

TRINITY COLLEGE DUBLIN
M.SC. APPLIED SOCIAL DATA SCIENCE

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The Price of Policing: Uncovering Local Economic Divides in Stop and Search

– A Study of London and
Merseyside

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Abstract

This study examines the spatial concentration of stop and search (S&S) practices through a comparative analysis of the 2022 Merseyside and Greater London policing data. While existing research extensively explores the ethnic dynamics of S&S, this study expands upon it by considering how differing social compositions between these two regions influence the economic dynamics of policing. Specifically, London's highly diverse, multicultural population contrasting with Merseyside's relatively more homogenous demographic. Departing from a purely demographic focus, this investigation examines the geographical distribution of policing practices and the relationship between S&S incidences and localised economic inequality. By assessing these policing encounters at the local level, the findings reveal statistically significant correlations between S&S incidence and economic inequality. By comparing these regions, this study offers new insights into how differing social make-ups shape the relationship between spatial justice, economic disparity and policing strategies.

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1 Introduction

1.1 Background and Context

Stop and search is a widely used policing tactic that allows officers to stop individuals in public spaces and search them for illegal items such as drugs, weapons or stolen property. While intended to enhance public safety and deter crime, the practice has long been controversial in the UK. Critics argue that it disproportionately targets certain communities, particularly Black, Asian and Minority Ethnic (BAME) groups, raising concerns about racial discrimination and the erosion of public trust in law enforcement. Despite policy reforms aimed at improving transparency and accountability, stop and search remains heavily debated in terms of its effectiveness, fairness and social impact. This dissertation examines the spatial and economic dimensions of stop and search practices, focusing on the relationship between local economic disparities and the geographic distribution of these incidents in two regions: Merseyside and Greater London. By exploring how economic inequality and social composition influence policing strategies, this study contributes to a growing body of work on spatial and structural inequalities in law enforcement.

1.2 Research Problem and Motivation

The central issue addressed by this research is how the spatial patterns of stop and search correlate with localised economic disparities. While a significant body of research has explored the racial and social dynamics of stop and search, far less attention has been paid to the role of economic inequality in shaping its implementation. Understanding how policing practices reflect and reinforce socioeconomic divides is essential for developing a more grounded and critical view of their impact in diverse urban environments. By focusing on two contrasting regions—Merseyside and Greater London—this study responds to a gap in the literature that tends to overlook the intersection between economic conditions and policing. Existing research often treats race, geography and class as separate factors; this project aims to explore how these elements combine to produce differentiated policing outcomes across space.

1.3 Research Aim and Objectives

The primary aim of this research is to explore how the spatial distribution of stop and search practices in Merseyside and Greater London correlates with local economic disparities at the Lower Super Output Area (LSOA) level. The specific research objectives are:

- To analyse the spatial distribution of stop and search incidents in Merseyside and Greater London.
- To assess the relationship between economic inequality and the frequency of stop and search incidents.
- To evaluate the impact of social composition (e.g., ethnicity, income levels) on stop and search practices.

1.4 Research Questions

The research question guiding this study is:

To what extent do the spatial patterns of stop and search in Merseyside and Greater London, reflecting their differing social compositions, correlate with localised economic disparities at the Lower Super Output Area (LSOA) level?

1.5 Methodological Approach

This study will employ a quantitative research design, using publicly available data on stop and search incidents from local police authorities in Merseyside and Greater London. Key

variables—including stop and search rates, socioeconomic indicators (such as income levels and deprivation indices) and demographic data (e.g., ethnicity, age)—will be analysed at the LSOA level. Analytical techniques will include spatial mapping to identify policing hotspots, as well as statistical modelling to assess the relationship between economic inequality and stop and search frequency. This approach allows for a detailed examination of both geographic and structural dimensions of contemporary policing.

1.6 Significance and Contribution

This research is significant for several reasons. Academically, it contributes to the under-explored intersection of economic inequality and policing practices in England and Wales, particularly within the context of stop and search. It offers a more integrated understanding of how social and economic factors jointly influence the deployment of police powers across space. From a policy perspective, the findings could inform more equitable approaches to policing by highlighting the socioeconomic biases that underpin current practices. Societally, this study aims to improve public awareness of how stop and search disproportionately affects marginalised communities, particularly in areas marked by economic deprivation and racial inequality.

2 Literature Review

2.1 Theoretical Foundations of Stop and Search

A critical dimension in understanding stop and search practices is public trust in the police. Murray (2021) investigates this through a city based cross-sectional survey of school children across Scotland and England, focusing on their experiences of crime and victimisation [Murray et al.2021]. Respondents were asked about their exposure to stop and search, including the frequency and nature of their most recent encounters. This study reveals significant variation in the prevalence of stop and search across cities, with Sheffield showing higher rates among non-white respondents, while Glasgow showed the opposite trend. Interestingly, in cities like Birmingham and Edinburgh, there was no notable ethnic disparity in stop and search prevalence.

These findings show how local social compositions and policing cultures may shape the implementation and perceived fairness of stop and search powers. Such contextual patterns echo the central concern of this dissertation, which examines spatial disparities in stop and search practices between Merseyside and Greater London.

However, Murray's study also highlights methodological limitations. Key among them is its reliance on self-reported data, which may introduce recall bias or inaccuracies in reporting sensitive interactions with law enforcement.

Although, the use of self reported data may truly be the only way to evaluate UK policing interactions. This is due to the lack of interaction documentation from stop and searches, there is often little to no documented evidence of how the 'suspect' was actually treated or how they perceived their treatment. This has lead to the introduction of Body Worn Cameras (BWC) to document the interactions.

The introduction of this video evidence has lead to studies such as [Henstock and Ariel2017], which conducted a six month randomised controlled trial to assess the impact of BWCs on police use of force. While the findings indicated a 50% reduction in the odds of force being used when BWCs were present, the study faced significant limitations. Notably, the sample size was relatively small, with only 46 officers participating, what more with the officers having to volunteer for the study this introduces potential selection bias.

Or [Owens et al.2014] which investigated the effect the body worn cameras had on the officers perceptions of themselves. Using surveys they assessed how the officer felt they behaved with or without the BWCs. This style of self reporting perhaps obviously lead to professional PR style statements such as "I am just as professional, whether it is switched on or off" [Owens et al.2014]. Such self-reported statements, however, often lack substantive value for any form of analysis.

These studies often "lack consistency and sample sizes are often small" [Criminal Justice Alliance2021], limiting their suitability as rigorous empirical evidence within academic research. Given these limitations, the focus of this dissertation will not be on BWCs.

2.2 Stop and Search in the UK: Policy and Historical Context

The development of stop and search powers in the UK cannot be separated from their historical application to Black and minority ethnic (BAME) communities. [Yesufu2013] traces the origins of this policing tool to the Vagrancy Act 1824, which introduced the so-called 'sus' laws. These gave officers the authority to stop and search individuals based purely on suspicion – a loosely defined term at the time[Roberts2023]. These powers, widely criticised for their arbitrary use, were disproportionately applied to young Black men and played a central role in fuelling distrust between BAME communities and the police; as stated by the [The Police Foundation2012].

Yesufu's work highlights how early legal frameworks have shaped modern perceptions of policing legitimacy and fairness. This is especially relevant in the context of the ongoing conversation surrounding institutional racism. While the most notorious examples are often associated with US police forces, the UK is by no means exempt from such concerns [Delsol2006].

Although the 'sus' laws were eventually repealed, their legacy persists in current stop and search practices. Today, Black individuals remain significantly more likely to be stopped by police, pointing to a continuity of racialised surveillance under a different legislative guise

[Alam et al.2024]. This is particularly evident in the modern use of stop and search powers under Section 60 of the Criminal Justice and Public Order Act 1994, which allows police to stop and search individuals without suspicion in specific areas where there is a perceived threat of violence [Government1994]. Critics argue that these powers disproportionately target Black communities, reflecting an ongoing pattern of institutionalised racism within policing practices. As highlighted by [Gillborn2008], institutional racism is “not limited to individual acts of discrimination but is embedded in the policies and practices that perpetuate unequal outcomes for ethnic minorities”. This has been echoed in more recent studies, such as by [Shiner et al.2018], who conducted a comprehensive analysis of the [National Stop and Search Data](#) in England and Wales. Their work reveals that Black individuals are still significantly more likely to be stopped than their white counterparts, even after controlling for factors like location and crime rates.

2.3 Racial and Socioeconomic Disparities in Stop and Search

Dominating much of the discourse on stop and search is the question of racial and socioeconomic disparities, with race, in particular, occupying a central focus. While this is not the primary concern of this research, the topic cannot be ignored. The racialised implementation of stop and search powers has been a longstanding and heavily scrutinised aspect of policing in the UK.

[Farrell2024] uses NYPD Stop, Question, and Frisk data to examine how the intersections of gender, race and place simultaneously shape the nature and frequency of stop and frisk encounters. Though based in the US, the study’s insights are instructive, particularly in showing how location and identity are jointly implicated in patterns of policing. In the UK context, similar dynamics are evident, with stop and search powers disproportionately exercised in areas with high ethnic minority populations and elevated socioeconomic deprivation [Buil-Gil et al.2022].

Although gender is not directly addressed in this study, it remains important to acknowledge its interplay with race. [Duff and Kemp2025] highlights how stop and search disproportionately targets “young people and people of colour, especially Black young men and boys”. These patterns reflect deeper institutional biases and are symptomatic of broader structural inequalities in British society.

The use of police powers to humiliate, intimidate or exert dominance over individuals, particularly racialised individuals is not new. [Yates et al.2024] situates such practices within a historical continuation of institutionalised racism, where law enforcement has functioned not just as a tool of public safety but as an instrument of racialised social control.

Despite these challenges, public resistance has been substantial. Campaigns aimed at legislative reform, increased accountability and, in some cases, the complete defunding of police institutions have gained significant traction in recent years. The UK arm of the Black Lives Matter movement, for example, has been vocal in highlighting the racial injustices embedded within stop and search practices and in pushing for fundamental changes to the policing system [Elliott-Cooper2023].

While this research focuses primarily on spatial and socioeconomic dynamics, it is essential to recognise that these are inextricably linked to race. A complete analysis of stop and search practices must account for how these dimensions converge to shape both the implementation and the lived experience of police encounters. Policing is rarely experienced in isolation from identity. As such, race remains a central axis along which stop and search powers are disproportionately exercised, especially in urban areas with high ethnic diversity.

2.4 Legislative Foundations of Stop and Search in the UK

Stop and search powers in the UK have long been justified through the lens of crime prevention, particularly in relation to knife and drug crime. Political rhetoric around these issues has consistently shaped public policy. Successive Prime Ministers, especially during periods of rising youth violence have used stop and search as a visible commitment to public safety. Often invoking it as a deterrent against knife related offences, the strategy gained prominence in the late 2000s and early 2010s, when public concern over knife crime was met with aggressive policing measures rather than social intervention.

2.4.1 Knife Crime

The introduction of the *Offensive Weapons Act 2019*, alongside earlier legislation such as the *Criminal Justice and Public Order Act 1994*, granted police broader authority to conduct suspicionless searches in designated areas. These powers were presented as necessary tools to address a surge in knife-related violence, especially in cities like London. However, evidence from the College of Policing indicates that stop and search has only a limited and inconsistent impact on reducing violent crime [College of Policing²⁰²²]. [Shiner et al.²⁰¹⁸] argue that these powers are disproportionately applied to Black individuals, reinforcing perceptions of bias and contributing to a breakdown in trust between communities and the police. Similarly, the Runnymede Trust has criticised such policies for neglecting the underlying causes of youth violence and has instead called for investment in preventative, community-led approaches [Runnymede Trust²⁰²¹].

Keeling highlights how stop and search practices shape the lived experiences of young Black and minority ethnic men, often fostering feelings of humiliation and exclusion [Keeling²⁰¹⁷]. Drawing on government data, Keeling argues that stop and search is less about preventing crime and more about exerting social control. Crucially, the belief that such practices reduce knife crime is increasingly disputed—even the Metropolitan Police admit there is “no definitive evidence to prove or disprove the suggested link”.

2.4.2 Drug Crime

Talk about laws and legislation for drug related stop and searches

[Koch et al.²⁰²⁴] outlines how shifting government strategies around drug crime, particularly the ‘county lines’ phenomenon have marked a partial move away from punitive approaches. While this shift has been welcomed, the policing of drug-related offences continues to reflect racialised patterns of suspicion and enforcement. In the context of urban hubs like London and Merseyside, drug-related stop and search is often justified through vague associations with gang activity or low-level dealing.

A report by the European Harm Reduction Network highlights how drug suspicion is frequently used as a pretext for stop and search, with Black individuals disproportionately targeted [Pomfret²⁰²⁴]. Despite the volume of searches conducted, the majority do not result in the discovery of drugs or related paraphernalia. This raises questions about both the efficacy and the true motives behind these practices, particularly when considered alongside the broader social costs of over-policing already marginalised communities.

2.5 Gaps in the Literature and Positioning of this Study

A common limitation in existing research on stop and search is the narrow geographical focus of many studies. For instance, [Dippie and Hasan²⁰²⁴] examine stop and search practices within only four London boroughs, restricting the scope of their findings to a highly specific urban context. While their work provides valuable insights into the dynamics of stop and search in these areas, the findings may not be easily generalisable to other regions with different social and ethnic compositions. By examining diverse contexts such as Merseyside and the whole of Greater London, this study aims to contribute a more comprehensive understanding of how social and ethnic factors shape stop and search practices at both the local and national levels.

A key source of inspiration for this study is the work of [Suss and Oliveira^{2022, August}], who introduced an innovative approach to exploring the spatial and economic distribution of stop and search practices. Their study utilised Linear Regressions (OLS) and Species Distribution Models (SDM) to assess the distribution of stops and searches in London, aiming to identify potential patterns and underlying factors. Their findings revealed a strong, statistically significant relationship between stop and search frequencies and “highly unequal neighbourhoods where the rich and the poor co-exist” [Suss and Oliveira^{2022, August}]. This analysis highlighted the role of economic inequality in shaping policing practices, contributing to a relatively under explored area within the literature on economic disparities in law enforcement.

OLS for count data?

While this study shares thematic similarities with [Suss and Oliveira^{2022, August}]’s research, but broadens the scope by examining the effects of social and ethnic composition on stop and search, providing a more nuanced comparison across different regions. The combination of socio-economic and ethnic factors will allow for a deeper understanding of how these variables interact and influence policing practices across urban contexts.

2.6 Building on the Literature

Building on the insights provided by previous studies, this research expands on the exploration of spatial and socioeconomic factors influencing stop and search practices. As highlighted by [Suss and Oliveira^{2022, August}], economic inequality has a significant role in shaping the distribution of policing practices, but it is crucial to extend this investigation to other intersecting factors, such as ethnicity and social composition. [Suss and Oliveira^{2022, August}]’s use of both Linear Regressions (OLS) and Species Distribution Models (SDM) offers an interesting methodological approach, which this dissertation aims to adapt and refine to fit a broader set of urban contexts.

In contrast to studies that focus on the relationship between stop and search and demographic variables in isolated urban areas such as [Dippie and Hasan²⁰²⁴], this research addresses the gap by comparing regions with markedly different social and ethnic compositions, such as Merseyside and Greater London. London the more obvious choice, has been the centre of the majority of the research in this area, specifically in England and Wales. Merseyside by contrast, has featured more frequently in studies concerned with community dynamics and regional identity. From [and¹⁹⁷⁴] investigating the Social geography of the county since the 19th centenary to the more recent [Back et al.¹⁹⁹⁹] looking at what makes a community. This study explores the “*changing cultures of racism in English football*”, highlighting Merseyside’s markedly different racial composition compared to cities like London and Manchester. It notes how Merseyside fans are often implicitly characterised as white, a framing that becomes particularly relevant in the context of racially charged chants exchanged between supporters [Back et al.¹⁹⁹⁹]. These insights stress the importance of regional specificity when examining social dynamics and public perceptions of fairness in policing.

These cities differ not only in size but in their socioeconomic and ethnic make-up, providing a useful basis for comparative analysis. By situating stop and search within these distinct contexts, this research seeks to uncover how structural inequalities play out across location. While quantitative methods will be used to examine the spatial distribution of stop and search activity, these patterns must also be understood alongside qualitative accounts that foreground the lived experience of over-policed communities. In doing so, this study aims to move beyond simple metrics of crime and enforcement, instead offering a more grounded understanding of how race, class and place intersect to shape the realities of contemporary policing in England and Wales.

3 Methodology

3.1 Research Design

This research begins by collecting Stop and Search (S&S) data for the year 2022 from Police.uk. Each recorded stop is geocoded using its latitude and longitude and assigned to a Lower Super Output Area (LSOA) based on the 2021 boundary shapefiles provided by the Office for National Statistics (ONS). Once all stops have been spatially attributed to their respective LSOAs, the data is aggregated to produce total counts of stop and search events per LSOA.

Following this, the aggregated stop and search data is merged with additional contextual variables at the LSOA level, such as demographic indicators from the 2021 Census and economic deprivation measures from the Indices of Deprivation 2019.

The final dataset is then used to perform regression analysis, enabling the investigation of associations between the frequency of stop and search and various area-level characteristics.

3.2 Data Sources and Preparation

This study relies on three primary data sources:

3.2.1 UK Police Data

This study draws on CSV files provided by the official [UK Policing website](#). The dataset includes every recorded crime within each policing jurisdiction, all stop and search incidents, and the outcomes of criminal cases — such as whether a prosecution was successful.

While the crime data is already matched with the LSOA where each incident occurred, the stop and search data only includes geographic coordinates (longitude and latitude), making it more difficult to directly associate with specific areas. This reflects a broader issue of inconsistency in reporting practices across police forces in the UK.

To overcome this limitation, LSOA boundary shapefiles were sourced from the [UK Data Service](#). These shapefiles provide the geographic boundaries of each LSOA in England and Wales, allowing stop and search records to be accurately assigned to their respective areas. The Python package `GeoPandas` was used to carry out the spatial join, mapping each set of coordinates to the correct LSOA for aggregation and analysis.

Importantly, this study focuses only on stop and search data from the Metropolitan Police Service (London) and Merseyside Police. Although other forces such as the City of London Police are available, they were excluded due to limited jurisdiction and a disproportionate number of stop and search incidents. Limiting the scope to these two major forces enables a clearer and more meaningful comparison between two densely populated urban regions with differing social and demographic structures.

3.2.2 Office for National Statistics

The Office for National Statistics (ONS) served as the primary source for the socio-economic data used in this study. The ONS not only provides a comprehensive list of Lower Layer Super Output Areas (LSOAs), used here to ensure that areas with zero stop and search incidents were still included. But also detailed information on the social composition of each LSOA. This was accessed via the 2021 Census data, which includes a wide range of variables from sexual orientation to the number of UK armed forces veterans. However, for the purpose of this study, only the ethnicity data has been utilised. In addition, the ONS provides mean house prices by LSOA. To maintain consistency with the stop and search data, the 2022 edition of this dataset has been used.

3.2.3 UK Government's Official Website (GOV.UK)

Data was also sourced from the UK Government's official website (GOV.UK), specifically the Indices of Deprivation 2019 for England and Wales. This dataset combines income and employment domain scores to evaluate levels of deprivation across LSOAs. For this analysis, the rank measure has been used, as it provides a consistent basis for comparison between regions, such as London and Merseyside.

3.3 Variable Selection

From these data sources, the key variables were operationalised for analysis.

3.3.1 Descriptive Statistics

Table 1: Descriptive Statistics for Stop and Search Data in London

Statistic	N	Mean	St. Dev.	Min	Max
Total Stop Count	4,994	32	77	0	2,317
Drug Related Stop Count	4,994	20	49	0	1,608
LSOA Population	4,994	1,762	320	1,002	4,282
Percentage of BAME Individuals	4,994	45	19	3	98
Income Domain Score	4,994	15,626	8,715	203	34,742
Total Crime Count	4,994	195	290	0	9,956
Drug-Related Crime Count	4,994	7	16	0	731
Mean House Price	4,994	680,011	494,341	156,810	8,325,277

Table 2: Descriptive Statistics for Stop and Search Data in Merseyside

Statistic	N	Mean	St. Dev.	Min	Max
Total Stop Count	923	54	122	0	2,134
Drug Related Stop Count	923	43	100	0	1,729
LSOA Population	923	1,542	294	1,009	3,789
Percentage of BAME Individuals	923	8	9	1	78
Income Domain Score	923	11,782	9,984	3	34,549
Total Crime Count	923	188	266	0	5,067
Drug-Related Crime Count	923	12	28	0	565
Mean House Price	923	199,443	98,194	67,866	1,020,604

[talk about descriptive statistics]

To ensure consistent comparison of the data between London and Merseyside, the independent variables were z-score normalised. This scoring transformation converts the data into a measure of how many standard deviations each data point is from the mean, thereby standardising the scale and allowing for more meaningful comparisons across regions.

3.3.2 Outcome Variable

The primary dependent variable in this analysis is the count of Stop and Search incidents per LSOA. As previously mentioned, this data was spatially aggregated using the geographic coordinates provided in the raw dataset. Any entries where the LSOA was missing or could not be assigned were reclassified as zero counts, under the assumption that these represent areas with no recorded stops.

This analysis focuses on two policing forces: the Metropolitan Police Service and the Merseyside Police. The maps below illustrate the geographical distribution of stop and search events recorded in each region:

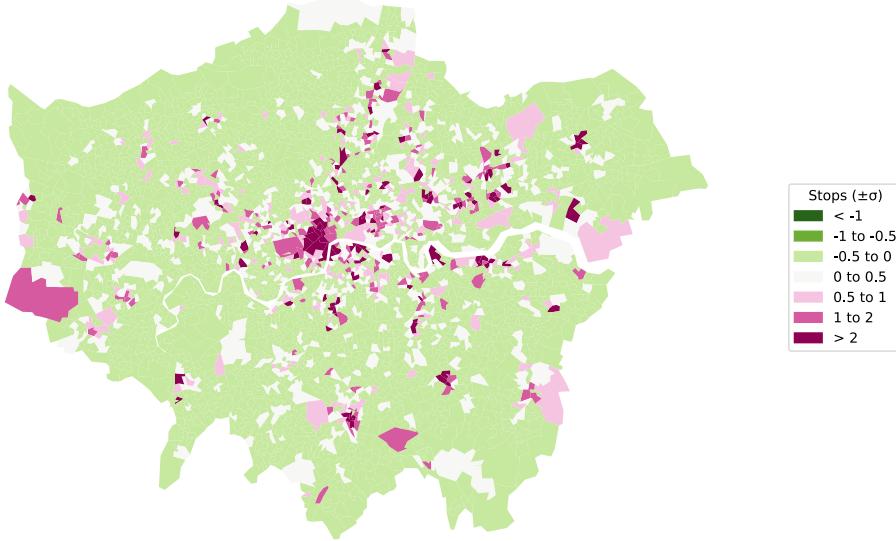


Figure 1: Stop and Search locations in London

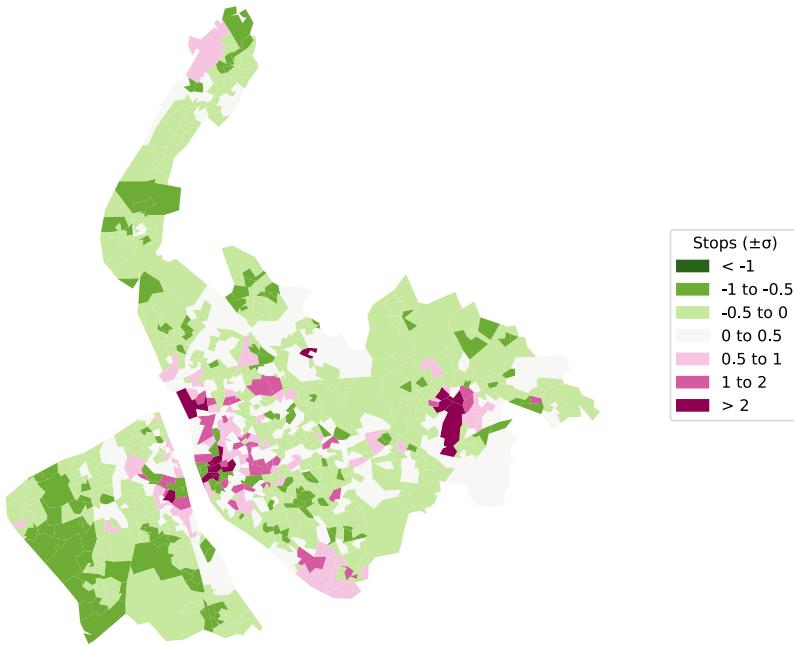


Figure 2: Stop and Search Locations in Merseyside

Figure 1 and Figure 2 illustrate the distribution of stop and search incidents in both London and Merseyside. In both regions, there is a noticeable concentration of stops around the city centres, which may be indicative of higher population density and greater policing activity in these areas. Additionally, pockets of increased stop and search activity appear on the outskirts of both regions, suggesting that areas with varying demographic and socioeconomic characteristics may experience different policing priorities. These patterns could reflect a combination of factors, including targeted policing strategies, areas with known crime hotspots, or the availability of resources in more densely populated urban areas. Further analysis could reveal the underlying drivers of these clustering patterns and help assess whether they align with broader trends in crime and policing practices.

3.3.3 Independent Variables

The Independent Variables...

Crime Rates

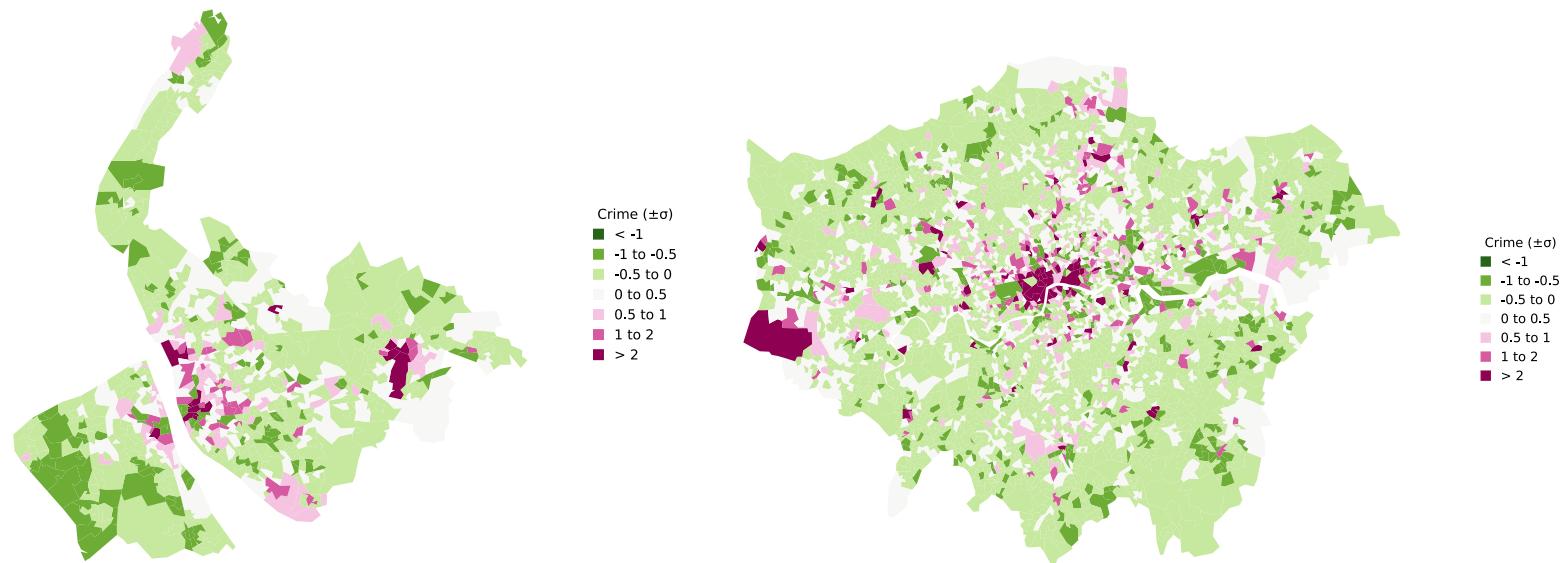


Figure 3: Crime data distribution for Merseyside and London

Drug Related Crime Rates Population Ethnicity – BAME

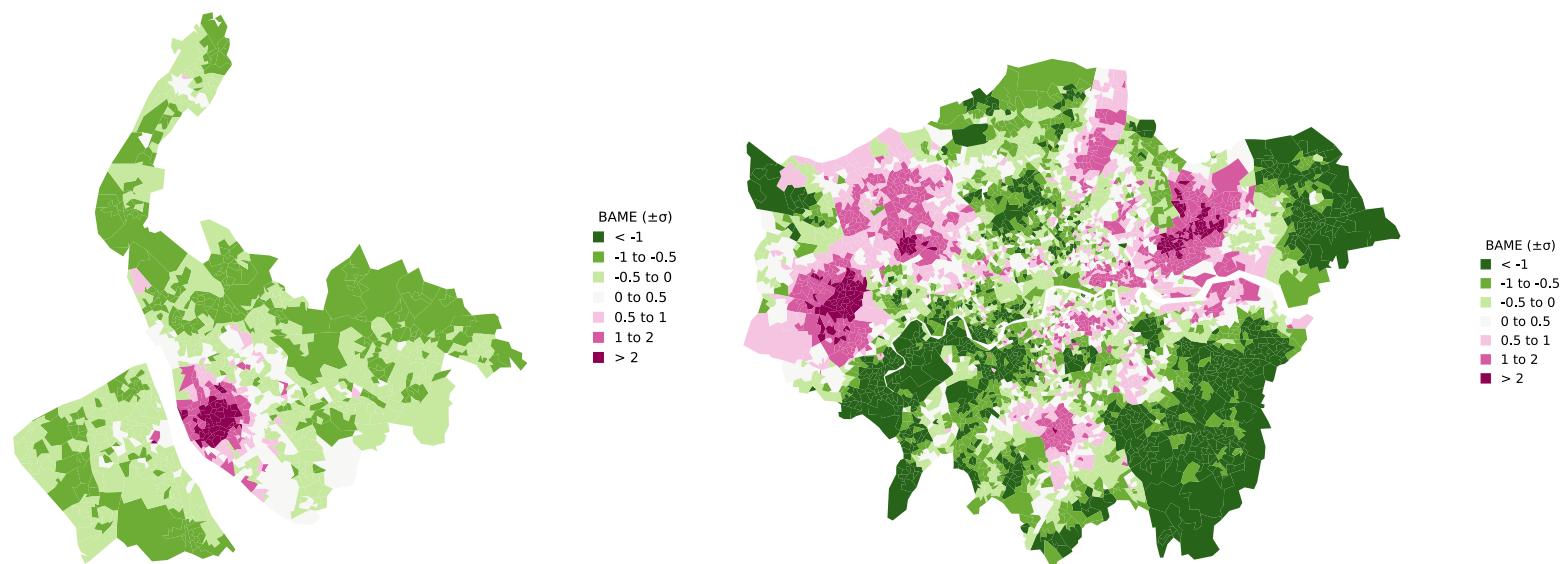


Figure 4: BAME data distribution for Merseyside and London

Income Domain Score

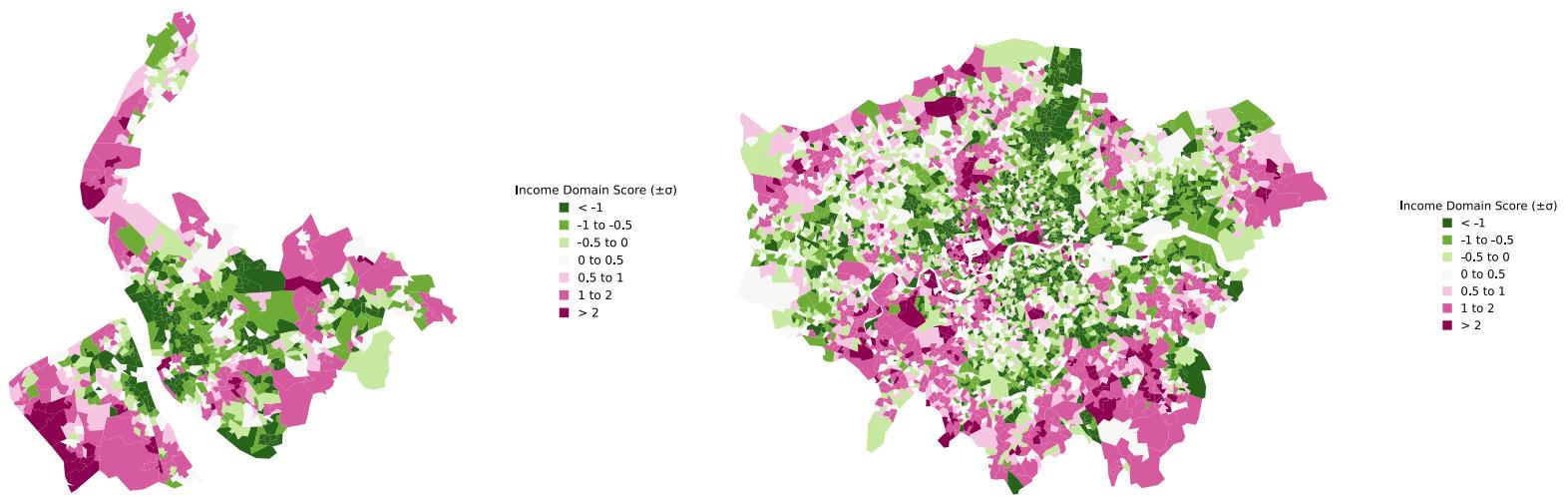


Figure 5: Income Domain data distribution for Merseyside and London

House Price

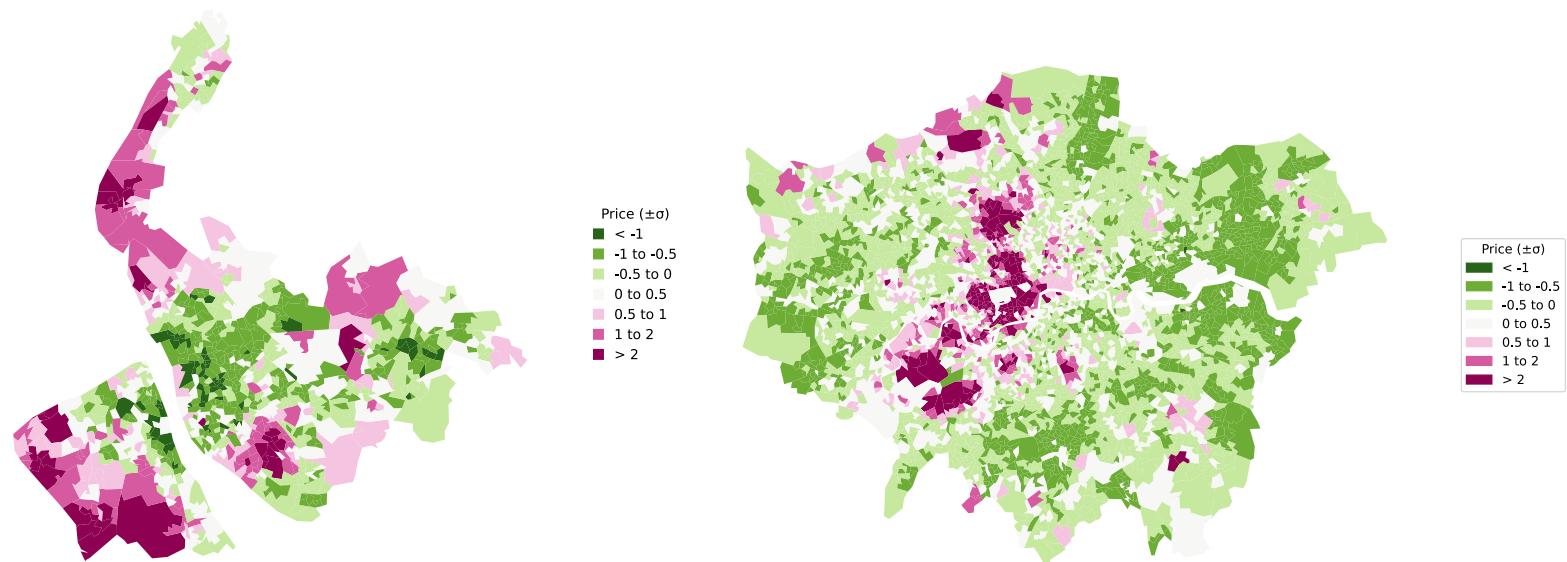


Figure 6: Mean House Price data distribution for Merseyside and London

3.4 Modelling Approach and Rationale

Given the data is ‘count’ data there are 2 available models to use: Poisson and Negative Binomial.

Table 3: Model Fit Comparison: London

Metric	Poisson Model	Negative Binomial Model
AIC	228,422	42,115
Log Likelihood	-114,205	-21,052

To assess model fit and address potential overdispersion in the count data, both Poisson and Negative Binomial (NB) regressions were estimated for both the datasets. Model compar-

Table 4: Model Fit Comparison: Merseyside

Metric	Poisson Model	Negative Binomial Model
AIC	44,980.430	8,289.780
Log Likelihood	-22,484.210	-4,138.890

son statistics strongly favoured the NB specification: the NB model reported a substantially lower AIC (42,117.29) compared to the Poisson model (228,422.2), alongside a markedly higher log-likelihood as shown in Table 3. These results indicate a clear presence of overdispersion in the data, rendering the Poisson model inappropriate. Consequently, the NB model was selected as the more robust and reliable approach for analysing the variation in stop and search counts across boroughs.

3.5 Fixed Effects

Fixed effects is a technique that... used in [Hilber et al.2011] and [Suss and Oliveira2022, August] in regression analysis of London when performing spatial analysis

Table 5: Fixed Effects Model Fit Statistics: London

	No Fixed Effects	With Fixed Effects
AIC	42,115.290	41,751.330
Log Likelihood	-21,051.640	-20,837.670
Pseudo R-squared	0.049	0.057
Dispersion (Theta)	0.960	1.030

Table 6: Fixed Effects Model Fit Statistics: Merseyside

	No Fixed Effects	With Fixed Effects
AIC	8,289.780	8,250.540
Log Likelihood	-4,138.890	-4,115.270
Pseudo R-squared	0.087	0.092
Dispersion (Theta)	1.290	1.350

As shown in Tables 5 and 6, the inclusion of fixed effects leads to improvements in model fit for both regions. Specifically, the AIC is reduced in both models, indicating a better-fitting model when accounting for fixed effects. Moreover, the log likelihood becomes less negative, further suggesting that the fixed effects models provide a more accurate representation of the data. Additionally, the pseudo R^2 increases with the use of fixed effects, which signals an improvement in the proportion of variance explained by the model.

When examining the dispersion parameter (theta), we observe a very slight decrease for London, with a change of less than 0.01. This indicates a marginal reduction in overdispersion when using fixed effects, which suggests that fixed effects may slightly improve the model's handling of variance. In contrast, for Merseyside, the theta value increases by 0.06, albeit marginally. This increase is small and does not suggest a significant negative impact of using fixed effects.

Overall, while there is a small increase in theta for Merseyside, the overall improvements in AIC, log likelihood, and pseudo R^2 across both models strongly support the decision to use fixed effects for both London and Merseyside in subsequent analyses.

4 Results

- 4.1 Spatial Analysis of Stop and Search**
- 4.2 Statistical Model Results**
- 4.3 Interaction Terms**
- 4.4 Interpretation of Findings**

5 Conclusion

5.1 Summary of Findings

5.2 Implications for Policy and Practice

5.3 Limitations and Future Research

References

- Alam, S., O'Halloran, S., & Fowke, A. (2024). What are the barriers to mental health support for racially-minoritised people within the uk? a systematic review and thematic synthesis. *The Cognitive Behaviour Therapist*, 17, e10. <https://doi.org/10.1017/S1754470X24000084>
- and, N. K. (1974). The index of dissimilarity: A measurement of residential segregation for historical analysis. *Historical Methods Newsletter*, 7(4), 285–289. <https://doi.org/10.1080/00182494.1974.10112683>
- Back, L., Crabbe, T., & Solomos, J. (1999). Beyond the racist/hooligan couplet: Race, social theory and football culture. *The British Journal of Sociology*, 50(3), 419–442. <https://doi.org/https://doi.org/10.1111/j.1468-4446.1999.00419.x>
- Buil-Gil, D., Moretti, A., & Langton, S. H. (2022). The accuracy of crime statistics: Assessing the impact of police data bias on geographic crime analysis. *Journal of Experimental Criminology*, 18(3), 515–541. <https://doi.org/10.1007/s11292-021-09457-y>
- College of Policing. (2022). *Stop and search: Effectiveness and fairness*. College of Policing. <https://www.college.police.uk/research/stop-and-search/stop-and-search-effectiveness>
- Criminal Justice Alliance. (2021). *More harm than good: A super-complaint on section 60 stop and search and independent community scrutiny* (tech. rep.) (Accessed: 2025-05-12). Criminal Justice Alliance. https://assets.publishing.service.gov.uk/media/60a7a10cd3bf7f7377976b01/CJA_super-complaint_section_60.pdf
- Delsol, R. (2006). *Institutional racism, the police and stop and search: A comparative study of stop and search in the uk and usa* [Unpublished], University of Warwick. <http://webcat.warwick.ac.uk/record=b2217204~S15>
- Dippie, A., & Hasan, M. (2024). Public influence on the ethnic disparity in stop-and-search statistics in four london boroughs. *Social Sciences*, 13(2), 19–27. <https://doi.org/10.11648/j.ss.20241302.11>
- Duff, K., & Kemp, T. (2025). Strip-searching as abjectification: Racism and sexual violence in british policing. *Theoretical Criminology*, 29(1), 65–90. <https://doi.org/10.1177/13624806241230485>
- Elliott-Cooper, A. (2023). Abolishing institutional racism. *Race & Class*, 65(1), 100–118. <https://doi.org/10.1177/03063968231166901>
- Farrell, C. (2024). Policing gender, race, and place: A multi-level assessment of stop and frisks. *Race and Justice*, 14(3), 290–312. <https://doi.org/10.1177/21533687221078970>
- Gillborn, D. (2008). *Racism and education: Coincidence or conspiracy?* Routledge.
- Government, U. (1994). Criminal justice and public order act 1994, c. 33, section 60 [Accessed: 2025-05-12]. <https://www.legislation.gov.uk/ukpga/1994/33/section/60>
- Henstock, D., & Ariel, B. (2017). Testing the effects of police body-worn cameras on use of force during arrests: A randomised controlled trial in a large british police force. *European Journal of Criminology*, 14(6), 720–750. <https://doi.org/10.1177/1477370816686120>
- Hilber, C. A., Lyytikäinen, T., & Vermeulen, W. (2011). Capitalization of central government grants into local house prices: Panel data evidence from england [Special Issue: The Effect of the Housing Crisis on State and Local Governments]. *Regional Science and Urban Economics*, 41(4), 394–406. <https://doi.org/https://doi.org/10.1016/j.regsciurbeco.2010.12.006>
- Keeling, P. (2017). No respect: Young bame men, the police and stop and search. *Criminal Justice Alliance*. <https://www.criminaljusticealliance.org/wp-content/uploads/No-Respect-Young-BAME-men.pdf>
- Koch, I., Williams, P., & Wroe, L. (2024). 'county lines': Racism, safeguarding and statecraft in britain. *Race & Class*, 65(3), 3–26. <https://doi.org/10.1177/03063968231201325>
- Murray, K., McVie, S., Farren, D., Herlitz, L., Hough, M., & and, P. N. (2021). Procedural justice, compliance with the law and police stop-and-search: A study of young people in england and scotland. *Policing and Society*, 31(3), 263–282. <https://doi.org/10.1080/10439463.2020.1711756>
- Owens, C., Mann, P., & Mckenna, R. (2014). *The essex body worn video trial: The impact of body worn cameras on criminal justice outcomes of domestic abuse incidents*

-
- (tech. rep.). College of Policing. https://whatworks.college.police.uk/Research/Documents/BWV_Report.pdf
- Pomfret, A. (2024). City report-london. the disproportionate harms of drug prohibition on oppressed peoples. civil. *City of London*. https://correlation-net.org/wp-content/uploads/2024/04/2023_CEHRN-Monitoring_City-Report-London.pdf
- Roberts, C. (2023). Discretion and the rule of law: The significance and endurance of vagrancy and vagrancy-type laws in england, the british empire, and the british colonial world. *Duke Journal of Comparative International Law*, 33(2), 195–240. <https://djcil.law.duke.edu/article/discretion-and-the-rule-of-law-roberts-vol33-iss2/>
- Runnymede Trust. (2021). *Over-policed and under-protected: The road to safer communities*. The Runnymede Trust. <https://www.runnymedetrust.org/publications/over-policed-and-under-protected>
- Shiner, M., Carre, Z., Delsol, R., & Eastwood, N. (2018a). The colour of injustice: 'race', drugs and law enforcement in england and wales. *Stop Watch and Release*. https://www.stop-watch.org/uploads/documents/The_Colour_of_Injustice.pdf
- Shiner, M., Carre, Z., Delsol, R., & Eastwood, N. (2018b). The colour of injustice: 'race', drugs and law enforcement in england and wales. *Stop Watch and Release (Drugs charity)*. https://www.stop-watch.org/uploads/documents/The_Colour_of_Injustice.pdf
- Suss, J. H., & Oliveira, T. R. (2022). Economic inequality and the spatial distribution of stop and search: Evidence from london. *The British Journal of Criminology*, 63(4), 828–847. <https://doi.org/10.1093/bjc/azac069>
- The Police Foundation. (2012). The briefing: Stop and search [Series 2, Edition 3 – March 2012]. https://www.police-foundation.org.uk/wp-content/uploads/2017/08/stop_and_search_briefing.pdf
- Yates, A. K., Obus, E., Peele, H., Petrovic, L., Wing, S., & Cunningham, M. (2024). The function of power: A herstorical model of power, trauma, and policing african americans. *Psychological trauma: theory, research, practice, and policy*, 16(3), 363.
- Yesufu, S. (2013). Discriminatory use of police stop-and-search powers in london, uk. *International Journal of Police Science & Management*, 15(4), 281–293. <https://doi.org/10.1350/ijps.2013.15.4.318>

A Appendix