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Not just a North–South divide: the geography of opportunity in England

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Abstract

The United Kingdom is one of the most spatially unequal countries in the OECD. This paper investigates how the link between opportunity and childhood background varies across England. We use administrative data linking education records and labour market outcomes to study how the socio-economic conditions in the residential neighbourhood where one grows up are associated with earnings in adulthood. We find that the strength of this relationship varies sharply across England and that there are large differences in earnings of those who grew up in equally poor neighbourhoods in different parts of the country. While the North–South divide is evident, we also find significant variation within regions. A group that stands out is young women and men who grew up in poor neighbourhoods of regional cities (large cities outside of London) whose earnings are significantly lower than those of counterparts outside the cities. Two themes run through our analysis: substantial gender differences in key trends, and the fact that greater equality of opportunity within a place does not always translate into better outcomes for the disadvantaged. Key policy implications include the need to consider highly localised inequalities, gender differences, and whether greater equality is achieved through better opportunities for the disadvantaged.

KEYWORDS
childhood neighbourhood, equality of of opportunity, geography

JEL CLASSIFICATION
H0, I24, J0, R0

1 | INTRODUCTION

The United Kingdom is among the more spatially unequal countries in the OECD (Davenport and Zaranko, 2020). These inequalities span multiple dimensions, including, among others, life expectancy and healthcare quality (Fisher et al., 2022; Camacho et al., 2024; Steel et al., 2024), human capital and quality of education (Farquharson, McNally and Tahir, 2024), and productivity (Brandily et al., 2022). Successive governments have stressed the need to tackle such inequalities, with policy discourse placing particular emphasis on 'place-based' interventions. The effectiveness of such interventions depends on a clear understanding of the geographical patterns and drivers of these inequalities. This paper contributes to that understanding by examining how the link between opportunity and childhood background varies across England.

Prior research shows that the UK exhibits one of the strongest associations between childhood background and adult outcomes among developed nations (Corak, 2013; Jerrim and Macmillan, 2015), with little evidence of improvement over time (Blanden, Gregg and Machin, 2005; Gregg, Macmillan and Vittori, 2017; van der Erve et al., 2023). Emerging evidence further suggests that these national trends mask large geographical differences, highlighting that childhood background is likely to be a much stronger determinant of one's opportunities in some parts of England than in others (Carneiro et al., 2020; Bell, Blundell and Machin, 2023; van der Erve et al., 2023). We study these differences leveraging newly available administrative data that allow us to track entire birth cohorts at a finer level of geographical detail.

The literature highlights both the childhood family and neighbourhood socio-economic environments as central influences on later outcomes; see Mogstad and Torsvik (2023) for a recent overview. In this paper, we focus on the local residential neighbourhood context in which children grow up, which has been shown to influence a wide range of outcomes including school attainment, involvement in crime, and employment and earnings (Chetty, Hendren and Katz, 2016; Gibbons, Silva and Weinhardt, 2017; Chyn, 2018)). According to foundational theories in sociology, a key mechanism underlying residential neighbourhood effects is exposure to successful adults who help shape children's educational, work and social aspirations (Wilson, 1987). Other factors thought to matter include housing quality and neighbourhood safety (Sampson, 2012).

Many studies of neighbourhood effects use the neighbourhood poverty rate as a proxy for local socio-economic conditions (Sampson, Morenoff and Gannon-Rowley, 2002; Chetty, Hendren and Katz, 2016). We construct a neighbourhood socio-economic status (SES) index that incorporates a broader set of indicators of socio-economic characteristics of the residents, alongside poverty measures. We link this neighbourhood SES index to administrative data, which combine education records and labour market outcomes for cohorts born since the mid-1980s. This allows us to examine how the SES (or quality) of the residential neighbourhood in which an individual grows up relates to their adult earnings. Neighbourhood and family socio-economic characteristics are likely to be correlated because, as in many other parts of the world, residential patterns in England are segregated, for example by income and education (Drayton, Greaves and Rossi, 2023). Currently available administrative data in England do not contain good proxies for family socio-economic characteristics (such as parental income or education) making it difficult to separate family influences from those of the neighbourhood. Our estimates can thus be viewed as informing on the role of childhood socio-economic circumstances that include, but are not necessarily limited to, the neighbourhood context.

The focus of this paper is on geographical variation in the association between childhood neighbourhood SES and adult earnings. This is motivated by a growing body of evidence, spanning multiple countries, showing that the importance of childhood economic conditions for outcomes in adulthood can vary considerably within the same country; see, for example, Chetty et al. (2014b) for the US, Heidrich (2017) for Sweden, Acciari, Polo and Violante (2022) for Italy and Kenedi and Sirugue (2023) for France. This is important because such variation suggests that there may be more constraints to opportunity, and thus greater unrealised potential, in some parts of the country

than others – potential that could be harnessed more efficiently to reduce geographical inequalities. While a lot remains unknown about the mechanisms underlying this variation, strong candidates include differences in access to high-quality schools and peers, the strength of local labour markets, availability of transport, and migration opportunities. For example, having access to high-quality schools irrespective of what neighbourhood one lives in may mediate the adverse effects of growing up in a neighbourhood with few role models and reduce the importance of childhood residential neighbourhood for adult outcomes. If such access is available in some parts of the country but not others, growing up in a poor neighbourhood may be more of a constraint to opportunity in some areas than in others.

We find large differences in the strength of the link between childhood neighbourhood quality and adult earnings across different areas of England. For example, our estimates suggest that men who grew up in the richest neighbourhoods of Hackney (an area in London) rank, on average, only about nine percentiles higher in the national earnings distribution than those from Hackney's poorest neighbourhoods. In contrast, the corresponding gap is around 28 percentile ranks in Bradford, Coventry, Hull and Blackpool, which are medium-sized urban areas located in the Midlands and Northern regions. This indicates that which neighbourhood one grows up in matters much more for adult outcomes in Bradford, Coventry and Hull than it does in Hackney. We also find that growing up in a poor neighbourhood specifically may affect expected earnings very differently depending on its location. For example, the expected earnings rank of women who grew up in poor neighbourhoods of the Harrow area in London is nearly 16 percentiles higher than that of women from similarly poor neighbourhoods, such as Hull in the north-east of England. This difference is equivalent to as much as 55 per cent of the median earnings of women in this group.

Broadly, childhood neighbourhood quality plays a more important role in shaping earnings outcomes in the poorer Northern regions of the country than in London and the South East. However, we also find substantial variation at more granular geographical levels, with several examples of large differences between areas located in the same region. This aligns with existing evidence that many geographical inequalities in the UK are highly localised (Agrawal and Phillips, 2020). A group that stands out is young women and men who grew up in poor neighbourhoods of regional cities (large cities outside of London). On average, their expected earnings rank is around a standard deviation lower than that of young people who grew up in equally poor neighbourhoods outside of these cities, even when comparing individuals within the same region (i.e., controlling for region fixed effects). We present suggestive evidence that this pattern is, at least in part, driven by the relatively poor educational attainment that characterised these regional cities when the study cohorts were at school.

The link between childhood neighbourhood quality and adult earnings is stronger for women than for men. Furthermore, there are some marked gender differences in the geographical patterns, especially when focusing on the outcomes of those who grew up in poor neighbourhoods. Inner London provides a striking example. While young women who grew up in poor Inner London neighbourhoods have substantially higher earnings than young women from equally poor neighbourhoods in other parts of the country, the reverse is true for young men who grew up in Inner London. The findings for women are consistent with the strong educational outcomes reported in previous research for pupils from disadvantaged backgrounds in Inner London (e.g., Greaves, Macmillan and Sibieta, 2014). Yet this cannot explain the stark gender differences we observe, because the educational attainment advantage is there for both girls and boys. This raises important questions for future research about what specific conditions in Inner London produced such divergent outcomes for boys and girls from equally poor neighbourhoods, and whether similar dynamics remain relevant for more recent cohorts.

Finally, areas where the link between childhood neighbourhood quality and adult earnings is weaker are not necessarily those with better overall labour market outcomes. Our analysis suggests that in many parts of the country, especially for women, greater equality of opportunity – that is, where childhood neighbourhood quality plays a smaller role in determining earnings – is driven by worse opportunities for those from richer neighbourhoods rather than better opportunities for those

from poorer neighbourhoods. We provide some descriptive evidence on possible explanations for this pattern.

Our analysis is strongly complemented by the study by Xu (2025) in this symposium: while we focus on where individuals grow up, she traces where the same cohorts are living as young adults, showing that just under a third move to a different location by age 32. Differences in opportunities to migrate to places with more jobs and higher wages may thus be an important driver of the geographical variation in the degree to which the neighbourhood where one grows up influences earnings in adulthood.

The rest of the paper is organised as follows. Section 2 describes the data we use and our key measures. Section 3 sets out our empirical methodology. Results are presented in Section 4. In Section 5, we conclude with a discussion of key policy implications of our findings and questions for future research.

2 | DATA

We study the association between childhood neighbourhood SES and earnings in adulthood. To do this, we use the Longitudinal Educational Outcomes (LEO) dataset and data from the 2001 Census and the Annual Survey of Hours and Earnings (ASHE).

The LEO dataset combines administrative records collected from different government departments, including:

- socio-demographic characteristics and educational outcomes from the National Pupil Database (NPD) for state schools in England and the Higher Education Statistics Agency (HESA) for higher education;
- earnings and income data from Pay As You Earn (PAYE) and Self-assessment (SA) records from HM Revenue and Customs (HMRC);
- benefits data from the Department for Work and Pensions (DWP).

For our analysis, the NPD data provide information on individuals' residential location and performance in national standardised exams (GCSEs) at age 16. The HMRC and DWP data provide their subsequent earnings and benefit histories in adulthood.

The LEO dataset covers all people born since September 1985 who engaged with the state education system in England. We focus on adult earnings measured at age 30. The choice of this age allows us to observe earnings of multiple birth cohorts before the disruption brought on by the COVID-19 pandemic in 2020, at a point in the life cycle when bias from using a snapshot of income as a proxy for lifetime income is starting to become less of a concern (Jenkins, 1987; Haider and Solon, 2006; Chetty et al., 2014b). Our analysis sample, therefore, consists of three of the earliest birth cohorts available in the data: those born between 1 September 1985 and 31 August 1988.

In addition to LEO, we use data from the 2001 Census and the 2017 ASHE. The 2001 Census provides information on the characteristics of the areas where our cohorts lived around age 16, which we use to construct a measure of the socio-economic conditions in childhood neighbourhoods and to explore potential mechanisms underlying our main findings. Our analysis of potential mechanisms also utilises the 2017 ASHE data, which capture the labour market characteristics of the areas where the study cohorts grew up around the time when we measure earnings.

2.1 | Adult earnings

We measure adult earnings at age 30 by combining employment earnings from the PAYE records and self-employment earnings from the SA records. We include zero earners and do not have information

on hours of work. Therefore, earnings in our analysis can be interpreted as a combination of labour market participation and wages.

The measure of earnings that we use in the analysis is the percentile rank of an individual in the national earnings distribution of their birth cohort. To construct this measure, we rank individuals within the earnings distribution of their birth cohort, pooling men and women, and we assign each individual an earnings percentile rank. For example, someone who earns more than 30 per cent of their birth cohort will be assigned rank 30. Zero earners make up approximately 8 per cent of the sample born between 1 September 1985 and 31 August 1986, and 9 per cent of the sample in the other two birth cohorts. To ensure a continuous distribution, we randomly assign income percentile ranks of 1 to 8 for zero earners in the 1985/1986 birth cohort, and 1 to 9 in the 1986/1987 and 1987/1988 birth cohorts.

2.2 | Childhood neighbourhood SES

The appropriate geographical scale for defining a 'neighbourhood' depends on the research question. We are interested in neighbourhoods as components of the immediate socio-economic environment in which a child grows up. In line with other studies of the effects of local residential neighbourhoods, such as Gibbons, Silva and Weinhardt (2017) in the UK and Goux and Maurin (2007) in France, we define a neighbourhood as the smallest geographical area available in census statistics – equivalent to a few residential streets in an urban area or around half of a large village in a rural area. These neighbourhoods primarily capture differences in socio-economic composition of neighbouring residents, local amenities and social environment, rather than in broader variation in school quality or local labour markets.

The smallest geographical area in UK census statistics is an 'Output Area' (OA). OAs consist of between 40 and 250 households and have populations between 100 and 625 individuals. OAs were created by the UK Office for National Statistics for the 2001 Census by combining adjacent postcodes in ways which identified relatively socio-economically homogeneous local areas that aligned with existing natural and administrative boundaries and have remained stable over time (Office for National Statistics, 2004). We assign each individual in our sample to the OA recorded for them in the NPD Pupil Level Annual School Census at age 16.[1] This yields 165,420 OAs after merging across census and NPD datasets (out of a total of 165,665 OAs in the 2001 census).

Many studies of neighbourhood effects use the neighbourhood poverty rate as a proxy for local socio-economic conditions (Sampson, Morenoff and Gannon-Rowley, 2002; Chetty, Hendren and Katz, 2016). We construct a neighbourhood socio-economic index that incorporates a broader set of indicators of socio-economic characteristics of the residents, alongside poverty measures from around the time when our cohorts were age 16, drawing on the Census 2001 and the LEO datasets. The index includes:

- percentage of households who own their home;
- percentage of households who live in social housing;
- percentage of adults unemployed;
- percentage of children aged 0–15 receiving Free School Meals (FSM);[2]
- percentage of adults in managerial occupations (SOC1);
- percentage of adults in professional occupations (SOC2);
- percentage of adults in associate professional and technical occupations (SOC3);

[1] Not all individuals spent their entire childhood in the OA where they were living at age 16. We focus on location at age 16 because this is when young people make critical decisions about their paths beyond compulsory schooling, such as whether and how to pursue further education, training or work.

[2] FSM is a means-tested entitlement for children from low-income households and is widely used as a proxy for socio-economic disadvantage.

- percentage of adults in elementary occupations (SOC9);
- percentage of adults with college degree or more (level 4 and above qualifications);
- percentage of adults with no qualifications.

Table A.1 in the online Appendix reports the loadings of each OA-level variable on the first principal component that is used to construct the SES index. In the rest of the paper, we refer to this index as a measure of childhood neighbourhood SES or childhood neighbourhood quality.

The measure of neighbourhood SES used in the main analysis is the percentile rank of each OA in the national distribution of OA-level SES. Specifically, we rank all OAs according to their SES index values in 2001 (around the time our study cohorts were age 16) and assign each OA a corresponding percentile rank. For example, an OA that scores higher than 30 per cent of OAs in England on the SES index is assigned a rank of 30.

2.3 | Sample

Our base sample is comprised of 1,710,380 individuals. These are all individuals in the NPD who were born between 1 September 1985 and 31 August 1988, and attended a state school in England at age 16.[3] We have non-missing data on the OA where the individuals lived at age 16 for 99.32 per cent of this sample. Of these, 99.96 per cent live in England at age 16.

To link an individual's location at age 16 in the NPD data to earnings data at age 30, we need to be able to identify the individuals from the NPD database in either the HMRC or DWP data, or both. This means that our final analysis sample consists of the individuals in our base sample who, at age 30, are either (1) employed or self-employed, or (2) receiving out-of work benefits. Zero earners in our sample are individuals who were reported by their employer as having zero earnings in the HMRC data, self-reported zero earnings, or were listed as out-of-work benefits recipients in the DWP data.

Details on the matching rates across datasets are reported in Table A.2 in the online Appendix. The final analysis sample consists of 1,434,102 individuals, which represents 83.85 per cent of the base sample.[4]

3 | METHODS

We are interested in the relationship between childhood neighbourhood SES and adult earnings. We examine two measures of this relationship. The first measure captures the degree to which childhood neighbourhood SES is related to adult earnings. To estimate this we regress adult earnings on a child neighbourhood SES index, separately for men and women. We convert both of the measures into percentile ranks in the national distribution in order to make it easier to interpret the estimates and increase robustness of the analysis to outliers and skewness (see Section 2 for further details on how the ranks are constructed). For individual i of gender g,

$$R_i = \alpha_g + \beta_g N_i + \epsilon_i, \tag{1}$$

where R_i denotes the percentile rank of individual i within their birth cohort's national earnings distribution (calculated jointly for men and women) while N_i denotes the rank of the neighbourhood

[3] The fact that our sample is comprised of those who were attending a state school in England at age 16 is important to keep in mind for the interpretation of our findings. We come back to this issue in the discussion in Section 5.

[4] Table A.3 compares the average characteristics of individuals in the final analysis sample (*Sample*) with individuals in the base sample who are not in the final analysis sample (*Out of sample*). Individuals in the base sample who are not in the final analysis sample are those who cannot be linked to the HMRC or DWP data. This could be because they have emigrated from the UK as adults, or they have not participated in the labour market and are ineligible for out-of-work benefits. We find that individuals in the final sample are less likely to be female, eligible for FSM at age 16, and more likely to be White or Indian as opposed to other ethnic groups than individuals out of the sample.

where individual i was living at age 16 within the national distribution of neighbourhood SES. Standard errors are clustered at the neighbourhood level. Coefficient β_g captures the strength of the association between childhood neighbourhood quality and adult earnings by gender. It can be interpreted as a measure of equality of opportunity between those who grew up in poorer and richer neighbourhoods. If $\beta_g = 0$, then adult earnings are completely independent of childhood neighbourhood SES, implying perfect equality of opportunity, where opportunities do not depend at all on the neighbourhood in which one grows up. Higher values of β_g indicate that adult earnings vary more systematically with childhood neighbourhood SES and, thus, that where one grows up plays a stronger role in shaping later-life outcomes.

Differences in outcomes of those who grew up in poorer and richer neighbourhoods may arise for two distinct sets of reasons. First, the quality of the neighbourhood in which one grows up may have a causal influence on adult earnings, for example through local role models, peers, amenities and networks. Second, there may be systematic differences in the types of families who live in poorer versus better-off neighbourhoods, and it is these differences – rather than the neighbourhoods themselves – that result in differences in earnings. For example, neighbourhood and family socio-economic characteristics are likely to be correlated as residential patterns in England are segregated on many dimensions including income and education (Drayton, Greaves and Rossi, 2023). The administrative data that we use does not contain reliable proxies for family socio-economic characteristics (such as parental income or education) making it difficult to separate family influences from those of the neighbourhood. Therefore, while we refer to β_g as capturing gender-specific neighbourhood quality effects, we do not claim to identify the causal effect of neighbourhoods. Our estimates can instead be viewed as describing the associations between childhood socio-economic circumstances and adult earnings, where the childhood circumstances include, but are not necessarily limited to, the influence of neighbourhood context.

Our second measure of neighbourhood effects focuses on outcomes of those who grew up in poor neighbourhoods. It captures the expected earnings rank for someone who grew up in a neighbourhood ranked at the 25th percentile of the national neighbourhood SES distribution. These neighbourhoods can be viewed as typical poor areas, representing the middle of the lower half of the neighbourhood SES distribution,

$$\bar{r}_{g,25} = \hat{\alpha}_g + \hat{\beta}_g * 25, \tag{2}$$

where $\hat{\alpha}_g$ and $\hat{\beta}_g$ are estimates of the intercept and slope in the regression in equation (1). If neighbourhood rank is unrelated to labour market opportunities, then $\bar{r}_{g,25}$ would be 50, which is the national average. Values of $\bar{r}_{g,25}$ below 50 indicate that growing up in a poor neighbourhood is associated with worse labour market opportunities than those we would expect to see if these opportunities were not related to childhood neighbourhood quality.

We start by examining childhood neighbourhood effects at the national level. However, because our main interest is in studying how the link between background and opportunity varies across England, most of the analysis focuses on how childhood neighbourhood effects vary across Upper Tier Local Authorities (LAs) in England. We choose LAs as the level at which we examine geographical differences because we want this analysis to provide useful insights for place-based policy to improve equality of opportunity across England. Upper Tier LAs are a particularly meaningful scale of geography for this purpose. They are responsible for delivering a wide range of essential services, including social care, education, youth services, housing, and public health and the UK government has historically regarded them as the relevant unit for targeting reforms related to skills, intra-regional travel, and employment support, among others (Sandford, 2025). Understanding how and why equality of opportunity varies across Upper Tier LAs will therefore yield insights at a geographical scale where policies can be implemented through existing local government structure. While LAs may reflect smaller geographical areas than typical 'local labour markets', we prefer these to Travel to Work Areas (TTWAs), for example, due to the relevance for targeting policies.

There are 152 LAs in England, which vary significantly in their main socio-economic and demographic characteristics. The average population of an LA is approximately 380,000 individuals (similar to a commuting zone in the United States). An average LA consists of 1,067 OAs (our childhood neighbourhood unit).[5] We assign each individual to an LA based on the OA that they lived in at age 16. We refer to this location as the LA where the individual grew up. We then construct the two measures of neighbourhood quality effects described above at the LA level and examine how they vary across England. To do this, as above, we regress an individual's earnings rank on the SES rank of the neighbourhood where they grew up but now we estimate this regressions separately for each LA a and gender g:

$$R_i = \alpha_{ag} + \beta_{ag} N_i + \epsilon_i. \tag{3}$$

Importantly, we continue to use earnings and neighbourhood ranks calculated in the national distribution. This generates LA- and gender-specific estimates of α and β that are comparable across LAs. We use estimates of β_{ag} to examine whether differences in childhood neighbourhood quality exert an equally strong influence on adult earnings across different parts of England.

We then construct an LA-specific measure of how those who grew up in poor neighbourhoods fare by using the estimated values of α_{ag} and β_{ag} for each LA and gender (from equation 3):

$$\bar{r}_{ag,25} = \widehat{\alpha}_{ag} + \widehat{\beta}_{ag} * 25. \tag{4}$$

Here, $\bar{r}_{ag,25}$ is the LA-specific expected earnings rank of men and women who grew up in poor neighbourhoods (ranked in the 25th percentile of the national distribution) in that LA. Differences in $\bar{r}_{ag,25}$ across LAs show differences in expected earnings of those who grew up in equally poor neighbourhoods but in different parts of the country (i.e., LAs). The estimates are constructed separately for men and women. For example, we find that $\bar{r}_{ag,25} = 41.7$ for women who grew up in Camden and 32.6 for women who grew up in Nottingham. This tells us that in spite of growing up in equally poor neighbourhoods, the expected earnings of young women from Camden are around 9 percentile ranks higher than those of young women from Nottingham.

The two measures ($\widehat{\beta}_{ag}$ and $\bar{r}_{ag,25}$) complement each other in several ways. First, while $\widehat{\beta}_{ag}$ summarises neighbourhood effects across the entire distribution of neighbourhood quality, $\bar{r}_{ag,25}$ focuses specifically on the outcomes of those who grew up in poor neighbourhoods. Second, variation in $\widehat{\beta}_{ag}$ across LAs informs on differences in the degree of inequality of opportunity between those from poorer and richer neighbourhoods *within* the same LAs, whereas $\bar{r}_{ag,25}$ captures geographical inequalities in how those who grow up in poor neighbourhoods fare.

The robustness of the LA-level analysis depends on several factors. First, there needs to be significant variation in neighbourhood SES ranks within each LA. We find this to be the case: the within-LA standard deviation of neighbourhood SES ranks ranges from 15.4 to 33.0 percentile ranks. Figure B.1 in the online Appendix shows the distribution of LA-level variation in neighbourhood SES.

Second, β_{ag} in equation (3) provides a good summary of the relationship between earning ranks and childhood neighbourhood SES ranks if this relationship is linear. Figure 1 suggests that this is the case nationally. To explore whether this is also the case at the LA level, we plot childhood neighbourhood SES percentile ranks against adult earnings ranks for the largest LAs in each of the nine regions of England. Encouragingly, this relationship is approximately linear in these LAs for both men and women (see Figure B.2).

[5] We use 150 LAs in our analysis, dropping two LAs – City of London and Isles of Scilly – where the analysis sample size is less than 100 individuals. However, we retain the neighbourhoods and individuals who grew up in these LAs when calculating ranks of earnings and neighbourhood SES within the national distributions.

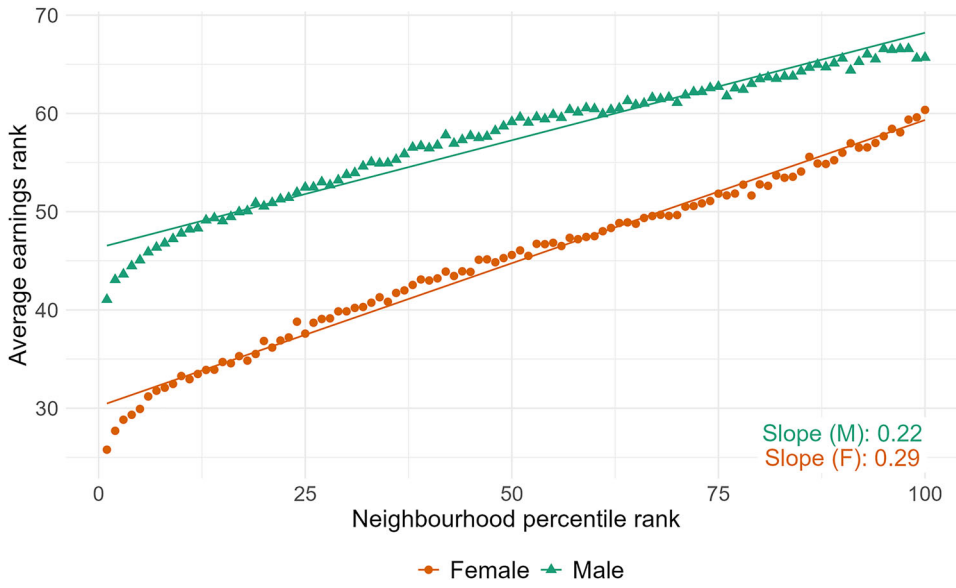


FIGURE 1 Association between childhood neighbourhood SES and earnings at age 30 in England. *Note*: The figure shows the average earnings percentile rank at age 30 by the percentile rank of childhood neighbourhood SES, separately for men and women. Each point represents the mean adult earnings rank for individuals who grew up in neighbourhoods at a given SES percentile rank. The solid lines show the best-fitting linear relationship between childhood neighbourhood SES rank and adult earnings rank, estimated using least squares. The reported slope indicates how strongly adult earnings ranks are associated with childhood neighbourhood SES ranks. [Colour figure can be viewed at wileyonlinelibrary.com]

Third, we address concerns about noise in the LA-level measures due to small sample sizes, by adjusting these measures by an estimate of the variance of the measurement error, as is widely done in past studies (Kane and Staiger, 2002; Chetty, Friedman and Rockoff, 2014a; Araujo et al., 2016; Carneiro et al., 2020). See online Appendix B.1 for a detailed description of this approach.

Before moving on to the results, we highlight three observations about the methodology.

First, 'equally poor neighbourhoods', according to the neighbourhood SES index that we construct, do not necessarily represent equally disadvantaged neighbourhoods in all relevant dimensions. Neighbourhoods with similar SES scores in difference parts of the country may still differ in ways that are not captured by the index but that matter for labour market outcomes. For example, two neighbourhoods might have the same SES rank, but differ in access to public transport, which is likely important for labour market outcomes but is not included in the SES index due to limitations in available data. Although we include a rich set of characteristics to reduce the risk of unobserved differences, some unmeasured variation may remain; this should be kept in mind as a potential limitation of the analysis.

Second, we examine variation in childhood neighbourhood effects across LAs of origin (LAs where individuals lived at age 16) rather than LAs where they live at age 30 when the earnings are measured. Xu (2025) in this symposium shows that around 30 per cent of young workers in England move between the ages of 16 and 32, and that whether and where they move differ significantly by education level. Because education is highly correlated with socio-economic background, Xu's findings imply that geographical differences in opportunities to move to better labour markets and differences in propensity to move by socio-economic background may be important mechanisms underlying the geographical differences that we find in childhood neighbourhood effects. Xu's complementary analysis thus provides useful context for interpreting our results. We come back to this point in Section 5.

Finally, to avoid a 'London-centric' interpretation of key trends, we present and discuss key trends when London is included and when it is excluded. London accounts for 32 of the 150 LAs in our analysis and is well documented as an outlier on multiple socio-economic dimensions (e.g., wages, housing costs and schooling outcomes). There is, therefore, a risk that inference about overall trends will be shaped by London's distinctive profile, which our approach aims to mitigate.

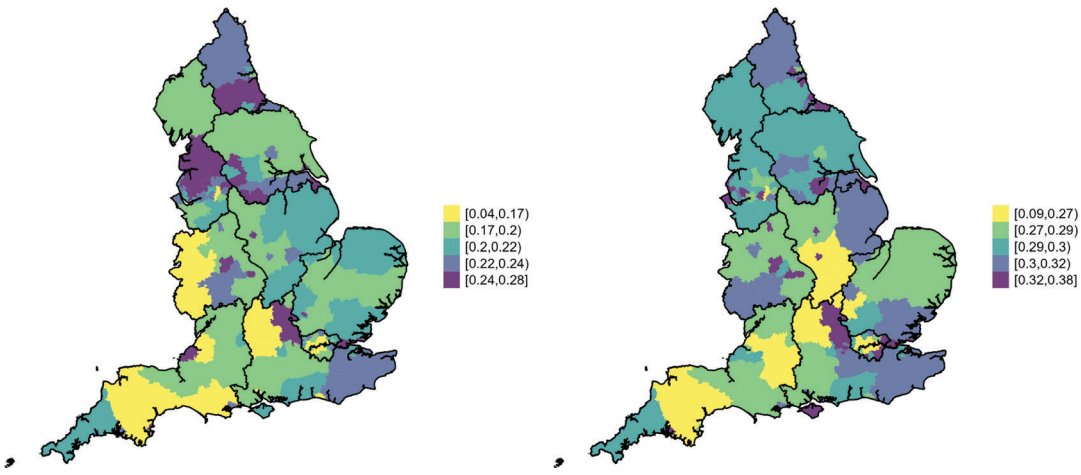
4 | RESULTS

4.1 | Geographical variation in equality of opportunity

We start by presenting the national picture. Figure 1 shows the mean percentile rank of individuals' adult earnings by the percentile rank of the childhood neighbourhood SES, for men and women, respectively. Across most of the distribution of childhood neighbourhood SES, this relationship is linear. OLS estimates show that a percentile increase in childhood neighbourhood SES is associated with an increase of 0.22 of a percentile rank in adult earnings for men and 0.29 of a percentile rank for women. This translates into a 22 (29) percentile rank difference between men (women) who grew up in the poorest and richest neighbourhoods.

The national estimates mask significant heterogeneity across different areas of England. This echoes a growing body of evidence spanning multiple countries that shows that the importance of childhood economic conditions for outcomes in adulthood can vary considerably within the same country; for example, Chetty et al. (2014b) for the US, Heidrich (2017) for Sweden, Acciari, Polo and Violante (2022) for Italy and Kenedi and Sirugue (2023) for France. Heat maps in Figures 2(a) and 2(b) show LA-level estimates of childhood neighbourhood SES effects for men and women, respectively. The different colours correspond to quintiles of the neighbourhood SES effect ($\hat{\beta}_{ag}$ in equation (3)); the quintiles are calculated separately for men and women.

We interpret weaker childhood neighbourhood effects (lower values of $\hat{\beta}_{ag}$) as indicating greater equality of opportunity; that is, weaker dependence of adult earnings on childhood neighbourhood



(a) Men (b) Women

FIGURE 2 LA-level estimates of association between childhood neighbourhood SES and earnings at age 30 in England. *Note*: The maps show the degree of geographical variation in the association between childhood neighbourhood SES and adult earnings, separately for men and women. The different colours correspond to quintiles of the neighbourhood SES effect ($\hat{\beta}_{ag}$ in equation (3)) estimated separately for each LA and sex. The range for each quintile is shown in the legends. [Colour figure can be viewed at wileyonlinelibrary.com]

TABLE 1 LAs with highest and lowest equality of opportunity

LA rank	Male			Female		
	Region	Upper Tier LA	$\hat{\beta}_{ag}$	Region	Upper Tier LA	$\hat{\beta}_{ag}$
10 LAs with highest equality of opportunity						
1	London	Islington	0.04	London	Camden	0.09
2	London	Westminster	0.04	London	Hackney	0.09
3	London	Kensington and Chelsea	0.06	London	Tower Hamlets	0.12
4	London	Camden	0.06	London	Lambeth	0.13
5	London	Hammersmith and Fulham	0.07	London	Kensington and Chelsea	0.13
6	London	Southwark	0.08	London	Westminster	0.14
7	London	Tower Hamlets	0.09	London	Hammersmith and Fulham	0.14
8	London	Lambeth	0.09	London	Islington	0.14
9	London	Hackney	0.09	London	Southwark	0.15
10	London	Lewisham	0.10	London	Wandsworth	0.18
10 LAs with lowest equality of opportunity						
141	North West	St. Helens	0.27	East of England	Southend-on-Sea	0.34
142	North East	Hartlepool	0.27	West Midlands	Stoke-on-Trent	0.35
143	North West	Knowsley	0.27	West Midlands	Walsall	0.35
144	West Midlands	Walsall	0.27	South East	Windsor and Maidenhead	0.35
145	Yorkshire and The Humber	Bradford	0.28	West Midlands	Solihull	0.35
146	West Midlands	Coventry	0.28	London	Havering	0.36
147	Yorkshire and The Humber	Kingston upon Hull, City of	0.28	London	Bexley	0.36
148	North West	Blackpool	0.28	London	Sutton	0.36
149	Yorkshire and The Humber	North East Lincolnshire	0.28	London	Barking and Dagenham	0.37
150	East of England	Luton	0.28	West Midlands	Sandwell	0.38

Note: The table presents coefficients ($\hat{\beta}_{ag}$) from regressions of adult earnings rank on childhood neighbourhood SES rank estimated separately for each LA and for men and women (equation 3). It shows these estimates for the 10 LAs with the highest equality of opportunity (weakest childhood neghbourhood effects) and lowest equality of opportunity (strongest childhood neighbourhood effects).

SES. For men, the LA-level estimates of childhood neighbourhood SES effects range between 0.04 and 0.28. That is, in the LA with the greatest equality of opportunity, men who grew up in the richest neighbourhoods are on average only 4 percentile ranks higher in the earnings distribution than men who grew up in the poorest neighbourhoods. In contrast, in the LA with the lowest equality of opportunity, this gap is 28 percentile ranks. For a man with earnings at the 50th percentile rank, a 28 percentile rank increase in earnings is equivalent to £12,251 or 64 per cent increase in earnings. The difference between LAs is even larger for women, ranging between 0.09 and 0.38.

Table 1 lists the ten LAs with highest and lowest equality of opportunity (the weakest and strongest childhood neighbourhood SES effects) for men and women; the full ranking is shown in Tables C.1 and C.2 in the online Appendix. For both sexes, the LAs with the highest equality of opportunity are all located in London. In contrast, the LAs with the lowest equality of opportunity differ markedly by sex and are more geographically dispersed. Six of the ten areas with the lowest equality of opportunity for men are in the Northern and Yorkshire regions, while for women these are spread across the East of England, West Midlands and London. Among women, the most equal LAs are concentrated in Inner London, whereas four of the ten most unequal LAs are found in Outer London. The only LA appearing among the most unequal for both men and women is Walsall in the West Midlands.

As London (especially Inner London) stands out for having the areas with the lowest inequality of opoortunity, we check whether the large differences between the least and most unequal areas

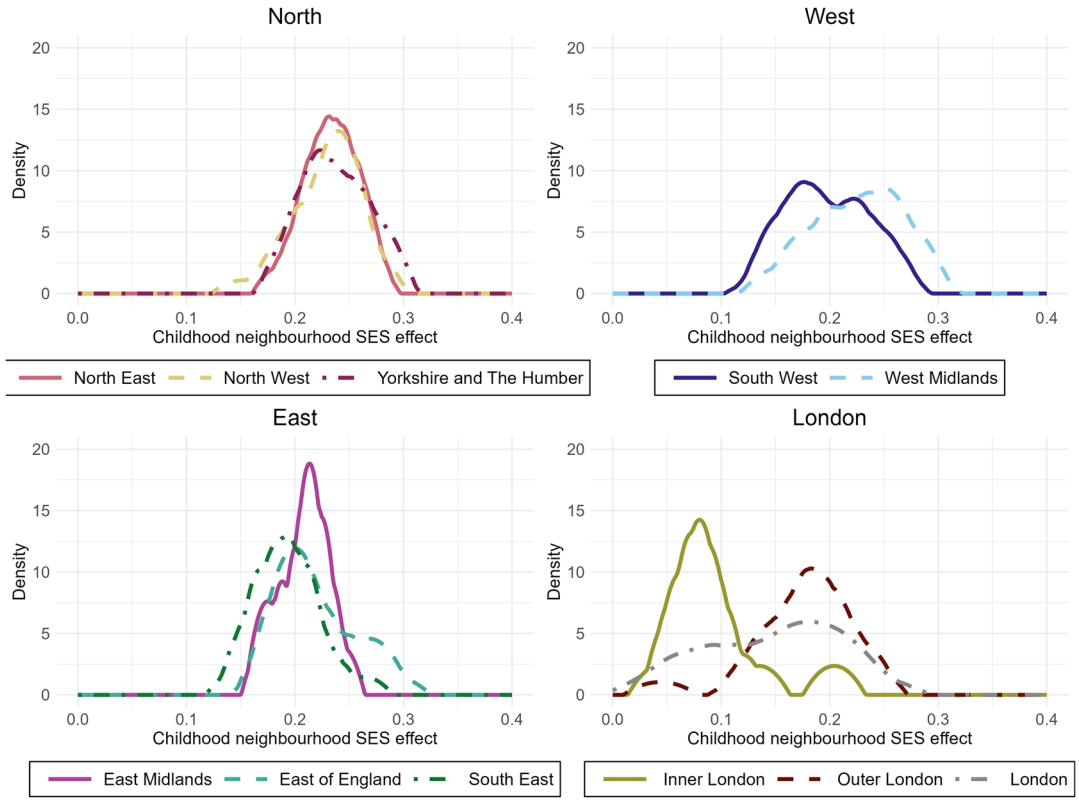


FIGURE 3 Distributions of LA-level estimates of childhood neighbourhood SES effects by region. *Note*: The figure plots the distributions of LA-level estimates of the association between the percentile rank of childhood neighbourhood SES and percentile rank of adult earnings ($\hat{\beta}_{ag}$ in equation (3)) for each of the nine regions in England for men, grouped by where they are located. London is split into Inner and Outer London. [Colour figure can be viewed at wileyonlinelibrary.com]

in England are driven by London LAs. We find that significant geographical variation in childhood neighbourhood SES effects remains even if we leave out London, ranging between 0.14 and 0.28 for men and 0.23 and 0.38 for women. Interestingly, outside London, the LAs with more equality of opportunity for women are not necessarily the same ones as those for men; the correlation between neighbourhood effects estimates for non-London LAs for men and women is only 0.47.

These patterns are not just driven by broad geographical trends, such as the North–South divide. We find significant variation in childhood neighbourhood SES effects across LAs *within* regions. Figure 3 shows the distributions of LA-level estimates of these effects for each of the nine regions in England for men, grouped by where the regions are located. For London, we also show the distributions separately for Inner and Outer London. We see significant dispersion in the neighbourhood effects estimates within most of the nine regions (this is also the case for women). This is in line with existing evidence that geographical inequalities in the UK can be highly localised, with instances of high affluence and high growth areas neighbouring high deprivation, stagnating areas within the same locality and regions (Agrawal and Phillips, 2020).

To more rigorously assess the relative importance of within- and across-region variation in LA-level childhood neighbourhood effects, we decompose the variance in these estimates into between- and within-region components. To do this, we use the R^2 from regressing LA-level estimates of $\hat{\beta}_{ag}$ on region fixed effects. In line with what we see in Figure 3, we find that, for both men and women, more than half of the variation in $\hat{\beta}_{ag}$ across LAs is *within* regions, at 58 per cent and 69 per cent, respectively. Excluding London, which looks very different in Figure 3 and thus boosts the

inter-regional variation component, just under 80 per cent of the total variation is within region for both men and women.

The West Midlands region gives some stark examples of this intra-regional variation. It includes Shropshire and Herefordshire, which are in the top 25 per cent of LAs in England in terms of equality of opportunity, and Coventry, which is in the bottom five of LAs. The high within-region variation suggests that the spatial differences in relative life chances of those from poorer and better-off neighbourhoods are more complex than the well-documented 'North–South' divide. This is consistent with previous findings from Carneiro et al. (2020) for men.

What might explain these patterns? It is helpful to first consider how childhood neighbourhood quality in a given LA might affect adult labour market earnings. The first potential mechanism is through educational inequality. If children from poorer neighbourhoods receive lower-quality education than those from more advantaged areas, this is likely to reduce their adult earnings, as lower educational attainment tends to translate into lower pay. This mechanism will be particularly important in areas where there are high returns to education, either through jobs available locally or through migration opportunities. Therefore, local labour market characteristics will constitute the second potential mechanism – closely linked to the first. There will also be a wider set of local factors, such as closeness of the community and stability of families, among many others, which may contribute to gaps in earnings.

We leverage available census, administrative and survey datasets in order to construct proxies for these different potential mechanisms and to examine associations with LA-level estimates of childhood neighbourhood effects. Specifically, to measure childhood education exposure, we construct a measure of the quality of schools in the LA and the degree of academic segregation across the schools in 2002 (around the age when our cohorts were 16). We use the 2001 census to construct indicators of socio-demographic characteristics of the LAs around the same time. These include: an indicator for whether the LA is urban; the proportion of the adult population who are an ethnic minority; the proportion of the adult population who are immigrants; a factor for stable families constructed from the proportion of children living in single parent and in married parent families; the share of children eligible for FSM; and the proportion of the population owning a house.[6] Finally, we capture characteristics of the local labour markets in 2017 – around the time when our cohorts were 30 (when we measure their earnings) – including the proportion of the adult population who were economically active and mean hourly gross wages for men and women.

To consider the associations between LA characteristics and LA-level childhood neighbourhood effects estimates, we regress $\hat{\beta}_{ag}$ (equation 3) on the set of LA characteristics described above. Results are presented in Table 2. Columns 1–3 show estimates for men; columns 4–6 show estimates for women. For each, we first estimate a basic model with just the covariates described above, then we add region fixed effects, and finally we show results for the model with region fixed effects but excluding London.

We find that these covariates explain the majority of the variation in childhood neighbourhood effects across LAs for men and women (76 per cent and 73 per cent, respectively). Adding region fixed effects in columns 2 and 5 in addition to the covariates increases the R^2 by a very small amount and does not change the associations between the covariates and $\hat{\beta}_{ag}$, suggesting that these characteristics are central to explaining the within-region variation in childhood neighbourhood SES effects on adult earnings. The estimates show that growing up in LAs with better quality schools and stronger labour markets (higher economic activity and mean wages) is associated with weaker childhood neighbourhood effects in earnings (greater equality of opportunity) for both men and women. Childhood neighbourhoods matter more for adult earnings in urban areas and areas with greater levels of academic segregation across schools, consistent with literature on the impact of selective schooling systems (Burgess, Dickson and Macmillan, 2020). There are some differences

[6] These socio-demographic characteristics of LAs may also account for part (although not all) of the sorting of families into LAs that could also be driving differences in our findings.

TABLE 2 Association between LA characteristics and LA-level estimates of childhood neighbourhood SES effects

	Male			Female		
	(1)	(2)	(3)	(4)	(5)	(6)
Good quality schools	−0.010***	−0.008***	−0.009***	−0.004	−0.005*	−0.005*
	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)
Academic segregation	0.007***	0.008***	0.009***	0.011***	0.010***	0.009***
across schools	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.002)
Proportion of population	−0.003***	−0.003***	−0.002*	−0.004***	−0.004***	−0.003***
economically active 2017	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Mean gross hourly pay 2017	−0.004***	−0.003***	−0.003*	−0.002	−0.004*	−0.004*
	(0.001)	(0.001)	(0.002)	(0.002)	(0.002)	(0.003)
Urban LA	0.021***	0.019***	0.018**	0.018***	0.015**	0.008
	(0.006)	(0.006)	(0.007)	(0.007)	(0.007)	(0.006)
Ethnic minority population	0.025***	0.024***	0.016	0.028***	0.027***	−0.010
	(0.005)	(0.006)	(0.018)	(0.006)	(0.006)	(0.014)
Immigrant population	−0.042***	−0.035***	−0.028	−0.048***	−0.058***	0.004
	(0.006)	(0.007)	(0.026)	(0.007)	(0.008)	(0.021)
Stable families	0.008	0.003	0.006	−0.003	−0.002	0.002
	(0.006)	(0.006)	(0.009)	(0.006)	(0.006)	(0.007)
Share of children	0.002	0.002	0.010	−0.023***	−0.020***	−0.009
eligible for FSM	(0.006)	(0.006)	(0.009)	(0.006)	(0.006)	(0.007)
Homeownership	0.018***	0.023***	0.017**	0.011	0.010	−0.003
	(0.006)	(0.006)	(0.008)	(0.006)	(0.007)	(0.006)
N	150	150	118	150	150	118
R^2	0.762	0.783	0.542	0.734	0.788	0.479
Region fixed effects	No	Yes	Yes	No	Yes	Yes
London LAs included	Yes	Yes	No	Yes	Yes	No

Note: The table presents coefficients from regressions of $\hat{\beta}_{ag}$ (equation 3) on LA characteristics, separately for men and women. For men (women), column 1 (column 4) presents estimates from the regressions excluding region fixed effects and including London LAs. Column 2 (column 5) presents the same estimates with the addition of region fixed effects. Column 3 (column 6) presents estimates including region fixed effects but excluding London LAs. All variables other than those labelled '2017' are measures in 2002, around the time when the study cohorts were 16. Asterisks indicate statistical significance levels: $^{***}p < 0.01$; $^{**}p < 0.05$; $^{*}p < 0.10$.

in patterns across genders; there is a positive association between homeownership and neighbourhood effects for men, while there is no association for women. In contrast, while the share of children eligible for FSM is associated with greater equality of opportunity for women, there is no significant association for men.[7]

From a policy perspective, we may be concerned about stronger childhood neighbourhood effects in some LAs than others because such variation suggests greater inequality of opportunity – and therefore more unrealised potential in some parts of the country than others. Harnessing this potential more effectively could reduce geographical inequalities.

[7] A concern with this analysis may be that some of the correlates are also used to construct our childhood neighbourhood SES index (see Section 2). We check the robustness of the results to the exclusion of the overlapping variables (homeownership in the area and proportion of children eligible for FSM). This does not change the main patterns (Table C.3 in the online Appendix).

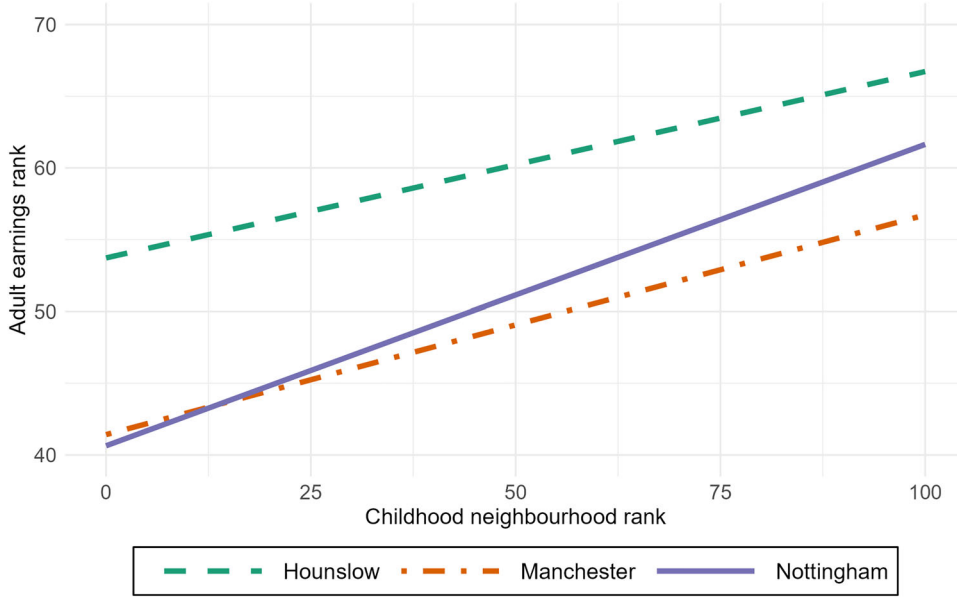


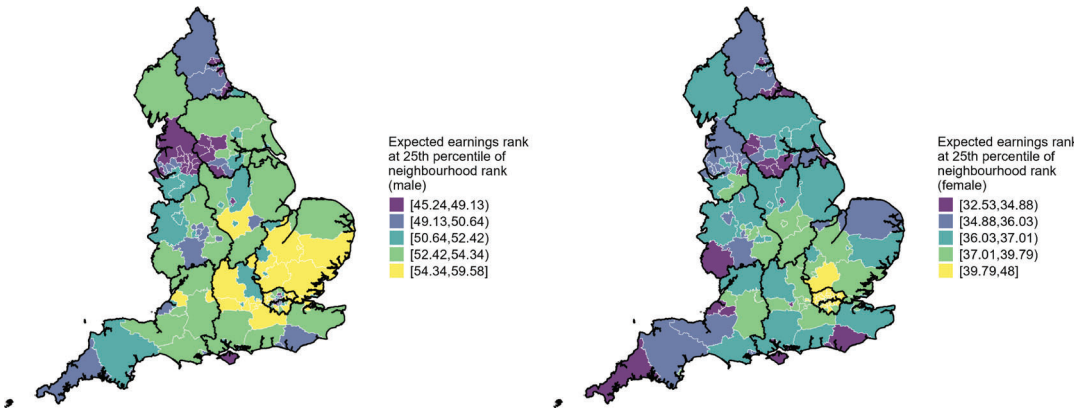
FIGURE 4 Childhood neighbourhood SES effects in selected LAs. *Note*: The figure plots the estimated linear relationship (using least squares) between childhood neighbourhood SES rank and adult earnings rank for men in Nottingham, Hounslow and Manchester. [Colour figure can be viewed at wileyonlinelibrary.com]

However, we may also worry that places with larger inequalities in opportunity are characterised by particularly poor outcomes among those from the most disadvantaged neighbourhoods. Figure 4 illustrates that this is not necessarily the case. It shows the estimated relationship between childhood neighbourhood SES percentile rank and adult earnings percentile rank for men in three LAs: Nottingham, Hounslow and Manchester. Nottingham lies around the middle of the neighbourhood effects distribution (80th out of 150 LAs), while Hounslow and Manchester are both among the top 20 LAs with the weakest childhood neighbourhood effects and, therefore, the smallest earnings-rank gaps between men who grew up in richer versus poorer neighbourhoods (highest equality of opportunity). Clearly, Hounslow and Manchester are very different, however. In Hounslow, there is more equality of opportunity than in Nottingham because those who grew up in poorer neighbourhoods have higher earnings than those who grew up in equally poor neighbourhoods in Nottingham. In contrast, in Manchester, this gap is smaller than in Nottingham because those who grew up in richer neighbourhoods have lower earnings than those who grew up in equally rich neighbourhoods in Nottingham. This comparison highlights that areas with similar levels of equality of opportunity can nevertheless differ substantially in outcomes of individuals who grew up in poor neighbourhoods.

In order to learn about geographical variation in how those from poor neighbourhoods fare, in the next part of the paper, we focus on differences in outcomes of those who grew up in similarly poor neighbourhoods but in different parts of England.

4.2 | Geographical variation in outcomes of individuals from poor neighbourhoods

As set out in Section 3, our measure of outcomes of those who grew up in poor childhood neighbourhoods is the expected earnings rank of individuals who grew up in neighbourhoods in the 25th percentile rank of the neighbourhood SES distribution ($\bar{r}_{g,25}$ in equation 2); we refer to



(a) Men (b) Women

FIGURE 5 LA-level expected earnings rank of individuals who grew up in poor neighbourhoods. *Note*: The maps show geographical variation in LA-level expected earnings rank at age 30 for individuals who grew up in neighbourhoods at the 25th percentile rank of the national neighbourhood SES distribution ($\bar{r}_{ag,25}$ measure from equation 4) in England, by gender. The colours correspond to the quintiles of the expected earnings rank for each LA calculated separately for men and women. [Colour figure can be viewed at wileyonlinelibrary.com]

these as 'poor neighbourhoods' as they represent the middle of the lower half of the neighbourhood SES distribution.

Nationally, the expected earnings rank for those who grew up in a poor neighbourhood is 51.7 for men and 37.4 for women.[8] However, there is a 14 (16) percentile rank gap for men (women) between LAs where those who grew up in poor neighbourhoods earn the most and least, on average. This is equivalent to £5,328 in annual earnings or 25 per cent of the median earnings for men in this group and £6,641 or 55 per cent of the median earnings for women in this group. Figures 5(a) and 5(b) map the $\bar{r}_{ag,25}$ measure from equation (4) across LAs in England for men and women, respectively. Table 3 shows the top and bottom 10 LAs for this measure; the ranking of all LAs can be found in Tables C.4 and C.5 in the online Appendix.

Figure 5(b) shows that for women who grew up in equally poor neighbourhoods, expected earnings ranks are highest in LAs located in the London region and its surrounding areas, and lowest in LAs that are further away from London. This is confirmed by the fact that 28 of the top 30 LAs on this measure are located in the London region (Table 3 and Tables C.4 and C.5). The lowest-performing LAs for women are more geographically dispersed, including areas in the North, such as Sheffield and Middlesbrough, Nottingham in the Midlands and several areas in the South, such as Isle of Wight, Southampton, Bristol and Plymouth. Overall, there is a strong regional pattern: 71 per cent of the variation in expected earnings rank of women who grew up in equally poor neighbourhoods in different LAs is across rather than within regions. This is in stark contrast to the inequality of opportunity measure discussed above, for which inter-regional variation explains less than a third of total variation across LAs.

Clearly, any summary statistics are going to be heavily influenced by London as London LAs dominate the top places for this measure. In order to get a better idea of the patterns in the rest of the country, we look at how much geographical variation remains if we exclude London LAs. The

[8] If childhood neighbourhood SES rank were uncorrelated with adult earnings, we would expect individuals from any neighbourhood percentile rank to reach earnings percentile rank of 50, on average. To the extent that there is a positive correlation between childhood neighbourhood SES and adult earnings, we would expect $\bar{r}_{g,25}$ to be below the 50th percentile rank. In our analysis, $\bar{r}_{g,25}$ is above the 50th percentile rank for men because earnings ranks are calculated jointly for men and women and, on average, men earn more than women. In the joint distribution, the median earnings percentile rank for men is 60 and for women it is 40.

TABLE 3 Areas with the highest and lowest expected earnings rank among those who grew up in poor neighbourhoods

LA rank	Male			Female		
	Region	Upper Tier LA	$\bar{r}_{25}$	Region	Upper Tier LA	$\bar{r}_{25}$
Top 10 LAs						
1	London	Havering	59.58	London	Harrow	48.00
2	London	Barking and Dagenham	58.37	London	Ealing	46.60
3	London	Bexley	57.44	London	Redbridge	46.05
4	South East	West Berkshire	57.40	London	Brent	45.53
5	East of England	Thurrock	57.19	London	Hounslow	44.89
6	South East	Bracknell Forest	57.09	London	Newham	44.16
7	London	Hillingdon	57.04	London	Hillingdon	43.81
8	London	Hounslow	56.98	London	Barking and Dagenham	43.73
9	London	Sutton	56.83	South East	Slough	43.12
10	South West	South Gloucestershire	56.51	London	Havering	43.12
Bottom 10 LAs						
141	Yorkshire and The Humber	Sheffield	47.22	South East	Isle of Wight	33.73
142	North West	Trafford	47.10	Yorkshire and The Humber	Sheffield	33.67
143	North West	Bolton	47.02	North East	Middlesbrough	33.63
144	North East	Newcastle upon Tyne	46.74	South East	Southampton	33.32
145	North West	Oldham	46.27	North East	Stockton-on-Tees	33.30
146	East Midlands	Nottingham	45.97	Yorkshire and The Humber	North East Lincolnshire	32.87
147	Yorkshire and The Humber	Bradford	45.84	South West	Plymouth	32.72
148	North West	Blackburn with Darwen	45.74	East Midlands	Nottingham	32.60
149	North West	Blackpool	45.42	Yorkshire and The Humber	Kingston upon Hull, City of	32.56
150	North West	Manchester	45.24	South West	Bristol, City of	32.53

Note: The table presents the 10 LAs with the highest (top 10) and 10 LAs with the lowest (bottom 10) expected earnings rank for those who grew up in neighbourhoods at the 25th percentile rank of the national neighbourhood SES distribution, by sex ($\bar{r}_{ag,25}$ measure from equation (4)).

range shrinks from a 16 percentile rank difference between the LA where the expected earnings rank for this group is highest and lowest to 11 percentile ranks. This is still, however, non-negligible – equivalent to £4,875 (or 41 per cent of median earnings of women in this group). Excluding London also diminishes the importance of inter-regional variation, with 74 per cent of variation explained by within-region variation for areas outside London. This is much more similar to what we see for the inequality of opportunity measure.

For men, Figure 5(a) and Table C.4 present a more mixed picture. While all but one of the bottom 10 LAs are located in the Northern and Yorkshire regions, London LAs include ones that have some of the highest expected earnings for this group (such as Havering, Barking and Dagenham, and Bexley), as well as those with some of the lowest expected earnings (such as Lambeth, Wandsworth, Kensington & Chelsea, Haringey and Hackney). The better performing London LAs tend to be located in Outer London, while the worse performing ones are in Inner London. This more mixed picture for men is reflected in a much less pronounced regional pattern, even when London is included, with 65 per cent of the variation in this measure being within region.

Given differences in patterns by gender, the correlation in this measure between men and women is moderate (0.49), indicating that the LAs where women from poor neighbourhoods fare relatively well are not necessarily the same as those where men do.

4.2.1 | Earnings of men and women who grew up in big cities outside London

Strikingly, the 20 per cent of LAs where expected earnings for men and women from poor neighbourhoods are lowest include most of the inner-city areas of England's ten largest cities outside London, as defined by the Centre for Cities.[9] For men, these include Leeds, Liverpool, Sheffield, Newcastle, Nottingham, Bradford and Manchester. Four of these (Bradford, Newcastle, Sheffield and Nottingham) are also in the bottom 20 per cent of LAs for women, alongside Portsmouth and Bristol. While most of these cities are in the Northern part of the country where expected earnings tend to be lower, on average, even controlling for region fixed effects, mean LA-level expected earnings rank for those who grew up in poor neighbourhoods is around a standard deviation lower for both men and women in the inner city LAs of the 10 biggest cities outside of London than in the other LAs (Table 4).[10]

Furthermore, Figure 6 shows that in fact everyone in the study cohorts (those born in the late 1980s) who grew up in big cities (not just those from poor neighbourhoods) have lower expected earnings than those who grew up elsewhere outside of London.[11] This is consistent with the fact that these big cities do not stand out for having high inequality of opportunity (large neighbourhood effects).

This finding seems at odds with the evidence that big cities attract younger, more-educated people, and have higher wages (D'Costa and Overman, 2014; Overman and Xu, 2024). An important distinction is between those who are residents of cities and those who work there. Agrawal and Phillips (2020) document that, in fact, the mean earnings of residents tend to be a little lower in cities than outside. In line with this, results in Table 5 confirm that while the mean hourly pay of those working in inner city LAs of the top 10 big cities was significantly higher than in LAs outside of the top 10 big cities (excluding London) in 2017 (columns 1 and 2), this premium disappears once we consider wages of residents of the big cities rather than of those who work there (columns 3 and 4).[12]

Why is it that growing up in big cities is associated with worse labour market outcomes when big cities appear to have better labour market opportunities? While a definitive answer to this question is beyond the scope of this paper, initial exploratory analysis suggests that poor quality of education in big cities in the 1990s and early 2000s, when our study cohorts were in school, is likely to be part of the explanation. Using data on GCSE attainment of our cohorts, we reproduce Figure 6 but using GCSE scores of our cohorts in English, Science and Mathematics rather than earnings as the outcome. Figure C.1 in the online Appendix shows that just as growing up in big cities is associated

TABLE 4 Association between expected earnings in poor neighbourhoods and regional big city status

	Male	**Female**
	(1)	**(2)**
Big city	−3.090***	−1.515***
	(0.687)	(0.490)
N	118	118
R^2	0.507	0.321
Region fixed effects	Yes	Yes
London LAs included	No	No

Note: The table shows the results from regressing $\bar{r}_{ag,25}$ (equation 4) on an indicator of whether the LA is an inner city LA of a big city outside London. Asterisks indicate statistical significance levels: ***$p < 0.01$; **$p < 0.05$; *$p < 0.1$.

[9] See https://www.centreforcities.org/data/data-tool/.

[10] The standard deviation of $\bar{r}_{ag,25}$ outside London for men is 2.81, and for women 1.71.

[11] This result holds relative to different categories of areas, including suburbs of the big cities, smaller urban areas and rural areas. Results available on request.

[12] Data from the ASHE 2017 on LA-level mean hourly pay by place of work (table 7 of ASHE 2017) and residence (table 8 of ASHE 2017).

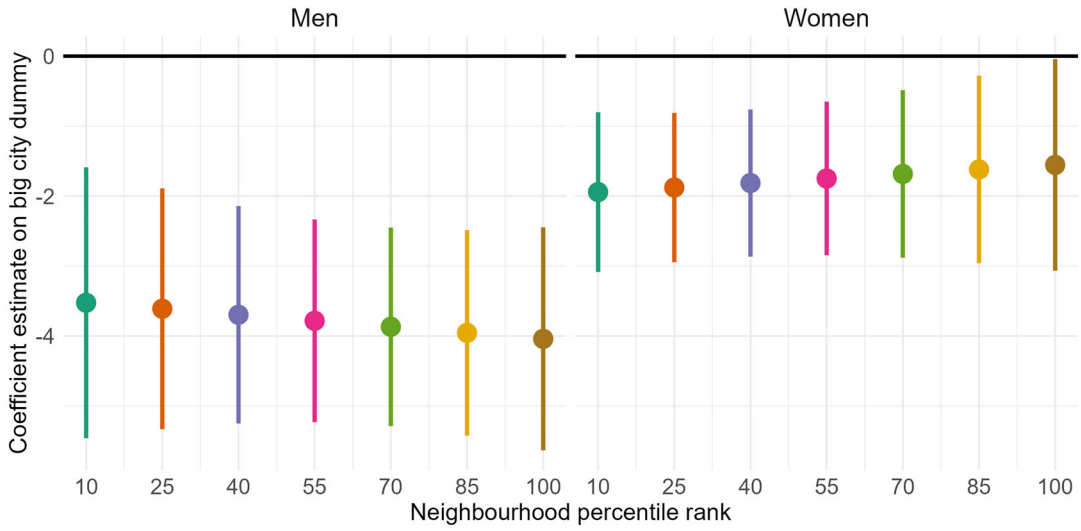


FIGURE 6 Associations between growing up in regional big cities and expected earnings. *Note*: The coefficient plot shows results from regressing the LA-level expected earnings rank of those who grew up in neighbourhoods ranked at the 10th, 25th, 40th, 55th, 70th, 85th and 100th percentiles of the national neighbourhood SES distribution on an indicator of whether the LA is in one of the top 10 big cities outside of London. London is excluded so the comparison group is LAs outside London and big cities. Each coefficient is from a separate regression. [Colour figure can be viewed at wileyonlinelibrary.com]

TABLE 5 Hourly wages in 10 biggest cities outside London

	Gross hourly wage		Gross hourly wage of residents	
	Male	Female	Male	Female
	(1)	(2)	(3)	(4)
Big city	1.298**	1.124***	−0.470	0.264
	(0.565)	(0.326)	(0.694)	(0.378)
N	118	118	118	118
R^2	0.397	0.417	0.316	0.363
Region fixed effects	Yes	Yes	Yes	Yes
London LAs included	No	No	No	No

Note: The table presents the results from regressing LA-level mean gross hourly wage earned (columns 1 and 2) and LA-level mean gross hourly wage of residents (columns 3 and 4) on an indicator of whether the LA is an inner city LA of a big city outside London. London is excluded from the analysis. All specifications include region fixed effects. Asterisks indicate statistical significance levels: $^{***}p < 0.01$; $^{**}p < 0.05$; $^{*}p < 0.1$. One standard deviation of LA-level mean wages outside London is 2.09 for men and 1.22 for women.
Source: ASHE 2017.

with lower earnings, it is also associated with lower educational attainment (GCSE scores) for these cohorts, especially for those from poorer neighbourhoods. Adding controls for LA-level expected GCSE scores of those who grew up in poor neighbourhoods reduces the association between expected earnings and growing up in a big city in Table 4 by 23 per cent for men and nearly 50 per cent for women. While this analysis provides evidence that poor education in cities is likely to have played a role in explaining the low expected earnings, it also suggests that factors beyond education are at play, which are important to unpack in future research.

4.2.2 | Earnings of men and women who grew up in London

London is a clear outlier in the patterns we find for big cities in England for women. Women who grew up in poor neighbourhoods in Inner London have higher expected earnings than in the rest of the country. However, in stark contrast, results for men align with findings for other big cities. On average, Inner London LAs are in the 60th percentile of LAs for boys according to this measure, with more than half in the bottom 30 per cent (Table C.4 in the online Appendix). For example, men in our cohort who grew up in poor neighbourhoods in Wandsworth in Inner London, on average, are expected to reach a similar earnings rank to men who grew up in similarly poor neighbourhoods but in much poorer parts of England, including Sunderland, Tameside and Hartlepool. These findings are all the more stark if we consider the much higher costs of living in London compared with these areas.

As in big cities outside London, this finding extends to all of the men in our study cohorts, not just those from poor neighbourhoods (Figure C.2 in the online Appendix), which is consistent with the high levels of equality of opportunity in London LAs discussed in Section 4.1 (Table 1 and Tables C.1 and C.2). At first glance, this is a surprising result. Not only are wages in Inner London among the highest in England, but it also leads in the education performance of state school students (Ross et al., 2020). How is it possible that young men who grew up in LAs with high-quality public education provision and good labour market opportunities have such poor outcomes? In fact, Greaves, Macmillan and Sibieta (2014) show that while GCSE results in state schools in Outer London have been consistently the best in the country, results in Inner London have transformed from the worst in the country in the early 2000s (when our study cohorts were at school) to some of the best by 2012. The exception to these poor educational outcomes in Inner London in the early 2000s was the performance of children who were eligible for FSM; these children (girls and boys) were already outperforming FSM-eligible children in the rest of the country by 2002 (Greaves, Macmillan and Sibieta, 2014).

These education trends align with some of our findings. Poor labour market outcomes, on average, for men in our study cohorts who grew up in Inner London relative to those who grew up outside of London are consistent with the poor average educational outcomes in Inner London during that period. High expected earnings ranks for both men and women who grew up in LAs in Outer London also map well to strong educational outcomes in these parts of London in the early 2000s. Finally, the high expected earnings of women in our study cohorts who grew up in poor neighbourhoods of Inner London LAs are consistent with the strong education performance of children from families eligible for FSM in Inner London in the early 2000s. The question that remains is why this alignment between education outcomes for FSM-eligible children and high earnings among women from poor neighbourhoods is not replicated for men from poor neighbourhoods? This highlights an area for future research using more granular data – what is it about conditions in Inner London that resulted in such stark differences in how men and women from equally poor neighbourhoods fared?

4.3 | Characterising areas with more equality of opportunity: disadvantage premium or advantage penalty?

In the final part of the analysis, we bring together what we learn about geographical differences in equality of opportunity (Section 4.1) and in the earnings of those who grew up in poor neighbourhoods (Section 4.2). Our discussion above about big cities and London highlights the point made earlier that areas with more equality of opportunity are not necessarily ones where those who grew up in poorer neighbourhoods do better. Big cities outside London are in the middle of the distribution in terms of equality of opportunity, but are some of the worst places in terms of earnings of those who grew up in poor neighbourhoods. In contrast, women who grew up in poor neighbourhoods of LAs in Outer London earn more than their counterparts in other parts of the country, while the gap between them and women who grew up in richer neighbourhoods in Outer London remains one of the highest in

the country.[13] This raises the question of whether, on average, LAs with more equality of opportunity (weaker childhood neighbourhood effects) in England tend to be characterised by those from poorer neighbourhoods doing better than in less equal LAs or by those from richer backgrounds doing worse.

In order to answer this question, we look at the association between LA-level estimates of childhood neighbourhood SES effects ($\hat{\beta}_{ag}$ from equation (3)) and LA-level expected earning ranks of individuals who grew up in poorer and richer neighbourhoods in each LA. We follow Chetty et al. (2014b) in our approach. First, for each LA we calculate the expected earnings rank for individuals who grew up in neighbourhoods in each percentile of the national neighbourhood SES distribution. We do this separately for men and women. This gives us $\bar{r}_{agp}$ for each of the 100 percentile ranks – the expected earnings rank for gender g in LA a who grew up in a neighbourhood in percentile p. For each of the 100 percentile ranks, we then estimate a separate regression of $\bar{r}_{agp}$ on the LA-level and gender-specific estimate of childhood neighbourhood SES effect ($\hat{\beta}_{ag}$):

$$\bar{r}_{agp} = \alpha_{gp} + \gamma_{gp}\,\hat{\beta}_{ag} + \epsilon_{agp}. \tag{5}$$

Here, γ_{gp} measures the association across LAs between a one percentile rank increase in $\hat{\beta}_{ag}$ (stronger childhood neighbourhood SES effect) and the mean expected earnings rank of an individual who grew up in a neighbourhood in the pth SES percentile. We estimate separate regressions for men and women, as indicated by subscript g. A negative γ_{gp} for a given percentile p and gender g ($\gamma_{gp}<0$) would indicate that – on average across LAs in England – more equality of opportunity (lower $\hat{\beta}_{ag}$) is beneficial for the outcomes of individuals of gender g growing up in neighbourhoods in percentile p. For example, a negative γ_{gp} for women who grew up in 25th percentile neighbourhoods ($p = 25$) would indicate that greater equality of opportunity in an LA is, on average, beneficial for the earnings of women growing up in poor neighbourhoods.

We focus on areas outside of London because, throughout our analysis, London is an outlier. Figure 7 plots the estimates of γ_{gp} at each childhood neighbourhood SES percentile separately for men and women, with a line of best fit and a horizontal dashed line to indicate where $\gamma_{gp} = 0$. Points below the dashed line ($\gamma_{gp}<0$) indicate neighbourhood SES percentile ranks at which higher equality of opportunity is associated with better earnings outcomes; points above the dashed line ($\gamma_{g}>0$) indicate neighbourhood SES percentile ranks at which this relationship is the reverse.

The results are very different for men and women. Among men, growing up in neighbourhoods with greater equality of opportunity is associated with higher earnings across most of the childhood neighbourhood SES distribution, from the very poorest up to around 70th percentile rank (the line of best fit crosses zero at percentile $p = 72.6$). Among women, however, the reverse is true. Only those coming from the bottom third or so of neighbourhoods have higher earnings in areas with more equality of opportunity; the rest do better in more unequal areas, with the line of best fit crossing zero at the 31st percentile.

The patterns in Figure 7 suggest that, on average across England (excluding London), LAs with greater equality of opportunity for men are those where men who grew up in the poorest neighbourhoods are doing better relative to counterparts in less equal LAs by a larger margin than men who grew up in neighbourhoods higher up the SES distribution. In other words, higher equality of opportunity largely reflects better opportunities for those from poor neighbourhoods in some LAs compared with others. For women, the pattern is reversed. LAs with greater equality of opportunity differ from those with less mainly through how women from better-off neighbourhoods fare: these women tend to have lower earnings in more equal LAs. This suggests that, for women, greater

[13] Examples include the Outer London LAs Havering, Bexley, and Barking & Dagenham; these LAs are characterised by some of the highest inequalities in opportunity (Table 1) but are in the top 30 LA in terms of expected earnings of women from poor neighbourhoods (Table C.5 in the online Appendix).

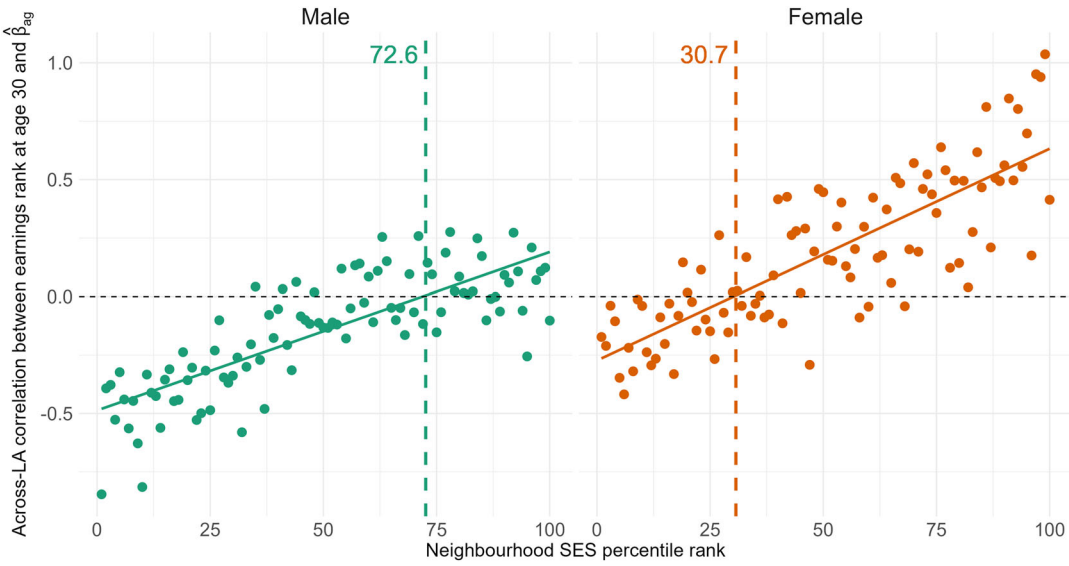


FIGURE 7 Association between LA-level equality of opportunity and adult earnings by childhood neighbourhood quality. *Note*: The figure plots the correlation between expected earnings rank at age 30 and LA-level equality of opportunity ($\hat{\beta}_{ag}$ from equation (3)) across LAs for each neighbourhood SES percentile rank, by sex, excluding London LAs. The vertical dashed line corresponds to the 'switch point', the point at which the across-LA correlation (γ_{gp} from equation 5) crosses 0. [Colour figure can be viewed at wileyonlinelibrary.com]

equality of opportunity is driven primarily by worse opportunities for women who grew up in rich neighbourhoods in some LAs than others.[14]

We can see this in comparisons of individual LAs characterised by lower and higher inequality of opportunity ($\hat{\beta}_{ag}$) for men and women (Figures C.4 and C.5 in the online Appendix). The main difference between the more and less equal LAs for men (Waltham Forest in London and Gateshead in Newcastle, respectively) is that those from poorer childhood neighbourhoods are doing better in Waltham Forest than in Gateshead (Figure C.4). In contrast, the main difference for women between more equal Oxfordshire and less equal Kent is that those who grew up in richer neighbourhoods are doing worse in Oxfordshire than in Kent (Figure C.5).

What explains these stark gender differences? To explore this question, we go back to the LA-level characteristics analysed in Section 4.1, which we showed explain close to 80 per cent of variation in equality of opportunity across LAs, and we examine associations between these and earnings of men and women who grew up in poorer and richer neighbourhoods – those in the 25th, 50th, 75th and 100th percentiles. Tables 6 and 7 show the results for men and women, respectively. Column 1 replicates the results in columns 3 and 6 of Table 2, regressing LA-level neighbourhood effects estimates ($\hat{\beta}_{ag}$) on proxies for quality of education in the LA at the time when the study cohorts were doing their GCSEs, current labour market conditions and additional controls for socio-demographic conditions at the time when the cohorts were growing up. In columns 2–5, we then regress LA-level expected earnings rank of those from 25th, 50th, 75th and 100th percentile neighbourhoods on these characteristics.

There are no noticeable gender differences in the associations between the LA-level education and socio-demographic characteristics and expected earnings rank at different points of the childhood

[14] When London is added to the analysis (Figure C.3 in the online Appendix), the switch point for men decreases. As we show in Figure C.2, all men (irrespective of childhood neighbourhood SES) fare worse in Inner London LAs than in the rest of the country and, at the same time, Inner London LAs have higher equality of opportunity than most LAs in the country for men. The switch point moves up slightly for women, as women from the lower half of the childhood neighbourhood SES distribution do much better in Inner London than other parts of the country, and, as in the case of men, Inner London is made up of some of the most equal LAs for women.

TABLE 6 Associations between LA characteristics and mean earnings of those who grew up in poorer and richer neighbourhoods: men

	Rank–rank	$\bar{r}_{25}$	$\bar{r}_{50}$	$\bar{r}_{75}$	$\bar{r}_{100}$
	(1)	(2)	(3)	(4)	(5)
Proportion of population	−0.002*	0.137*	0.083	0.029	−0.026
economically active 2017	(0.001)	(0.081)	(0.077)	(0.083)	(0.097)
Mean gross hourly pay 2017	−0.003*	0.366***	0.282**	0.197	0.113
	(0.002)	(0.126)	(0.119)	(0.128)	(0.151)
Urban LA	0.018**	0.369	0.823*	1.277**	1.732***
	(0.007)	(0.493)	(0.465)	(0.501)	(0.589)
Ethnic minority population	0.016	0.996	1.389	1.782	2.175
	(0.018)	(1.236)	(1.167)	(1.258)	(1.478)
Immigrant population	−0.028	−2.998	−3.686**	−4.373**	−5.061**
	(0.026)	(1.807)	(1.707)	(1.839)	(2.162)
Stable families	0.006	1.029	1.188**	1.348**	1.507**
	(0.009)	(0.627)	(0.592)	(0.638)	(0.750)
Share of children eligible for FSM	0.010	−0.225	0.031	0.286	0.541
	(0.009)	(0.638)	(0.603)	(0.649)	(0.763)
Homeownership	0.017**	−0.362	0.059	0.481	0.903
	(0.008)	(0.543)	(0.512)	(0.552)	(0.649)
Good quality schools	−0.009***	0.077	−0.139	−0.355	−0.571**
	(0.003)	(0.226)	(0.213)	(0.230)	(0.270)
Academic segregation across schools	0.009***	−0.012	0.217	0.446**	0.675***
	(0.003)	(0.209)	(0.197)	(0.212)	(0.250)
N	118	118	118	118	118
R^2	0.542	0.654	0.604	0.522	0.455
Region fixed effects	Yes	Yes	Yes	Yes	Yes
London LAs included	No	No	No	No	No

Note: The table presents coefficient estimates from (a) regressing $\hat{\beta}_{ag}$ (equation 3) on LA characteristics (column 1) and (b) regressing expected earnings rank of those who grew in in childhood neighbourhoods ranked in the 25th (column 2), 50th (column 3), 75th (column 4) and 100th (column 5) percentiles of the national neighbourhood SES distribution on LA characteristics. All specifications include region fixed effects and exclude London LAs. All variables, except those labelled '2017', are measured in 2002, around the time when our study cohorts were 16. Asterisks indicate statistical significance levels: $^{***}p < 0.01$; $^{**}p < 0.05$; $^{*}p < 0.1$.

neighbourhood SES distribution. There is also little difference in the association between labour market characteristics and equality of opportunity estimates for men and women; higher economic activity and mean gross hourly pay in 2017 are significantly associated with greater equality of opportunity (weaker neighbourhood effects). The main difference is in the relationship between local wages and earnings at different parts of the childhood neighbourhood SES distribution. For women, the negative association inequality of opportunity and wages is being driven by a strong negative relationship between local wages and earnings among those from richer neighbourhoods, but not those from poorer neighbourhoods. In contrast, for men, a similar magnitude negative association between inequality of opportunity and local wages is driven by a strong positive association between wages and those from poorer neighbourhoods, but not those from richer neighbourhoods. Overall, we see that while stronger labour markets benefit disadvantaged women (positive association between economic activity and earnings of women from neighbourhoods in the 25th and 50th SES percentiles), they are

TABLE 7 Associations between LA characteristics and mean earnings of those who grew up in poorer and richer neighbourhoods: women

	Rank–rank	$\bar{r}_{25}$	$\bar{r}_{50}$	$\bar{r}_{75}$	$\bar{r}_{100}$
	(1)	(2)	(3)	(4)	(5)
Proportion of population	−0.003***	0.191***	0.104*	0.017	−0.070
economically active 2017	(0.001)	(0.054)	(0.057)	(0.068)	(0.084)
Mean gross hourly pay 2017	−0.004*	−0.159	−0.265*	−0.371**	−0.477**
	(0.003)	(0.146)	(0.153)	(0.183)	(0.227)
Urban LA	0.008	0.258	0.460	0.662	0.864*
	(0.006)	(0.324)	(0.341)	(0.407)	(0.504)
Ethnic minority population	−0.010	1.809**	1.550*	1.290	1.031
	(0.014)	(0.817)	(0.860)	(1.029)	(1.274)
Immigrant population	0.004	−0.760	−0.654	−0.547	−0.440
	(0.021)	(1.205)	(1.269)	(1.517)	(1.879)
Stable families	0.002	1.152***	1.208***	1.265**	1.321**
	(0.007)	(0.417)	(0.439)	(0.525)	(0.650)
Share of children eligible for FSM	−0.009	0.420	0.206	−0.008	−0.223
	(0.007)	(0.434)	(0.457)	(0.546)	(0.676)
Homeownership	−0.003	−0.518	−0.593	−0.667	−0.741
	(0.006)	(0.359)	(0.378)	(0.452)	(0.560)
Good quality schools	−0.005*	0.239	0.118	−0.003	−0.124
	(0.003)	(0.150)	(0.158)	(0.188)	(0.233)
Academic segregation across schools	0.009***	0.213	0.439***	0.666***	0.892***
	(0.002)	(0.138)	(0.145)	(0.174)	(0.215)
N	118	118	118	118	118
R^2	0.479	0.590	0.547	0.499	0.471
Region fixed effects	Yes	Yes	Yes	Yes	Yes
London LAs included	No	No	No	No	No

Note: The table presents coefficient estimates from (a) regressing $\hat{\beta}_{ag}$ (equation 3) on LA characteristics (column 1); and (b) regressing expected earnings rank of those who grew in in childhood neighbourhoods ranked in the 25th (column 2), 50th (column 3), 75th (column 4) and 100th (column 5) percentiles of the national neighbourhood SES distribution on LA characteristics. All specifications include region fixed effects and exclude London LAs. All variables, except those labelled '2017', are measured in 2002, around the time when our study cohorts were 16. Asterisks indicate statistical significance levels: $^{***}p < 0.01$; $^{**}p < 0.05$; $^{*}p < 0.1$.

actively harmful for advantaged women (negative association between wages and earnings of women from neighbourhoods in the 50th, 75th and 100th SES percentiles). For men, however, everyone does better or the same in stronger labour market areas, but the advantage they offer to men from poorer neighbourhoods is stronger.

This analysis suggests that it is the negative relationship between labour market conditions and earnings of women from better-off neighbourhoods that underlies the finding presented in Figure 7; that is, on average in England (outside London), women from better-off neighbourhoods have lower earnings in areas with more equality of opportunity. What might be driving the negative association between labour market conditions and earnings of women who grew up in richer neighbourhoods? This is a question for future research. One possibility is that more competitive labour markets provide fewer opportunities to leverage networks and other types of social capital which advantaged women have access to and have more opportunities to leverage in less competitive markets. However, it is not

clear why this would not also be the case for men. Another possibility is that women who grew up in richer neighbourhoods are more likely to work fewer hours or not work at all in stronger labour markets because their partners are able to earn more. In order to explore this hypothesis, we would need to have access to family rather than individual earnings – data that currently do not exist.

5 | DISCUSSION AND CONCLUSIONS

We have presented a number of new findings about the geography of opportunity in England, highlighting large variation in the link between childhood circumstances and adult outcomes across places. These differences are stark, whether comparing the earnings inequalities of those from the richest compared with the poorest neighbourhoods in a given place, or when comparing the adult earnings of those from poor neighbourhoods across places. While there are some important cross-regional patterns, a large proportion of the differences between places actually occurs within regions, particularly outside of London.

It is concerning that we show, for the first time, that there is a notable penalty for young women and men growing up in big cities outside of London. While these places typically offer greater labour market opportunities than smaller cities or rural places, these opportunities are not being accessed by the young people who grew up in the big cities. Gender differences across places are also stark, with only moderate overlap between LAs that have more equality of opportunity for both men and women. Inner London is a clear example of a place where women from poor neighbourhoods thrive, but men from the same neighbourhoods struggle. Finally, we highlight that greater equality of opportunity in a place does not always equate to better outcomes for all. There are a number of places that have more equality but lower earnings for all young people, regardless of background.

Before concluding, we highlight some limitations in the scope of our work, which are important for interpretations of our findings and directions for future work. First, geographical mobility is implicit in our estimates of areas that are characterised by more and less equality of opportunity – areas could be more unequal, for example, because young people from poorer neighbourhoods stay in that place while young people from better-off neighbourhoods move to other regions to achieve higher earnings. This would be consistent with findings presented by Xu (2025) in this symposium for the same cohorts of young people in England. Xu shows that these cohorts are indeed highly mobile, and that university graduates are much more likely to move than non-graduates, and to move specifically to high-wage locations, especially London. Because childhood circumstances are highly correlated with educational attainment, these more mobile graduates are also likely to have grown up in richer neighbourhoods. In future work we plan to examine to what extent the patterns that we document are explained by the selective migration patterns documented in Xu (2025).

Second, when interpreting our results by gender, we should be mindful that we only observe annual earnings ranks at age 30 for men and women. Some of our differences may then be driven by differential labour market participation at the intensive margin for women from different neighbourhoods at this stage in their lives (see Blanden, Campbell and Macmillan, 2025). Third, we cannot say anything about the adult earnings of young people educated in private schools with our data, as we do not observe where they live. Therefore, if selection into state/private schools varies across different places, then this compositional difference could be driving some of the variation we observe.

These findings lead to a number of important implications for policy and questions for future research. First, the stark variation between places, and the importance of local characteristics, including education systems and labour markets in explaining this variation, highlight the vital importance of local place-based policies for equalising opportunities. While reducing the North–South divide is an ambition of the Opportunities Mission, this research points to the importance of better understanding differences between areas within regions, and in particular why neighbouring LAs offer such different opportunities for young people, to create more realistic solutions. This need for a localised approach to policy interventions is further emphasised by our findings relating to gender

differences across areas. While some LAs will require a set of interventions primarily targeted at young men, others will need interventions to support young women in particular, and in some cases both genders.

Our new findings regarding the penalty from growing up in a big city outside of London highlight the need for a better understanding of why opportunities are so plentiful in these places and yet not accessed by young people who grow up there. While the paper by Daams, Mayer and McCann (2025) in this symposium shows that investors increasingly view big cities outside London as much more risky to invest in than London, with the exception of Birmingham and Manchester more recently, in line with previous research we can show that these cities still offer positive returns to workers, relative to other labour markets. Indeed, there has been a concerted effort to move organisations out of London to spread opportunities more widely (e.g., media in Manchester, Civil Service across the country). Why then are these opportunities not being shared with young people from these places? Our findings on educational attainment in big cities suggest an important role for strengthening the provision of education and skills in cities to improve the supply of 'home-grown' workers. But it also raises important questions on the demand side about the hiring practices of local employers, and the potential role of skills mismatch that occurs as a result. New research should consider these questions in the context of big cities outside of London to aid our understanding of barriers here.

Finally, our findings suggest that alongside measures of equality in a place, such as the headline metric for the Opportunities Mission, we also need to consider the labour market outcomes of disadvantaged young people in parallel. While some areas have high levels of equality of opportunity and good earnings outcomes for young people from disadvantaged neighbourhoods, other areas with similar levels of equality have very poor outcomes for young people from disadvantaged neighbourhoods, and therefore, by definition, for all young people. This is particularly the case for young women, where areas with more equality are typically places with strong labour markets, but where more advantaged women are doing less well than similar peers in less equal areas. Understanding what is driving this particular pattern for young women requires a household analysis, emphasising the need for better data linkages between co-residing adults in the administrative data.

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CONFLICT OF INTEREST STATEMENT

The authors declare that they have no conflict of interest.

DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available from ONS. Restrictions apply to the availability of these data, which were used under license for this study (Department for Education; HM Revenue and Customs; Department for Work and Pensions; Higher Education Statistics Agency, 2025). Data are available from https://www.gov.uk/guidance/apply-to-access-the-longitudinal-education-outcomes-leo-dataset with the permission of ONS.

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REFERENCES

Acciari, P., Polo, A., & Violante, G. L. (2022). "And yet it moves": intergenerational mobility in Italy. *American Economic Journal: Applied Economics*, 14, 183–217.

Agrawal, S., & Phillips, D. (2020). Catching up or falling behind? Geographical inequalities in the UK and how they have changed in recent years. IFS Report, https://ifs.org.uk/publications/catching-or-falling-behind-geographical-inequalities-uk-and-how-they-have-changed

Araujo, M. C., Carneiro, P., Cruz-Aguayo, Y., & Schady, N. (2016). Teacher quality and learning outcomes in kindergarten. *Quarterly Journal of Economics*, 131, 1415–53.

Bell, B., Blundell, J., & Machin, S. (2023). Where is the land of hope and glory? The geography of intergenerational mobility in England and Wales. *Scandinavian Journal of Economics*, 125, 73–106.

Blanden, J., Campbell, S., & Macmillan, L. (2025). Measuring and explaining the intergenerational earnings persistence of women and men. Working paper, Centre for Education Policy and Equalising Opportunities, University College London, forthcoming in the CEPEO Working Paper Series.

Blanden, J., Gregg, P., & Machin, S. (2005). Intergenerational mobility in Europe and North America. Report supported by the Sutton Trust, Centre for Economic Performance, London School of Economics, https://www.suttontrust.com/our-research/intergenerational-mobility-europe-north-america/.

Brandily, P., Distefano, M., Donnat, H., Feld, I., Overman, H. G., & Shah, K. (2022). Bridging the productivity gap between different areas in the UK. LSE Business Review, https://blogs.lse.ac.uk/businessreview/2022/07/05/bridging-the-productivity-gap-between-different-areas-in-the-uk/.

Burgess, S., Dickson, M., & Macmillan, L. (2020). Do selective schooling systems increase inequality? *Oxford Economic Papers*, 72, 1–24.

Camacho, C., Webb, R. T., Bower, P., & Munford, L. (2024). Risk factors for deaths of despair in England: an ecological study of local authority mortality data. *Social Science & Medicine*, 342, 116560.

Carneiro, P., Cattan, S., Dearden, L., van der Erve, L., Krutikova, S., & Macmillan, L. (2020). The long shadow of deprivation: differences in opportunities across England. Social Mobility Comission, https://socialmobility.independent-commission.uk/reports/the-long-shadow-of-deprivation-differences-in-opportunities-across-england/.

Chetty, R., Friedman, J. N., & Rockoff, J. E. (2014a). Measuring the impacts of teachers I: evaluating bias in teacher value-added estimates. *American Economic Review*, 104 (9), 2593–632.

Chetty, R., Hendren, N., & Katz, L. F. (2016). The effects of exposure to better neighborhoods on children: new evidence from the moving to opportunity experiment. *American Economic Review*, 106 (4), 855–902.

Chetty, R., Hendren, N., Kline, P., & Saez, E. (2014b). Where is the land of opportunity? The geography of intergenerational mobility in the United States. *Quarterly Journal of Economics*, 129, 1553–623.

Chyn, E. (2018). Moved to opportunity: the long-run effects of public housing demolition on children. *American Economic Review*, 108 (10), 3028–56.

Corak, M. (2013). Income inequality, equality of opportunity, and intergenerational mobility. *Journal of Economic Perspectives*, 27 (3), 79–102.

Daams, M. N., Mayer, C., & McCann, P. (2025). Regions, cities and finance: the role of capital shocks and banking reforms in shaping the UK geography of prosperity. *Fiscal Studies*, 46, https://doi.org/10.1111/1475-5890.70002.

Davenport, A., & Zaranko, B. (2020). Levelling up: where and how. IFS Green Budget, 315–71, https://ifs.org.uk/books/levelling-where-and-how.

D'Costa, S., & Overman, H. G. (2014). The urban wage growth premium: sorting or learning? *Regional Science and Urban Economics*, 48, 168–79.

Department for Education; HM Revenue and Customs; Department for Work and Pensions; Higher Education Statistics Agency (2025). ONS SRS Metadata Catalogue, dataset, Longitudinal Education Outcomes SRS Iteration 2 Standard Extract – England, https://doi.org/10.57906/pzfv-d195.

Drayton, E., Greaves, E., & Rossi, G. (2023). School and neighbourhood segregation in Scotland and England. IFS Report R276, Institute for Fiscal Studies, https://ifs.org.uk/publications/school-and-neighbourhood-segregation-scotland-and-england.

Farquharson, C., McNally, S., & Tahir, I. (2024). Education inequalities. *Oxford Open Economics*, 3, i760–i820.

Fisher, R., Allen, L., Malhotra, A. M., & Alderwick, H. (2022). Tackling the inverse care law. The Health Foundation, https://www.health.org.uk/reports-and-analysis/reports/tackling-the-inverse-care-law.

Gibbons, S., Silva, O., & Weinhardt, F. (2017). Neighbourhood turnover and teenage attainment. *Journal of the European Economic Association*, 15, 746–83.

Goux, D., & Maurin, E. (2007). Close neighbours matter: neighbourhood effects on early educational achievement. *The Economic Journal*, 117, 1193–215.

Greaves, E., Macmillan, L., & Sibieta, L. (2014). Lessons from London schools for attainment gaps and social mobility. Research report, Social Mobility and Child Poverty Commission/Institute for Fiscal Studies/Institute of Education, University of London, London.

Gregg, P., Macmillan, L. A., & Vittori, C. (2017). Moving towards estimating sons' lifetime intergenerational economic mobility in the UK. *Oxford Bulletin of Economics and Statistics*, 79, 79–100.

Haider, S., & Solon, G. (2006). Life-cycle variation in the association between current and lifetime earnings. *American Economic Review*, 96 (4), 1308–20.
Heidrich, S. (2017). Intergenerational mobility in Sweden: a regional perspective. *Journal of Population Economics*, 30, 1241–80.
Jenkins, S. (1987). Snapshots versus movies: 'lifecycle biases' and the estimation of intergenerational earnings inheritance. *European Economic Review*, 31, 1149–58.
Jerrim, J., & Macmillan, L. (2015). Income inequality, intergenerational mobility, and the Great Gatsby curve: is education the key? *Social Forces*, 94, 505–33.
Kane, T. J., & Staiger, D. O. (2002). The promise and pitfalls of using imprecise school accountability measures. *Journal of Economic Perspectives*, 16, 91–114.
Kenedi, G., & Sirugue, L. (2023). Intergenerational income mobility in France: a comparative and geographic analysis. *Journal of Public Economics*, 226, 104974.
Mogstad, M., & Torsvik, G. (2023). Family background, neighborhoods, and intergenerational mobility. In S. Lundberg and A. Voena (eds), *Handbook of the Economics of the Family*, Vol. 1, Amsterdam: North-Holland, 327–387.
Office for National Statistics (2004). Census 2001: Definitions, https://ukdataservice.ac.uk/app/uploads/2001_defs_intro.pdf.
Overman, H. G., & Xu, X. (2024). Spatial disparities across labour markets. *Oxford Open Economics*, 3, i585–i610.
Ross, A., Lessof, C., Brind, R., Khandker, R., & Aitken, D. (2020). Examining the London advantage in attainment: evidence from LSYPE. Research report, Department for Education/Kantar, London.
Sampson, R. J. (2012). *Great American City: Chicago and the Enduring Neighborhood Effect*, Chicago: University of Chicago Press.
Sampson, R. J., Morenoff, J. D., & Gannon-Rowley, T. (2002). Assessing "neighborhood effects": social processes and new directions in research. *Annual Review of Sociology*, 28, 443–78.
Sandford, M. (2025). Local government in England: structures. Research Briefing SN07104, House of Commons Library, London.
Steel, N. et al. (2024). Inequalities in healthy life expectancy and risk factors for poor health in small geographic areas. *European Journal of Public Health*, 34 (Suppl 3), ckae144-007.
van der Erve, L., Krutikova, S., Macmillan, L., & Sturrock, D. (2023). Intergenerational mobility in the UK. *Oxford Open Economics*, 3, i684–i708.
Wilson, W. J. (1987). *The Truly Disadvantaged: The Inner City, the Underclass, and Public Policy*, Chicago: University of Chicago Press.
Xu, X. (2025). On the move: local opportunities and youth migration. *Fiscal Studies*, 46.

SUPPORTING INFORMATION

Additional supporting information can be found online in the Supporting Information section at the end of this article.

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