



**Evaluation of Nuffield Research Placements:
Interim Report: Technical Report for Preliminary Impact
Analysis**

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About the Nuffield Foundation

The Nuffield Foundation is an independent charitable trust with a mission to advance social well-being. It funds research that informs social policy, primarily in Education, Welfare, and Justice. It also funds student programmes that provide opportunities for young people to develop skills in quantitative and qualitative methods. The Nuffield Foundation is the founder and co-funder of the Nuffield Council on Bioethics and the Ada Lovelace Institute. The Foundation has funded this project, but the views expressed are those of the authors and not necessarily the Foundation. Visit www.nuffieldfoundation.org.

Introduction

This technical report chapter presents further details on the preliminary findings in chapter 4 on the impacts of the placements on A Level results and higher education (HE) choices for the students undertaking placements in 2014. The first section summarises how the impacts are estimated, while the second and third sections present the findings for A Level results and HE choices respectively. The final section summarises the findings and the regression results are presented in the annex.

Later work in the evaluation will repeat this analysis for three cohorts of placement students in 2014, 2015 and 2016, with findings expected to be published in spring 2020.

How are impacts estimated?

This preliminary analysis considered the impacts on two sets of outcomes:

- A Level choice and achievement: whether achieved at least one STEM (science, technology, engineering and mathematics) A Level; number of STEM A Levels achieved; and average points score in STEM A Levels (for those with at least one STEM A Level).
- HE enrolment in 2015/16: whether enrolled in HE; whether enrolled in a STEM course in HE; whether enrolled in a Russell Group HE institution (HEI) (and the combined whether enrolled in a STEM course in a Russell Group HEI).¹

The first set of outcomes for A Levels are ‘intermediate outcomes’ in the sense that they are not specific programme objectives but may be a step towards achieving the aims of encouraging or enabling students to pursue further study and careers in STEM. Both are considered here to provide insight on whether Nuffield Research Placements (NRPs) impact on future choices via the effects on A Level study.² In addition, because the programme aims to specifically support pupils from disadvantaged backgrounds, the impacts were estimated for all NRP participants and separately for participants from disadvantaged backgrounds, specifically those who were eligible for free school meals (FSM).

Data on A Level achievement for maintained schools in England was obtained from the NPD (National Pupil Database) data and on HE enrolment in the UK from HESA (Higher Education Statistics Agency) for all pupils in the NRP cohort year, with individual matching for NRP applicants (both successful and unsuccessful). Because the NPD only covers pupils

¹ Less than 1 percent of the 2014 cohort of NRP applicants began further education in 2015/2016 and the analysis therefore focused on HE outcomes.

² Analysis of the HE outcomes conditional on A Level results indicated that the total impact on enrolment in STEM courses and in Russell Group institutions is partly direct (for example, by influencing aspirations) and partly indirect, via improved A Level results. For simplicity, this interim report presents only the total impact on HE enrolment and the later analysis will consider the breakdown into direct and indirect impacts.

in maintained schools in England, the impact analysis was restricted to these pupils and did not cover NRP applicants from independent schools or in the devolved nations.³

For each outcome, NRP participants were compared to two different comparison groups:

1. Unsuccessful applicants: all unsuccessful applicants to the programme in 2014.
2. All eligible pupils: all pupils in the NPD data eligible to apply for an NRP in 2014⁴

As neither of these comparison groups will be an exact match for NRP participants, both the simple raw differences in the outcomes are presented along with the estimated differences in outcomes from regression models that control for differences in other observed characteristics which may drive the outcomes. These models include individual, school and local area characteristics,⁵ as well as specific controls for some differences in AS Level choices between NRP participants and both comparison groups.⁶

The following caveats should be noted with respect to the impact analysis:

- The analysis is restricted to pupils in maintained schools in England because of the limited coverage of the NPD data.
- The impact on enrolment in HE only covers the year following A Level completion and does not include enrolment following a gap year.⁷
- While using unsuccessful applicants as a comparison group has the advantage that they are likely to closely match NRP participants in other characteristics which could drive outcomes, there are two drawbacks to using this comparison group. First, the sample size is relatively small. Second, successful applicants may differ from unsuccessful ones due to the NRP selection process. This process varies across areas and schools in an unpredictable way (in particular, co-ordinators may give preference to students who they think will benefit the most and would otherwise have

³ Of the 3,186 applicants in 2014, 1,062 (33 percent) were not matched to pupils in the NPD, constituting 31 percent of NRP participants and 35 percent of unsuccessful applicants.

⁴ Eligibility for NRPs requires pupils to have at least five B+ GCSEs and to be studying at least one STEM subject at A Level. The comparison group did not include pupils whose only A Level subject was psychology, for two reasons. First, very few NRP participants studied psychology at AS Level and the restriction improved the match of the comparison group with NRP participants. Second, although psychology is included as STEM for the NRP programme, it is not included in the Higher Education Funding Council for England (HEFCE) definition, which is the definition used to define STEM subjects in HE.

⁵ Individual characteristics included gender, ethnicity, FSM eligibility at key stage 4 and average GCSE point score; school characteristics included proportion of pupils eligible for FSM and proportion of pupils with five or more good GCSEs at the school attended for key stage 4; and local characteristics included region and local authority level IDACI (Income Deprivation Affecting Children Index) score.

⁶ NRP participants were more likely to have studied three or more STEM subjects at AS Level than the comparison groups (99 percent compared to 98 percent for unsuccessful applicants and 92 percent for all eligible pupils) and were more likely to have studied STEM subjects other than mathematics at AS Level (99 percent compared to 98 percent for unsuccessful applicants and 93 percent for all eligible pupils). Both prior study measures were therefore included in the regression models as controls.

⁷ There is no information on what students are doing if not enrolled in HE or further education. The later analysis will explore HE entry following a gap year.

poorer outcomes than those not selected) and could introduce an unknown bias in the differences with the unsuccessful applicant comparison group.⁸

- While using all eligible pupils as a comparison group has the advantage of an extremely large size (which substantially raises the likelihood of identifying any programme impacts), applicants to the programme may differ from the broader pool of all eligible pupils in having greater unmeasured motivation to study and pursue careers in STEM subjects. This would suggest a potential upward bias in the estimates of the impact of the NRPs using the all eligible pupils comparison group. However, the comparison group will contain many students who have not applied to the NRP programme for reasons unrelated to motivation (for example, they may not have been aware of the programme), suggesting that any bias may be limited.

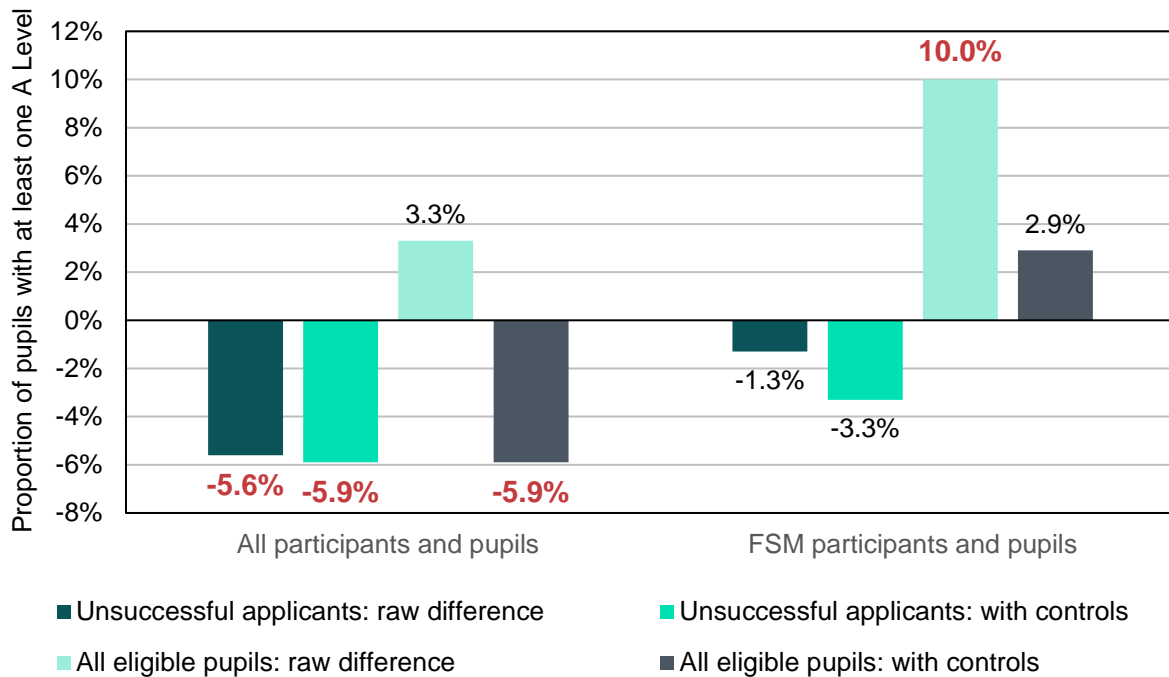
On balance, the preferred comparison group is the all eligible students group, but findings are also presented for unsuccessful applicants for completeness.

Do placements improve STEM A Level results?

Some 82 percent of all NRP students go on to achieve at least one STEM A Level in the following year. But, controlling for differences in other characteristics, undertaking a placement is associated with a lower likelihood (5.9 percentage points lower) of achieving this for both comparison groups (figure 1). For FSM students, 80 percent of NRP participants go on to achieve at least one A Level in STEM. The raw proportion is 10 percentage points higher for NRP participants than the eligible pool of FSM pupils, but there are no statistically significant differences in the likelihood of achieving at least one A Level with either comparison group once controls for other characteristics of these groups are included in the analysis.

⁸ The use of schools fixed effects was not feasible due to the small numbers in each school, but standard errors in the regression models allowed for potential clustering effects at the school level to take into account that applying to the NRP programme is likely to be influenced by the school attended.

Figure 1: Estimated impacts on proportion achieving at least one STEM A Level

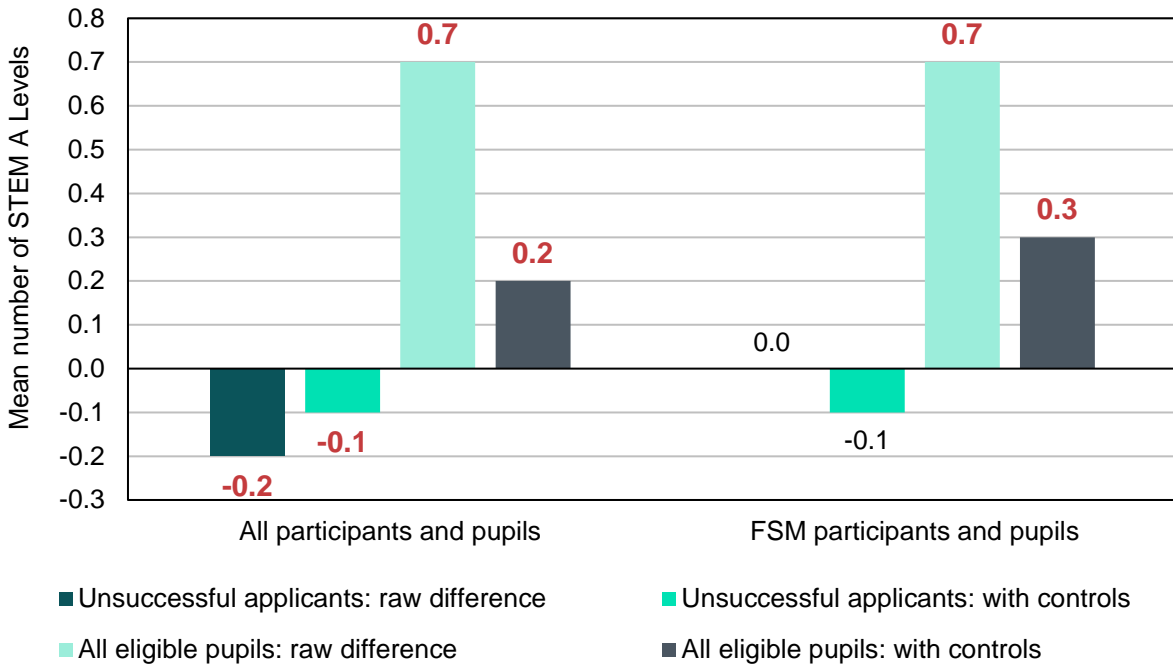


Notes: Numbers in bold red indicate statistically significant differences at the 95 percent level. Sample sizes are 2,120, 1,691, 110,608 and 88,947 for all participants and pupils and 417, 343, 12,095 and 10,007 for FSM participants and pupils.

NRP students go on to achieve an average of 2.4 STEM A Levels, which is lower than the average for unsuccessful applicants, but higher than the average for the comparison group of all eligible pupils (figure 2). Indeed, controlling for other characteristics, undertaking a placement is associated with a lower mean number of STEM A Levels (0.1 lower) than unsuccessful applicants and a higher mean (0.2 higher) than all eligible pupils. For FSM students, those undertaking a placement go on to achieve an average of 2.2 STEM A Levels. There is no statistically significant difference with unsuccessful applicants, but the average is notably higher than all eligible FSM pupils (with a raw difference of 0.7 and a difference of 0.3 controlling for other characteristics).

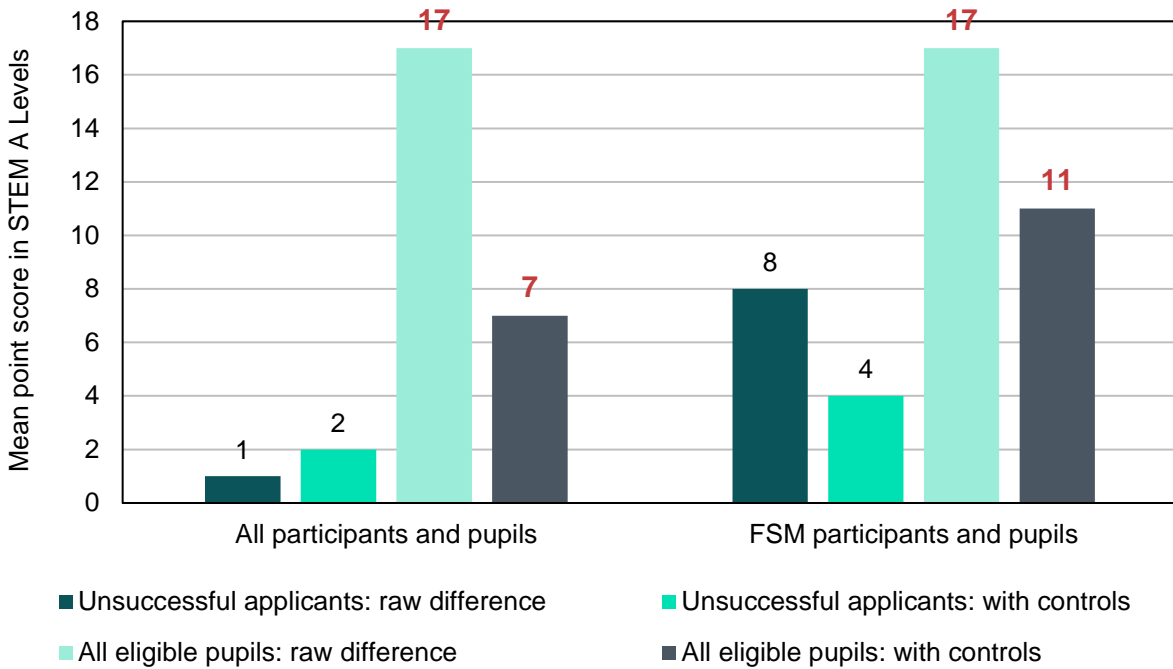
NRPs also have benefits for the average point score in STEM A Levels among those achieving at least one STEM A Level (figure 3). All NRP students achieve an average score of 248, while FSM NRP students achieve an average score of 238, but both are 17 points higher than the average for the all eligible pupils comparison group (with no statistically significant differences with unsuccessful applicants). Even controlling for other characteristics, these differences are 7 points for all eligible pupils and 11 points for FSM-eligible pupils. As 10 points corresponds to one higher grade on one A Level, this difference roughly indicates, for example, that placement students achieve an average AAB set of grades for three A Levels rather than ABB or that they achieve an average ABC rather than BBC.

Figure 2: Estimated impacts on number of STEM A Levels achieved



Notes: Numbers in bold red indicate statistically significant differences at the 95 percent level. Sample sizes are 2,120, 1,691, 110,608 and 88,947 for all participants and pupils and 417, 359, 12,095 and 10,007 for FSM participants and pupils.

Figure 3: Estimated impacts on average point score in STEM A Levels



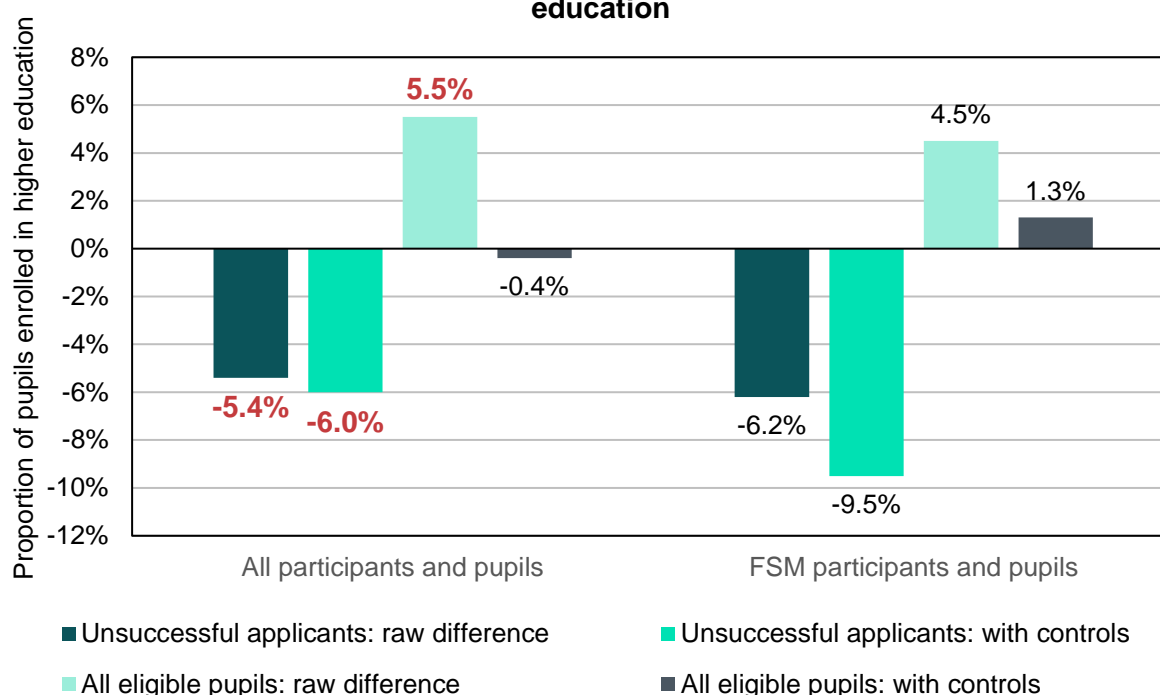
Notes: Numbers in bold red indicate statistically significant differences at the 95 percent level. Sample sizes are 1,820, 1,443, 87,284 and 70,128 for all participants and pupils and 338, 290, 8,617 and 7,132 for FSM participants and pupils.

Do placements improve access to STEM higher education?

Just over two-thirds (67 percent) of NRP students (and 60 percent of FSM participants) enrol in HE in the following year. However, there is no evidence that placements are associated with a higher proportion than that for either comparison group (figure 4). While the proportion of all placement students who enrol is higher (by 5.5 percentage points) than the all eligible pupils comparison, this is explained by other characteristics of these pupils (shown by the small negative difference with controls). In addition, NRP students are less likely to enrol in HE than unsuccessful applicants (by 6 percentage points with controls for other characteristics). This may reflect programme selection towards pupils requiring more support or the possibility that those undertaking NRPs may be more likely to take a gap year before enrolling in HE. There are no statistically significant differences in the enrolment rate for FSM pupils.

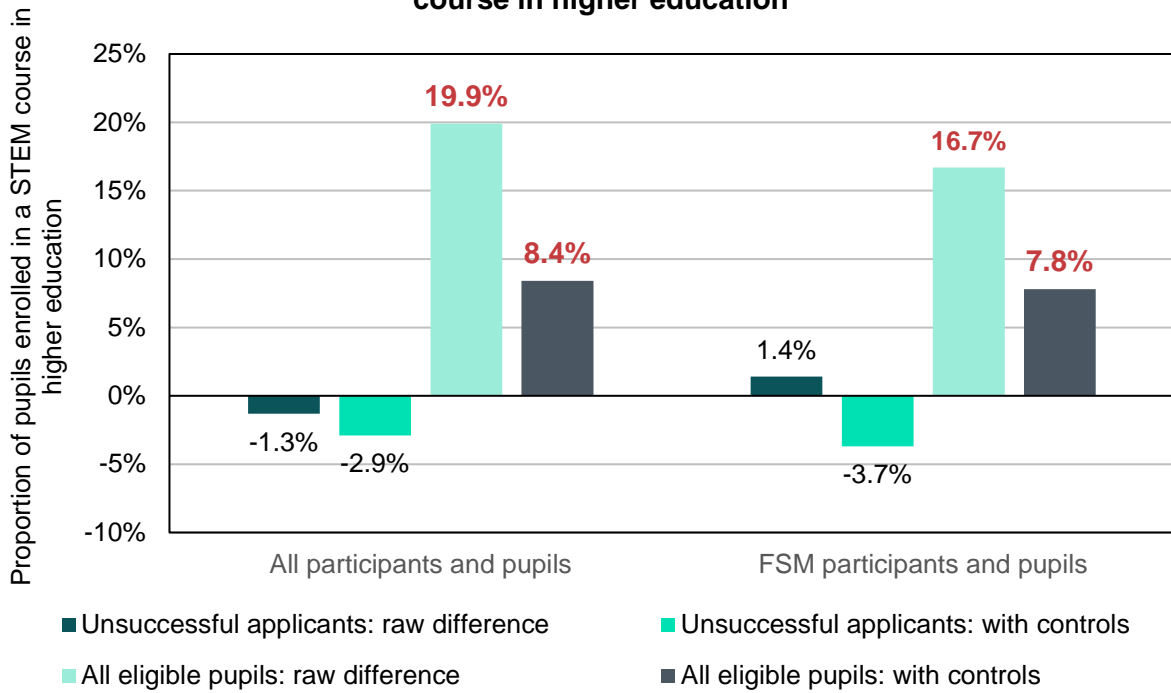
Just under half (47 percent) of NRP participants (and 43 percent of FSM participants) enrol in a STEM course in HE in the following year. While there are no statistically significant differences in this proportion with unsuccessful applicants, this proportion is substantially higher than for the all eligible pupils comparison group (figure 5). Indeed, the proportion is 20 percentage points higher for all pupils and 17 percentage points higher for FSM pupils than the comparison group. Some of these differences are explained by other characteristics, but participating in the programme is associated with a higher enrolment rate of 8 percentage points for all pupils and for FSM pupils.

Figure 4: Estimated impacts on proportion enrolled in higher education



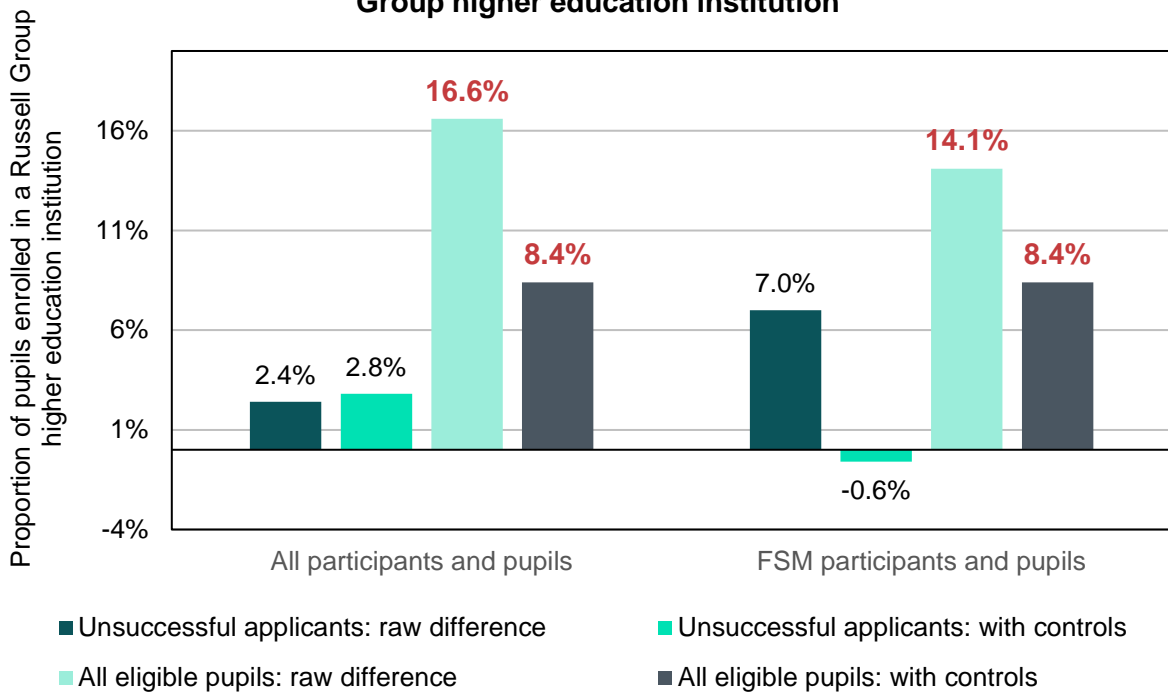
Notes: Numbers in bold red indicate statistically significant differences at the 95 percent level. Sample sizes are 2,120, 1,691, 110,608 and 88,947 for all participants and pupils and 417, 356, 12,095 and 10,007 for FSM participants and pupils.

Figure 5: Estimated impacts on proportion enrolled in a STEM course in higher education



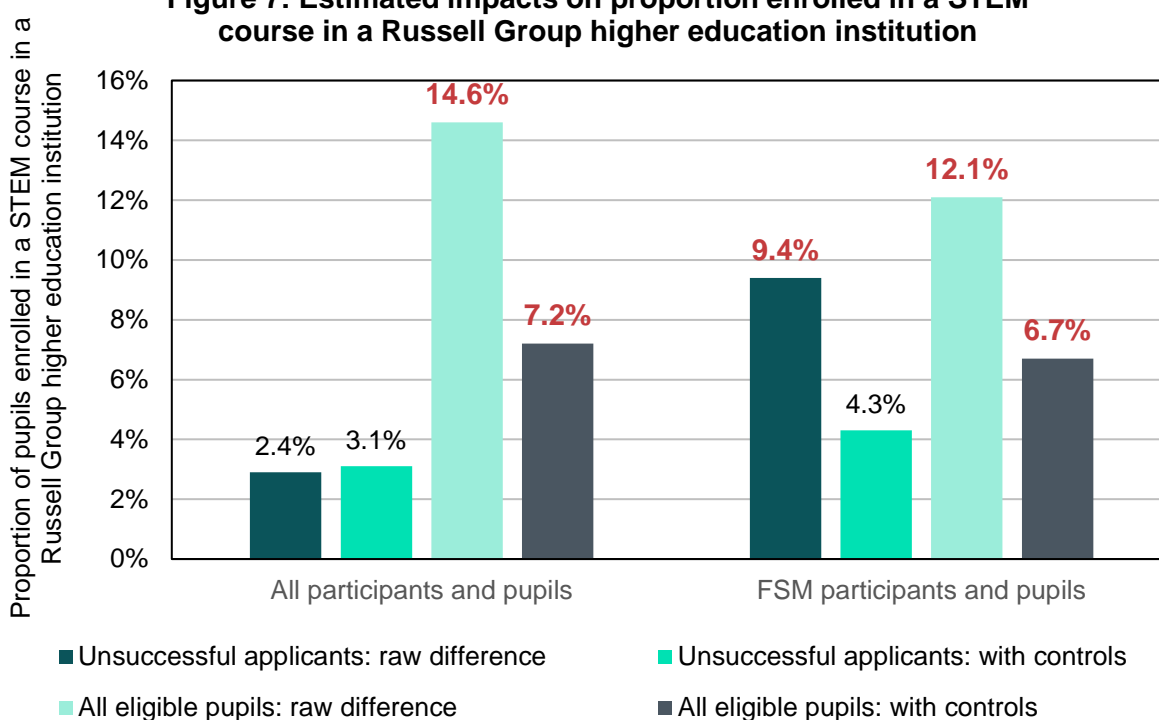
Notes: Numbers in bold red indicate statistically significant differences at the 95 percent level. Sample sizes are 2,120, 1,691, 110,608 and 88,947 for all participants and pupils and 417, 356, 12,095 and 10,007 for FSM participants and pupils.

Figure 6: Estimated impacts on proportion enrolled in a Russell Group higher education institution



Notes: Numbers in bold red indicate statistically significant differences at the 95 percent level. Sample sizes are 2,120, 1,691, 110,608 and 88,947 for all participants and pupils and 417, 356, 12,095 and 10,007 for FSM participants and pupils.

Figure 7: Estimated impacts on proportion enrolled in a STEM course in a Russell Group higher education institution



Notes: Numbers in bold red indicate statistically significant differences at the 95 percent level. Sample sizes are 2,120, 1,691, 110,608 and 88,947 for all participants and pupils and 417, 340, 12,095 and 10,007 for FSM participants and pupils.

Almost a half (45 percent) of NRP students will enrol in a Russell Group HEI in the following year, although the proportion is somewhat lower (36 percent) for FSM participants (figure 6). However, the differences with the comparison groups follow the same pattern as for STEM courses: there are no statistically significant differences with unsuccessful applicants, but the proportions are substantially higher than for all eligible pupils with, again, a gap of around 8 percentage points in the enrolment rates with controls for other characteristics.

Finally, just under a third (32 percent) of all NRP students enrol in a STEM course in a Russell Group institution in the following year, while just over a quarter (27 percent) of FSM NRP participants enrol in such a place. Unsurprisingly, figure 7, for the combined enrolment in a STEM course in a Russell Group institution, largely reflects the similarity in the patterns in the previous two figures. The one difference is that the raw proportion of FSM students is statistically significantly higher than unsuccessful applicants (by 9 percentage points), but this is explained by the other characteristics of these pupils. In line with the previous two figures, the enrolment proportions are notably higher for all NRP participants and for FSM NRP participants than for all eligible pupils with a gap of 7 percentage points with controls for other characteristics.

Summary

This analysis suggests that the placements have the following impacts:

- Relative to unsuccessful applicants and the broader pool of pupils who are eligible to apply, participation in NRPs is associated with a *lower* probability of achieving at

least one STEM A Level. Relative to unsuccessful applicants, participation is also associated with a *lower* average number of STEM A Levels.

- However, relative to the broader pool of pupils who are eligible to apply, participation in NRPs is associated with a *higher* number of STEM A Levels and a higher average point score for STEM A Levels, with slightly stronger effects for FSM pupils.
- Relative to unsuccessful applicants, participation in NRPs is associated with a *lower* probability of enrolment in HE in the year following the placement.
- However, relative to the broader pool of pupils who are eligible to apply, participation in NRPs is associated with a *higher* probability of enrolment in a STEM course in HE or in a Russell Group HEI (and in a combination of both), with similar sized effects for FSM and non-FSM pupils.

Given the uncertainty in the comparability of the unsuccessful applicant group (and with the caveat that the all eligible pupils comparison group may overstate impacts), this indicates that NRPs have particular benefits for the number and quality of STEM A Levels achieved (conditional on achieving any) and on the likelihood of enrolling in a STEM course at a Russell Group HEI (conditional on enrolling in HE).

Annex: Regression results

This annex presents the regression results for the findings.

Table 1: Regression results for achieving at least one STEM A Level (2014 cohort)

Dependent variable: probability of achieving at least one STEM A Level		All students		FSM students	
		Comparison: unsuccessful applicants	Comparison: all eligible pupils	Comparison: unsuccessful applicants	Comparison: all eligible pupils
NRP participant (ref = not participant)		-0.361*** (0.090)	-0.247*** (0.078)	-0.178 (0.204)	0.100 (0.153)
FSM eligible at KS4 (ref = not eligible)		0.178 (0.112)	-0.116*** (0.019)	n/a	n/a
Proportion of FSM pupils in KS4 school		0.601 (0.426)	-0.102 (0.098)	1.602** (0.645)	-0.170 (0.150)
Pupil's GCSE average score		0.014*** (0.001)	0.013*** (0.000)	0.016*** (0.003)	0.012*** (0.001)
Female (ref = male)		-0.199** (0.098)	0.002 (0.016)	-0.267 (0.194)	-0.020 (0.030)
Ethnicity (ref = white)	Black	-0.253 (0.162)	-0.028 (0.041)	-0.208 (0.275)	0.019 (0.053)
	Asian	-0.108 (0.138)	-0.028 (0.031)	-0.073 (0.289)	0.061 (0.054)
	Other non- white	-0.161 (0.155)	-0.039 (0.026)	0.066 (0.313)	0.053 (0.054)
Region (ref = North East)	North West	-0.109 (0.346)	0.047 (0.060)	0.014 (0.709)	0.122 (0.128)
	Yorkshire and the Humber	0.208 (0.396)	0.116* (0.063)	omitted	0.208 (0.134)
	East Midlands	-0.116 (0.370)	0.001 (0.068)	-0.493 (0.781)	0.042 (0.160)
	West Midlands	-0.109 (0.354)	0.084 (0.067)	-0.640 (0.679)	0.133 (0.134)
	East of England	-0.139 (0.355)	0.054 (0.066)	-0.468 (0.708)	0.194 (0.138)
	London	-0.179 (0.337)	0.049 (0.064)	-0.555 (0.672)	0.117 (0.131)
	South East	-0.357 (0.344)	0.002 (0.064)	0.444 (0.851)	0.029 (0.133)
	South West	0.086	-0.029	0.007	0.006

Dependent variable: probability of achieving at least one STEM A Level	All students		FSM students	
	Comparison: unsuccessful applicants	Comparison: all eligible pupils	Comparison: unsuccessful applicants	Comparison: all eligible pupils
	(0.366)	(0.061)	(0.705)	(0.132)
Local authority IDACI score for KS4 school	-0.865** (0.342)	-0.373*** (0.054)	-1.212** (0.610)	-0.152 (0.096)
Proportion of pupils in KS4 school with 5+ good GCSEs	-0.208 (0.406)	-0.194*** (0.075)	1.035 (0.745)	-0.294** (0.142)
Only STEM subject at A Level is maths	0.251 (0.637)	-0.393*** (0.036)	0.272*** (0.084)	0.298*** (0.030)
Number of STEM subjects studied at AS Level	0.352*** (0.053)	0.364*** (0.018)	0.748 (0.786)	-0.246*** (0.072)
Constant	-5.138*** (0.727)	-4.960*** (0.138)	-6.433*** (1.555)	-4.594*** (0.278)
McFadden's pseudo R ²	0.283	0.176	0.319	0.446
Number of students	1,691	88,947	343	10,007

Data source: NPD-HESA linked data

Notes: Robust standard errors are shown in brackets. Statistically significant coefficients are indicated at the 1 percent (***), 5 percent (**) and 10 percent level. FSM students are those eligible for free school meals. The variable for the Yorkshire and the Humber region is omitted in the FSM model with the comparison group of unsuccessful applicants due to multicollinearity.

Table 2: Regression results for number of STEM A Levels achieved (2014 cohort)

Dependent variable: number of STEM A Levels achieved		All students		FSM students	
		Comparison: unsuccessful applicants	Comparison: all eligible pupils	Comparison: unsuccessful applicants	Comparison: all eligible pupils
NRP participant (ref = not participant)		-0.128** (0.053)	0.160*** (0.048)	-0.063 (0.126)	0.319*** (0.099)
FSM eligible at KS4 (ref = not eligible)		0.098 (0.073)	-0.050*** (0.012)	n/a	n/a
Proportion of FSM pupils in KS4 school		0.011 (0.227)	0.068 (0.075)	0.660* (0.390)	0.029 (0.113)
Pupil's GCSE average score		0.012*** (0.001)	0.011*** (0.000)	0.012*** (0.002)	0.011*** (0.001)
Female (ref = male)		-0.298*** (0.048)	-0.138*** (0.011)	-0.376*** (0.107)	-0.158*** (0.022)
Ethnicity (ref = white)	Black	-0.010 (0.109)	0.060*** (0.021)	-0.071 (0.170)	0.078** (0.037)
	Asian	0.000 (0.076)	0.069*** (0.018)	-0.088 (0.149)	0.098** (0.041)
	Other non-white	0.007 (0.091)	0.021 (0.015)	0.081 (0.180)	0.068* (0.036)
Region (ref = North East)	North West	-0.092 (0.199)	-0.006 (0.037)	-0.165 (0.435)	0.012 (0.089)
	Yorkshire and the Humber	0.273 (0.224)	0.045 (0.038)	0.352 (0.419)	0.102 (0.092)
	East Midlands	-0.082 (0.219)	-0.005 (0.041)	-0.292 (0.503)	-0.014 (0.108)
	West Midlands	-0.146 (0.208)	0.021 (0.045)	-0.551 (0.432)	0.035 (0.093)
	East of England	-0.019 (0.201)	0.019 (0.039)	-0.115 (0.443)	0.056 (0.092)
	London	-0.052 (0.202)	-0.011 (0.041)	-0.366 (0.422)	0.045 (0.091)
	South East	-0.066 (0.201)	0.015 (0.038)	0.320 (0.463)	0.025 (0.093)
	South West	0.053 (0.194)	-0.026 (0.038)	0.024 (0.429)	-0.015 (0.094)
Local authority IDACI score for KS4 school		-0.292 (0.208)	-0.141*** (0.032)	-0.152 (0.364)	-0.112* (0.064)

Dependent variable: number of STEM A Levels achieved	All students		FSM students	
	Comparison: unsuccessful applicants	Comparison: all eligible pupils	Comparison: unsuccessful applicants	Comparison: all eligible pupils
Proportion of pupils in KS4 school with 5+ good GCSEs	-0.088 (0.185)	-0.123*** (0.043)	0.361 (0.416)	-0.224** (0.091)
Only STEM subject at A Level is maths	-0.161 (0.252)	-0.289*** (0.027)	-0.027 (0.237)	-0.259*** (0.067)
Number of STEM subjects studied at AS Level	0.410*** (0.033)	0.548*** (0.014)	0.365*** (0.056)	0.470*** (0.034)
Constant	-3.572*** (0.439)	-4.131*** (0.093)	-3.586*** (0.859)	-3.931*** (0.202)
R-squared	0.406	0.472	0.139	0.379
Number of students	1,691	88,947	359	10,007

Data source: NPD-HESA linked data

Notes: Robust standard errors are shown in brackets. Statistically significant coefficients are indicated at the 1 percent (***), 5 percent (**), and 10 percent level. FSM students are those eligible for free school meals.

Table 3: Regression results for average point score in STEM A Levels (2014 cohort)

Dependent variable: average point score in STEM A Levels		All students		FSM students	
		Comparison: unsuccessful applicants	Comparison: all eligible pupils	Comparison: unsuccessful applicants	Comparison: all eligible pupils
NRP participant (ref = not participant)		1.939 (1.687)	7.320*** (1.369)	3.615 (3.852)	10.521*** (3.077)
FSM eligible at KS4 (ref = not eligible)		-1.802 (2.616)	-0.985* (0.505)	n/a	n/a
Proportion of FSM pupils in KS4 school		-13.464* (7.975)	0.985 (2.094)	-15.815 (16.288)	3.274 (3.878)
Pupil's GCSE average score		0.628*** (0.042)	0.702*** (0.007)	0.546*** (0.061)	0.561*** (0.018)
Female (ref = male)		-14.255*** (1.682)	-4.547*** (0.323)	-14.196*** (3.723)	-6.625*** (0.833)
Ethnicity (ref = white)	Black	-2.278 (3.875)	-1.484* (0.778)	-10.773 (7.491)	-1.926 (1.406)
	Asian	-1.375 (2.361)	-0.143 (0.531)	-0.261 (6.192)	1.451 (1.219)
	Other non-white	0.416 (2.993)	-1.022* (0.562)	-3.229 (6.808)	-0.772 (1.329)
Region (ref = North East)	North West	4.690 (8.865)	1.691 (1.349)	-21.147* (12.479)	-0.752 (2.703)
	Yorkshire and the Humber	9.667 (9.711)	3.511** (1.368)	-26.932** (13.048)	-3.267 (2.826)
	East Midlands	7.243 (9.500)	1.771 (1.309)	-17.478 (15.441)	-5.185 (3.577)
	West Midlands	7.592 (9.205)	-0.328 (1.270)	-15.548 (12.207)	-5.908** (2.835)
	East of England	3.942 (9.120)	2.916** (1.334)	-16.448 (13.379)	-2.108 (4.066)
	London	8.255 (8.959)	1.126 (1.266)	-13.600 (12.315)	-3.414 (2.640)
	South East	2.955 (9.136)	2.397* (1.309)	-24.398* (14.364)	-0.924 (2.628)
	South West	3.853 (9.098)	1.480 (1.296)	-15.807 (13.144)	-6.356** (2.768)
Local authority IDACI score for KS4 school		-4.031 (7.471)	-8.232*** (1.239)	16.646 (15.077)	-7.760*** (2.825)

Dependent variable: average point score in STEM A Levels	All students		FSM students	
	Comparison: unsuccessful applicants	Comparison: all eligible pupils	Comparison: unsuccessful applicants	Comparison: all eligible pupils
Proportion of pupils in KS4 school with 5+ good GCSEs	-1.945 (6.435)	-3.009* (1.581)	-1.765 (16.305)	-6.911** (3.521)
Only STEM subject at A Level is maths	47.521*** (9.060)	-2.392*** (0.777)	53.881*** (6.093)	0.732 (2.659)
Number of STEM subjects studied at AS Level	2.682*** (0.978)	0.059 (0.163)	3.075 (2.360)	0.528 (0.471)
Constant	-23.555 (19.474)	-55.622*** (3.149)	24.486 (30.923)	5.806 (7.963)
R-squared	0.418	0.352	0.399	0.248
Number of students	1,443	70,128	290	7,132

Data source: NPD-HESA linked data

Notes: Robust standard errors are shown in brackets. Statistically significant coefficients are indicated at the 1 percent (***), 5 percent (**), and 10 percent level. FSM students are those eligible for free school meals.

Table 4: Regression results for enrolled in higher education (2014 cohort)

Dependent variable: probability enrolled in higher education		All students		FSM students	
		Comparison: unsuccessful applicants	Comparison: all eligible pupils	Comparison: unsuccessful applicants	Comparison: all eligible pupils
NRP participant (ref = not participant)		-0.195*** (0.068)	-0.010 (0.058)	-0.277* (0.151)	0.035 (0.115)
FSM eligible at KS4 (ref = not eligible)		0.048 (0.089)	-0.080*** (0.017)	n/a	n/a
Proportion of FSM pupils in KS4 school		-0.511 (0.315)	0.039 (0.073)	-0.027 (0.500)	0.187 (0.131)
Pupil's GCSE average score		0.009*** (0.001)	0.011*** (0.000)	0.010*** (0.002)	0.009*** (0.001)
Female (ref = male)		-0.146* (0.075)	-0.025** (0.010)	-0.213 (0.166)	0.013 (0.028)
Ethnicity (ref = white)	Black	-0.053 (0.134)	0.170*** (0.029)	-0.087 (0.237)	0.099** (0.048)
	Asian	-0.185* (0.095)	0.101*** (0.022)	-0.191 (0.212)	0.127*** (0.040)
	Other non- white	-0.106 (0.134)	0.009 (0.022)	-0.134 (0.259)	0.066 (0.050)
Region (ref = North East)	North West	-0.463 (0.312)	-0.018 (0.041)	-0.816 (0.616)	-0.013 (0.099)
	Yorkshire and the Humber	-0.150 (0.338)	0.019 (0.046)	-0.583 (0.627)	0.031 (0.105)
	East Midlands	-0.344 (0.335)	-0.049 (0.045)	-1.302** (0.633)	-0.178 (0.119)
	West Midlands	-0.294 (0.323)	-0.060 (0.045)	-0.798 (0.620)	-0.069 (0.103)
	East of England	-0.393 (0.318)	-0.090* (0.046)	-0.652 (0.639)	0.019 (0.108)
	London	-0.536* (0.313)	-0.122*** (0.042)	-0.962 (0.614)	-0.092 (0.098)
	South East	-0.477 (0.312)	-0.184*** (0.041)	-0.616 (0.675)	-0.163 (0.104)
	South West	-0.568* (0.315)	-0.378*** (0.042)	-0.352 (0.643)	-0.365*** (0.113)
Local authority IDACI score for KS4 school		0.047 (0.291)	-0.240*** (0.044)	0.307 (0.494)	-0.110 (0.092)

Dependent variable: probability enrolled in higher education	All students		FSM students	
	Comparison: unsuccessful applicants	Comparison: all eligible pupils	Comparison: unsuccessful applicants	Comparison: all eligible pupils
Proportion of pupils in KS4 school with 5+ good GCSEs	-0.160 (0.257)	0.081 (0.053)	-0.107 (0.579)	0.068 (0.126)
Only STEM subject at A Level is maths	1.351** (0.657)	0.083*** (0.023)	Omitted	0.225*** (0.056)
Number of STEM subjects studied at AS Level	0.087*** (0.033)	0.028*** (0.007)	-0.054 (0.087)	0.012 (0.014)
Constant	-2.660*** (0.554)	-4.206*** (0.098)	-2.434** (1.138)	-3.729*** (0.227)
McFadden's pseudo R ²	0.096	0.070	0.090	0.054
Number of students	1,691	88,947	356	10,007

Data source: NPD-HESA linked data

Notes: Robust standard errors are shown in brackets. Statistically significant coefficients are indicated at the 1 percent (***), 5 percent (**) and 10 percent level. FSM students are those eligible for free school meals. The variable only STEM A Level is maths is omitted in the FSM model with the comparison group of unsuccessful applicants because all FSM applicants had a value of zero.

Table 5: Regression results for enrolled in STEM higher education course (2014 cohort)

Dependent variable: probability enrolled in STEM higher education course		All students		FSM students	
		Comparison: unsuccessful applicants	Comparison: all eligible pupils	Comparison: unsuccessful applicants	Comparison: all eligible pupils
NRP participant (ref = not participant)		-0.076 (0.069)	0.299*** (0.059)	-0.277* (0.151)	0.035 (0.115)
FSM eligible at KS4 (ref = not eligible)		0.021 (0.079)	0.006 (0.018)	n/a	n/a
Proportion of FSM pupils in KS4 school		-0.345 (0.284)	0.268*** (0.079)	-0.027 (0.500)	0.187 (0.131)
Pupil's GCSE average score		0.005*** (0.001)	0.007*** (0.000)	0.010*** (0.002)	0.009*** (0.001)
Female (ref = male)		-0.204*** (0.068)	-0.119*** (0.014)	-0.213 (0.166)	0.013 (0.028)
Ethnicity (ref = white)	Black	-0.137 (0.119)	0.095*** (0.029)	-0.087 (0.237)	0.099** (0.048)
	Asian	-0.251*** (0.088)	-0.029 (0.020)	-0.191 (0.212)	0.127*** (0.040)
	Other non- white	-0.041 (0.134)	0.018 (0.024)	-0.134 (0.259)	0.066 (0.050)
Region (ref = North East)	North West	-0.476* (0.279)	-0.065 (0.040)	-0.816 (0.616)	-0.013 (0.099)
	Yorkshire and the Humber	-0.221 (0.317)	-0.055 (0.040)	-0.583 (0.627)	0.031 (0.105)
	East Midlands	-0.414 (0.292)	-0.074* (0.042)	-1.302** (0.633)	-0.178 (0.119)
	West Midlands	-0.352 (0.284)	-0.065 (0.044)	-0.798 (0.620)	-0.069 (0.103)
	East of England	-0.439 (0.282)	-0.114*** (0.041)	-0.652 (0.639)	0.019 (0.108)
	London	-0.307 (0.283)	-0.135*** (0.042)	-0.962 (0.614)	-0.092 (0.098)
	South East	-0.405 (0.286)	-0.107*** (0.040)	-0.616 (0.675)	-0.163 (0.104)
	South West	-0.631** (0.282)	-0.267*** (0.042)	-0.352 (0.643)	-0.365*** (0.113)
Local authority IDACI score for KS4 school		-0.224 (0.260)	0.037 (0.048)	0.307 (0.494)	-0.110 (0.092)

Dependent variable: probability enrolled in STEM higher education course	All students		FSM students	
	Comparison: unsuccessful applicants	Comparison: all eligible pupils	Comparison: unsuccessful applicants	Comparison: all eligible pupils
Proportion of pupils in KS4 school with 5+ Good GCSEs	-0.321 (0.232)	-0.171*** (0.052)	-0.107 (0.579)	0.068 (0.126)
Only STEM subject at A Level is maths	0.108*** (0.033)	0.324*** (0.015)	Omitted	0.225*** (0.056)
Number of STEM subjects studied at AS Level	0.042 (0.355)	-0.402*** (0.041)	-0.054 (0.087)	0.012 (0.014)
Constant	-1.426*** (0.475)	-4.283*** (0.101)	-2.434** (1.138)	-3.729*** (0.227)
McFadden's pseudo R ²	0.047	0.105	0.057	0.076
Number of students	1,691	88,947	356	10,007

Data source: NPD-HESA linked data

Notes: Robust standard errors are shown in brackets. Statistically significant coefficients are indicated at the 1 percent (***), 5 percent (**) and 10 percent level. FSM students are those eligible for free school meals. The variable only STEM A Level is maths is omitted in the FSM model with the comparison group of unsuccessful applicants because all FSM applicants had a value of zero.

Table 6: Regression results for enrolled in Russell Group higher education institution (2014 cohort)

Dependent variable: probability enrolled in Russell Group higher education institution		All students		FSM students	
		Comparison: unsuccessful applicants	Comparison: all eligible pupils	Comparison: unsuccessful applicants	Comparison: all eligible pupils
NRP participant (ref = not participant)		0.089 (0.073)	0.317*** (0.060)	-0.024 (0.162)	0.361*** (0.121)
FSM eligible at KS4 (ref = not eligible)		-0.021 (0.106)	-0.029 (0.020)	n/a	n/a
Proportion of FSM pupils in KS4 school		-0.027 (0.342)	0.188** (0.085)	-0.815 (0.549)	0.481*** (0.154)
Pupil's GCSE average score		0.018*** (0.002)	0.022*** (0.000)	0.022*** (0.003)	0.020*** (0.001)
Female (ref = male)		-0.315*** (0.071)	-0.188*** (0.013)	-0.496*** (0.169)	-0.225*** (0.033)
Ethnicity (ref = white)	Black	-0.058 (0.173)	0.044 (0.034)	-0.101 (0.305)	0.008 (0.058)
	Asian	-0.128 (0.095)	0.036* (0.021)	-0.052 (0.252)	0.052 (0.046)
	Other non- white	0.039 (0.137)	0.017 (0.025)	-0.019 (0.302)	0.063 (0.061)
Region (ref = North East)	North West	-0.177 (0.245)	0.010 (0.044)	-1.108** (0.444)	0.089 (0.113)
	Yorkshire and the Humber	0.059 (0.295)	0.062 (0.047)	-1.031* (0.539)	-0.047 (0.127)
	East Midlands	-0.003 (0.279)	-0.090* (0.046)	-2.305*** (0.583)	-0.238* (0.142)
	West Midlands	-0.053 (0.259)	-0.147*** (0.048)	-0.900** (0.443)	-0.242* (0.129)
	East of England	-0.287 (0.259)	-0.172*** (0.045)	-1.432*** (0.507)	-0.135 (0.123)
	London	-0.065 (0.252)	-0.083* (0.043)	-0.931** (0.436)	-0.097 (0.112)
	South East	-0.366 (0.255)	-0.200*** (0.043)	-1.642*** (0.536)	-0.251** (0.117)
	South West	-0.223 (0.264)	-0.252*** (0.043)	-0.921* (0.547)	-0.277** (0.128)
Local authority IDACI score for KS4 school		-0.245 (0.313)	-0.341*** (0.054)	0.836 (0.566)	-0.174* (0.104)

Dependent variable: probability enrolled in Russell Group higher education institution	All students		FSM students	
	Comparison: unsuccessful applicants	Comparison: all eligible pupils	Comparison: unsuccessful applicants	Comparison: all eligible pupils
Proportion of pupils in KS4 school with 5+ good GCSEs	0.241 (0.272)	0.171*** (0.063)	-0.097 (0.626)	0.098 (0.153)
Only STEM subject at A Level is maths	1.379 (0.886)	0.113*** (0.025)	2.591** (1.135)	0.060 (0.071)
Number of STEM subjects studied at AS Level	0.052 (0.034)	0.007 (0.008)	-0.000 (0.095)	-0.011 (0.017)
Constant	-7.768*** (0.744)	-9.794*** (0.122)	-7.863*** (1.399)	-8.769*** (0.341)
McFadden's pseudo R ²	0.193	0.199	0.258	0.170
Number of students	1,691	88,947	359	10,007

Data source: NPD-HESA linked data

Notes: Robust standard errors are shown in brackets. Statistically significant coefficients are indicated at the 1 percent (***), 5 percent (**) and 10 percent level. FSM students are those eligible for free school meals. The variable only STEM A Level is maths is omitted in the FSM model with the comparison group of unsuccessful applicants because all FSM applicants had a value of zero.

Table 7: Regression results for enrolled in STEM course at Russell Group higher education institution (2014 cohort)

Dependent variable: probability enrolled in STEM course at Russell Group Higher Education institution		All students		FSM students	
		Comparison: unsuccessful applicants	Comparison: all eligible pupils	Comparison: unsuccessful applicants	Comparison: all eligible pupils
NRP participant (ref = not participant)		0.103 (0.077)	0.438*** (0.061)	0.180 (0.173)	0.443*** (0.119)
FSM eligible at KS4 (ref = not eligible)		-0.106 (0.097)	0.011 (0.023)	n/a	n/a
Proportion of FSM pupils in KS4 school		0.068 (0.327)	0.349*** (0.105)	0.056 (0.579)	0.470** (0.187)
Pupil's GCSE average score		0.013*** (0.001)	0.015*** (0.000)	0.015*** (0.003)	0.014*** (0.001)
Female (ref = male)		-0.309*** (0.072)	-0.246*** (0.016)	-0.455*** (0.168)	-0.288*** (0.042)
Ethnicity (ref = white)	Black	-0.147 (0.163)	-0.069 (0.047)	-0.100 (0.324)	-0.126* (0.073)
	Asian	-0.282*** (0.097)	-0.122*** (0.024)	-0.275 (0.247)	-0.076 (0.054)
	Other non- white	0.025 (0.143)	-0.026 (0.031)	-0.084 (0.304)	0.010 (0.066)
Region (ref = North East)	North West	-0.317 (0.243)	-0.028 (0.051)	-0.876* (0.469)	0.208 (0.140)
	Yorkshire and the Humber	-0.076 (0.294)	0.012 (0.051)	-0.925 (0.572)	0.025 (0.152)
	East Midlands	-0.139 (0.278)	-0.065 (0.053)	Omitted	-0.045 (0.161)
	West Midlands	-0.174 (0.251)	-0.120** (0.054)	-0.849* (0.473)	-0.070 (0.154)
	East of England	-0.389 (0.261)	-0.141*** (0.052)	-1.175** (0.521)	0.031 (0.154)
	London	-0.044 (0.254)	-0.048 (0.050)	-0.552 (0.465)	0.177 (0.141)
	South East	-0.374 (0.253)	-0.138*** (0.050)	-1.073* (0.562)	-0.013 (0.155)
	South West	-0.378 (0.257)	-0.195*** (0.052)	-0.729 (0.533)	-0.055 (0.160)
Local authority IDACI score for KS4 school		-0.342 (0.282)	-0.095* (0.055)	-0.149 (0.574)	-0.059 (0.130)

Dependent variable: probability enrolled in STEM course at Russell Group Higher Education institution	All students		FSM students	
	Comparison: unsuccessful applicants	Comparison: all eligible pupils	Comparison: unsuccessful applicants	Comparison: all eligible pupils
Proportion of pupils in KS4 school with 5+ good GCSEs	-0.055 (0.260)	-0.107 (0.068)	-0.181 (0.634)	-0.123 (0.177)
Only STEM subject at A Level is maths	-0.073 (0.402)	-0.399*** (0.051)	Omitted	-0.405*** (0.125)
Number of STEM subjects studied at AS Level	0.036 (0.036)	0.250*** (0.016)	0.030 (0.090)	0.164*** (0.029)
Constant	-5.567*** (0.649)	-8.098*** (0.143)	-5.918*** (1.106)	-7.330*** (0.376)
McFadden's pseudo R ²	0.118	0.164	0.159	0.139
Number of students	1,691	88,947	340	10,007

Data source: NPD-HESA linked data

Notes: Robust standard errors are shown in brackets. Statistically significant coefficients are indicated at the 1 percent (***), 5 percent (**) and 10 percent level. FSM students are those eligible for free school meals. The variables East Midlands and only STEM A Level is maths are omitted in the FSM model with the comparison group of unsuccessful applicants because all FSM applicants had a value of zero for both variables.