

Multi-intervention outreach and mentoring analysis report: Impact evaluation of the University of Birmingham's Forward Thinking programme

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The full protocol for this study can be found on the [TASO website](#)

The study was pre-registered on the [Open Science Framework](#).¹

¹ Open Science Framework registration <https://osf.io/3kixw>

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1. Summary

1.1. Background

The Centre for Transforming Access and Student Outcomes in Higher Education (TASO) has funded the University of Birmingham to run an evaluation of their multi-intervention outreach and mentoring programme - Forward Thinking (FT) - which has the goal of encouraging more students from widening participation (WP) backgrounds to progress to research-intensive universities. Jisc has undertaken the analysis on behalf of TASO and the University of Birmingham.

1.2. Aims

This project aims to investigate the impact of the Forward Thinking programme at the University of Birmingham.

1.3. Intervention

The primary aim of the Forward Thinking programme is to encourage progression to more research-intensive higher education (HE) providers and/ or higher tariff HE providers. The programme is for 12 to 16 year olds and comprises: a launch event; university experience days; subject taster sessions; mentoring; and a graduation and celebration event.

1.4. Design

Higher Education Statistics Agency (HESA) data will be used to track students who have participated in the Forward Thinking programme into HE. Three topics of interest will be investigated:

- Topic 1: Identify other schools in the Birmingham area that had students enter HE who may have been eligible to participate in the Forward Thinking programme but did not have students attend.
- Topic 2: A deep dive into Forward Thinking students who had entered HE, investigating their HE journey and outcomes.
- Topic 3: A comparison of Forward Thinking students with a matched group of students (who are assumed not to have participated in the programme) and their HE journey. Where possible, the matched group of students will be similar on available observable characteristics.

1.5. Outcome measures

Specifically for Topic 2 (focused on Forward Thinking students who had entered HE) and Topic 3 (comparing Forward Thinking students who had entered HE with the matched group of students) - the outcome measures are:

- attendance at a research-intensive and/ or high tariff HE provider.

- the subject they studied (STEM vs non-STEM).
- continuation from first year of study to second year of study.
- achievement of a first or upper second class honours following completion of a first degree qualification.
- time to completion (up to five years) of first degree study.
- progression to postgraduate study following undergraduate study.

1.6. Analyses

Descriptive statistics, tables and charts are used in analysis for Topic 1 and Topic 2.

For Topic 3, propensity score matching (PSM) using the nearest neighbour method without replacement is used to provide a matched 1:1 or k:1 comparison group for Forward Thinking students and non-Forward Thinking students.

1.7. Results

Topic 1: The analysis identified that there were 45 other schools in the local area who had in the past had at least five or more eligible students for the Forward Thinking programme in attendance between 2013-14 and 2020-21 based on a proxy of the eligibility criteria for the Forward Thinking programme.

Topic 2: The analysis identified for entrants to HE from 2013-14 to 2020-21:

- 49% of Forward Thinking students attended a research-intensive and/ or high tariff HE provider.
- 57% of Forward Thinking students studied a STEM subject.
- 90% of Forward Thinking students continued from the first year of study into a second year of study.
- 83% of Forward Thinking qualifiers achieved a first or upper second class honours following completion of a first degree qualification.
- 99% of Forward Thinking students completed their first degree qualification in up to and including five years.
- 18% of Forward Thinking undergraduate qualifiers progressed to postgraduate study.

Topic 3: Two 'matched' groups of non- Forward Thinking students domiciled from the West Midlands and England were created using PSM to compare their outcomes with the Forward Thinking students. The analysis identified for entrants to HE from 2013-14 to 2020-21:

- The proportion of Forward Thinking students who were enrolled at a research-intensive and/or high tariff HE provider was statistically significantly higher than both the non- Forward Thinking students from the West Midlands

matched sample and the non- Forward Thinking students from the England matched sample at the 5% significance level.

- The proportion of Forward Thinking students who were enrolled on a STEM subject course was statistically significantly higher than both the non- Forward Thinking students from the West Midlands matched sample and the non- Forward Thinking students from the England matched sample at the 5% significance level.
- The proportion of Forward Thinking students who continued from their first year into their second year of study was not statistically significantly higher than both the non- Forward Thinking students from the West Midlands matched sample and the non- Forward Thinking students from the England matched sample at the 5% significance level.
- The proportion of Forward Thinking first degree qualifiers who gained a good honours degree was not statistically significantly higher at the 5% significance level than the non- Forward Thinking students from the West Midlands matched sample. It was statistically significantly higher than non- Forward Thinking students from the England matched sample at the 5% significance level.
- The proportion of Forward Thinking first degree students who completed their first degree course in up to and including five years was statistically significantly higher at the 5% significance level than both the non- Forward Thinking students from the West Midlands matched sample and the England matched sample.
- The proportion of Forward Thinking first degree qualifiers who progressed to postgraduate study was not statistically significantly higher than both the non- Forward Thinking students from the West Midlands matched sample and the non- Forward Thinking students from the England matched sample at the 5% significance level.

1.8. Conclusions

Topic 1: There are non-partner schools in the Birmingham area which have students with similar backgrounds to Forward Thinking students and may benefit from partnering with the FT programme.

Topic 2: The analysis shows positive outcomes for Forward Thinking students, including attendance at research-intensive HE providers, continuation from first to second year of study and the subject studied.

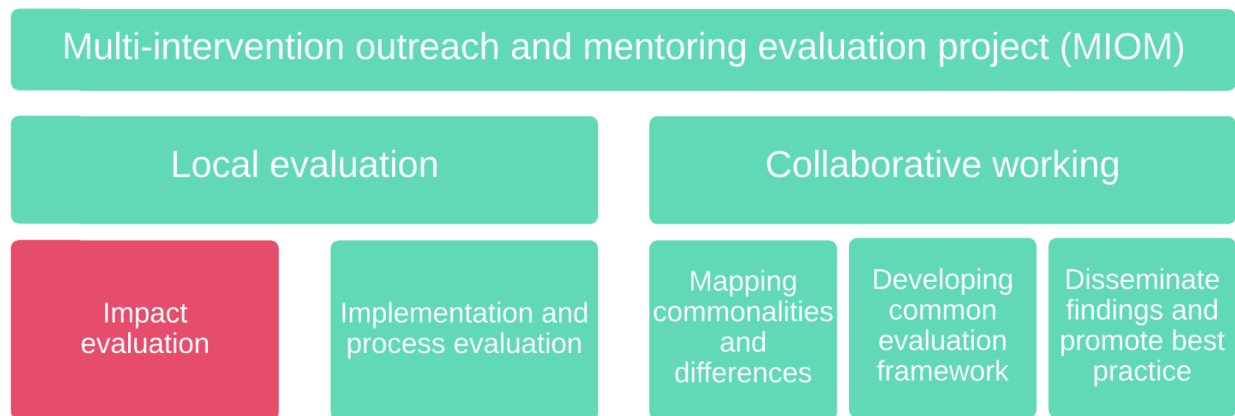
Topic 3: Within all analysis, Forward Thinking students performed favourably in comparison to non- Forward Thinking students, though not all differences were statistically significant.

2. Introduction

2.1. Background

This evaluation study is part of the TASO-funded project to develop our understanding of multi-intervention outreach and mentoring (MIOM) – that is, programmes which combine multiple outreach strategies into sustained support for learners over a course of months or years. The evaluation study forms one part of a broader evaluation, as shown in [Figure 1](#). The parts of the figure which are not highlighted are covered in other reports.

Figure 1: The multi-intervention outreach and mentoring evaluation project (MIOM)



The key stakeholders involved in the evaluation are outlined in the table below.

Organisation	Name	Role and responsibilities
University of Birmingham	Elizabeth Chandler	Head of Outreach <ul style="list-style-type: none"> Overall lead for Birmingham's involvement in the MIOM project
TASO	Rain Sherlock	Evaluation Manager <ul style="list-style-type: none"> Lead on the MIOM local impact evaluations
Jisc	Emma Jones	Senior consultant - business intelligence <ul style="list-style-type: none"> Project lead - reporting lead/ analysis of data
Jisc	Vicky Duxbury	Senior Data and Analytics Developer <ul style="list-style-type: none"> Analysis of data
Jisc	Nia Comley	Data and Analytics Developer <ul style="list-style-type: none"> Leading analysis including linking FT data to HESA data Preparing dataset for analysis and analysis of data

2.2. Aims

The objective of this project is to investigate the impact of participation in the Forward Thinking (FT) programme on a number of outcomes following entry into higher education (HE).

Higher Education Statistics Agency (HESA) Student Record or Student Alternative data is used to track students who have participated in the FT programme into HE. Three topics of interest will be investigated as follows.

Topic 1: Identify other schools in the Birmingham area that had students enter HE who may have been eligible to participate in the FT programme but did not have students attend

Local schools in Birmingham who had students enter HE are identified. Key demographic characteristics about the students from each school is analysed including entry tariff, parental education, whether they are from POLAR 1 or 2 quintile areas,

disability status, sex, age on entry, socio-economic classification and ethnicity. A comparison with the FT cohort of students on these key demographic characteristics is shown.

Not all criteria for eligibility for the FT programme (defined in [Section 2.3](#)) are available via the HESA data, therefore a proxy for the number of eligible students from other local schools will be defined as the sample meeting all the following conditions:

- Achieved a high tariff AND
- Indicated that their parents did not have a HE qualification such as a degree, diploma or certificate of HE AND
- Domiciled from a POLAR 1 or 2 quintile (low progression area) OR indicated they have a known disability).

The total number of eligible students by school is shown. Schools are not named to ensure anonymity.

Topic 2: A deep dive into FT students who had entered HE, investigating their experience and outcomes

Analysis of first year FT students includes type of provider attended, continuation from first year of study to second year of study and the subject studied; achievement of FT students who had studied a first degree qualification and time to completion (start to end of course), and progression to postgraduate study following award of a first degree.

Topic 3: A comparison of FT students with a matched group of students (who are assumed not to have participated in the programme) and their HE experience

A matched groups design in which the outcome of the treatment group (those students who have participated in the FT programme and have entered HE) are compared to a non-treatment group (those who are assumed not to have participated in the FT programme and have entered HE). The non-treatment group will be selected from HESA data.

Similar analysis to Topic 2 will be undertaken.

A significance test between the treatment and non-treatment groups is conducted for each outcome measure to see if there are any significant differences in proportions between the two cohorts at a 95% confidence level.

2.3. Intervention

The intervention being evaluated is the FT programme, run by the University of Birmingham. It is a progressive programme of activities for students from Year 8 through to Year 11 who are currently attending a FT partner school and comprises:

- Launch event (Year 8)
- Subject taster day (Year 9)
- University experience day (Year 9)
- Mentoring (Year 10)
- Celebration event (Year 11)

3. Methods - applicable for Topic 1, 2 and 3

3.1. Design

Information about eight cohorts of students who were in Year 8 between 2007-08 and 2014-15 (n= 700) and had participated in the FT programme were supplied to Jisc from the University of Birmingham. If these students followed a typical pathway through secondary education and/or further education into HE, it would be expected that the earliest cohort of students would enter HE in 2013-14.

Jisc attempted to find the FT students in the HESA Student Record or Student Alternative 2013-14 to 2020-21 through a process using a data linking technique known as fuzzy matching.² The HESA data contains information about the academic career of students prior to their enrolment in HE and their achievement at HE. Data linking uses the following information:

- First name
- Last name
- Date of birth (DOB)
- Postcode of domicile

Each student passes through a series of linking 'pots' from one to five, if a student is linked to a pot they will be removed from the next, taking a top down approach. The pot criteria is:

1. First and Last Name/DOB/Postcode of domicile
2. Soundex name³/DOB/Same sector postcode of domicile
3. First and Last Name/Postcode of domicile
4. First and Last Name/DOB
5. Same Initial First Name/Last Name/DOB/Same sector Postcode of domicile

² Pupils who participated in the FT programme in 2014-15 would be expected to enter HE in 2020-21 at the earliest- these pupils may be less likely to be found in the HESA Student Record or Student Alternative Record as it does not allow for them taking gap years/ repeating years in further education as it does for earlier cohorts of the FT programme.

³ Soundex is explained here:

<https://docs.microsoft.com/en-us/sql/t-sql/functions/soundex-transact-sql?view=sql-server-ver15>

For a student to be linked to a pot they must match every criterion. The strictness of the match reduces from pot one to five. A 10% sample was taken from each pot and a confidence test was undertaken on the number of links that Jisc had complete confidence in and the number that appeared ambiguous. The confidence test score and number of links from each pot was shared with TASO and the University of Birmingham. It was decided that only pots with confidence test scores of 80% or more would be used in the analysis.

FT students may be identified as entering UK HE multiple times in the same or different academic years, for example if they begin and complete a course and enter a subsequent course in a later academic year or if they begin multiple courses in the same or different academic years. Each enrolment is counted separately and is referred to as an instance; an instance is an engagement with a HE provider that aims towards gaining a qualification or credit.

Data linking of the FT students with the HESA data begins with identifying all relevant student instances across HESA data 2013-14 to 2020-21. If multiple instances are found for a student, a deduplication method to identify the most relevant link, which has a top down approach such that the link which is in the earliest academic year (their first identified engagement with HE) is used. If there are still multiple links, the link which identifies the best undergraduate qualification is taken (choose first degree over other undergraduate) and full-time enrolment over a part-time enrolment is taken. This identifies the number of FT students who have entered UK HE and the academic year of entry. For those FT students who have been identified entering into HE, their journey through HE is followed by tracking them through successive years using a personal identifier field (PID).⁴ When the FT students who had entered HE were identified, the investigation of Topic 2 began.

In order to undertake the analysis of Topic 1 and 3, a comparator group of students (non-FT students) from the HESA data 2013-14 to 2020-21 who were not identified in the FT cohorts of students, and therefore assumed not to have participated in the FT programme, were extracted. Similarly, their journey through HE is followed by tracking them through successive years using a PID, known as PID tracking.

More detail about the design for each Topic follows in each individual section.

⁴ PID (Personal identifier) is a field used to associate multiple instances of study for a student as we have no way of directly identifying if one instance relates to another in the data. The PID is developed by using fuzzy matching techniques to link all students' instances to a central ID primarily based on underlying fields - First Name, Last Name, Date of Birth, Postcode of domicile and Sex. Student instances do not need to exactly match all the criteria to account for typing errors, change of address and naming differences, thus the PID method is not 100% accurate and should be used with care.

3.2. Sample selection

The study included eight cohorts of students who started Year 8 at school (aged 11 and 12 years old) between 2007-08 and 2014-15 and who completed the FT programme. Of the learners, 315 (45%) were male, 415 (60%) were from a Black, Asian and minority ethnic (BAME) group, the majority (97%) did not have a parent or carer who had previously attended HE, 235 (42%) were eligible for Free School Meals (FSM) and 71% of learners were from POLAR quintiles 1 and 2.

Table 1: Demographic characteristics of FT learners

Cohort (start year)	Sample size	Male	BAME	No parental HE	FSM	POLAR 1 or 2
1 (2007-08)	45	25 (51%)	15 (38%)	40 (91%)	Unknown	Unknown
2 (2008-09)	70	30 (45%)	25 (38%)	70 (97%)	20 (30%)	55 (76%)
3 (2009-10)	50	20 (42%)	40 (85%)	45 (98%)	Unknown	35 (73%)
4 (2010-11)	45	20 (38%)	35 (77%)	45 (96%)	Unknown	30 (65%)
5 (2011-12)	85	35 (44%)	45 (51%)	80 (95%)	25 (31%)	65 (77%)
6 (2012-13)	115	55 (46%)	65 (55%)	110 (97%)	45 (38%)	75 (66%)
7 (2013-14)	160	65 (42%)	95 (59%)	155 (99%)	75 (47%)	80 (49%)
8 (2014-15)	130	65 (49%)	95 (74%)	130 (99%)	65 (52%)	125 (97%)
Total	700	315 (45%)	415 (60%)	680 (97%)	235 (42%)	465 (71%)

In order to take part in the FT programme learners had to have met one of the following criteria:

1. Has the academic potential to achieve good GCSE grades and go to a research-intensive university.
2. Has parents/guardians who have not completed a HE qualification in the UK or abroad.

In addition, students should meet at least one of the following criteria:

- Live in a low progression area
- Be eligible for pupil premium funding or free school meals
- Have a recognised disability
- Have experienced significant extenuating circumstances that has had (or is having) a detrimental impact on their studies
- Be a young carer.

4. Topic 1: Identify other schools in the Birmingham area that had students enter HE who may have been eligible to participate in the FT programme but did not have students attend.

4.1. Design

The FT programme is in partnership with a number of schools located in Birmingham, Sandwell and Solihull (see [Appendix 1](#)). There are schools in these areas that are not involved in the partnership and may have future students who would benefit from engaging with the programme. Topic 1 aims to identify schools in these areas which the FT programme may wish to partner with in the future.

Information about the last provider (e.g., school/college) a student attended prior to enrolling in HE is collected in the HESA data. Last provider attendance is compulsory for undergraduate students entering through UCAS and HE providers are encouraged to collect this information for other full-time undergraduates in order to provide more complete statistical information for the sector.

The eligibility criteria for the FT programme is listed in [Section 2.3](#) above.

Not all criteria for eligibility for the FT programme are available via the HESA data, therefore a proxy for the number of eligible students from other local schools was defined as the sample meeting all the following conditions:

- Achieved a high tariff defined equal to or above the median tariff of the FT cohort.
AND
- Indicated that their parents did not have a HE qualification such as a degree, diploma or certificate of HE AND
- Domiciled from a POLAR 1 or 2 quintile (low progression area) OR indicated they have a known disability).

UCAS created the concept of tariff score, which translates post-16 qualification grades to a numerical value.⁵ The purpose of tariff score is to specify entrance requirements for some UK HE providers but also allows broad comparisons to be made about a wide range of entry qualifications. In 2017-18 a new tariff mapping was introduced. The median tariff for FT students who had entered HE between 2013-14 and 2016-17 was 340 tariff points (average (mean) 348, standard deviation 85) and for FT students who entered between 2017-18 and 2020-21 was 128 (average (mean) 126, standard deviation 35).

4.2. Analytical strategy

A key part of the eligibility criteria is based on tariff, any students who had a zero or unknown tariff were excluded from the analysis of Topic 1. This reduces the total number of students included in the analysis. The decision not to impute these missing values was taken as they often have outlier or unknown values in other fields which would skew analysis.

In order to identify schools in Birmingham, Sandwell and Solihull which the FT programme may wish to partner with, we took the following steps:

1. Data was restricted to students who had attended a previous institution in the Birmingham, Sandwell or Solihull area.
2. Any previous institution that was not identified by their UKPRN (UK Register of Learning Providers) on the Get Information about Schools website was excluded.⁶
3. We excluded any previous institution that was identified on the Get Information about Schools website that:
 - a. Indicated they did not offer education from Year 8 through to Year 11 [using StatutoryLowAge and StatutoryHighAge].
 - b. Indicated their admissions policy was selective [using AdmissionsPolicy].
 - c. Indicated they were an independent school [using TypeOfEstablishment].
4. The time series of data being analysed is entry to HE between 2013-14 to 2020-21. In this time some establishments have closed [identified using EstablishmentStatus] and a successor has reopened at the same site. The Get Information about Schools website provides information about linked establishments which are either predecessor or successor establishments. The

⁵

<https://www.ucas.com/undergraduate/what-and-where-study/entry-requirements/ucas-tariff-points#:~:text=UCAS%20Tariff%20points%20translate%20your%20qualifications%20and%20grades,the%20qualificati on%20size,%20and%20the%20grade%20you%20achieved.>

⁶ Get Information about schools: <https://www.get-information-schools.service.gov.uk/Search> is a register of schools and colleges in England. Data was accessed on 13/12/22.

data for any school which was identified as 'Closed' but had a linked establishment which was either a 'Closed' or 'Open' successor were merged.

The total number of eligible students by school was identified as well as key demographic characteristics about all the students from each school including entry tariff, parental education, whether they were from POLAR 1 or 2 quintile areas, disability status, sex, age on entry, socio-economic classification and ethnicity. A comparison with the FT cohort of students on these key demographic characteristics is presented below.

All analysis is restricted to schools who have five or more students who entered HE between 2013-14 and 2020-21. Percentages are shown for schools who have 22.5 or more students. Any school which is already in partnership with the FT programme is excluded.

5. Results: Topic 1

5.1. Description of data

There were 63 schools identified in the Birmingham, Solihull or Sandwell areas who had five or more students who had entered HE according to the HESA data from 2013-14 to 2020-21 and were not already a FT partnership school.

Of these 63 schools, 45 had five or more students who may have been eligible to participate in the FT programme. Note that this will be an undercount of the total number of eligible students who would have attended these schools due to the fact that:

- a. Not all students enter HE following KS4/KS5 education.
- b. Students may have changed schools from KS4 to KS5 for example leaving school after GCSEs to complete KS5 qualifications such as A levels or BTECs at a sixth form college.
- c. There may have been an error in reporting a student's previous institution to UCAS or capture of this information by the HE provider.

All schools have been anonymised in the report.

[Appendix 11](#) provides the previous institution identifier, the number of eligible students and the total number of students who entered HE taken from the HESA data, ordered by number of eligible students.

5.2. Outcome of analysis

[Table 2](#) shows the key demographic characteristics of all the students from each school. A comparison with the FT cohort of students on these key demographic characteristics is shown in the first row.

The key demographics are:

1. Percentage of students with a known disability.
2. Percentage of students who were female.
3. Percentage of students who were aged 18-20 on entry to HE. Calculations exclude students with an unknown age.
4. Percentage of UK domiciled students who were from a BAME background (note ethnicity information is only collected for UK domiciled students). Calculations exclude students with an unknown ethnicity.
5. Percentage of students based on their socio-economic status. This is classified according to the National Statistics Socio-economic classification (NS-SEC), a system based on occupational class. For students aged under 21 at the start of their course, the socio-economic background of their parent, step-parent or guardian is recorded. For students aged 21 and over at the start of their course, their own socio-economic background is recorded. Calculations exclude students with an unknown or unclassified socio-economic classification.
6. Percentage of students who did not have HE qualifications. Calculations exclude students who did not know/unknown information about their parents HE qualifications.
7. Percentage of students from a POLAR 1 or 2 area. Calculations exclude students with no POLAR information.
8. Percentage of students who had a tariff score which was equal or higher than the median tariff. Calculations exclude students with a zero tariff or unknown tariff.

Note School 45 is omitted from the following analysis as the total number of HE entrants were less than 22.5 and so percentage calculations are suppressed due to the Jisc rounding strategy.

Table 2: The previous institution alongside key demographic characteristics and a comparison to the FT students.

	Percentage known disability	Percentage female	Percentage age 18-20 on entry to HE	Percentage BAME of UK domiciled students	Percentage SEC 1-3	Percentage SEC 4-7	Percentage SEC not worked	Percentage parents not in HE	Percentage POLAR 1 or 2	Percentage median tariff or higher
Forward Thinking students	11%	62%	98%	66%	34%	64%	2%	89%	41%	45%
School 1	9%	52%	94%	65%	36%	64%	0%	84%	60%	55%
School 2	5%	59%	97%	62%	38%	62%	0%	77%	81%	20%
School 3	14%	53%	94%	27%	52%	48%	1%	72%	68%	62%
School 4	6%	53%	96%	81%	36%	64%	0%	85%	48%	33%
School 5	13%	65%	95%	25%	45%	55%	0%	77%	77%	38%
School 6	5%	61%	97%	50%	36%	64%	0%	86%	71%	53%
School 7	8%	56%	96%	50%	44%	55%	1%	71%	78%	33%
School 8	5%	55%	97%	58%	45%	54%	1%	70%	66%	47%
School 9	9%	55%	95%	19%	50%	50%	0%	70%	67%	55%
School 10	12%	61%	97%	30%	74%	26%	0%	43%	21%	41%

	Percentage known disability	Percentage female	Percentage age 18-20 on entry to HE	Percentage BAME of UK domiciled students	Percentage SEC 1-3	Percentage SEC 4-7	Percentage SEC not worked	Percentage parents not in HE	Percentage PO LAR 1 or 2	Percentage median tariff or higher
Forward Thinking students	11%	62%	98%	66%	34%	64%	2%	89%	41%	45%
School 11	12%	99%	98%	49%	62%	37%	0%	59%	44%	32%
School 12	4%	51%	93%	25%	39%	61%	0%	82%	91%	44%
School 13	6%	54%	97%	63%	34%	66%	0%	83%	59%	22%
School 14	3%	52%	96%	98%	21%	77%	2%	82%	40%	56%
School 15	8%	56%	93%	98%	27%	71%	2%	83%	36%	52%
School 16	6%	55%	97%	64%	44%	56%	0%	77%	41%	23%
School 17	10%	50%	96%	75%	61%	39%	1%	51%	32%	41%
School 18	7%	59%	94%	81%	34%	65%	1%	76%	59%	29%

School 19	4%	59%	96%	100%	15%	85%	0%	91%	26%	31%
School 20	12%	51%	96%	26%	67%	33%	1%	55%	27%	28%
School 21	10%	59%	97%	22%	77%	23%	0%	46%	18%	44%
	Percentage known disability	Percentage female	Percentage age 18-20 on entry to HE	Percentage BAME of UK domiciled students	Percentage SEC 1-3	Percentage SEC 4-7	Percentage SEC not worked	Percentage parents not in HE	Percentage POLAR 1 or 2	Percentage median tariff or higher
Forward Thinking students	11%	62%	98%	66%	34%	64%	2%	89%	41%	45%
School 22	14%	60%	96%	25%	76%	24%	0%	43%	15%	47%
School 23	11%	52%	93%	35%	58%	41%	1%	67%	53%	30%
School 24	9%	54%	98%	13%	74%	26%	0%	44%	21%	40%
School 25	3%	52%	97%	97%	21%	78%	1%	90%	37%	33%
School 26	5%	59%	95%	97%	24%	74%	2%	84%	44%	33%

School 27	16%	64%	96%	4%	35%	63%	2%	93%	92%	39%
School 28	9%	53%	97%	10%	77%	23%	0%	44%	9%	37%
School 29	8%	55%	99%	32%	84%	16%	0%	32%	3%	50%
School 30	12%	53%	99%	17%	87%	13%	0%	26%	1%	46%
School 31	4%	57%	99%	99%	29%	70%	1%	87%	8%	37%
School 32	11%	57%	98%	11%	83%	17%	0%	33%	8%	33%
School 33	7%	55%	98%	54%	56%	44%	0%	68%	9%	19%
	Percentage known disability	Percentage female	Percentage age 18-20 on entry to HE	% BAME of UK domiciled students	Percentage SEC 1-3	Percentage SEC 4-7	Percentage SEC not worked	Percentage parents not in HE	Percentage PO LAR 1 or 2	Percentage median tariff or higher
Forward Thinking students	11%	62%	98%	66%	34%	64%	2%	89%	41%	45%
School 34	2%	52%	97%	100%	22%	77%	0%	87%	6%	31%

School 35	4%	100%	96%	99%	24%	74%	2%	85%	13%	33%
School 36	15%	56%	99%	26%	73%	27%	0%	44%	7%	36%
School 37	8%	54%	99%	99%	50%	50%	0%	72%	25%	23%
School 38	16%	60%	88%	31%	42%	57%	1%	71%	68%	16%
School 39	11%	40%	89%	44%	52%	48%	0%	64%	56%	47%
School 40	5%	50%	97%	97%	51%	49%	1%	70%	6%	13%
School 41	9%	56%	90%	34%	55%	45%	0%	62%	51%	18%
School 42	4%	54%	96%	57%	57%	42%	1%	68%	27%	23%
School 43	6%	52%	84%	43%	45%	55%	0%	82%	63%	22%
School 44	12%	68%	83%	12%	58%	42%	0%	89%	71%	17%

This table shows that there are schools which have students with similar backgrounds to FT students and may benefit from partnering with the FT programme.

6. Topic 2: A deep dive into Forward Thinking students who had entered HE, investigating their experience and outcomes

6.1. Design

The FT students who were identified in the HESA data as entering UK HE are analysed within this section.

6.2. Outcome measures

Table 3: Outcome measures for Topic 2.

Outcome measure	Data collected	Point of collection
Primary: Whether the learner attended a research-intensive HE provider (a HEP committed to research as a central part of its mission) and/or high tariff HE provider	Binary (yes/no)	Via the HESA Student Record and Student Alternative Record (See Appendix 2 for a list of research-intensive and/or high tariff HE providers)
Secondary: Whether the learner studied a STEM subject	Binary (yes/no)	Via the HESA Student Record and Student Alternative Record
Secondary: Whether the learner continued from first year to second year of study	Binary (yes/no)	Via the HESA Student Record and Student Alternative Record
Secondary: For those learners who completed a first degree, whether the learner achieved a first or upper second class honours first degree	Binary (yes/no)	Via the HESA Student Record and Student Alternative Record
Secondary: Whether the learner completed their	Binary (yes/no)	Via the HESA Student Record and Student Alternative Record

qualification in up to five years		
Secondary: Whether the learner progressed to postgraduate study	Binary (yes/no)	Via the HESA Student Record and Student Alternative Record

6.3. Analytical strategy

Note any data that has been provided by The University of Birmingham about the FT students or data derived from the HESA records has been rounded using the Jisc rounding strategy. Percentage calculations exclude any unknowns.

Comparisons to the England domiciled student population were either sourced from the Heidi Plus database or from an England domiciled bespoke dataset.⁷

7. Results: Topic 2

7.1. Participant flow

Of the 700 students who had engaged with the FT programme, 420 students were successfully found in the HESA data from 2013-14 to 2020-21 (60%). There are several possible reasons for the remaining 40% of students not being found in the HESA data: the students did not enter HE following the FT programme; the students are yet to enter HE; or the students' personal information used to conduct the fuzzy matching process was incorrect or had changed following entry to the FT programme meaning they could not be found in the HESA data. [Table 4](#) shows the academic year of entry by cohort number for the FT students.

[Figure 2](#) shows the number of FT students who entered undergraduate HE in the UK by academic year of entry. The number of FT students in HE increases over the time series, this aligns with the increase in the number of students who engaged with the FT programme over time (in 2007-08 45 students, in 2014-15 130 students see [Table 1](#)). It will also be due to students who engaged with the FT programme had longer to appear in the data. For example, a FT student who left school in 2013-14 had the opportunity to take a gap year or work before entering HE and still be found in the HESA data. Whereas an FT student who left school in the summer of 2019 will only appear in this analysis if they entered HE in 2019-20 or 2020-21.

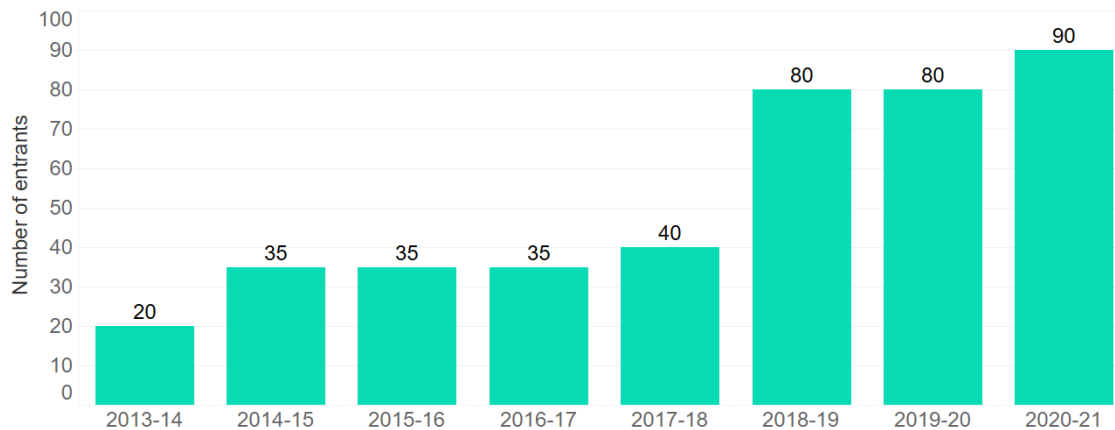
⁷ HESA Student Record (2013-14 to 2020-21) Copyright Higher Education Statistics Agency Limited. Heidi Plus is the higher education sector's data visualisation and analytics tool.

Table 4: A time series of Forward-Thinking students who entered undergraduate HE in the UK by cohort number, 2013-14 to 2020-21.⁸ (- indicates that it was not possible for a student from that cohort to enter HE in that academic year)

Academic year of HE entry with cohort size	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	Total	Percentage of cohort
Cohort 1-size 45	20	10	0	0	0	0	0	0	25	60%
Cohort 2-size 70	-	30	15	0	0	0	0	0	45	66%
Cohort 3-size 50	-	-	20	10	5	0	0	0	35	77%
Cohort 4-size 45	-	-	-	25	10	5	0	0	35	77%
Cohort 5-size 85	-	-	-	-	30	15	5	0	50	59%
Cohort 6-size 115	-	-	-	-	-	60	10	5	75	66%
Cohort 7-size 160	-	-	-	-	-	-	60	25	85	53%
Cohort 8-size 130	-	-	-	-	-	-	-	60	60	47%

⁸ The sum of values across years may differ to the values in the Total column due to the Jisc rounding methodology.

Figure 2: The academic year of entry for FT students who entered undergraduate HE in the UK, 2013-14 to 2020-21.



The majority of the 420 FT students who entered UK HE over the time series began studying a first degree qualification (400, 96%) with the remaining entrants studying another undergraduate qualification such as a Higher National Diploma (HND) or a foundation degree qualification.

The majority of the students (405, 97%) were full-time students.

Due to small numbers of FT students present in each academic year, all following analysis is aggregated across all academic years.

7.2. Description of data

Of the 700 students who engaged with the FT programme:

- 55% (390) were female and 60% (415) were male.
- 60% (415) were from a BAME background and 40% (285) were white.

Figure 3 shows the personal characteristics of FT students found in the HESA data. Of the 420 FT students who were found in the HESA data that had entered HE:

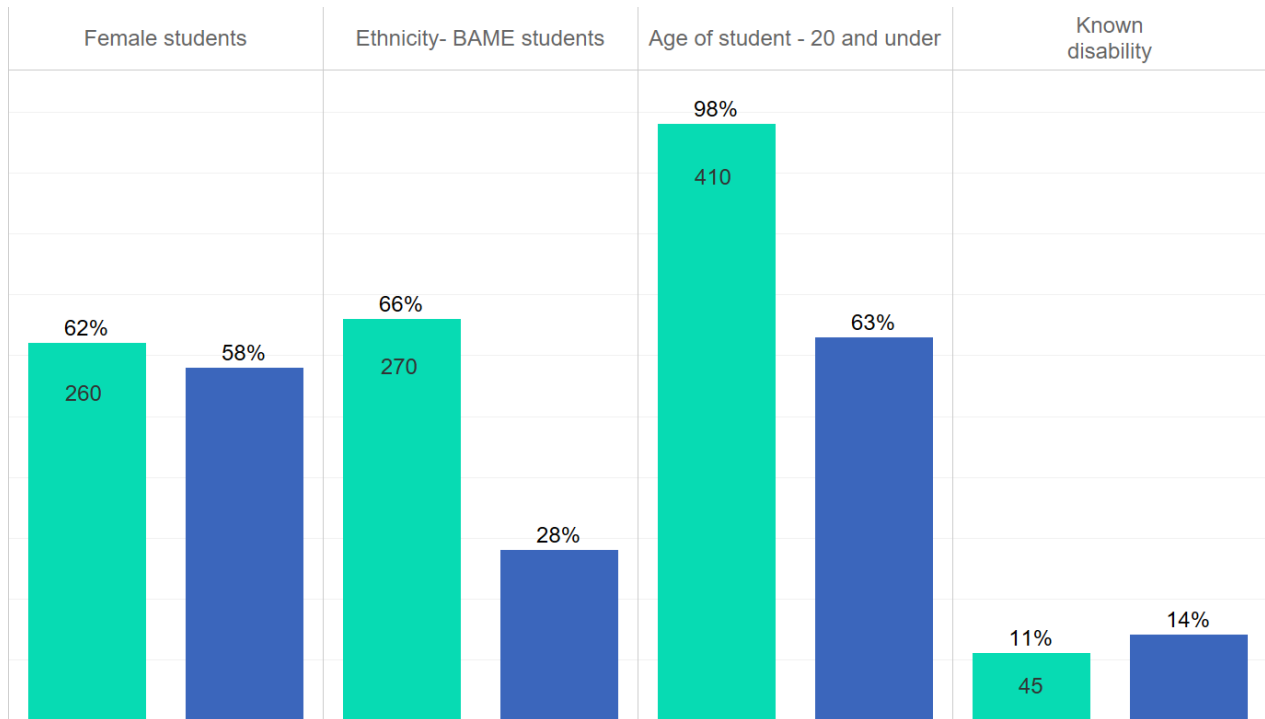
- 62% (260) were female and 38% (160) were male.
- Of the UK domiciled entrants with a known ethnicity, 66% (270) were from a BAME background and 34% (145) were white.
- 98% were 20 and under (410) and 2% (10) were over 21.
- 11% (45) had a known disability and 89% (375) had no known disability.

In comparison to the England domiciled first year undergraduate student population, aggregated 2013-14 to 2020-21:

- 58% were female and 42% were male.
- 28% were from a BAME background and 72% were white.

- 63% were 20 and under and 37% were over 21.
- 14% had a known disability and 86% had no known disability.

Figure 3: Personal characteristics for FT students who entered undergraduate HE in the UK, aggregated 2013-14 to 2020-21 alongside personal characteristics for England domiciled first year undergraduate student population, aggregated 2013-14 to 2020-21.



■ Forward Thinking students
 ■ England domiciled first year undergraduate students

Of the 700 students who engaged with the FT programme:

- 97% (680) had parents/guardians who had not completed a HE qualification in the UK or abroad and 3% (20) who had parents/guardians who had completed a HE qualification in the UK or abroad.
- 71% (465) were from a POLAR 1 or 2 quintile area and 29% (190) were from a POLAR 3, 4 or 5 quintile area.

[Figure 4](#) shows WP characteristics for FT students who were found in the HESA data.

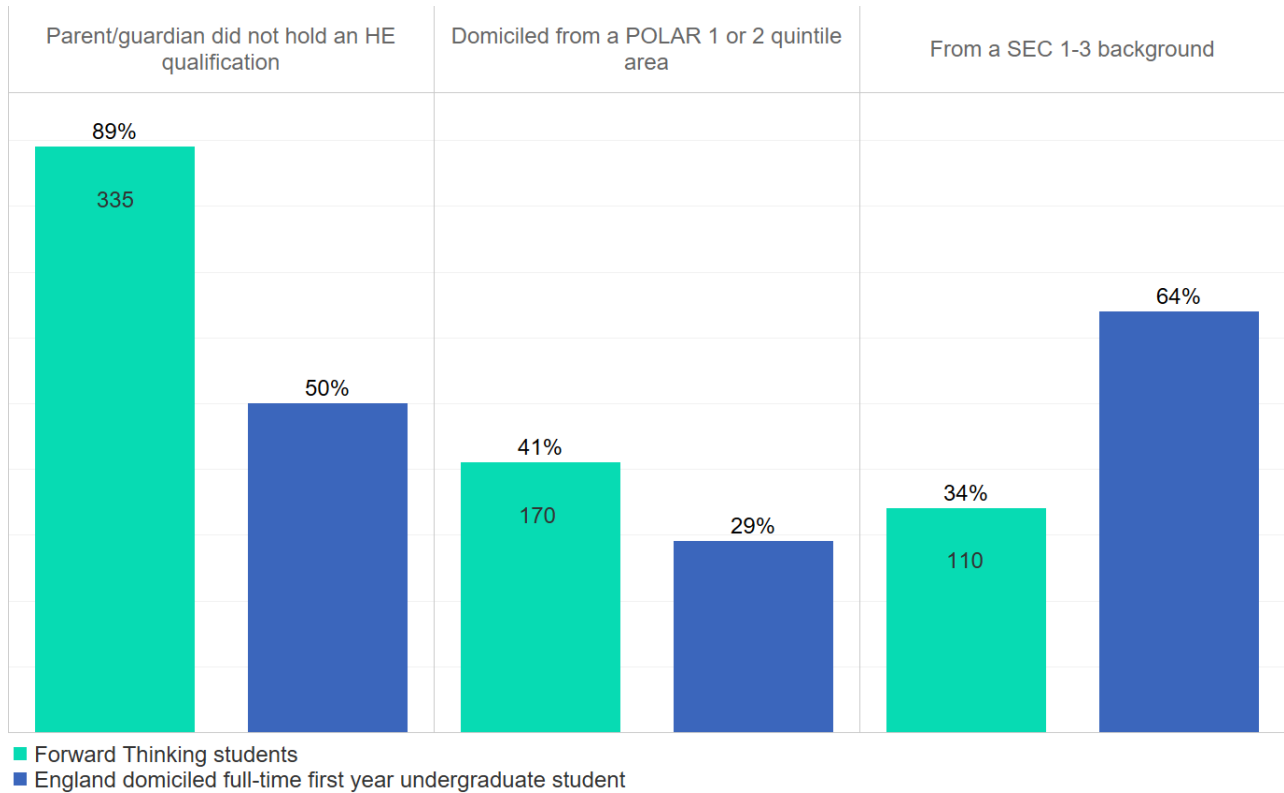
Of the 420 FT students who were found in the HESA data that had entered HE:

- 89% (335) had parents/guardians who did not hold a HE qualification such as degree, diploma or certificate of HE and 11% (40) had parents/guardians who held a HE qualification such as degree, diploma or certificate of HE.
- 41% (170) were from a POLAR 1 or 2 quintile area and 59% (245) were from a POLAR 3, 4 or 5 quintile area.
- 34% (110) were from a SEC (socio-economic classification) 1-3 background, 64% (205) were from a SEC 4-7 background and 2% (5) who had never worked/long term unemployed.

For the England domiciled full-time first year undergraduate student population, aggregated 2016-17 to 2020-21:

- 50% had parents/guardians who did not hold a HE qualification such as degree, diploma or certificate of HE and 50% had parents/guardians who held a HE qualification such as degree, diploma or certificate of HE.
- 29% were from a POLAR 1 or 2 quintile area and 71% were from a POLAR 3, 4 or 5 quintile area.
- 64% were from a SEC 1-3 background, 36% were from a SEC 4-7 background and 1% who had never worked/long term unemployed.

Figure 4: Widening participation characteristics for FT students who entered undergraduate HE in the UK, aggregated 2013-14 to 2020-21 alongside widening participation characteristics England domiciled full-time first year undergraduate student population, aggregated 2016-17 to 2020-21.



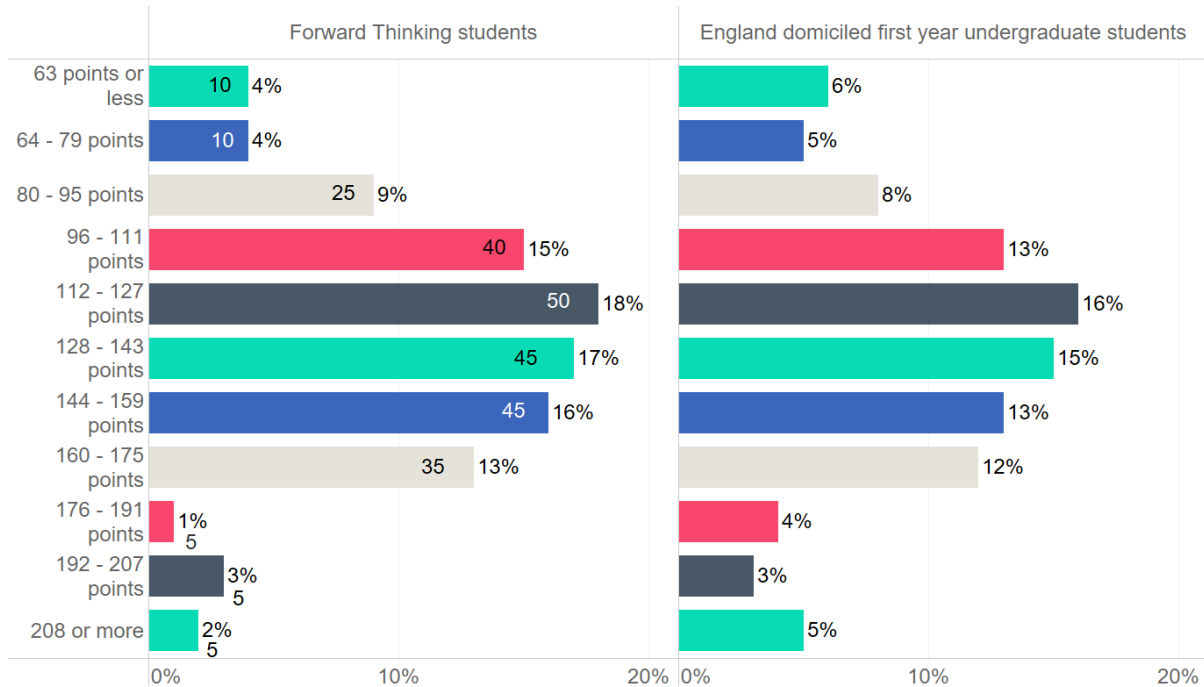
UCAS created the concept of tariff score, which translates post-16 qualification grades to a numerical value. In 2017-18 a new tariff mapping was introduced. Of the 275 FT students who entered HE between 2017-18 and 2020-21 with known tariff information, had a median tariff of 128 (average (mean) 126, standard deviation 35).

In comparison to the England domiciled first year undergraduate student population with known tariff, aggregated 2017-18 to 2020-21, the average (mean) tariff was 129.

Figure 5 shows the tariff score on entry distribution for the FT students who entered HE in 2017-18 to 2020-21. The distribution is bell shaped, with 65% of FT students having achieved between 96-159 tariff points on entry – A level B,B,B is equivalent to 120 tariff points and A,A,A is equivalent to 144 tariff points.

The majority of students (59%, 170) entered with A/ AS level qualifications, 10% entered with a diploma at Level 3 (30) and 26% were awarded a mix of Level 3 qualifications (75) which were tariff bearing.

Figure 5: Tariff distribution of FT students who entered undergraduate HE in the UK, aggregated 2017-18 to 2020-21 compared to the tariff distribution of England domiciled first year undergraduate students with known tariff, aggregated 2017-18 to 2020-21.



[Table 5](#) shows a summary of the statistics for the description of the data presented in this section.

Table 5 - Summary statistics for the description of the FT cohort against the England domiciled student population.

	FT students who were engaged in the FT programme (700) ⁹	FT students who were found in the HESA data (420)	England domiciled first year undergraduate student population
Female	55%	62%	58%
Were 20 or under years of age	-	98%	63%
Had known disability	-	11%	14%
BAME background	60%	66% (UK domiciled students only)	28%
Domiciled from a POLAR 1 or 2 quintile area (full-time students only)	71%	41%	29%
Had parents/ guardians who had not completed/ did not hold a HE qualification (full-time students only)	97%	89%	50%
From a SEC 1-3 background (full-time students only)	-	34%	64%
From a SEC 4-7 background (full-time students only)	-	64%	36%
Tariff for entrants between 2017-18 and 2020-21	-	Median tariff of 128, average (mean) 126, standard deviation 35.	Average (mean) tariff 129

⁹ - means this information was not available

7.3. Outcome of analysis

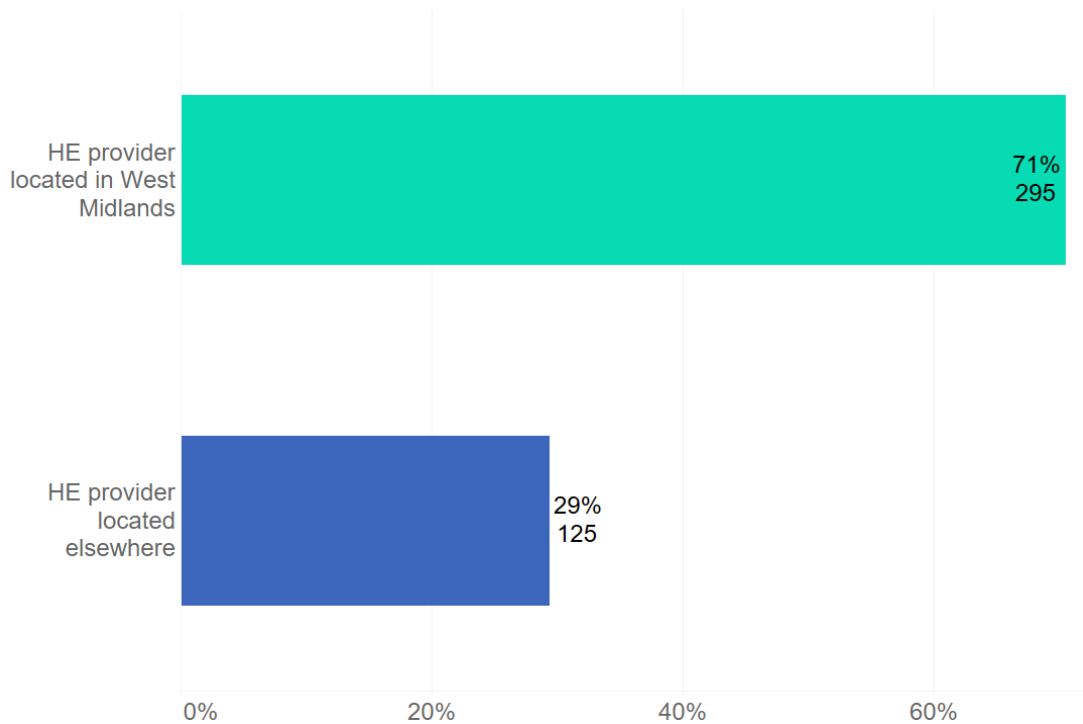
7.3.1. Primary outcome: whether the learner attended a research-intensive and/or high tariff HE provider

49% (205) of FT students were enrolled at a research-intensive and/or high tariff HE provider and 51% (215) were enrolled at another HE provider.¹⁰

In comparison to the England domiciled first year undergraduate student population, aggregated 2013-14 to 2020-21, 27% were enrolled at a research-intensive and/or high tariff HE provider.

[Figure 6](#) shows the proportion of FT students enrolled at a HE provider in the West Midlands. 71% of FT students were enrolled at a HE provider in the West Midlands (295) and 29% of FT students were enrolled at a HE provider located elsewhere.

Figure 6: FT students who entered undergraduate HE in the UK by HE provider located in West Midlands, aggregated 2013-14 to 2020-21.



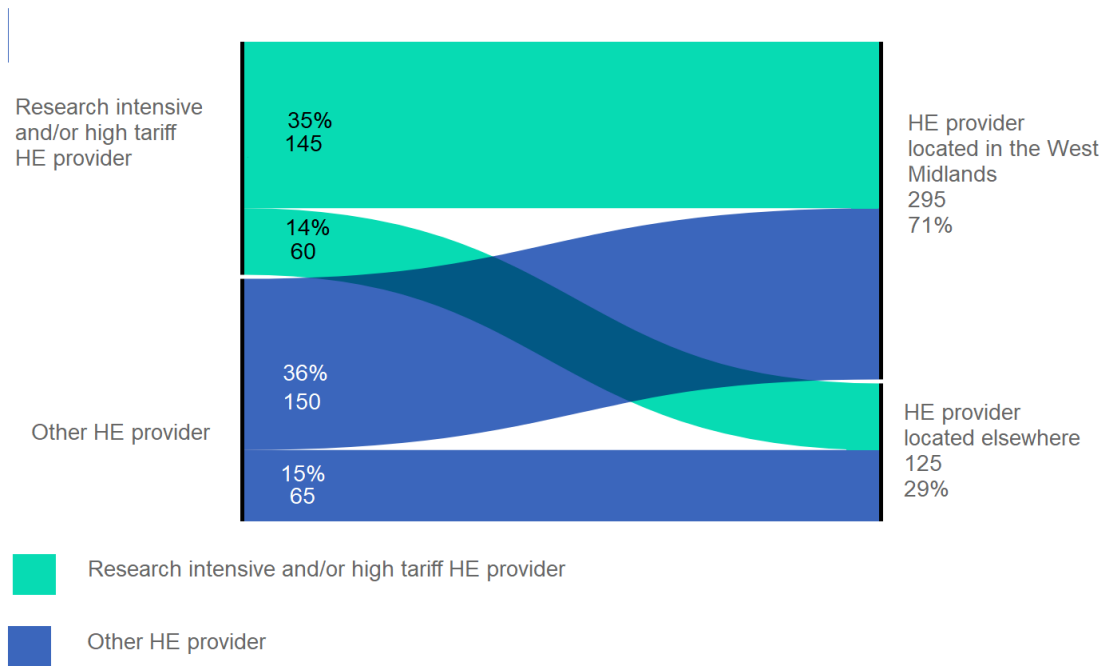
[Figure 7](#) shows the flow between the type of HE provider and the location of the HE provider. Of the FT students who were enrolled at a research-intensive and/or high tariff HE provider, 35% (145) of students were at a HE provider located in the West Midlands in comparison to 36% (150) of students at another HE provider located in the West

¹⁰ See [Appendix 2](#) for research-intensive and/ or high tariff HE providers.

Midlands. Of the FT students who were enrolled at a research-intensive and/or high tariff HE provider, 14% (60) were at a HE provider located elsewhere in comparison to 15% (65) of students at another HE provider located elsewhere.

In comparison to the England domiciled first year undergraduate student population, aggregated 2013-14 to 2020-21, 3% of students were enrolled at a research-intensive and/or high tariff HE providers located in the West Midlands in comparison to 8% of students at another HE provider in the West Midlands.

Figure 7: FT students who entered undergraduate HE in the UK by type of HE provider and location of HE provider, aggregated, 2013-14 to 2020-21.



FT students, regardless of the type of HE provider they were enrolled at, had a preference to enrol at a HE provider in the West Midlands region.

Due to term-time accommodation information only being collected for full-time students, the following statistics are restricted to those studying full-time only. [Figure 8](#) shows the majority of full-time FT students (57%, 235) lived in their parental/ guardian home during their first year compared to 25% (100) living in provider-maintained property .

In comparison this trend is very different to the England domiciled full-time first year undergraduate student population, aggregated 2013-14 to 2020-21, 25% of students

lived in their parental/guardian home compared to 38% of students living in provider maintained property.

Figure 8: FT students who entered full-time undergraduate HE in the UK by term-time accommodation type, aggregated, 2013-14 to 2020-21 compared to England domiciled full-time first year undergraduate student population, aggregated 2013-14 to 2020-21.

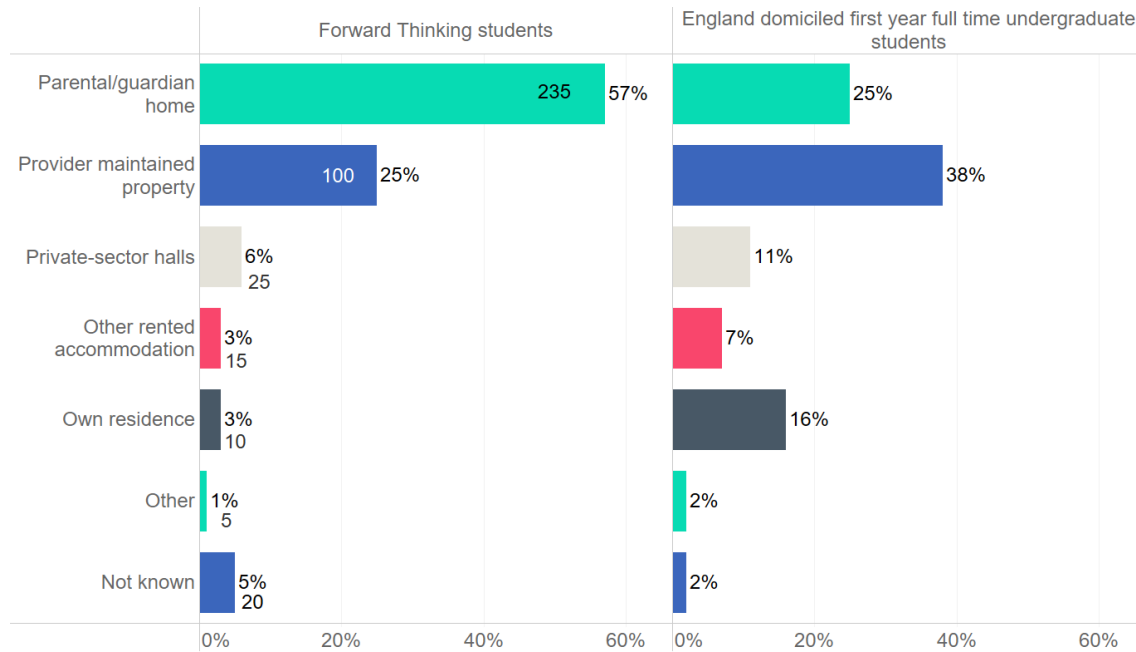


Table 6 shows a summary of the outcome statistics presented in this section.

Table 6 - Summary statistics for the FT cohort and the England domiciled student population.

	FT students who were found in the HESA data (420)	England domiciled first year undergraduate student population
Enrolled at a research-intensive and/or high tariff HE provider	49% (205)	27%
Enrolled at a HE provider in the West Midlands	71% (295)	11%
Enrolled at a research-intensive and/or high tariff HE	35% (145)	3%

provider in the West Midlands		
Living in parental/guardian home (full-time students only)	57% (235) Note the denominator for this calculation is: 405 (restricted to full-time students only)	25%
Living in provider maintained property (full-time students only)	25% (100) Note the denominator for this calculation is: 405 (restricted to full-time students only)	38%

7.3.2. Secondary outcome: whether the learner studied a STEM subject

The majority of FT students were enrolled on a STEM subject course (57%, 240) with 43% (180) enrolled on a non-STEM subject course.¹¹

For the England domiciled first year undergraduate student population, aggregated 2019-20 to 2020-21, 46% were enrolled on a STEM subject course.

[Figure 9](#) shows that of the 205 FT students enrolled at a research-intensive and/ or high tariff HE provider, 61% (125) were studying a STEM subject. Of the 215 FT students enrolled at another HE provider, 53% (115). were studying a STEM subject.

For the England domiciled first year undergraduate student population, aggregated 2019-20 to 2020-21, enrolled at a research-intensive and/ or high tariff HE provider 50% were studying a STEM subject. Of the England domiciled first year undergraduate student population enrolled at another HE provider, 45% were studying a STEM subject.

¹¹ The STEM grouping includes all Common Aggregation Hierarchy (CAH) level 1 codes CAH01 through to CAH13 and CAH26 with the exception of CAH26-01-03 (Human geography). CAH26 (Geographical and environmental studies) has been disaggregated so that CAH26-01-03 (Human geography) is presented in the non-science grouping labelled as 'Geographical and environmental studies (social sciences)'. All other CAH level 3 codes within CAH26 are presented in the STEM grouping labelled as 'Geographical and environmental studies (natural sciences)'. This grouping of STEM subjects has been created by HESA. <https://www.hesa.ac.uk/support/documentation/hecos/cah#download-cah>

Figure 9: FT students who entered undergraduate HE in the UK by type of HE provider and STEM subject marker, aggregated 2013-14 to 2020-21, against the England domiciled first year undergraduate student population, aggregated 2019-20 to 2020-21.

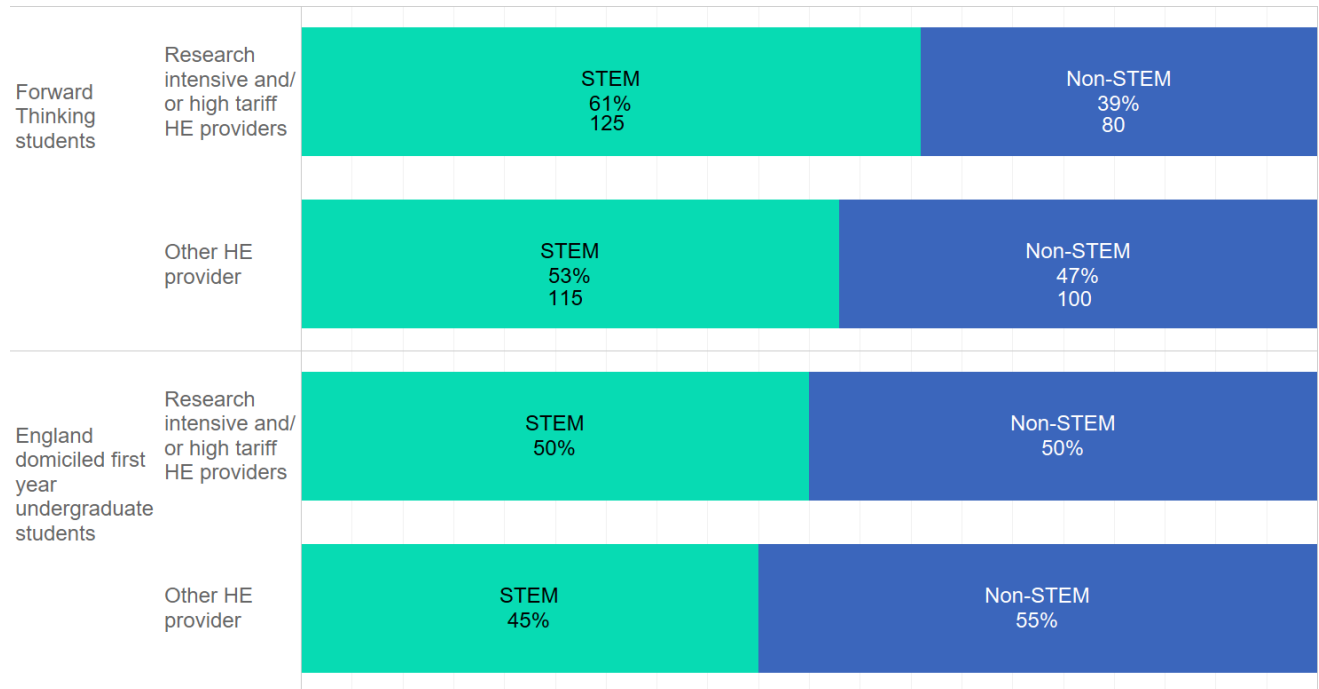


Table 7 shows a summary of the outcome statistics in this section.

Table 7 - Summary statistics for the FT cohort and the England domiciled student population.

	FT students who were found in the HESA data (420)	England domiciled first year undergraduate student population
Studied a STEM subject	57% (240)	46%
Studied a STEM subject and enrolled at high tariff/research-intensive HE provider	61% (125) Note the denominator for this calculation is: 205 (restricted to those enrolled at a high tariff/research-intensive HE provider)	50%

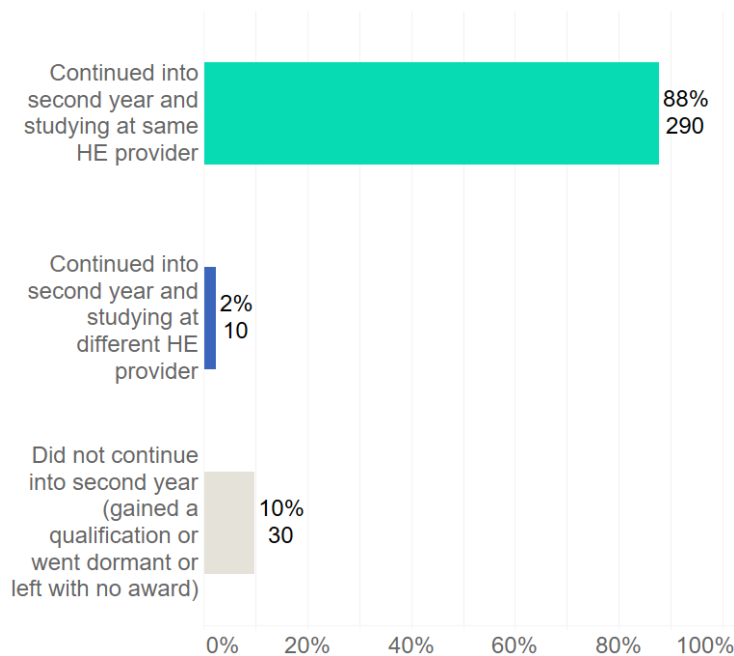
7.3.3. Secondary outcome: whether the learner continued from first year to second year of study

Analysis for this section excludes FT students who were enrolled in their first year in 2020-21 as the data does not enable us to confirm if they continued or not into the 2021-22 academic year.

For FT students who entered HE in 2013-14 to 2019-20 (330), 90% (295) of FT students continued from their first year into their second year of study and 10% (30) did not continue from their first year into their second year of study.¹²

[Figure 10](#) shows of the 295 FT students who continued from their first year into their second year, 10 of them changed HE provider from their first year to their second year.

Figure 10: FT students who continued from first year of study into second year of study, aggregated, 2013-14 to 2019-20.



Of the 165 FT students who were enrolled at a research-intensive and/ or high tariff HE provider, 95% (155) continued from their first year into their second year of study. Similarly, 85% (140) of the 165 FT students enrolled at another HE provider continued from their first year into their second year of study.

¹² Note this is based on the year of study that the student is enrolled on. Students who continued may be going into the following year of their course or repeating the first year of their course. Students who gained a qualification, were writing up, had gone dormant or left with no award are shown as did not continue.

When analysing the data by STEM subjects studied, 90% (170) of the 185 FT students studying a STEM subject continued from their first year into their second year of study. Similarly, 91% (130) of the 140 FT students studying a non-STEM subject continued from their first year into their second year of study.

There is no England comparison figure as the tracking of students from their first year into their second year of study is bespoke to this analysis.

[Table 8](#) shows a summary of the outcome statistics in this section.

Table 8 - Summary statistics for FT students found in the HESA data.

	FT students who were found in the HESA data 2013-14 to 2019-20 (330)
Continued from first year to second year of study	90%
Continued from first year to second year of study if studying at high tariff/research-intensive HE provider	95% Note the denominator for this calculation is: 165 (restricted to those enrolled at a high tariff/research-intensive HE provider)
Continued from first year to second year of study if studying a STEM subject	90% Note the denominator for this calculation is: 185 (restricted to those studying a STEM subject)

7.3.4. Secondary outcome: for those learners who completed a first degree, whether the learner achieved a first or upper second class honours first degree

Within the time series, 175 FT students were found to have an HE qualification. Please note, some FT students enrolled in HE within this analysis may not have completed their course yet or may have left with no award at sometime within their studies or gone dormant (those who have suspended study but have not formally de-registered).

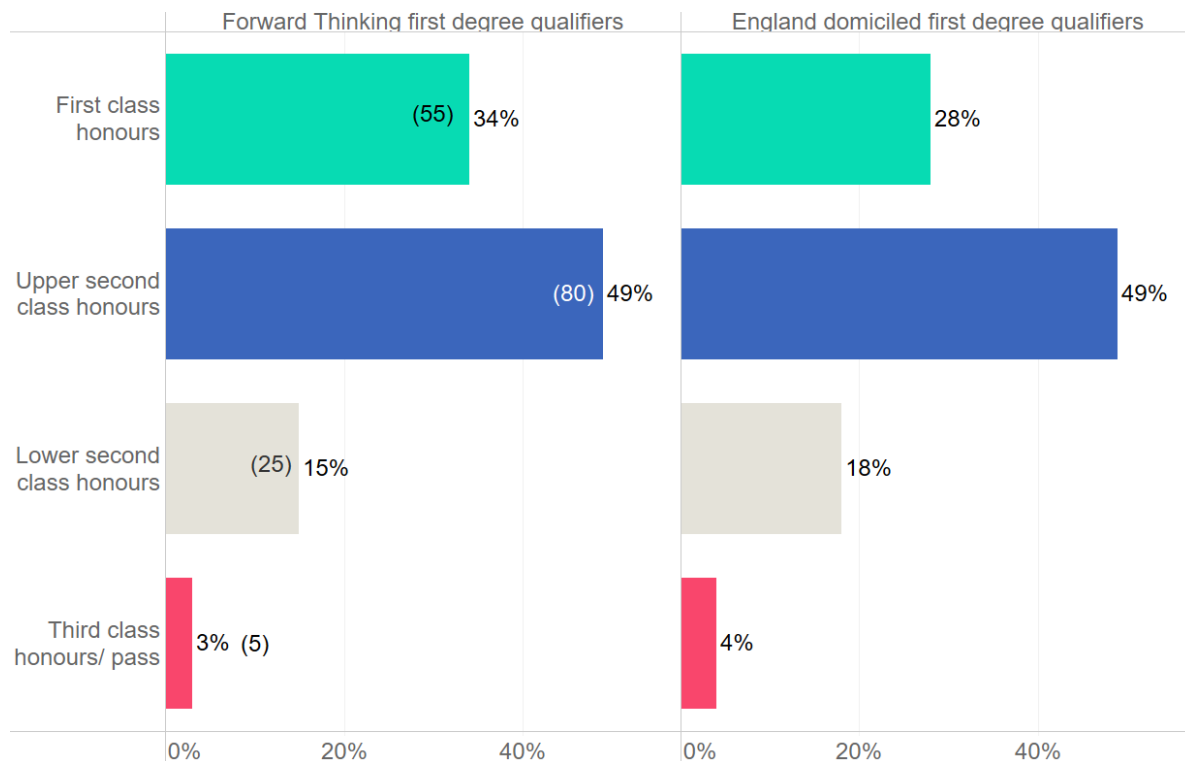
Of these 175 FT students, 160 were awarded a first degree qualification and 15 were awarded another undergraduate qualification.

There were 10 FT students who were awarded another undergraduate qualification had originally enrolled to study a first degree course.

Figure 11 shows first degree qualifiers by class of first degree. **Of the 160 FT students who were awarded a first degree qualification, 83% (130) gained a ‘good honours degree’** - 34% (55) gained a first class honours, 49% (80) gained an upper second class honours, 15% (25) gained a lower second class honours and 2% (5) gained a third class honours/ pass.

In comparison to the England domiciled first degree qualifiers population, aggregated 2013-14 to 2020-21, 77% gained a ‘good honours degree’ - 28% gained a first class honours 49% gained an upper second class honours, 18% gained a lower second class honours and 4% gained a third class honours/ pass.

Figure 11: FT first degree qualifiers by class of first degree, aggregated, 2013-14 to 2020-21, compared to the England domiciled first degree qualifiers population, aggregated 2013-14 to 2020-21.



Similar distributions of class of degree awards were seen when analysed by research-intensive and/ or high tariff HE providers – of the 80 FT students who were awarded first degree at a research-intensive and/or high tariff HE providers 36% (30) gained a first class honours and 53% (45) gained an upper second class honours. Of the 80 FT students who were awarded a first degree at another HE provider 32% (25) gained a first class honours and 44% (35) gained an upper second class honours.

In comparison to the England domiciled qualifiers population, aggregated 2013-14 to 2020-21, 33% gained a first class honours and 54% gained an upper second class honours at a research-intensive and/or high tariff HE providers. Of the England domiciled qualifiers population enrolled at another HE provider, 26% gained a first class honours and 46% gained an upper second class honours.

Differing distributions of class of degree awards were seen when analysed by STEM subjects – of the 80 FT students who were awarded a STEM subject first degree 43% (35) gained a first class honours and 39% (30) gained an upper second class honours. Of the 80 FT students who were awarded a non-STEM first degree 25% (20) gained a first class honours and 58% (45) gained an upper second class honours.

For the England domiciled qualifiers population, aggregated 2019-20 to 2020-21, 40% gained a first class honours and 42% gained an upper second class after studying a STEM subject first degree. Of the England domiciled qualifiers population who were awarded a non-STEM first degree, 34% gained a first class honours and 50% gained an upper second class honours.

[Table 9](#) shows a summary of the outcome statistics in this section.

Table 9 - Summary statistics for the FT cohort and the England domiciled student population.

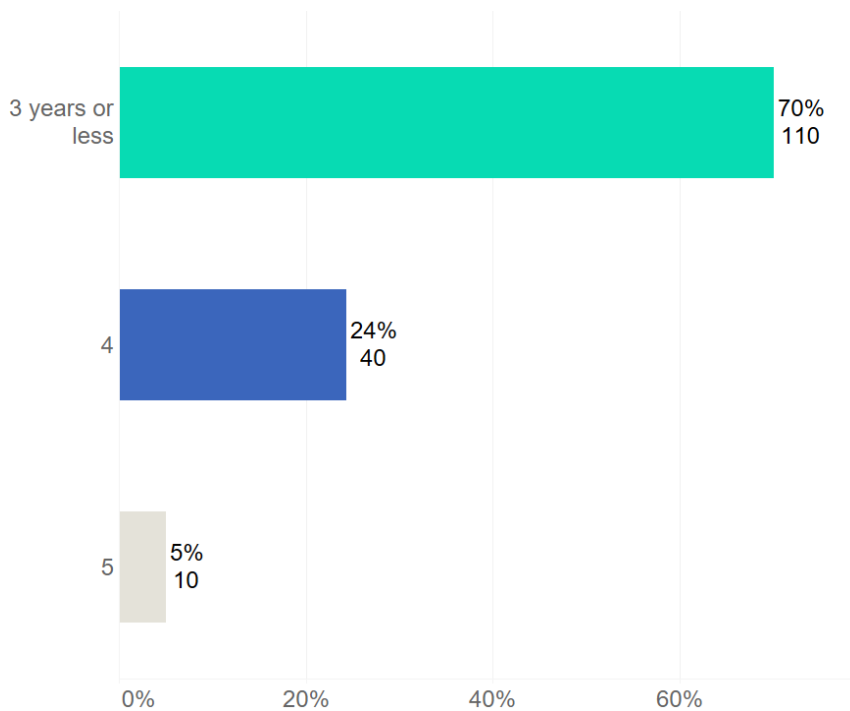
	FT first degree qualifiers who were found in the HESA data (160)	England domiciled first degree qualifiers population
Achieved a first or upper second class honours first degree	83%	77%
Achieved a first or upper second class honours first degree and studied at high tariff/research-intensive HE provider	89% Note the denominator for this calculation is: 80 (restricted to those enrolled at a high tariff/research-intensive HE provider)	87%
Achieved a first or upper second class honours first degree and studied a STEM subject	82% Note the denominator for this calculation is: 80 (restricted to those studying a STEM subject)	82%

7.3.5. Secondary outcome: Whether the learner completed their qualification in up to five years

First degree courses can have differing lengths of courses depending on which nation they studied in (typically first degree courses are three to four years in length), the content of the course (it may include an additional sandwich year) and what subject the student is studying (medicine courses are typically five years).

[Figure 12](#) shows **of the 160 FT first degree qualifiers, 99% completed their qualification within five years**, with the majority (70%, 110) of them completing it in three years or less.

Figure 12: The time to completion (in years) of first degree qualifications for FT students, aggregated 2013-14 to 2020-21



Of the 80 FT students who were enrolled at a research-intensive and/ or high tariff HE provider, 60% (50) completed their first degree in up to three years. Of the 80 FT students enrolled at another HE provider, 80% (65) completed their first degree in up to three years.

Of the 80 FT students who were studying a STEM subject 62% (50) completed their first degree in three years. Of the 80 FT students studying a non-STEM subject, 78% (65) completed their first degree in three years.

There is no England comparison figure as the completion of qualification calculation is bespoke to this request.

7.3.6. Secondary outcome: Whether the learner progressed to postgraduate study

Of the 160 FT students who were awarded a first degree (undergraduate) qualification; **18% (30) of FT students were found to have progressed on to a postgraduate qualification.** Please note, some FT students will not have had the opportunity to enrol in postgraduate study due to their qualification being awarded in 2020-21 or taking gap years prior to engaging in further study.

The majority of the FT students (20) went straight from undergraduate to postgraduate studies, five had a gap year and five had two or more years between the study types.

10 of the FT students were enrolled at a research-intensive and/or high tariff HE provider for postgraduate study.

10 of the FT students were studying a STEM subject for postgraduate study.

There is no England comparison figure as the learner progression from postgraduate study from undergraduate qualification calculation is bespoke to this analysis.

8. Topic 3: A comparison of FT students with a matched group of students (who are assumed not to have participated in the programme) and their HE experience.

8.1. Design

The FT students who have been identified in the HESA data as entering UK HE are compared to matched samples. The matched samples are created using a technique known as propensity score matching (PSM).

8.2. Outcome measures

The same outcome measures as referenced for Topic 2 in [Section 6.2](#) are analysed.

8.3. Analytical strategy

Ideally in order to estimate the impact of a WP programme, a randomised controlled trial (RCT) would be conducted to randomly assign students to a treatment group (engaged with the FT programme) or a control group (not engaged with the FT programme). An RCT design would allow us to assume that the two groups of students (treatment and control) are, on average, the same in terms of their background and demographic characteristics (Stuart, 2010). This means that any differences between outcomes for students in the treatment and control groups can be attributed to the WP programme and allows us to estimate the impact of the programme. However, as it was not possible to conduct an RCT, this section uses observational data to better understand the impact of the FT programme. Differences in outcomes between the treatment and control group from observational data may be due to differences in the student characteristics rather than the programme that the student has engaged in.

PSM is a statistical technique which enables the comparison of a treatment and a control group (Rosenbaum and Rubin, 1983). PSM attempts to create similar treatment and control groups, matching participants on a series of observable characteristics, prior to comparing their outcomes.

PSM was used to create a 'matched' group of students for this study. The matched group was made up of students who, it is assumed, did not participate in the FT programme (non-FT students) but who were similar in their background characteristics to the FT students. It was also used to create a matched group of FT and non-FT qualifiers (those who have gained their qualification). There are a variety of different types of matching methods available for use, and in some instances, it is applicable to use one method of matching on some of the variables and another on the remainder of the variables (Greifer, 2022).

Variables within PSM were limited to the availability of the variables that were collected in the HESA data. Background characteristics were taken from the HESA data for both FT and non-FT students to ensure that they have been collected consistently using the same methodology. Due to the time and resource constraints of processing the HESA data via Jisc not all background characteristics could be included, the characteristics that were used in the matching algorithm were:

- Domicile (West Midlands)
- Tariff score
- Parental education
- POLAR 4 quintile
- Disability status
- Age on entry (full)
- Academic year of entry into HE (for students) / academic year of qualification (for qualifiers).

The background characteristics based on tariff score, parental education, POLAR 4 quintile and disability status aligned with the entry requirements for the FT programme. Enrolment on the FT programme determined the domicile of the student (attendance at a school in the West Midlands) and the age of the student on entrance to HE (had to be in Year 8 between 2007-08 and 2014-15). Academic year of entry into HE/ year of qualification was included in the matching algorithm to allow for unobservable differences which are common to cohorts of students/ qualifiers such as exam conditions in specific years (either when undertaking A levels or degree level exams).

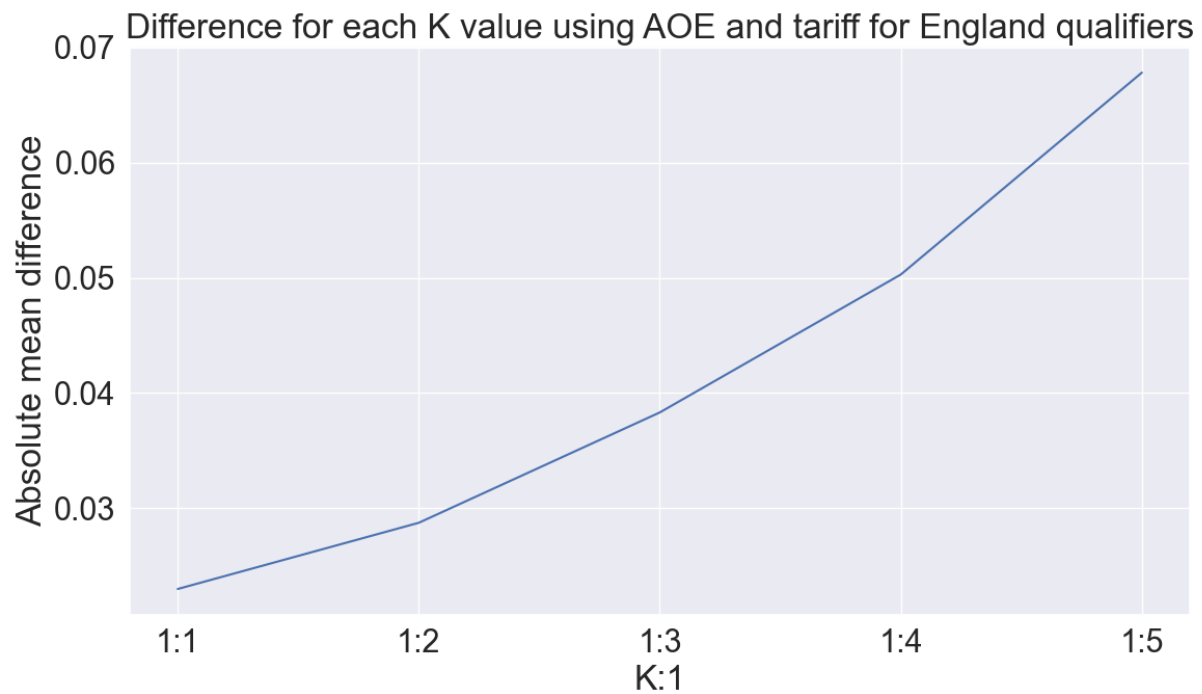
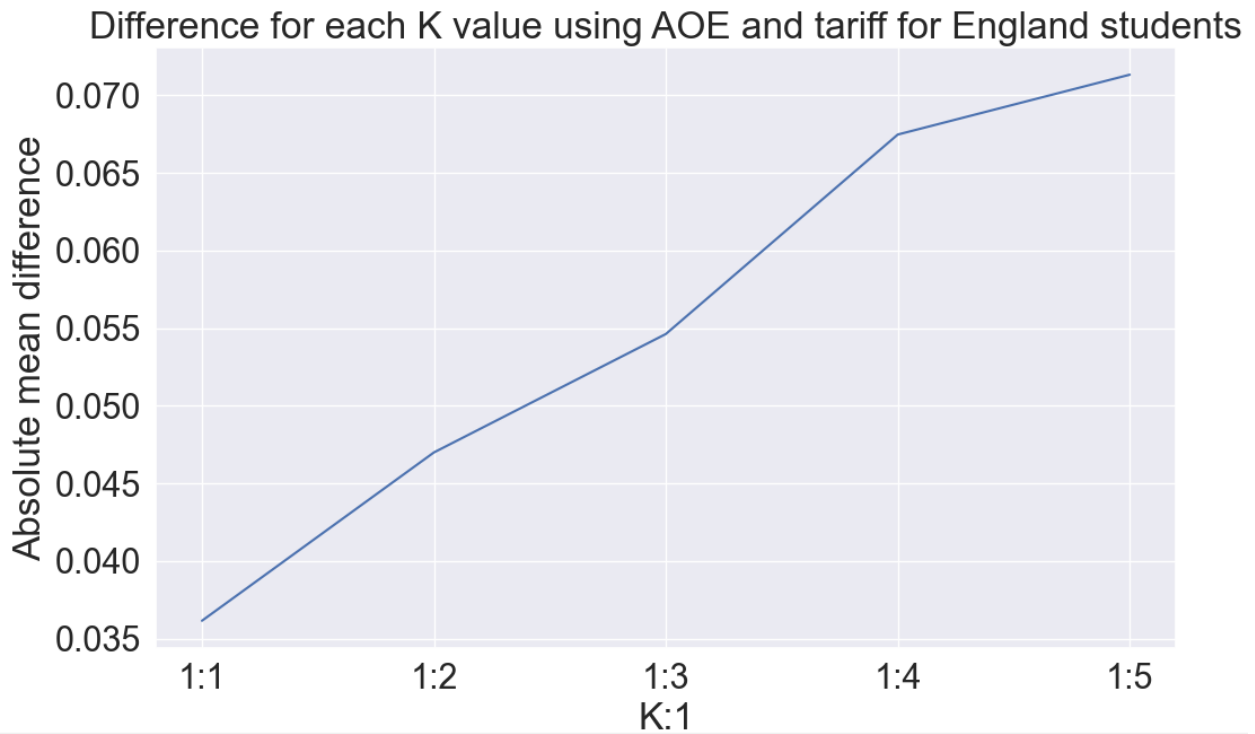
With the exception of tariff score and age on entry, all the variables were either dichotomous or ordinal and for these variables an exact matching method was used. The non-FT student was matched exactly on those variables to the FT student. Nearest neighbour matching without replacement using the Mahalanobis distance was used for tariff score and age on entry as they are continuous variables. Nearest neighbour matching is essentially looking for the most similar non-FT student to be matched to an FT-student.

Though 1:1 matching is most commonly used, due to the large number of non-FT students available for PSM 1:k, matching was implemented. Implementing 1:k matching increases the robustness of the experiment by increasing the amount of data we can use in the analysis, however this can negatively impact the precision of the matches. [Figure 13](#) shows the trade-off between precision and robustness and this initial exploratory analysis showed us that k=3 was the most appropriate value to use to maximise robustness and preserve as much precision as possible.

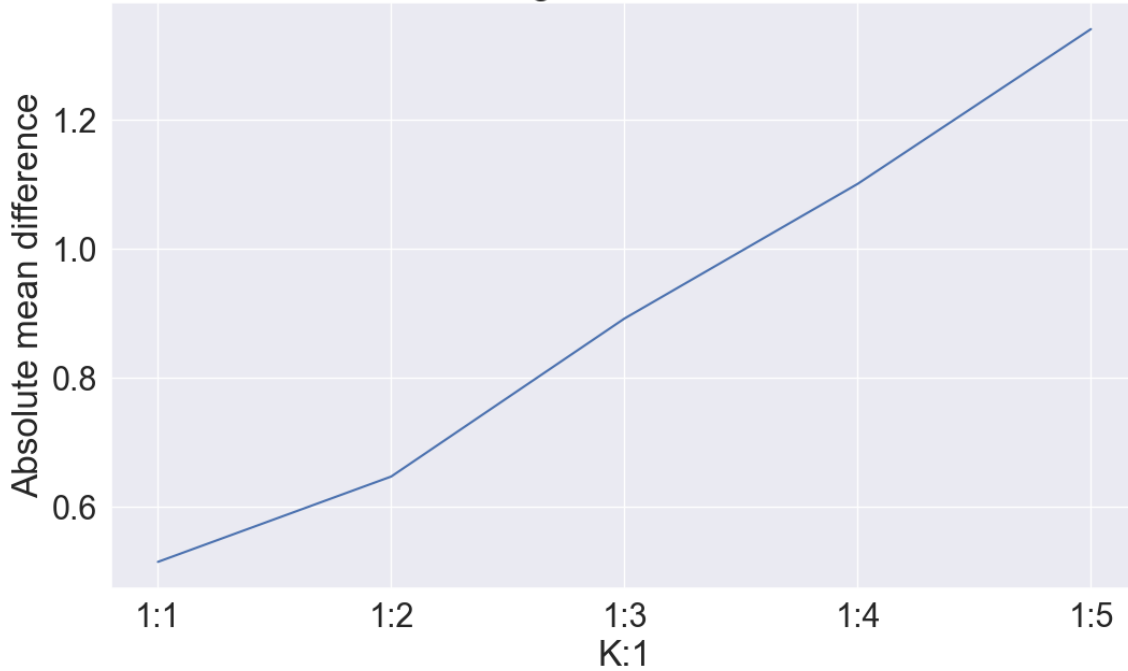
The decision to use k=3 was determined using the elbow method which is a technique primarily used in clustering analysis. The elbow method involves plotting the differences

for each k and looking at the steepness of the curve to identify the 'elbow' or bend in the plot. This 'elbow' identifies an ideal value of k which is as high as possible to maximise robustness without sacrificing the accuracy of the analysis. Applying this methodology to the data ([see Figure 13](#)) to determine the optimal figure proved challenging as the plot showed mostly a straight line with minimal deviations. In discussions between TASO and Jisc a slight bend was identified in charts 1 and 2, and the value of $k=3$ was chosen.

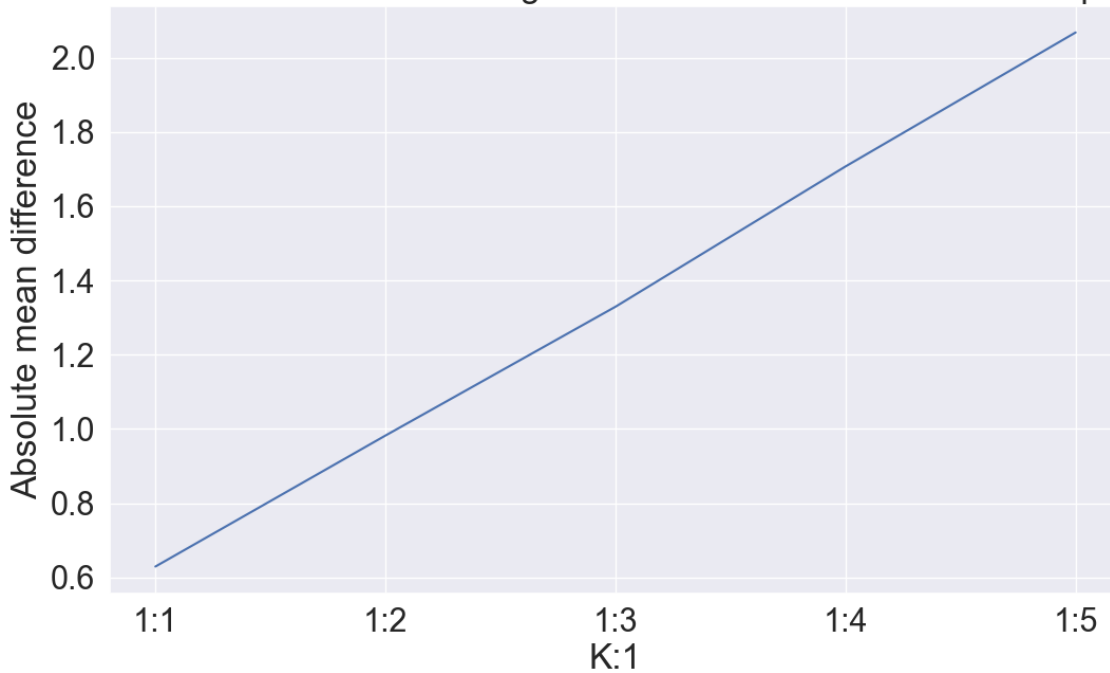
Figure 13: Exploratory analysis to determine the most appropriate value of k .



Difference for each K value using AOE and tariff for West Midlands students



Difference for each K value using AOE and tariff for West Midlands qualifiers



A variety of post-match balance tests were conducted to assess the effectiveness of the matching process. Balance statistics and jitter plots can be found in the [Appendices 3 - 10](#).

To enable a national comparison following PSM based on students domiciled from the West Midlands, the PSM was reprocessed with the domicile match updated to those who were England domiciled.

A one-tailed two-proportion z-test of significance is performed between the FT students and non-FT students on each outcome to determine whether the observed proportion of the FT students (p_{FT}) was greater than the observed proportion of the non-FT students on each outcome (p_{non-FT}).

The null hypothesis is defined as:

$$H_0 : p_{FT} \leq p_{non-FT}$$

The alternative hypothesis is defined as:

$$H_1 : p_{FT} > p_{non-FT}$$

All z-tests are performed at the 5% significance level (the null hypothesis is rejected when the p-value is less than 0.05 ($p < 0.05$), then the test is significantly significant thus there is enough evidence to interpret that p_{FT} is significantly greater than p_{non-FT} .

9. Results: Topic 3

9.1. Participant flow

Of the 420 FT students who were successfully found in the HESA data from 2013-14 to 2020-21 410 were domiciled from the West Midlands and 415 were domiciled in England. The domicile of a small number of students had changed following their engagement in the FT programme, prior to entry to HE.

For the PSM for West Midlands, 410 FT students were matched to 1225 non-FT students. Similar proportions of FT and non-FT students were enrolled on a first degree and were studying full-time.

The PSM was repeated for qualifiers domiciled from the West Midlands, 170 FT qualifiers were matched to 510 non-FT qualifiers. Similar proportions of FT and non-FT qualifiers had studied a first degree.

For the PSM for England, 415 FT students were matched to 1245 non-FT students. Again, similar proportions of FT and non-FT students were enrolled on a first degree and were studying full-time.

The PSM was repeated for qualifiers domiciled from England, 175 FT qualifiers were matched to 520 non-FT qualifiers. Similar proportions of FT and non-FT qualifiers had studied a first degree.

Due to the small differences in the numbers of FT students in the PSM, there are some small percentage differences compared to previous analysis for FT students.

9.2. Outcome of analysis

9.2.1. Primary outcome: whether the learner attended a research-intensive and/or high tariff HE providers

For the FT students in both the West Midlands and England PSM, 49% were enrolled at a research-intensive and/or high tariff HE provider¹³ and 51% were enrolled at another HE provider.

For the non-FT students from the West Midlands matched sample, 32% were enrolled at a research-intensive and/or high tariff HE provider and 68% were enrolled at another HE provider.

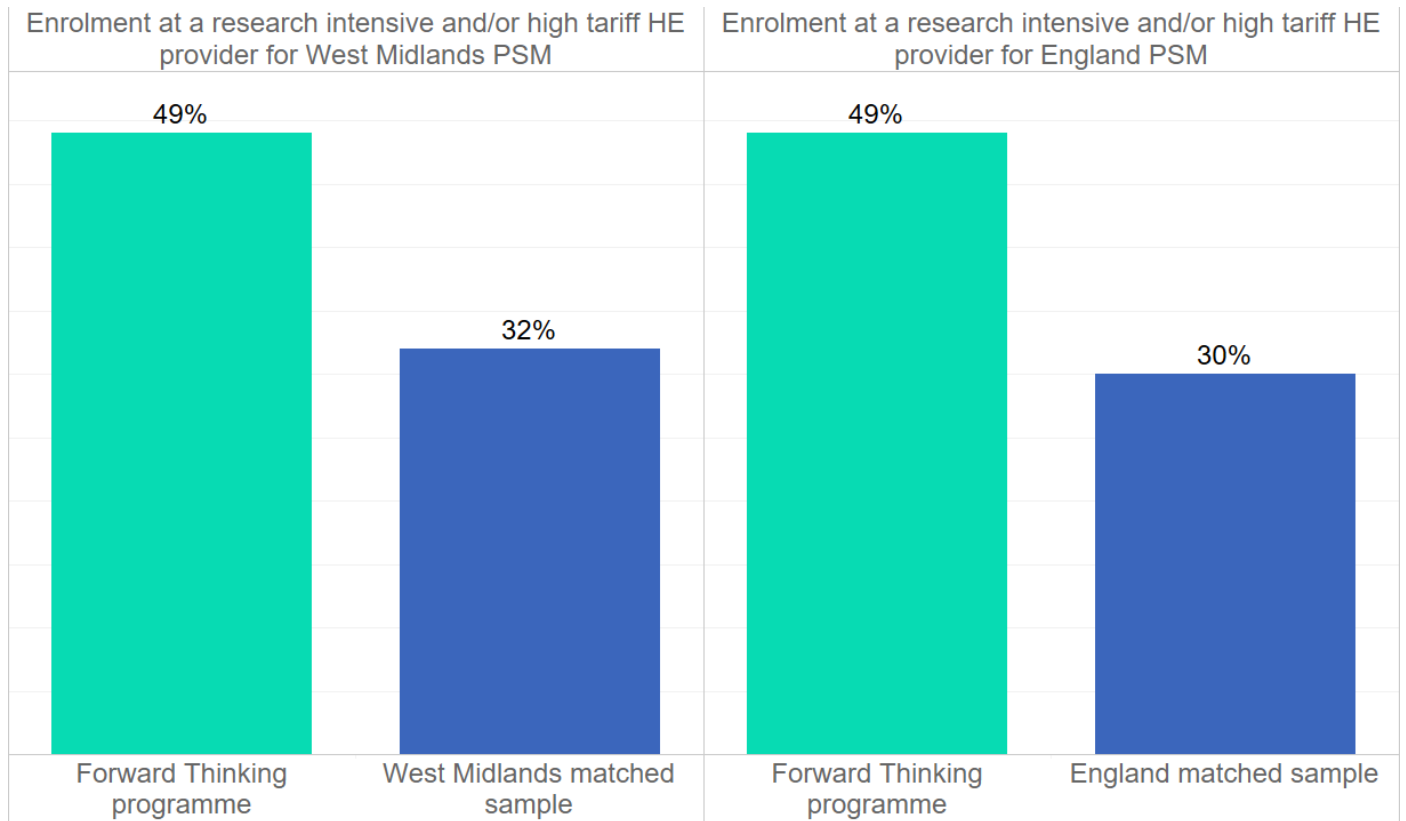
For the non-FT students from the England matched sample, 30% were enrolled at a research-intensive and/or high tariff HE provider and 70% were enrolled at another HE provider.

The proportion of FT students who were enrolled at a research-intensive and/or high tariff HE provider was statistically significantly higher than both the non-FT students from the West Midlands matched sample and the non-FT students from the England matched sample at the 5% significance level (the null hypothesis was rejected).

FT students had a higher preference to attend a research-intensive and/ or high tariff HE provider than non-FT students.

¹³ See [Appendix 2](#) for HE providers which are grouped under research-intensive and/ or high tariff HE providers.

Figure 14: FT undergraduate students enrolled at a research-intensive and/ or high tariff HE provider compared to West Midlands and England matched samples



9.2.2. Secondary outcome: whether the learner studied a STEM subject

For the FT students in both the West Midlands and England PSM, 57% were enrolled on a STEM subject course and 43% were enrolled on a non-STEM subject course.

For the non-FT students from the West Midlands matched sample, 49% were enrolled on a STEM subject course and 51% were enrolled on a non-STEM subject course.

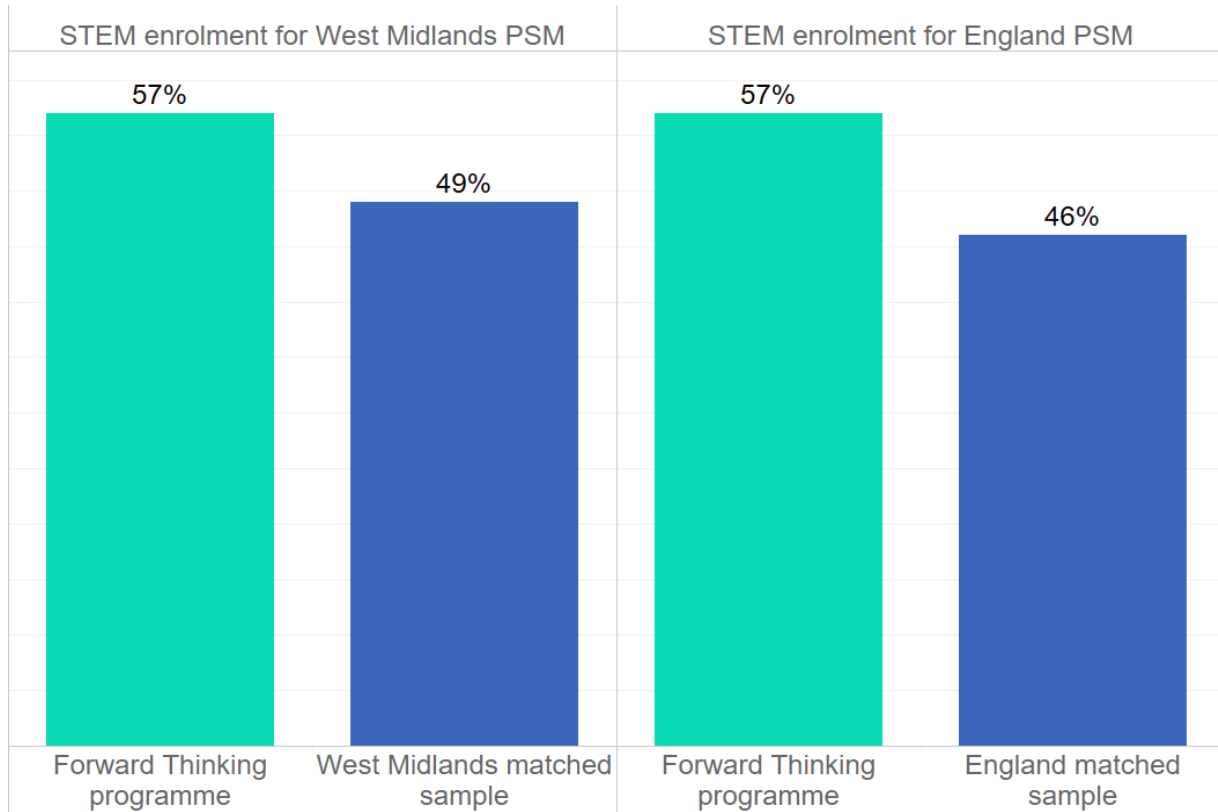
For the non-FT students from the England matched sample, 46% were enrolled on a STEM subject course and 54% were enrolled on a non-STEM subject course.

The proportion of FT students who were enrolled on a STEM subject course was statistically significantly higher than both the non-FT students from the West Midlands matched sample and the non-FT students from the England matched sample at the 5% significance level (the null hypothesis was rejected).¹⁴

¹⁴ The STEM grouping includes all Common Aggregation Hierarchy (CAH) level 1 codes CAH01 through to CAH13 and CAH26 with the exception of CAH26-01-03 (Human geography). CAH26 (Geographical and environmental studies) has been disaggregated so that CAH26-01-03 (Human geography) is presented in the non-science grouping labelled as 'Geographical and environmental studies (social

FT students had a preference to study a STEM subject compared to non-FT students.

Figure 15: FT undergraduate students studying a STEM subject compared to West Midlands and England matched samples



9.2.3. Secondary outcome: whether the learner continued from first year to second year of study

For the FT students who entered HE in 2013-14 to 2019-20 in both the West Midlands and England PSM, 90% continued from their first year into their second year of study and 10% did not continue from their first year into their second year of study.

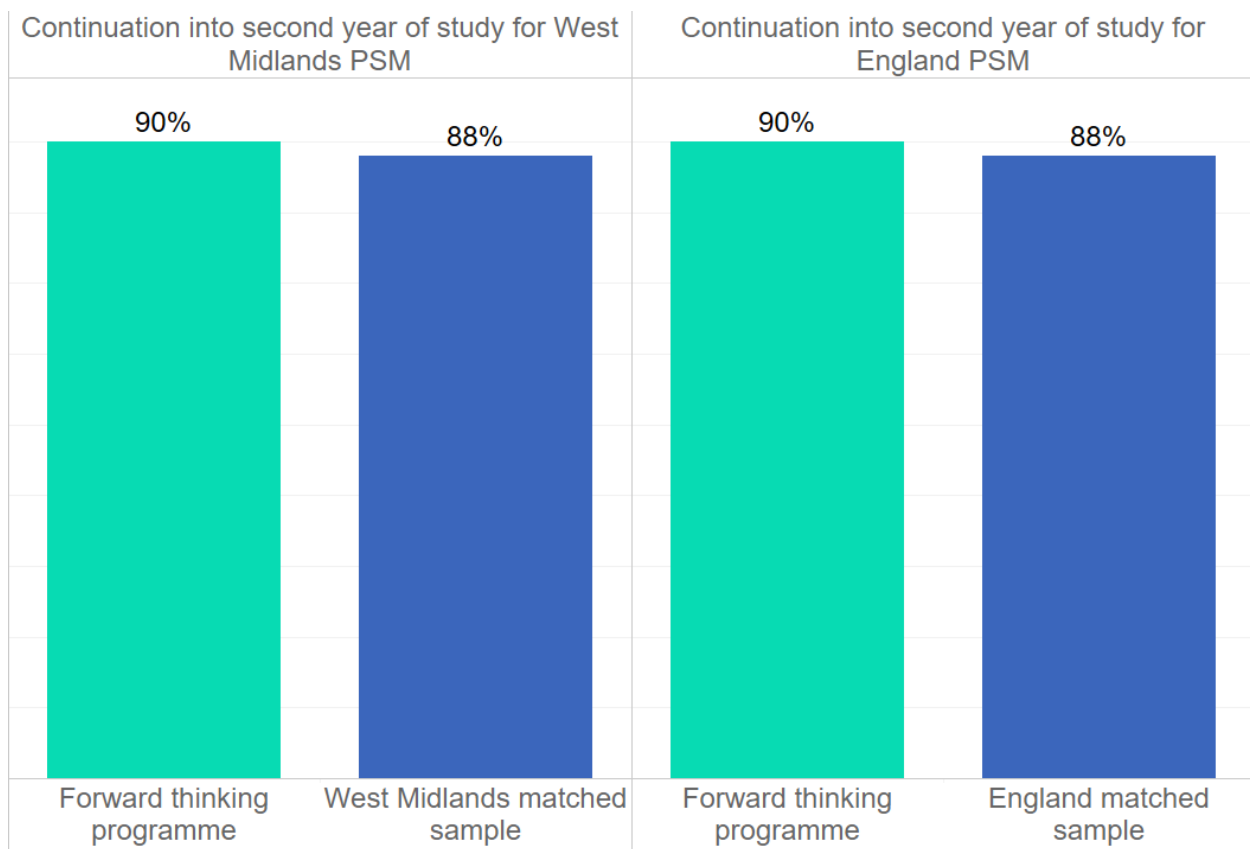
For the non-FT students from the West Midlands matched sample, 88% continued from their first year into their second year of study and 12% did not continue from their first year into their second year of study.

sciences)'. All other CAH level 3 codes within CAH26 are presented in the STEM grouping labelled as 'Geographical and environmental studies (natural sciences)'. This grouping of STEM subjects has been created by HESA. <https://www.hesa.ac.uk/support/documentation/hecos/cah#download-cah>

For the non-FT students from the England matched sample, 88% continued from their first year into their second year of study and 12% did not continue from their first year into their second year of study.

The proportion of FT students who continued from their first year into their second year of study was not statistically significantly higher at the 5% significance level (there is insufficient evidence to reject the null hypothesis) than both the non-FT students from the West Midlands matched sample and the non-FT students from the England matched sample.¹⁵

Figure 16: FT undergraduate students who continued from first year to second year of study compared to West Midlands and England matched samples



¹⁵ Note this is based on the year of study that the student is enrolled on. Students who continued may be going into the following year of their course or repeating the first year of their course. Students who gained a qualification, were writing up, had gone dormant or left with no award are shown as did not continue.

9.2.4. Secondary outcome: for those learners who completed a first degree, whether the learner achieved a first or upper second class honours first degree

For the FT students in the West Midlands PSM, 83% gained a first class honours or upper second class honours first degree and 17% gained a lower second class honours or third class honours/ pass first degree.

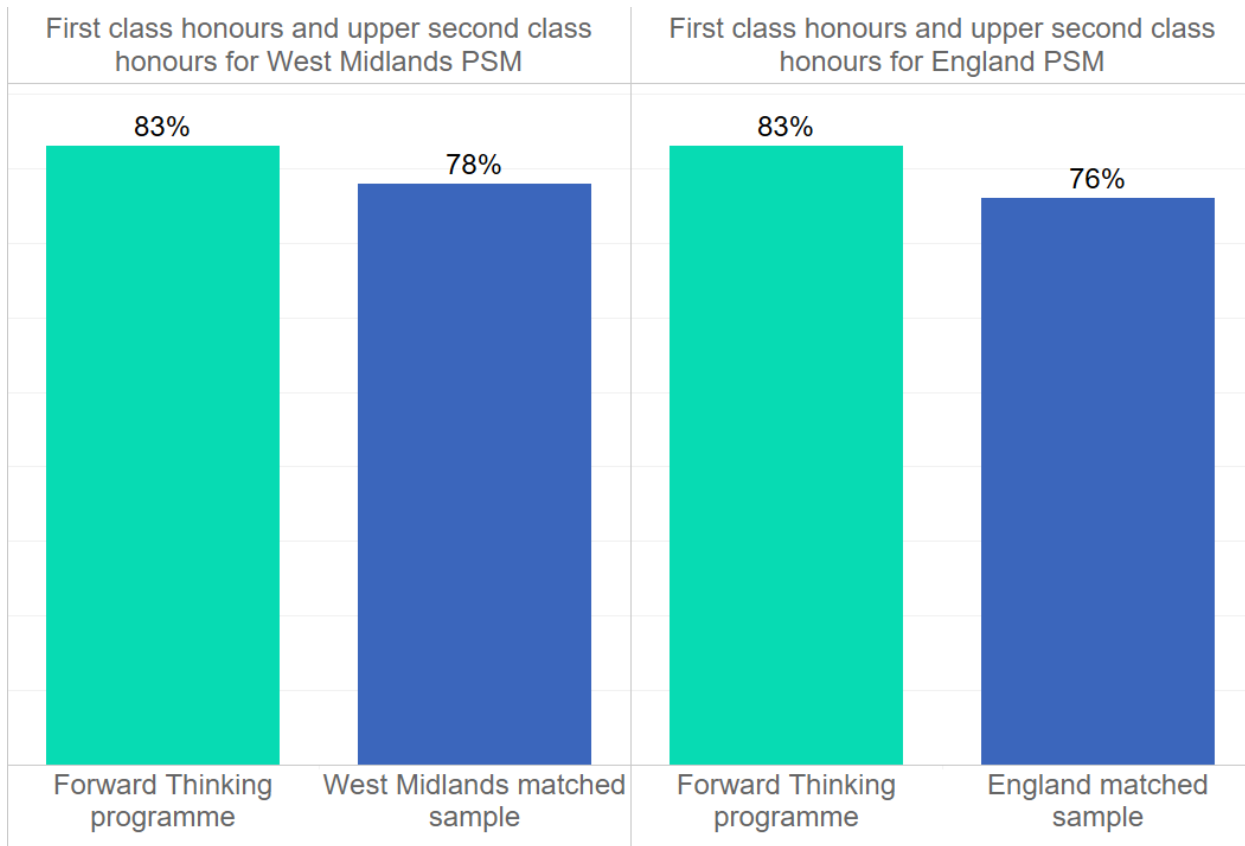
For the non-FT students from the West Midlands matched sample, 78% gained a first class honours or upper second class honours first degree and 22% gained a lower second class honours or third class honours/ pass first degree.

For the FT students in the England PSM, 83% gained a first class honours or upper second class honours first degree and 18% gained a lower second class honours or third class honours/ pass first degree.

For the non-FT students from the England matched sample, 76% gained a first class honours or upper second class honours first degree and 24% gained a lower second class honours or third class honours/ pass first degree.

The proportion of FT first degree qualifiers who gained a good honours degree was not statistically significantly higher at the 5% significance level (there is insufficient evidence to reject the null hypothesis) than the non-FT students from the West Midlands matched sample. FT first degree qualifiers who gained a good honours degree was statistically significantly higher than non-FT students from the England matched sample at the 5% significance level (the null hypothesis was rejected).

Figure 17: FT first degree qualifiers who gained a good honours degree compared to West Midlands and England matched samples



FT students performed better than non-FT students when comparing degree class outcomes at a national level.

9.2.5. Secondary outcome: Whether the learner completed their qualification in up to five years

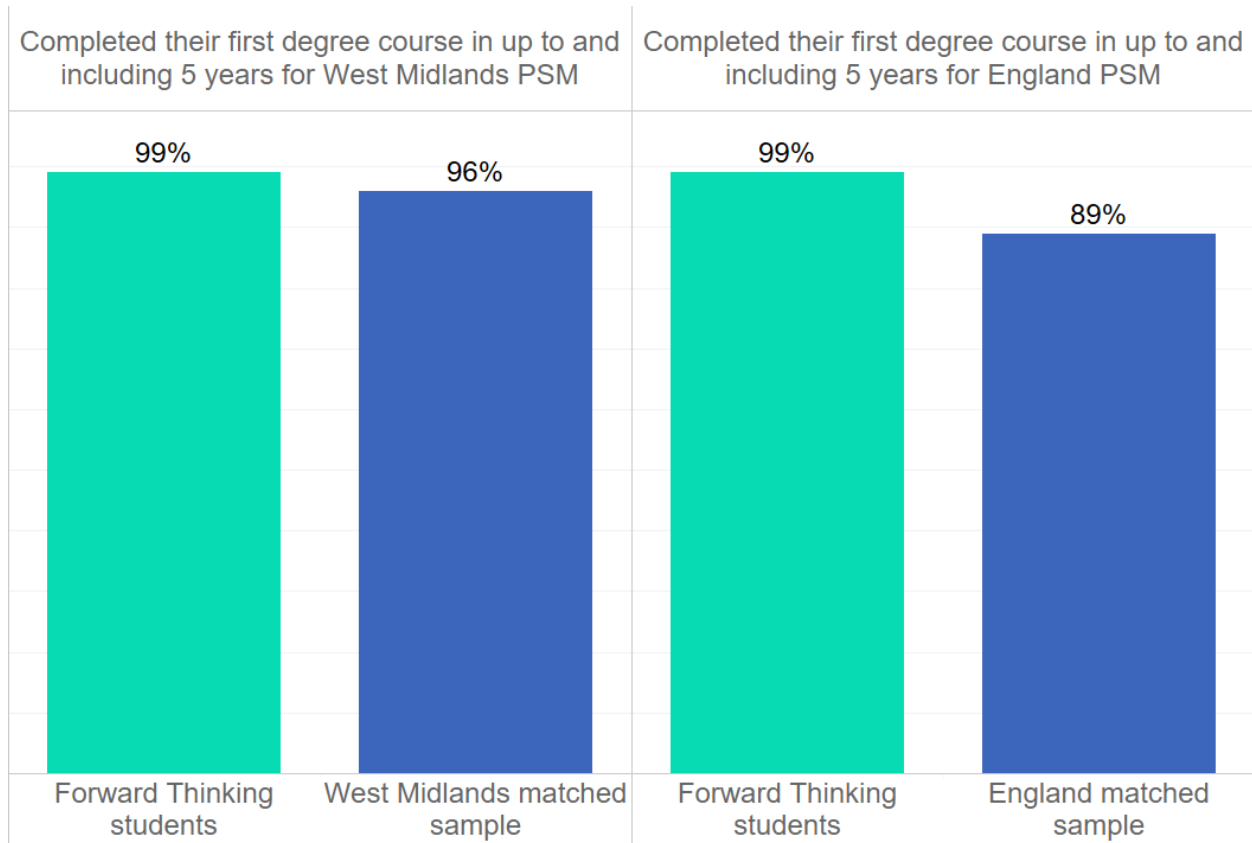
For the FT students in both the West Midlands and England PSM, 99% completed their first degree in up to and including five years and 1% completed their first degree in more than five years.

For the non-FT students from the West Midlands matched sample, 96% completed their first degree in up to and including five years and 4% completed their first degree in more than five years.

For the non-FT students from the England matched sample, 89% completed their first degree in up to and including five years and 11% completed their first degree in more than five years.

The proportion of FT first degree students completed their first degree course in up to and including five years was statistically significantly higher at the 5% significance level (the null hypothesis was rejected) than both the non-FT students from the West Midlands matched sample and the England matched sample.

Figure 18: FT first degree qualifiers time to completion compared to West Midlands and England matched samples



9.2.6. Secondary outcome: Whether the learner progressed to postgraduate study

For the FT students in the West Midlands PSM, 17% progressed to postgraduate study and 83% had no further HE activity found.

For the non-FT students from the West Midlands matched sample, 16% progressed to postgraduate study and 84% had no further HE activity found.

For the FT students in the England PSM, 18% progressed to postgraduate study and 83% had no further HE activity found.

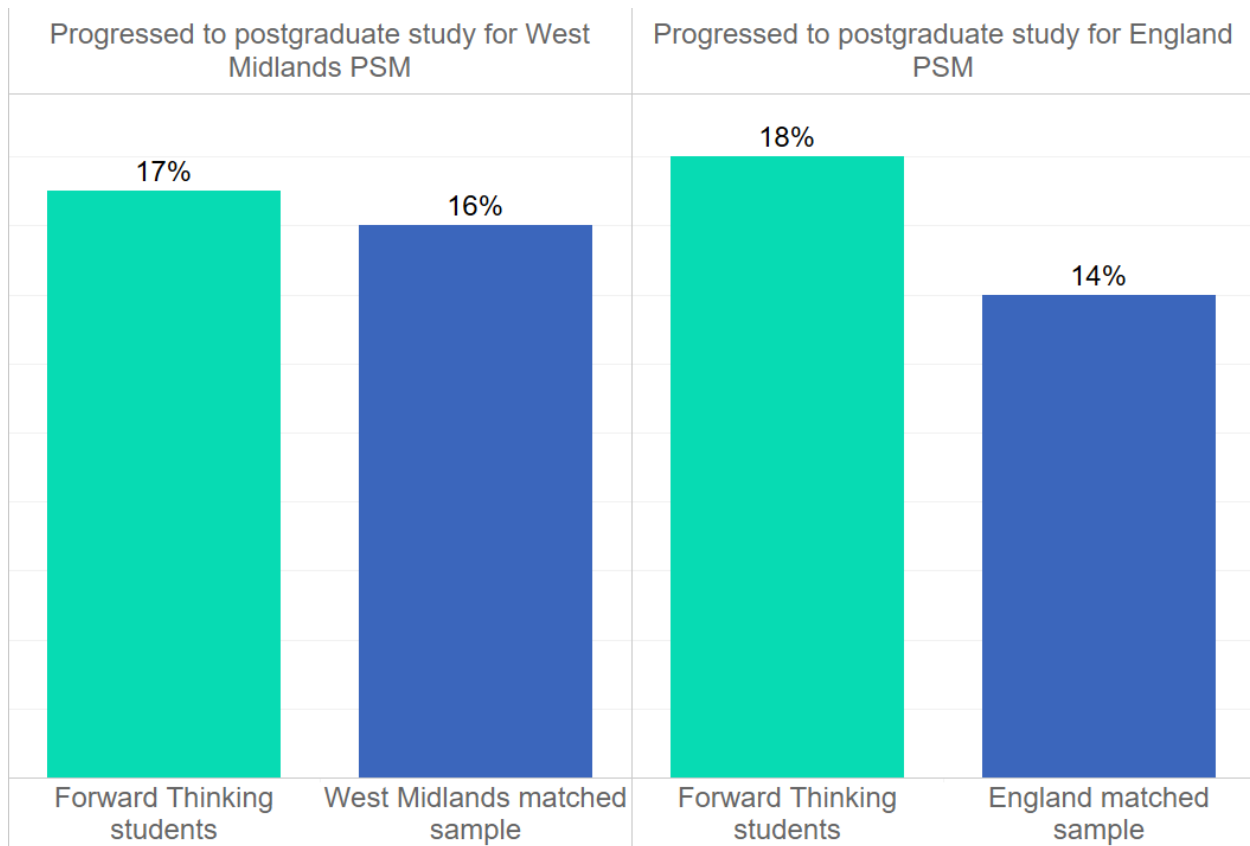
For the non-FT students from the England matched sample, 14% progressed to postgraduate study and 86% had no further HE activity found.

For the West Midlands PSM, FT first degree qualifiers progression to postgraduate study was not statistically significantly higher at the 5% significance level (there is insufficient evidence to reject the null hypothesis) than the non-FT students from the West Midlands matched sample.

For the England PSM, FT first degree qualifiers progression to postgraduate study was not statistically significantly higher at the 5% significance level (there is insufficient evidence to reject the null hypothesis) than the non-FT students from England matched sample.

The small difference in FT qualifiers figures here is due to slight differences in the number of FT students domiciled from the West Midlands versus domiciled from England.

Figure 19: FT first degree qualifiers who progressed to postgraduate study compared to West Midlands and England matched samples



9.2.7. Summary of outcome of analysis

[Table 10](#) shows a summary of the outcome statistics in this section.

Table 10 - Summary statistics comparing FT students to a matched group found in the HESA data

	FT students/ qualifiers	Matched sample West Midlands	Significant difference at the 5% level? (indicated by *)	Matched sample England	Significant difference at the 5% level? (indicated by *)
Enrolled at a research-intensive and/or high tariff HE provider	49%	32%	*	30%	*
Studied a STEM subject	57%	49%	*	46%	*
Continued from first year to second year of study	90%	88%		88%	
Achieved a first or upper second class honours first degree	83%	78%		76%	*
Completed their first degree in five years	99%	96%	*	89%	*
Progressed on to a postgraduate study following undergraduate qualification	17% (domiciled from West Midlands) 18% (domiciled from England)	16%		14%	

10. Discussion

10.1 Topic 1: Identify other schools in the Birmingham area that had students enter HE who may have been eligible to participate in the FT programme but did not have students attend.

The FT programme currently partners with 35 schools (see [Appendix 1](#)) located in Birmingham, Sandwell and Solihull. The analysis identified that there were 45 other schools in the local area who had in the past had at least five or more eligible students for the FT programme in attendance between 2013-14 and 2020-21 based on a proxy of the eligibility criteria for the FT programme. Key demographic characteristics were provided for each school alongside a comparison to the demographic characteristics of the FT students.

There are some limitations to bear in mind when interpreting this analysis as follows. A proxy of the eligibility criteria was used to identify schools who had in the past had eligible students in attendance and was limited to the variables available in the HESA dataset:

- A student achieving a high tariff defined as equal to or above the median tariff of the FT cohort was used as a proxy for the eligibility criteria to the FT programme of having the academic potential to achieve good GCSE grades and attend a research-intensive/ high tariff HE provider. The eligibility criteria is subjective based on teacher knowledge and may not reflect the tariff score a student achieved prior to entering HE.
- Information about pupil premium funding or free school meals, extenuating circumstances that had a detrimental impact on their studies and young carer information is not available via the HESA data.
- The proxy for the eligibility criteria was created based on demographic characteristics when the student entered HE and may have changed since they were in Year 8.

Though the identified schools had in the past eligible students in attendance, this was between 2013-14 and 2020-21 and the demographic of students in their local catchment area may have changed over time.

This number of eligible students identified at each local school will be an undercount of the total number of eligible students in attendance during that time period due to the fact that:

- Not all students enter HE following KS4/KS5 education.
- Students may have changed schools from KS4 to KS5 for example leaving school after GCSEs to complete KS5 qualifications such as A levels or BTECs at a sixth form college.

- There may have been an error in reporting a student's previous institution to UCAS or capture of this information by the HE provider.

Whilst school membership of the FT programme has been relatively stable since the programme started in 2008, the University of Birmingham reviews the partnerships list regularly to ensure that they are working with the most appropriate schools and students. The insight gained through Topic 1 will inform the review process and aid the University of Birmingham to grow the scheme and reach a higher number of eligible learners.

10.2 Topic 2: A deep dive into Forward Thinking students who had entered HE, investigating their experience and outcomes.

Of the 700 students who had engaged with the FT programme, 420 students were successfully found in the HESA data from 2013-14 to 2020-21 (60%).

Key findings from this analysis include:

- The majority of the FT students who entered UK HE over the time series began studying for a first degree qualification (400, 96%).
- The majority of the students (405, 97%) were full-time students.
- Just under half of FT students were enrolled at a research-intensive and/or high tariff HE provider (49%, 205).
- 71% (295) of FT students were enrolled at a HE provider in the West Midlands.
- The majority of FT students were enrolled on a STEM subject course (57%, 240).¹⁶
- For FT students who entered HE in 2013-14 to 2019-20 (330), 90% (295) of FT students continued from their first year into their second year of study.¹⁷
- Of the 160 FT students who were awarded a first degree qualification, 83% (130) gained a 'good honours degree'.
- Of the 160 FT students who were awarded a first degree qualification, 99% completed their qualification within five years.

¹⁶ The STEM grouping includes all Common Aggregation Hierarchy (CAH) level 1 codes CAH01 through to CAH13 and CAH26 with the exception of CAH26-01-03 (Human geography). CAH26 (Geographical and environmental studies) has been disaggregated so that CAH26-01-03 (Human geography) is presented in the non-science grouping labelled as 'Geographical and environmental studies (social sciences)'. All other CAH level 3 codes within CAH26 are presented in the STEM grouping labelled as 'Geographical and environmental studies (natural sciences)'. This grouping of STEM subjects has been created by HESA. <https://www.hesa.ac.uk/support/documentation/hecos/cah#download-cah>

¹⁷ Note this is based on the year of study that the student is enrolled on. Students who continued may be going into the following year of their course or repeating the first year of their course. Students who gained a qualification, were writing up, had gone dormant or left with no award are shown as did not continue.

- Of the 160 FT students who were awarded a first degree (undergraduate) qualification; 18% (30) FT students were found to have progressed on to a postgraduate qualification.

The following must be considered alongside the key findings in this section:

- The analysis is based on multiple small cohorts of students who engaged with the FT programme (700 in total) and then had entered HE (420) by linking student information into the HESA data.
- Linking the FT students into the HESA data using a technique known as fuzzy matching. The success of this technique relies on the quality of the personal information collected about the student (name, date of birth and domicile postcode) and that the information at point of collection is not notably different from point of entry into HE. The student does not need to match exactly on all the personal information- a series of linking pots are used, each with their own criteria. The first pot is an exact match with the following pots allowing more fuzzy matches, therefore an accurate match is always chosen over a fuzzy match. A confidence test was undertaken on the number of links that Jisc had complete confidence in and the number that appear ambiguous. It was decided that only pots with confidence test scores of 80% or more would be used in the analysis following consultation with TASO and the University of Birmingham. A limitation of the confidence test is that it is subjective and is only based on a 10% sample from each pot.
- The tracking of students through their HE journey relies on PID tracking. The PID is developed by using fuzzy matching techniques to link all students' instances to a central ID primarily based on underlying fields – First Name, Last Name, Date of Birth, Postcode of domicile and Sex. Student instances do not need to exactly match all the criteria to account for typing errors, change of address and naming differences, thus the PID method is not 100% accurate.
- It is very typical for young HE entrants to enrol on a full-time, first degree course following KS5 education.
- There is a huge selection process for enrolment on the FT programme- some of these students may have been more likely to engage with the programme as they were motivated to attend a research-intensive and/or high tariff HE provider or study a STEM subject course.
- Students domiciled from a particular location may have a preference to study in their local area.
- Some of the students selected to be on the FT programme were identified as having the academic potential to achieve good GCSE grades and go to a research-intensive/ high tariff HE provider. It may be expected that having

academic potential at GCSE would translate to having academic potential in HE and the ability to gain a 'good honours degree'.

- Some FT students enrolled in HE within this analysis may not have completed their course as yet or may have left with no award at sometime within their studies or gone dormant (those who have suspended study but have not formally de-registered). Therefore, the numbers of FT students who were awarded a first degree qualification from these cohorts is likely to increase over time.
- Similarly, some FT students will not have had the opportunity to enrol in postgraduate study due to their first degree qualification being awarded in 2020-21 or taking gap years prior to engaging in further study. Therefore, the numbers of FT students who were awarded a first degree qualification and progressed to postgraduate study from these cohorts is likely to increase over time.

Overall, the findings from this analysis are encouraging and align with the FT programmes key objectives of supporting attainment and progression to HE. The results suggest that the FT programme is engaging with learners who both meet several WP criteria and have the potential to attend and succeed at HE. It is interesting to note that the majority of students went on to study a STEM subject as this is not a primary focus for the programme but is an outcome that is also observed on other access programmes delivered by the University of Birmingham. Similarly, the insight that the majority of learners enrolled at a HE provider in the West Midlands and decided to stay local for their studies is a pattern observed across other WP programmes delivered at the university and aligns with research that shows that less advantaged students are more likely to attend local colleges or HE providers.

10.3 Topic 3: A comparison of FT students with a matched group of students (who are assumed not to have participated in the programme) and their HE experience.

Propensity score matching was used to create a 'matched' group of students to compare their outcomes with the FT students. The matched group was made up of students who did not participate in the FT programme (non-FT students) but who were similar in their background characteristics to the FT students. It was also used to create a matched group of FT and non-FT qualifiers (those who have gained their qualification).

The characteristics that were used in the matching algorithm were:

- Domicile (West Midlands)
- Tariff score
- Parental education
- POLAR 4 quintile

- Disability status
- Age on entry (full)
- Academic year of entry into HE (for students) / academic year of qualification (for qualifiers).

Nearest neighbour matching without replacement using the Mahalanobis distance was used for tariff score and age on entry as they are continuous variables. All the other variables were either dichotomous or ordinal and for these variables an exact matching method was used. Due to the large number of non-FT students available for PSM 1:3, matching was implemented.

In order to enable a national comparison following PSM based on students domiciled from the West Midlands, the PSM was reprocessed with the domicile match updated to those who were England domiciled.

A one-tailed two-proportion z-test of significance was performed between the FT students and non-FT students on each outcome to determine whether the observed proportion of the FT students was significantly greater than the observed proportion of the non-FT students on each outcome.

Key findings from this analysis include:

- 49% of FT students were enrolled at a research-intensive and/or high tariff HE provider which was statistically significantly higher than both the non-FT students from the West Midlands (32%) matched sample and the non-FT students from the England matched sample (30%) at the 5% significance level (the null hypothesis was rejected).
- 57% FT students were enrolled on a STEM subject course which was statistically significantly higher than both the non-FT students from the West Midlands (49%) matched sample and the non-FT students from the England matched sample (46%) at the 5% significance level (the null hypothesis was rejected).
- For FT students who entered HE in 2013-14 to 2019-20, 90% of FT students continued from their first year into their second year of study compared to 88% of non-FT students from the matched samples who were either West Midlands domiciled or England domiciled. This was not statistically significantly higher at the 5% significance level (there is insufficient evidence to reject the null hypothesis).
- 83% of FT first degree qualifiers gained a good honours degree compared to 78% of non-FT students from the West Midlands matched sample. This was not statistically significantly higher at the 5% significance level (there is insufficient evidence to reject the null hypothesis). It was statistically significantly higher than non-FT students from the England matched sample (76%) at the 5% significance level (the null hypothesis was rejected).

- 99% of FT first degree students completed their first degree course in up to and including five years which was statistically significantly higher at the 5% significance level (the null hypothesis was rejected) than both the non-FT students from the West Midlands matched sample (96%) and the England matched sample (89%).
- Due to slight differences in the number of FT students domiciled from the West Midlands versus domiciled from England, there was a small difference in FT qualifier figures for progression to postgraduate study:
 - For the West Midlands PSM, 17% of FT first degree qualifiers progressed to postgraduate study compared to 16% of non-FT students from the West Midlands matched sample.
 - For the England PSM, 18% of FT first degree qualifiers progressed to postgraduate study compared to 14% of non-FT students from the England matched sample.
 - Neither were statistically significantly different at the 5% significance level (there is insufficient evidence to reject the null hypothesis).

Within all analyses, FT students performed favourably in comparison to non-FT students, though not all differences were statistically significant.

The following must be considered alongside the key findings in this section:

- All considerations that were identified for Topic 2 above.
- Not all background characteristics were used in the matching algorithm and therefore the matched samples may be unbalanced on other characteristics which may influence the FT and non-FT student outcomes.
- There are some variables that are not available as the information is either not collected, for example the work ethic of the student, or not available in the HESA data for example free school meal provision that may impact outcomes of the student.
- PSM relies on the quality of the matching which depends on the relevance and the accuracy of the variables used. All the information has been collected through the HESA Record which has a quality assurance process but relies on accurate recording of a student's information by the HE provider.
- PSM results may not be generalizable to other populations or contexts, and it may have limited power to detect treatment effects (engagement with the FT programme) in small sample sizes.

Although further experimental or quasi-experimental evaluation is required to estimate the impact of the FT programme on student outcomes, the findings of this comparison are encouraging and indicate that the programme is achieving what it sets out to do in terms of supporting both attainment and progression to HE.

11. Appendices

Appendix 1: Current Forward Thinking Partnership Schools

UKPRN	School name
10082960	Archbishop Ilsley Catholic School
10027856	Ark St Alban's Academy
10033251	Bartley Green School
10014824	Bordesley Green Girls' School and Sixth Form
10047437	Bournville School
10039684	Bristnall Hall Academy
10015135	Colmers School and Sixth Form College
10039867	Four Dwellings Academy
10038605	George Dixon Academy
10017934	Grace Academy (Solihull)
10036182	Hall Green Secondary School
10031000	Harborne Academy
10035166	Hillcrest School and Sixth Form Centre
10064827	Holy Trinity Catholic School
10090548	King Solomon International Business School
10016304	Kings Heath Boys' School
10003656	Kings Norton Boys' School
10033247	Kings Norton Girls' School
10065191	Lordswood Boys' School
10033245	Lordswood Girls' School
10004438	Moseley School
10035478	Oldbury Academy

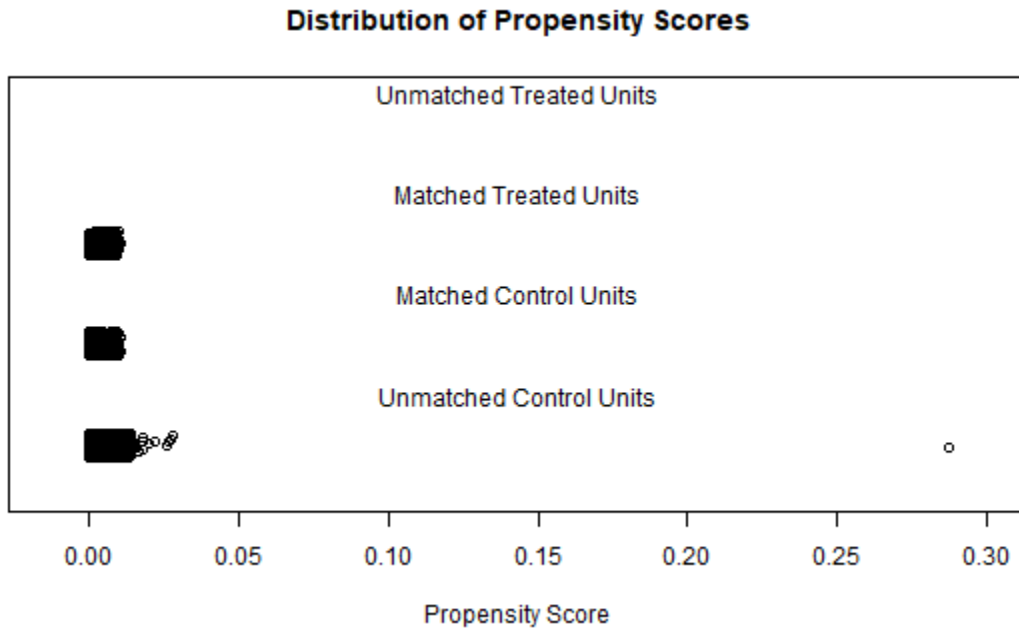
10036064	Ormiston Forge Academy
10048240	Saltley Academy
10017433	Sandwell Academy
10018172	Selly Park Girls' School
10028146	Shenley Academy
10021074	Shireland Collegiate Academy
10063712	Small Heath Leadership Academy
10049317	St Thomas Aquinas Catholic School
10037253	Stockland Green School
10006456	Swanshurst School
10088074	Turves Green Boys' School
10053520	Waverley School
10015715	Wheelers Lane Technology College

Appendix 2: research-intensive and/ or high tariff HE providers

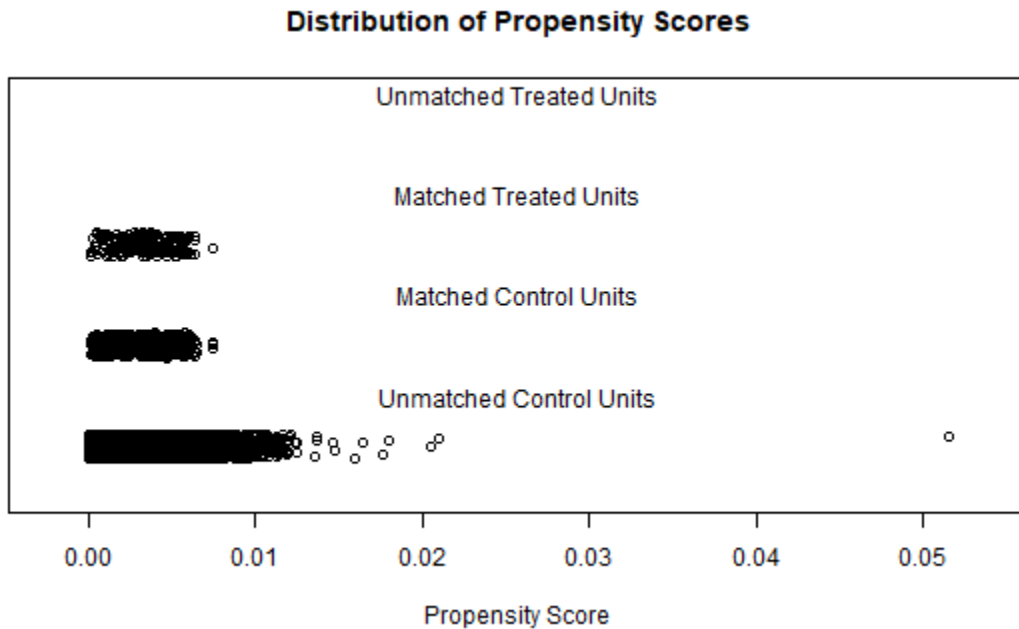
research-intensive and/ or high tariff HE providers
0108 Aston University
0109 The University of Bath
0110 The University of Birmingham
0112 The University of Bristol
0114 The University of Cambridge
0116 University of Durham
0117 The University of East Anglia
0118 The University of Essex
0119 The University of Exeter
0123 The University of Lancaster
0124 The University of Leeds
0125 The University of Leicester
0126 The University of Liverpool
0127 Birkbeck College
0131 Goldsmiths College
0132 Imperial College of Science, Technology and Medicine
0133 Institute of Education
0134 King's College London
0137 London School of Economics and Political Science
0139 Queen Mary University of London
0141 Royal Holloway and Bedford New College
0146 SOAS University of London
0149 University College London

0151 University of London (Institutes and activities)
0152 Loughborough University
0154 Newcastle University
0155 University of Nottingham
0156 The University of Oxford
0157 The University of Reading
0159 The University of Sheffield
0160 The University of Southampton 0161 The University of Surrey
0162 The University of Sussex
0163 The University of Warwick
0164 The University of York
0167 The University of Edinburgh
0168 The University of Glasgow
0179 Cardiff University
0184 Queen's University Belfast
0204 The University of Manchester

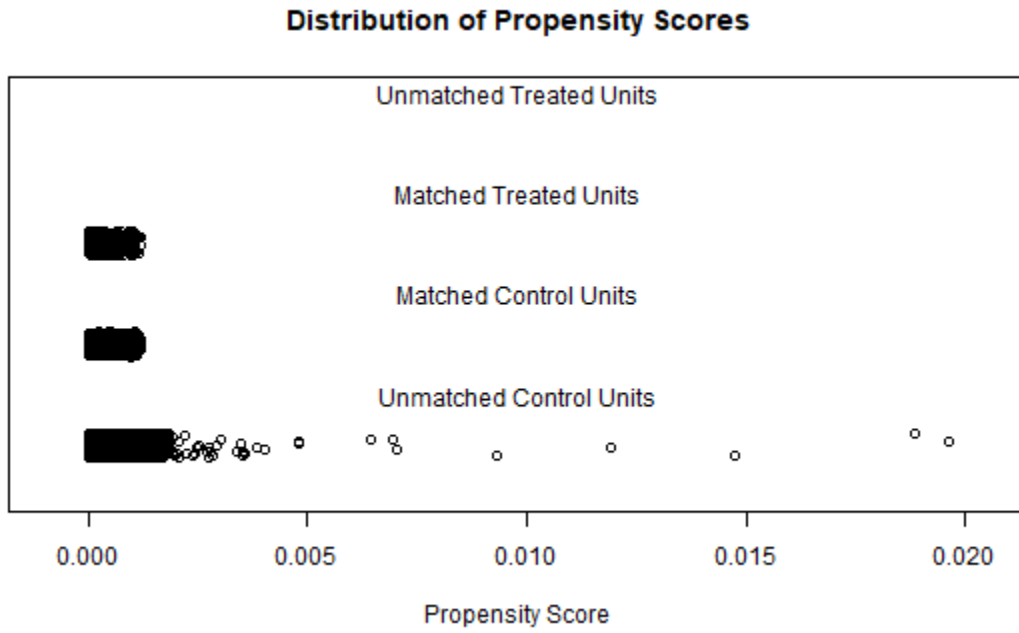
Appendix 3: Jitter plot of West Midlands student PSM propensity scores



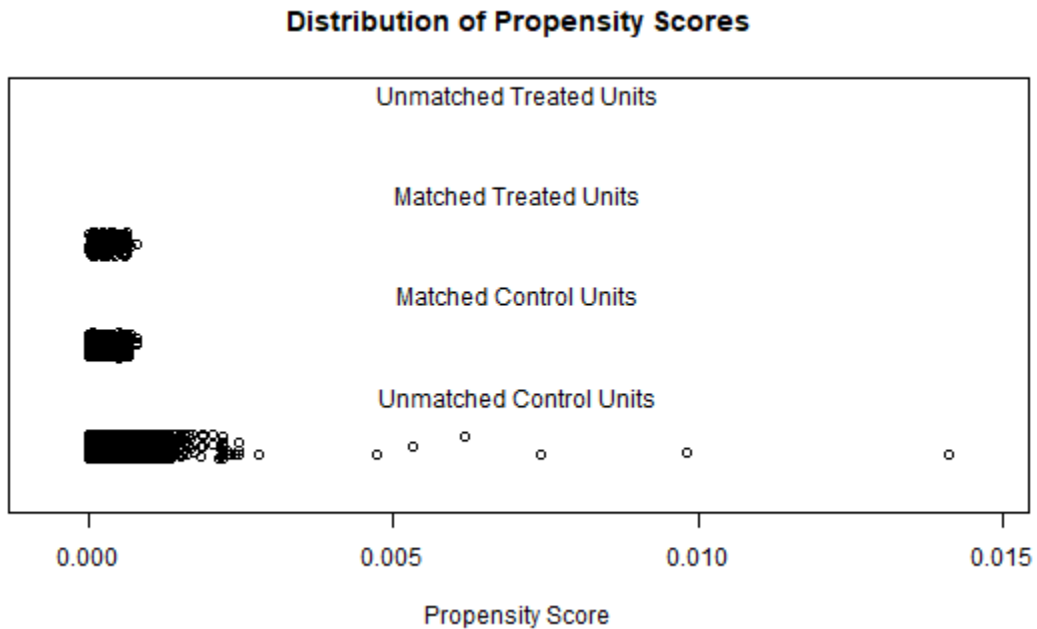
Appendix 4: Jitter plot of West Midlands qualifier PSM propensity scores



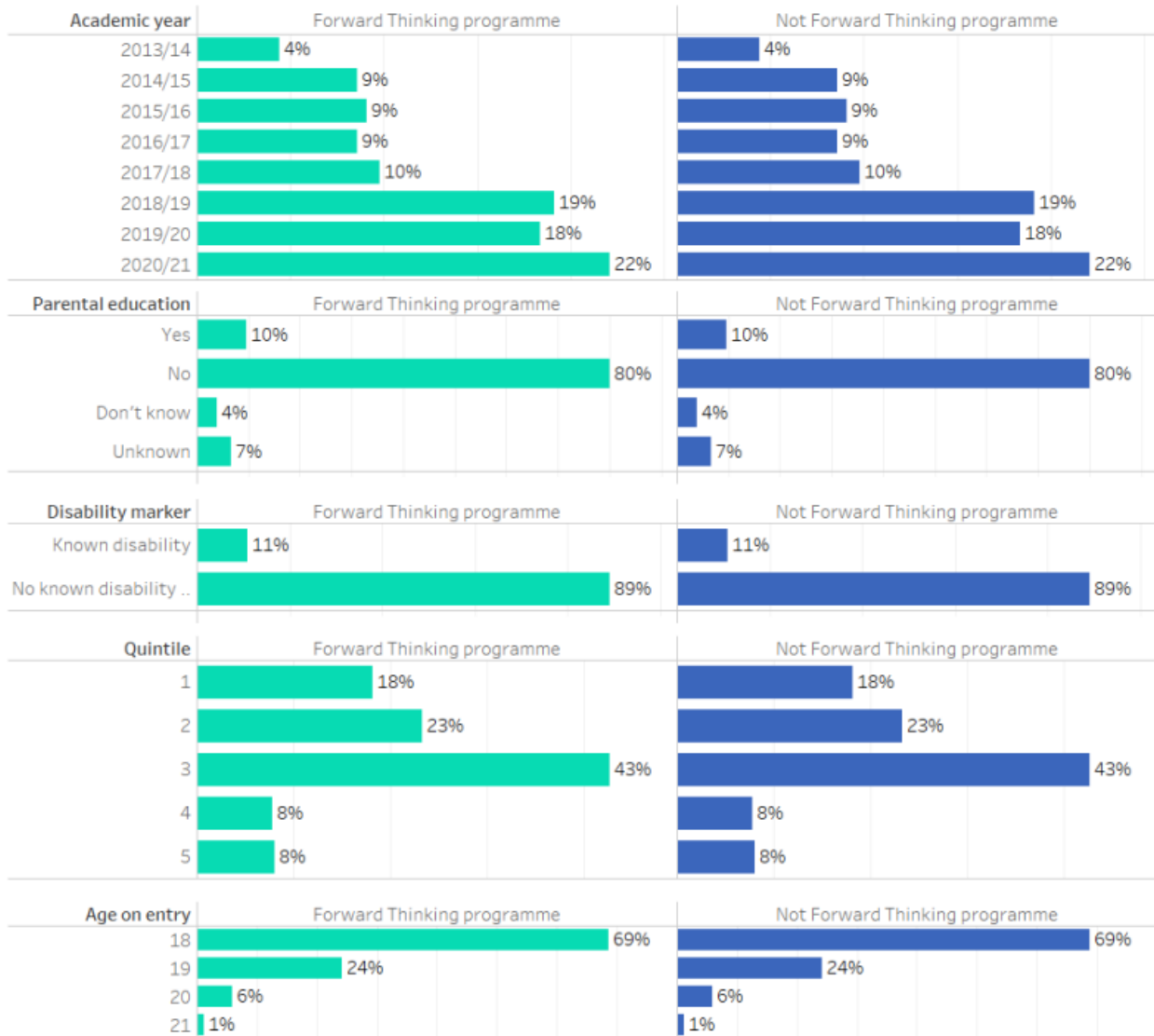
Appendix 5: Jitter plot of England student PSM propensity scores



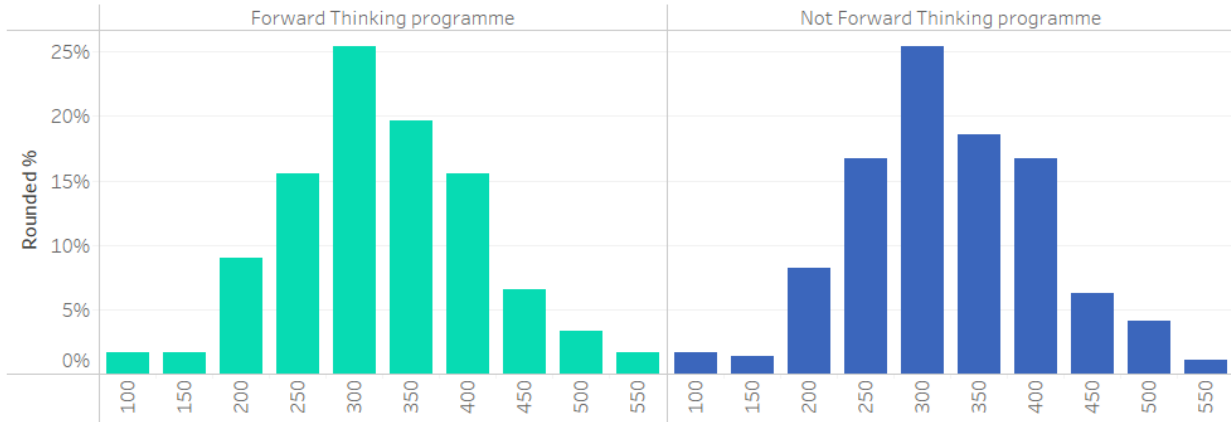
Appendix 6: Jitter plot of England qualifier PSM propensity scores



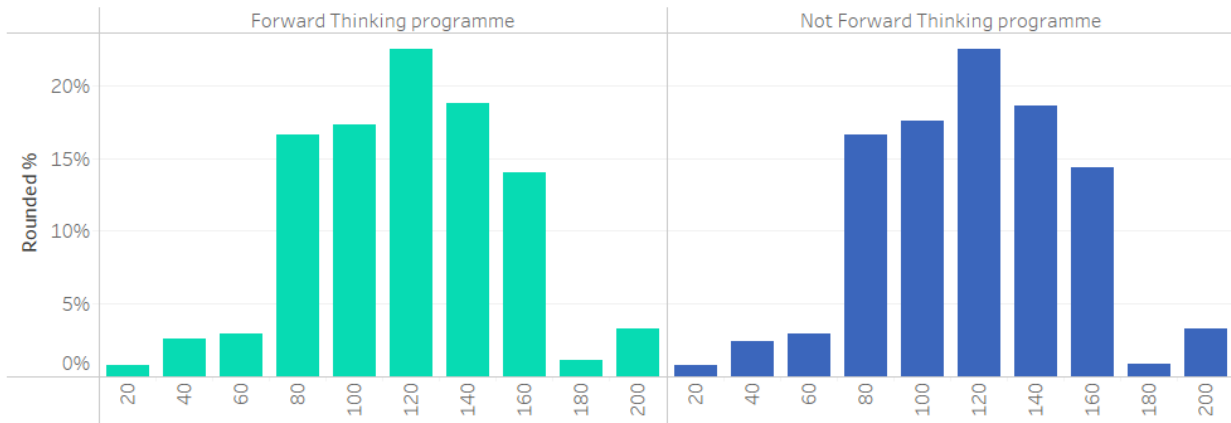
Appendix 7: Balance statistics for West Midlands students



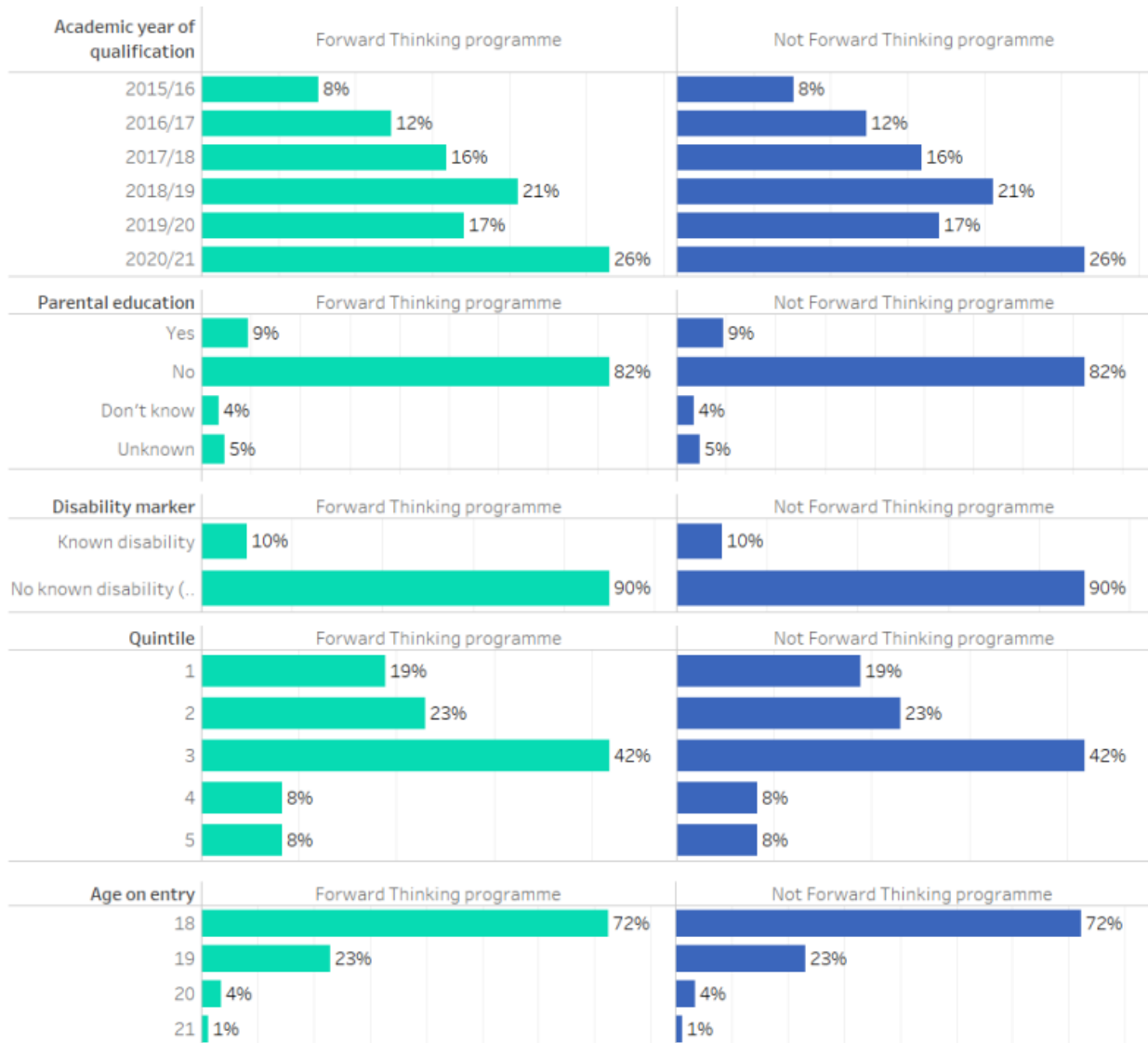
West Midlands Students - XTARIFF



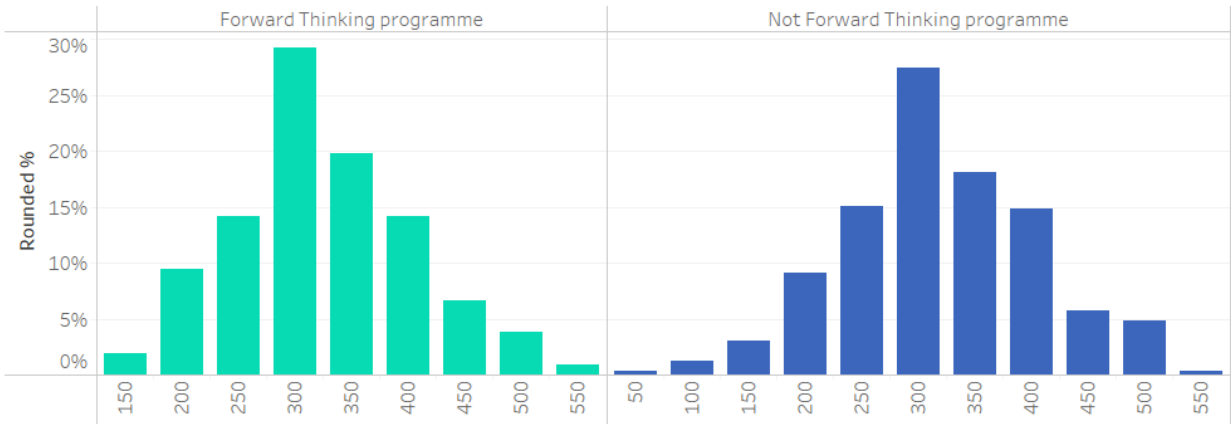
West Midlands Students - XTPOINTS



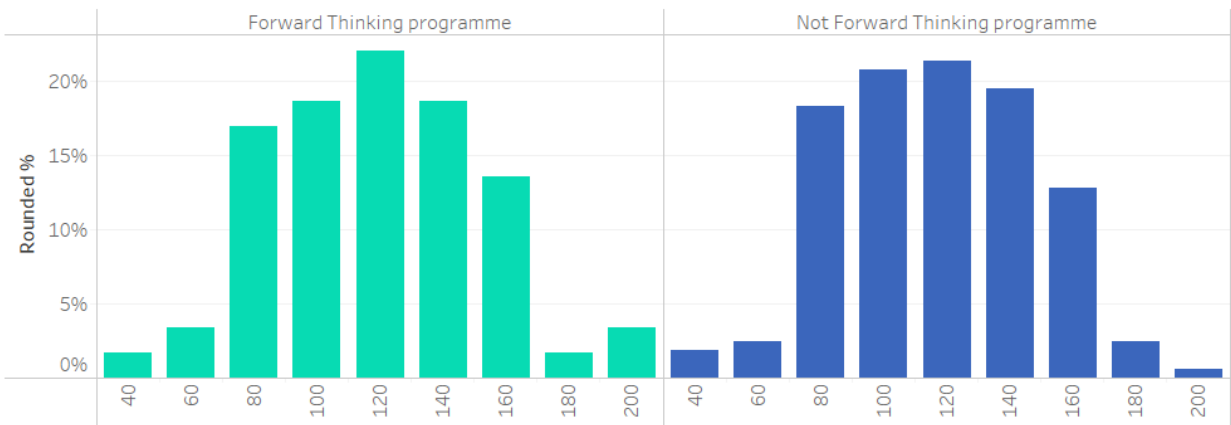
Appendix 8: Balance statistics for West Midlands qualifiers



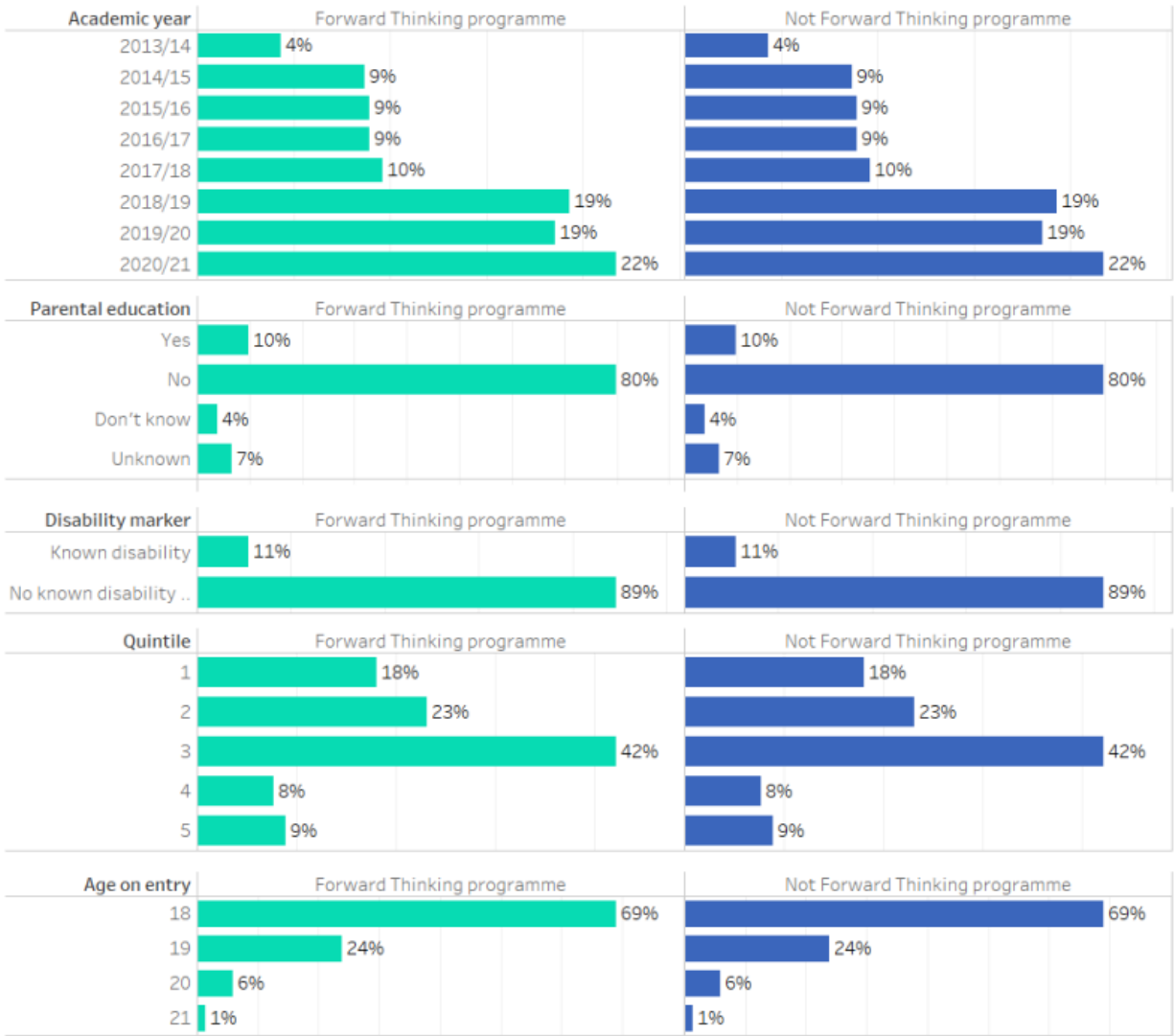
West Midlands Qualifiers - XTARIFF



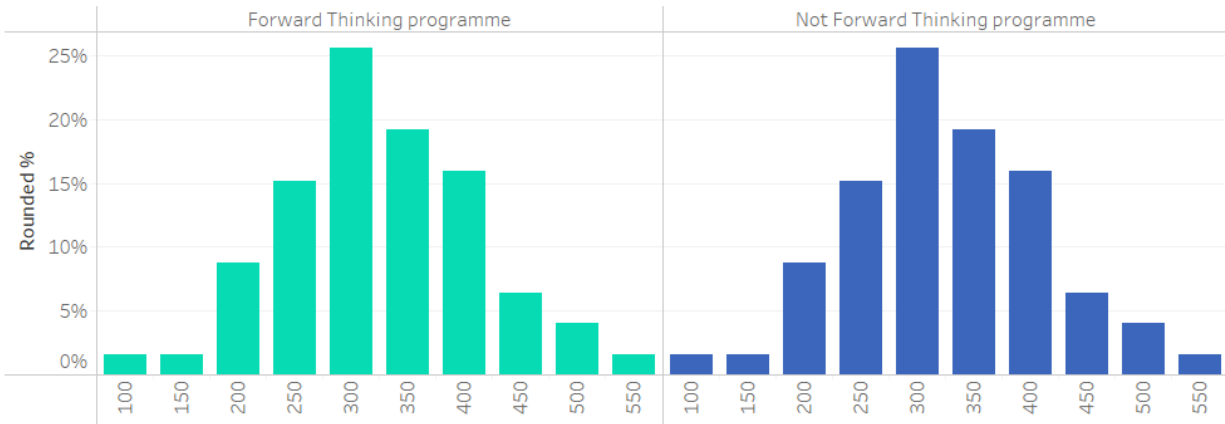
West Midlands Qualifiers - XTPOINTS



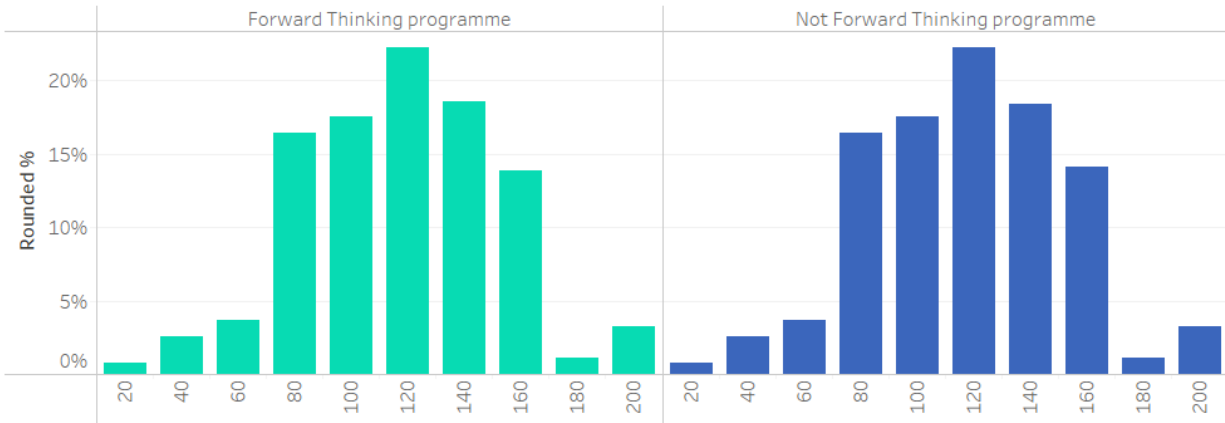
Appendix 9: Balance statistics for England students



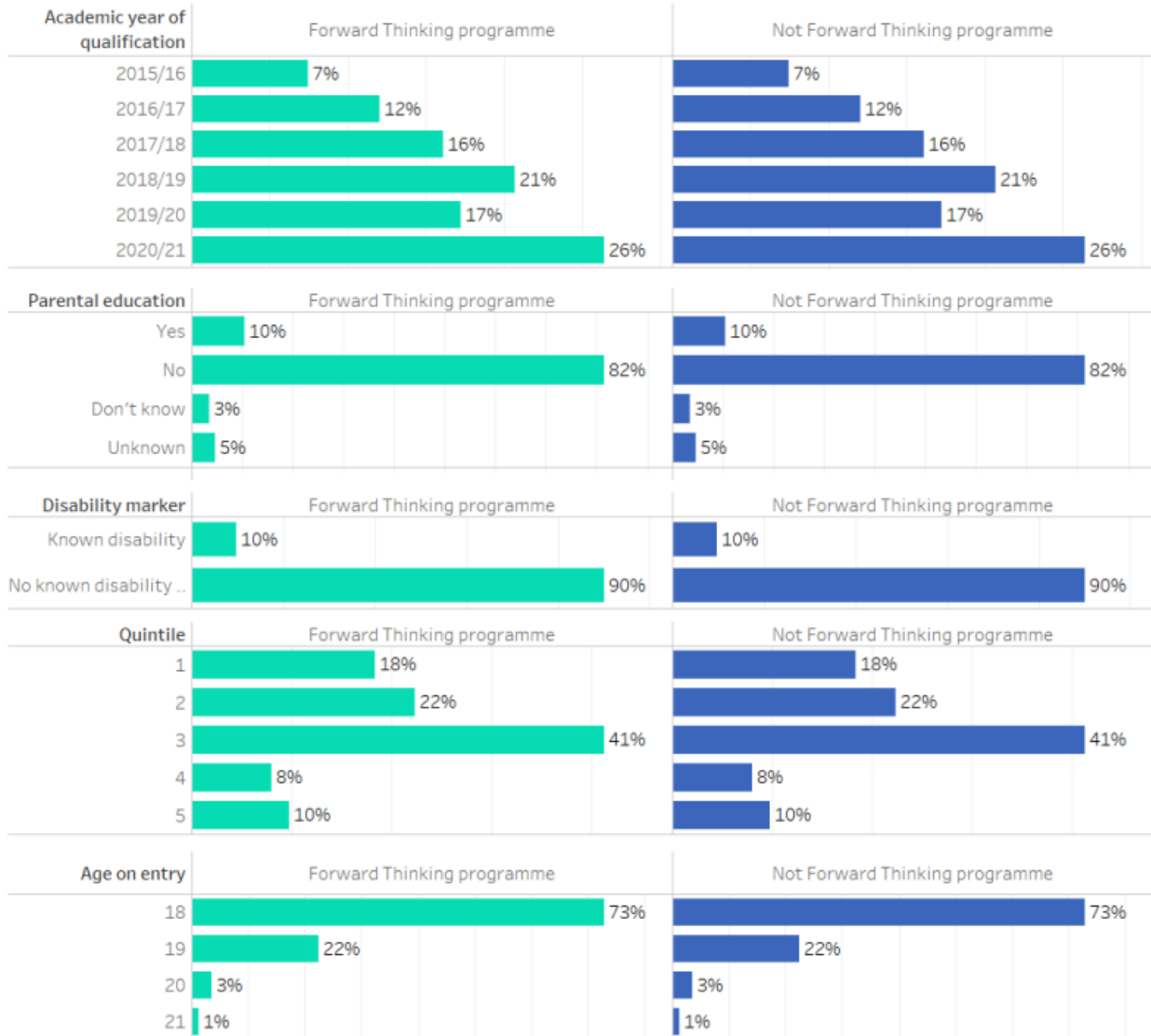
England Students - XTARIFF



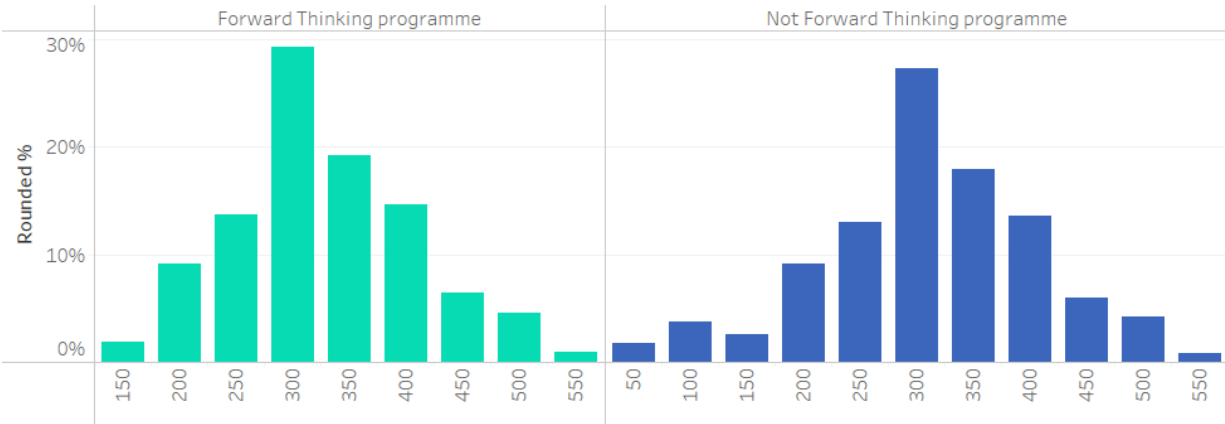
England Students - XTPOINTS



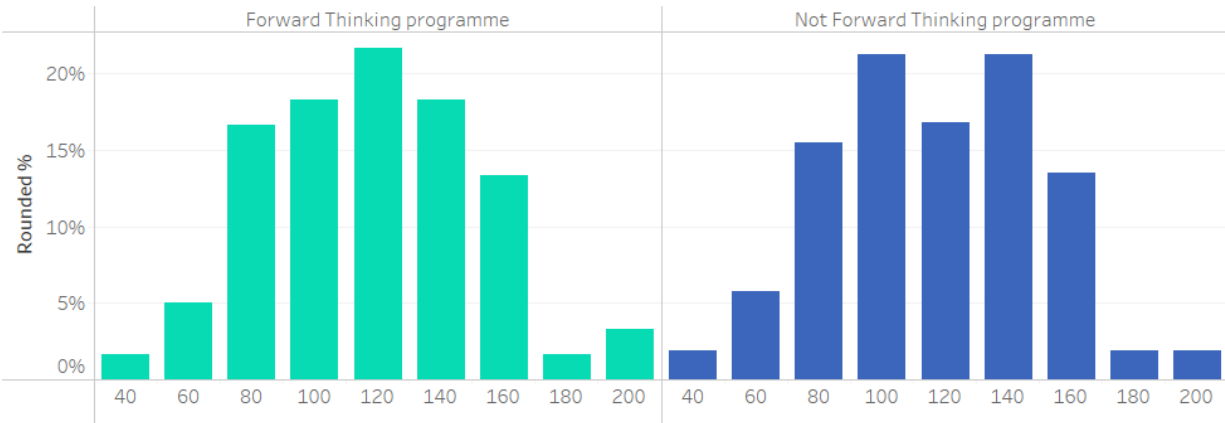
Appendix 10: Balance statistics for England qualifiers



England Qualifiers - XTARIFF



England Qualifiers - XTPOINTS



Appendix 10: Definitions

Age on entry

Age on entry is as at the date of a student's initial commencement of studies for this student instance.

Continuation

Using PID to track from a student's first year of study into their second year of study to determine if they continue into the following year or are no longer in the HESA data. No longer in the HESA data includes students who gained a qualification, were writing up, had gone dormant or left with no award.

Classification of first degree

The class obtained first degree qualifications. Certain qualifications obtained at first degree level are not subject to classification of award, notably medical and general degrees. These, together with ordinary degrees and aegrotat qualifications have been included within Unclassified. Third class honours, fourth class honours and the pass have been aggregated as Third class/pass. Lower second and undivided second class honours have been aggregated as Lower second class.

Disability status

Disability information is collected on a basis of a student's own self-assessment. Students are not obliged to report a disability if they have one.

With the introduction of the Disability Equality Duty, and on the recommendation of the Equality Challenge Unit (ECU), HESA adopted a version of the coding frame introduced by the Disability Rights Commission (DRC).

Disability is grouped as follows:

Known to have a disability includes students who reported a disability that categorised as: a specific learning difficulty; blind or a serious visual impairment; deaf or a serious hearing impairment; a physical impairment or mobility issues; personal care support; mental health condition; social communication/Autistic spectrum disorder; a long-standing illness or health condition; two or more conditions listed plus another disability, impairment or medical condition.

No known disability includes students who reported they have no known disability plus students who refused to provide disability information, students for whom this

information was not sought, those for whom information was not known and those for whom this information was not applicable.

Domicile

Indicates the location of the student's permanent or home address prior to entry to the course. UK domiciled students are those whose normal residence is in the UK, and includes Guernsey, Jersey and the Isle of Man.

Ethnicity

Students domiciled in England, Wales, Scotland, Northern Ireland, Guernsey, Jersey and the Isle of Man are required to report their ethnic origin. Data on the ethnicity of students is therefore restricted to UK domiciled students. The coding frame is that recommended by the Office for National Statistics (ONS) for UK-wide data collection. White includes White, White -Scottish, Irish Traveller, Gypsy or Traveller, plus Other White background.

Black includes Black or Black British -Caribbean, Black or Black British -African, and other Black backgrounds.

Asian includes Asian or Asian British -Indian, Asian or Asian British -Pakistani, Asian or Asian British -Bangladeshi, Chinese, and other Asian backgrounds.

Others include Arab, plus other ethnic backgrounds. Mixed includes mixed -White and Black Caribbean, mixed -White and Black African, mixed -White and Asian, other mixed background

Not known includes not known and information refused.

BAME includes all non-white categories excluding not known.

First degree

First degrees (including eligibility to register to practise with a health or social care or veterinary statutory regulatory body), first degrees with Qualified Teacher Status (QTS)/registration with a General Teaching Council (GTC), enhanced first degrees, first degrees obtained concurrently with a diploma and intercalated first degrees.

HESA qualifiers population

A count of student instances associated with the award of an HE qualification (excluding HE institutional credits) during the HESA reporting period 1 August to 31 July. This includes qualifications awarded from dormant, writing-up and sabbatical status, but excludes incoming visiting and exchange students.

HESA student population

A count of the number of HE student instances active at a reporting HE provider in the reporting period 1 August to 31 July. Dormant students (those who have ceased studying but have not formally de-registered); incoming visiting and exchange students; students where the whole of the programme of study is outside of the UK; students on sabbatical, and writing-up students are excluded from the population.

Higher education (HE) students

Students on courses for which the level of instruction is above that of level 3 of the Qualifications and Curriculum Authority (QCA) National Qualifications Framework (NQF) (e.g. courses at the level of Certificate of HE and above).

Highest qualification on entry

This refers to the highest qualification which a student held at the beginning of their current instance. A student's highest qualification on entry is not necessarily that which was required for entry to the programme of study.

Level 3 qualification (including A levels and Highers) includes any combinations of GCE A/AS levels, SQA Higher/SQA Advanced Higher, General National Vocational Qualification (GNVQ)/General Scottish Vocational Qualification (GSVQ) level 3, National Vocational Qualification (NVQ)/Scottish Vocational Qualification (SVQ) level 3, Ordinary National Certificate (ONC), Ordinary National Diploma (OND) (BTEC and SQA equivalents), A level equivalent qualifications not elsewhere specified, foundation courses at FE level, HE access courses (Quality Assurance Agency (QAA) recognised/not QAA recognised), Baccalaureates (AQA, Scottish, Welsh Baccalaureate Advanced Diploma level 3 and International Baccalaureates (IB) diplomas/certificates), Diplomas in Foundation Studies (Art and Design), 14-19 Advanced Diplomas level 3, Diplomas, Certificates and Awards at level 3, Cambridge Pre-U Diplomas and Certificates and other level 3 qualifications.

Last provider attended

This describes the previous provider attended by the student identified by the unique UKPRN of the provider. This information is compulsory for undergraduate students entering through UCAS. HE providers are encouraged to provide this information for other full-time undergraduates in order to provide more complete statistical information for the sector.

Level of study

This illustrates the study level undertaken by the student.

Low-participation neighbourhoods (POLAR4)

POLAR4 is based on the HE participation rates of people who entered a HE course in a UK HE provider or English or Scottish further education college, aged 18 or 19, between academic years 2009-10 and 2013-14. The POLAR4 classification is formed by ranking 2001 Census Area Statistics (CAS) wards by their young participation rates. This gives five quintile groups of areas ordered from '1' (those wards with the lowest participation) to '5' (those wards with the highest participation), each representing 20 per cent of UK young cohort. Students have been allocated to the neighbourhoods on the basis of their postcode. Those students whose postcode falls within wards with the lowest participation (quintile 1) are denoted as being from a low participation neighbourhood.

Mode of study

Full-time students- those normally required to attend an HE provider for periods amounting to at least 24 weeks within the year of study, on thick or thin sandwich courses, and those on a study-related year out of their HE provider. During that time students are normally expected to undertake periods of study, tuition or work experience which amount to an average of at least 21 hours per week.

Part-time students- includes those studying on full-time on courses lasting less than 24 weeks, on block release, or studying during the evenings only.

PID (Personal identifier)

A field used to associate multiple instances of study for a student as we have no way of directly identifying if one instance relates to another in the data. The PID is developed by using fuzzy matching techniques to link all students' instances to a central ID

primarily based on underlying fields - First Name, Last Name, Date of Birth, Postcode of domicile and Sex. Student instances do not need to exactly match all the criteria to account for typing errors, change of address and naming differences, thus the PID method is not 100% accurate and should be used with care.

Postgraduate courses

Are those leading to higher degrees, diplomas and certificates (including Postgraduate Certificate in Education (PGCE at level M) (unless shown separately) and professional qualifications) which usually require a first degree as an entry qualification (i.e. already qualified at level H).

Rounding strategy

Jisc implements a strategy in published and released tabulations designed to prevent the disclosure of personal information about any individual. This strategy involves rounding all numbers to the nearest multiple of 5. This rounding strategy is also applied to total figures, the consequence of which is that the sum of numbers in each row or column rarely matches the total shown precisely. Average values and proportions values have been calculated on precise raw numbers. However, percentages calculated on populations which contain fewer than 22.5 FPE have been suppressed as have averages based on populations of 7 or fewer. More information can be found here <https://www.hesa.ac.uk/support/definitions/students#rounding-and-suppression-strategy>

Parental education

This records whether an entrant's parents have HE qualifications. This information is only required for undergraduate students whose permanent address is in the UK.

Sex

This records the sex of the student. Others are included for students whose sex aligns with terms such as intersex, androgyne, intergender, ambigender, gender fluid, polygender and gender queer.

Socio-economic classification (SEC)

SEC is used to identify the socio-economic classification of students participating in HE. This data is compulsory for undergraduate students entering through UCAS. 'Not

classified' is a valid code and includes students; occupations not stated or inadequately described and not classifiable for other reasons. Percentages are based on those students with classified known SEC data. SEC data has been grouped into categories with examples (Office for National Statistics, 2010) : SEC 1-3: 1 Higher managerial and professional occupations (e.g., Solicitors, Architects, Medical practitioners , Chief executives, Economists 2 Lower managerial and professional occupations (e.g., Social workers, Nurses, Journalists, Managers and directors in retail and wholesale, Teaching professionals (Further education/ Secondary education/ Primary and nursery/ Special needs)) 3 Intermediate occupations (e.g., Paramedics, Nursery Nurses and assistants, Police officers (sergeant and below), Bank and post office clerks, Graphic designers SEC 4-7: 4 Small employers and own account workers (e.g., Farmers, Shopkeepers and proprietors –wholesale and retail, Taxi and cab drivers and chauffeurs, Driving instructors, Window cleaners) 5 Lower supervisory and technical occupations(e.g., Mechanics, Chefs, Train and tram drivers, Plumbers, Electricians 6 Semi-routine occupations (e.g., Receptionists, Shelf fillers, Care workers and home carers, Telephonists, Fitness instructors 7 Routine occupations (e.g., Bar staff, cleaners and domestics, Butchers, Bus and coach drivers, Van drivers) 8 Never worked and long-term unemployed 9 Not classified.

STEM subject marker

STEM subject marker is an aggregation of CAH level 1 codes CAH01 through to CAH13 and CAH26 with the exception of CAH26-01-03 (Human geography). CAH26 (Geographical and environmental studies) has been disaggregated so that CAH26-01-03 (Human geography) is presented in the non-STEM group. All other CAH level 3 codes within CAH26 are presented in the STEM group. This grouping of subjects has been created by HESA.

Subject of study

Subjects are branches of knowledge or learning that are studied in HE. Subjects are essential attributes of all courses and students may study combinations of subjects – each course can have up to five subjects allocated to it, although most have less than three.

From 2019-20, the Higher Education Classification of Subjects (HECoS) subject coding scheme, replaced the older subject coding scheme (JACS). A Common Aggregation Hierarchy (CAH) was developed in part to act as a 'bridge' between the two coding frames. The CAH also provides standard groupings of related HECoS subjects.

The proportion of time allocated for each subject studied on a course is represented by a percentage. Percentages are based on a broad assessment of the relative contributions of each subject to individual students' programmes of study. The sum of the proportion allocated to each subject studied on a course must equal 100. No subject proportion less than 5% is recorded.

Most providers will apply similar percentages to the majority of their courses and only vary this where there is a substantially different expectation. The following standard percentages are:

Balanced: 50% for each of the two subjects,

Major – Minor: 67% and 33%,

Triple: 34%, 33% and 33%.

Tariff

The tariff system assigns a numerical value to a student's pre-HE qualifications, with each qualification awarded a set number of tariff points. The tariff field contains the combined tariff score for the entry qualifications associated with a student. This information is compulsory for undergraduate students entering through UCAS.

Average (mean) tariff is the sum of all tariff scores divided by the number of students. Those with zero or unknown tariffs are excluded.

Term-time accommodation

Term-time accommodation identifies where the student is living during the academic year. This information is compulsory only for full-time and sandwich students.

Time to completion

The number of years taken to complete the qualification from the academic year at the start of the course to the academic year when the qualification was gained.

Year of study/first year marker

First years include those students who commenced their programme instance within the reporting period and are based on the HESA standard registration population. In some cases, the student's first year of study may be the second or subsequent year of a programme.

Appendix 11: The previous institution, alongside the number of eligible students and, the total number of HE entrants

Previous institution	Number of eligible students	Total number of HE entrants
School 1	130	480
School 2	85	570
School 3	85	295
School 4	80	605
School 5	80	280
School 6	75	220
School 7	70	320
School 8	70	305
School 9	70	285
School 10	60	1205
School 11	60	465
School 12	55	180
School 13	50	450
School 14	60	350
School 15	45	245
School 16	40	495
School 17	35	395
School 18	35	345
School 19	35	335
School 20	30	640
School 21	30	595
School 22	30	590

School 23	30	245
School 24	25	535
School 25	25	230
School 26	25	215
School 27	25	75
School 28	15	650
School 29	15	645
School 30	10	560
School 31	10	540
School 32	10	525
School 33	10	380
School 34	10	365
School 35	10	280
School 36	10	205
School 37	10	135
School 38	10	95
School 39	10	45
School 40	5	435
School 41	5	140
School 42	5	115
School 43	5	90
School 44	5	40
School 45	5	20

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Stuart, E. A. 2010 Matching methods for causal inference: A review and a look forward. *Statistical Science*. 25(1), pp.1-21.