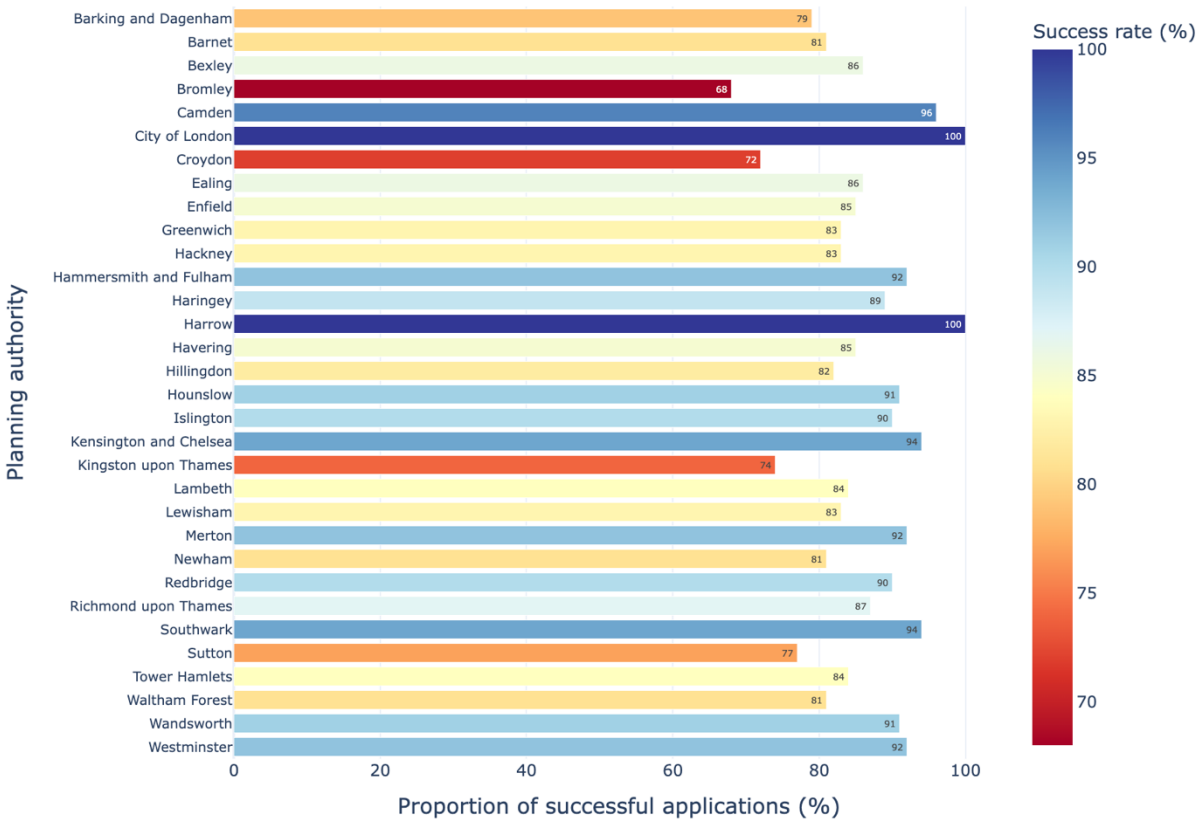

Figure 6- Planning application success rate in London planning authorities

Figure 7 illustrates how this variation is also apparent at an LSOA level. Of the LSOA with an application submitted during the time period, many saw over 80% of applications approved, though a sizeable proportion saw considerably lower success rates. Only 50% of applications were approved in the Ealing 029F LSOA, for instance, whilst only 33% were approved in the Tower Hamlets 030C LSOA. In contrast, 100% of applications were approved in LSOA such as Merton 002A, Enfield 025G, and Greenwich 038C.

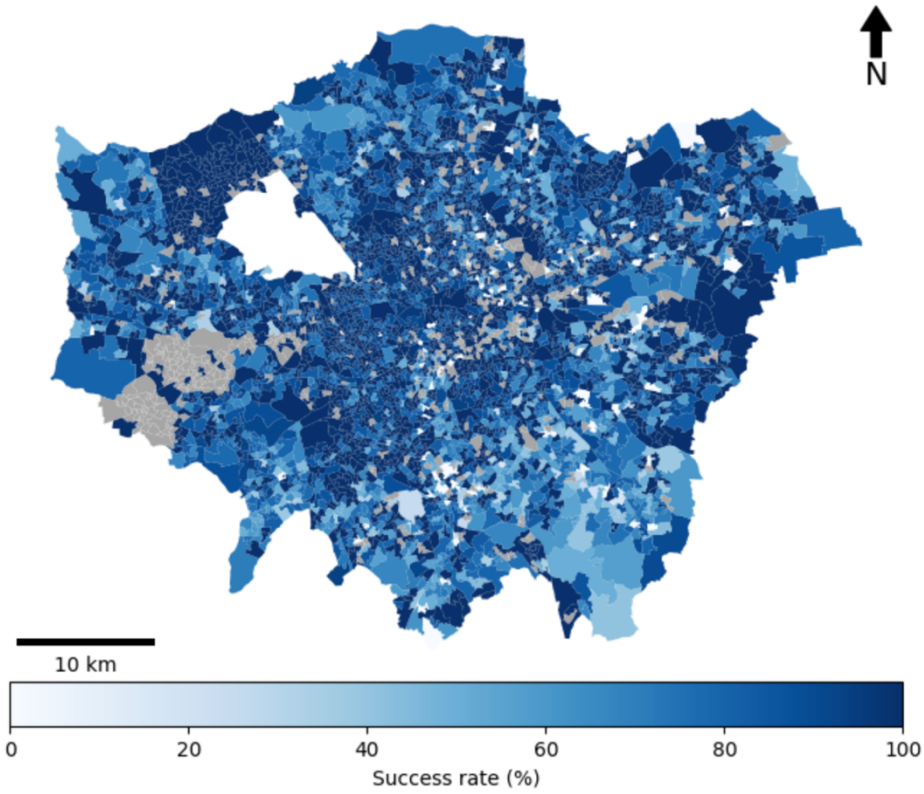

Figure 7- Planning application success rate in London LSOA

Unlike the distribution of the number of planning applications per 1,000 persons in an LSOA presented in Section 5.1, there is a lack of discernible pattern amongst this data. However, the statistically significant Moran's I value of 0.11 indicates that there are systematic clusters of LSOA with similar success rates. These can be seen in Figure 8, in which there are large clusters of the 'HH' type shaded in red that represent LSOA with a high success rate neighbouring LSOA with a similarly high success rate. These are most commonly found in the central and northern reaches of the city, whilst large clusters of the 'LL' type, which represent LSOA with a low success rate neighbouring LSOA with a similarly low success rate, are most common in south London.

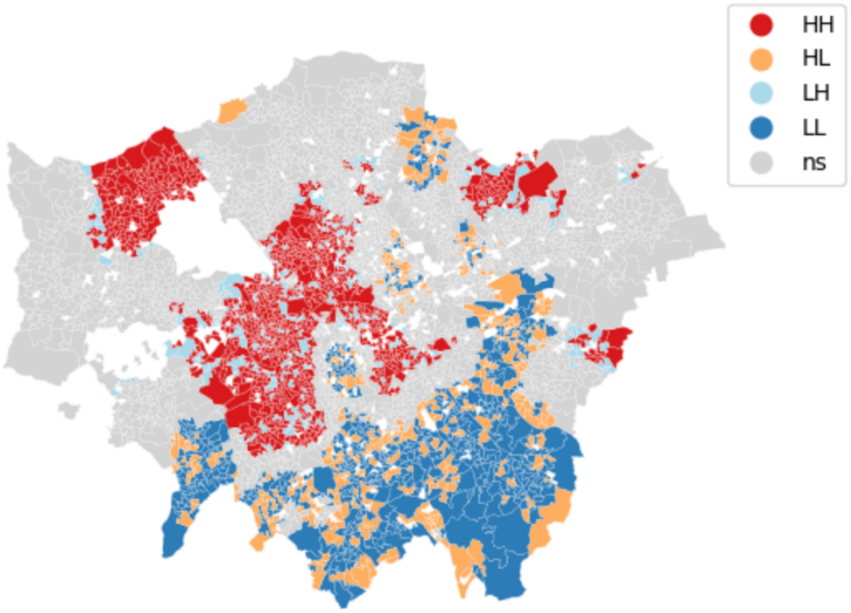

Figure 8- Spatial clustering of planning application success rates

Such clustering indicates that a level of spatial autocorrelation exists in the data, meaning that underlying spatial processes affect the distribution of success rates. The results of the GWR model shine a light on some of these processes, finding statistically significant associations between the success rate of applications in an LSOA and the IMD score, proportion of homes of owned tenure type, proportion of homes of privately rented tenure type, and the median house sale price of an LSOA. There is not, however, a statistically significant association between the proportion of persons from a non-white ethnic background in an LSOA and the success rate of applications in an LSOA.

This is dissimilar from the statistically significant association between the number of planning applications per 1,000 persons in an LSOA and the proportion of persons from a non-white ethnic background identified in Section 5.1, and suggests that ethnic minority groups are statistically less likely to submit planning applications, perhaps because of socio-economic disparities (Zuccotti, 2019) but, once an application is submitted, there is no statistical disadvantage in the likelihood of a successful application.

Figure 9 visualises how these associations vary over space, showing that in LSOA shaded red in Figure 9a, a one-unit increase in IMD score is associated with an increase of up to 0.46 in the success rate of planning applications in an LSOA, whilst in those shaded blue, a negative association is seen whereby the same change is associated with a reduction of up to -1.18 in the success rate.

Although there is no statistically significant association identified in Section 5.1 between the number of planning applications per 1,000 persons in an LSOA and the IMD score of an LSOA, there is a statistically significant association between the IMD score of an LSOA and the success rate of applications in an LSOA. Therefore, it can be argued that deprivation has little statistical impact on the likelihood of an application submission, but may pose a disadvantage in some areas when it comes to the success of an application.

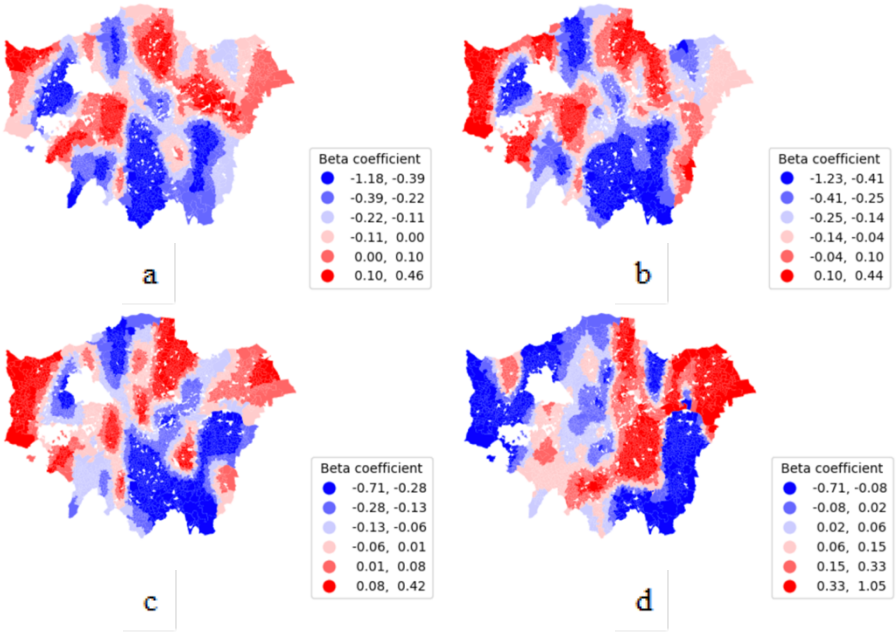

Figure 9- Spatial variation in the associations between the success rate of planning applications in an LSOA and geodemographic characteristics (a- IMD score; b-the proportion of homes of owned tenure type; c- the proportion of homes of privately rented tenure type; d- median house sale price)

A similar range of spatial variation is seen in Figure 9b, where a one-unit increase in the proportion of homes of owned tenure type in an LSOA shaded red is associated with an increase of up to 0.44 in the success rate of planning applications, but a negative association is seen in those shaded blue, in which the same change is associated with a reduction of up to -1.23 in the success rate of planning applications.

Additionally, Figures 9c and 9d illustrate how a one-unit increase in the proportion of homes of privately rented tenure type in an LSOA or the median house sale price of an LSOA is associated in some LSOA with an increase in planning application success rate of up to 0.42 and 1.05 respectively, but a decrease in success rate of up to -0.71 amongst both variables. In comparison to Section 5.1, the ranges of spatial variation evident in Figures 9b, 9c, and 9d are reduced, suggesting that these variables have a greater statistical impact on the number of planning applications submitted in an LSOA than the subsequent success or failure of a planning application in an LSOA.

Overall, Research Question 3 identified that the success rate of planning applications is spatially variable between London LSOA. More importantly, it identified that the success rate of planning applications in an LSOA is associated with the geodemographic characteristics of the IMD score, proportions of housing of owned and privately rented tenure types, and the median house sale price of an LSOA.

At an LSOA level, the findings demonstrate how the planning system can potentially compound or fail to mitigate urban challenges such as deprivation, whilst the differences in planning application success rate at a planning authority level perhaps highlights disparate planning policies between authorities and shows the need for standardised decision-making, a suggestion that has been called for in the recent Government White Paper (UK Government, 2020) and tentatively in Clifford et.al. (2020).

5.4. What factors predict the success of planning applications?

Figure 10 shows how each of the application types and geodemographic characteristics of an LSOA affect the odds of a successful application in an LSOA. Of these, it is clear that the type of application is the strongest predictor of a successful application. An application for a noise assessment, for instance, is 15 times more likely to be approved than an application for an extension, whilst applications for both tree works and a discharge of conditions are approximately 3 times more likely to be approved than an extension.

This is perhaps because such applications have relatively little impact on people, place, and environment, unlike an application for an extension which is a more complex matter. More intrusive applications, such as room conversions, shopfront advertising, and minor works are weaker predictors of a successful application, bolstering this idea.

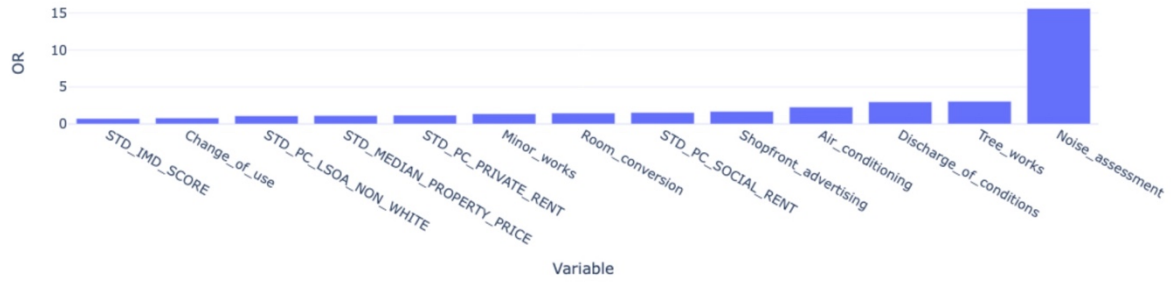

Figure 10- Odds ratios

Results also indicate that an application for a change of use is the weakest application type predictor of a successful application. This is surprising given the pressing need for retail conversions to combat the urban challenge of declining high streets (Carmona, 2015; Peel and Parker, 2017; Clifford and Madeddu, 2022), but may be a result of the expansion in 2021 of permitted development rights, which removed the need for full planning permission in the conversion of a retail unit into housing (Madeddu and Clifford, 2021).

Of the geodemographic variables, the proportion of housing of socially rented tenure type in an LSOA is the strongest predictor of a successful application in an LSOA, with a one-unit increase in this proportion increasing the likelihood of application success by 1.56 times. This finding is supported by the work of Ball (2010), who found that planning authorities and investment have, in recent years, targeted areas of high social housing provision, which perhaps helps explain the strong effect on application success.

In contrast, the geodemographic variables of the proportions of housing of privately rented and owned tenure types in an LSOA, the IMD score of an LSOA, the proportion of persons of non-white ethnic background in an LSOA, and the median house sale price in an LSOA are all statistically significant but weak predictors of application success. In the case of the IMD score of an LSOA, for instance, a one-unit increase in score increases the odds of a successful application by just 0.73.

6. Implications

The primary finding of this project is that the planning system in London can reinforce and compound urban challenges. These include the entrenchment of deprivation, with results suggesting that planning applications are less likely to be successful in deprived areas, the continual decline of high streets, with applications for a premise change of use only a weak predictor of a successful application, and a reinforcement of the socio-economic status quo, with applications in areas of high property prices and home ownership more likely to be both received and approved.

However, the project also identifies areas where the planning system makes a positive contribution to urban challenges: the proportion of housing of social renting tenure type is the strongest geodemographic predictor of planning application success, indicating how the efforts of the planning system (Ball, 2010) have had a positive impact upon the urban challenge of social housing provision.

Moreover, the project developed insights into the type of planning applications in an area that could be commercially utilised and built a framework from which planning application data can be extracted.

Overall, the spatial variability of planning applications and the success rate of planning applications indicates the need for standardised planning policy, whilst the associations of planning applications and success rates with geodemographic characteristics suggests that reform is necessary for the planning system to have a net positive impact on urban challenges. Such reform must start with the enhanced digitalisation and accessibility of planning application data to enable further research and should consider the diverse needs of all in a planning authority.

7. Limitations and future work

Only a short three-month period was studied; a larger time frame would allow for more granular and evidenced insights, as well as time-series research, but this was limited by computational power and time. This also likely impacted and limited the model performance in Section 5.4.4 of the attached notebook.

Additionally, the short time period likely led to the occasionally inappropriate clustering of planning applications. Despite conducting multiple iterations of the topic modelling process in Section 4.1.2.2 of the attached notebook, new build developments were clustered together with extensions, meaning that the project could not consider new developments specifically despite them having strong implications for the urban challenge of affordable housing provision.

Future work could enhance these findings by assessing a larger time period, focusing on a particular application type, or by using methods such as sentiment analysis to identify the optimal structure and linguistic attributes of an application. Alternatively, the data extraction framework developed in this project could be used solely to overcome the inaccessibility of planning application data.

8. Conclusions

Understanding the factors behind a successful planning application is important for homeowners, developers, and businesses, but can also help to meet urban challenges.

This project found that the number of planning applications in an LSOA is spatially variable and associated with the proportion of persons of non-white ethnicity, the proportion of homes of owned and privately rented tenure types, and the median house sale price of an LSOA. It also found that the success rate of planning applications is spatially variable across London LSOA, and that these rates are associated with the IMD score, proportion of homes of owned and privately rented tenure types, and the median house sale price of an LSOA.

These findings suggest that the planning system has the capacity to reinforce and perpetuate urban challenges such as area-level deprivation and ethnic inequalities, the decline of high streets, and the shortage of affordable housing.

Moreover, it was identified that applications for non-complex works, such as noise assessments or tree works, are more likely to be approved than those for invasive works such as extensions or a business change of use. Finally, the types of planning application submitted to London planning authorities and within London LSOA were ascertained, resulting in potentially commercially viable insights.

9. References

Alexiou, A., Fahy, K., Mason, K., Bennett, D., Brown, H., et.al. 2021. Local government funding and life expectancy in England: a longitudinal ecological study. *The Lancet Public Health*. **6**(9), pp.641-647.

Alves, S. 2022. Divergence in planning for affordable housing: A comparative analysis of England and Portugal. *Progress in Planning*. **156**, article no: 100536.

Bailey, N. 2015. Housing at the neighbourhood level: a review of the initial approaches to neighbourhood development plans under the Localism Act 2011 in England. *Journal of Urbanism: International Research on Placemaking and Urban Sustainability*. **10**(1), pp.1-14.

Bailey, N. 2020. Poverty and the re-growth of private renting in the UK, 1994-2018. *PloS one*. **15**(2), article no: e0228273.

Ball, M. 2010. Planning delay and the responsiveness of English housing supply. *Urban Studies*. **48**(2), pp.349-362.

Bates, L., Kearns, R., Coleman, T. and Wiles, J. 2019. 'You can't put your roots down': housing pathways, rental tenure and precarity in older age. *Housing Studies*. **35**(8), pp.1442-1467.

Bevan, C. 2014. The Localism Act 2011: The hollow housing law revolution. *The Modern Law Review.* **77**(6), pp.964-982.

Boland, P., Durrant, A., McHenry, J., McKay, S. and Wilson, A. 2021. A 'planning revolution' or an 'attack on planning' in England: digitization, digitalization, and democratization. *International planning Studies*. **27**(2), pp.155-172.

Brookfield, K. 2016. Getting involved in plan-making: Participation in neighbourhood planning in England. *Environment and Planning C: Politics and Space*. **35**(3), pp.397-416.

Cabinet Office. 2005. *Improving the prospects of people living in areas of multiple deprivation in England*. [Online]. [Accessed 10 August 2023]. Available from: http://www.sportni.net/wp-content/uploads/2013/03/improving_the_prospects_of_people_living_in_areas_of_multiple_deprivation_in_England.pdf

Carmona, M. 2015. London's local high streets: The problems, potential and complexities of mixed street corridors. *Progress in planning*. **100**, pp.1-84.

Carmona, M. 2021. The existential crisis of traditional shopping streets: The sun model and the place attraction paradigm. *Journal of Urban Design*. **27**(1), pp.1-35.

Carniero, P., Cattan, S., Dearden, L., van der Erve, L., Krutikova, S. and Macmillan, L. 2020. *The long shadow of deprivation: Differences in opportunities across England*. [Online]. [Accessed 5 August 2023]. Available from: https://www.voced.edu.au/content/ngv%3A87884

Castaño-Rosa, R., Sherriff, G., Thomson, H., Guzmán, J.S. and Marrero, M. 2019. Transferring the index of vulnerable homes: Application at the local scale in England to assess fuel poverty vulnerability. *Energy and Buildings*. **203**, article no: 109458.

Centre for Retail Research. 2021. *What happens to the high street?* [Online]. [Accessed 3 August 2023]. Available from: https://www.retailresearch.org/high-street-shopping.html

Clifford, B. and Madeddu, M. 2022. Turning shops into housing? Planning deregulation, design quality and the future of the high street in England. *Built Environment*. **48**(1), pp.123-140.

Clifford, B., Andres, L., Carmona, M., De Magalhaes, C., et.al. 2020. *The future of the planning system in England: Written evidence submitted by the Bartlett School of Planning, University College London*. [Online]. [Accessed 10 August 2023]. Available from: https://discovery.ucl.ac.uk/id/eprint/10127459/

Darwell, J. 2012. The mail keeps coming (empty shops). *International Journal of Epidemiology*. **41**(5), pp.1237-1240.

Davoudi, S. and Cowie, P. 2013. Are English neighbourhood forums democratically legitimate? *Planning Theory & Practice*. **14**(4), pp.562-566.

Derounian, J. 2011. *Parish, town and community councils are genuinely democratic vehicles for translating fine words about localism into reality.* [Online]. [Accessed 10 August 2023]. Available from: https://eprints.lse.ac.uk/41128/

Dolega, L. and Lord, A. 2020. Exploring the geography of retail success and decline: A case study of the Liverpool City Region. *Cities*. **96**, article no: 102456.

Ertiö, T.P. 2015. Participatory apps for urban planning—space for improvement. *Planning Practice & Research*. **30**(3), pp.303-321.

Fallon, K.F. and Price, C.R. 2023. Evaluating exposure to crime among LIHTC building types and characteristics in Ohio. *Housing Policy Debate*. **33**(2), pp.379-395.

Ferm, J., Clifford, B., Canelas, P. and Livingstone, N. 2020. Emerging problematics of deregulating the urban: The case of permitted development in England. *Urban Studies*. **58**(10), pp.2040-2058.

Foster, D. and Warren, J. 2021. The NIMBY problem. *Journal of Theoretical Politics*. **34**(1), pp.145-172.

Geoghegan, J. 2013. *Poorer areas see few neighbourhood plan applications*. [Online]. [Accessed 25 July 2023]. Available from: https://www.planningresource.co.uk/article/1175787/poorer-areas-few-neighbourhood-plan-applications

Griffiths, S., Dhanani, A., Ellul, C., Haklay, M., Jeevendrampillai, D., Nikolova, N., Rickles, P. and Vaughan, L. 2013. *Using space syntax and historical land-use data to interrogate*

narratives of high street 'decline' in two Greater London suburbs. [Online]. [Accessed 2 August 2023]. Available from: https://discovery.ucl.ac.uk/id/eprint/1418127/

Hackett, P. 2019. *The housing crisis in London, Berlin and other German cities: A British-German dialogue.* [Online]. [Accessed 8 August 2023]. Available from: https://www.thinkhouse.org.uk/site/assets/files/1951/tackling-the-housing-crisis-in-our-cities-a-british-german-dialogue.pdf

House of Commons. 2021. *Planning in England: permitted development and change of use.* [Online]. [Accessed 8 August 2023]. Available from: https://commonslibrary.parliament.uk/research-briefings/sn00485/

Inch, A., Dunning, R., While, A., Hickman, H. and Payne, S. 2020. 'The object is to change the heart and soul': Financial incentives, planning and opposition to new housebuilding in England. *Environment and Planning C: Politics and Space*. **38**(4), pp.713-732.

Krugman, P. 1991. Increasing returns and economic geography. *Journal of Political Economy*. **99**(3), pp.483-499.

Local Government Association. *An introduction to the Localism Act*. [Online]. [Accessed 20 July 2023]. Available from: https://www.local.gov.uk/introduction-localism-act

Lowe, P. 2019. *The Housing Market and the Economy*. [Online]. [Accessed 2 August 2023]. Available from: https://www.rba.gov.au/speeches/2019/pdf/sp-gov-2019-03-06.pdf

Mackintosh, S. and Heywood, F. 2015. The structural neglect of disabled housing association tenants in England: Politics, economics and discourse. *Housing Studies*. **30**(5), pp.770-791.

Madeddu, M. and Clifford, B. 2021. Housing quality, permitted development and the role of regulation after COVID-19. *Town Planning Review.* **92**(1), pp.41-48.

Marchand, R., Genovese, A., Koh, S.L. and Brennan, A. 2019. Examining the relationship between energy poverty and measures of deprivation. *Energy Policy*. **130**, pp.206-217.

Marsh, R., Chang, M. and Wood, J. 2020. The relationship between housing created through Permitted Development Rights and health: a systematic review. *Cities & Health*. **6**(4), pp.833-852.

Matthews, P., Bramley, G. and Hastings, A. 2014. Homo economicus in a big society: Understanding middle-class activism and NIMBYism towards new housing developments. *Housing, Theory and Society*. **32**(1), pp.54-72.

Mayor of London. 2018. *The London Health Inequalities Strategy.* [Online]. [Accessed 20 July 2023]. Available from: https://www.london.gov.uk/sites/default/files/health_strategy_2018_low_res_fa1.pdf

McAllister, P., Shepherd, E. and Wyatt, P. 2018. Policy shifts, developer contributions and land value capture in London 2005–2017. *Land Use Policy*. **78**, pp.316-326.

McKee, K., Soaita, A.M. and Hoolachan, J. 2019. 'Generation rent' and the emotions of private renting: self-worth, status and insecurity amongst low-income renters. *Housing Studies*. **35**(8), pp.1468-1487.

Milz, D. and Gervich, C.D. 2021. Participation and the pandemic: how planners are keeping democracy alive, online. *Town Planning Review*. **92**(3), pp.335-341.

Morton, A., and Ehrman, R. 2011. *More homes: fewer empty buildings*. [Online]. [Accessed 29 July 2023]. Available from: https://policyexchange.org.uk/wp-content/uploads/2016/09/more-homes-fewer-empty-buildings-mar-11.pdf

Office for National Statistics. 2019. *Exploring the UK's digital divide.* [Online]. [Accessed 1 August 2023]. Available from: https://www.ons.gov.uk/peoplepopulationandcommunity/householdcharacteristics/homeinternetandsocialmediausage/articles/exploringtheuksdigitaldivide/2019-03-04

Pain, K. 2008. Examining 'core–periphery' relationships in a global city-region: the case of London and Southeast England. *Regional Studies*. **42**(8), pp.1161-1172.

Parker, G. and Salter, K. 2017. Taking stock of neighbourhood planning in England 2011–2016. *Planning Practice & Research*. **32**(4), pp.478-490.

Parker, G., Wargent, M., Salter, K. and Yuille, A. 2023. Neighbourhood planning in England: A decade of institutional learning. *Progress in Planning*. Article no: 100749.

Peel, D. and Parker, C. 2017. Planning and governance issues in the restructuring of the high street. *Journal of Place Management and Development*. **10**(4), pp.404-418.

Planning Portal. 2020. *COVID-19 and full planning applications*. [Online]. [Accessed 29 July 2023]. Available from: https://ecab.planningportal.co.uk/Uploads/Planning_Portal_planning_market_insight_report_june2020.pdf

Ramzanpour, M., Sharghi, A. and Nourtaghani, A. 2023. Low-income housing stigma, results and outcomes: a systematic review. *Journal of Housing and the Built Environment*. **38**(2), pp.861-930.

Roberts, M. 2017. Urban design, central London and the 'crisis' 2007–2013: business as usual? *Journal of Urban Design*. **22**(2), pp.150-166.

Salvatore, M.A. and Grundy, E. 2021. Area deprivation, perceived neighbourhood cohesion and mental health at older ages: A cross lagged analysis of UK longitudinal data. *Health & Place*. **67**, article no: 102470.

Sharma, M., Kim, S.S., Lee, H. and Sonn, J.W. 2021. *Affordable Housing Policies in the United Kingdom and Their Lessons for Developing Asia.* [Online]. [Accessed 5 August 2023]. Available from: https://www.adb.org/sites/default/files/publication/736156/adb-brief-190-affordable-housing-policies-uk-lessons.pdf

Shepherd, E., McAllister, P. and Wyatt, P. 2022. State regulation of land financialisation: land promoters, planning risk and the land market in England. *Housing Studies*. pp.1-27.

Sivarajah, U., Irani, Z. and Weerakkody, V. 2015. Evaluating the use and impact of Web 2.0 technologies in local government. *Government Information Quarterly*. **32**(4), pp.473-487.

Stanton, J. & Bowes, A. 2014. The Localism Act 2011 and the general power of competence. *Public Law*, pp. 392-402.

Townshend, T.G. 2016. Toxic high streets. *Journal of Urban Design*. **22**(2), pp.167-186.

Trust for London. 2022. *Income inequality over time.* [Online]. [Accessed 1 August 2023]. Available from: https://trustforlondon.org.uk/data/income-inequality-over-time/

UK Government. 2010. *Localism Bill starts a new era of people power*. [Online]. [Accessed 1 August 2023]. Available from: https://www.gov.uk/government/news/localism-bill-starts-a-new-era-of-people-power

UK Government. 2011. *Localism Act 2011: Overview*. [Online]. [Accessed 1 August 2023]. Available from: https://www.gov.uk/government/publications/localism-act-2011-overview

UK Government. 2020. *Planning for the future*. [Online]. [Accessed 1 August 2023]. Available from: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/958420/MHCLG-Planning-Consultation.pdf

UK Government. 2023. *Live tables on planning application statistics*. [Online]. [Accessed 1 August 2023]. Available from: https://www.gov.uk/government/statistical-data-sets/live-tables-on-planning-application-statistics

Wang, Y., Shen, C., Bartsch, K. and Zuo, J. 2021. Exploring the trade-off between benefit and risk perception of NIMBY facility: A social cognitive theory model. *Environmental Impact Assessment Review*. **87**, p.106555.

Wargent, M. 2017. *Democratic participation and agonism: citizen perspectives of participatory spaces created under the Localism Act (2011).* [Online]. [Accessed 4 August 2023]. Available from: https://etheses.whiterose.ac.uk/17565/

Wrigley, N., Lambiri, D., Astbury, G., Dolega, L., Hart, C., et.al. 2015. *British high streets: From crisis to recovery? A comprehensive review of the evidence.* [Online]. [Accessed 2 August 2023]. Available from: https://eprints.soton.ac.uk/375492/1/BRITISH%2520HIGH%2520STREETS_MARCH2015%2528V2%2529.pdf

Young, G.W., Kitchin, R., and Naji, J. 2020. Building city dashboards for different types of users. *Sustainable Smart City Transitions.* **28**(1-2), pp.289-309.

Zuccotti, C.V. 2019. Ethnicity and neighbourhood attainment in England and Wales: A study of second generations' spatial integration. *Population, Space and Place.* **25**(7), article no: e2252