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'Levelling up' social mobility? Comparing the social and spatial mobility for university graduates across districts of Britain

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Abstract

Social and spatial mobility have been subject to substantial recent sociological and policy debate. Complementing other recent work, in this paper we explore these patterns in relation to higher education. Making use of high-quality data from the higher education statistics agency (HESA), we ran a set of multilevel models to test whether the local authority areas where young people grow up influence social and spatial mobility into a higher professional or managerial job on graduation. We found entry to these patterns reflect pre-existing geographies of wealth and income, with more affluent rural and suburban areas in South-East England having higher levels of entry to these occupations. Graduates clustered from major cities tended to be spatially immobile and those from peripheral areas further away from these cities show a higher density of long-distance moves following graduation. We also explored the intersection between social and spatial mobility for graduates with the economic geography of Britain, showing that access to high-class occupations is not necessarily associated with long-distance moves across most British districts. Our evidence further suggests that the 'London effect', where working-class students have

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higher school attainment than their peers elsewhere, may not continue through to graduate employment.

KEYWORDS
graduate outcomes, regional inequalities, social mobility, spatial mobility

1 | INTRODUCTION

Regional inequality, social and spatial mobility and education have been the subject of major debate in policy and academic circles over recent years (Britton et al., 2021; Buscha et al., 2021; Francis et al., 2021, p. 2). A UK government body tasked with improving social mobility, the Social Mobility Commission (SMC) argued '…Britain's social mobility problem is not just one of income or class background, it is increasingly one of geography' (2017, p. 2). This now appears to be developing in a new direction with the new co-chair of the SMC emphasising that young people should not have to 'leave to achieve' (Francis et al., 2021, p. 6). Early social science analyses intermittently noted the need to analyse spatial and social mobility together (Bell, 1968; Musgrove, 1963; Savage, 1988) but over the last decade there has been a renewed spatial turn in the interactions between space, place and social mobility (Chetty et al., 2014; Friedman & Macmillan, 2017; Bosquet & Overman, 2019; Yu, 2022; Yu & Athey, 2023). These papers have all examined the role of place and/or spatial mobility in shaping prospects for social mobility. Local patterns of social mobility, as well as patterns of spatial mobility to and from university (Davies et al., 2021; Gamsu & Donnelly, 2021), also reflect and reinforce regional inequalities. Rather than using longitudinal survey data which tends to have smaller sample sizes and have a time lag in production, we use contemporary administrative data from higher education students graduating in 2018. This allows us to capture contemporary trends in social and spatial mobility as they happen, whilst having the limitation of not representing more mature career destinations for young people.

Spatial mobility for graduates has a long association with upward social mobility, with economically successful 'escalator regions' (e.g., Fielding, 1992) playing a persistent role in forging unequal social and spatial mobilities in different parts of the UK (Wielgoszewska, 2018). Historically, economic performance varies widely between regions of Britain (Overman, 2019), spatial mobility is acritical element in the adjustment of regional labour markets (Amior & Manning, 2015; Blanchard & Katz, 1992). Since Savage (1988) argued there is a 'missing link' in the study of the relationship between social and spatial mobility there has been a notable expansion in the literature exploring social and spatial mobility together, particularly over the last decade. This work has also begun to use administrative data drawn from education and other governmental surveys (Duta & Iannelli, 2018; Friedman & Macmillan, 2017), we develop this approach here using new higher education statistics authority (HESA) data, the graduate outcomes survey (GOS).

Analysing regional variations in social mobility (SMC, 2017) and geographical inequalities in graduate destinations from different social backgrounds has been a major public policy concern over recent years (Office for Students, 2021). Higher education has been seen to be central to government policy around social mobility. The Opportunity Areas policy (Department for Education, 2017) invested funds and research resources into areas with high deprivation and lower levels of educational attainment; access to higher education was a central concern. With the Westminster government elected in 2019 focused on 'levelling up' and a more critical turn against higher education (Francis et al., 2021; HM Government, 2022), it is unclear what the expectations are for universities in terms of social mobility and regional inequality. Despite shifts in policy emphasis, administrative data provides the potential for more detailed, granular and 'real time' analyses of how social and spatial mobility are interacting with regional differences to shape contemporary patterns inequality.

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The first aim of this study is to investigate the spatialisation of occupational mobility and employment inequality for recent graduates in Britain. Reflecting service class expansion over recent decades, this study explores the probability of graduates from different parts of the country of achieving a high-class occupation 15 months after leaving university. Furthermore, we explore the relationship between social and spatial mobility, focusing on whether graduates are spatially mobile as part of the process of entering a high-class occupation. Some research has suggested that long-distance movements are often tied to employment (Boyle et al., 2008) and until recently social mobility and higher education policy implicitly fostered spatial relocation for study through emphasising entry to elite universities (Cameron, 2016; Lane, 2015). However, the current 'Levelling up' agenda claims to wish to reverse this pattern, with prominent government ministers claiming that 'You shouldn't have to leave somewhere you love in order to have a truly fulfiling career - that's part of what levelling up is about' (Lloyd, 2021). In this paper we explore current trends in social and spatial mobility into high-class occupations for university graduates, allowing us to explore these debates empirically in real time for recent cohorts of young people. Our analysis allows us to explore which local authorities are associated with higher or lower spatial and social mobility outcomes and by controlling for background characteristics including social class origin we also estimate relative mobility across different parts of Britain.

2 | LITERATURE REVIEW

Social mobility measures how people's social status changes across generations, which is seen as an indicator of the equality of life opportunities. In academia, several studies have found a rise in upward social mobility in post-war Britain, which was commonly attributed to the structural changes that began in the 1960s (e.g., Goldthorpe et al., 1987). The national economy has seen a contraction of manufacturing and industry and an expansion of the service and business sectors, which enables more individuals of working-class parents to progress into professional jobs. Whilst policymakers have emphasised the 'absolute' increase of upward mobility, this however has tended to overlook the central sociological fact that individual achievements occur in a positional competition that typically benefits those from privileged backgrounds (Brown, 2013). Although industrial restructuring over decades has increased the weight of professional and managerial occupations in the class structure, it has also seen greater levels of social reproduction or reduced downward mobility amongst individuals with higher class backgrounds. This is what (Brown, 2013, p. 682) refers to as the 'fallacy of fairness'.

More importantly, traditional research in social mobility has also been criticised for its methodological nationalism (Chernilo, 2011), where scholars tend to measure mobility rate at a national level whilst ignoring whether there are subnational differences. Generally, the geography of wealth and power in the UK has been deeply unequal (Robson, 1986), and patterns of social mobility partly reflect these geographic inequalities (Payne, 1987; SMC, 2017). The UK now has the greatest subnational disparities among OECD nations (e.g., McCann, 2020). The inequalities in wealth and employment between regions have substantially increased with the advancement of deregulation and other economic reforms. Economic re-structuring since the 1980s has resulted in substantial variation in economic performance across regions (HM Government, 2022). A recent national survey shows, despite rising numbers of salariat (i.e., managerial/professional) jobs, 45% of recent increases are concentrated in London and South East (SMC, 2019), which stands in significant contrast to the deindustrialised areas of the North East and Midlands. This not only implies an increase in the concentration of high-class occupations, but also results in more unequal distributions of social, cultural and political capitals that substantially favour already economically dominant regions (Cunningham & Savage, 2015).

Geographical inequality of this sort means that even if a society is experiencing rising social mobility in general terms, national-average mobility rates would likely be less relevant to people living in economically marginalised areas (Buscha et al., 2021). Recent years have seen emerging research showing that omitting the spatial dimension would hide substantial variation in social mobility within a country (e.g., Bell et al., 2023; Chetty et al., 2014;

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Friedman & Macmillan, 2017). In Britain, Friedman and Macmillan (2017) find substantial differences in mobility across 19 regions. Notably, rates of absolute and relative upward mobility are relatively high in areas such as Tyne and Wear and Merseyside. In London there is greater upward mobility for those originating in the capital but when Londoners are taken together with international and domestic migrants, relative and absolute mobility in the capital is low compared to other regions (Ibid: 65). Bell et al. (2023) also provide evidence that there were significant regional disparities in occupational mobility between England and Wales; London has shown higher mobility in education and employment across cohorts. Additionally, Buscha et al. (2021) estimated the rates of occupational mobility for England and Wales using ONS LS data. They showed that the increasing rate of social mobility was not geographically evenly distributed, London was the most socially mobile region while parts of northern England and Wales showed deep-rooted disadvantages.

One of the main forces that scholars may expect to equalise socioeconomic opportunities across regions is migration (Langella & Manning, 2022). Geographers contend that migration is always linked to major life changes and people tend to move to places where they are better rewarded (Borjas, 1987; Borjas et al., 1992), studies often link social mobility and migration in terms of the probability of a better employment outcome in the destination place, for example, Cote (1983) and Fox (1985) both find a strong relationship between spatial mobility and upward occupational mobility, using Nuffield Mobility Study and Longitudinal Census Data, respectively; Champion (2012) provides evidence that migrants are generally found to be more socially mobile than non-migrants. More recently, the SMC (2019) reports that people who move across regions have a better chance of entering top occupations than those who remain in their region of origin. This perspective that social and spatial mobility are inter-related has sparked substantial research into the question that how moving into certain cities or places appears to improve individuals' life opportunities (e.g., Van Ham, 2003). In the UK, given that a large demand of service-class jobs has been spatially concentrated in South-east England, the idea that progress into professions is partially determined by whether people move in there for employment remains central to investigating the interconnection between social and spatial mobility (Miles & Leguina, 2018). This is conceptualised as the 'escalator region' by Tony Fielding (1992).

Studies following Fielding's concept have reinforced the 'escalator' function of London and South-east England (e.g., Findlay et al., 2008; Findlay et al., 2009; Yu, 2022; Yu & Athey, 2023), meaning young people who moved into the region would see better employment opportunities than their peers who stayed in elsewhere. Older papers have also stressed the ability to move, especially out of less privileged regions, increases the likelihood of promotions and the range of life opportunities (Crompton & Jones, 1984), but that the detailed process of how one's social and geographic origins affects upward social mobility remains unclear. Recent evidence shows that people from more privileged backgrounds would be more likely to move and maintain their socio-economic status (e.g., Yu & Athey, 2023), suggesting that internal migration may not be an effective means of addressing inequality between individuals from different social and spatial backgrounds. Theoretically, people from a privileged background often have greater parental support, enabling them to afford the costs associated with relocating. Combining with better resources in accessing and processing information, they are expected to have greater returns on migration made towards job matching than their less privileged peers.

Since 2010 there has been increasing emphasis on access to elite universities and elite employment, side-lining lifelong learning and other forms of access to education (Gamsu, 2020; Lane, 2015). This emphasis of entry to elite universities has often been associated with an emphasis of the need for working-class students to be spatially mobile to access educational opportunities and enhanced occupational prospects that may follow. However, under Boris Johnson the government appeared to move away from this emphasis, instead focusing on 'levelling up' regional inequalities (Institute for Government, 2021) as well as social mobility policy too (Francis et al., 2021). Government ministers have emphasised that individuals should not have to move away to access fulfilling and well-rewarded employment (Institute for Government, 2021; Lloyd, 2021). 'Levelling up' has been critiqued as somewhat vague (Newman, 2021) and it is questionable whether it is truly sufficient to overcome the deepest regional

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inequalities of any OECD country, with the gap between London and elsewhere particularly stark (Beatty & Fothergill, 2020; McCann, 2020).

University graduates have a higher probability of interregional movement (Faggian et al., 2016). The importance of attracting and retaining graduate human capital for regional economies has been explored elsewhere (see Venhorst et al., 2010). Moreover, the effects of selective migration by graduates and other higher earners may have disproportionate effects on those who remain. Those who remain in communities that others leave may suffer a 'double disadvantage' and such selective migrations may sharpen the economic polarisation of areas (Overman, 2019). This in turn influences the spatial patterning of persistence in the distribution and reproduction of disadvantage over the long term (see, e.g., Dorling et al., 2000; Gregory, 2009). Whilst post-2010 policy has emphasised individual spatial mobility as part of an upwardly socially mobile trajectory through (selective) higher education, this now appears to be changing. Our data allow insights into mobility patterns as graduate careers and the processes of social/spatial mobility or social reproduction are in formation. By doing so we can examine the results of recent education and social mobility policy as well as flagging how the uneven geography of the UK is affecting current trends in social and spatial mobility.

3 | DATA AND MEASURES

The data used here is from HESA, the body responsible for higher education (HE) data in the UK. Two specific datasets were involved, firstly the student record, which collects information on all students registered with a HE provider. This includes data on student's socio-economic background, academic profile, degree and course level data. In addition, to access graduates' employment data, we linked this to the GOS which collects graduates' information 15 months after studies finished. Our data refers to the cohort of students that finished their studies in 2017–18 and records their employment status towards the end of 2019. This provides a better measure of post-graduation occupational destination than the predecessor of the GOS, the Destination of Leavers in Higher Education which surveyed graduates 6 months after university.

As in previous studies including the SMC's mobility index (2016), local authority district is used as the spatial unit for analysis. Student and graduate records were taken from 368 local authority districts (excluding Northern Ireland, Isle of Man, the Channel Islands). We excluded cases where graduates are employed outside of Britain, as one's employment outcome would not necessarily provide clear data on the intergenerational transmission of socioeconomic (dis)advantage in a British context. For missing data, we applied list wise deletion, which means cases containing any missing values in the analysed variables were eliminated. As such, our final sample was 88,663.

The National Statistics Socio-economic Classification (NS-SEC) was used to define one's social class position. However, as HESA data uses Standard Occupational Classification 2010 (SOC 2010), transformation was done by using the ONS SOC 2010 to NS-SEC look-up table. Like Buscha and Sturgis (2018), we used the five-scale NS-SEC schema: (I) Higher managerial and professional occupations, (II) lower managerial and professional, (III) intermediate, (IV) semi-routine, (V) routine and (VI) unemployed. For class destination variable, this study focuses on 'long-range' social mobility rather than changes between adjacent classes. We defined NS-SEC classes I-II as a high socio-occupational destination for graduates. It should note that the social background information is collected according to their parents' job if the student was aged below 21 when taking the survey, otherwise it refers to previous employment.

For spatial mobility, previous research defines mobility by either the distance moved or mobility between different geographical areas (Donnelly & Gamsu, 2018a, 2018b). One issue with HESA data is the collection of employment location uses different spatial units across countries, for example, graduates employed in England were recorded by which county or unitary authority they work in, while they were by local authority district in Scotland and Wales. To solve this problem and provide a better spatial mobility measure, we estimated the distance that people moved for employment from their home prior to attending university, this was calculated by using the

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latitude and longitude of their home postcode area and the estimated centroid of the county/district where the graduate was employed. Furthermore, we distinguished spatial mobility between short- and long-distance moves. Other analyses have defined a long-distance move as more than 40 or 50 km (e.g., Boyle et al., 2001). However, graduates are considerably more geographically mobile than non-graduates, and more importantly, the measure of location is based on employment and our estimations to the distances involved are only proximate given the highly aggregated latitude and longitude information for counties, we decided to increase the long-distance threshold to 85 km (roughly the third quartile) to prevent movements from being underestimated, this is approximately the distance from central London to Brighton. In the models below, spatial mobility indicates a move over 85 km or not. Another important limitation to HESA data is that it does not collect locational information for those unemployed, as such we only consider employed or self-employed cases.

Several explanatory variables were included in regression analysis, including gender, ethnicity, study mode and age of university entry. To control for whether students were spatially mobile on entry to university, a distance variable was generated which measures the distance one had moved for university. It was calculated by using the latitude and longitude of postcode areas for home and term-time address. We also include two variables indicating one's education background, namely school and university type. Lastly, two district-level predictors were also introduced to examine how labour market conditions influence individual mobility outcomes. They are weekly gross salary and employment rate for people aged between 16 and 64 in 2018 using NOMIS data, the official labour market statistics for the UK. For a summary of predictor variables, see Table 1.

4 | MODEL

Multilevel modelling assumes cases sharing a characteristic from the same group. The model accommodates the correlation among observations by modelling group-specific variation via additional error terms called random effects (Raudenbush & Bryk, 2001; Singer & Willett, 2003), it facilitates comparisons between cases from different groups. A random-intercept model, where a random intercept term is constructed to be varying by high-level (i.e., district) units, is established as:

$$\text{Individual level}: Y_{ij} = \beta_{0j} + \beta_{1j}X_{ij} + r_{ij}$$

TABLE 1 Summary of predictor variables.

Name	Scale	Description
Study mode	Categorical	Full/part time
Gender	Categorical	Male/Female
Distance moved to university	Continuous	Unit: 10 km
Ethnicity	Categorical	White; Indian; Chinese; Pakistan; other Asian; African; Caribbean; other black; Bangladesh
NS-SEC classes	Categorical	6-Scale: Higher professional, lower professional, intermediate, semi-routine, routine and unemployed
Age of entry	Continuous	16–75
State school	Categorical	0 for private; 1 for state
RG university	Categorical	1 for RG uni; 0 for other university
Weekly salary	Continuous	Unit: 100 pounds/week
Employment rate	Continuous	Unit: 1%

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$$\text{District level}: \beta_{0j} = \gamma_{00} + \gamma_{01} Z_j + u_{0j}$$

$$\text{Rearranged as}: Y_{ij} = \gamma_{00} + \gamma_{01} Z_j + \gamma_{10} X_{ij} + u_{0j} + u_{1j} X_{ij} + r_{ij},$$

$$\log it(\pi_{ij}) = \log\left(\frac{\pi_{ij}}{1-\pi_{ij}}\right) = \gamma_{00} + \gamma_{01} Z_j + \gamma_{10} X_{ij} + u_{0j} + u_{1j} X_{ij} + r_{ij}$$

At the individual level, Y_{ij} represents the value of the dependent variable of the *i*th individual in the district *j*, while X_{ij} is a vector of independent variables; β_{0j} and β_{1j} are the individual-level intercept and slope in district *j*; r_{ij} indicates the error term. At the district level, γ_{00} denotes the average of the dependent variable Y_{ij}; controlling for the district-level variables Z_j, γ_{01} is the slope of the district-level variables Z_j; u_{0j} is the error term at the district level.

Although there is evidence that graduates who move across the country may experience better employment outcomes, our study does not define a direct causality between them. Instead, we applied a 'repeated measure' structure, including them both as outcome variables. This allowed us to investigate how one's occupational and spatial mobility outcomes are both determined by individual's background characteristics. In the model, outcome variables are in the first level where no other parameters are included, because the purpose of this level is to establish the multiple response structure (see Goldstein, 2011); the individual is the second level while the district is the highest level. As the outcome measures are binary, standard linear regression models are inappropriate and therefore this study uses a logit link, where $F(\pi_{ij})$ is the cumulative density function of the logistic distribution.

We constructed models that gradually increase in complexity: the null model contains no predictor variables. A fixed intercept from the model indicates the average odds of being in high class occupation for the sample. The random intercept indicates a district-level average in addition to the population average, note this only gives estimates of employment and movement outcomes; then we ran an extended model which include NS-SEC class variables to note graduates' social class origin, as such mobility figures are expressed by a log odds coefficient in logistic regression; lastly the model is extended to include more variables at the individual level (school type, ethnicity etc), along with predictors at the district level. Models were performed via *MlwiN 3.0.5* (Charlton et al., 2020). Finally, maps of the random intercept for each district were produced using *tmap* in R (version 4.0.4).

4.1 | Descriptive statistics

We first present our descriptive analysis. Figure 1 shows mobility rates by calculating proportions of graduates that were in a higher-class occupation (NS-SEC 1–2) and were spatially mobile, depending on their familial class origin. On both spatial and social mobility measures a higher socio-economic background is associated with greater mobility compared to peers from lower socio-economic classes. Figure 2 shows mobility rates by gender, university type, school type, study mode and ethnicity, respectively. In general, female graduates were at a slight disadvantage in entry to higher class occupations. Women were also less likely to make long-distance moves after graduating, this is in line with Faggian et al.'s (2007) findings on Scottish students. Besides, school type and university reputation appear to influence mobility outcomes significantly. Graduates from private school had an advantage on both mobility measures compared to their state educated peers; similar patterns are found for Russell Group universities compared to other HEIs. Interestingly, whilst graduates from a part-time programme were less likely to be spatially mobile over long distances, they showed a better employment outcome than full-time graduates. Last, we find mobility figures varied significantly across ethnicities (Figure 3). Chinese and Indian graduates had highest entry to professional-managerial occupations; Black Caribbean graduates had the lowest level of social mobility. For spatial mobility, Bangladesh and Caribbean background graduates were least likely to conduct long-distance move after graduation. By contrast, Chinese and White students showed a lot more willingness to move.

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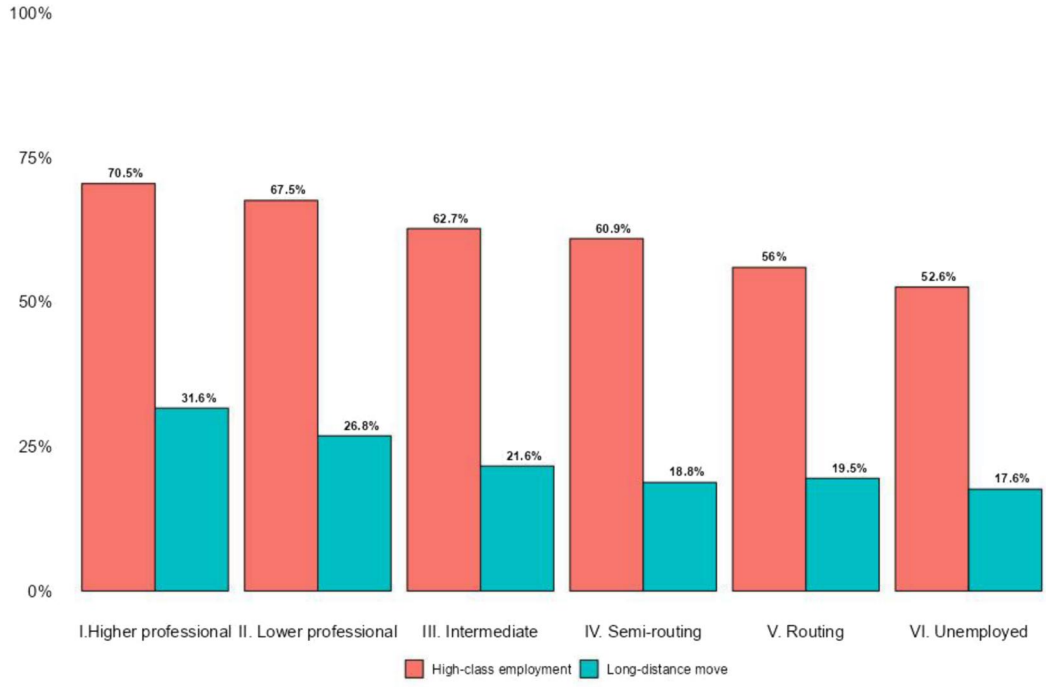

FIGURE 1 Absolute mobility outcomes.

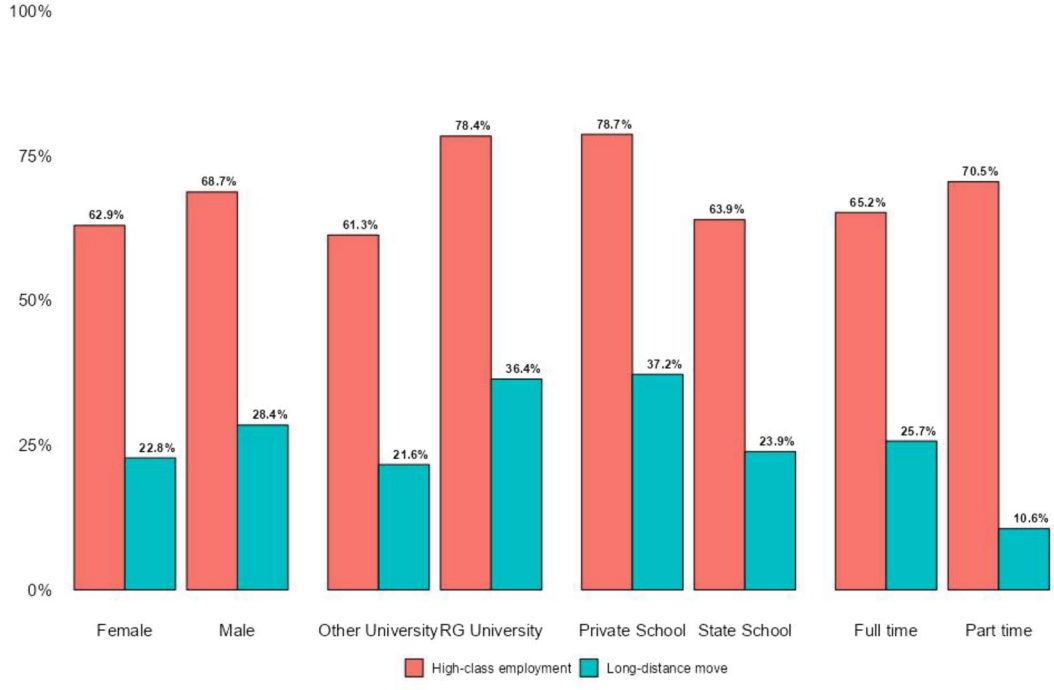

FIGURE 2 Percentage entering high-class employment by gender, types of university, school and course.

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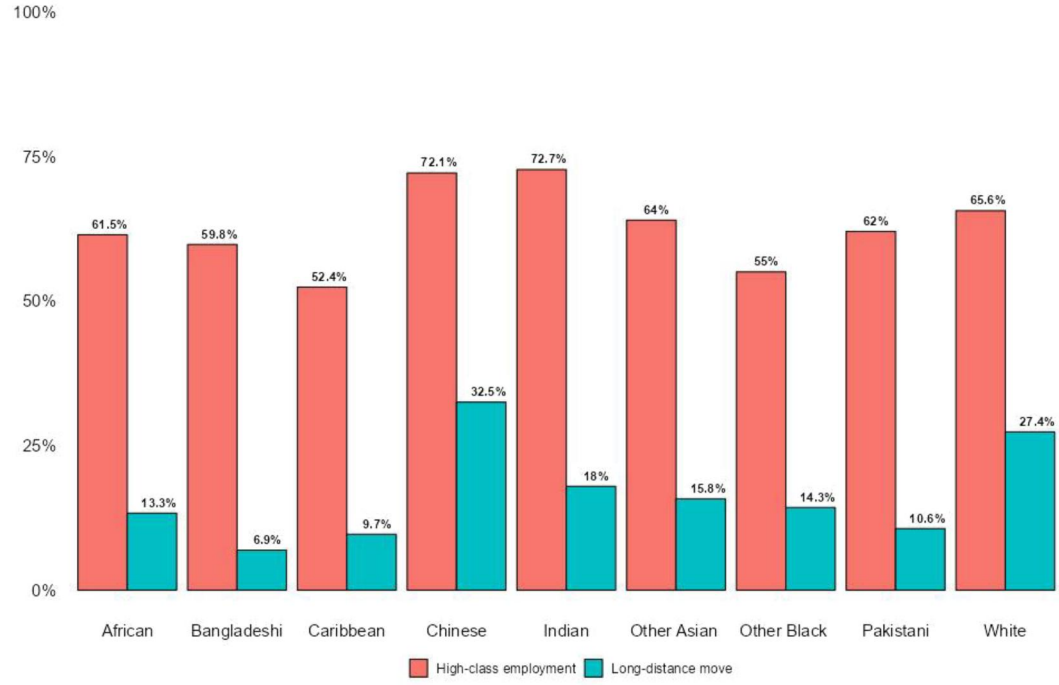

FIGURE 3 Percentage entering high-class employment by ethnicity group.

4.2 | Regression results

To assess the model fits, we first compare the deviance (*−2*loglikelihood)* between models, a smaller value will suggest a better model fit. If we run the null model without considering between-district variation, the deviance was given as 222,480, higher than the values above once district is included. This means a multilevel structure was of a better fit. We also performed a Wald test over the variance parameters and the results suggest there are significant differences between districts for both social and spatial mobility measures.

For the null model, the variance shows not much of it was nested over the district level. As we used logistic regression, to calculate the variance partition coefficient (VPC) value, we applied the latent variable method (Goldstein et al., 2002). Then the VPC is calculated as 0.007, this suggests only 0.7% of variance in the access to high-class occupation is attributable to the district level, while the remaining 99.3% is due to differences between graduates within districts. By contrast, the VPC of spatial mobility suggests the variance nested on the LA level for spatial mobility is about 11.65%, suggesting greater variations of spatial mobility between districts. Whilst VPC seems less easy to understand as it lacks a clear distinction between individual and district level variance, so we compare the odds ratio between different districts.

4.2.1 | Exploring the geography of social mobility outcome

As Table 2 shows, the constant coefficient of 0.634 suggests the odds of being in a high-class rather than low-class occupation is 1.885 in an average district. For the contextual effect of districts, the random intercept of, for example, Sandwell has the lowest value (−0.355) with Wokingham the highest (0.311), so accounting for individual characteristics, a graduate from Wokingham in Berkshire is almost 1.94 times more likely to be in a high-class destination than being from Sandwell in the West Midlands, given in such an extreme case. In addition, we can

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TABLE 2 Regression results.

	Null model		Extended model		Full model	
Random-intercept logit model (IGLS)	**Social**	**Spatial**	**Social**	**Spatial**	**Social**	**Spatial**
Random part						
LA level						
Variance.con	0.025***	0.434***	0.017***	0.441***	0.011***	0.331***
Covar/Corr	−0.003 (−0.025)		−0.011 (−0.127)		0.002 (0.030)	
VPC	0.0075	0.1165	0.0051	0.1182	0.0033	0.091
MOR	1.162	1.870	1.132	1.879	1.105	1.727
Individual level						
Covar/Corr	0.121***		0.114***		0.099***	
Fixed part						
Constant	0.634***	−0.970***	0.851***	−0.671***	−0.158	−0.062
SEC class: Ref higher professional						
Lower professional			−0.125***	−0.221***	−0.054**	−0.082***
Intermediate			−0.331***	−0.494***	−0.226***	−0.209***
Semi- routine			−0.394***	−0.629***	−0.261***	−0.247***
Routine			−0.597***	−0.599***	−0.435***	−0.213***
Unemployed			−0.724***	−0.744***	−0.548***	−0.118
Ethnicity: Ref white						
Pakistani					0.008	−0.441***
Indian					0.354***	0.043
Bangladeshi					−0.046	−0.488***
African					−0.117**	0.082
Chinese					0.232**	0.436***
Other asian					0.052	0.048
Caribbean					−0.163***	−0.163
Other Black					−0.358**	−0.109
Part time					0.119**	−0.321***
Female					−0.235***	−0.250***
Distance moved for university					−0.002*	0.059***
Age of entry					0.038***	−0.042***
State school					−0.433***	−0.219***
RG uni					0.759***	0.369***
District-level predictor						
Weekly salary					0.02***	−0.43***
Employment rate					0.006**	0.033***
*−2*loglikelihood*	215,990		213,687		185,376	

$p < 0.05$*, $p < 0.01$**, $p < 0.001$***.

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calculate a Median Odds Ratio (MOR, Larsen & Merlo, 2005) to suggest a median case of all pairwise comparisons between district variances. The MOR for social mobility measure is about 1.162, suggesting in the median case the residual heterogeneity between LAs increased by 1.162 times the individual odds of being in a high-class occupation. Likewise, we also calculate the MOR for spatial mobility, a result of 1.870 indicates considerable differences in spatial movement between districts.

We find very significant variations of social mobility into high-class occupations between districts. Whilst the difference does seem large if we only consider the median case, this hides substantial variation. To better visualise and interpret the results, Figure 4 shows the random intercept between districts. In line with other recent studies, our analysis finds how graduates from southern England, and particularly the affluent London boroughs and rural areas of the South-East, generally have a higher relative chance to enter a professional or managerial occupation 18 months after graduation. This may offer some partial support the argument that this is the 'engine-room' for social mobility in Britain (Friedman & Macmillan, 2017). However, there are also significant inequalities within London depending on where in the capital graduates are from. London's poorer eastern boroughs still have lower rates of entry to higher professional employment for graduates compared to the Western and Outer boroughs. This

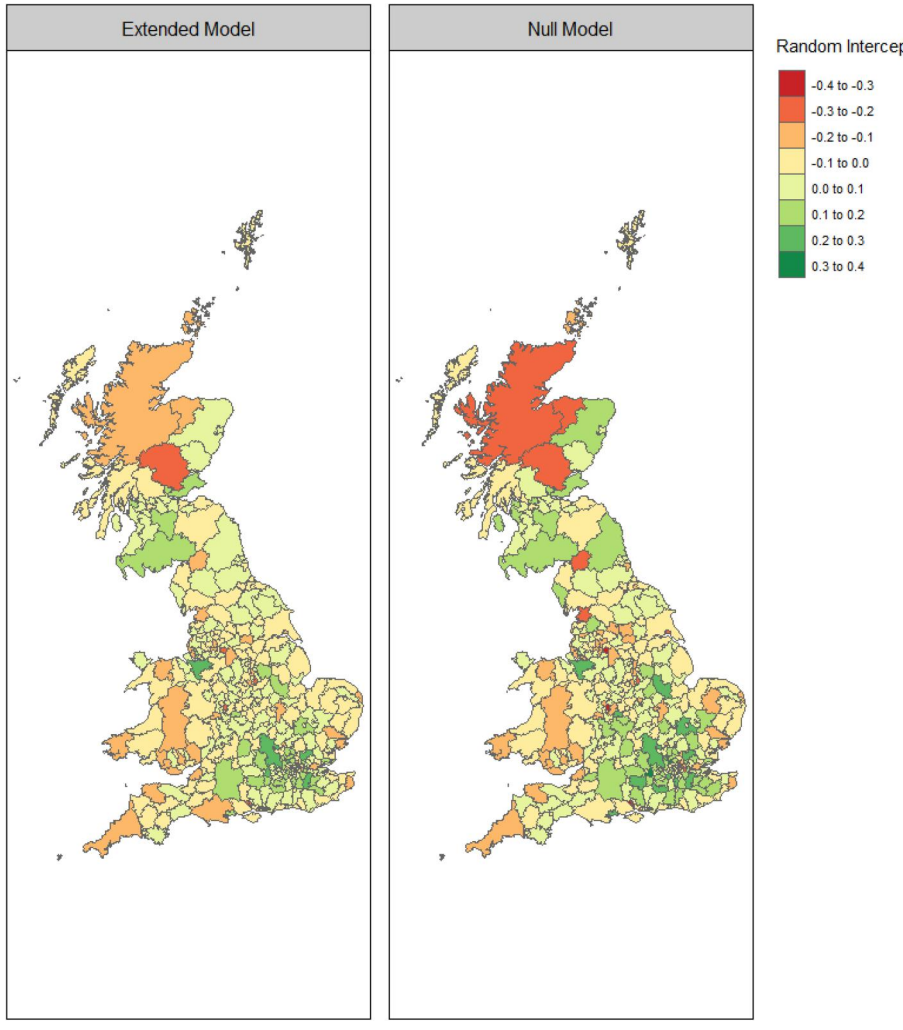

FIGURE 4 Random intercept by districts.

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fits historic patterns of urban inequality and suggest forms of residential segregation and economic inequality persist even as the city has gentrified. We comment on these patterns in the capital further below.

Outside the capital, districts such as South Kesteven, Chester, Solihull and Cambridgeshire also showed higher likelihood of graduate employment in professional occupations underlining the subtle geography of graduate entry to higher status occupations. Geographical origins in affluent suburbs, towns and wealthy rural areas offers advantages, suggesting a persistent and largely unsurprising patterns of social reproduction. By contrast, graduates from districts in peripheral rural areas of Southwest England, coastal areas, Wales, de-industrialised towns and cities across the Midlands and North of England as well as Highland Scotland experience persistent labour market disadvantages. Graduates from Tameside outside Manchester, Southampton, Carlisle, Lancaster, Hull and Nottingham all have lower odds of entering higher professional employment soon after graduation. The other lower performing urban areas are in the capital.

4.2.2 | Questioning the 'London effect' for the capital's graduates

As noted above, we found London areas performed very differently on social mobility, we provide a detailed map for 33 London boroughs (Figure 5). This supports Buscha et al. (2020), who suggest the differences between areas

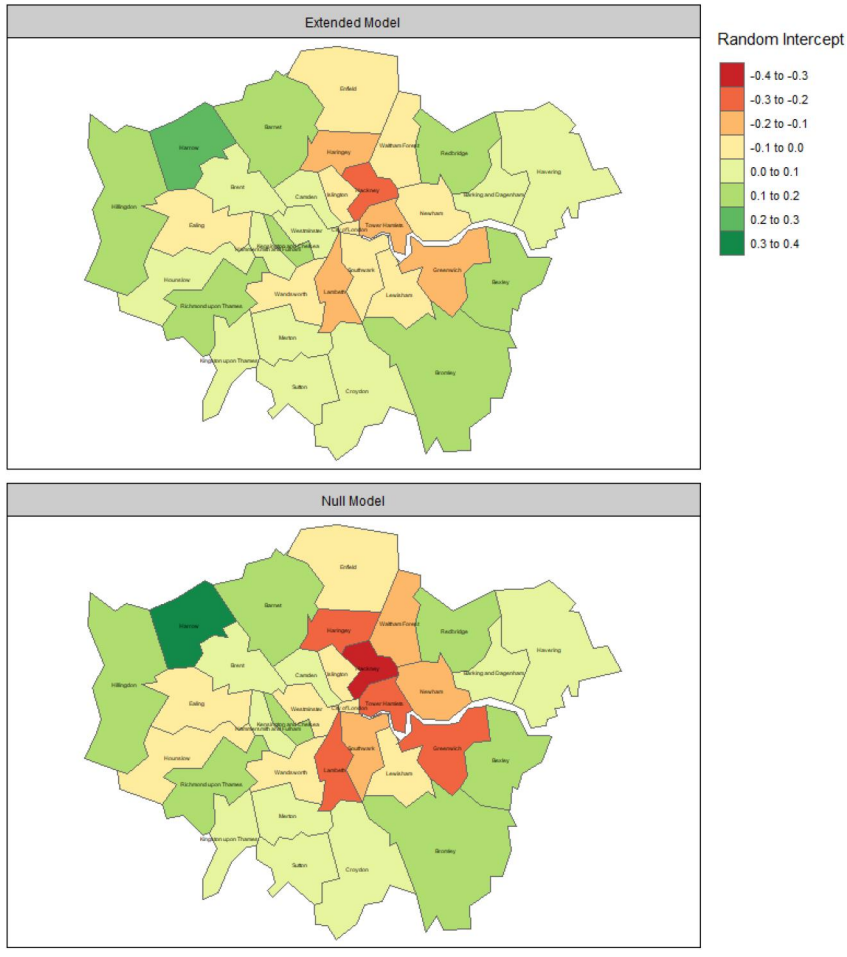

FIGURE 5 Random intercept for London boroughs.

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within a region may be as great as differences across regions, we find this is the case for London boroughs. (Buscha et al. [2020], p. 15) note that within London, whilst relative mobility was higher overall relative to other regions, certain local authorities had low levels of mobility. Our findings suggest that for current generations of graduate students these intra-regional inequalities are persisting. The pattern for graduates from London suggests that entry into professional middle-class employment during the initial stage of graduate careers varies substantially by where in London graduates are from.

Interestingly, the spatial pattern our analysis suggests reflects historic and quite persistent patterns of working-class residence in the city (In Donnison, 1973; Manley & Johnston, 2014). Graduates from the traditionally working-class boroughs of South central and East London having lower chances of entering professional occupations soon after graduation. Moreover, it also suggests claims that there is a 'London effect' (Burgess, 2014) of rising attainment improving the prospects of *school* students from disadvantaged backgrounds in the city need to be tempered somewhat. London is not a hotspot for entry to professional employment for graduates from all boroughs. The opportunities available in the capital's employment market are not available evenly to all and the 'London effect' may not be feeding through to the graduate labour market. Our data allows us to analyse precisely the cohorts affected by the 'London effect' (Friedman & Macmillan, 2017, p. 60) and these findings suggest that improved attainment for Londoners from socio-economically deprived backgrounds does not automatically lead to equality in the graduate labour market. These graduates likely find themselves squeezed between affluent 'privileged domestic migrants' (Ibid., p. 67), the spatially mobile regional middle class, on the one hand, and the metropolitan elite on the other (Cunningham & Savage, 2015). Social closure may be persisting despite improving attainment and geographical inequalities appear to be persisting into the initial stages of employment on graduation.

4.2.3 | Patterns of spatial mobility

Figure 6 shows random intercepts for spatial mobility. District differences are clearly patterned with clustering of immobility centred over London and Southeast England, Cardiff, Manchester, Sheffield, Glasgow and Edinburgh; meanwhile peripheral areas further away from these cities show a higher level of spatial mobility. This is unsurprising given the concentration of graduate employment opportunities in urban centres with graduates from urban, as opposed to rural, areas less likely to have to be spatially mobile to find employment. However, there is also some variation within and between different urban and rural areas. As above, we also map random intercepts for London boroughs (Figure 7). Here lower levels of spatial mobility again likely relate to specificities relating to the underlying social geography of the city. Tower Hamlets for example, tends to have low levels of spatial mobility even within the school system (Butler & Hamnett, 2011, p. 179; Gamsu, 2017, p. 285) which may well be associated with the large British-Bangladeshi and British Pakistani communities who also tend to remain local for university (Gibbons & Vignoles, 2012).

4.2.4 | The intersection of spatial and social mobility by district

Lastly, we examine the correlation of between-district variances of social and spatial mobility. It was given as −0.025, which indicates the district-level effects over social and spatial mobility are poorly associated, districts vary substantially on the two measures. Figure 8 is a two-dimensional scatter plot showing districts' performance, horizontal axis is the social mobility measure while vertical axis is spatial mobility, zero marks the average of individual level estimation. This suggests four categories of performance. In particular, areas nested in the upper right corner show above-average performance on both social and spatial mobility, this means graduates from these areas have a better chance to enter NS-SEC I-II and are also more likely to make a long-distance move for employment.

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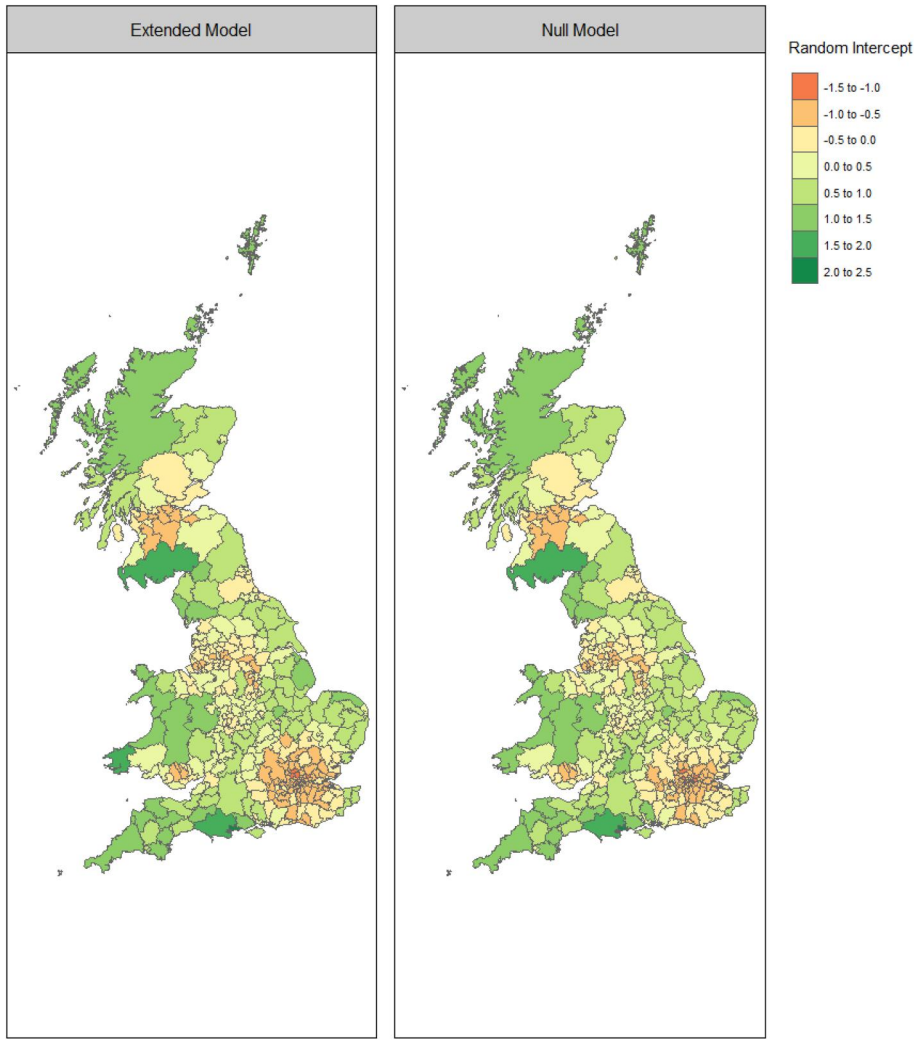

FIGURE 6 Random intercept of spatial mobility.

These are mostly affluent rural areas/towns/smaller cities, these vary geographically but are largely Southern English areas.

In the top left of Figure 8, areas of low social mobility but higher spatial mobility include several geographically peripheral rural or small-town areas across Britain such as Pembrokeshire, Great Yarmouth, Monmouthshire, Cornwall, Moray or the Orkneys. Interestingly even though graduates from these areas are more likely to move, they are less likely to access high-status jobs. In the bottom right we find more affluent areas, many of which are in southern England and the more affluent London boroughs, where graduate spatial mobility is low but entry to higher professional/managerial employment is high. There is some variation in this quadrant with a geographically heterogeneous set of local authorities with lower scores on the social mobility axis. Affluent south-eastern areas are still the largest regional group though and also have higher scores on the *x* axis. Finally, districts in the bottom left corner show low scores against both mobility measures, suggesting graduates from these areas face limited local labour market opportunities with poorer employment outcomes relative to graduates from elsewhere. These areas are notably geographically patterned, concentrated in urban areas including major cities (Glasgow, Liverpool, Nottingham), poorer London boroughs (Newham, Tower Hamlets, Haringey) and smaller post-industrial urban

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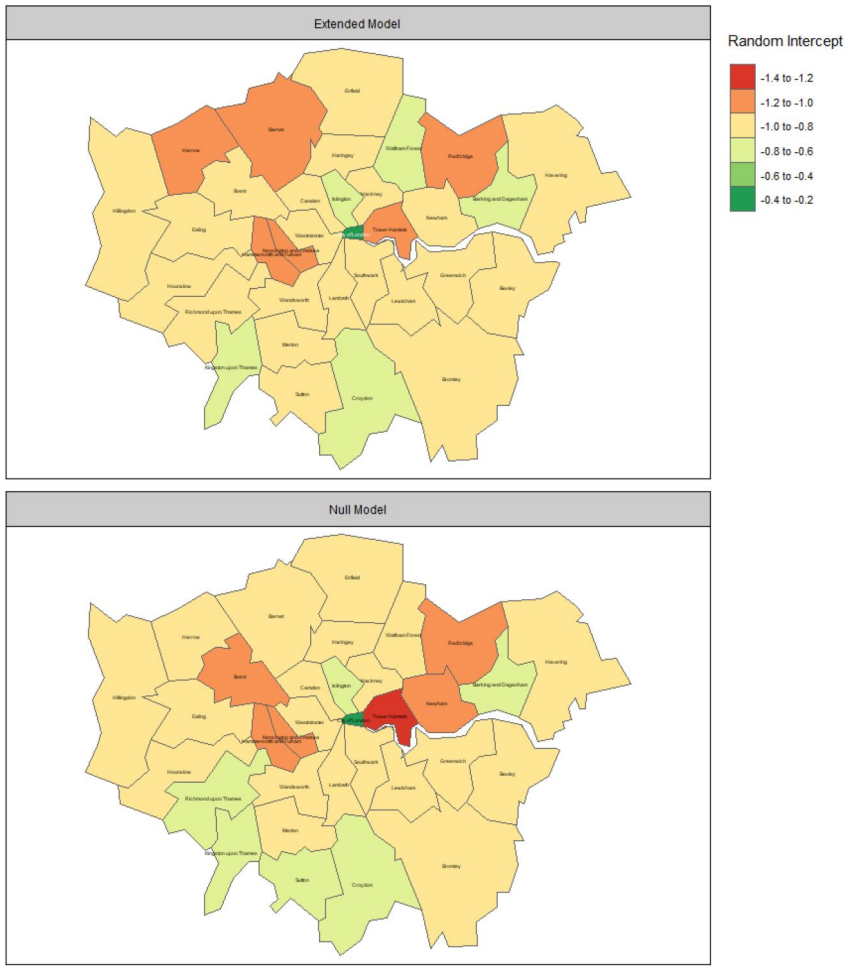

FIGURE 7 Random intercept for London boroughs.

areas (Luton, Tameside, Bolsover). These patterns suggest that the relationship between spatial mobility and entry to professional forms of employment on graduates has a complex relationship to local geography. It is notable that a significant number of these areas (Portsmouth, Hull, Stockton, Birmingham, Glasgow, Wolverhampton and Liverpool) have also experience long-term structural economic decline relative to the rest of the country (Tyler et al., 2017). However, the inclusion of Southampton, one of the most successful cities economically of the last 4 decades (Tyler et al., 2017) indicates that the relationship between structural economic conditions and social/spatial mobility outcomes for graduates is likely to be intricate and nuanced. Where you grow up matters, but the relationship with employment outcomes and spatial mobility is complex and these associations suggest that local labour market conditions and peripheral locations/proximity to affluent urban centres may influence outcomes.

4.2.5 | Examining the extended and full model

We now turn to the extended model, which includes information on one's social class origin. The null model simply predicts the average chance for each district, if a district has more cases with a characteristic producing more effects for the outcome variable (i.e., higher social class origin), then the district average would be 'overestimated'.

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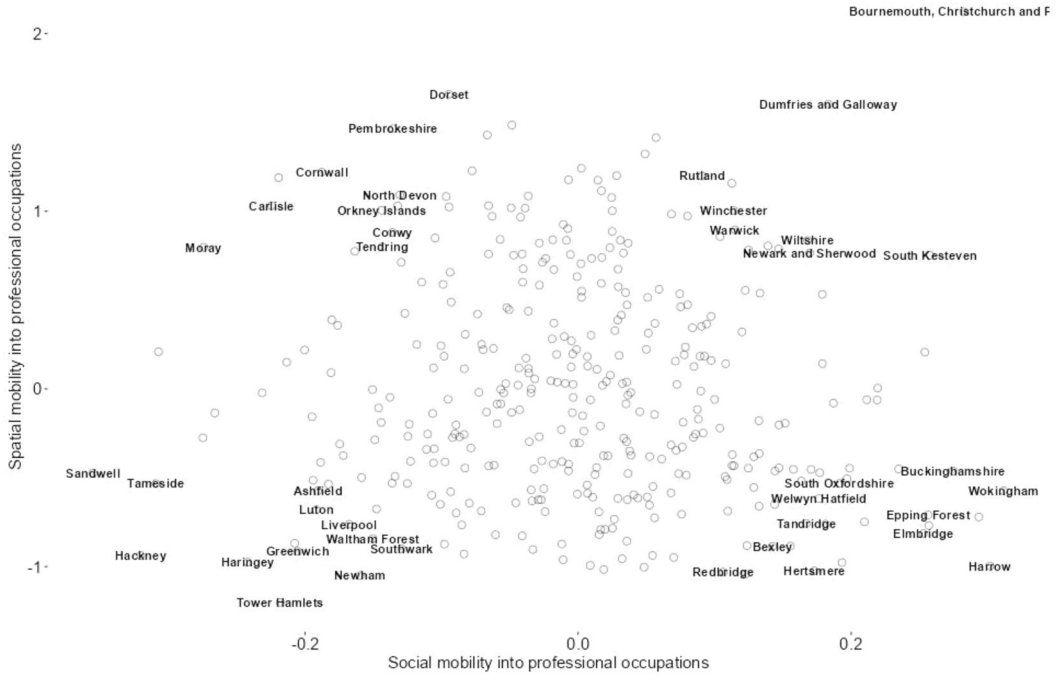

FIGURE 8 Scatter plot—null model.

Back to the case, the extended model shows a better fitting with deviance down to 213,687. The LA-level variance of social mobility declines by 32% (from 0.025 to 0.017), meanwhile a majority of variance over LA level seems persistent or might be even independent from social class background. In other words, both the results from these two models suggest spatial mobility is more geographically specific than social mobility. We also plot the random effects from this model in addition to previous estimates. Furthermore, similar to our descriptive statistics, we find a clear gradient in the social class effect, graduates with a higher social class origin are more likely to land in a top occupation and also move for a long distance. Lastly, one feature of MOR is that it allows us to directly compare odds ratios of individual and district predictions. For example, given the MOR of 1.132 for social mobility, it is similar to the odd ratio of NS-SEC class (I) against class (II) (1/0.878 = 1.139). Thus, in a median case, the difference between districts would be of the same effect as that between NS-SEC class (I) and (II).

Last, we move to the full model. Given the deviance of 185,376, it indicates a better model fit and most predictors are found with significant effects. In particular, the results show the distance moved from home to university could play a role here, every 10 km distance increase is associated with a small decline of 0.002 on the log odds of entry to higher professional occupations. This suggests that there is no simple relationship between spatial mobility for university and entry to higher status forms of occupation for graduates. The narrative that students should be encouraged to leave home for university to improve employment prospects could be questioned here. Meanwhile, moving to attend university is associated with a positive effect on spatial mobility for graduate employment. This further supports the argument that previous movement may lower the barriers to subsequent spatial mobility as the psychological costs of moving are lower (DaVanzo, 1983).

Age also has significant effects for both mobility measures, where older graduates are more likely to land a top occupation but less likely to make moves to do so. This is not surprising since these people might be mature students who had already gained work experiences before going to university. This could be the same story for those studying part-time with work experience, a possible explanation of improved access to professional/managerial employment and reduced likelihood of moving away. This finding highlights some substantial irony here in the

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government's approach since 2010 with part-time student numbers falling by 58% between 2008 and 2015 (Callender & Thomson, 2018, p. 8) whilst the government now claims that people should not have to leave where they are from to get on (Institute for Government, 2021; Lloyd, 2021).

Finally, two district-level predictors are found with significant effects over individuals' mobility outcomes. For example, every £100 increase in the average weekly salary is associated with an increase of 0.02 by log odds coefficient for entry to higher professional employment. This suggests, in line with the maps and scatterplot explored above, that the more affluent (i.e., the higher the average weekly earnings) the area, the more likely graduates are to enter higher status employment. In contrast, higher weekly earnings are negatively associated with spatial mobility. This suggests that graduates are less likely to have been spatially mobile on graduation if they were already in an area with higher earnings. Spatial mobility appears to be quite contingent on local economic geography and affluence. Taking the second district level predictor, employment rate, we find that the higher employment rates in a particular district, the greater the levels of both entry to higher professional employment and spatial mobility. This aligns with previous findings that migrants generally avoid regions with relatively high unemployment rates (Herzog jr. et al., 1993). What is true for more general labour market and migration patterns also appears to be true for the graduate labour market, with higher local employment rates associated with higher levels of spatial mobility on graduation.

5 | DISCUSSION AND CONCLUSION

There has been much focus on the spatialisation of social inequality in recent years. The combined effects of austerity, the continued growth of London's economy, Brexit and the pandemic have both reinforced existing spatial socio-economic inequality and created new formations and modifications on old patterns (Gray & Barford, 2018; McCann et al., 2021; Townsend & Champion, 2020). In academia, with a growing recognition of the geographic effect on individual's life outcomes, many studies have provided evidence that London and some other metropolitan regions have an 'escalator' effect which accelerates individual's progression into professions (Fielding, 1992). Our findings, like Friedman and Macmillan (2017), nuance this analysis.

A significant number of subnational differences were found regarding the social and spatial mobility for the graduate population. Affluent rural and suburban areas in South-East England showed increased levels of entry to professional employment, while clustering of spatial immobility centred over major cities. Our analysis suggests that access to high-class occupations is not necessarily associated with long-distance move across most British districts.

Notably we find considerable variation within London, with graduates from some of the poorer and more ethnically diverse London boroughs less likely to enter higher professional employment. These boroughs instead share similar rates of social mobility to post-industrial urban areas in the North of England and the Midlands. This suggests that policy successes within the school system that have seen higher attainment for students from deprived backgrounds in the capital, the 'London effect', may not feed through to the graduate labour market. Graduates from wealthier London boroughs and the affluent shire districts around London all having much higher entry into professional and managerial employment. This pattern is true nationally with graduates from more affluent rural areas, particularly in England, having much greater success in achieving high-status jobs soon after university.

Looking at current patterns of graduate social and spatial mobility appears to reinforce the structural nature of inequalities. The 'levelling up' agenda might appear to respond to lower levels of high-managerial employment for graduates from more marginalised areas. And yet, this analysis highlights how key elements of government policy have pushed the solution to these inequalities further away. The finding on part-time students is particularly reflective of this. Part-time students were less likely to be spatially mobile and slightly more successful in entering high-status managerial/professional employment. However, as noted above, numbers of these students have fallen

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dramatically since 2010 as a result of both misplaced policy decisions around part-time student funding and the 2008 recession (Callender & Thomson, 2018).

Our analysis highlights the possibility of using these administrative data to track trends as they are in process. There is, however, the limitation that this data does not allow us to look at more long-term career trajectories and destinations for graduates over the 20s and into their early 30s when they reach occupational maturity. Also, a large amount of missingness presents when linking up student records and their employment outcomes, this suggests the data might have been biased towards those who reported an employment status after graduation. Nonetheless, our analyses are useful in identifying the role of, and limits to, higher education as an agent of social change in shaping patterns of social and spatial mobility as they combine. Lastly, based on our results, one should note much more distinctions are consistently drawn among graduates within a district, this is particularly the case for social mobility. Future analyses could explore whether different geographical units could be more reliable than the local authority district for the analysis of spatial inequalities amongst graduates. The question of whether attending university or where you are from has a greater effect on labour market outcome also remains to be explored further.

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CONFLICT OF INTEREST STATEMENT

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available from the Higher Education Statistics Agency (HESA): www.hesa.ac.uk. Restrictions apply to the availability of these data, which were used under licence for this study. Data are available from the authors with the permission of HESA.

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