Social Mobility Commission

Social and ethnic inequalities in choice available and choices made at age 16

Rebecca Allen, Meenakshi Parameshwaran and Dave Thomson, Education Datalab

December 2016

Social Mobility Commission
Sanctuary Buildings
20 Great Smith Street
London
SW1P 3BT

contact@smcpcommission.gsi.gov.uk

About the Commission

The Social Mobility Commission is an advisory, non-departmental public body established under the Life Chances Act 2010 as modified by the Welfare Reform and Work Act 2016. It has a duty to assess progress in improving social mobility in the United Kingdom and to promote social mobility in England. It currently consists of four commissioners and is supported by a small secretariat.

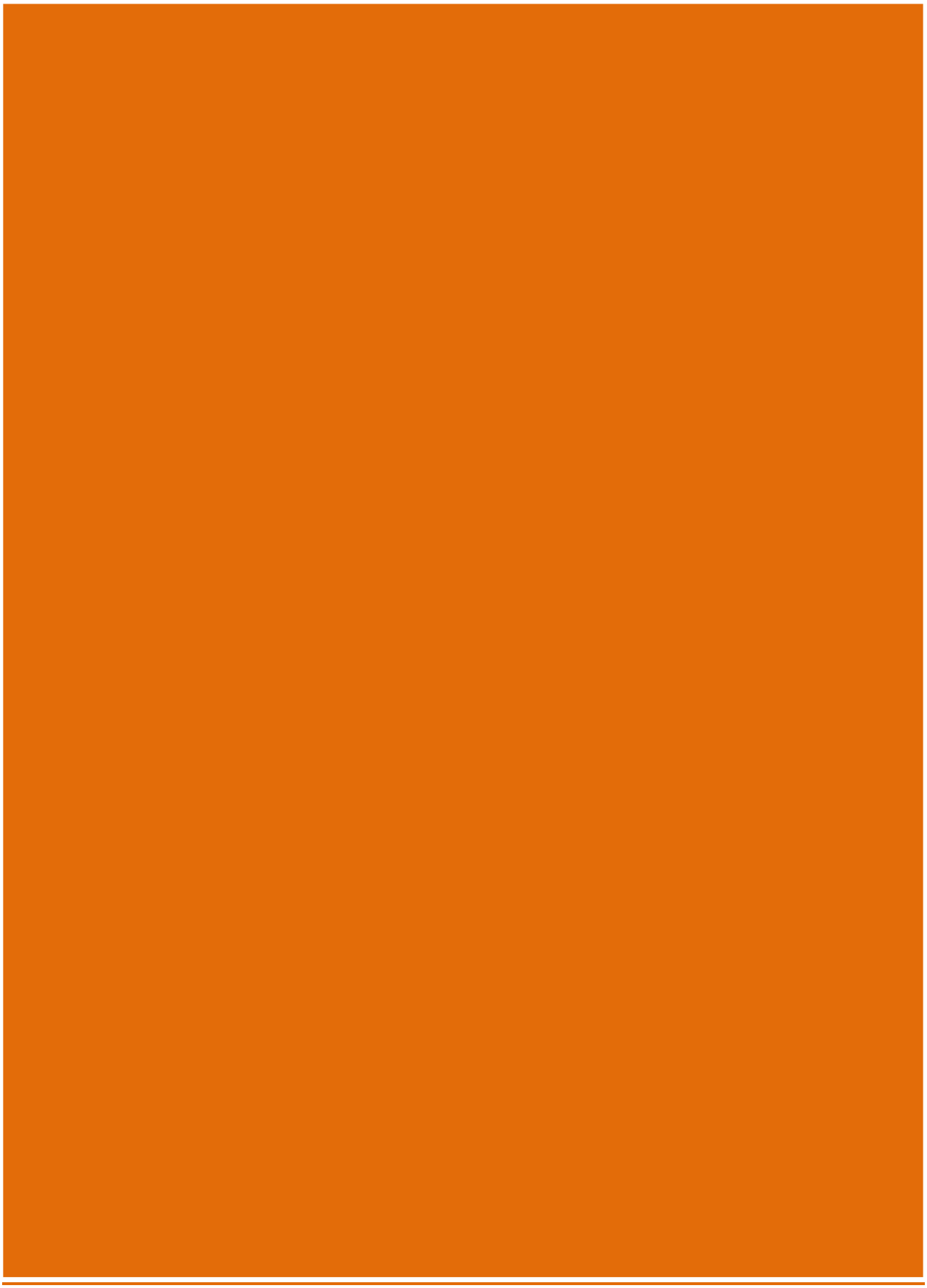
The commission board currently comprises:

- Alan Milburn (chair)
- Baroness Gillian Shephard (deputy chair)
- Paul Gregg, Professor of Economic and Social Policy, University of Bath
- David Johnston, Chief Executive of the Social Mobility Foundation

The functions of the commission include:

- Monitoring progress on improving social mobility
- Providing published advice to ministers on matters relating to social mobility
- Undertaking social mobility advocacy

Contents



Executive Summary

The transition at the age of 16 marks the first point in most individuals' educational lives where opportunities and choice become markedly diverse. Students can choose whether to attend school sixth forms, sixth form colleges or further education (FE) colleges. This choice is, in part, geographically shaped by quite idiosyncratic variation in institutional provision. For example, students in London are able to choose between large numbers of providers with exceptionally high access to school sixth forms. The North West has high levels of provision in sixth form colleges, unlike the North East and East Midlands. Students in the North East and South West have the lowest levels of choice of provider.

This research provides an up-to-date understanding of post-16 educational choices and transitions, highlighting the implications of differences in choice sets for students from different areas and backgrounds. Specifically, our research analysis explores how the choice sets available to students vary according to their geographic, social and educational background. It investigates the impact of these institutional and qualification choices made on students' educational trajectories at age 16 and into higher education.

Using three linked databases – the National Pupil Database, Individual Learner Records, and Higher Education Statistics Authority data – we explore all educational choices made by students who sat GCSEs in summer 2010. Our modelling strategy allows us to distinguish between inequalities in post-16 choice and attainment that arise between groups facing identical institutional availabilities and those that arise because different groups have access to different types of local post-16 provision. We do this, in part, by comparing choices made by students who live in the same neighbourhood (Middle Super Output Area) and who achieved similar GCSEs at age 16.

Social inequalities in post-16 routes

Students eligible for free school meals (FSM) live in more urban areas, which gives them greater choice of post-16 institution and marginally greater access to 6th form colleges. We find that FSM pupils living in the same neighbourhood and with similar GCSE attainment as non-FSM pupils have marked differences in the post-16 choices they make that cannot be explained by inequalities in institutional availability.

In this cohort, 9% of non-FSM students drop-out of the education system at age 16 compared to 16% of FSM students. This is, of course, largely related to GCSE attainment. But we estimate over a third of this participation gap results from differences in choices made by students with identical opportunities open to them. We estimate these choices are also responsible for about a third of the gap in entry to a sixth form environment (i.e. school sixth form, sixth form college or independent school).

There are FSM gaps in the proportions studying at least level 2 qualifications (58% versus 78%), level 3 qualifications (40% versus 66%) and 3 A levels (47% versus 21%). We estimate that 24%, 26% and 35% of these gaps, respectively, arises from choices made by students living in the same neighbourhoods with approximately the same GCSE attainment.

There are also marked FSM differences in higher education routes. Just 24% of FSM pupils attend HE versus 42% of non-FSM pupils, with over a quarter of this participation gap arising from students within the same neighbourhood with the same GCSE attainment. We estimate that as much as half the FSM gap in Russell Group attendance (at 2% for FSM versus 10% for non-FSM) could be removed if we were able to equalise university access between pupils living in the same neighbourhoods and with similar GCSE attainment.

Gender inequalities in post-16 routes

Male and female pupils generally face similar choice sets but take slightly different post-16 routes as a result of both differences in age 16 achievement and choices made by students with the same achievement levels. Boys are more likely to drop out of education altogether at age 16 (9% versus 11%), but about half of this participation gap arises from choices by gender of students with the same GCSE attainment.

Girls are more likely to take at least level 2 qualifications (81% versus 70%), level 3 qualifications (68% versus 58%) and 3 A levels (48% versus 39%). But while differences in rates studying for at least level 2 qualifications are largely explained by choice, the differences in rates studying A levels are almost all explained by gender differences in GCSE attainment.

Girls are more likely than boys to attend HE (44% versus 36%) both because they have higher GCSE attainment and because they have higher attendance for a given level of GCSE attainment. The latter contributes about a third of this gender gap. The pattern for elite Russell Group attendance is quite different because, although girls are slightly more likely to attend over (10% versus 9%), they are *less* likely (with 17% lower odds) than boys to attend for a given level of GCSE attainment.

Ethnic inequalities in post-16 routes

Students of minority ethnic backgrounds – measured here using six broad ethnic groupings – have lower propensities to drop out of education at age 16, compared to the White British population (for whom 10% leave). This rate is the smallest for the Indian group at just 3%, both because they are higher attaining at GCSE and because they make different choices compared to White British students living in the same neighbourhoods with similar attainment. It is lower at just 7% for black students and 8% for Pakistani and Bangladeshi students, *despite* having lower GCSE attainment.

The white other and other ethnic groups are more similar to the White British group, most likely because these categorisations mask wide variation in educational choices. Nevertheless, all ethnic minority groups are much more likely than the White British group to attend a school sixth form or sixth form college, even accounting for prior attainment and neighbourhood. They are also more likely to take level 2 qualifications, level 3 qualifications and 3 A levels.

All ethnic minority groups have much higher university participation: the rates for the black, Indian and Pakistani/Bangladeshi group are 57%, 72% and 53%, respectively, compared to 36% for the White British population. However, only the Indian ethnic group is markedly more likely to attend a Russell Group university, compared to White British pupils with similar GCSE attainment living in the same neighbourhoods.

Post-16 outcomes where there are few school sixth form places available

There are 20 places in England where there is almost no opportunity for students to attend school sixth forms because they do not exist due to historic local authority level organisational decisions. We match the neighbourhoods in these areas to similar neighbourhoods elsewhere in England that have school sixth forms. This allows us to estimate the impact of living in an area where all students must proceed to a sixth form college or further education college. We find that living in an area with no sixth form college has no overall effect on levels of post-16 participation, but it does affect the types of courses that students study. There are significantly lower percentages of pupils studying at least 2 level qualifications (73.5% versus 75.5%), at least level 3 qualifications (59.9% versus 63.0% and at least level 3 academic qualifications (40.0 versus 43.2%).

The largest impacts are for those in the middle prior attainment group who are much less likely to study for 3 A levels. This may be because sixth form colleges serve a smaller community of students than do school sixth forms, leaving greater numbers of middle attainers to attend general FE colleges.

Higher prior attainment students have a five percentage point lower take-up of at least 2 facilitating A-levels and lower rates studying for at least one science or maths A level. One possible explanation is that sixth form colleges are able to provide a wider range of A-levels, increasing the chances that they study less traditional subjects. We also find this higher attaining group is slightly less likely to attend higher education (2 percentage points) or a Russell Group university (1 percentage points).

Introduction

The transition at the age of 16 marks the first point in most individuals' educational lives where opportunities and choice become markedly diverse. Students can choose whether to attend school sixth forms, sixth form colleges and Further Education (FE) colleges. This choice is, in part, geographically shaped by quite idiosyncratic variation in institutional provision. This research provides an up-to-date understanding of post-16 educational choices and transitions, highlighting the implications of differences in choices available for students from different areas and backgrounds. Specifically, our research analysis explores how the choice sets available to students vary according to their geographic, social and educational background. It investigates the impact of these institutional, subject and qualification choices made on students' educational trajectories, including their subsequent educational attainment and their access to higher education.

Our study uses three linked databases – the National Pupil Database, Individual Learner Records, and Higher Education Statistics Authority data – to explore all choices made by all individuals, rather than those appearing the Key Stage Five attainment tables. This allows a greater understanding of the role of both academic and vocational pathways in producing inequalities in higher education enrolment. We create a unique post-16 institutional choice set for each prospective student, which allows us to distinguish between inequalities in post-16 choice and attainment that arise between groups facing identical institutional availabilities and those that arise because different groups have access to different types of local post-16 provision.

Previous research

The existing literature has tended to focus on the decision to participate in education post-16, rather than on the type of institution chosen.[1] The result is a limited evidence base on post-16 choice patterns and their implications for students. The literature does, however, suggest that attendance at different types of post-16 institutions has a social and educational gradient to it. For example, students are more likely to attend sixth form based provision if they are from more advantaged social backgrounds or attend a school with a lower proportion of pupils in receipt of free school meals, whilst they are more likely to enrol in an FE college if they are from a non-professional background.[2] Achieving at least five GCSEs at A*-C grade and attending a school with a sixth form are also important influences on pupils' decisions to stay on in post-16 education, particularly in sixth-form based provision.[3][4]

---

[1] Clark, D., Conlon, G. and Galindo-Rueda, F. (2005) "Post-Compulsory Education and Qualification Attainment", in Machin, S. and A. Vignoles (eds.) *What's the Good of Education? The Economics of Education in the United Kingdom*, Princeton University Press

[2] Crawford, C., Meschi, E., and Vignoles, A. (2011) *Post-16 Educational Choices and Institutional Value Added at Key Stage 5. CEE DP 124.* Centre for the Economics of Education. http://cee.lse.ac.uk/ceedps/ceedp124.pdf

[3] Ibid.

[4] Foskett, N., Dyke, M., and Maringe, F. (2004) *The Influence of the School in the Decision to Participate in Learning Post-16. Research Report No. 538*. Department for Education and Skills.

There are also differences in pupil choices and outcomes at different types of institutions. Pupils attending schools with sixth forms are more likely to choose academic subjects for post-16 study, whilst those without in-school sixth forms have a greater chance for choosing vocational subjects.[5] Sixth form colleges have been found to add the most value to higher achieving pupils taking A-levels, and FE colleges adding the least.[6] Students attending FE colleges are also less likely to go to university, with those that do attend being less likely to gain acceptance to a highly selective university.[7] This is likely due to FE colleges serving students with lower prior attainment, making the finding that pupils are more likely to choose to enrol in FE colleges when they live in poorer areas all the more pertinent.[8] One explanation for different post-16 choices is local provision, with pupils living in poorer areas having more access to FE colleges than their peers in wealthier areas.[9] Another explanation is the behaviour of schools, which are more likely to promote participation in post-16 education in their own sixth forms when they are based in metropolitan or urban local authorities where other post-16 providers are also available.[10] This suggests that institutional choice sets can affect the behaviour of both students and institutions.

The issue of geographical variation in post-16 provision is a key gap in the existing literature, which lacks explicit consideration of issues such as distance to nearest provider or differences in institutional choice sets across areas. One study, using a similar approach to the one proposed here, identifies common patterns of institutional provision across geographical areas and assesses the impact of provision on post-16 participation and attainment, finding that patterns in provision does not seriously affect outcomes.[11] Another study looks at models of choice made within local authorities, using local authority fixed effects. We expand on previous research by explicitly considering geographically based institutional choice sets for students.

Data

In this research we use three linked administrative datasets – the National Pupil Database (NPD), the Individualised Learner Record (ILR) and the Higher Education Statistics Authority dataset (HESA). Our study population is the cohort of 15 year olds who sat their GCSEs in 2009/10, whether in the state or independent sector, and we attempt to identify them in a post-16 institution in 2010/11 academic year. If

---

http://webarchive.nationalarchives.gov.uk/20130401151715/http://www.education.gov.uk/publications/eOrderingDownload/RR538.pdf

[5] Foskett, Dyke and Maringe; Thomson, D. (2015) *What you study after your GCSEs depends on where you live, Education Datalab blog at* http://www.educationdatalab.org.uk/Blog/August-2015/What-you-study-after-your-GCSEs-depends-on-where-y.aspx#

[6] Crawford, Meschi and Vignoles

[7] Ibid.

[8] Ibid.

[9] Ibid.

[10] Foskett, Dyke and Maringe

[11] Schagen, I., Lopes, J., Rutt, S., Savory, C., and Styles, B. (2006) *Do post-16 structures matter? Evaluating the impact of local patterns of provision*. Learning and Skills Network.

they are in a school sixth form we find them in the spring school census and subsequently find their qualifications and subjects pursued in the Key Stage 5 records in 2010/11 and 2012/13. If they are in an FE college or sixth form college we find them via the Individualised Learner Records learning aims, which gives us their qualifications and subjects pursued. This includes apprenticeship completions and information on training for learners who drop-out. We find those in independent schools in the Key Stage 5 tables, with the proviso that if they begin in this sector and are not entered for a qualification then we will not identify their post-16 route.

HESA allows us to explore post-16 progression to higher education. The earliest we find this cohort in the HESA data is 2012/13 and we give them three opportunities to appear in the higher education sector by cross-checking the 2013/14 and 2014/15 data.

For each individual in the study, we aim to attach the following background information:

- Student gender
- Student ethnicity, grouped into white British; white other; black; Indian; Pakistani or Bangladeshi; other including east Asian
- Student free school meals eligibility at age 15/16[12]
- Student home postcode at age 15/16 (or as close in age as possible)

We apply the principle that the highest data quality lies in the school census, but draw on other sources where it is missing. For the tiny number of individuals who are educated in the independent sector for pre-16 *and* post-16 study *and* who do not attend university, we are missing some key background characteristics.

Institutions included in our analysis

The students in our analysis attend a number of different types of post-16 institutions: schools with sixth forms (n=1935); FE colleges (n=473); sixth form colleges (n=97); independent schools (n=791) and other institutions such as special schools and private training organisations (n=524). Since our analysis is interested in the relationship between the location of the student's home and institution, we split large, multi-site FE colleges into multiple pseudo-institutions based on the ILR learning aims postcode.[13] Each individual is assigned to only one institution; this is their first institution if they have dropped-out and re-started elsewhere.

We retain individuals in independent schools and in other institutions in our analysis, but do not include these institutions in our choice set analysis. Figure 1 shows the cohort size of the post-16 institutions we analyse (split into pseudo-institutions as described above, where appropriate). It shows that school sixth forms are typically

[12] This measure of benefits entitlement is used to proxy income disadvantage; POLAR and NS-Sec are available in HESA, but we do not have them for those who do not attend university so cannot use them in this study.
[13] For each student we identified the modal postcode of their location of study in the ILR learning aims. We split large institutions into multiple pseudo-institutions where they had at least 70 students going to one of the combinations of the provider ID and the delivery postcode.

small, with between 50 and 150 students in a cohort. FE colleges and sixth form colleges are much larger, typically with 500-1000 students.

Figure 1 Cohort size of institutions

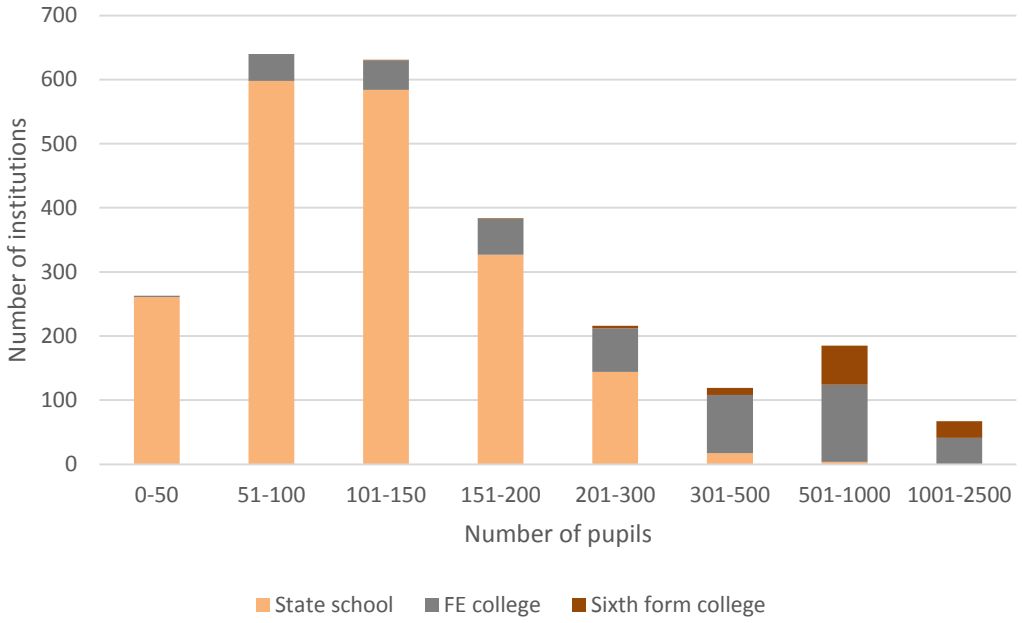
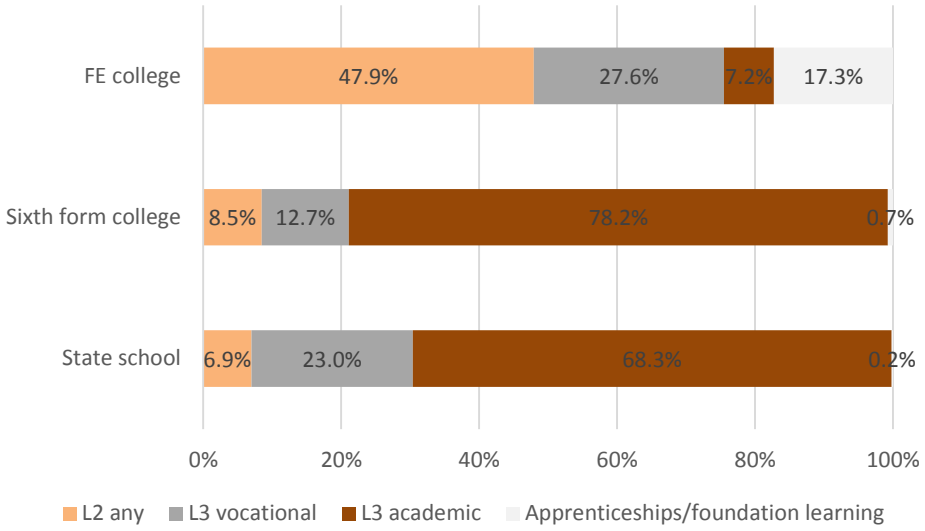


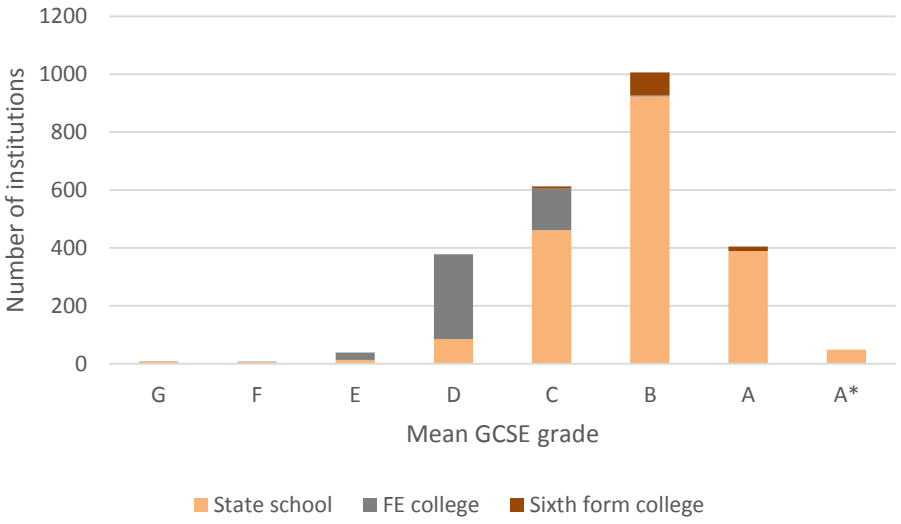
Figure 2 shows that state school sixth forms and sixth form colleges both principally cater for students wishing to take the traditional level 3 route of studying for A-levels, although a substantial minority do study vocational courses and level 2 courses (e.g. retaking GCSE qualifications). By contrast, almost half the 16 year olds in FE colleges are studying for level 2 qualifications, with the next largest group studying for level 3 vocational qualifications.

Figure 2 Proportions studying different types of course by institution type



Given these differences in course provision, clearly state school sixth forms and sixth form colleges require higher entry grades. Figure 3 shows that they most frequently have a student cohort with a mean GCSE grade B.

Figure 3 Average GCSE grade of student intake by institution



Describing student post-16 outcomes

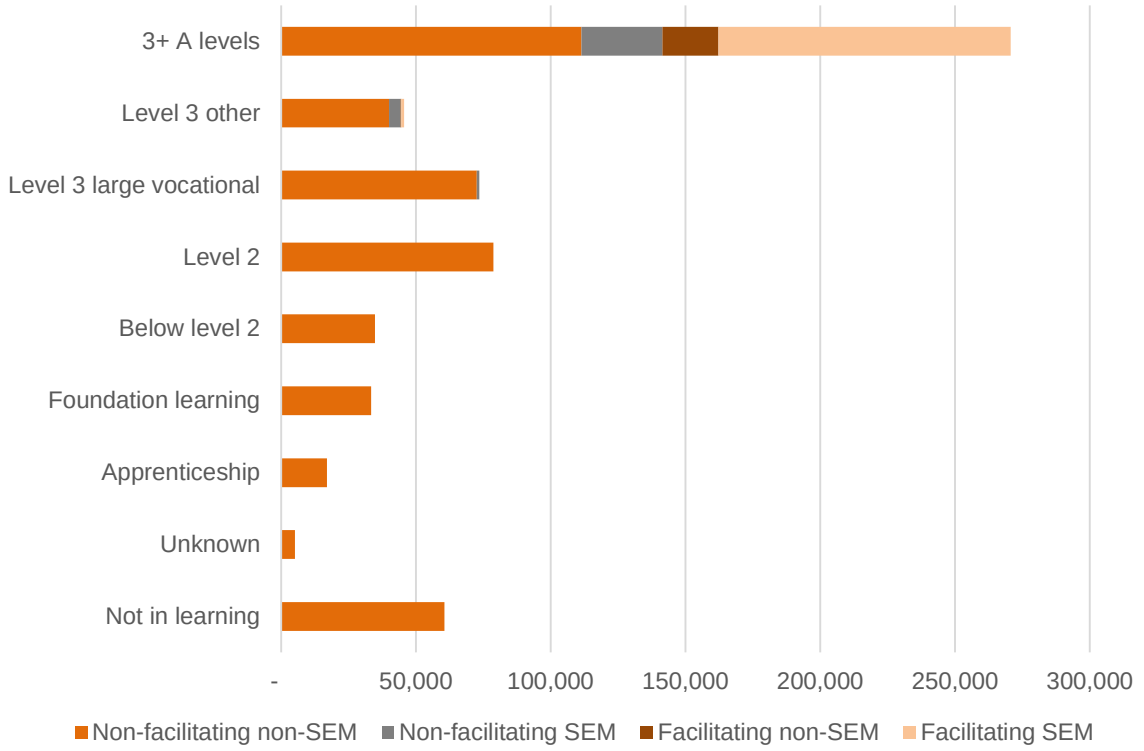
We assess the impact of the post-16 institutional choices made in two way. First, we identify post-16 course choice, grouping courses into the following categories:

- Level 3 academic (3+ A-levels) (N = 270,629)
- Level 3 other, which includes 1 or 2 A-levels and mixtures of academic and vocational qualifications (N = 45,652)
- Level 3 large vocational (N = 73,508)
- Level 2, which includes those taking GCSEs and any vocational qualifications (N = 78,784)
- Below level 2 (N = 34,861)
- Foundation learning (N = 33,402)
- Apprenticeship (N = 17,036)
- Unknown qualification (N = 5,150)
- Not in learning at school/college (N = 60,654)

For those studying A-levels we identify those studying two or more Russell Group 'facilitating' A-levels that are frequently required for university courses: biology, chemistry, English literature, geography, history, physics, modern/classical languages, maths and further maths. We also identify those studying two or more science or maths A-levels, which we classify in Figure 4 as 'SEM'.[14]

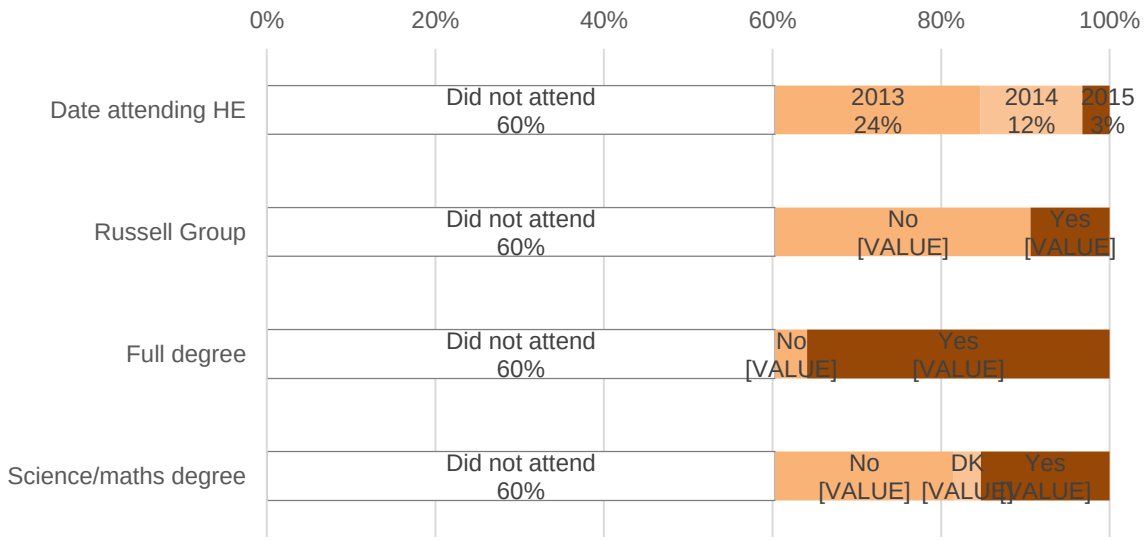
[14] We include a number of A-levels here that are not considered facilitating, such as human biology, environmental science and pure maths with statistics.

Figure 4 Post-16 courses studied



Our second measure of post-16 outcomes is university entry at ages 18, 19 and 20. Figure 5 summarises this information, showing that 60% of the cohort do not attend university in these three years. 24% attend at age 18 in 2013, 12% attend in 2014, and 3% first attend in 2015. We also identify those who are studying at a Russell Group university and those who are studying a science, engineering or maths subject. Almost all the cohort are studying for a full degree (as opposed to a diploma or certificate) so we do not explore this further in our analysis.

Figure 5 University entry rates



We do not include information on qualifications achieved at the age of 18 in our analysis, as others have. To include A-level grades would restrict our analysis to the 271,000 who study the conventional route of 3 or more A-levels. This would be a valid analysis *only* if we believed that post-16 institutional availability had no impact on the chances of studying A-levels, a hypothesis we will challenge in this report.

Creating choice sets of institutional availability

Our analysis explores the extent to which social and ethnic differences in post-16 choices and outcomes arise from the opportunities open to them at age 16, or whether individuals are making different choices given a similar post-16 institutional environment. [15] To do this we generate local choice sets of post-16 options and then explore how choices made are related to these choice sets.

Defining choice sets by observed choices made

We summarise the post-16 institutional options open to each individual by assuming that all students living in the same Middle Super Output Area (MSOA) have the same choices available to them. An MSOA is a small geographical area that is designed to contain between 2,000 and 6,000 households. They divide England into 6,791 small areas[16] and in our dataset they contain an average of 91 post-16 students (with a minimum and maximum of 4 and 269, respectively). We believe it is reasonable to constrain all students living in a MSOA to having the same choice set, even though these areas are relatively large, because older students are less constrained geographically and more able to travel further to the institution of their choice compared to younger students.

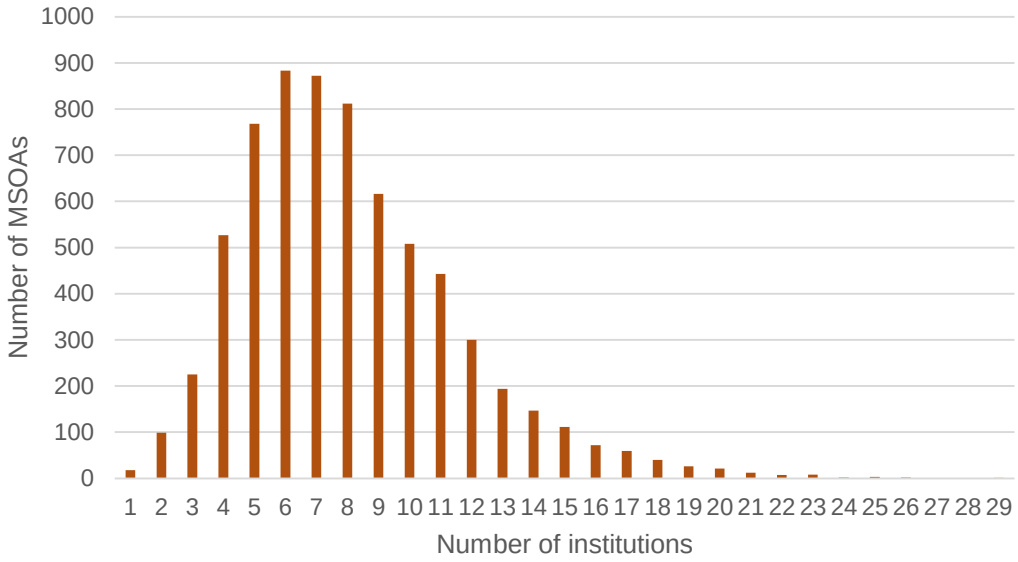
We include a post-16 institution in the choice set of an MSOA if two or more students in the cohort attended that institution. This follows an approach often used to generate primary and secondary school choice sets.[17] We exclude independent schools (and other minor institutions) from the choice sets and ignore the problem that a tiny number of post-16 institutions are single sex. This approach to generating choice sets assumes that choices made by students in the past reflect all feasible choices. This has the advantage that we do not need to know admission policies or transport links to generate the choice sets and we need not assume it is equally straightforward to travel in all directions from the MSOA. However, the choice sets are necessarily endogenous to the nature of the individuals who live in the MSOA. If, for example, there are two contiguous MSOAs with completely different demographic profiles and only in the wealthier MSOA do students ever attend a particular post-16 institution (e.g. if the journey to the institution is expensive) then it will be excluded from the choice set of the MSOA with lower income families, even though it might be

[15] Crawford et al. (2011) use two measures to capture patterns of post-16 provision: the proportion of the total number of pupils in the previous cohort who are enrolled in an FE college for full-time post-16 education, and the percentage of secondary schools in each local authority that had a sixth form in the previous academic year.
[16] We use 6776 MSOAs in our analysis, dropping those that have zero institutions in their choice sets
[17] For discussion of these methods see: Singleton, A.D., Longley, P.A., Allen, R. and O'Brien, O. (2011) Estimating secondary school catchment areas and the spatial equity of access, *Computers, Environment and Urban Systems*, 35(3)241-249.

quite close to them. We implement a procedure to check there is relative stability in the estimation of choice sets in different student cohorts (see Appendix II).

Figure 6 below shows the distribution of the number of institutions across the 6776 MSOAs included in the analysis. It was not possible to define choice sets for 14 MSOAs because there were no institutions chosen by at least two students living in these areas.

Figure 6 Distribution of number of institutions across MSOAs



Describing institutional availability within choice sets

We create a number of indicators to describe the institutional choices available to students living in the MSOA. They are summarised in Table 1 and are as follows:

- The number of institutions, which measures the overall amount of choice available and will clearly be relatively highly correlated with population density. Thus, it is highest in London and lowest in the South West and the North East.
- The percentage of pupils attending 6th form colleges and percentage of pupils attending school sixth forms. The former varies a great deal across regions where there are very few in the South West, the East Midlands and North East. London has by far the most students studying in school sixth forms.
- The percentage of pupils attending the most popular institution is used as a secondary measure of the diversity of choices exercised, and will again by related to population density. So it is under 20%, on average, in London.
- The intake diversity, which is an index that measures the standard deviation in the average institutional GCSE scores at the MSOA-level, excluding pupils who completed their GCSEs in the independent sector. In other words, it captures the level of post-16 institutional segregation by KS4 attainment.

Table 1 Choice set availability by region

	Number of institutions		% sixth form colleges		% school sixth forms		% attending most popular institution		Intake diversity	
	mean	**(s.d.)**	**mean**	**(s.d.)**	**mean**	**(s.d.)**	**mean**	**(s.d.)**	**mean**	**(s.d.)**
National	8.07	(3.52)	14.05	(15.26)	43.45	(22.81)	30.95	(13.46)	0.88	(0.20)
East Midlands	7.93	(2.52)	8.32	(10.01)	45.00	(18.05)	31.51	(11.76)	0.90	(0.17)
East of England	7.23	(2.59)	9.84	(14.17)	49.98	(19.92)	33.66	(11.40)	0.92	(0.17)
London	11.58	(4.66)	14.35	(13.21)	55.12	(17.89)	18.95	(9.09)	0.91	(0.22)
North East	6.80	(2.21)	9.57	(12.81)	38.15	(21.05)	34.05	(11.87)	0.79	(0.15)
North West	7.44	(3.15)	22.24	(17.05)	32.74	(23.24)	32.24	(12.47)	0.87	(0.19)
South East	7.59	(2.85)	19.09	(19.67)	43.48	(27.96)	32.65	(13.65)	0.89	(0.21)
South West	6.86	(2.81)	10.42	(12.00)	43.10	(20.84)	37.00	(15.39)	0.80	(0.25)
West Midlands	8.40	(3.29)	10.62	(10.64)	40.81	(20.16)	29.40	(11.11)	0.89	(0.16)

Findings I – Inequalities in post-16 routes where choices and opportunities are identical

Students from different social backgrounds, gender and ethnicity make different post-16 choices. Here we show the extent to which these different choices arise from differences in institutional availability rather than differences in preferences. We present descriptive statistics of institutional availability, choice set indicators and institutions attended. We then compare pupils with the same institutional choice set because they have the same GCSE prior attainment (measured in deciles) and live in the same MSOA neighbourhood. If we see systematic social background, gender and ethnic differences in post-16 choices made after comparing pupils who have the same institutions available to them, we can reasonably conclude that these differences are due to pupil or family preferences rather than inequalities in institutional availability.

Understanding differences in post-16 choices by social background

Student of different social backgrounds – measured here via eligibility for free school meals (FSM) - are unevenly distributed across the country. This results in FSM and non-FSM students having different types of institutions available to them at age 16. Table 2 shows that FSM students are more likely to live in areas that give them a greater choice of post-16 institution (an average of 9.4 versus 8.3 institutions in the MSOA choice set for FSM and non-FSM respectively; also fewer attending the most popular institution, on average). The mixture of institutional options open to them is slightly different with fewer in their choice sets tending to attend school 6th forms and only marginally more attending 6th form colleges. The amount of variation in institutional selectivity is the same.

Table 2 Institutional characteristics of choice sets by FSM status

	FSM		Non-FSM	
	Mean	**S.D**	**Mean**	**S.D.**
Number of institutions	9.45	4.21	8.31	3.59
% sixth form colleges	14.09	13.23	13.54	14.74
% school sixth forms	41.17	21.89	43.44	22.50
% attending most popular institution	27.78	12.50	31.69	13.43
Intake diversity	0.87	0.19	0.88	0.19

These differences in the nature of the choice sets available to FSM and non-FSM students may, in part, explain why there are differences in the proportions attending different types of institutions, distances travelled to these institutions and the selectivity of the institution attended.

Figure 7 shows far greater proportions of non-FSM than FSM pupils choosing school sixth forms than sixth form colleges. For both types of institution, there is a gap in

attendance by FSM status. However, this gap is marginally in favour of FSM pupils in the first four attainment deciles, but reverses in favour of non-FSM pupils at higher attainment deciles.

Figure 7 Post-16 institutional attendance by KS4 decile and FSM status

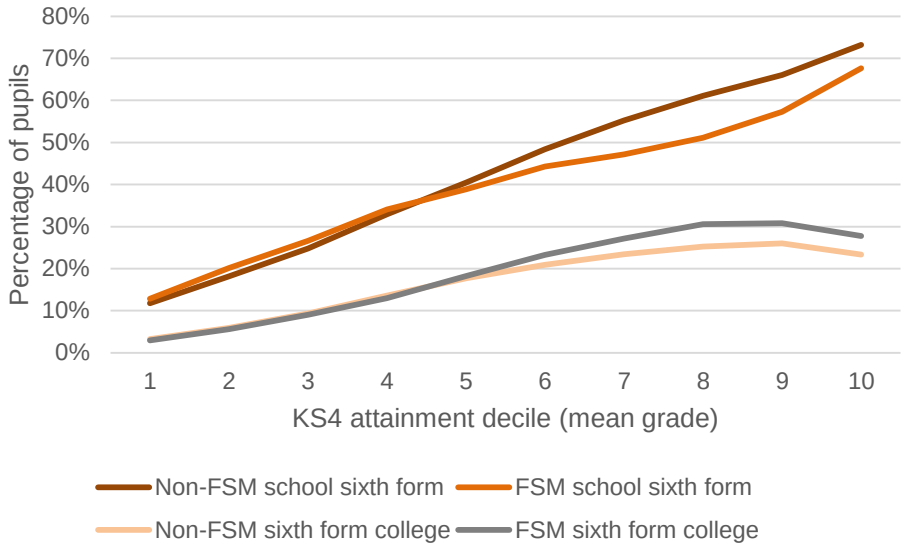
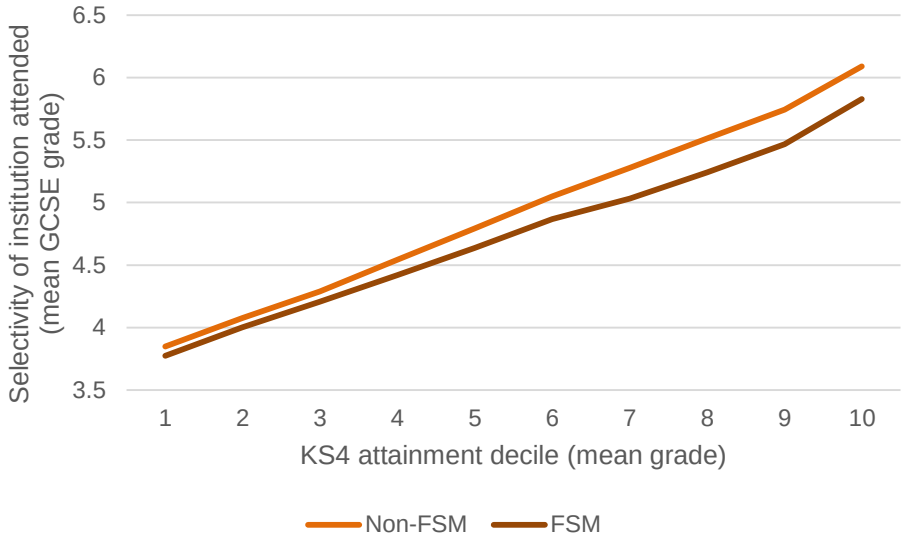


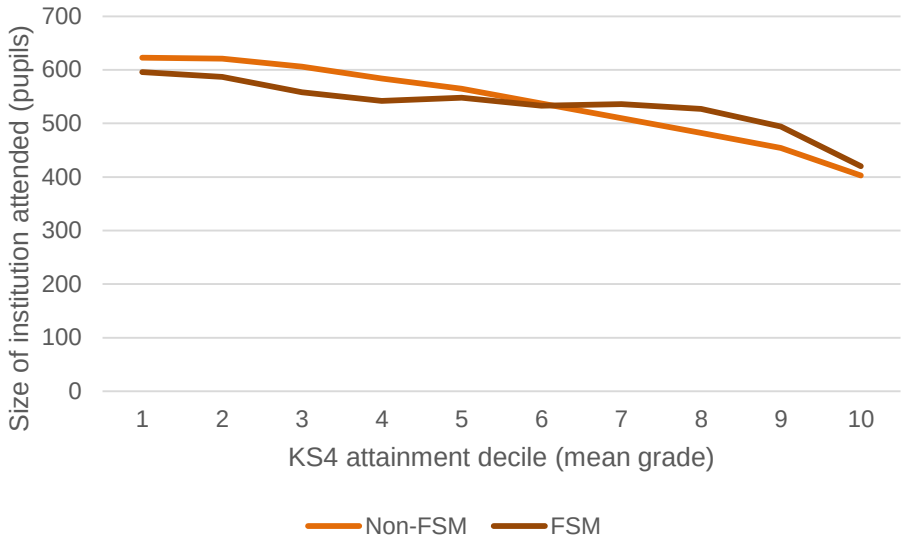
Figure 8 shows non-FSM pupils attend slightly more selective institutions than FSM pupils at each KS4 decile. The gap widens as the KS4 attainment decile increases, indicating that higher attaining FSM pupils attend post-16 institutions with lower attaining intakes than their similar attaining non-FSM peers.

Figure 8 Selectivity of institution attended by KS4 decile and FSM status



At higher KS4 attainment deciles, FSM pupils tend to attend institutions with more pupils compared to non-FSM pupils (Figure 9). However, the pattern is reversed at lower attainment deciles.

Figure 9 Size of institution attended by KS4 decile and FSM status



We next try to disentangle whether FSM differences in choices made at age 16 result from differences in institutional availability or differences in choices made given the same institutional availability. We do this by running fixed effect models that estimate the chances (i.e. odds) of an outcome for pupils who live in the same MSOA and are in the same prior attainment decile.

Table 3 shows FSM pupils are more likely to have lower post-16 routes and outcomes than non-FSM pupils with similar levels of prior attainment and who face the same post-16 institutional choice sets because they live in the same area.

In this cohort, 9% of FSM students drop-out of the education system at age 16 compared to 16% of non-FSM students. This is, of course, largely related to GCSE attainment. But we estimate over a third of this participation gap results from differences in choices made by students with identical opportunities open to them (we calculate this by converting the estimated odds ratio of 1.34 back to an impact on participation rates).

We estimate 26% lower odds of staying on in a school sixth form, sixth form college or independent school, which accounts for about a third of the overall FSM gap in entry to a sixth form environment. We also find FSM students attend less selective institutions that are closer to home than non-FSM students with similar attainment in the same neighbourhood.

There are FSM gaps in the proportions studying at least level 2 qualifications (58% versus 78%), level 3 qualifications (40% versus 66%) and 3 A levels (47% versus 21%). We estimate that 24%, 26% and 35% of these gaps, respectively, arises from choices made by students living in the same neighbourhoods with approximately the same GCSE attainment. They also have lower odds of studying for facilitating A levels of science and maths A levels.

There are also marked FSM differences in higher education routes. Just 24% of FSM pupils attend HE versus 42% of non-FSM pupils, with over a quarter of this participation gap arising from students within the same neighbourhood with the same

GCSE attainment. We estimate that as much as half the FSM gap in Russell Group attendance (at 2% for FSM versus 10% for non-FSM) could be removed if we were able to equalise university access between pupils living in the same neighbourhoods and with similar GCSE attainment.

The findings in Table 3 suggest that the FSM differences in choices made at age 16 are not a result of differences in institutional availability (choice sets) but instead a result of differences in choices made by pupils given the same choice set and level of prior attainment.

Table 3 Post-16 routes and outcomes by social background

Effects for FSM pupils compared to non-FSM pupils on…	OR/beta	s.e.	Number of pupils	Number of groups with variation
Dropping out post-16	**1.34**	0.02	619,253	32,265
Staying on in a sixth form	**0.74**	0.01	619,253	32,265
Distance to institution (km)	**-0.95**	0.09	540,906	29,655
Selectivity of institution (mean GCSE grade)	**-0.15**	0.00	541,074	29,658
Cohort size	**9.42**	1.83	541,094	29,659
Studying at least level 2	**0.77**	0.01	619,253	32,265
Studying at least level 3	**0.74**	0.01	619,253	32,265
Studying at least level 3 academic	**0.68**	0.01	619,253	32,265
Studying 2+ facilitating A-levels	**0.71**	0.01	619,253	32,265
Studying 1+ SEM A-levels	**0.75**	0.01	619,253	32,265
Attending HE	**0.81**	0.01	619,253	32,265
Attending a Russell Group HEI	**0.53**	0.02	619,253	32,265
Studying a SEM degree	**0.78**	0.01	619,253	32,265

Understanding differences in post-16 choices by gender

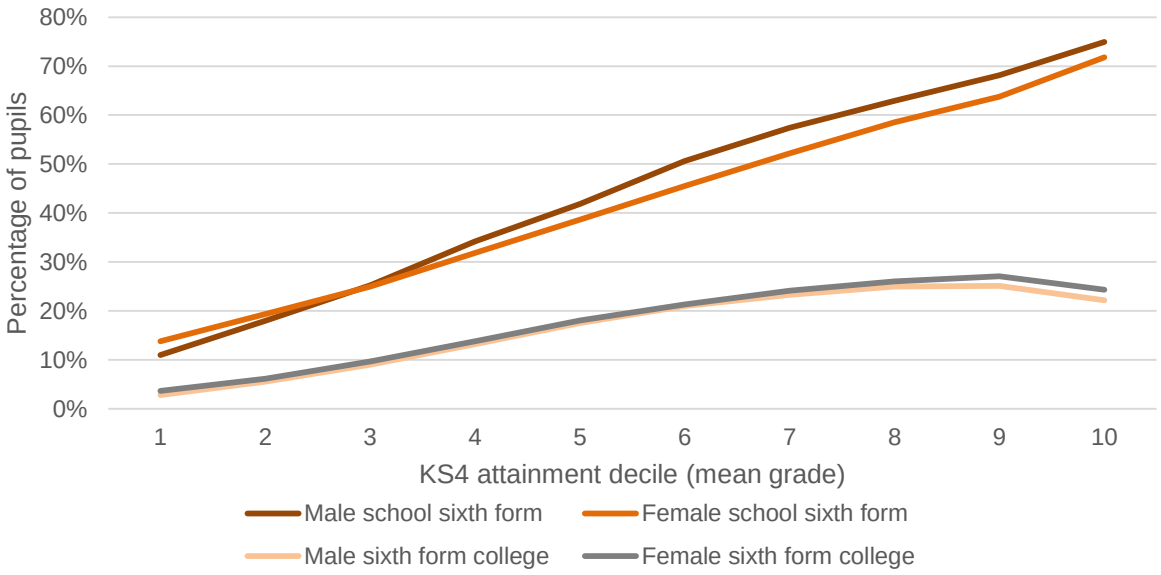
The choice sets faced by male and female students are almost identical, as can be seen in Table 4.

Table 4 Institutional characteristics of choice sets by gender

	Female		Male	
	Mean	**S.D**	**Mean**	**S.D.**
Number of institutions	8.46	3.70	8.46	3.69
% sixth form colleges	13.62	14.56	13.60	14.55
% school sixth forms	43.13	22.43	43.17	22.45
% attending most popular institution	31.16	13.38	31.19	13.38
Intake diversity	0.88	0.19	0.88	0.19

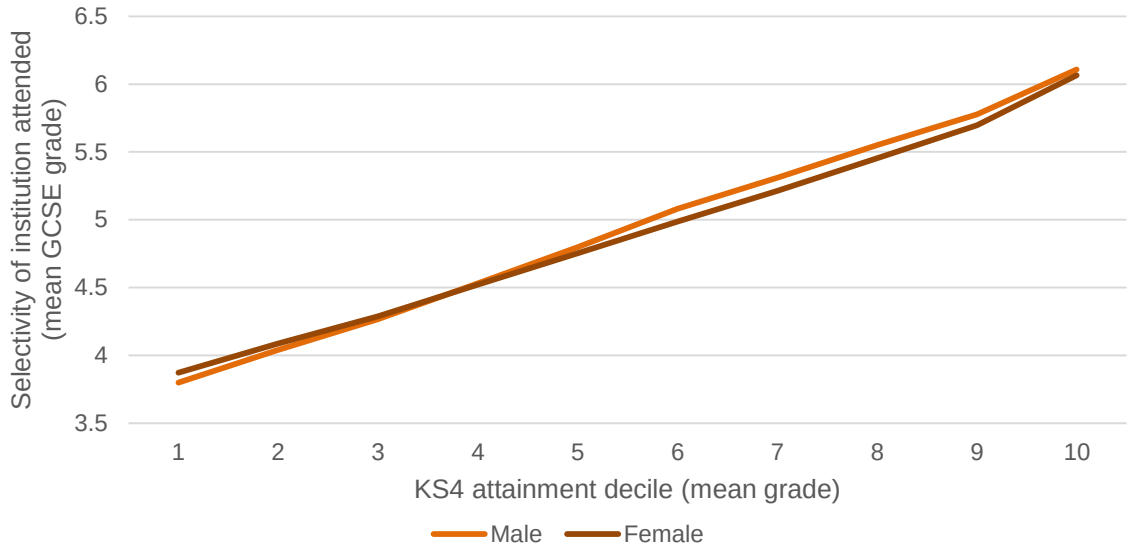
Figure 10 shows us that males and females both attend school sixth forms in increasing proportions as their GCSE attainment increases. However, greater proportions of males attend school sixth forms across all ten attainment deciles, and the attendance gap widens as attainment increases. Very similar proportions of males and females attend sixth form colleges across all deciles up until the eighth decile, after which more females attend than males.

Figure 10 Post-16 institutional attendance by KS4 decile and gender



Females in the bottom three attainment deciles attend institutions with slightly lower mean GCSE grades than do males (Figure 11). However, males attend more selective post-16 institutions compared to females in the fourth attainment decile and upwards.

Figure 11 Selectivity of institution attended by KS4 decile and gender



Across attainment deciles, females attend slightly larger institutions than do males (Figure 12). This is likely due to greater proportions of males attending school sixth forms across all attainment deciles – school sixth forms tend to be smaller than other types of post-16 institution.

Figure 12 Size of institution attended by KS4 decile and gender

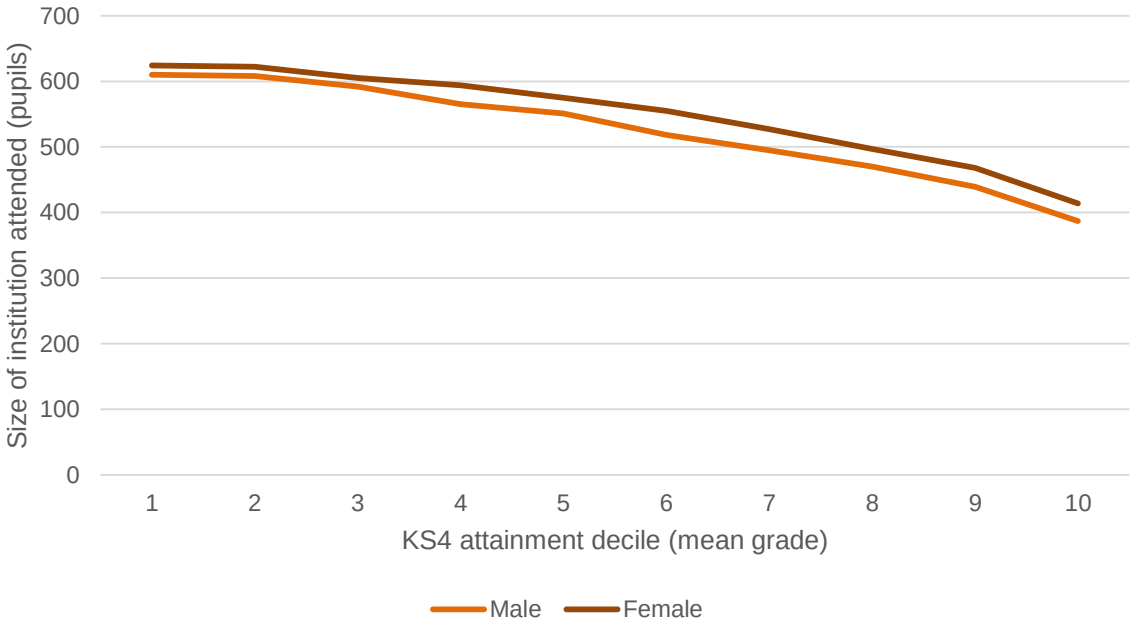
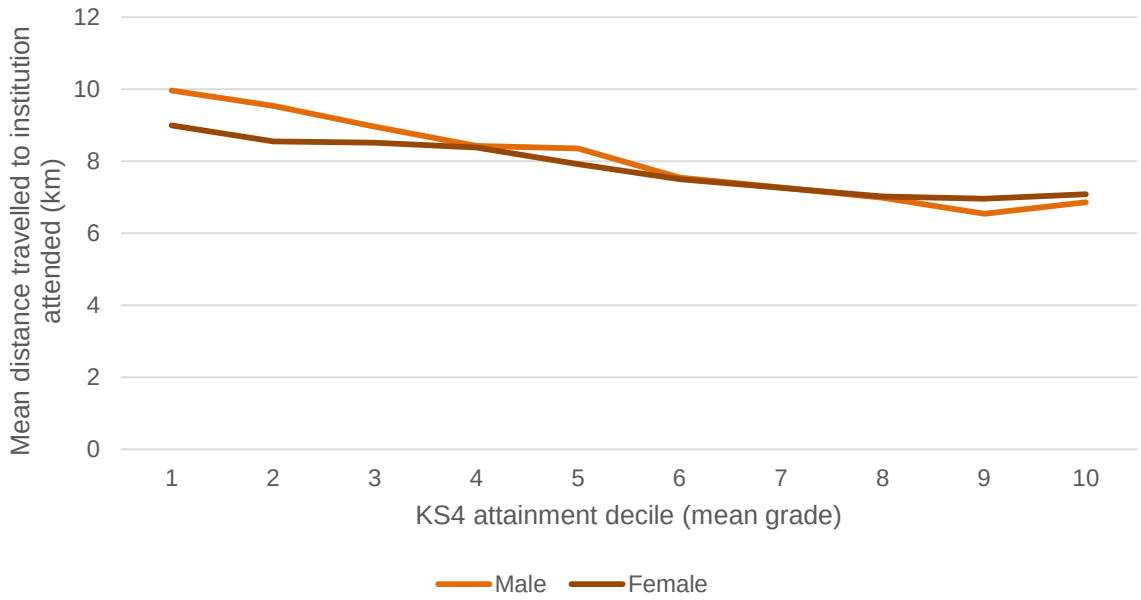


Figure 13 shows that only the highest attaining females travel further to their post-16 institutions than males. Below the eighth attainment decile, males travel further than females, with the gap in distance travelled narrowing as prior attainment increases.

Figure 13 Mean distance travelled to institution attended by KS4 decile and gender



We next try to disentangle whether gender differences in choices made at age 16 result from differences in institutional availability or differences in choices made given the same institutional availability.

Table 5 shows the effects for female pupils compared to male pupils on various post-16 routes and outcomes. Boys are more likely to drop out of education altogether at age 16 (9% versus 11%) and about half of this participation gap arises from choices by gender of students with the same GCSE attainment. Girls are more likely to attend an institution closer to home.

Girls are more likely to take at least level 2 qualifications (81% versus 70%), level 3 qualifications (68% versus 58%) and 2 or more A levels (48% versus 39%). But while differences in rates studying for at least level 2 qualifications are largely explained by choice, the differences in rates studying A levels are explained by gender differences in GCSE attainment.

Girls are more likely than boys to attend HE (44% versus 36%) both because they have higher GCSE attainment and because they have higher attendance for a given level of GCSE attainment. The latter contributes about a third of this gender gap. The pattern for elite Russell Group attendance is quite difference because, although girls are slightly more likely to attend over (10% versus 9%), they are *less* likely than boys to attend for a given level of GCSE attainment. Girls are more likely to study for a SEM degree (note that this includes psychology, medicine, nutrition and nursing).

Table 5 Post-16 routes and outcomes by gender

Effects for female pupils compared to male pupils on…	OR/beta	s.e.	Number of pupils	Number of groups with variation
Dropping out post-16	**0.86**	0.01	619,253	60,993
Staying on in a sixth form	**1.03**	0.01	619,253	60,993
Distance to institution (km)	**-0.54**	0.06	540,906	58,584
Selectivity of institution (mean GCSE grade)	0.00	0.00	541,074	58,585
Cohort size	**23.44**	1.11	541,094	58,586
Studying at least level 2	**1.66**	0.01	619,253	60,993
Studying at least level 3	**1.26**	0.01	619,253	60,993
Studying at least level 3 academic	**1.08**	0.01	619,253	60,993
Studying 2+ facilitating A-levels	**0.60**	0.01	619,253	60,993
Studying 1+ SEM A-levels	**0.50**	0.00	619,253	60,993
Attending HE	**1.12**	0.01	619,253	60,993
Attending a Russell Group HEI	**0.83**	0.01	619,253	60,993
Studying a SEM degree	**1.11**	0.01	619,253	60,993

In Table 16 in Appendix IV we report how the effects of gender vary by social background. The impact of being eligible for FSM is stronger for girls than it is for boys in terms of staying on rates, staying in a 6th form setting, travelling shorter distances to study, and studying for a level 2 or 3 qualification. However, we find no interaction between gender and social background in terms of selectivity of institution, cohort size, studying for A levels and HE attendance.

Understanding differences in post-16 choices by ethnic background

Student of different ethnic backgrounds – measured here using six broad ethnic groupings – have access to different types of institutions at age 16. Table 6 shows that White British students have the smallest choice of institutions in a choice set, and the greatest concentration of pupils attending the most popular institution. This is because ethnic minority students tend to live in urban areas, where more institutions are found as a result of greater population density, leading to greater choice and less concentration within the most popular institution. Pupils of Indian background have the greatest access to school sixth forms, whilst Black and Pakistani and Bangladeshi background pupils have the greatest access to sixth form colleges. Pupils of all ethnic groups face choice sets with a similar amount of intake diversity.

Table 6 Institutional characteristics of choice sets by ethnicity

	Black		Indian		Other ethnicity		Pakistani /Bangladeshi		White British		White Other	
	Mean	S.D	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.
Number of institutions	12.62	4.74	11.01	4.51	9.77	4.41	10.78	4.31	7.86	3.16	9.87	4.38
% sixth form colleges	14.31	10.71	12.01	12.41	13.62	13.82	14.27	12.20	13.58	14.96	13.67	13.99
% school sixth forms	46.87	18.29	48.65	20.93	47.37	22.13	44.44	21.49	42.20	22.70	46.71	21.78
% attending most popular institution	20.17	10.10	27.49	12.34	27.42	13.48	26.92	12.06	32.63	13.21	26.61	12.93
Intake diversity	0.93	0.16	0.93	0.16	0.90	0.19	0.88	0.19	0.88	0.19	0.91	0.19

Figure 14 below shows increasing proportions of pupils attending school sixth forms for higher KS4 attainment deciles, with the rate of increase varying across ethnic groups. The Indian group has the greatest percentage of pupils selecting school sixth forms, whilst the White British group tends to be amongst the lowest across attainment deciles. The Pakistani-Bangladeshi group is notable for the stall in school sixth form attendance by its members between the 5th and 6th attainment deciles.

Figure 14 School sixth form attendance by KS4 decile and ethnicity

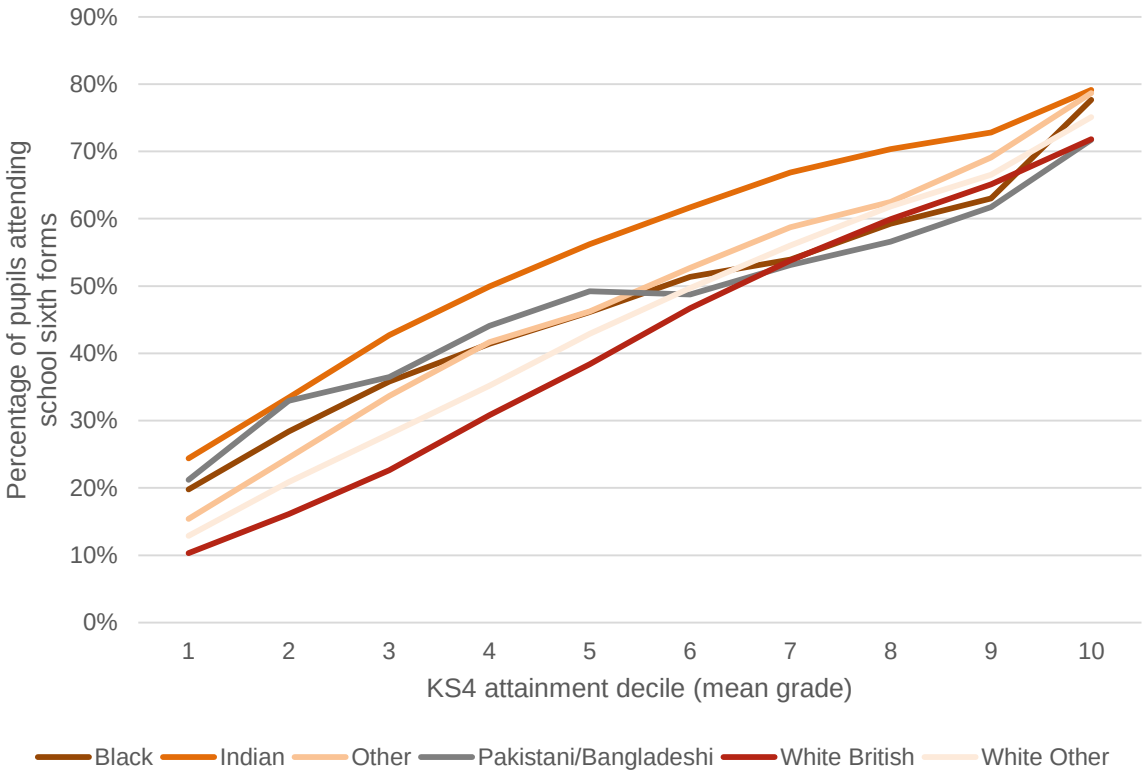


Figure 15 below shows the proportion of pupils attending sixth form colleges by KS4 attainment decile and ethnicity. The lower percentage of Pakistani and Bangladeshi pupils choosing school sixth forms is partly explained by the higher rate of attendance of this group at sixth form colleges.

Figure 15 Sixth form college attendance by KS4 decile and ethnicity

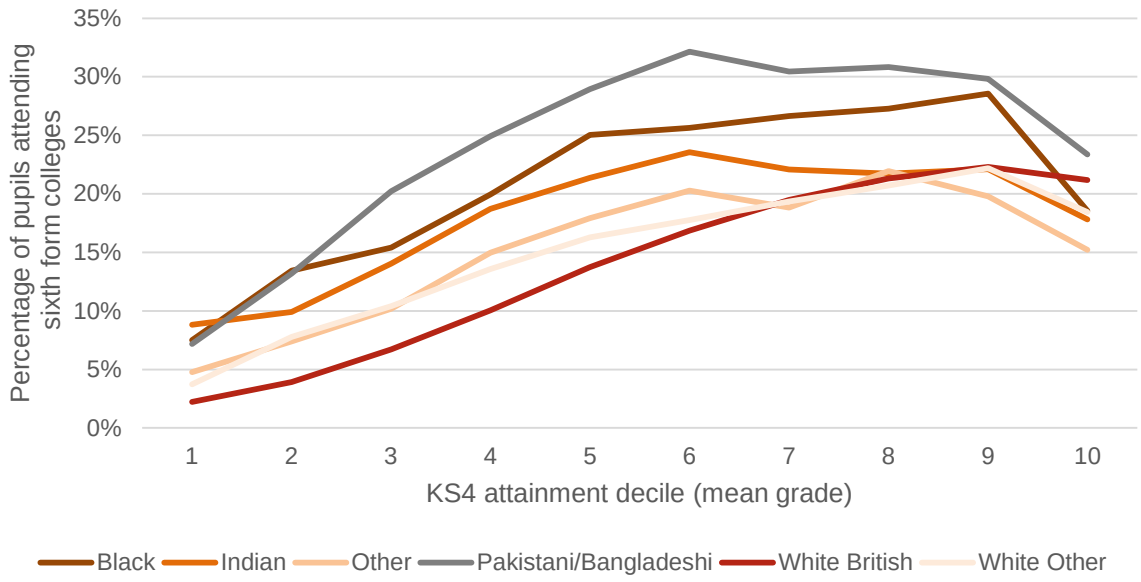


Figure 16 shows that Indian pupils tend to attend slightly more selective institutions across all KS4 deciles, whilst higher attaining Black, White British, Pakistani and Bangladeshi pupils tend to attend less selective institutions.

Figure 16 Selectivity of institution attended by KS4 decile and ethnicity

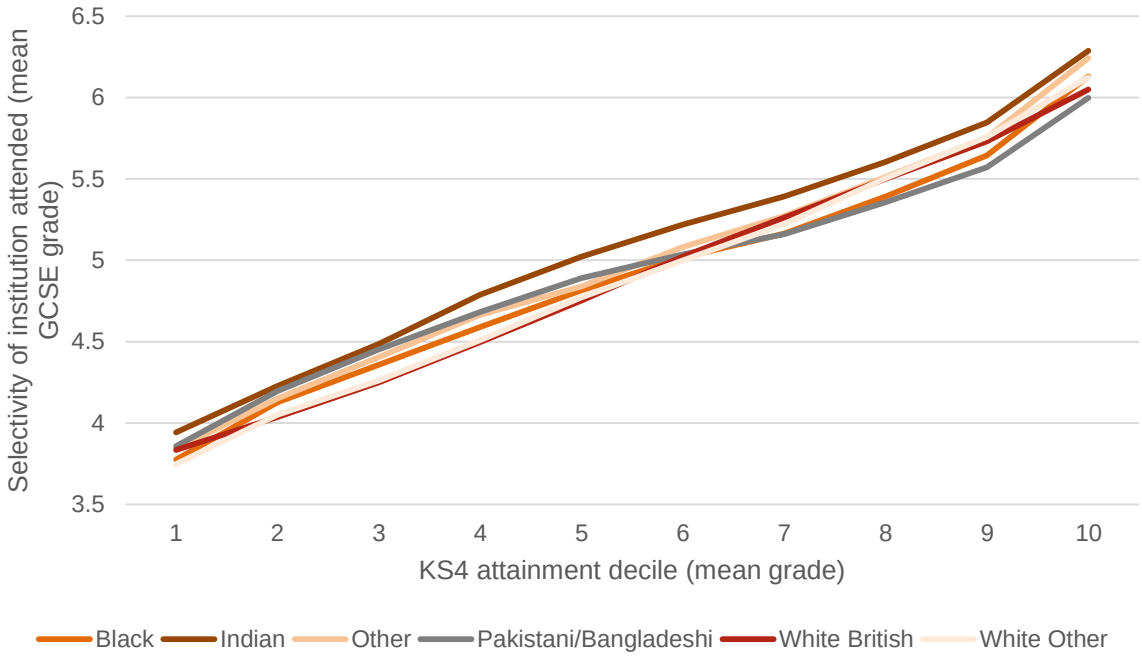
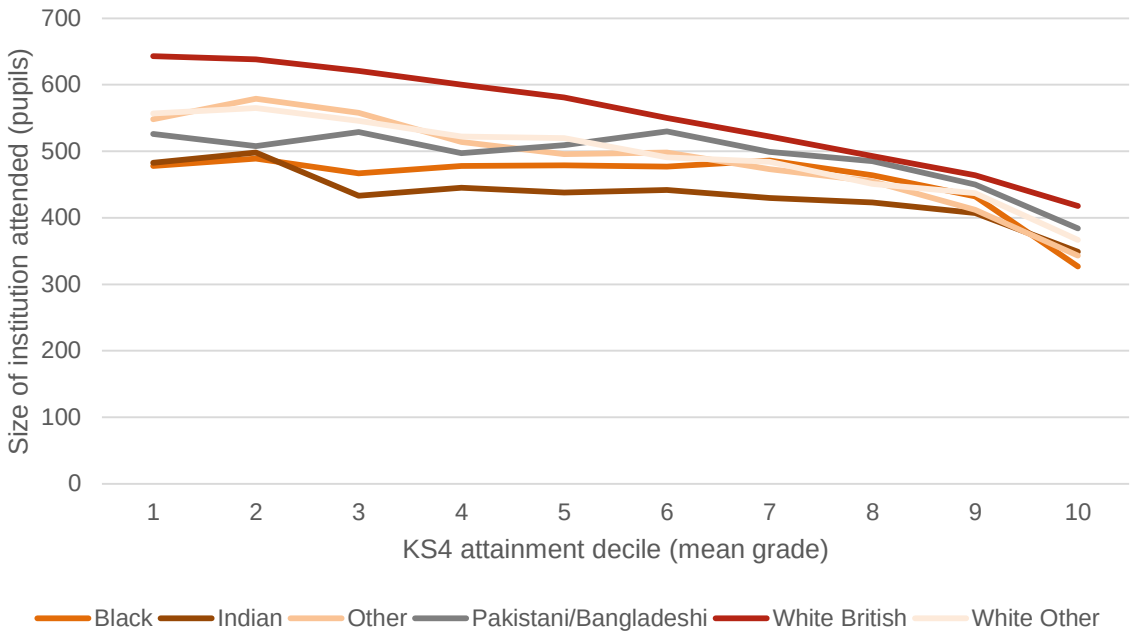


Figure 17 shows that White British pupils tend to attend much larger institutions than students from other ethnic backgrounds, particularly at lower KS4 attainment deciles. This is likely due to greater proportions of White British students attending further education colleges, which tend to be larger than sixth form colleges or school sixth forms, than pupils of other ethnic backgrounds.

Figure 17 Size of institution attended by KS4 decile and ethnicity



We next try to disentangle whether ethnic differences in choices made at age 16 result from differences in institutional availability or differences in choices made given the same institutional availability.

Table 7 shows the chances of a post-16 outcome occurring for each ethnic minority group compared to White British pupils, by comparing those living in the same MSOA and with the same KS4 attainment decile. In general, ethnic minority pupils experience better post-16 routes and outcomes than White British pupils in similar circumstances, although the size of the difference varies according to the outcome and the ethnic minority group under consideration.

Ethnic minority groups are more likely to drop out than are the White British population (for whom 10% leave). This rate is the smallest for the Indian group at just 3%, both because they are higher attaining at GCSE and because they make different choices compared to White British students living in the same neighbourhoods with similar attainment. It is lower at just 7% for black students and 8% for Pakistani and Bangladeshi students, *despite* having lower GCSE attainment.

The white other and other ethnic groups are more similar to the White British group, most likely because these categorisations mask wide variation in educational choices. Nevertheless, all ethnic minority groups are much more likely than the White British group to attend a school sixth form or sixth form college, even accounting for prior attainment and neighbourhood. They are also more likely to take level 2 qualifications, level 3 qualifications and 3 A levels.

All ethnic minority groups have much higher university participation: the rates for the black, Indian and Pakistani/Bangladeshi group are 57%, 72% and 53%, respectively, compared to 36% for the White British population. However, only the Indian ethnic group is markedly more likely to attend a Russell Group university, compared to White British pupils with similar GCSE attainment living in the same neighbourhoods.

Table 7 Post-16 routes and outcomes by ethnicity

Effects for ethnic minority pupils compared to White British pupils on…	OR/beta	s.e.	Number of pupils	Number of groups with variation
Dropping out post-16			601,503	32,919
Black	**0.54**	0.02		
Indian	**0.54**	0.02		
Other	1.04	0.03		
Pakistani/Bangladeshi	**0.64**	0.02		
White Other	**0.96**	0.02		
Staying on in a sixth form			601,503	32,919
Black	**1.98**	0.04		
Indian	**3.41**	0.10		
Other	**1.49**	0.03		
Pakistani/Bangladeshi	**2.59**	0.06		
White Other	**1.19**	0.02		
Distance to institution (km)			524,677	30,532
Black	**-0.51**	0.15		
Indian	**-2.66**	0.19		
Other	**0.45**	0.17		
Pakistani/Bangladeshi	**-3.14**	0.16		
White Other	-0.11	0.13		
Selectivity of institution (mean GCSE grade)			524,837	30,540
Black	**0.12**	0.01		
Indian	**0.28**	0.01		
Other	**0.10**	0.01		
Pakistani/Bangladeshi	**0.16**	0.01		
White Other	**0.03**	0.01		
Cohort size			524,857	30,544
Black	**-16.78**	3.13		
Indian	**-78.34**	3.98		
Other	**-25.05**	3.43		
Pakistani/Bangladeshi	**-55.64**	3.43		
White Other	-3.41	2.71		
Studying at least level 2			601,503	32,919
Black	**2.25**	0.06		
Indian	**2.93**	0.12		
Other	**1.22**	0.03		
Pakistani/Bangladeshi	**2.01**	0.05		
White Other	**1.26**	0.03		

Studying at least level 3			601,503	32,919
Black	**1.80**	0.04		
Indian	**2.37**	0.09		
Other	**1.12**	0.03		
Pakistani/Bangladeshi	**1.69**	0.05		
White Other	**1.13**	0.02		
Studying at least level 3 academic			601,503	32,919
Black	**1.78**	0.04		
Indian	**2.83**	0.09		
Other	**1.31**	0.03		
Pakistani/Bangladeshi	**2.12**	0.06		
White Other	**1.08**	0.02		
Studying 2+ facilitating A-levels			601,503	32,919
Black	**1.32**	0.03		
Indian	**2.16**	0.06		
Other	**1.48**	0.04		
Pakistani/Bangladeshi	**1.82**	0.05		
White Other	**1.10**	0.02		
Studying 1+ SEM A-levels			601,503	32,919
Black	**1.57**	0.04		
Indian	**3.12**	0.08		
Other	**1.80**	0.04		
Pakistani/Bangladeshi	**2.38**	0.06		
White Other	**1.08**	0.02		
Attending HE			601,503	32,919
Black	**5.66**	0.12		
Indian	**5.68**	0.16		
Other	**2.45**	0.06		
Pakistani/Bangladeshi	**4.32**	0.10		
White Other	**1.72**	0.03		
Attending a Russell Group HEI			601,503	32,919
Black	1.00	0.04		
Indian	**1.89**	0.07		
Other	**1.46**	0.05		
Pakistani/Bangladeshi	**1.34**	0.05		
White Other	**1.23**	0.04		
Studying a SEM degree			601,503	32,919
Black	**4.67**	0.10		
Indian	**5.38**	0.15		
Other	**2.23**	0.05		
Pakistani/Bangladeshi	**3.81**	0.09		
White Other	**1.60**	0.03		

It is plausible that ethnic differences in post-16 choices vary further by social background. Table 16 in Appendix IV explores whether this is the case. It shows the effects of combinations of ethnicity and social background on post-16 routes and outcomes and highlights the general trend of more negative effects of poverty on White British pupils compared to non-White British pupils. For example, White British pupils in receipt of FSM have 44% lower odds of following a level 3 academic route than similarly attaining non-FSM White British pupils living in the same MSOA. In comparison, the next largest gap is for the Black group, where FSM pupils have 23% lower odds of following a level 3 academic route compared to non-FSM Black group pupils.

Table 18 in Appendix IV explores the effects of combinations of ethnicity and gender on post-16 routes and outcomes. Girls of all ethnic groups tend to be more likely to stay on in education and follow all levels of qualifications than boys of the same ethnic groups. Notably, gender gaps are often larger for pupils in the Black group than in other groups. For example, Black females have 31% lower odds of dropping out and have 39% higher odds of attending university than similar Black males. By comparison, White females have only 14% lower odds of dropping out and 13% greater odds of attending university than similar White males. The finding of no significant difference between Black females and males in the likelihood of attending a Russell Group university is interesting, especially given that females of all other ethnic groups are significantly less likely to study at a Russell Group institution than males of the equivalent groups. The lack of a gender difference in Russell Group attending for Black pupils is likely due to the much better educational outcomes of Black females compared to similar Black males.

Findings II – Post-16 outcomes in areas with few school sixth forms

There is a great deal of variation in post-16 institutional set-ups across England. However, the causation between local demographics, institutional structures and post-16 outcomes is not clear. For example, more affluent areas are likely to have greater provision of academic post-16 study and more rural communities will have fewer post-16 choices available.

However, there are 20 places in England where we believe it is possible to argue that current demographic trends have not determined the institutional mix. These are places where there is almost no opportunity for students to attend school sixth forms because there is very little provision. This arose where local authorities decided to organise all post-16 provision into larger sixth form and further education colleges from the 1960s onwards, usually as part of comprehensive reorganisation. We map out these areas in Appendix I where it can be seen that they are distributed across the country without any obvious shared characteristics. It is slightly arbitrary whether we decide to include an area in this list, but we roughly adhere to the principle that there must be five or more contiguous MSOAs where numbers attending school sixth forms is close to zero. The list includes:

Barrow-in-Furness
Blackpool
Bury
Cambridge
Chorley South Ribble
Devon
Eastbourne
Exeter
Great Yarmouth
Hampshire
Kirklees
Lewes
Luton
Mid Cornwall
North Lincolnshire
Portsmouth
Redcar Stockton
Selby
West Cornwall
Worthing

Matching across MSOAs

These 20 areas without school sixth forms include 470 MSOAs. We match each of these MSOAs with no school sixth forms to their three most similar MSOAs elsewhere, via a propensity score match based on similarity of:

- mean GCSE grade;
- percentage of White British residents;
- population density; and
- percentage of residents employed in class I or II occupations.

MSOAs were sampled with replacement, meaning that the same control MSOAs could be matched to more than one treatment MSOA.

Table 8 shows the proportions attending a school sixth form in our ‘zero’ school sixth form areas, compared to the matched areas and compared to the country as a whole, alongside key matching characteristics. Apart from the percentage of pupils attending a school sixth form in an area (the very characteristic used to define treatment and matched areas), all other matching characteristics are very similar in treatment and matched areas. There are no significant differences between the average characteristics of the treatment areas compared to matched areas.

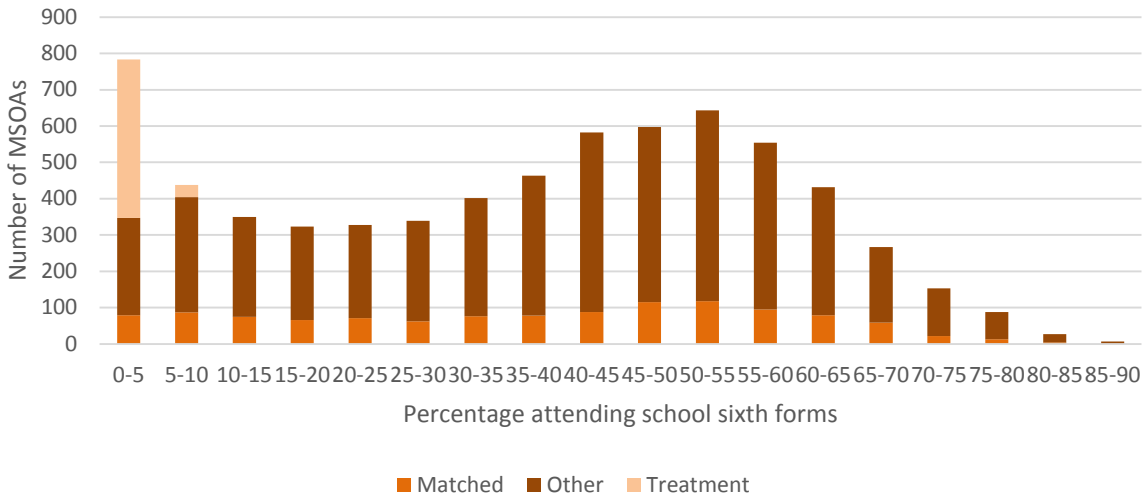
Table 8: Demographic characteristics of MSOAs in areas with no school sixth forms, compared to matched areas and England as a whole

	Treatment areas	Matched areas	Difference between treatment and matched (* indicates statistically significant difference)	England
Number of MSOAs	470	1,410	N/A	6,776
% attending a school sixth form	1.6	37.0	35.396 *	36.2
Mean GCSE grade	4.7	4.7	0.003	4.7
% UK born residents	92.0	92.5	0.006	87.7
Population density	27.0	26.3	0.656	33.1
% social class 1 and 2	26.5	26.4	0.000	27.7
% employed	65.2	65.3	0.001	64.8

Note: The 1,410 matched MSOAs include some MSOAs that were drawn and matched more than once (matching with replacement). 162 MSOAs were drawn and matched twice; 26 MSOAs were drawn and matched three times; 3 MSOAs were drawn and matched four times.

Figure 18 shows the distribution of the percentage of pupils attending school sixth forms across all MSOAs. The bars are shaded according to the type of MSOA – treatment MSOAs (those with zero school sixth forms), matched MSOAs (those with similar characteristics to the treatment MSOAs but with school sixth forms), or other MSOAs (neither treatment nor matched). The chart clearly shows that treatment MSOAs are concentrated in the left-most bars, which makes sense as areas with zero school sixth forms will typically have very low percentages of pupils attending school sixth forms. By contrast, the matched MSOAs feature throughout the distribution, indicating that the matched MSOAs are very varied in terms of the percentage of pupils attending school sixth forms, even if they are very similar along other dimensions to the treatment MSOAs.

Figure 18 Distribution of the percentage of pupils attending school sixth forms in treatment and matched MSOAs



It is important to note that the 'treatment' areas do not simply differ in the proportion of places available school sixth forms because this, in turn, affects who attends general FE colleges. Table 23 in Appendix IV shows that areas with few school sixth forms also have far larger numbers of low and middle attaining students attending general FE colleges. This is because sixth form colleges are generally more selective in their intake than school sixth forms are.

MSOA-level regressions

We run MSOA-level regressions on this sample of 1,880 MSOAs – 470 with the 'treatment' of few school sixth forms and 1,410 others. The analysis is carried out for all pupils and then repeated by prior attainment tercile.

The results are presented in Table 9. The first column of results of shows that living in an area with few school sixth forms has no overall effect on levels of post-16 participation, but it does affect the types of courses student study. There are significantly lower percentages of pupils studying at least 2 level qualifications (73.5% versus 75.5%), at least level 3 qualifications (59.9% versus 63.0%) and at least level 3 academic qualifications (40.0 versus 43.2%). Further, there are significantly lower percentages of pupils studying two or more facilitating A-levels, and also lower percentages studying one or more SEM A-levels.

The negative effects tend to follow similar patterns for each of the three GCSE attainment groups. However, low attainers experience particularly negative effects in terms of the percentage studying at least level 2 (-4.89 percentage points) and at least level 3 qualifications (-5.32 percentage points). This suggests that living in an area with school sixth forms may provide lower attaining pupils with opportunities to study rather than take up apprenticeships or below level 2 qualifications.

The largest impacts are for those in the middle prior attainment group who are much less likely to study for 3 A levels. This may be because sixth form colleges serve a smaller community of students than do school sixth forms, leaving greater numbers of middle attainers to attend general FE colleges.

Higher prior attainment students have a five percentage point lower take-up of at least 2 facilitating A-levels and lower rates studying for at least one science or maths A level. One possible explanation is that sixth form colleges are able to provide a wider range of A-levels, increasing the chances that they study less traditional subjects. We also find this higher attaining group is slightly less likely to attend higher education (2 percentage points) or a Russell Group university (1 percentage points), although this last finding may not be robust to alternative model specifications shown in Appendix VII.

Table 9 Effects of living in an area with no school sixth forms on post-16 participation by prior attainment (MSOA matching)

Effect of living in an area with no school sixth forms on the percentage of pupils…	Effect of living in treatment area (no school sixth forms)		Effect of living in treatment area (no school sixth forms)		Effect of living in treatment area (no school sixth forms)		Effect of living in treatment area (no school sixth forms)	
	All pupils		Low attainers		Middle atttainers		High attainers	
	beta	(s.e.)	beta	(s.e.)	beta	(s.e.)	beta	(s.e.)
Percent participating in post-16 education	0.27	0.21	0.57	0.52	-0.27	0.28	-0.14	0.19
Percent studying at least level 2	**-1.91**	0.28	**-4.89**	0.66	**-1.50**	0.40	**-0.67**	0.24
Percent studying at least level 3	**-2.56**	0.28	**-5.32**	0.52	**-2.88**	0.49	**-0.91**	0.27
Percent studying at least level 3 academic	**-3.08**	0.34	**-1.25**	0.19	**-5.93**	0.73	**-3.00**	0.51
Percent studying at least 2 facilitating A-levels	**-2.75**	0.26	**-0.17**	0.05	**-3.16**	0.36	**-5.51**	0.69
Percent studying at least 1 SEM A-level	**-2.24**	0.27	**-0.54**	0.11	**-3.63**	0.44	**-3.06**	0.66
Percent attending HE	-0.22	0.30	0.28	0.27	0.60	0.58	**-2.65**	0.58
Percent attending a Russell Group HEI	-0.61	0.37	0.02	0.06	0.23	0.13	**-1.13**	0.52
Percent studying for a SEM degree	-0.68	0.44	-0.03	0.13	0.39	0.34	**-1.21**	0.59

Note: N=1,880 MSOAs split into 470 treatment MSOAs and 1,410 matched MSOAs. Each model controls for the following at the MSOA-level: percentage of rented households, the percentage of socially rented households, the percentage of degree-qualified adults, percentage of unemployed adults, percentage of employed adults, percentage of full-time employed adults, percentage of UK born adults, percentage of adults belonging to social class I or II, the population density, and the population density squared. Each model also controls for following pupil characteristics at the MSOA-level: the percentage of FSM pupils, the percentage of female pupils, the percentage of White British pupils, the percentage of Black pupils, the percentage of White Other pupils, the percentage of Pakistani and Bangladeshi pupils, the percentage of Indian pupils, the percentage of pupils belonging to Other ethnic backgrounds, the percentage of SEN pupils, the percentage of EAL pupils, the percentage of pupils achieving 5 or more GCSEs at A-C grade (and a squared term), the mean number of A-A* GCSE passes (and a squared term), the mean GCSE grade (and a squared term), and the percentage of pupils attending independent schools whilst in Year 11.*

In general, it seems that living in an area with no school sixth forms has significant effects on the types of post-16 courses studied by students across the attainment distribution. It also lowers university participation for higher attainers.

In Appendix VII we show the results from an alternative matching technique that matches individual students living in no school sixth form areas to those living elsewhere in the country. The results are largely the same. This pupil matching approach allows us to report the impact on particular pupil groups. It shows that FSM pupils are generally less affected than are non-FSM pupils, which is logical since the absence of school sixth forms affects higher attaining pupils the most. It also shows

that boys are more affected than are girls, particularly with respect to the proportion studying for A levels and attending more elite universities. The numbers in minority ethnic groups who live in these areas are generally too small to estimate ethnic differences in impact.

Possible causes

We can only speculate as to why areas without school sixth forms see progression into less academic post-16 routes, on average, and also have slightly less successful higher education progression for the most able students. Historically, there have been differences in how sixth form and FE colleges are judged, compared to school sixth forms. Sixth form and FE colleges are judged on the proportion of their students who successfully complete their course, which may incentivise a more cautious approach to matching prospective students to course. By contrast, up to 2015 schools were not judged on this metric and so it is possible that schools were more likely to give students the 'benefit of the doubt' who wish to progress to A levels and other level 3 qualifications with relatively weak GCSE grades.

Another likely explanation for less academic course take-up in areas with school sixth forms is simply that school sixth forms tend to be small and so can only offer a relatively restricted academic curriculum. Such a restricted curriculum is expected to encourage participation in level 3 qualifications and 'traditional' choices that are more conducive to university participation.

These two explanations alone may be enough to explain differences in post-16 outcomes, including progression to higher education. But there are three other differences between study in schools and in other institutions that warrant consideration. Firstly, school sixth forms have smaller sized cohorts overall and many find they must operate with quite small study classes, which may benefit the students. Secondly, they may recruit a more homogenous intake to their classes, making them more straightforward to teach. It is beyond the scope of this study to analyse the ability distribution of classes within post-16 settings.

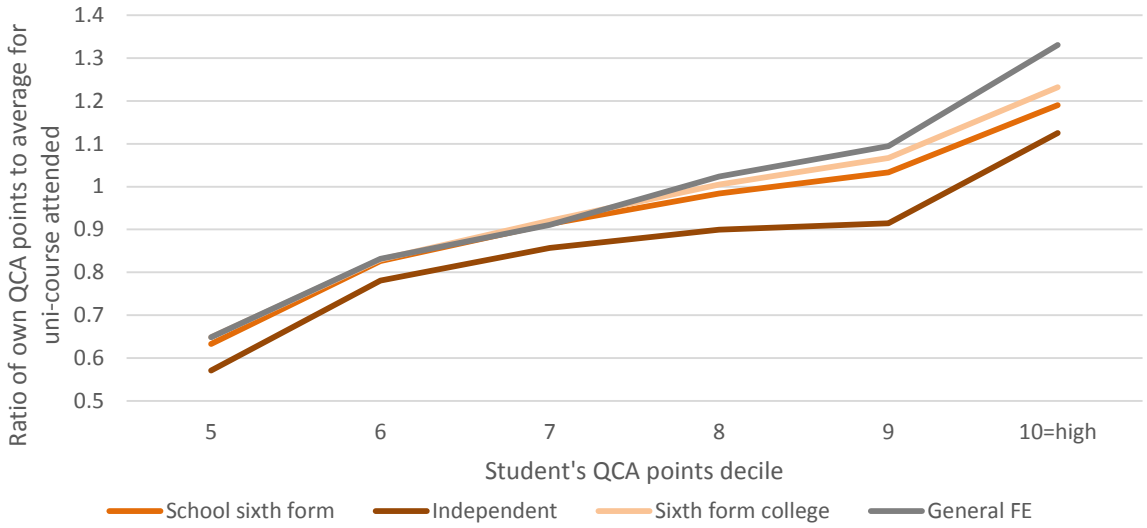
Finally, pupils who continue on to post-16 education in the same school rather than changing to another institution may benefit from the established relationships and familiar setting of their secondary school. Whilst changing institutions for post-16 education may well benefit some students, both academically and non-academically, other pupils who remain in school for sixth form may gain advantages through the consistency of educational provision and the longer "run up" to post-16 choices.

The observation that higher attaining students appear to be affected by institutional choices available to them at 16 is confirmed by evidence on university course selection. Figure 19 shows whether pupils make ambitious HE choices given their GCSE results and A-level results. Our metric of course ambition is the student's own QCA points achieved via A-levels or equivalents divided by the average QCA points for students attending the same university and course in this cohort. A value of above 1 means the student will have better A level grades than their university peers; a value below 1 means they will have lower A level grades than their peers.

We plot these average ratios for different institutional types by the Key Stage 5 (QCA point) attainment of the student (excluding the lowest attaining since so few go to university). The chart shows that students from independent schools tend to have

worse A level grades than their university course peers. One interpretation is that independent schools are successful in 'stretching' their students to achieve an ambitious course entry, given their grades. By contrast, sixth form college and general FE students tend to have slightly better QCA points than their university course peers; indeed, they might well have been able to successfully enter a more ambitious university course with the right support. In the case of general FE colleges where many non A-level subjects are taken, it is a signal that universities may value their qualifications less than the value assigned under QCA conversion. Overall we take this as evidence that school sixth forms have a better success rate at securing the best possible university place for their students.

Figure 19: 'Stretch' of university attended, as measured by ratio of own post-16 outcomes divided by the mean for university-course attended



Appendices

Appendix I – Maps of post-16 institutional availability

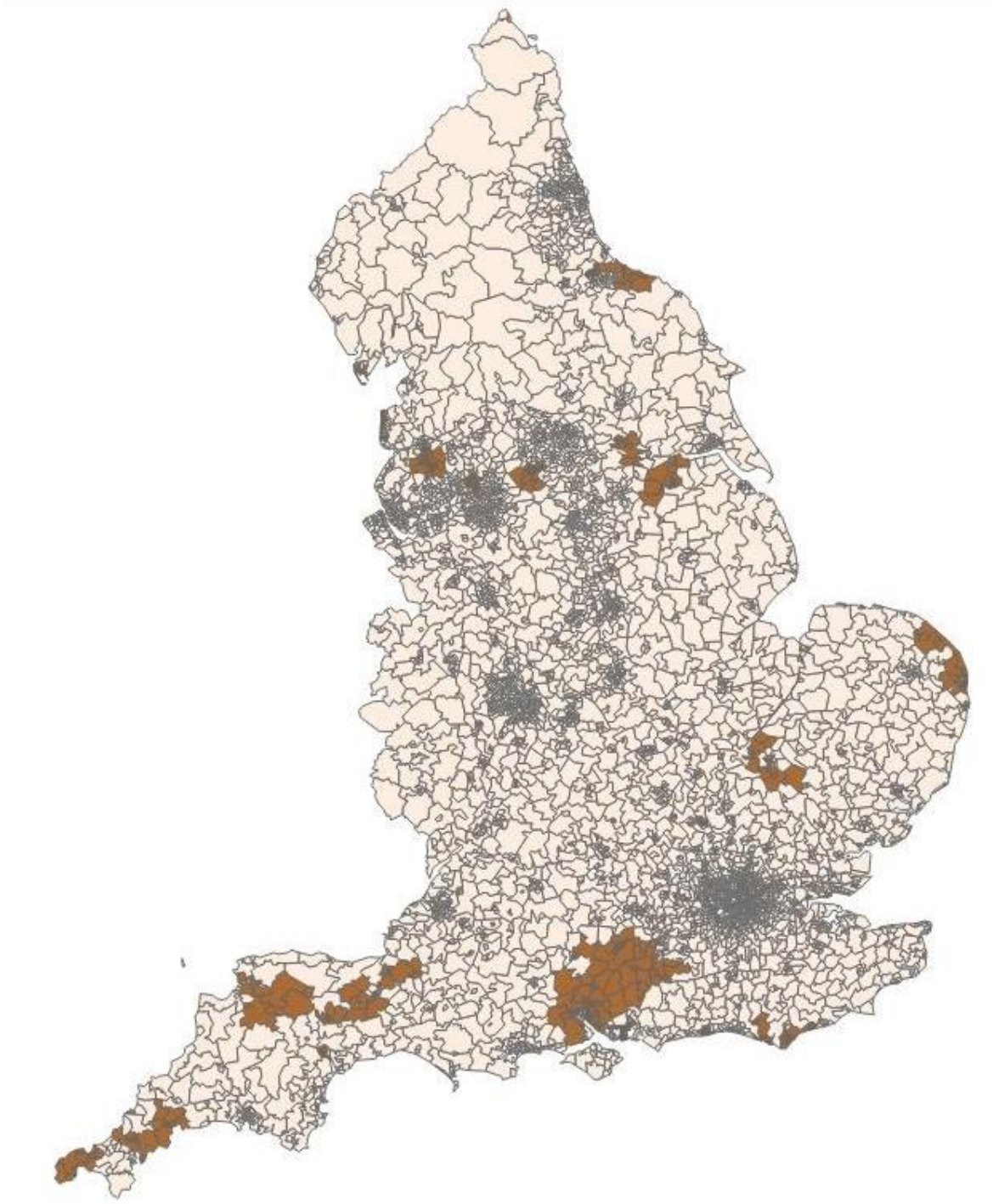


Figure 20 MSOAs with no school sixth forms

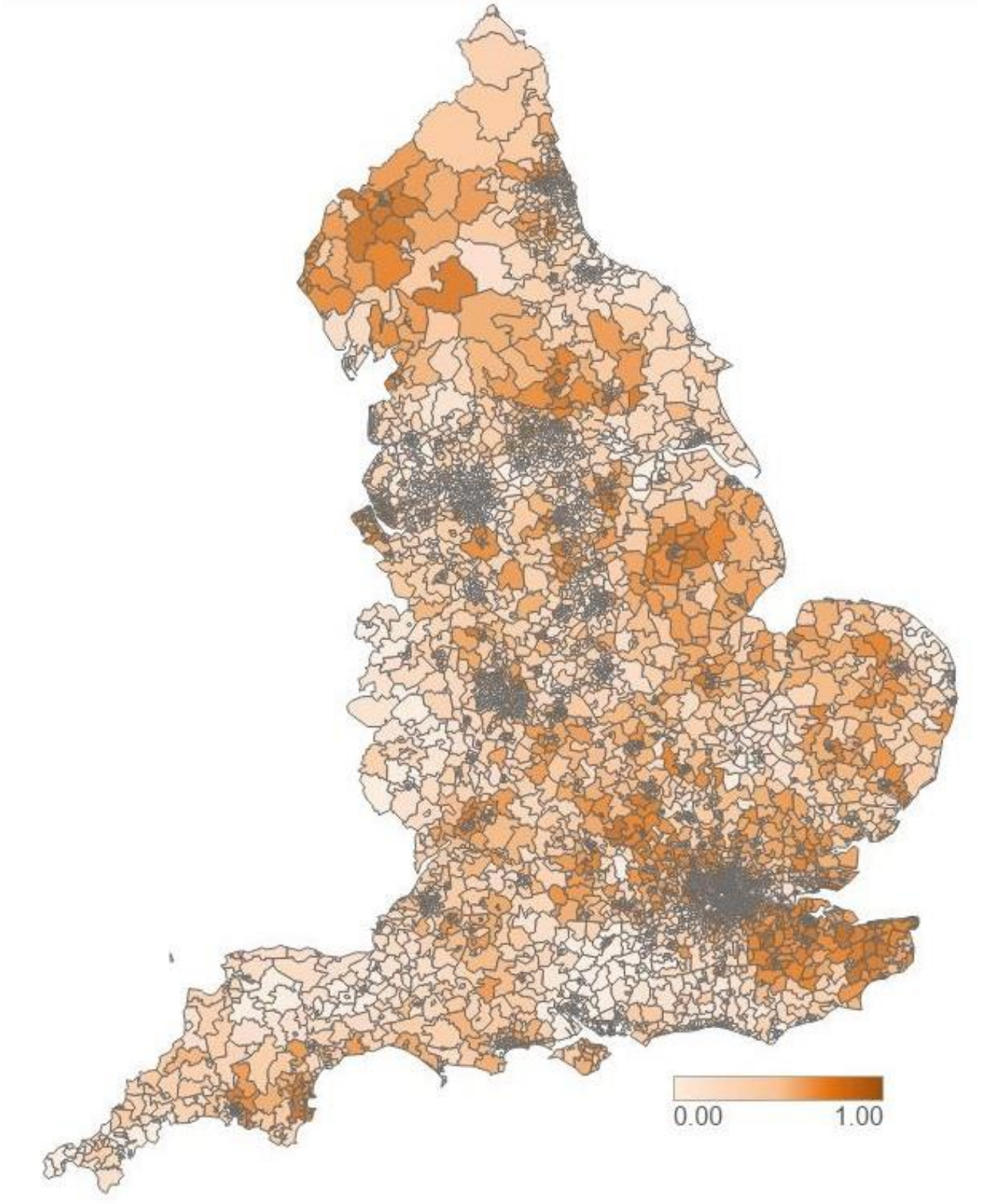


Figure 21 Proportion of school sixth forms across MSOAs

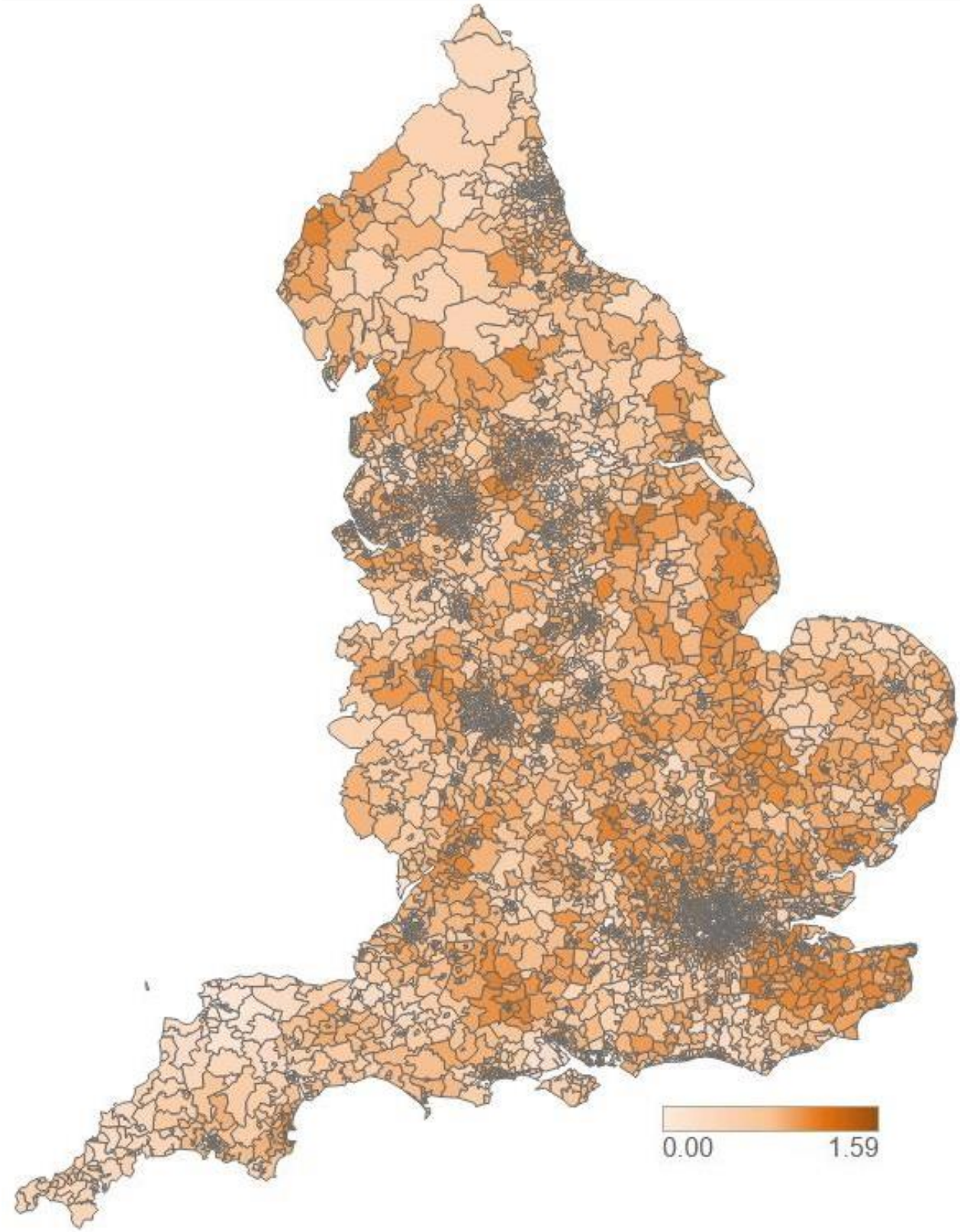


Figure 22 Diversity of intakes across MSOAs

Appendix II – Year-on-year stability of MSOA choice set indicators

Robustness checks on the year-on-year stability of our choice set measures shows that choice set measures are generally stable with a small amount of local instability. The relatively high year-on-year correlation between pairs of choice set indicators can be seen in Table 10.

Table 10 Year-on-year correlation between choice set indicators

Choice set indicator	Correlation 2010-2011
Number of pupils	0.860
% attending state-funded mainstream schools Y12	0.931
% attending sixth form colleges Y12	0.935
% attending colleges of general further education Y12	0.881
Number of Y12 schools, SFCs and GFEs with at least 1 pupil	0.881

Table 11 shows the change in number of Year 12 institutions in the choice set for each MSOA. We can see that 39% of MSOAs hardly change at all in terms of the number of Year 12 institutions within their choice sets, while there is a difference of no more than 6 institutions for 95% of MSOA choice sets.

Table 11 Change in number of Y12 schools, sixth form colleges and further education colleges with at least 1 pupil 2010-2011

		Number of MSOAs experiencing specific changes in the number of post-16 institutions					
		7+ fewer inst.	2 to 6 fewer inst.	Within 1 inst.	2 to 6 more inst.	7+ more inst.	Total MSOAs
Number of post-16 institutions with at least 1 pupil in 2010	<= 5	0	3	94	104	5	206
	6 - 10	0	304	892	774	31	2,001
	11 - 15	9	695	976	626	67	2,373
	16 - 20	35	449	407	285	30	1,206
	21 - 25	32	179	145	108	31	495
	26 - 30	29	113	82	63	26	313
	31 - 35	21	40	33	29	7	130
	36 - 40	7	19	17	12	1	56
	41 +	4	3	2	1	1	11
	Total	**137**	**1,805**	**2,648**	**2,002**	**199**	**6,791**

In terms of the type of institutions pupils are going to, we find that there is very little change in the number of sixth form colleges chosen by pupils. Instead, most of the change in the composition of choice sets is due to pupils selecting different schools and further education colleges. This can be seen in Table 12 below, which shows how the distribution of post-16 institutions changes between 2010 and 2011 for the 4,143 MOSAs which are not in the "within 1 column" in Table 11. It is clear that there is very little change in the number of sixth form colleges in choice sets between 2010 and 2011.

The 2011 pupil cohort is slightly smaller than the 2010 pupil cohort. This means that, overall, we have fewer pupils going to more institutions. This leads up to assume that there was more choice in institutions for the 2011 cohort because of the spare capacity in post-16 institutions for this year group compared to the 2010 cohort.

Table 12 Change in composition of MSOA choice sets by institution type

	Institution type		
	Schools	**Sixth form colleges**	**Further education colleges**
Number of MSOAs with:			
More institutions in choice set in 2011 than in 2010	1,168	173	1,278
Fewer institutions in choice set in 2011 than in 2010	1,010	214	1,067
One institution in 2011 of 2010 choice set	1,965	3,756	1,798
Total MSOAs	**4,143**	**4,143**	**4,143**

Appendix III – Descriptive statistics of choice set indicators, institutional choices, and post-16 outcomes by pupil prior attainment tercile

Table 13 Choice set indicators and institutional choices by prior attainment tercile

Choice set indicators and institutional choices	Low attainers	Middle attainers	High attainers	All attainers
Mean GCSE grade	2.7	4.9	6.5	4.7
Selectivity of post-16 institution	3.9	4.8	5.8	4.9
Size of post-16 institution (pupils)	591	551	425	516
Distance to post-16 institution (km)	9.0	7.9	6.8	7.8
Percentage attending school sixth forms	12.7	37.5	57.8	36.0
Percentage attending sixth form colleges	4.1	16.2	22.3	14.2
Percentage attending further education colleges	54.1	37.1	9.2	33.5

Table 14 Percentage of pupils achieving post-16 outcomes by prior attainment tercile

Percentage of pupils…	Low attainers	Middle attainers	High attainers	All attainers
Participating in post-16 education	78.4%	94.3%	98.0%	90.2%
Studying at least level 2	42.9%	87.2%	96.7%	75.6%
Studying at least level 3	15.1%	77.6%	96.0%	62.9%
Studying at least level 3 academic	1.9%	40.8%	88.3%	43.7%
Studying at least 2 facilitating A-levels	0.3%	9.8%	53.2%	21.1%
Studying at least 1 SEM A-level	0.9%	15.2%	54.0%	23.4%
Attending HE	6.4%	34.5%	78.2%	39.7%
Attending a Russell Group HEI	6.3%	33.2%	51.4%	30.3%
Studying for a SEM degree	2.9%	19.3%	41.3%	21.2%

Appendix IV – Post-16 route and outcomes – interacting combinations of pupil characteristics

Table 15 Post-16 routes and outcomes – interacting social background with prior attainment

	OR/beta	s.e.	Lower bound	Upper bound	Number of pupils	Number of groups with variation
Dropping out post-16					619253	6134
OR Low FSM to non-FSM	**1.08**	0.08	1.05	1.11		
OR Middle FSM to non-FSM	**1.21**	0.19	1.14	1.28		
OR High FSM to non-FSM	**1.20**	0.18	1.05	1.37		
Staying on in a sixth form					619253	6134
OR Low FSM to non-FSM	**0.91**	-0.10	0.88	0.93		
OR Middle FSM to non-FSM	**0.82**	-0.20	0.80	0.84		
OR High FSM to non-FSM	**0.63**	-0.46	0.60	0.67		
Distance to institution (km)					540906	12565
Beta Low non-FSM	**9.76**	0.08	9.62	9.91		
Beta Middle non-FSM	**8.47**	0.06	8.34	8.59		
Beta High non-FSM	**8.44**	0.07	8.31	8.57		
Beta Low FSM	**8.69**	0.12	8.45	8.93		
Beta Middle FSM	**7.44**	0.15	7.14	7.74		
Beta High FSM	**6.74**	0.22	6.31	7.18		
Selectivity of institution (mean GCSE grade)					541074	12568
Beta Low non-FSM	**4.07**	0.00	4.06	4.08		
Beta Middle non-FSM	**4.86**	0.00	4.86	4.87		
Beta High non-FSM	**5.60**	0.00	5.60	5.61		
Beta Low FSM	**3.97**	0.01	3.96	3.98		
Beta Middle FSM	**4.71**	0.01	4.70	4.72		
Beta High FSM	**5.35**	0.01	5.33	5.36		
Cohort size					541094	12568
Beta Low non-FSM	**579.43**	2.21	575.10	583.76		
Beta Middle non-FSM	**534.10**	1.90	530.38	537.82		
Beta High non-FSM	**456.66**	2.05	452.63	460.68		
Beta Low FSM	**567.78**	2.99	561.92	573.65		

Beta Middle FSM	**540.07**	3.35	533.51	546.64		
Beta High FSM	**505.77**	4.73	496.50	515.04		
Studying at least level 2					619253	6134
OR Low FSM to non-FSM	**0.82**	-0.20	0.81	0.84		
OR Middle FSM to non-FSM	**0.91**	-0.09	0.88	0.95		
OR High FSM to non-FSM	1.06	0.06	0.94	1.20		
Studying at least level 3					619253	6134
OR Low FSM to non-FSM	**0.76**	-0.27	0.74	0.78		
OR Middle FSM to non-FSM	**0.81**	-0.21	0.79	0.84		
OR High FSM to non-FSM	1.04	0.04	0.94	1.16		
Studying at least level 3 academic					619253	6134
OR Low FSM to non-FSM	**0.56**	-0.58	0.51	0.61		
OR Middle FSM to non-FSM	**0.79**	-0.24	0.77	0.81		
OR High FSM to non-FSM	**0.78**	-0.25	0.73	0.82		
Studying 2+ facilitating A-levels					619253	6134
OR Low FSM to non-FSM	**0.71**	-0.34	0.57	0.89		
OR Middle FSM to non-FSM	**0.85**	-0.17	0.80	0.89		
OR High FSM to non-FSM	0.99	-0.01	0.95	1.04		
Studying 1+ SEM A-levels						
OR Low FSM to non-FSM	**0.81**	-0.21	0.72	0.91		
OR Middle FSM to non-FSM	**0.91**	-0.09	0.88	0.95		
OR High FSM to non-FSM	**1.14**	0.13	1.09	1.19		
QCA points					409152	10782
Beta Low non-FSM	**421.36**	1.47	418.48	424.24		
Beta Middle non-FSM	**572.16**	0.90	570.40	573.92		
Beta High non-FSM	**843.14**	0.88	841.42	844.86		
Beta Low FSM	**402.15**	2.76	396.75	407.55		
Beta Middle FSM	**551.57**	2.11	547.44	555.70		
Beta High FSM	**792.76**	2.80	787.27	798.26		
Attending HE					619253	6134
OR Low FSM to non-FSM	1.00	0.00	0.96	1.04		

OR Middle FSM to non-FSM	**1.07**	0.07	1.04	1.11		
OR High FSM to non-FSM	**0.88**	-0.12	0.84	0.93		
Attending a Russell Group HEI					619253	6134
OR Low FSM to non-FSM	**0.58**	-0.54	0.44	0.78		
OR Middle FSM to non-FSM	1.03	0.03	0.92	1.17		
OR High FSM to non-FSM	**0.70**	-0.36	0.66	0.74		
Studying a SEM degree					619253	6134
OR Low FSM to non-FSM	0.98	-0.02	0.92	1.04		
OR Middle FSM to non-FSM	**1.06**	0.05	1.02	1.09		
OR High FSM to non-FSM	**0.86**	-0.15	0.82	0.91		

Table 16 Post-16 routes and outcomes – interacting gender with social background

	OR/beta	s.e.	Lower bound	Upper bound	Number of pupils	Number of groups with variation
Dropping out post-16					619253	30937
OR FSM female to FSM male	**0.93**	-0.07	0.90	0.97		
OR non-FSM female to non-FSM male	**0.84**	-0.18	0.82	0.85		
OR female FSM to female non-FSM	**1.43**	0.36	1.39	1.48		
OR male FSM to male non-FSM	**1.29**	0.25	1.25	1.33		
Staying on in a sixth form					619253	30937
OR FSM female to FSM male	**1.11**	0.10	1.07	1.14		
OR non-FSM female to non-FSM male	**1.02**	0.02	1.01	1.03		
OR female FSM to female non-FSM	**0.77**	-0.26	0.75	0.79		
OR male FSM to male non-FSM	**0.71**	-0.34	0.69	0.73		
Distance to institution (km)					540906	28000
Beta non-FSM male	**9.07**	0.05	8.97	9.17		
Beta non-FSM female	**8.56**	0.05	8.46	8.66		
Beta FSM male	**8.21**	0.12	7.98	8.45		
Beta FSM female	**7.53**	0.12	7.30	7.77		
Selectivity of institution (mean GCSE grade)					541074	28003
Beta non-FSM male	**4.86**	0.00	4.85	4.87		
Beta non-FSM female	**4.86**	0.00	4.85	4.86		
Beta FSM male	**4.68**	0.01	4.67	4.69		
Beta FSM female	**4.72**	0.01	4.71	4.74		
Cohort size					541094	28004
Beta non-FSM male	**509.17**	1.50	506.24	512.11		
Beta non-FSM female	**533.94**	1.51	530.98	536.89		
Beta FSM male	**523.84**	2.65	518.65	529.04		
Beta FSM female	**536.52**	2.65	531.33	541.71		
Studying at least level 2					619253	30937

OR FSM female to FSM male	**1.56**	0.01	1.52	1.61		
OR non-FSM female to non-FSM male	**1.70**	0.01	1.67	1.72		
OR female FSM to female non-FSM	**0.72**	0.01	0.70	0.73		
OR male FSM to male non-FSM	**0.78**	0.01	0.76	0.80		
Studying at least level 3					619253	30937
OR FSM female to FSM male	**1.16**	0.01	1.13	1.20		
OR non-FSM female to non-FSM male	**1.28**	0.01	1.27	1.30		
OR female FSM to female non-FSM	**0.69**	0.01	0.68	0.71		
OR male FSM to male non-FSM	**0.77**	0.01	0.75	0.78		
Studying at least level 3 academic					619253	30937
OR FSM female to FSM male	**1.13**	0.02	1.09	1.17		
OR non-FSM female to non-FSM male	**1.08**	0.01	1.07	1.09		
OR female FSM to female non-FSM	**0.69**	0.01	0.67	0.71		
OR male FSM to male non-FSM	**0.66**	0.01	0.64	0.68		
Studying 2+ facilitating A-levels					619253	30937
OR FSM female to FSM male	**0.68**	0.02	0.65	0.71		
OR non-FSM female to non-FSM male	**0.60**	0.01	0.59	0.60		
OR female FSM to female non-FSM	**0.77**	0.02	0.74	0.80		
OR male FSM to male non-FSM	**0.68**	0.02	0.65	0.70		
Studying 1+ SEM A-levels						
OR FSM female to FSM male	**0.59**	0.02	0.57	0.62		
OR non-FSM female to non-FSM male	**0.49**	0.01	0.49	0.50		
OR female FSM to female non-FSM	**0.85**	0.02	0.82	0.88		
OR male FSM to male non-FSM	**0.71**	0.02	0.69	0.73		

QCA points					409152	18444
Beta non-FSM male	**634.92**	1.07	632.82	637.02		
Beta non-FSM female	**655.56**	1.06	653.48	657.65		
Beta FSM male	**595.00**	2.25	590.58	599.41		
Beta FSM female	**617.20**	2.10	613.09	621.31		
Attending HE					619253	30937
OR FSM female to FSM male	**1.11**	0.02	1.07	1.15		
OR non-FSM female to non-FSM male	**1.12**	0.01	1.11	1.14		
OR female FSM to female non-FSM	**0.80**	0.01	0.78	0.82		
OR male FSM to male non-FSM	**0.81**	0.01	0.79	0.83		
Attending a Russell Group HEI					619253	30937
OR FSM female to FSM male	0.96	0.05	0.88	1.05		
OR non-FSM female to non-FSM male	**0.83**	0.01	0.81	0.84		
OR female FSM to female non-FSM	**0.57**	0.03	0.53	0.61		
OR male FSM to male non-FSM	**0.49**	0.03	0.46	0.52		
Studying a SEM degree					619253	30937
OR FSM female to FSM male	**1.11**	0.02	1.07	1.16		
OR non-FSM female to non-FSM male	**1.11**	0.01	1.10	1.13		
OR female FSM to female non-FSM	**0.78**	0.01	0.76	0.80		
OR male FSM to male non-FSM	**0.78**	0.02	0.75	0.81		

Table 17 Post-16 routes and outcomes – interacting social background with ethnicity

	OR/beta	s.e.	Lower bound	Upper bound	Number of pupils	Number of groups with variation
Dropping out post-16					601503	18632
OR Black FSM to non-FSM	**1.29**	0.25	1.16	1.43		
OR Indian FSM to non-FSM	**1.52**	0.42	1.19	1.94		
OR Other FSM to non-FSM	**0.80**	-0.23	0.71	0.90		
OR Pakistani/Bangladeshi FSM to non-FSM	1.02	0.02	0.93	1.13		
OR White Other FSM to non-FSM	**1.22**	0.20	1.11	1.33		
OR White FSM to non-FSM	**1.48**	0.39	1.44	1.52		
Staying on in a sixth form					601503	18632
OR Black FSM to non-FSM	**0.88**	-0.13	0.83	0.93		
OR Indian FSM to non-FSM	**0.61**	-0.50	0.54	0.68		
OR Other FSM to non-FSM	1.06	0.06	0.98	1.14		
OR Pakistani/Bangladeshi FSM to non-FSM	**0.83**	-0.19	0.78	0.87		
OR White Other FSM to non-FSM	0.83	-0.19	0.78	0.88		
OR White FSM to non-FSM	**0.64**	-0.45	0.63	0.65		
Distance to institution (km)					524677	16370
Beta Black non-FSM	**8.75**	0.17	8.42	9.07		
Beta Indian non-FSM	**6.32**	0.20	5.94	6.71		
Beta Other non-FSM	**9.99**	0.18	9.63	10.35		
Beta Pakistani/Bangladeshi non-FSM	**6.03**	0.18	5.68	6.39		
Beta White Other non-FSM	**8.96**	0.14	8.68	9.24		
Beta White non-FSM	**8.99**	0.04	8.91	9.08		
Beta Black FSM	**7.45**	0.26	6.95	7.96		
Beta Indian FSM	**5.66**	0.57	4.53	6.78		
Beta Other FSM	**6.65**	0.38	5.91	7.39		

Beta Pakistani/Bangladeshi FSM	**5.13**	0.25	4.63	5.62		
Beta White Other FSM	**7.96**	0.32	7.34	8.58		
Beta White FSM	**8.33**	0.11	8.12	8.54		
Selectivity of institution (mean GCSE grade)					524837	16378
Beta Black non-FSM	**4.95**	0.01	4.93	4.96		
Beta Indian non-FSM	**5.11**	0.01	5.10	5.13		
Beta Other non-FSM	**4.94**	0.01	4.93	4.96		
Beta Pakistani/Bangladeshi non-FSM	**4.99**	0.01	4.98	5.01		
Beta White Other non-FSM	**4.86**	0.01	4.85	4.87		
Beta White non-FSM	**4.83**	0.00	4.82	4.84		
Beta Black FSM	**4.83**	0.01	4.81	4.85		
Beta Indian FSM	**4.92**	0.02	4.88	4.97		
Beta Other FSM	**4.80**	0.02	4.77	4.83		
Beta Pakistani/Bangladeshi FSM	**4.87**	0.01	4.85	4.89		
Beta White Other FSM	**4.74**	0.01	4.71	4.76		
Beta White FSM	**4.65**	0.01	4.64	4.66		
Cohort size					524857	16379
Beta Black non-FSM	**510.27**	3.64	503.13	517.41		
Beta Indian non-FSM	**446.84**	4.22	438.58	455.11		
Beta Other non-FSM	**503.36**	3.88	495.76	510.97		
Beta Pakistani/Bangladeshi non-FSM	**465.69**	3.96	457.92	473.45		
Beta White Other non-FSM	**523.86**	3.08	517.82	529.89		
Beta White non-FSM	**528.23**	1.42	525.45	531.02		
Beta Black non-FSM	**520.81**	5.35	510.32	531.29		
Beta Indian non-FSM	**489.98**	11.60	467.25	512.71		
Beta Other non-FSM	**508.43**	7.72	493.31	523.55		
Beta Pakistani/Bangladeshi non-FSM	**493.75**	5.40	483.17	504.33		
Beta White Other non-FSM	**537.08**	6.51	524.33	549.84		
Beta White non-FSM	**537.02**	2.48	532.17	541.88		
Studying at least level 2					601503	18632
OR Black FSM to non-FSM	**0.87**	-0.14	0.82	0.93		
OR Indian FSM to non-FSM	**0.79**	-0.23	0.68	0.93		
OR Other FSM to non-	**1.23**	0.21	1.13	1.34		

FSM						
OR Pakistani/Bangladeshi FSM to non-FSM	0.97	-0.03	0.91	1.03		
OR White Other FSM to non-FSM	**0.84**	-0.18	0.78	0.89		
OR White FSM to non-FSM	**0.69**	-0.38	0.67	0.70		
Studying at least level 3					601503	18632
OR Black FSM to non-FSM	**0.88**	-0.12	0.84	0.93		
OR Indian FSM to non-FSM	**0.84**	-0.17	0.75	0.95		
OR Other FSM to non-FSM	1.05	0.05	0.97	1.13		
OR Pakistani/Bangladeshi FSM to non-FSM	0.97	-0.03	0.92	1.03		
OR White Other FSM to non-FSM	**0.86**	-0.15	0.81	0.92		
OR White FSM to non-FSM	**0.64**	-0.45	0.63	0.65		
Studying at least level 3 academic					601503	18632
OR Black FSM to non-FSM	**0.77**	-0.26	0.73	0.82		
OR Indian FSM to non-FSM	**0.84**	-0.18	0.75	0.94		
OR Other FSM to non-FSM	**0.91**	-0.10	0.84	0.98		
OR Pakistani/Bangladeshi FSM to non-FSM	**0.82**	-0.20	0.77	0.86		
OR White Other FSM to non-FSM	**0.78**	-0.25	0.73	0.83		
OR White FSM to non-FSM	**0.56**	-0.57	0.55	0.58		
Studying 2+ facilitating A-levels					601503	18632
OR Black FSM to non-FSM	**1.10**	0.09	1.02	1.18		
OR Indian FSM to non-FSM	**0.76**	-0.27	0.67	0.86		
OR Other FSM to non-FSM	1.09	0.09	0.99	1.19		
OR Pakistani/Bangladeshi FSM to non-FSM	**0.70**	-0.36	0.65	0.75		
OR White Other FSM to non-FSM	**0.71**	-0.34	0.65	0.79		
OR White FSM to non-FSM	**0.53**	-0.64	0.51	0.55		

Studying 1+ SEM A-levels						
OR Black FSM to non-FSM	**1.07**	0.07	1.00	1.14		
OR Indian FSM to non-FSM	**0.71**	-0.34	0.63	0.80		
OR Other FSM to non-FSM	**1.16**	0.15	1.07	1.27		
OR Pakistani/Bangladeshi FSM to non-FSM	**0.71**	-0.34	0.67	0.76		
OR White Other FSM to non-FSM	**0.83**	-0.19	0.76	0.90		
OR White FSM to non-FSM	**0.56**	-0.58	0.54	0.58		
QCA points					395711	10708
Beta Black non-FSM	**657.81**	2.57	652.76	662.85		
Beta Indian non-FSM	**693.58**	2.80	688.10	699.07		
Beta Other non-FSM	**672.63**	2.73	667.28	677.97		
Beta Pakistani/Bangladeshi non-FSM	**653.45**	2.77	648.02	658.88		
Beta White Other non-FSM	**661.37**	2.20	657.05	665.68		
Beta White non-FSM	**640.04**	1.03	638.03	642.05		
Beta Black FSM	**635.49**	3.97	627.70	643.28		
Beta Indian FSM	**680.90**	8.20	664.83	696.97		
Beta Other FSM	**632.76**	5.82	621.34	644.17		
Beta Pakistani/Bangladeshi FSM	**640.07**	3.98	632.26	647.88		
Beta White Other FSM	**624.72**	5.34	614.27	635.18		
Beta White FSM	**584.61**	2.16	580.39	588.84		
Attending HE					601503	18632
OR Black FSM to non-FSM	1.02	0.02	0.97	1.08		
OR Indian FSM to non-FSM	**0.67**	-0.40	0.60	0.75		
OR Other FSM to non-FSM	**1.31**	0.27	1.21	1.41		
OR Pakistani/Bangladeshi FSM to non-FSM	**0.87**	-0.14	0.82	0.92		
OR White Other FSM to non-FSM	0.95	-0.05	0.89	1.02		
OR White FSM to non-FSM	**0.56**	-0.58	0.55	0.58		
Attending a Russell Group HEI					601503	18632
OR Black FSM to non-	**0.70**	-0.35	0.61	0.81		

FSM						
OR Indian FSM to non-FSM	**0.77**	-0.26	0.63	0.94		
OR Other FSM to non-FSM	**0.73**	-0.31	0.63	0.84		
OR Pakistani/Bangladeshi FSM to non-FSM	**0.84**	-0.18	0.75	0.94		
OR White Other FSM to non-FSM	**0.49**	-0.72	0.41	0.57		
OR White FSM to non-FSM	**0.35**	-1.05	0.32	0.38		
Studying a SEM degree					601503	18632
OR Black FSM to non-FSM	0.97	-0.03	0.91	1.03		
OR Indian FSM to non-FSM	**0.69**	-0.37	0.61	0.79		
OR Other FSM to non-FSM	**1.26**	0.23	1.15	1.38		
OR Pakistani/Bangladeshi FSM to non-FSM	**0.87**	-0.14	0.81	0.92		
OR White Other FSM to non-FSM	0.92	-0.08	0.85	1.00		
OR White FSM to non-FSM	**0.54**	-0.63	0.52	0.55		

Table 18 Post-16 routes and outcomes – interacting gender with ethnicity

	OR/beta	s.e.	Lower bound	Upper bound	Number of pupils	Number of groups with variation
Dropping out post-16					601503	31471
OR Black female to male	**0.69**	-0.38	0.62	0.76		
OR Indian female to male	1.01	0.01	0.85	1.22		
OR Other female to male	**0.86**	-0.15	0.78	0.95		
OR Pakistani/Bangladeshi female to male	0.99	-0.01	0.90	1.08		
OR White Other female to male	**0.89**	-0.12	0.82	0.96		
OR White female to male	**0.86**	-0.16	0.84	0.87		
Staying on in a sixth form					601503	31471
OR Black female to male	**1.19**	0.17	1.13	1.25		
OR Indian female to male	**1.22**	0.20	1.13	1.32		
OR Other female to male	0.98	-0.02	0.92	1.04		
OR Pakistani/Bangladeshi female to male	**1.42**	0.35	1.34	1.49		
OR White Other female to male	0.96	-0.04	0.92	1.01		
OR White female to male	**1.01**	0.01	1.00	1.02		
Distance to institution (km)					524677	28857
Beta Black male	**8.65**	0.20	8.26	9.04		
Beta Indian male	**6.39**	0.25	5.90	6.89		
Beta Other male	**9.30**	0.23	8.85	9.75		
Beta Pakistani/Bangladeshi male	**6.06**	0.21	5.65	6.46		
Beta White Other male	**9.06**	0.18	8.70	9.42		
Beta White male	**9.22**	0.05	9.11	9.32		
Beta Black female	**8.19**	0.19	7.81	8.57		
Beta Indian female	**6.10**	0.26	5.59	6.61		
Beta Other female	**9.43**	0.24	8.96	9.90		
Beta Pakistani/Bangladeshi female	**5.49**	0.21	5.09	5.90		
Beta White Other female	**8.55**	0.18	8.20	8.91		
Beta White female	**8.62**	0.05	8.52	8.73		
Selectivity of institution (mean GCSE grade)					524837	28865
Beta Black male	**4.90**	0.01	4.89	4.92		

Beta Indian male	**5.09**	0.01	5.07	5.11		
Beta Other male	**4.91**	0.01	4.89	4.93		
Beta Pakistani/Bangladeshi male	**4.96**	0.01	4.94	4.98		
Beta White Other male	**4.84**	0.01	4.82	4.86		
Beta White male	**4.81**	0.00	4.81	4.82		
Beta Black female	**4.95**	0.01	4.93	4.97		
Beta Indian female	**5.10**	0.01	5.08	5.12		
Beta Other female	**4.92**	0.01	4.90	4.94		
Beta Pakistani/Bangladeshi female	**4.98**	0.01	4.96	4.99		
Beta White Other female	**4.84**	0.01	4.83	4.86		
Beta White female	**4.81**	0.00	4.80	4.82		
Cohort size					524857	28869
Beta Black male	**501.37**	4.25	493.04	509.71		
Beta Indian male	**454.12**	5.26	443.80	464.44		
Beta Other male	**495.86**	4.76	486.53	505.18		
Beta Pakistani/Bangladeshi male	**499.58**	4.45	490.87	508.29		
Beta White Other male	**512.82**	3.86	505.25	520.38		
Beta White male	**515.31**	1.53	512.31	518.32		
Beta Black female	**522.91**	4.15	514.78	531.05		
Beta Indian female	**447.93**	5.45	437.25	458.61		
Beta Other female	**513.47**	4.90	503.86	523.08		
Beta Pakistani/Bangladeshi female	**447.17**	4.48	438.39	455.95		
Beta White Other female	**538.85**	3.81	531.37	546.32		
Beta White female	**543.68**	1.54	540.66	546.70		
Studying at least level 2					601503	31471
OR Black female to male	**1.68**	0.52	1.57	1.80		
OR Indian female to male	**1.35**	0.30	1.20	1.52		
OR Other female to male	**1.31**	0.27	1.22	1.41		
OR Pakistani/Bangladeshi female to male	**1.25**	0.22	1.17	1.33		
OR White Other female to male	**1.49**	0.40	1.41	1.57		
OR White female to male	**1.74**	0.55	1.72	1.76		

Studying at least level 3					601503	31471
OR Black female to male	**1.32**	0.28	1.25	1.39		
OR Indian female to male	**1.23**	0.20	1.12	1.34		
OR Other female to male	**1.07**	0.07	1.01	1.14		
OR Pakistani/Bangladeshi female to male	0.98	-0.02	0.93	1.03		
OR White Other female to male	**1.12**	0.11	1.06	1.17		
OR White female to male	**1.30**	0.26	1.28	1.32		
Studying at least level 3 academic					601503	31471
OR Black female to male	**1.37**	0.32	1.30	1.44		
OR Indian female to male	**1.27**	0.24	1.18	1.36		
OR Other female to male	0.97	-0.03	0.91	1.02		
OR Pakistani/Bangladeshi female to male	**1.13**	0.12	1.08	1.19		
OR White Other female to male	**1.09**	0.08	1.04	1.14		
OR White female to male	**1.07**	0.07	1.06	1.08		
Studying 2+ facilitating A-levels					601503	31471
OR Black female to male	**0.84**	-0.18	0.78	0.89		
OR Indian female to male	**0.71**	-0.35	0.66	0.75		
OR Other female to male	**0.65**	-0.43	0.61	0.70		
OR Pakistani/Bangladeshi female to male	**0.69**	-0.37	0.65	0.73		
OR White Other female to male	**0.67**	-0.40	0.63	0.71		
OR White female to male	**0.57**	-0.55	0.57	0.58		
Studying 1+ SEM A-levels						
OR Black female to male	**0.66**	-0.42	0.62	0.70		
OR Indian female to male	**0.54**	-0.61	0.51	0.58		
OR Other female to male	**0.57**	-0.56	0.54	0.61		
OR Pakistani/Bangladeshi female to male	**0.56**	-0.58	0.53	0.59		
OR White Other female to male	**0.47**	-0.75	0.45	0.50		
OR White female to male	**0.48**	-0.73	0.48	0.49		
QCA points					395711	22645
Beta Black male	**636.63**	3.15	630.46	642.79		
Beta Indian male	**688.85**	3.54	681.91	695.79		
Beta Other male	**662.59**	3.47	655.79	669.40		
Beta Pakistani/Bangladeshi male	**642.84**	3.23	636.51	649.18		

Beta White Other male	**644.15**	2.89	638.48	649.81		
Beta White male	**624.25**	1.13	622.04	626.47		
Beta Black female	**668.33**	2.89	662.67	673.99		
Beta Indian female	**695.96**	3.57	688.95	702.96		
Beta Other female	**668.87**	3.39	662.23	675.51		
Beta Pakistani/Bangladeshi female	**659.30**	3.11	653.20	665.40		
Beta White Other female	**667.36**	2.70	662.07	672.66		
Beta White female	**645.68**	1.12	643.49	647.87		
Attending HE					601503	31471
OR Black female to male	**1.39**	0.33	1.33	1.47		
OR Indian female to male	**1.24**	0.21	1.15	1.33		
OR Other female to male	**1.08**	0.07	1.01	1.14		
OR Pakistani/Bangladeshi female to male	**0.85**	-0.16	0.81	0.90		
OR White Other female to male	**1.17**	0.16	1.12	1.23		
OR White female to male	**1.13**	0.12	1.12	1.14		
Attending a Russell Group HEI					601503	31471
OR Black female to male	1.06	0.06	0.95	1.18		
OR Indian female to male	**0.62**	-0.48	0.56	0.67		
OR Other female to male	**0.63**	-0.47	0.57	0.68		
OR Pakistani/Bangladeshi female to male	**0.82**	-0.19	0.75	0.91		
OR White Other female to male	**0.85**	-0.16	0.79	0.92		
OR White female to male	**0.85**	-0.16	0.83	0.87		
Studying a SEM degree					601503	31471
OR Black female to male	**1.31**	0.27	1.24	1.39		
OR Indian female to male	**1.21**	0.19	1.11	1.31		
OR Other female to male	1.05	0.05	0.98	1.13		
OR Pakistani/Bangladeshi female to male	**0.88**	-0.13	0.82	0.93		
OR White Other female to male	**1.14**	0.13	1.07	1.20		
OR White female to male	**1.12**	0.11	1.10	1.14		

Appendix V – Post-16 routes and outcomes in London

Table 19 Post-16 routes and outcomes in London – interacting gender and ethnicity

	OR/beta	s.e.	Lower bound	Upper bound	Number of pupils	Number of groups with variation
Dropping out post-16					76285	6813
OR Black female to male	**0.64**	-0.44	0.54	0.76		
OR Indian female to male	0.82	-0.20	0.66	1.02		
OR Other female to male	**0.83**	-0.18	0.75	0.93		
OR Pakistani/Bangladeshi female to male	**0.77**	-0.26	0.69	0.86		
OR White Other female to male	**0.85**	-0.16	0.78	0.93		
OR White female to male	**0.84**	-0.17	0.82	0.86		
Staying on in a sixth form					76285	6813
OR Black female to male	**1.18**	0.17	1.09	1.29		
OR Indian female to male	**1.39**	0.33	1.27	1.53		
OR Other female to male	**1.10**	0.09	1.02	1.18		
OR Pakistani/Bangladeshi female to male	**1.71**	0.54	1.61	1.81		
OR White Other female to male	1.01	0.01	0.95	1.07		
OR White female to male	**1.02**	0.02	1.01	1.03		
Distance to institution (km)					68991	6434
Beta Black male	**6.96**	0.23	6.51	7.42		
Beta Indian male	**4.69**	0.39	3.92	5.46		
Beta Other male	**6.62**	0.35	5.93	7.31		
Beta Pakistani/Bangladeshi male	**5.07**	0.36	4.37	5.77		
Beta White Other male	**6.90**	0.29	6.33	7.47		
Beta White male	**7.73**	0.17	7.39	8.06		
Beta Black female	**6.58**	0.22	6.14	7.02		
Beta Indian female	**4.75**	0.40	3.96	5.55		
Beta Other female	**5.71**	0.37	4.99	6.43		
Beta Pakistani/Bangladeshi female	**4.72**	0.36	4.02	5.41		
Beta White Other female	**6.17**	0.29	5.60	6.73		
Beta White female	**7.90**	0.17	7.56	8.24		
Selectivity of institution (mean GCSE grade)					68991	6434
Beta Black male	**4.88**	0.01	4.85	4.91		

Beta Indian male	**5.04**	0.02	5.01	5.08		
Beta Other male	**4.92**	0.02	4.88	4.95		
Beta Pakistani/Bangladeshi male	**4.86**	0.02	4.82	4.89		
Beta White Other male	**4.82**	0.02	4.79	4.86		
Beta White male	**4.87**	0.01	4.84	4.89		
Beta Black female	**4.93**	0.01	4.90	4.95		
Beta Indian female	**5.09**	0.02	5.05	5.13		
Beta Other female	**4.92**	0.02	4.89	4.96		
Beta Pakistani/Bangladeshi female	**4.92**	0.02	4.89	4.96		
Beta White Other female	**4.85**	0.02	4.82	4.88		
Beta White female	**4.88**	0.01	4.85	4.90		
Cohort size					68994	6435
Beta Black male	**408.56**	4.83	399.10	418.03		
Beta Indian male	**331.71**	7.83	316.36	347.06		
Beta Other male	**381.97**	7.03	368.18	395.75		
Beta Pakistani/Bangladeshi male	**412.96**	7.20	398.86	427.07		
Beta White Other male	**406.30**	5.87	394.80	417.80		
Beta White male	**377.78**	3.73	370.47	385.09		
Beta Black female	**426.42**	4.67	417.27	435.57		
Beta Indian female	**319.24**	8.09	303.40	335.09		
Beta Other female	**385.24**	7.33	370.87	399.61		
Beta Pakistani/Bangladeshi female	**363.32**	7.16	349.27	377.36		
Beta White Other female	**416.55**	5.78	405.22	427.88		
Beta White female	**395.92**	3.78	388.51	403.33		
Studying at least level 2					76285	6813
OR Black female to male	**1.70**	0.53	1.53	1.89		
OR Indian female to male	**1.79**	0.58	1.55	2.06		
OR Other female to male	**1.33**	0.29	1.23	1.45		
OR Pakistani/Bangladeshi female to male	**1.74**	0.56	1.62	1.87		
OR White Other female to male	**1.50**	0.41	1.41	1.60		
OR White female to male	**1.67**	0.51	1.65	1.69		
Studying at least level 3					76285	6813
OR Black female to male	**1.21**	0.19	1.11	1.32		
OR Indian female to male	**1.30**	0.26	1.17	1.44		
OR Other female to male	**1.11**	0.10	1.03	1.19		
OR Pakistani/Bangladeshi female to male	**1.22**	0.20	1.15	1.30		
OR White Other female to male	**1.12**	0.12	1.06	1.19		
OR White female to male	**1.24**	0.21	1.22	1.25		

Studying at least level 3 academic					76285	6813
OR Black female to male	**1.40**	0.34	1.29	1.53		
OR Indian female to male	**1.34**	0.29	1.23	1.46		
OR Other female to male	0.97	-0.03	0.91	1.05		
OR Pakistani/Bangladeshi female to male	**1.35**	0.30	1.27	1.43		
OR White Other female to male	1.02	0.02	0.96	1.08		
OR White female to male	**1.06**	0.06	1.05	1.07		
Studying 2+ facilitating A-levels					76285	6813
OR Black female to male	**0.88**	-0.12	0.79	0.99		
OR Indian female to male	**0.77**	-0.26	0.71	0.84		
OR Other female to male	**0.73**	-0.31	0.67	0.80		
OR Pakistani/Bangladeshi female to male	**0.81**	-0.21	0.75	0.87		
OR White Other female to male	**0.77**	-0.27	0.71	0.82		
OR White female to male	**0.68**	-0.39	0.67	0.69		
Studying 1+ SEM A-levels						
OR Black female to male	**0.67**	-0.40	0.61	0.74		
OR Indian female to male	**0.57**	-0.57	0.52	0.62		
OR Other female to male	**0.62**	-0.47	0.57	0.67		
OR Pakistani/Bangladeshi female to male	**0.57**	-0.56	0.53	0.61		
OR White Other female to male	**0.46**	-0.77	0.43	0.50		
OR White female to male	**0.51**	-0.68	0.50	0.52		
QCA points					54415	5226
Beta Black male	**615.02**	4.20	606.78	623.25		
Beta Indian male	**666.03**	6.08	654.10	677.95		
Beta Other male	**645.27**	5.79	633.93	656.62		
Beta Pakistani/Bangladeshi male	**620.63**	5.87	609.12	632.14		
Beta White Other male	**631.04**	5.05	621.14	640.93		
Beta White male	**613.56**	3.38	606.94	620.18		
Beta Black female	**647.79**	3.89	640.16	655.41		
Beta Indian female	**667.25**	6.16	655.18	679.32		
Beta Other female	**657.49**	5.78	646.16	668.83		
Beta Pakistani/Bangladeshi female	**637.73**	5.70	626.56	648.90		
Beta White Other female	**660.64**	4.74	651.34	669.94		
Beta White female	**633.82**	3.35	627.25	640.38		
Attending HE					76285	6813
OR Black female to male	**1.40**	0.34	1.29	1.52		

OR Indian female to male	**1.35**	0.30	1.23	1.47		
OR Other female to male	**1.19**	0.18	1.11	1.28		
OR Pakistani/Bangladeshi female to male	1.06	0.05	0.99	1.12		
OR White Other female to male	**1.27**	0.24	1.20	1.35		
OR White female to male	**1.09**	0.09	1.08	1.11		
Attending a Russell Group HEI					76285	6813
OR Black female to male	1.06	0.06	0.88	1.28		
OR Indian female to male	**0.68**	-0.39	0.61	0.76		
OR Other female to male	**0.54**	-0.62	0.48	0.60		
OR Pakistani/Bangladeshi female to male	**0.72**	-0.33	0.64	0.81		
OR White Other female to male	**0.84**	-0.18	0.76	0.92		
OR White female to male	**0.80**	-0.22	0.79	0.82		
Studying a SEM degree					76285	6813
OR Black female to male	**1.31**	0.27	1.19	1.45		
OR Indian female to male	**1.29**	0.26	1.17	1.43		
OR Other female to male	**1.15**	0.14	1.05	1.26		
OR Pakistani/Bangladeshi female to male	1.02	0.02	0.95	1.09		
OR White Other female to male	**1.23**	0.21	1.15	1.33		
OR White female to male	**1.06**	0.05	1.04	1.07		

Table 20 Post-16 routes and outcomes in London – interacting social background and ethnicity

	OR/beta	s.e.	Lower bound	Upper bound	Number of pupils	Number of groups with variation
Dropping out post-16					601503	18632
OR Black FSM to non-FSM	**1.29**	0.25	1.16	1.43		
OR Indian FSM to non-FSM	**1.52**	0.42	1.19	1.94		
OR Other FSM to non-FSM	**0.80**	-0.23	0.71	0.90		
OR Pakistani/Bangladeshi FSM to non-FSM	1.02	0.02	0.93	1.13		
OR White Other FSM to	**1.22**	0.20	1.11	1.33		

non-FSM						
OR White FSM to non-FSM	**1.48**	0.39	1.44	1.52		
Staying on in a sixth form					601503	18632
OR Black FSM to non-FSM	**0.88**	-0.13	0.83	0.93		
OR Indian FSM to non-FSM	**0.61**	-0.50	0.54	0.68		
OR Other FSM to non-FSM	1.06	0.06	0.98	1.14		
OR Pakistani/Bangladeshi FSM to non-FSM	**0.83**	-0.19	0.78	0.87		
OR White Other FSM to non-FSM	**0.83**	-0.19	0.78	0.88		
OR White FSM to non-FSM	**0.64**	-0.45	0.63	0.65		
Distance to institution (km)					524677	16370
Beta Black non-FSM	**8.75**	0.17	8.42	9.07		
Beta Indian non-FSM	**6.32**	0.20	5.94	6.71		
Beta Other non-FSM	**9.99**	0.18	9.63	10.35		
Beta Pakistani/Bangladeshi non-FSM	**6.03**	0.18	5.68	6.39		
Beta White Other non-FSM	**8.96**	0.14	8.68	9.24		
Beta White non-FSM	**8.99**	0.04	8.91	9.08		
Beta Black FSM	**7.45**	0.26	6.95	7.96		
Beta Indian FSM	**5.66**	0.57	4.53	6.78		
Beta Other FSM	**6.65**	0.38	5.91	7.39		
Beta Pakistani/Bangladeshi FSM	**5.13**	0.25	4.63	5.62		
Beta White Other FSM	**7.96**	0.32	7.34	8.58		
Beta White FSM	**8.33**	0.11	8.12	8.54		
Selectivity of institution (mean GCSE grade)					524837	16378
Beta Black non-FSM	**4.95**	0.01	4.93	4.96		
Beta Indian non-FSM	**5.11**	0.01	5.10	5.13		
Beta Other non-FSM	**4.94**	0.01	4.93	4.96		
Beta Pakistani/Bangladeshi non-FSM	**4.99**	0.01	4.98	5.01		
Beta White Other non-FSM	**4.86**	0.01	4.85	4.87		
Beta White non-FSM	**4.83**	0.00	4.82	4.84		

Beta Black FSM	**4.83**	0.01	4.81	4.85		
Beta Indian FSM	**4.92**	0.02	4.88	4.97		
Beta Other FSM	**4.80**	0.02	4.77	4.83		
Beta Pakistani/Bangladeshi FSM	**4.87**	0.01	4.85	4.89		
Beta White Other FSM	**4.74**	0.01	4.71	4.76		
Beta White FSM	**4.65**	0.01	4.64	4.66		
Cohort size					524857	16379
Beta Black non-FSM	**510.27**	3.64	503.13	517.41		
Beta Indian non-FSM	**446.84**	4.22	438.58	455.11		
Beta Other non-FSM	**503.36**	3.88	495.76	510.97		
Beta Pakistani/Bangladeshi non-FSM	**465.69**	3.96	457.92	473.45		
Beta White Other non-FSM	**523.86**	3.08	517.82	529.89		
Beta White non-FSM	**528.23**	1.42	525.45	531.02		
Beta Black FSM	**520.81**	5.35	510.32	531.29		
Beta Indian FSM	**489.98**	11.60	467.25	512.71		
Beta Other FSM	**508.43**	7.72	493.31	523.55		
Beta Pakistani/Bangladeshi FSM	**493.75**	5.40	483.17	504.33		
Beta White Other FSM	**537.08**	6.51	524.33	549.84		
Beta White FSM	**537.02**	2.48	532.17	541.88		
Studying at least level 2					601503	18632
OR Black FSM to non-FSM	**0.87**	-0.14	0.82	0.93		
OR Indian FSM to non-FSM	**0.79**	-0.23	0.68	0.93		
OR Other FSM to non-FSM	**1.23**	0.21	1.13	1.34		
OR Pakistani/Bangladeshi FSM to non-FSM	0.97	-0.03	0.91	1.03		
OR White Other FSM to non-FSM	**0.84**	-0.18	0.78	0.89		
OR White FSM to non-FSM	**0.69**	-0.38	0.67	0.70		

Studying at least level 3					601503	18632
OR Black FSM to non-FSM	**0.88**	-0.12	0.84	0.93		
OR Indian FSM to non-FSM	**0.84**	-0.17	0.75	0.95		
OR Other FSM to non-FSM	1.05	0.05	0.97	1.13		
OR Pakistani/Bangladeshi FSM to non-FSM	0.97	-0.03	0.92	1.03		
OR White Other FSM to non-FSM	**0.86**	-0.15	0.81	0.92		
OR White FSM to non-FSM	**0.64**	-0.45	0.63	0.65		
Studying at least level 3 academic					601503	18632
OR Black FSM to non-FSM	**0.77**	-0.26	0.73	0.82		
OR Indian FSM to non-FSM	**0.84**	-0.18	0.75	0.94		
OR Other FSM to non-FSM	**0.91**	-0.10	0.84	0.98		
OR Pakistani/Bangladeshi FSM to non-FSM	**0.82**	-0.20	0.77	0.86		
OR White Other FSM to non-FSM	**0.78**	-0.25	0.73	0.83		
OR White FSM to non-FSM	**0.56**	-0.57	0.55	0.58		
Studying 2+ facilitating A-levels					601503	18632
OR Black FSM to non-FSM	**1.10**	0.09	1.02	1.18		
OR Indian FSM to non-FSM	**0.76**	-0.27	0.67	0.86		
OR Other FSM to non-FSM	1.09	0.09	0.99	1.19		
OR Pakistani/Bangladeshi FSM to non-FSM	**0.70**	-0.36	0.65	0.75		
OR White Other FSM to non-FSM	**0.71**	-0.34	0.65	0.79		
OR White FSM to non-FSM	**0.53**	-0.64	0.51	0.55		
Studying 1+ SEM A-levels						
OR Black FSM to non-FSM	1.07	0.07	1.00	1.14		
OR Indian FSM to non-FSM	**0.71**	-0.34	0.63	0.80		
OR Other FSM to non-	**1.16**	0.15	1.07	1.27		

FSM						
OR Pakistani/Bangladeshi FSM to non-FSM	**0.71**	-0.34	0.67	0.76		
OR White Other FSM to non-FSM	**0.83**	-0.19	0.76	0.90		
OR White FSM to non-FSM	**0.56**	-0.58	0.54	0.58		
QCA points					395711	10708
Beta Black non-FSM	**657.81**	2.57	652.76	662.85		
Beta Indian non-FSM	**693.58**	2.80	688.10	699.07		
Beta Other non-FSM	**672.63**	2.73	667.28	677.97		
Beta Pakistani/Bangladeshi non-FSM	**653.45**	2.77	648.02	658.88		
Beta White Other non-FSM	**661.37**	2.20	657.05	665.68		
Beta White non-FSM	**640.04**	1.03	638.03	642.05		
Beta Black FSM	**635.49**	3.97	627.70	643.28		
Beta Indian FSM	**680.90**	8.20	664.83	696.97		
Beta Other FSM	**632.76**	5.82	621.34	644.17		
Beta Pakistani/Bangladeshi FSM	**640.07**	3.98	632.26	647.88		
Beta White Other FSM	**624.72**	5.34	614.27	635.18		
Beta White FSM	**584.61**	2.16	580.39	588.84		
Attending HE					601503	18632
OR Black FSM to non-FSM	1.02	0.02	0.97	1.08		
OR Indian FSM to non-FSM	**0.67**	-0.40	0.60	0.75		
OR Other FSM to non-FSM	**1.31**	0.27	1.21	1.41		
OR Pakistani/Bangladeshi FSM to non-FSM	**0.87**	-0.14	0.82	0.92		
OR White Other FSM to non-FSM	0.95	-0.05	0.89	1.02		
OR White FSM to non-FSM	**0.56**	-0.58	0.55	0.58		
Attending a Russell					601503	18632

Group HEI						
OR Black FSM to non-FSM	**0.70**	-0.35	0.61	0.81		
OR Indian FSM to non-FSM	**0.77**	-0.26	0.63	0.94		
OR Other FSM to non-FSM	**0.73**	-0.31	0.63	0.84		
OR Pakistani/Bangladeshi FSM to non-FSM	**0.84**	-0.18	0.75	0.94		
OR White Other FSM to non-FSM	**0.49**	-0.72	0.41	0.57		
OR White FSM to non-FSM	**0.35**	-1.05	0.32	0.38		
Studying a SEM degree					601503	18632
OR Black FSM to non-FSM	0.97	-0.03	0.91	1.03		
OR Indian FSM to non-FSM	**0.69**	-0.37	0.61	0.79		
OR Other FSM to non-FSM	**1.26**	0.23	1.15	1.38		
OR Pakistani/Bangladeshi FSM to non-FSM	**0.87**	-0.14	0.81	0.92		
OR White Other FSM to non-FSM	0.92	-0.08	0.85	1.00		
OR White FSM to non-FSM	**0.54**	-0.63	0.52	0.55		

Appendix VI – Factor analysis of MSOA characteristics

Table 21 Factor analysis of MSOA characteristics - rotated factor loadings and unique variance

MSOA characteristic	Factor 1	Factor 2	Factor 3	Uniqueness
MSOA population density	-0.13	0.91	-0.04	0.16
MSOA population density squared	-0.01	0.84	-0.02	0.30
Percentage of rented households	-0.50	0.68	-0.28	0.21
Percentage of social rented households	-0.59	0.43	-0.32	0.36
Percentage of adults with A-level 4 qualification	0.82	0.27	0.33	0.14
Percentage of unemployed adults	-0.65	0.44	-0.43	0.20
Percentage of employed adults	0.32	-0.20	0.96	-0.06
Percentage of full-time employed adults	0.28	-0.09	0.88	0.15
Percentage of UK-born adults	-0.05	-0.76	0.13	0.41
Percentage of adults belonging to social class I and II	0.86	0.08	0.29	0.17
Percentage of pupils attending grammar schools	0.29	-0.08	0.02	0.91
Mean GCSE grade	0.93	-0.13	0.21	0.07
Mean GCSE grade squared	0.94	-0.13	0.19	0.07

Appendix VII – Pupil-level matching and regressions of impact of living in an area with no school sixth forms

We perform a second matching approach to ensure the individual pupils living in these areas without school sixth forms are matched as precisely as possible to individual pupils with the same characteristics living elsewhere in England. Our matching approach uses the individual pupil and local area variables listed in Table 22. In order to simplify the matching process, a factor analysis was carried out on the MSOA-level variables. Thirteen MSOA characteristics were analysed and combined into three factors using factor analysis. These thirteen local area characteristics and their factor loadings can be seen in Table 21 in Appendix VI.

The three resulting factors, alongside the individual pupil variables, were used in the matching process. An analysis of the quality of the matching process (a balancing test) can be seen in Table 22. We can be more confident that the pupils in the treatment area sample are similar to those they are matched to in the control area sample when the bias percentage is less than five per cent and there are no significant differences in the mean values of the variables between the treatment and matched control samples. As can be seen in Table 22, the level of bias is slightly high with regards to matching on the White British characteristic. There are also various pupil and MSOA-level characteristics that vary significantly between the treatment and control samples. However, although significant, the size of the differences tends to be very small and so we are not overly concerned about these significant differences. The low level of bias seen after matching is also reassuring.

Table 22 Quality of propensity score matching of pupils in treatment and matched control areas

Variable	Treatment mean	Control mean	Significant difference between treatment mean and matched mean	% Bias	Well balanced (%bias < 5)
FSM	0.106	0.106	No	0.1	Yes
Female	0.488	0.486	No	0.5	Yes
Indian	0.006	0.009	Yes	-3.7	Yes
Other ethnicity	0.020	0.022	No	-1	Yes
Pakistani/Bangladeshi	0.024	0.026	Yes	-1.4	Yes
White Other	0.033	0.038	Yes	-2.6	Yes
White British	0.887	0.870	Yes	5.1	Marginal
Missing ethnicity	0.020	0.023	Yes	-1.9	Yes
School Action	0.128	0.128	No	0.1	Yes
School Action Plus	0.088	0.092	Yes	-1.7	Yes
Statement	0.036	0.036	No	-0.2	Yes
EAL	0.049	0.055	Yes	-2.7	Yes
Five GCSEs at A*-C	0.530	0.533	No	-0.6	Yes
Mean GCSE grade points	4.687	4.708	No	-1.2	Yes
Mean GCSE grade points squared	24.953	25.133	No	-1.2	Yes
Number of GCSEs at A-A*	1.669	1.715	Yes	-1.6	Yes
MSOA characteristics factor 1	-0.089	-0.076	No	-1.3	Yes
MSOA characteristics factor 2	-0.206	-0.203	No	-0.6	Yes
MSOA characteristics factor 3	0.178	0.163	Yes	1.3	Yes
North West	0.162	0.159	No	0.7	Yes
Yorkshire and the Humber	0.095	0.095	No	-0.2	Yes
East Midlands	No matches so excluded from the matched analysis				
West Midlands	No matches so excluded from the matched analysis				
East of England	0.105	0.104	No	0.2	Yes
London	No matches so excluded from the matched analysis				
South East	0.425	0.430	No	-1	Yes
South West	0.150	0.153	No	-0.8	Yes

When we look at the distribution of pupils across school types in treatment and matched control areas (Table 23), we can see that greater proportions of pupils across all three attainment bands attend school sixth forms in matched areas than treatment areas (as would be expected given that treatment areas are those without school sixth forms). Attendance gradients are similar in treatment and matched areas in that greater proportions of pupils attend some sort of institution as attainment increases. Given the lack of school sixth form options in treatment areas,

there are greater proportions of pupils attending sixth form colleges and FE colleges in treatment areas than matched areas.

Table 23 Distribution of low, middle and high attaining pupils across school types in treatment and matched control areas

	School sixth form		Sixth form college		FE college	
	Treatment	Matched	Treatment	Matched	Treatment	Matched
Low attainers	0.5%	12.7%	12.1%	3.4%	60.6%	54.3%
Middle attainers	1.6%	38.6%	43.8%	14.2%	45.1%	38.0%
High attainers	2.8%	60.3%	69.6%	20.0%	16.8%	9.7%

Pupil-level regressions

The tables below show the results of the pupil-level matched analysis. Each set of results estimates the effect of living in areas with no school sixth forms (treatment areas) on the likelihood of pupils achieving each of our post-16 outcomes compared to matched pupils who live in areas with school sixth forms. We first look at the results for the full matched sample before breaking the sample down according to various pupil characteristics. Table 24 shows the sample sizes for each analysis. Whilst the full pupil sample is sufficiently large, some pupil sub-samples are quite a lot smaller (such as the Black and Indian pupil samples) and so we are more cautious about the findings here, particularly when we take into account the non-random geographical concentration of ethnic groups across England.

Table 24 Sample sizes for pupil-level matched regressions

Pupil sub-group	Number of pupils	Number of MSOAs
All pupils	85,834	4,469
Low attainers	28,846	3,880
Middle attainers	28,996	4,053
High attainers	27,992	3,978
Non-FSM pupils	76,739	4,456
FSM pupils	9,095	2,406
Male pupils	44,043	4,345
Female pupils	41,791	4,311
Black pupils	971	532
Indian pupils	636	386
Other ethnicity pupils	1,819	1,032
Pakistani/Bangladeshi pupils	2,135	593
White Other	3,019	1,432
White British	75,405	4,423
Missing ethnicity pupils	1,849	1,016

The results for all attainers in Table 25 show us that pupils living in areas with no school sixth forms are significantly less likely to be studying for at least level 2 (11% lower odds), at least level 3 (13% lower odds) and at least level 3 academic (15% lower odds) qualifications. They are also less likely to be studying for at least two facilitating A-levels and at least one SEM A-level. The pattern of results is reasonably similar for low, middle and high attainers.

Table 25 Effects of living in an area with no school sixth forms on post-16 participation by prior attainment (pupil matching)

Effect of living in an area with no school sixth forms on the likelihood of a pupil…	All attainers		Low attainers		Middle attainers		High attainers	
	OR	(s.e.)	OR	(s.e.)	OR	(s.e.)	OR	(s.e.)
Participating in post-16 education	1.04	0.03	**1.09**	0.04	0.93	0.05	1.00	0.10
Studying at least level 2	**0.89**	0.03	**0.85**	0.03	**0.85**	0.03	0.90	0.07
Studying at least level 3	**0.87**	0.03	**0.65**	0.03	**0.81**	0.03	**0.85**	0.06
Studying at least level 3 academic	**0.85**	0.03	**0.47**	0.05	**0.76**	0.03	**0.77**	0.04
Studying at least 2 facilitating A-levels	**0.82**	0.03	**0.42**	0.15	**0.66**	0.03	**0.83**	0.03
Studying at least 1 SEM A-level	**0.84**	0.03	**0.31**	0.06	**0.67**	0.03	**0.91**	0.03
Attending HE	0.95	0.03	0.91	0.06	1.03	0.04	**0.87**	0.03
Attending a Russell Group HEI	0.93	0.05	1.00	0.36	1.21	0.14	0.93	0.04
Studying a SEM degree	0.97	0.03	0.98	0.12	1.07	0.05	0.96	0.03

Note: Models were estimated on the following numbers of pupils: all attainers (85,834), low attainers (28,846), middle attainers (28,996), high attainers (27,992).

Turning to the effects of living in an area with no school sixth forms on demographic sub-samples of pupils, Table 26 shows there are few differences in the magnitude of the estimates for FSM and non-FSM pupils. Some of the estimates on the FSM sample are not statistically significant because the sample is so much smaller.

The findings by gender show bigger gaps for males than females. For example, males in treatment areas have 18 per cent lower odds of studying for a level 3 academic qualification than matched males in control areas, whilst females in treatment areas have only 12 per cent lower odds of following this route than are matched females. Although the pattern of findings is generally similar for males and females, one area of divergence occurs when looking at the likelihood of attending a Russell Group institution. Here, there are no significant differences between females in treatment and matched control areas, but males in treatment areas have lower odds than males in control areas of attending a Russell Group HEI. This suggests that limiting access to school sixth forms is not just to the disadvantage of males during the post-16 phase, but also in terms of access to higher status universities.

Table 26 Effects of living in an area with no school sixth forms on post-16 participation by social background and gender (pupil matching)

Effect of living in an area with no school sixth forms on the likelihood of a pupil…	Non-FSM		FSM		Males		Females	
	OR	(s.e.)	OR	(s.e.)	OR	(s.e.)	OR	(s.e.)
Participating in post-16 education	1.05	0.04	0.99	0.06	1.03	0.04	1.05	0.29
Studying at least level 2	**0.89**	0.03	**0.87**	0.05	**0.87**	0.03	**0.92**	0.09
Studying at least level 3	**0.87**	0.03	**0.82**	0.05	**0.84**	0.03	**0.90**	0.04
Studying at least level 3 academic	**0.84**	0.03	0.98	0.07	**0.82**	0.03	**0.88**	0.02
Studying at least 2 facilitating A-levels	**0.82**	0.03	0.88	0.10	**0.82**	0.03	**0.83**	0.01
Studying at least 1 SEM A-level	**0.84**	0.03	**0.79**	0.08	**0.83**	0.03	**0.85**	0.01
Attending HE	0.94	0.03	1.03	0.08	0.93	0.04	0.97	0.01
Attending a Russell Group HEI	0.93	0.05	0.84	0.16	**0.86**	0.05	1.00	0.00
Studying a SEM degree	0.98	0.03	0.88	0.10	0.98	0.04	0.97	0.00

Note: Models were estimated on the following numbers of pupils: non-FSM (76,739), FSM (9,095), males (44,043), females (41,791).

Table 27 repeats the analysis for four ethnic group sub-samples. As would be expected, the results for the White British group closely follow those for the sample of all attainers. The sub-sample of Black pupils is small (only 971), but our results indicate that this group is especially disadvantaged in terms of participation in level 3 study. Given that we do not see similar findings for the Indian sub-sample and the Pakistani/Bangladeshi sub-sample, the lack of access to school sixth forms seems particularly disadvantageous for Black pupils.

We only see positive effects of living in an area with no school sixth forms on the likelihood of attending higher education for Indian pupils and Pakistani/Bangladeshi pupils (35 per cent more likely). Interestingly, these two ethnic groupings do not experience significantly lower likelihoods of following level 2, level 3 and level 3 academic routes in treatment areas, unlike all the other sub-samples investigated here. The lack of significant differences could be because of small sample sizes, however.

Table 27 Effects of living in an area with no school sixth forms on post-16 participation by ethnicity (pupil matching)

Effect of living in an area with no school sixth forms on the likelihood of a pupil…	White British		Black		Indian		Pakistani/ Bangladeshi	
	OR	(s.e.)	OR	(s.e.)	OR	(s.e.)	OR	(s.e.)
Participating in post-16 education	1.04	0.04	1.55	0.51	3.24	2.29	0.82	0.15
Studying at least level 2	**0.89**	0.03	0.83	0.14	1.10	0.38	0.94	0.11
Studying at least level 3	**0.87**	0.03	**0.69**	0.09	1.24	0.31	1.05	0.11
Studying at least level 3 academic	**0.84**	0.03	**0.69**	0.10	1.23	0.24	1.09	0.12
Studying at least 2 facilitating A-levels	**0.82**	0.03	**0.56**	0.10	1.10	0.20	1.01	0.13
Studying at least 1 SEM A-level	**0.84**	0.03	**0.56**	0.09	1.07	0.20	1.14	0.13
Attending HE	0.95	0.03	0.99	0.14	**1.60**	0.30	**1.35**	0.13
Attending a Russell Group HEI	0.93	0.05	0.64	0.22	1.40	0.31	0.72	0.16
Studying a SEM degree	0.98	0.03	0.76	0.13	1.08	0.19	1.15	0.14

Note: Models were estimated on the following numbers of pupils: White British (75,405), Black (971), Indian (636), Pakistani/Bangladeshi (2,135).

Interpretation of the magnitude of findings

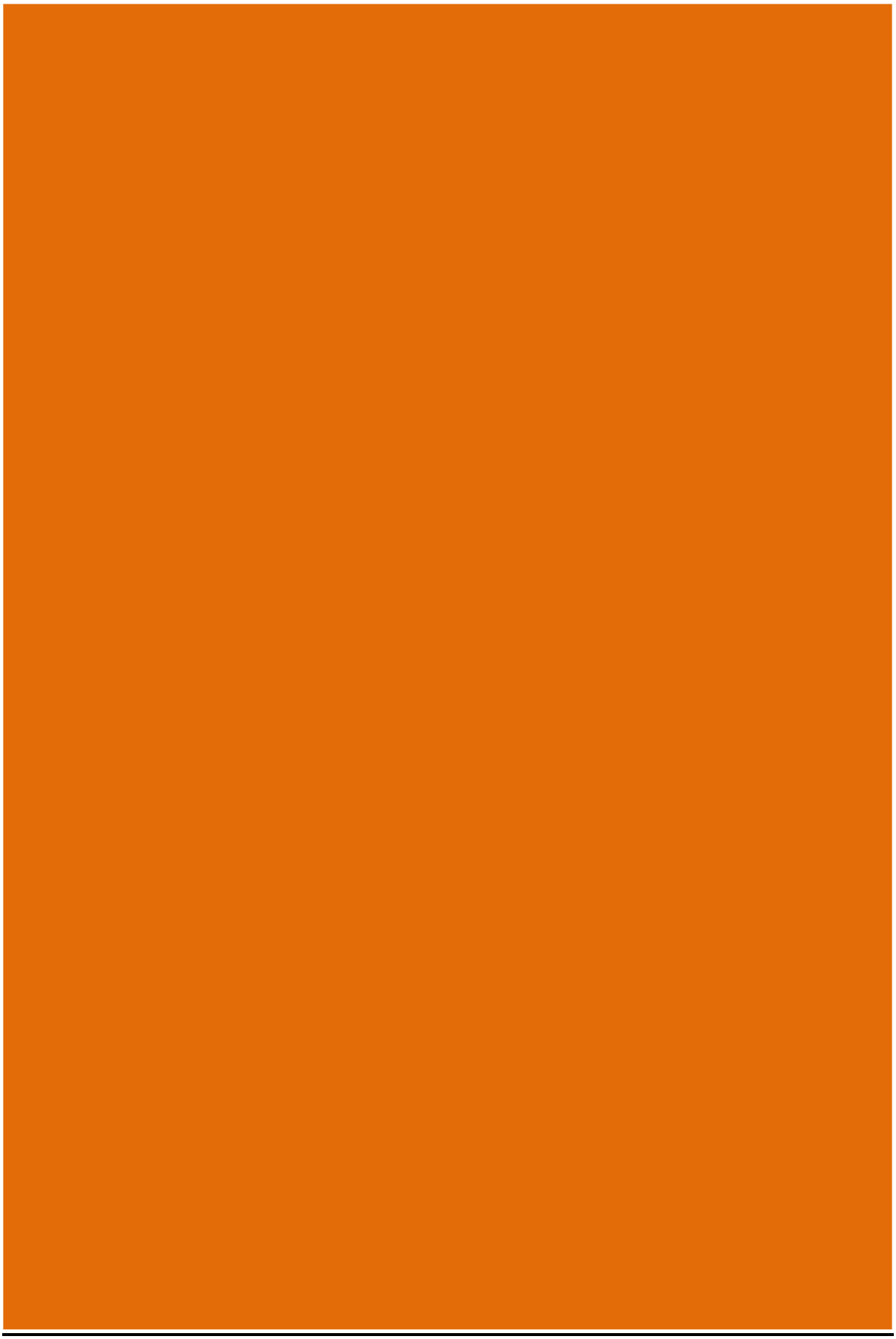
In this section we interpret the magnitude of the findings by estimating how many pupils miss out on each of our post-16 routes and outcomes because of the school sixth form provision available to them. We base our estimates on the number of pupils living in the treatment (no school sixth forms) used in our earlier analysis. We further split our estimates by pupil social background. Table 28 shows the results of our interpretation of the magnitude of the findings.

As can be seen in the analysis of all attainers, pupils tend to miss out when they live in treatment areas i.e. areas with no school sixth forms. For example, we estimate that 1,713 pupils miss out on studying for level 3 academic qualification because of a lack of school sixth form provision in their local areas, whilst 502 pupils miss out on university attendance.

Table 28 Estimated number of pupils missing out in areas with no school sixth forms

	All pupils	Non-FSM	FSM
Studying at least level 2	927	761	163
Studying at least level 3	1,422	1,220	200
Studying at least level 3 academic	1,713	1,696	
Studying at least 2 facilitating A-levels	1,279	1,247	
Studying at least 1 SEM A-level	1,263	1,181	80

Note: The "all attainers" estimates are based on a sample of 42,949 pupils in treatment (no school sixth form) areas. The non-FSM estimates are based on a sample of 38,387 pupils in treatment (no school sixth form) areas. The FSM estimates are based on a sample of 4,562 pupils in treatment (no school sixth form) areas.



Social Mobility Commission

Any enquiries regarding this publication should be sent to us at the Social Mobility Commission, Sanctuary Buildings, 20 Great Smith Street, London, SW1P 3BT.
Email: contact@smcpcommission.gsi.gov.uk

This document is also available from our website at:

www.gov.uk/government/organisations/social-mobility-commission