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Multilevel analysis of ethnic clustering across local schools: Exploring group dynamics

Yiyang Gao[1,2]

[1]Q-Step Centre for Computational Social Science, University of Exeter, Exeter, UK

[2]Sheffield Methods Institute, University of Sheffield, Sheffield, UK

Correspondence
Yiyang Gao, Q-Step Centre for Computational Social Science, University of Exeter, Clayden Building, Streatham Rise, Exeter EX4 4PE, UK.
Email: y.gao@sheffield.ac.uk

Abstract

This study examines ethnic clustering patterns across English secondary schools from 2010 to 2018 using National Pupil Database data and multilevel modelling. Despite concerns about increased segregation following educational reforms, findings reveal a general decline in ethnic concentration across all groups during this period. Analysis of 150 local authorities shows significant variation in clustering patterns, with Bangladeshi and Other White students exhibiting the highest between-authority variation. Multilevel models demonstrate that higher proportions of same-ethnic populations in local areas correlate with more dispersed school distributions for most groups, a counterintuitive finding suggesting complex dynamics of white avoidance and ethnic community strategies for navigating educational markets. Faith schools consistently increase ethnic concentration across all groups, while academies show mixed effects by ethnicity. Case studies of Birmingham and London reveal concerning patterns of institutional segregation, with different ethnic groups concentrated in different school types, potentially limiting meaningful intergroup contact. While declining clustering suggests improved opportunities for intergroup contact, persistent institutional variations raise questions about whether school choice policies inadvertently create parallel educational systems that undermine social cohesion. The study contributes to international debates about balancing parental choice with integration objectives, offering lessons for diverse democracies grappling

with similar challenges in an era of increasing ethnic diversity and political tensions around immigration.

KEYWORDS
educational markets, ethnic clustering, intergroup contact, multiculturalism, school segregation, social integration

Key insights

What is the main issue that the paper addresses?

This paper examines ethnic clustering patterns in English secondary schools from 2010 to 2018, investigating how educational reforms and institutional arrangements affect ethnic segregation despite overall declining trends, with implications for social cohesion in multicultural societies.

What are the main insights that the paper provides?

Higher ethnic minority populations correlate with more dispersed school distributions; faith schools increase ethnic concentration across all groups; academies show mixed effects; and institutional segregation persists within school types, potentially limiting meaningful intergroup contact despite statistical integration improvements.

INTRODUCTION

England's schools serve an increasingly diverse student population, yet concerns persist about ethnic clustering that may undermine educational equity, social cohesion and the prospects for a genuinely integrated multicultural society. These patterns take on heightened significance in contemporary Britain, where debates about immigration, integration and social cohesion have intensified following the 2016 Brexit referendum, a decision significantly influenced by concerns about immigration and perceived failures of multiculturalism (Kaufmann, 2017; Dunin-Wasowicz, 2016). The paradox of declining ethnic segregation in schools during a period of rising anti-immigration sentiment and political polarisation raises fundamental questions about how educational institutions navigate the tensions between diversity and cohesion in an era of populist politics.

The phenomenon of ethnic clustering, where students from different ethnic backgrounds are unevenly distributed across schools, has profound implications for processes of ethnic boundary formation, intergroup contact and equal educational opportunities (Reardon & O'Sullivan, 2004). In the school context, such segregation spatially isolates pupils along ethnic lines, limiting social interaction at a critical time in the formation of children's social attitudes and contributing to processes that can entrench ethnic boundaries (Archer & Stevens, 2018; McArdle & Acevedo-Garcia, 2017). This spatial separation during formative years has implications for future intergroup relations, potentially affecting workplace diversity, residential choices and civic participation patterns in adulthood (Reardon, 2016; Reardon et al., 2019; Schwartz et al., 2012).

England provides an exceptional context for studying these dynamics, given its diverse population, long history of immigration and complex educational landscape that has undergone dramatic transformation over the past two decades. While England's population, families and neighbourhoods are becoming increasingly ethnically mixed and diverse (Catney et al., 2023; Jivraj & Simpson, 2015; Johnston et al., 2013), some ethnic groups remain socially and economically disadvantaged, with limited access to quality education, healthcare and employment opportunities. This intersection of ethnic diversity with persistent inequalities creates conditions where educational segregation can both reflect and reproduce patterns of ethnic disadvantage.

The concept of ethnic clustering in schools fundamentally challenges the ideal of integrated education that underpins social cohesion policy and multicultural democracy. The term 'parallel living' has been used to describe community segregation, referring to people from different ethnic backgrounds not living in the same area, not going to school together, not working in the same place and not sharing social and cultural activities (Cantle, 2001, 2008). This failure to prepare pupils for diversity and inclusion has broader implications for Britain's multicultural project and social mobility prospects (McArdle & Acevedo-Garcia, 2017).

Schools have been positioned at the centre of UK integration policy precisely because of their potential to disrupt processes of ethnic boundary formation and promote cross-ethnic understanding. The role of schools in promoting British values has been adopted as one of the core strategies for improving social inclusion (DfE, 2014). The explicit aim of the school system is to ensure that all children and young people are prepared for life in modern Britain and have the opportunity to mix socially in a meaningful way with people from different backgrounds (HM Government, 2018). However, when schools are ethnically segregated, these integration goals are undermined, and educational institutions may inadvertently contribute to the reproduction of ethnic boundaries rather than their dissolution.

The stakes of this research extend far beyond the educational sphere. Families from different ethnic backgrounds lose opportunities to break down barriers between communities by meeting at school gates, sharing school facilities and building cross-cultural friendships through school activities (Cantle, 2013). When different ethnic groups attend systematically different types of schools (e.g., faith schools, academies or community schools), the potential for meaningful intergroup contact diminishes even in demographically diverse areas. This institutional segregation can contribute to the maintenance of ethnically homogeneous social networks and limit opportunities for social mobility across ethnic lines.

The policy landscape over the past two decades has created new challenges for ethnic integration in schools, while simultaneously providing natural experiments for understanding how institutional arrangements interact with processes of ethnic clustering. The introduction of academies and free schools into the English education system, along with the expansion of faith schools, has raised concerns about the possibility of increased segregation and the development of parallel educational systems serving different ethnic communities (Allen & West, 2011). Academies, which are government funded but independently operated, have autonomy to establish their own admission policies, potentially enabling them to cater to specific communities and leading to more ethnically homogeneous schools (West, 2017). While proponents argue that academies offer parents greater choice, critics contend that this freedom might inadvertently contribute to heightened segregation, as parents could opt for schools that primarily serve their ethnic, cultural, religious or socioeconomic backgrounds (Courtney, 2015; Gorard, 2016; Morris, 2016).

This tension between choice and integration reflects broader debates across liberal democracies about how to balance individual freedoms with collective social goals. Comparative analysis with other European nations facing similar diversity challenges, such as the Netherlands' experience with school segregation or France's struggles with educational integration (Friedrichs, 2023; James & Janmaat, 2019; Karsten et al., 2003), reveals

that England's combination of market-based education reforms and explicit multicultural policies creates unique conditions for understanding how institutional arrangements shape ethnic mixing in schools (Jenkins et al., 2008). International research from the United States, Canada and Australia demonstrates that school segregation patterns can persist across generations, creating self-reinforcing cycles of ethnic separation that prove difficult to break even with targeted policy interventions (Owens et al., 2016; Perry et al., 2024; Reardon & Owens, 2014).

This study addresses these critical gaps by examining ethnic clustering patterns across English secondary schools from 2010 to 2018, a period encompassing major educational reforms and intensifying debates about immigration and integration. Using comprehensive National Pupil Database data covering 150 local authorities, I employ multilevel modelling to investigate how the distribution of different ethnic groups across local schools has changed over time, and what factors explain the variation in clustering patterns. By examining each ethnic group separately, this approach provides a nuanced understanding of how recent policy changes and demographic shifts have affected ethnic clustering and processes of ethnic boundary formation in English schools.

The analysis specifically explores the relationships between school types (academies, faith schools, selective schools) and ethnic distribution patterns, contributing new evidence to debates about educational choice, ethnic integration and the challenges facing multicultural societies. The findings have implications not only for England but also for other diverse democracies seeking to balance parental choice with integration objectives while managing the political tensions surrounding immigration and ethnic diversity in an era of growing populist politics.

LITERATURE REVIEW

Theoretical frameworks for understanding ethnic clustering in schools

Spatial assimilation theory and ethnic integration

The theoretical foundation for understanding ethnic clustering in schools draws heavily from spatial assimilation theory, which posits that successful integration occurs through the gradual spatial dispersion of ethnic minority groups into majority dominated areas. Group mixing has traditionally been viewed as a key indicator of successful integration, embodying social cohesion, equal opportunities and the absence of discrimination (Finney, 2014). While much research on group mixing has focused on residential and neighbourhood integration, recent studies have increasingly examined mixing in schools, workplaces and other social settings (Hudson et al., 2007).

Central to this theoretical framework is the understanding that spatial concentration and integration are dynamic processes shaped by multiple factors. The policy priority of integrating ethnic minorities into the spatial fabric of the United Kingdom has progressively intensified, mirroring wider discourses on multiculturalism and societal aspirations for greater cohesion. Understanding these processes is particularly crucial as European societies grapple with increasing diversity alongside rising inequality, challenges that make ethnic clustering in schools a critical site for examining broader patterns of social stratification (Byrne et al., 2020). The intersectionality of ethnicity and poverty has been discussed in the context of wider social inequality and stratification, with central questions focusing on the extent to which these inequalities persist after accounting for individual and social origin characteristics (Hout & DiPrete, 2006).

The relationship between residential and school segregation

The spatial concentration of ethnic minorities and their disproportionate representation in deprived areas are widely acknowledged patterns in the British social landscape (Zuccotti, 2015). This residential patterning directly influences school composition through catchment area systems and parental choice mechanisms. Historical settlement patterns have created lasting spatial divisions: non-white migrants initially settled in metropolitan areas characterised by poverty and hostility, with immigrants housed in poor private dwellings or the worst-quality owner-occupied housing (Phillips, 1998; Rattansi, 2011). This resulted in spatial segregation based on ethnicity, further reinforced by the suburbanisation of white populations, a pattern mirroring the 'white flight' dynamic documented internationally.

However, evidence suggests that spatial assimilation is occurring for some groups. As educational attainment and socioeconomic upward mobility increase, the probability of entry into predominantly white areas increases for most ethnic minority groups (Zuccotti, 2019). This suggests that processes of ethnic boundary formation are not static but respond to changing socioeconomic conditions, a finding with important implications for understanding school clustering patterns.

Crucially, school segregation typically exceeds residential segregation. A comparison between school and neighbourhood segregation shows that although correlated, the levels of residential and school segregation in a locality are generally not equal (Burgess et al., 2005). Segregation in schools is usually higher than that in neighbourhoods (Johnston et al., 2006; Östh et al., 2015), partly due to differences in age structure and the operation of school choice mechanisms that can amplify residential patterns.

Patterns and trends in school ethnic clustering

Historical development and current state

In Britain, concerns about ethnic segregation in schools have persisted for decades, especially after Ted Cantle's (2001) report described some communities living 'parallel lives'. From earlier studies using 2001 school census data to recent research using 2019 data (Mitchell, 2023), evidence suggests that high levels of school segregation persist in England, although patterns vary by region, ethnic group and educational stage.

Recent evidence paints a mixed picture. While analyses indicate that overall ethnic segregation between schools in England has gradually declined since the 2000s, segregation persists (Greaves, 2024; Harris & Johnston, 2020; Leckie & Goldstein, 2015). A 2016 study found that 26% of English primary schools and about 40% of secondary schools qualified as ethnically segregated (iCoCo Foundation, SchoolDash & The Challenge, 2017). The persistence of such patterns, despite overall improvement, raises questions about whether market-based education reforms can deliver meaningful integration or whether they create new mechanisms for maintaining ethnic boundaries.

The policy debate is particularly concerned with ethnic mixing in certain multicultural areas. Former textile mill towns in West Yorkshire and East Lancashire, such as Bradford, Burnley and Oldham, are regarded as symbols of failed immigration, plagued by poverty and ethnic conflict (Goodhart, 2004). Previous research indicates that roughly 70% of Bangladeshi and Pakistani pupils in secondary schools in Oldham and primary schools in Bradford had to change schools to better reflect the town's ethnic composition (Burgess et al., 2005).

White British avoidance and ethnic concentration

Importantly, researchers have identified patterns of White British avoidance as a key driver of school segregation. Mitchell (2023) found that while most ethnic minority students have opportunities to interact with White British peers, many White British students attend schools with limited ethnic diversity. Between 2011 and 2016, areas experiencing influxes of minority pupils often saw notable drops in White British enrolment, indicating that White families were opting for alternate schools or moving, contributing to self-reinforcing segregation cycles. This dynamic of majority group avoidance, documented across diverse societies from the Netherlands to the United States, represents a critical challenge for integration policies that rely on parental choice.

Drivers of ethnic clustering in schools

School choice policies and market mechanisms

England's education system, especially since the 1980s, has emphasised parental preference and diversified school types. Research shows that new free schools have been associated with heightened segregation in their areas (Morris, 2016). Faith schools, which can prioritise applicants by religious affiliation, are on average more ethnically segregated than non-faith schools—one analysis found that 29% of primary faith schools were ethnically segregated versus 25% of other primaries (iCoCo Foundation, SchoolDash & The Challenge, 2017). These patterns suggest that institutional diversity, while expanding choice, may inadvertently facilitate ethnic sorting by providing legitimate mechanisms for avoiding diverse schools (Allen & West, 2011; Gorard, 2016).

Policy context and international comparisons

The United Kingdom's traditionally ‘neutral’ stance on ethnic mixing contrasts sharply with more interventionist approaches elsewhere (Delmont, 2016; Friedrichs, 2023). Unlike the United States' civil rights era's busing policies or France's colour-blind republicanism, Britain has largely avoided direct integration mandates (Esteves, 2018). This ‘non-decision-making’ reflects broader tensions in liberal democracies between respecting individual choice and promoting collective integration goals (Friedrichs, 2023; Galston, 2018). The Casey (2016) review explicitly warned that ‘the school age population is even more segregated’ than residential populations and highlighted hundreds of schools where Pakistani or Bangladeshi heritage pupils formed a majority.

Consequences of ethnic clustering

The most compelling implications of ethnic clustering are social. Following Gordon Allport's contact theory, decades of research demonstrate that meaningful intergroup contact can reduce prejudice and foster positive attitudes, especially when occurring early in life under cooperative conditions. Recent UK research confirms these benefits: Burgess and Platt (2018) found that students held warmer feelings towards other ethnic groups when their schools had more pupils from those groups. This evidence underscores schools' critical role in fostering the intergroup understanding necessary for cohesive multicultural societies.

When different ethnic groups attend systematically different school types, they develop distinct social networks that can influence future opportunities. International research demonstrates how school segregation patterns can persist across generations, creating self-reinforcing cycles of ethnic separation that limit social mobility and perpetuate inequality (Gutiérrez et al., 2020; Kim et al., 2023; Rothstein, 2015). For Britain's increasingly diverse society, these patterns raise fundamental questions about whether educational institutions facilitate integration or entrench ethnic boundaries through processes of racialisation that operate through seemingly neutral market mechanisms (West, 2023).

Understanding England's patterns requires situating them within broader international experiences. The United States provides the most extensively studied case, where decades after *Brown v. Board of Education*, segregation persists through residential patterns and school choice. American research reveals that charter schools, despite intentions to increase diversity, often increase segregation, with 70% of Black charter school students attending intensely segregated minority schools compared to 34% in traditional public schools (Frankenberg et al., 2012).

European experiences offer more direct comparisons. In the Netherlands, the residential concentration of predominantly Turkish, Moroccan and Surinamese in large cities is to a significant extent responsible for the composition of schools (Boterman, 2018). Given the historically strong position of parental choice and school autonomy, many studies have investigated parental preferences. It is argued that in the free-choice context of the Netherlands, parental choices are central for understanding school segregation (Boterman, 2019; Clark et al., 1992; Ladd et al., 2009). France's commitment to republican ideals prohibits ethnic data collection, yet research using proxy measures documents substantial clustering for non-natives of North African, Black African and Turkish origin (Felouzis & Jacobs-Colas, 2003). Sweden's voucher system, introduced in 1992, led to a 10% increase in school segregation by socioeconomic status within a decade, with immigrant-background students increasingly concentrated in particular schools (Böhlmark et al., 2016).

These international patterns reveal common mechanisms: majority group avoidance of diverse schools, the use of choice policies to maintain ethnic boundaries and the intersection of ethnic and socioeconomic segregation. However, England's specific combination of religious schools, academy autonomy and residential segregation creates unique dynamics. Unlike the explicit ethnic considerations in US school assignment policies or the Netherlands' pillarised system (Francis & Darity, 2021; Franken & Vermeer, 2019), England's segregation operates through facially neutral mechanisms that nonetheless produce racialised outcomes (Drayton et al., 2023; HM Government, 2022).

Cross-national research demonstrates that ethnically integrated schools promote more positive intergroup attitudes, reduce prejudice and increase social trust (Janmaat, 2014; Pettigrew & Tropp, 2006). The English experience demonstrates both the potential for progress and the continued importance of institutional design in shaping outcomes for multicultural democracy.

DATA AND METHODS

Data resource

This study utilises the National Pupil Database (NPD), a comprehensive record-level administrative dataset maintained by the UK Department for Education (DfE) for funding, school performance monitoring, policy development and research purposes (DfE, 2017). The NPD represents one of the most extensive educational databases globally, enabling longitudinal tracking of individual pupils across census years and key stages. This capacity

allows for comprehensive analysis of factors including school attendance, exclusion, pupil mobility and educational attainment patterns.

The NPD benefits from rigorous quality assurance procedures as schools are legally required to submit accurate pupil-level data under Section 537A of the Education Act 1996. Data collection occurs three times annually (January, May and October), with schools, local authorities and exam awarding bodies submitting information that is then matched and stored by the DfE. For this analysis, I implemented additional quality checks including verification of school identifiers and cross-referencing school characteristics (faith status, academy status, selective status) with official DfE directories to correct apparent data entry errors.

Regarding missing data, ethnicity information in the NPD demonstrates high completion rates (exceeding 98%) due to mandatory reporting requirements. Parents and pupils can refuse to provide ethnicity information (coded as 'REFU'), or data may be recorded as not yet obtained ('NOBT'), invalid ('INVA') or missing ('MISS'). Unclassified pupils account for less than 2% of the overall sample, varying slightly by school type (3.8% in non-maintained special schools vs <2% in primary and secondary schools). Given that ethnicity is the primary variable of interest and cannot be reliably imputed, I employed complete case analysis, excluding records with missing ethnicity data. This approach resulted in minimal data loss while maintaining the integrity of our ethnic clustering analysis.

The final analytical sample comprises complete observations for 150 local authorities across 9 years (2010–2018), with only the City of London excluded due to having fewer than three secondary schools. This represents over 98% of eligible secondary school pupils in England during the study period, providing confidence in the generalisability of findings despite the exclusion of pupils in private schools (approximately 7% of the school-age population) and home-educated children (estimated at 45,000–50,000).

The analysis focuses on secondary school data from 2010 to 2018, encompassing 150 local authorities in England (excluding the City of London due to the absence of secondary schools). Data limitations restrict the analysis to secondary schools, as comprehensive information on school admission policies by type is only available at this educational level. The temporal scope covers nine academic years, providing sufficient variation to examine trends in ethnic clustering patterns across different institutional and demographic contexts. This period is particularly significant as it encompasses major educational reforms, the expansion of academies and intensifying political debates about immigration and integration following the Brexit referendum, making it ideal for examining how institutional changes interact with processes of ethnic boundary formation.

Measuring ethnic clustering: The segregation index

To quantify the degree of ethnic clustering within local authority school systems, this study employs an entropy-based segregation index (Elbers, 2023). For each ethnic group g within local authority schools, the segregation score is calculated as

$$\mathrm{Seg}_g = E(p_u) - E(p_{ug}) = \sum_{u=1}^{U} p_u \cdot \log\left(\frac{1}{p_u}\right) - \sum_{u=1}^{U} p_{ug} \cdot \log\left(\frac{1}{p_{ug}}\right) \quad (1)$$

where: u denotes individual schools ($u = 1, 2, \ldots, U$) within a local authority; U represents the total number of schools in the local authority; g represents a specific ethnic group; p_u represents the population proportion of each school u within the local authority (i.e., the number of students in school u divided by the total number of students across all schools in the local authority); p_{ug} represents the proportion of each school u within ethnic group g (e.g., the number of students from ethnic group g in school u divided by the total number of students from ethnic group g

across all schools in the local authority); $E(p_u)$ represents the entropy of the overall school population distribution; and $E(p_{ug})$ represents the entropy of the distribution for ethnic group *g*. The summation $\sum$ is taken over all schools $u=1$ to U.

The segregation index thus captures the deviation between the distribution of one ethnic group across local authority schools and the overall school population distribution. Higher scores indicate greater clustering (more uneven distribution), with values approaching zero suggesting more even distribution across schools.

This entropy-based measure offers several advantages over alternative segregation indices. It is relatively insensitive to the demographic composition of local authorities, making comparisons across different contexts more meaningful. Additionally, it provides an intuitive interpretation: the index represents the extent to which the spatial distribution of an ethnic group deviates from what would be expected under random allocation across schools.

To illustrate how this index works, consider a simplified example of a local authority with four secondary schools focusing on the segregation of Asian students. Table 1 presents the distribution of students and the calculation steps. School A has 200 students (50 Asian, 150 other); School B has 300 students (150 Asian, 150 other); School C has 300 students (50 Asian, 250 other); and School D has 200 students (50 Asian, 150 other), giving a total of 1000 students across the local authority, of whom 300 are Asian.

The first step is to calculate the overall school proportions (p_u): School A comprises 20% of all students (200/1000); Schools B and C each comprise 30% (300/1000); and School D comprises 20% (200/1000). Next, one can calculate the distribution of Asian students across schools (p_{ug}): 16.7% attend School A (50/300); 50% attend School B (150/300); and 16.7% each attend Schools C and D (50/300 each).

Using these proportions, the entropy of the overall distribution is $E(p_u)=0.20\times\log(5)+0.30\times\log(3.33)+0.30\times\log(3.33)+0.20\times\log(5)=1.351$, while the entropy of the Asian student distribution is $E(p_{ug})=0.167\times\log(6)+0.50\times\log(2)+0.167\times\log(6)+0.167\times\log(6)=1.242$. The segregation score is therefore $\text{Seg}_{\text{Asian}}=1.351-1.242=0.109$.

This score of 0.109 indicates moderate segregation. If Asian students were perfectly evenly distributed across schools (75 in each school, representing 25% of all Asian students in each school), the score would be 0. The actual distribution shows clustering, with 50% of Asian students concentrated in School B, despite it containing only 30% of all students. The index thus captures how much the actual distribution deviates from perfect evenness, with higher values indicating greater clustering.

Multilevel modelling approach

Given the hierarchical structure of English educational data, with repeated observations nested within local authorities, which are themselves nested within regions, this study employs multilevel modelling techniques. This approach is particularly appropriate for several reasons. First,

TABLE 1 Worked example of segregation index calculation.

School	Total students	Asian students	Other students	p_u	p_{ug} (Asian)
A	200	50	150	0.20	0.167
B	300	150	150	0.30	0.500
C	300	50	250	0.30	0.167
D	200	50	150	0.20	0.167
Total	**1000**	**300**	**700**	**1.00**	**1.000**

it accounts for the non-independence of observations within higher-level units, providing more accurate standard errors and significance tests. Second, it enables decomposition of variance across different levels of the hierarchy, facilitating identification of where ethnic clustering variation is most pronounced. Third, it allows for the incorporation of predictors at multiple levels while appropriately modelling the correlation structure inherent in nested data.

The analysis employs a three-level random intercept model for each ethnic group separately:

$$Y_{tij} = \gamma_{000} + \beta_{01j(\text{Selective schools})_{ij}} + \beta_{02j(\text{Academies})_{ij}} + \beta_{03j(\text{Faith schools})_{ij}} + \beta_{04j(\text{ethnicity\%})_{ij}} + u_{00j} + r_{0ij} + e_{tij} \quad (2)$$

where: Y_{tij} represents the segregation score for the specific ethnic group in year t, local authority i, within region j; γ_{000} is the grand mean across all observations; β_{01j} through β_{04j} are fixed effects coefficients for local authority-level predictors; u_{00j} captures random variation between regions (Level 3); r_{0ij} captures random variation between local authorities within regions (Level 2); and e_{tij} represents residual error at the year level (Level 1).

Hierarchical structure

Level 1 (year)

The lowest level consists of annual observations from 2010 to 2018, providing repeated measures of ethnic segregation within each local authority. This temporal dimension captures year-to-year fluctuations in clustering patterns within stable geographical and institutional contexts.

Level 2 (local authority)

The intermediate level encompasses 150 local authorities, each containing 9 years of nested observations. This level incorporates four time-varying predictors extracted from the DfE's annual 'Schools, Pupils and their Characteristics' statistical releases (https://explore-education-statistics.service.gov.uk/methodology/schools-pupils-and-their-characteristics):

- *Selective schools*. The number of grammar schools within the local authority, representing academic selection mechanisms that may contribute to ethnic stratification.
- *Academy schools*. The number of academies, capturing the impact of school autonomy and choice policies on ethnic clustering.
- *Faith schools*. The number of religious schools, which may serve particular ethnic or cultural communities.
- *Ethnic group percentage*. The proportion of the local school-age population from the specified ethnic group, controlling for demographic composition effects.

Level 3 (region)

The highest level consists of 10 English regions, including Inner and Outer London as separate entities following DfE classification systems (DfE, 2019). Regional random effects capture unmeasured contextual factors that may influence ethnic clustering patterns, such as historical settlement patterns, economic conditions or regional policy variations.

Model selection and year treatment

A critical methodological decision involves the treatment of time (year) as either a fixed or a random effect. This study compares both approaches to determine optimal model

specification. When year is treated as a random effect, the model acknowledges that temporal variations may reflect unmeasured time-specific factors affecting ethnic clustering. Conversely, treating year as a fixed effect estimates average temporal trends while assuming constant effects across local authorities.

Model comparison using likelihood ratio tests indicated a marginally better fit when year is specified as a random intercept. This specification acknowledges that temporal changes in ethnic clustering may vary across local contexts in ways not captured by the included predictors. However, both approaches yield substantively similar results, and fixed-effect specifications are presented in the online supplementary analyses.

For each ethnic group, three model specifications are estimated:

1. *Null model*. Contains only random intercepts, decomposing total variance across hierarchical levels. Null models are presented in Appendix S1, Table A5.
2. *Random intercept model*. Includes random effects for year, local authority and region without fixed predictors.
3. *Full model*. Incorporates both random effects and local authority-level predictors.

Model validation and diagnostics

Model assumptions are assessed through examination of residual plots and random effects distributions. Caterpillar plots visualise random effects for local authorities, identifying outlying areas with unusually high or low ethnic clustering relative to model predictions. These diagnostic tools facilitate identification of local authorities where ethnic clustering patterns deviate substantially from expectations based on measured institutional and demographic characteristics.

The multilevel approach enables identification of systematic patterns while acknowledging that unmeasured local factors, such as historical settlement patterns, community preferences or informal networks, may contribute to ethnic clustering beyond what can be explained by formal institutional arrangements. This analytical strategy provides a comprehensive framework for understanding both general patterns and local variations in ethnic clustering across English secondary schools, offering insights relevant to other national contexts grappling with similar challenges of balancing educational choice with ethnic integration objectives.

Prior to model estimation, I examined the distribution of segregation scores for each ethnic group (see Appendix S1, Tables A1–A3 and Figures A1–A3 for detailed analyses). While scores showed moderate right skewness (skewness = 1.509, ranging from 0 to 6.062), only 1.49% of observations exceeded three standard deviations from the mean, indicating no severe outlier issues. The large sample size (32,744 observations across 150 local authorities, 9 years and 12 ethnic groups) provides robustness to these moderate departures from normality. Multilevel models with random effects are generally robust to non-normal outcome distributions when sample sizes are large (Maas & Hox, 2004). The appropriateness of linear model specification was verified through distribution analysis. Full model specifications and diagnostic tests are provided in Appendix S1 (Tables A1–A7 and Figure A1).

RESULTS

Modelling ethnic clustering

The changing landscape of ethnic diversity provides essential context for understanding clustering patterns. Figures 1 and 2 illustrate the evolution of ethnic diversity at the

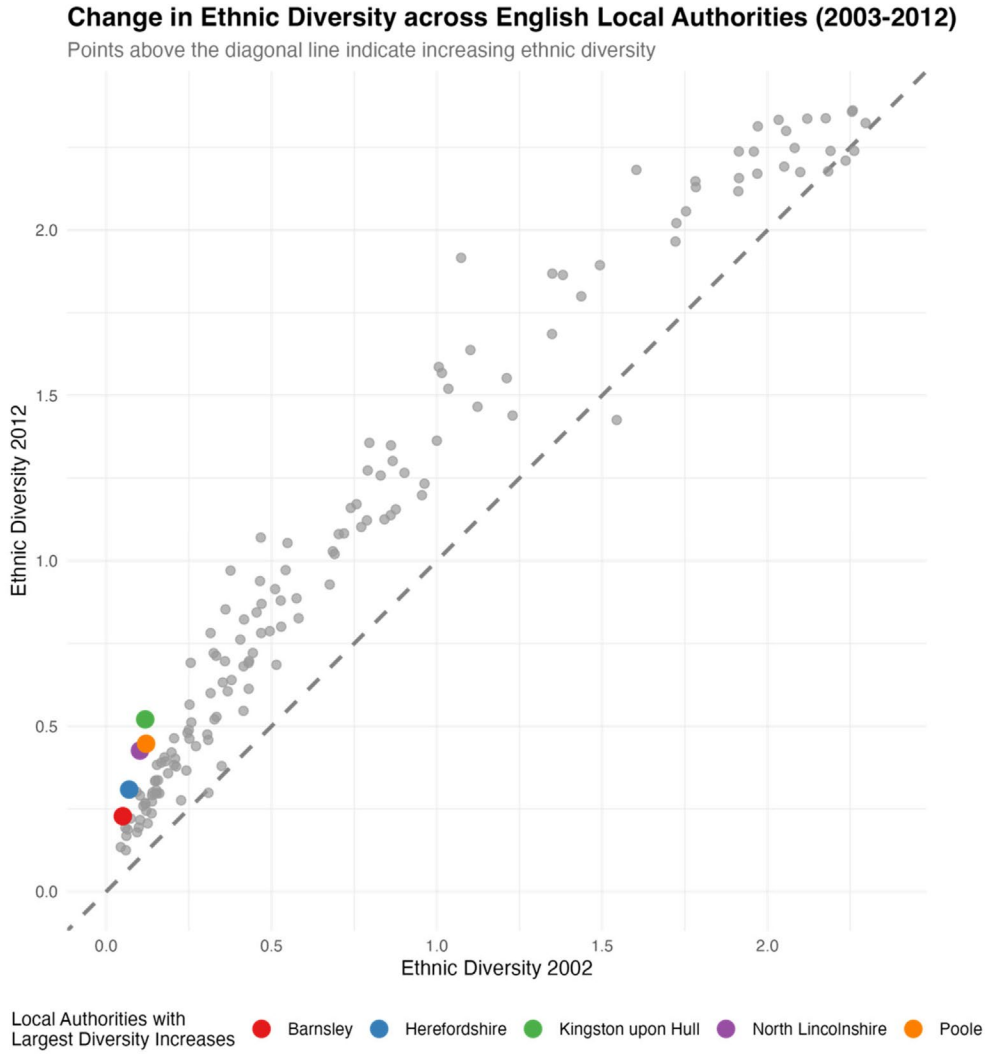

FIGURE 1 Change in ethnic diversity across English local authorities (2002–2011).

local authority level across England's secondary school population. Figure 1 reveals a strong positive correlation between diversity levels in 2002 and 2012, with the vast majority of local authorities positioned above the diagonal line, indicating widespread increases in ethnic diversity during this period. The highlighted authorities, including Barnsley, Herefordshire, Kingston upon Hull, North Lincolnshire and Poole, experienced the most dramatic increases, transforming from areas with minimal diversity in 2002 to substantially more diverse populations by 2012.

Notably, this pattern shows diversity increases occurring across the spectrum, from historically homogeneous areas experiencing their first significant demographic changes to already-diverse areas continuing to diversify. Figure 2 extends this analysis to 2021, showing continued diversification across most local authorities, though the rate of change has moderated compared to the previous period. The authorities with the largest increases in this later period, namely Barnsley, Gateshead, Halton, Knowsley and Rutland, again represent areas that had relatively low initial diversity, suggesting a geographic spreading of ethnic diversity beyond traditional metropolitan centres. These patterns of increasing diversity

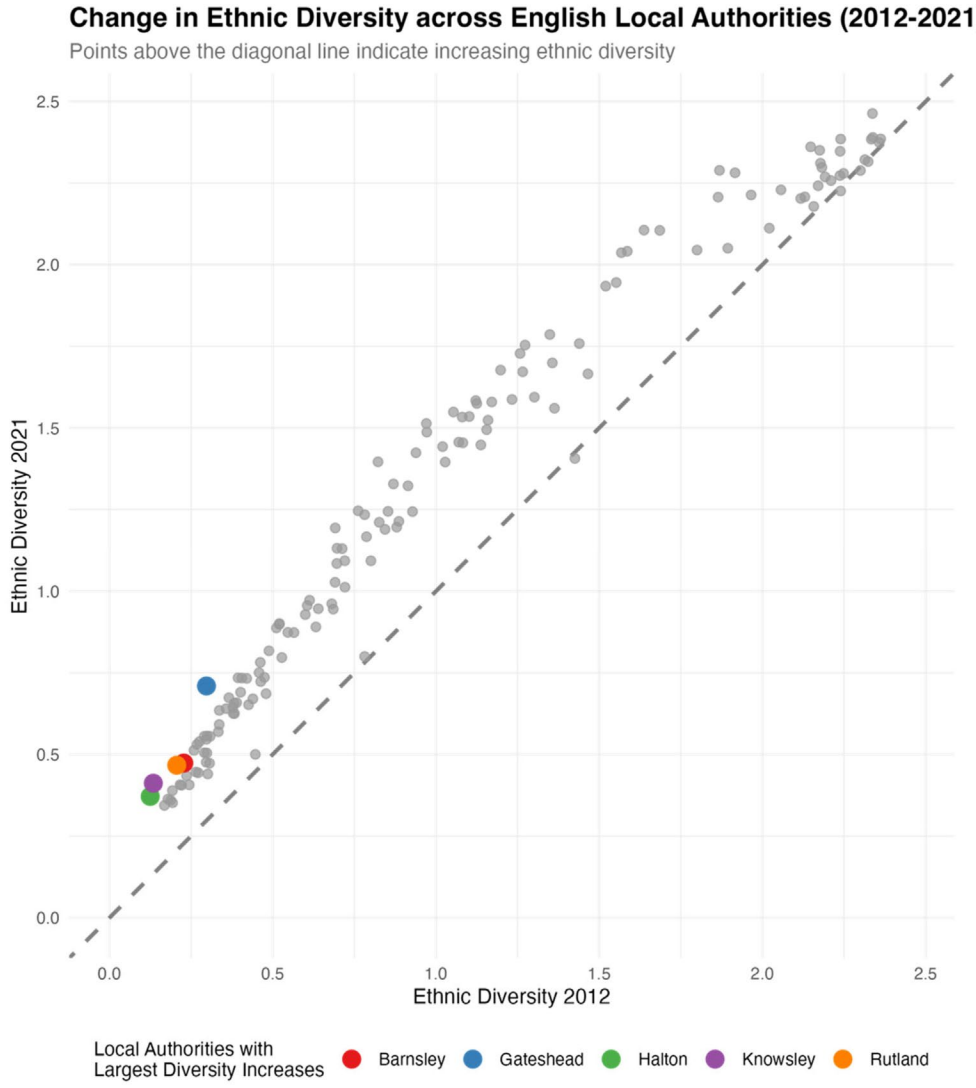

FIGURE 2 Change in ethnic diversity across English local authorities (2012–2021).

at the local authority level make the subsequent findings about declining ethnic clustering within schools particularly significant. As areas become more ethnically heterogeneous overall, the distribution of students across schools has simultaneously become more even.

Table 2 presents the year random intercept model results, while Table 3 shows the full mixed-effects model for each ethnic group. The coefficients in the mixed-effects model represent the estimated effects of predictor variables on ethnic concentration levels, the degree to which ethnic groups cluster within schools across local authorities. The decision to treat year as a random effect rather than a fixed effect was based on model comparison using likelihood ratio tests, which indicated marginally better fit when year is specified as a random intercept. For comparison and robustness, models treating year as a fixed effect are presented in Appendix S1, Tables A6 and A7, which yield substantively similar results regarding the direction and significance of key relationships.

The most striking finding emerges from the relationship between local ethnic population proportions and school concentration levels. Contrary to conventional expectations, as the

TABLE 2 Year random effect models of the ethnic concentration across local schools.

	Bangladeshi		Indian		Pakistani		Chinese		Black African		Black Caribbean	
Model	**Coeff.**	**SE**	**Coeff.**	**SE**	**Coeff.**	**SE**	**Coeff.**	**SE**	**Coeff.**	**SE**	**Coeff.**	**SE**
Intercept	102.74***	16.24	66.55***	8.43	93.17***	11.53	71.35***	9.27	59.52***	10.19	98.95***	20.07
AIC	11,183		10,867		11,053		11,090		11,321		10,956	
BIC	11,208		10,893		11,078		11,115		11,347		10,981	
logLik	−5586		−5429		−5522		−5540		−5656		−5473	
R2_conditional	0.87		0.82		0.87		0.76		0.8		0.86	
ICC_Year	0.3		0.44		0.53		0.31		0.38		0.32	
ICC_LA	0.41		0.21		0.2		0.13		0.22		0.37	
ICC_region	0.26		0.26		0.26		0.26		0.26		0.26	
	White British		**Other White**		**White Irish**		**Mixed White/Asian**		**Mixed White/Black African**		**Mixed White/Black Caribbean**	
Model	**Coeff.**	**SE**	**Coeff.**	**SE**	**Coeff.**	**SE**	**Coeff.**	**SE**	**Coeff.**	**SE**	**Coeff.**	**SE**
Intercept	7.11***	2.42	24.41***	3.47	102.63***	14.49	27.62***	4.34	49.1***	11.08	30.38***	6.66
AIC	6221		9302		11,801		10,130		11,379		10,908	
BIC	6246		9328		11,827		10,156		11,404		10,934	
logLik	−3106		−4646		−5896		−5060		−5684		−5449	
R2_conditional	0.97		0.67		0.74		0.66		0.71		0.66	
ICC_Year	0.61		0.24		0.19		0.3		0.17		0.24	
ICC_LA	0.31		0.22		0.15		0.1		0.18		0.2	
ICC_region	0.26		0.26		0.26		0.26		0.26		0.26	

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

TABLE 3 Full models of the ethnic concentration across local schools (year as the random effect).

	Bangladeshi		Indian		Pakistani		Chinese		Black African		Black Caribbean	
Model	**Coeff.**	**SE**	**Coeff.**	**SE**	**Coeff.**	**SE**	**Coeff.**	**SE**	**Coeff.**	**SE**	**Coeff.**	**SE**
Intercept	98.2***	16.42	57.76***	8.63	89.68***	12.31	91.42***	8.25	56.8***	9.41	116.6***	15.68
(1) % local population	−0.47	0.61	−1.23***	0.53	−1.56***	0.59	−67.49***	6.06	−1.44***	0.68	−13.08***	1.73
(2) # faith schools	3.34***	0.85	2.7***	0.65	3.91***	0.92	2.24***	0.63	2.61***	0.75	2.95***	1.13
(3) # selective schools	−0.65	1.06	0.84	0.8	−1.53	1.17	1.48***	0.78	−0.44	0.91	0.59	1.44
(4) # academies	−0.62***	0.17	0.03	0.13	−0.44***	0.17	−0.34***	0.14	−0.14	0.16	−0.59***	0.23
AIC	11,164		10,846		11,032		10,968		11,313		10,894	
BIC	11,210		10,892		11,078		11,013		11,359		10,939	
logLik	−5573		−5414		−5507		−5475		−5648		−5438	
R2_conditional	0.88		0.82		0.86		0.82		0.77		0.87	
R2_marginal	0.03		0.09		0.06		0.25		0.06		0.26	
ICC_Year	0.32		0.43		0.48		0.42		0.41		0.43	
ICC_LA	0.4		0.2		0.23		0.03		0.14		0.19	
ICC_region	0.05		0.05		0.03		0.17		0.06		0.08	

	White British		Other White		White Irish		Mixed White/Asian		Mixed White/Black African		Mixed White/Black Caribbean	
Model	**Coeff.**	**SE**	**Coeff.**	**SE**	**Coeff.**	**SE**	**Coeff.**	**SE**	**Coeff.**	**SE**	**Coeff.**	**SE**
Intercept	32.92***	1.54	15.52***	5.1	115.38***	13.33	44.54***	3.25	73.75***	7.49	42.63***	5.82
(1) % local population	−0.39***	0.02	1.25***	0.27	−58.93***	6.34	−19.56***	1.88	−45.18***	4.35	−10.92***	1.61
(2) # faith schools	0.5***	0.11	0.46***	0.26	4.03***	0.81	1.28***	0.3	1.99***	0.46	1.24***	0.45
(3) # selective schools	−0.09	0.15	0.38	0.3	−0.52	0.96	0.18	0.35	0.1	0.53	−0.15	0.52
(4) # academies	−0.01	0.01	0.04	0.07	−0.64***	0.2	−0.22***	0.08	−0.63***	0.15	−0.1	0.13
AIC	6018		9292		11,698		10,059		11,301		10,866	

(Continues)

TABLE 3 (Continued)

Model	White British		Other White		White Irish		Mixed White/Asian		Mixed White/Black African		Mixed White/Black Caribbean	
	Coeff.	SE	Coeff.	SE	Coeff.	SE	Coeff.	SE	Coeff.	SE	Coeff.	SE
BIC	6064		9338		11,744		10,105		11,347		10,911	
logLik	−3000		−4637		−5840		−5021		−5642		−5424	
R2_conditional	NA		0.8		0.8		0.62		0.765		0.65	
R2_marginal	0.96		0.08		0.19		0.28		0.28		0.17	
ICC_Year	0.76		0.22		0.3		0.26		0.16		0.25	
ICC_LA	0.05		0.36		0.07		0.01		0.03		0.11	
ICC_region	0		0.06		0.24		0.05		0.16		0.05	

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

percentage of students from the same ethnic group in the local school-age population increases, the concentration level of that group across schools decreases. This relationship is statistically significant for Indian (−1.23, $p < 0.001$), Pakistani (−1.56, $p < 0.001$), Chinese (−67.49, $p < 0.001$), Black African (−1.44, $p < 0.001$), Black Caribbean (−13.08, $p < 0.001$), White British (−0.39, $p < 0.001$) and Mixed White/Asian (−19.56, $p < 0.001$) students. The magnitude varies dramatically across groups, with Chinese students showing the largest coefficient, suggesting particularly strong dispersion effects as local Chinese populations increase.

Faith schools consistently show positive associations with ethnic concentration across all groups, functioning as mechanisms for ethnic sorting regardless of denominational affiliation. Each additional faith school in a local authority increases concentration levels, with coefficients ranging from 0.46 for Other White students to 4.03 for White Irish students. This universal effect across all ethnic groups reveals how religious schooling operates as a proxy for ethnic segregation within England's educational landscape.

Academy numbers show varied relationships with ethnic concentration across groups. The negative coefficients for Bangladeshi (−0.62, $p < 0.001$), Pakistani (−0.44, $p < 0.001$), Chinese (−0.34, $p < 0.001$), Black Caribbean (−0.59, $p < 0.001$), White Irish (−0.64, $p < 0.001$), Mixed White/Asian (−0.22, $p < 0.001$) and Mixed White/Black African (−0.63, $p < 0.001$) students suggest that academy expansion correlates with reduced concentration for these groups. However, the case studies reveal that this aggregate pattern masks concerning institutional segregation within academy types.

The intraclass correlation coefficients (ICC) reveal substantial variation in ethnic concentration patterns across analytical levels. Bangladeshi and Other White students exhibit the highest local authority variation (approximately 40% and 36%, respectively), suggesting that local contexts play particularly important roles in shaping these groups' distribution across schools. Year-to-year variation is pronounced for Indian (0.44), Pakistani (0.53), Black African (0.38) and Black Caribbean (0.32) groups, indicating temporal volatility in clustering patterns that may reflect demographic shifts or policy changes. To visualise the variation in ethnic clustering across local authorities, caterpillar plots (Figures A2–A4 in Appendix S1) are provided, which identify specific local authorities with unusually high or low ethnic clustering relative to model predictions.

The temporal analysis reveals a consistent pattern: negative coefficients on year in fixed-effect models (see Appendix S1, Table A6) confirm a general decline in ethnic concentration across all groups from 2010 to 2018. This trend towards reduced clustering occurs against the backdrop of increasing ethnic diversity shown in Figures 1 and 2, and despite the political context of rising anti-immigration sentiment, suggesting that educational integration processes may operate somewhat independently of broader political discourse.

For robustness, I also estimated models for White British pupils excluding the population share predictor (Appendix S1, Table A4), which showed consistent effects for other institutional variables, particularly the positive association with faith schools (0.77, $p < 0.001$) and negative association with academies (−0.04, $p < 0.001$).

Understanding racialisation processes and institutional responses

The counterintuitive finding that higher proportions of same-ethnic populations correlate with more dispersed school distributions represents one of the most theoretically significant results of this analysis. This pattern challenges conventional assumptions about demographic composition and segregation while revealing important insights about racialisation processes and institutional responses to ethnic diversity.

Ethnic community strategies and institutional navigation

The negative relationship between ethnic population proportions and concentration levels presents a counterintuitive finding that warrants examination. While the data clearly show that areas with higher proportions of same-ethnic populations correlate with more dispersed school distributions, the mechanisms driving this pattern require careful interpretation.

One possible explanation is that established ethnic minority communities in areas with substantial populations may develop more nuanced approaches to school choice that prioritise educational quality over ethnic comfort. This interpretation would align with research on spatial assimilation theory, which predicts that successful integration involves strategic dispersion rather than concentration as communities gain social and cultural capital (Zuccotti, 2015).

For South Asian communities in particular, who show strong negative coefficients in this relationship, the pattern could reflect deliberate strategies to access high-performing schools across local authorities rather than concentrating in ethnically familiar institutions. However, the data cannot directly confirm whether this behaviour represents active preference or constrained choices. It is possible that ethnic concentration in schools results from limited choice and constrained opportunities rather than active preference for clustering. The findings suggest that when communities have sufficient numbers to support multiple school choices, dispersion increases, though the underlying motivations remain unclear.

The magnitude of this effect varies significantly across ethnic groups, with Chinese students showing the largest coefficient (−67.49). While this finding is robust, its interpretation requires caution. It may suggest particularly strong preferences for educational achievement over ethnic concentration when population numbers allow choice, consistent with research on Chinese educational values and strategic approaches to institutional navigation that prioritise academic outcomes (Archer & Francis, 2006). However, alternative explanations, including institutional factors or residential patterns, cannot be ruled out.

Institutional capacity and demographic responses

From an institutional perspective, the findings raise questions about whether the dispersed distribution pattern in high ethnic minority areas might reflect capacity constraints and policy responses rather than community choices alone. While institutional decision-making cannot be directly observed, it is plausible that schools in areas with large ethnic minority populations could implement informal selection mechanisms or admission practices that encourage dispersion to avoid becoming identified as ‘ethnic schools’ with potential reputational consequences.

If such institutional responses exist, they would reveal how racialisation processes might operate through seemingly neutral educational policies. Schools may resist ethnic concentration not because of explicit discrimination but potentially because of concerns about academic performance, parental satisfaction or broader community acceptance. The data show the outcome of dispersed distributions but cannot confirm whether such responses create systematic pressures for ethnic dispersion that operate independently of family preferences.

Another possibility is that educational authorities in diverse areas may actively promote dispersion through strategic school placement, transport policies or informal guidance to families. While this analysis cannot verify these mechanisms directly, if present, these institutional interventions would represent attempts to manage ethnic diversity in ways that promote integration whilst avoiding the political controversies associated with explicit racial policies.

White flight dynamics and majority group responses

While the analysis focuses on ethnic minority dispersion patterns, the findings raise important questions about 'white flight' and majority group responses to ethnic diversity. The more even distribution of ethnic minorities in high-diversity areas could potentially reflect White British families' choices to avoid schools with high ethnic minority concentrations, which might create pressure for minority families to distribute across multiple institutions. However, the data do not allow direct observation of these dynamics or confirmation of causation.

Research from other contexts suggests that when ethnic minority populations reach certain thresholds, white families often seek alternative schools, creating tipping points that can lead to rapid ethnic transition (Burgess et al., 2005). The observed dispersed pattern in high ethnic minority areas might represent equilibrium outcomes where institutional arrangements and family choices interact to prevent such tipping points whilst maintaining overall integration. However, this interpretation remains speculative without longitudinal data on individual school choices.

If these dynamics are operating, they would reveal how racialisation processes could operate through market mechanisms rather than explicit policies. The apparent 'choice' of ethnic minority families to disperse may reflect constrained options created by majority group preferences and institutional responses to demographic change. Further research would be needed to confirm these potential mechanisms.

Faith schools and religious racialisation

The consistent positive association between faith schools and ethnic concentration across all groups reveals how religious institutions interact with racialisation processes. Faith schools do not simply serve religious communities; they often function as proxies for ethnic concentration, particularly for Muslim students of South Asian heritage and Catholic students from various ethnic backgrounds.

This pattern suggests that religious identity and ethnic identity operate in complex, overlapping ways within educational markets. Faith schools may provide culturally comfortable environments for ethnic minority families while simultaneously reinforcing ethnic boundaries through religious selection. For White British families, faith schools may offer indirect means of avoiding ethnic diversity while maintaining claims to religiously motivated rather than racially motivated choice.

The uniformity of faith school effects across ethnic groups indicates that these institutions systematically contribute to ethnic segregation regardless of specific religious or ethnic composition. This finding challenges claims that faith schools promote integration by bringing together families of shared values rather than shared ethnicity.

Academy policies and marketised integration

The mixed effects of academy expansion on ethnic concentration reveal the complex ways educational markets interact with racialisation processes. For some ethnic groups, academy expansion correlates with reduced concentration, suggesting that increased institutional diversity and choice can promote integration. However, the case studies reveal concerning patterns of ethnic polarisation within academy types that complicate this optimistic interpretation.

The differential effects across ethnic groups suggest that marketised education systems may reproduce racialised advantages and disadvantages in subtle ways. Academy autonomy in admission policies, curriculum design and community engagement may enable informal selection processes that systematically favour or disadvantage particular ethnic groups without explicit racial criteria.

These findings indicate that educational choice policies do not operate in race-neutral ways but interact with existing patterns of racialisation to produce complex outcomes. While overall ethnic concentration may decline, market mechanisms may simultaneously create new forms of institutional segregation that limit meaningful intergroup contact even in statistically integrated systems.

The academy results highlight the importance of examining not just overall ethnic distributions but the quality and character of intergroup contact within educational institutions. Reduced ethnic concentration may coexist with increased subtle forms of segregation that maintain racial boundaries through institutional rather than geographic mechanisms.

Case study analysis: Racialisation patterns and community relations

To examine patterns of ethnic segregation within specific local contexts, this study employs segplot visualisations following Elbers and Gruijters (2024). Figures 3 and 4 present these analyses for Birmingham and London, respectively, distinct from the diversity trends shown in Figures 1 and 2. These segplots reveal stark patterns of racialised educational segregation with profound implications for intergroup contact, community relations and ethnic boundary reproduction. For clarity, the analysis uses broad ethnic categories rather than the detailed groupings employed in the multilevel models.

In these plots, individual schools appear as vertical bars ordered by segregation score. This technique compresses schools with similar compositions to reduce visual complexity while retaining essential information. The smooth appearance results from this compression methodology (Elbers & Gruijters, 2024) and indicates aggregated patterns rather than identical scores. Bar width corresponds to school size, while height shows ethnic composition. Schools are arranged left to right by segregation score, with the most segregated on the left.

The rightmost bar in each panel shows the reference distribution—the overall ethnic composition across all schools of that type. A perfectly integrated school would match this distribution exactly.

Birmingham: Institutionalised ethnic segregation

The Birmingham analysis reveals concerning patterns of ethnic concentration that challenge common media narratives about school segregation. Most strikingly, White British pupils (who comprise only 25% of Birmingham's secondary school population) are disproportionately concentrated in foundation schools, voluntary aided schools and both types of academies. This over-representation is particularly pronounced in voluntary aided schools, which are predominantly faith schools operating under religious auspices.

The concentration of White British students in academy sponsor-led schools raises particular concerns. These schools, typically created to address underperformance in struggling institutions, show significant White British over-representation despite their remedial mandate. This pattern suggests that even schools explicitly designed for improvement may become sites of ethnic sorting, potentially limiting their effectiveness in serving Birmingham's diverse communities.

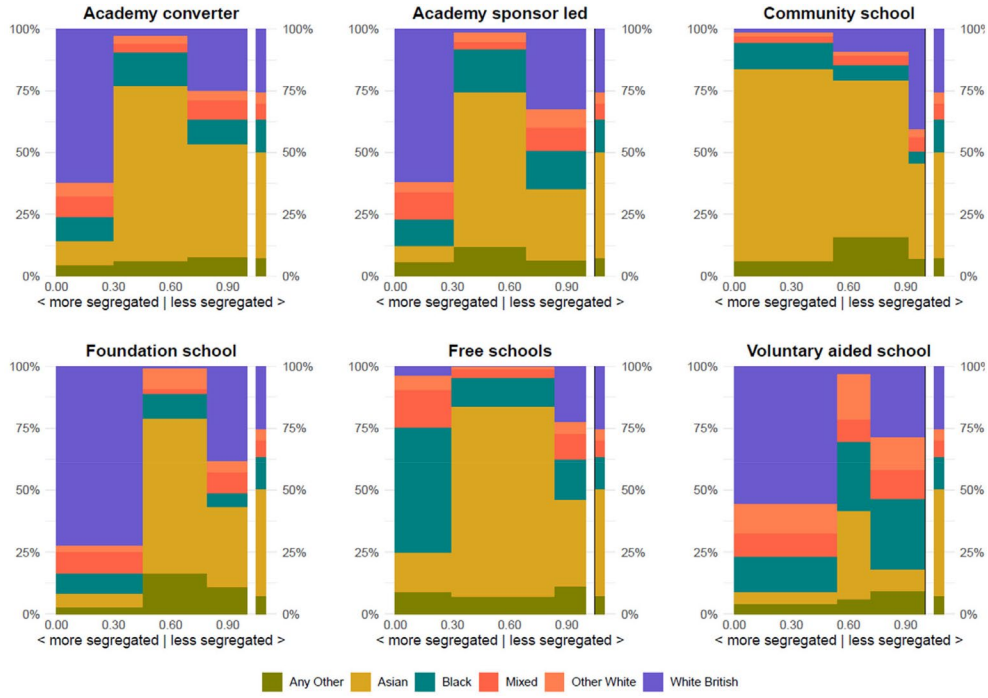

FIGURE 3 Distribution of ethnic groups across secondary schools in Birmingham (2021).

The faith school patterns present an unexpected finding that contradicts prevalent media narratives. Birmingham, home to a substantial Muslim population, might be expected to show Asian student concentration in religious schools. However, the data reveal the opposite: voluntary aided schools with the highest White British concentrations are predominantly Catholic institutions. This finding challenges assumptions about faith-based self-segregation among Muslim communities and instead highlights how established Christian denominational schools may function as mechanisms for White British concentration.

Conversely, Asian students show notable concentration in community schools—institutions managed by local authorities that typically receive less favourable funding compared to academies, which obtain resources directly from central government and trust bodies. This pattern is particularly concerning given that community schools often contend with older facilities and more limited resources. The concentration of Asian students in these potentially under-resourced institutions raises questions about equitable access to educational quality across ethnic groups.

Free schools emerge as an anomaly within Birmingham's segregated landscape, showing high concentrations of Black students in their most segregated institutions. This distinctive pattern, contrasting sharply with other school types, suggests that these newer institutional forms may be fulfilling specific community functions while simultaneously contributing to overall segregation patterns.

These findings collectively reveal how Birmingham's diversified school system, despite intentions to provide choice and improve outcomes, may inadvertently create ethnically stratified educational experiences. The concentration of White British students in better-resourced school types, coupled with Asian student concentration in local authority schools, suggests that institutional arrangements may be reproducing rather than ameliorating ethnic educational inequalities.

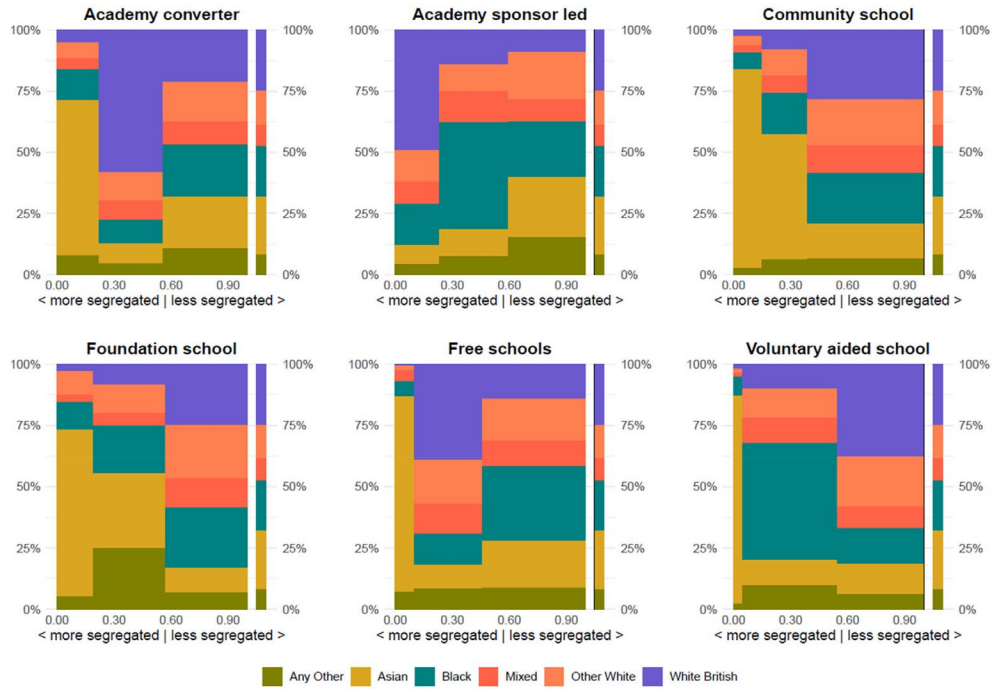

FIGURE 4 Distribution of ethnic groups across secondary schools in London (2021).

London: Complexity within diversity

London's segplot visualisations reveal complex patterns of ethnic stratification that reflect the capital's status as a global city with substantial ethnic diversity. Against a reference distribution comprising approximately 25% each of White British and Asian students, 20% each of Black and Other White students and 10% Mixed/Any Other heritage students, the analysis exposes how different institutional forms create distinct patterns of ethnic concentration.

The academy sector demonstrates divergent segregation dynamics between its two variants. Academy converter schools exhibit pronounced Asian over-representation in their most segregated institutions, where Asian students, despite constituting 25% of London's secondary population, comprise 40–50% of enrolment. These schools also display secondary patterns of White British concentration, while maintaining relatively even distributions of Black students. In contrast, academy sponsor-led schools show White British over-representation in their most segregated institutions, with some schools also displaying higher than expected proportions of Black students, suggesting these schools may serve different community functions across London's diverse landscape.

Community schools, despite operating under local authority governance structures theoretically promoting integration, reveal significant Asian clustering patterns. The width of segregated segments indicates that a substantial number of community schools maintain high Asian concentrations, representing one of the largest absolute volumes of ethnically concentrated schools across all institutional types. This finding challenges assumptions about the integrative effects of local authority oversight and suggests that even direct public management cannot fully counteract underlying segregation dynamics.

Foundation schools similarly display extensive Asian concentration, with the most segregated institutions exceeding 70% Asian enrolment, nearly three times their proportional

representation. The broad width of these segregated segments indicates that, alongside community schools, foundation schools contain the largest number of institutions with significant Asian clustering. This pattern raises concerns about equitable access to different school types across ethnic communities.

Free schools, despite their recent establishment and purported innovation in educational provision, replicate patterns of Asian concentration observed in more established institutional forms. The most segregated free schools exceed 70% Asian enrolment, suggesting that new school types do not inherently disrupt existing patterns of ethnic clustering.

Voluntary aided schools present a paradoxical pattern of extreme but limited segregation. While these schools exhibit the highest concentration levels, with some institutions approaching ethnic homogeneity at over 90% Asian enrolment, the narrow width of these segments indicates that such extreme segregation affects relatively few schools. However, the broader pattern reveals that nearly half of all voluntary aided schools maintain approximately 50% Black student enrolment, more than double the Black proportion in London's secondary population. This bifurcated pattern likely reflects the intersection of religious affiliation and ethnic community boundaries, with different faith traditions serving distinct ethnic constituencies.

These findings collectively reveal that London's institutional diversity, rather than promoting ethnic integration, may facilitate sophisticated sorting mechanisms that concentrate students along ethnic lines. The prevalence of Asian clustering across multiple school types is notable, with the most extensive clustering in community and foundation schools by volume and the most intense in select voluntary aided schools by concentration. This suggests systemic factors that transcend individual institutional arrangements. Such patterns raise fundamental questions about whether school choice mechanisms in superdiverse urban contexts inadvertently create ethnically stratified educational experiences that limit opportunities for meaningful intergroup contact during formative years.

Comparative patterns and systemic implications

The segplot analyses of Birmingham and London reveal both striking similarities and notable differences in how ethnic segregation manifests across England's diverse urban contexts. Despite their distinct demographic compositions, with Birmingham having a larger Asian plurality (45%) and London exhibiting more balanced diversity (25% each White British and Asian), both cities demonstrate systematic patterns of ethnic sorting that transcend local contexts.

The most consistent finding across both cities is the concentration of White British students in specific school types despite their minority status. In Birmingham, White British students comprise only 25% of the secondary population yet dominate the most segregated voluntary aided schools (approaching 90%) and show significant over-representation in academies and foundation schools. London presents a more complex picture, with White British concentration most pronounced in academy sponsor-led schools. This pattern of White British clustering in select institutions, even where they constitute a demographic minority, aligns with international research on majority group self-segregation and suggests that school choice mechanisms may facilitate ethnic boundary maintenance.

However, the cities diverge significantly in their patterns of Asian student distribution. Birmingham's Asian students, despite forming the largest ethnic group (45%), concentrate notably in community schools, the institutions typically receiving less favourable funding compared to academies. In contrast, London's Asian students (25% of the population) demonstrate more extensive clustering across multiple school types, with community and foundation schools containing the largest volumes of Asian-concentrated schools and voluntary aided schools showing the most extreme concentration levels exceeding 90%. This

difference suggests that demographic dominance does not automatically translate into equitable distribution across school types.

The role of faith schools emerges as particularly significant in both contexts but with different implications. Birmingham's voluntary aided schools serve predominantly White British students, contradicting expectations given the city's substantial Muslim population and suggesting that established Christian denominational schools function as mechanisms for White British concentration. London's voluntary aided schools present a bifurcated pattern, with some showing extreme Asian concentration (likely Islamic schools) and others maintaining high proportions of Black students (approximately 50%), indicating how religious institutions may serve distinct ethnic constituencies within the same city.

Free schools represent another point of divergence. In Birmingham, these institutions uniquely concentrate Black students, making them the only school type where ethnic minorities rather than White British students dominate the most segregated schools. London's free schools show Asian concentration patterns similar to other school types, suggesting that the function of new institutional forms varies significantly by local context.

Community schools in both cities challenge assumptions about the integrative effects of local authority governance. Despite theoretical commitments to inclusion, these schools show significant ethnic clustering: Asian concentration in Birmingham and extensive Asian clustering by volume in London. This pattern is particularly concerning given the typically lower funding levels of community schools compared to academies, raising questions about whether ethnic minorities disproportionately attend less well-resourced institutions.

The analysis reveals three critical systemic implications. First, institutional autonomy appears to facilitate rather than mitigate ethnic segregation. Academy status and voluntary aided designation, which grant schools greater control over admissions and operations, correlate with higher levels of ethnic concentration in both cities. Second, the persistence of ethnic clustering across diverse institutional types suggests that school choice mechanisms, regardless of specific governance arrangements, may inherently produce segregated outcomes in ethnically diverse contexts. Third, the concentration of ethnic minorities in potentially under-resourced school types (community schools in Birmingham, the volume of Asian students in London's community and foundation schools) indicates that segregation patterns may simultaneously reflect and reproduce educational inequalities.

These findings fundamentally challenge the assumption that institutional diversity and parental choice naturally promote integration. Instead, the evidence suggests that without active intervention, educational markets in diverse urban areas create sophisticated sorting mechanisms that organise students along ethnic lines. The consistency of certain patterns across both cities, particularly White British concentration despite minority status and the limited integrative capacity of any school type, points to systemic features of England's education system that transcend local demographics or governance structures. Such patterns raise urgent questions about whether current educational arrangements can deliver the meaningful intergroup contact necessary for cohesive multicultural societies, or whether they inadvertently perpetuate ethnic boundaries through institutionalised separation during formative years.

CONCLUSIONS

This study examines ethnic clustering patterns in English secondary schools from 2010 to 2018, revealing a complex landscape where declining overall segregation coexists with persistent institutional variations that reflect and potentially reproduce ethnic inequalities. The findings challenge prevailing assumptions about increasing segregation following educational reforms whilst illuminating how racialisation processes operate through seemingly neutral institutional arrangements.

The counterintuitive finding that higher proportions of same-ethnic populations correlate with more dispersed school distributions reveals sophisticated dynamics operating through educational markets. For established ethnic minority communities, particularly South Asian groups showing strong negative coefficients, this pattern suggests strategic navigation of educational markets that prioritises academic achievement over ethnic comfort. However, this apparent 'choice' must be understood within the context of observed segregation patterns. The case studies from Birmingham and London demonstrate that different ethnic groups systematically concentrate in different school types, with White British students over-represented in faith schools and certain academy types despite their minority status, creating a segmented educational landscape that may shape and constrain all families' educational options (Burgess et al., 2005).

Faith schools' consistent positive association with ethnic concentration across all groups reveals how religious institutions function as mechanisms for maintaining ethnic boundaries. This finding resonates with international evidence from the Netherlands (Denessen et al., 2005) and Belgium (Agirdag et al., 2012), where denominational schools similarly facilitate ethnic sorting. The uniformity of faith school effects across ethnic groups indicates that these institutions systematically undermine integration regardless of specific denominational or ethnic composition.

Whilst academies show negative associations with ethnic concentration at the aggregate level, the case studies reveal more troubling patterns. The stark segregation between school types in Birmingham and London illustrates how governance structures designed to promote choice may create new forms of institutional segregation. Unlike Sweden's free school reforms that produced clear increases in segregation (Böhlmark & Lindahl, 2015), England shows overall declining concentration. However, like US charter schools (Bifulco & Ladd, 2007), academies appear to create subtler forms of segregation that maintain ethnic boundaries through institutional rather than geographic mechanisms.

Several limitations should be considered when interpreting these findings. First, the analysis excludes pupils attending private schools (approximately 7% of school-age children), potentially underestimating the full extent of ethnic segregation. Second, whilst employing 18 ethnic categories, these groupings mask within-group heterogeneity that may obscure important variations in segregation patterns. Third, ethnicity recording in the NPD relies on parental reporting with potential school inference when data is refused, introducing possible misclassification bias. Fourth, the intersection with socioeconomic disadvantage could not be fully explored; future research incorporating free school meal eligibility could illuminate how ethnic and class-based segregation intersect. Finally, the study identifies associations but cannot establish causal mechanisms driving observed patterns.

The overall decline in ethnic clustering from 2010 to 2018 occurs within a political context of intensifying debates about immigration and integration. However, the persistence of institutional segregation revealed in Birmingham and London undermines narratives of successful integration. When different ethnic groups systematically attend different school types, opportunities for developing the 'commonplace diversity' (Wessendorf, 2014) essential for cohesive multicultural societies are severely limited.

England's experience offers important insights for diverse democracies balancing choice with integration. Market mechanisms alone cannot ensure integration; without active monitoring and intervention, choice systems may create sophisticated forms of segregation. Religious schooling poses particular challenges across diverse contexts, whilst the emergence of different ethnic concentrations in different academy types warns against assuming that institutional diversity automatically promotes integration. The stark differences between Birmingham and London demonstrate how similar policies produce different outcomes depending on local context.

This study reveals a paradox: overall ethnic clustering declined during political backlash against diversity, yet institutional arrangements created new forms of segregation potentially more insidious than traditional geographical concentration. The complex relationships between school governance, ethnic distribution and racialisation processes underscore that integration requires more than demographic mixing. True social cohesion demands institutional arrangements that facilitate meaningful intergroup contact and create genuine opportunities for mutual understanding. As ethnic diversity continues increasing across developed democracies, these findings highlight the critical importance of educational institutions in shaping social cohesion. The challenge for policymakers is developing approaches that preserve legitimate choices whilst actively promoting the meaningful integration necessary for sustaining diverse democratic societies.

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CONFLICT OF INTEREST STATEMENT

The author declares no competing interests.

DATA AVAILABILITY STATEMENT

The data employed in this analysis are aggregated at the school level and are publicly accessible. Detailed information on schools and pupil numbers is available from Statistics: School and pupil numbers (www.gov.uk). For data prior to 2010, archived files containing school, pupil and characteristic information from 2002 to 2009 can be accessed at Schools, pupils and their characteristics: 2002 to 2009 data (www.gov.uk).

ETHICS STATEMENT

This study uses open-access secondary analysis of anonymised administrative data from the National Pupil Database. Ethical approval was obtained from the University of Exeter as part of the ethics application for the author's PhD thesis, *Ethnic Segregation in Schools in England* (https://ore.exeter.ac.uk/repository/handle/10871/135338).

ORCID

Yiyang Gao https://orcid.org/0000-0003-0421-7760

TWITTER

Yiyang Gao 𝕏 constanceko0316

REFERENCES

Agirdag, O., Van Houtte, M., & Van Avermaet, P. (2012). Why does the ethnic and socio-economic composition of schools influence math achievement? The role of sense of futility and futility culture. *European Sociological Review*, *28*(3), 366–378.

Allen, R., & West, A. (2011). Why do faith secondary schools have advantaged intakes? The relative importance of neighbourhood characteristics, social background and religious identification amongst parents. *British Educational Research Journal*, *37*(4), 691–712.
Archer, L., & Francis, B. (2006). *Understanding minority ethnic achievement: Race, gender, class and 'success'*. Routledge.
Archer, T., & Stevens, M. (2018). *Housing, integration and segregation: A rapid literature review*. Sheffield Hallam University. https://www.shu.ac.uk/centre-regional-economic-social-research/projects/all-projects/housing-integration-and-segregation-a-rapid-literature-review
Bifulco, R., & Ladd, H. F. (2007). School choice, racial segregation, and test-score gaps: Evidence from North Carolina's charter school program. *Journal of Policy Analysis and Management*, *26*(1), 31–56.
Böhlmark, A., Holmlund, H., & Lindahl, M. (2016). Parental choice, neighbourhood segregation or cream skimming? An analysis of school segregation after a generalised choice reform. *Journal of Population Economics*, *29*(4), 1155–1190.
Böhlmark, A., & Lindahl, M. (2015). Independent schools and long-run educational outcomes: Evidence from Sweden's large-scale voucher reform. *Economica*, *82*(327), 508–551.
Boterman, W. R. (2018). School segregation in the free school choice context of Dutch cities. In X. Bonal & C. Bellei (Eds.), *Understanding school segregation: Patterns, causes and consequences of spatial inequalities in education* (pp. 155–178). Bloomsbury.
Boterman, W. R. (2019). The role of geography in school segregation in the free parental choice context of Dutch cities. *Urban Studies*, *56*(15), 3074–3094.
Burgess, S., & Platt, L. (2018). *Integrating the next generation: How school composition affects inter-ethnic attitudes*. British Politics and Policy at LSE. https://blogs.lse.ac.uk/politicsandpolicy/integrating-the-next-generation-school-composition/
Burgess, S., Wilson, D., & Lupton, R. (2005). Parallel lives? Ethnic segregation in schools and neighbourhoods. *Urban Studies*, *42*(7), 1027–1056.
Byrne, B., Alexander, C., Khan, O., Nazroo, J., & Shankley, W. (2020). *Ethnicity, race and inequality in the UK: State of the nation*. Policy Press.
Cantle, T. (2001). *Community cohesion: A report of the independent review team* (The Cantle Report).
Cantle, T. (2008). Parallel lives – the development of community cohesion. In N. Johnson (Ed.), *Citizenship, cohesion and solidarity* (pp. 9–20). Smith Institute.
Cantle, T. (2013). Interculturalism as a new narrative for the era of globalisation and super-diversity. In M. Barrett (Ed.), *Interculturalism and multiculturalism: Similarities and differences* (pp. 69–93). Council of Europe.
Casey, L. (2016). The casey review: A review into opportunity and integration. Department for Communities and Local Government, London.
Catney, G., Lloyd, C. D., Ellis, M., Wright, R., Finney, N., Jivraj, S., & Manley, D. (2023). Ethnic diversification and neighbourhood mixing: A rapid response analysis of the 2021 census of England and Wales. *The Geographical Journal*, *189*(1), 63–77.
Clark, W. A. V., Dieleman, F. M., & De Klerk, L. (1992). School segregation: Managed integration or free choice? *Environment and Planning C: Government & Policy*, *10*(1), 91–103.
Courtney, S. J. (2015). Mapping school types in England. *Oxford Review of Education*, *41*(6), 799–818.
Delmont, M. F. (2016). *Why busing failed: Race, media, and the national resistance to school desegregation*. University of California Press.
Denessen, E., Driessena, G., & Sleegers, P. (2005). Segregation by choice? A study of group-specific reasons for school choice. *Journal of Education Policy*, *20*(3), 347–368.
DfE. (2014). *Promoting fundamental British values as part of SMSC in schools: Departmental advice for maintained schools*. https://assets.publishing.service.gov.uk/media/5a758c9540f0b6397f35f469/SMSC_Guidance_Maintained_Schools.pdf
DfE. (2017). *Collection of data on pupil nationality, country of birth and proficiency in English (DFE-00316-2017)*. https://assets.publishing.service.gov.uk/media/5a82eb25e5274a2e8ab5a037/Data_on_pupil_nationality__country_of_birth_and_proficiency.pdf
DfE. (2019). *Schools, pupils and their characteristics: January 2019*. https://www.gov.uk/government/statistics/schools-pupils-and-their-characteristics-january-2019
Drayton, E., Greaves, E., & Rossi, G. (2023). *School and neighbourhood segregation in Scotland and England*. IFS Report No. R276.
Dunin-Wasowicz, R. (2016). 'Multiculturalism can foster a new kind of post-Brexit Englishness', LSE Brexit Blog, 30 August. https://blogs.lse.ac.uk/brexit/2016/08/30/multiculturalism-can-foster-a-new-kind-of-post-brexit-englishness/
Elbers, B. (2023). A method for studying differences in segregation across time and space. *Sociological Methods & Research*, *52*(1), 5–42.

Elbers, B., & Gruijters, R. J. (2024). Segplot: A new method for visualizing patterns of multi-group segregation. *Research in Social Stratification and Mobility*, *89*, 100860.
Esteves, O. (2018). *The 'desegregation' of English schools: Bussing, race and urban space, 1960s–80s*. Manchester University Press.
Felouzis, G., & Jacobs-Colas, A. (2003). Ethnic segregation and its effects in middle school in France. *Revue Française de Sociologie*, *44*(3), 413–448.
Finney, N. (2014). *What do we know about social interaction and spatial integration and what are the key emerging issues?* COMPAS, University of Oxford.
Francis, D. V., & Darity, W. A. (2021). Separate and unequal under one roof: How the legacy of racialised tracking perpetuates within-school segregation. *The Russell Sage Foundation Journal of the Social Sciences*, *7*(1), 187–202.
Franken, L., & Vermeer, P. (2019). Deconfessionalising RE in pillarised education systems: A case study of Belgium and The Netherlands. *British Journal of Religious Education*, *41*(3), 272–285.
Frankenberg, E., Siegel-Hawley, G., Wang, J., & Orfield, G. (2012). *Choice without equity: Charter school segregation and the need for civil rights standards*. https://civilrightsproject.ucla.edu/research/k-12-education/integration-and-diversity/choice-without-equity-2009-report
Friedrichs, J. (2023). Ethnic segregation in schools: A study of non-decision making. *Journal of Education Policy*, *38*(6), 1024–1043.
Galston, W. A. (2018). The populist challenge to liberal democracy. *Journal of Democracy*, *29*(2), 5–19.
Goodhart, D. (2004). Too diverse? *Prospect Magazine*, *95*(30), 7.
Gorard, S. (2016). The complex determinants of school intake characteristics and segregation, England 1989 to 2014. *Cambridge Journal of Education*, *46*(1), 131–146.
Greaves, E. (2024). Segregation by choice? School choice and segregation in England. *Education Economics*, *32*(1), 1–19.
Gutiérrez, G., Jerrim, J., & Torres, R. (2020). School segregation across the world: Has any progress been made in reducing the separation of the rich from the poor? *The Journal of Economic Inequality*, *18*(2), 157–179.
Harris, R., & Johnston, R. (2020). *Ethnic segregation between schools: Is it increasing or decreasing in England?* Policy Press.
HM Government. (2022). *Inclusive Britain: Government response to the Commission on Race and Ethnic Disparities*. https://www.gov.uk/government/publications/inclusive-britain-action-plan-government-response-to-the-commission-on-race-and-ethnic-disparities
HM Government. (2018). *Integrated communities strategy green paper*. Ministry of Housing, Communities and Local Government.
Hout, M., & DiPrete, T. A. (2006). What we have learned: RC28's contributions to knowledge about social stratification. *Research in Social Stratification and Mobility*, *24*(1), 1–20.
Hudson, M., Phillips, J., Ray, K., & Barnes, H. (2007). Social cohesion in diverse communities. Joseph Rowntree Foundation, York.
iCoCo Foundation, SchoolDash & The Challenge. (2017). *Understanding school segregation in England: 2011 to 2016*. The Challenge.
James, J. S., & Janmaat, J. G. (2019). *Civil disorder, domestic terrorism and education policy: The context in England and France*. Springer Nature.
Janmaat, J. G. (2014). Do ethnically mixed classrooms promote inclusive attitudes towards immigrants everywhere? A study among native adolescents in 14 countries. *European Sociological Review*, *30*(6), 810–822.
Jenkins, S. P., Micklewright, J., & Schnepf, S. V. (2008). Social segregation in secondary schools: How does England compare with other countries? *Oxford Review of Education*, *34*(1), 21–37.
Jivraj, S., & Simpson, L. (Eds.). (2015). *Ethnic identity and inequalities in Britain: The dynamics of diversity*. Policy Press.
Johnston, R., Burgess, S., Wilson, D., & Harris, R. (2006). School and residential ethnic segregation: An analysis of variations across England's local education authorities. *Regional Studies*, *40*(9), 973–990.
Johnston, R., Poulsen, M. F., & Forrest, J. (2013). Multiethnic residential areas in a multiethnic country? A decade of major change in England and Wales. *Environment and Planning A*, *45*(4), 753–759.
Karsten, S., Ledoux, G., Roeleveld, J., Felix, C., & Elshof, D. (2003). School choice and ethnic segregation. *Educational Policy*, *17*(4), 452–477.
Kaufmann, E. (2017). *Racial self interest is not racism: Ethno-demographic interests and the immigration debate*. Policy Exchange.
Kim, S. J., Shin, J., & Tilahun, N. (2023). Racial disparities in the pattern of intergenerational neighbourhood mobility. *Urban Studies*, *60*(2), 256–273.
Ladd, H. F., Fiske, E. B., & Ruijs, N. (2009). Parental choice in The Netherlands: Growing concerns about segregation. Paper presented at the *National Conference on School Choice*, Vanderbilt University.

Leckie, G., & Goldstein, H. (2015). A multilevel modelling approach to measuring changing patterns of ethnic composition and segregation among London secondary schools, 2001–2010. *Journal of the Royal Statistical Society, Series A: Statistics in Society*, *178*(2), 405–424.
Maas, C. J., & Hox, J. J. (2004). The influence of violations of assumptions on multilevel parameter estimates and their standard errors. *Computational Statistics & Data Analysis*, *46*(3), 427–440.
McArdle, N., & Acevedo-Garcia, D. (2017). *Consequences of segregation for children's opportunity and wellbeing*. Harvard University Press.
Mitchell, P. M. (2023). Measuring ethnic school segregation within local educational markets in England. *Cambridge Journal of Education*, *53*(1), 19–42.
Morris, R. (2016). *Free schools in England: Choice, admissions and social segregation*. PhD thesis, University of Birmingham.
Östh, J., Clark, W. A., & Malmberg, B. (2015). Measuring the scale of segregation using k-nearest neighbor aggregates. *Geographical Analysis*, *47*(1), 34–49.
Owens, A., Reardon, S. F., & Jencks, C. (2016). Income segregation between schools and school districts. *American Educational Research Journal*, *53*(4), 1159–1197.
Perry, L. B., Yoon, E. S., Sciffer, M., & Lubienski, C. (2024). The impact of marketization on school segregation and educational equity and effectiveness: Evidence from Australia and Canada. *International Journal of Comparative Sociology*. Advance online publication. https://doi.org/10.1177/00207152241227810
Pettigrew, T. F., & Tropp, L. R. (2006). A meta-analytic test of intergroup contact theory. *Journal of Personality and Social Psychology*, *90*(5), 751–783.
Phillips, D. (1998). Black minority ethnic concentration, segregation and dispersal in Britain. *Urban Studies*, *35*(10), 1681–1702.
Rattansi, A. (2011). *Multiculturalism: A very short introduction*. Oxford University Press.
Reardon, S. F., Kalogrides, D., & Shores, K. (2019). The geography of racial/ethnic test score gaps. *American Journal of Sociology*, *124*(4), 1164–1221.
Reardon, S. F., & O'Sullivan, D. (2004). Measures of spatial segregation. *Sociological Methodology*, *34*(1), 121–162.
Reardon, S. F., & Owens, A. (2014). 60 years after Brown: Trends and consequences of school segregation. *Annual Review of Sociology*, *40*(1), 199–218.
Reardon, S. F. (2016). School segregation and racial academic achievement gaps. RSF: The Russell Sage Foundation. *Journal of the Social Sciences*, *2*(5), 34–57.
Rothstein, R. (2015). The racial achievement gap, segregated schools, and segregated neighborhoods: A constitutional insult. *Race and Social Problems*, *7*, 21–30.
Schwartz, A., McDermott, J. H., & Shinn-Cunningham, B. (2012). Spatial cues alone produce inaccurate sound segregation: The effect of interaural time differences. *The Journal of the Acoustical Society of America*, *132*(1), 357–368.
Wessendorf, S. (2014). *Commonplace diversity: Social relations in a super-diverse context*. Springer.
West, A. (2017). Academies in England and independent schools (fristående skolor) in Sweden: Policy, privatisation, access and segregation. In G. Walford (Ed.), *Academies, free schools and social justice* (pp. 78–98). Routledge.
West, A. (2023). School choice (and diversity) in the UK since 1944: Continuity, change, divergence and school selectivity. *Journal of School Choice*, *17*(1), 15–34.
Zuccotti, C. V. (2015). Do parents matter? Revisiting ethnic penalties in occupation among second generation ethnic minorities in England and Wales. *Sociology*, *49*(2), 229–251.
Zuccotti, C. V. (2019). Ethnicity and neighbourhood attainment in England and Wales: A study of second generations' spatial integration. *Population, Space and Place*, *25*(7), e2252.

SUPPORTING INFORMATION

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

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