



Department
for Education



Which university degrees are best for intergenerational mobility?

Research report

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**Jack Britton, Elaine Drayton and Laura
van der Erve**

Institute for Fiscal Studies



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Executive Summary

Higher education is often seen as a crucial vehicle for improving intergenerational mobility. Previous research in the UK has generally looked in isolation at access to, or outcomes from, university for students coming from low-income backgrounds. Here, we put these components together to investigate the extent to which individual universities, subjects and courses (the term we use for specific subjects at specific universities, e.g. mathematics at the University of Warwick) promote intergenerational mobility.

In this report, we use the Longitudinal Education Outcomes (LEO) dataset to document mobility rates for each university, subject and course in England. Mobility rates are calculated via the following simple relationship:

$$\text{Mobility rate} = \text{Access rate} * \text{Success rate}$$

where the access rate is the share of students for each university, subject or course who are from low-income backgrounds, which we proxy using free school meal (FSM) eligibility, and the success rate is the share of those FSM students who make it to the top 20% of the earnings distribution at age 30. Because this latter measure requires people to have already turned 30, we focus our main analysis on people who attended university in the mid 2000s, although we also investigate the likely trends in mobility rates for more recent cohorts. Our key findings are as follows:

- Gaps in access are hugely variable depending on university selectivity. While low-income students are as likely to attend the least selective institutions as their wealthier peers, they are far less likely to attend the top universities: in the mid 2000s, students who attended private secondary schools were around 100 times more likely to attend Oxford or Cambridge than FSM-eligible students.
- There is also a lot of variation in access to different subjects. Pharmacology and social care have only very small gaps in access by socio-economic background, but there are large gaps in subjects such as medicine. In the mid 2000s, the privately educated were nearly 25 times more likely to study medicine than FSM-eligible students.
- The very best-performing institutions in terms of their labour market success admitted few FSM students. Similarly, the universities with the highest FSM access rates have below average success rates. However, across all universities, the correlation between access and success of -0.24 is relatively weak. Some universities do reasonably well on both metrics.
- The average mobility rate across all universities is 1.3%. This figure is well below our benchmark rate of 4.4%, the rate you would get if there were equal access to university for all income groups *and* undergraduates from all income backgrounds had the same chance of

making it into the top 20%. This means that at age 30, only 1.3 in every 100 university graduates are in the top 20% of the earnings distribution and from a low-income background, compared with a benchmark of 4.4.

- There is considerable variation around this average mobility rate. The highest-mobility institutions are often less selective and based in big cities, with London institutions especially dominant. However, only seven institutions reach or improve upon our benchmark mobility rate of 4.4%.
- The high share of FSM pupils in London, many of whom perform well at school and are from ethnic minority backgrounds, is likely to explain at least part of the high access rates of London institutions.
- Many Russell Group universities have high success rates but admit very few FSM students, leading to below-average mobility rates. Queen Mary University of London (QMUL) is a remarkable exception, performing extremely well on both metrics and topping the overall mobility rankings with a mobility rate of 6.8%.
- Adjusting earnings for cost of living differences across the country improves the mobility rates of Northern universities, and lowers those in London and the South East. It does not change the overall ranking of universities very much, however. London universities still dominate the top of the mobility distribution, and the most selective universities still perform poorly.
- We also look at the impact of adjusting for student composition, such as in terms of prior attainment. Adjusting for differences in attainment and other characteristics of FSM students across universities only reinforces the message that many low-return, low-selectivity degrees do very well in terms of mobility. The least selective institutions move up the mobility ranking, while the most selective ones move even further down. However, the overall changes from this adjustment are relatively minor.
- Law, computing and (especially) pharmacology are the best-performing subject areas, with mobility rates of 2.2%, 2.9% and 4.2%, respectively. Around 10% of their students were FSM eligible and many of them perform well in terms of labour market success.
- There are, of course, alternative ways to define mobility rates, and our estimates here are not definitive. However, our overall conclusions are robust to reasonable changes to definitions (such as how we define low-income children and how we define success).
- While some courses have no students from low-income backgrounds, others have mobility rates that exceed 10%. Computing, law and economics at London-based institutions dominate the top 20 courses when ranked on mobility rates. Arts and humanities courses generally do poorly.

- There is much variation in mobility rates within institutions - many universities are in the top 10% of the mobility rankings for some subjects and in the bottom 10% for others. There is also substantial variation within subjects, across institutions. Even for the arts courses, which do poorly overall, there are some institutions with very good mobility rates.
- There is no correlation between the estimated *returns* and mobility rates at the university level, and only a small positive correlation at the course level. Many courses that do poorly in terms of boosting earnings on average do a lot to promote mobility.
- There has been a slow but steady increase in the access rates of FSM students in the decade since our oldest cohorts entered university in the mid 2000s. This period encompasses the large higher education reforms that occurred in 2012. However, at many universities, progress over this period was negligible.
- Based on these improved access rates, we predict an increase in average mobility rates from 1.3% for cohorts at university during the mid 2000s to around 1.6% for cohorts entering university in 2018 and 2019. Thus, the improvements in access still leave us well below our benchmark mobility rate of 4.4%. There is clearly much progress still to be made, especially by the most selective universities, where access rates remain extremely low.

1 Introduction

Intergenerational mobility is often measured in terms of how well a child's later-life earnings are predicted by the earnings of their parents. A higher correlation is worse for mobility, as it implies that the rich are more likely to stay rich, while the poor are more likely to stay poor. By this metric, the UK is one of the worst performers in the OECD (Corak, 2013). This has been a long-term concern for successive UK governments, and policymakers have often seen the higher education sector - which has been expanded dramatically over the last 30 years - as a crucial vehicle for addressing the problem.

However, recent work (Belfield et al., 2018) has shown that not all degrees actually boost the earnings of students by age 30. While selective courses at high-status universities generally see high earnings returns, for a non-negligible share of arts and humanities degrees at less selective universities, earnings returns are low or even negative compared with not going to university at all. This has led to a debate over whether all parts of the sector really provide 'value for money'. In this report, we contribute a new angle to this debate - which has largely focused on the impact of degrees on average student outcomes in terms of earnings or employment - by documenting the extent to which universities, subjects and 'courses' (subject-institution combinations) promote social mobility. Specifically, we create 'mobility rates' which show the share of students in each university, subject or course who were both eligible for free school meals (FSM) *and* reach the top 20% of the income distribution at age 30.

This report contributes to a substantial literature that documents inequalities in UK higher education. At each stage of the system, from application and acceptance into university to subsequent performance and progression, previous work has found large disparities between students from low-income backgrounds and those from better-off families. Crawford et al. (2016a) highlighted that students from low-income households are much less likely to attend university than their wealthier peers and, conditional on attending, they are less likely to attend high-status universities. The authors also showed that virtually all of the attendance gaps can be explained by differences in school attainment, suggesting that improving the school outcomes of children from low-income backgrounds is likely to be crucial for equalising access to university. However, Campbell et al. (2019) found that even when we compare individuals with the same A-level attainment, there are still differences in the quality of university they attend. That is, students from lower-income backgrounds are more likely to 'undermatch' and attend less selective universities than their wealthier peers with equivalent A levels. Belfield et al. (2018) found large differences in the earnings impact of different degrees, with more selective degrees increasing earnings by more than less selective ones, implying that these differences in access to different types of degrees will matter for later-life outcomes. Other work has found that equalising access rates to university, and selective universities in particular, is an important first step, but unlikely to be sufficient to equalise outcomes between children from the most and least disadvantaged backgrounds. Even conditional on attending university, there are large gaps in performance, with lower-income students being more likely to drop out and less likely to graduate with a 'good' - that is, an upper-

second or first-class - degree (Crawford, 2014b). Finally, even after studying the same subject at the same institution, students from more disadvantaged backgrounds *still* earn less than their more affluent peers (Crawford et al., 2016a; Britton et al., 2019).

While this literature provides insight into specific issues around access and subsequent progression, data limitations have meant that existing studies have generally focused on these individual components of mobility in isolation. They have also generally focused on the sector as a whole or on aggregated groups of universities, which could mask important variation.

Instead, the most comprehensive picture on social mobility and higher education comes from recent work from the United States. Chetty et al. (2017) construct statistics on social mobility for each college in the US, focusing on the participation and labour market outcomes of students from the bottom 20% of the parental earnings distribution. A key contribution of this work is the ranking of institutions by mobility, as measured by the proportion of students who come from the bottom income quintile and move into the top earnings quintile. Importantly, they find that the elite Ivy League colleges do little to promote mobility as, despite offering high returns, these colleges admit so few low-income students. In contrast, mid-ranking institutions tend to have the largest share of mobile students as they are both accessible to low-income students and offer reasonable earnings prospects.

In this report, we exploit detailed, individual-level data from the Longitudinal Education Outcomes (LEO) dataset to estimate mobility rates for all English universities¹ and, unlike Chetty et al. (2017), individual subjects and courses. We document these estimates and then investigate how well correlated they are with estimates of average returns from Belfield et al. (2018). We also investigate how our mobility rates are affected by adjustments for where people live after leaving university and for the prior attainment and background characteristics of low-income students on different courses. Finally, we document more recent trends in access and look at the implications for mobility rates, in order to reflect the more recent actions of universities. Taken together, this work makes an important contribution to the debate about value in higher education, and may lead to more scrutiny of universities that are doing little for social mobility. Finally, it provides an evidence base upon which future work can draw to explore the key drivers of mobility.

The rest of the report is set out as follows. In Section 2, we describe the LEO dataset. Section 3 then investigates access rates and Section 4 studies labour market ‘success’ rates. We then put the access and success rates together to study mobility rates in Section 5, before looking at the effects of adjusting for cost of living and student composition in Section 6. Section 7 considers the likely implications of more recent trends in access rates for mobility rates, and finally Section 8 concludes.

¹We do not include results for individual Welsh, Northern Irish or Scottish universities in this study. This is because poor students are much less likely to cross borders within the UK and unfortunately we are not able to identify poorer students from Scotland, Wales or Northern Ireland within our dataset.

2 Data

We use the individual-level Longitudinal Education Outcomes (LEO) dataset. This is a linked administrative dataset that combines school records from the National Pupil Database (NPD), university records from the Higher Education Statistics Agency (HESA), employment and tax records from Her Majesty’s Revenue and Customs (HMRC) and benefits data from the Work and Pensions Longitudinal Study (WPLS) for residents of England. We additionally use information on the local area of people’s home address (at the Lower Layer Super Output Area level) from after leaving education. This is based on data from the Department for Work and Pensions’ (DWP) Customer Information Spine (CIS) which have been recently linked to the LEO dataset and contain individuals’ address of residence as recorded by their employers or when applying for benefits.

This dataset provides detailed, individual-level information on individuals’ background, as well as their educational and labour market outcomes, making it well suited to our purpose. The detailed university records allow us to estimate mobility rates at the institution, subject and course (institution-subject) level. The dataset includes rich prior attainment measures from school records, including test scores and subjects taken at ages 11, 16 and 18, as well as demographics such as gender and ethnicity. This extensive set of background characteristics allows us to account for selection into different university degrees, enabling us to explore how mobility rates are affected by differences in student intake. The address records allow us to check the robustness of our results to adjusting earnings for differences in living costs across the country.

These fully linked data are available for individuals who took their GCSEs in 2002 or after, or equivalently were born approximately 1 September 1985 onwards. We have earnings data up to the 2018/19 tax year. We face a challenge in balancing the desire to observe individuals’ labour market outcomes only once they are well established in the labour market (rather than immediately after leaving higher education) against the need to maintain sufficiently large sample sizes for detailed course-level analysis. Our solution to this challenge is to focus our institution- and subject-level analysis on the three oldest cohorts for which we have complete data. These individuals took their GCSEs between 2002 and 2004, and were mostly born between 1 September 1985 and 31 August 1988. We focus on their earnings at approximately age 30, which is around nine years after graduation for those who go straight to university at 18 and do a three-year degree. For the course-level results, we focus on earnings at age 28, which allows us to increase sample sizes by also including the two cohorts who took their GCSEs in 2005 or 2006. In the remainder of this section, we describe how we construct our sample for analysis, before defining our key variables.

2.1 Sample selection

Table 1 shows, for each of the cohorts we use in our main analysis, how we go from the total population of individuals taking GCSEs in England in each year to our analysis sample.

Column (1) shows that around 600,000 students take their GCSEs in England each year. For

a small number of these, we are missing crucial data from the school census that we need to construct a measure of their parental background. Column (2) shows the numbers of students having the required background data to be included in our analysis, which is around 98% of the full population from Column (1). Column (3) then shows the people who are successfully merged to the HMRC tax records. Around 7% of the sample cannot be matched to tax records. This group includes individuals with mistakes in the name or address recorded in their education or tax records and so the records could not be linked,² as well as some individuals who have never been in touch with the tax and benefit system - for example, because they have moved abroad.

Table 1: LEO sample by GCSE cohort

GCSE cohort	Population	Non-missing KS4 vars	Matched to HMRC	No UG	PT, mature, & PG-only	UG
	(1)	(2)	(3)	(4)	(5)	(6)
2001-02	589,543	580,524	534,707	321,461	32,912	180,334
2002-03	621,697	614,475	567,767	344,929	33,413	189,425
2003-04	638,242	629,207	588,820	356,942	33,320	198,558
2004-05	646,429	631,935	592,725	356,731	30,771	205,223
2005-06	648,331	636,265	602,953	356,762	28,144	218,047
Total	3,144,242	3,092,406	2,886,972	1,736,825	158,560	991,587

Columns (4)-(6) then split up the people for whom we have all the required information based on their university attainment. Column (4) shows that around 60% of the sample did not attend university within our sample period.³ We focus on the implications for social mobility of undertaking an undergraduate (UG) degree. This definition includes both students who graduate from a degree as well as those who drop out of university. We restrict to full-time students who started university by the age of 21, in order to ensure that individuals have had a reasonable number of years in the labour market after graduating by the end of our sample period. Though our focus is on undergraduates, part of the return to taking an undergraduate degree is the opportunity to pursue postgraduate (PG) study; therefore this group also includes students who go on to do a postgraduate degree. Column (5) shows the number of individuals who attended university but are excluded from our analysis as they do not meet one of these criteria. This includes people studying part-time (PT) and individuals who started university as a mature student.⁴ Column (6) then shows our main analysis sample, which consists of around 200,000 students in each cohort. For our university- and subject-level analysis, which uses the three oldest cohorts, our analysis

²The linkage between the different datasets was done using National Insurance numbers or, where unavailable, using fuzzy matching based on name, postcode and gender. This matching was performed by the Department for Work and Pensions before we had access to the dataset.

³We observe HESA records, and hence whether someone has attended university, up to 2015-16, which is age 28, 29 or 30 depending on the cohort.

⁴It also includes a very small number of individuals for whom we observe a postgraduate but not an undergraduate degree, likely due to them studying abroad for their undergraduate qualification. As our focus here is on the social mobility impact of undergraduate degrees, we exclude these individuals from our analysis.

is based on around 570,000 individuals. Our course-level analysis is based on almost 1,000,000 individuals.

2.2 Family background

We use eligibility for free school meals (FSM) at age 16 as our measure of family background. Children are recorded as being on FSM when their parents are in receipt of means-tested benefits⁵ and have annual gross income below a given threshold, currently £16,190. FSM eligibility is therefore a good indicator of family-level deprivation. In our cohorts of analysis, 12.5% of students are recorded as being on free school meals. These students broadly represent the students from the lowest-income families.

For some descriptive analysis, we show results for the whole population. For this we rank state school students who are not eligible for FSM according to the local-area-level deprivation of the Lower Layer Super Output Area (LLSOA) where they live at age 16. We use the Income Deprivation Affecting Children Index (IDACI), which measures the proportion of children aged 0 to 15 living in income-deprived households, as a proxy for parental income. While it is true that some children from lower-income families will live in areas with low deprivation and vice versa, on average children in areas with low deprivation will be from much wealthier families than children who grew up in areas with higher deprivation. Many of our descriptive figures will show results separately for children on FSM, children not on FSM split into quintiles of IDACI, and children who attended private schools.⁶

2.3 University attendance

We obtain information on university attendance from the HESA records. We observe the individuals who attend university in the UK, and can see their degree subject, institution, whether they study full-time or part-time, and whether they obtain their final qualification. We include dropouts in our analysis. For ease of language, we often refer to graduates from a degree, where we technically mean people who started the degree.⁷

Degree subjects are recorded at the four-digit Joint Academic Coding System (JACS) code level, which means we observe around 1,500 different possible subjects of study. For our analysis, we

⁵These benefits are: income support, income-based jobseeker's allowance, income-related employment and support allowance, support under Part VI of the Immigration and Asylum Act 1999, the guaranteed element of pension credit and child tax credit (provided the parents are not also entitled to working tax credit).

⁶We do not observe the LLSOA of residence for the 6.5% of children at private secondary schools in our data, so we show them as a separate group. In theory, an individual on FSM might attend a private school (for example through a scholarship). However, for the purpose of our analysis, we assume the privately educated group does not contain FSM students.

⁷Where individuals have attended multiple undergraduate courses, we assign them to the first course they graduated from or, if they never graduate, the first course they attend. For example, someone who studies architecture at the University of East Anglia for one year, before dropping out and switching to English at the University of Bedfordshire and graduating from this course will be assigned to the latter course, while someone who has graduated from (dropped out of) both courses will be assigned to the course they graduated from (dropped out of) first.

aggregate these into 35 subjects, based on the CAH2 subject classification.⁸ We might, for example, see individuals studying community nursing or palliative care nursing, and will combine these under 'nursing'. When individuals study multiple subjects in their degree, we assign individuals to all the subjects in proportion to the share of their degree which is devoted to each subject. An individual studying French and history with equal weight given to both subjects would therefore be counted as 0.5 of a person in both the French and the history results.

Students attend around 150 different universities across the UK. In the analysis, we will often classify these into broader groups. Oxford, Cambridge, Imperial College London and the London School of Economics are put together into the 'Most selective Russell Group' category, due to the much higher average prior attainment of students at these universities.⁹ All other universities that are part of the Russell Group, which is a group of 24 high-status and often research-intensive universities, are grouped together in the 'Russell Group' category. The remaining traditional universities which attained university status prior to the 1992 conversion of many technical colleges to university status are grouped together in the 'Old universities' group (these universities are often referred to as the 'pre-1992' universities). The remaining universities (often referred to as the 'post-1992' universities) are non-traditional universities such as arts colleges and institutions which gained university status after 1992. Based on the average KS4 score of their students, these universities are split into two equal-sized groups: 'Other (more selective)' and 'Other (least selective)'. The full list of universities and their groups can be found in the Online Appendix.

2.4 Labour market outcomes

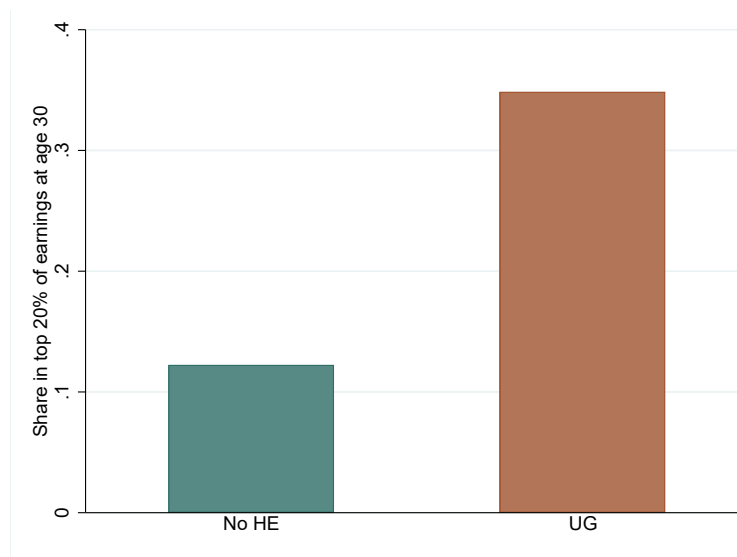
The HMRC tax records contain earnings from conventional employment (from PAYE records), as well as earnings from self-employment and profit from partnerships (from Self Assessment records). We combine these two sources of income to create a measure of total income at age 30. We focus on annual income and do not distinguish between full-time and part-time work, as hours worked are not recorded in the data. We focus on age 30 as this is the oldest age at which we observe all three of our main analysis cohorts in the tax data, which we have up to the 2018/19 tax year.¹⁰

⁸For more information on this subject classification, and how it maps to JACS codes, see <https://www.hesa.ac.uk/innovation/hecos>.

⁹For all four of these universities, the average GCSE score of their students exceeds 550 points (equivalent to five A*s and five As at GCSE), based on the 2004 GCSE cohort. A plot of average entrant KS4 score for each university included in the analysis can be found in Appendix Figure A1.

¹⁰As discussed above, for the course-level analysis we use total income at age 28 instead in order to be able to use five cohorts in the analysis.

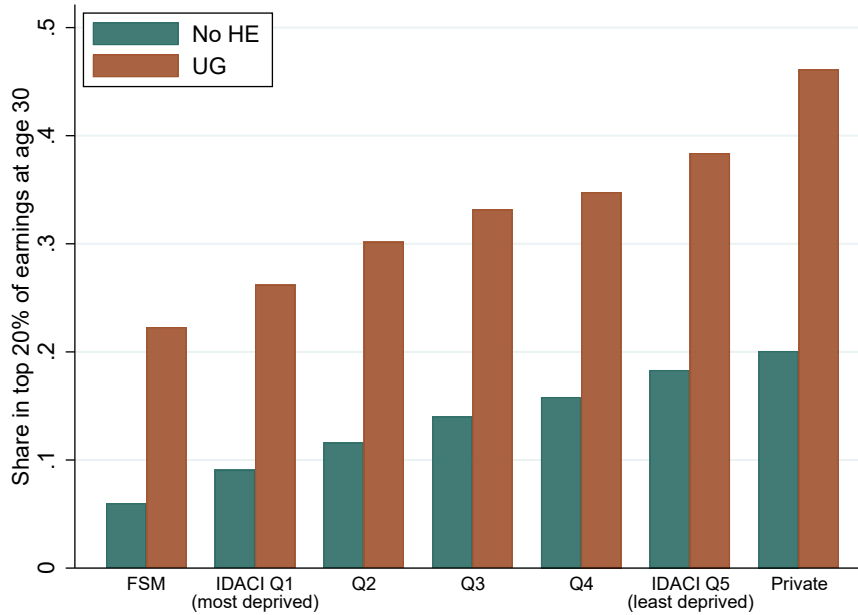
Figure 1: Share in top earnings quintile at age 30



Notes: Includes the 2002-04 GCSE cohorts. Shows the share of individuals with and without higher education (HE) who make it to the top 20% of earnings.

In most of the analysis, we measure an individual's income in terms of their rank within their cohort's earnings distribution, defining labour market success as making it to the top 20% of the overall distribution of earnings for people of the same age. Figure 1 shows the share of individuals reaching the top 20% at age 30, by higher education status. University students are around three times more likely to reach this threshold - which equates to annual earnings of at least £33,500 (in 2018 prices) - than those who did not attend university.

Figure 2: Share in top earnings quintile at age 30, by family background



Notes: Includes the 2002-04 GCSE cohorts. IDACI quintiles are defined based on state school students who are not eligible for FSM.

Figure 2 then splits this by family background, showing that the relationship between labour market success and HE status that we saw in Figure 1 holds for all groups. Amongst the FSM eligible, for example, the undergraduate group is 16 percentage points more likely to enter the top quintile of earnings at age 30 than the no HE group.

The figure also shows that there is a clear relationship between family background and labour market success even within the undergraduate and the no HE groups.¹¹ Overall, the FSM-eligible are much less likely to enter into the top 20% of earnings. Amongst those not attending university, around 6% of the FSM-eligible reach the top 20%, compared to 13.5% of non-FSM individuals, while for undergraduates, the rates are around 35% and 22% for non-FSM and FSM students, respectively. These differences are even starker when we compare FSM students to students from the most affluent families. For instance, amongst those who did not go to HE, the privately educated are around 14 percentage points more likely to make it to the top 20% than the FSM-eligible. Amongst those who started an undergraduate degree, the privately educated are more than 20 percentage points more likely to do so. In the following sections, we consider the outcomes of those eligible for FSM in much greater detail. We first consider their access to university and how this varies across different institutions, before turning to look at variation in labour market success rates by institution. We then put these together to generate our mobility rates, looking at how

¹¹Appendix Table A1 shows how large each group is as a share of the population so as to show how much of the top 20% of earnings is made up by individuals in each of the seven family background groups. Meanwhile, Appendix Table A2 shows how individuals from different family backgrounds are distributed across all earnings quintiles.

these vary by institution, subject and course.¹²

3 University access by socio-economic background

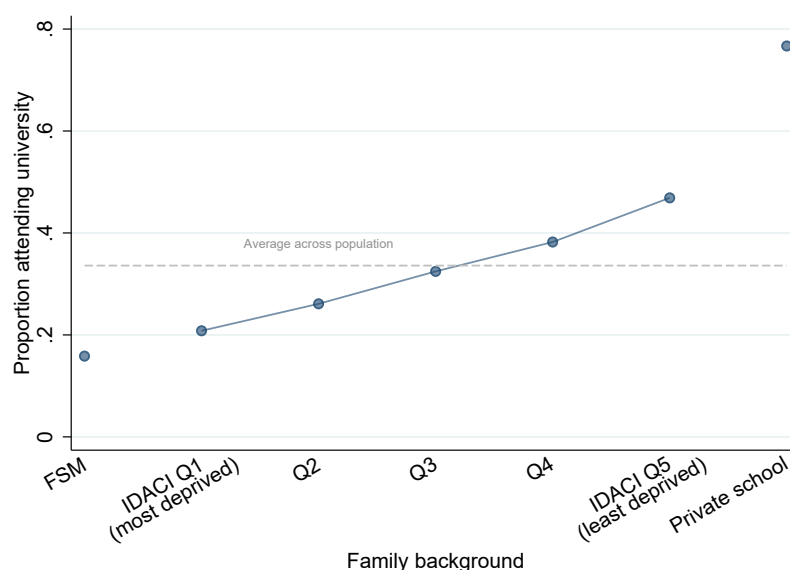
There is now a large body of UK work studying the issue of access to university for students from poorer backgrounds (Crawford, 2014a; Crawford and Greaves, 2015; Crawford et al., 2016a,b). Much of this work has focused on the extent to which access gaps can be explained by the background characteristics of students, such as their prior attainment, ethnicity or the school they attended. That work has mostly studied access to university as a whole, or access to groups of institutions, such as the Russell Group. However, there has been relatively little work looking at differences in access to *individual institutions* or different subjects. Since our overall aim is to focus on the extent to which individual institutions and degrees promote mobility, it is natural for us to start by documenting access at a more refined level.

To set the scene, we first confirm the finding from previous research that overall, individuals from more disadvantaged backgrounds are much less likely to attend university. Figure 3 shows, for each family background group, the share of individuals from that group who attended university. Around 16% of FSM pupils attend university, compared with more than 75% of the privately educated, and 50% of the state school educated from the least deprived backgrounds.¹³

¹²While our focus is very much on differences in mobility *within* the higher education sector, it is worth noting the particularly poor outcomes of those from low-income households who do not attend university. Further understanding of these outcomes and their drivers is an important avenue for future research.

¹³Appendix Figure A3 additionally shows that among those who attend university, dropout rates are much higher for students from lower socio-economic backgrounds than they are for students from more affluent backgrounds.

Figure 3: Proportion of individuals attending university for the 2002-04 GCSE cohorts, by family background group



Notes: IDACI quintiles are defined based on state school students who are not eligible for FSM. The dots show the share of individuals from each family background group who attend HE.

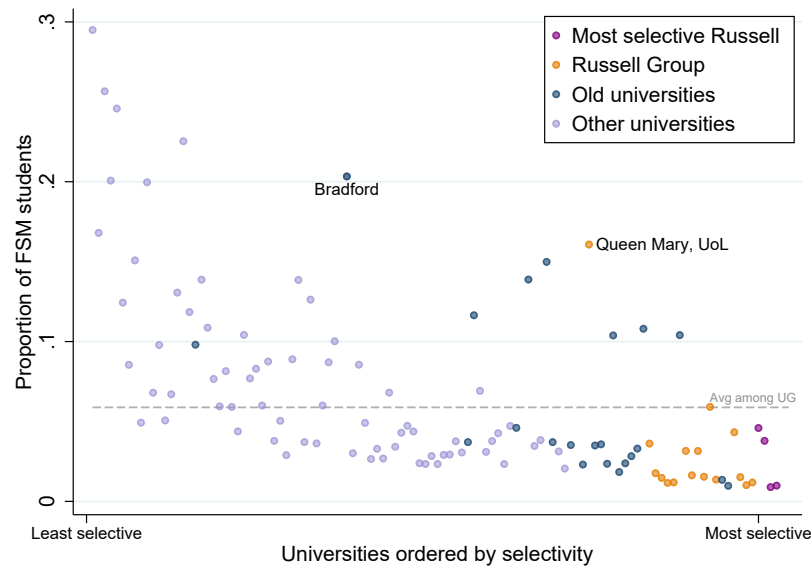
As a result of these large differences in university attendance by family background, FSM pupils are underrepresented among the student population. On average, around 6% of UG students were eligible for FSM at age 16, despite making up around 12.5% of the population for the same cohorts. This overall number masks some important variation in how access varies across different institutions. Figure 4 plots the share of FSM students attending each individual university, with universities sorted by their ‘selectivity’, as measured by the average KS4 score of their students.¹⁴ At the least selective universities, as many as 20-30% of students were on FSM at age 16. At more selective universities, these shares are much lower. For the top 10 most selective universities, this is below 2% on average. Among the universities with the lowest¹⁵ FSM shares in the country - Oxford, Bath and Cambridge - the share of FSM students is less than 1%. With the exception of Queen Mary University of London,¹⁶ all of the Russell Group universities have access rates at or below the national average.

¹⁴This is not a perfect measure of selectivity as universities select on characteristics other than GCSEs, most notably A-level grades. However, because A-level and equivalent qualifications are difficult to compare across subjects, and because GCSE scores give us a very sensible ranking of universities (for example, with Oxford and Cambridge at the top), we stick to using this measure. It should be noted that universities that select on characteristics such as musical talent may appear to be less selective here than they are in practice. This only applies to a small number of cases, however, and therefore does not change the overall story very much.

¹⁵Among universities with a sufficient number of FSM students.

¹⁶Indeed QMUL has a higher share of FSM students than the population as a whole.

Figure 4: University access rates for the 2002-04 GCSE cohorts, by university selectivity



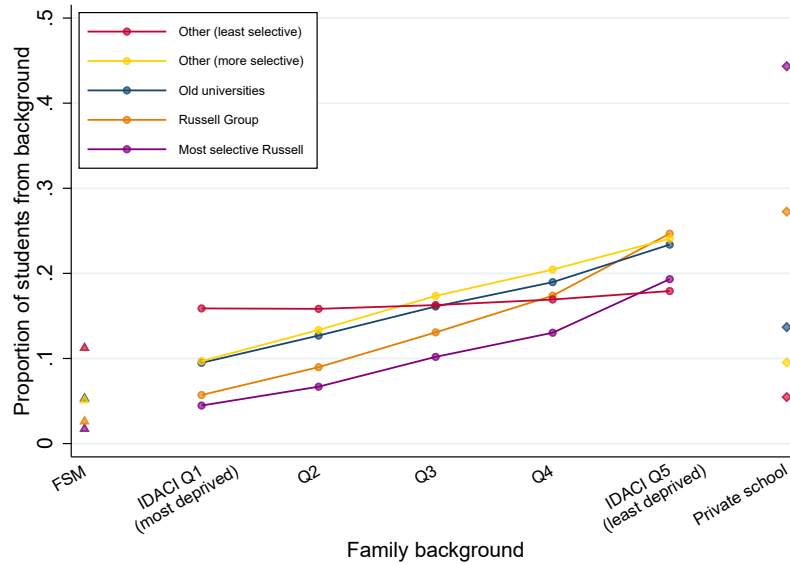
Notes: Selectivity is measured as the average GCSE points score of a university's students. Royal Agricultural College, Harper Adams University College and Leeds City College are not plotted due to having a low number of FSM students.

Figure 5 then presents more detail on the distribution of access by family background for each of our broad university groupings. At the least selective institutions, individuals from all socio-economic backgrounds are broadly evenly represented,¹⁷ but high-status and selective institutions are dominated by those from the most affluent backgrounds. At the 'Most selective Russell' Group universities (Oxford, Cambridge, LSE and Imperial), private school students make up more than 44% of the student body, despite representing only 7% of the overall population, while FSM students account for less than 2% of the student body. This means that the privately educated are around 50 times more likely than the poorest students to attend a 'Most selective Russell' Group institution.¹⁸ These numbers are even starker when just looking at the universities of Oxford and Cambridge: privately educated students are nearly 100 times more likely to go to Oxford or Cambridge than pupils who were on FSM.

¹⁷FSM students represent around 12.5% of individuals in a cohort, private school students around 6.5%, and each quintile of IDACI hence around 16% of individuals. For an equal representation across family background groups, we would hence expect to see a lower proportion from private schools and slightly lower proportion on FSM than of the IDACI groups.

¹⁸For comparison, Chetty et al. (2017) find that pupils in the US from the top 1% of the parental income distribution are around 77 times more likely to attend an elite ('Ivy Plus') college than pupils from the bottom 20% of the parental income distribution.

Figure 5: University access rates for the 2002-04 GCSE cohorts, by family background and university group



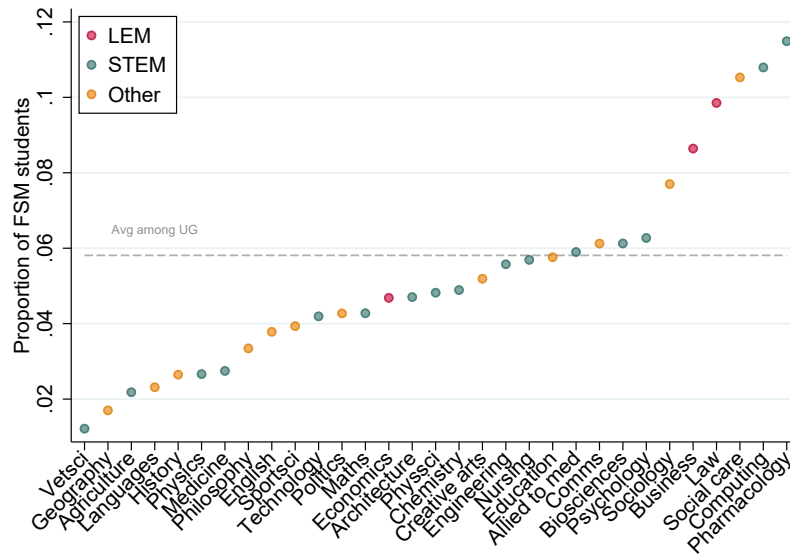
Notes: IDACI quintiles are defined based on state school students who are not eligible for FSM.

Not only do we see differences across universities in how well represented individuals from across the socio-economic status (SES) distribution are, but we also see large differences in access across different subject areas, as shown in Figure 6. FSM students make up more than 10% of the student body in social care, computing and pharmacology degrees. In subjects such as veterinary science, geography, agriculture and languages, however, FSM students are strongly under-represented, accounting for less than 2.5% of the total student body. There are some interesting differences across subjects in closely related fields. Medicine is one of the subjects with the lowest representation from FSM students, but nursing and pharmacology have some of the highest representation.¹⁹ Similarly, business has a much higher share of FSM students than economics.²⁰ The high variation in access across subjects suggests there is likely to be a lot of variation *within*, as well as across, universities, and highlights the potential importance of exploring mobility rates at the course level.

¹⁹The privately educated are around 25 times more likely to study medicine than FSM students, while they are only twice as likely to study nursing and 2.7 times more likely to study pharmacology. This can be seen more clearly from the shares of students across different backgrounds by subject, which are shown in Appendix Figure A4.

²⁰This aligns with the finding in Britton et al. (2021b) that low-income students are more likely to enrol in business degrees and less likely to take economics than the average student.

Figure 6: Access rates for the 2002-04 GCSE cohorts, by subject



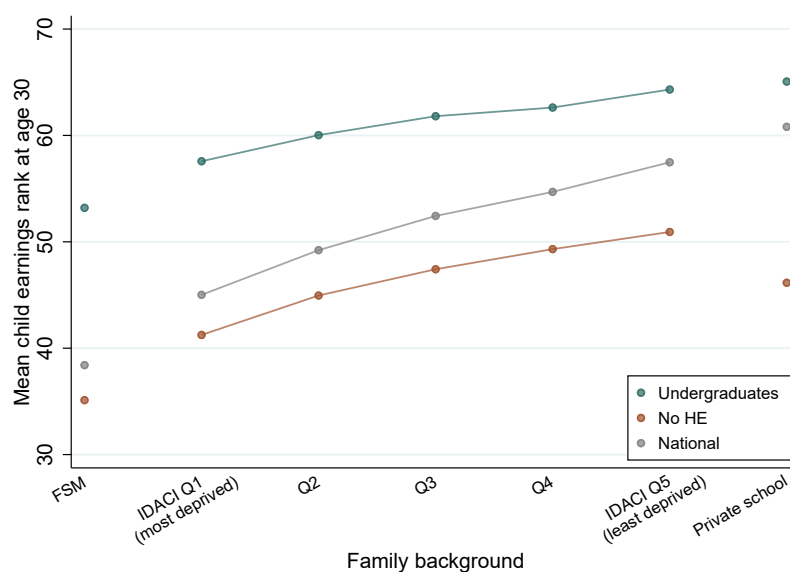
4 Labour market success by socio-economic background

An important motivator of this work is the widely held belief that university can play a key role in increasing social mobility. Figure 7 explores this issue by plotting the relationship between the earnings rank of individuals and their parental background among both HE attendees and non-attendees.²¹ The figure provides *suggestive*²² evidence that this belief is justified. It shows the average earnings rank of people in different family background groups for the whole sample (grey dots) and then split by whether people went to higher education (green dots) or not (brown dots). Overall there is a strong positive relationship between family background and earnings rank at age 30, but this is much weaker amongst those who went to university. For example, the overall gap in the average earnings rank between the least deprived state-educated students and the FSM eligible is around 20 percentiles, while it is only around 10 percentiles for those who went to university.

²¹ Appendix Figure A2 shows an equivalent graph but plots median earnings at age 30 rather than earnings rank.

²² We can only say suggestive because the chart does not deal at all with differential selection into university across groups. For instance, it could be the case that only the very highest-ability poorer students enter university, while a much broader set of wealthier students go. This would result in a flatter curve amongst the university attendees even if university itself did nothing to boost earnings outcomes.

Figure 7: Dependence between family background and child earnings rank at age 30 for the 2002-04 GCSE cohorts

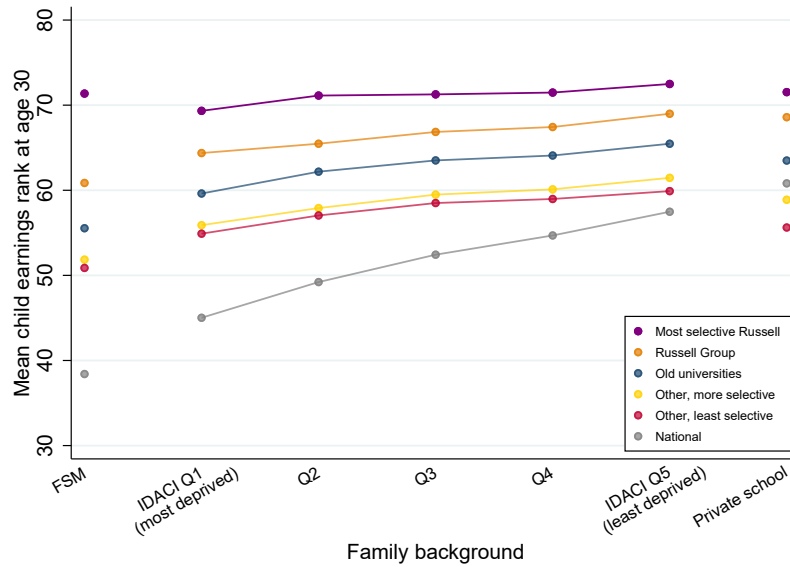


Notes: IDACI quintiles are defined based on state school students who are not eligible for FSM. National plot includes children with a linked KS4 and HMRC record. Earnings ranks are calculated in each cohort and are equivalent to percentiles in the earnings distribution.

Figure 8 then divides universities up into the five broad university groupings we introduced in the previous section.²³ This shows that the relationship gets weaker still as you look at more selective universities. Amongst the most selective Russell Group universities, there is almost no gap in the average earnings rank for those eligible for FSM and the least-deprived state school students, while the equivalent gap for the ‘Other’ universities is close to 10 percentiles.

²³We replicate this graph using median earnings instead of earnings rank in Appendix Figure A5. This shows a very similar picture, although the earnings gap between FSM students and those from the least deprived areas is slightly larger in the most selective Russell Group due to the presence of very high earners.

Figure 8: Dependence between family background and child earnings rank at age 30 for the 2002-04 GCSE cohorts

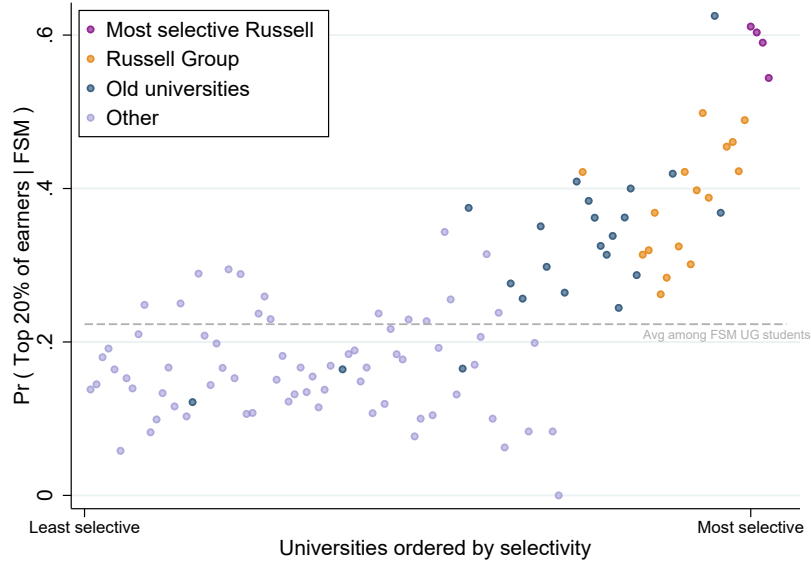


Notes: IDACI quintiles are defined based on state school students who are not eligible for FSM.

We take this investigation a step further in Figure 9 by plotting labour market success rates for individual universities, which we order by selectivity along the horizontal axis (as in the previous section, we follow Chetty et al. (2017) and define labour market success based on whether an individual makes it to the top 20% of their cohort's earnings distribution by age 30). Importantly, these success rates are for the FSM eligible only. Aligning with Figure 8, it is the most selective universities which have the highest success rates for their poorer students. We see that all Russell Group universities have success rates above the average, and five institutions - the four 'most selective Russell' Group universities as well as the Royal Veterinary College - have success rates of more than 50%, meaning more than half of their students from low-income families make it to the top 20% of the earnings distribution. At the bottom end, we see a set of institutions - mostly arts colleges or among the least selective universities - with success rates below 10%.

While the most selective institutions typically have the best success rates for their poorer students, we saw in the previous section that they also have the lowest access rates. In other words, the poorer students who do get in often do quite well, but not many get in to start with. This makes it difficult to draw conclusions about how well these institutions are performing in terms of contributing to social mobility. In the following section, we explore this issue by putting together the access and success rates to create a mobility rate for each university.

Figure 9: Labour market success rates for the 2002-04 GCSE cohorts, by university selectivity



Notes: Includes FSM eligible only. Some institutions are excluded for sample size reasons.

5 Mobility rates

In this section, we report our estimated mobility rates. We start by defining how we measure these before reporting them for each individual university, subject and ‘course’ (the interaction of subject and institution, e.g. business at the University of Manchester) in England. We finish the section by looking at the relationship between mobility rates and earnings returns.

5.1 Defining mobility rates

We follow Chetty et al. (2017) and define the upward mobility rate of an institution, subject or course as the fraction of its students who (1) were on FSM at age 16 *and* (2) make it to the top 20% of the earnings distribution. For institutions and subjects we use earnings at age 30, while for courses we use earnings at age 28 (in order to boost sample sizes).

We calculate this as the product of the proportion of students who were on FSM - which we will call the ‘access rate’ - and the probability for students of making it to the top 20% of earnings, *conditional* on having been on FSM at age 16 - the ‘success rate’. We can write this as follows:

$$\text{Mobility rate} = \text{Access rate} * \text{Success rate} \quad (1)$$

$$P(\text{FSM and } Q5^{child}) = P(\text{FSM}) * P(Q5^{child} | \text{FSM}) \quad (2)$$

where FSM indicates whether a child was on FSM, and $Q5^{child}$ indicates whether a child is in

the top 20% of their cohort's earnings distribution at age 30 (or 28 for the course-level analysis). $P(Q5^{child}|FSM)$ indicates the probability of the child making it to the top quintile, given they were eligible for FSM during school. We will refer to students who were on FSM as a child *and* reach the top 20% of the income distribution at age 30 as 'mobile students'. We also explore different definitions of success such as the proportion of students on FSM and who make it into the top 40% or top 5% of earnings. Higher mobility rates indicate a greater contribution of that university, subject or course to intergenerational mobility.

A potentially useful benchmark for what follows is the mobility rate we would get if access to university was equal for all income groups *and* there was equal labour market success amongst all undergraduates, irrespective of family background (holding the overall university participation rate fixed so that the same number of people go to university). We estimate this benchmark to be 4.4%. That is equal to 12.5% (the share of the population who were FSM eligible in the cohorts we look at) multiplied by 35% (the share of university graduates in the top 20% of the earnings distribution).

5.2 Mobility by institution

We show the variation in mobility rates graphically in Figure 10, by plotting access and success rates against each other.²⁴ The curves (isoquants) show success-access combinations that yield the 10th, 50th and 90th percentiles of mobility rates. The isoquants reveal that mobility is generally low in UK institutions: the median mobility rate is 0.9%, meaning that for half of all institutions less than 1 in 100 of their students is both from an FSM background and reaches the top 20% of earnings. This is considerably below the benchmark of 4.4% highlighted above. However, there is still a large amount of variation in mobility rates across institutions. The bottom performing 10% of universities have mobility rates of less than 0.5%, compared with more than 3.3% for the top 10%. The latter means that at least seven times as many graduates from the most mobile institutions as from the least mobile ones both grew up in households poor enough to be eligible for FSM *and* reached the top 20% of the income distribution.

The figure draws out the differences between our five university groups. Despite the high success rates amongst the Russell Group universities, the low access rates at these institutions mean they do not perform particularly well in terms of overall mobility rates.²⁵ Only one-third of Russell Group universities are in the top half of mobility scores, while Oxford and Cambridge are close to the 10th percentile (these are the two purple dots on the 10th percentile curve). This is not due to poor success rates, but rather to the extremely low access rates at these universities of below 1%. Queen Mary's University of London (QMUL) is an outlier amongst the Russell Group, with an access rate of 16% and a success rate of 42%, meaning it accepts a high share of poor students, and those students do very well, with almost half making it to the top of the earnings distribution.

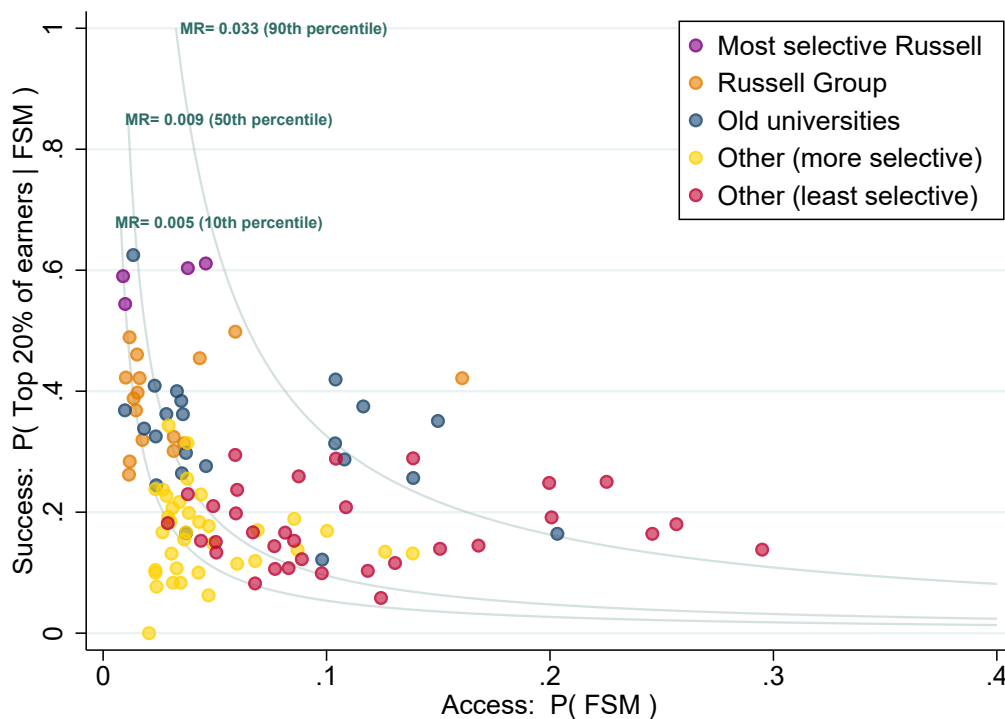
²⁴To be included in this plot, universities must have at least 250 students. As mentioned above, we also exclude non-English universities.

²⁵Across all universities, there is a slight negative correlation between access and success of around -0.24.

This results in the highest mobility rate across all universities of just under 7%.

The ‘Old’ universities do a bit better than the Russell Group in terms of mobility, combining slightly higher access rates with decent success rates, resulting in more than half of these institutions being in the top half of the mobility distribution. Among the remaining institutions, the picture is somewhat mixed. A number of institutions in this group, particularly among the ‘Other (more selective)’ institutions, fail to achieve better access rates than the Russell Group universities, despite lower academic entry requirements. Combining these with relatively low success rates in this group results in a number of institutions that perform poorly in terms of both access and success and consequently have very low mobility rates. Many of the institutions that perform less well are specialist agricultural or arts and music colleges. On the other hand, there are also some institutions in this group where the access rates are so high that despite lower-than-average success rates, they are among the highest-mobility institutions. Notably, the ‘Other (least selective)’ institutions generally perform very well in terms of mobility, making up over half of the top 10% of institutions for mobility.

Figure 10: Institution success, access and mobility rates for the 2002-04 GCSE cohorts



Notes: Royal Agricultural College, Harper Adams University College and Leeds City College are not plotted due to low sample size.

Table 2 lists the top 20 universities for mobility.²⁶ As already mentioned, QMUL is the university with the highest mobility rate, of 6.8%. The University of Westminster - which belongs to the

²⁶Appendix Table A4 lists the bottom 20 universities for mobility.

‘Other (least selective)’ group - has the second-highest mobility rate, of 5.6%, followed by City and Greenwich universities with around 5% mobile students. Overall, seven institutions have mobility rates that match (to one decimal place) or exceed the benchmark mobility rate of 4.4%. This means that more of their graduates both come from poorer backgrounds *and* have made it to the top of the income distribution.

Table 2: Top 20 universities for mobility (2002-04 GCSE cohorts)

Rank	University	Group	Mobility %	Access %	Success %
1	QMUL	Russell Group	6.8	16.1	42.2
2	Westminster	Other (least selective)	5.6	22.5	25.0
3	City	Old universities	5.3	15.0	35.1
4	Greenwich	Other (least selective)	5.0	20.0	24.8
5	London South Bank	Other (least selective)	4.6	25.7	18.0
6	Brunel	Old universities	4.4	11.6	37.5
7	St George’s Hospital	Old universities	4.4	10.4	41.9
8	East London	Other (least selective)	4.1	29.5	13.8
9	London Met	Other (least selective)	4.0	24.6	16.4
10	Kingston	Other (least selective)	4.0	13.9	28.9
11	Middlesex	Other (least selective)	3.8	20.1	19.1
12	Goldsmiths	Old universities	3.6	13.9	25.6
13	Bradford	Old universities	3.3	20.3	16.4
14	Aston	Old universities	3.3	10.4	31.4
15	SOAS	Old universities	3.1	10.8	28.7
16	Hertfordshire	Other (least selective)	3.0	10.4	28.9
17	KCL	Russell Group	2.9	5.9	49.8
18	LSE	Most selective Russell	2.8	4.6	61.1
19	West London	Other (least selective)	2.4	16.8	14.5
20	Imperial	Most selective Russell	2.3	3.8	60.3

The outstanding feature of the table is the clear dominance of the London-based institutions. Out of the top 20 universities, only two (Bradford and Aston) are not located in or around London. These London institutions tend to achieve high mobility rates both by taking in a lot of students on FSM and by being relatively likely to send them to the top of the earnings distribution.

One potential driver of the high access rates of London universities is the supply of potential university students who were eligible for FSM and live in the local area. This is likely to be important as students from lower-income backgrounds tend to attend university closer to home. The composition of those FSM students might also matter for access rates as students with higher attainment, and students from ethnic minority backgrounds, are relatively more likely to attend university (Britton et al., 2021b). Table 3 explores these relationships in more detail by showing the average access rates of universities, the share of FSM-eligible students, the share of FSM pupils with ‘good’ attainment and the share of FSM pupils from ethnic minority backgrounds for each of the Government Office Regions in England.

Comparing the composition of students in each region to the average access rates for univer-

sities in the final column in Table 3, we find that access rates are indeed correlated to the share of FSM students in a region. London has the highest share of FSM students, as well as the highest access rates on average. The South East and South West have the lowest numbers of FSM students, and institutions in those regions also have the lowest access rates. Similarly, institutions located in regions with high-attaining FSM students and higher shares of non-white FSM students have higher access rates on average. It seems likely that the high average access rates of London institutions are at least partly driven by the high share of high-attaining and ethnic minority FSM students in London. That said, differences in the supply of FSM students across regions are far from the only driver of differences in access rates across institutions. Less than one-third of the variance in access rates can be explained by region and there are some striking differences *within* regions. For example, while London institutions have the highest access rates on average, the region has universities that are both in the top 10% and bottom 10% in terms of access.

Another factor that is likely to be important for explaining the good overall performance of London institutions in terms of mobility is many of their graduates ending up working in or around London, where earnings - and hence success rates - are higher than in many other parts of the country. We consider the importance of this in Section 6, where we also consider the importance of the prior attainment of students in driving the success rates of different universities.

Table 3: FSM shares, characteristics and access by region, 2002-04 GCSE cohorts

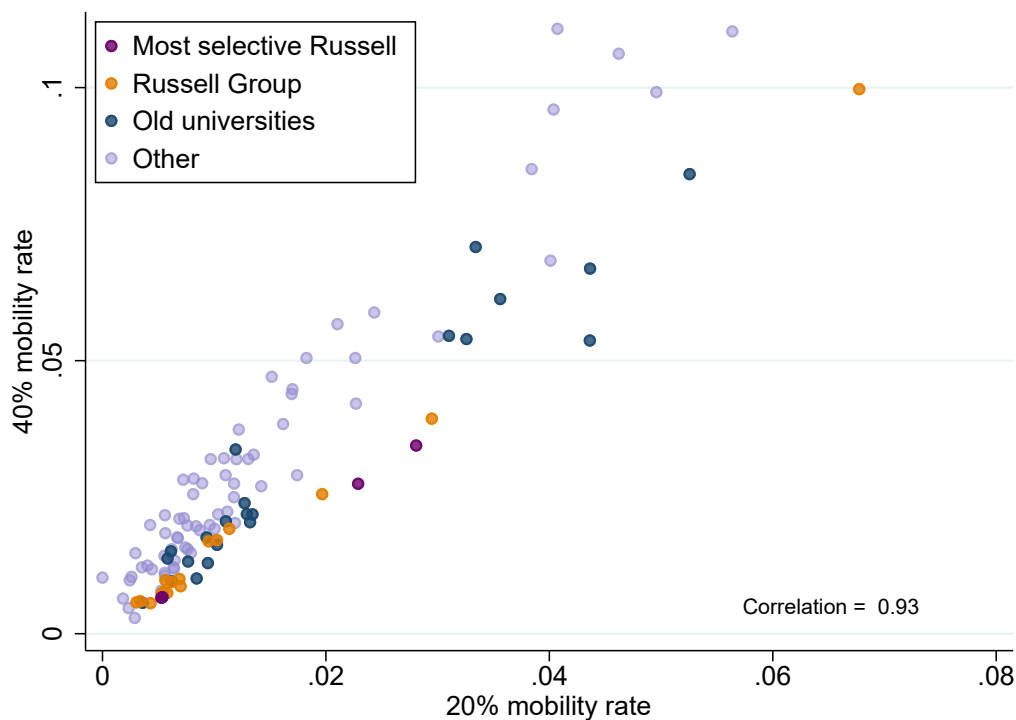
Region	FSM share	<i>Of FSM students</i>		<i>Avg university</i>
		5 A*-Cs share	Non-white	Access rates (%)
London	0.22	0.34	0.60	11.7
North West	0.18	0.25	0.15	6.9
North East	0.17	0.21	0.03	4.4
West Midlands	0.15	0.28	0.35	7.2
Yorkshire and the Humber	0.14	0.20	0.23	5.0
East Midlands	0.10	0.23	0.18	4.4
East of England	0.09	0.26	0.17	5.7
South West	0.08	0.25	0.06	2.2
South East	0.07	0.24	0.13	3.6

Notes: The 5 A*-Cs share is based on GCSE grades (and they refer to the individual getting at least those grades). Excludes those with missing regional information or missing ethnicity, which includes those who were privately educated. Region averages calculated by taking an (unweighted) average over all universities in a region.

A final point to make before moving on to consider differences across subjects is that mobility rates across universities are not particularly sensitive to different definitions of success. The institutions that are good for moving poor students up into the top 20% of earnings are also good when we use a broader definition of success (moving into the top 40%). Figure 11 plots this 40% mobility rate against the original 20% rate for each institution. Though a handful of less selective institutions perform better on this measure, there is little change in the overall ranking of institutions. Indeed, the correlation between 20% and 40% mobility rates for institutions is very high, at

0.93. If we instead focus on top-tail mobility (moving poor students into the top 5% of earnings),²⁷ this correlation is somewhat lower at 0.8. Several mid-ranking universities that are good at getting students to the top 20% are not so good at getting them to the *very* top of the distribution, while a number of selective universities do relatively better under the 5% definition. For example, Newman University College ranks 25th in terms of 20% mobility rate but drops to 80th in terms of top 5% mobility rate. Conversely, Oxford University moves up from 95th to 30th place when going from top 20% to top 5% mobility rate as it sends a disproportionately large share of students to the very top of the distribution.²⁸

Figure 11: Correlation between 20% mobility rates and 40% mobility rates, by institution



Notes: Royal Agricultural College, Harper Adams University College and Leeds City College are not plotted due to low sample size.

5.3 Mobility by subject

We now turn to look at mobility rates by subject.²⁹ Figure 12 plots access against success rates for each subject, with a subset of subjects labelled.³⁰ As with institutions, we see significant varia-

²⁷Results are reported in Appendix Figure A16.

²⁸The results are also not sensitive to the exclusion of dropouts (reported in Appendix Section A3). The intuition behind this is that focusing on graduates only reduces access rates but boosts success rates such that the overall impact on mobility rates is limited.

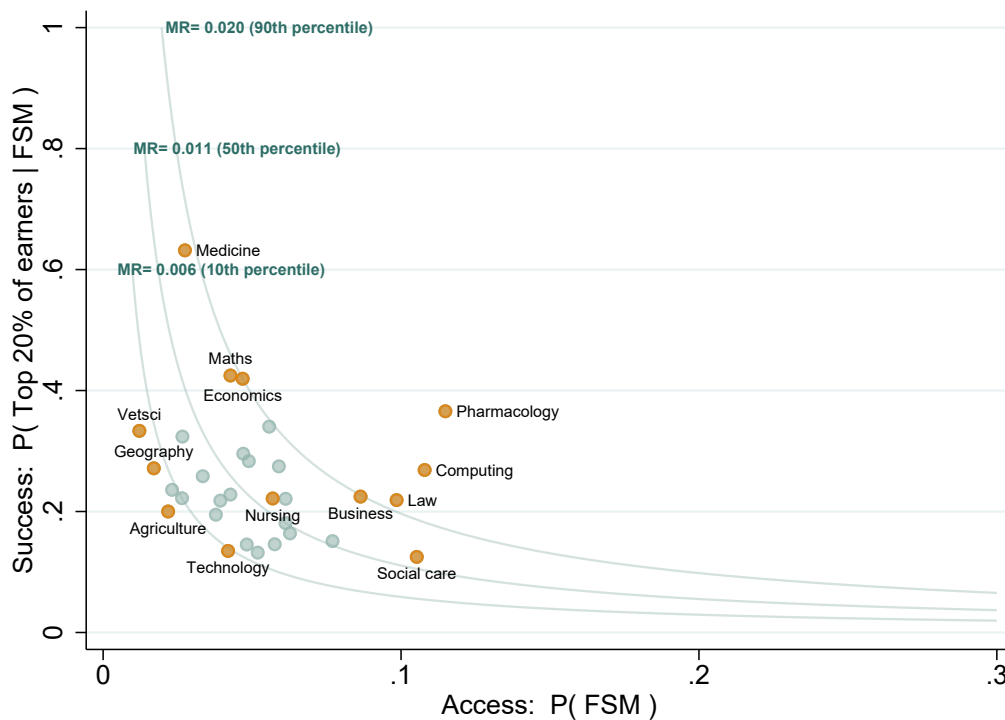
²⁹As with the institution analysis, we include subjects with at least 250 students. We also drop small subjects (Celtic, Humanities non-specific and Combined).

³⁰Appendix Figure A7 shows subject mobility rates plotted by mobility rank so rates for all subjects can be seen clearly. We also plot access and success rates separately by subject in Figure 6 and Appendix Figure A6, respectively.

tion in mobility. Again, we also plot isoquants which show access and success combinations that deliver mobility rates at the 10th, 50th and 90th percentiles of subjects.

Pharmacology is the standout performer, with around 4% of students coming from the poorest families *and* moving to the top 20% of the earnings distribution. Law, computing and business also combine high access rates with above-average or close to average success rates. In contrast, for veterinary sciences, geography and agriculture, fewer than 0.5% of students were on FSM and reach the top 20% of earnings. These three subjects are also the three subjects with the lowest access rates and have just below or slightly above average success rates.

Figure 12: Subject success, access and mobility rates for the 2002-04 GCSE cohorts



We also see subjects that have very similar mobility rates despite being very different in terms of access and success. For instance, mobility rates for business and economics are both at the 90th percentile, but economics has a very high success rate and a below-average access rate, while business has one of the highest access rates and an average success rate. In general, arts and humanities subjects seem to perform poorly, LEM subjects do well and STEM subjects are more mixed.³¹ Computing, maths and pharmacology do very well, but agriculture, veterinary science and technology have some of the lowest mobility rates.³² Changing the measure of success from the top 20% to the top 5% of earnings results in little change in subject ranking with an overall

Appendix Table A3 lists mobility, access and success rates for all subjects.

³¹LEM subjects are Law, Economics and Management subjects (the last of which is called 'business' in our subject classification). STEM subjects are Science, Technology, Engineering and Maths subjects.

³²These patterns are relatively robust to using different measures of success, as can be seen in Appendix Figure A17.

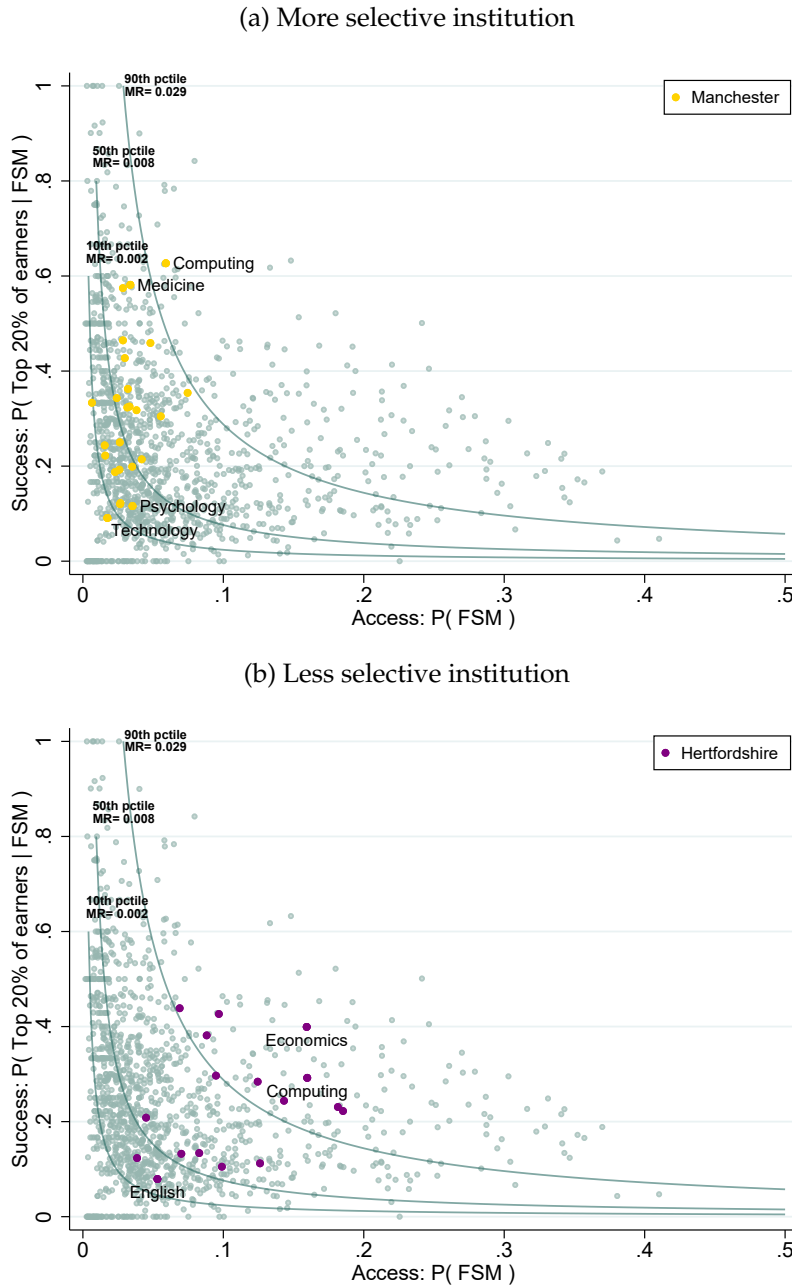
correlation of 0.8. Notable exceptions to this are medicine (which moves up from 8th to 1st place), social care (down from 13th to 22nd place), and nursing (down from 14th to 28th place).

5.4 Mobility by course

Finally, Figure 13 plots success versus access at the course (the interaction of institution and subject) level, for over 1,250 courses.³³ There is much greater variation in mobility at the course level than there is at the subject or institution level. For some courses, almost *1 in 10* students were FSM eligible and reached the top 20% of earnings, while for others this number is less than *1 in 100*. Overall there is only a small (-0.22) negative correlation between success and access rates.

³³We include all courses with more than 250 students across the five cohorts included in our course-level analysis.

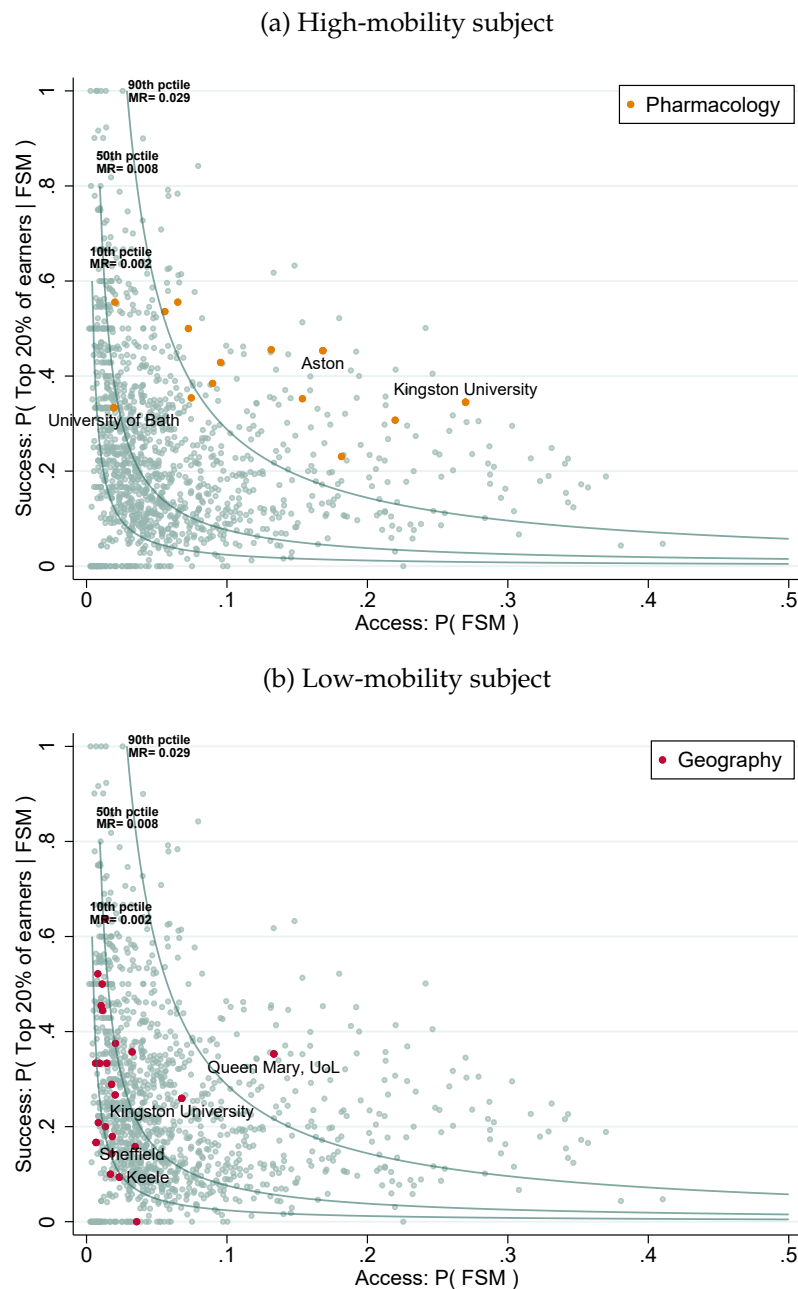
Figure 13: Success, access and mobility rates by course for the 2002-04 GCSE cohorts - highlighting institutions



Panels (a) and (b) focus on the different subjects within a more selective and less selective institution, respectively, highlighting the considerable variation *within* institutions. The University of Manchester, highlighted in panel (a), has a relatively narrow range of access rates, which never exceed 8%. Yet, it has a wide range of success rates, with courses such as technology and psychology towards the lower end, and computing and medicine being among the top. As a result, Manchester has courses in both the top and the bottom 10% of mobility rates. The University of

Hertfordshire, shown in panel (b), has a similarly large range, with substantial variation in both its access *and* success rates. Economics at Hertfordshire, for example, is one of the best-performing courses in terms of mobility with 16% of students having been on FSM, and 40% of those students reaching the top 20% of earnings, resulting in an overall mobility rate of 6.4%. At the other end of the scale, English performs much less well with an access rate of only 5% and a success rate of 8% (resulting in a mobility rate of just 0.4%). These results are consistent with Belfield et al. (2018), who found substantial variation in within-institution earnings returns.

Figure 14: Success, access and mobility rates by course for the 2002-04 GCSE cohorts - highlighting subjects



Notes: Only pharmacology and geography courses with a sufficient number of FSM students are highlighted.

Figure 14 repeats the same set of estimates, but instead highlights variation in mobility rates across institutions within two subjects. Panel (a) shows pharmacology, a very high-mobility subject, while panel (b) shows geography, a low-mobility subject. Pharmacology performs very well across the board, with nearly all of its courses above the median. That said, there is still a lot of

variation - the University of Bath is the institution that is below the median for pharmacology, with a mobility rate of 0.8%, while Kingston University is the best performer for pharmacology, with a mobility rate of 9.3% (this comes from an access rate of 27%, multiplied by a success rate of 35%). We also see a large amount of variation in mobility rates for geography in panel (b). Several geography degrees are in the bottom 10% of all courses for mobility, and the vast majority of courses have below-median mobility. However, geography degrees at Kingston University and Queen Mary (two of the most mobile universities) perform very well.

We also focus in on creative arts in Appendix Figure A8. This is a large subject area with low overall mobility rates. We find that many of the creative arts courses are concentrated in the bottom left-hand corner of the plot and are therefore right at the bottom of the mobility distribution. Two exceptions to this are Ravensbourne (where 11% of graduates were FSM eligible, and 19% have reached the top of the earnings distribution, resulting in a mobility rate of 2%) and QMUL (where 5% of graduates were FSM eligible and 52% have reached the top of the earnings distribution, resulting in a mobility rate of 2.6%, which is almost in the top 10% of all courses for mobility).

Table 4: Top 20 courses for mobility (2002-04 GCSE cohorts)

Rank	University	Group	Subject	Mobility %	Access %	Success %
1	QMUL	Russell Group	Computing	12.1	24.1	50.1
2	QMUL	Russell Group	Maths	10.0	24.6	40.5
3	City	Old universities	Nursing	9.4	18.0	52.2
4	QMUL	Russell Group	Economics	9.4	14.8	63.2
5	Kingston	Other (least selective)	Pharmacology	9.3	27.0	34.5
6	City	Old universities	Computing	9.1	22.0	41.4
7	Goldsmiths	Old universities	Computing	8.9	30.3	29.5
8	City	Old universities	Economics	8.7	19.2	45.1
9	Middlesex	Other (least selective)	Computing	8.5	27.9	30.5
10	QMUL	Russell Group	Engineering	8.4	22.8	36.9
11	Greenwich	Other (least selective)	Computing	8.3	26.1	31.7
12	Westminster	Other (least selective)	Computing	8.2	33.1	24.9
13	KCL	Russell Group	Computing	8.2	13.3	61.8
14	Westminster	Other (least selective)	Law	8.2	27.1	30.3
15	QMUL	Russell Group	Law	7.9	15.4	51.3
16	City	Old universities	Law	7.8	19.4	40.0
17	Westminster	Other (least selective)	Biosciences	7.8	34.3	22.6
18	Brunel	Old universities	Computing	7.8	18.8	41.2
19	Aston	Old universities	Pharmacology	7.6	16.8	45.3
20	QMUL	Russell Group	Business	7.6	21.3	35.7

We list the 20 highest-mobility courses in Table 4. The top 20 is largely populated with courses at low-selectivity institutions, in subjects that combine high access with moderate success. QMUL - which dominates the top of the mobility ranking with six of the top 20 courses - is the only Russell Group institution represented in the top 20. We see the very high representation of computing courses, which is a very good subject for mobility in general. Finally, the dominance of London is

again very clear, with all but one of the highest-mobility courses in or around London.

After considering variation across both subjects and universities, a natural question to ask is whether subject choice or institution choice matters more for mobility rates. A Shapley-Owen decomposition (Huettner and Sunder, 2012) indicates that around 73% of the variance in course-level mobility rates is explained by institution and the remaining 27% is explained by subject. While the relative importance of subject and institution is more balanced for success (institution explains around three-fifths of the variation in success rates), institution is an even more important determinant of access, with around 87% of the variation in access rates explained by institution and just 13% by subject.

5.5 The relationship between mobility and returns

This report follows an earlier piece of work (Belfield et al., 2018) that used the LEO data to investigate variation in the returns to different university degrees. That work found that many institutions did not boost the earnings of their students by very much by age 29, and in fact several actually *reduced* earnings relative to not going to university at all.³⁴ Returns were generally found to be much higher at more selective institutions, meaning it was generally the less selective institutions that were performing badly in terms of average returns.

In Figure 15, we plot the overall relationship between the estimated returns for men from Belfield et al. (2018) and our mobility rates for universities. We see virtually no relationship (correlation = 0.13). This lack of relationship is arrived at via a strong positive correlation between returns and success rates, but a strong *negative* correlation between returns and access rates.³⁵

It is therefore the case that several institutions have very low earnings returns while at the same time contributing to social mobility by taking in poor students and moving them up the income ladder. For example, the University of West London has amongst the lowest male returns, but is in the middle of the pack when it comes to mobility rates. Similarly, Goldsmiths has below zero returns, yet is in the top 20 in terms of mobility. This highlights the potential importance of taking into account other factors when making policy decisions about the ‘value’ of certain universities. Determining value based on returns would discount many institutions that make important contributions in terms of helping children from low-income families move up the income ladder.

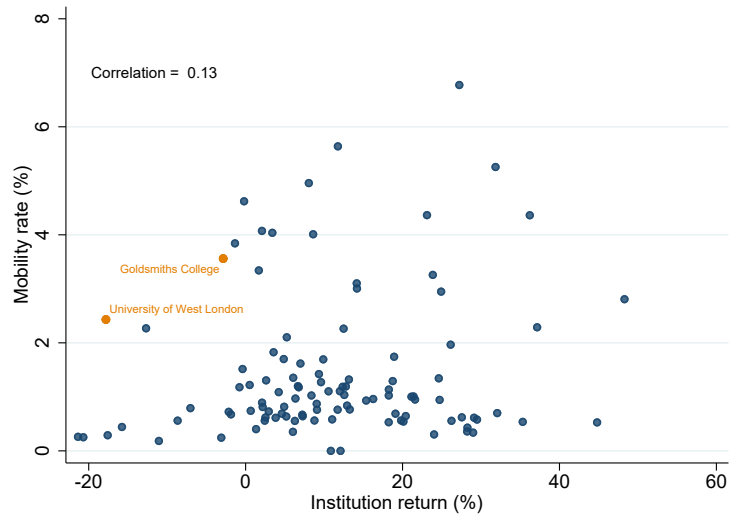
We also investigate the same relationship for subjects in Figure 16. There is a stronger, positive relationship between mobility and return (correlation = 0.53). This can be explained by the fact that some of the higher-returning subjects not only have decent success rates, but also good access rates, such as business and law. Pharmacology stands out as having an especially high mobility rate, given its return, driven by its high access rate.

Finally (and unsurprisingly, given that courses are a combination of institution and subject), we find a correlation of mobility with earnings returns at the course level that is somewhere in between the correlations for institution and subject (see Appendix Figure A9 for the plot). This

³⁴This was for men. For women, almost all returns were found to be positive by age 29.

³⁵We show the relationship between returns and access, and returns and success, in Appendix Figure A20.

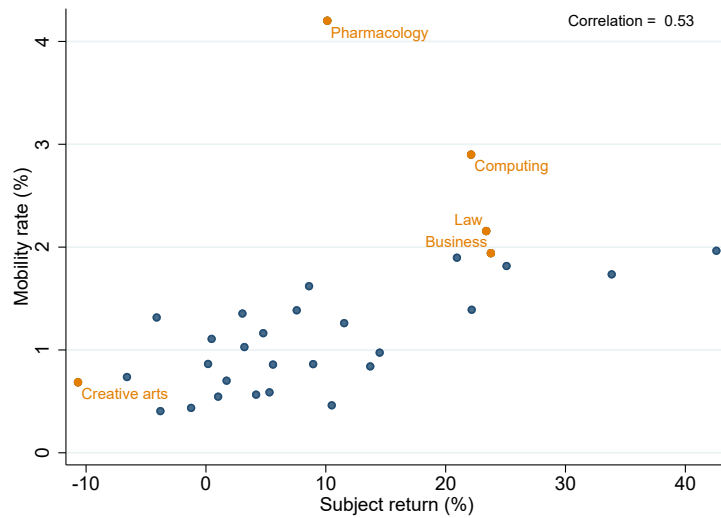
Figure 15: Mobility and returns by institution



Notes: Uses male returns estimates from Belfield et al. (2018).

means that for courses there is only a very low correlation between returns and mobility (correlation = 0.18), and so the same points apply as for the institution plot: focusing solely on returns may fail to reflect some other important things certain courses are doing for society in terms of promoting intergenerational mobility.

Figure 16: Mobility and returns by subject



Notes: Uses male returns estimates from Belfield et al. (2018).

6 Adjusting for cost of living and student composition

6.1 Cost of living

One of the most striking results from the previous section is the relative high performance of the London-based universities when it comes to mobility rates. One potential challenge to this finding is that our success rates are based on raw earnings outcomes, but that the same salary may translate to much higher living standards in some parts of the country than in others. Recent work (Britton et al., 2021a), which exploited the new linkage of information on where people live after leaving education to the LEO data, has shown that the geographical distribution of graduates varies dramatically depending on university attended. Unsurprisingly, graduates from London-based and more selective institutions are much more likely to end up in London after graduation.

Here we exploit the same data to assess the extent to which our results are affected by adjusting earnings for average differences in the cost of living across the country. To do this, we first combine measures of house prices, rents and the price of goods and services into cost of living indices for each area. We then adjust individuals' earnings in each year according to the cost of living index in their area of residence in the same year.³⁶ We then define success based on making it to the top 20% of the adjusted earnings distribution, and recalculate mobility rates based on this adjusted measure of success.

We first show the impact of this adjustment on the mobility rates of universities in Figure 17. Panel (a) ranks universities by their unadjusted mobility rate and compares this with their adjusted mobility rate, separately colouring universities by their region. Overall mobility rates decrease due to graduates living in more expensive areas than non-graduates on average. Universities at the bottom of the mobility rate distribution see little change, which is usually because access rates are so low at these places that any adjustment to success rates has little effect on mobility rates. In the middle of the distribution, the adjustment increases mobility rates for many of the Northern universities, while it decreases them for universities in the South East. Overall the changes to mobility rates in this part of the distribution are still relatively modest, with virtually all adjustments increasing or decreasing mobility rates by less than 0.5 percentage points. However, at the top of the distribution we do see some large changes, as so many of these institutions are located in London and many of their graduates live in London or the South East. Several of the London institutions at the top of the distribution see downwards adjustments to their mobility rates of over 2 percentage points.

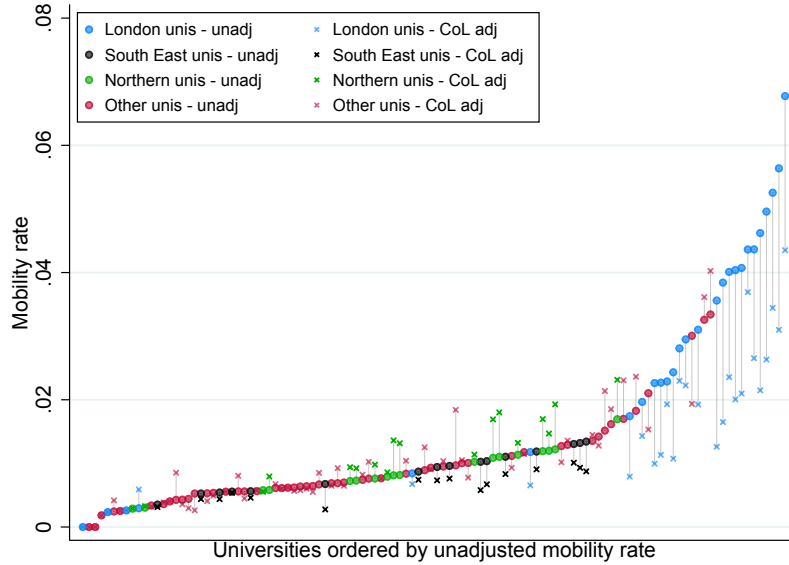
Despite this, the London institutions still dominate even after the adjustment. This can be seen more clearly in panel (b), which ranks universities by their adjusted mobility rates. The figure also shows that our other main findings still hold. 'Other' institutions, who are less selective, still do

³⁶This method follows Britton et al. (2021a), who provide more detail on the adjustments made. That work highlighted a concern with the regional data which is that students do not appear to always update their home address on their tax forms. As a result, we observe an unrealistic share of students still living at the same address as they did when they were 16. This is likely to overstate the downward adjustment to outcomes for universities situated in more expensive areas, and vice versa. As a result, we believe the adjustments we show below are likely to be an upper bound on the changes we might expect to see if the data more accurately reflected people's home addresses.

much better on average than the Russell Group who are more selective.

Figure 17: Cost of living (CoL) adjusted mobility rates by university

(a) Comparison with unadjusted estimates



(b) Highlighting university groups

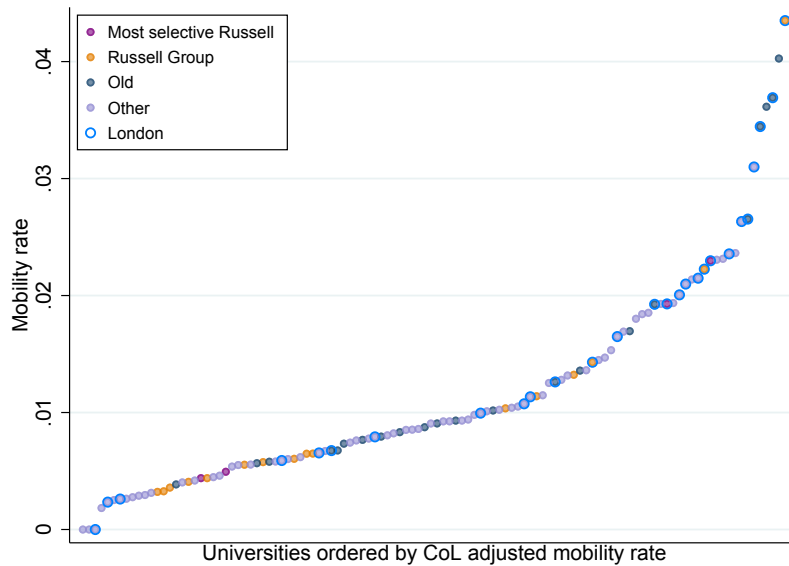
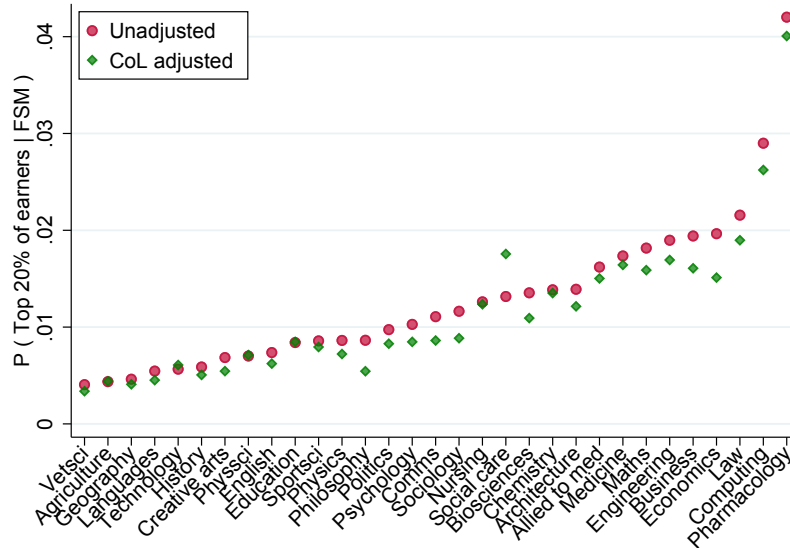


Figure 18 shows the impact of the same adjustment for the mobility rates by subject. Changes here are more modest due to the wider geographical spread of graduates by subject relative to individual universities. Most subjects see no change or decreases in mobility rates which do little to alter their ranking. The only meaningful exception to this is social care, which sees an increase in its mobility rate from 1.3% to 1.8%, and a corresponding rank increase from 13th to 4th place. The largest drops in mobility rates are for business, economics and philosophy, highlighting the

relatively high shares of graduates of these subjects living in expensive cities after leaving education.

Figure 18: Cost of living (CoL) adjusted mobility rates by subject



Although the results here do suggest living cost adjustments can make quite large differences to the mobility rate for individual subjects or institutions, we would emphasise caution before taking the adjusted results as being a more accurate reflection of mobility rates. As mentioned in footnote 36, there are reporting problems in the regional data we use. More conceptually, it is also important to note that adjusting earnings for costs of living will likely understate differences in living standards. Higher living costs tend to reflect areas having better amenities. A more expensive but greener, safer area, with better schools or better public services, will be preferred by many to cheaper areas with less good amenities. Furthermore, average living costs in an area do not always reflect people's individual circumstances. For example, housing costs in many cities can vary considerably from one street to the next, or individuals might be able to live with friends or family. We therefore made the choice to not adjust for living costs in our main results but to show how the results might be affected by these adjustments. And overall, although we see some large changes in individual estimates, we conclude that adjusting earnings for costs of living does not significantly alter our conclusions on which degrees are good for mobility, as it does not dramatically change the ranking of universities and subjects.³⁷

³⁷Nevertheless, we provide both sets of results in our Online Appendix, allowing people to draw upon either in any follow-up to this work.

6.2 Student composition

Another potential challenge to our estimates is that differences in success rates (and hence mobility rates, which are equal to access rates multiplied by success rates) may be driven at least partly by differences in student composition. For example, it could be the case that the universities that do very well in terms of mobility take much higher-ability students who are much more likely to make it to the top 20% of the earnings distribution anyway.

Here we test the impact on our findings when we adjust mobility rates to take into account some of these differences in student characteristics. To do so, we calculate *conditional success rates*, which can be interpreted as the probability of a student from a given subject, institution or course making it to the top 20% of the earnings distribution, conditional on their prior attainment and other background characteristics. We then multiply this conditional success rate by the access rate to obtain conditional mobility rates.

To compute these conditional success rates, we start by regressing an indicator for individuals being in the top 20% of the earnings distribution on an indicator for their institution, subject or course, as well as a set of prior attainment and background variables. We do this *only for FSM students* and use a simple linear probability model (LPM). This can be written as follows:

$$Q5_i = \alpha + HEI'_i\beta + X'_i\gamma + \epsilon_i \quad (3)$$

$$Q5_i = \alpha + Subject'_i\beta + X'_i\gamma + \epsilon_i \quad (4)$$

$$Q5_i = \alpha + Course'_i\beta + X'_i\gamma + \epsilon_i \quad (5)$$

where $Q5_i$ is an indicator for whether the individual is in the top quintile of earnings, at age 30 for institutions and subjects and at age 28 for courses, and HEI'_i , $Subject'_i$ and $Course'_i$ are institution, subject and course dummies respectively (we omit the conditioning on individuals being from low-income families from the notation for the sake of clarity). The inclusion of controls X'_i helps to account for differences in success that are due to differences in observable characteristics between students across subjects, courses or institutions. We control for:

- KS4 point score (non-parametrically);³⁸
- home region;
- ethnicity;
- gender.

In the presence of these controls, the coefficient β_j gives us the difference in probability of having age 30 earnings in the top 20% between students from low-income backgrounds who attended

³⁸We split individuals into deciles of KS4 score within cohort and include dummies for each decile.

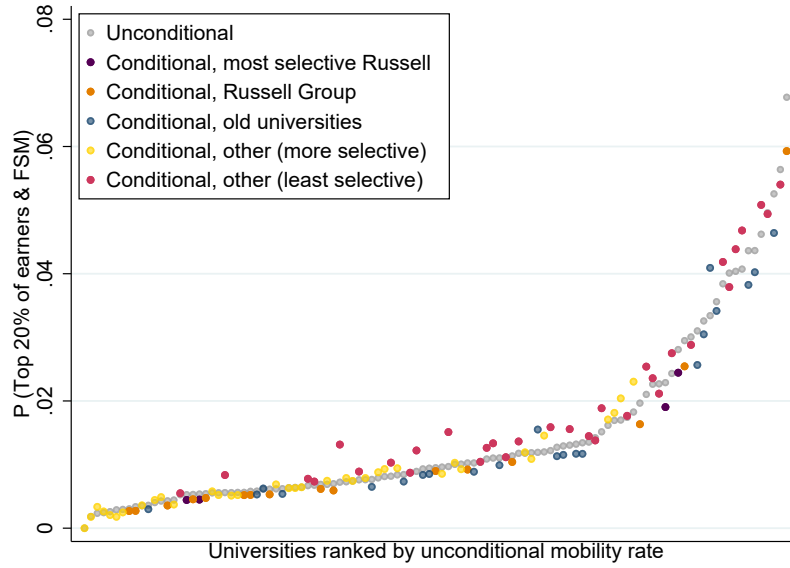
university, subject or course j and comparable - in terms of the characteristics contained in X_i' - individuals from low-income backgrounds who did not attend HE (the omitted category). This can be interpreted as the differences in success which cannot be explained by differences in GCSE attainment, ethnicity, gender or region of origin.

To construct conditional success rates, we use the coefficients from equations (3), (4) and (5) to predict the conditional success rate at each institution, subject and course respectively, for the average student from a low-income background. Writing the characteristics of the average poor student as \bar{X} , we can thus write the conditional success rate of institution, subject or course j as follows:

$$Success_j^{cond} = \alpha + \beta_j + \bar{X}'\gamma \quad (6)$$

We then multiply these conditional success rates by access rates for each university, subject and course to construct conditional mobility rates. Figure 19 shows these conditional mobility rates for universities, plotting them alongside the baseline (unconditional) mobility rates presented in Section 5.2.

Figure 19: Conditional mobility rates by university



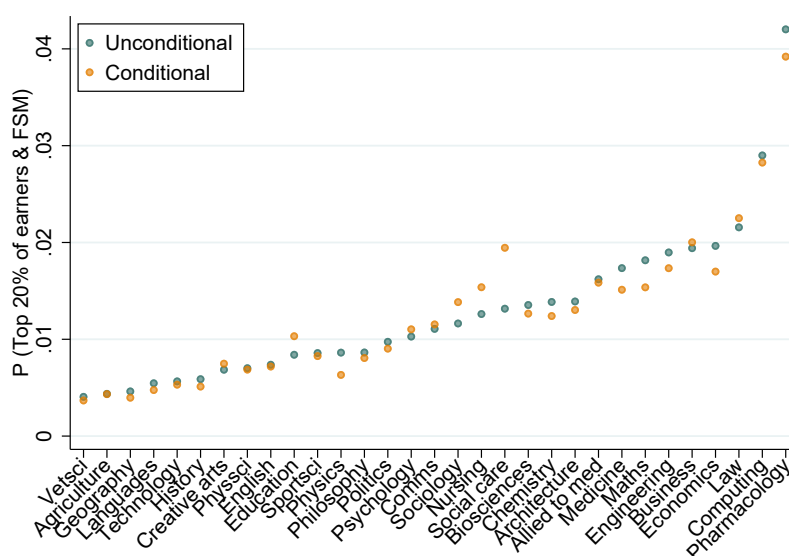
Notes: Universities with at least 250 students and 6 FSM students are included. Negative conditional mobility rates are set to zero.

Although it is true that adjusting for differences in student characteristics and attainment can substantially reduce the success rates of the more selective universities (e.g. it has a big negative effect on the success rates of the Russell Group universities, as shown in Appendix Figure A18) due to their very low access rates, this adjustment actually has only a fairly minor effect on mobility rates. For example, despite the adjustment resulting in a fall of 10 percentage points in the success rate at the University of Cambridge, this does change its position in the mobility ranking by much. Figure 19 shows that mobility rates drop at several of the higher-mobility places, while

some of the less selective universities see boosts to their mobility rates. The University of Bradford, for example, moves into the top ten universities (from 13th to 9th) once student characteristics are taken into account.

Figure 20 shows the results of a similar adjustment to the mobility rates by subject.³⁹ As in the previous subsection, we again see social care looking much better in terms of mobility, as it moves up from 13th to 5th place. This is driven by the relatively low prior attainment of students taking this subject. We also see education and sociology move up the mobility ranking, while subjects such as maths, medicine, economics and physics all drop.⁴⁰

Figure 20: Conditional mobility rates by subject



Overall, this exercise shows that adjusting for student composition can impact mobility rates. The key factor in this is prior attainment, as there is a large amount of selection of higher-ability students into certain universities and subjects. However, we again conclude that these conditional estimates do not dramatically change our overall conclusions. In fact, we argue that this exercise only reinforces the message that many low-selectivity and low-returns universities do relatively well when it comes to promoting mobility.

7 Recent trends in access and mobility rates

The results so far have focused on students who entered university in the mid to late 2000s. This section attempts to take into account any recent progress universities have made in this area by

³⁹ Adjusted success rates by subject are shown in Appendix Figure A19.

⁴⁰ We also show the impact of conditioning on observable characteristics for the course-level estimates of mobility rates in Appendix Figure A21. Again, the two sets of estimates are very highly correlated, and we see similar patterns to those for the overall institution and subject estimates, such as courses at the 'most selective Russell Group' universities doing slightly worse with conditioning variables and courses such as social care doing better.

looking at more recent trends in what universities have been doing for poorer students. Specifically, we focus here on trends in access by university, subject and course, and consider the implications of those trends for mobility rates. We devote a large part of the section to carefully considering the potential impact of changes in access on success rates, which we do not actually observe for these later cohorts.⁴¹ It is worth noting that to ensure comparability over time, we now drop 20-year-old university entrants from all the analysis in this section.⁴²

7.1 Changes in institution access rates

We start by considering changes to access rates. Figure 21 plots what happened to access rates by our broad university groupings over the 10-year period up to the 2012 GCSE cohort, the last year we have comparable data for.⁴³ During that decade, we see a gradual improvement over time in access in the sector as a whole (the dashed line) with the share of FSM students rising from around 5.5% for the 2002 GCSE cohort to around 6.8% for the 2012 GCSE cohort. This is driven by progress across all university groups, though it is particularly pronounced for ‘Old’ and ‘Other (least selective)’ universities. Progress at Russell Group universities has been slower over the period. Overall, however, there is not strong evidence of either convergence or divergence in access rates between university groups over this period.⁴⁴

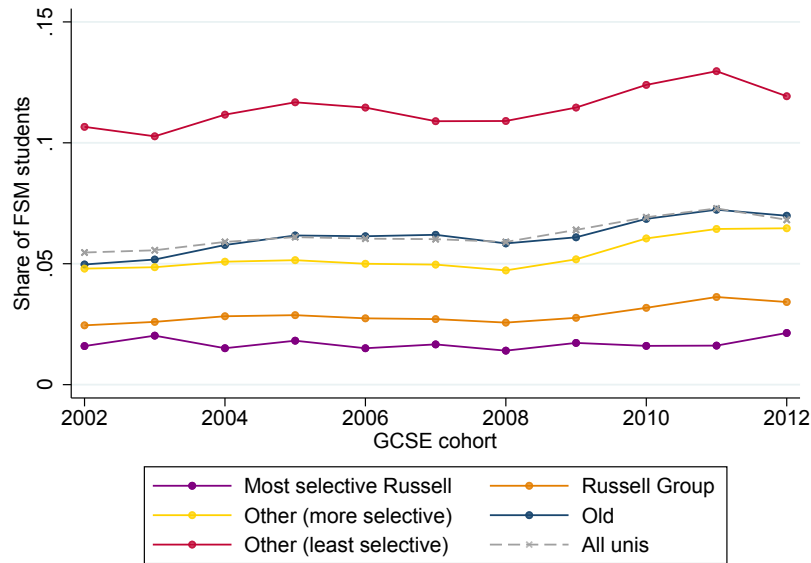
⁴¹In theory, this could go either way. On one hand, more students from poorer backgrounds could result in lower success rates, as we know that poorer students tend to do worse in the labour market, even conditional on university and subject (Britton et al., 2016). On the other hand, as shares of poorer students rise, universities might improve their ability to cater for such students through support services such as career guidance, which could boost success.

⁴²This means that access rates for the 2002-04 cohorts in this section differ somewhat from the main estimates, though in practice the two are very similar.

⁴³As our data end in 2012, we have drawn upon another source of data (POLAR rates, which can be found in Appendix Section A6) to study how access may have evolved more recently. While trends in the POLAR access measure are similar to those in our FSM data, they are not perfectly comparable. We therefore focus on the information up to 2012 in the main text.

⁴⁴We focus here on FSM rates as our measure of access, while universities often target other measures of access such as POLAR rates. We show the trends in access in terms of POLAR in Appendix Figure A22.

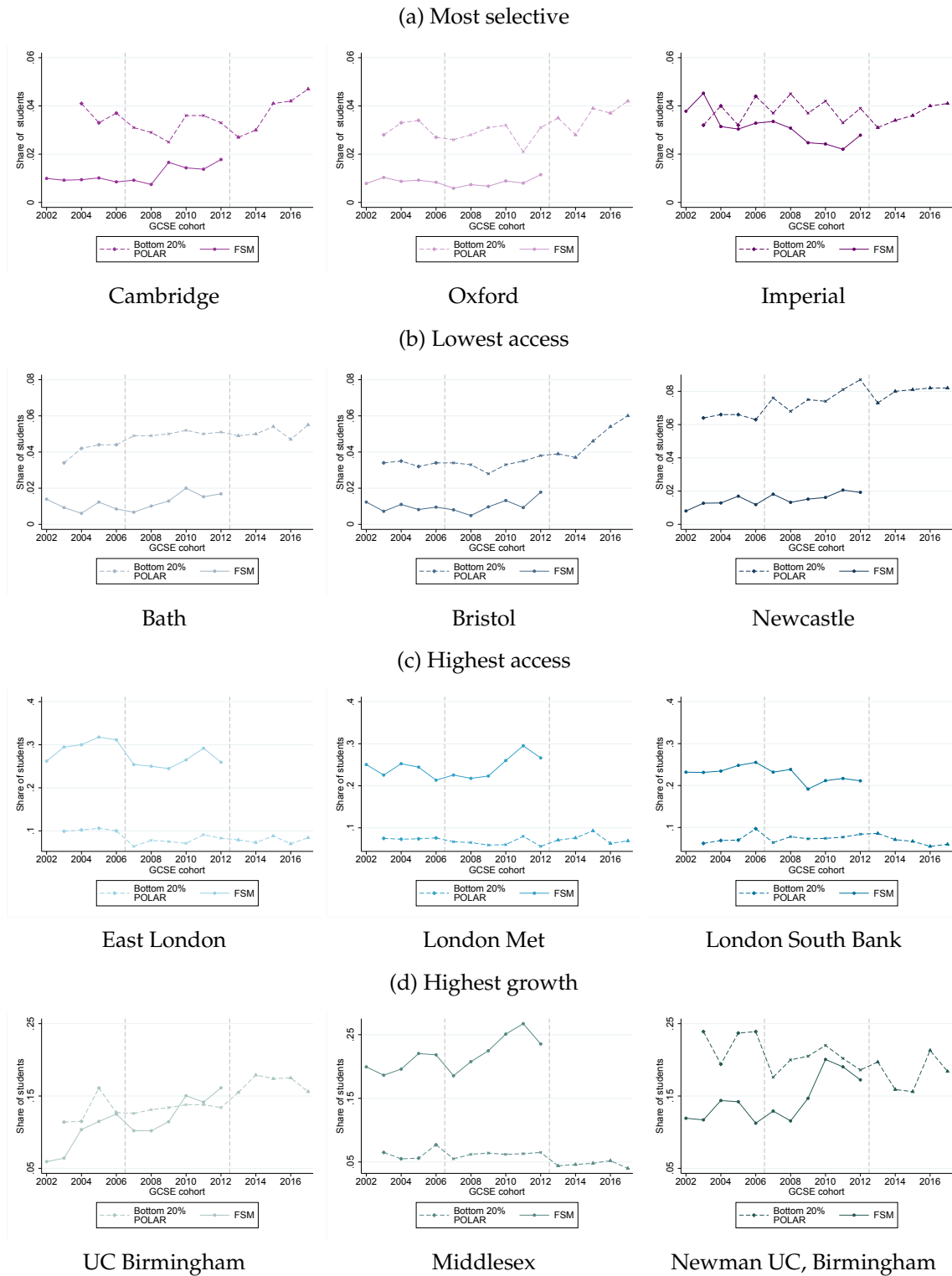
Figure 21: Access over time by university groups



Notes: Excluding 20-year-olds. Universities with at least 100 students in each year are included.

While most university groups have displayed gradual improvements in access over time, progress is much more varied at the individual university level. We illustrate this by plotting changes in access over time for a selection of universities. Focusing first on our own definition for access rates (the FSM share), panel (a) in Figure 22 shows access rates for three of the most selective universities: Cambridge, Oxford and Imperial. Although this is noisy over time, we can see that from similar starting points, Cambridge has made more progress than Oxford in improving access for FSM-eligible students. Access for FSM students at Imperial, meanwhile, has even slightly decreased though is still significantly higher than at Oxbridge. This highlights the variability in progress towards greater access even amongst similarly selective institutions.

Figure 22: Access over time for individual institutions



Notes: Excluding 20-year-olds. Most selective excludes LSE (as there are fewer than 500 students in individual years). Lowest access excludes Oxford and Cambridge (plotted under most selective) and Harper Adams, Leeds City College and Royal Agricultural College (due to disclosivity). POLAR2 is plotted between 2004 and 2006. This is based on people who were 18 between 2000 and 2004 and who started a course, aged 18 or 19, between 2000-01 and 2005-06. POLAR3 (based on 18- and 19-year-olds starting between 2005-06 and 2009-10 and between 2006-07 and 2010-11, respectively) is plotted up to 2012. 2013 onwards plots POLAR4 (based on 18-year-olds starting between 2009-10 and 2013-14 and 19-year-olds starting between 2010-11 and 2014-15). While POLAR rates are generally higher than FSM rates, many London universities have lower POLAR rates as London has high HE participation.

Panels (b) and (c) show changes in FSM-eligible access rates for the three universities with the lowest⁴⁵ and highest access rates at the beginning of the period, respectively. Newcastle, Bath and Bristol, some of the lowest-access institutions, show flat to modest growth in access, and remain amongst the ten universities with the lowest access rates. At the other end of the scale, access rates at the most accessible universities have largely remained flat or, in the case of London South Bank, even declined. Yet they retain their position as some of the highest-access universities by the end of the period. Finally, panel (d) highlights the universities with the biggest growth in access from 2002 to 2012. All start the period as universities with above-average access and see significant improvements over this period. This contextualises the very limited growth at institutions such as Cambridge and Bristol.

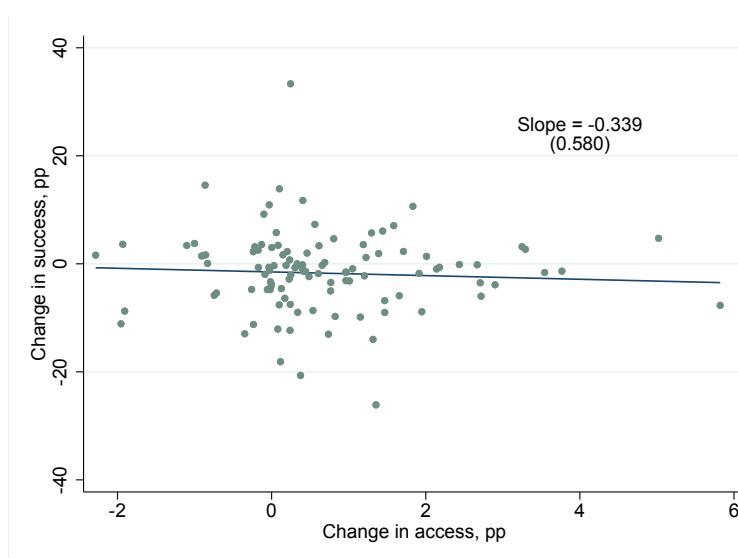
The figure also plots the trend in the share of students coming from the 20% of areas with the lowest higher education participation (the dashed lines). This is the POLAR statistic that many universities specifically target as part of their widening participation and access schemes. Tracking progress in this measure is more difficult as its definition has changed over time (as indicated by the vertical lines in the figure). Despite the different levels of access from this and the FSM measure, it seems to be the case that for the set of universities included in Figure 22, the trends are generally quite similar over the 2002 to 2012 period. Looking beyond 2012, however, universities including Cambridge, Oxford and Bristol have seen shares from the lowest POLAR quintile areas increase. If this reflects an improvement in access for FSM students as well, this would be a welcome development.

7.2 Do higher access rates affect success?

The aim of this overall section is to update our mobility rates to adjust for more recent trends in access rates. A challenge, however, is that we do not observe success rates for more recent cohorts as they are too young to have any usable labour market outcomes. We therefore have to approximate success rates, and in doing this we want to take into account the possibility that changes to access rates might be associated with changes to success rates. For example, universities that see dramatic improvements in their access rates might also experience corresponding drops in success, offsetting the implied increase to mobility rates.

⁴⁵Excluding universities of Oxford and Cambridge as these are plotted under panel (a), and Harper Adams, Leeds City College and Royal Agricultural College due to disclosivity.

Figure 23: Changes in success rates and access rates by institution, GCSE cohorts 2002-05



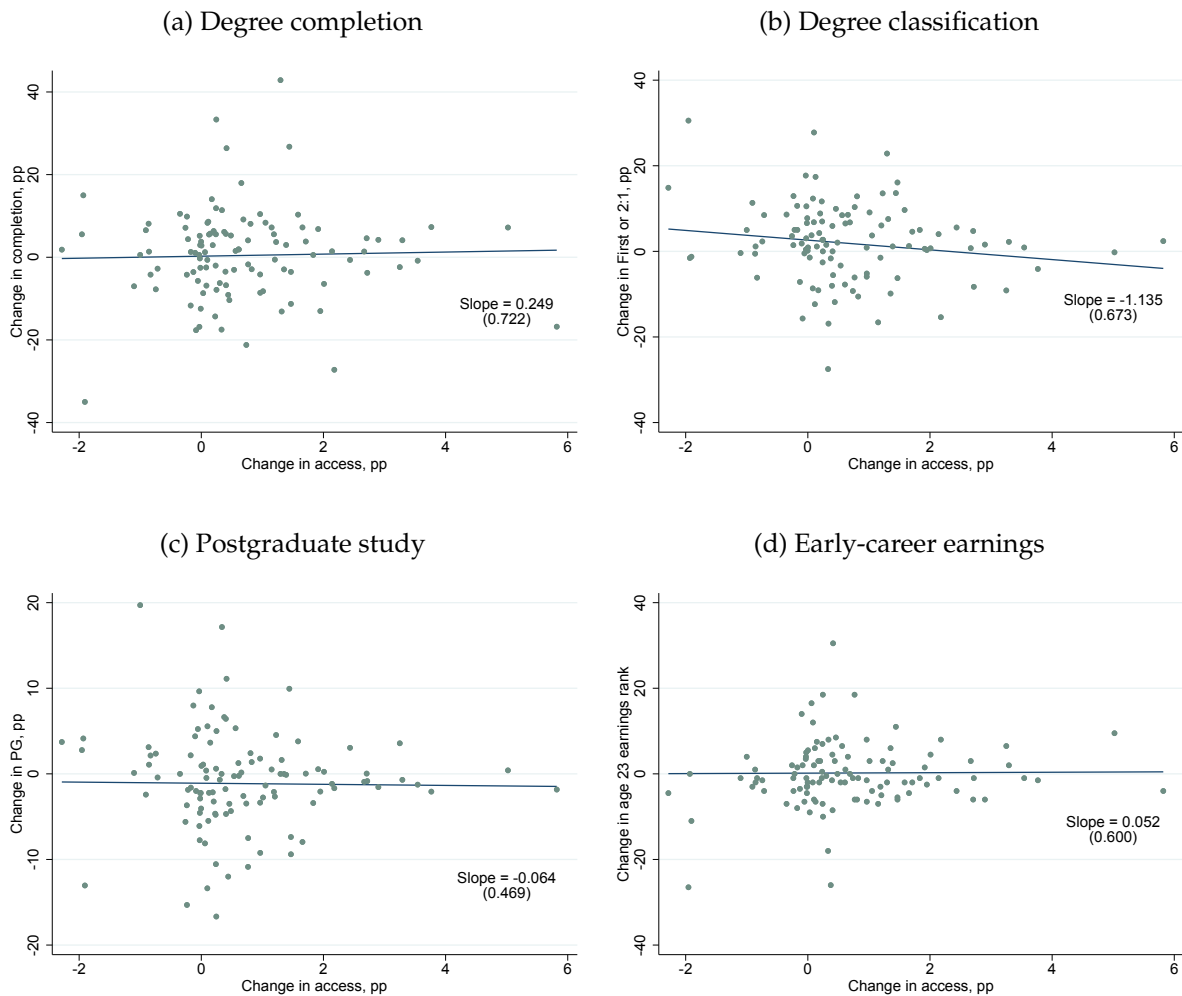
Notes: Success measured at age 29. Excluding 20-year-olds. Institutions with at least 100 students and at least 6 FSM students in 2002 and 2005 are included in the regression.

In Section 5, we indeed found that there is a (weak) negative correlation between the access and success rates of universities and courses. However, looking at this cross-sectional relationship is unlikely to be informative about the causal relationship between the two variables. To approximate this more accurately, we therefore look at how *changes* in access relate to *changes* in success, within institution. Specifically, we plot the change in success rates between the 2002-03 and the 2005-06 GCSE cohorts against the corresponding change in access rates in Figure 23. The figure also shows the regression line, slope and standard error from an (enrolment-weighted) OLS regression of the relationship. We do not find a significant relationship between changes in access and success, and we fail to reject the null hypothesis of no relationship between the two.⁴⁶

This suggests that there is not a strong case to adjust our success rates for recent trends. However, to further explore this issue, we consider whether there is any evidence of changing success rates when we look at some shorter-term outcomes. In Figure 24, we look at the relationship between changes in access and changes in degree completion, degree classification, postgraduate study, and early-career earnings. We see no relationship between changes in access and changes in completion, progress to postgraduate study or early-career earnings in panels (a), (c) and (d). However, changes in access *are* negatively correlated with changes in the shares of poorer students getting higher-class degrees (although this relationship is not statistically significant at the 5% level).

⁴⁶Chetty et al. (2020), who find that a 1 percentage point improvement in access rates is associated with a 0.17 percentage point reduction in success rates, come to the same conclusion.

Figure 24: Relationship between access and intermediate outcomes of poorer students



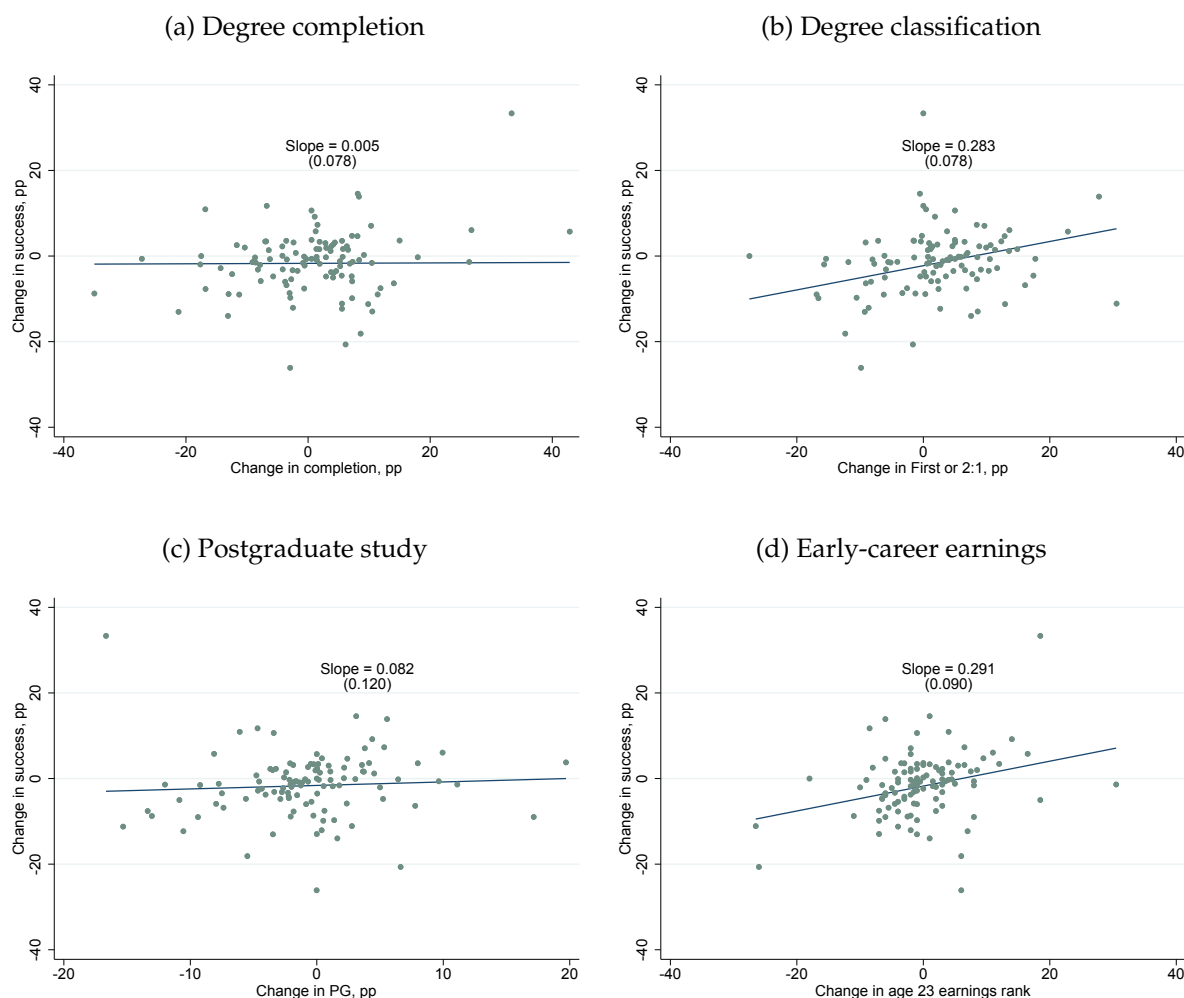
Notes: Figure includes institutions with at least 100 students and at least 6 FSM students in 2002-03 and 2005-06. Median completion time calculated at subject level. Postgraduate defined as starting a postgraduate course within four years of starting an undergraduate course for those taking a three-year degree (excluding those taking integrated masters). Earnings rank excludes zero earnings and earnings from self-employment.

We then turn to consider the relationship between this same set of intermediate outcomes and success rates in Figure 25. Again, we see no statistically significant (at the 5% level) relationship for completion or postgraduate study, but we do see significant positive relationships for both degree classification and early career earnings.

Taken together, we do not think this subsection creates a compelling case that success rates should be adjusted in response to changes in access rates. In the following subsection, we therefore present mobility rates that use newly updated access rates but hold success rates fixed at the levels of the earlier cohorts. The main source of doubt with this conclusion is the implication from Figures 24 and 25 that higher access might imply lower relative degree performance of poorer students, which could result in lower success rates. Because of this, in Appendix Figure A23

we also show the effect of adjusting our success rates downwards with increases in access rates. Importantly, while this adjustment reduces mobility rates on average across universities, it does not have an important effect on the ranking of universities against one another.

Figure 25: Relationship between intermediate outcomes and success rates of poorer students



Notes: Figure includes institutions with at least 100 students and at least 6 FSM students in 2002-03 and 2005-06. Success is measured at age 28. See notes to Figure 24 for more on the intermediate outcomes.

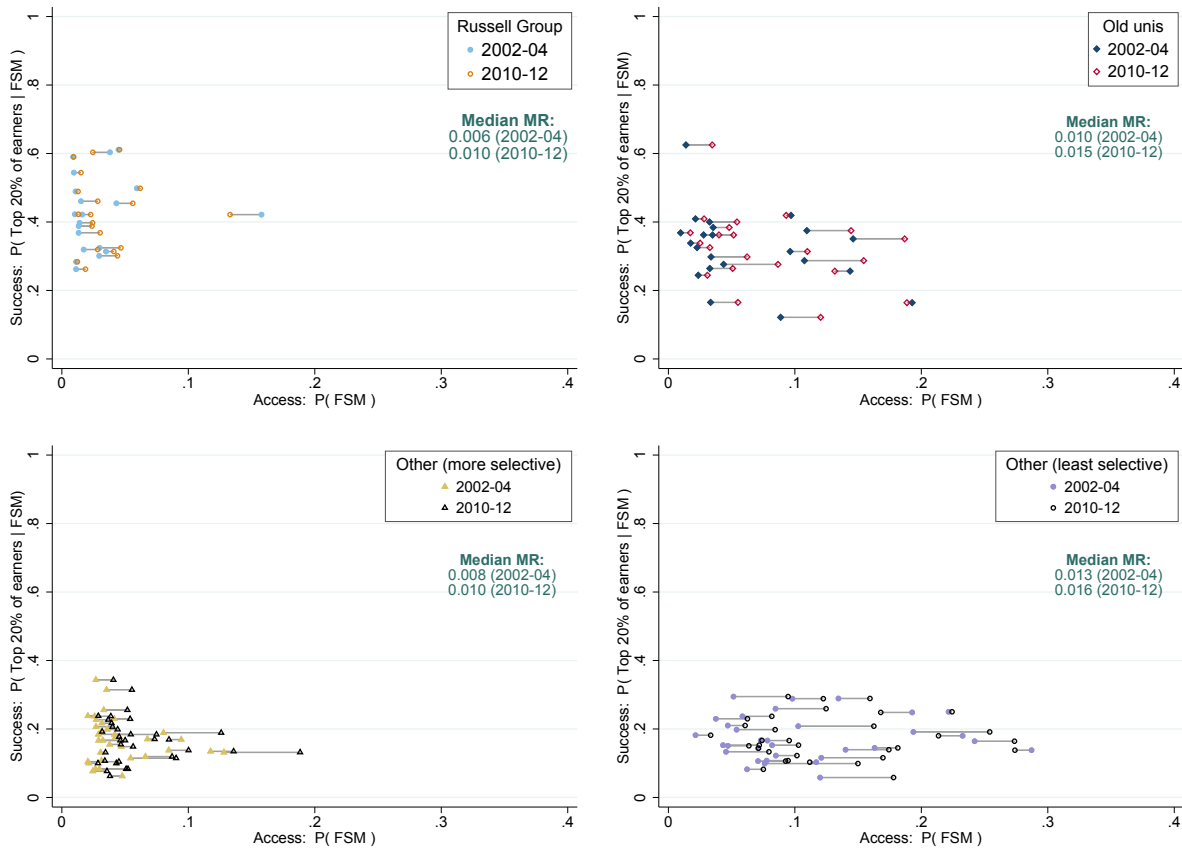
7.3 Consequences of recent trends for mobility

Bringing together the updated access rates with the success rates, we now project mobility rates for each university in 2012. Figure 26 plots the original mobility rates (GCSE cohorts 2002-04) and the projected rates (GCSE cohorts 2010-12), separately for each university group. Appendix Figure A23 shows the same plots with adjusted success rates.

Over the 10-year period, the median mobility rates for all groups have increased due to improvements in access. Though each university group contains both institutions that have seen

large increases in access and those that have seen very little improvement, on the whole, Russell Group universities have tended to increase access the least while ‘Old’ universities and the least selective universities have increased access the most. Despite some differences in growth of access between different types of universities, the ranking of universities in terms of mobility is largely unchanged.⁴⁷

Figure 26: Updated mobility in 2012, by institution



Notes: Figure adjusts access rates but holds success rates fixed at previous levels. 20-year-olds are excluded resulting in small differences in the estimates for the 2002-04 cohorts relative to Section 5.

Table 5 summarises changes in access rates and subsequent mobility rates for different groups of universities. We show access and mobility rates for 2002-04, our 2010-12 projection based on our most recent data on access, and a projection of access and mobility rates in 2017. Access rates for the 2017 GCSE cohort are projected by drawing on access statistics published by HESA that use an alternative measure of deprivation - namely, the share of students from areas in the bottom 20% of higher education participation (bottom POLAR quintile). While the access levels of POLAR and our FSM measure differ, changes over time are broadly similar. This allows us to use the growth in the POLAR access statistic over recent years to approximate how the FSM access rate is likely

⁴⁷ An equivalent plot by subject can be found in Appendix Figure A24.

to have evolved over these years.⁴⁸

Table 5: Trends in mobility rates from the 2002 to 2017 GCSE cohorts

	2002-04			2010-12 <i>projection</i>		2017 <i>projection</i>	
	Access (%)	Success (%)	Mobility (%)	Access (%)	Mobility (%)	Access (%)	Mobility (%)
University type							
Elite Russell	1.7	59.0	1.0	1.8	1.0	2.2	1.3
Russell Group	2.6	38.4	1.0	3.4	1.3	3.7	1.4
Old universities	5.3	27.8	1.5	7.0	2.0	7.2	2.0
Other (more selective)	4.9	17.7	0.9	6.3	1.1	6.6	1.2
Other (least selective)	10.7	18.5	2.0	12.4	2.3	11.9	2.2
High mobility unis (2002-04)							
Low selectivity	10.0	19.3	1.9	11.6	2.2	11.3	2.2
High selectivity	6.6	32.7	2.1	8.0	2.6	8.1	2.6
Low mobility unis (2002-04)							
Low selectivity	4.2	14.9	0.6	5.6	0.8	5.9	0.9
High selectivity	1.7	34.2	0.6	2.6	0.9	2.8	1.0
Subject type							
LEM	7.8	23.6	1.8	8.9	2.1	-	-
STEM	5.6	27.1	1.5	6.7	1.8	-	-
Other	4.3	17.1	0.7	6.1	1.0	-	-
All	5.6	22.3	1.3	7.0	1.6	7.1	1.6

Notes: High- and low-mobility universities are universities with above- and below-median mobility rates, respectively. High-selectivity universities include 'Old' and Russell Group universities. Low-selectivity universities include 'Other' universities. 2017 projection uses student numbers from 2010-12 to weight universities; 2002-04 and 2010-12 use contemporaneous student numbers as weights. Excludes those starting university at age 20 for comparability over time. We are not able to project mobility rates in 2017 for subject groups as HESA does not report POLAR statistics by subject.

The table shows improvements in access and hence mobility rates across the higher education sector in the decade following the mid 2000s (notably this period included the large tuition fee reforms in 2012). Under the assumption that success rates will remain the same, we estimate that the average mobility rate across the whole sector has improved from 1.3% to 1.6%, and that there have been modest improvements for all university groups. That said, for the most selective Russell Group universities, almost all of this improvement has been in more recent years, which is a period for which we have less reliable data.

Table 5 also summarises the implications of recent trends for different subject groupings. All three subject groups have seen quite similar improvements in access and hence quite similar improvements in mobility rates. LEM subjects are still predicted to have both the highest access and highest mobility rates, followed by STEM subjects.

⁴⁸Specifically, for each university we take the average percentage change in the POLAR access measure between cohorts entering university in years 2015 and 2016 and years 2018 and 2019 (equivalent to cohorts taking their GCSEs in summer 2013 and 2014 and summer 2016 and 2017, respectively) and apply this change to the FSM access rate in 2012 to project the FSM access rate in 2017.

These recent trends compare quite favourably with equivalent estimates from Chetty et al. (2017), who show that high-mobility colleges in the United States have become less accessible over time. Nonetheless, access rates to many English institutions - especially the most selective institutions - remain extremely low, and the latest estimate of a mobility rate of 1.6% across the whole sector is still well below our benchmark rate of 4.4%. All of this suggests there is much progress still to be made.

8 Conclusion

This report provides new evidence on the contribution of different institutions, subjects and courses to social mobility. We show large variation in both the proportion of low-income students taken in, and in the proportion of these students who reach the top of the earnings distribution. Despite having very high success rates, we see that the elite institutions do very poorly in terms of mobility rates, as they let in so few low-income students. Instead, low- to mid-ranking institutions, often based in London, are the best performers in terms of mobility.

We also find considerable variation in the mobility rates of subjects, and indeed across subjects within the same institution. Many institutions have courses both in the top and bottom 10% in terms of mobility. This suggests policy might be more appropriately focused at specific combinations of universities and subjects rather than on universities as a whole.

This work can feed into the discussion of 'value' in higher education. The results are important for documenting things that universities do that are beneficial for society that are not reflected in average earnings returns: indeed, a key finding is that many of the institutions and institution-subject combinations with high mobility rates do not have very high average returns. Consequently, it is plausible that policies that restrict funding for low-returning courses could come at a cost in terms of social mobility.

These results can also directly promote mobility themselves. Publicly available rankings of mobility, rather than returns or average earnings, might cause universities to refocus their priorities in order to boost mobility rates. Finally, this research will hopefully motivate future work that helps us to better understand what drives mobility. The evidence provided in this report is an important step, but more research will be needed on *why* certain universities are particularly good for mobility and also what other institutions can learn from them.

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Appendix

A1 Additional tables

Table A1: Share of the population in each group

	Bottom 20%	Earnings quintile			Top 20%
		Q2	Q3	Q4	
No HE					
FSM	0.0379	0.0271	0.0209	0.0126	0.0063
Highest IDACI	0.0333	0.0322	0.0290	0.0201	0.0114
IDACI Q2	0.0255	0.0285	0.0277	0.0216	0.0136
IDACI Q3	0.0205	0.0246	0.0244	0.0211	0.0148
IDACI Q4	0.0171	0.0214	0.0216	0.0204	0.0151
Lowest IDACI	0.0140	0.0172	0.0174	0.0175	0.0148
Private	0.0037	0.0029	0.0020	0.0020	0.0027
Undergraduates					
FSM	0.0038	0.0038	0.0040	0.0048	0.0047
Highest IDACI	0.0049	0.0056	0.0070	0.0089	0.0094
IDACI Q2	0.0058	0.0062	0.0081	0.0113	0.0135
IDACI Q3	0.0068	0.0071	0.0095	0.0140	0.0185
IDACI Q4	0.0080	0.0079	0.0106	0.0164	0.0229
Lowest IDACI	0.0098	0.0088	0.0117	0.0193	0.0309
Private	0.0086	0.0059	0.0053	0.0089	0.0247
Total	0.2	0.2	0.2	0.2	0.2

Notes: IDACI quintile defined over state school students not eligible for FSM. Highest IDACI quintile is most deprived.

All numbers shown are shares of the total number of individuals in our sample.

Table A2: Share in each earnings quintile at age 30 across family background group

	Earnings quintile				
	Bottom 20%	Q2	Q3	Q4	Top 20%
No HE					
FSM	0.36	0.26	0.20	0.12	0.06
Highest IDACI	0.26	0.26	0.23	0.16	0.09
IDACI Q2	0.22	0.24	0.24	0.19	0.12
IDACI Q3	0.19	0.23	0.23	0.20	0.14
IDACI Q4	0.18	0.22	0.23	0.21	0.16
Lowest IDACI	0.17	0.21	0.21	0.22	0.18
Private	0.28	0.22	0.15	0.15	0.20
Undergraduates					
FSM	0.18	0.18	0.19	0.23	0.22
Highest IDACI	0.14	0.16	0.20	0.25	0.26
IDACI Q2	0.13	0.14	0.18	0.25	0.30
IDACI Q3	0.12	0.13	0.17	0.25	0.33
IDACI Q4	0.12	0.12	0.16	0.25	0.35
Lowest IDACI	0.12	0.11	0.15	0.24	0.38
Private	0.16	0.11	0.10	0.17	0.46

Notes: IDACI quintile defined over state school students not eligible for FSM. Highest IDACI quintile is most deprived.

Table A3: Mobility, access and success rates for all subjects

Subject	Rank	Mobility (%)	Access (%)	Success (%)
Pharmacology	1	4.2	11.5	36.6
Computing	2	2.9	10.8	26.9
Law	3	2.2	9.9	21.9
Economics	4	2.0	4.7	41.9
Business	5	1.9	8.6	22.5
Engineering	6	1.9	5.6	34.0
Maths	7	1.8	4.3	42.5
Medicine	8	1.7	2.7	63.2
Allied to med	9	1.6	5.9	27.5
Architecture	10	1.4	4.7	29.6
Chemistry	11	1.4	4.9	28.3
Biosciences	12	1.4	6.1	22.1
Social care	13	1.3	10.5	12.5
Nursing	14	1.3	5.7	22.2
Sociology	15	1.2	7.7	15.1
Comms	16	1.1	6.1	18.1
Psychology	17	1.0	6.3	16.4
Politics	18	1.0	4.3	22.8
Philosophy	19	0.9	3.3	25.8
Physics	20	0.9	2.7	32.4
Sportsci	21	0.9	3.9	21.8
Education	22	0.8	5.8	14.6
English	23	0.7	3.8	19.5
Physsi	24	0.7	4.8	14.5
Creative arts	25	0.7	5.2	13.2
History	26	0.6	2.6	22.2
Technology	27	0.6	4.2	13.5
Languages	28	0.5	2.3	23.6
Geography	29	0.5	1.7	27.1
Agriculture	30	0.4	2.2	20.0
Vetsci	31	0.4	1.2	33.3

Table A4: Bottom 20 universities for mobility

Rank	University	Group	Mobility (%)	Access (%)	Success (%)
1	Arts Inst Bournemouth	Other (more selective)	0.2	2.4	7.7
2	Rose Bruford	Other (more selective)	0.2	2.3	10.0
3	York St John UC	Other (more selective)	0.2	2.3	10.4
4	Leeds City	Other (more selective)	0.3	1.0	25.0
5	Central Sch Speech/Drama	Other (more selective)	0.3	3.1	8.3
6	L'pool Inst Perf Arts	Other (more selective)	0.3	3.5	8.3
7	Cons Dance/Drama	Other (more selective)	0.3	4.7	6.3
8	Newcastle	Russell Group	0.3	1.2	26.2
9	Exeter	Russell Group	0.3	1.2	28.4
10	Winchester	Other (more selective)	0.4	3.3	10.7
11	Bath	Old universities	0.4	1.0	36.8
12	Bath Spa	Other (more selective)	0.4	3.1	13.2
13	Bishop Grosseteste	Other (more selective)	0.4	4.3	10.0
14	Bristol	Russell Group	0.4	1.0	42.3
15	Norwich UC Arts	Other (more selective)	0.4	2.7	16.7
16	Writtle C	Other (least selective)	0.5	2.9	18.2
17	Oxford	Most selective Russell	0.5	0.9	59.0
18	York	Russell Group	0.5	1.4	38.8
19	Cambridge	Most selective Russell	0.5	1.0	54.4
20	Southampton	Russell Group	0.5	1.5	36.8

Notes: Three universities with low access and/or success rates are omitted from this list due to low sample size.

A2 Additional figures

Figure A1: University selectivity for the 2004 GCSE cohort

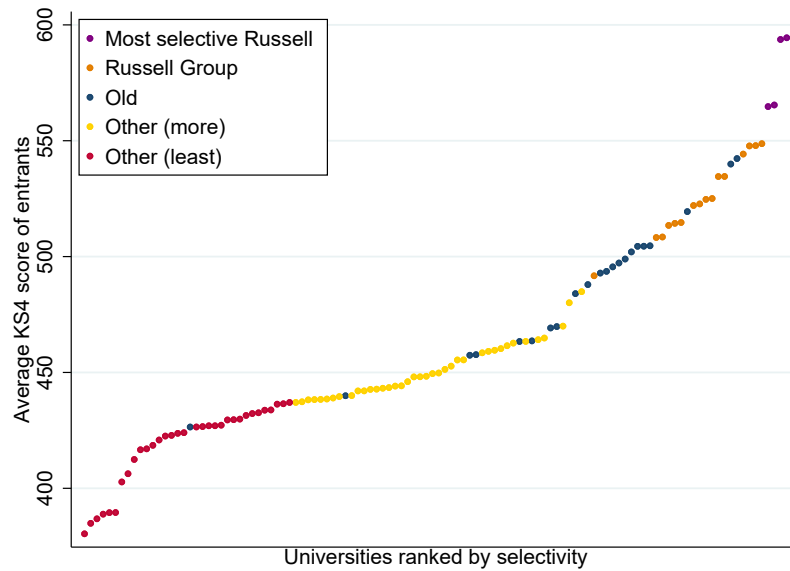
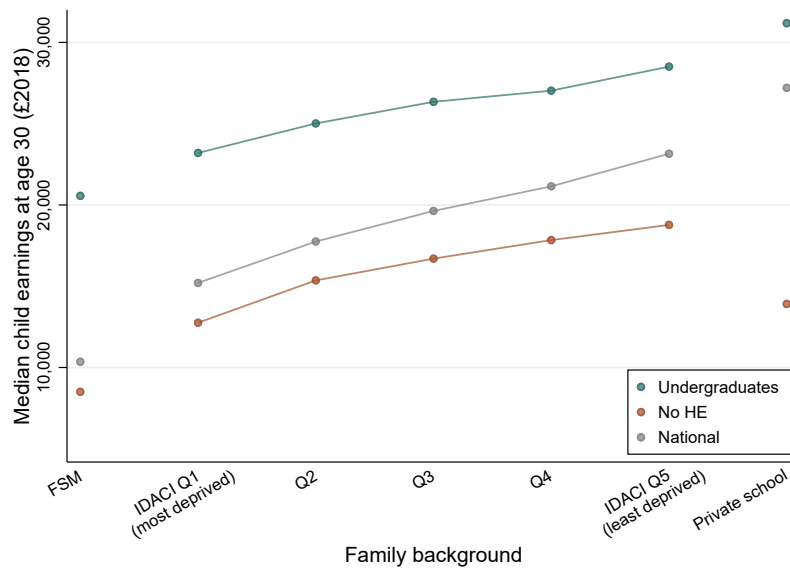
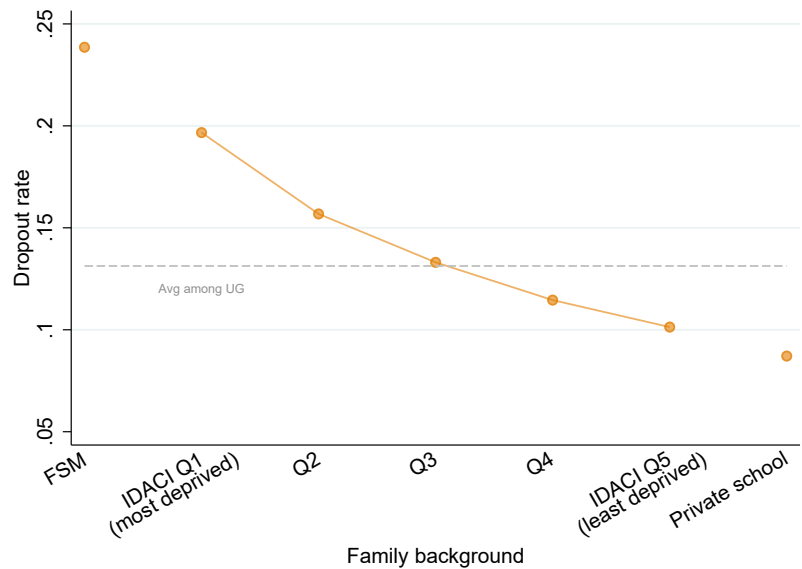


Figure A2: Dependence between family background and child earnings at age 30 for the 2002-04 GCSE cohorts



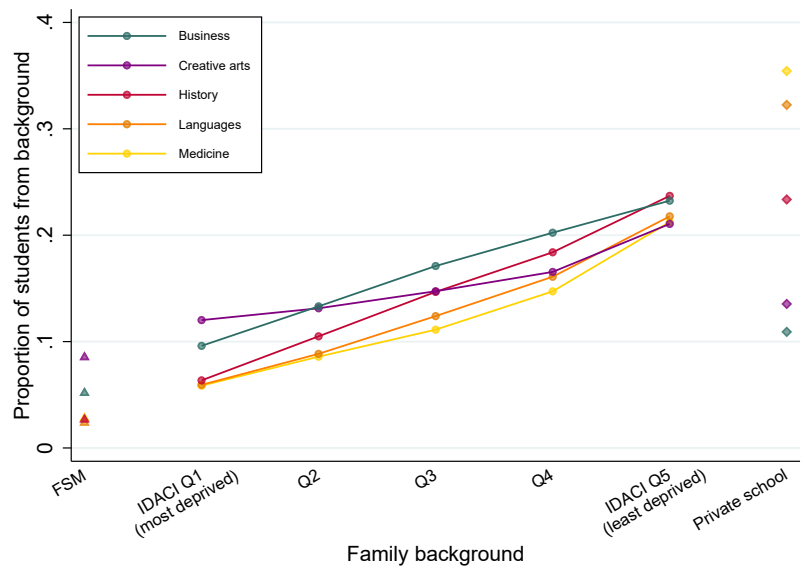
Notes: IDACI quintiles are defined based on state school students who are not eligible for FSM. National plot includes children with a linked KS4 and HMRC record.

Figure A3: Student dropout rates by income group for the 2002-04 GCSE cohorts



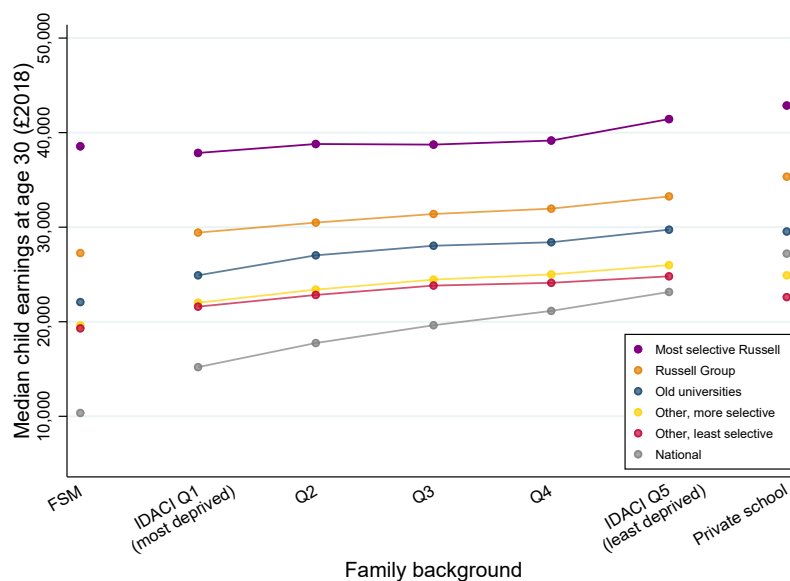
Notes: Figure shows proportion of university entrants who do not graduate, for state school students in each quintile of IDACI score, as well as for FSM and private school students.

Figure A4: University access rates by family background for the 2002-04 GCSE cohorts, for selected subjects



Notes: IDACI quintiles are defined based on state school students who are not eligible for FSM.

Figure A5: Dependence between family background and child earnings at age 30 for the 2002-04 GCSE cohorts



Notes: IDACI quintiles are defined based on state school students who are not eligible for FSM.

Figure A6: Success rate by subject for the 2002-04 GCSE cohorts

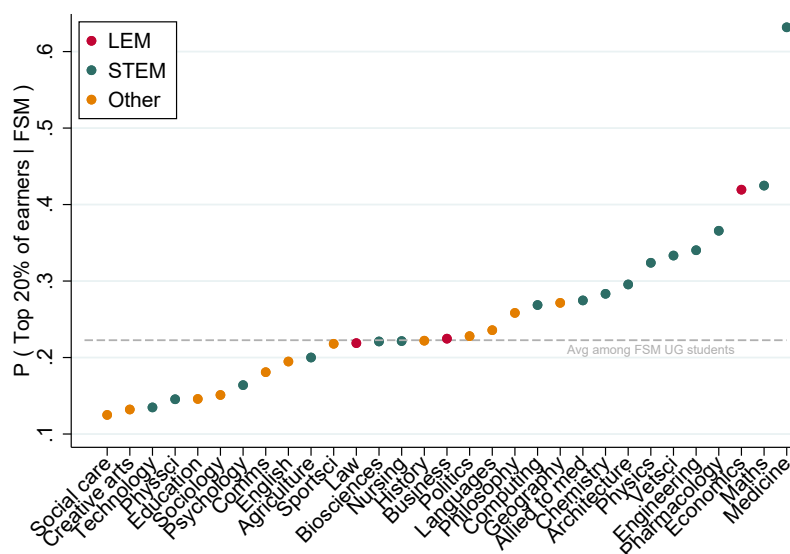


Figure A7: Mobility rates by subject for the 2002-04 GCSE cohorts

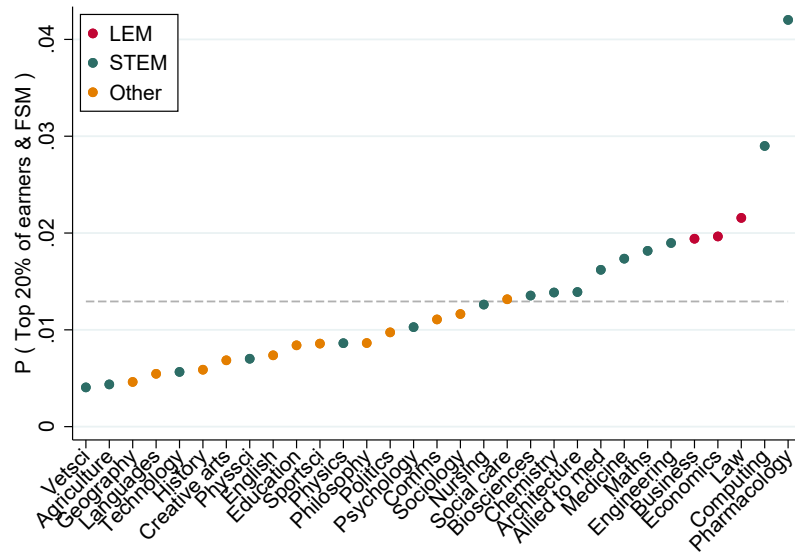
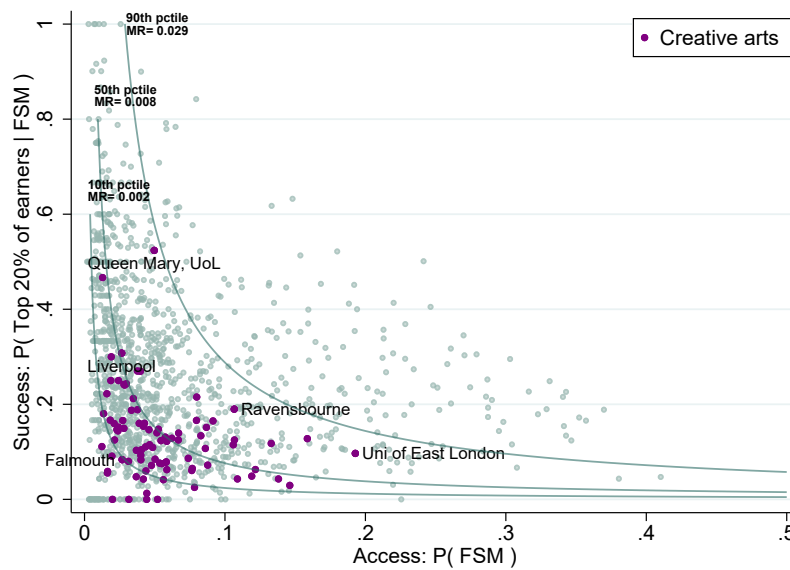
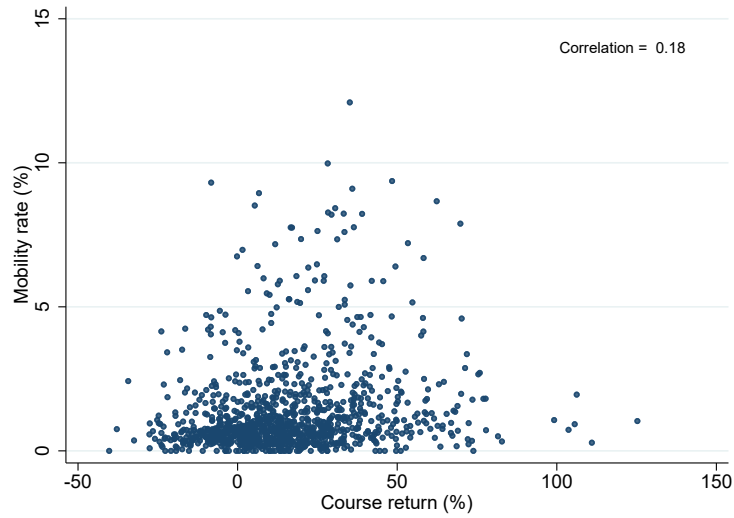


Figure A8: Success, access and mobility rates by course, within subjects



Notes: Only creative arts courses with a sufficient number of FSM students are highlighted.

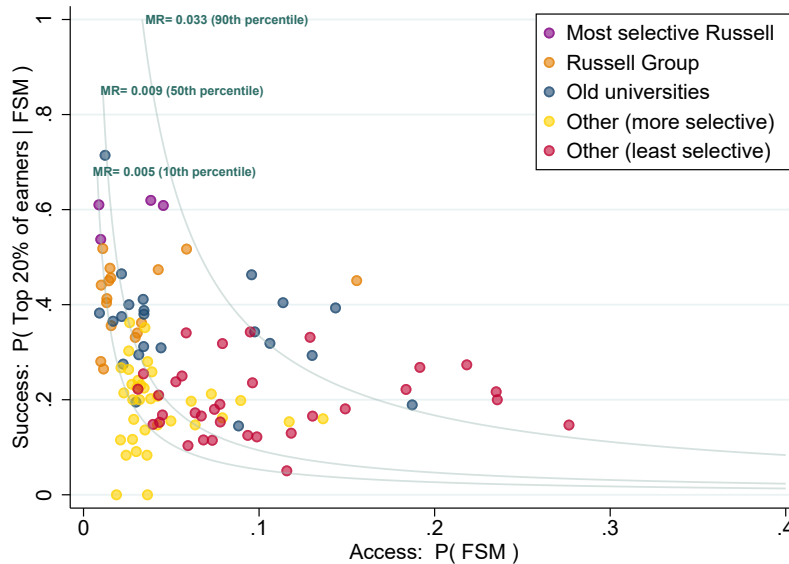
Figure A9: Mobility and returns by course



Notes: Uses male returns estimates from Belfield et al. (2018). Nursing and social care courses are excluded as there are not enough men in these subjects to get reliable returns estimates at the individual course level.

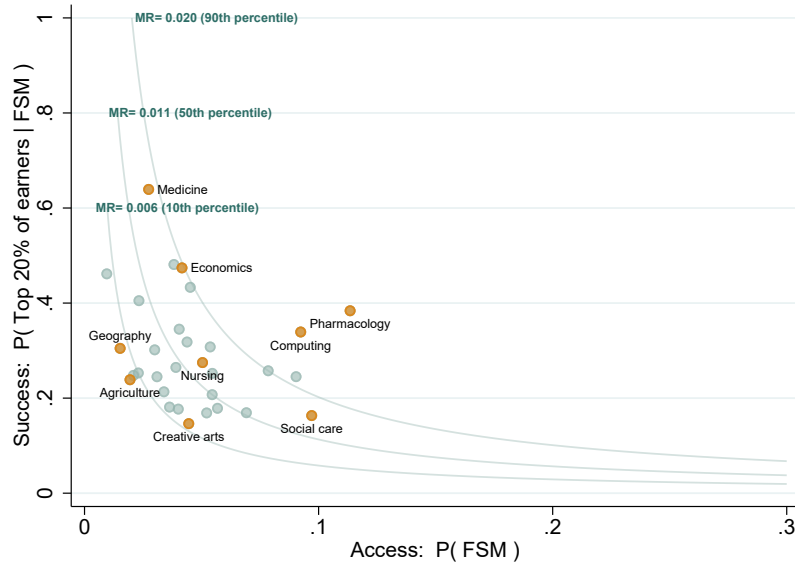
A3 Mobility rates excluding dropouts

Figure A10: Success, access and mobility rates by institution, graduates only



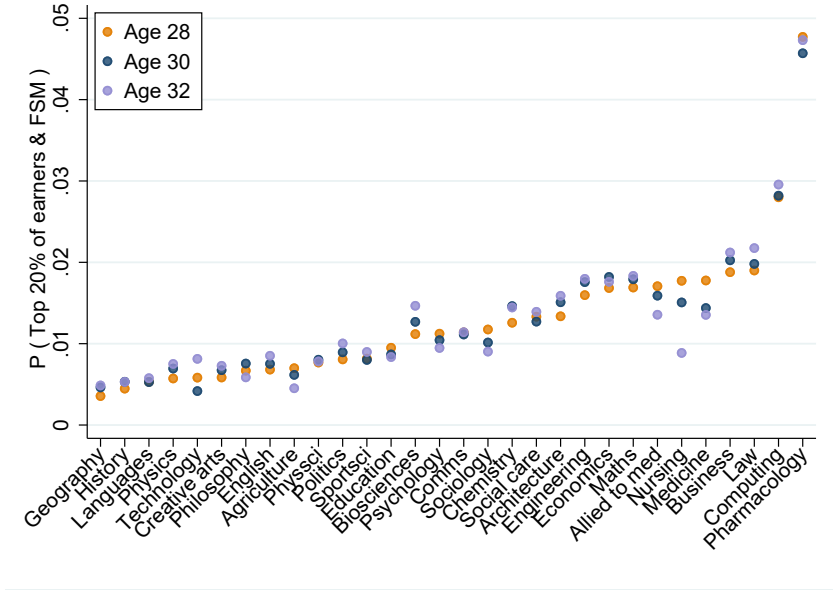
Notes: Harper Adams, Leeds City College, Royal Agricultural College and Trinity LABAN dropped due to small sample.

Figure A11: Success, access and mobility rates by subject, graduates only



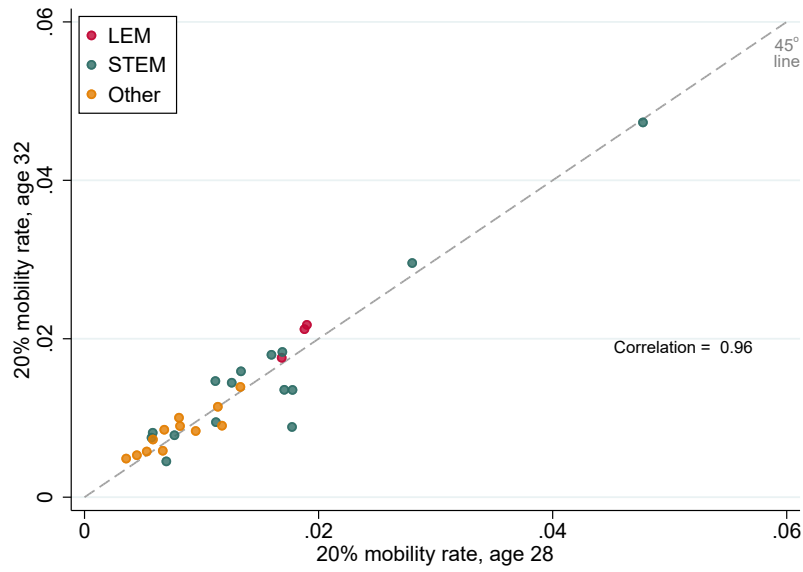
A4 Mobility by age

Figure A12: Mobility rates by subject, ages 28-32



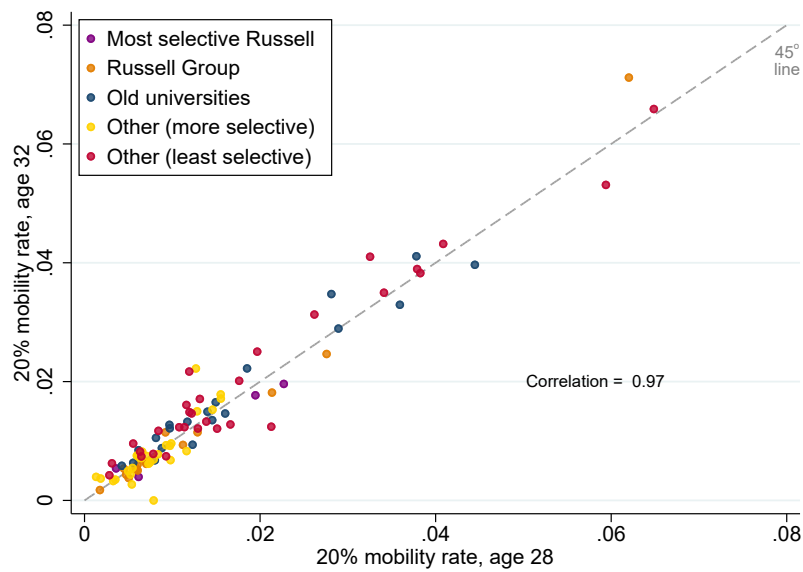
Notes: Uses 2002 GCSE cohort. Excludes subjects with a low number of FSM students.

Figure A13: Mobility rates by subject, age 28 vs age 32



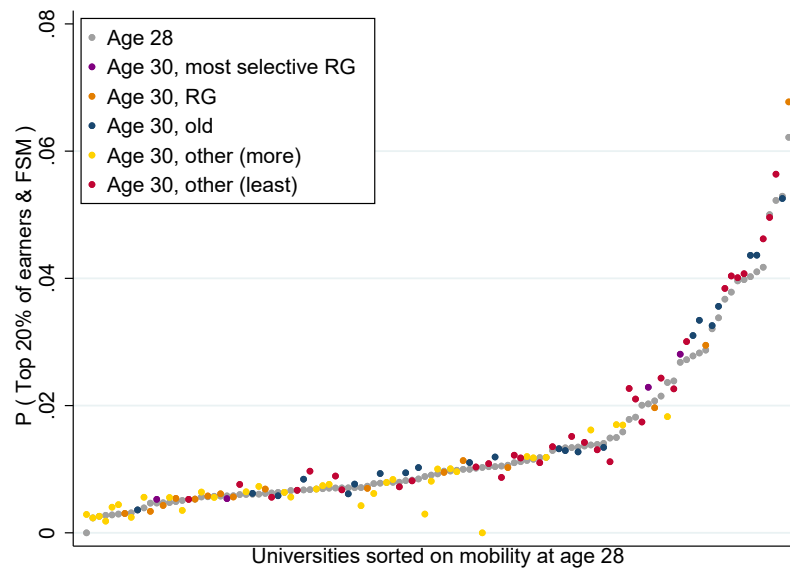
Notes: Uses 2002 GCSE cohort. Excludes subjects with a low number of FSM students.

Figure A14: Mobility rates by institution, age 28 vs age 32



Notes: Uses 2002 GCSE cohort. Universities with at least 250 students and 6 FSM students are included.

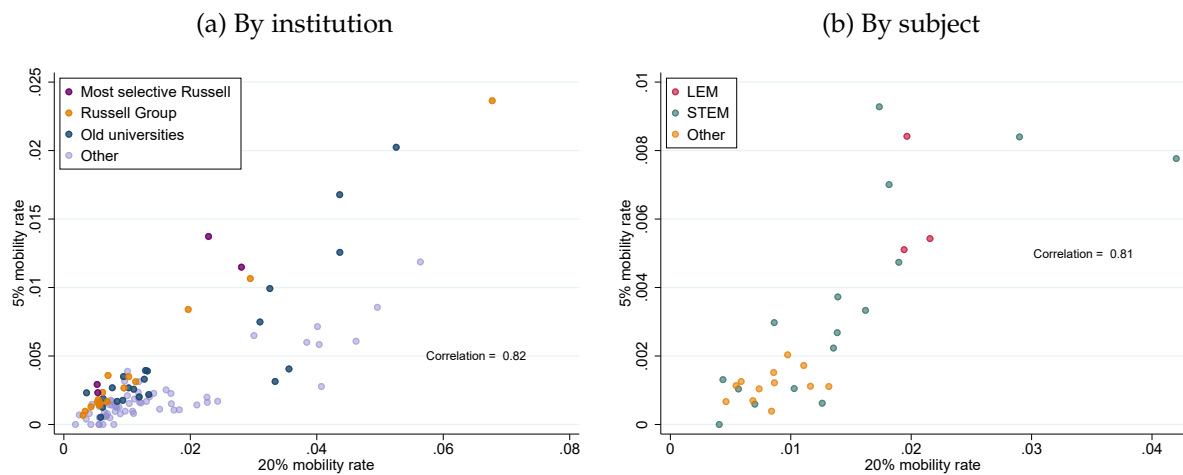
Figure A15: Mobility rates by institution, age 28 vs age 30



Notes: Universities with at least 250 students and 6 FSM students are included.

A5 Mobility rates with alternative definitions of success

Figure A16: Correlation between 20% mobility rates and 5% mobility rates



Notes: Includes universities with at least 500 students. Harper Adams is not plotted due to disclosivity.

Figure A17: Correlation between 20% mobility rates and 40% mobility rates, by subject

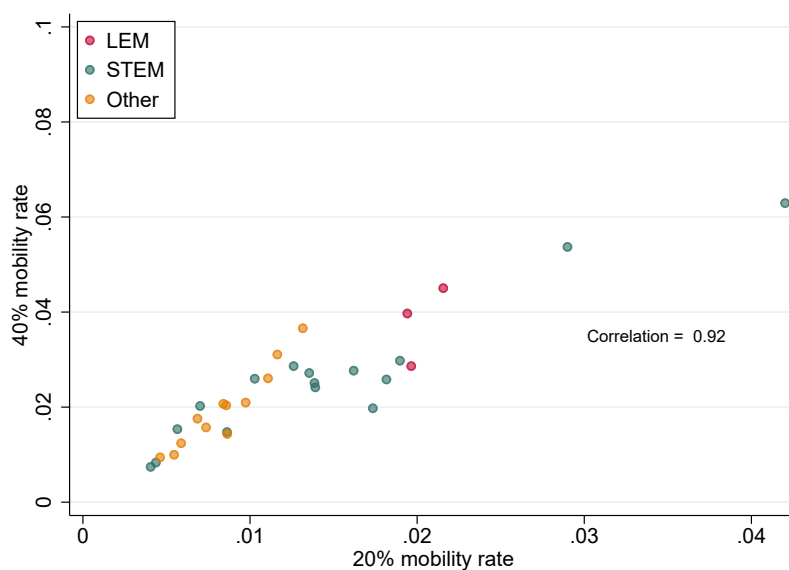
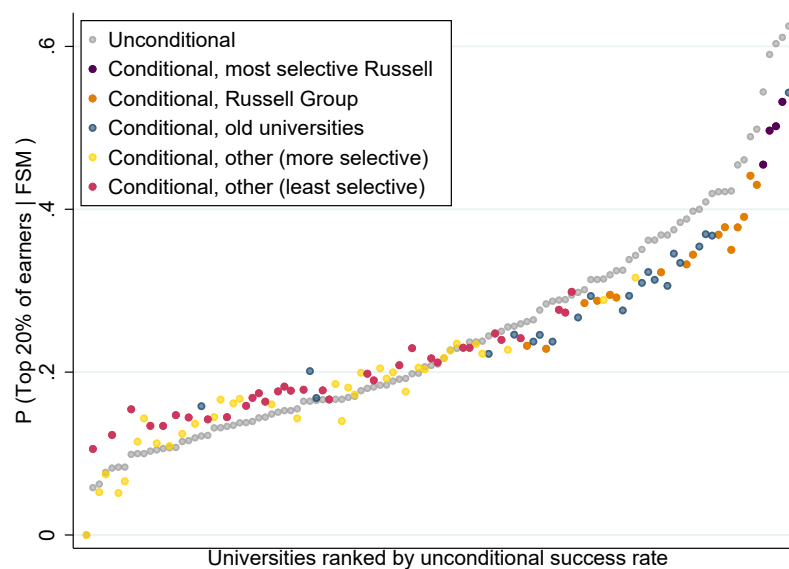


Figure A18: Conditional success rates by university



Notes: Universities with at least 250 students and 6 FSM students are included. Negative conditional success rates are set to zero.

Figure A19: Conditional success rates by subject

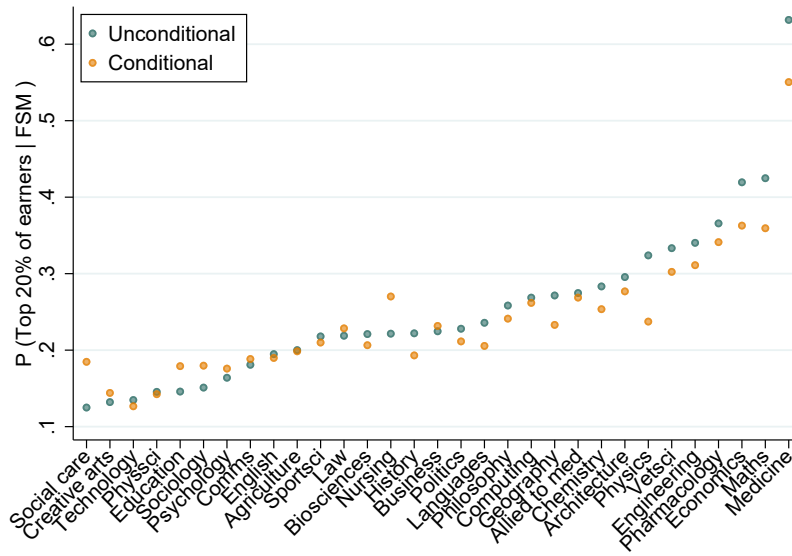


Figure A20: Correlation between access and success rates and university returns

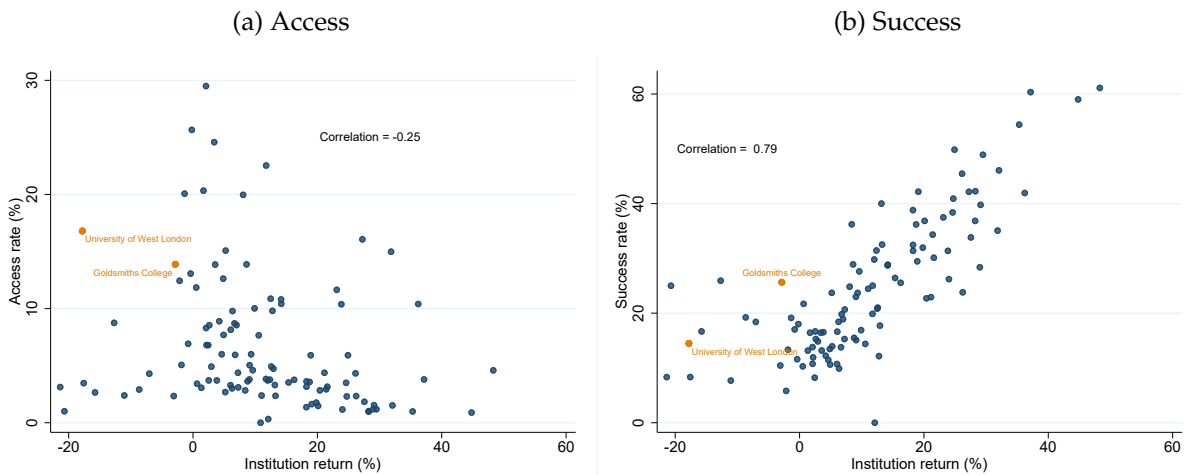
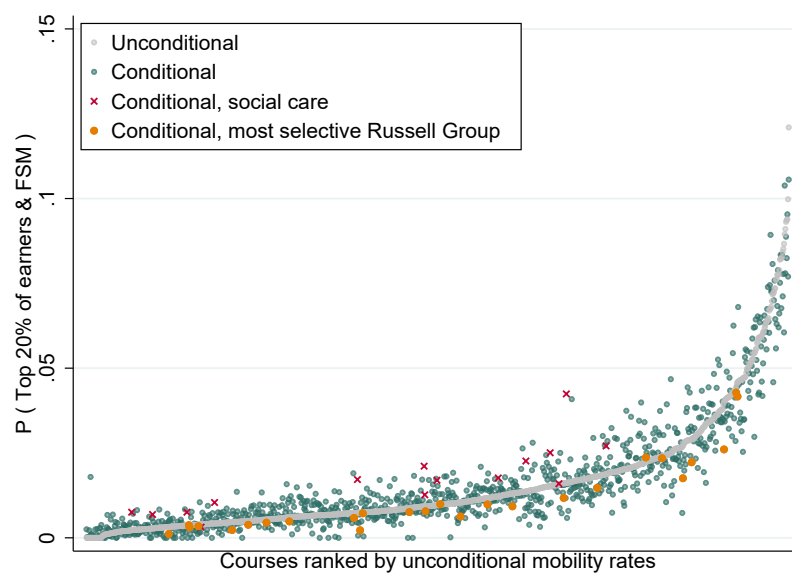


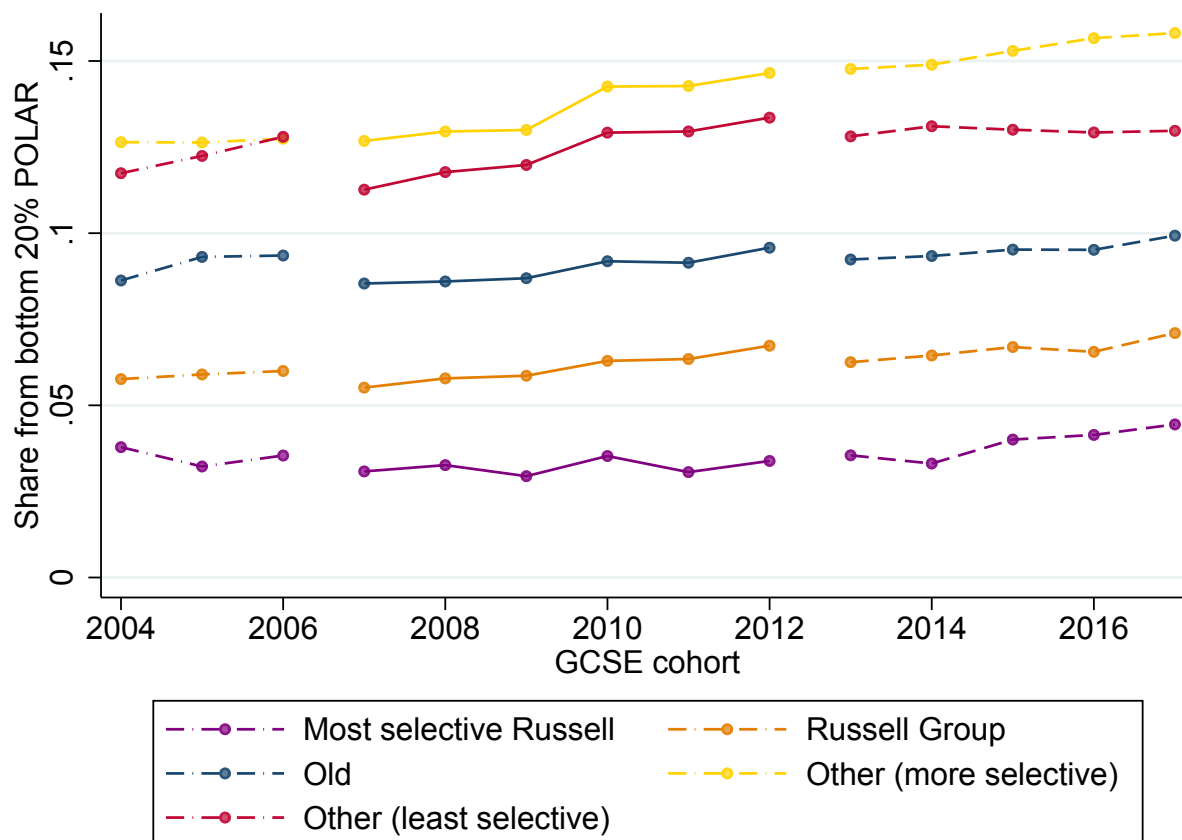
Figure A21: Conditional mobility rates by course



Notes: Negative conditional mobility rates are set to zero.

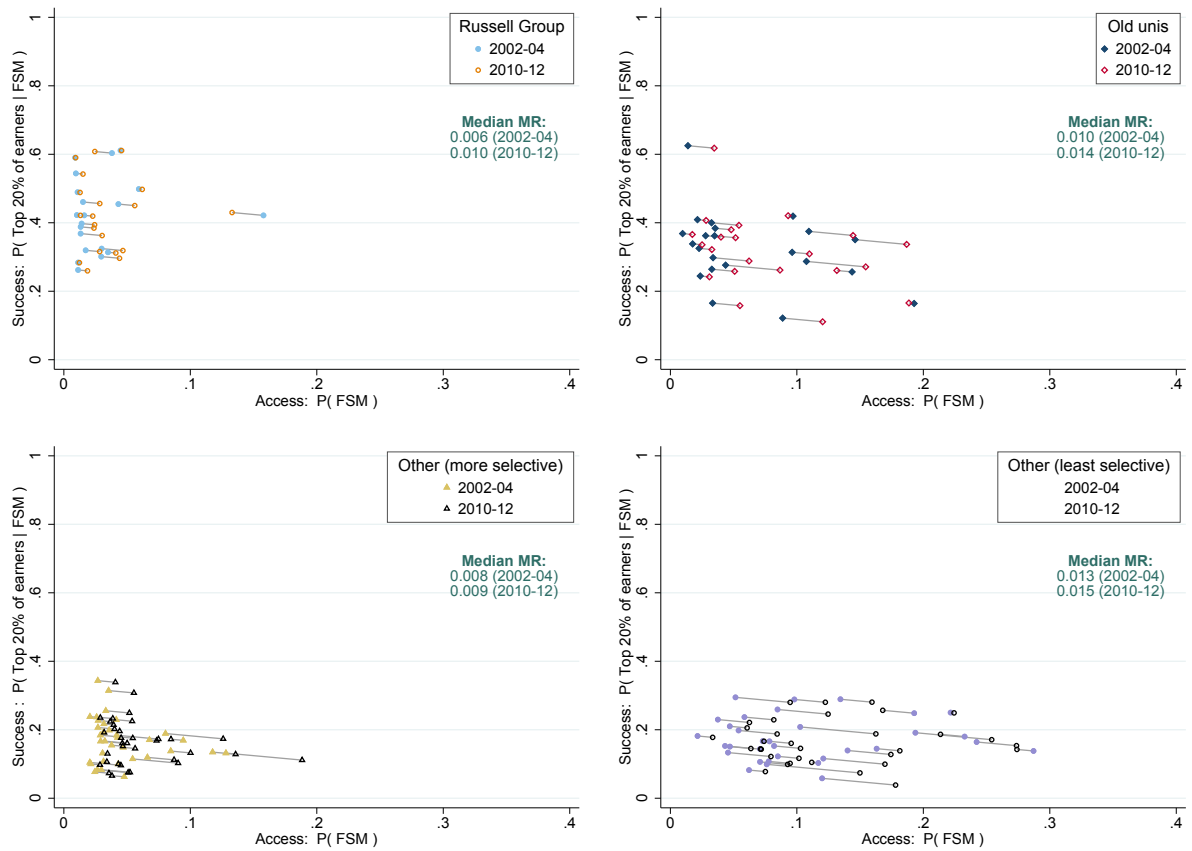
A6 Recent trends in access and mobility

Figure A22: Access over time using POLAR



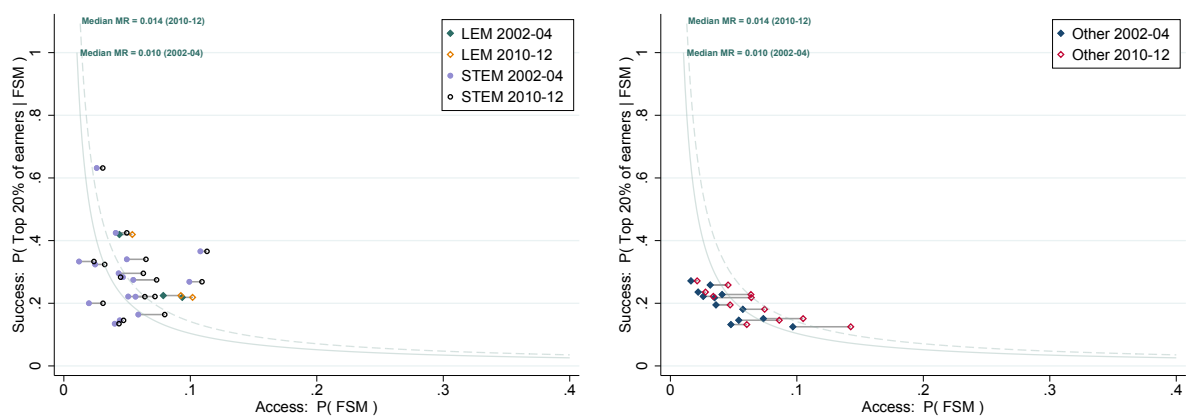
Notes: POLAR2 is plotted between 2004 and 2006. This is based on people who were 18 between 2000 and 2004 and who started a course, aged 18 or 19, between 2000-01 and 2005-06. POLAR3 (based on 18- and 19-year-olds starting between 2005-06 and 2009-10 and between 2006-07 and 2010-11, respectively) is plotted up to 2012. 2013 onwards plots POLAR4 (based on 18-year-olds starting between 2009-10 and 2013-14 and 19-year-olds starting between 2010-11 and 2014-15).

Figure A23: Updated mobility in 2012, with adjusted success rates



Notes: Excluding 20-year-olds. Success rates adjusted downwards by 0.339 percentage points for each 1 percentage point increase in access.

Figure A24: Estimated mobility in 2012 by subject





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For any enquiries regarding this publication, contact us at:

james.greenway@education.gov.uk or www.education.gov.uk/contactus