BERJ | British Educational Research Journal

BERA British Educational Research Association

British Educational Research Journal
Vol. 47, No. 4, August 2021, pp. 1079–1101

DOI: 10.1002/berj.3711

Geographies of elite higher education participation: An urban 'escalator' effect

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Based on analysis of an administrative dataset, which includes granular detail on 800,000 English students over a 10-year period, this article identifies an urban 'escalator' effect in entry to elite universities, with disadvantaged youth in the urban centres of England having higher rates of entry than similarly disadvantaged youth located rurally. Using multilevel modelling, as well as Geographic Information System (GIS) methods, the analyses show that while place in *itself* is not a major contributory factor in entry to elite universities overall, there is a distinct urban–rural patterning to progression. When raw progression rates by area alone are observed, rural areas typically have higher progression rates to elite universities. However, when the full range of individual differences are accounted for, including attainment, socio-economic status, ethnicity and accessibility to elite universities, the converse is true—localities within and surrounding major urban centres are those with the highest progression rates. A 'vortex of influences' is likely to favour urban disadvantaged youth, including the geography of social class and ethnic identities, a legacy of concerted policy interventions within urban areas, as well as the proliferation of widening participation activity in urban centres.

Keywords: elite universities; escalator regions; geographies of higher education; urban and rural

Introduction

There is growing attention internationally on the importance of geography in shaping higher education (HE) destinations. Research has examined interesting spatial questions around how far students tend to move away from home, the spatial distribution of universities within countries and how these two factors impact on HE participation. In the USA, Hillman (2016) shows how places with large Hispanic communities and low attainment have the fewest colleges located nearby, what they refer to as 'educational deserts'. For some country contexts, geography is implicated in important ways with race and ethnicity; for example, Indigenous community groups often tend to be geographically concentrated in specific (largely rural) locations. In Australia, based on analysis of a large longitudinal dataset, Parker *et al.*, (2009) found that distance from university impacted significantly on university expectations and entrance, especially for lower socio-economic groups.

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In the UK, the role of place is gaining traction in policy debates around social justice and inequalities. The 2016 referendum result to leave the European Union accelerated debate around so-called 'left behind' places, increasing calls for the decentring of political and economic power away from London. In the context of an increasingly place-based character to policy narratives, HE institutions (HEIs) are similarly held to account in the spatial, as well as social, profile of their intake. Government ministers often call out elite universities on the profile of their intake (e.g. Lammy, 2017), with such criticism increasingly taking a spatial turn. A crucial question here is what role place plays in access to elite universities, after all other known determinants are accounted for (including the spatially uneven distribution of elite universities themselves). Does place impact on progression to elite universities above and beyond social background determinants? How can we measure the significance of any such 'place effects' on progression? Do similarly high-achieving working-class youth differ in their likelihood of progressing to an elite university depending on where in the country they grow up? This article uses fine-grained administrative data on the individual profiles of five national cohorts of students entering HE over a 10-year period to address these questions.

There are few studies which have specifically examined the role geography plays in mediating progression to elite universities. There has been some work focusing on the importance of distance for students when it comes to making university choices. Mangan *et al*., (2010) demonstrate the importance of having elite institutions locally situated, showing that high-achieving students with an elite institution local to them have an 18% increased probability of attending one. Likewise, Gibbons and Vignoles (2012) also examine the impact of geography on progression to university, as well as type of university attended, demonstrating that geographical distance has very little impact on whether students pursue HE, regardless of students' ethnic group or socio-economic class, but that it does have a strong influence on institutional choice. Their findings suggest that students from lower socio-economic backgrounds may be more likely to choose an institution close to them, even if it is of lower status. The analysis presented in this article takes account of these important differences in 'accessibility' to elite universities, examining the importance of place whilst at the same time controlling for distance to elite universities.

The majority of research exploring inequalities in access to elite institutions has focused on the role of individual characteristics. Indeed, the importance of attainment, socio-economic status, gender and ethnicity in mediating progression to elite universities is well documented (Ball & Ball, 2002a,b; Reay *et al*., 2005; Chowdry *et al*., 2013). Another area of consideration has been the application process to elite universities, with those from lower socio-economic backgrounds found to be much less likely to apply to these universities than students from higher socio-economic backgrounds and private schools, even when in possession of similar grades (Boliver, 2013). Evidence of ethnic bias at some elite universities has also been demonstrated, with students from Black and Asian backgrounds shown to be significantly less likely to receive offers from Russell Group universities compared to students from White backgrounds (Boliver, 2013).

Schools also play an important role in influencing who applies to elite institutions (Reay *et al*., 2001; Oliver & Kettley, 2010). Attention here has typically been focused on the 'institutional habitus' of schools, a concept which stems from the application of Bourdieu's (1990) work on individual habitus to institutions, and which suggests that where there is an expectation of students to apply to elite universities, more pupils do so. In contrast, Donnelly (2014) uses Bernstein's (1975) concepts of classification and framing to examine the 'hidden messages' sent out by schools about elite institutions and likewise finds that where messages are strongly framed (i.e. it is made clear to those that have the potential to apply to do so), more students do apply. Moreover, the knowledge and support required to access elite universities appears unevenly distributed and where schools are more effective at increasing participation, their effect is not uniform. Rather, some schools are better at improving the likelihood of accessing elite universities for females and others for males (Taylor *et al.*, 2018).

The role of place and the widening participation agenda

In the UK, concerted government interest in widening participation to HE was principally set in train with publication of the Dearing Report (National Committee of Inquiry into Higher Education, 1997). Whilst there had been various policy initiatives targeted at under-represented student groups prior to this (Kettley, 2007), it was this that set in motion an increasing focus on the effect of 'place' (Brown, 2012) and which continues to the present day. For example, in 2017, a large-scale outreach programme, the National Collaborative Outreach Programme—now known as Uni Connect—was launched, focused on local areas where progression to university is lower than might be expected taking into account GCSE results and ethnicity (Office for Students, 2020a). Focusing on 'place' has become a convenient proxy for 'social class', allowing university outreach programmes to be targeted at those thought to possess 'low aspirations' without having to acknowledge their social background (Brown, 2012). A series of place-based measures have been developed in recent times, enabling the use of data to judge individual institutions on their effectiveness at broadening the socio-demographic character of their intake. The Higher Education Funding Council for England (HEFCE)—now part of the Office for Students (OfS)—introduced the Participation of Local Areas (POLAR) methodology, which is now commonplace within the HE sector. This tool—now in its fourth iteration named POLAR4—enables practitioners to see how likely young people are to participate in HE at age 18 or 19 according to the area in which they live (Office for Students, 2019). The methodology involves classifying local areas into five quintiles, from quintile 1 (lowest) to quintile 5 (highest) participation. More recently, the OfS has also introduced another similar measure to POLAR—TUNDRA—which differs in that it uses data-linkage methods to track students from age 16 to 18 (Office for Students, 2019). The OfS have also created a 'postcode look-up tool' (Office for Students, 2020b) which enables the user to see in which POLAR and TUNDRA quintiles a certain postcode falls, as well as the impact of some individual characteristics on HE progression rates. For example, practitioners can see in which quintile an area is in terms of the gap between expected and actual HE participation given, firstly, GCSE score and, secondly, GCSE score and ethnicity.

The now routine collection and use of such data to measure participation in HE is not without its drawbacks. Whilst these official measures of HE participation have generated a wealth of data on rates of overall participation by area, they lack a sufficiently detailed breakdown of individual university destinations. Furthermore, whilst the OfS postcode look-up tool enables the user to see the impact of some individual characteristics on HE progression rates, the possibilities it currently offers—looking at the impact of GCSE score and ethnicity—remain limited. Moreover, use of the tool highlights the importance of considering these factors, as it reveals that there are often differences as to which quintile an area is in when each of the available characteristics are accounted for. Indeed, the Middle Super Output Area (MSOA) given as an example by the OfS—that of Frenchay and Great Stoke—is in quintile 5 for POLAR4 (the highest quintile), yet for both 'Gaps GCSE' and 'Gaps GCSE Ethnicity' it is in quintile 1 (the quintile with the biggest gap between expected and actual participation).

Furthermore, a crucial drawback of 'official' place-based widening participation measures stems from the fact that not all deprived areas are similar (Brown, 2012; Donnelly & Evans, 2016; Crossley, 2017; Donnelly & Gamsu, 2018). Indeed, the varying social and spatial relationships within different communities may have differential impacts on young people's aspirations and hence HE progression trajectories. Socially disadvantaged young people from minority ethnic groups, the highest concentrations of which are often to be found in inner-city areas, often have high educational aspirations, driven in part by high expectations from their families (Modood, 2004; Shah *et al.*, 2010). This often stands in contrast to young people living in equally disadvantaged, but more physically and socially isolated locations, such as small towns which have borne the brunt of de-industrialisation or large social housing estates on the outskirts of cities (Brown, 2012). Our analyses make an important contribution to this debate by drawing on the case of London, which represents a particular microcosm to observe such 'urban' effects.

Research within economic and social geography has dealt with questions around geographic mobility and intra-generational social mobility in the UK (Savage & Fielding, 1989; Coombes & Charlton, 1992; Fielding, 1992; Champion *et al.*, 2007; Fielding, 2007; Findlay *et al.*, 2009). Savage and Fielding's (1989) concept of an 'escalator region' stems from a paper which examines the higher rates of social mobility into and out of the 'service class' in the South East of England as compared to the rest of the country. The authors argue that these findings are indicative of the South East acting as an 'escalator region', which attracts many young people due to the higher chances it offers of social mobility than elsewhere. Other more recent research has disputed whether London really is the 'engine room' for social mobility within the UK context (Friedman & Macmillan, 2017). The concept of the 'escalator region' has been applied to understand a number of other topics, including whether capital city regions act as 'escalator regions' for early career international migrants (Andersson, 1996; Conradson & Latham, 2005; King *et al.*, 2018), the extent to which second-order cities may emulate the capital as 'escalators' (Champion *et al.*, 2014) and the role of ambition in gaining the most from a move to an 'escalator region' (Gordon, 2015). We draw on these insights from social and economic geography to consider the role of place in determining elite university destinations, and whether such 'escalator regions' exist within the context of UK HE.

Data and methods

The data drawn on here was specially requested from the Higher Education Statistics Agency (HESA), the official agency for data collection and analysis on students enrolled on UK-based HE courses. The extract used contained data for over 800,000 English students beginning university in the academic years 2008/09, 2010/11, 2012/13, 2014/15 and 2016/17. Combining data from several cohorts (and including a cohort control measure) ensures that any conclusions drawn from the analyses are consistent, and not limited to 'one-off' patterns true for only one or two cohorts.

To be able to model patterns of progression to elite universities, it was necessary to first decide how 'elite' universities would be defined. Much of the research looking at access to elite universities (Wright, 2014; Boliver, 2016; Sullivan *et al.*, 2017; Thiele *et al.*, 2017) has used the 24 universities of the academically selective and research-intensive Russell Group as a proxy measure. Recognising the self-selective nature of this grouping, and the fact that there are some universities which share very similar characteristics, we cross-referenced these institutions against those at the top of the *Guardian*, *Times Higher Education* and *Complete University Guide* league tables. Given the similarities between these rankings, we chose to use the *Complete University Guide* (Complete University Guide, 2020), the longest-running amongst these tables, and to also include within our elite grouping measure any university within the top 20 when their rankings for both entry standards and research scores are combined. This resulted in the addition of three further universities—University of St Andrews, University of Bath and University of Strathclyde—to create a 'top27' grouping. To check the robustness of this outcome variable, sensitivity analyses were run with other 'elite' groupings, including a 'top20' measure, which indicated that our results are not particularly affected by variations in the definition of the outcome variable.[1]

Several factors were taken into consideration in determining the most appropriate unit of analysis for measuring geographic place. Very small geographical measures, such as postcode, were not suitable for this study due to the sensitive nature of the information, as well as the need for sufficient numbers of individuals within each grouping unit for a multilevel modelling approach to be used. The same was true of the slightly larger Lower Super Output Areas (LSOAs), one of the geographical hierarchies defined and used by the Office for National Statistics (ONS), and which was initially considered for use, but due to low numbers of individuals in some LSOAs and subsequent issues with model convergence had to be abandoned. Equally, using a much larger hierarchy with a fairly substantial level of aggregation such as 'local authority' was also unsuitable, as university progression rates can vary substantially between different areas within the same local authority. For these reasons, the ONS's MSOA field, the subsequent geographical hierarchy up from LSOA, and which the POLAR4 methodology also employs, was adopted. Each MSOA, of which there are 6,791 across England, has a population between 5,000 and 15,000, with a minimum of 2,000 and a maximum of 6,000 households (Office for National Statistics, 2016).

An important consideration in determining whether place impacts on entry to elite universities is the degree of 'accessibility' to elite institutions given their uneven geographic spread. As physical proximity (or lack of it) to these universities may make some students more (or less) likely to access them (Mangan *et al.*, 2010; Gibbons &

Vignoles, 2012), a control variable quantifying each MSOA's overall accessibility to the universities within the elite grouping was created. This measure of accessibility was similar to that used by Wright (2014), originally developed by Knox in 1978 (described in Joseph & Phillips, 1984) to measure geographical differences in access to GP practices in Britain. Using centroids for both universities and MSOAs, the distances to the 27 universities within the elite grouping were calculated for each of the 6,791 MSOAs, giving a matrix of distances of 183,357 (= 6,791 × 27). Students located in MSOAs with the lowest cumulative distance to the 27 universities thus had the highest relative access to these universities in comparison to their peers in other localities and those students in MSOAs with the highest cumulative distance the worst. To incorporate this measure into the modelling, the cumulative distances calculated for each MSOA were transformed into Z scores and linked to individuals via their MSOA.

Multilevel modelling recognises that individuals with shared characteristics (i.e. in this context, living in the same area) will be more alike than those living in different areas, and enables separation within the modelling process of the variance which can be attributed to the individual level and that which can be attributed to the grouping level (in this case, MSOA). Such a modelling approach was therefore well suited to this study, which was interested in identifying the impact of where students live on their likelihood of progressing to an elite university. The analyses completed used a sequence of two-level (students at level 1, MSOAs at level 2) random-intercept logistic models of increasing complexity. Initially, a null model was used. This enabled identification of the mean rate of attendance at top27 universities, as well as the proportion of the unexplained variance which could be attributed to MSOAs. The random (MSOA) effects were then estimated and listed, to observe which MSOAs had the lowest and highest progression rates to top27 universities before any control variables were considered.

Following this, the MSOA effects were mapped using QGIS to observe which areas had the lowest and highest progression rates. To more easily examine patterns of progression nationally, progression was mapped by decile, with decile 1 representing the areas with the lowest progression up to decile 10 representing the areas with the highest progression.

Control variables were then included, accounting for observable factors known to be important in predicting entry to elite universities, to account for their potentially confounding impacts. Ten control variables, grouped within five theoretical domains, were included:

1. **Education** (state/private school education, tariff point score, number of facilitating subjects studied).
2. **Socio-economic status** (National Statistics Socio-economic Classification (NS-SEC) of students aged 21 and over (else that of their highest-earning parent) and a marker indicating if one or more parents has a university education).
3. **Social and individual-level factors** (age, ethnicity and sex).
4. **Distance travelled** (measured from student's domicile MSOA to their university).
5. **Academic year** (08/09, 10/11, 12/13, 14/15 and 16/17).

Initially, each theoretical grouping was modelled separately to see how much of the model's variance it could explain. Next, control variables at the MSOA level were each added separately to the model, combining all the individual fixed effects, to see how much of the remaining variance they could explain:

1. MSOA mean tariff score
2. MSOA mean number of facilitating subjects studied
3. Accessibility of MSOA to the universities of the elite grouping.

Finally, the MSOA-level variables were then added simultaneously to the model containing all level 1 control variables, to create the final fixed-effects model. The random (MSOA) effects were then again estimated and listed to observe which MSOAs had the lowest and highest progression rates to top27 universities with all control factors considered, before being mapped by decile like those of the null model. The complete model is a multilevel logistic regression model, with a MSOA-specific random intercept $\zeta_j \sim N(0, \Psi)$. Its specification is as follows:

$$\text{logit}\{\Pr(y_{ij} = 1/X_{pij}, \zeta_j)\} = \text{logit}\{P_{ij}\} = \ln\left(\frac{P_{ij}}{1 - P_{ij}}\right) = \beta_{0j} + \beta_{pj} X_{pij}$$

$$\beta_{0j} = \gamma_{00} + \gamma_{0q} Z_{aj} + \zeta_{0j}$$

$$\beta_{pj} = \gamma_{p0}$$

$$\rightarrow \text{logit}\{\Pr(y_{ij} = 1/X_{pij}, \zeta_j)\} = \gamma_{00} + \gamma_{0q} Z_{aj} + \gamma_{p0} X_{pij} + \zeta_{0j}$$

where P_{ij} is the probability of entering an elite university for individual i in MSOA j. This probability is built of β_{0j} (mean probability of MSOA j) and X_{pij} (p-explanatory variables related to individual characteristics). β_{0j}, in turn, comprises γ_{00} (mean probability of all MSOAs) and ζ_{0j} (deviation of the probability of MSOA j from the mean probability of all MSOAs). Finally, Z_{qj} comprises the q-variables related to the MSOA level.

Maximum likelihood estimates of the model parameters and their standard errors were obtained using the *xtmelogit* command (e.g. Skrondal & Rabe-Hesketh, 2009) in Stata (StataCorp, 2019) with adaptive quadrature. Empirical Bayes' predictions of the random effects were obtained using the *predict* command with the *ref* option. These estimates are based on the mode of the posterior distribution of the random effects (see Rabe-Hesketh & Skrondal, 2008, p. 162).

The significance of place in progression to elite universities

Looking at the raw data on elite HE progression rates by MSOA reveals some striking geographical patterning, suggestive of a compounding effect upon individual-level factors of social class, private school attendance, etc. For example, 17 of the top 20 MSOAs (see Table A1 in Appendix A) for elite HEI progression were shown to be London boroughs, most within predominantly affluent areas of West and South West London. Indeed, the top MSOA for progression (Kensington & Chelsea 011) had almost 80% of its students progressing to these universities and standing in stark contrast to the over 300 MSOAs with progression rates of less than 10%, including two MSOAs (Wolverhampton 007 and Plymouth 006) where no students at all went on to these universities (see Table A2 in Appendix A).

Moving on to the multilevel modelling process itself, Table 1 presents both the null model (which only accounts for MSOA effects) as well as the final fixed-effects model (which controls for all individual and neighbourhood characteristics mentioned above). The between-MSOA variance in the null model is estimated as 0.382. This gives a variance partition coefficient (VPC) estimated using the standard logistic distribution ($\pi^2/3 = 3.29$) of 10.4% ($0.382/(0.382 + 3.29) = 0.104$). This means that just over 10% of the residual variation in students' likelihood of progressing to an elite university is due to unobserved MSOA characteristics; that is to say, characteristics that have not yet been accounted for in the model. A caterpillar plot (Figure B1 in Appendix B) shows the MSOA effects (residuals) in the null model for the 6,791 MSOAs. For a substantial number of them, the 95% confidence interval does not cross zero. This indicates that the progression of students from these MSOAs to elite universities is either significantly above average (for those MSOAs above the zero line) or significantly below average (for those below the zero line). Turning to the final fixed-effects model, the between-MSOA variance is estimated as 0.147, giving a VPC of 4.3% ($0.147/(0.147 + 3.29) = 0.043$). Just over 6% of the original 10.4% unexplained variance at the MSOA level (in the null model) has thus been accounted for. As would be expected, given the reduction in the unexplained variance at the MSOA level once control variables have been included, a second caterpillar plot (Figure B2 in Appendix B) shows that there are now fewer MSOAs whose student progression to elite universities is either significantly above or below average. That said, there remain a significant number of MSOAs which diverge from the general trend, suggesting that they positively or negatively influence progression to elite universities more so than is the case for others overall.

The modelling is largely supportive of previous research findings into the factors associated with progression to HE and elite universities. The group of control variables with the biggest impact was the educational variables, which reduced the between-MSOA variance by 50%—suggesting substantial variation of these characteristics across MSOAs. The addition of the socio-economic variables also had a considerable impact, reducing the between-MSOA variance by approximately a third. The addition of distance travelled reduced the between-MSOA variance by approximately 15%, whereas the addition of age, ethnicity and sex had a lesser impact—reducing the between-MSOA variance by just over 5% and academic year even less—reducing it by less than 1%. That the most significant reductions in between-MSOA variance would follow the addition of the education and socio-economic control groupings was expected, given that initial descriptive analysis of the data shows that school type (state/private), attainment and uptake of facilitating subjects varies substantially between areas and that some areas are more affluent than others, and that these areas will typically have a higher proportion of parents with a university education. Likewise, as universities are unevenly distributed throughout the UK, it was to be expected that the distribution of distance travelled by students across MSOAs would vary considerably. Furthermore, whilst there is variation in terms of ethnicity across MSOAs, with 86% of the population identifying as White in the 2011 census

Table 1. Associations between individual and MSOA-level factors and attending an elite (top27) university

Random-intercept logistic models		Elite HE participation: Null model	Elite HE participation: Final fixed-effects model
Random effects			
Intercept		−1.054	−4.479
MSOA-level variance		0.382	0.147
Student-level variables (Level 1)			
Tariff			0.114
Number of facilitating subjects studied			0.654
State school	*Reference category: Private*		
	State		−0.985
Socio-economic class (NS-SEC)	*Reference category: Higher managerial, administrative and professional occupations*		
	Lower managerial, administrative and professional occupations		−0.061
	Intermediate occupations		−0.103
	Small employers and own account workers		−0.165
	Lower supervisory and technical occupations		−0.341
	Semi-routine occupations		−0.191
	Routine occupations		−0.309
	Never worked and long-term unemployed		−1.506
Parent(s) attended university	*Reference category: No*		
	Yes		0.098
Distance travelled to university			0.063
Age			−0.059
Ethnicity	*Reference category: White*		
	Black Caribbean		−0.370
	Black African		−0.176
	Other Black		−0.191
	Indian		0.053
	Pakistani		0.022
	Bangladeshi		0.442
	Chinese		0.226
	Other Asian		0.001
	Mixed ethnicity		0.073
	Other ethnicity		−0.033
Gender	*Reference category: Male*		
	Female		−0.003
	Other		−0.628
Academic year	*Reference category: 2008/09 academic year*		
	2010/11 academic year		−0.444
	2012/13 academic year		−0.653
	2014/15 academic year		−0.441
	2016/17 academic year		−0.294
MSOA-level variables (Level 2)			
MSOA mean tariff			−0.018

Table 1. (Continued)

Random-intercept logistic models	Elite HE participation	
	Null model	Final fixed-effects model
MSOA mean number of facilitating subjects studied		0.602
MSOA accessibility to top27 universities		0.143
Variance partition coefficient	0.104	0.043
Log likelihood	−483,650.99	−310,529.21

(Office for National Statistics, 2015), it was not unexpected that the distribution of ethnicity across MSOAs did not vary very significantly.

An 'urban escalator' effect

This section moves on to map the MSOA residual values to consider whether any spatial patterning exists in the geographic distribution of MSOAs that differ from the average in their effect on progression to elite universities. Figure 1 shows the MSOA progression rates by decile from the null model (that is to say, the proportions of their students progressing to elite universities) before any control variables are accounted for. The deciles go from light (lowest proportion) to dark (highest proportion) of students progressing to elite universities. Significantly, this mapping of the residuals is suggestive of a rural–urban patterning, with rural areas tending to have higher proportions of their students progressing to elite universities than urban areas. Given that no control variables are accounted for here, this makes sense given that rural areas of the UK tend to be more affluent and lower socio-economic groups, as well as ethnic minorities, tend to live in urban areas. Whilst the East Midlands and East of England regions appear to have slightly higher numbers of MSOAs with lower progression rates, all regions typically have a mix of MSOAs with both higher and lower rates of progression.

Figure 2 shows the MSOA progression rates by decile from the final fixed-effects model (that is to say, when control variables are included). Crucially, this map suggests quite a different picture of elite HE participation than that indicated from the mapping of the null model residuals. Whilst the MSOAs in some rural areas, especially in the North East and South West, continue to have higher than expected participation rates, many rural MSOAs now have lower than expected progression rates and urban MSOAs are more likely to have higher participation rates than rural MSOAs. This is suggestive of an 'urban escalator' effect in progression to elite universities, where disadvantaged students situated in urban areas are advantaged over similarly disadvantaged students situated rurally.

As to why disadvantaged groups in urban areas may have a better chance of accessing elite universities than their rurally located peers, there are likely to be multiple

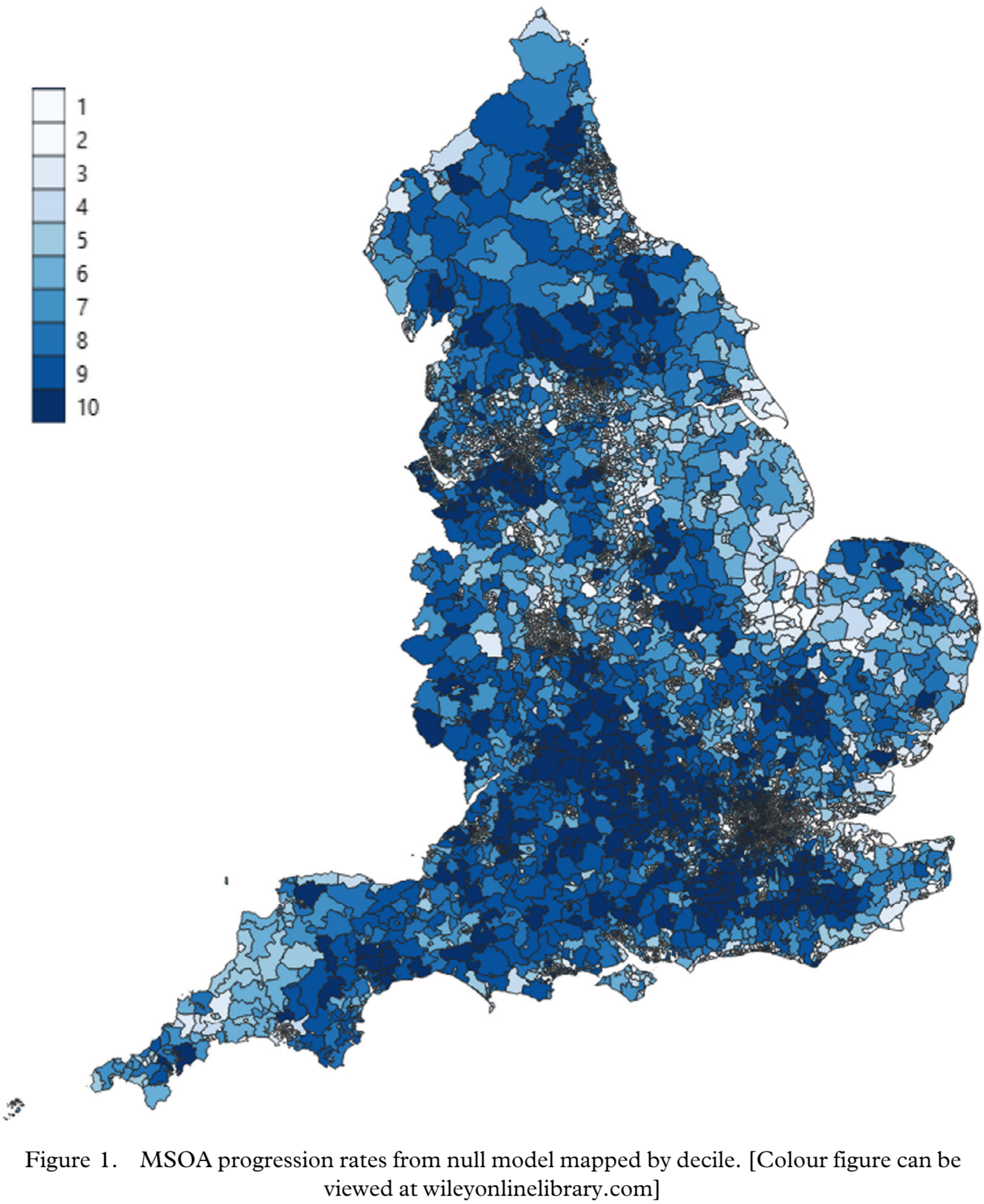

Figure 1. MSOA progression rates from null model mapped by decile. [Colour figure can be viewed at wileyonlinelibrary.com]

competing explanations at play. Previous research suggests that there is not one standout reason, but rather that large towns and cities contain a vortex of influences which favour urban disadvantaged groups over those located rurally.

On one level, the geography of social class and ethnic identities and the impact this has upon young people's aspirations likely provides one possible explanation. Recent research on the socio-spatial patterning of social class has suggested a concentration of elite groups within particular urban locations, largely urban centres of the South but also particular 'enclaves' within the North (Cunningham & Savage, 2015). As

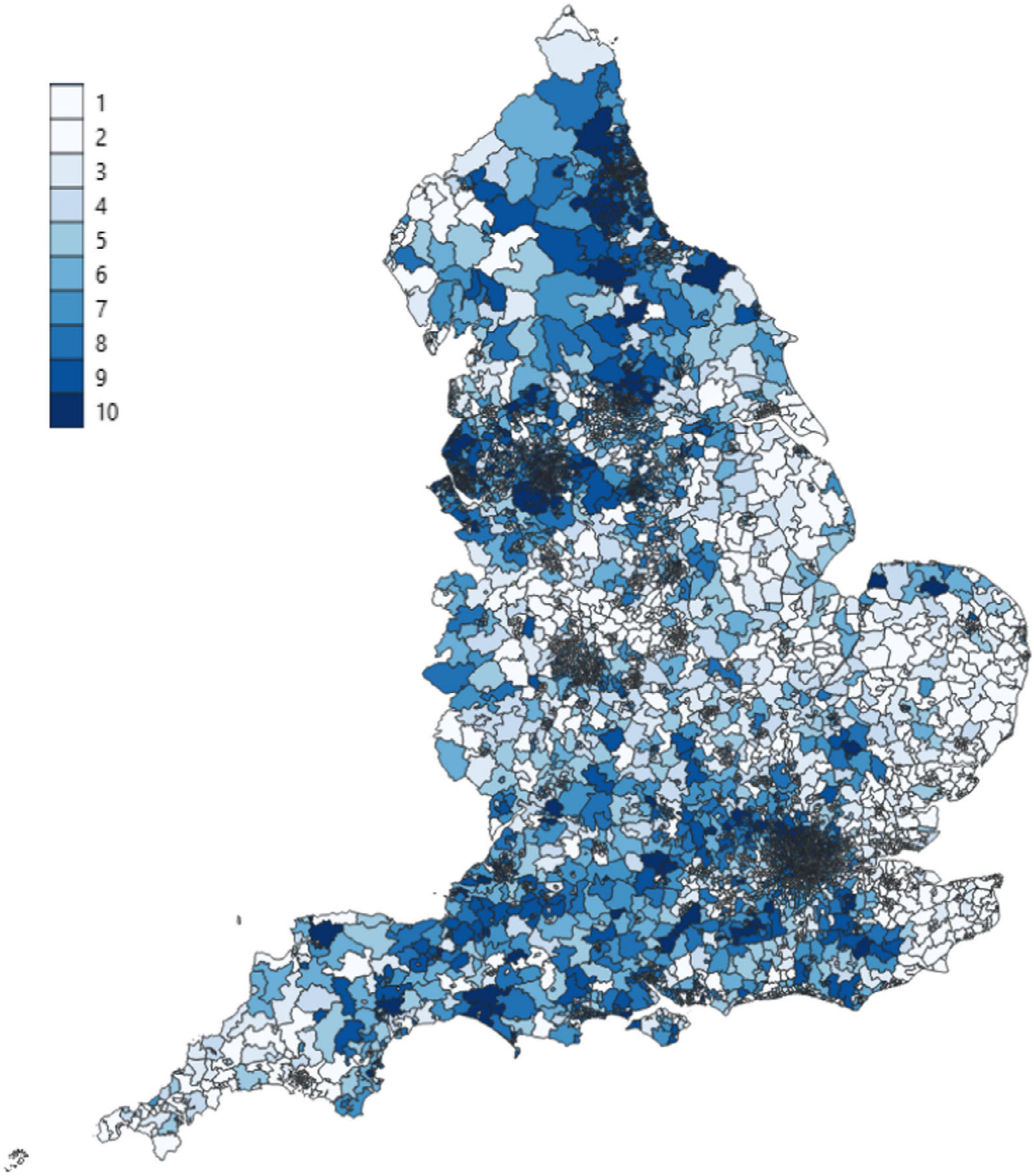

Figure 2. MSOA progression rates from final fixed-effects model mapped by decile. [Colour figure can be viewed at wileyonlinelibrary.com]

well as mapping onto elite groups, the geographical patterning of residuals also to some extent maps onto the identification of UK government ‘cold spots’—identified by policy-makers as locations where extra investment is targeted to address under-achievement in education. For example, Norwich is one such ‘cold spot’ identified by the UK government, which our modelling also suggests underperforms in access to elite universities. There is also some observable connection between overall rates of access to university (as seen within the OfS’s POLAR mapping[2]) and the spatial patterning of elite university entry observed here, although our data is restricted to those entering HE, so it is not possible to establish any robust connections. Further qualitative research is needed to more fully understand and interpret these patterns, and indeed the impact of such targeted place-based policy initiatives. Previous qualitative research suggests that some ethnic minority families (typically represented in higher proportions in urban areas) often have very high aspirations for, and expectations of, their children (Modood, 2004; Shah *et al.*, 2010), which may not always be the case for families and young people living in physically and socially isolated locations such as small towns suffering the effects of de-industrialisation (Brown, 2012). In a study of male African-Caribbean students studying at Russell Group universities, Dumangane (2017) also suggests that the interplay between ethnic identity and faith can impact positively on propensity to attend an elite institution.

On another level, urban centres have become centres for multiple policy initiatives in recent years, accelerated by successive governments attempting to make their mark, especially from the New Labour government onwards. One significant policy initiative has been the introduction of 'academies', state schools which receive funding directly from the Department for Education instead of being under local authority control, established through the Learning and Skills Act 2000. At the outset, the policy was inherently 'urban' in character, targeting failing inner-city schools, using funds from the private sector to pioneer a new type of school structure. 72% of state secondary schools in England are now academies (National Audit Office, 2018) and whilst the academisation of schools was and remains controversial, some academies have achieved marked improvements in attainment compared to their predecessor schools (Bedell, 2008). However, it must also be noted that in terms of exam performance, other evidence suggests that the academies programme has had no substantial impact on school performance (Gorard, 2009); but this is not to say that academies have had no impact, especially when thinking about outcomes that are less easily measured. Whilst the academies programme is now mainstream across the UK, it is an example of a policy which initially positioned educational disadvantage as an inherently 'urban' problem. Other 'urban' education policies include the Excellence in Cities programme in the early 2000s, designed to improve attainment in urban schools (Department for Education and Skills, 2005), and the London Challenge (2003–2011), a secondary school improvement programme across the capital (Kidson & Norris, 2014). The legacy of these policy initiatives in improving urban youth's academic attainment may play a role in explaining why disadvantaged urban groups may be more likely to access elite universities than their rurally located peers.

Moreover, since the raising of university tuition fees, considerable investment and effort has been made across the HE sector to widen the demographic of their intake. Outreach work is expensive, and it is likely that individual universities will attempt to maximise the impact of their activities through targeting particular areas where they are most likely to 'capture' a greater number of their target population. Furthermore, in contrast to former government directives which saw institutions obliged to work in partnership with one another (McCaig, 2015), universities are now able to target their outreach activity as they wish, which does not engender collaboration. As a result, universities in urban areas, especially in cities like London, where there is a high concentration of providers, are likely to target the same local disadvantaged areas, meaning that these students may benefit disproportionately from outreach activities.

A further possible explanation is that, similar to the idea of a 'school mix effect' (Thrupp, 1999), which suggests that disadvantaged students do better in schools with a more advantaged student body, there may also be a 'geographic mix' effect at play. Indeed, as a Department for Education (2017) report suggests, students in more socially diverse areas have a greater likelihood of encountering aspirational 'role models' and being exposed to a wider range of potential career paths. As socially diverse areas are more likely to be urban areas, there is thus reason to suggest that disadvantaged students living in urban locations may benefit disproportionately from these interactions and the impact they may have on aspiring towards attending an elite university.

London as a microcosm of the 'urban escalator'

London is used here to examine some of these place-based effects more closely. London represents an ideal locality to examine further because it is often considered a 'microcosm' of wider UK society with regards to wealth distribution, ethnicity, educational and other dimensions. London, however, stands out in having the largest rich–poor pay gap in the UK, with the richest 1% of earners earning almost 15 times that of the poorest 1%, compared to a pay gap of 8–10 times in most other UK regions (The Equality Trust, 2014).

In our own analyses, London represents a kind of microcosm encapsulating the wider 'urban escalator' phenomenon identified. As highlighted earlier, initial exploration of the raw MSOA progression rates revealed that 17 of the top 20 MSOAs for elite HE progression were London boroughs, most within predominantly affluent areas of West and South West London. Mapping of the MSOA residuals from the null model however, that is to say before the addition of control variables, revealed a different story in more ethnically diverse and typically poorer East London, where the vast majority of MSOAs had low progression rates (Figure 3).

However, once all control variables are accounted for in the final fixed-effects model, London's MSOAs, now including those of East London, have almost universally higher than expected progression rates (Figure 4). As to the possible explanations for the dramatic change seen in the MSOAs of East London, the geography of social class and ethnic identities outlined earlier appears particularly pertinent. Indeed, East London, home to some of the most deprived areas in the UK, including the borough of Tower Hamlets where more than 25% of children live in income-deprived households (Ministry of Housing, Communities and Local Government, 2019), is one of the most ethnically diverse parts of the country and many of the ethnic groups represented in high proportions here—notably those of South Asian backgrounds—have been shown by previous research to have high aspirations for their children (Modood, 2004; Shah *et al*., 2010). Again, during the years of the London Challenge (2003–2011) and the start of the academisation programme, the attainment of many of London's underperforming schools—such as Hackney-based Mossbourne Community Academy, regularly lauded by politicians (Bedell, 2008)—was transformed. This is thus also likely to have impacted positively on many students' likelihoods of being able to progress to an elite university.

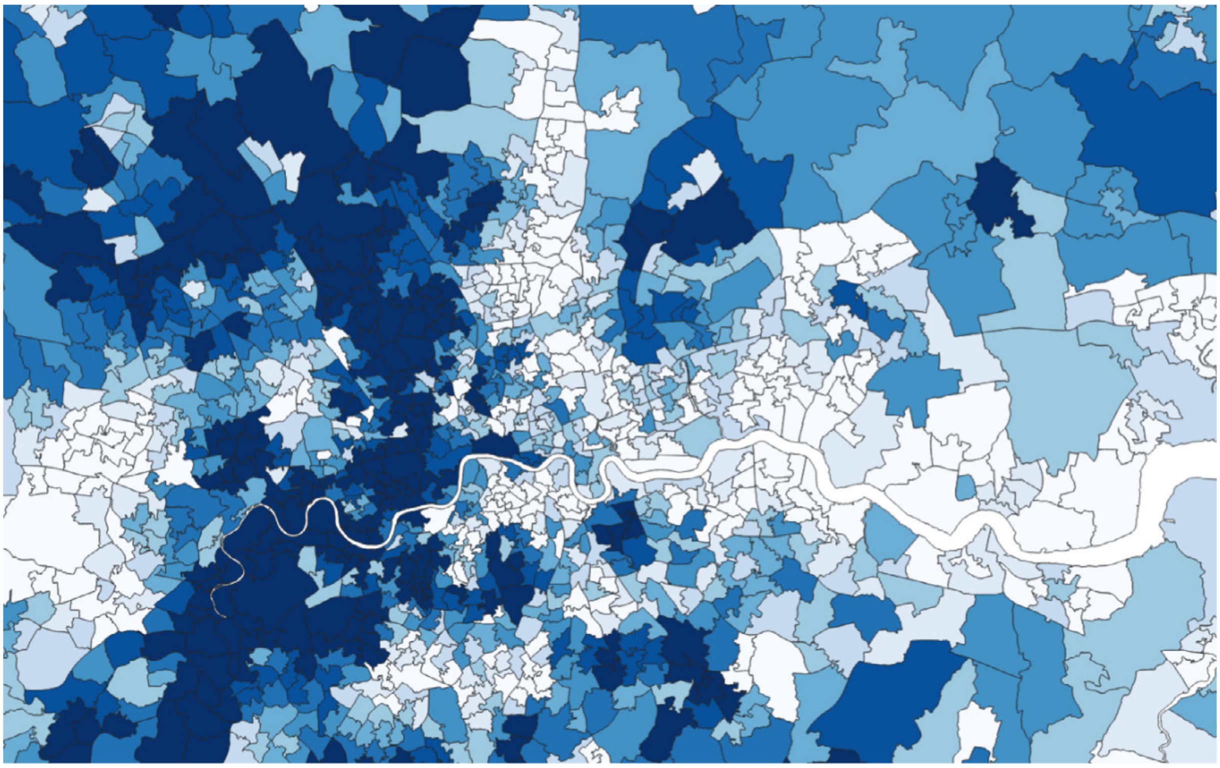

Figure 3. Null model map, zoomed in on London area. [Colour figure can be viewed at wileyonlinelibrary.com]

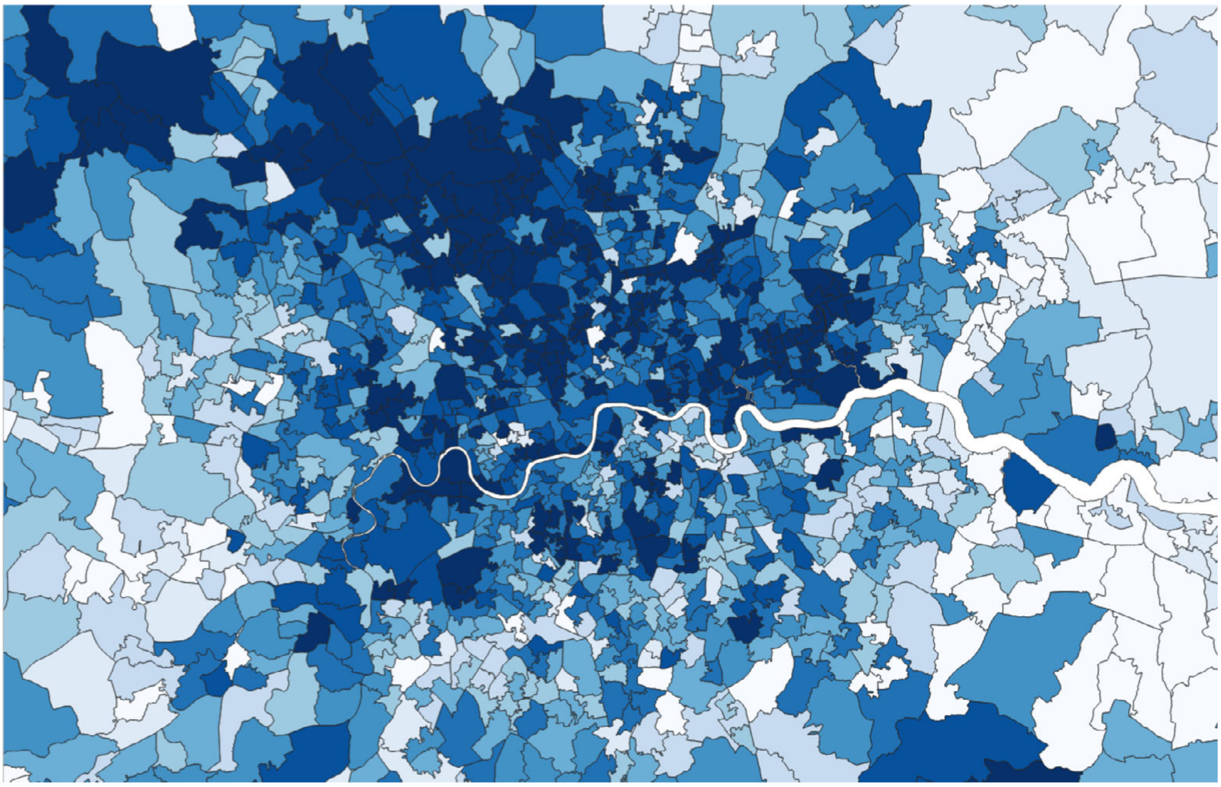

Figure 4. Final fixed-effects model map, zoomed in on London area. [Colour figure can be viewed at wileyonlinelibrary.com]

Third sector widening participation organisations are also much more likely to be based in urban areas (IntoUniversity, 2015), with a particular concentration in London (Gamsu, 2016). Moreover, these London-based third-sector organisations often receive substantial donations from the corporate social responsibility arms of City of London businesses (Gamsu, 2016), and many also provide opportunities such as visits and work experience placements. Engagement with these third-sector organisations and the benefits drawn from their connections is thus also likely to impact positively on disadvantaged students' propensities to progress to elite institutions.

Conclusion

The analyses presented here give a granular account of the importance geography plays in access to elite universities within the UK—contributing to similar research in other country contexts where the importance of geography has been examined. Adding to this international literature, it underlines the importance of attending to geography, especially in spatially diverse countries like the UK. The research holds relevance for other country contexts that have similar spatial diversity, in terms of place-based economic and social inequalities, as well as an uneven spatial distribution of universities themselves. What is clear from these analyses, and evident in other countries (Parker *et al.*, 2009; Hillman, 2016), is the importance of controlling for distance from universities, and examining place-based inequalities at fine-grained geographic levels (for example, within large cities, to account for their spatial heterogeneity).

The dataset drawn on here enabled the tracking of individual trajectories into HE in a granular level of detail, tracing how social, ethnic and educational characteristics interact with geographic locality across successive cohorts. Overall, set against other major competing factors, place has little impact on progression. If anything, this finding speaks to the prevailing significance of social class and ethnicity (and in turn, their mediating influence on levels of attainment) in shaping the socially differentiated nature of progression to different types of university within the UK. That said, our analyses also reveal important caveats to this point, with the average limited role of place not consistent across all geographic localities. An 'urban escalator' is evident in rates of progression to elite universities, likely to be driven by a historical 'vortex of influences' which have provided those in urban centres a distinct advantage. This 'vortex of influences', including 'social mix effects', successive urban-centred policy interventions and the urban targeting of university and third-sector outreach activities, represents a plausible set of explanations on a number of levels.

Moreover, the study's findings add a further educational dimension to research around regional inequalities and forms of 'regional escalators' that have been identified since Savage and Fielding's (1989) identification of an 'escalator' effect in the labour market. Importantly, they add a further dimension to debates around regional inequalities in education, which go beyond commonplace notions of 'north' and 'south' regional divides. Rather, they underscore a form of geographic inequality based around urban centres, suggestive of a more complex set of spatial determinants within urban areas that may be at play in shaping inequalities.

An important drawback of the place-based measures currently used by the OfS is that they do not account for the diverse nature of deprived areas (Brown, 2012;

Donnelly & Evans, 2016; Crossley, 2017; Donnelly & Gamsu, 2018). Indeed, the differing nature of social and spatial relationships within communities has varying effects on young people's aspirations and HE trajectories. Socially disadvantaged minority-ethnic families, many of whom live in inner-city areas, often have high expectations of their children, translating to higher educational aspirations (Modood, 2004; Shah *et al.*, 2010). In contrast, the converse may be true for families of young people living in equally disadvantaged, yet more physically and socially isolated communities (Brown, 2012).

The analyses presented within this article suggest that an over-reliance on area-based measures that do not account for individual characteristics, like the POLAR methodology, puts elite universities at risk of missing disadvantaged students living in areas with otherwise good progression. The use of Geographic Information System (GIS) mapping methods, as used within our own analyses, could enable elite universities to more effectively target under-represented students, especially disadvantaged students living in rural areas with otherwise good progression rates. Furthermore, as called for elsewhere (e.g. Boliver *et al.*, 2019), more comprehensive use of individual-level metrics—such as eligibility for free school meals and low household income—could help elite universities identify disadvantaged students who might otherwise be missed if area-based measures alone, like POLAR, are relied upon.

Finally, if it is true that urban areas are becoming 'congested' by a concentration of widening participation activity, then there is clearly a need for policy-making that brings about a more even spatial distribution. Greater strategic planning by the OfS could also help ensure that no areas—especially rural areas—are missed by elite universities for outreach activities. For example, the regulator could use elite universities' Access and Participation Plans to map which areas have been targeted nationwide and identify areas that have been under- or over-targeted. Accordingly, an over-arching system could be developed aimed at providing national coverage of widening participation activity, allocating each elite university additional under-represented areas (in addition to those areas which universities choose to target themselves) and/or offering universities financial incentives to target priority areas.

Funding

This research was supported by a University of Bath Research Studentship Award.

Ethical guidelines

Ethical clearance for this research was granted by the Social Science Research Ethics Committee at the University of Bath (reference number: S20-026). Use of HESA data complied with all requirements outlined in their Agreement for the Supply of Information Services.

Conflict of interest

The authors declare that there is no conflict of interest.

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.

NOTES

[1] Results of these analyses are available from the corresponding author upon request.
[2] The POLAR map of HE participation can be accessed at www.officeforstudents.org.uk/data-and-analysis/young-participation-by-area/maps-of-participation-in-higher-education/

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Appendix A

Raw elite and non-elite progression rates by MSOA

Table A1. Top 20 MSOAs for elite HE progression

MSOA	Ranking	Non-elite HE progression (%)	Elite HE progression (%)
Kensington and Chelsea 011	1	20.9	79.1
Kensington and Chelsea 006	2	21.5	78.5
Merton 002	3	21.8	78.2
Oxford 003	4	22.0	78.0
Hammersmith and Fulham 024	5	22.7	77.3
Kensington and Chelsea 007	6	23.5	76.5
Barnet 033	7	24.6	75.4
Ealing 034	8	24.8	75.2
Merton 004	9	25.4	74.6
Wandsworth 015	10	26.0	74.0
Richmond upon Thames 008	11	26.4	73.6
Wandsworth 017	12	26.4	73.6
Cambridge 007	13	26.9	73.1
Westminster 019	14	27.1	72.9
Bristol 015	15	27.2	72.8
Camden 002	16	27.3	72.7
Hounslow 001	17	27.3	72.7
Kensington and Chelsea 020	18	27.3	72.7
Wandsworth 011	19	27.3	72.7
Southwark 031	20	27.6	72.4

Table A2. Bottom 20 MSOAs for elite HE progression

MSOA	Ranking	Non-elite HE progression (%)	Elite HE progression (%)
Basildon 019	6772	96.6	3.4
Middlesbrough 003	6773	97.0	3.0
Basildon 015	6774	97.1	2.9
Northampton 017	6775	97.1	2.9
Tamworth 007	6776	97.1	2.9
Walsall 018	6777	97.1	2.9
Great Yarmouth 007	6778	97.3	2.7
Kingston upon Hull 004	6779	97.3	2.7
Portsmouth 002	6780	97.4	2.6
Solihull 006	6781	97.4	2.6
Ipswich 016	6782	97.6	2.4
Leicester 017	6783	97.6	2.4
Leicester 035	6784	97.6	2.4
Kingston upon Hull 003	6785	97.9	2.1
Kingston upon Hull 021	6786	97.9	2.1
Shepway 013	6787	98.0	2.0
Sandwell 014	6788	98.2	1.8
Stoke-on-Trent 016	6789	98.2	1.8
Plymouth 006	6790	100.0	0.0
Wolverhampton 007	6791	100.0	0.0

Appendix B

Caterpillar plots of the MSOA effects

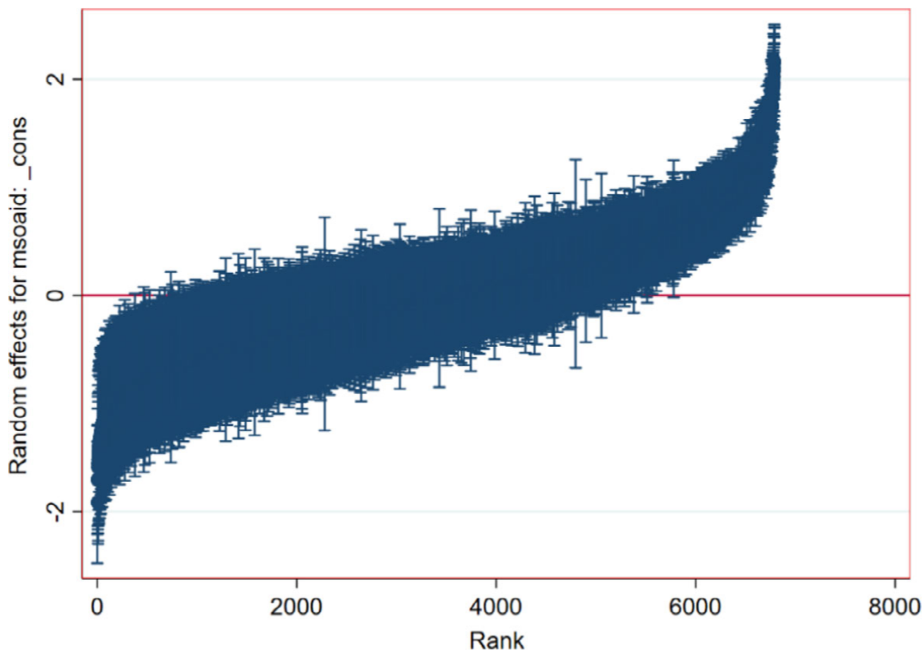

Figure B1. Plot of MSOA effects in the null model on progression to elite universities. [Colour figure can be viewed at wileyonlinelibrary.com]

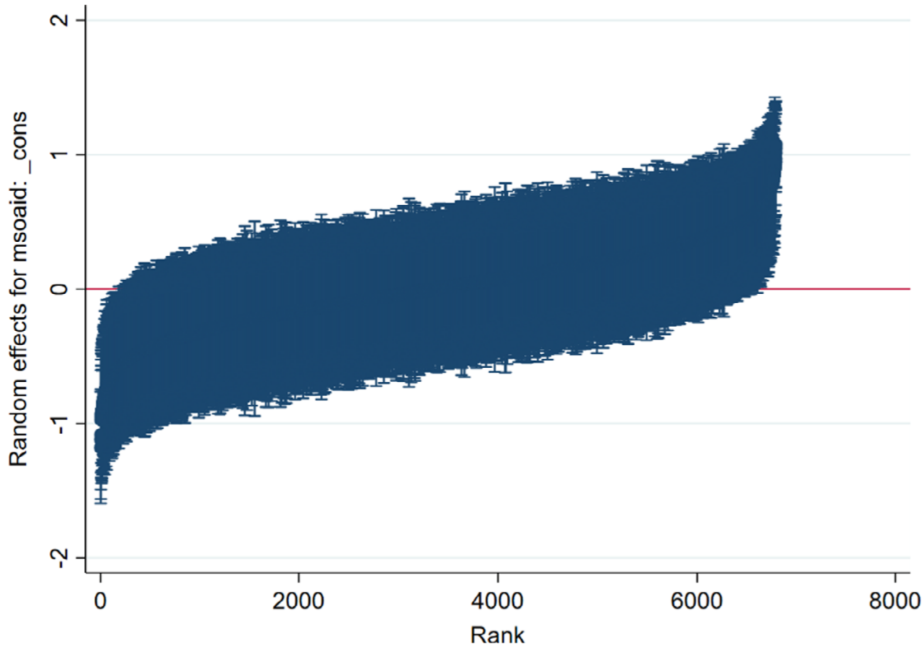

Figure B2. Plot of MSOA effects in the final fixed-effects model on progression to elite universities. [Colour figure can be viewed at wileyonlinelibrary.com]