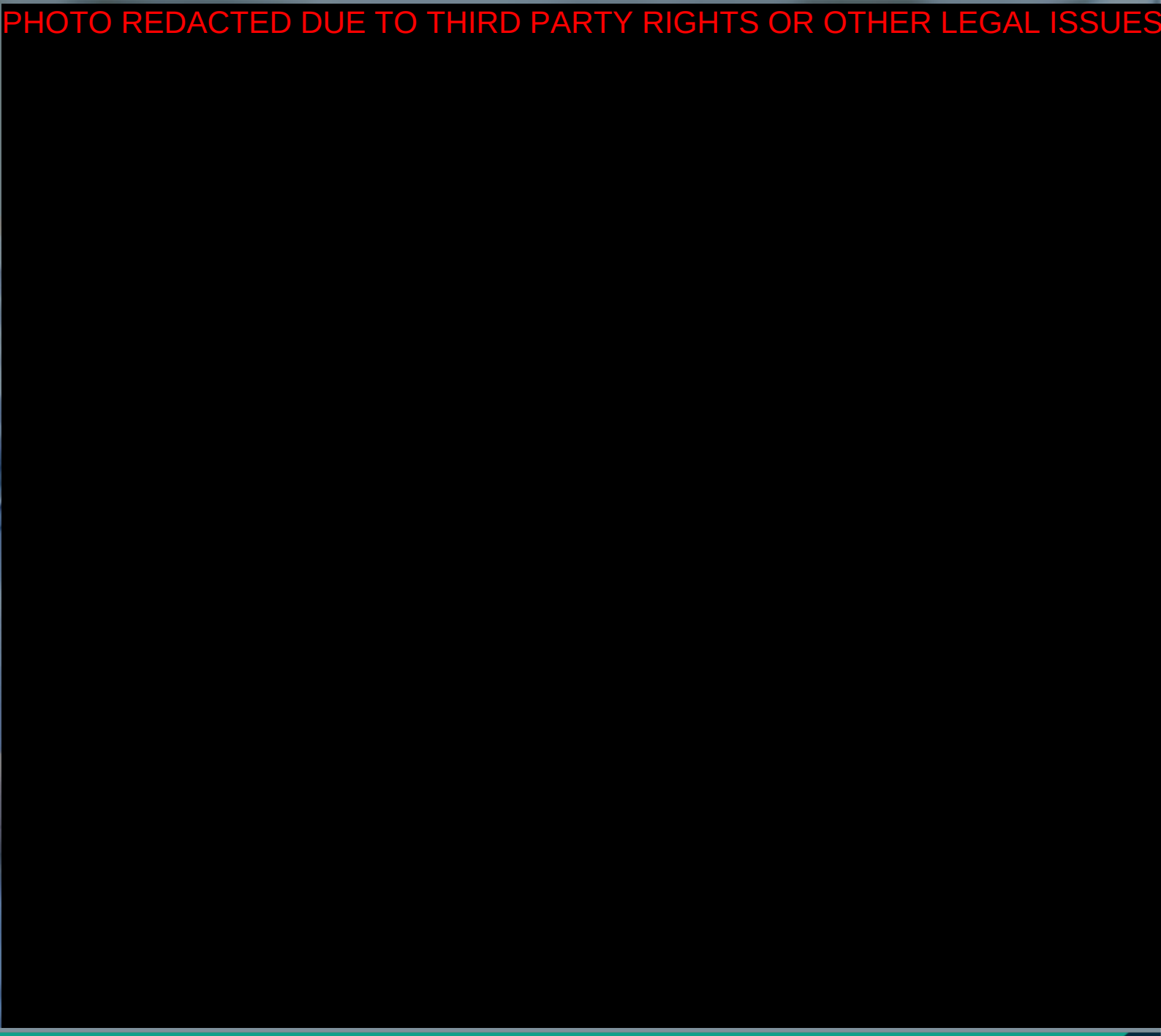

A quantitative analysis of T level access and progression

Robbie Maris, Shruti Khandekar and David Robinson

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About the author

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Executive Summary

T levels are a new set of level 3 technical qualifications in England, studied by 16-19 year olds. They are large qualifications, equivalent to three A levels in size, that combine classroom-based learning with practical work experience. T levels are still in the early stages of their rollout and were introduced in 2020. They were introduced to reduce the complexity of the post-16 qualifications landscape, widen progression opportunities for vocational learners, and to increase the quality and esteem of vocational education. However, the early stages of the T level rollout have been marred with issues that have been well documented by Ofsted, the Education Select Committee and others.

In this report, we investigate the early-stage trends and impacts of T levels, and the T level transition programme (TLTP – soon to be renamed the T level foundation year). We aim to provide evidence to support and inform future policy, decisions and interventions around T levels and the TLTP. We explore the characteristics of students who enrol on T levels and the TLTP, the drivers and consequences of T level withdrawal, transitions from the TLTP to T levels, and the impacts of T levels and the TLTP on post-16 attainment and progression. We also look at the typical course content of the TLTP. As T levels have only been available for a few years, we are not able to cover the long run impacts of T levels, including employment outcomes. This research will be needed in the longer-term to secure a more complete view of the success of the roll-out of T levels.

Key Findings

Student demographics vary across different T level pathways and over time

In terms of enrolments, we find large gender differences between pathways. For example, 95 per cent of education and early years students are female compared to only 8 per cent of engineering and manufacturing students. We find that disadvantaged students are well represented on T levels and over-represented on the TLTP. On the other hand, students with Special Educational Needs and Disabilities (SEND) are under-represented on T levels and over-represented on the TLTP. On average, T level students are less ethnically diverse than the wider cohort of post-16 learners and TLTP learners, but ethnic diversity has been rising over time. Notably, the digital T level pathway is the most ethnically diverse and caters for relatively more students with SEND. We also find that a significant proportion of T level learners start their programme in their second year of post-16. This proportion may decline as T levels become more established.

T level students are drawn from a diverse range of alternative post-16 pathways

Using a set of machine learning classification models to predict which pathways students might have followed in the absence of T levels, we predict that around 15 per cent would have taken A levels, 20 per cent would have taken an apprenticeship and 25 per cent would have studied less than a full level 3. The remaining 40 per cent would have taken a vocational level 3 qualification or a mixed programme (A levels and vocational study).

Disadvantaged and female students are more likely to withdraw from T levels

T level withdrawal has been a major concern and we find worrying trends that disadvantaged and female students withdraw more often than other students on the same pathway with similar prior attainment and other characteristics. White students are also more likely to withdraw, except in the digital pathway. Concerningly, of those who withdraw, over a third appear to leave education and training altogether, becoming NET (Not in Education or Training). Disadvantaged students are more

likely to become NET after withdrawing than other similar students. Only a third of students who withdraw end up on a full-sized level 3 programme in the following year. This is noteworthy given students have gone from one of the largest and more challenging level 3 qualifications (T levels) to no level 3 at all.

Students taking T levels are less likely to complete their level 3 qualification, but more likely to progress to other forms of technical provision

T level students in the 2021/22 cohort are more than 20 percentage points less likely to achieve a full level 3 by age 18 (typically completing their T level) than comparable students taking other qualifications. When compared with similar A level students, T level students are more likely to stay in post-16 education and training for at least two years. Compared to all similar students, T level students are more likely to progress to an advanced apprenticeship or a higher technical qualification.

Outcomes for T level students vary considerably by pathway

The digital pathway appears to be performing relatively well, with digital students no less likely to achieve a full level 3 by 18 and significantly less likely to become NET by 18 compared to other similar students. Students that withdraw from the digital pathway after one year also have better outcomes and destinations on average than other pathways. On the other hand, the health and science and education and early years pathways have seen high rates of withdrawal, worse level 3 attainment outcomes and worse outcomes for students that do withdraw.

Transition Programme students secure few qualifications

The TLTP should provide work placement/experience opportunities, develop vocational skills relevant to a T level area and prepare foundational literacy and numeracy skills to support progression to a T level in the following year. However, less than a third of TLTP students engage in any formally recognised work experience or placements. Of the more popular TLTP pathways, engineering and manufacturing has the lowest rate with less than one in five students receiving formal work placements. Moreover, in some pathways, there is a high proportion of students *not* taking an English or maths resit despite not having achieved a good pass in their GSCEs (over 40 per cent in many cases).

Progression from the TLTP to T levels is very low and has worsened over time

In the 2020/21 cohort of learners, 15 per cent of TLTP students progressed on to a T level. This fell to 8 per cent for the 2021/22 cohort of TLTP learners. Of those who do progress to a T level, more than one in four will withdraw within their first year. As such only 11 per cent of 2020/21 TLTP students progressed to and completed the first year of a T level, dropping to 6 per cent for 2021/22 learners. For some pathways, the rate was as low as 2 per cent (health and science) or 5 per cent (education and early years). Female students, disadvantaged students and students with SEND are even less likely to progress. For a programme whose paramount focus is on helping students transition to a T level, this is an alarming result.

Recommendations:

Based on our analyses, we have the following recommendations:

- The government should extend the pause on the defunding of overlapping qualifications. T levels are not currently suitable for many level 3 learners and changes need to be made before T levels can feasibly become the primary level 3 technical qualifications.
- The independent curriculum review should consider introducing a smaller version of the T level (approximately one A level in size). This would enable access for a wider range of students and allow for greater breadth and flexibility in post-16 programme design. For example, student could take A levels and T levels like many currently do with A levels and BTECs, or a mixed level 3 and level 2 programme.
- The ongoing independent review of T level content should put a particular emphasis on T levels that appear to be performing less well. We show that health and science and the education and early years pathways may need more focus given some negative results. The review may be able to draw lessons from the better performing pathways, such as the digital pathway.
- The government should carefully consider how to provide adequate support and progression routes or student that withdraw from their T level, particularly in the first year. Many of these learners, who were on a large level 3 qualification, go missing from education and training.
- The government should abolish, or completely overhaul, the T level transition programme (TLTP, soon to be the Foundation Year). The results to date are overwhelmingly negative and the programme is failing in its primary objective – promoting transitions to T levels. Correspondingly, the government should design and promote better linkages between full level 2 qualifications and T levels. This will support level 2 learners in progressing to T levels while ensuring they spend their first year gaining a full-sized qualification.

Introduction

Introduced in 2020, T levels are a new set of post-16 (upper secondary) vocational qualifications that are approximately equal to three A levels in size.[1] T levels take two years to complete and are larger than most existing vocational post-16 qualifications. They were introduced following the Sainsbury Review in 2016 and were designed to achieve a number of objectives including: improving the quality and esteem of post-16 vocational education; simplifying the overly complex post-16 qualifications landscape; and creating a vocational pathway that enables students to progress to a broad range of destinations, including higher education.[2]

The Sainsbury Review also recommended a transition year for students who are not ready for a full level 3 technical qualification and this has been rolled out alongside T levels. The T level Transition Programme (TLTP – now renamed the T level foundation year) serves as a preparatory year designed to develop students' maths, English, and technical skills and provide them with work experience to enable them to progress to a T level in the following year and to improve their employability.[3] The TLTP, however, is not a qualification in its own right.

T levels have come under considerable scrutiny since they were rolled out. The initial uptake of T levels was lower than anticipated and several issues have been raised with the T level content, teaching and structure. Ofsted's review of T levels found a mismatch between students' expectations of T level courses and the reality, and poor identification of student needs.[4] This has contributed to the poor rates of student retention across T level pathways which has been widely reported on.[5] There has also been very low conversion from the transition programme to T levels.[6] Moreover, there have been concerns around plans to defund technical qualifications that loosely overlap with T levels, particularly given how challenging T levels are and the risk that many students would not be able to access the T level content.[7]

In this report, we examine patterns in T level enrolment and investigate the short run impacts of T levels. The first half of the report looks across the first three cohorts of T level students and investigates descriptive trends in enrolments and withdrawals. This includes analysing trends in TLTP enrolments and progression onto T levels. We also investigate the drivers of T level withdrawal and track where these students end up after they withdraw. The second half of the report focuses on the impacts of T levels and the TLTP on post-16 achievement and progression to further study. For this analysis, we focus on the 2021/22 cohort, which is the first (and only) available cohort that has complete data for post-16 outcomes. We also conduct some exploratory classification modelling with this 2021/22 cohort to investigate where T level students are most likely to have been diverted from.

[1] The words vocational and technical are often used to describe T levels and other post-16 non-academic qualifications. When we use the term "vocational" we are referring to vocational and technical qualifications. There are subtle differences in definition, but they are not meaningful distinctions for this report.
[2] Department for Education and Department for Business, Innovation and Skills, 'Report of the Independent Panel on Technical Education'.
[3] Department for Education, 'T Level Foundation Year'.
[4] Ofsted, 'T-Level Thematic Review'.
[5] Chowen, 'T-Level Content Review Launched amid "Worrying" Drop-out Rate'.
[6] Chowen, 'T Levels'; Camden, 'Pre-T Level Course Flops in Its First Year'.
[7] Robinson, 'T Levels'.

The report is structured as follows: the next section covers the background to the T level reforms, followed by a review of the emerging issues with T levels. We then report results describing the demographics and prior attainment of T level and TLTP students and the progression of TLTP students to T levels. Next, we analyse T level withdrawals in depth and then proceed to examine the plausibly causal effects of T levels on post-16 outcomes.

1 - Background to the T Level reforms

The last two decades have seen periods of substantial reform to the complex technical and vocational education (VET) landscape in England (and the UK more widely). Many of these reforms followed notable reports commissioned by the UK government. These include reports on 14 to 19 vocational education (the Wolf review), apprenticeships (the Richard review) and technical education (the Sainsbury review), among others.[8]

At the time of these reports, the upper secondary VET education landscape was considered bloated, confusing and not delivering the skills society needed.[10] There were, and still are, thousands of technical qualifications to choose from, making it difficult for students to ascertain quality and make informed decisions.[9] The complexity of the VET qualifications landscape was a primary driver behind the T level reforms and other reforms in the UK (see the Tomlinson and Wolf reports).[10]

Moreover, a divide in social status exists between technical and vocational education and academic education, leading to calls for reforms of the post-16 education system to strive for "parity of esteem". Indeed, this has been a principal focus of government policy and reforms, including the former government's plans for the Advanced British Standard and T levels.[11]

Complexity of the vocational qualifications landscape

To illustrate the complexity of the post-16 qualifications landscape we calculated the number of different qualifications a student could enter once they had chosen a specific subject area in either the academic or vocational track.[12] Our estimates are conservative as we only look at level 3 qualifications that are at least one full A level in size and have more than 100 enrolments. This means that we exclude the extensive range of small vocational qualifications at level 3 and qualifications at level 2 and below.

In Figure 1, we show the average number of qualifications available to students on either the academic or the vocational track once they have selected a subject area of interest. Consistently, there are considerably more vocational qualifications available to students than academic qualifications. In 2023, there were an average of seven level 3 qualifications for students on the academic track in a specific subject area. In contrast, there were nineteen qualifications for

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Department for Education and Department for Business, Innovation and Skills, 'Report of the Independent Panel on Technical Education'; Richard, 'Richard Review of Apprenticeships'; Wolf, 'Review of Vocational Education – The Wolf Report'.[8]

[9] Wolf, 'Review of Vocational Education – The Wolf Report'; Department for Business, Innovation and Skills, 'Post-16 Skills Plan'.

[10] Wolf, 'Review of Vocational Education – The Wolf Report'; Tomlinson, '14-19 Curriculum and Qualifications Reform: Final Report of the Working Group on 14-19 Reform'.

[11] Department for Business, Innovation and Skills, 'Post-16 Skills Plan'; Department for Education, 'A World-Class Education System - The Advanced British Standard'.

[12] Using data from the National Pupil Database (NPD) and Individualised Learner Record (ILR). Academic qualifications are defined by DfE and include A levels, the International Baccalaureate (IBO) and similar courses. The subject area was defined as the tier two sector subject area (see Qualification descriptions - GOV.UK (www.gov.uk)). We excluded Science (group 2.1) from the academic route because it is an outlier in terms of how broad of a range of academic qualifications this group covers. For vocational education, this is less of an issue because Science qualifications are more broadly defined (for example, the single T level in Science versus A levels in Biology, Physics, Chemistry, Environmental Science and so on).

vocational learners. This difference was one of the major motivations for T levels and Figure 1 illustrates that the gap has narrowed since T levels were introduced in 2020/21.

Figure 1. Average number of unique level 3 qualifications of at least one A level in size that students can choose from within a specific subject area (tier two sector subject area).

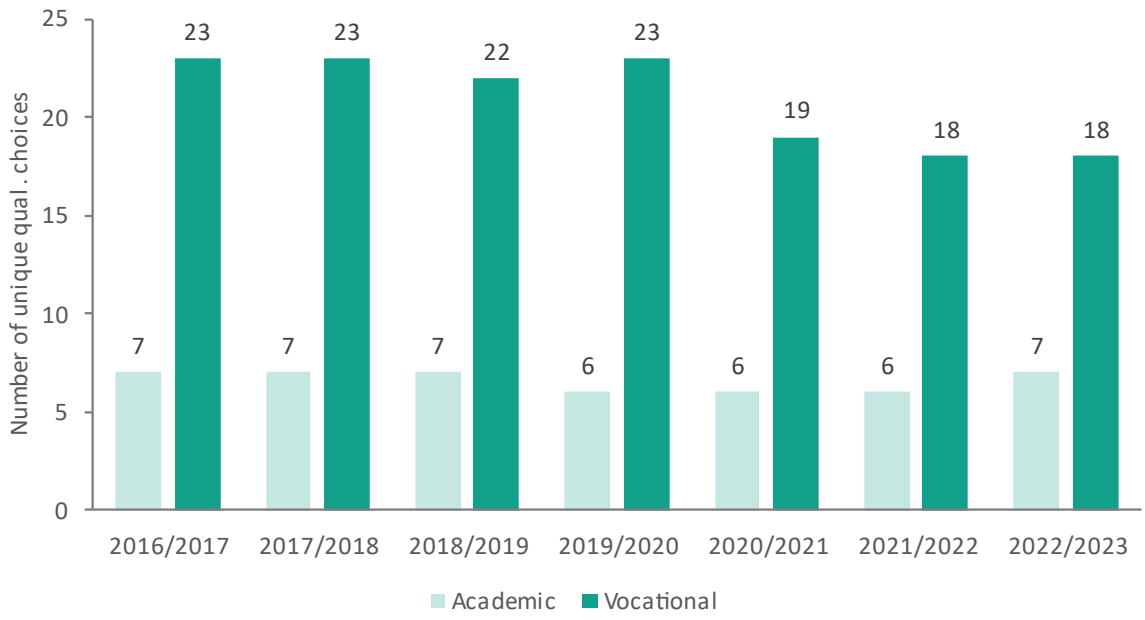


Figure 2 shows the average number of *qualification types* available to students. For academic courses, this distinguishes between A levels, extended projects, IBO diplomas, pre-university (pre-U) certificates and other certificates defined as academic for performance table purposes.[13] For vocational courses, this distinguishes between common qualification types contained within the qualification name.[14] On average, students and parents focussed on the academic route have a single option – A levels. In contrast, students and parents looking at the vocational route have six different qualification types that are all at least one A level in size. For example, they might be choosing between an extended certificate, diploma, award, certificate, extended diploma, subsidiary diploma, and more.[15]

[13] Department for Education, '16 to 18 Qualifications, Discount Codes and Point Scores'.
[14] This includes extended diplomas, subsidiary diplomas, applied diploma, diplomas, extended certificates, certificates, awards and more.
[15] This does not even account for different providers offering qualifications with similar names (diplomas, for example) that are different qualifications.

Figure 2. Average number of qualification types students can choose between in a given subject area.

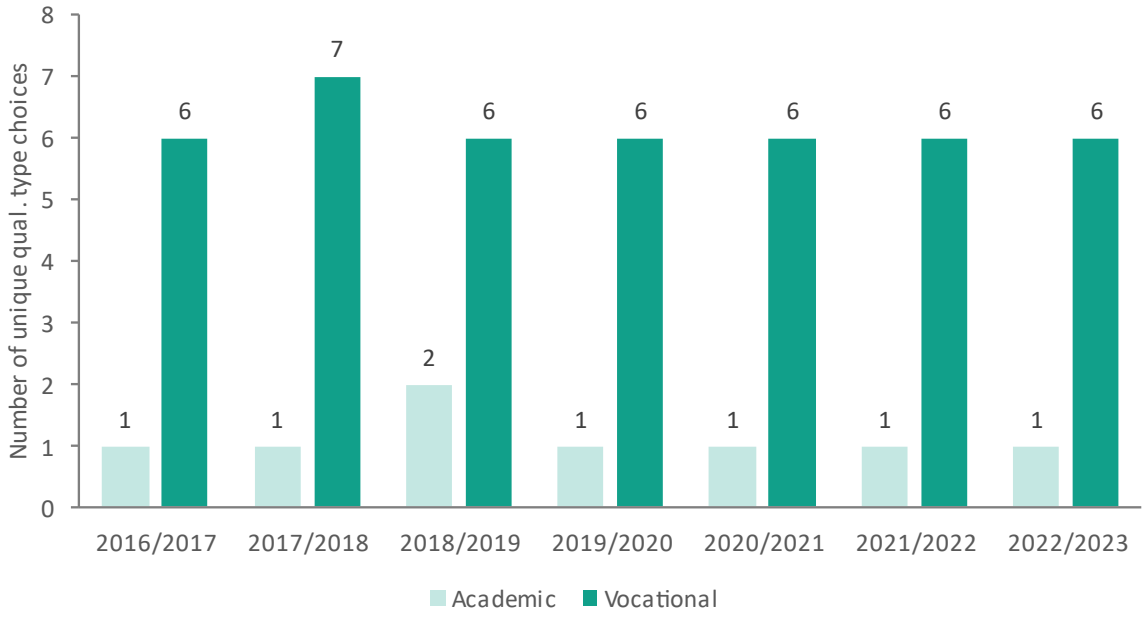
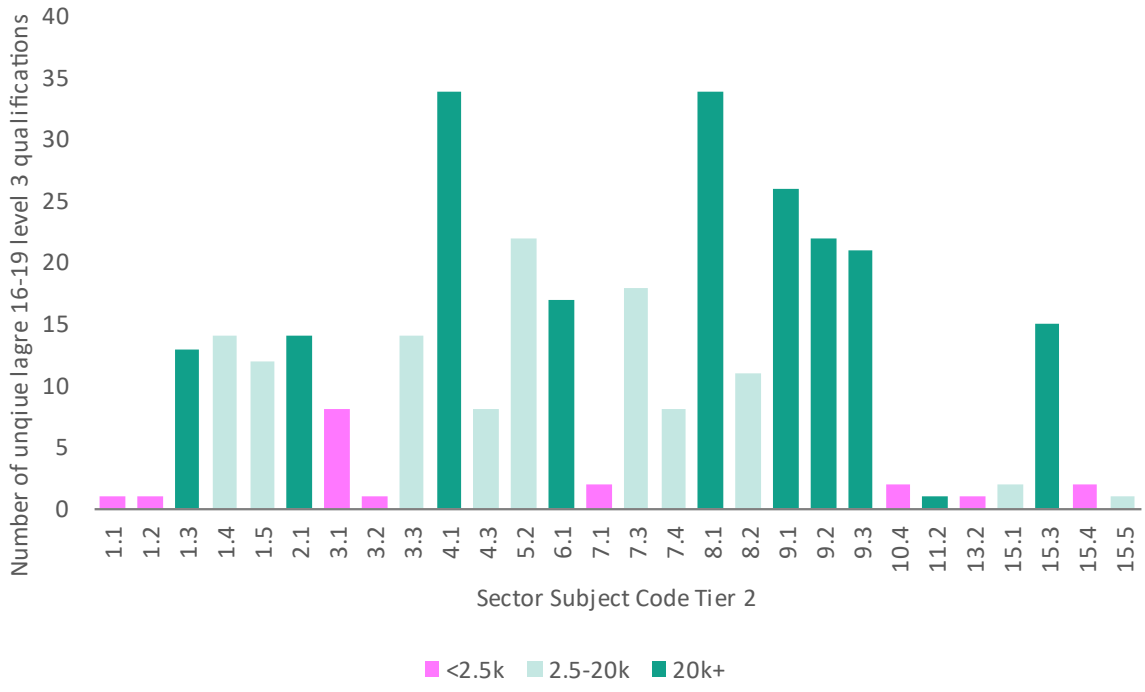


Figure 3 shows the areas with the largest number of qualifications are engineering (4.1), sport science (8.1), performing arts (9.1), crafts, creative Arts and design (9.2) and media and communications (9.3). Building and construction (5.2) also has a relatively large number options given the number of entries in this area.

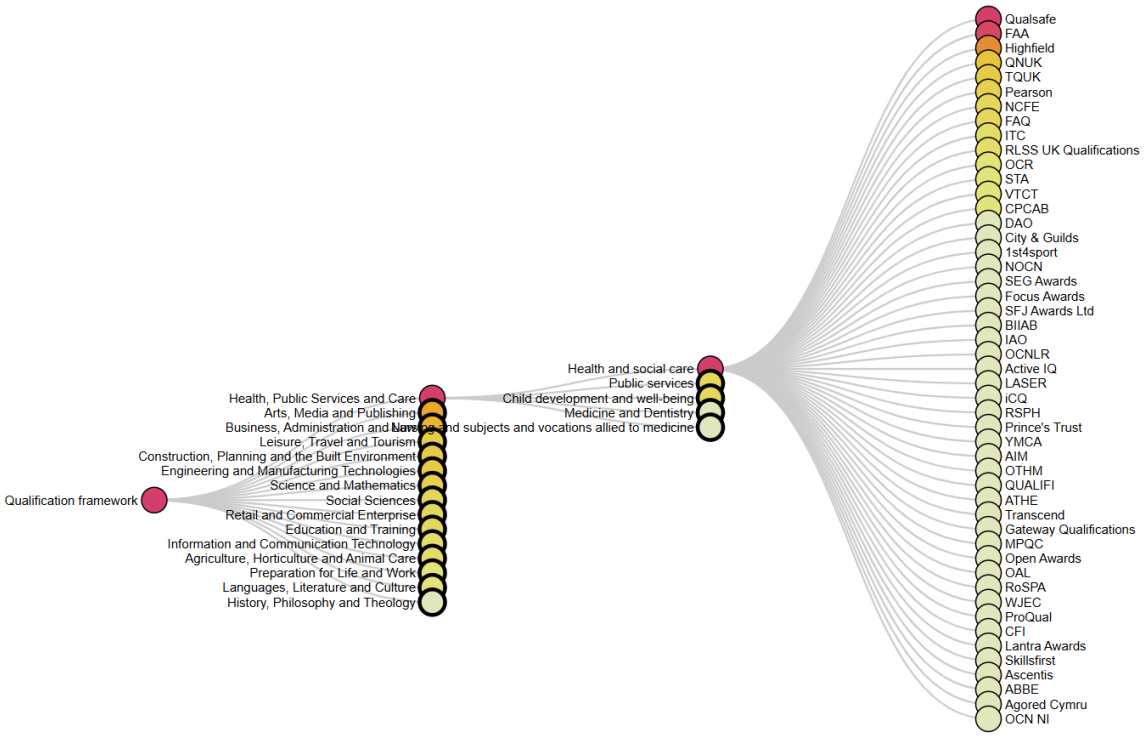
Figure 3. Total number of VET level 3 qualifications that are at least one A level in size available to learners in different tier two sector subject areas that are publicly funded for 16-19 year olds.



The range of choices students and parents face can also be visualised using Ofqual's new VET landscape tool and is shown in Figure 4. Figure 4 includes all level 3 qualifications (regardless of size

and whether they are taken by post-16 students) and demonstrates the sheer level of complexity that parents, teachers and students have to navigate. Furthermore, the large number of different qualifications make it difficult for employers to understand the level of skills and education students have developed through their educations.[16] Reducing this complexity has been a driving force behind the T level rollout.

Figure 4. Extract from Ofqual's VET landscape tool. [17, 18] Graph shows the number of different providers offering regulated level 3 qualifications in health and social care in England.



T levels – an overview

Responding to the recommendations in the Sainsbury Review, the previous government outlined plans for a set of two-year post-16 technical qualifications that would address many of the challenges facing the industry.[19] These qualifications would become known as T levels. The goal was that T levels would form half of the level 3 technical education post-16 offering, alongside apprenticeships as the other half. T levels are technical courses which are broadly equivalent to 3 A levels but offer a mixture of classroom learning and 'on-the-job' experience. Their aim is to improve the quality of technical education available to young people to meet labour market needs and provide the skills and knowledge to improve young people's productivity, later wages and, hence, life chances. Each T level consists of three main components – the core component, occupational specialism and industry placement (see Table 1).

Students must complete all three components to be awarded a T level and their overall T level grade is determined by their grades in the core component and the occupational specialism.[20] Within each

[16] Wolf, 'Review of Vocational Education – The Wolf Report'.
[17] Ofqual, 'Vocational and Technical Qualifications Landscape'.
[18] See https://analytics.ofqual.gov.uk/apps/VTQ/VTQLandscape/
[19] Department for Business, Innovation and Skills, 'Post-16 Skills Plan'.
[20] Pearson, 'T Levels: Provider FAQs'.

T level qualification, several occupational specialisms may exist. For example, in the education and early years route, one can specialise in early years education or teaching assistance. In the onsite construction route, one could currently specialise in bricklaying, carpentry and joinery, painting and decorating, or in plastering. The content and structure for each T level and their occupational specialisms were co-designed with panels of relevant employers, professional bodies and providers to ensure the T level's content is relevant, high-quality and valued by industry.[21]

Table 1. Details of the T level qualification components.

Component	Description	Assessment and grading
Core	The classroom-based learning that covers the fundamental knowledge and skills for the T level. The theoretical content is common across all occupational specialisms within a T level.	Consists of (usually two) formal exams and an employer set project. A single core grade is awarded on an A* to E grading scale. Exams are usually taken in the first year of the T level but can be taken several times.
Occupational specialism	The classroom-based learning that covers the *specific* knowledge and skills required for a specialism or career withing the broader T level pathway.	The assessment can vary by awarding organisation and T level. Generally, it is project-based and focuses on all the key competencies and performance outcomes for the occupational specialism.[22] Graded on a Distinction, Merit, Pass scale. Is taken in the second (and final) year of the T level.
Industry placement	The work experience component of the T level. Consists of a minimum 45-day (315 hour) placement with a relevant and accredited employer.	Is not formally assessed by the awarding organisation. Providers themselves determine whether a student has completed their industry placement or not (in consultation with employers). The outcome is either completed or not completed. Students must complete to be awarded a T level qualification.
Overall	The overall T level qualification, awarded if students complete all three components.	Based on the highest grades achieved in the student's core and occupational specialism components. Graded on a Distinction*, Distinction, Merit, Pass scale. The look-up table is provided by DfE.[23]

There is also a one-year preparatory course called the T level transition programme (TLTP) which is designed for level two learners. The main purpose of the TLTP is to develop the broad range of skills,

[21] Department for Education, 'T Level Action Plan 2020'.
[22] Pearson, 'T Levels: Provider FAQs'.
[23] Department for Education, 'How Grades Are Calculated'.

knowledge, experiences and behaviours students need to progress and succeed on a T level qualification.[24] Importantly, the TLTP is *not* a qualification and is therefore *not* externally assessed and administered by an awarding body. Students are likely to take smaller level two vocational qualifications during their TLTP, but there is no requirement to do any qualification and the TLTP programmes are designed by providers themselves. In fact, the TLTP could be entirely project-based and result in no qualification being awarded at all.

It is also worth noting that T levels belong to different overall pathways. The mapping of T levels to pathways for the first three cohorts are shown in Table 2. For example, there are three construction T levels (one introduced in 2020/21 and the other two in 2021/22).

Table 2. Mapping of T levels to pathways for the first three cohorts of the rollout

Pathway	T Level	Year
Construction	Design, surveying and planning for construction	2020/21
Construction	Onsite construction	2021/22
Construction	Building services engineering for construction	2021/22
Digital	Digital production, design and development	2020/21
Digital	Digital support services	2021/22
Digital	Digital business services	2021/22
Education and early years	Education and early years	2020/21
Health and science	Health	2021/22
Health and science	Healthcare science	2021/22
Health and science	Science	2021/22
Management and administration	Management and administration	2022/23
Legal, finance and accounting	Finance	2022/23
Legal, finance and accounting	Accounting	2022/23
Engineering and manufacturing	Engineering and manufacturing design and development	2022/23
Engineering and manufacturing	Maintenance, installation and repair for engineering and manufacturing	2022/23
Engineering and manufacturing	Engineering, manufacturing, processing and control	2022/23

State of the T level rollout

The T Level rollout is still ongoing, with more T level routes and specialisms added each year. In 2020, there were three T levels available in Digital production, design and development, education and early years, and construction and the built environment.[25] As of September 2023, there were 18 T level qualifications on offer and over 50 occupational specialisms.

Around 1,300 students started a T level in September 2020 and around 16,000 started a T level in September 2023. These 16,000 students were spread across over 250 T level providers distributed around the country. While this is certainly a substantial increase in enrolments over time, T levels still represent fewer than 3 per cent of enrolments for incoming 16-year-olds. Likewise, there has been substantial growth in the number of students taking the TLTP. The number of students rose

[24] Department for Education, 'T Level Transition Programme: Supporting Young People to Progress onto and Succeed on a T Level: Framework for Delivery from Academic Year 2022 to 2023'.
[25] Department for Education, 'T Level Action Plan 2022 to 2023'.

from around 800 in 2020/21 to approximately 7,000 in 2022/23, catered for by 85 TLTP providers. The TLTP providers are a subset of T level providers (they provide both T levels and the TLTP).

Emerging issues

There have been several issues raised before and during the T level rollout including low levels of awareness and understanding around T levels, high withdrawal rates and issues with T level content and structure, and low progression from the TLTP to T levels.[26] We briefly discuss a few of these issues below.

Drawing on surveys, interviews and discussion groups, Ofsted (in a 2023 thematic review of T levels) found that many students reported being misled about T level content, teachers struggled with some of the theoretical components of the courses, concerns were raised about the volume and difficulty of the content and industry placement quality varied considerably.[27] Some of the concerns about course content were noticeably stronger for the health and science T level route. Additionally, some students were surprised and disappointed to find that some universities did not accept their T level as a valid entrance qualification (despite T levels being designed to provide options to progress to higher education).

Similarly, the Education Select Committee released a report on the future of post-16 qualifications, with a particular focus on T levels.[28] Like the Ofsted (2023) review, they find that the large size and high level of academic rigour of T levels is out of touch with the previous government's aspirations for T levels to be the main level 3 technical qualification. Several submissions to the committee argued that T levels are essentially restricted to students who are more academically gifted. Indeed, Lord Baker, who has had a significant influence on technical education reforms in the UK, asserted that T levels do not suit students with less than a grade six in their GCSEs. For context, less than a quarter of all GCSEs are graded above a six.[29] Moreover, over 95 per cent of T level entrants had a good pass in English and maths at GCSE, demonstrating that T levels may not be accessible for students without those subjects.[30]

Both the Education Committee and Ofsted were highly critical of the T level transition programme (TLTP).[31] Specifically, there was wide variability in the quality of content and delivery across providers and an extremely low progression rate into T levels. Moreover, the Tech Ed learner survey showed that only 58 per cent of students reported studying towards a vocational qualification in their chosen area and just over half reported doing any work experience.[32] By far the most concerning to policymakers and industry was the low rate of progression from the TLTP to T levels. In the first cohort, only 15 per cent of TLTP students progressed onto a T level. This fell to 8 per cent for the second cohort, meaning less than one in ten TLTP students progressed onto a T level.[33] Given the TLTP's strong focus on progression to T levels, this is very stark. As the Education Committee (2023) put it, "this is an entirely inadequate rate for a programme whose purpose is to provide a high-quality preparatory route into T Levels".

[26] Ofsted, 'T-Level Thematic Review'.
[27] Ofsted. As above.
[28] Education Committee, 'The Future of Post-16 Qualifications'.
[29] FFT Education Datalab, 'GCSE Results 2023'.
[30] Department for Education, 'T Level Action Plan: Analytical Annex'.
[31] The TLTP programme is being renamed to the T level foundation year from 2024/25 and beyond.
[32] NatCen Social Research and NFER, 'Technical Education Learner Survey 2022: Research Report'.
[33] Department for Education, 'T Level Action Plan 2023 to 2024'.

Nonetheless, the Ofsted (2023) and Education Committee (2023) reviews and more recent research suggests that many of the students who were retained on a T level had a positive experience. For example, Ofsted found that around two thirds of retained students in 2022 felt well prepared for their next steps.[34] Moreover, the Education Committee report received numerous submissions from individual colleges and stakeholders praising T levels and asserting that they were an improvement on existing qualifications.[35] A recent survey of the 2020/21 cohort of T level learners found that most students (retained on a T level) reported being very or quite fulfilled with their T level, many students would recommend a T level to others and four fifths of completers stated their T level prepared them well for their future endeavours.[36] However, part of these positive sentiments arise because these are the students that selected to stay on their T level for the entire two years. In contrast, for the second cohort of learners (2021/22 starters), satisfaction after the first year was relatively low.[37] Only around half of T level learners reported being satisfied after their first year and satisfaction was notably low for health and science students (only 41 per cent of students were satisfied).

These low levels of satisfaction and the range of issues discussed above are reflected in the fact that one-third of 2021/22 starters withdrew from their T level.[38] This concerningly large withdrawal rate has prompted an urgent review into the content of all T level programmes, taking heed of the critiques in both the Ofsted and Education Committee findings.[39]

Awareness of T levels

One of the key challenges of the T level rollout has been raising awareness of T levels amongst students, parents, teachers and employers. In 2019, the year preceding the T level rollout, research showed that more than four in ten classroom teachers had never heard of T levels.[40] There was greater awareness for teachers living within five miles of a T level provider, but awareness was still low. Moreover, of those who had heard of T levels, the vast majority (83 per cent) felt poorly informed or not informed at all.[41] This fits an overall pattern of low awareness and understanding of technical and vocational education in the UK. In a large 2016 European opinion survey, the UK was the worst for awareness of vocational education and training.[42]

More recently, in the Tech Ed learner survey, students *not* undertaking T levels were asked about their awareness of T levels. These are students who chose to take either A levels or other level 3 vocational courses. Of these students, less than 30 per cent were aware that T levels existed [43]. Of the unaware students, 21 per cent of A level students and 28 per cent of other level 3 vocational learners were likely or very likely to have considered T levels over their current course of study. Moreover, most T level learners learnt about T levels through the college or provider themselves,

[34] Ofsted, 'T-Level Thematic Review'.
[35] Education Committee, 'The Future of Post-16 Qualifications'.
[36] NatCen Social Research and NFER, 'Technical Education Learner Survey 2023: Progression of the First T Level Cohort'.
[37] NatCen Social Research and NFER, 'Technical Education Learner Survey 2022: Research Report'.
[38] Chowen, 'T Level Results 2023'; Stein, 'How to Buck the Low T Level Retention Trend'.
[39] Borrett and Foster, 'Low T-Levels Uptake in England Prompts Calls for Urgent Reform of Qualification'; Chowen, 'T-Level Content Review Launched amid "Worrying" Drop-out Rate'.
[40] Straw, 'How Aware Are Schools of T Levels - A Survey of Senior Leaders and Classroom Teachers'.
[41] Straw.
[42] Cedefop, 'Opinion Survey on VET'.
[43] NatCen Social Research and NFER, 'Technical Education Learner Survey 2022: Research Report'.

rather than careers advisors and teachers within their secondary school.[44] In addition, only half of T level students' employers or institutions post T level were very or quite aware of T levels.[45] Given these institutions and employers hired T level students, this is likely to be an overestimate of the general awareness of T levels with employers and higher education institutions.

Raising awareness for new programmes and qualifications is always a challenge and this is likely exacerbated by the fact that T levels are being rolled out into a very complex and crowded technical education landscape.[46] Sector leaders reportedly believe that the previous government significantly underestimated the difficulty of launching an entirely new set of technical and vocational qualifications.[47] Despite a relatively large advertising and marketing spend before and during the early stages of the rollout (£7 million between 2018 and 2021), initial take up of T levels was well below 1 per cent of 16-year-olds.[48] The marketing campaigns are ongoing and have been expanding over time, with other campaigns and organisations (like the Gatsby Foundation) contributing to the growing effort (Patel, 2023). Moreover, the previous government recently established a T Level Celebration Week (held in December) to promote and raise awareness of T levels.[49]

Defunding of overlapping qualifications

One of the more controversial aspects of the T level rollout itself was the previous government's plan to defund all overlapping level 3 qualifications. The idea was to radically simplify the technical and vocational education landscape in the UK by defunding thousands of "lower quality" qualifications that were crowding the sector.[50] Defunding was planned in stages. First, in 2022, funding was withdrawn for qualifications with very low or no sustained enrolments. In phase two, qualifications that overlap with T levels would be defunded in two waves across 2024 and 2025, depending on which T level they overlapped with.[51] Finally, in 2023, awarding organisations could develop and submit new technical qualifications (which do not overlap with T levels) for approval based on standards from the Institute for Apprenticeships and Technical Education.

Initial estimates were that 89,600 students were on qualifications that would be defunded because they overlapped with T levels in waves one to four.[52] These students were disproportionately from disadvantaged backgrounds, have SEND and have an Education, Health and Care Plan (EHCP). The major concern around this defunding was that these "overlapping" qualifications actually were not overlapping at all. While they may be at the same level (level 3) and have a similar title, the qualifications to be defunded cater for a different group of students and have considerably different content and structure.[53] As we mentioned earlier, T levels are very large and challenging qualifications that are currently geared towards more academically inclined students. Many of the students on these overlapping qualifications would not be well-suited to switch to a T level instead.[54]

[44] NatCen Social Research and NFER.
[45] NatCen Social Research and NFER, 'Technical Education Learner Survey 2023: Progression of the First T Level Cohort'.
[46] Department for Education and Department for Business, Innovation and Skills, 'Report of the Independent Panel on Technical Education'; Patel, 'DfE's Spending on T Level Public Awareness Efforts Revealed'.
[47] Patel, 'DfE's Spending on T Level Public Awareness Efforts Revealed'.
[48] Patel.
[49] Department for Education, 'T Level Action Plan 2023 to 2024'.
[50] Department for Business, Innovation and Skills, 'Post-16 Skills Plan'.
[51] Department for Education, 'Wave 3 T Levels'.
[52] Department for Education; Department for Education, 'Qualifications That Overlap with T Levels'; Department for Education, 'Wave 4 T Levels'.
[53] Education Committee, 'The Future of Post-16 Qualifications'.
[54] Robinson, 'T Levels', 11 July 2022.

This would leave a large group of learners (that tend to be lower attaining and disadvantaged) with no or limited level 3 study options.

Notably, the submissions to the Education Select Committee were unanimous in their support to pause the defunding of overlapping qualifications, particularly overlapping Applied General Qualifications (AGQs).[55] AGQs are level 3 qualifications that combine practical skills with academic learning in a vocational subject area. The most popular of these are BTECs, which have been an important lever for upward mobility in the UK.[56] Of White working-class students that enter university, 44 per cent studied at least one BTEC qualification.[57] Moreover, 37 per cent of Black students entering university do so with *only* BTEC qualifications. Research has also shown that BTECs deliver some of the best employment, progression and wage outcomes out of the vocational qualifications in the UK.[58]

The previous government announced a list of 74 qualifications that would be "saved" from defunding and would become alternative academic qualifications (AAQ).[59] However, these are smaller vocational courses (including smaller BTECs) that are designed to be taken alongside A levels. The new government announced a temporary pause and review of the defunding of overlapping qualifications. A decision on the defunding of overlapping qualifications is expected towards the end of 2024.[60]

[55] Education Committee, 'The Future of Post-16 Qualifications'.
[56] Education Committee.
[57] Gicheva and Petrie, 'Vocation, Vocation, Vocation'.
[58] Conlon and Patrignani, 'Returns to BTEC Vocational Qualifications: Final Report for Pearson'; McIntosh and Morris, 'Labour Market Returns to Vocational Qualifications in the Labour Force Survey'.
[59] Chowen, 'Revealed'.
[60] Doherty, 'The Post-16 Pause and Review Puts Schools in a Tough Spot'.

2 - Who is studying T levels and the TLTP?

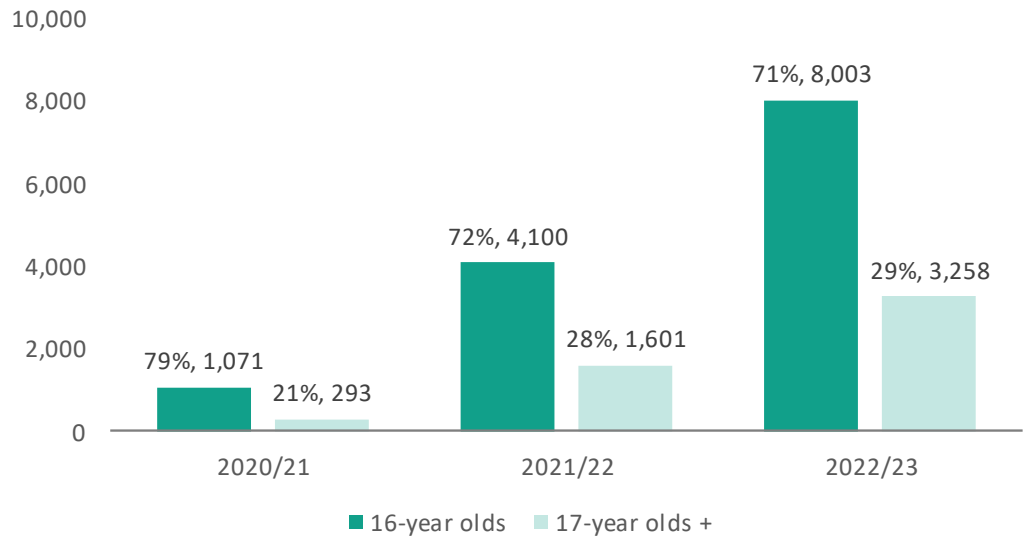
T levels

This section focuses specifically on T levels and examines students who enrolled in the first three cohorts of T levels (starting in 2020/21, 2021/22 and 2022/23). The data for these results comes from three sources: the Individual Learner Record (ILR), the Post-16 Learning Aims (PLAMS), and the National Pupil Database (NPD). The ILR and PLAMS contain records of the students who enrolled in T levels through colleges (sixth form and FE) and school sixth forms respectively, while the NPD provides the demographic and attainment backgrounds of those students.

We do not include comparisons to other post-16 learners directly in our figures, but we do make comparisons in the text and our causal impact analysis later in the report looks at T level students relative to a representative control group (rather than simply all other learners).

Figure 5 shows how many students were enrolled in each pathway across the three cohorts. As expected, T level enrolments have been growing over time as more institutions become registered providers and more T levels are offered. In 2020/21, around 1,300 students enrolled on a T level. The number of students enrolled then grew by approximately 5,000 students each year to a total of 16,000 in 2023/24.[61] This still represents a very small proportion of the post-16 student population (1 per cent of all 16 to 18 learners in education or training).[62] Interestingly, Figure 5 shows that a notable number of T level enrolments are from students partway through their post-16 education (those aged 17-years or older). In the first cohort, these students accounted for 21 per cent of enrolments and this rose to 29 per cent in 2022/23.

Figure 5. T levels participation by year and age at the start of the academic year[63]



[61] Department for Education, 'T Level Action Plan 2023 to 2024'.
[62] Department for Education, 'Participation in Education, Training and Employment Age 16 to 18, Calendar Year 2022'.
[63] These are unique enrolments – a student is not recorded multiple times. Where a student has switched pathways, we take the pathway that students switch into.

Figure 6 shows the enrolments in different T level pathways over all three cohorts. The number in brackets shows the year when this pathway was launched. Overall, the construction, digital, education and early years and health and science pathways account for 83 per cent of enrolments. The newer T levels (introduced in 2022/23) account for the remaining 17 per cent of enrolments. The legal, finance and accounting route got off to a slow start with only 156 enrolments in 2022/23.

Figure 6. Number of enrolments in T level pathways overall

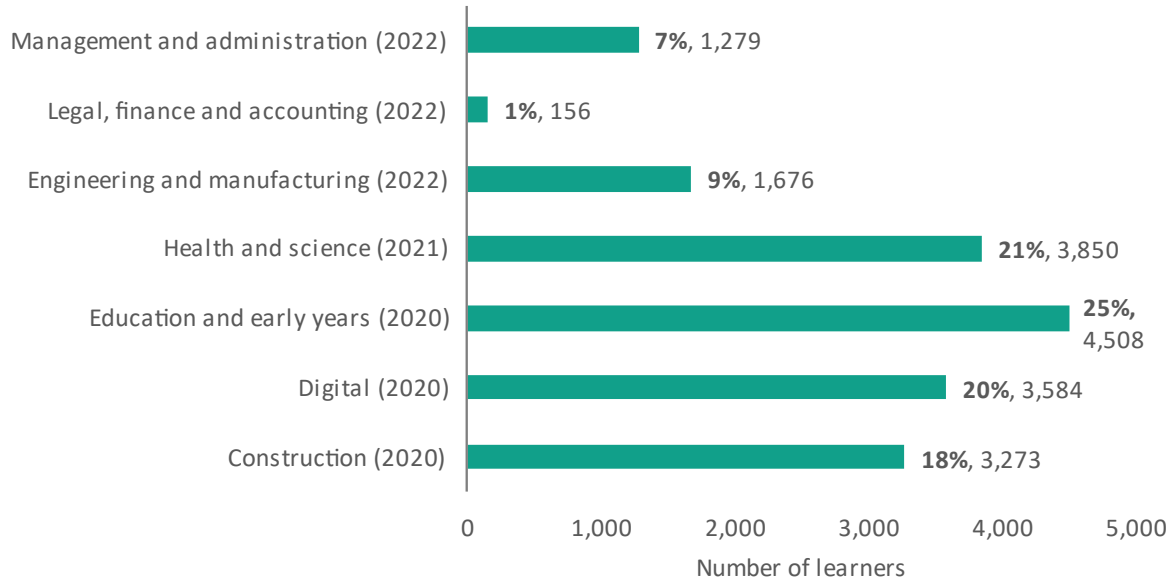


Figure 7 shows the expansion of the T level pathways and the number of students enrolled in each pathway by academic year. There were three pathways offered in first year: construction, digital and education and early years. Of these pathways, education and early years was the most popular pathway with half of all students in 2020/21 enrolling in that pathway. The provision of T levels pathways was then expanded in 2021/22 to include more T level qualifications in the existing pathways and a new health and science pathway (see Table 2. Mapping of T levels to pathways for the first three cohorts of the rollout 2). This pathway was the most popular in 2021/22 despite this being its first year of implementation. In 2022/23, the distribution of enrolments was spread relatively evenly across the pathways (except for legal, finance and accounting – one of the new pathways in 2022/23).

Figure 7. Proportion of enrolments in T level pathways over time

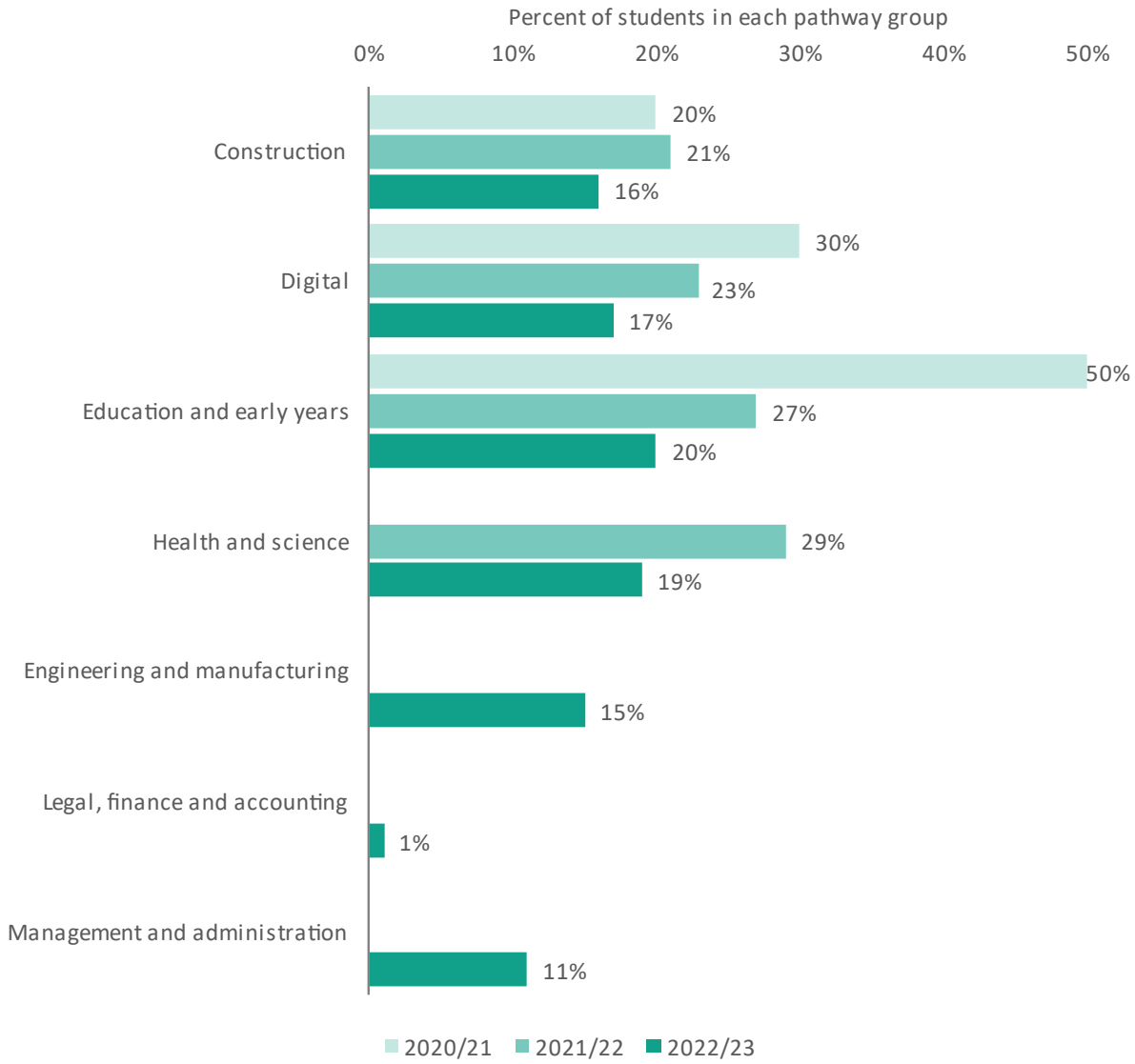


Figure 8 illustrates the demographic and attainment profile of T level students over time.[64] Overall, enrolments in T levels are relatively balanced on gender. In 2020/21 and 2021/22, female students were slightly overrepresented in T levels compared to the overall cohort of 16- and 17-year-olds. In 2022/23, female students were under-represented due to the introduction of the male-dominated engineering and manufacturing pathway. The proportion of students who are disadvantaged is broadly consistent over time and broadly mirrors the overall cohort (25 per cent disadvantaged[65]), while students with SEND were underrepresented in T levels (approximately 15 per cent in wider

[64] All categories in the figure are coded dichotomously. For example, if female students comprise x per cent of all students, it can be inferred that the proportion of male students is 1 - x. We code gender dichotomously as the data available in the NPD restricts the definitions of gender to "female" and "male." The calculated percentages are valid percentages, meaning that the proportion of each category is out of the total non-missing cases.

[65] Eligible for free school meals at any point in the previous six years, recorded at the age of 16.

cohort and 10 per cent in T levels).[66] Students who enrolled in T levels were significantly more likely to have achieved a 4 or above in both GCSE maths and English. Around 85 per cent of T level students had a grade 4+ in both subjects compared to 60-65 per cent of the total cohort.[67] However, this finding is unsurprising since the majority of T level providers indicated that they require students to have earned a grade 4 or above in both to be accepted onto the programme.[68]

Figure 8. Characteristics of T level students over time

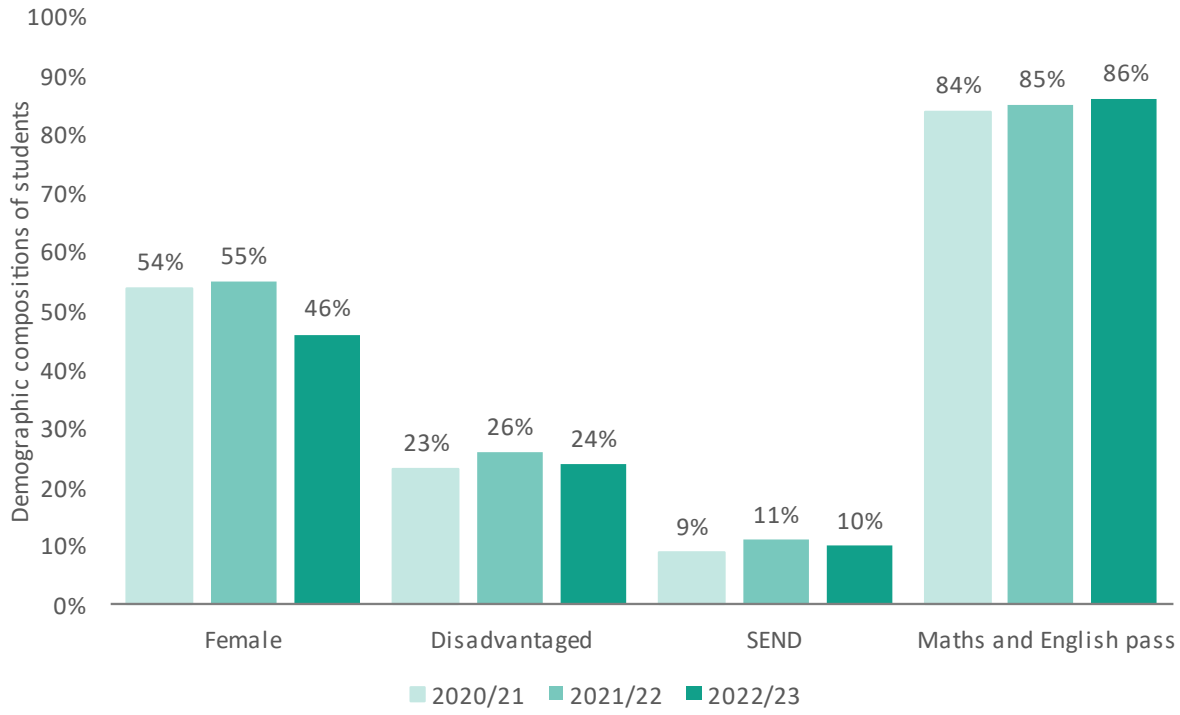
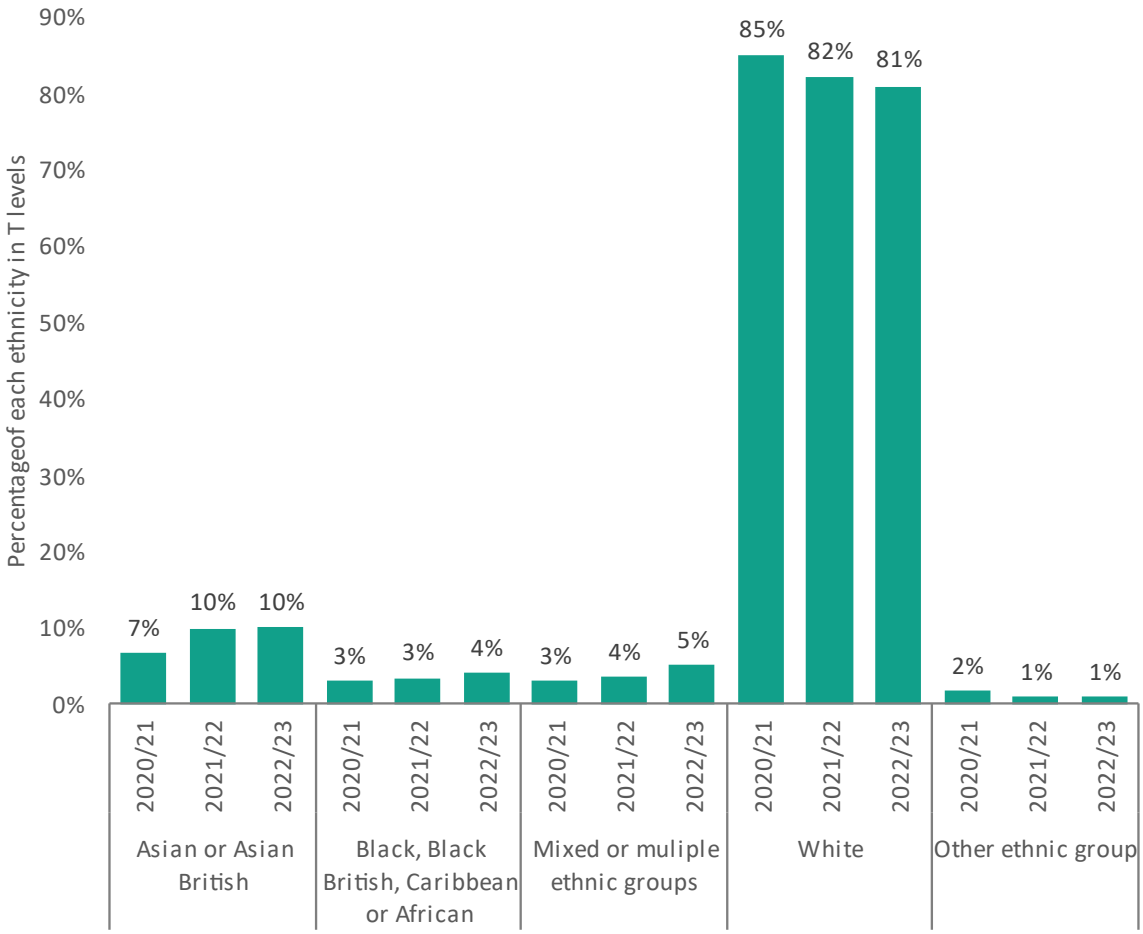


Figure 9 shows the ethnicity profile of T level students over time. The ethnicity categories are constructed using data from the NPD and then organised into groups present in the UK census.[69] White students were most likely to participate in T levels, with the proportion equalling 85 per cent in 2020/21, 82 per cent in 2021/22 and 81 per cent in 2022/23. While this shows T levels have become more diverse over time, White students are still slightly overrepresented in T levels compared to the overall cohort of 16- and 17-year-olds. Asian and Asian British students were the second largest group at 10 per cent in 2021/22 and 2022/23, while all other groups of students made up 5 per cent or less of T level students in each year.

[66] These cohort averages are simple means across all 16 to 17 year olds (at the start of the academic year) in post-16 study recorded in PLAMS and the ILR.
[67] Other sources show that the proportion of T level entrants with level 2 English and maths is over 90 per cent (see DfE's T Level Action Plans). Our figure is lower because we are looking at GCSE results at the age of 16 only.
[68] Parker, 'What Grades Will Be Required to Study the New T Levels?'
[69] Office for National Statistics, 'Ethnic Group, England and Wales - Office for National Statistics'.

Figure 9. Ethnicity profile of T level students over time



In Figure 10 we explore the demographic profiles of T level learners by pathway. The most obvious imbalance is in the gender split between male and female students. Male students are the majority in engineering and manufacturing (92 per cent), construction (90 per cent) and digital (90 per cent). Female students are the majority in education and early years (95 per cent) and health and science (85 per cent). Male students are the majority in the legal, finance and accounting (70 per cent) and management and administration (57 per cent) pathways, but these pathways are relatively more balanced. These gender imbalances mirror those in employed occupations and sectors.[70]

There are relatively smaller differences across pathways in enrolments by disadvantaged and SEND students, though disadvantaged students are slightly less likely to enrol in construction and engineering and manufacturing while SEND students are more likely to enrol in the digital pathway. There are relatively smaller differences across pathways, though disadvantaged students are slightly less likely to enrol in construction and engineering and manufacturing while SEND students are more likely to enrol in the digital pathway than other pathways. In terms of ethnicity, the digital and management and administration pathways more closely mirror the wider population of post-16 students in terms of the proportion of White students. Education and early years, construction and legal, finance and accounting are the least diverse pathways with 85 to 87 per cent of students being White.

[70] Limani and Sodergren, 'Where Women Work'.

Figure 10. Proportion of T level students by characteristics in select T level pathways

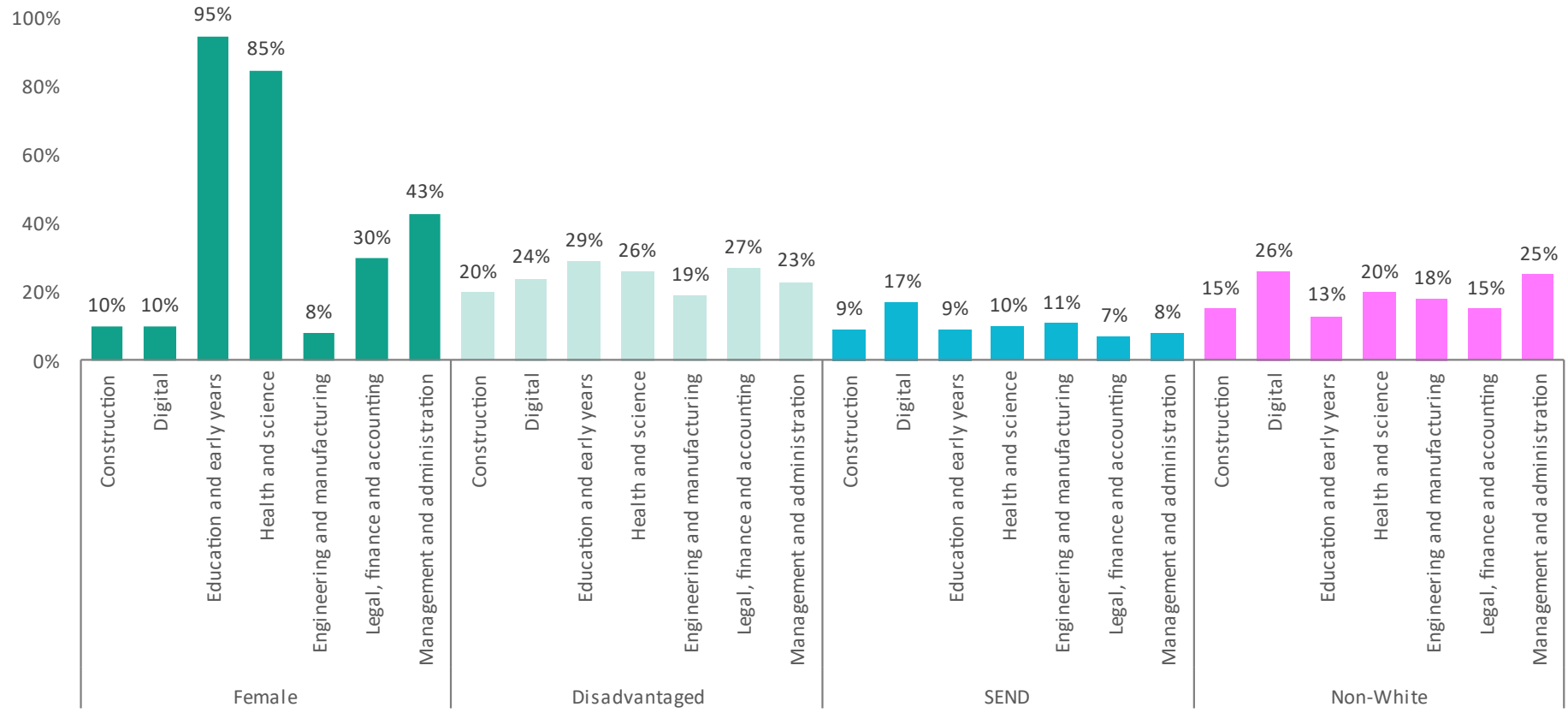
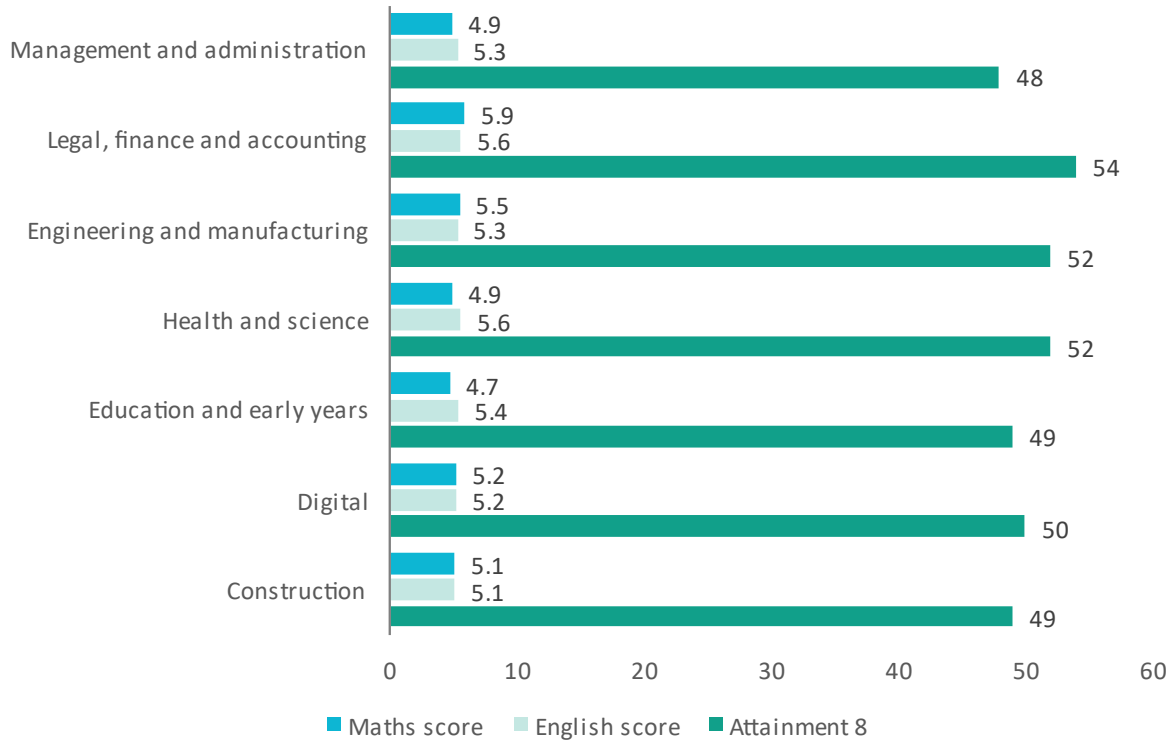


Figure 11 shows the prior attainment (English, maths and Attainment 8 scores) of T level students by pathway. Students in the relatively unpopular legal, finance and accounting route have the highest Attainment 8, English and maths scores. A one unit increase in Attainment 8 is equivalent to around a one-point increase in a single GCSE (i.e. moving from a 4 to a 5 on GCSE maths). Students in the health and science and engineering and manufacturing pathways also have higher Attainment 8 scores on average. Attainment 8 scores are broadly similar to the wider cohort of 16-year-olds (the average over the study period was between 49 and 50).[71] Students in the engineering and manufacturing and legal, finance and accounting pathways have the highest maths attainment (5.5 and 5.9 points respectively, compared to 5.0 overall). The health and science pathway has particularly strong attainment in English, along with the legal, finance and accounting pathway. Any changes in prior attainment over time within a pathway are negligible.

Figure 11. Prior attainment across the pathways



T levels Transition Programme

This section focuses specifically on the students who enrolled in the T Level Transition Programme (TLTP) and describes their demographics, prior attainment and their progression to T levels. We also investigate the study programmes of TLTP students. As discussed previously, the TLTP is a flexible programme designed to prepare students for progression to a T level. There is no prescribed qualification or mandated training – instead, providers can design the programmes themselves in line with the government's guidelines.[72] Therefore, it is important to investigate exactly what students are doing during this year to ensure providers are kept accountable for providing high

[71] Department for Education, 'Key Stage 4 Performance, Academic Year 2022/23'.
[72] Department for Education, 'T Level Foundation Year'.

quality education programmes for all students. So far, there has been limited coverage of what TLTP students do during their transition year despite the concerningly low conversion rate to T levels.

Figure 12. Number of students enrolled on the TLTP over time

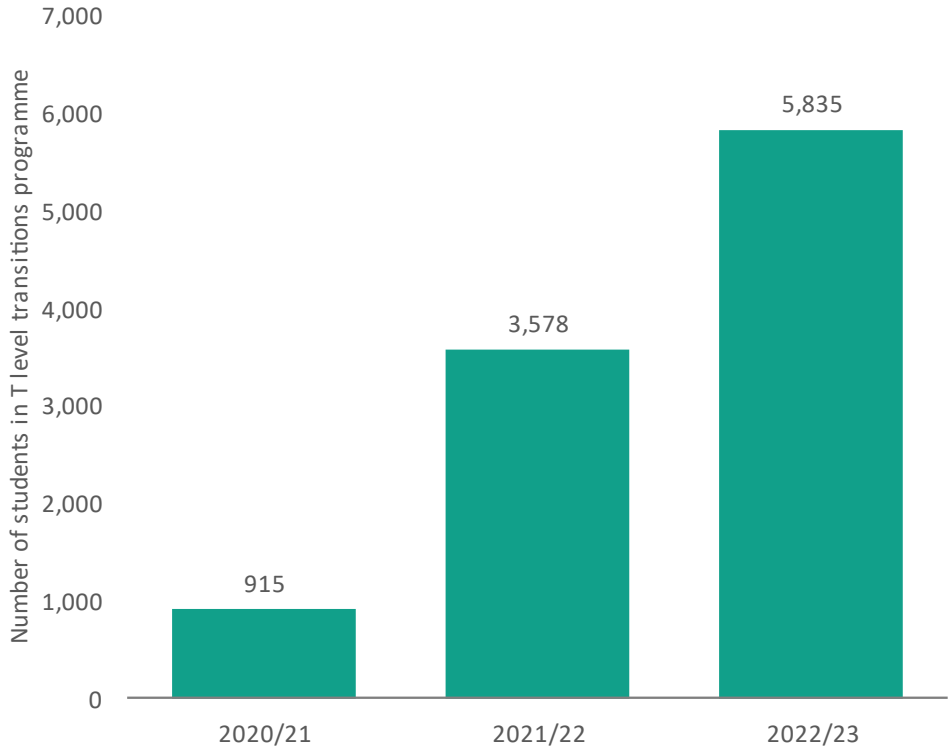


Figure 12 shows the number of students who enrolled in the TLTP over time. Like T levels, enrolments in the TLTP increased significantly between cohort one and two (a more than tripling of enrolments) and increased steadily between cohort two and three. Figure 13 shows that some demographics of TLTP students remained fairly consistent over time. On average, 48 per cent of TLTP students were female and 37 per cent disadvantaged. This gender split is similar to T levels in 2022/23 but disadvantaged students are significantly over-represented in the TLTP (37 per cent for the TLTP compared to 25 per cent for T levels). Students with SEND are also over-represented in the TLTP but the average proportion of students with SEND in the TLTP has been falling over time (from 31 per cent in 2020/21 to 25 per cent in 2022/23). Like T levels, the TLTP has become more diverse over time with the percentage of White students falling from 81 per cent in 2020/21 to 74 per cent in 2022/23.

Figure 13. Characteristics of TLTP students over time

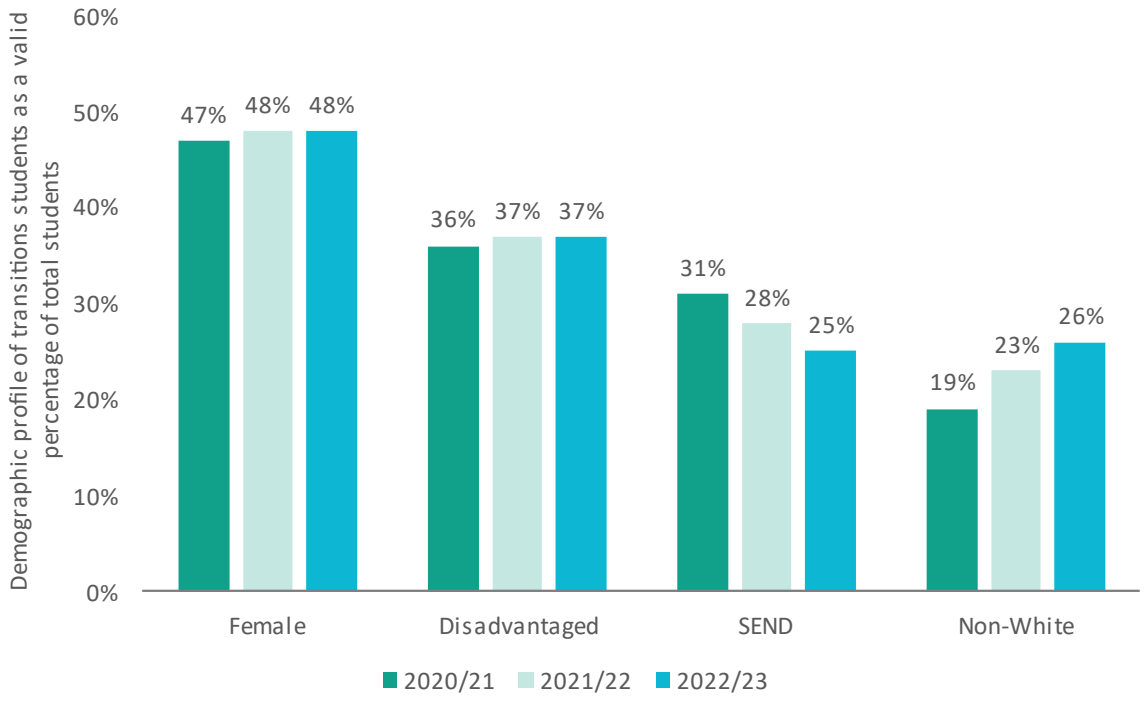


Figure 14 shows the prior attainment of TLTP students over time. The proportion of students starting the TLTP with at least a full standard pass in GCSE English and maths has increased from 10 per cent to 17 per cent (but is still lower than the average attainment in GCSEs). Attainment 8 scores, on the other hand, have remained unchanged suggesting increases in English and maths scores were balanced by decreases in scores in other subjects.

Figure 14. Prior attainment of TLTP students over time

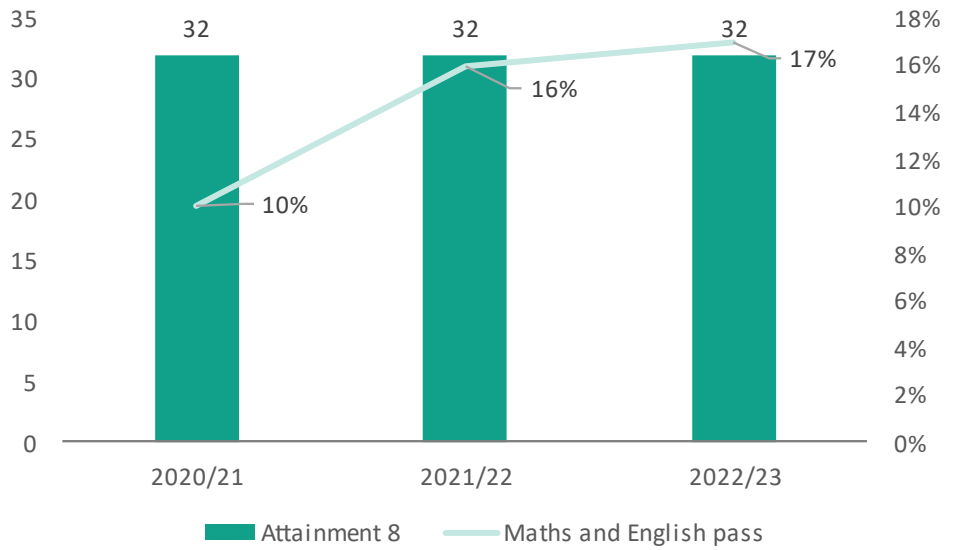
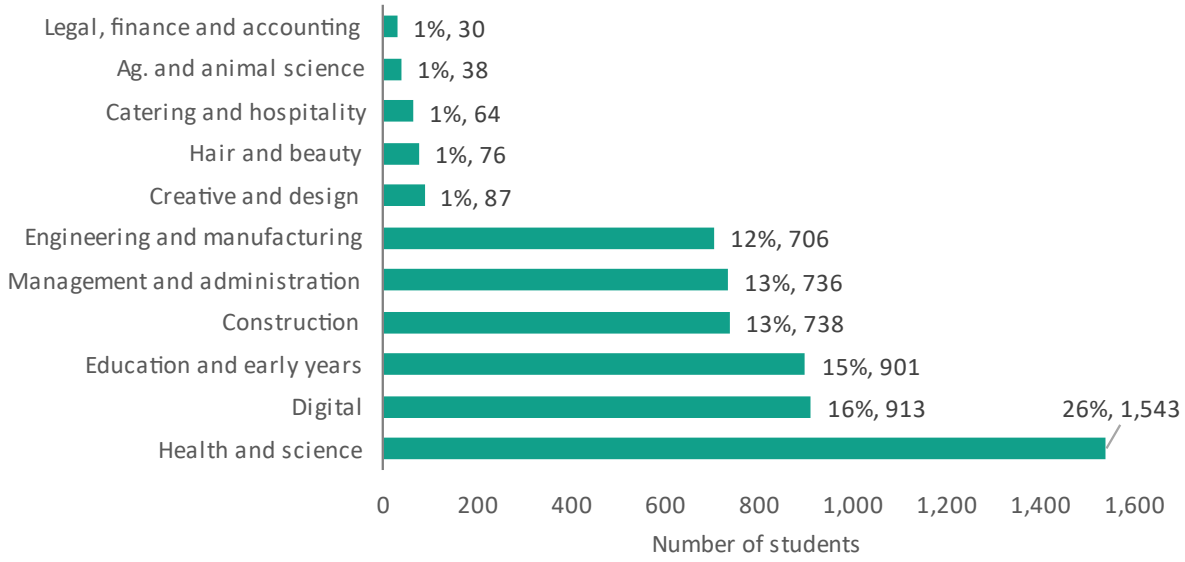


Figure 15 shows the distribution of enrolments across T level pathways (the TLTP programmes are designed for progression onto a specific T level pathway). There are more TLTP routes reported than there are T levels. This is likely due to some providers offering the TLTP in pathways that will be introduced in the following year (so students who do the TLTP will still have a T level to progress on

to in principle). Over the three years of the TLTP, a quarter of enrolments were in health and science and 12 to 16 per cent across the remaining active T level pathways (excluding legal, finance and accounting). The remaining enrolments were spread across some of the newer T level pathways. This is a disproportionately large number of students on the health and science track relative to the number of T level enrolments.

Figure 15. Enrolments in TLTP by pathway



3 – TLTP course content and progression

TLTP Course content

In this section, we describe the specific enrolments of TLTP students. We identify whether students are doing resits and work experience, given these are core components of the TLTP according to the Framework for Delivery. We also investigate whether students are enrolled in any non-regulated provision (which is learning that is not Ofqual regulated) and the highest level of learning students are engaged in. We do this by identifying students in the ILR and PLAMs that are undertaking the TLTP and examining their qualification aims.

Figure 16. Type of study included in TLTP programme by year

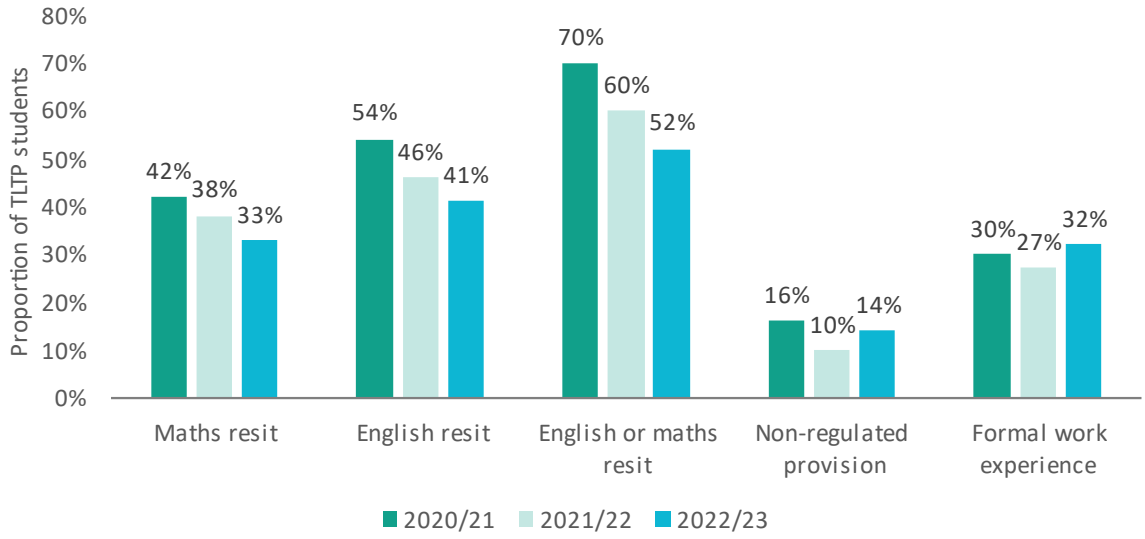


Figure 16 shows that the majority of TLTP students are taking some form of English or maths resit (any qualification on the list of approved qualifications for the condition of funding requirement). However, the proportion of TLTP students taking resits has fallen considerably over time. In 2020/21, 70 per cent of students were taking at least one resit. In 2021/22, 52 per cent of students were taking at least one resit. This is an interesting pattern given that our demographic statistics reveal 90, 84 and 83 per cent of TLTP students in 2020/21, 2021/22 and 2022/23 respectively had not passed level 2 English and maths. This shows that a large proportion (20 to 30 per cent) of TLTP students are not resitting English and maths despite being below the level 2 threshold. This could be because these students are exempt from the condition of funding due to having an EHC plan or because the provider allows them to be non-compliant as part of their 5 per cent allowance.[73] In both cases, this may be cause for concern given students are specifically enrolled on the TLTP with the intention of progressing onto a T level and T levels tend to require a pass in both English and maths.

Another concerning finding is the lack of formal work experience in the TLTP over time. On average, just three in ten TLTP students have some formal work experience or placement. This is despite work experience being an integral component of the TLTP. According to the TLTP Framework: "[Work experience] … is an important component of the T Level foundation year to prepare students for a T Level industry placement. We expect **all** students to undertake appropriate work experience

[73] Education and Skills Funding Agency, '16 to 19 Funding'.

activities and workplace preparation tailored to what each student needs, informed by an assessment of their work readiness."

Part of this lack of formal work placements is likely due to the wider difficulties with finding placements for T level students.[74] There is a non-negligible group of TLTP students that are taking non-regulated provision (14 per cent in 2022/23). This is more common in the construction pathway.

Figure 17 shows that almost all (95 per cent) of TLTP students are studying at level 2, which is expected given the TLTP is designed for level 2 learners who are aiming to progress to the level 3 T level qualifications in the following year. The level 1/level 2 qualifications mainly correspond to GCSEs and the level 2 qualifications correspond to smaller level 2 vocational qualifications that students are enrolled in.

Figure 17. Highest level of study for TLTP students

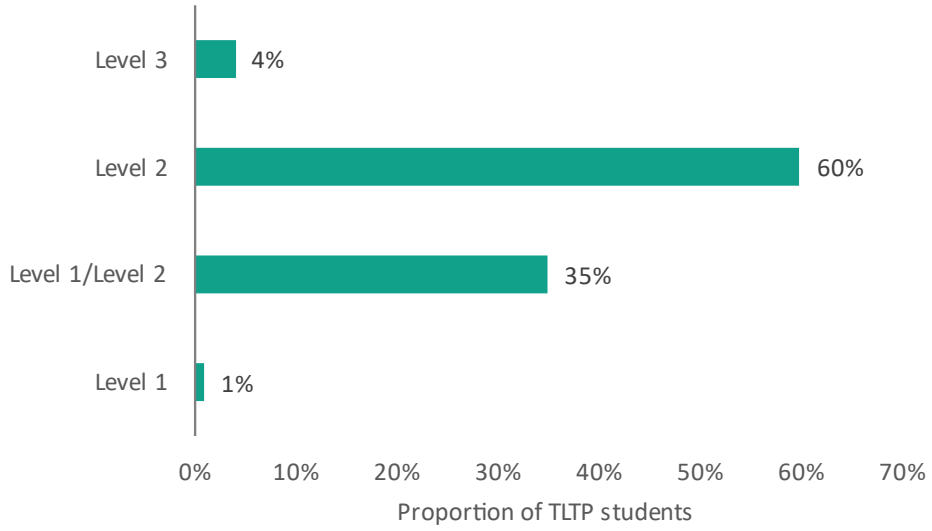


Figure 18 shows that proportion of students taking a resit varies considerably by pathway. The small agriculture and animal science pathway has almost 90 per cent of students taking a resit while catering and hospitality has 20 per cent. However, these differences need to be contextualised in the average prior attainment of the different pathways. In Figure 19, we show the proportion of students without a grade 4 in both English and maths who *do not* take a resit. Essentially, this is the proportion of students who are allowed to be non-compliant or are exempt from the resit requirement. We find that students on the catering and hospitality, creative and design, education and early years and construction pathways have the highest rate of "resit non-compliance".[75] This is not explained by higher rates of SEND in these pathways as the digital and agriculture and animal science pathways have the highest prevalence of SEND out of all the pathways.

[74] Ofsted, 'T-Level Thematic Review'.
[75] This isn't technically non-compliance are some students will be exempt.

Figure 18. Proportion of TLTP students taking a resit by pathway

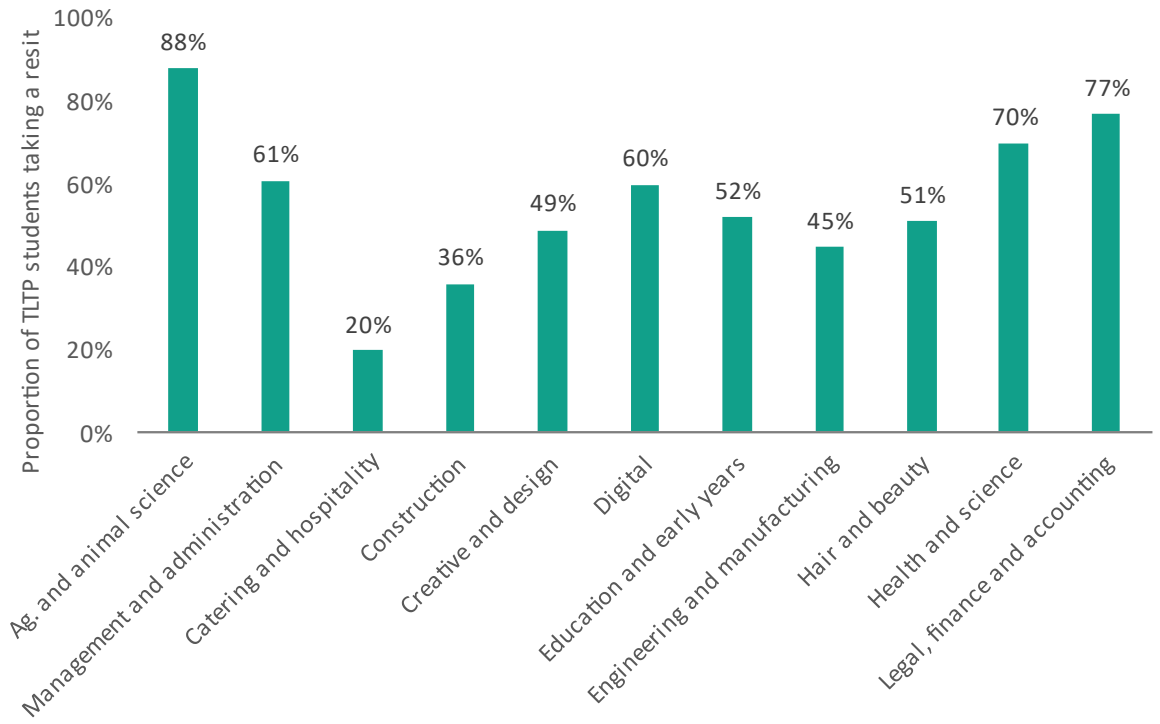
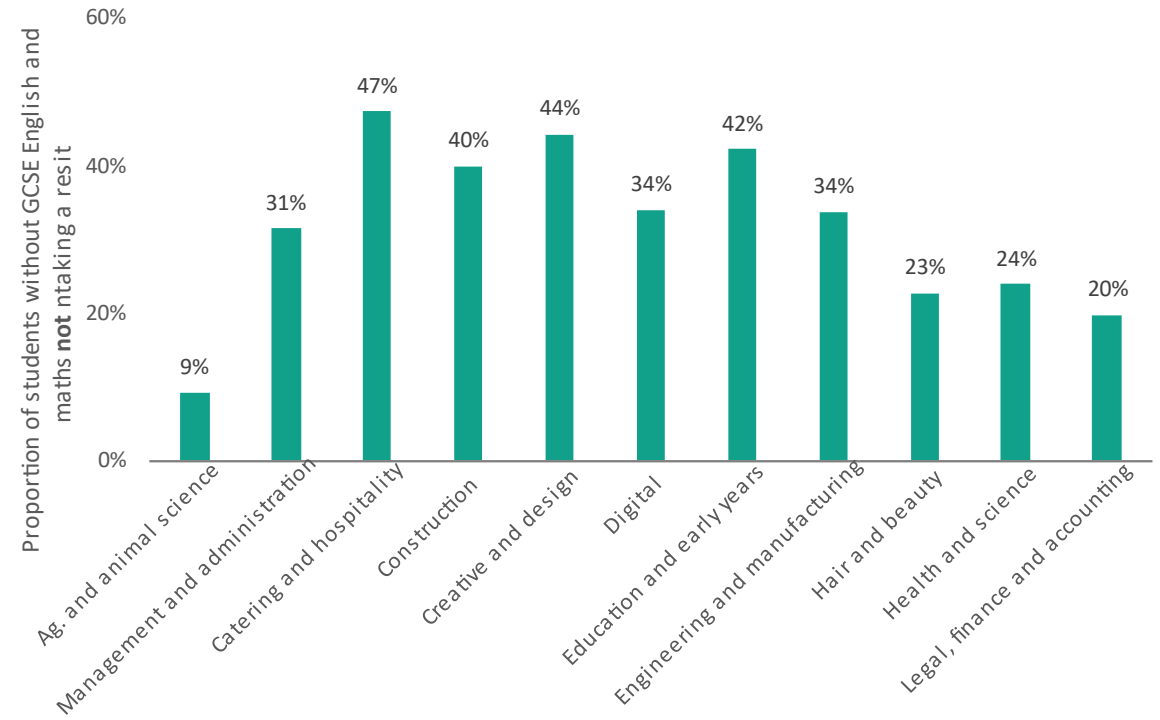


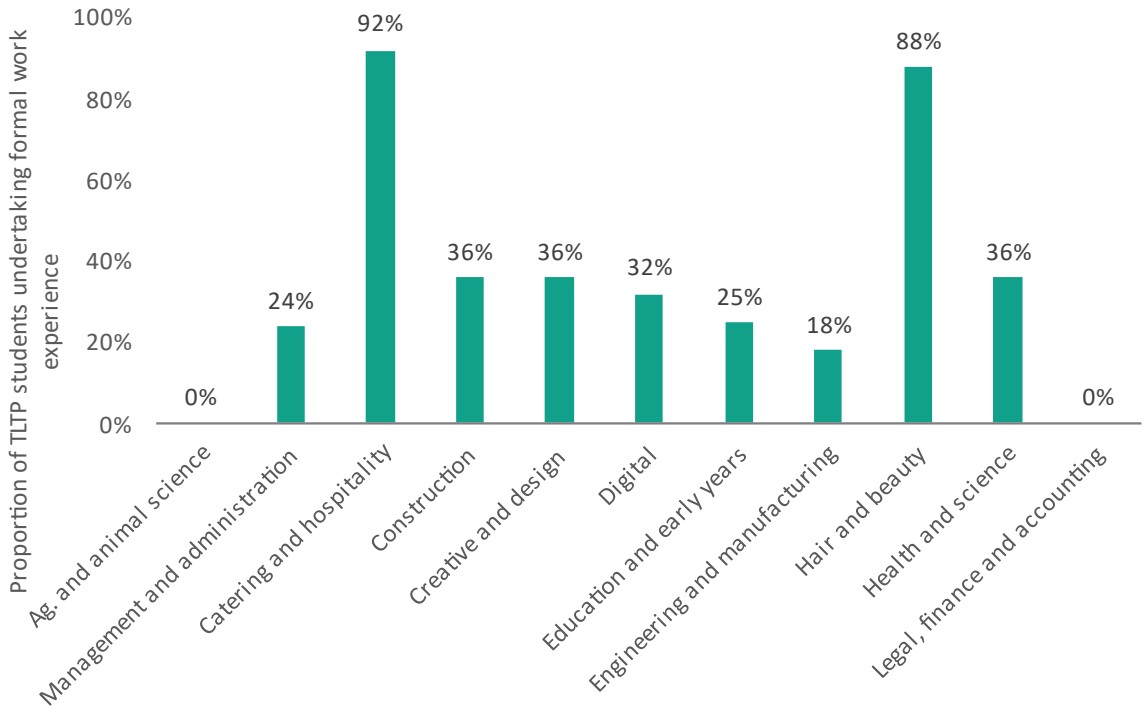
Figure 19. Proportion of students without a pass in both English and maths that are *not* taking a resit by pathway



In Figure 20 we show the proportion of TLTP students undertaking some formal work placement by pathway. The results show sizeable disparities across pathways. Two of the newer pathways, hair

and beauty and catering and hospitality have high rates of work experience (88 and 92 per cent). This could be because the providers offering these early TLTPs have stronger connections with industry than other providers on average. Alternatively, because T levels had not yet been introduced in these subjects, it could be that there is less competition for work placement opportunities. However, we do not see similarly high levels work placements across the other newer pathways (agriculture and animal science and legal, finance and accounting – these both have 0 per cent of students on a formal placement). Of the larger pathways, construction and health and science do comparatively well with 36 per cent of students doing a placement. However, this is still well below what we expect from any TLTP pathway. On the other hand, engineering and manufacturing do comparatively worse with less than one in five students undertaking a placement in this pathway.

Figure 20. Proportion of TLTP undertaking some formal work experience by pathway



TLTP Progression to T Levels

The following section reports on the rate of progression from the TLTP onto to T levels. As we need data from one year post-TLTP, we examine progression for the first two cohorts only (those starting in 2020/21 and 2021/22). Using data from the ILR and PLAMS, we investigate what these students' study in the year following their TLTP. We focus particularly on transitions to T levels and whether students are retained on their T level in that first year of the course.

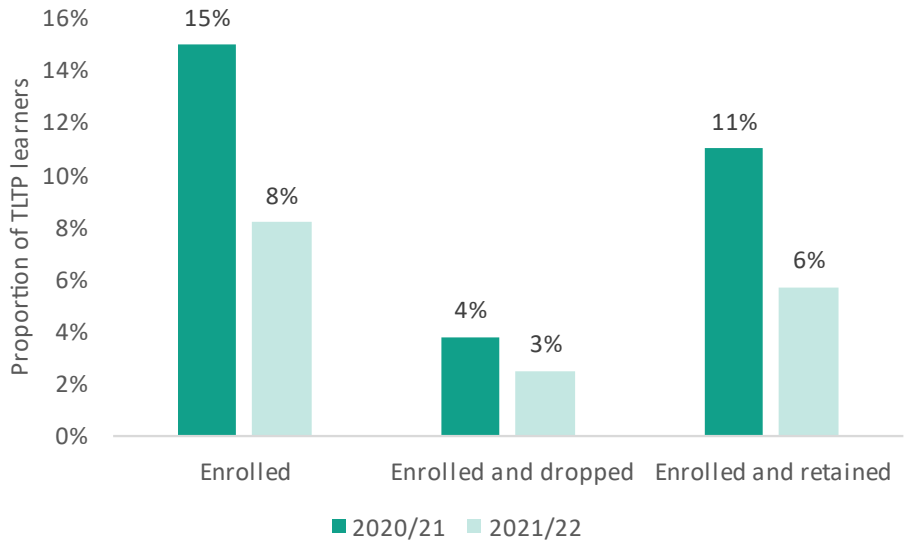
Figure 21 shows the proportion of TLTP students each year that progress to enrolling on a T level and the proportion that are retained on that T level in the first year (they do not drop or withdraw from all of their T level aims in the first year). In 2020/21, only 15 per cent of TLTP students progressed onto a T level – this low proportion was widely reported on in the media.[76] Our analysis

[76] Chowen, 'T Levels'; Camden, 'Pre-T Level Course Flops in Its First Year'.

demonstrates that this is an underestimate of successful transitions – of those who enrolled on a T level, almost a third withdrew within the first year. This means the progressed and retained rate for the 2020/21 cohort is closer to 11 per cent (or one in nine students progressing to a T level).

For the 2021/22 cohort, the progression rate is almost halved. Only 8 per cent of TLTP students enrolled on a T level in the following year. Once we account for withdrawals, the progressed and retained rate is just less than 6 per cent. This decline in progression (from an already low baseline) raises significant concerns about the content, delivery and purpose of the TLTP.

Figure 21. Proportion of TLTP learners progressing on to a T level in the following year and being retained in the first year.[77]

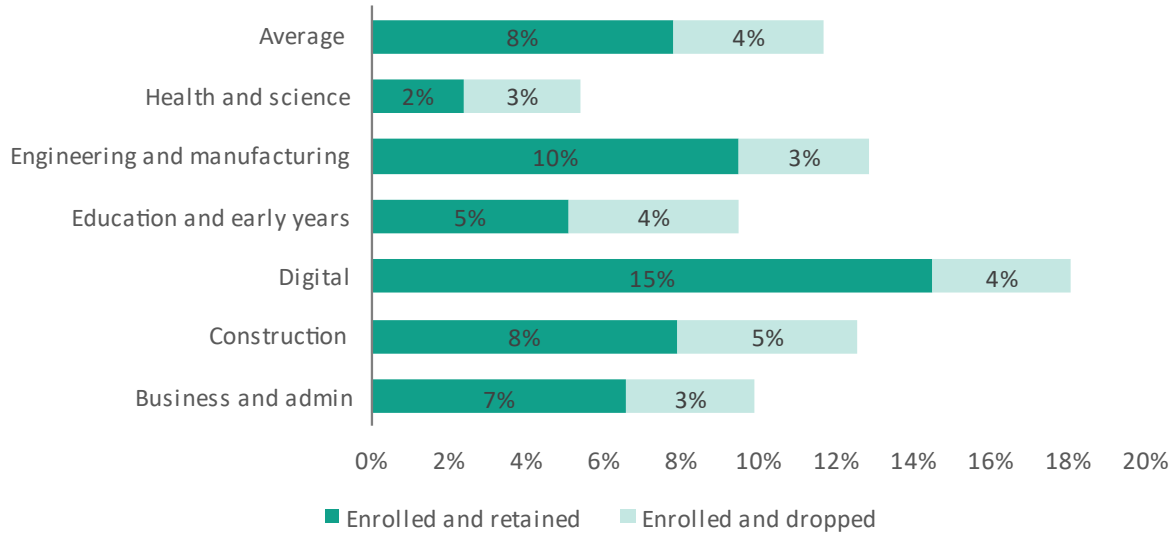


We consider progression rates by demographic characteristics. We find that disadvantaged students in the TLTP are less likely to progress onto a T level compared to non-disadvantaged students (13 per cent v 18 per cent). Progression rates for other demographics were roughly similar to the overall progression rate, however male students were slightly more likely to progress than female students.

In Figure 22 we report the TLTP progression rates by pathway. Just as we saw stark pathway differences in TLTP content (including whether students do a work placement) we see sizeable differences in progression rates. The digital pathway has the highest progression rate, with 19 per cent of students enrolling on a T level and 15 per cent of students enrol and are retained. On the other hand, only 5 per cent of students in the health and science pathway progress to a T level and more than half of these students withdraw from their aim within the first year. This means the progressed and retained rate for health and science TLTP students is 2 per cent (or one in fifty). education and early years also has a relatively low progression rate with only 5 per cent of students enrolled and retained on a T level.

[77] Rounding accounts for 2021/22 bars not summing to the total shown in the left-most bars.

Figure 22. TLTP progression rates by pathway



4 – T Level Retention

In this section, we consider first-year T level retention and examine the drivers of withdrawing from T levels. We consider retention in the first year only for simplicity and because most of T level withdrawals occurs within the first year. Looking at the first year also means we can consider a greater number of cohorts and T level pathways. However, this means the not-retained rates we report are an underestimate of the overall rate as they will not include withdrawals in the second year.

Methods

We define a student as having withdrawn if they are a T level student (they have at least one T level core aim in the ILR or PLAMS) but do not have an *active* or *completed* T level aim. This means they have either withdrawn, transferred or paused learning for *all* their T level aims (most of these aims are withdrawn).

We start by showing retention summary statistics by year and pathway. We then track what these students do in the following year using the ILR and PLAMS for the 2020/21 and 2021/22 cohorts (we did not have data for the 2022/23 cohort at the time of this report). This provides insight into where some T level students may have been diverted from and the impacts T levels have had on students' post-16 education journeys.

We then estimate a regression model to predict T level withdrawal. This model allows us to look at the characteristics that are associated with T level withdrawal while controlling for important factors like prior attainment, T level pathway and more. We estimate the following model:

$$Y_{ikt} = \psi_k + \eta_t + \boldsymbol{\beta X_i} + \varepsilon_{ikt}$$

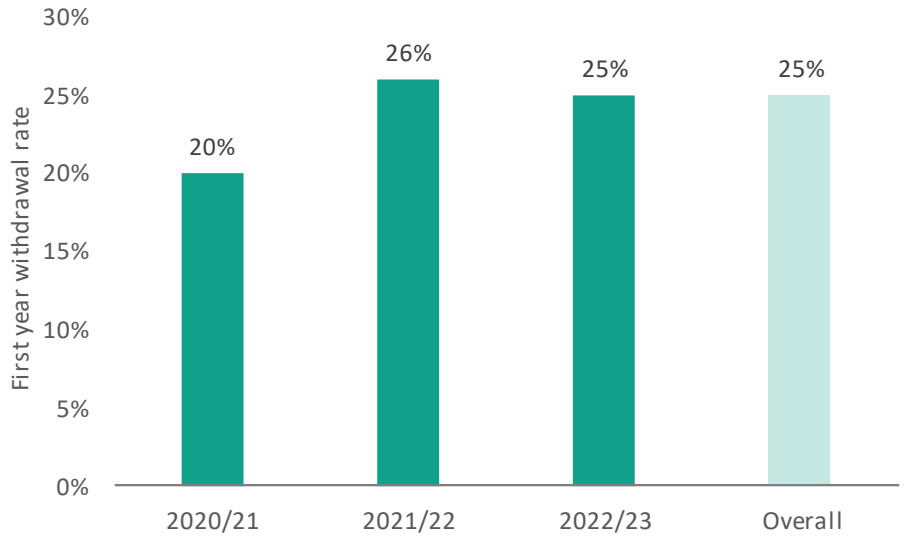
where Y_{ikt} is an indicator for whether student i withdrew from their T level in pathway k at time t. ψ_k are pathway fixed effects (with Design, Surveying and Planning for construction as the base category), η_t is a time fixed effect and $\boldsymbol{X_i}$ is a vector of individual characteristics including prior attainment, disadvantaged status, EAL status, SEND status, ethnicity, age and gender. We also run the same model separately for 2020/21 starters and 2021/22 starters (dropping the time fixed effect). We then run our models separately by pathway (dropping the pathway fixed effects). These extensions allow us to examine the drivers of withdrawal within a specific year and within a specific pathway.

Descriptive results

We start by showing the average withdrawal rates for T levels in year one in Figure 23 . In the first cohort, 20 per cent of students left their T level within the first year. This rose in 2021/22 to 26 per cent of students and is at 25 per cent for the 2022/23 cohort. As mentioned earlier, this rate is lower than the rates from retention statistics published by DfE (which cover the full two years of the T level). For the 2022/23 cohort, the T level completion rate was 71 per cent and for the 2022/21 cohort the rate was 66 per cent.[78] Hence, the full withdrawal rates were 34 per cent (or a third) and 29 per cent for the 2021/22 and 2022/23 cohorts. As indicated by Figure 23, first-year withdrawals account for most of the overall withdrawals.

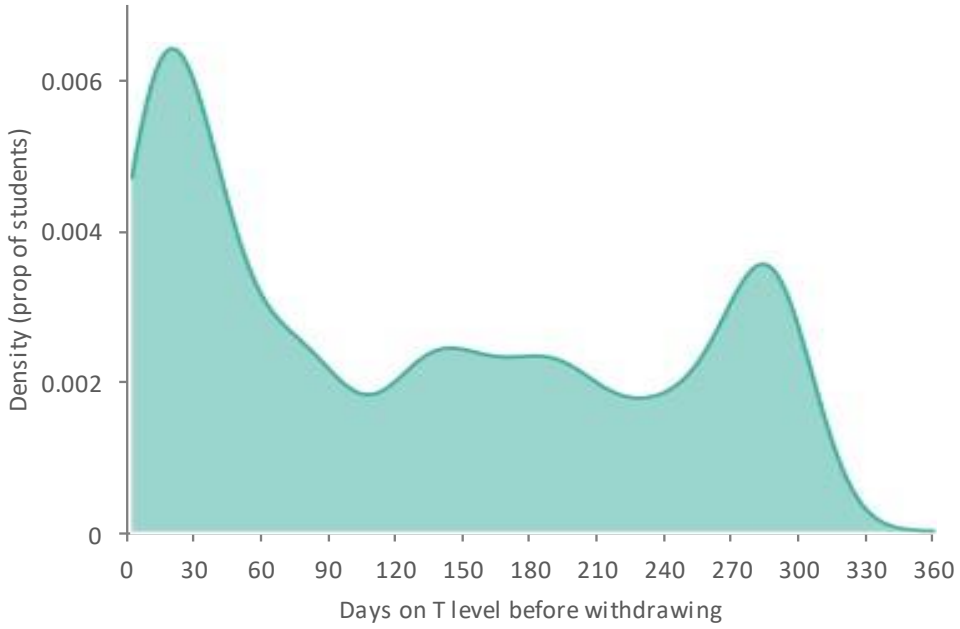
[78] Tuckett et al., 'Analysis: Level 3 Results Day'.

Figure 23. T level withdrawal rates in the first year over time



In Figure 24, we show when students tend to withdraw from their T level. We find that a significant group of students withdraw in the early stages of the T level (within two months) and there is another spike towards the end of the academic year when exams are being taken (240 to 300 days on a T level corresponds to finishing somewhere in June and July). There is also a steady flow of withdrawals between these two peaks.

Figure 24. T level withdrawal timing (the date learning is recorded to have finished in the ILR or PLAMs)



Looking at pathway-specific withdrawals, we find that retention is the lowest in the legal, finance and accounting pathway with a third of students withdrawing in the first year (Figure 25).[79] Health and science has the next highest withdrawal rate with 31 per cent of students leaving during the first

[79] It is worth noting that some courses have very small sample sizes (including the legal, finance and accounting pathway, with 30 students). Please refer back to Figure 15 for more information.

year. Management and administration has an above average withdrawal rate of 27 per cent while construction and education and early years has a withdrawal rate close to the overall average. Conversely, digital has the lowest withdrawal rate (19 per cent) followed by engineering and manufacturing (21 per cent).

Figure 25. T level withdrawals in the first year by pathway

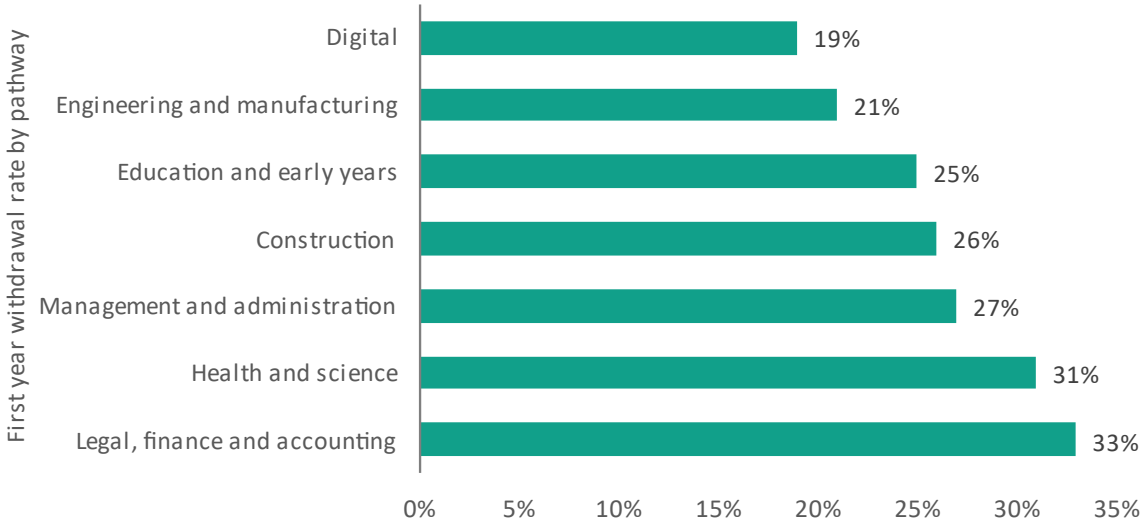


Figure 26 shows what T level students who were not retained are doing in the following year. Concerningly, almost half of these students end up missing from the education and training system (are NET). This could be because students have become disengaged with education or they have found skilled employment through their T level or a combination of the two. Of those who remain in education, just over half go on to study a full level 3 programme (the size of at least two A levels) or apprenticeship (30 per cent of students who withdraw). 8 per cent of students who withdraw go on to study a partial level 3 (a smaller level 3 qualification) and 16 per cent go on to study at level 2 or below. Understanding why these choices were made is important for interpreting these results. For example, it might be that students are discouraged from other level 3 qualifications because of their negative experience on a T level, or because they were not ready for level 3 study in the first place. This requires more research going forward.

When we look at destinations by pathway, we find that over half of the students who withdraw from the education and early years T levels go missing from education and only a quarter move to a different full level 3 programme. The other pathways have similar rates of missingness but the digital pathway has the highest proportion of students who move to another full level 3 programme (39 per cent).

A concern is that the high rates of missingness are driven by the older T level students who have finished compulsory education. Therefore, in Figure 27 we show the withdrawal rates for 16-year-old starters only. As such, these students would be 17 years old in the year following their withdrawal. Even amongst this group, we find high rates of missingness. On average, over a third (36 per cent) of 16-year-olds who withdraw from their T levels leave the education system. Again, this is highest for the education and early years pathway where 43 per cent of students who withdraw go missing. We also see the same pattern with full level 3 enrolments – students who withdraw from the digital pathway are more likely to end up on a full level 3 (46 per cent).

Figure 26. Destinations of students who withdrew from their T level in the following year

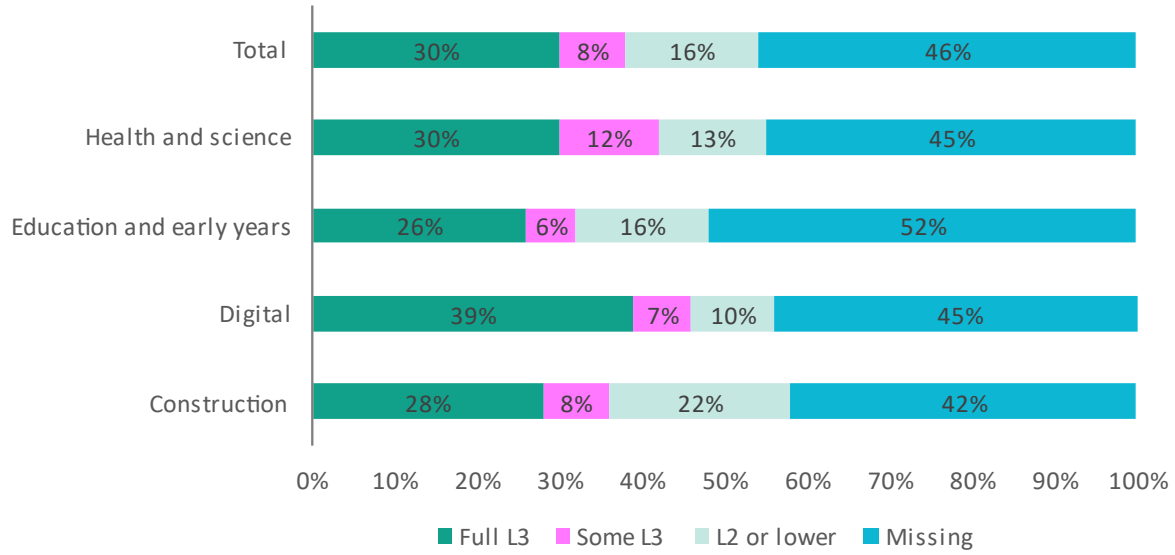
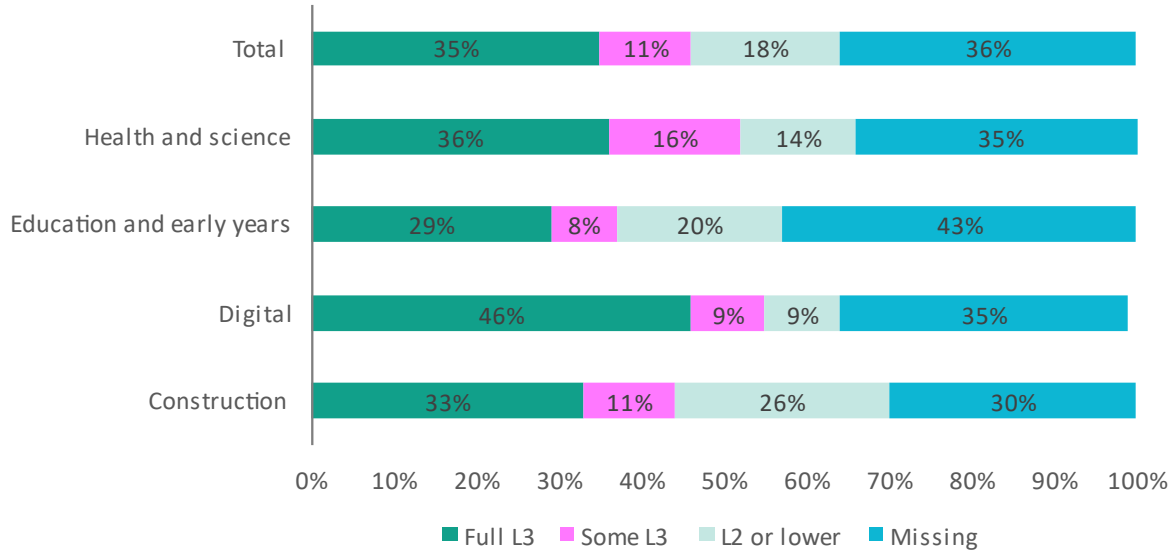
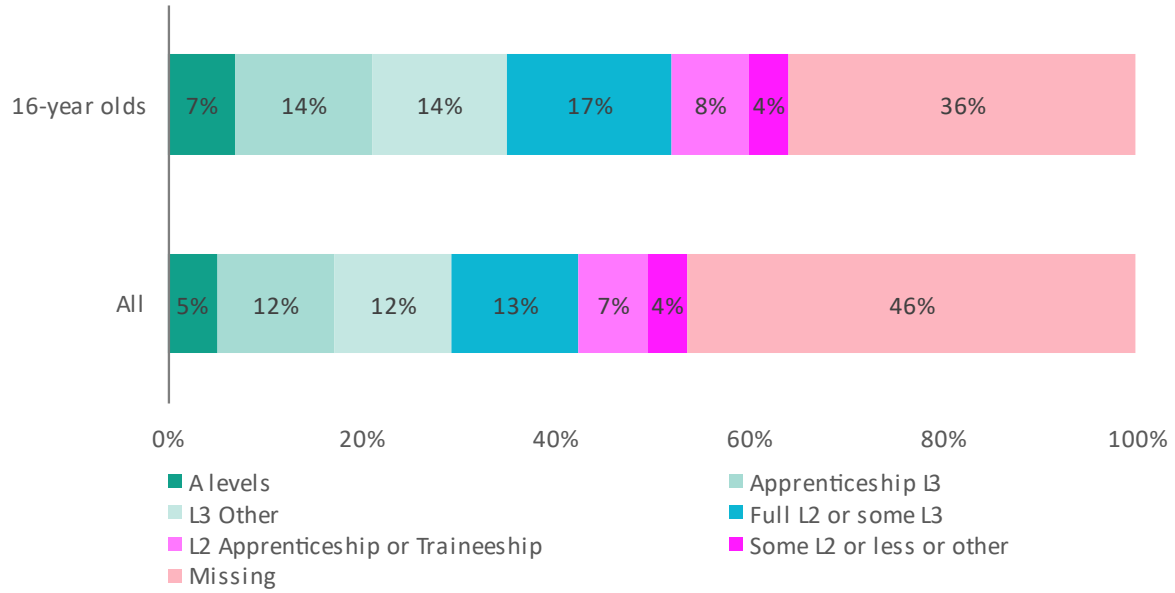


Figure 27. Destinations of 16-year-old students who withdrew from their T level in the following year



In Figure 28, we break down the destinations into smaller categories to distinguish between moving on to an apprenticeship, A levels and other programmes of study. Looking at 16-year-olds, we find that 7 per cent of students who withdraw go onto an A levels course of study, 14 per cent start an advanced apprenticeship and 8 per cent move onto an intermediate apprenticeship or a traineeship. These results show there are a diverse range of pathways that T level students who withdraw follow and it is likely that these represent some of the pathways students would have taken in the absence of T levels.

Figure 28. Specific destinations of students who withdrew from their T level in the following year



Regression modelling results

Here we present the results from our regression models that predict T level withdrawal using demographics, prior attainment, year and T level information. Our graphs show the coefficients and 90 per cent confidence intervals using error bars.

Figure 29 tells us whether withdrawals are more likely in one year compared to another after controlling for changes in the types of students taking T levels. We also run one model with pathway fixed effects (or controls) and one without. This allows us to see if differences between years are driven by the inclusion of new pathways. We find that the withdrawal rate is significantly higher in 2021/22 and 2022/23 than it is in 2020/21. This aligns with the descriptive results in the previous section. More than half of this difference is driven by the introduction of new T level pathways. Once we account for these pathways, withdrawal is still 3 per cent higher in 2021/22 and 2022/23 than it was in 2020/21. For the rest of this section, all results are from models that control for pathway.

Figure 29. Change in withdrawal probability over time

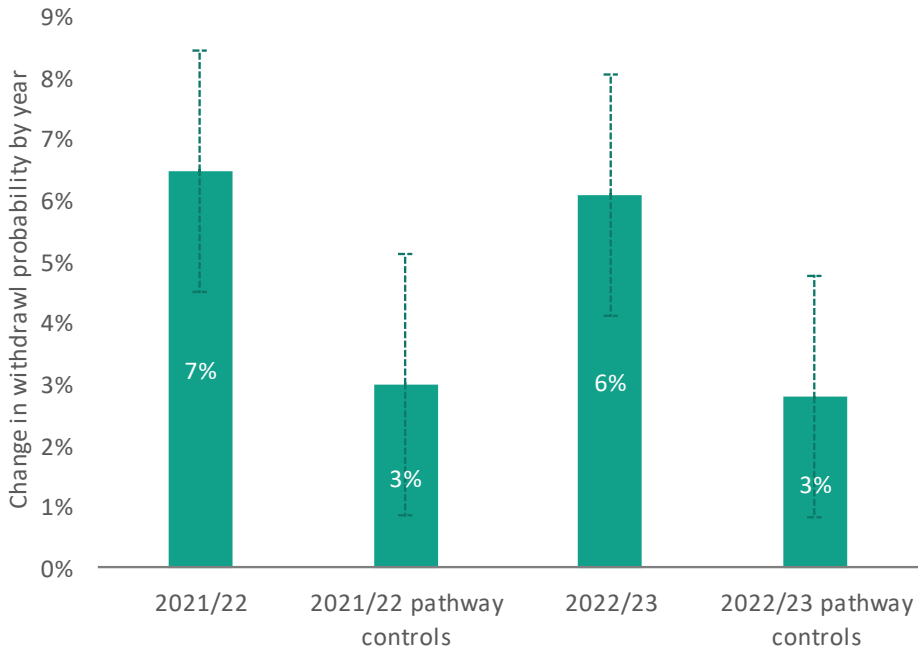


Figure 30 shows that overall, male students are significantly less likely to withdraw from their T level than female students even after controlling for prior attainment and pathway selection. In 2020/21, females are 10 percentage points more likely to withdraw and in 2021/22 they are 6 percentage points more likely to withdraw. By 2022/23, the difference has shrunk to 3 percentage points but is still statistically significant.

Figure 30. Change in withdrawal probability by gender

We find that disadvantaged students are also more likely to withdraw from their T level compared to their non-disadvantaged peers with the same prior attainment on the same pathway (Figure 31). Disadvantaged students are 6 percentage points more likely to withdraw, which represents a considerable increase relative to the 25 per cent baseline. Students with SEND on the other hand are less likely to withdraw on average (Figure 33).

Prior attainment (Attainment 8 score) is negatively correlated with withdrawal. A 1 SD increase in Attainment 8 (approximately 10 points) is associated with a 6 percentage point reduction in the probability of withdrawing (Figure 32). Prior attainment appears to be slightly more influential for 2020/21 starters.

Figure 31. Change in withdrawal probability by disadvantaged status

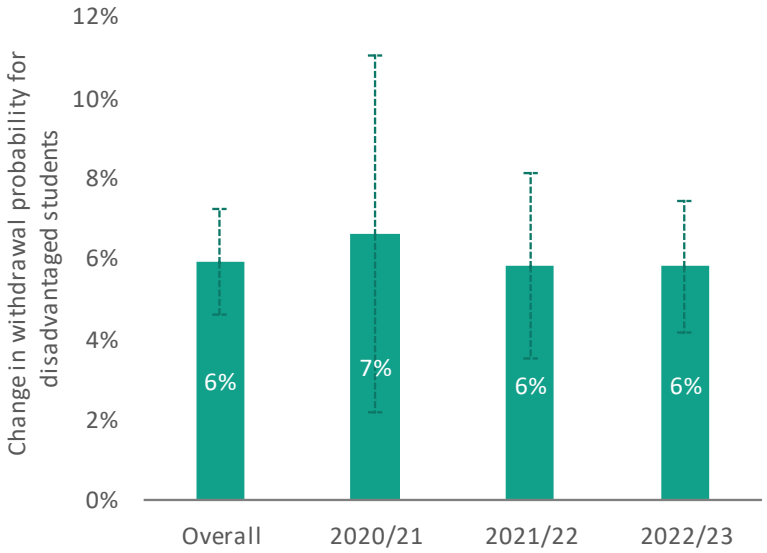


Figure 32. Change in withdrawal probability by attainment 8 score

Figure 33. Change in withdrawal probability by SEND status

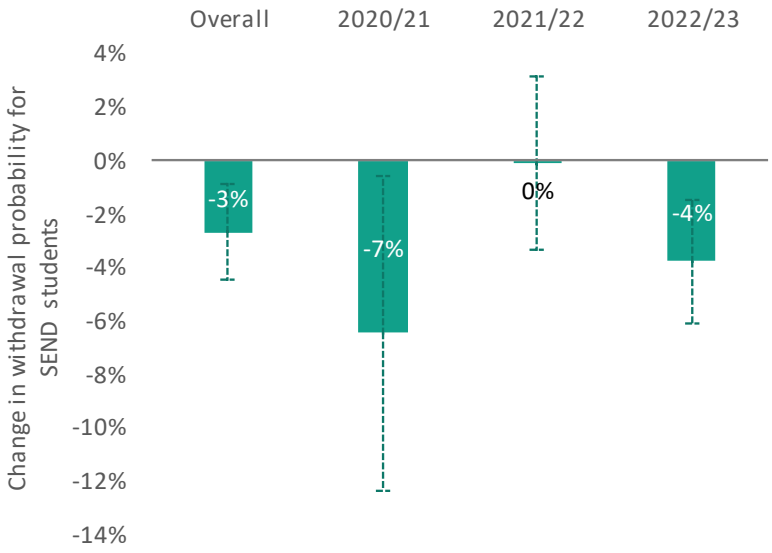


Figure 34 shows that all ethnicities on average have lower withdrawal rates than White students even after controlling for prior attainment, T level pathway selection and other demographics. Black, Black British, Caribbean or African students have the lowest rates of withdrawal and are 10 percentage points less likely to withdraw than White students.

Figure 34. Change in withdrawal probability by ethnicity

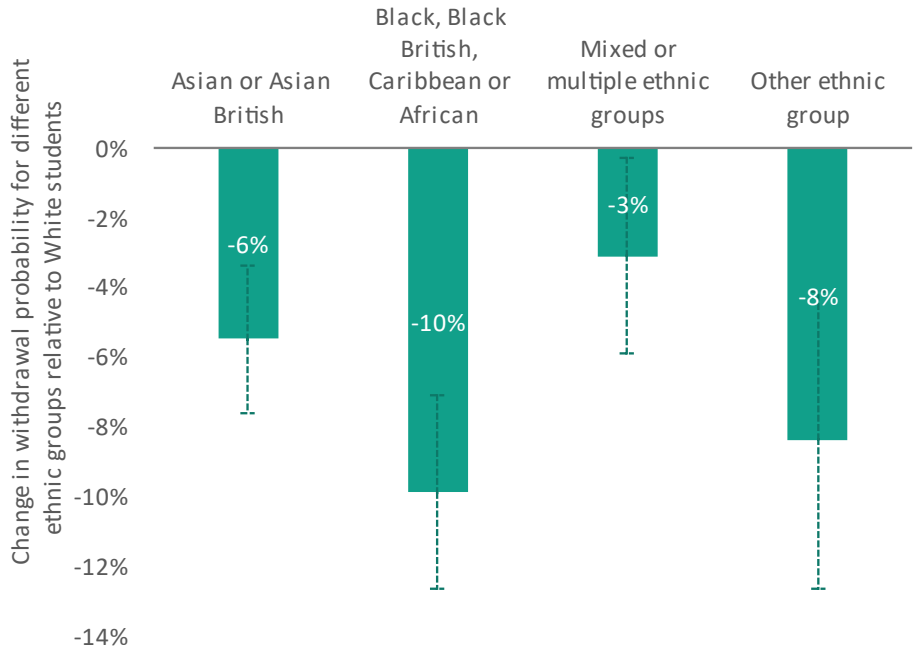
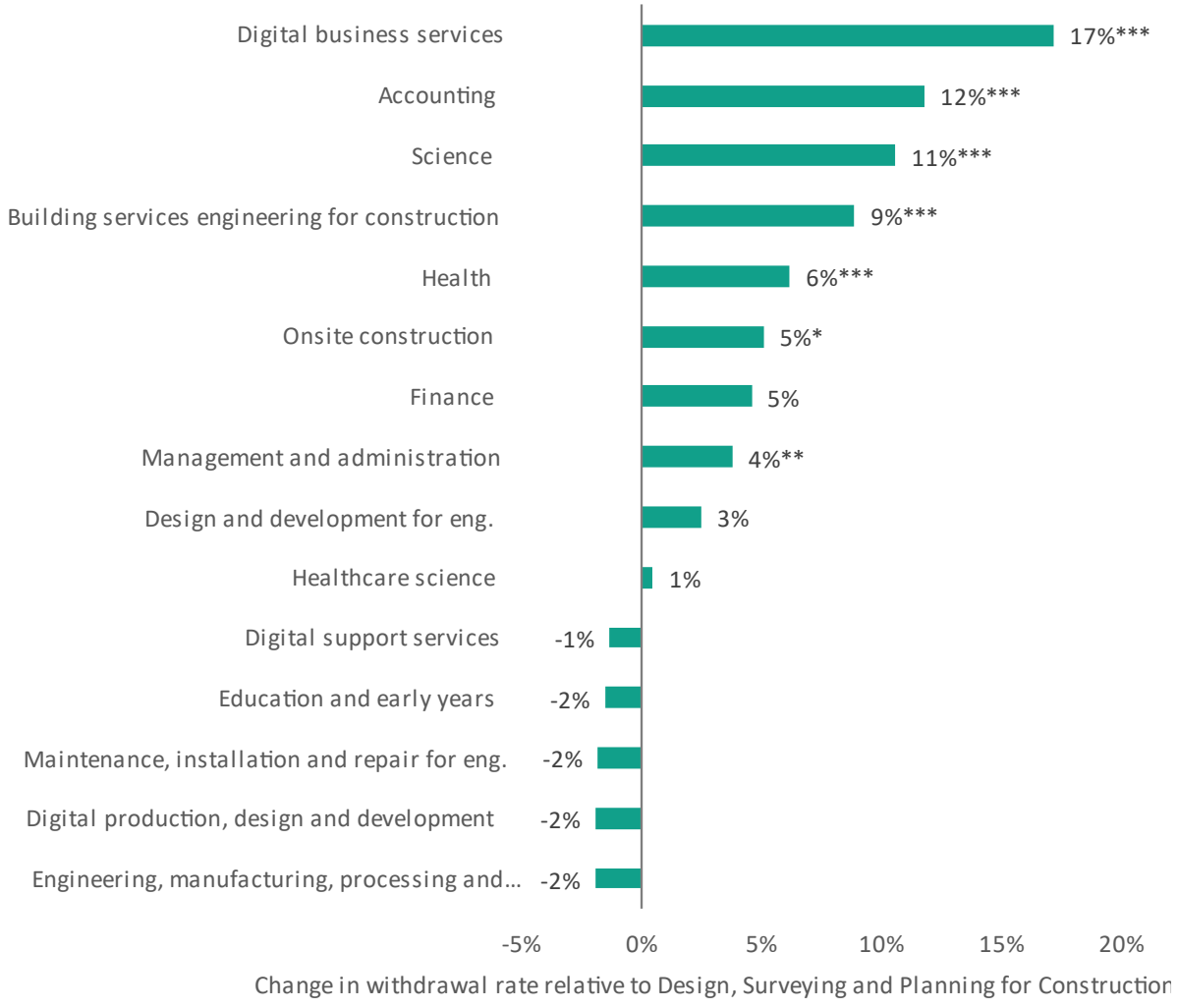


Figure 35 shows the results for individual T level awards. These are at a more granular level than the overall T level pathway and allow us to identify if certain T levels within a pathway have worse retention outcomes others. All coefficients are in comparison to the Design, Surveying and Planning for construction T level. Firstly, the health and science T levels have higher withdrawal rates after controlling for student characteristics. The Science T level is particularly concerning with a withdrawal rate that is 11 percentage points higher than the construction baseline T level. The

health T level has a 6 percentage-point higher withdrawal rate and the healthcare science T level is not significantly different to the baseline. The other two construction T levels (onsite construction and building services engineering for construction) have higher withdrawal rates compared to the design and planning for construction T level. Two of the highest withdrawal rates belong to the accounting T level (12 percentage points higher) and the digital business services (17 percentage points higher). The digital business services T level has the highest overall withdrawal rate even though all the other digital T levels are similar to the baseline. Taken together, these results suggest there may be some issues with business-focussed T levels (accounting, management and administration, digital business services).

Figure 35. Change in withdrawal probability for specific T level awards[80]



[80] Note: Stars are used for significance rather than confidence intervals to avoid cluttering the graph. *** p-value < 0.01; ** p-value < 0.05; * p-value < 0.10

Regression models by pathway

In this section, we report the results for each pathway separately. Firstly, in Figure 36 we find that female students are more likely to withdraw in all pathways except management and administration. The differences appear to be marginally larger for the male-dominated pathways (construction and digital). Disadvantaged students are more likely to withdraw in the management and administration, education and early years and health and science pathways. However, in the digital pathway, disadvantaged students are not significantly more likely to withdraw than their non-disadvantaged peers (see Figure 37).

Figure 36. Pathway-specific changes in withdrawal probability by gender

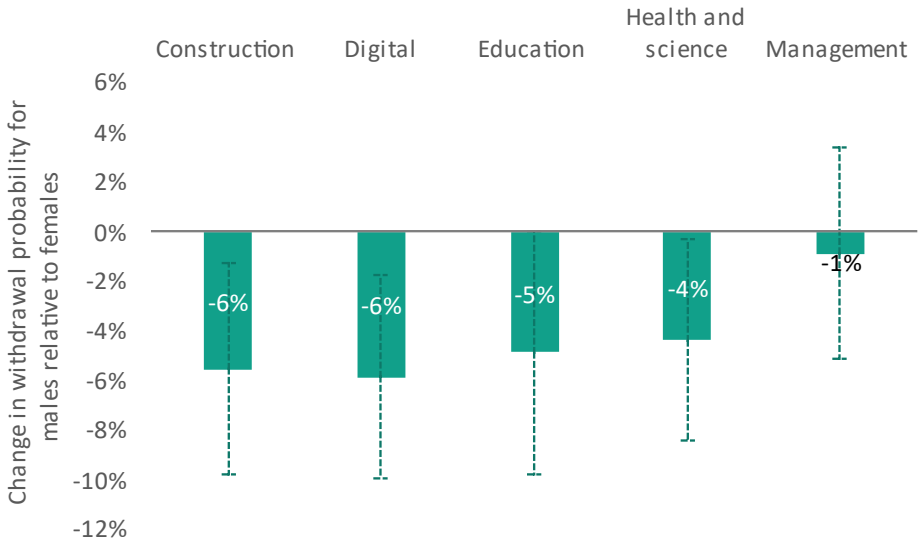
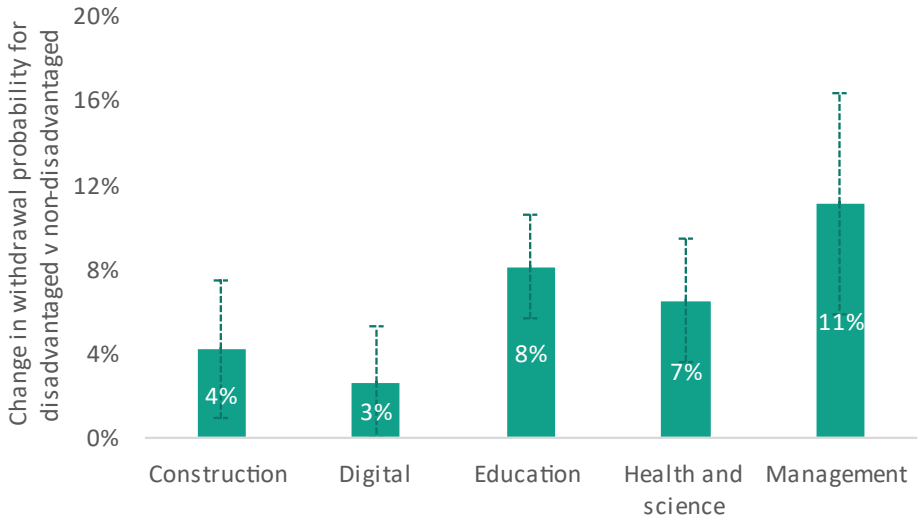


Figure 37. Pathway-specific changes in withdrawal probability by disadvantaged status



We find that Attainment 8 score is a more important predictor of withdrawal in the education and early years, health and science and management and administration pathways (Figure 38). This could be because the content in these courses have a higher level of academic rigour which places more emphasis on prior academic attainment. Students with SEND are no more likely to withdraw across the pathways, and are in fact less likely withdraw from the education and early years pathway

(Figure 39). This is a positive sign for SEND inclusion in T levels, particularly for the education and early years pathway.

Finally, in Figure 40, we show that Black, Black British, Caribbean or African students are significantly less likely to withdraw than White students in the construction and health and science T levels. Asian or Asian British students are significantly less likely to withdraw than White students in the education and early years and health and science T levels. However, Asian or Asian British students are more likely than White students to withdraw on the legal, finance and accounting pathway. We also find there are very few differences in withdrawal rates by ethnicity for the digital pathway and the management and administration pathway.

Figure 38. Pathway-specific changes in withdrawal probability by attainment 8 score

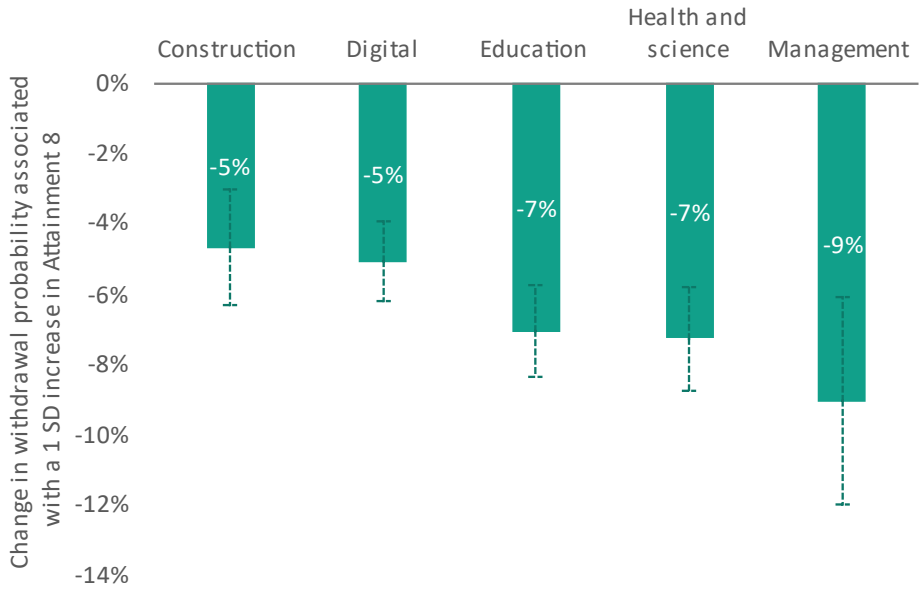


Figure 39. Pathway-specific changes in withdrawal probability by SEND status

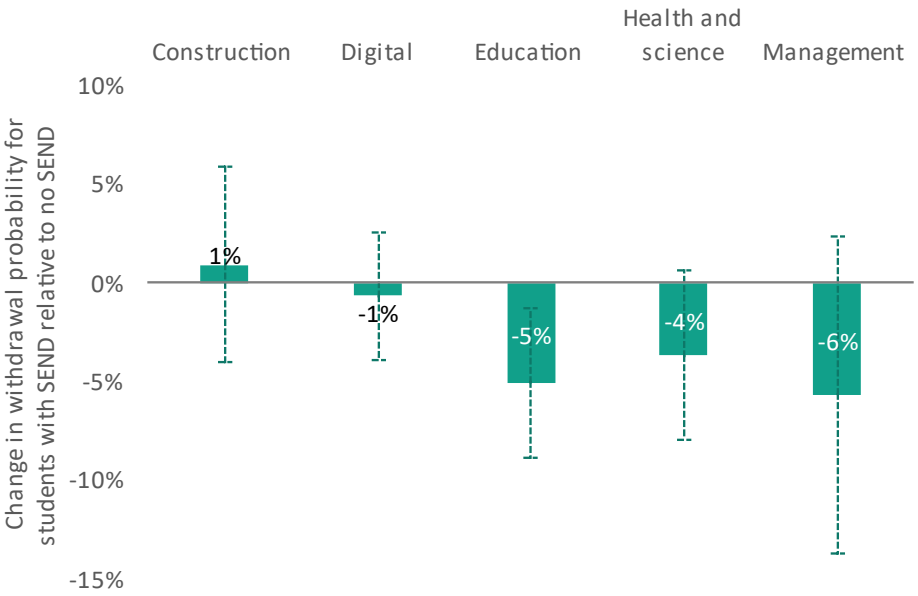
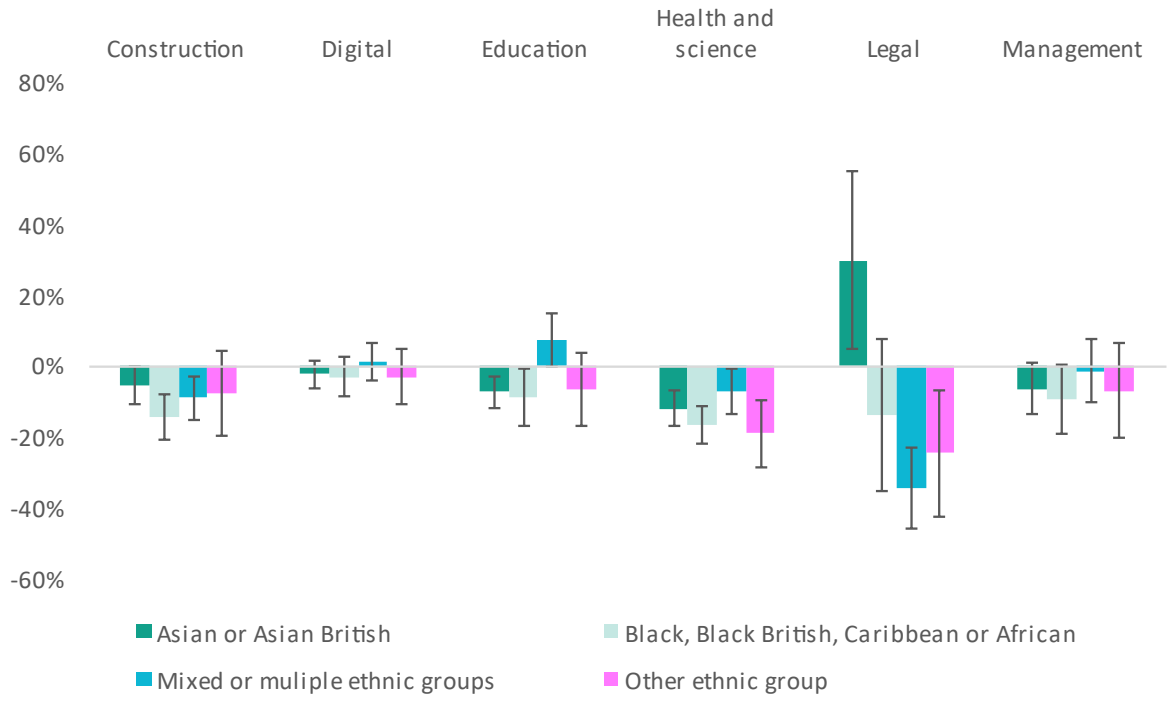


Figure 40. Pathway-specific regression changes in withdrawal probability by ethnicity (relative to White students)



Withdrawal destinations' regression modelling

In this last section on T level withdrawal, we run regression models to predict the likelihood of going missing (NET), moving onto an advanced apprenticeship, and studying at less than a full level 3 after withdrawing (Figure 41 - Figure 43). These are separate linear probability models (LPMs) that predict the specific outcome (i.e. becoming NET) relative to all other outcomes. We find that disadvantaged students are 14 percentage points more likely to become NET after withdrawing from their T level than non-disadvantaged peers who also withdraw from their T level. They are also 6 percentage points less likely to undertake an advanced apprenticeship and 6 percentage points more likely to be studying at less than a full level 3 (though this is not statistically significant).

Students with a 1 SD higher Attainment 8 score are 4 percentage points less likely to go NET after withdrawing from their T level and 12 percentage points less likely to be studying below a full level 3. Attainment 8 does not appear to influence the likelihood of students progressing onto an advanced apprenticeship. We also find no differences by gender or by SEND status.

Students withdrawing from the education and early years pathway are significantly more likely to go NET (after accounting for student characteristics). They are 11 percentage points more likely to go NET than construction students. However, there are no differences in likelihood of moving onto an advanced apprenticeship or studying at less than a full level 3. Students withdrawing from the digital and health and science pathways are considerably less likely to go onto an advanced apprenticeship than those from the construction and education and early years pathways. Students from the digital pathway are also significantly less likely to be studying at less than a full level 3 (20 percentage points less likely than similar construction students).

Figure 41. Change in probability of becoming NET after withdrawal for different characteristics

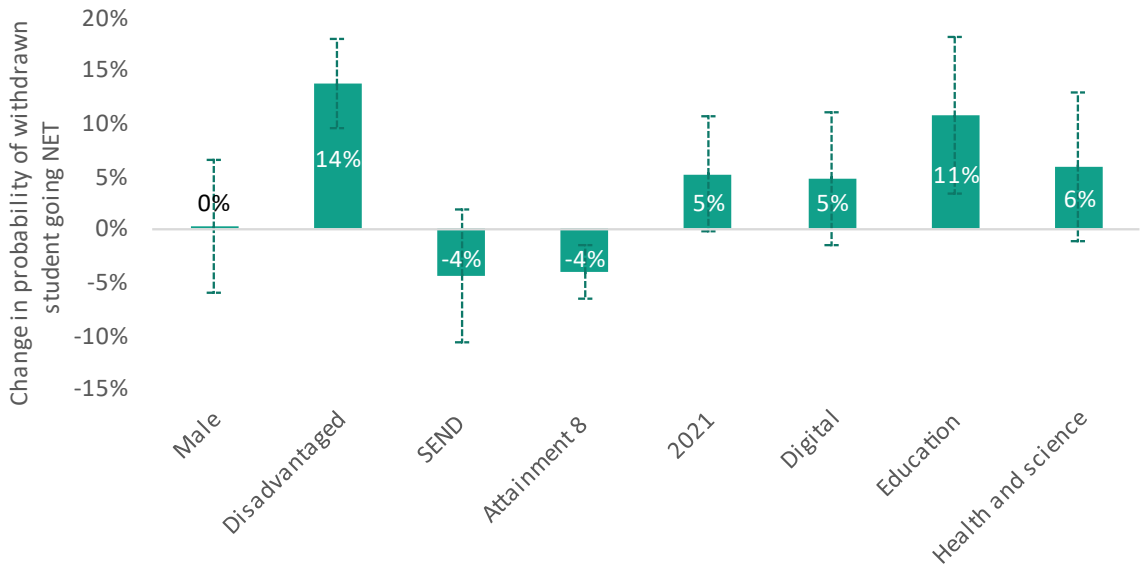


Figure 42. Change in probability of moving on to an apprenticeship after withdrawal for different characteristics

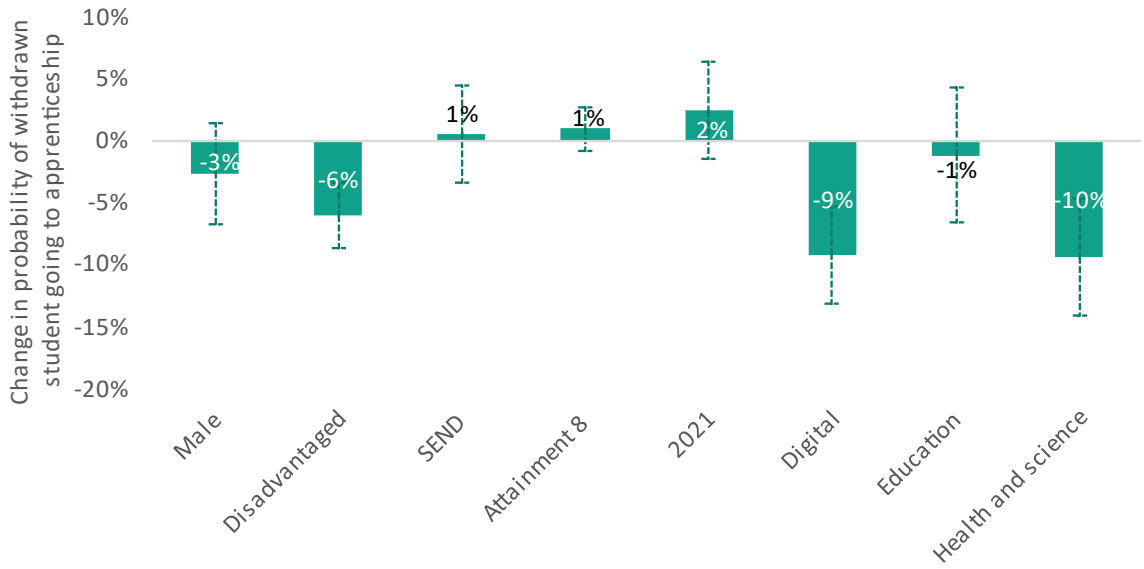
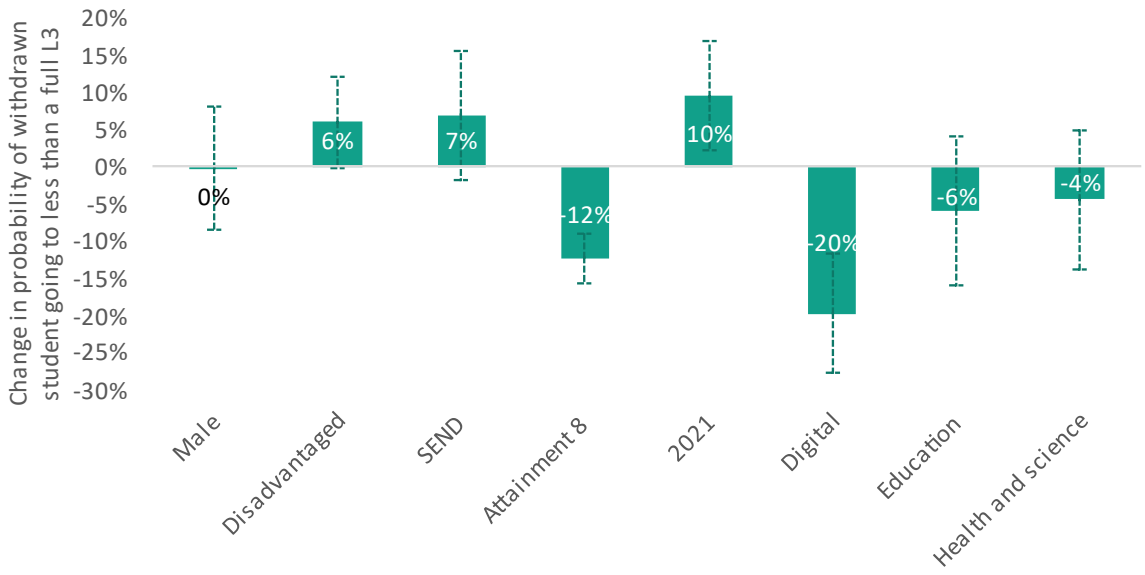


Figure 43. Change in probability of moving on to a full level 3 after withdrawal for different characteristics



5 - Where are T level students being diverted from?

In this section, we report on our exploratory methods and results for classifying students' post-16 choices. Our aim was to create a classification model that could predict what post-16 pathway T level students would take in the absence of T levels. This gives us a richer understanding of who T level students are, where they have been diverted from and the potential impacts of T levels. For the classification modelling, we use the 2021/22 cohort of post-16 starters as we do for out T level impact analyses.

Methods

We filter our data to students that choose a level 3 qualifications-based pathway in the same subject area as one of the T levels (tier 1 sector subject area) and students that undertake apprenticeships. Our method for classifying a student's initial post-16 choices is described in the Appendix**.**

We run a random forest machine learning algorithm with 500 trees to classify level 3 learners' post-16 choices. We use Breiman's random forest algorithm which takes all available variables and works out which are most important for predicting post-16 choice and builds up a classification model using a tree-based framework.[81] We develop two classifications models – one that predicts choice between three options and one that predicts choice between five options. The three options are: academic, vocational and mixed. The five options are: academic, vocational, mixed, apprenticeship and some level 3.

Once we had our sample, we randomly under-sampled the data to ensure that our groups would be equal in size. This is an important data processing step for improving the accuracy and performance of classification models.[82] We then randomly split the data into a training and testing set, with 70 per cent of the data used to train the model and 30 per cent used for testing.

The total accuracy for our 3-class model was 66 per cent. Much of the error arises when determining which *non-academic* pathway a student chooses. Indeed, the accuracy for distinguishing between academic and non-academic choices broadly is 85 per cent. The total accuracy of our 5-class model is lower at 51 per cent. However, this is still much higher than we would expect if we randomly classified students (expected accuracy would be 20 per cent). Again, we achieve good accuracy in terms of classifying choices into academic and non-academic (87 per cent accuracy). The moderate to low overall accuracy shows the challenges of predicting post-16 choice, particularly in the noisy, complex vocational qualifications landscape. It also shows the extent to which unobservable factors influence post-16 choice (like future education and career aspirations, careers advice and motivation, for example).

Results

The most important variables for predicting choice as determined by the random forest algorithm were prior attainment variables (attainment 8, English and maths scores), area-level deprivation, (IDACI) and school-level variables (proportion of lower-secondary pupils going to the academic track, proportion disadvantaged and more). Charts showing the relative importance of different variables are in the Appendix.

[81] Breiman, 'Random Forests'.
[82] Werner de Vargas et al., 'Imbalanced Data Preprocessing Techniques for Machine Learning'.

In Figure 44 and Figure 45, we show the average predicted choices for T level students in the 2021/22 cohort, assuming T levels did not exist. Across both models, we find that a non-negligible group appear to have been shifted from the academic A levels track onto T levels. Our models predict that around 15 per cent of T level students would have done A levels. Our 3-class model predicts that almost half (45 per cent) of T level students would have taken a level 3 mixed programme (a programme with some A levels and some vocational qualifications at level 3 – i.e. BTECs). When we look at our model with more classes, we predict that almost a quarter of T level students would have entered for an apprenticeship in the absence of a T level. We also predict that a quarter would have studied at less than a full level 3 (i.e. taking less than 2 A levels worth of level 3 qualifications). This could partially explain the relatively high rates of T level withdrawal and is consistent with the destinations of students post withdrawal.

Figure 44. Predicted post-16 choices for 2021/22 T level starters using 3-class model

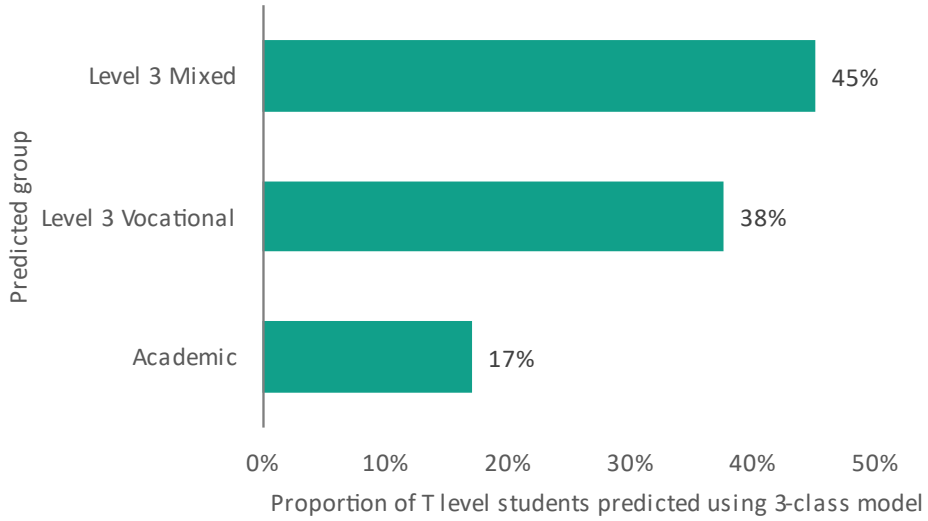
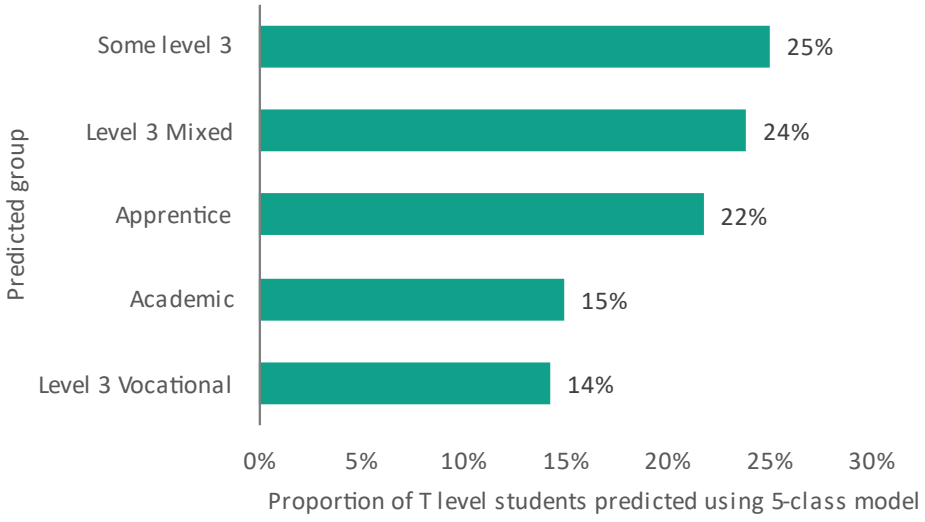


Figure 45. Predicted post-16 choices for 2021/22 T level starters using 5-class model



These results are interesting given the defunding of overlapping level 3 qualifications. Students taking overlapping qualifications are most likely to be captured in the level 3 vocational category or

the mixed category which makes up majority of the predicted destinations for T level students in the 3-class model (83 per cent) and 38 per cent in the 5-class model.

6 - Outcomes for T Level students

In this section, we focus on quantifying the impacts of T levels on short-run post-16 outcomes, attainment and progression. Are students better or worse off, on average, by enrolling on T levels? To do this, we compare T level students to students who are similar in all other observable characteristics.

Data and methods

To explore these questions, we look at students' initial post-16 choices (the decisions they make at the start of their post-16 education) so we can evaluate the impacts of choosing to enrol on a T level at the beginning of post-16 (rather than the impacts from enrolling at any time). This makes the analyses simpler and easier to interpret because all students are making their initial post-16 choices at the same time, and we can evaluate the impacts of T levels relative to other initial choices (regardless of the switching that may occur thereafter). As such, our analysis focuses on students who choose to start a T level when they are 16 years old.

Data sources

We use administrative data for England to estimate the causal impacts of T levels for the 2021/2022 cohort of post-16 starters. We derive our initial population of students from the 2021 Spring School Census, filtering to students in their final year of lower secondary education (year 11). We link this data to the 2020/2021 key stage 4 (KS4) exam file to obtain information about students' performances in their high-stakes GCSE exams. Both datasets come from the National Pupil Database (NPD). We focus on the 2021/22 cohort of starters because this is the earliest cohort with complete data where we have outcomes at 18 years of age. There is one earlier cohort (the 2020/21 starters) but there were several data quality issues with the exam results for T level students in this cohort. As such, we do not have a good record of post-16 attainment for these students and do not include them in our analyses.

We link our cohort of students to two datasets containing records of student entries for the 2021/2022 academic year. For students at school sixth forms, we use the Post-16 Learning Aims (PLAMs) dataset from the NPD. For students at further education (FE) colleges, sixth form colleges and other providers, we use the aims data from the individualised learner record (ILR). These data are used to categorise a students' initial post-16 choices. In England, students have a range of qualifications and programmes that they can enter in the post-16 phase. There are no *strictly* defined pathways for students to follow (vocational versus academic, for example) but there are some classifications provided by DfE that help sort students into unique pathways. For full details on how we classify students into pathways, please refer to the Appendix. The key point is that we only consider students' initial enrolments.

Outcome variables

The outcomes we measure are derived from the key stage 5 (KS5) exam file and the 2022/2023 versions of the ILR and PLAMs. The outcomes we use are summarised in Table 3.

Achieving a level 3 qualification (or a full level 3) is one of the most important outcomes – it is the highest level of qualification for upper secondary education, it supports progression to further study

and it delivers significant economic returns on average.[83] Achieving a level 3 qualification was one of the key outcome measures and foci for a recent paper on post-16 education choices.[84] However, rather than focusing on the achievement of any level 3 qualification, we look at whether a student collectively (or through a single qualification) passes the level 3 threshold (2 A levels or equivalent).

The other outcomes we include revolve around whether a student dropped their main qualification (dropped main aim), left education (NET), and progressed to advanced vocational study.

Table 3. Description of outcome variables

Outcome	Description	Age	Data source
Full level 3	Whether the student passed the equivalent of 2 or more A levels at level 3. This is typically considered a "full level 3" pass.	18	NPD (KS5 Exam File)
Dropped main aim	Whether the student dropped their initial main aim used to classify their original choices. Importantly, this excludes aims students immediately transfer out of (i.e. changed A level subject right before school year starts).	17	ILR (Aims) and NPD (PLAMS)
NET Yr 1	Is missing from education data in their first year of post-16 (after starting some course).	17	ILR (Aims) and NPD (PLAMS)
NET Yr 2	Is missing from education data in their second year of post-16 (after starting some course).	18	ILR (Aims) and NPD (PLAMS)
Apprenticeship progression Yr 3	Progresses to an advanced apprenticeship in the 2023/24 year.	19	ILR (Aims)
Level 4+ study in Yr 3	Progresses to a level 4 or higher vocational qualification in the 2023/24 year.	19	ILR (Aims)

Sample filtering

T levels make up a very small proportion of students in our cohort of interest (less than 1 per cent). Therefore, it makes little sense to analyse the data for all students because there will be many with zero, or near zero, probability of taking a T level. For example, it would not make sense to include level 1 or level 2 learners in our T level sample because these students are studying well below the standard of a T level (which is equivalent to 3 A levels). Therefore, as is common in causal inference and treatment effects research, we filter our sample to include control units that are most similar to T level students. Filtering data to ensure similarity between control and treatment groups (or to ensure comparisons are sensible) is the bedrock of many applied causal inference tools (like difference-in-differences, synthetic control and propensity score matching).

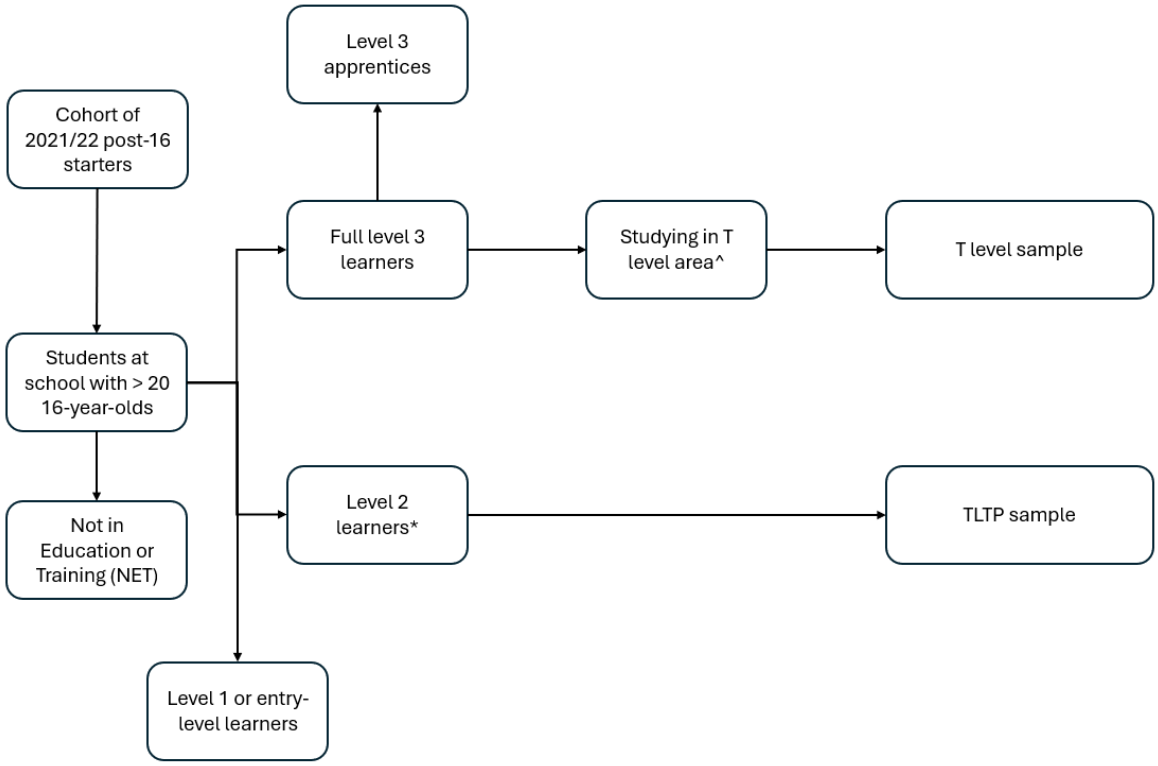
[83] Dearden et al., 'The Returns to Academic and Vocational Qualifications in Britain'; Greenwood, Jenkins, and Vignoles, 'The Returns to Qualifications in England: Updating the Evidence on Level 2 and Level 3 Vocational Qualifications'; McIntosh and Morris, 'Labour Market Returns to Vocational Qualifications in the Labour Force Survey'.

[84] Hupkau et al., 'Post-Compulsory Education in England'.

Our sample filtering process is shown in Figure 46. We also show how we will filter to a sample of comparable students for the TLTP programme (next section). We exclude students from schools with less than 20 students in year 11 because we calculate school-cohort averages and use these as control variables in our modelling.[85]

For the T level sample, we include students studying a full level 3 programme of study, excluding apprentices. We exclude apprentices because these students do not have qualifications and exams recorded at the same time as other level 3 learners. For example, apprenticeships do not generate 16-to-18-point scores and therefore cannot be compared to T level students. Students in the T level sample could be studying A levels, a collection of smaller vocational qualifications (BTEC certificates/diplomas), larger vocational qualifications (advanced diplomas) or a combination of the above. Moreover, because T levels are in very specific study areas, we also filter to students whose main learning aim is in one of the T level tier one subject areas.[86]

Figure 46. Sample selection diagram. * Level 2 learners can be studying for some smaller level 3 qualifications. ^ T level subject areas are based on tier one sector codes (except for the Science T level where we use the tier two code).



Methods

Using our T level sample, we want to estimate the impacts of enrolling on a T level on post-16 attainment and progression. One of the challenges in estimating the causal effects of T levels is that students are not randomly assigned to take a T level. Instead, students self-select into the

[85] 20 students is somewhat arbitrary so we test different cutoff points to ensure this step is not significantly changing our results.
[86] For the science T level, we use the tier two subject area ("Science") because the tier one subject area is too broad to be practically useful ("Science and Mathematics").

qualification and this means a simple comparison between T level and non T level students will not give an accurate reflection of the impacts of T levels. However, a feature of the T level rollout has been a low level of awareness of T levels across schools, students, parents and teachers (see the background section). This is, in part, due to the patchy nature of careers advice in schools in England.[87] This means that there is a degree of randomness in who knows about and therefore enrols on T levels. Indeed, in the Tech Ed Surveys, researchers found that most other level 3 learners did not know about T levels and many would have seriously considered them if they had been aware.[88]

With this context, to estimate the impacts of T levels we will compare T level students with students who are similar in every other observable way but do not take T levels. We will use both regression modelling and propensity score matching (PSM) methods to achieve this. We argue that after controlling for a rich set of observable characteristics, the leftover variation in T level enrolment will be plausibly random (due in part to the lack of awareness of T levels).

The characteristics we will account for are:

- **Demographic controls** which include:
  - Disadvantaged status (eligible for free school meals at any point in the past six years
  - Ethnicity
  - Gender
  - English as an additional language (EAL) status
  - Special educational needs (SEND) status
- **Attainment controls** which include:
  - Attainment 8 score (for their GCSEs)
  - GCSE English point score
  - GCSE maths point score
- **Area-based controls** which include:
  - Local authority (LA) fixed effects
  - Income Deprivation Affecting Children Index (IDACI) scores
- **School-level controls** which include school-level averages of:
  - Disadvantaged status
  - IDACI scores
  - Attainment 8 scores
  - SEND status
  - EAL status
  - Ethnicity
  - School size
  - School sex type (male, female or mixed)
  - Proportion of students taking A levels in the following year.[89]

[87] Whittaker, 'Fund Careers Advisers Directly to Ease Burden on Colleges, DfE Told'; Hochlaf and Dromey, 'The Baker Clause'.
[88] NatCen Social Research and NFER, 'Technical Education Learner Survey 2022: Research Report'.
[89] This excludes the individual student themselves.

Regression modelling

In our regression models, we will also control for the type of post-16 institution students attended (sixth form college, school sixth form or further education college) as this is likely to have an impact on post-16 attainment and progression outcomes.

The basic regression model we estimate is:

$$Y_{ikg} = \alpha_g + \theta D_i + \boldsymbol{X_i}\boldsymbol{\delta} + \boldsymbol{S_k}\boldsymbol{\eta} + \varepsilon_i \quad (1)$$

where Y_{ikg} is the outcome for individual i at school k in LA g, α_g are the LA fixed effects, D_i is a T level (or TLTP) treatment indicator, $\boldsymbol{X_i}$ is a vector of individual level demographic and attainment controls, $\boldsymbol{S_k}$ is a vector of school-level controls and ε_i is an idiosyncratic error term.

Assuming T level assignment is conditionally exogenous ($Y_i \perp D_i | \alpha_g, \boldsymbol{X_i}, \boldsymbol{S_k}$), θ represents the causal effect of enrolling on T levels on outcome Y. In our context, this is plausible given the range of characteristics we can account for and the patchiness of the T level rollout and T level awareness. We also extend this model to include both Lower layer Super Output Area (LSOA) fixed effects and school fixed effects such that we are comparing students within the same school in the same LSOA with similar characteristics and prior attainment.[90] Finally, we run a set of models that include the different T level pathways as separate treatment variables (health and science, construction, digital and education and early years). For the coefficients on these variables to have a causal interpretation, the conditional exogeneity assumption must be satisfied for each T level pathway:

$$Y_i \perp D_{ij} | \alpha_g, \boldsymbol{X_i}, \boldsymbol{S_k} \; where \; D_{ij} = 1 \; when \; pathway = j \; and \; 0 \; otherwise$$

These regression models hinge on the assumption that we can treat enrolling on T levels as exogenous conditional on observables. This means that if we have two students living in the same area with very similar prior attainment, demographics and school characteristics, the likelihood of these two students taking T levels is as good as random. Given the patchiness of careers advice, the low awareness of T levels and the fact that T levels are a brand new qualification, this is not an unreasonable assumption. In particular, because T levels are new and there is sizeable uncertainty around how "good" these qualifications are and how they will be perceived by employers, it is less likely there will be issues of self-selection on outcomes (Roy-style selection) or treatment effects.[91,92]

Propensity score matching (PSM)

To add additionally credibility to our estimates of the impacts of T levels, we combine our regression modelling with PSM. PSM methods rely on similar assumptions to our regression models but they remove or down-weight observations that are not very similar to the treated units (T level students). PSM methods can also be combined with outcome regression models to produce doubly robust estimates of parameters.[93] Doubly robust means only one of the outcome model or PSM selection model need to be correctly specified to recover unbiased causal estimates of the impacts of T levels

[90] The results are similar using different combinations of fixed effects. For brevity, these results are not presented in this paper but are available upon request.
[91] Roy, 'Some Thoughts on the Distribution of Earnings'.
[92] Ashenfelter and Card, 'Using the Longitudinal Structure of Earnings to Estimate the Effect of Training Programs'.
[93] Abadie and Imbens, 'Large Sample Properties of Matching Estimators for Average Treatment Effects'; Funk et al., 'Doubly Robust Estimation of Causal Effects'.

We use generalised full matching to estimate our PSM weights which is a generalised version of optimal full matching designed for large sample sizes.[94] The method works by assigning units to sub-classes which have one treated unit and several control units. The number of sub-classes and assignment to sub-classes is determined by minimising the sum of the within-sub-class standardised covariate differences in the matched sample. This method is a form of propensity score weighting that is less sensitive to the form of the propensity score model, allows users to retain all observations and is an approach recommended in the literature.[95] The variables we use for matching are the same as the covariates used in our outcome regression models. The one difference is that we exclude the post-16 institution type because that is endogenous to the choice of T levels (most T levels are offered at further education colleges). However, we still want to control for this in the outcome models.

We also run our PSM models on two sub-samples of control units – those taking an academic (mostly A levels) route or those taking a vocational route. This allows us to compare T level students overall to a control group of similar-looking academic learners and similar-looking vocational learners. This is a useful and pertinent comparison because most T level students were re-directed from one of these two pathways *and* we might expect the treatment effects to differ based on the students' counterfactual (what they would have studied in the absence of treatment).

We assessed balance by calculating standardised mean differences between the treated and control groups for all our variables. We ensured that all differences were between -0.1 and 0.1 SDs indicating that the groups were well balanced.

Descriptive results

In this section, we show the basic descriptive statistics by study group for the variables we use in our analysis (outcomes and control variables). In Table 4 we report the summary statistics for our control variables and in Table 5 we summarise our outcome variables. We have calculated summary statistics for the four groups of learners in our sample (defined by post-16 pathway).

The results show that the academic sample of students have higher prior attainment, are less likely to be disadvantaged and are less likely to have SEND than all three other groups. These trends are very similar to those observed in other studies of level 3 learners in the UK.[96] Academic learners are also at secondary schools with higher prior attainment, lower levels of disadvantage and lower rates of SEND. Academic learners are most likely to be at a school sixth form (73%) rather than a sixth form college (20%) or FE college (7%). For level 3 vocational learners, school sixth forms are still the most common destination, followed by sixth form colleges.[97] Almost all T level students study at FE colleges (this is where most of the T level provision happens).

T level students are broadly similar to students in the vocational groups, particularly the Level 3 mixed cohort (which are students studying a blend of academic and vocational courses). However,

[94] Greifer, 'Matching Methods'; Hansen, 'Full Matching in an Observational Study of Coaching for the SAT'; Sävje, Higgins, and Sekhon, 'Generalized Full Matching'.
[95] Austin and Stuart, 'Moving towards Best Practice When Using Inverse Probability of Treatment Weighting (IPTW) Using the Propensity Score to Estimate Causal Treatment Effects in Observational Studies'; Stuart, 'Matching Methods for Causal Inference'.
[96] Hupkau et al., 'Post-Compulsory Education in England'.
[97] The relatively high proportion of level 3 vocational learners at school sixth forms is in-part due to the T level subject area filters we apply. These filters include: Health, Public Services and Care (1), Science (2.1), construction, Planning and the Built Environment (5), Information and Communication Technology (6) and Education and Training (13).

this cohort of T level students are less likely to be female, less likely to have EAL and less likely to be non-white. This suggests that amongst level 3 learners studying in T level areas, T levels are one of the least diverse pathways.

Table 4. Summary statistics for level 3 learners (demographics and prior attainment)

	Academic	Mixed	Vocational	T level
Sample size	77,583	10,031	14,111	3,729
Individual characteristics				
Att8 score	70	53	47	53
IDACI score	0.15	0.19	0.21	0.18
Disadvantaged	15%	25%	32%	24%
Female	57%	65%	64%	57%
English score	6.6	5.2	4.7	5.2
Maths score	6.9	5	4.4	5.1
EAL	23%	23%	26%	11%
Non white	37%	35%	39%	16%
SEND	5%	8%	12%	9%
Rural	16%	12%	11%	18%
School-level averages				
IDACI score	16%	19%	20%	18%
Disadvantaged	22%	27%	30%	26%
SEND	12%	14%	14%	14%
EAL	19%	20%	24%	13%
NET	7%	8%	8%	8%
Boys school	6%	2%	3%	1%
Girls school	11%	7%	8%	3%
Mixed school	83%	91%	89%	96%
Att8 score	55	50	50	50
Number of pupils	1209	1186	1153	1101
Cohort size	200	201	196	196
Proportion academic	51%	39%	37%	36%
Someone attends T levs	42%	45%	45%	87%
Prop attending T levs	1%	1%	1%	2%
Post-16 destinations				
FE college	7%	6%	25%	88%
School sixth form	73%	69%	47%	3%
Sixth form college	20%	25%	28%	9%

The outcome summary statistics in Table 5 show that academic learners are more likely to finish their study in the two years of post-16 we can observe, they are less likely to drop their initial aim, less likely to sign on to an apprenticeship in year three or other advanced vocational study, less likely to go missing from education, more likely to pass a full level 3. T level students appear less likely to finish in two years (despite T levels being a two-year full level 3 course) and less likely to achieve a full level 3. They are, however, more likely to progress to an advanced apprenticeship or level 4 or higher vocational study at the age of 19. They have a similar rate of missingness and withdrawal to other level 3 vocational learners. We can see that of 3,729 16-year-olds who started a T level at the beginning of 2021/2022, less than half had achieved a T level by the time they were 18.

Table 5. Outcome summary statistics

	Academic	Mixed	Vocational	T level
Sample size	77,583	10,031	14,111	3,729
Full level 3	88%	78%	72%	44%
Total size passed (A lev eq.)	2.9	2.6	2.5	2.0
Dropped aim	15%	20%	23%	23%
NET yr 1	4%	10%	12%	12%
NET yr 2	1%	2%	3%	3%
Adv. apprenticeship Yr 3	3%	5%	5%	9%
Level 4+ vocational study Yr 3	2%	1%	1%	5%
Passed full T level	-	-	-	40%
Passed T level core	-	-	-	47%
Passed T level occ.	-	-	-	62%

Main results

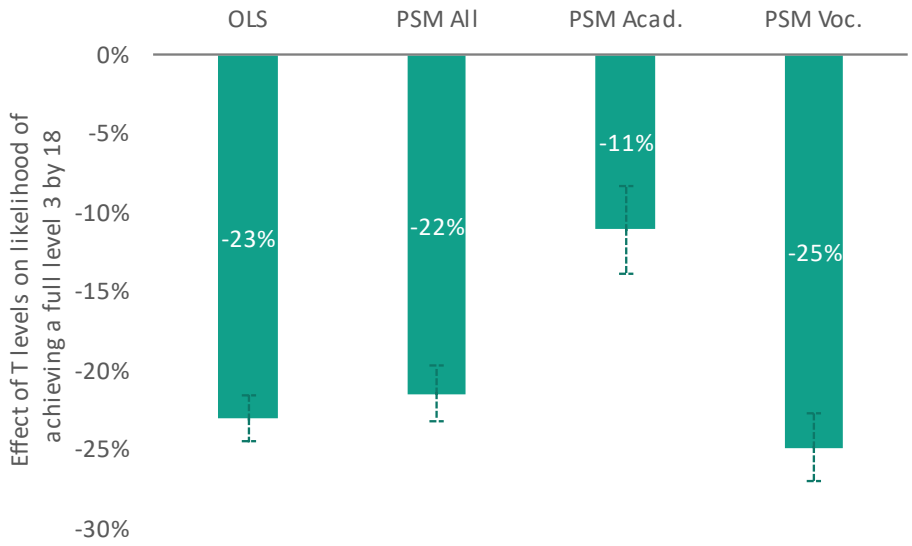
Our main results are summarised in the following graphs. Each graph contains the coefficient for T levels for the following models:

- **OLS** – the regression model with all controls but not PSM.
- **PSM All** – the OLS regression model combined with PSM on the entire sample.
- **PSM Acad**. – the OLS regression modelled combined with PSM for academic control students only, i.e. A level students are the comparison group.
- **PSM Voc**. – the OLS regression modelled combined with PSM for vocational control students only, i.e. level 3 learners taking vocational qualifications are the comparison group.

All of our results compare T level students to students who are studying at level 3 in similar areas with similar individual, school-level and area characteristics. The PSM academic and vocational models compare T level students to similar academic and vocational learners *only*.

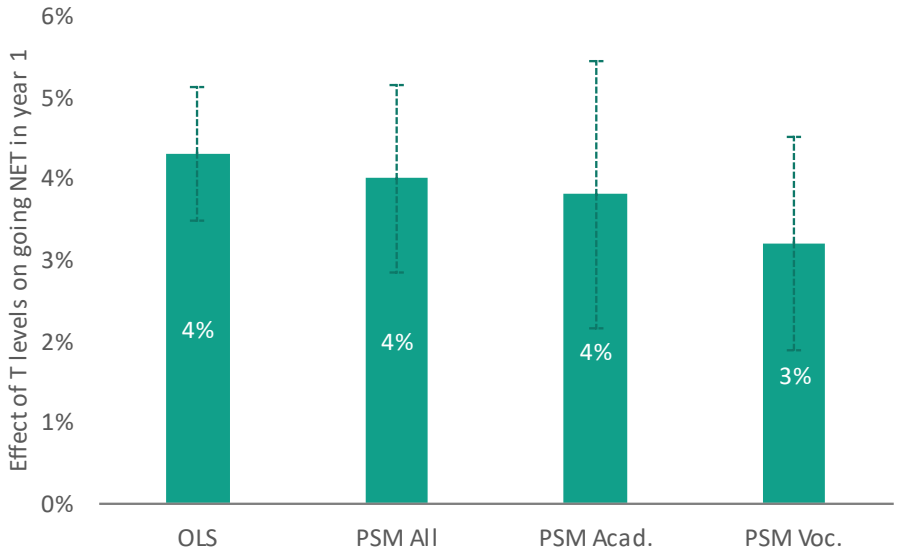
We start by looking at the likelihood of passing a full level 3 by 18. Figure 47 shows that T level students are significantly less likely to pass a full level 3 by 18 (two years after starting post-16). On average, T level students are 22 percentage points less likely to achieve a full level 3 and this is more pronounced when comparing to similar vocational learners (25 percentage points less likely) than similar academic learners (11 percentage points less likely).

Figure 47. Effects of T levels on likelihood of achieving a full level 3 by 18



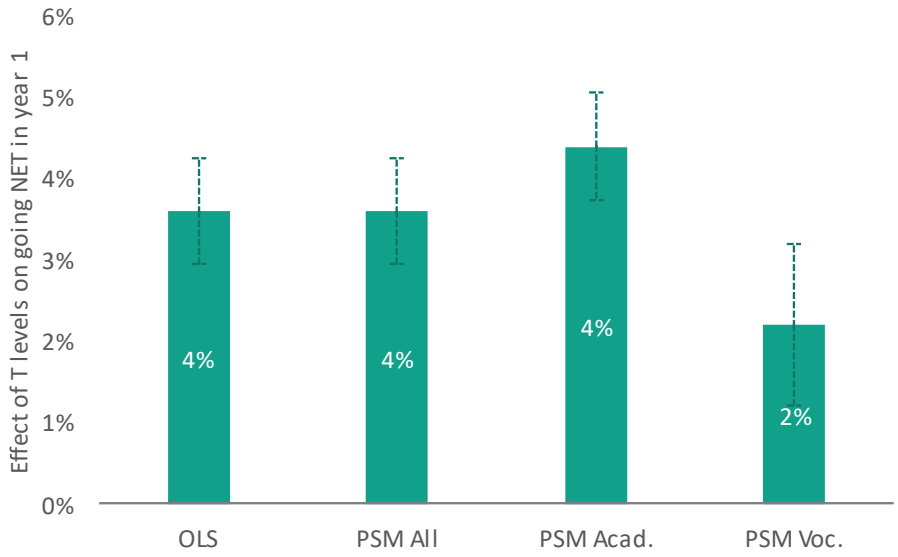
Next, we look at the impacts of T levels on progression to an advanced apprenticeship in year 3 of post-16 education. Figure 48 shows that T level students are around 4 percentage points more likely to move on to an advanced apprenticeship at the age of 19 (year 3 of post-16). This is a significant increase on a baseline of 3 to 5 per cent.

Figure 48. Effects of T levels on progressing to an advanced apprenticeship in year 3 of post-16 education



We also find that T level students are significantly more likely to progress to a level 4 or higher vocational qualification at the age of 19 (year three of post-16 education). On average, T level students are four percentage points more likely than comparable students to progress to level 4 or higher vocational study. This does not include higher education but suggests that T levels do promote pathways to further study for some students.

Figure 49. Effects of T levels on progressing to level 4+ vocational qualification in year 3 of post-16 education



The following three graphs (Figure 50, Figure 51 and Figure 52) show the effects of T levels on the likelihood of a student dropping their main study aim, going NET in year one of post-16 and going NET in year two of post-16. The results suggest that despite concerns over T level withdrawal, T level students are less likely to drop their main aim in their first year than other similar students. This is driven by comparisons with similar academic students who are 13 percentage points more likely to drop their main aim than T level students. However, it is worth noting that academic students (and other vocational learners) may find it easier to swap to a different aim (a different A level, for example) because there are more similar outside options than for T levels. Also, the choice of an A level student's main aim is more arbitrary than other (mainly vocational) learners because students tend to have multiple equally sized A level aims (so it is not clear which aim should be identified as the main aim). Hence, the impact of dropping the main study aim may not be the same for T level students and others.

We also find that T level students are significantly less likely to go NET than similar academic students. In year one, T level students are three percentage points less likely to go NET than similar academic students and they are four percentage points less likely to become NET in year two.

Figure 50. Effects of T levels on dropping main study aim in year 1

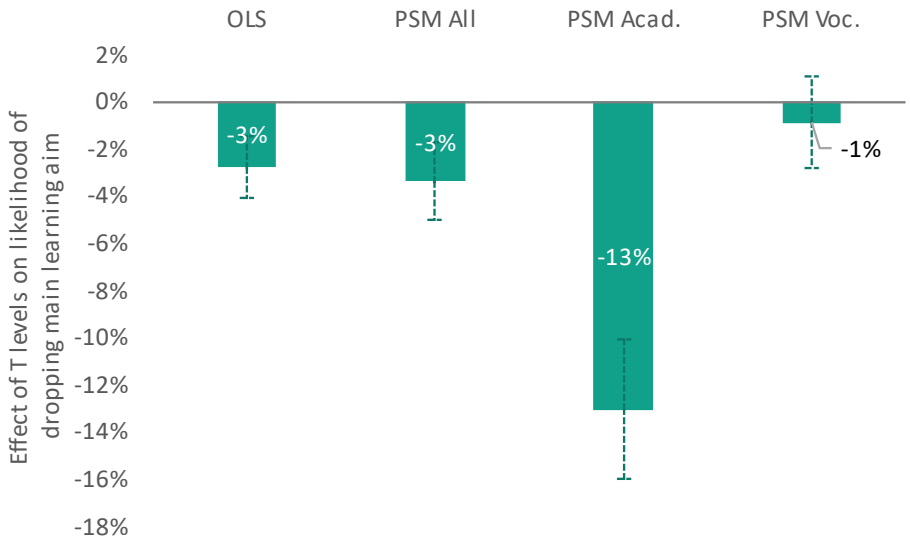


Figure 51. Effects of T levels on becoming NET in year 1

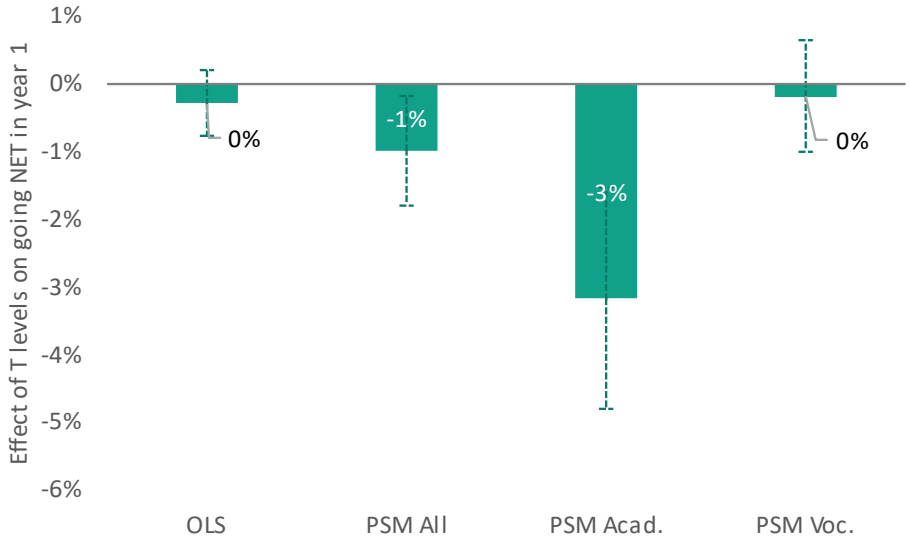
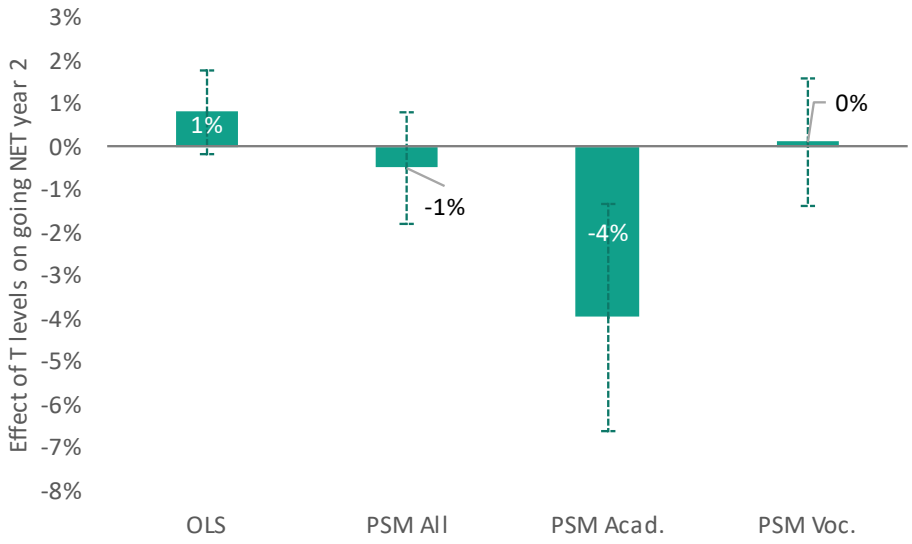


Figure 52. Effects of T levels on becoming NET in year 2



Results by pathway

We also run our regression models with separate T level treatment variables for each pathway. This allows us to explore whether the positive and negative effects we have observed are driven by particular pathways. For brevity, we will present graphs for two of our main outcomes – achieving a full level 3 and progressing to an advanced apprenticeship – and we will discuss the broader trends across the pathways and refer readers to the appendix where the coefficients are reported by pathway.

Our results show that the short-run impacts of T levels vary considerably by pathway. We find that the negative impacts of T levels on the likelihood of attaining a full level 3 and finishing post-16 are driven by the education and early years and the health and science pathways. The education and early years T level students are 53 percentage points less likely to pass a full level 3 compared to similar students and health and science students are 20 percentage points less likely (see Figure 53). There are still negative impacts overall for construction (8 percentage points less likely to pass a full level 3) but there are no significant impacts for the digital pathway).

Figure 53. OLS estimates of the impacts of T levels on the likelihood of progressing to an advanced apprenticeship by pathway

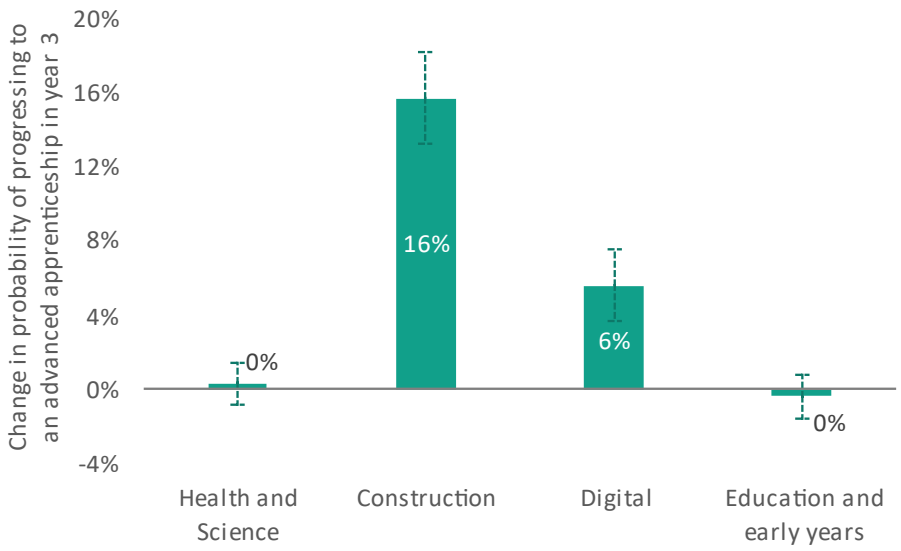
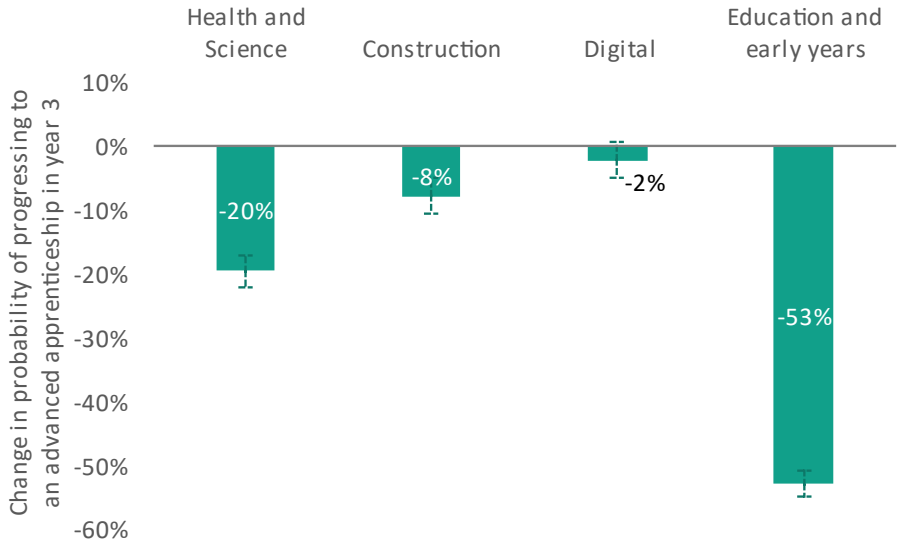


Figure 54. OLS estimates of the impacts of T levels on the likelihood of attaining a full level 3 by 18 by pathway



The increase in apprenticeship enrolments arising from T level enrolment is driven by the construction and digital pathways, where T level students are 16 and 6 percentage points more likely to go onto an advanced apprenticeship, respectively (see Figure 54). The reductions in students going NET in year one appear to be driven by the health and science and digital pathways. However, in year two, health and science students are more likely to go NET than other similar students.

Overall, these results show there is considerable heterogeneity by pathway indicating that some pathways have done better than others in the early stages of the T level rollout.

Conclusions

T levels are still in the early stages of their rollout and were introduced for well-founded reasons, such as the simplification of choices for students and increasing the quality and esteem of vocational education. However, the early stages of the rollout were marred with issues that have been well documented by Ofsted, the Education Committee and others.

We see these issues borne out in the data. T level students in the 2021/22 cohort are around 20 percentage points less likely to achieve a full level 3 by 18 than comparable students. T level students are, however, more likely to stay in education and training for the full two years when compared with comparable *academic* learners.

The retention of students has also been a major concern. Although we find that T level students are less likely to drop their qualification in year one than students studying other qualifications, we also find that disadvantaged and female students are more likely to not complete their T levels than students with similar prior attainment and other characteristics. White students are also more likely to withdraw in most pathways. Concerningly, of those who withdraw, a large group drop out of education and training altogether, with disadvantaged students most vulnerable to this.

These T level results and trends vary considerably by pathway. Overall, the digital pathway appears to be performing relatively well. Students are no less likely to achieve a full level 3 by 18 and are significantly less likely to become NET. Students that withdraw from the digital pathway also have better outcomes and destinations on average than other pathways. On the other hand, some T levels have performed less well. In particular, the health and science and education and early years pathways have seen high rates of withdrawal, worse level 3 attainment outcomes and worse outcomes for students that do withdraw. This suggests some key pathway-specific issues that may need to be addressed.

As for the Transition Programme, our results are overwhelmingly negative. The TLTP is explicitly designed to support students in progressing to a T level. However, it fails to do this for almost all of the students that are enrolled. In 2020/21, only 11 per cent *successfully* progressed to a T level and that fell to 6 per cent in 2022/23. For some pathways, this was as low as 2 per cent (health and science) or 5 per cent (education and early years). To put that in context, only 1 in 50 health and science TLTP students progress to a T level. For a programme whose paramount focus is on helping students transition to a T level, this is an alarming result.

We also show that less than a third of TLTP students appear to receive formal work experience, despite this being an important component of the programme. Moreover, in some pathways, up to 40 per cent of students are *not* taking English or maths resits despite not achieving a good pass in their GCSEs. This is another area the TLTP was to focus on.

Recommendations:

Based on our analyses, we have the following recommendations:

- The government should extend the pause on the defunding of overlapping qualifications. T levels are not currently suitable for many level 3 learners and changes need to be made before T levels could feasibly become the primary level 3 technical qualifications.
- The independent curriculum review should consider introducing a smaller version of the T level (approximately one A level in size). This would enable access for a wider range of

students and allow for greater breadth and flexibility in post-16 programme design. For example, student could take A levels and T levels like many currently do with A levels and BTECs, or a mixed level 3 and level 2 programme.

- The ongoing independent review of T level content should put a particular emphasis on T levels that appear to be performing less well. We show that health and science and the education and early years pathways may need more focus given some negative results. The review may be able to draw lessons from the better performing pathways, such as the digital pathway.
- The government should carefully consider how to provide adequate support and progression routes or student that withdraw from their T level, particularly in the first year. Many of these learners, who were on a large level 3 qualification, go missing from education and training.
- The government should abolish, or completely overhaul, the T level transition programme (TLTP, soon to be the Foundation Year). The results to date are overwhelmingly negative and the programme is failing in its primary objective – promoting transitions to T levels. Correspondingly, the government should design and promote better linkages between full level 2 qualifications and T levels. This will support level 2 learners in progressing to T levels while ensuring they spend their first year gaining a full-sized qualification.

Finally, we note that this report comes during the initial stages of the T level rollout and therefore looks at the short-run impacts of T levels and the TLTP. It will be important to study longer term progression and employment outcomes as data comes available as there may be significant long-run benefits for students who *complete* their T level qualification. However, our analyses show that T levels, as things stand, are clearly not for everyone. The government must act if the original aims of the T level reforms are to be achieved, including T levels becoming the primary level 3 vocational route for post-16 education.

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Appendices

Post-16 choice classification

This file describes the approach taken to classify students' post-16 choices. The aim is to create a group of mutually exclusive categories that defines what students choose to undertake at the start of their post-16 study.

We start by merging the ILR with the KS5 student cut which allows us to identify important characteristics of learners in the ILR (like their KS4 cohort, ethnicity, prior attainment and more). We then filter the merged data to students who transitioned to KS5 in the year of consideration (ie 2021, if looking at 2021/2022 aims). We also merge qualifications data from Ofqual which provides us with qualification titles, grading schemes, levels and types. We also add a flag for qualification type from DfEs performance table data.

We use the Asize and Gsize variables in the key stage 5 exam file rather than the width variables in the ILR. This has several advantages – firstly, the Asize and Gsize variables have greater coverage and fewer zeroes for qualifications. Secondly, the Asize and Gsize variables are consistent with UCAS points and awarding body websites that state the equivalence between qualifications and A levels or GCSEs. For example, a BTEC Extended Certificate will be worth 1 A level while a BTEC Diploma is worth 2 A levels. In the ILR, most vocational qualifications either have a zero for width (empty) or a 100 (meaning the qualification is worth 2 A levels).

When we mapped this to the Asize and Gsize variables from DfE, there was poor consistency suggesting some major data quality issues in the ILR.

The new approach is as follows:

- We filter the aims so that we only include entries meeting the following criteria:
    - For most aims, they must start between 01/08/2021 and 19/09/2021 (the start of August to third Sunday of September). We do this because we want to capture initial choices rather than choices made during the post-16 phase.
    - For aims with an apprenticeship "progtype" in the ILR or a traineeship, we extend this end date to the 31/01/2022 (end of January) because apprenticeship starts are more staggered (this captures over 75% of starts in the academic year).
    - All aims must last at least 7 days. This ensures we exclude aims that students start and then immediately withdraw from.
- From these filtered aims, we create an indicator variable for whether a student has any of the following aims:
    - A T level aim
    - A T level transition programme aim
    - A level 2 apprenticeship aim (an apprenticeship aim with a level 2 width greater than zero)
    - A level 3 apprenticeship aim (an apprenticeship aim with a level 3 width greater than zero)
    - A traineeship aim
- With the large number of remaining aims, we use the ASIZE and GSIZE variables to identify how much each aim contributes to a full level 2 and level 3 award. For ASIZE, 1 = 1 A level so an ASIZE of 2 is considered a full level 3 (2 A levels). For GSIZE, 1 = 1 GCSE so a full level 2 is

usually considered 4-5 GCSEs. In this part of the data cleaning, we only consider regulated aims that we have Ofqual data for.

The Asize and Gsize variables are still incomplete for some qualifications and these tend to be odd BTECs or other vocational qualifications. This is only around 1% of regulated and relevant (level wise) qualifications. To fill in these gaps, we created a taxonomy of vocational courses based on common key words (see below) and calculated the median Asize (for level 3 qualifications) and median Gsize (for level 2 qualifications) for aims in those broader groups. We then used these values to impute the missing Asize and Gsize values.

Qualification keyword	**Broader group**	**Assigned Asize**
National Diploma	Larger Diplomas	100 (2 A levels eq.)
Extended Diploma	Larger Diplomas	100 (2 A levels eq.)
Subsidiary Diploma	Smaller Diplomas	50 (1 A level eq.)
Applied Diploma	Smaller Diplomas	50 (1 A level eq.)
Foundation Diploma	Smaller Diplomas	50 (1 A level eq.)
Diploma	Smaller Diplomas	50 (1 A level eq.)
Extended Certificate	Extended Certificates	50 (1 A level eq.)
Certificate	Certificates	25 (1 AS level eq.)
Award	Awards	25 (1 AS level eq.)
Other (small proportion)	Awards	25 (1 AS level eq.)

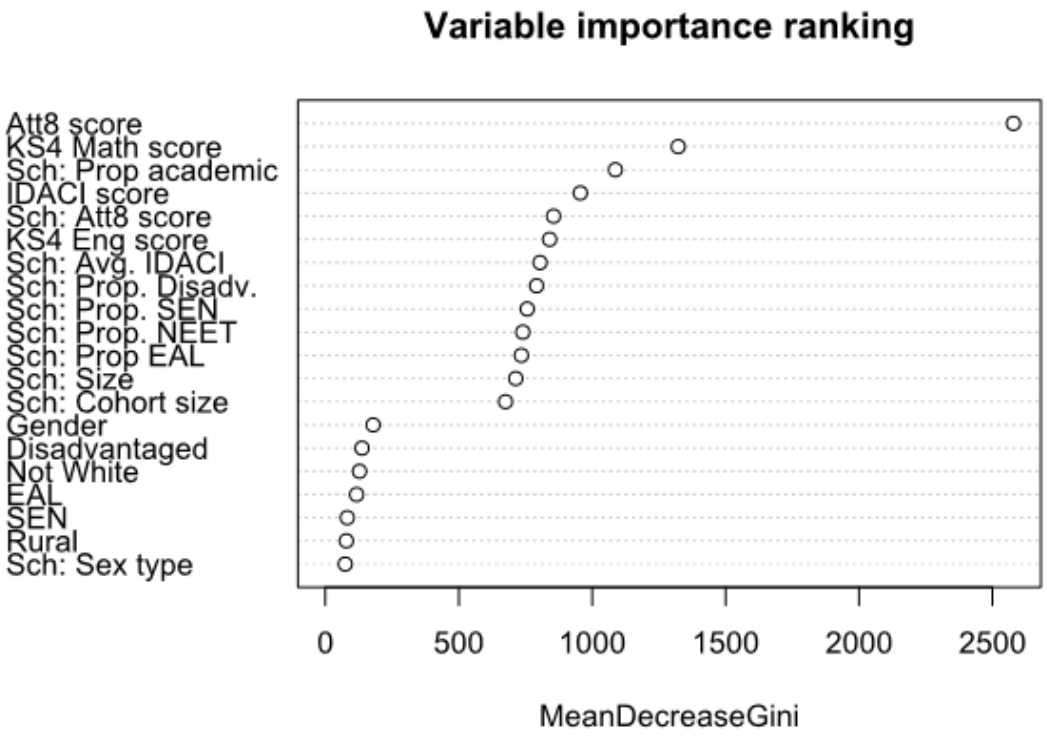
We then create the following distinct groups using a recursive assignment process and the following rules:

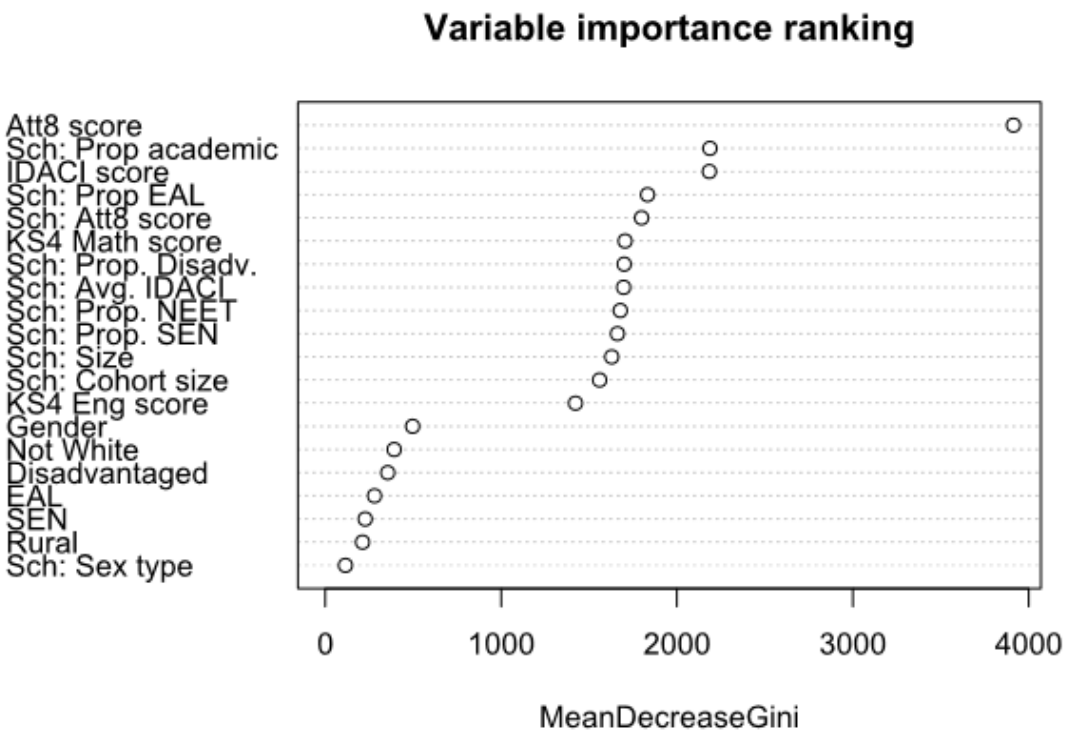
Group	**Rule**
Level 3 Apprenticeship	Has a level 3 apprenticeship programme type
T level	Has a T level programme type
A levels	Is undertaking A levels or AS levels that sum to at least ASIZE = 2 (2 full A levels)
Full Level 3 Academic	Is undertaking A levels, AS levels or other academic qualifications (ie extended projects) that sum to at least ASIZE = 2 (2 full A levels)
Full Level 3 Mixed	Has an ASIZE at least = 2 (full level 3) where at least 0.25 points (1 AS level eq.) come from academic qualifications
Full Level 3 Vocational	Has an ASIZE at least = 2 (full level 3) where less than 0.25 points (1 AS level eq.) come from academic qualifications.
Apprenticeship Level 2	Has a level 2 apprenticeship programme type
Traineeship	Has a traineeship programme type
T level Transition Programme	Has a T level transition programme type
Some Level 3	Has at least an ASIZE = 0.25 (1 AS level eq.) but less than a full level 3 (ASIZE = 2)
Full Level 2	Has a GSIZE of at least 4 (4 GCSEs) – this is consistent with a recent Nuffield report.
Some Level 2	Has a GSIZE >= 1 (1 GCSE).
Other (non-regulated or less than level 2)	Does not meet any of the following conditions:

	Either studying predominantly non-regulated aims or studying at level 1 or below.

Variable importance graphs from classification modelling

The graphs below show the twenty most important variables for the 3-class and 5-class classification models. Prior attainment and school-level characteristics are consistently the most important variables in the models.




Variable importance ranking
Att8 score
Sch: Prop academic
IDACI score
Sch: Prop EAL
Sch: Att8 score
KS4 Math score
Sch: Prop. Disadv.
Sch: Avg. IDACI
Sch: Prop. NEET
Sch: Prop. SEN
Sch: Size
Sch: Cohort size
KS4 Eng score
Gender
Not White
Disadvantaged
EAL
SEN
Rural
Sch: Sex type
0
1000
2000
3000
4000
MeanDecreaseGini