



Summary report:

An investigation into the relationship between outreach participation and KS4 attainment/HE progression

Analysis based on the HEAT aggregate tracking dataset

March 2021

Acknowledgements

This report was developed via a collaboration between TASO and the Higher Education Access Tracker (HEAT). TASO would like to acknowledge HEAT for preparing the analysis of KS4 attainment outcomes that informed this summary report.

TASO and HEAT would also like to thank the HEAT member organisations for collecting and capturing the data on which this analysis is based.



Higher Education Access Tracker

1. INTRODUCTION

The Higher Education Access Tracker (HEAT) Service is a national non-profit-making collaboration between higher education (HE) outreach providers. HEAT provides a monitoring and evaluation service, at the heart of which is an extensive system of outreach participant data collection and tracking.

HEAT has collected an impressive dataset from across its membership, comprising outreach participant details and information about their involvement in outreach activities. The HEAT dataset is annually linked to government data on education outcomes, including attainment and information on whether and where participants enter HE. This data linking makes the HEAT database a potentially powerful resource to help us explore questions about the relative efficacy of different outreach approaches.

The Centre for Transforming Access and Student Outcomes in Higher Education (TASO) has partnered with HEAT to analyse some of the extensive data currently held within the HEAT database. Specifically, we investigated the relationship between outreach participation and:

- Key Stage 4 (KS4) attainment¹
- HE progression
- Progression to 'top third' HE providers (i.e. those with the highest entry requirements in terms of entry qualifications)

The KS4 analysis focused on approximately 117,500 individuals and the HE progression analysis focused on approximately 165,500 individuals.

This summary report provides an overview of our findings. More detail on our methodology and findings are given in accompanying technical reports.²

1.1 Caveat to our analysis

- It is important to note that this analysis cannot provide causal evidence on the efficacy of outreach because:
 - We cannot capture differences between outreach participants in terms of factors such as individual motivation and school/parental support.
 - Individuals who are more interested in HE and have more school/parental support may be more likely to participate in a greater number of activities or different activities.
 - These factors are also strongly correlated with attainment and HE progression.
 - In other words, there is a risk of 'selection bias', where the groups we examine (i.e. those who do and do not take part in outreach) may have been very different to begin with, regardless of those activities.³
 - Therefore, where we find that participation in outreach is associated with attainment/HE progression, it is not possible to attribute this to the activities recorded in HEAT because we cannot rule out that other differences are driving the pattern we observe.
- However, there are a number of factors which are strongly correlated with attainment and HE progression that are present in the HEAT dataset. These include prior attainment and proxies for socio-economic background such as Free School Meals (FSM) eligibility, Income Deprivation Affecting Children Index (IDACI) and whether the individual is first in family to attend HE. We include such variables in our analysis in an attempt to take into account some of the measurable differences between individuals who take part in different activities.
- Therefore, although not capable of providing causal evidence, this descriptive analysis is able to provide high level trends which can be used to inform future causal studies.
- According to the Office for Students' (OfS) Standards of Evidence, we categorise this work as Type 2 evidence.

Different types of evidence

TASO's approach to classifying evidence is aligned with the OfS 'Standards of Evidence' which categorises evidence into the following 'types':

- **Type 1** – Narrative: there is a clear narrative for why we might expect an activity to be effective. This narrative is normally based on the findings of other research or evaluation.
- **Type 2** – Empirical Enquiry: there is data which suggests that an activity is associated with better outcomes for students.
- **Type 3** – Causality: a method is used which demonstrates that an activity has a 'causal impact' on outcomes for students. This means it tells us whether an activity causes a difference in outcomes.

1.2 Key findings

Intensity of outreach

- When analysing the intensity of outreach, we control for a suite of individual characteristics, including measures of disadvantage and prior attainment.
- We find that taking part in more intensive outreach is associated with higher KS4 attainment and higher HE progression.⁴ Both parts of the picture are vital as [national research](#) has shown KS4 attainment to be critical to future progression to higher education.
 - Taking part in intensive outreach is associated with an increase in Attainment 8 scores of 3.4 points.
 - Individuals who take part in an intensive package of HEAT activities are 6-13 percentage points (pp) more likely to progress to HE than those who do not.
 - There is some evidence that students who take part in an 'intensive' package of activities are more likely to progress to top-third providers than those who do not, although the evidence is more mixed than for overall HE progression.

Types of outreach

- When analysing the type of outreach participated in, we also control for participation in other activities, as well as individual characteristics, including measures of disadvantage and prior attainment.⁵

⁴ An investigation into the relationship between outreach participation and KS4 attainment/HE progression

- Participation in summer schools is associated with higher KS4 attainment and higher HE progression.
 - Taking part in a summer school is associated with an increase in Attainment 8 scores of 2.9 points.⁶
 - We estimate that HE progression is 5-14pp higher for those who attended any summer school in our data versus those who did not in. We also estimate that top-third progression is 3-12pp higher for those who attended any summer school versus those who did not.
 - These results align with some [existing evidence](#) on the positive association between participation in summer schools and outcomes relating to HE participation; however, further research is needed to investigate whether this remains true after taking into account factors such as motivation which can't be controlled for in this sort of analysis.
 - TASO is running [new research](#) to help fill this gap in the evidence.
- Participation in campus visits is associated with higher attainment at KS4, albeit less so than participation in summer schools.
 - Taking part in a campus visit is associated with a small increase in Attainment 8 scores of 0.7 points. Differences were greatest for disadvantaged students with low prior attainment.
 - There is not a clear association between campus visits and HE progression outcomes.⁷
- Analysis of the association between mentoring participation and outcomes are inconclusive within our analysis.
 - Initial analysis shows taking part in mentoring is associated with:
 - A decrease in Attainment 8 scores of -1.8 points.
 - A decrease in HE progression; HE progression is 2-3pp lower for those who attended any mentoring versus those who did not. Top-third progression is 5pp lower for those who attended any mentoring versus those who did not.
 - However, other analysis based on a sub-set of participants who had taken part in only one single type of activity, showed higher KS4 exam results for mentoring participants when ranked alongside other activity types.
- Our analysis supplements [existing evidence](#) which has found positive associations between mentoring and attitudes/aspirations and, in some cases, attainment and HE progression.
- The existing evidence also suggests approaches differ substantially between programmes; therefore, within the large-scale data used here, which collates a diverse range of mentoring activities, it is not possible to consider the nuance of individual programmes and which elements might be more or less effective.
- TASO is exploring this issue in more detail in [collaboration with sector partners](#).
- KS4 attainment is positively associated with summer schools and HE information sessions but negatively associated with mentoring, implying that higher attaining students may access summer schools while mentoring may be targeted at those with lower grades. In addition, FSM eligibility is positively associated with mentoring and HE information sessions but negatively associated with summer schools, implying that summer schools may attract more advantaged participants. These findings may help explain the patterns of attainment and HE outcomes we see associated with these activities, as outlined above.

Age of participation

- Students who first engage in outreach after the age of 16 are more likely to progress to HE and this pattern is not explained by other characteristics captured in our data such as prior attainment, gender or markers of disadvantage. It is possible this finding reflects the different profile of students who engage pre- and post-16. Those who engage when they are older may do so under their own initiative and be more likely to be 'on track' for HE; therefore, higher rates of progression might be expected for this group, regardless of their participation in outreach.

2. REFLECTION ON THE FINDINGS

2.1. Summer schools

The existing evidence suggests that individuals who attend a summer school express higher confidence and aspirations at the end than at the beginning, but evidence on progression to HE is more limited (see our [Evidence Toolkit](#) for more information). Our analysis contributes to the evidence base by demonstrating a positive association between participation in summer schools and KS4/HE outcomes; however, further research is needed to investigate whether this remains true after controlling for factors which we can't capture in the existing data.

Many summer school activities recruit participants through an application process, a format that favours individuals who already have high levels of motivation to attend and/or a greater degree of support from their school or family. These students are also more likely to demonstrate higher levels of motivation towards their education as a whole and may receive more support throughout their education journey. These self-selecting students would therefore most likely outperform their peers who did not apply for the summer school regardless of their participation in that summer school. Further research is needed to account for this selection effect.

2.2. Campus visits

Our findings suggest that participation in campus visits is associated with higher achievement at KS4 for disadvantaged students with low prior attainment. Like summer schools, this may be the result of a selection effect. However, unlike summer schools, places on campus visits are not typically allocated through applications, but rather they are offered to entire classes in schools and colleges. A possible explanation for this is that when disadvantaged students come to a university campus they are exposed to a new environment which inspires them to work harder at school and achieve higher grades, something that is only possible with the support of a wider package of activities. However, there is not a clear association between campus visits and HE progression outcomes. Further research is needed to explore our finding on campus visits in more detail.

2.3. Mentoring

Our analysis of mentoring produces mixed results on its association with KS4 attainment and there is a negative association between HE progression outcomes and mentoring. One possible reason for this result is that mentoring participants are specifically chosen because they face particular challenges and barriers in education. Therefore, the association between mentoring and less positive outcomes could be due to the type of individuals who take part in these activities, rather than the activities themselves. This explanation is supported by the fact that we found lower achieving individuals, and FSM-eligible individuals, were more likely to be involved in mentoring versus other activities.

Another consideration is the design of different mentoring programmes. There is a great deal of diversity in the nature of mentoring activities in terms of the number of sessions, the location and format of delivery (online/face-to-face) and other factors (see our [Evidence Toolkit](#) for more information). Research by HEAT as part of their [National Outreach Coverage Project](#) has also found variation in the way mentoring activities are recorded on the HEAT database. This diversity could mean we are combining quite different activities in the data and so we should be careful about how we interpret our findings. A framework to capture the relevant facets of mentoring programmes consistently across providers could facilitate analysis which could unpick the strength of different types of programmes more effectively.

3. METHODS

A full description of our methods, including a detail on the datasets used, is provided in the accompanying Technical Reports.⁸ A brief summary is provided below.

3.1. Data matching

- In the HEAT aggregate tracking dataset, each record relates to one student who has participated in at least one outreach activity.
- Participants were linked to their record on the National Pupil Database (NPD) and to data held by the Higher Education Statistics Agency (HESA) as part of HEAT's ongoing longitudinal tracking study. This linking was carried out by the Office for National Statistics (ONS) on behalf of the Department for Education (DfE) and HESA with the aim of providing a dataset to evaluate the efficacy of outreach in raising student attainment and later progression to HE.

3.2. KS4 dataset

- The KS4 analysis was restricted to individuals who had participated in outreach before the time they took their KS4 exams in year groups 7 to 11.
- All students took their KS4 exams in one of three years: 2016/17, 2017/18 or 2018/19 – with the latter being the latest available at the time of analysis. Results for these three years are aggregated to increase sample size.
- The final dataset for this analysis comprised 117,550 participant records.

3.3. HE progression dataset

- The HE progression analysis was restricted to data for participants who were 'HE ready' between 2007/08-2017/18, providing a ten-year period during which participants had the opportunity to progress to HE.⁹
- The final dataset for this analysis comprised 165,448 participant records.

- Unfortunately, there was a substantial amount of data missing for some of the variables in this dataset. There are probably underlying reasons why data are missing for some individuals and not others, meaning that there are likely to be systematic differences between these students. Therefore, we must be careful when discarding data to conduct our analysis. With this in mind, we conducted our analysis using two different datasets: both the full dataset and a 'restricted' dataset containing the 28,050 rows where we had complete data for individuals.
- We conducted the same analysis on each dataset and then compared our results to formulate insights about the relationship between outreach activity on our outcomes of interest. This approach leads to us presenting an estimated range for the magnitude of association between activities and outcomes (see Section 1.2).

3.4. Analytical approach

- For both the KS4 and HE progression data, we used regression analysis to explore the association between participation in outreach and outcomes.
- The variables included in the regressions differ between the KS4 and HE progression analysis and are described in more detail in the Technical Reports.

3.5. Limitations

- Not all HE providers use HEAT to record their outreach activity. So, this data can only be used as a sample of outreach rather than a complete national dataset. An up-to-date list of HEAT's member organisations is available on the [HEAT website](#). Although this represents a large proportion of outreach providers, the dataset does not include all organisations providing outreach. It is also important to note that the HEAT membership has grown over time, and the extent to which members record their outreach activities in the database has also varied over the years; therefore, we are limited to analysing a snapshot of the data on the HEAT database for the years in question, rather than a full record of all activities taking place at all current HEAT members over the period specified.

- Because data is collected locally by HE providers, there may be some inconsistency in how activity is coded and recorded; this is not something we are able to detect or explore within the datasets.
- For the purpose of compiling appropriately large samples, we have combined data from across a number of years (as stated above). We control for year group which should account for changes in participation rates and policy shifts over time, however, this limitation should be taken into consideration when interpreting our analysis.
- For the HE progression analysis there are some inconsistencies in the results depending on how this missing data is handled. As a cautious approach, we've only reported on findings where the results are consistent regardless of how the missing data is handled. Future research could explore the source of these inconsistencies in more detail or replicate this analysis with more complete data.

4. RESPONSE AND SHORT-TERM RESEARCH PRIORITIES

TASO is using the results of this analysis, along with our [previous evidence synthesis](#) on the most effective methods of widening access to HE, to inform our ongoing work. Based on the recommendations of our Theme Working Group we have commissioned research projects to help answer some of the questions raised in this report.

Our [randomised controlled trial \(RCT\) of summer schools](#) has been set up to address the issue of selection bias and uncover the effect of the activity versus the effect of certain individuals being more likely to attend. We are working with eight universities to implement a collaborative RCT in which eligible applicants are randomly allocated a place on the programme, or not, and then the outcomes of both groups tracked over time to measure the impact of the activity. There are not enough summer school places for all applicants to attend, so this is a good opportunity for us to develop more robust evidence on the impact of summer schools by using the existing oversubscription to create a control group. Originally planned for summer 2020, our summer schools RCT will now take place in summer 2021. Therefore, we will be focusing on the impact of online summer schools in the first instance but will explore investigating the impact of in-person provision in future years if possible.

As part of our [multi-intervention outreach and mentoring project](#), we are working with Aston University, Kings College London, and the University of Birmingham. One part of this work will develop a more thorough understanding of the different elements of mentoring activities used in outreach programmes, with a view to producing a common recording framework which providers can use to capture the different facets of the mentoring they deliver. Agreeing a more consistent approach will lay the foundations for future research which can delve into the most effective elements in more detail.

A broader priority for TASO is supporting the sector to maintain and build on efforts to record and use outreach and tracking data. The dataset used in this analysis is a hugely valuable tool to help us quantify and examine the array of activities which providers deliver. However, the gaps in the data and some inconsistencies in how activities are recorded, impose limitations on our analysis, and any future research on this data. TASO is pleased to be a member of the Steering Group for the OfS-funded and HEAT-led [National Outreach Coverage Project](#), which is pioneering work to get the most out of such data.

Finally, a recurrent theme in our report, is the issue of selection bias (the selection of certain types of individuals into certain activities) which undermines any causal interpretation of our findings. This issue is a problem for anyone seeking to use observational data to understand the effect of an activity, and specific methods are needed to address it. TASO hopes to continue to work with HEAT, and other interested partners, to develop new ways of creating comparator groups for analysis of large-scale tracking data which allows us to generate more causal evidence.

References and notes

- 1 For more information on Key Stage 4 please visit: <https://www.gov.uk/national-curriculum/key-stage-3-and-4>.
- 2 Please see our two technical reports: [Technical Appendix 1 KS4 attainment](#) and [Technical Appendix 2 HE Outcomes](#)
- 3 For more information on selection bias please see this explanation on the [Institute for Work and Health website](#).
- 4 An 'intensive' package of activities is defined by HEAT as: one or more summer schools; one or more HE insight events; one or more mentoring interactions; one or more projects; two or more skills and attainment activities; two or more campus visits; one or more skills and attainment activities and one or more campus visits; three or more HE information talks and one or more skills and attainment activities; three or more HE information talks and one or more visits.
- 5 This means that, in our findings, we are comparing participants who took part in a similarly intensive package of activities (see the HEAT definition above).
- 6 For more information on Attainment 8 scores, please see this overview from the [Department for Education](#)
- 7 It is important to note that previous analysis commissioned by HEAT has found that outreach participants who attend on-campus activities are more likely to enter HE than those attending off-campus activities and that this effect was particularly pronounced among disadvantaged groups. However, the previous analysis defined 'on-campus' activities, based on location whereas our current analysis focuses on 'campus visits' which is a specific type of on-campus activity. This difference may explain the different results. Please see the previous analysis at: <https://heat.ac.uk/research-and-evidence/thematicreports/>
- 8 Please see our two technical reports: [Technical Appendix 1 KS4 attainment](#) and [Technical Appendix 2 HE Outcomes](#)
- 9 An individual's 'HE ready' year is the academic year when the student is aged 18 and therefore typically ready to progress to HE.

TASO

Transforming Access
and Student Outcomes
in Higher Education

Evidence Quarter
Floor 4, Albany House
94-96 Petty France
London SW1H 9EA

info@taso.org.uk
taso.org.uk

TASO was set up by a consortium of King's College London, Nottingham Trent University and the Behavioural Insights Team. It is funded by the Office for Students and is an affiliate What Works Centre, and part of the UK Government's What Works Movement.