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Progression of students who leave post-16 education with low A level grades

Research Report

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1. Introduction and aim of the current research

1.1 Background

One of the purposes of education is to enable young people to progress to further study (*e.g.*, Higher Education), training (*e.g.*, apprenticeship), and employment.

During recent years, the Department for Education (DfE) has published destination measures that provide information about what young people were doing in the 12 months after leaving post-16 study (https://explore-education-statistics.service.gov.uk/find-statistics/16-18-destination-measures). The DfE has also published information on destinations broken down by a range of individual characteristics, geographical location, and type of education provider. While this information is welcome, it only provides a view of what is happening in the short term.

Research on longer term post-16 education and labour market pathways has been possible in recent years using the Longitudinal Education Outcomes (LEO) data (https://www.gov.uk/guidance/apply-to-access-the-longitudinal-education-outcomes-leo-dataset#about-the-leo-standard-extract), managed by DfE. For example, Anderson and Nelson (2021a) have written a very comprehensive report looking at education and labour market activities, pathways and outcomes for several cohorts of students who completed Key Stage 4 in England. Robinson and Bunting (2021) also used LEO data to investigate the relationship between 16-19 curriculum breath and employment outcomes, and Julius, Hillary and Faulkner-Ellis (2022) measured the value added of post-16 schools and colleges on progression.

More specific research on labour market returns to different qualifications and, in particular to Level 3 qualifications, has also been carried out to date (*e.g.*, McIntosh *et al*. (2002), Hayward, Hunt and Lord (2014), Conlon and Patrignani (2015), Espinoza *et al*. (2020)) using data from large-scale surveys or from cohort studies.

However, although some of the above research focuses on specific qualifications (vocational *vs*. academic) or on specific subjects (*e.g.*, STEM), research on progression and earnings of young people based on the qualifications achieved during post-16 study (*e.g.*, A levels, BTECs, Cambridge Technicals) and their performance on them (*e.g.*, at least ABB at A level; at least 136 UCAS points based on A levels and other equivalent Level 3 qualifications) is scarce.

In England, A levels are the most popular qualification taken by students post-16. They can lead to university, further education study, training, or work. Students usually take three or more A levels over two years. The majority of A level entries achieve good grades. For example, in 2023, 76.1% of all A levels taken by 18 year-olds were graded A*-C (https://analytics.ofqual.gov.uk/apps/Alevel/Outcomes/). A levels are the most common route to get into Higher Education (HE) and most courses require specific A levels (or combinations of A levels) and a minimum level of performance on them. A levels are also valued by employers because they can show a good level of knowledge and skills.

However, not all A level students achieve good grades. For example, in 2023, 7.3% of all A level entries were graded E (the lowest grade) and a further 2.5% were ungraded (https://www.jcq.org.uk/examination-results/).

What happens to students who leave school or college with A level qualifications at grade E? Are their opportunities for progression similar to those of students who get better grades? Or are they similar to those of students who achieved different qualifications (*e.g.*, BTECs or Cambridge Technicals)? Do they have good progression outcomes and/or good labour market returns?

It is important to make sure that students with poor outcomes at the end of school or college are not forgotten. Knowing their destinations and labour market outcomes would help understand what is happening to them and whether any policy changes / interventions need to be made to help them.

1.2 The current research

This research project aims to understand the education, training and employment destinations, as well as the labour marker outcomes (*i.e.*, earnings), of students who leave post-16 education with grades which might be considered to have little currency (*e.g.*, grades D or E) in their A level qualifications. As the destinations of young people depend, not only on their school qualifications, but also on individual characteristics (*e.g.*, average academic performance, gender, socio-economic status, ethnicity), this research also takes into account students' background characteristics when investigating progression and earnings.

2. Data and methods

2.1 Data

In this work, we used the Longitudinal Educational Outcomes (LEO) data, a database developed by the Department for Education. LEO connects individuals' education data with their employment, benefits and earnings data and includes the types of data shown in Table 1 below. All data is available, in the current iteration of the LEO data (2nd iteration) until 2020/21, with the exception of HESA data (only available until 2019/20). See https://www.gov.uk/government/publications/longitudinal-education-outcomes-leo-dataset/longitudinal-education-outcomes-leo-data for information of the key parts of the LEO standard extract and Appendix A for specific details about the structure of the datasets from HMRC (*i.e.*, employment spells; earnings; self-assessment earnings) and DWP (*i.e.*, out of work benefits).

For the current research we selected, using the Key Stage 5 extracts of the NPD, the students who achieved their A level qualifications between 2004/05 and 2011/12 (eight cohorts) and we followed their education and labour market activities until 2020/21.

Table 1: Types of data in the LEO dataset

Data type	Source	Availability
School records	National Pupil Database (NPD)	2001/02 - 2020/21
Further education college and apprenticeship data	Individualised Learner Records (ILR)	2002/03 - 2020/21
Higher education records	Higher Education Statistics Agency (HESA)	2004/05 - 2019/20
Employment spells	His Majesty's Revenue and Customs (HMRC)	1997/98 - 2020/21
Earnings	His Majesty's Revenue and Customs (HMRC)	2003/04 - 2020/21
Self-assessment earnings	His Majesty's Revenue and Customs (HMRC)	2013/14 - 2020/21
Out of work benefits	Department for Work and Pensions (DWP)	1999/00 - 2020/21

Several years of data on education and labour market outcomes were available for each cohort, as shown in Figure 1. For example, students who achieved their A levels in 2004/05 were 34 years-old in 2020/21 and sixteen years of education/employment/earnings data were available for them; students who achieved their A levels in 2011/12 were 27 years-old in 2020/21 and nine years of education/employment/earnings data would be available for them. The LEO data allows us to tack the activities and earnings of individuals over time. As an example, Table 2 shows the progression of one individual in the 2009/10 cohort.

Education data is centred on the academic year, which usually runs from 1 September to 31 August for schools and Higher Education and from 1 August to 31 July for Further Education. The employment, earnings, benefits and self-assessment data is structured around the tax year, which runs from 6 April to 5 April the following year.

This makes it difficult to combine data from all the different sources. In this report, we have used the "*academic year*" for any analyses including education data (even if the analysis also included other types of data). For analyses not including any education data, we have used the "tax year".

The focus of this research was on students:

- with at least two A level qualifications, and whose best grade in them was grade 'E',
- with at least two A level qualifications, and whose best grade in them was grade 'D'.

For the students above, the grades achieved in the majority of their programme of study might be considered to have 'little' currency (they did not achieve grades higher than D in any of their A levels)[1].

Progression (*e.g.*, to education and employment) and earnings for these students were compared to progression and earnings of other groups of students:

- students with two or more A levels, all at grades C or above.
- students with other Level 3 qualifications (*i.e.*, BTECs).

Based on the above, candidates were classified in four mutually exclusive groups as follows:

[1] Note that students with grade U in all their A level qualifications were excluded from the research.

- *A level best grade E*: the student took at least two A levels and their best A level grade was E (A levels must make up at least 50% of their qualifications)
- *A level best grade D*: the student took at least two A levels and their best A level grade was D (A levels must make up at least 50% of their qualifications)
- *A level grade C or above*: the student took at least two A levels and their worst A level grade was not lower than C (A levels must make up at least 50% of their qualifications)
- *BTECs*: the student took at least two BTECs (any grades) and BTECs made up at least 50% of their qualifications.

Any student not included in one of these groups was not considered in the research. This was done so as to have distinct groups of students and to allow for "straight forward" comparisons between the focus groups (A level best grade E; A level best grade D) and the comparator groups (A level lowest C; BTECs). For example, A level students who achieved one or more grades above a D and one or more grades below a C were not included in this research – such students would have grades which might be considered to have little currency but would also have A levels with "good" grades and it would have been impossible to isolate the effect of the lower A level grades on progression or earnings.

For students in the four groups above, background characteristics (*e.g.*, academic performance, gender, socio-economic status, ethnicity, ….) were available in the NPD, as follows:

- Gender[2] (male / female)
- The average academic performance (prior attainment) was measured by an average GCSE and equivalents point score. This point score, which ranges from 0 to 58[3], was used to divide students into approximately equally sized groups: low attainment, medium attainment and high attainment. These terciles were based on the students included in the research only (that is, those in the four student groups).
- Socio-economic background: The level of income-related deprivation that a student experienced was inferred using the Income Deprivation Affecting Children Index (IDACI)[4]. This index is based on the student's home postcode and describes the percentage of children in a very small geographical area (Lower Layer Super Output Area or LSOA) living in low income families. It varies between 0 and 1 and indicates how income deprived the area in which a student lives is. It cannot, however, indicate how income deprived the student actually is. This measure was used to divide students into three approximately equally sized groups: low deprivation (more affluent), medium deprivation and high deprivation. These terciles were based on the students included in the research only.

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[2] Throughout this report the word "gender" has been used instead of "sex". This approach is taken to follow the terminology used in the NPD extracts, which are the source of this data in the current research. It is acknowledged that this assumption may not accurately represent all individuals, but it is hoped that it is sufficiently accurate to identify, interpret and discuss large-scale patterns in the data.

[3] Points were assigned to grades. For example, 58 points were assigned to each A*, 52 to each A, 46 to each B, 40 to each C, etc.

[4] For further information on IDACI calculation, including definitions of children, families, and income deprivation, see https://www.gov.uk/government/publications/english-indices-of-deprivation-2015-technical-report.

Key Stage 5 cohort	Post-16 years (LEO data)															
	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12	2012/13	2013/14	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21
2004/05																
2005/06																
2006/07																
2007/08																
2008/09																
2009/10																
2010/11																
2011/12																

Figure 1: Availability of LEO data by Key Stage 5 cohort[5]

[5] Coloured cells indicate the years students were followed up for in each Key Stage 5 cohort. For example, for students who were at the end of Key Stage 5 in 2009/10, were followed up in the LEO data from 2010/11 until 2020/21.

- Type of school: the NPD includes information about the school at which candidates gained their Key Stage 5 qualifications, indicated by the school's Unique Reference Number (URN). This number was used to match candidates to the DfE's register of educational establishments[6], providing information on the type of school (Gill, 2017). Schools were classified into three groups: state schools (which included selective and non-selective schools), independent schools and colleges (sixth form colleges and further education (FE) colleges).
- Ethnicity: the student's major ethnic group, as provided by the NPD, was used to classify students into the following ethnic groups: Asian (not Chinese), Black, Chinese, White, Mixed or Other.
- Special educational needs (SEN): the NPD provided information on whether a student received SEN support (in particular, whether they had a SEN statement), or not.

Note that some of the variables described above are collected as part of the annual school census, so they are primarily available only for students at state-maintained schools (which do not include independent schools or colleges). This can lead to missing data for some variables (*e.g.*, IDACI deprivation, special educational needs or ethnicity).

Table 2: Example of the trajectory of a student completing Key Stage 5 in 2009/10

Academic Year	Example Individual	Year after post-16 study	Age
2009/10	Last year of Key Stage 5		18
2010/11	First year HE	Year 1	19
2011/12	Second year HE	Year 2	20
2012/13	Third year HE	Year 3	21
2013/14	Mixed (education + employment)	Year 4	22
2014/15	Employed	Year 5	23
2015/16	Employed	Year 6	24
2016/17	Employed	Year 7	25
2017/18	Employed	Year 8	26
2018/19	Employed	Year 9	27
2019/20	Benefits	Year 10	28
2020/21	Employed	Year 11	29

2.1.1 Destinations

In a first step, for each academic year (up to a maximum of 15 years after completing Key Stage 5)[7], students were assigned each of the following destination measures, using data from the ILR, from the HESA student records, and from the employment and out of work benefits extracts of the LEO data:

[6] https://get-information-schools.service.gov.uk/.

[7] We followed students for a maximum of 15 years in Education and 15 in Employment/Benefits.

- *Being in sustained education*

  An individual was defined as being in sustained further education or sustained higher education as follows:

  - Sustained Further Education: the individual appeared in the ILR aims data (in England) for at least one day in each of six consecutive months of the academic year (1 September – 31 August). Only active aims[8] were considered.
  - Sustained Higher Education: the individual appeared in the HESA student records data (UK Higher Education institutions) for six consecutive months of the academic year (1 September – 31 August).

- *Being in sustained employment*

  An individual was counted as in sustained employment if they were recorded as being employed (for at least a day) in 5 out of the 6 months between October and March in the academic year (*e.g*., 5 out of 6 months between October 2010 and March 2011 for the academic year 2010/11).

  Only employment spells for those who pay tax through PAYE (https://www.gov.uk/income-tax/how-you-pay-income-tax) were considered to record an individual as being in sustained employment[9].

  Employment spells that started before April 2003 (that is, started in the tax year before our first cohort was 16 years-old) were removed. Similarly, employment spells that had an end date before April 2005 (that is, spells that ended in the tax year before the first cohort of students in the study completed Key Stage 5) were removed.

- *Claiming out of work benefits*

  An individual was counted as having sustained benefits if they were recorded as being on benefits (for at least a day) in 5 out of the 6 months between October and March in the academic year (*e.g*., 5 out of 6 months between October 2010 and March 2011 for the academic year 2010/11).

  Only out of work benefits were considered. The benefits classed as out of work for the analyses carried out in this research are listed in Anderson and Nelson (2021a, p. 8). They include, for example, jobseekers' allowance, universal credit and pension credit. Other benefits such as statutory sick pay or disability living allowance are not classified as "out of work benefits" and are not included here.

  Benefits spells that that started before April 2003 (that is, started in the tax year before our first cohort was 16 years-old) were removed. Similarly, benefits spells that had an end date before April 2005 (that is, that ended in the tax year before the first cohort of students in the study completed Key Stage 5) were removed.

[8] "Active" aims are those that are currently being pursued by a learner, that is, they are neither completed nor withdrawn.

[9] Self-employment was not included in the Destinations analyses but was considered separately (see Section 2.1.3 for details).

- *No sustained destination*

  The individual had some paid employment, participated in some learning (HE and/or FE) or claimed some out of work benefits in the academic year, but did not fulfil the requirements of "sustained" destinations in any of these.

- *No destination identified*

  The individual was not found in any of the education, employment or benefits datasets for the year in question.

To define the sustained destinations above (*e.g.*, education, employment, benefits, etc.) we followed the terminology used by DfE in previous research using LEO data (*e.g.*, Anderson and Nelson, 2021a).

In a second step, for each academic year (as above), each individual was assigned a main (or principal) destination based on their education and their labour market activity (employment, benefits). When an individual met the criteria for more than one destination in the same year, the following hierarchy (Anderson and Nelson, 2021a) was applied:

- Education and employment: education was assigned to be the main destination
- Education and claiming out of work benefits: education was assigned to be the main destination.
- Employment and claiming out of work benefits: claiming out of work benefits was assigned to be the main activity.

2.1.2 Earnings

The earnings data covered those individuals with records submitted through the PAYE system. As such, it did not include those who are self-employed[10].

For each individual, in each tax year (up to a maximum of 15 years), we calculated their daily earnings. This was done by taking their annual earnings reported in a given tax year and dividing by the number of days recorded in any employment spells in that same tax year.

Only people in sustained employment and with earnings greater than zero were included in this work. As it is not possible to identify which individuals are working part-time, this was intended to minimise the impact of including individuals who might be working part-time while studying.

Earnings data was cleaned to remove extreme and inconsistent values. For example, earnings which were unreasonably high (daily earnings of more than £200,000) were excluded. For dealing with those with apparently very low earnings, we rounded the daily earnings values to the nearest whole number and removed any instances of zero earnings (*i.e.*, daily earnings prior to rounding of below 50p). There were still, however, instances of individuals with earnings below the tax threshold included in the data. We did not remove them as, in some years, they accounted for more than 20% of the records.

[10] Self-employment earnings were not included in the earnings analyses but were considered separately (see Section 2.1.3 for details).

As our data included several cohorts of individuals, their earnings were from different tax years. To be able to make year on year comparisons, we adjusted earnings from all years in line with the most recent tax year (2020/21). That is, all earnings are presented in terms of their equivalent value in 2020/21. To do that we used the Bank of England inflation calculator (for details see here: https://www.bankofengland.co.uk/monetary-policy/inflation/inflation-calculator).

2.1.3 Self-assessment data

As well as employment and earnings data for those who pay tax through PAYE, the LEO dataset also includes employment and earnings information of those who pay tax through self-assessment. However, this data is only available from the 2014/15 tax year onwards.

Figure 2 shows, for each of the Key Stage 5 cohorts in our research, when self-assessment data is available. It is clear that this data does not exist for all cohorts of students in all years (Year 1 to Year 16) after the completion of Key Stage 5. For example, for the cohort of students who completed Key Stage 5 in 2009/10 cohort, data on self-assessment was not available in Year 1 and Year 2 after completing Key Stage 5. Therefore, in the main analyses of destinations and earnings from 2004/05 to 2020/21, self-assessment data was not included.

However, not considering this data at all might penalise young people from some backgrounds (*e.g.*, those with A level grades that might be considered to have little currency) who might be more likely to be working in sectors with high self-employment (*e.g.*, skilled trades or the creative industries). For that reason, in this report, we carried out some additional separate analyses of the self-assessment data.

Self-assessment destinations

For each year after Key Stage 5 (from Year 3 to Year 16)[11], the following destination measures were considered:

- *Being self-employed only*

  An individual is counted as self-employed in a tax year if they have earnings due to self-employment in that year. An individual is not considered *self-employed only* if they are also on sustained employment in the tax year (as defined in Section 2.1.1).

  The LEO data does not record details of self-employment spells during the tax year or number of days in self-employment.

- *Being both in sustained employment and self-employment*

  An individual is counted in sustained employment if they were recorded as being employed (for at least a day) in 5 out of the 6 months between October and March in the tax year (*e.g.*, 5 out of 6 months between October 2010 and March 2011 for the tax year 2010/11).

  To be in this category, the individual also needs to be counted as being self-employed in the tax year (*i.e.*, have earnings due to self-employment in that year).

[11] Note that for the first two years after Key Stage 5 none of our A level cohorts had data on self-employment (self-employment data is only available from 2014/15 onwards; our A level cohorts completed Key Stage 5 between 2004/05 and 2011/12).

Note that, for the calculation of self-assessment destinations, data stretches to 16 years after completion of Key Stage 5, rather than to 15 years as in the analyses discussed previously. This is due to HESA data only being available until 2019/20 but other data in LEO, such as employment and self-assessment data, being available until 2020/21.

Self-assessment earnings

For each individual, in each year (from Year 3 to Year 16, as above), we calculated two measures of earnings:

- *Yearly earnings from self-employment only* (restricting to students with self-employment earnings only)
- *Yearly combined earnings from self-employment and sustained employment* (restricting to students with earnings from both self-employment and sustained employment)

Yearly earnings were used instead of daily earnings because data on self-employment spells was not available (and, therefore, it was not possible to calculate the number of days in self-employment). This means that earnings from self-employment will be underestimated in comparison to earnings from employment. For example, a student who earned £10,000 from a self-employment spell of 6 months but nothing else in the rest of the year would have yearly earnings of £10,000. However, a student earning the same amount from 6 months of employment (and nothing else) would have daily earnings of £10,000/182.5 = £54.79 which, when multiplied by 365 days, equates to yearly earnings of £20,000.

For consistency, the earnings from the sustained employment part of the combined earnings did not take account of the number of days employed (*i.e.,* total earnings for the year figure was used, irrespective of how many days worked).

Key Stage 5 cohort	Years after completion of Key Stage 5 (LEO data)															
	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Year 11	Year 12	Year 13	Year 14	Year 15	Year 16
2004/05																
2005/06																
2006/07																
2007/08																
2008/09																
2009/10																
2010/11																
2011/12																

Figure 2: Availability of self-employment and self-employment earnings by Key Stage 5 cohort and years after completing Key Stage 5[12]

[12] Coloured cells indicate, for each cohort, the years after completing Key Stage 5 for which self-assessment data was available. For example, for students who were at the end of Key Stage 5 in 2009/10, self-assessment data was only available in seven years (from Year 5 to Year 11 after completing Key Stage 5).

2.2 Methods

2.2.1 Destinations

In the first instance, descriptive statistics were produced to show "where" young people were progressing. For example, tables and graphs showing the percentages of young people (amongst the groups of interest and the comparators) in each destination outcome, by year after completion of Key Stage 5 (from Year 1 to Year 15), were produced.

The analyses above were also carried out for groups of students broken down by background characteristics: gender, ethnicity, socio-economic deprivation, special educational needs, prior attainment and type of school attended during Key Stage 5.

To further explore progression to sustained education and progression to sustained employment (the most two popular destination outcomes), taking into account the type of student (*i.e.*, A level lowest C; A level best D, A level best E, BTECs) and whilst controlling for students' backgrounds, multilevel logistic regression analyses (with students clustered within schools) were carried out.

The outcomes (dependent variables) in the regression models were as follows:

- Progression to sustained education
- Progression to sustained employment

In a first step, the independent variables in the regression models included: the type of student (groups of interest and comparators), the gender of the student, the type of school attended during Key Stage 5, the student's level of deprivation, an indicator of special educational needs, and the student's ethnicity. A variable indicating the Key Stage 5 cohort (*e.g.*, 2004/05, 2005/06, etc.) was also included in the regression models to account for changes over time. In a second step, the regression models included the interactions between the type of student and all other individual background variables.

The discussion of regression models presented in the results section of this report will focus on the independent variables and interactions that were statistically significant at the 0.05 level. Furthermore, instead of carrying out regression analysis for each year after completion of Key Stage 5 (from Year 1 to Year 15), we focussed on Year 1, Year 5 and Year 10 only.

To aid interpretation, alongside the results from the regression analyses, figures are presented showing the probability of progressing to each destination, broken down by the student group (*i.e.*, A level lowest C; A level best D, A level best E, BTECs) and the Key Stage 5 cohort. These charts are intended to illustrate the differences between the student groups (groups of interest and comparators) once all other factors are held constant.

2.2.2 Pathways

Alongside destinations in each year after completing Key Stage 5, the research investigated students' pathways. We defined "pathways" as the destinations of young people over time (*i.e.*, the flow/movement/change between years). To get a clearer view of the pathways of young people at the same age, and in each of the student type groups, we used Sankey charts[13]. In particular, two sets of charts are presented in this work:

[13] https://www.data-to-viz.com/graph/sankey.html

- Flows of students between qualification group and destination in Year 1, Year 5, and Year 10 (three separate charts) after completing Key Stage 5.
- For each group of students (*i.e.*, A level lowest C; A level best D, A level best E, BTECs) flows of students between destination in Year 1, destination in Year 5, and destination in Year 10 after completing Key Stage 5.

The main aim of these charts is to show the transition from education into the labour market of students in the *A level best grade E* and *A level best grade D* groups (students whose A levels might be considered to have little currency) and their peers in the two comparator groups.

Note that, in these graphs, the destination "*No destination identified*" was not included. Additionally, in the graphs showing flows between Year 1, Year 5, and Year 10 destinations, the destination "*Benefits"* was not included. These destination measures were removed due to the small numbers of students in each of them. Including them in the graphs would have made them very difficult to read and interpret.

2.2.3 Earnings

As for the destinations analyses, descriptive statistics were produced in a first step, to show the average daily earnings of the different groups. For example, tables and graphs showing the median[14] daily earnings of young people (amongst the group of interest and the comparators), by year after completion of Key Stage 5 (from Year 1 to Year 15), were produced.

The analyses above were also carried out for groups of students broken down by the following background characteristics: gender, ethnicity, socio-economic deprivation, special educational needs, prior attainment and type of school attended during Key Stage 5.

In a second step, we carried out regression analyses to further explore the relationship between earnings and the different groups of students. In particular, multilevel linear regression models for the earnings measure (daily earnings) were fitted. Note that we used the *log of the daily earnings* as the dependent variable instead of the daily earnings, to account for the fact that the earnings data had a right-skewed distribution. A log-transformation can help make the data more normally distributed, improving linearity, and facilitating easier interpretation of coefficients as percentage changes[15].

The regression models controlled for the students' background characteristics listed above, including the student group (*i.e.*, A level lowest C, A level best D, A level best E, BTECs), and had errors clustered at the school level. A variable indicating the Key Stage 5 cohort (*e.g*., 2004/05, 2005/06, etc.) was included in the regression models to investigate whether there were changes in daily earnings over time.

Two set of models were fitted for each of Year 1, Year 5 and Year 10, as described in Section 2.2.1: a model without interactions between the independent variables, and a model including the interactions between the type of student and all other individual background

[14] We have used the median instead of the average (or mean) as the earnings data had outliers (*e.g.,* fairly high/low daily earnings) and the median is less susceptible to such extreme values.

[15] Technically, the exponential of the coefficients can be interpreted as proportional changes. However, provided the coefficients themselves are fairly close to zero (which they are in this study), they will approximately represent the percentage increase of decrease in earnings relative to the reference category.

variables. Note that, as above, the discussion of the regression models will focus on the independent variables and interactions that were statistically significant at the 0.05 level.

To aid interpretation, alongside the results from the regression analyses, figures are presented showing the predicted daily earnings, broken down by the student group and the Key Stage 5 cohort. These charts are intended to illustrate the differences between the student groups (groups of interest and comparators) once all other factors are held constant.

2.2.4 Self-assessment

The analyses of the self-assessment data followed the same methodology (descriptive statistics and regression models) as the analysis for the "Destinations" (Section 2.2.1) and "Earnings" (Section 2.2.3) but with the focus on the following outcomes:

Self-assessment destinations

- Progression to self-employment only
- Progression to both self-employment and sustained employment

Self-assessment earnings

- Earnings from self-employment only
- Earnings from both self-employment and sustained employment

The focus of these analyses was on Year 5 and Year 10 after completion of Key Stage 5 (as explained in Section 2.1.3, for the first two years after Key Stage 5 none of our cohorts of students had data on self-employment).

Note about Statistical Disclosure Controls

To ensure confidentiality of the data, statistical disclosure controls have been applied to the results (tables and graphs).

- For results in Section 3.2 (analysis using any data from HESA), the "linked DfE-HESA" disclosure control policies have been applied (for more details, see https://www.hesa.ac.uk/about/regulation/data-protection/rounding-and-suppression-anonymise-statistics). Percentages are displayed to zero decimal places.
- For results in Sections 3.1, 3.3, 3.4 and 3.5, counts below ten and percentages (rounded to the nearest one decimal point) based on counts below ten have either been suppressed or merged.

As a result of rounded figures and/or suppression, the percentages shown in tables may not necessarily add up to 100.

3. Results

3.1 Summary of student groups and their characteristics

Table 3 presents the total number of students in the NPD Key Stage 5 extracts, and the number of students included in the research ('students classified') by year of Key Stage 5 completion. The percentages of classified students in each of the four student groups are also reported.

A high proportion of students were not classified into any categories for this research because, for example, they achieved A level grades both at C and above and at D and below.

Table 3: Students in each group, by Key Stage 5 cohort

Year	Students in dataset	Students classified	% A level C and above	% A level best D	% A level best E	% BTECs
2004/05	276706	128166	69.3	13.9	3.8	12.9
2005/06	285918	155719	65.8	12.8	3.4	17.9
2006/07	285073	163325	64.8	11.3	2.9	21.0
2007/08	296136	172442	64.9	10.3	2.4	22.4
2008/09	310821	184118	64.0	8.9	2.0	25.1
2009/10	334014	200916	62.1	8.3	1.8	27.9
2010/11	345088	209479	62.1	7.6	1.5	28.8
2011/12	409581	232211	60.0	7.7	1.5	30.8

Table 3 shows that the smallest percentages of students were in the A level best E and A level best D groups. The percentages in these groups decreased over time, from 13.9% to 7.7% for A level best D and from 3.8% to 1.5% for A level best E. However, as the overall number of students increased significantly over time, the numbers of students in the A level best D group was very similar in 2011/12 (17933) and in 2004/05 (17873), despite the change in the percentage. The number of students in the A level best E group decreased from 4839 to 3384 in the same time period.

By far, the largest group of students in each year was A level at grades C and above (over 60% in each year). However, the percentage in this group decreased steadily over time, down to 60.0% in 2011/12. The next largest group was BTECs, which increasing numbers of students over time: percentages increased from 12.9% in 2004/05 to 30.8% in 2011/12[16].

Table 4 shows the percentages in each student group of students with different background characteristics (across all Key Stage 5 cohorts together). Students in the A level best D or best E groups were most likely to be low attainers, males, attending a state school, in the high deprivation group, have a statement of SEN, and be of Black ethnicity. Students in the A level at grade C and above group were more likely to be high attainers, females, attending

[16] This probably reflects the increased popularity of Applied General qualifications (which include BTECs) in the period of study. See, for example, Gill (2013) for details on the uptake of Level 3 qualifications in English schools between 2008 and 2012.

an independent school, in the low deprivation group, with no SEN, and be of Chinese origin. BTECs students were most likely to be low attainers, males, attending a college or 'other' school, in the high deprivation group, have any kind of SEN (*i.e.*, with or without statement), and be of Black ethnicity.

Table 4: Background characteristics, by students' group

Sub-group (characteristic)	Values	N	% A level C and above	% A level best D	% A level best E	% BTECs
Gender	Female	782831	67.6	8.3	1.7	22.4
	Male	663546	59.0	11.4	3.0	26.6
Deprivation	Low	213546	83.0	11.1	2.4	3.6
	Medium	213545	77.7	13.5	3.1	5.6
	High	213553	67.4	16.0	4.1	12.4
	Missing	805733	53.8	6.7	1.5	37.9
Prior attainment	Low	400322	19.4	19.4	5.1	56.2
	Medium	399630	76.4	8.4	1.2	13.9
	High	400771	98.5	0.4	0.1	1.1
	Missing	245654	58.4	11.5	3.0	27.1
SEN	None	623346	76.8	13.4	3.2	6.6
	No statement	22231	59.0	15.7	4.2	21.2
	Statement	2874	55.8	18.3	5.6	20.3
	Missing	797926	53.6	6.7	1.5	38.2
Ethnic Group	Other	7261	78.1	10.9	2.9	8.2
	Asian	54628	76.3	12.5	3.1	8.1
	Black	19196	63.1	16.1	3.6	17.2
	Chinese	5793	89.4	6.9	1.5	2.2
	Mixed	18349	77.8	10.8	2.3	9.0
	Unclassified	15199	77.6	13.9	3.4	5.1
	White	528064	76.3	13.7	3.2	6.8
	Missing	797887	53.6	6.7	1.5	38.2
School type	State	652933	75.7	13.5	3.2	7.6
	Independent	200141	96.5	2.6	0.5	0.5
	College	590926	39.3	8.1	1.8	50.8
	Other	2377	48.3	4.0	1.3	46.4

3.2 Destinations

3.2.1 All students

The figures below (Figure 3 to Figure 7) show the percentages of students in each destination after completing Key Stage 5 (from year 1 to year 15), by the type of student.

Figure 3 shows that, as expected, in the first few years, the students with low A level grades (best grade E) had the lowest progression to sustained education (for example, 47% in Year 1 and 51% in Year 2) whilst students with better grades (best grade D and lowest grade C)

progressed to sustained education at higher rates (56% and 76% in Year 1 and 61% and 89% in Year 2, respectively). However, after Year 3, progression to sustained education decreased for all groups of students and by Year 6 rates were very similar, independently of the A level performance.

A level students with low grades (best grade E) had lower progression to sustained education in the first three years after completing Key Stage 5 than BTEC students but not from Year 4 onwards.

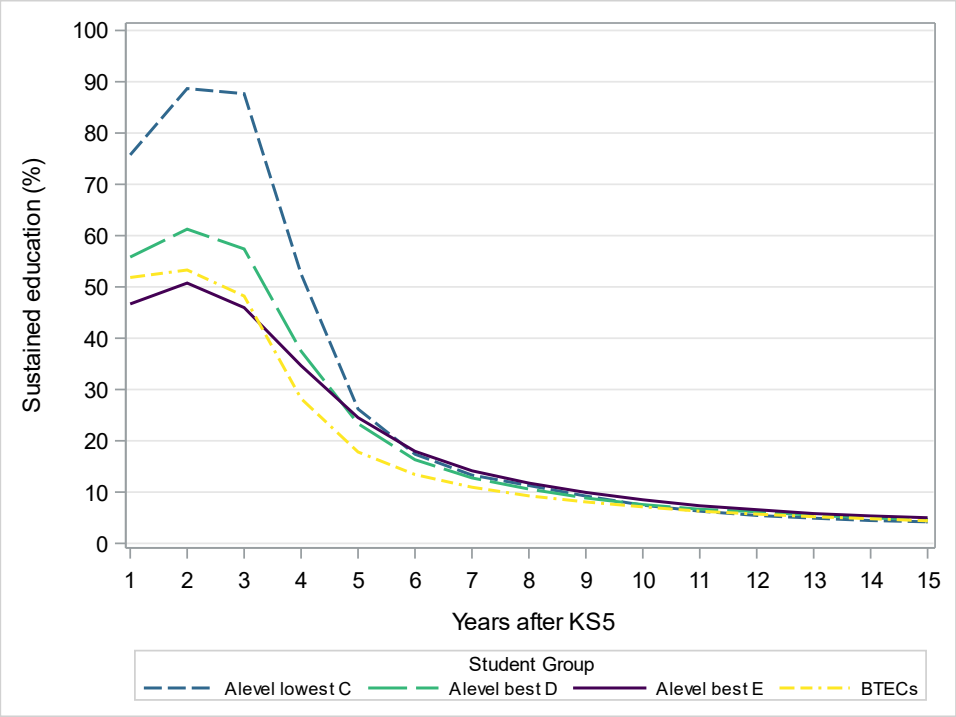


Figure 3: Percentages of students in sustained education after completing Key Stage 5 (Year 1 to Year 15), by type of student

Regarding progression to sustained employment, Figure 4 shows the opposite pattern, with the students with low A level grades (best grade E) having the highest progression to sustained employment in the first few years after completing their post-16 study (followed very closely by students with BTEC qualifications) and those with the best A level grades (lowest C) having the lowest. However, after six or seven years, the likelihood of being in sustained employment was fairly similar for all types of students.

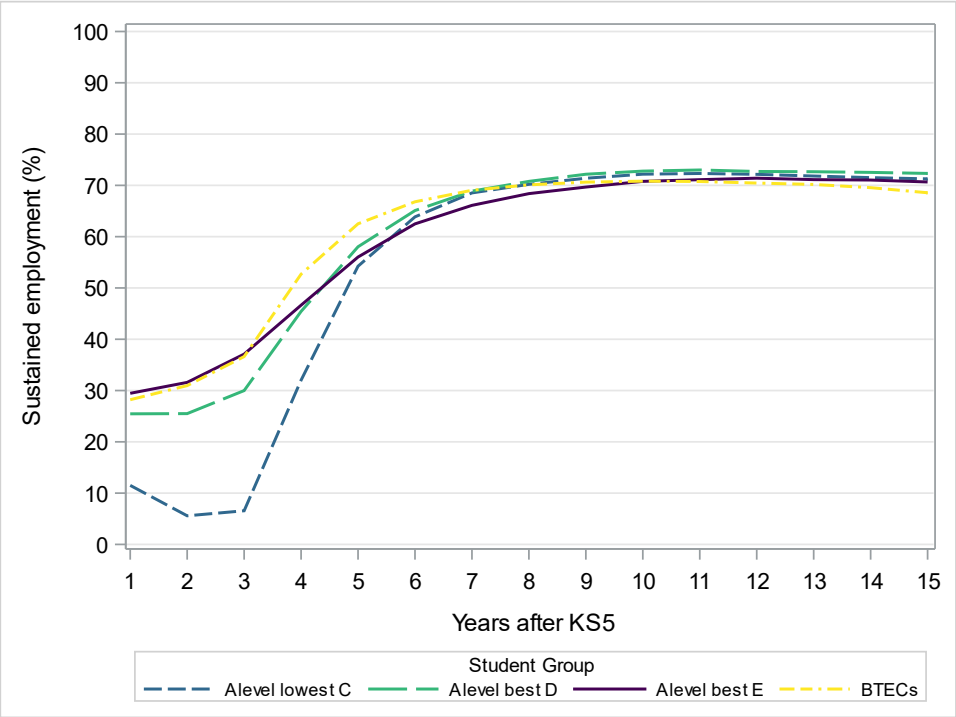


Figure 4: Percentages of students in sustained employment after completing Key Stage 5 (Year 1 to Year 15), by type of student

The percentage of students claiming benefits was fairly low for all types of students (below 4.5%) and did not change much over time. Figure 5 shows that the students claiming benefits at the highest rate were those with BTEC qualifications, followed by the students with the lowest A level grades (best grade E).

Figure 6 shows that the percentages of students with the highest A level grades (lowest grade C) without a sustained destination in the first few years after completing Key Stage 5 were lower than those of students with BTEC qualifications or with A levels which might have been considered to have little currency (best grade E; best grade D). The percentage in Year 1 was slightly higher than in Years 2 and 3, maybe due to some students taking a gap year before starting higher education or being in sustained employment. On the contrary, the students with the lowest A level grades (best grade E) were the group with the highest percentages not having a sustained destination in the first few years, followed by students with BTEC qualifications. After Year 7 the percentages of students without a sustained destination were very similar for all groups of students and they decreased slightly over time. It is worth noting that, for a brief period of time (between Year 4 and Year 7), the percentage of students without a sustained destination in the A level lowest C group was higher than in the groups of students with lower A level grades.

Finally, Figure 7 shows the percentages of students with no destination identified. These are students who did not appear in the ILR, HESA or HMRC/DWP datasets. The patterns shown in this figure are similar for those of students without a sustained destination in the first few years (*e.g.*, lowest percentages amongst the students with the best A level grades; highest percentages amongst the students with the lowest A level grades). However, percentages increased over time.

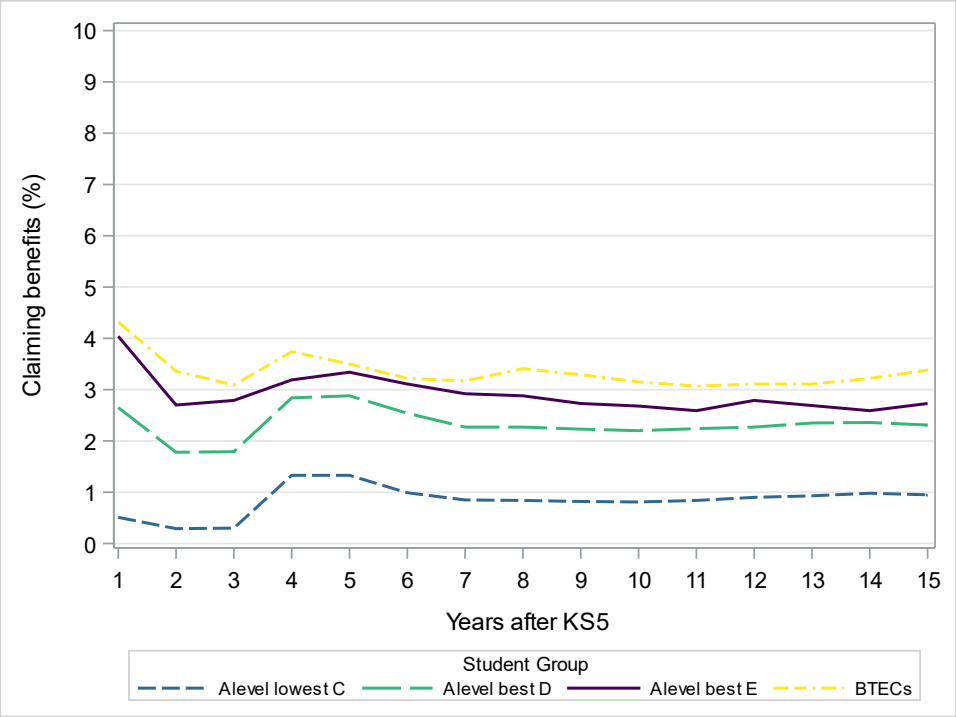


Figure 5: Percentages of students claiming benefits after completing Key Stage 5 (Year 1 to Year 15), by type of student

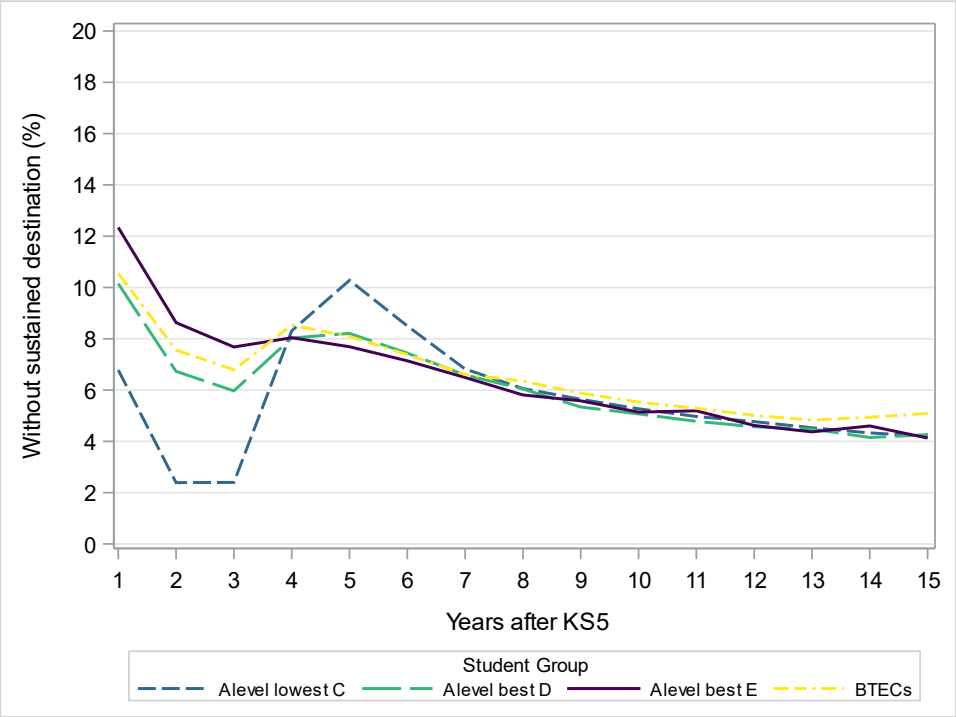


Figure 6: Percentages of students without a sustained destination after completing Key Stage 5 (Year 1 to Year 15), by type of student

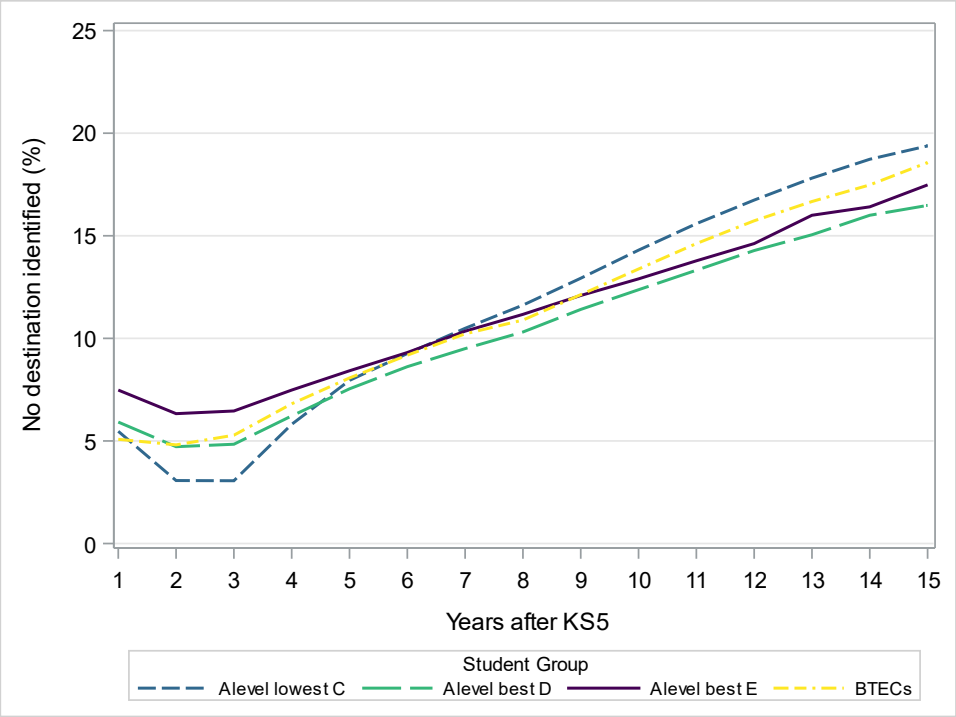


Figure 7: Percentages of students with no destination identified after completing Key Stage 5 (Year 1 to Year 15), by type of student

3.2.2 Breakdowns by student characteristics

In this section, the focus is on the main two destinations (sustained education and sustained employment), broken down by the following student's background characteristics: gender, ethnicity, socio-economic deprivation, special educational needs, prior attainment and type of school attended during Key Stage 5.

Table 5 shows the percentages of students in each student category (A level lowest C, A level best D, A level best E, BTECs) in sustained education, by each of the background characteristics, one, five and ten years after the completion of Key Stage 5.

There were some gaps between males and females in terms on progression to sustained education for each student group, with females tending to progress at higher rates. In Year 1, this gender gap was slightly higher for the students with the lowest A level grades (best grade E and best grade D) than for students in the A level lowest C group. However, the gap reduced (by half in most cases) over time.

Table 5 shows that, when looking at the students' breakdown by deprivation group, there were some contrasting differences (although generally small) between the different groups of students, particularly in Year 1. For students in the A level lowest C group, those in the low and high deprivation groups had the same rates of progression to sustained education. On the contrary, for students in the A level best D or A level best E groups, those in the high deprivation group had the highest progression rates.

In terms of students' prior attainment, the progression to sustained education in Year 1 was similar for all students with the lowest A level grades (best grade E) independently of their prior attainment level. This was not the case, however, for students in the A level lowest C group: progression rates increased with increasing prior attainment. Five years after completion of Key Stage 5, patterns of progression to sustained education changed compared to Year 1. In this case, for all groups of students (with the exception of those achieving BTEC qualifications), rates of being within sustained education increased with increasing prior attainment and the gap between the lowest achievers and the highest achievers was between six and ten percentage points. By Year 10, the gaps between the prior attainment groups almost disappeared.

Students with special educational needs and, in particular, those with a statement progressed at much higher rates to sustained education in Year 1 than students with no special needs if they had achieved the lowest A level grades (best grade E and best grade D) or BTEC qualifications. Students in the A level lowest C group progressed at similar rates independently of their special educational needs status. By Year 10 the differences in the rates within sustained education between students with and without special educational needs were small (one to four percentage points).

There were gaps on progression to sustained education by ethnic group, with Asian and Chinese students tending to progress at higher rates and White students at lower rates. In Year 1 and Year 5 the gaps were higher for the students with the lowest A level grades (best grade E and best grade D). By Year 10, the gaps reduced and rates were similar for all types of students, independently of their ethnic background.

Regarding the type of school attended, there were gaps between state schools and colleges in progression to sustained education, with students attending state schools tending to progress at slightly higher rates. This was the case for all groups of students. The gaps between the different school types remained similar over time.

Table 6 shows the percentages of students in each student category in sustained employment, by each of the background characteristics, one, five and ten years after the completion of Key Stage 5.

As for progression to sustained education, there were some gaps between males and females in terms on progression to sustained employment for each student group. However, in this case, the gap was very small in Year 1 and increased over time. In Year 5, females progressed at higher rates in all groups, with the gap being slightly wider for those in the A level lowest C group and narrowest for those with the lowest A level grades (best grade E). However, in Year 10, the progression rates to sustained employment were slightly higher for males than females amongst all students other than those in the A level lowest C group.

When looking at the students' breakdown by deprivation group (IDACI), there were some differences between the different groups of students, particularly those with the lowest A level grades and with BTECs. For these groups, in general, students in the low deprivation category had the highest rates of progression to sustained employment and those in the high deprivation category had the lowest. However, these differences reduced over time (for example, from six percentage points in Year 1 to three percentage points in Year 10 for the students in the A level best E group). In contrast, for students in the A level lowest C group, differences in progression to sustained employment by level of deprivation were fairly small (between one and two percentage points in all years).

Table 6 also shows the progression to sustained employment by students' prior attainment. As expected, and contrary to the patterns observed for progression to sustained education, there were some differences in Year 1 between the different groups of students, particularly those with the highest A level grades and with BTECs. For these groups, in general, students in the low attainment category had the highest rates of progression to sustained employment and those in the high attainment category had the lowest. In contrast, for students with the lowest A level grades (best grade E, best grade D), differences in progression to employment by level of attainment were small (three percentage points). In the later groups, differences increased over time (for example, from three percentage points in Year 1 to nine percentage points in Year 5 and six percentage points in Year 10 for the students in the A level best E group).

Students with special educational needs and, in particular, those with a statement progressed at much lower rates to sustained employment in Year 1 than students with no special needs, independently of the type of qualifications achieved during Key Stage 5. However, the gaps between those with special needs and those without were larger amongst the students with the lowest A level grades (21 percentage points for students in the best grade E group and 16 percentage points for students in the best grade D group) compared to amongst the students in the lowest grade C group (just five percentage points). By Year 5, differences by the special needs category increased for the students in the A level lowest C group (around 18 percentage points compared to five in Year 1), whilst they remained similar for all other groups of students (between 16 and 23 percentage points). By Year 10, the magnitude of the differences decreased slightly and were similar for all types of students, independently of their Key Stage 5 qualifications.

There were gaps on progression to sustained employment by ethnic group, with Asian and Chinese students tending to progress at lower rates and White students at higher rates. Note that, as with the attainment, patterns for progression to employment were opposite to patterns for progression to education. In all years the gaps were higher for the students with the lowest A level grades (best grade E and best grade D), although their magnitude decreased slightly by Year 10.

Finally, regarding the type of school attended, students in state schools had, generally, the highest progression to sustained employment when compared to students in other types of centres (*e.g.*, independent schools or colleges). This was the case in all years we looked at.

Table 5: Percentages of students in each student category in sustained education, by subgroups, one, five and ten years after Key Stage 5 completion

Sub-group (characteristic)		Year 1				Year 5				Year 10			
		A level lowest C	A level best D	A level best E	BTECs	A level lowest C	A level best D	A level best E	BTECs	A level lowest C	A level best D	A level best E	BTECs
Gender	Female	76	58	49	51	25	23	25	18	8	8	10	8
	Male	75	54	45	53	27	24	24	18	7	7	8	6
Deprivation	Low	80	55	45	51	26	23	23	17	7	7	8	6
	Medium	78	55	47	51	26	23	23	17	8	7	8	7
	High	80	60	49	55	26	23	25	18	8	8	9	7
	Missing	72	54	45	52	27	24	25	18	7	8	9	7
Prior attainment	Low	72	55	46	50	21	23	24	18	7	7	8	7
	Medium	76	58	48	59	22	25	28	18	7	8	9	7
	High	78	59	47	63	31	31	32	19	8	9	9	7
	Missing	70	56	47	51	26	23	24	18	7	8	9	7
SEN	None	79	56	47	53	26	23	24	17	8	7	8	7
	No Statement	77	60	50	54	27	27	27	17	9	8	10	7
	Statement	81	67	62	58	30	27	21	18	12	10	7	8
	Missing	72	54	45	52	27	24	25	18	7	8	9	7
Ethnic Group	Any other	83	69	62	67	32	28	22	19	8	7	10	4
	Asian	88	79	71	73	30	26	32	18	7	5	5	4
	Black	86	76	66	69	25	29	32	23	9	9	10	8
	Chinese	87	81	78	78	28	26	34	14	6	5	-	-
	Mixed	80	60	48	56	27	25	27	19	8	9	7	9
	Missing	72	54	45	52	27	24	25	18	7	8	-	-
	Unclassified	75	55	48	50	26	22	27	19	8	8	8	8
	White	78	53	44	49	25	22	23	17	8	7	8	7
School type	State	79	57	47	54	26	23	24	17	8	7	8	7
	Independent	65	47	42	33	29	23	22	13	6	5	6	4
	College	77	55	46	52	25	24	26	18	8	8	9	7

Table 6: Percentages of students in each student category in sustained employment, by subgroups, one, five and ten years after Key Stage 5 completion

Sub-group (characteristic)		Year 1				Year 5				Year 10			
		A level lowest C	A level best D	A level best E	BTECs	A level lowest C	A level best D	A level best E	BTECs	A level lowest C	A level best D	A level best E	BTECs
Gender	Female	12	25	29	30	57	60	57	64	73	72	69	70
	Male	11	26	30	26	51	56	56	61	71	73	72	72
Deprivation	Low	11	28	34	32	58	61	60	66	75	75	74	74
	Medium	12	28	32	31	57	61	59	66	75	75	73	73
	High	10	22	26	23	56	58	55	62	73	73	71	70
	Missing	12	25	29	28	51	55	53	62	69	70	68	71
Prior attainment	Low	15	26	30	30	59	59	57	63	73	74	71	71
	Medium	13	26	30	26	60	59	55	65	74	74	72	73
	High	10	23	27	23	51	51	48	62	73	67	65	69
	Missing	11	24	27	26	47	55	54	58	68	70	69	69
SEN	None	11	26	30	27	57	60	58	64	75	75	72	73
	No Statement	11	21	25	23	53	53	51	59	70	69	69	67
	Statement	6	10	9	14	39	37	40	48	59	58	56	58
	Missing	12	25	29	28	51	55	53	62	69	70	71	68
Ethnic Group	Any other	6	11	10	11	45	45	44	50	67	64	62	57
	Asian	4	8	11	9	51	50	44	56	73	72	71	69
	Black	6	10	13	11	54	49	41	53	70	67	60	64
	Chinese	3	6	-	9	44	42	34	49	64	67	71	64
	Mixed	10	21	27	23	53	54	50	58	70	67	67	62
	Missing	12	25	-	28	51	55	53	62	69	70	68	71
	Unclassified	12	25	30	30	54	58	55	59	71	72	73	70
	White	12	28	33	31	58	61	60	66	75	75	73	73
School type	State	11	26	30	27	57	60	64	58	75	74	72	71
	Independent	11	20	19	32	44	48	55	46	66	64	61	60
	College	13	26	30	28	57	56	62	54	73	71	68	71

3.2.3 Regression analysis: progression to sustained education or employment

To further explore progression to sustained education and progression to sustained employment, multilevel logistic regression analyses (as described in Section 2.2.1) were carried out.

In order to check whether a multilevel model (with students clustered within schools) was needed, we calculated the variance explained by the school (that is, the proportion of the total variance in the dependent variable that was attributed to the school) when fitting baseline[17] models with the outcomes being progression to sustained education and progression to sustained employment.

Tables B1 and B2 in Appendix B include the variance components for the "baseline" multilevel logistic models and show that, in both progression to sustained education and progression to sustained employment, just under 10% of the variance was explained by the schools in Year 1 after completion of Key Stage 5. This proportion decreased in Year 5 and Year 10 but, for example, 3.5% of the variability in the progression to sustained employment was still due to the school.

In the remainder of this section, the results of the regression analyses are presented and discussed. The full outputs from the regression models are available in Appendix C.

Progression to sustained education

In the first instance, we looked at progression to sustained education in Year 1, Year 5 and Year 10, by student category and accounting by students' background characteristics. Table 7 presents the parameter estimates for the student categories in each of the years. These estimates show the effect of the predictor (student category) on the probability of the outcome (progression to sustained education) occurring, expressed on a logit scale. Positive coefficients indicate an increased probability relative to the reference group (A level students with a best grade of E) and negative coefficients indicate reduced probabilities. From Table 7 we can see that:

- In Year 1, the probability of progression was significantly higher for each of the student categories compared to the reference group (A level students with a best grade of E), once their background characteristics were accounted for.
- In Year 5, the probability of being in sustained education was similar for the students with A level qualifications but there was a larger difference between students who achieved BTEC qualifications and those with a best grade E in their A levels: students with BTECs were notably less likely to progress.
- In Year 10, the probability of being in sustained education was significantly lower for each of the student categories compared to the reference group (A level students with a best grade of E). In particular, students with BTEC qualifications had the lowest probability of progression in Year 10, followed by students in the A level lowest C group.

[17] The baseline model does not account for any predictor variables (*e.g.*, student characteristics), it only includes a school random effect.

Table 7: Progression to sustained education in Years 1, 5 and 10 ~ regression parameter estimates by student category

Year	Student category	Estimate	Standard Error	*p*-value	Probability of progression[18]
1	A level lowest C	1.263	0.012	<.0001	0.781
	A level best D	0.369	0.013	<.0001	0.593
	BTECs	0.306	0.013	<.0001	0.578
	[A level best E]	.	.	.	0.502
5	A level lowest C	-0.096	0.014	<.0001	0.190
	A level best D	-0.051	0.014	0.000	0.197
	BTECs	-0.332	0.015	<.0001	0.156
	[A level best E]	.	.	.	0.205
10	A level lowest C	-0.193	0.024	<.0001	0.075
	A level best D	-0.132	0.025	<.0001	0.079
	BTECs	-0.270	0.025	<.0001	0.070
	[A level best E]	.	.	.	0.089

There were other variables in the regression models (*i.e.*, students' backgrounds) which were statistically significant (see full results from the regression models in Appendix C). In particular, all else being equal:

- Males were significantly more likely than females to progress to sustained education in Year 1 and Year 5 after completing Key Stage 5 but were less likely to do so in Year 10.
- In Year 1, the most deprived students were the least likely to progress to sustained education and those in the low deprivation group the most likely to progress. This pattern changed in Year 5 (those with a medium level of deprivation were the most likely to be in sustained education) and in Year 10 (the most deprived students were the most likely to be in sustained education).
- In all three years after completion of Key Stage 5, students with the highest prior attainment were the most likely to progress to sustained education, followed by those with medium attainment.
- Students with a statement of special educational needs were more likely than SEN students without a statement and than students without special educational needs to progress to sustained education in Year 1, Year 5 and Year 10 after the completion of Key Stage 5.
- White students were less likely to progress to sustained education than any other group of students in Year 1. The students most likely to progress to sustained education were those with an Asian or Chinese background. This pattern continued in Year 5, although it was not as clear and, by Year 10, it reversed: White students

[18] This is the probability of progression for a typical student who completed Key Stage 5 in the academic year 2009/10 (female, White, in the medium deprivation group, with medium prior attainment, no special educational needs and in a state school during Key Stage 5).

were amongst the most likely (together with Black students) to be in sustained education whereas Chinese and Asian students were the least likely.

- Students in state schools were the most likely to progress to sustained education in Year 1 after completion of Key Stage 5, followed by students in colleges. Students in independent schools were the least likely. Interestingly, in Year 5, students from independent schools were the most likely to still be in sustained education and there were no differences between students from state schools and colleges. In Year 10, students from independent schools were the least likely to be in sustained education.

In a second step, we looked at the interaction between the student category variable and the year students completed Key Stage 5. This was done in an attempt to investigate whether there were changes in destinations depending on when students completed their Key Stage 5 study.

Figure 8 to Figure 10 show the probability of being in sustained education in Year 1, Year 5 and Year 10 (respectively) after completing Key Stage 5, by type of student and Key Stage 5 cohort.

In Year 1, the interaction between the student category and the cohort was statistically significant. In particular, there were significant positive interactions between the A level lowest C group and the years 2004/05, 2006/07, 2009/10 and 2010/11. This means that compared with the reference year (2011/12) the impact of being in this student group rather than the A level best E group was larger. This can be seen in Figure 8, which shows that the gap between A level best E and A level lowest C was largest in these years. There was a significant negative interaction between the A level lowest C group and the 2007/08 year. As shown in Figure 8, the gap between A level best E and A level lowest C students in progression to sustained education was the smallest in that year.

Similarly, there were significant positive interactions between the BTECs group and the years 2004/05, 2009/10 and 2010/11 and the A level best D group and the years 2004/05, 2005/06, 2009/10 and 2010/11. This means that, compared with the reference year (2011/12), the impact of having BTECs or being in the A level best D group rather than being on the A level best E group was larger. Again, this can be seen in Figure 8, which shows for example that the gap between A level best E and A level best D students was largest in the years mentioned above.

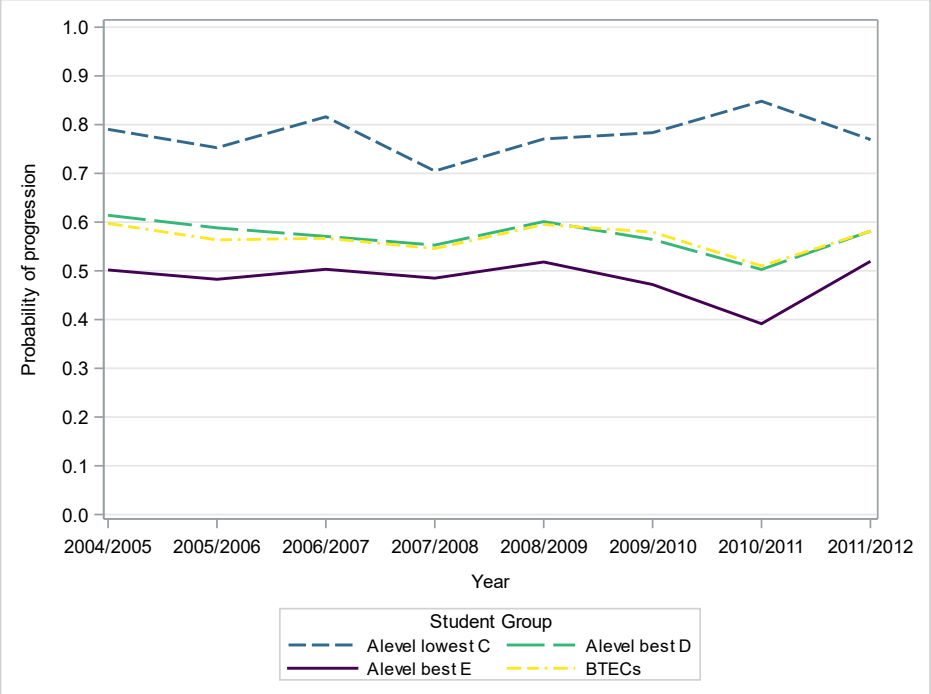


Figure 8: Probability of a typical[19] student being in sustained education in Year 1 after completing Key Stage 5, by type of student and Key Stage 5 cohort

In Year 5, there were also some significant interactions between the student category variable and the cohort when the student completed Key Stage 5 (see Figure 9). However, in Year 10 the interaction between those variables was no longer significant. This can be seen in Figure 10, which shows that progression to sustained education was similar independently of when the student completed Key Stage 5.

[19] Female, White, in the medium deprivation group, with medium prior attainment, no special educational needs and in a state school during Key Stage 5.

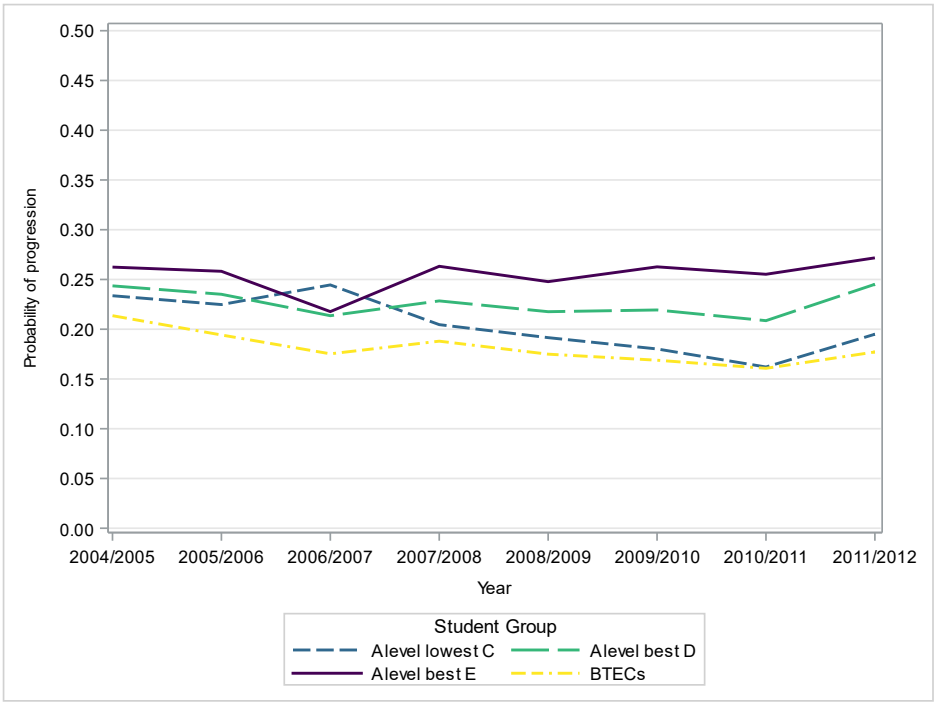


Figure 9: Probability of a typical[20] student being in sustained education in Year 5 after completing Key Stage 5, by type of student and Key Stage 5 cohort

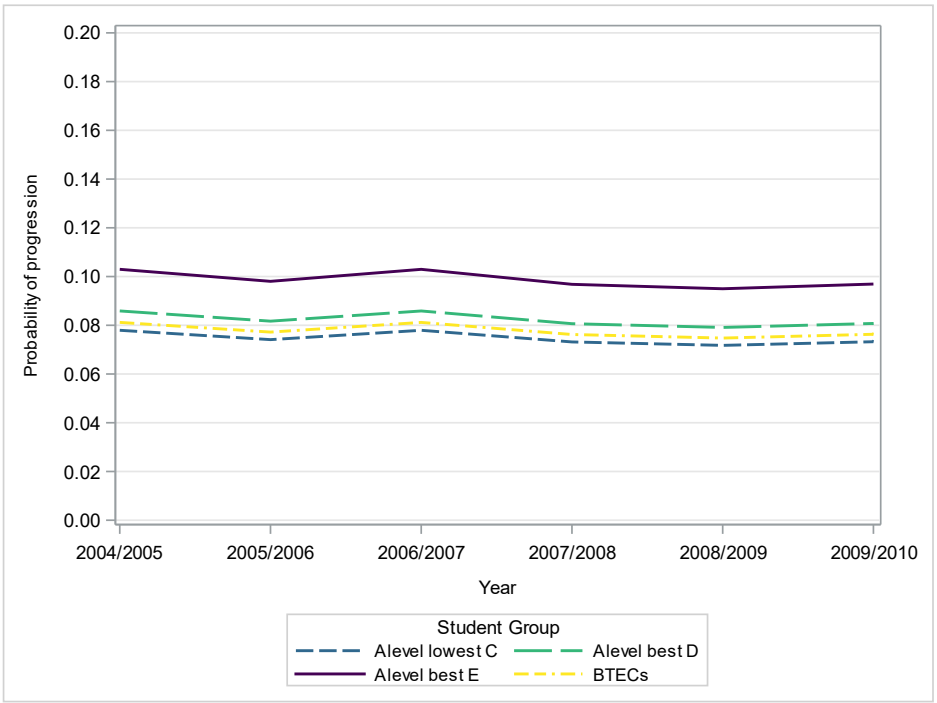


Figure 10: Probability of a typical[19] student being in sustained education in Year 10 after completing Key Stage 5, by type of student and Key Stage 5 cohort

[20] Female, White, with medium prior attainment, no special educational needs and in a state school during Key Stage 5.

Progression to sustained employment

As for progression to sustained education, we looked in the first instance at progression to sustained employment in Year 1, Year 5 and Year 10, by student category and accounting by students' background characteristics. Table 8 presents the parameter estimates for the student categories in each of the years and shows that:

- In Year 1, the probability of progression to sustained employment was significantly lower for each of the student categories compared to the reference group (A level students with a best grade of E), once their background characteristics were accounted for. The lowest probability of progression was, by far, that of the A level lowest C group.
- In Year 5, the probability of progression to sustained employment was similar for the students with A level qualifications but there was a larger and statistically significant difference between students who achieved BTEC qualifications and those with a best grade E in their A levels: students with BTECs were significantly more likely to progress.
- In Year 10, the probability of progression to sustained employment was significantly higher for each of the student categories compared to the reference group (A level students with a best grade of E) and, in particular, students with BTECs were the most likely to progress to sustained employment.

Table 8: Progression to sustained employment in Years 1, 5 and 10 ~ regression parameter estimates by student category

Year	Student category	Estimate	Standard Error	*p*-value	Probability of progression [21]
1	A level lowest C	-1.123	0.014	<.0001	0.138
	A level best D	-0.227	0.014	<.0001	0.281
	BTECs	-0.176	0.014	<.0001	0.291
	[A level best E]	.	.	.	0.329
5	A level lowest C	-0.001	0.012	0.927	0.674
	A level best D	0.044	0.013	0.001	0.684
	BTECs	0.200	0.013	<.0001	0.717
	[A level best E]	.	.	.	0.675
10	A level lowest C	0.090	0.015	<.0001	0.764
	A level best D	0.088	0.015	<.0001	0.763
	BTECs	0.103	0.016	<.0001	0.766
	[A level best E]	.	.	.	0.747

[21] This is the probability of progression for a typical student who completed Key Stage 5 in the academic year 2009/10 (female, White, in the medium deprivation group, with medium prior attainment, no special educational needs and in a state school during Key Stage 5).

There were other variables in the regression models (*i.e.*, students' backgrounds) which were statistically significant (see full results from the regression models in Appendix C). In particular, all else being equal:

- Males were significantly less likely than females to progress to sustained employment in Year 1, Year 5 and Year 10 after completing Key Stage 5. The differences between males and females were very similar in Year 1 and Year 5 and smaller in Year 10.
- In Year 1 after completing Key Stage 5, students in the medium and high deprivation groups were more likely to progress to sustained employment than students in the low deprivation group. The differences between the groups were, however, small. In Year 5 and Year 10 students in the high deprivation group were less likely to progress to sustained employment than students in the low deprivation group. There were no significant differences in progression between those in the low and medium deprivation groups.
- In Year 1 and Year 5 after completion of Key Stage 5, students with the highest prior attainment were the least likely to progress to sustained employment, followed by those with medium attainment. In Year 10, however, students with the lowest prior attainment at school were the most likely ones to progress to sustained employment.
- In all three years after completion of Key Stage 5, students with a statement of special educational needs were the least likely to progress to sustained employment, followed by SEN students without a statement. The difference in the probability of progression between both groups of students with SEN (statement *vs*. no statement) was bigger in Year 1 than in Year 5 or Year 10.
- White students were more likely to progress to sustained employment than any other group of students in Year 1 after completing Key Stage 5. The students least likely to progress to sustained employment were those with an Asian or Chinese background. This pattern continued in Year 5 and Year 10.
- Students in state schools were the most likely to progress to sustained employment in Year 1, Year 5 and Year 10 after completion of Key Stage 5, followed by students in colleges. Students in independent schools were the least likely.

In a second step, we looked at the interaction between the student categories and the year students completed Key Stage 5. Figure 11 to Figure 13 show the probability of being in sustained employment in Year 1, Year 5 and Year 10 (respectively) after completing Key Stage 5, by type of student and Key Stage 5 cohort.

In Year 1, the interaction between the student category and the cohort was statistically significant. In particular, there were significant negative interactions between the A level lowest C group and the years 2004/05, 2005/06, 2009/10 and 2010/11. This means that compared with the reference year (2011/12) the impact on progression to sustained employment of being in these student group rather than the A level best E group was larger. This can be seen in Figure 11, which shows that the gap between A level best E and A level lowest C was largest in these years.

Similarly, there were significant negative interactions between the A level best D group with all years apart from 2006/07 and 2008/09. This means that compared with the reference year (2011/12) the impact of being in the A level best D group was larger. However, the impact of having BTECs rather than being in the group with lowest A level grades, was smaller in the years 2005/06, 2007/08, 2009/10 and 2010/11.

In Year 5, there were significant negative interactions between the A level lowest C group and the years 2004/05, 2005/06, and 2007/08. The effect of this interaction can be seen in Figure 12, which shows that the gap between the A level best E and A level lowest C groups was smallest in these years. Similarly, there were statistically significant interactions between the BTECs group and the years 2004/05, and 2007/08, which indicate that, progression to sustained employment depended on the year of completion of Key Stage 5.

In Year 10, the interaction between the student category variable and the academic year 2006/07 was statistically significant and positive. This means that compared with the reference year (2011/12) the impact on progression to sustained employment of being in all student groups compared to being in the A level best E group was larger. Figure 13 clearly shows that the difference between groups in progression was largest in 2006/07.

There was also a significant positive interaction between the BTECs group and the 2004/05 year (see Figure 13, which shows that the gap between A level best E and BTEC students in progression to sustained employment was also slightly larger in that year compared to the reference 2011/12).

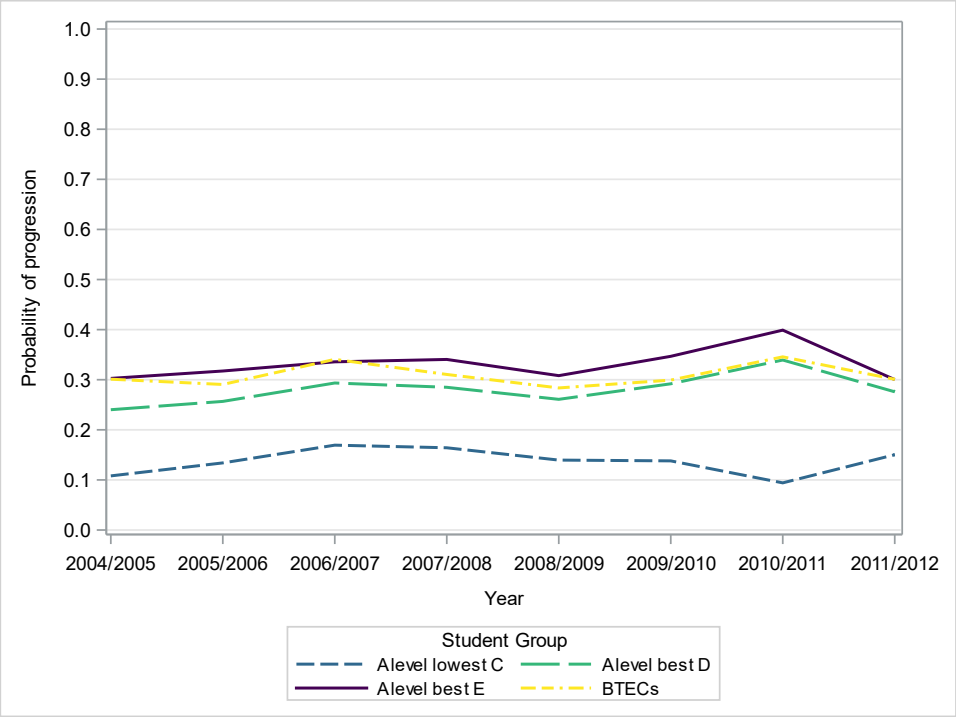


Figure 11: Probability of a typical[22] student being in sustained employment in Year 1 after completing Key Stage 5, by type of student and Key Stage 5 cohort

[22] Female, White, in the medium deprivation group, with medium prior attainment, no special educational needs and in a state school during Key Stage 5.

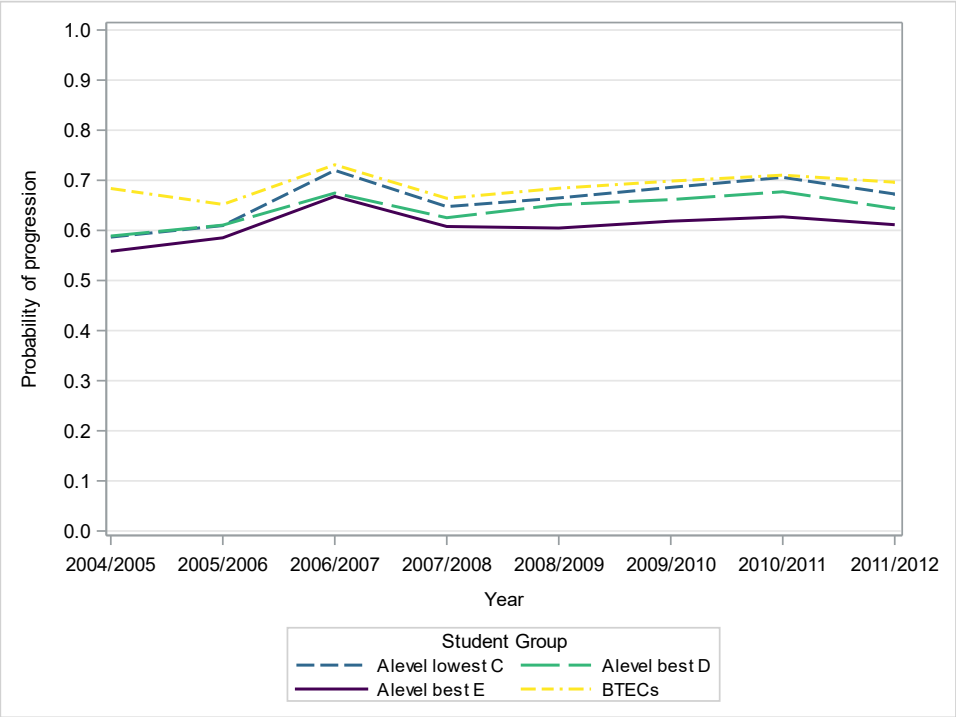


Figure 12: Probability of a typical[22] student being in sustained employment in Year 5 after completing Key Stage 5, by type of student and Key Stage 5 cohort

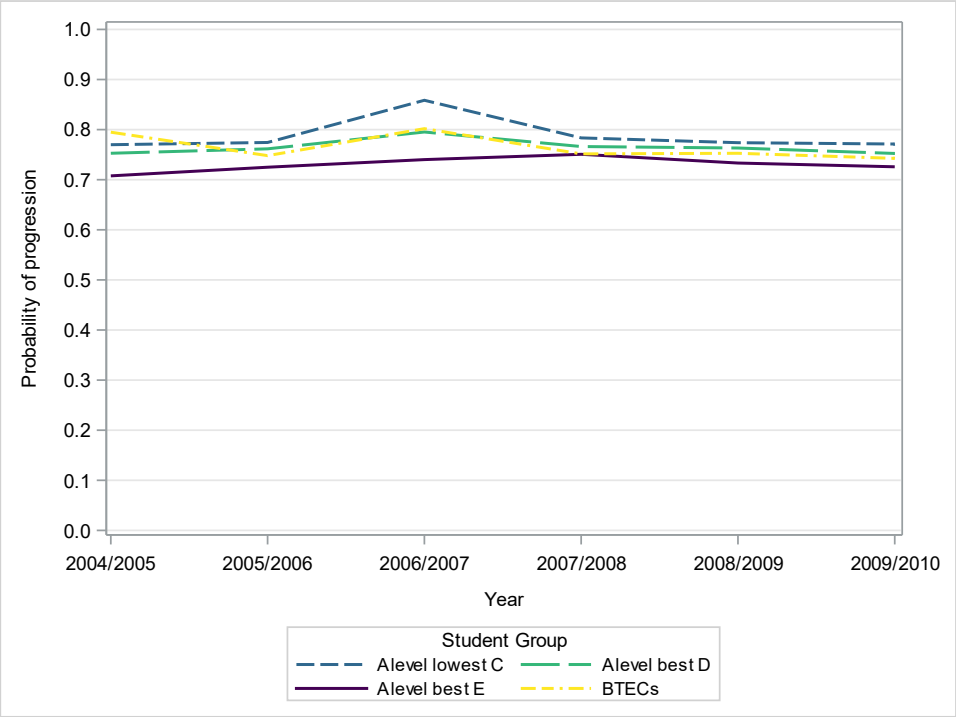


Figure 13: Probability of a typical[22] student being in sustained employment in Year 10 after completing Key Stage 5, by type of student and Key Stage 5 cohort

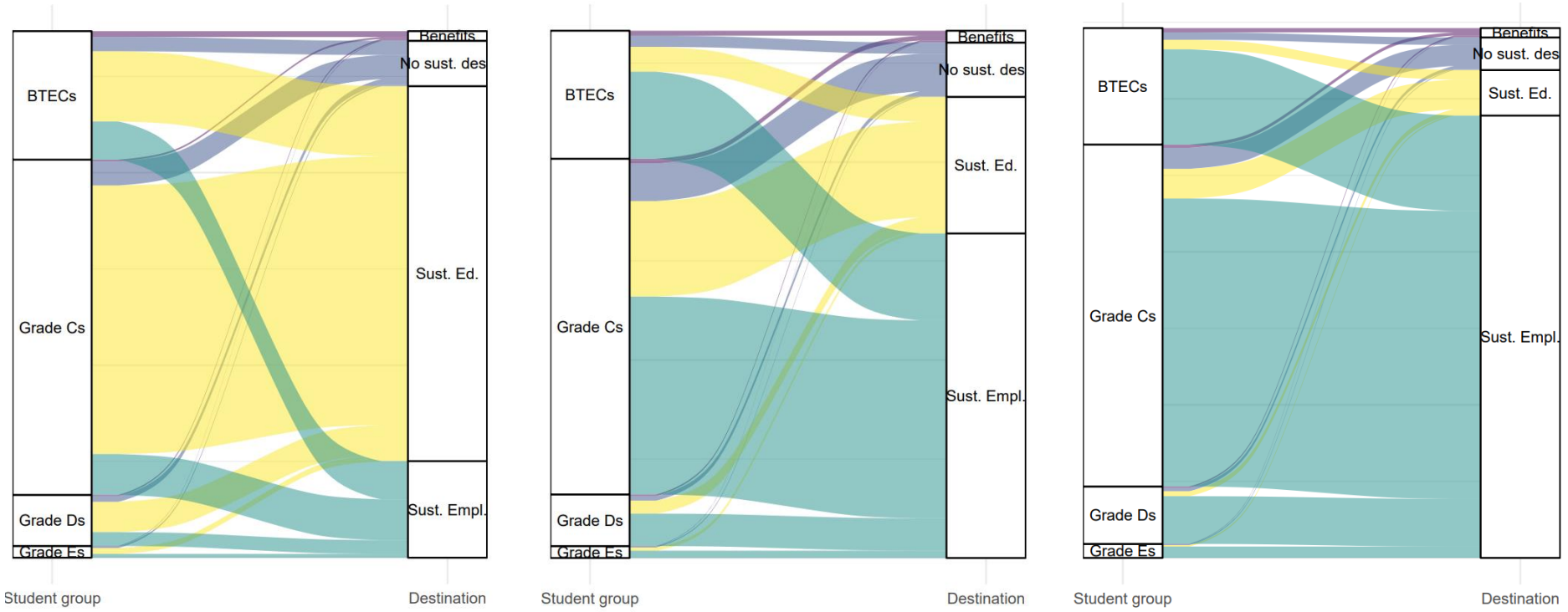
3.2.4 Pathways

In this section, we looked at the pathways taken by students after finishing Key Stage 5. By pathways we mean the flow of students between destinations over time. To get a clearer view of the pathways of young people at the same age, and in each of the student type groups, we used Sankey charts, as described in Section 2.2.2.

Figure 14 shows the flow from each student group to each destination, for three different years after completion of Key Stage 5 (Year1, Year 5, and Year 10). This figure displays the same information shown in the descriptive analysis earlier but provides a different way to visualise it. Each band represents the number of students in each student group moving into each destination. The colours of the bands are based on the destination (*e.g*., yellow shows the students moving to the sustained education destination, green shows the students moving to the sustained employment destination). Students with '*No destination identified'* were excluded from this figure due to very low numbers of students.

This figure shows that in Year 1, most students moved to the sustained education destination, followed by the sustained employment destination. In Year 5 and Year 10, the reverse was true, with most students in the sustained employment destination.

As shown earlier (Figure 3 to Figure 7), there were some differences in the pathways of students in the different groups. For example, in Year 1 there was proportionally lower progression to sustained education from students with grade D*s* and grade E*s* at A level and from students with BTECs than from grade C or above A level students. In Year 5, there was proportionally higher progression to sustained employment from students with grade D*s* and grade E*s* at A level and from students with BTECs than from grade C or above A level students.



(a) Year 1 (b) Year 5 (c) Year 10

Figure 14: Flows of students between student group and destination (Year 1, Year 5, and Year 10)

Figure 15 to Figure 18 present the flows of students in the different student groups between Year 1 destination, Year 5 destination and Year 10 destination.

The flows of students between Year 1 and Year 5 in the A level best D, A level best E, and the BTECs groups were broadly similar and contrasted with the A level lowest C group.

Figure 15 shows that, in the A level lowest C group, the majority of the students had sustained education in Year 1. Most of them moved to the sustained employment destination by Year 5, although a fairly high percentage remained in sustained education.

In the other groups (Figure 16 to Figure 18), although there were high percentages of students in sustained education in Year 1, a significant percentage had sustained employment. Independently of their Year 1 destination, most students in these groups moved to the sustained employment destination in Year 5. This was more evident for those who were in sustained employment in Year 1. BTEC students (Figure 18) were slightly more likely to move to sustained employment and less likely to move to sustained education compared with students who achieved A levels which might be considered to have little currency (A level best E, A level best D).

Figure 15 to Figure 18 also show that, in Year 5, the majority of the students were in sustained employment and almost all of them remained in that destination in Year 10. Of the students in sustained education in Year 5, most moved to sustained employment by Year 10.

There were only small differences in the pathways from Year 5 to Year 10 for the different groups of students. The main difference between groups was a lower percentage of students in the A level lowest C group moved to the benefits destination in Year 10 than the percentage of students in the other groups.

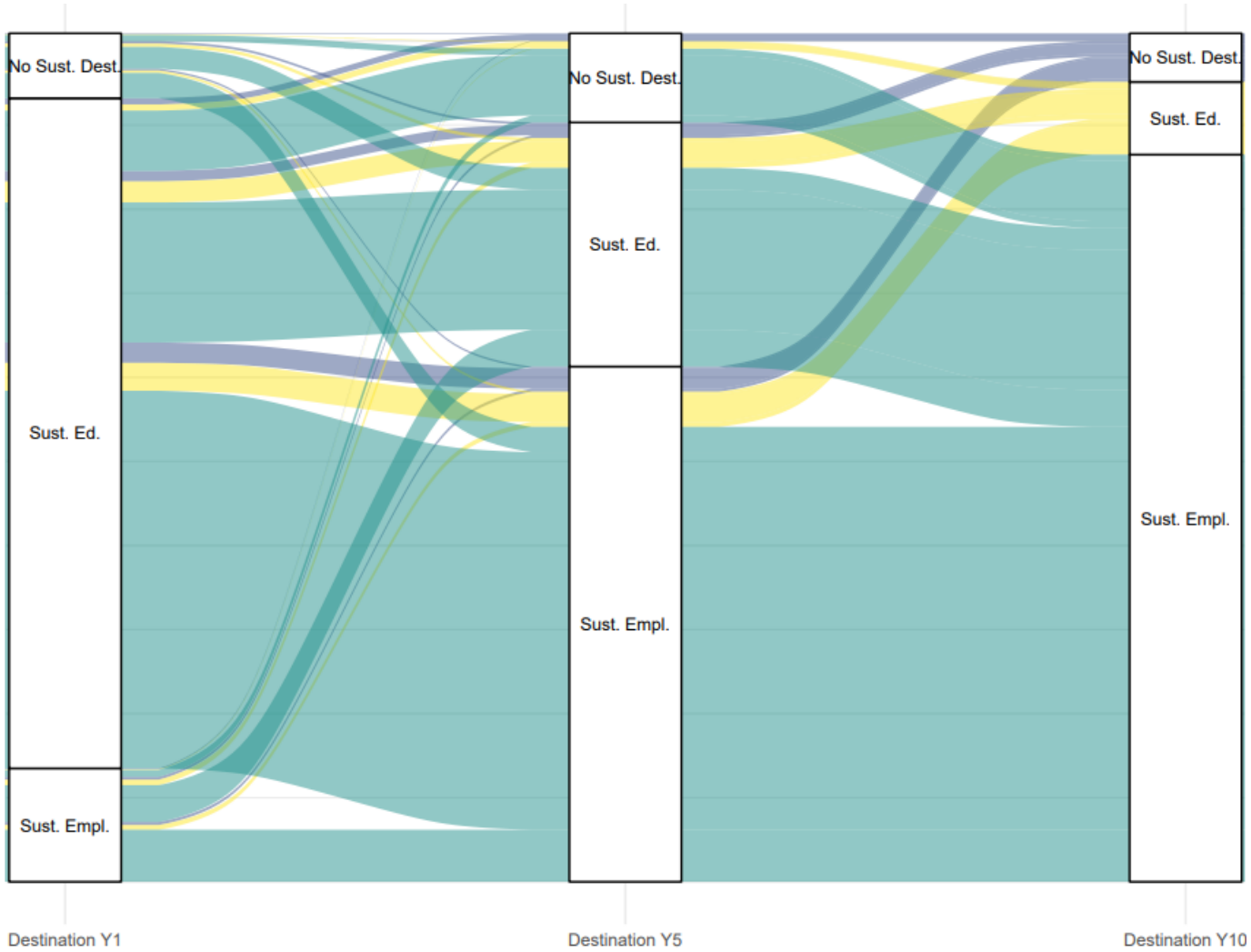


Figure 15: Flows of A level lowest C students between Year 1 destination, Year 5 destination and Year 10 destination

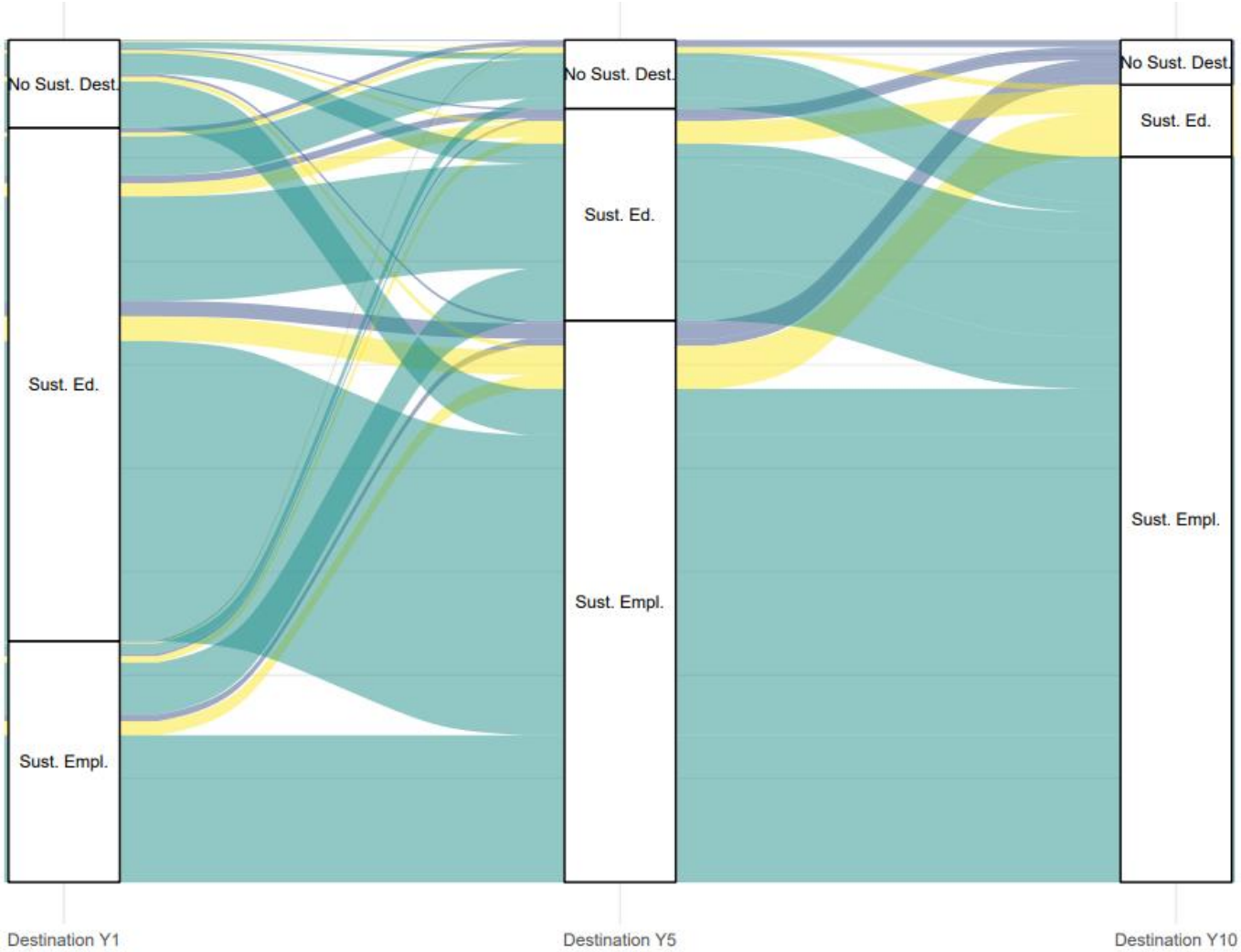


Figure 16: Flows of A level best D students between Year 1 destination, Year 5 destination and Year 10 destination

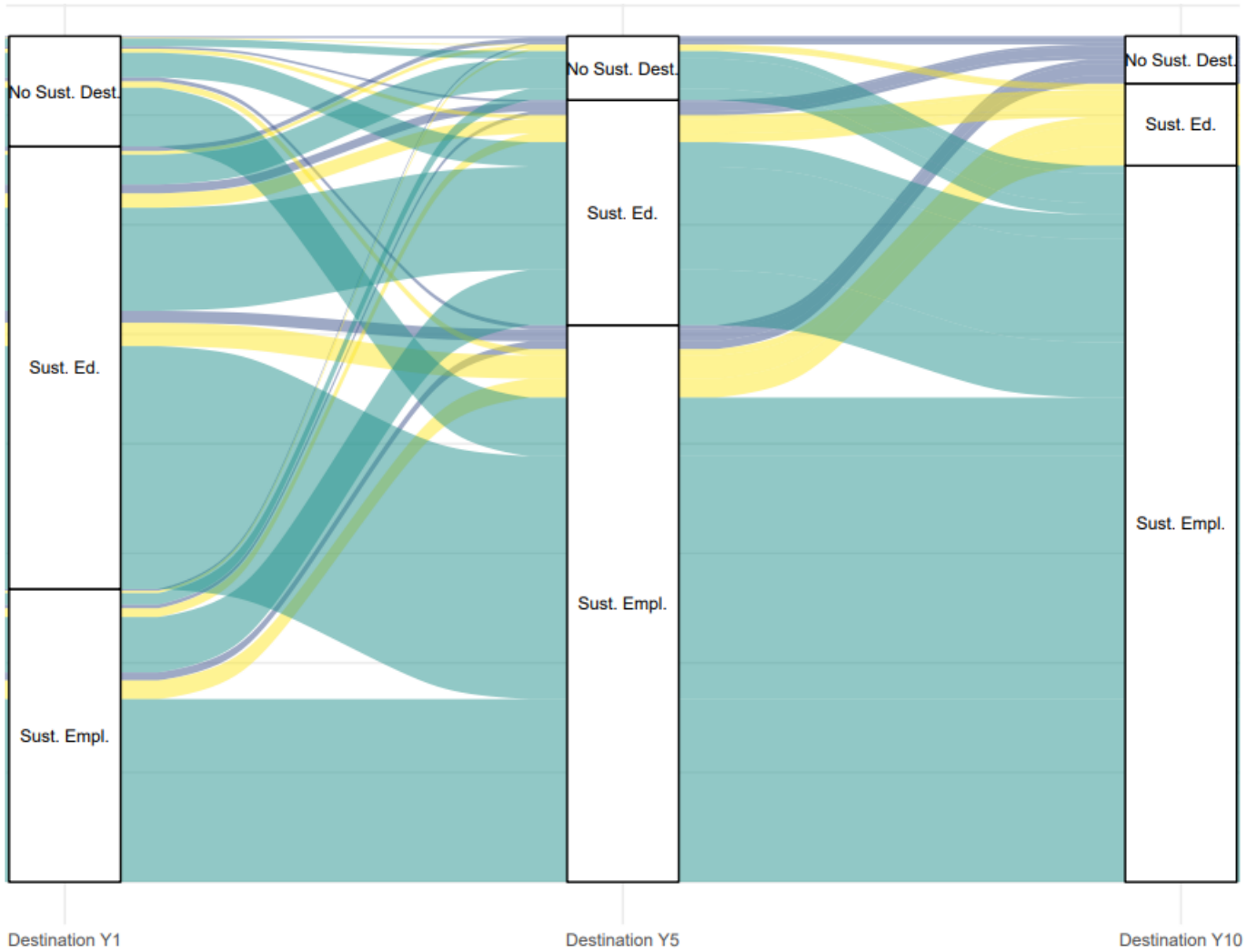


Figure 17: Flows of A level best E students between Year 1 destination, Year 5 destination and Year 10 destination

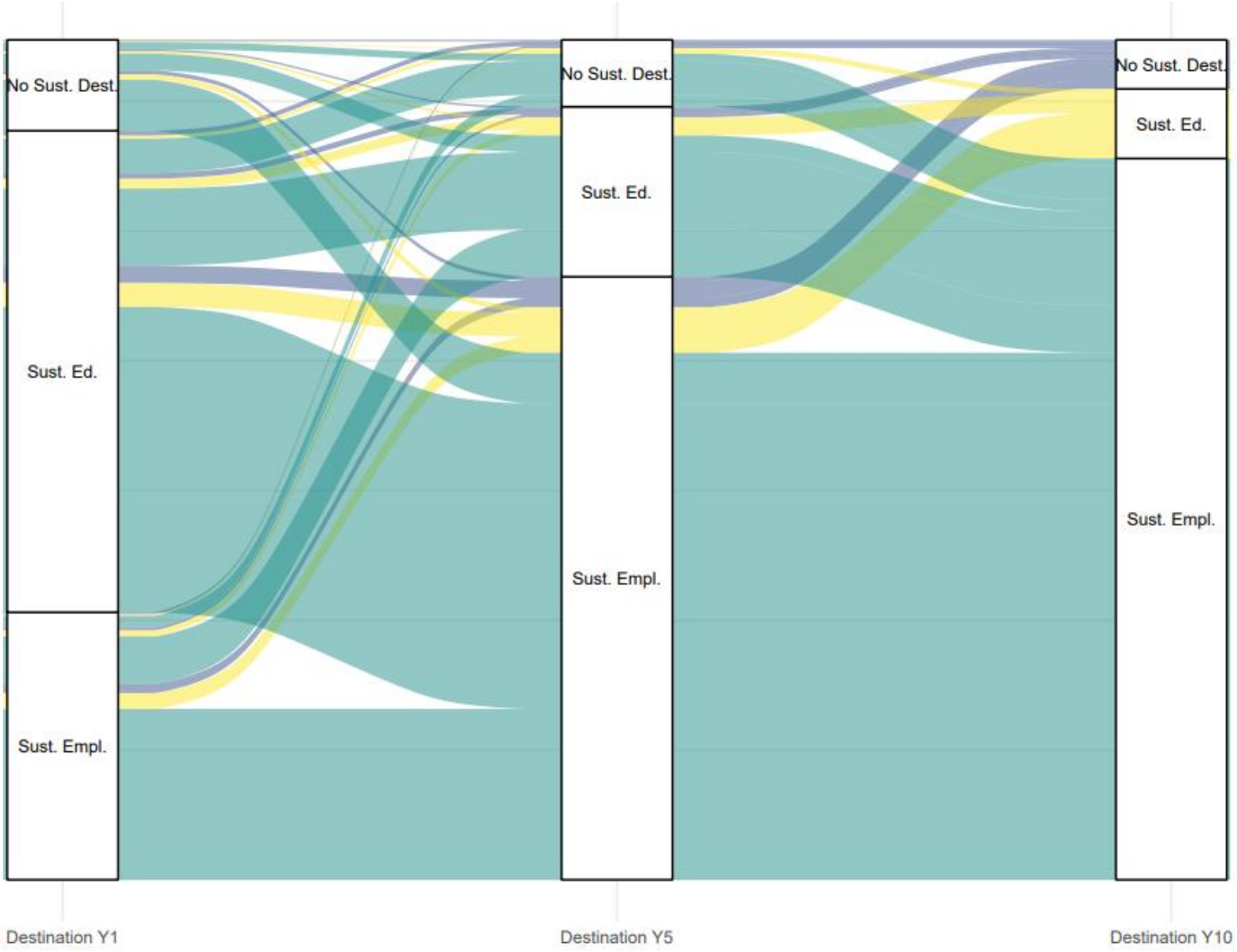


Figure 18: Flows of BTEC students between Year 1 destination, Year 5 destination and Year 10 destination

3.3 Earnings

3.3.1 All students

In this section we explore the earnings of students in the different student categories in the period of study[23]. Figure 19 shows the median daily earnings in years one to 15 following completion of their Key Stage 5 studies, for students in the different groups.

In the first few years, the students with low A level grades (best grade E or best grade D) had the highest median daily earnings. However, after Year 5, students with better grades (lowest grade C) had a higher median, with this advantage increasing over time. By Year 6, the difference was around £10 per day, rising to around £20 per day after 10 years. In Year 15, the median daily earnings was over £100 for A level lowest grade C students, compared with £80 for A level best grade D, around £75 for A level best grade E, and just over £70 for BTEC students. It is notable that even the A level students with low grades had higher median daily earnings than BTEC students towards the end of the time period.

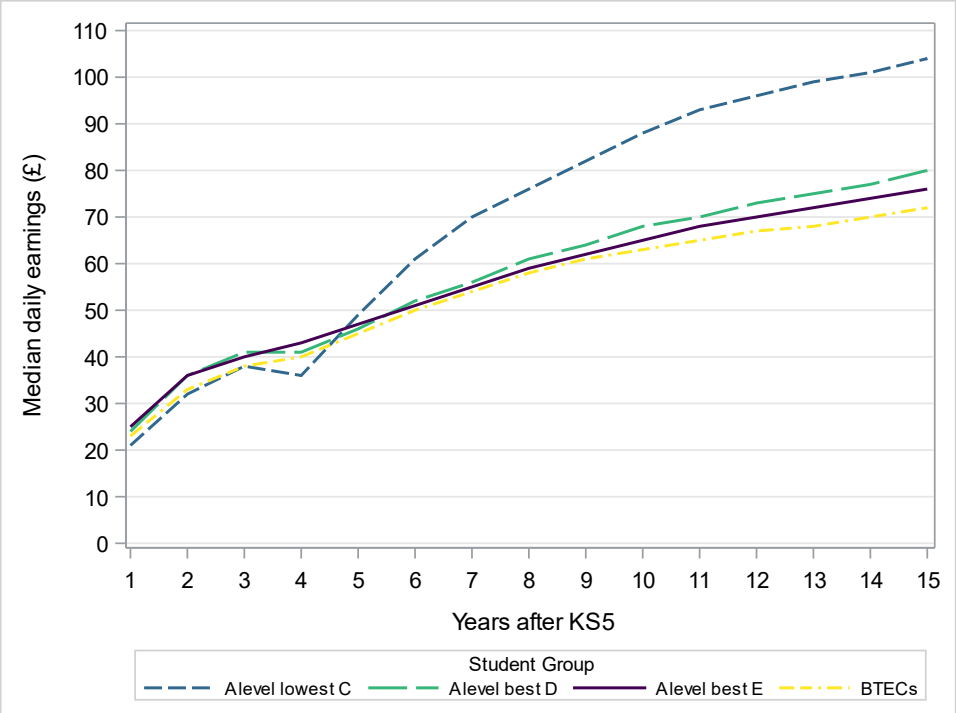


Figure 19: Median daily earnings after completing Key Stage 5 (Year 1 to Year 15), by type of student

[23] Note that, as explained in Section 2.1.2, only people in sustained employment and with earnings greater than zero were included in the analyses.

3.3.2 Breakdowns by student characteristics

In this section, the focus is on earnings broken down by the following student's background characteristics: gender, ethnicity, socio-economic deprivation, special educational needs, prior attainment and type of school attended during Key Stage 5.

Figure 20 shows the earnings within each student group broken down by gender, with each panel presenting the results for one of the different student groups. There was a substantial gap in daily earnings between males and females for each student group, which increased over time. Female median earnings tend to level out at around 10-12 years, whilst male earnings continue to increase.

In contrast to the overall results (see Figure 19), male BTEC students did not have lower median earnings in years 10 to 15 than those in the A level best E group. Furthermore, in the A level best E and the BTEC groups, the gap between males and females appeared earlier than in the other student groups.

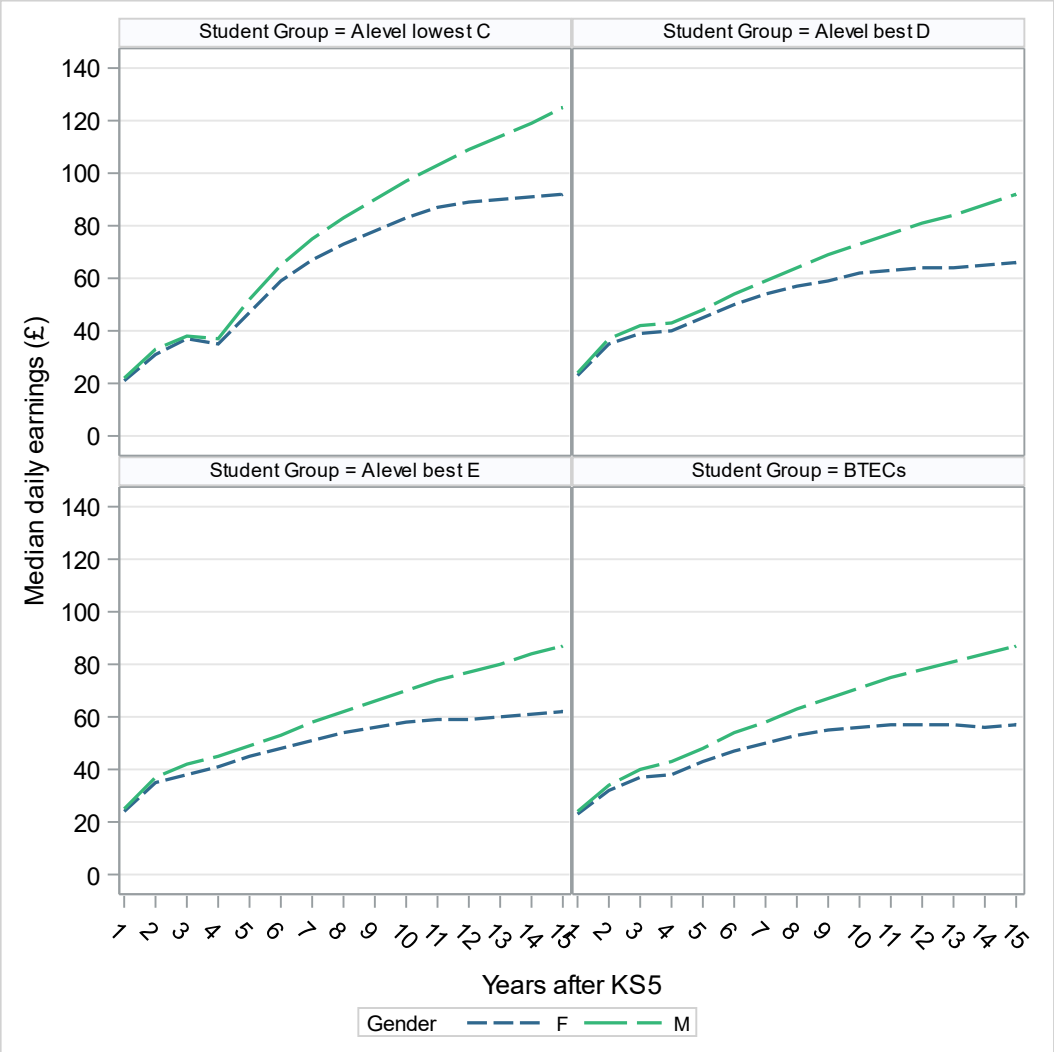


Figure 20: Median daily earnings after completing Key Stage 5 (Year 1 to Year 15), by student group and gender

Figure 21, which presents the breakdown by deprivation group, shows relatively small differences in median earnings, with students in the low deprivation group having the highest median earnings and students in the high deprivation group having the lowest median earnings. The largest difference in earnings was in the BTECs group in years 10 to 15.

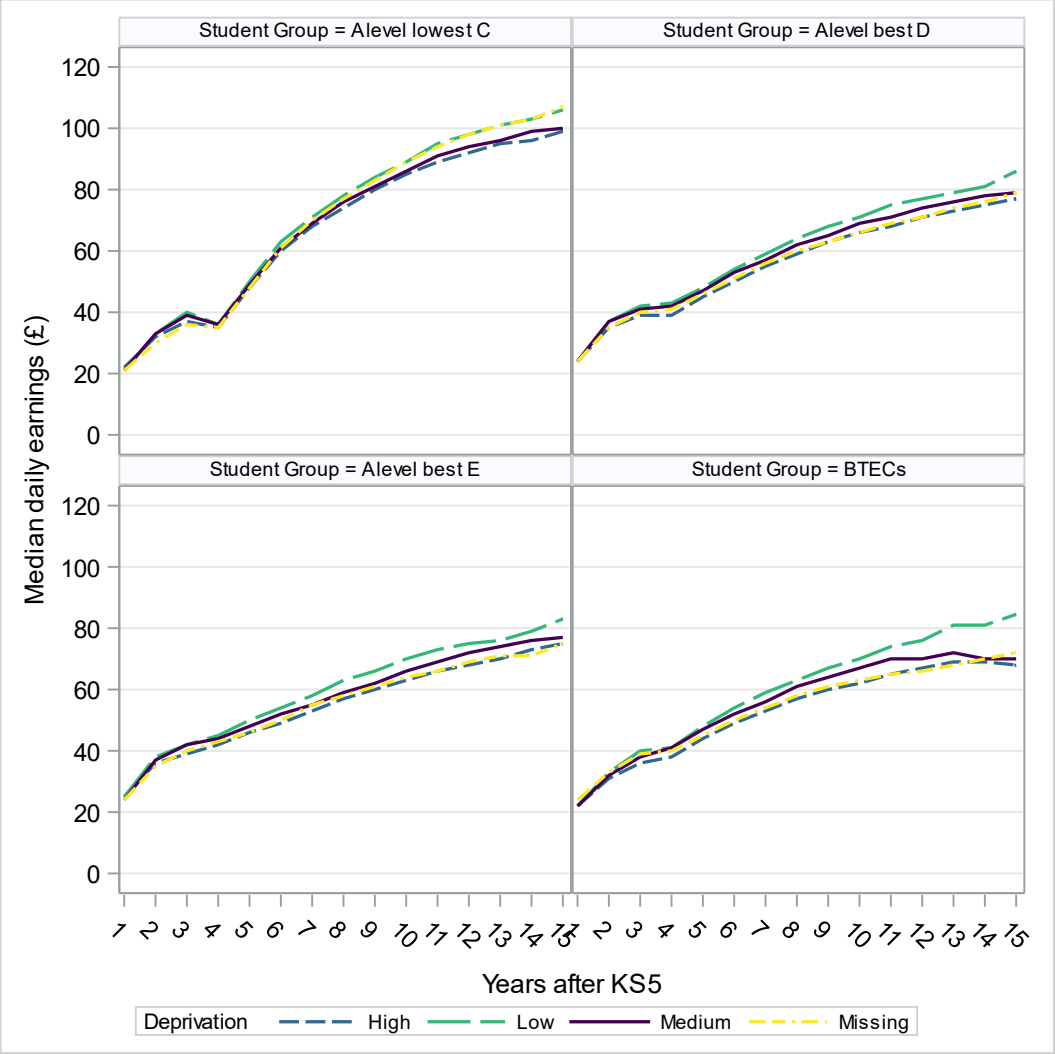


Figure 21: Median daily earnings after completing Key Stage 5 (Year 1 to Year 15), by student group and deprivation group

Figure 22 presents the earnings breakdown by prior attainment group. Unsurprisingly, it shows that in most years the high prior attainment group had the highest median earnings, followed by the medium attainment group and the low attainment group. The results were a bit more volatile towards the end of the time period, but this was likely to be due to low numbers of students within some groups (for example, the high attainment group in the A level best E group in year 14 was only 16 students). The advantage for those in the high attainment group was largest amongst the A level lowest C group.

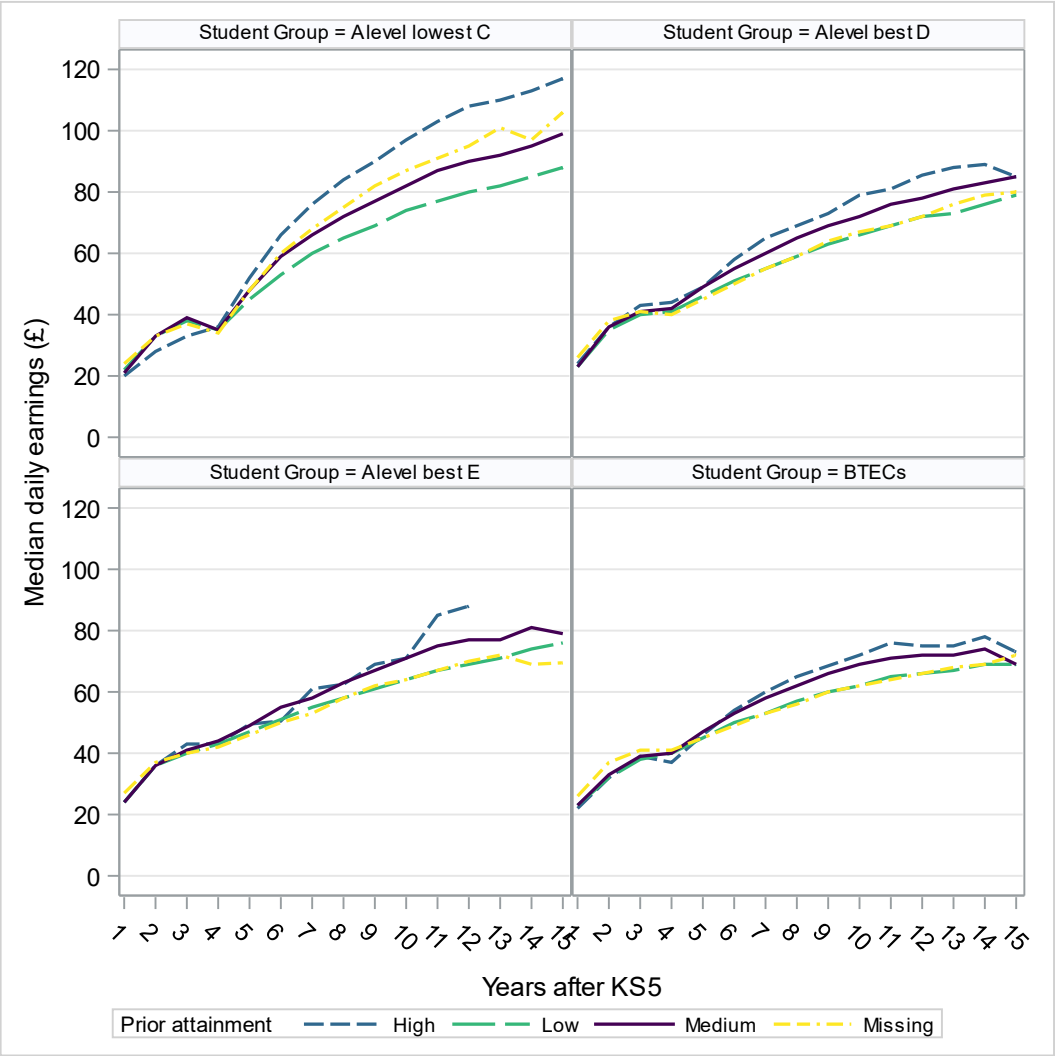


Figure 22: Median daily earnings after completing Key Stage 5 (Year 1 to Year 15), by student group and prior attainment group

Figure 23 presents the breakdown by special educational needs status. In each group, the students with no SEN had the highest median earnings, and those with a statement of special needs had the lowest median earnings. The largest differences were in the A level lowest C group, where students with a statement had particularly low earnings compared with students with no SEN. The smallest differences were in the BTEC group. These results, however, need to be interpreted with a bit of caution as the numbers of students in some categories (particularly in the SEN with a statement group) were low, particularly in the final few years.

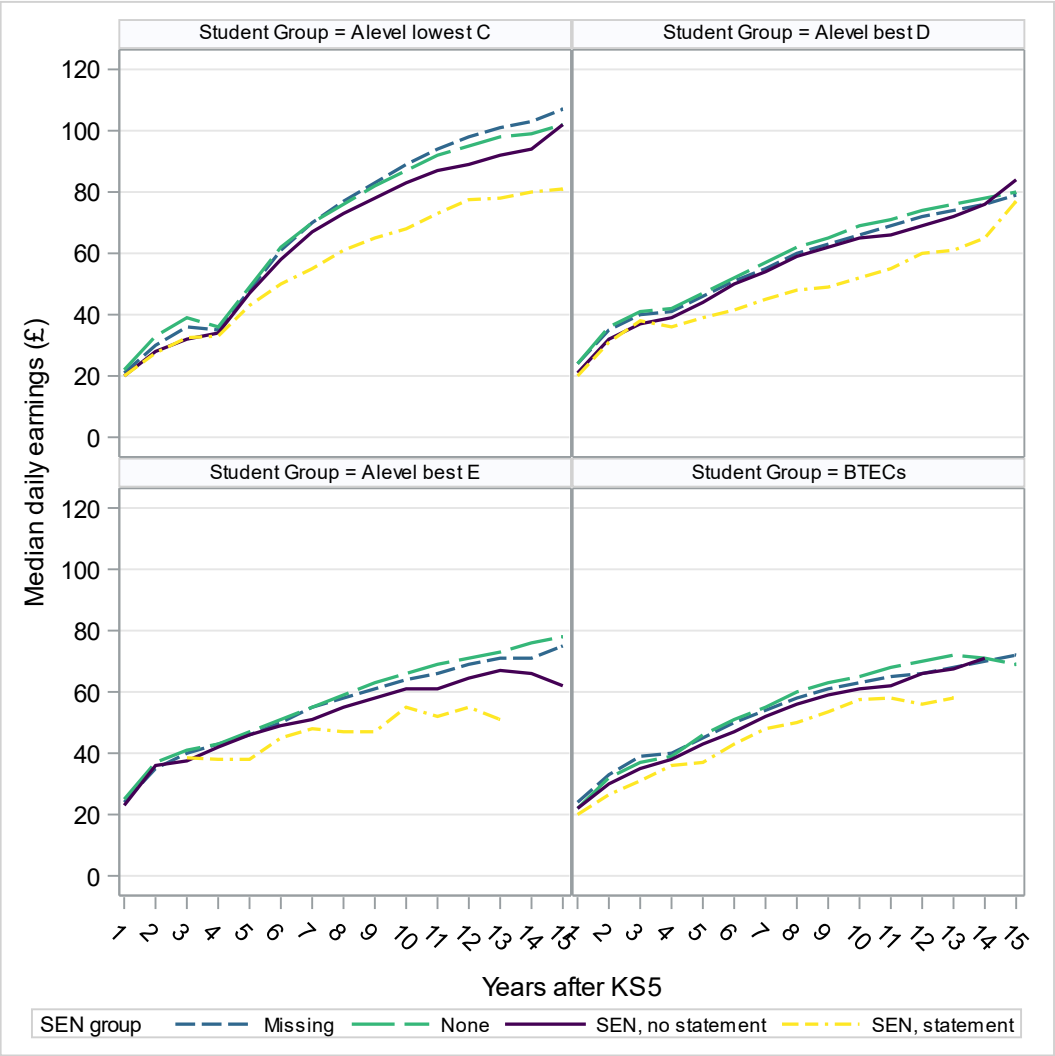


Figure 23: Median daily earnings after completing Key Stage 5 (Year 1 to Year 15), by student group and SEN status

Figure 24 presents the earnings breakdown by ethnic group and shows, in particular, that in the A level lowest C group, there was a clear pattern (except in the first 4 years), of Chinese students having the highest median earnings followed by Asian students. White students had the lowest median earnings, except in the first 4 years where they had the highest median earnings. In the other student groups, there was no consistent pattern, which might be explained by the low numbers of students with certain ethnic backgrounds in some years.

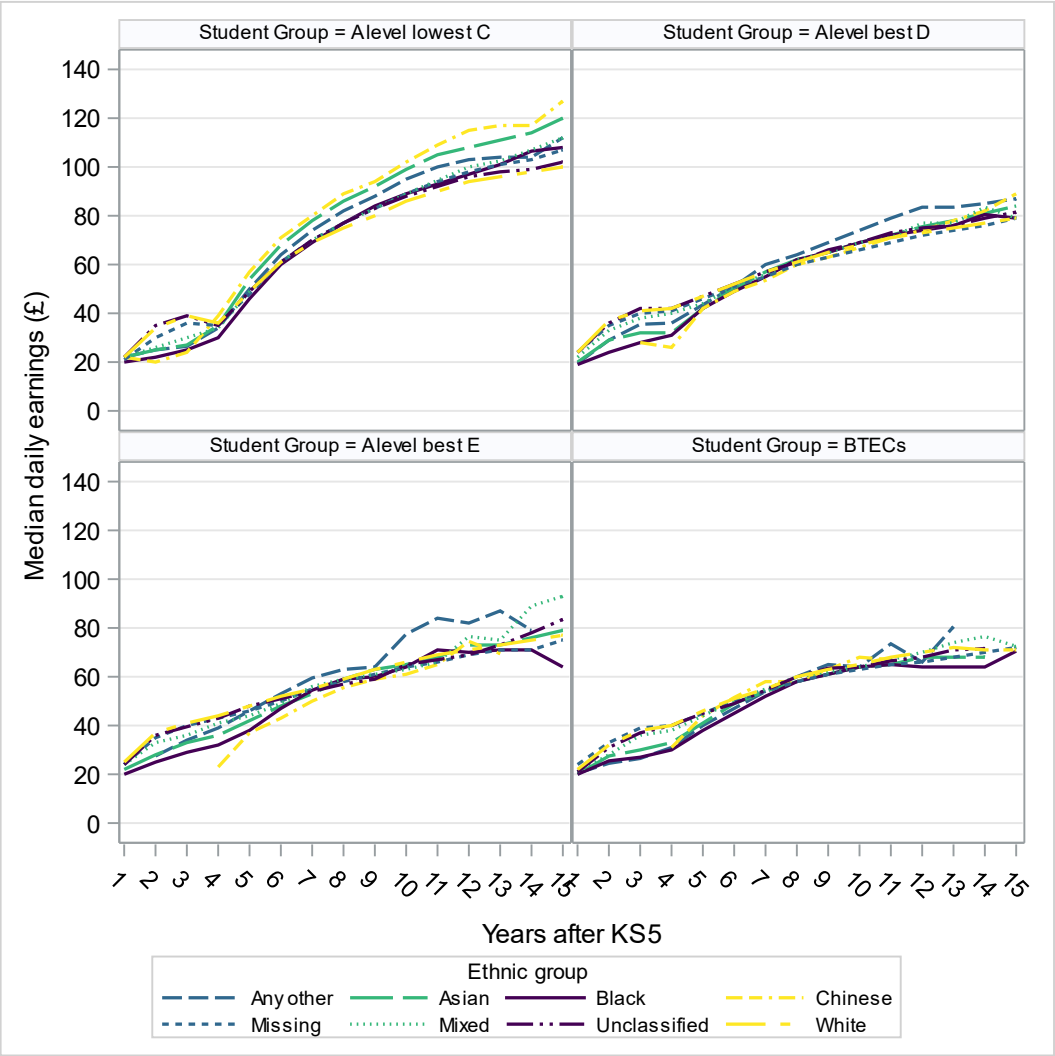


Figure 24: Median daily earnings after completing Key Stage 5 (Year 1 to Year 15), by student group and ethnicity

Figure 25 presents the earnings breakdown by school type. In each student group, those attending independent schools had the highest median earnings in most years. The exception to this was in the A level lowest C group, where independent school students had the lowest median earnings of those in sustained employment in years 1 to 4.

The largest gap between independent school students and those in other school types was in the A level lowest C group. In all student groups, state school students had higher median earnings than college students across most years. However, the differences were mostly very small.

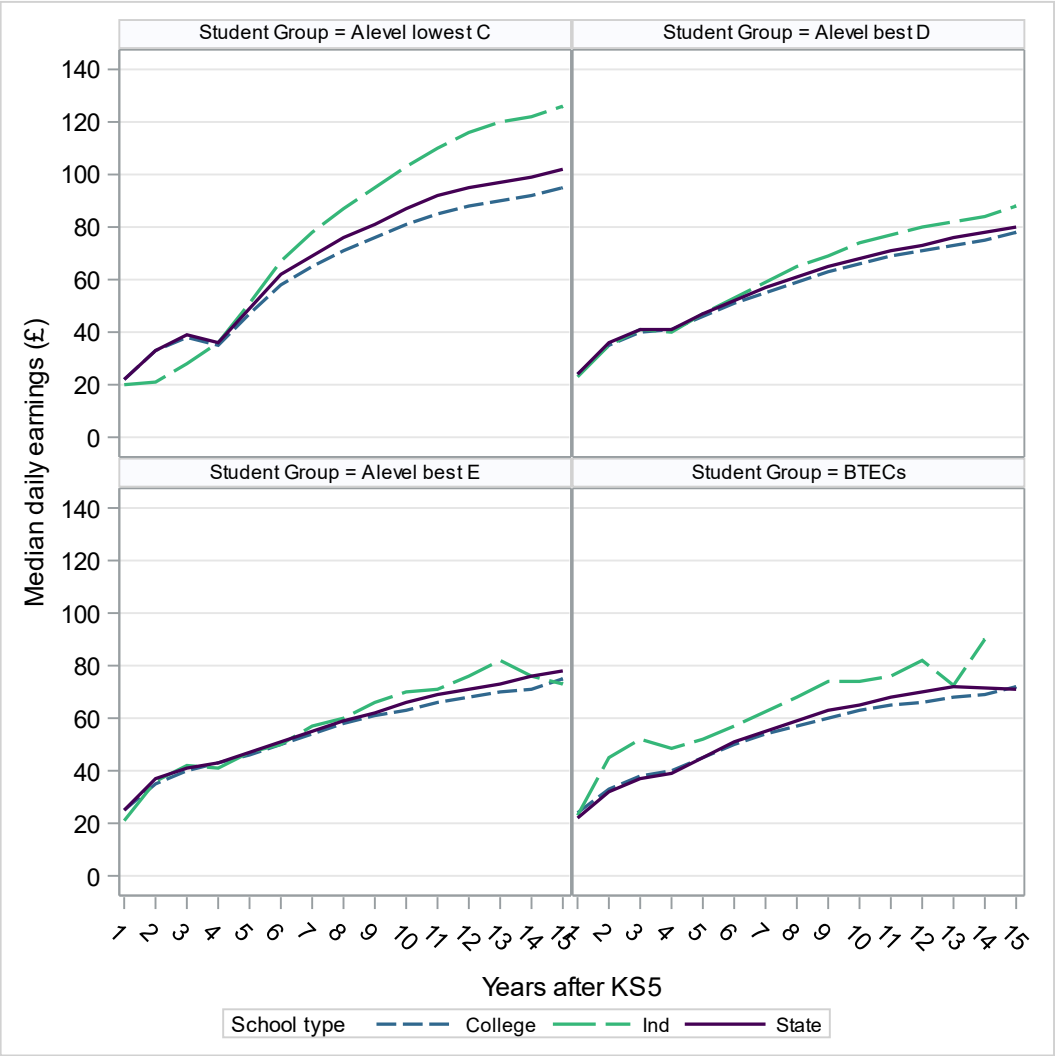


Figure 25: Median daily earnings after completing Key Stage 5 (Year 1 to Year 15), by student group and school type

Table 9 summarises the median daily earnings by student group, broken down by student characteristics, in three different years after finishing Key Stage 5: Year 1, Year 5, and Year 10.

In Year 1 and Year 5, the differences in earnings between the student groups were mostly very small, both overall and across student characteristics. The largest differences were for Chinese and Asian students in the A level lowest C group – these students had substantially higher earnings in Year 5 compared with any other students.

By Year 10, there were some much larger differences, with the A level lowest C group having much higher median earnings across the student characteristics. The highest median earnings were within the A level lowest C group for independent school students (£103 per day) and Chinese students (£102 per day).

Table 9: Median daily earnings (£) for students in each category, by subgroups, one, five and 10 years after Key Stage 5 completion

Sub-group (characteristic)		Year 1				Year 5				Year 10			
		A level lowest C	A level best D	A level best E	BTECs	A level lowest C	A level best D	A level best E	BTECs	A level lowest C	A level best D	A level best E	BTECs
Gender	Female	21	23	24	23	47	45	45	43	83	62	58	56
	Male	22	24	25	24	52	48	49	48	97	73	70	71
Deprivation	Low	21	24	25	22	50	48	50	48	89	71	70	70
	Medium	21	24	24	22	49	47	48	47	86	69	66	67
	High	22	24	25	22	48	45	46	44	85	66	63	62
	Missing	21	24	24	24	48	46	46	45	89	66	64	63
Prior attainment	Low	22	23	24	23	45	46	47	45	74	66	64	62
	Medium	21	23	24	23	48	49	49	47	82	72	71	69
	High	20	24	24	22	52	49	50	46	97	79	71	72
	Missing	24	26	27	26	48	45	46	45	87	67	64	62
SEN status	None	22	24	25	22	49	47	47	46	87	69	66	65
	No statement	20	21	23	22	47	44	46	43	83	65	61	61
	Statement	20	20	-	20	43	39	38	37	68	52	55	58
	Missing	21	24	24	24	48	46	46	45	89	66	64	63
Ethnic group	Any other	22	20	-	21	50	44	46	40	95	74	78	64
	Asian	22	20	22	20	54	42	42	41	99	69	65	64
	Black	20	19	20	20	46	42	38	38	89	69	64	64
	Chinese	22	-	-	-	57	42	37	44	102	67	61	68
	Mixed	22	22	24	21	49	44	44	44	89	69	63	64
	Missing	21	24	-	24	48	46	46	45	89	66	64	63
	Unclassified	22	24	24	21	49	47	48	45	88	69	65	64
	White	22	24	25	22	49	47	48	46	86	68	66	65
School type	State	22	24	25	22	49	47	47	45	87	68	66	65
	Independent	20	23	21	23	51	47	47	52	103	74	70	74
	College	22	24	25	24	47	46	46	45	81	66	63	63
Overall		21	24	25	23	49	46	47	45	88	68	65	63

3.3.3 Regression analysis

As with the students' destinations, we further explored earnings via regression analyses.

To check whether multilevel models (with students clustered within schools) were needed, we calculated the variance explained by the school when fitting baseline models with daily earnings as the outcome.

Table B3 in Appendix B shows the variance components for the baseline multilevel models and shows that, before accounting for any student characteristics, just under 4% of the variance in earnings was explained by the schools in Year 1 after completion of Key Stage 5. This proportion decreased in Year 5 to 1.8% and increased in Year 10 to 8%.

In the first instance, we looked at earnings in Year 1, Year 5 and Year 10, by student category and accounting for students' background characteristics. Table 10 presents the parameter estimates for the student group variable in each of the regression models. The full outputs of the regression analyses can be found in Appendix D.

The parameter estimates in Table 10 represent the change in the log of the daily earnings compared to the reference group (A level students with a best grade of E). This makes them hard to interpret directly. However, if we take the exponential of the estimates, the interpretation of the new value is the multiplicative factor due to being in each category compared with the reference category. For example, in Year 1 the exponentiated value of the estimate for the A level lowest C group is 0.90. This means that students in this group were predicted daily earnings which were 10% lower than the reference group. Furthermore, since all the estimates are values close to zero, the exponential will be approximately equal to 1 plus the original coefficient. Thus, the estimates themselves can approximately be interpreted as percentage increases and decreases in earnings associated with different student characteristics.

Table 10: Daily earnings in Years 1, 5 and 10 ~ regression parameter estimates by student category

Year	Student Category	Estimate	Standard Error	*p*-value	Multiplicative factor
1	A level lowest C	-0.105	0.009	<0.001	0.90
	A level best D	-0.013	0.009	0.132	0.99
	BTECs	-0.031	0.009	0.007	0.97
	[A level best E]	.	.	.	.
5	A level lowest C	-0.038	0.006	<0.001	0.96
	A level best D	-0.014	0.006	0.017	0.99
	BTECs	-0.031	0.006	<0.001	0.97
	[A level best E]	.	.	.	.
10	A level lowest C	0.190	0.005	<0.001	1.21
	A level best D	0.034	0.005	<0.001	1.03
	BTECs	0.009	0.005	0.072	1.01
	[A level best E]	.	.	.	.

From Table 10 we can see that:

- In Year 1 there were significant differences in earnings by student group. In particular, students in the A level lowest C group and the BTECs group were predicted significantly lower earnings than students in the reference group (A level best E). A level lowest C students were predicted earnings 10% lower than the A level best E group and the BTECs group were predicted earnings 3% lower.
- In Year 5, all three student groups were predicted significantly lower earnings than the reference group, but the differences were only small (between 1 and 4%).
- By Year 10, the pattern was reversed, with all groups of students apart from those with BTECs predicted significantly higher earnings than students with the lowest A level grades. This was particularly the case for the A level lowest C group, who were predicted 21% higher earnings than the reference group.

It is worth noting that, in all years, there were only very small differences in the earnings for those in the A level best D group compared to the A level best E group (even though some were statistically significant). This suggests that getting grade Ds rather than grade Es at A level does not improve earnings much.

There were other variables in the regression models which were statistically significant (see Appendix D for details). Specifically, amongst those in sustained employment, all else being equal:

- Males were predicted significantly higher earnings than females in all three years.
- Students with a statement of SEN were predicted the lowest earnings in all three years, followed by SEN students without a statement.
- In Year 1, White students were predicted significantly higher earnings than students from any other ethnic background. In Year 5, Chinese and Asian students were predicted the highest earnings and all other ethnic groups were predicted lower earnings than White students. In Year 10, Chinese and Asian students were predicted the highest earnings. The differences between any other ethnic groups at that time were all very small.
- In Year 1, the most deprived students were predicted higher earnings than the least deprived. On the contrary, in Year 5 and Year 10 the least deprived students were predicted higher earnings than the medium or high deprived ones.
- In Year 5 and Year 10, students in the highest attaining group were predicted the highest earnings, followed by medium attainers. These differences were largest in Year 10.
- In Year 1 and Year 5, students in state schools were predicted the highest earnings. In Year 10, however, this changed and it was students in independent school who were predicted the highest earnings.

In a second step, we looked at the interactions between the student category variable and all other variables in the models. The focus was, however, on the interaction between the student category variable and the year the students finished Key Stage 5, as this indicates changes in earnings depending on when students completed their post-16 studies.

Figure 26 to Figure 28 show the predicted daily earnings in Year 1, Year 5 and Year 10 (respectively) after completing Key Stage 5, by type of student and Key Stage 5 cohort.

In Year 1, there were significant negative interactions for A level lowest C in 2006/07, and for BTECs in 2006/07 and 2007/08. This means that compared with the reference year (2011/12) the impact of being in these student groups rather than the A level best E group was larger. This can be seen in

Figure 26, which shows that the gap between A level best E and A level lowest C or BTECs was largest in these two years.

In Year 5, there were two significant negative effects for both the A level lowest C and BTECs groups, in 2004/05 and in 2009/10. This can be seen in Figure 27, with these groups having particularly low daily earnings in these years.

Finally, in Year 10, there was a large positive interaction effect for A level lowest C group in 2006/07, which can clearly be seen in Figure 28. There was also a small but significant negative interaction effect for BTECs in 2004/05.

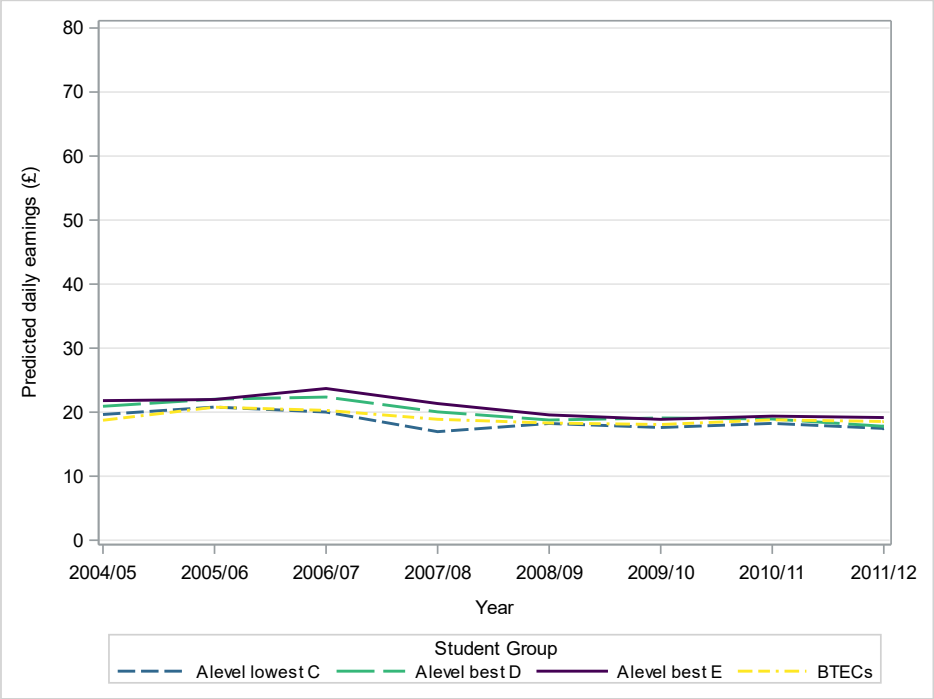


Figure 26: Predicted daily earnings for a typical student[24] in Year 1 after completing Key Stage 5, by type of student and Key Stage 5 cohort

[24] Female, White, with medium prior attainment, no special educational needs and in a state school during Key Stage 5.

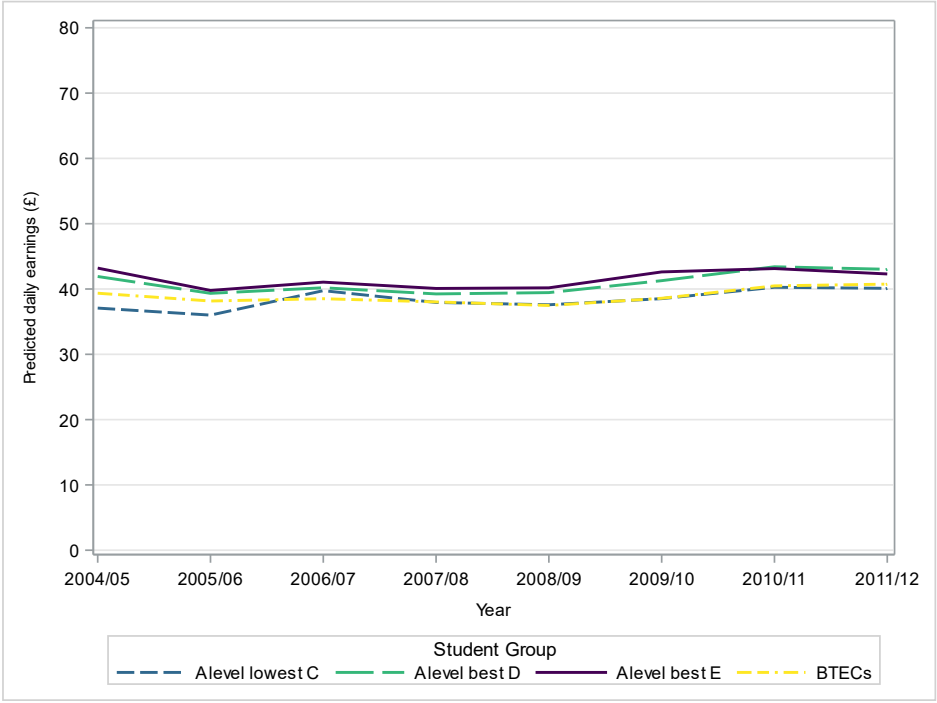


Figure 27: Predicted daily earnings for a typical student[24] in Year 5 after completing Key Stage 5, by type of student and Key Stage 5 cohort

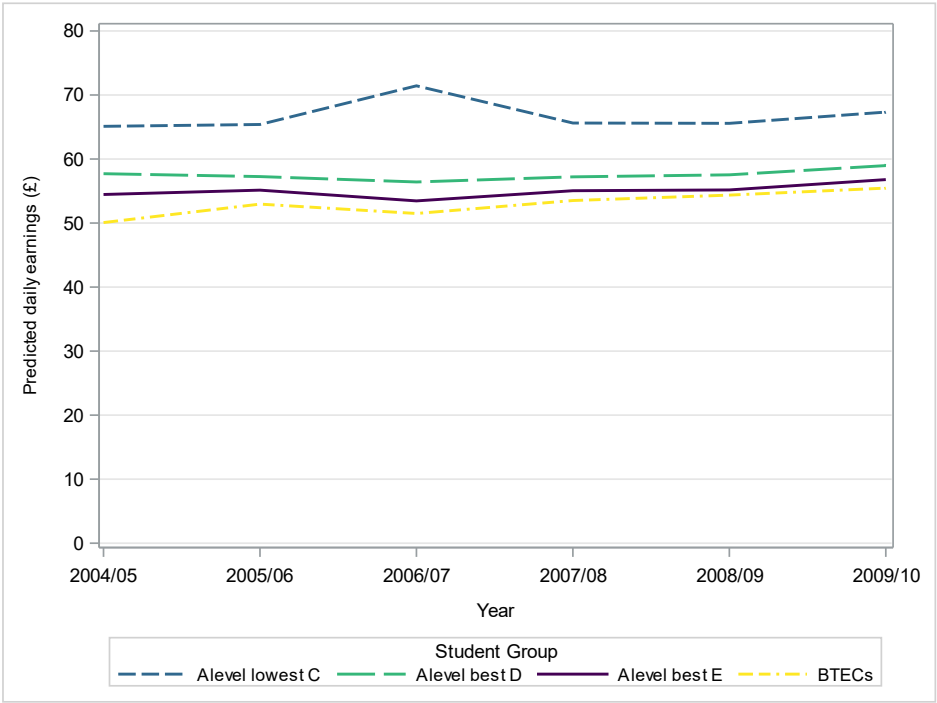


Figure 28: Predicted daily earnings for a typical student[25] in Year 10 after completing Key Stage 5, by type of student and Key Stage 5 cohort

[25] Female, White, in the medium deprivation group, with medium prior attainment, no special educational needs and in a state school during Key Stage 5.

3.4 Self-assessment destinations

As explained in Section 2.1.3, for the first two years after Key Stage 5 none of the Key Stage 5 cohorts included in this research had data on self-employment (self-assessment data is only available from 2014/15 onwards; the Key Stage 5 cohorts included here completed Key Stage 5 between 2004/05 and 2011/12). It is also worth noting that students who are included in the category "self-employment *and* sustained employment" were all in the sustained employment category in the analyses carried out in previous sections. Students in the "self-employment category only" could have been in any of the categories (*e.g.*, no destination identified, claiming sustained benefits, etc.), but not in sustained employment.

3.4.1 All students

The figures below (Figure 29 and Figure 30) show the percentages of students in each destination (self- employment only; a combination of both self-employment and sustained employment) after completing Key Stage 5 (from year 3 to year 16), by the type of student.

These percentages are of the cohorts of students who completed Key Stage 5 within years for which self-employment data was potentially available (see Figure 2). The cohort from which percentages are calculated changes depending on the number of years after completion of Key Stage 5 being analysed (*i.e.*, Year 3, Year 4, etc.). See Appendix E for a more detailed explanation.

Figure 29 shows that, independently of the type of student, the percentage of students in self-employment only increased steadily over time. The students with the highest A level grades (lowest grade C) had the lowest progression to self-employment (for example, 6.5% in Year 5 and 17.4% in Year 10) whilst students with lower grades (best grade D, best grade E) progressed to self-employment at similar higher rates (for example, rates for students in the group A level best E were 12.6% in Year 5 and 22.9% in Year 10).

Regarding progression to both sustained employment and self-employment, Figure 30 shows that the students with BTECs and low A level grades (best grade E) had the highest progression in the first few years after completing their post-16 study and those with the best A level grades (lowest C) had the lowest. However, after six or seven years, the pattern reversed and the likelihood of being in both sustained employment and self-employment was higher for students with the best A level grades (lowest C) followed by students with BTECs.

It is worth pointing out that, although the rates of progression to both sustained employment and self-employment increased in the first few years after completion of Key Stage 5 for all groups of students, they levelled off after Year 6.

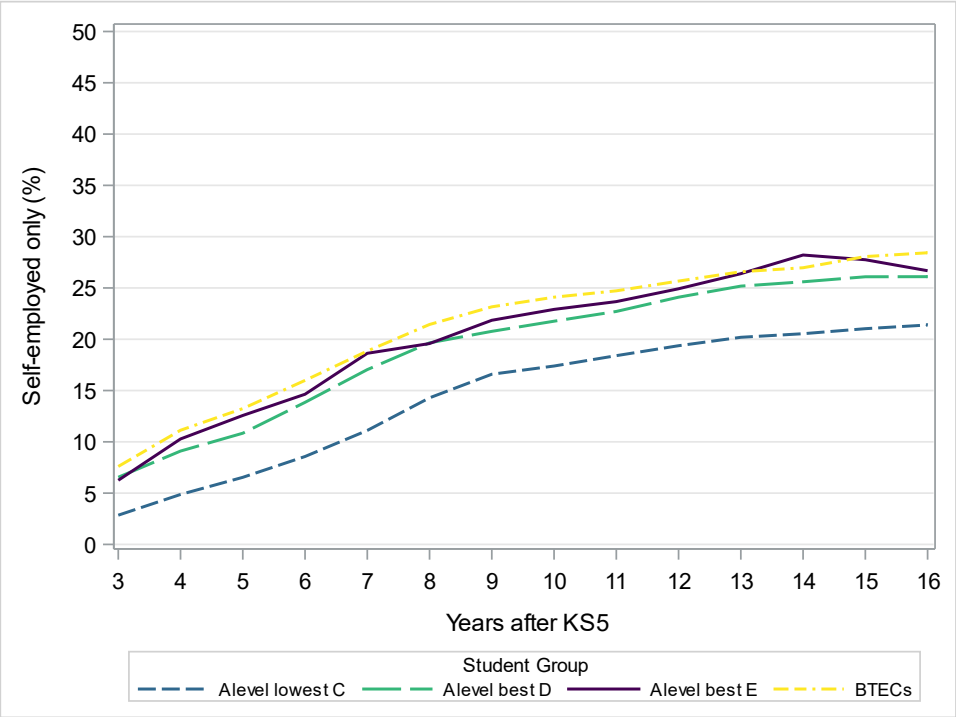


Figure 29: Percentages of students in self-employment only after completing Key Stage 5 (Year 3 to Year 16), by type of student

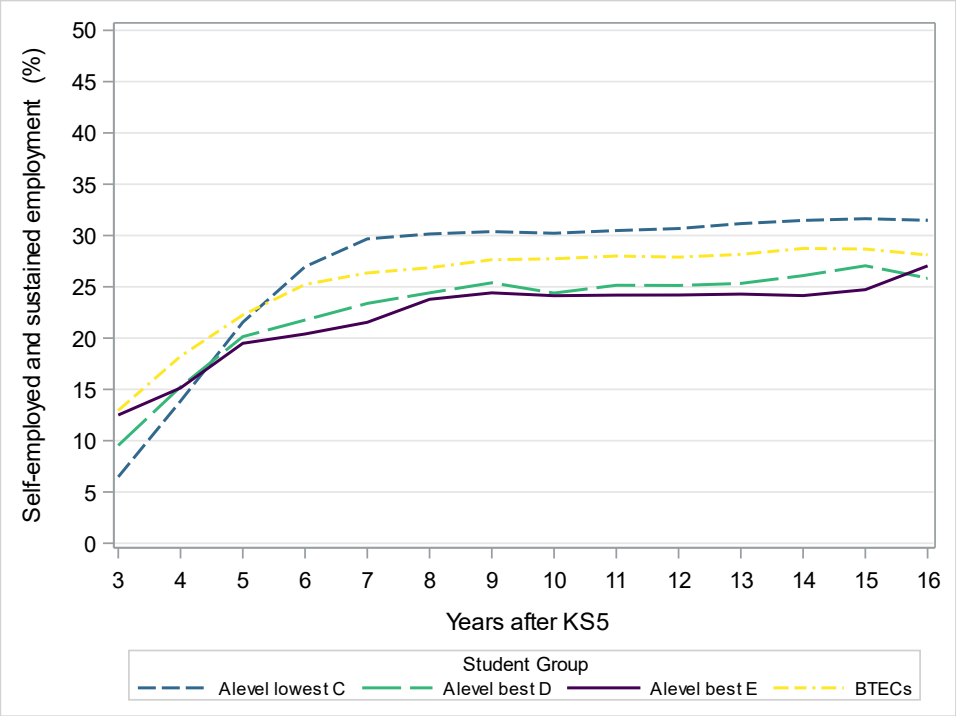


Figure 30: Percentages of students in a combination of both self-employment and sustained employment after completing Key Stage 5 (Year 3 to Year 16), by type of student

3.4.2 Breakdowns by student characteristics

In this section, the focus is on the same two destinations as above (self-employment only and both self-employment and sustained employment), broken down by students' background characteristics, in Year 5 and Year 10.

Firstly, Table 11 shows the percentages of students in each student category who progressed to self-employment only, by each of the background characteristics, five and ten years after the completion of Key Stage 5.

There were some gaps between males and females in terms on progression to self-employment for each student group, with males progressing at higher rates. In Year 5, this gender gap was slightly larger for the students with BTECs and smallest for students in the A level best E group. The gap increased (it was around double for students in the A level best D or A level best E groups) over time.

Table 11 shows that, when looking at the students' breakdown by deprivation group (IDACI), students in the low deprivation group had, generally, higher progression to self-employment in Year 5 than students in the high deprivation group. However, there were some small differences between the four groups of students based on the Key Stage 5 qualifications. In particular, for students in the A level lowest C group, those in the low and high deprivation groups had very similar rates of progression to self-employment. On the contrary, for students with BTEC qualifications, those in the high deprivation group had lower rates than those with medium or low levels of deprivation. This pattern changed slightly in Year 10, particularly amongst students in the A level lowest C group (those in the low deprivation group had lower rates than those with medium or low levels of deprivation).

In terms of students' prior attainment, the progression to self-employment in Year 5 generally decreased with increasing prior attainment. The biggest differences in progression were for the students with BTECs (almost four percentage points) and lowest for students in the A level best D or A level best E groups (between one and two percentage points). The pattern was similar in Year 10 although some of the differences between low and high prior attainment students increased (*e.g.*, for students in the BTECs group).

Regarding the type of school attended, there were small gaps between state schools and colleges in progression to self-employment in Year 5. However, the gaps between the different school types increased slightly over time, particularly between state and independent schools for students in the BTECs group.

Table 12 shows the percentages of students in each student category in both self-employment and sustained employment, by each of the background characteristics, five and ten years after the completion of Key Stage 5.

As for progression to self-employment, there were some gaps between males and females in terms on progression to both types of employment for each student group. The gap was small in both Year 5 and Year 10. In both years, females progressed at lower rates in the group with the lowest A level grades (best grade E). However, in all other groups, there was lower progression amongst males (with the biggest difference amongst BTEC students).

When looking at the students' breakdown by deprivation group (IDACI), there were some differences between the different groups of students, particularly those with the lowest A level grades (A level best E) and with BTECs. For these groups, in general, students in the low deprivation category had the highest rates of progression in Year 5 to both self-employment and sustained employment and those in the high deprivation category had the lowest. However, these differences reduced over time.

Table 12 also shows the progression to sustained employment by students' prior attainment. For most groups of students, students in the low attainment category had the lowest rates of progression to both self-employment and sustained employment and those in the high attainment category had the highest. The difference was highest for students with the lowest A level grades (A level best D, A level best E) and lowest for those in the A level lowest C group. These patterns were similar in Year 10.

Students with a special educational needs statement in the BTEC group progressed at much higher rates to both self-employment and sustained employment in Year 5 and Year 10 than students with no special needs. On the contrary, students in the A level lowest C group were more likely to progress if they did not have a SEN statement.

There were gaps on progression by ethnic group, however, the magnitude of these gaps decreased by Year 10.

Finally, regarding the type of school attended, students in state schools had, generally, the highest progression in Year 5 to the combination of both self-employment and sustained employment when compared to students in colleges. The exception was the students in the BTEC group, who were more likely to progress if they were in independent schools. This was the case in both years. For students in the A level best E group, we can only report on progression in Year 10. In this case, they were most likely to progress to both self-employment and sustained employment if they were in college and lest likely if they were in an independent school during Key Stage 5.

Table 11: Percentages of students in each student category in self-employment only, by subgroups, five and ten years after Key Stage 5 completion

Sub-group (characteristic)		Year 5				Year 10			
		A level lowest C	A level best D	A level best E	BTECs	A level lowest C	A level best D	A level best E	BTECs
Gender	Female	5.1	7.7	11.2	9.2	15.7	16.5	18.1	19.8
	Male	8.4	12.4	13.0	15.6	19.7	24.7	24.8	27.1
Deprivation	Low	6.6	10.5	12.8	14.9	16.3	22.6	25.2	25.0
	Medium	6.8	10.8	15.5	12.7	16.9	21.8	22.1	26.2
	High	6.4	10.2	13.1	11.9	17.4	22.4	24.3	24.2
	Missing	6.5	11.4	10.5	13.3	18.0	21.0	21.4	24.0
Prior attainment	Low	8.3	10.8	12.9	13.9	18.9	22.0	22.9	26.4
	Medium	7.3	11.3	12.3	11.8	16.9	22.2	24.9	22.8
	High	5.7	-	-	10.0	17.7	19.4	-	18.7
	Missing	7.1	-	-	13.6	16.6	20.7	-	20.1
SEN	None	6.5	10.5	13.9	12.5	16.8	22.2	23.6	24.7
	No Statement	7.4	9.3	-	14.6	17.4	21.8	20.6	27.0
	Statement	-	-	-	-	21.6	31.3	-	27.5
	Missing	-	-	10.5	-	18.0	20.9	-	24.0
Ethnic Group	Any other	5.5	-	-	-	18.8	-	-	20.5
	Asian	3.9	9.5	-	12.0	25.1	23.5	24.2	28.5
	Black	3.6	-	-	8.6	15.5	16.7	32.1	20.1
	Chinese	5.7	-	-	-	17.8	-	-	-
	Mixed	5.7	12.2	-	10.1	18.4	24.5	-	21.7
	Missing	6.5	11.3	10.5	13.3	18.0	20.9	21.7	-
	Unclassified	5.4	-	-	-	18.0	17.0	-	24.6
	White	7.1	11.0	14.9	13.3	15.8	22.5	23.8	25.4
School type	State	6.6	10.5	13.7	12.8	16.8	22.2	23.7	25.0
	Independent	6.2	13.5	-	14.6	19.0	20.1	19.1	20.8
	College	6.7	11.0	-	13.4	16.9	21.0	21.9	24.0

Table 12: Percentages of students in each student category in a combination of both self-employment and sustained employment, by subgroups, five and ten years after Key Stage 5 completion

Sub-group (characteristic)		Year 5				Year 10			
		A level lowest C	A level best D	A level best E	BTECs	A level lowest C	A level best D	A level best E	BTECs
Gender	Female	21.6	20.7	18.6	24.2	30.7	25.1	22.3	29.7
	Male	21.5	19.9	19.8	21.1	29.6	24.0	24.8	26.3
Deprivation	Low	22.9	21.2	19.5	25.7	30.6	26.4	24.1	29.5
	Medium	23.1	21.7	18.0	23.9	31.0	24.7	23.0	30.3
	High	20.5	20.0	16.6	21.6	29.8	25.0	23.2	30.4
	Missing	20.7	18.9	21.9	22.1	29.9	22.9	25.5	27.4
Prior attainment	Low	21.3	19.0	20.2	19.6	28.4	24.8	25.1	26.1
	Medium	22.2	21.7	27.0	17.5	31.0	25.2	25.5	31.4
	High	21.5	29.7	35.3	-	30.5	27.8	-	36.0
	Missing	16.2	18.7	20.3	-	28.8	22.3	-	28.1
SEN	None	22.3	20.9	18.0	23.4	30.4	25.3	23.1	30.3
	No Statement	21.5	23.6	-	19.0	32.5	24.4	32.4	28.2
	Statement	20.3	-	-	37.9	29.2	-	-	39.2
	Missing	20.7	-	21.6	22.1	30.0	-	-	27.4
Ethnic Group	Any other	15.8	-	-	28.6	26.4	27.5	-	35.6
	Asian	8.9	17.9	-	13.9	23.7	20.5	20.0	21.1
	Black	16.6	23.2	-	16.7	29.4	24.8	-	34.0
	Chinese	15.1	-	-	-	25.2	-	-	-
	Mixed	18.6	15.3	-	25.9	32.2	23.4	27.0	41.4
	Missing	20.7	18.7	21.6	-	30.0	-	25.4	-
	Unclassified	21.8	-	-	31.0	30.6	24.5	28.3	26.1
	White	24.3	21.5	18.4	23.7	31.2	25.7	23.8	29.8
School type	State	22.2	20.9	18.4	23.0	30.5	25.2	23.4	29.8
	Independent	19.4	18.3	-	25.5	29.4	21.9	19.9	35.0
	College	21.9	19.0	-	22.1	30.5	23.1	26.2	27.4

3.4.3 Regression analysis

To further explore progression to self-employment, multilevel logistic regression models (as described in Section 2.2.4) were carried out.

Tables B4 and B5 in Appendix B include the variance components for baseline multilevel logistic models with progression to self-employment and to a combination of sustained employment and self-employment as outcomes. These were fitted, as explained in Section 3.2.3, to check whether multilevel models with students clustered within schools were needed. The results in the tables show that, in the progression to self-employment only, just under 5% of the variance was explained by the schools in Year 5 after completion of Key Stage 5. This proportion decreased in Year 10 and only 1.4% of the variability in the progression to self-employment was still due to the school. For the progression to both self-employment and sustained employment, the percentage of the variance explained by the schools was smaller (1.2% in Year 5 and 0.6% in Year 10).

In the remainder of this section, the results of the regression analyses are presented and discussed. The full outputs from the regression analyses are available in Appendix F.

Progression to self-employment only

As in Section 3.2.3, we first looked at progression in Year 5 and Year 10, by student category and accounting for students' background characteristics. Table 13 presents the parameter estimates for the student categories in each of the years. These estimates show the effect of the predictor (student category) on the probability of the outcome (progression to self-employment only) occurring, expressed on a logit scale. This makes them hard to interpret directly but, from Table 13 we can see that:

- In Year 5, the probability of progression to self-employment was significantly lower for students in the A level lowest C category compared to the reference group (A level students with a best grade of E), once their background characteristics were accounted for. There were no significant differences in the probability of progressing between students in the A level best D and BTECs groups compared to the reference group.
- The same patterns as above were observed for Year 10, although the effect of being in the A level lowest C category compared to being in the reference group on the probability of progression was smaller (see estimates for A level lowest C in Table 13). There were no significant differences in the probability of progressing between students in the A level best D and BTECs groups compared to the reference group.

Table 13: Progression to self-employment only in Years 5 and 10 ~ regression parameter estimates by student categories

Year	Student category	Estimate	Standard Error	*p*-value	Probability of progression [26]
5	A level lowest C	-0.419	0.108	0.000	0.063
	A level best D	-0.123	0.114	0.283	0.080
	BTECs	0.074	0.106	0.486	0.099
	[A level best E]	.	.	.	0.092
10	A level lowest C	-0.266	0.047	<.0001	0.175
	A level best D	-0.049	0.049	0.320	0.209
	BTECs	0.016	0.047	0.728	0.220
	[A level best E]	.	.	.	0.217

There were other variables in the regression models (*i.e.*, students' backgrounds) which were statistically significant (see full results from the regression models in Appendix F). In particular, all else being equal:

- Males were significantly more likely than females to progress to self-employment only in both Year 5 and Year 10 after completing Key Stage 5.
- In both Year 5 and Year 10 after completion of Key Stage 5, students with the lowest prior attainment were the most likely to progress to self-employment only.
- White students were significantly more likely to progress to self-employment only than Asian or Black students in Year 5. In Year 10, however, White students were significantly less likely to progress than Asian students or students with a mixed ethnic background.

In a second step, we looked at the interaction between the student categories and the year students completed Key Stage 5. This was done in an attempt to investigate whether there were changes in progression depending on when students completed their Key Stage 5 study.

Figure 31 and Figure 32 show the probability of progressing to self-employment only in Year 5 and Year 10 (respectively) after completing Key Stage 5, by type of student and Key Stage 5 cohort. Note that there are only three cohorts included in the Year 5 analyses and seven cohorts in the Year 10 analyses. This is due to the availability of the self-assessment data, as explained in Section 2.1.3 (Figure 2).

In Year 5, the interaction between the student category and the cohort was statistically significant. In particular, there was a significant negative interaction between the A level lowest C group and the year 2009/10. This means that compared with the reference year (2011/12) the impact of being in this student group rather than the A level best E group was larger. There were no other significant interactions between the different groups of students and the cohorts.

[26] This is the probability of progression for a typical student who completed Key Stage 5 in the academic year 2010/11 (female, White, in the medium deprivation group, with medium prior attainment, no special educational needs and in a state school during Key Stage 5).

In Year 10, the interaction between the student category and the cohort was not statistically significant. Figure 32 shows, in fact, that the gaps between the different groups were very similar (if not identical) independently of the cohort.

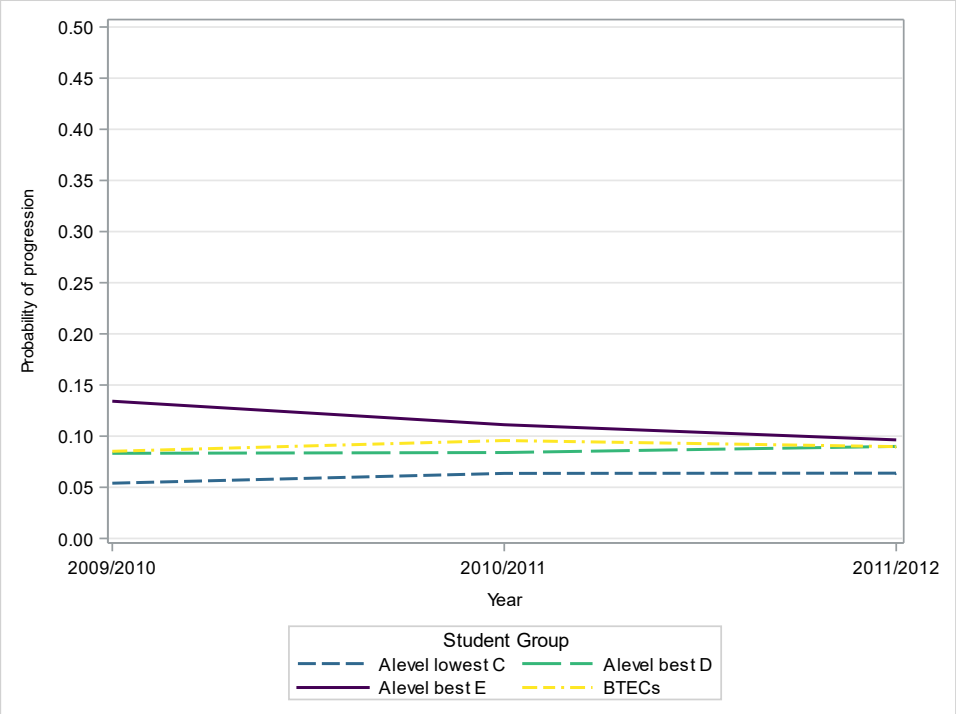


Figure 31: Probability of a typical[27] student being in self-employment only in Year 5 after completing Key Stage 5, by type of student and Key Stage 5 cohort

[27] Female, White and with medium prior attainment.

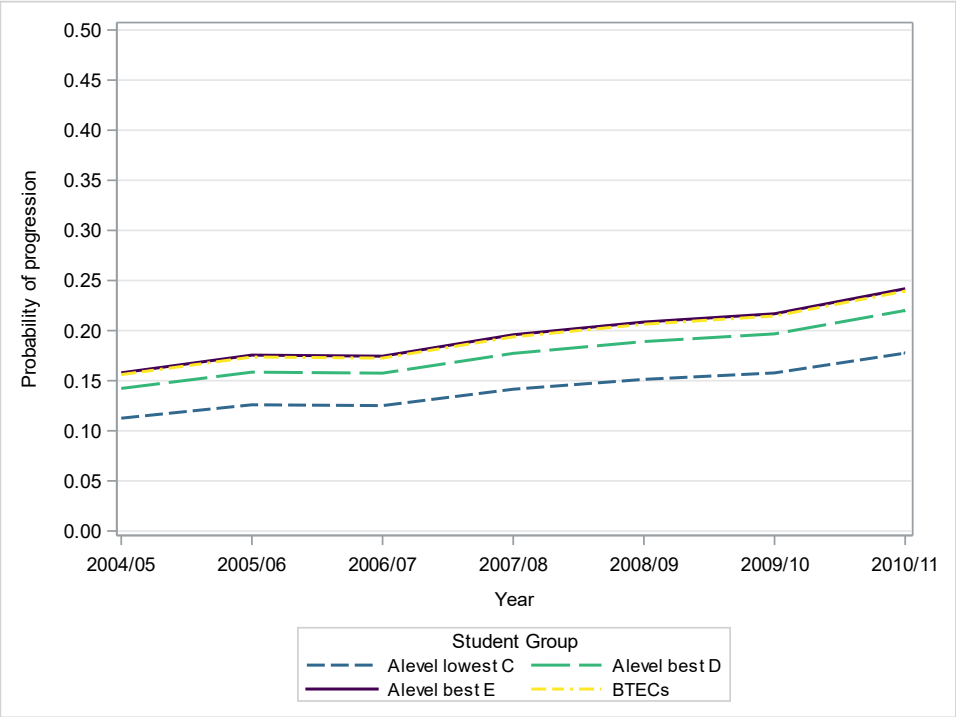


Figure 32: Probability of a typical[28] student being in self-employment only in Year 10 after completing Key Stage 5, by type of student and Key Stage 5 cohort

Progression to a combination of both self-employment and sustained employment

As for progression to self-employment only, we looked in the first instance at progression to the combination of both self-employment and sustained employment in Year 5 and Year 10, by student category and accounting by students' background characteristics. Table 14 presents the parameter estimates for the student categories in each of the years and shows that:

- In Year 5, the effect of the student category on the probability of progression to both self-employment and sustained employment was not statistically significantly once students' background characteristics were accounted for.
- In Year 10, however, the probability of progression to both self-employment and sustained employment was significantly higher for students in the A level lowest C and BTECs groups compared to the reference group (A level students with a best grade of E), once their background characteristics were accounted for. There were no significant differences in the probability of progressing between students in the A level best D group compared to the reference group.

[28] Female, White, with medium prior attainment and in a state school during Key Stage 5.

Table 14: Progression to both self-employment and sustained employment in Years 5 and 10 ~ regression parameter estimates by student categories

Year	Student category	Estimate	Standard Error	*p*-value	Probability of progression [29]
5	A level lowest C	-0.008	0.089	0.924	0.254
	A level best D	0.012	0.094	0.902	0.258
	BTECs	0.161	0.089	0.070	0.287
	[A level best E]	.	.	.	0.255
10	A level lowest C	0.214	0.045	<.0001	0.341
	A level best D	-0.008	0.048	0.867	0.293
	BTECs	0.165	0.046	0.000	0.330
	[A level best E]	.	.	.	0.294

There were other variables in the regression models (*i.e.*, students' backgrounds) which were statistically significant (see full results from the regression models in Appendix F). In particular, all else being equal:

- Males were significantly less likely than females to progress to both self-employment and sustained employment in Year 5 and Year 10 after completing Key Stage 5. The differences between males and females were smaller in Year 5.
- In Year 5 and Year 10 after completion of Key Stage 5, students with the lowest prior attainment were the least likely to progress to both self-employment and sustained employment.
- White students were more likely to progress to sustained employment than any other group of students in Year 5 after completing Key Stage 5. The students least likely to progress to both self-employment and sustained employment were those with Asian or Chinese backgrounds. This pattern continued in Year 10.

In a second step, we looked at the interaction between the student categories and the year students completed Key Stage 5.

Figure 33 and Figure 34 show the probability of being in both self-employment and sustained employment in Year 5 and Year 10 (respectively) after completing Key Stage 5, by type of student and Key Stage 5 cohort. As above, note that there are only three cohorts included in the Year 5 analyses and seven cohorts in the Year 10 analyses.

In Year 5, the interaction between the student category and the cohort was not statistically significant (Figure 33). This was not the case in Year 10. In particular, there was a significant negative interaction between the A level lowest C group and the years 2004/05, 2005/06 and 2009/10. This means that compared with the reference year (2010/11) the impact of being in this student group rather than the A level best E group was smaller (Figure 34).

[29] This is the probability of progression for a typical student who completed Key Stage 5 in the academic year 2010/11 (female, White, in the medium deprivation group, with medium prior attainment, no special educational needs and in a state school during Key Stage 5).

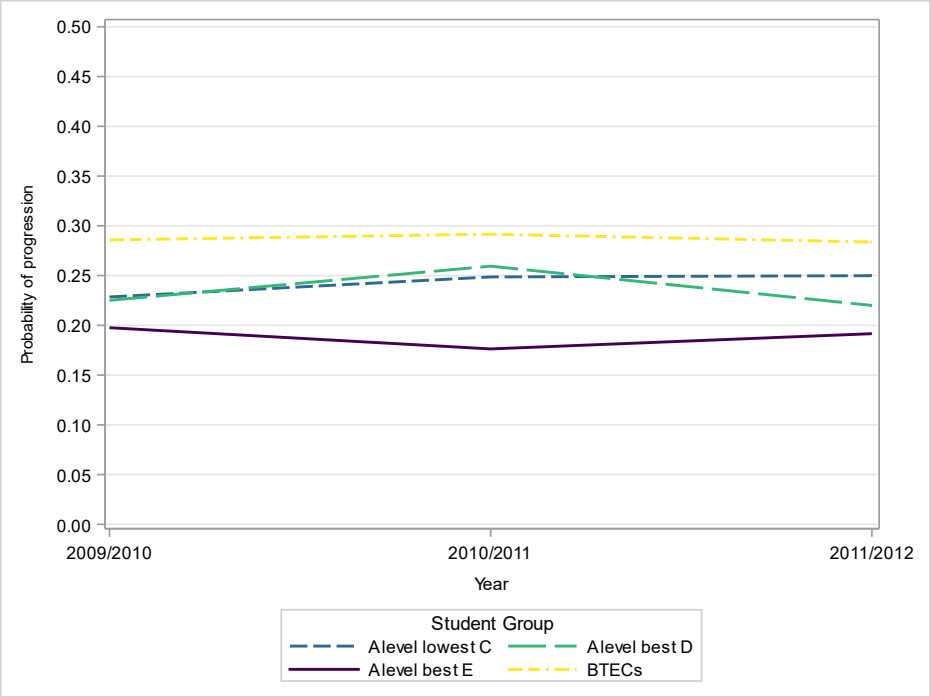


Figure 33: Probability of a typical[30] student being in both self-employment and sustained employment in Year 5 after completing Key Stage 5, by type of student and Key Stage 5 cohort

[30] White, with medium prior attainment and in a state school during Key Stage 5.

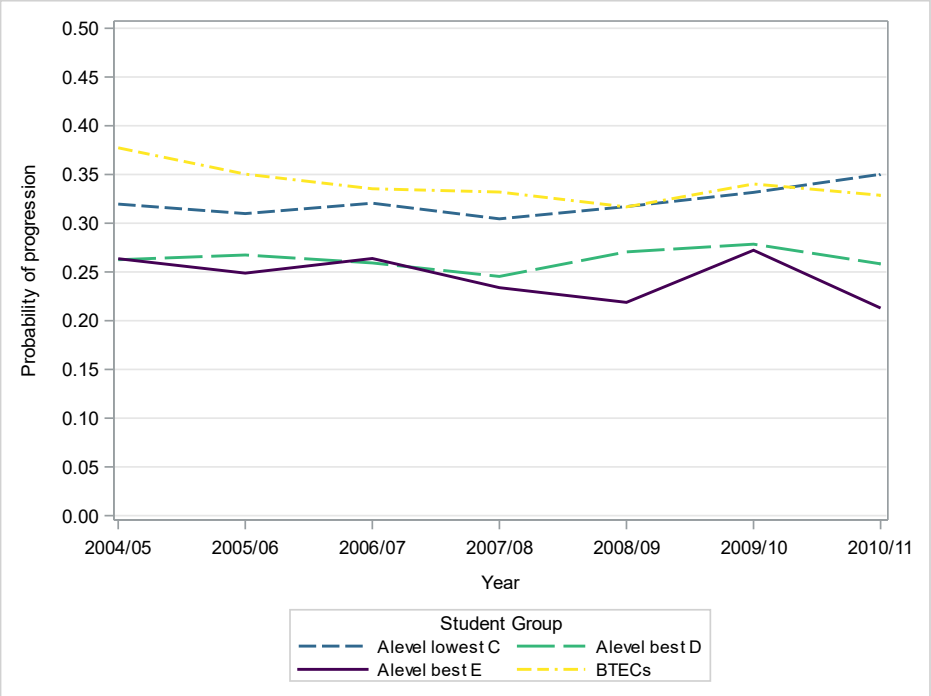


Figure 34: Probability of a typical[31] student being in both self-employment and sustained employment in Year 10 after completing Key Stage 5, by type of student and Key Stage 5 cohort

3.5 Self-assessment earnings

3.5.1 All students

As outlined in Section 2.1.3, we looked at two different earnings measures for students who were self-employed:

- Yearly earnings from self-employment only (restricting to students with self-employment earnings only)
- Yearly combined earnings from self-employment and sustained employment (restricting to students with earnings from both self-employment and sustained employment).

Figure 35 shows the median yearly earnings from self-employment by year of completion of Key Stage 5 for the different student groups and Figure 36 shows the median combined yearly earnings from self-employment and employment (amongst students with earnings from both).

[31] Female, White and with medium prior attainment.

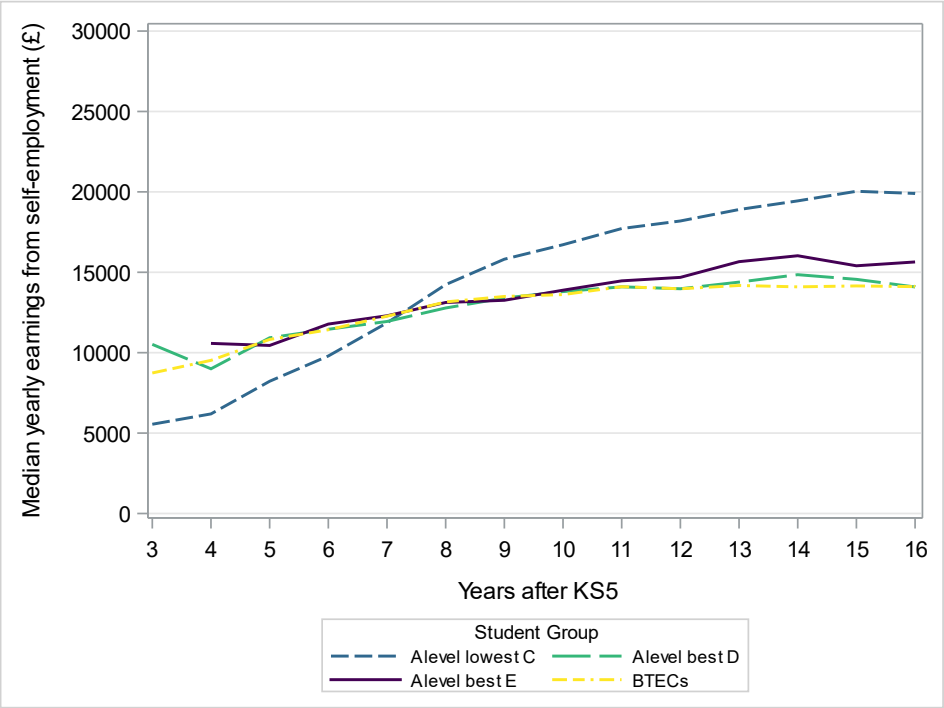


Figure 35: Median yearly earnings from self-employment only after completing Key Stage 5 (Year 3 to Year 16), by type of student

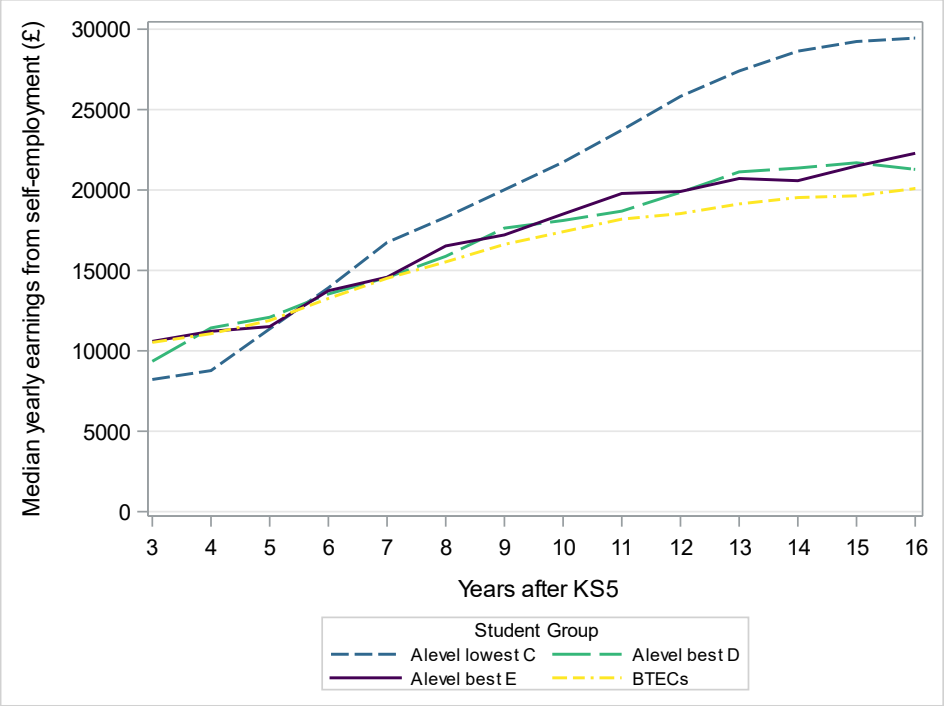


Figure 36: Median combined yearly earnings from self-employment and employment after completing Key Stage 5 (Year 3 to Year 16), by type of student

The earnings in both these figures (although yearly rather than daily earnings) follow similar patterns to the median daily earnings from employment only (Figure 19). In the first few years following completion of Key Stage 5, students in the A level lowest C group had the lowest median earnings. However, their earnings increased quicker, on average, than earnings of students in the other groups and eventually overtook them. For self-employed earnings only (Figure 35), from Year 8 onwards A level lowest C students had higher median earnings. For the combination of self-employed earnings and earnings (Figure 36) this happened from Year 6 onwards.

There were only relatively small differences between the other student groups. However, from Year 10 to Year 16, students in the A level best E group had higher median earnings from self-employment (Figure 35) than the A level best D or BTECs groups. In terms of combined earnings, BTECs students had slightly lower median earnings from Year 8 to Year 15 (Figure 36).

3.5.2 Breakdowns by student characteristics

In this section, the focus is on earnings from self-employment and from both self-employment and employment combined, broken down by student's background characteristics.

Note that in some of the figures in this section there are gaps in lines or completely missing lines. This was because these were based on counts below ten and statistical disclosure rules were applied.

Figure 37 presents the median self-employment earnings by gender. For each student group the gap between male and female students increased over time. In the A level lowest C group there was almost no difference between males and females up until Year 9, after which median earnings continued to increase for male students. For female students earnings remained mostly flat. In the other groups, median earnings for male and female students increased over time. However, the increase was much smaller for female students.

Similar patterns were found for the combined median earnings (Figure 38) but the differences between male and female students were not as pronounced. Earnings amongst female students increased somewhat more over time than self-employment earnings only. However, they increased at a slower rate than earnings amongst male students. By Year 16, the biggest gap between earnings by gender was amongst students with the lowest A level grades (A level best E).

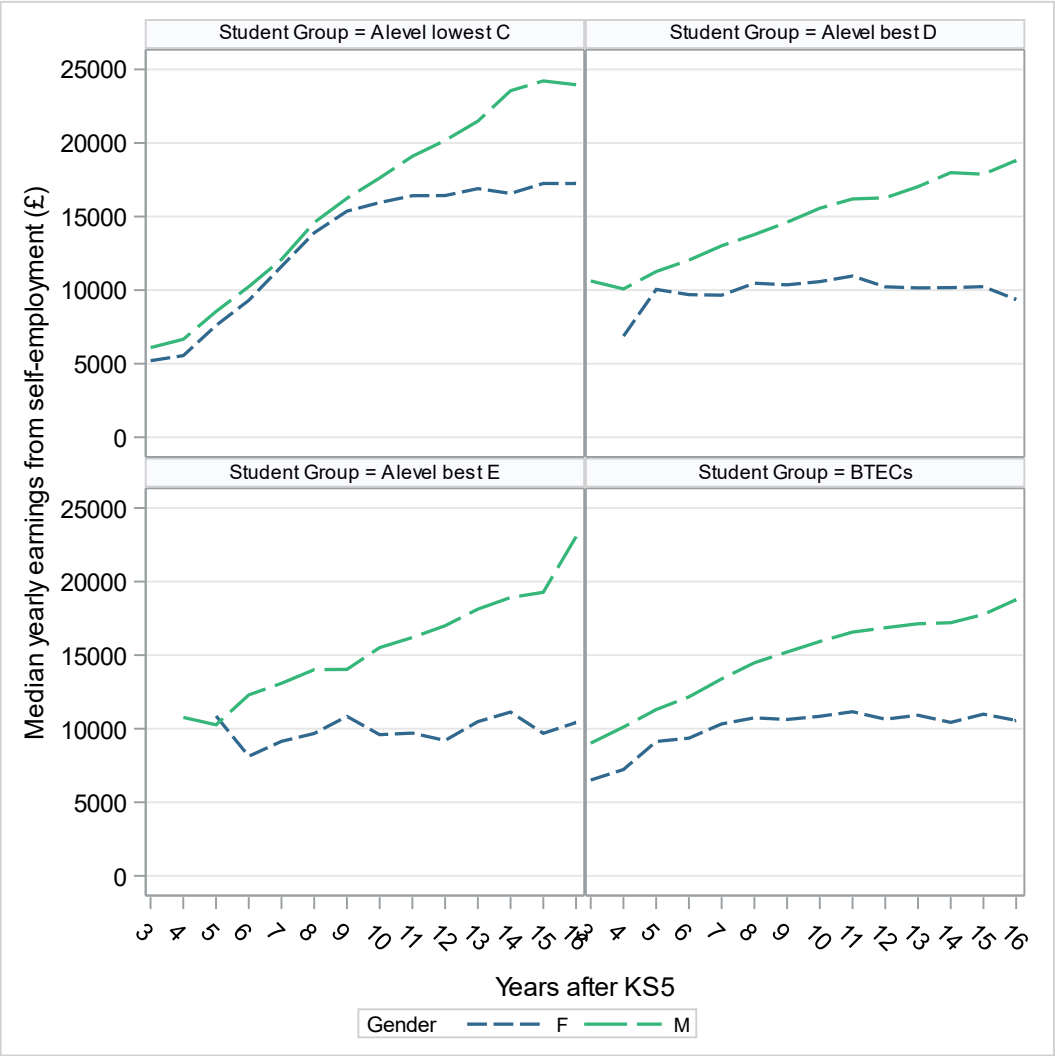


Figure 37: Median yearly earnings from self-employment only in years after completing Key Stage 5, by student group and gender

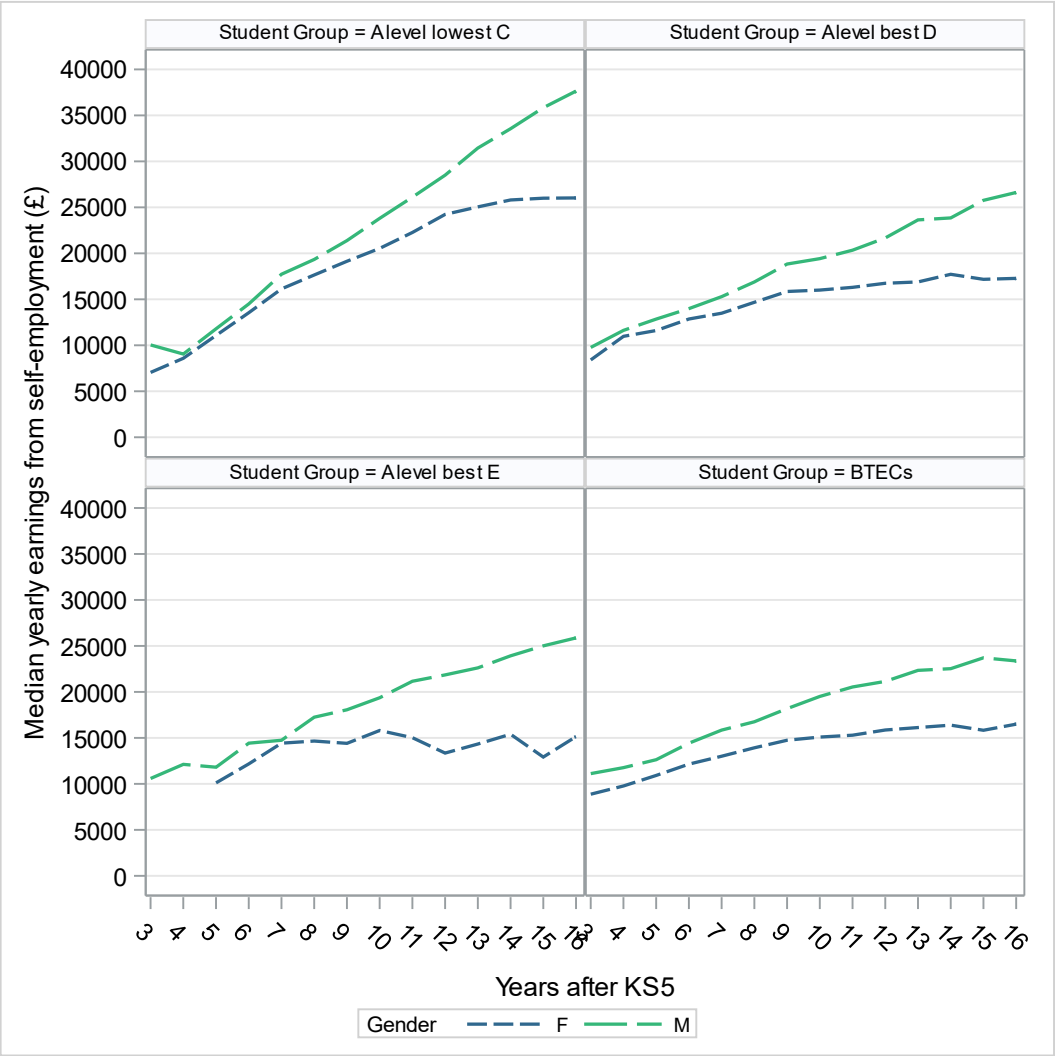


Figure 38: Median yearly earnings from self-employment and employment in years after completing Key Stage 5, by student group and gender

Figure 39 presents the breakdown of median earnings of students in self-employment only by deprivation group and Figure 40 presents the overall median earnings of those in a combination of self-employment and sustained employment. In each student group, there was a tendency for median self-employed earnings to be highest in the low and medium deprivation groups (Figure 39). However, in the A level lowest C group, the differences were very small. The largest differences were in the A level best E group. In terms of the earnings from a combination of both self-employment and employment (Figure 40), the differences were much smaller and with no clear pattern as to which deprivation group had the highest median earnings.

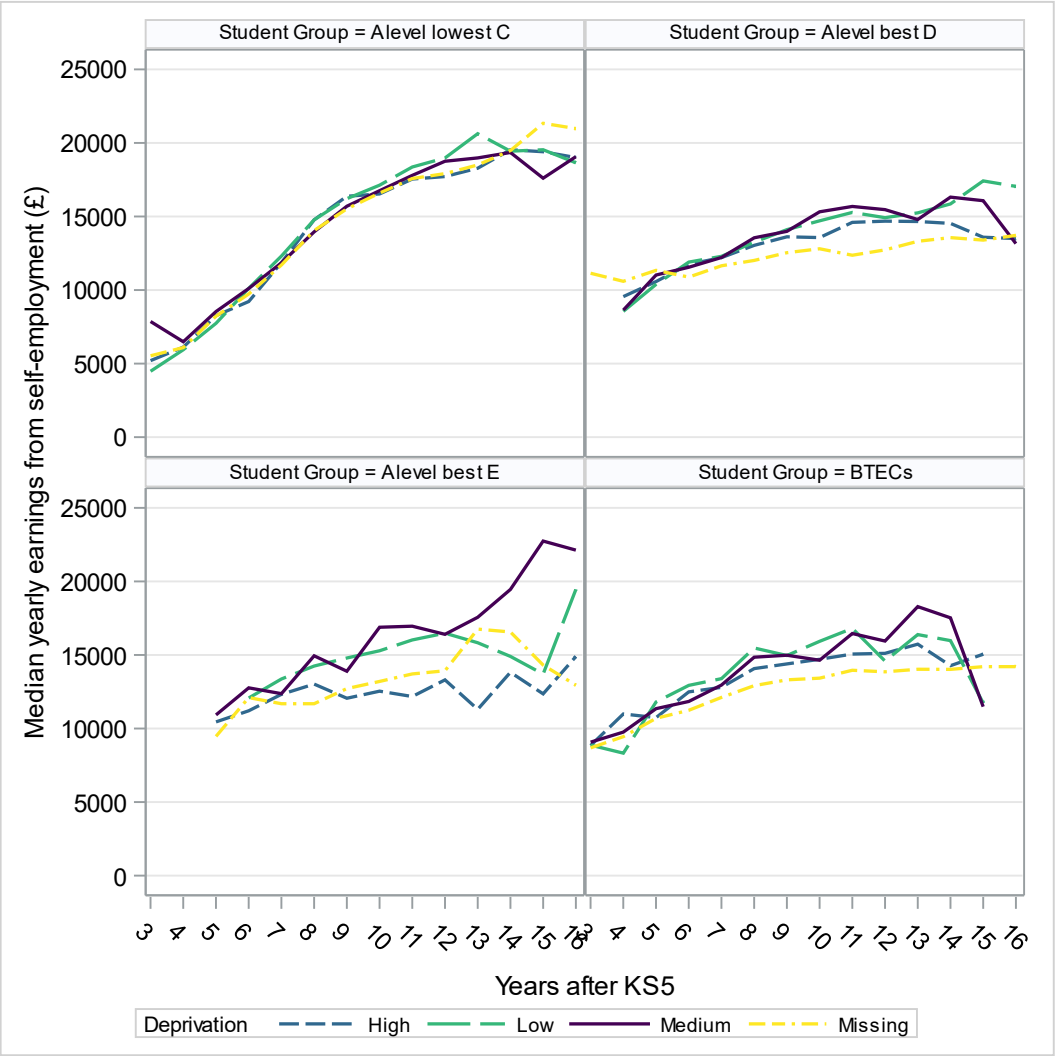


Figure 39: Median yearly earnings from self-employment only in years after completing Key Stage 5, by student group and deprivation group

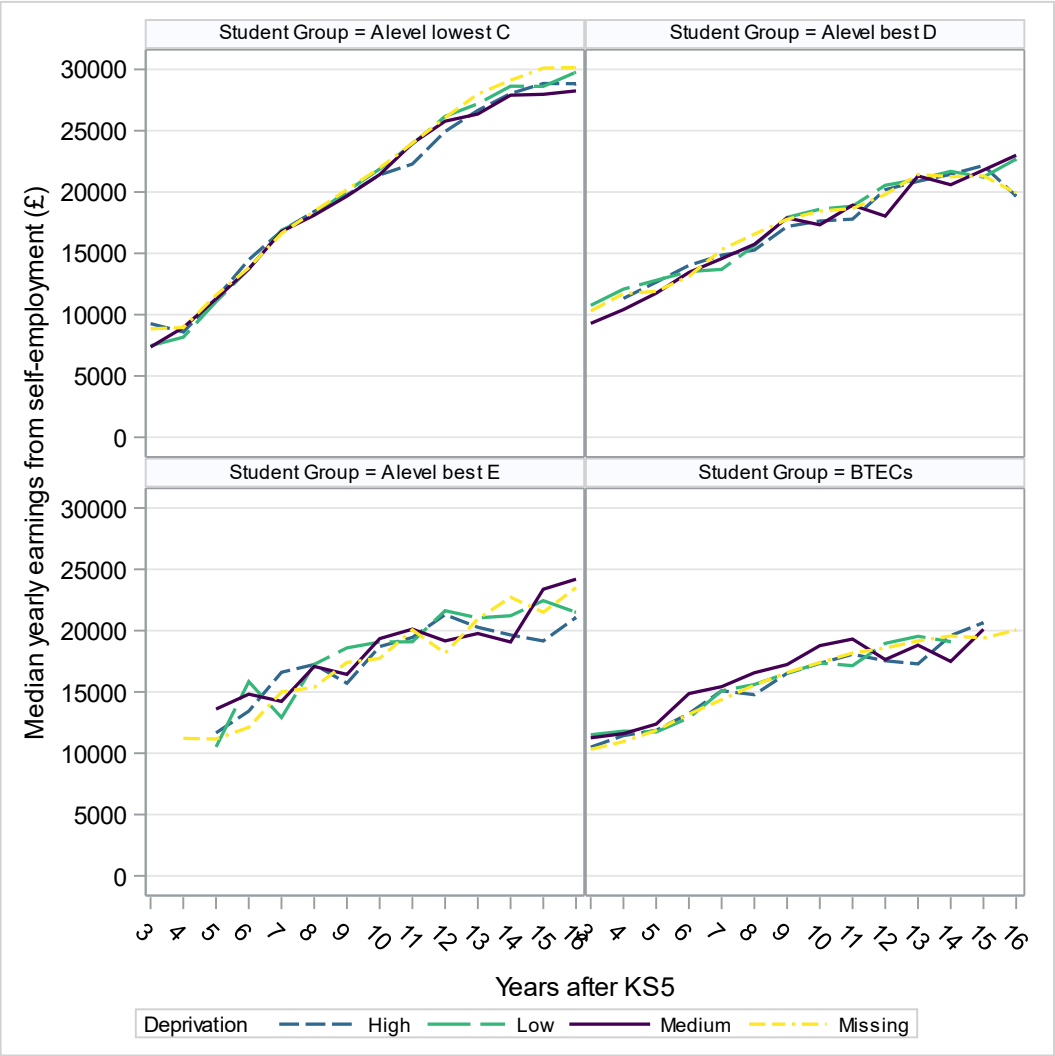


Figure 40: Median yearly earnings from self-employment and employment in years after completing Key Stage 5, by student group and deprivation group

Figure 41 and Figure 42 present the breakdowns of median earnings by prior attainment group. Amongst students in the A level lowest C group, there was a clear pattern (after the first few years) with students with high prior attainment having the highest median earnings and those with low prior attainment having the lowest median earnings. The differences mostly increased over time (years after completion of Key Stage 5). This was the case for both self-employed earnings only and the combination of earnings from self-employment and earnings. In the other student groups, there was no clear consistent pattern.

Breakdowns of median earnings by SEN status[32] are presented in Figure 43 and Figure 44.

[32] Note that in the analyses of the self-assessment earnings, the two SEN categories (SEN no statement; SEN statement) have been grouped together due to the low numbers of students with a SEN statement.

Amongst students in the A level lowest C group, students without special educational needs had consistently higher median earnings than those with them. The differences mostly increased over time (years after completion of Key Stage 5). This was the case for both self-employed earnings only and the combination of earnings from self-employment and earnings. There were no clear consistent patterns in any of the other groups of students.

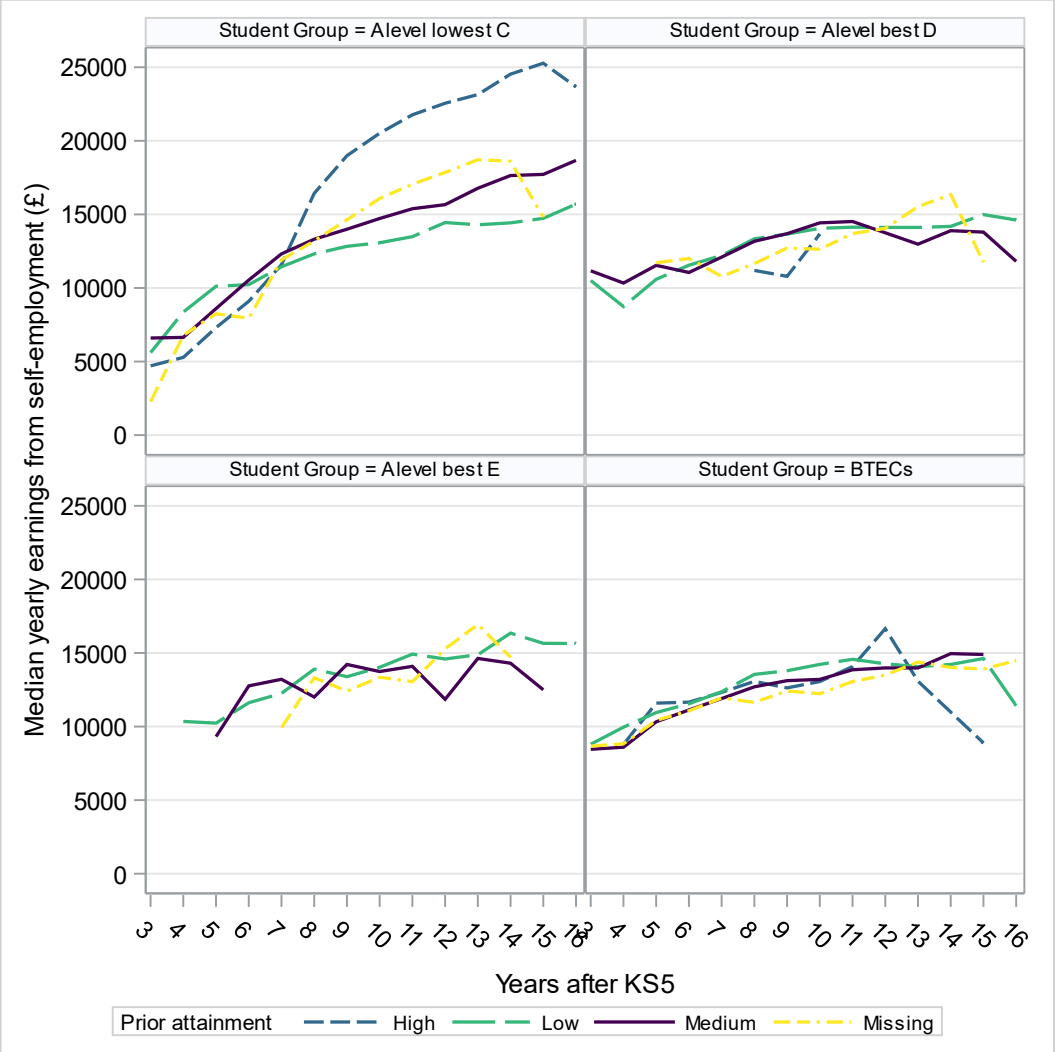


Figure 41: Median yearly earnings from self-employment only in years after completing Key Stage 5, by student group and prior attainment group

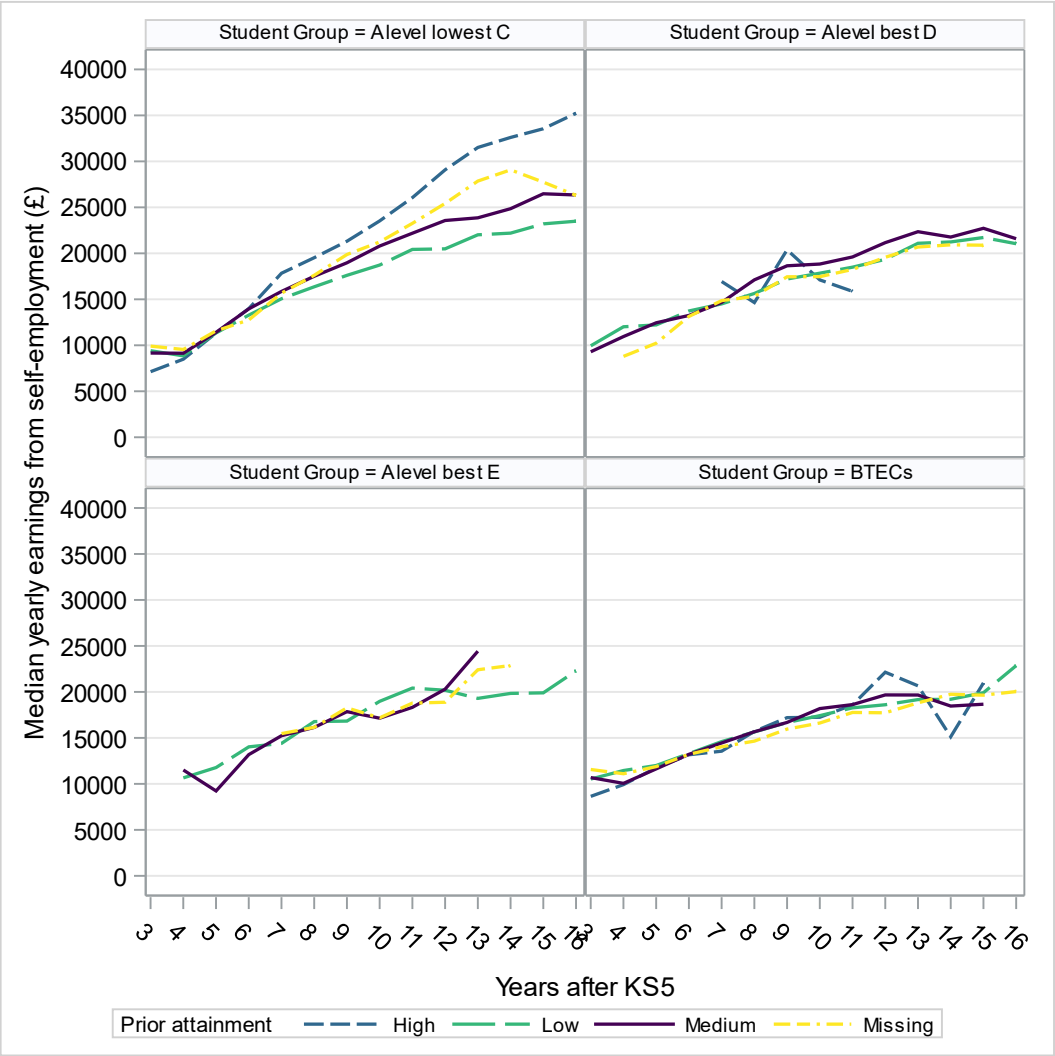


Figure 42: Median yearly earnings from self-employment and employment in years after completing Key Stage 5, by student group and prior attainment group

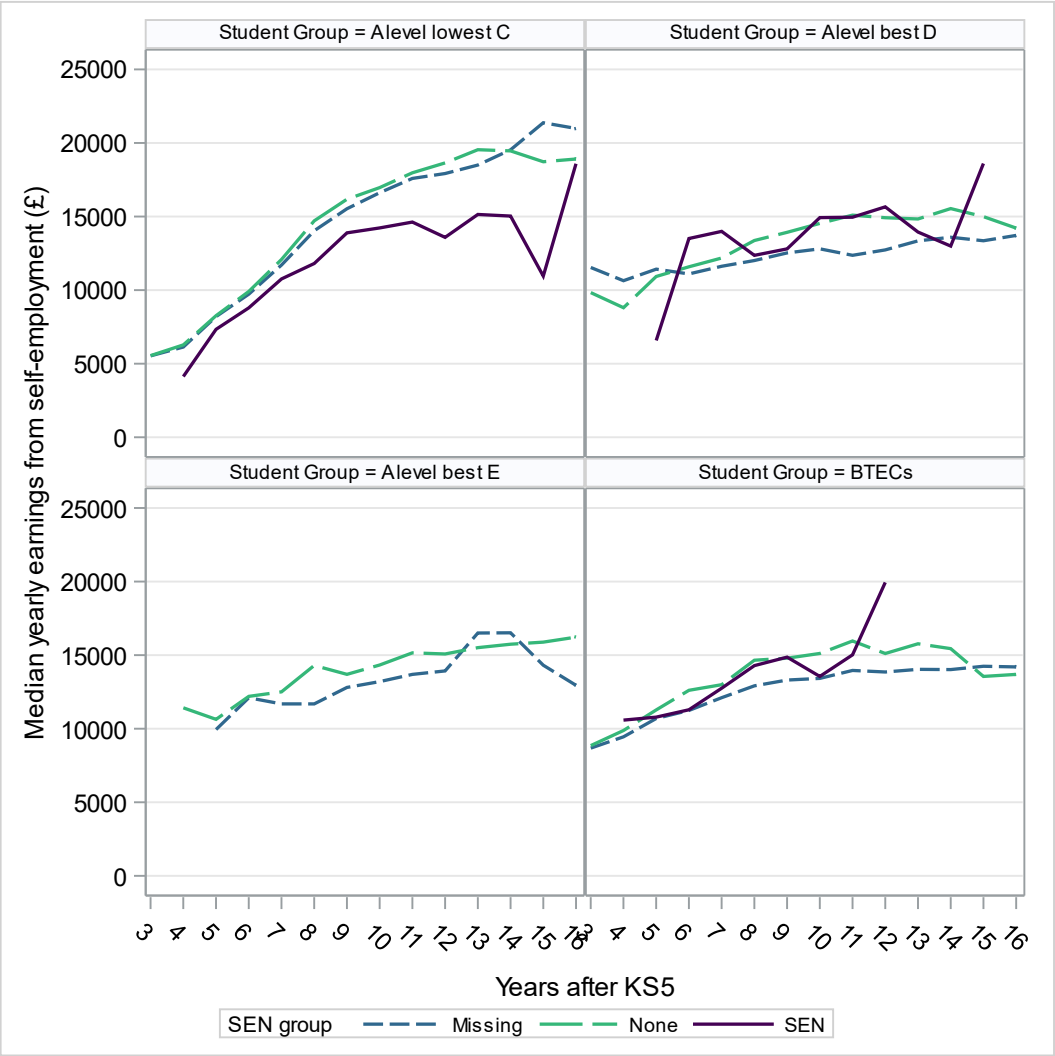


Figure 43: Median yearly earnings from self-employment only in years after completing Key Stage 5, by student group and SEN status

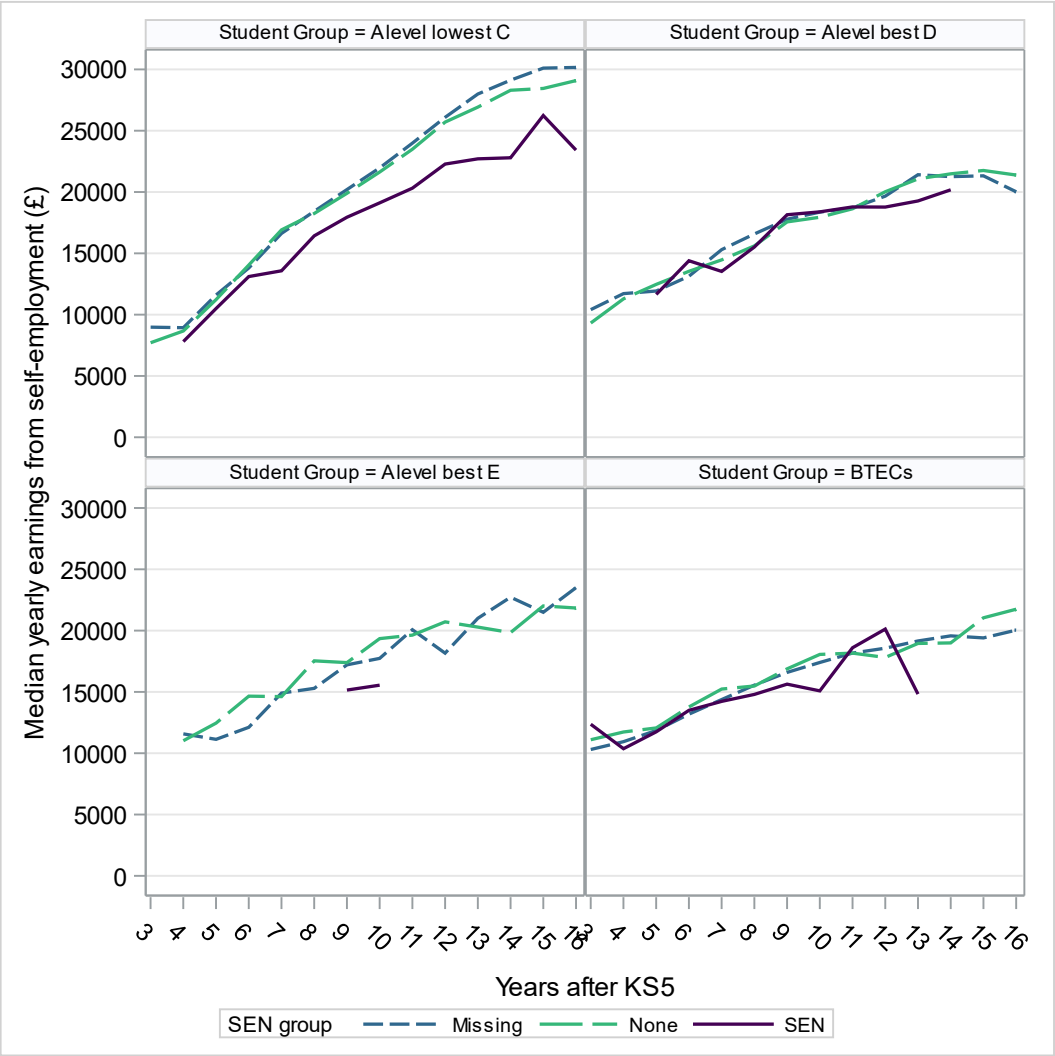


Figure 44: Median yearly earnings from self-employment and employment in years after completing Key Stage 5, by student group and SEN status

Figure 45 and Figure 46 present the breakdowns of median earnings by ethnicity. The patterns here were not very clear, probably due to low numbers of students in most ethnic groups. However, in the A level lowest C group, Asian and Chinese students had higher median earnings than other ethnic groups. For the self-employed earnings in the other student groups, the number of Asian and Chinese students were too low to be included (below 10) and, therefore, not reported.

Finally, breakdowns of median earnings by school type are shown in Figure 47 and Figure 48. Amongst the A level lowest C group there was a clear pattern with independent school students having the highest median earnings, followed by state school students and then college students. This was true for both measures of earnings and this gap widened over time.

In terms of earnings from self-employment only, state school students in the A level best D and A level best E groups had the highest earnings for most years, whereas for students in the BTECs group, those in independent schools had the highest earnings.

In terms of earnings from self-employment and employment, independent school students in the A level best D group had the highest earnings for most years. The pattern was similar for BTECs students in later years.

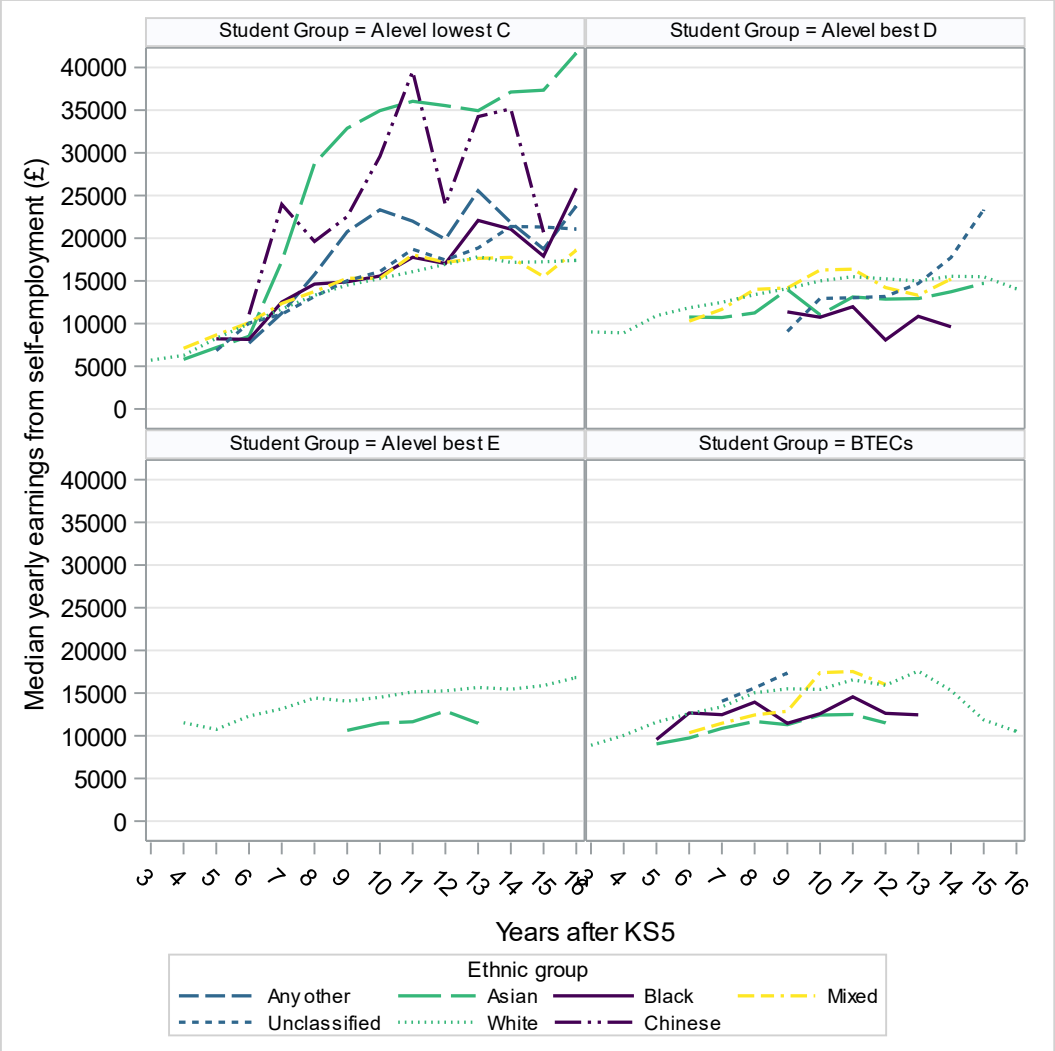


Figure 45: Median yearly earnings from self-employment only in years after completing Key Stage 5, by student group and ethnic group

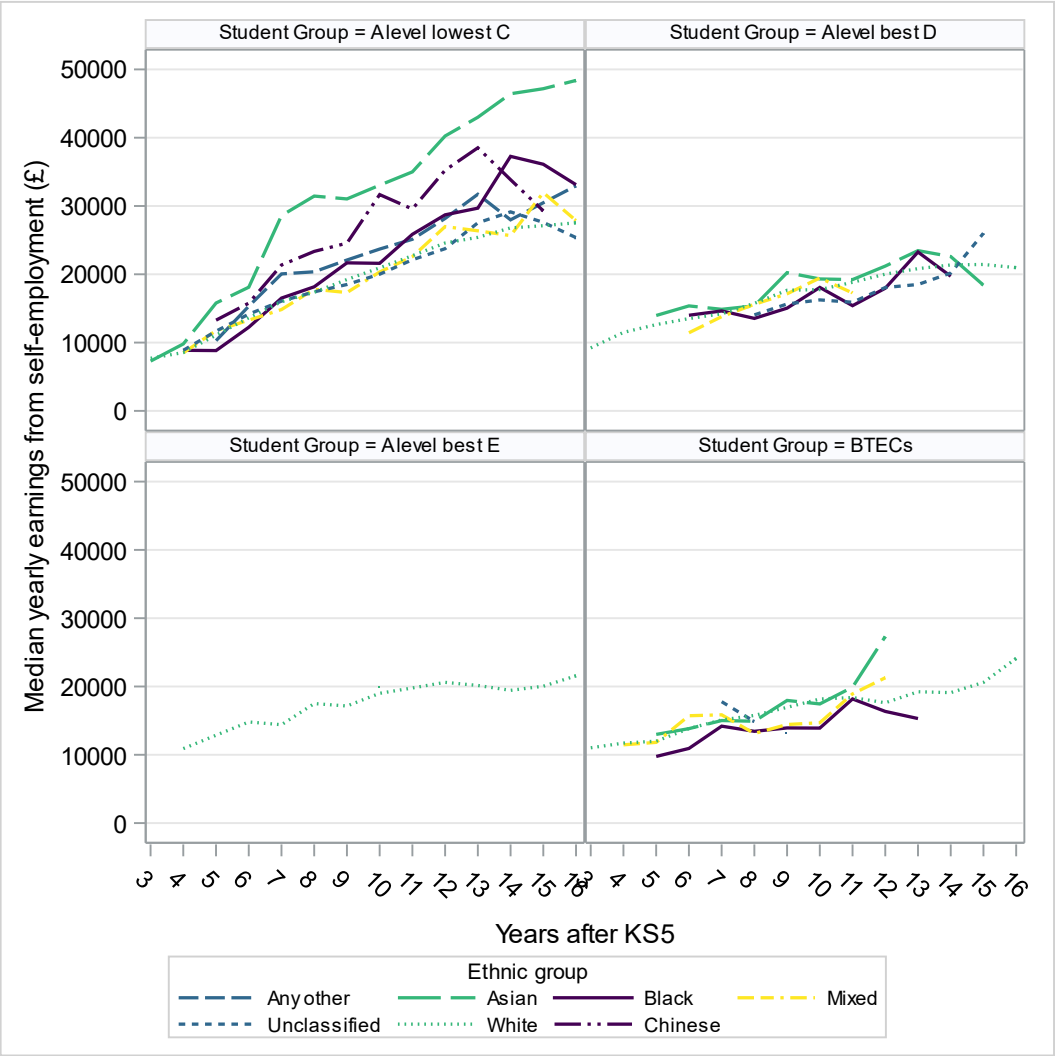


Figure 46: Median yearly earnings from self-employment and employment in years after completing Key Stage 5, by student group and ethnic group

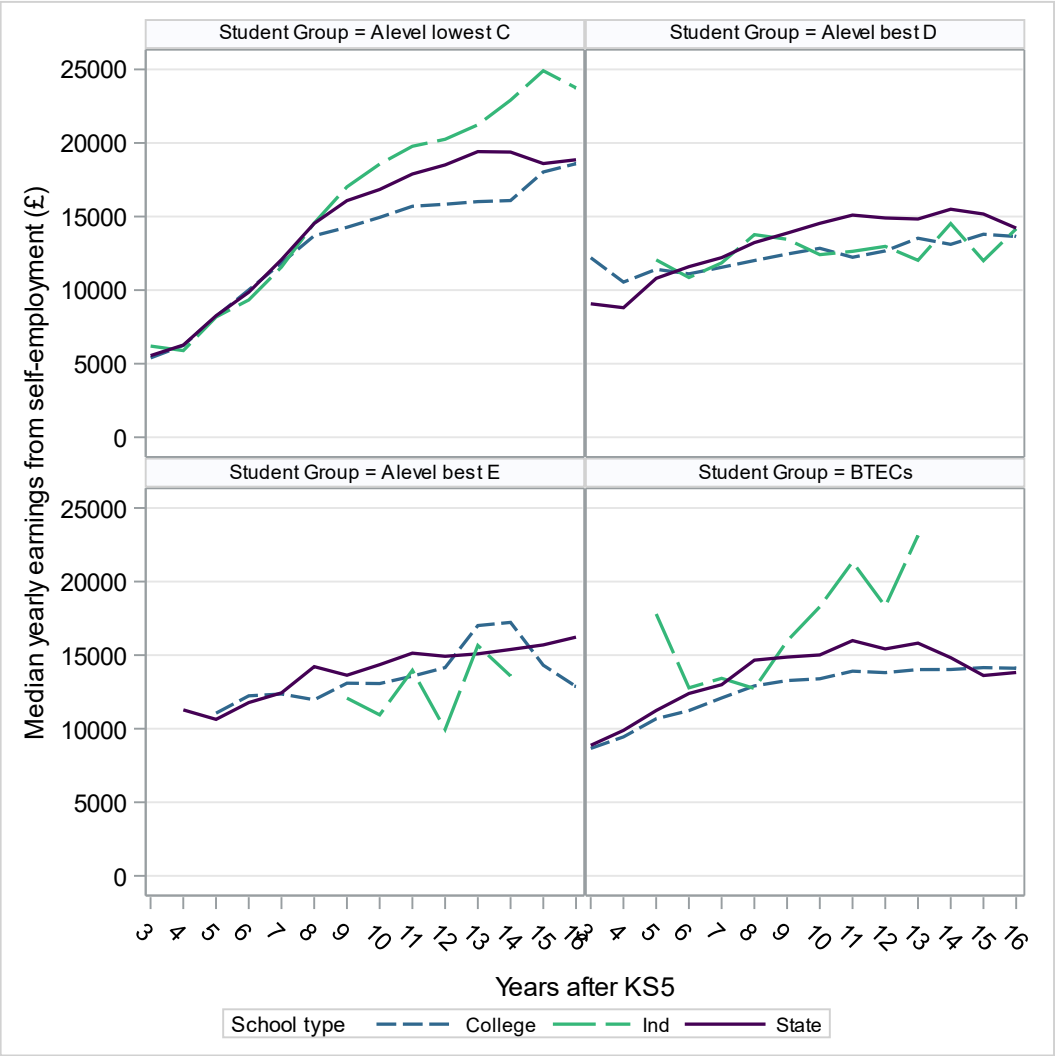


Figure 47: Median yearly earnings from self-employment only in years after completing Key Stage 5, by student group and school type

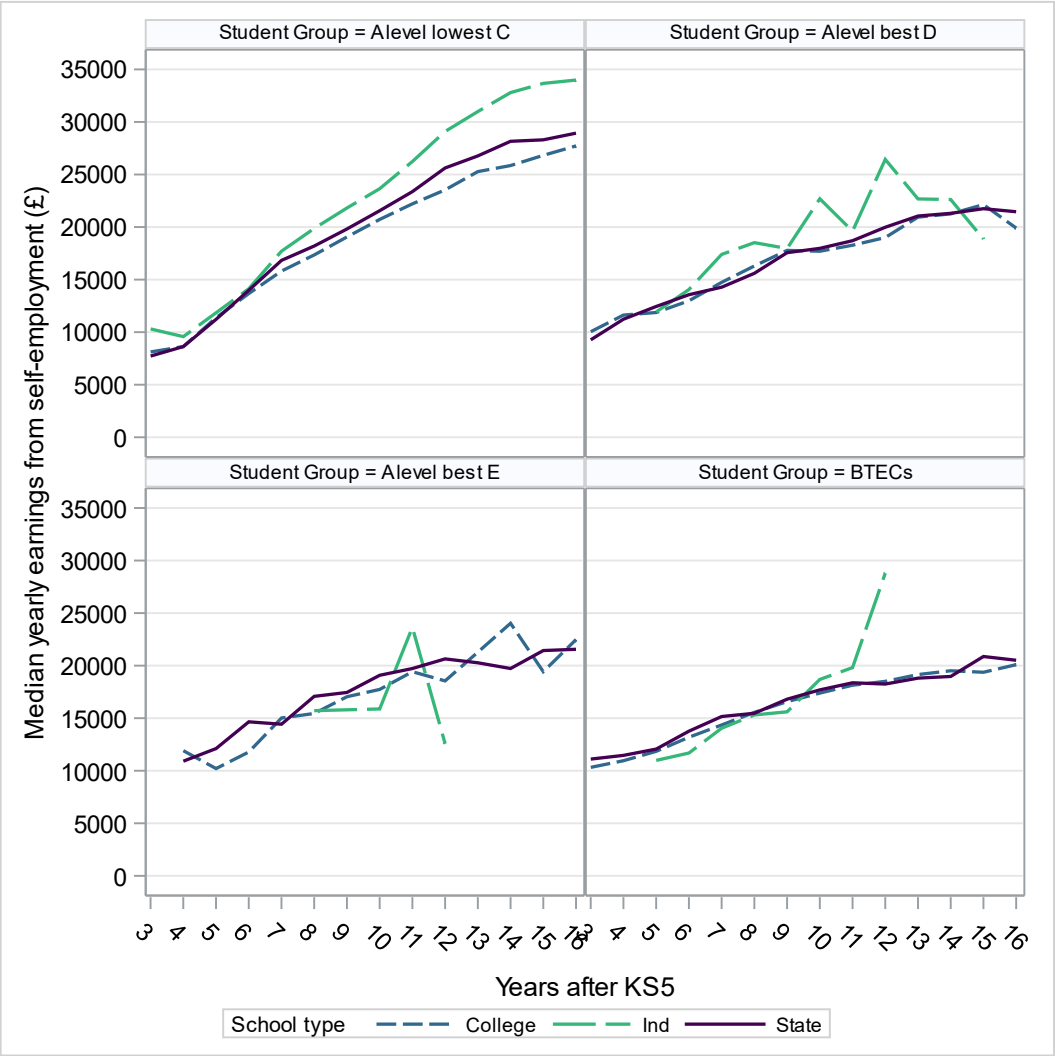


Figure 48: Median yearly earnings from self-employment and employment in years after completing Key Stage 5, by student group and school type

Further details on median earnings (both for self-employment only and combined earnings), broken down by student group and students' background characteristics can be found in Table 15 and Table 16. The figures in these tables are restricted to two different years after finishing Key Stage 5: Year 5 and Year 10.

Table 15: Median yearly earnings (£) from self-employment for students in each category, by subgroups, five years, and ten years after Key Stage 5 completion

Sub-group (characteristic)		Year 5				Year 10			
		A level lowest C	A level best D	A level best E	BTECs	A level lowest C	A level best D	A level best E	BTECs
Gender	Female	7598	10050	10864	9132	15951	10578	9595	10842
	Male	8549	11262	10265	11301	17622	15565	15513	15927
Deprivation	Low	7739	10385	-	11804	17128	14706	15285	15927
	Medium	8539	11021	10925	11351	16755	15318	16884	14642
	High	8262	10578	10450	10742	16533	13567	12538	14706
	Missing	8223	11339	9466	10694	16593	12805	13200	13423
Prior attainment	Low	10117	10589	10233	10953	13074	14053	14029	14224
	Medium	8601	11536	9318	10323	14721	14424	13738	13205
	High	7306	-	-	11592	20517	13663	-	13059
	Missing	8247	11713	-	10418	16080	12631	13351	12233
SEN status	None	8264	10927	10636	11276	16966	14534	14328	15114
	SEN	7336	6580	-	10786	14227	14927	11631	13552
	Missing	8202	11424	9945	10694	16619	12805	13200	13419
Ethnic group	Any other	-	-	-	-	23326	-	-	-
	Asian	7192	-	-	9047	34945	12428	11029	11477
	Black	8216	-	-	9563	15570	12590	-	12245
	Chinese	-	-	-	-	29585	-	-	-
	Mixed	8668	-	-	-	15305	17396	-	17396
	Missing	8202	10694	11424	9945	16619	13419	12805	13200
	Unclassified	6836	-	-	-	16101	12943	-	-
	White	8279	11600	10925	10751	15274	15435	14997	14507
School type	State	8258	10802	10634	11237	16839	14539	14352	15013
	Independent	8173	12055	-	17795	18566	12411	10941	18289
	College	8211	11414	11057	10677	14945	12842	13068	13393
Overall		8223	10927	10450	10823	16715	13799	13887	13613

Table 16:Median combined yearly earnings (£) from self-employment and employment for students in each category, by subgroups, five years, and 10 years after Key Stage 5 completion

Sub-group (characteristic)		Year 5				Year 10			
		A level lowest C	A level best D	A level best E	BTECs	A level lowest C	A level best D	A level best E	BTECs
Gender	Female	11073	11608	10111	10919	20538	16005	15805	15090
	Male	11796	12851	11812	12630	23801	19423	19366	19509
Deprivation	Low	11058	12800	10516	11738	21875	18598	19068	17358
	Medium	11289	11750	13600	12376	21420	17325	19347	18774
	High	11336	12650	11658	11866	21393	17637	18699	17332
	Missing	11600	11899	11163	11863	21967	18442	17735	17402
Prior attainment	Low	11342	12216	11777	12000	18726	17842	18976	17420
	Medium	11408	12449	9230	11633	20794	18835	17142	18189
	High	11337	-	-	11750	23525	17110	-	17245
	Missing	11572	10226	-	11880	21236	17464	17183	16617
SEN status	None	11227	12468	12456	12062	21630	17942	19347	18059
	SEN	10499	11648	-	11746	19115	18383	15550	15085
	Missing	11603	11927	11132	11854	21966	18362	17735	17400
Ethnic group	Any other	10282	-	-	-	23695	-	-	-
	Asian	15796	13971	-	12986	33045	17444	19318	19845
	Black	8829	-	-	9758	21605	18076	-	13909
	Chinese	13285	-	-	-	31668	-	-	-
	Mixed	11751	-	-	11820	20338	19458	-	14692
	Missing	11603	11854	11927	11132	21967	17400	18362	17735
	Unclassified	11673	-	-	-	20011	16250	-	-
	White	11094	11996	12632	12866	20942	18165	17758	19003
School type	State	11218	12444	12111	12062	21554	17974	19081	17694
	Independent	11842	11927	-	10986	23648	22690	15879	18687
	College	11372	11870	10207	11848	20725	17700	17735	17387
Overall		11363	12088	11508	11885	21732	18106	18507	17406

3.5.3 Regression analysis

Self-employment earnings were explored further via regression analyses.

To check whether multilevel models (with students clustered within schools) were needed, we calculated the variance explained by the school when fitting baseline models with earnings as the outcome. Tables B6 and B7 in Appendix B show the variance components for the baseline multilevel models and show that, before accounting for students' characteristics, the variance explained by the schools varied between 1.9% and 3.6%, depending on the outcome variable (earnings from self-employment only; earnings from self-employment and employment) and number of years after completing Key Stage 5.

As done so far in the report, we first looked at earnings in Year 5 and Year 10, by student category and accounting by students' background characteristics. Table 17 presents the parameter estimates for the student group variable in each of the regression models for self-employed earnings only. The results for combined earnings from self-employment and employment are shown in Table 18. The full outputs of the regression analyses can be found in Appendix G.

Table 17: Earnings from self-employment only in Years 5 and 10 ~ regression parameter estimates by student category

Year	Student category	Estimate	Standard Error	*p*-value	Multiplicative factor
5	A level lowest C	-0.192	0.072	0.008	0.83
	A level best D	-0.041	0.077	0.589	0.96
	BTECs	0.045	0.072	0.535	1.05
	[A level best E]	.	.	.	
10	A level lowest C	-0.023	0.035	0.517	0.98
	A level best D	-0.026	0.037	0.484	0.97
	BTECs	0.036	0.036	0.311	1.04
	[A level best E]	.	.	.	.

Table 18: Combined earnings from self-employment and sustained employment in Years 5 and 10 ~ regression parameter estimates by student category

Year	Student category	Estimate	Standard Error	*p*-value	Multiplicative factor
5	A level lowest C	0.036	0.056	0.521	1.04
	A level best D	0.082	0.060	0.174	1.09
	BTECs	0.061	0.056	0.281	1.06
	[A level best E]	.	.	.	.
10	A level lowest C	0.126	0.029	<.001	1.13
	A level best D	0.006	0.031	0.841	1.01
	BTECs	0.001	0.030	0.981	1.00
	[A level best E]	.	.	.	.

In Table 17, we can see that in Year 5 self-employment only earnings in the A level lowest C group were significantly different from those of students in the reference category (A level best E). As before, we used the multiplicative factor to interpret the parameter estimates. Students in the A level lowest C group in Year 5 were predicted yearly earnings 17% lower than students in the A level best E group. In Year 10, there were no statistically significant differences in earnings by the student category variable.

In terms of the results for the combined earnings, Table 18 shows that there was only one statistically significant effect. This was for students in the A level lowest C group who had significantly higher predicted earnings in Year 10 than students in the A level best E group (by 13%).

There were other variables in the regression models which were statistically significant (see full results from the regression analyses in Appendix G). These are summarised below.

- Males were predicted significantly higher earnings (in both measures) than females in both Year 5 and Year 10.
- Students with a statement of SEN were predicted the lowest earnings (in both measures) in Year 10.
- Both in Year 5 and Year 10, Asian students were predicted significantly higher earnings (in both measures) than White students. Similarly, Chinese students were predicted significantly higher earnings than White students in Year 5 (combined earnings only) and in Year 10 (both measures). Black students were predicted significantly lower earnings than White students (in both measures) in Year 5.
- In Year 5, students in the high prior attainment group were predicted significantly lower earnings (self-employment earnings only) than students in the low attainment group. In Year 10, the reverse was true. For combined earnings in Year 10, students in the high prior attainment group were predicted significantly higher earnings than students in the low attainment group.
- In Year 10, students in the most deprived group were predicted significantly lower earnings (in both measures) than students in the least deprived. There were no significant differences in earnings in Year 5 by the students' level of deprivation.
- In terms of school type, independent school students were predicted higher earnings (self-employment earnings only) than state school students in Year 10. There were no significant differences in earnings in Year 5 by the students' type of school.

In a second step, we looked at the interaction between the student categories and the year students completed Key Stage 5. This was done in an attempt to investigate whether there were changes in earnings by when students completed their Key Stage 5 study.

In the regression models fitted for both outcomes (earnings from self-employment; combined earnings from self-employment and employment) there were no statistically significant interactions between the student group variable and the cohort variable (see Appendix G for full results). This indicates that that the gaps in earnings (in both measures) between the different student groups were very similar independently of which Key Stage 5 cohort the students were in.

4. Summary and conclusions

This research looked at the destinations (*e.g.*, education, employment) and labour market outcomes (*e.g.*, earnings) of 1446376 young people who completed Key Stage 5 between 2005 and 2012, with a focus on those who achieved A level grades which might be considered to have little currency (A level best D; A level best E). This group makes up just over 12% of the students included in the research. Sub-groups of students, based on their background characteristics, were considered and the research also investigated how destinations and labour market outcomes differed for them.

Destinations

The destinations of students who finished post-16 education with A level grades which might be considered to have little currency differed from those of students who achieved better grades or obtained BTEC qualifications. In particular:

- In the first few years after completing post-16 education, students with low A level grades (best grade E) had the lowest progression to sustained education. The opposite pattern was observed for the progression to sustained employment: students with low A level grades had the highest progression in the first few years after completing their education (followed very closely by students with BTEC qualifications) and those with the best A level grades (lowest grade C) had the lowest. In particular, in Year 1, the probability of progression to sustained education was significantly higher for each of the student categories compared to A level students with a best grade of E and the probability of progression to sustained employment was significantly lower, once background characteristics were accounted for.

  However, after six or seven years, the likelihood of being in sustained education or in sustained employment was fairly similar for all types of students. In particular, in Year 5 and Year 10 the probability of progression to sustained education and to sustained employment was similar for students with A level qualifications, independently of their grades.
- The percentage of students claiming benefits was low for all types of students and did not change much over time. Students claiming benefits at the highest rate were those with BTEC qualifications, followed by the students with the lowest A level grades (best grade E).
- Students with the lowest A level grades (best grade E) were the group with the highest percentages not having a sustained destination in the first few years, followed by students with BTEC qualifications. After Year 7 the percentages of students without a sustained destination were very similar for all groups of students and they decreased slightly over time.

The difference in progression to both sustained education and sustained employment between the groups of students considered in the research varied depending on the Key Stage 5 cohort (*e.g.*, 2004/05, 2005/06, etc.). For example:

- In terms of progression to sustained education in Year 1, although there was higher progression amongst the students in the A level lowest C group, once their background characteristics were accounted for, compared with the reference year

(2011/12) the impact of being in the A level lowest C group rather than the A level best E group was larger for some cohorts (*e.g.*, years 2004/05, 2006/07, 2009/10 and 2010/11) – that is, the gap in the probability of progression between both groups of students was larger.

- There were several other instances of differences by cohort in the probabilities of progression to sustained education and sustained employment, indicating that the timing of Key Stage 5 completion also played a role students' progression, and this role differed depending on the qualifications/grades achieved.

Progression to education and to sustained employment varied based on students' background characteristics. Furthermore, the apparent impact of performance at A level on progression to these two destinations also varied according to these characteristics. In particular:

- Females generally progressed at higher rates than males to sustained education in all years and to sustained employment in Year 1 and Year 5. The gender gap in progression to sustained education was slightly wider for the students with the lowest A level grades and narrowed over time. On the contrary, the gender gap in progression to sustained employment increased over time (between Year 1 and Year 5) and was generally the widest for students with the highest A level grades.

  In Year 10, the rates of progression to sustained employment were slightly lower for females than males for those students with the lowest A level grades or BTEC qualifications.

- There were some differences, by the student's level of deprivation, between the different groups of students when looking at progression to sustained employment. For the students with the lowest A level grades, those in the low deprivation category had the highest rates of progression to sustained employment and those in the high deprivation category had the lowest. In contrast, for students with the highest A level grades, differences in progression were fairly small.

- In terms of students' prior attainment, the progression to sustained education in Year 1 was similar for all students with the lowest A level grades (best grade E) independently of their prior attainment level. Five and ten years after completion of Key Stage 5, patterns of progression to sustained education changed and progression rates increased with increasing prior attainment.

- Students from certain ethnic groups (*e.g.*, Chinese and Asian) progressed at higher rates to sustained education in Year 1 and Year 5 than White students, with the gaps being higher for the students with the lowest A level grades (best grade E and best grade D) than for the comparator groups (A level lowest and BTEC).

- Students with special educational needs also had different education and employment destinations if they achieved low A level grades than students with better post-16 outcomes. For example, students with a SEN statement progressed at much higher rates to sustained education in Year 1 than students with no special needs if they had achieved the lowest A level grades (best grade E and best grade D) or BTEC qualifications.

Earnings

Median daily earnings increased over time (that is, as the number of years since completing Key Stage 5 increased). This was true for all student groups. However, although higher grades at A level led to lower earnings in the short term, they were associated with better labour market outcomes in the longer term. In particular, amongst those students in sustained employment:

- In the first four years after completing Key Stage 5, the lowest median daily earnings were in the A level lowest C group. In Year 1, specifically, students in the A level lowest C group and the BTECs group were predicted significantly lower earnings than students in the group A level best E, by 10% and 3% respectively. However, from Year 6 onwards students in A level lowest C group had the highest median daily earnings.
- By Year 10, A level lowest C students had median daily earnings around £20 more than students in the other groups and, by Year 15, the median daily earnings were over £100 for A level lowest grade C students, compared with £80 for A level best grade D, around £75 for A level best grade E, and just over £70 for BTEC students.
- There were only very small differences in the earnings for those in the A level best D group compared to the A level best E group (even though some were statistically significant). This suggests that getting grade Ds rather than grade Es at A level does not improve your outcomes much.
- The relationship between achieved grades at the end of Key Stage 5 and earnings changed over time (that is, depending on the year students completed their post-16 studies).

Earnings in each of the student groups differed depending on the students' socioeconomic, demographic and education characteristics. For example:

- The biggest gap in earnings between high and low attainers (based on GCSE and equivalents attainment) was in the A level lowest C student group.
- Students with a SEN statement had particularly low earnings compared with students with no special educational needs if they were in the A level lowest C student group. This was not the case if students had lower A level grades (A level best grade E, A level best grade D).
- As mentioned earlier, students with better grades (lowest grade C) had higher earnings from Year 6 onwards, with these increasing over time. Interestingly, Asian, Black, and Chinese students had more of an advantage (than White students did) if they were in the A level lowest grade C group compared with students from other ethnic backgrounds.
- The gap in earnings between independent school students (which were the ones with highest earnings) and those in other school types was largest in the A level lowest C group.

Self-assessment destinations and earnings

Although self-assessment data (destinations and earnings) was not available for all the years considered in this study, additional separate analyses were carried out. This was done

to avoid penalising young people from some backgrounds (*e.g.*, those with A levels graded E or D) who might be more likely to be working in sectors with high self-employment.

The key findings of the analyses of self-assessment data, which was available from 2014/15 onwards, are summarised below.

Firstly, lower grades in A levels led to higher progression to self-employment and higher earnings due to self-employment by Year 5 after completing Key Stage 5. In particular, the research has shown that:

- Students with the highest A level grades (lowest grade C) had the lowest progression to self-employment whilst students with lower grades (best grade D, best grade E) progressed to self-employment at higher rates.
- Students in the A level lowest C group had the lowest median earnings by Year 5. In fact, they were predicted yearly earnings from self-employment only 17% lower than students in the A level best E group.
- From years 10 to 16, students in the A level best E group had higher median earnings from self-employment than the A level best D or BTECs groups and those in the A level lowest C group had the highest earnings of all.

Secondly, earnings due to self-employment increased over time, but at different rates depending on the student group. For example, earnings of students in the A level lowest C group grew quicker, on average, than earnings of students in any of the comparator groups. In fact, for self-employed earnings only, from Year 8 onwards A level lowest C students had the highest median earnings, despite having the lowest earnings in Year 5.

Thirdly, when looking at a combination of self-employment and sustained employment, students with BTECs and low A level grades (best grade E) had the highest progression in the first few years after completing their post-16 study and those with the best A level grades (lowest C) had the lowest. However, in later years, the pattern reversed and the likelihood of being in both sustained employment and self-employment was higher for students with the best A level grades (lowest C). However, it is worth pointing out that, although progression increased in the first few years after completion of Key Stage 5 for all groups of students, they levelled off after Year 6.

In terms of combined earnings, students in the A level lowest C group had significantly higher predicted earnings in year 10 than students in the A level best E group (by 13%) but there were no differences in combined earnings by student group in Year 5.

Conclusions

The outcomes of this work provide evidence for the need of policy decision-making which improves the destinations and labour market outcomes of students who finish school with low A level grades. These learners, who are predominantly male, from disadvantaged backgrounds, and have some form of special educational need (as shown in Section 3.1 of this report) should not be forgotten.

The research has indicated that individuals in their earlier thirties who had achieved A levels which might be considered to have little currency have worse labour market outcomes than their peers who achieved better grades, after controlling for their background characteristics and educational attainment at age 16. However, we must consider that we are measuring earnings fairly early in their careers. It might be worth updating this work when the LEO data includes employment and labour market outcomes in later years.

Limitations

There are a few limitations to the LEO data when used to look at young people's destinations and labour market outcomes in the context of the work carried out in this report. These are discussed below.

1) The LEO data combines information from several administrative sources that require matching across individuals, and vary in data quality. For example, not all Key Stage 5 records could be matched to employment or learning data[33]. This could affect the magnitude of our estimates if different types of individuals are more or less likely to be observed in the data, albeit the impact is likely to be small.
2) Although we requested the most recent data available, the length of time needed to link a young person aged 18 to their labour market outcomes is a limitation, as there is a long delay associated with earnings and employment data becoming available in LEO. Thus, the most recent Key Stage 5 cohort considered in the research completed their A levels in 2012. It is very plausible that changes to assessments and to economic conditions in general mean that outcomes will be different for students currently completing their studies.
3) The employment and earnings data comes from records submitted through the Pay As You Earn (PAYE) system. The data in the LEO extracts has been derived from administrative large-scale recording systems which can likely be subject to data entry and processing errors. As a result, a great amount of cleaning is necessary to make sure that the resulting data provides a good reflection of an individual's employment and earnings.
4) Although information on the industry that students progressed to was available in the 2nd iteration of the LEO data used in this research (as part of the Inter-Departmental Business Register[34]), there was still no information on occupations.
5) There is no information on hours worked so analysis might under-estimate the earnings of part-time workers compared to full-time workers. This is a particular concern for women, who are more likely than men to work part-time.
6) Self-employed workers can only be identified from the 2014/15 financial year onwards. In earlier years, these workers are not identified as being in employment or having earnings.
7) There are recorded employment spells in LEO with missing earnings information.
8) A further limitation relates to the regression models used to investigate students' destinations and earnings. Even if an association is found between the independent variables in our models (*e.g.*, performance in Key Stage 4, gender, school type, ethnicity, …) and the predictor variable of interest (*e.g.*, being in sustained education, daily earnings), we still cannot be sure of a causal relationship. There may be other factors which we cannot easily measure but which are important in determining the likelihood of progression or having a particular level of earnings.

[33] For details on how the data from the different sources is matched to create the LEO extracts, see Anderson and Nelson (2021b).

[34] https://www.ons.gov.uk/aboutus/whatwedo/paidservices/interdepartmentalbusinessregisteridbr

9) As discussed in Section 2.1, there was missing data in some of the variables relating to the students' backgrounds (e.g., IDACI deprivation, special educational needs or ethnicity). Data on these are collected as part of the annual school census, so they are primarily available only for students at state-maintained schools.

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Appendix A: Structure of dataset within LEO

This Appendix provides some details on the structure of the employment, earnings, benefits and self-assessment dataset within LEO.

Employment data

The employment data is structured in spells. Each employment spell (with its start and end date) appears as a line in the data. Individuals can have one or multiple employment spells in each tax year or employment spells over several tax years.

Earnings data

The earnings data includes, for each tax year when the individual have PAYE earnings, the gross annual earnings. Therefore, there usually are multiple lines in the data per individual, corresponding to the years when the individual was employed.

Out of work benefits

As for the employment data, the out of work benefits data is structured in spells. Each benefits spell (with the start and end date of the period when the benefit was claimed) appears as a line in the data. The data is split by benefit (*i.e.*, if an individual has benefits in the same spell, from two different benefit types, there are two lines in the data). Individuals can have one or multiple benefits spells in each tax year or benefits spells over several tax years.

Self-assessment data (employment and earnings)

The structure of the self-assessment data is slightly different from the structure of the employment and earnings data. In this case, for each tax year when the individual has been self-employed, the gross annual earnings are included. There are, however, no details about any self-employment spells. An indicator of whether an individual was self-employed in each tax year can be easily derived using the self-assessment earnings.

Note: All datasets included in LEO (not just the ones described in this Appendix but also the NPD, ILR and HESA datasets) can be linked to each other at the individual-level using pseudonymised identifiers.

Appendix B: Variance decomposition for multilevel models[35]

Table B1: Variance decomposition for baseline multilevel logistic models: Progression to sustained education

Variance component	Year 1		Year 5		Year 10	
	Variance	Standardised Variance	Variance	Standardised Variance	Variance	Standardised Variance
Total	3.637	100.0	3.363	100.0	3.328	100.0
School	0.347	9.5	0.073	2.2	0.038	1.1
Student	3.290	90.5	3.290	97.8	3.290	98.9

Table B2: Variance decomposition for baseline multilevel logistic models: Progression to sustained employment

Variance component	Year 1		Year 5		Year 10	
	Variance	Standardised Variance	Variance	Standardised Variance	Variance	Standardised Variance
Total	3.648	100.0	3.407	100.0	3.377	100.0
School	0.358	9.8	0.117	3.4	0.087	2.6
Student	3.290	90.2	3.290	96.6	3.290	97.4

Table B3: Variance decomposition for baseline multilevel models: Earnings from employment

Variance component	Year 1		Year 5		Year 10	
	Variance	Standardised Variance	Variance	Standardised Variance	Variance	Standardised Variance
Total	0.585	100.0	0.492	100.0	0.414	100.0
School	0.022	3.8	0.009	1.8	0.033	8.0
Student	0.563	96.2	0.483	98.2	0.381	92.0

[35] For details about the variance decomposition for baseline multilevel logistic models, see Mood (2010) or Crawford and Benton (2017).

Table B4: Variance decomposition for baseline multilevel logistic models: Progression to self-employment only

Variance component	Year 5		Year 10	
	Variance	Standardised Variance	Variance	Standardised Variance
Total	3.448	100.0	3.338	100.0
School	0.158	4.6	0.048	1.4
Student	3.290	95.4	3.290	98.6

Table B5: Variance decomposition for baseline multilevel logistic models: Progression to sustained employment and self-employment

Variance component	Year 5		Year 10	
	Variance	Standardised Variance	Variance	Standardised Variance
Total	3.333	96.7	3.311	99.2
School	0.043	1.2	0.021	0.6
Student	3.290	95.4	3.290	98.6

Table B6: Variance decomposition for baseline multilevel models: Earnings from self-employment only

Variance component	Year 5		Year 10	
	Variance	Standardised Variance	Variance	Standardised Variance
Total	1.361	100.0	1.562	100.0
School	0.039	2.9	0.036	2.3
Student	1.322	97.1	1.526	97.7

Table B7: Variance decomposition for baseline multilevel models: Earnings from self-employment and employment

Variance component	Year 5		Year 10	
	Variance	Standardised Variance	Variance	Standardised Variance
Total	0.432	100.0	0.472	100.0
School	0.008	1.9	0.017	3.6
Student	0.424	98.1	0.455	96.4

Appendix C: Regression models (sustained destinations)

The outputs of the regression models looking at progression to sustained education and progression to sustained employment in Year 1, Year 5 and Year 10 after completion of Key Stage 5 are available in the Excel file below:

Regression analyses outputs: Sustained Education and Sustained Employment

Appendix D: Regression models (earnings)

The outputs of the regression models looking at daily earnings in Year 1, Year 5 and Year 10 after completion of Key Stage 5 are available in the Excel file below:

Regression analysis outputs: Earnings

Appendix E: Self-assessment cohorts

This Appendix provides some details on how the percentages shown in Figure 29 and Figure 30 (self-assessment destinations) have been calculated.

The percentages are of the cohort of students for which self-employment data was potentially available. Therefore, the cohort changed depending on the year after completion of Key Stage 5 (*i.e.*, Year 3, Year 4, etc.).

For example, for Year 3, A level lowest C:

- Self-assessment data is only available from 2014/15 so, looking at the availability of data in Figure 2, only students in the 2011/12 Key Stage 5 cohort could appear in Year 3 in the self-assessment data. The number of students in the A level lowest C category that were followed up in the self-assessment data from that cohort was 14572.
- Of the 14572 students:
    - 416 (2.9%) were self-employed only
    - 943 (6.5%) were self-employed but also had sustained employment
- The above percentages are the ones showed in Figure 29 and Figure 30, respectively, for students in the A lowest C category.

In Year 4, looking at Figure 2, students from two cohorts (2010/11 and 2011/12) could appear in self-assessment data. So, the percentages of A level lowest C in each of the self-assessment categories are calculated using the data from both cohorts.

Appendix F: Regression models (self-assessment destinations)

The outputs of the regression models looking at progression to self-employment only and to both sustained employment and self-employment in Year 5 and Year 10 after completion of Key Stage 5 are available in the Excel file below:

Regression analyses outputs: Self-assessment destinations

Appendix G: Regression models (self-assessment earnings)

The outputs of the regression models looking at yearly earnings from self-employment only and from self-employment and employment in Year 5 and Year 10 after completion of Key Stage 5 are available in the Excel file below:

Regression analyses outputs: Self-assessment earnings