Employment and earnings outcomes of higher education graduates: *experimental statistics using the Longitudinal Education Outcomes (LEO) data: further breakdowns*

This is the second in a series of higher education data releases from the Department for Education's new Longitudinal Education Outcomes dataset. It focuses on the employment and earnings outcomes of those graduating with an undergraduate degree in 2008/09 from an English higher education institution (HEI). It looks at outcomes one, three and five years after graduation. Data are split by subject studied and graduate characteristic (sex, ethnicity, age, home region and prior attainment at A level). Employment outcomes are also provided for each HEI. A further release is scheduled for spring 2017 covering outcomes by each subject for each institution. In order to gain user feedback, this release previews this type of information by looking at employment and earnings outcomes for 2008/09 law graduates.

This publication also explores the impact of including self-assessment data for the 2014/15 tax year.

Overall employment and further study outcomes 5 years after graduation vary little by subject studied (2008/09 graduates)

'Biological sciences' and 'medicine & dentistry' had the highest proportion of graduates in 'further study, sustained employment or both'[1] five years after graduation (83.5 per cent and 83.3 per cent respectively). However, this is only 6.4 percentage points higher than those who studied a 'combined' degree. These figures include self-assessment data.
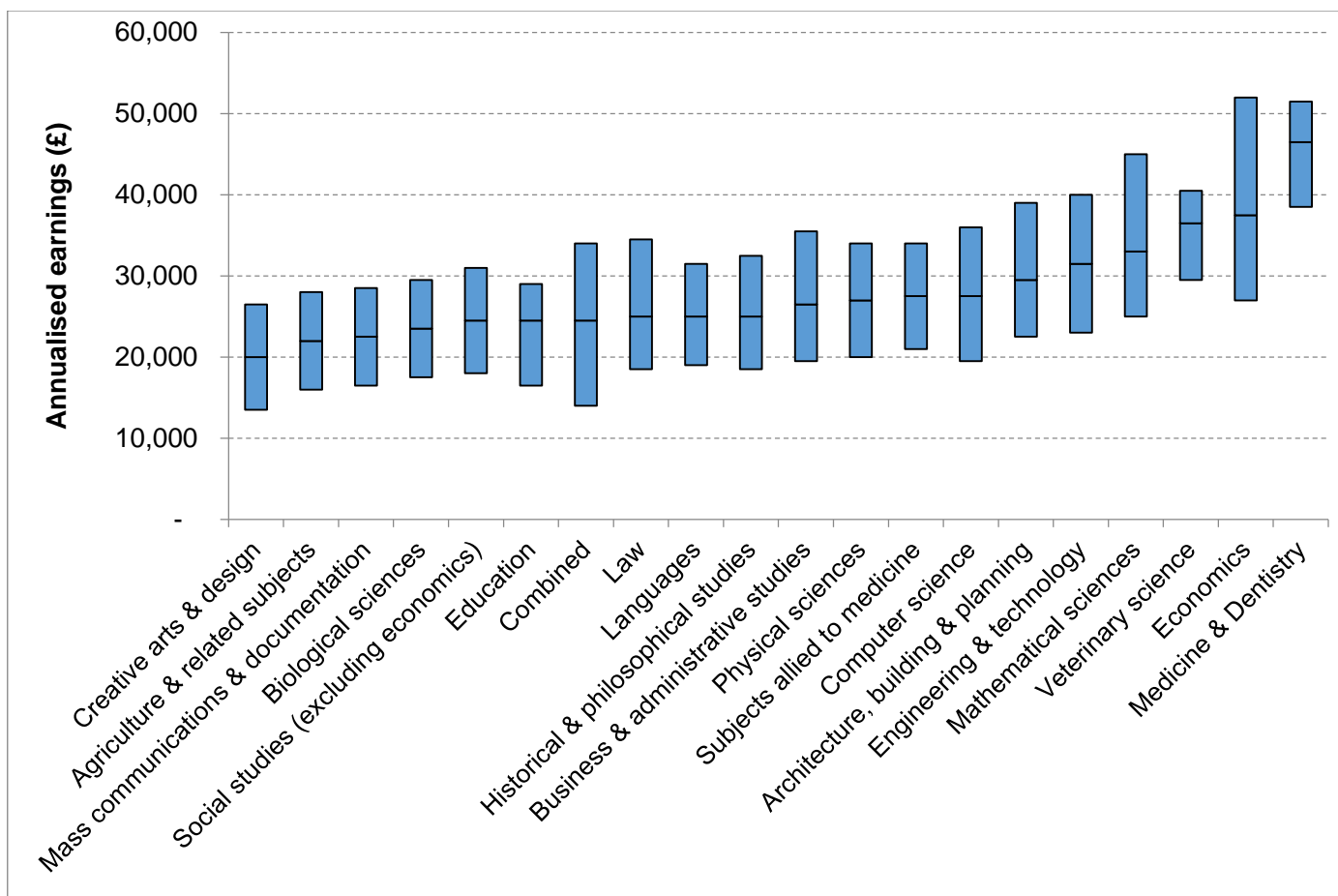

---
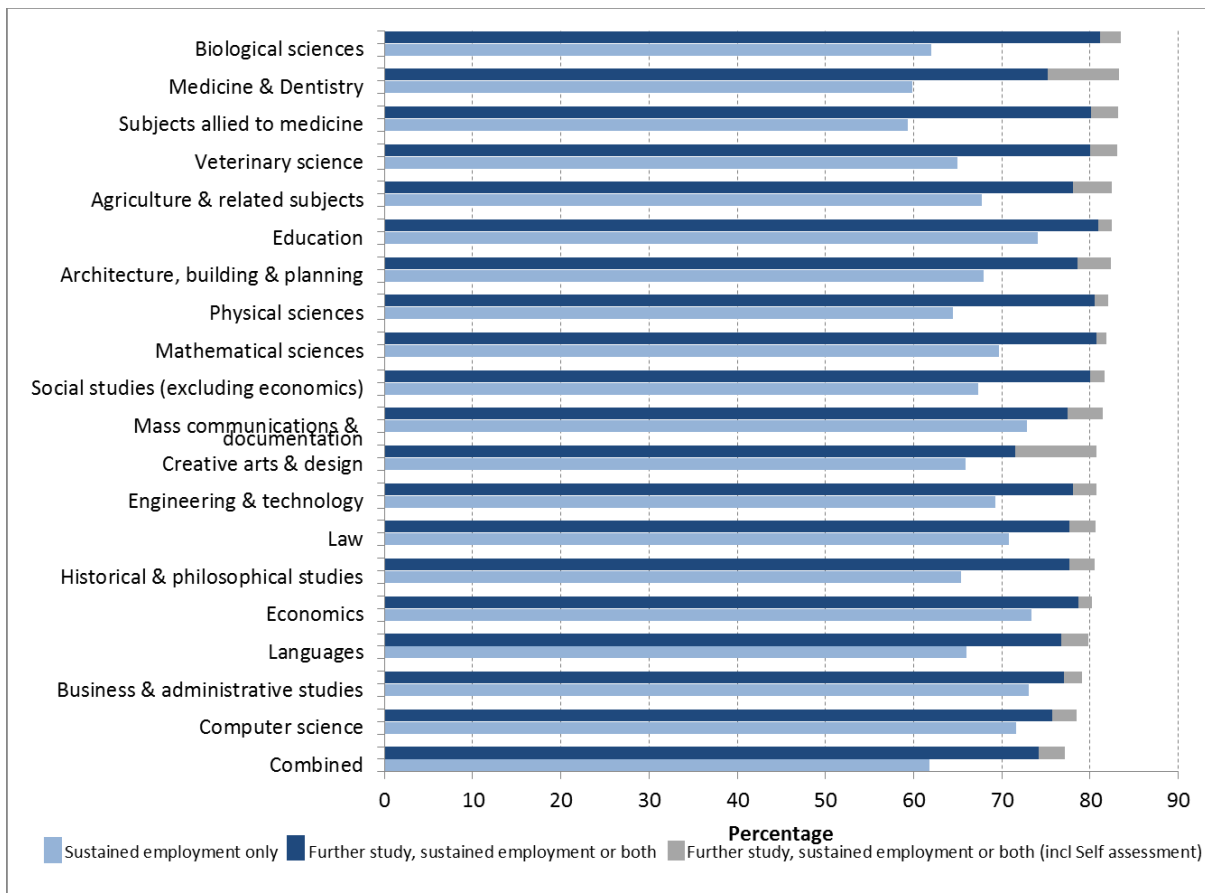
[1] Graduates are counted as being in sustained employment if they for work one day in five months out of six between October and March in the relevant tax year (See section 8: methodology for further details).

The inclusion of self-assessment data changes the reported outcomes for graduates of some subjects more than others, with it being most important for those who studied 'creative arts and design' (9.2 per cent self-employed) and 'medicine and dentistry' (8.1 per cent self-employed).

The proportion with a further study record five years after graduation varied by subject studied, from around 4 per cent for those who studied 'business & administrative studies' and 'computer science' (3.9 per cent and 4.1 per cent respectively) to around 20 per cent for those who studied 'subjects allied to medicine' and 'biological sciences' (20.8 and 19.1 per cent). The majority of those with a further study record were also in sustained employment.

Earnings after five years vary by subject studied (2008/09 graduates)

Five years after graduation, 'medicine and dentistry' graduates had the highest median annualised earnings (£46,500), while 'creative arts and design' graduates the lowest (£20,000). These figures do not include earnings from self-assessment. There is, however, a large overlap in the earnings range between all subjects, with the exception of 'medicine and dentistry' where the lowest quartile was higher than the median of all other subjects. The range of earnings within a subject also varied: 'veterinary science' had the lowest range in earnings (£11,000 between the lowest and upper quartile), while 'economics' had the highest range (£25,000).

Contents

About this release

This experimental statistical release presents statistics on the employment and earnings outcomes of higher education graduates. It uses the linked administrative data that forms part of the Longitudinal Education Outcomes (LEO) dataset. This publication mainly focuses on the cohort of leavers obtaining first degree qualifications in the 2008/2009 academic year, providing employment and earnings outcomes one, three and five years after graduation. Some tables also provide data for additional cohorts.

This is the second statistical release looking at employment and earnings outcomes of university graduates and builds on the data released on 4 August 2016.

Feedback

As these statistics are currently experimental we welcome feedback. Contact details are provided in .

In this publication

The following tables are included in this release:

Subject tables (Excel .xls)
Table 1a: Activity of graduates by subject, prior attainment and sex one, three and five years after graduation

Table 1b: Activity of graduates by subject and prior attainment one, three and five years after graduation

Table 1c: Activity of graduates by subject and sex

Table 1d: Activity of graduates by subject and sex one, three and five years after graduation: comparisons with and without self-assessment data

Institution tables (Excel .xls)
Table 2a: Activity of graduates by higher education institution (HEI) and sex one, three and five years after graduation

Table 2b: Activity of graduates by higher education institution (HEI) and sex

Table 2c: Activity of graduates by higher education institution (HEI) and sex one, three and five years after graduation: comparisons with and without self- assessment data

Subject by institution table (Excel .xls)
Table 3: Activity of Law graduates one, three and five years after graduation

Graduate characteristics tables (Excel .xls)
Table 4: Activity of graduates by ethnicity and sex one, three and five years after graduation

Table 5: Activity of graduates by age group on entry and sex one, three and five years after graduation

Table 6: Activity of graduates by region of domicile prior to study and sex one, three and five years after graduation

Table 7: Activity of graduates by prior attainment and sex one, three and five years after graduation

The technical annex provides information on the data sources, their coverage and quality and explains the methodology used in producing the data.

1. Introduction

Background to the Longitudinal Education Outcomes (LEO) dataset

The Small Business, Employment and Enterprise Act 2015 enabled Government, for the first time, to link higher education and tax data together to chart the transition of graduates from higher education into the workplace[2]. One of the advantages of linking data from existing administrative sources is that it provides a unique insight into the destinations of graduates without imposing any additional data collection burdens on universities, employers or members of the public. Compared to existing sources of graduate outcomes data, it is also based on a considerably larger sample, does not rely on survey methodology, and can track outcomes across time to a greater extent than is currently possible.

The LEO dataset links information about students, including:

- personal characteristics such as sex, ethnic group and age;
- education, including schools, colleges and higher education institution attended, courses taken, and qualifications achieved;
- employment and income; and
- benefits claimed.

It is created by combining data from the following sources:

- the National Pupil Database (NPD), held by the Department for Education (DfE);
- Higher Education Statistics Agency (HESA) data on students at UK publicly funded higher education institutions and some Alternative Providers, held by DfE;
- Individualised Learner Record data (ILR) on students at further education institutions, held by DfE;
- employment data (P45 and P14), held by Her Majesty's Revenue and Customs (HMRC);
- the National Benefit Database, Labour Market System and Juvos data, held by the Department for Work and Pensions (DWP).

By combining these sources together we can look at the progress of higher education leavers into the labour market. The focus of this release is on employment and earnings outcomes of leavers from higher education, using HESA records to link graduates to HMRC and DWP data. Please see the technical annex for further information on matching processes, consideration of the strengths and weaknesses of the LEO dataset, as well as a glossary of the definitions used throughout this publication.

The privacy notice explaining how personal data in this project is shared and used can be found here.

> **This Statistical First Release presents data on graduate employment and earnings outcomes one, three and five years after graduation. Data are split by graduate characteristic (sex, ethnicity, age, home region and prior attainment at A level). Data are also split by the subject studied.**
>
> **Only employment and further study outcomes are provided for each higher education institution in this release. Earnings outcomes for each subject in each institution are planned for publication in spring 2017. As a preview of this, we have included outcomes and earnings of law graduates at each institution in this publication to give users the opportunity to comment in advance of the spring 2017 release.**
>
> **The main tables look at those who graduated in 2008/09, the latest year for which we have a five year time series. Additional tables have been produced showing activity of all graduate cohorts since 2003/04 by institution or subject studied. The time series spans five years for outcomes by institution and ten years for outcomes and earnings by subject studied.**

---

[2] For more information on the legal powers governing the dataset please see section 78 of the Small Business, Enterprise and Employment Act 2015 and sections 87-91 of the Education and Skills Act 2008.

Coverage

This publication looks at those who graduated with a **first degree qualification from English higher education institutions (HEIs)**. First degrees are also known as bachelor's degrees. **We have just looked at those classified as UK domiciled prior to entry to higher education.** Figures are presented for all graduates and have not been split by full-time or part-time modes of study. On average we have been able to link over 95 per cent of each graduate cohort to tax and/or benefit data. Please see section 10: data matching and match rates for more information.

Designated Alternative Providers are not included in this publication as they were not required to return student level data to HESA prior to the 2015/16 academic year. The University of Buckingham has historically returned HESA data so is included in the publication.

The **employment data** covers those with records submitted through the Pay As You Earn (PAYE) system. The core purpose of PAYE is to collect tax and its coverage reflects this. Up until April 2013, employers were not required to supply information to HMRC for individuals who earned below the Lower Earnings Limit (LEL)[3] for National Insurance contributions, although for large employers these individuals were thought to be included due to the methods of data transfer. Since then, employers have been required to provide earnings information for all employees if even one employee of the company is paid above the LEL threshold. Please see section 7: data quality for more information on this.

The PAYE system does not collect information on the numbers of hours worked; therefore, whether an individual is working full-time or part-time cannot be ascertained.

All figures are based on UK tax, benefit and student records only: activity of those who move abroad to work or study after graduating is not reflected in the employment or further study figures. Instead, these individuals are categorised as 'activity not captured'.

The methodology for defining employment and earnings outcomes is set out in section 8: methodology.

Years after graduation

The time periods used in this publication are one, three, five and ten years after graduation. This refers to the first full tax year after graduation. So, for the 2012/13 graduation cohort the figures one year after graduation refer to employment/earnings outcomes in the 2014/15 tax year. This time period was picked as using the tax year which overlaps with the graduation date would mean that graduates are unlikely to have been engaged in economic activity for the whole tax year. This is displayed graphically in figure 1 below.

Figure 1: Relationship between academic year, tax year, and definitions of 'years after graduation' used in this publication

	Tax year									
Academic year of graduation	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12	2012/13	2013/14	2014/15
2003/04	1 year		3 years		5 years					10 years
2004/05		1 year		3 years		5 years				
2005/06			1 year		3 years		5 years			
2006/07				1 year		3 years		5 years		
2007/08					1 year		3 years		5 years	
2008/09						1 year		3 years		5 years
2009/10							1 year		3 years	
2010/11								1 year		3 years
2011/12									1 year	
2012/13										1 year

---

[3] The threshold for the 2014/15 tax year was £112 per week.

2. Results

In this section, we comment on breakdowns of the employment and earnings data by graduate characteristics, subject of study and institution. We do not study all the factors that are known to influence earnings and employment, such as part-time working and socio-economic background. Additionally, there are links between the various characteristics that this section does not take into account.

Outcomes are presented for graduates that have been successfully matched to the Department for Work and Pensions' Customer Information System (CIS) or if they have been matched to a further study instance on the HESA Student Record. In this publication these individuals are referred to as **matched**. Graduates that have not been matched to CIS or a further study record are referred to as **unmatched**.

Graduates that have been **matched** are then placed in one of five outcomes categories. These are:

Activity not captured: graduates that have been successfully matched to CIS but do not have any employment, out-of-work benefits or further study records in the tax year of interest. Reasons for appearing in this category include: moving out of the UK after graduation for either work or study, being self-employed in the relevant tax year, earning below the Lower Earnings Limit, or voluntarily leaving the labour force.

No sustained destination: graduates with an employment or out-of-work benefits record in the tax year in question but were not classified as being in 'sustained employment' and do not have a further study record.

Sustained employment only: graduates are considered to be in sustained employment if they were employed for at least one day for five out of the six months between October and March of the tax year in question. To be in the sustained employment **only** category graduates must not have a record of further study in the tax year in question.

Sustained employment with or without further study: includes **all** graduates with a record of sustained employment, regardless of whether they also have a record of further study. A graduate is defined as being in further study if they have a valid higher education study record at any UK HEI on the HESA database in the relevant tax year. The further study does not have to be at postgraduate level to be counted.

Sustained employment, further study or both: includes all graduates with a record of sustained employment **or** further study. This category includes all graduates in the 'sustained employment with or without further study' category as well as those with a further study record **only**.

This section focuses on the proportion of graduates in **sustained employment only** and **sustained employment, further study or both** as positive employment or further study outcomes. It is important to note that our sustained employment definition does not distinguish between the different types of work that graduates are engaged in and so cannot provide an indication of the proportion of graduates that are employed in graduate occupations.

Experimental inclusion of self-assessment data for the 2014/15 tax year

Self-assessment data captures the activity of individuals with income that is not taxed through PAYE, such as income from self-employment, savings and investments, property rental, and shares. The main tables do not currently include data from self-assessment tax returns and hence their employment and earnings figures will not fully reflect the activity of those who are self-employed.

For this publication we have obtained self-assessment data for the 2014/15 tax year and have explored the difference that self-employment data makes to overall sector-level employment measures (please see tables 1d and 2c in the accompanying Excel tables). **We do not currently have access to earnings from self-assessment returns**.

Individuals are classed as being in sustained employment if they have returned a self-assessment form stating that they have received income from self-employment. Individuals who have received income through other self-assessed means, such as through shares, investments or rental of property, and do not have a PAYE record, are not classed as being in employment (either sustained or unsustained). At this point we only have data for the 2014/15 tax year and therefore have not included it in the main tables within this release as it would make comparisons over time misleading.

Table A illustrates the impact of incorporating self-assessment data into LEO on the proportion of graduates in sustained employment, further study or both. Graduates are more likely to have a record of sustained employment defined by a self-employment record as time since graduation increases, and the difference is greater for males than for females.

These data illustrate that, for the sector as a whole, inclusion of 2014/15 self-assessment data into LEO is associated with a small increase in the proportion of graduates in sustained employment. This suggests that figures without this data should be interpreted with care. We explore the effect of including self-assessment data on employment outcomes by subject studied and institution in the results section.

Table A: Percentage point difference in the proportion of graduates in sustained employment, further study, or both when self-assessment data is included

	Excluding self-assessment	Including self-assessment	Difference (ppt)
Total			
One year after graduation	79.7%	82.0%	**2.3**
Three years after graduation	79.3%	82.2%	**2.9**
Five years after graduation	77.8%	81.2%	**3.4**
Ten years after graduation	74.4%	78.2%	**3.8**
Female			
One year after graduation	81.1%	83.1%	**2.0**
Three years after graduation	80.4%	82.9%	**2.5**
Five years after graduation	78.8%	81.7%	**2.9**
Ten years after graduation	74.4%	78.1%	**3.7**
Male			
One year after graduation	77.8%	80.6%	**2.8**
Three years after graduation	77.8%	81.3%	**3.5**
Five years after graduation	76.4%	80.5%	**4.1**
Ten years after graduation	74.3%	78.4%	**4.1**

Figures reflect activity of graduates one year after graduation (2012/13 cohort), three years after graduation (2010/11 cohort), three years after graduation (2008/09 cohort) and ten years after graduation (2003/04 cohort)

2.1 Employment outcomes by graduate characteristic

This section explores the employment and further study outcomes of 2008/09 graduates one, three and five years after graduation, split separately by sex, ethnicity, domicile prior to entry to higher education, and prior attainment. All figures can be found in tables 4 to 7 in the accompanying Excel graduate characteristics speadsheet.

Employment outcomes in this section do not include self-assessment data, **and therefore will not fully reflect activity of individuals who are self-employed.**

This summary chapter focuses on the combined category of 'further study, sustained employment or both' five years after graduation. Figures are compared to those with a record of sustained employment only. The difference between the dark and light blue bars in the charts represents the proportion that had a further study record.

Sex

Figure 2 shows that five years after graduation, female graduates were slightly more likely to be in sustained employment or further study than male graduates (78.8 per cent compared to 76.4 per cent). We also see that a smaller proportion of females were in the 'activity not captured' category (13.2 per cent compared to 15.1 per cent: see table B).

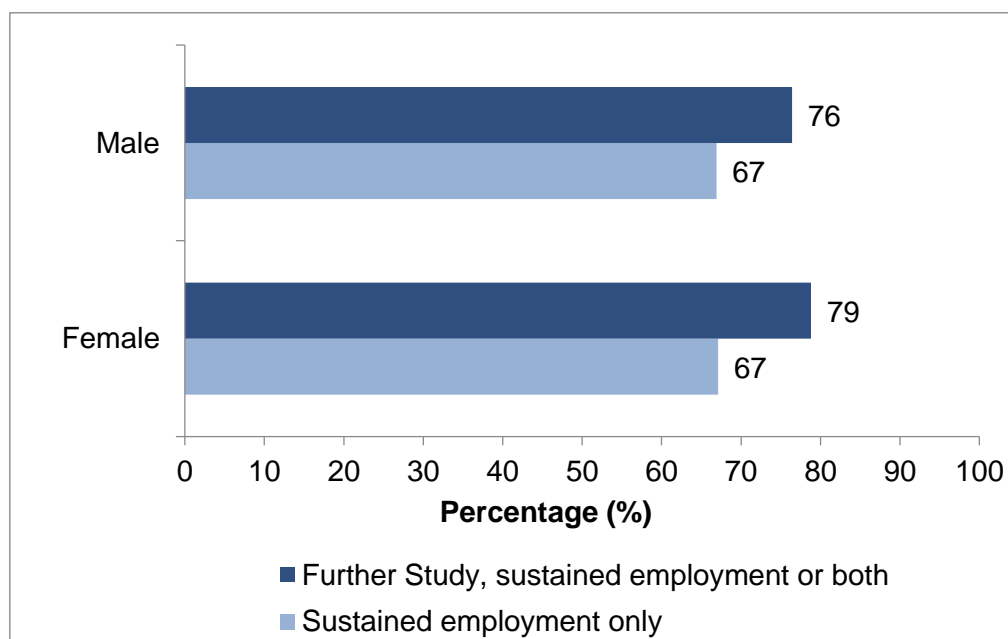**Figure 2: Activity of 2008/09 graduates by sex five years after graduation**

Table B: Activity of 2008/09 graduates by sex five years after graduation
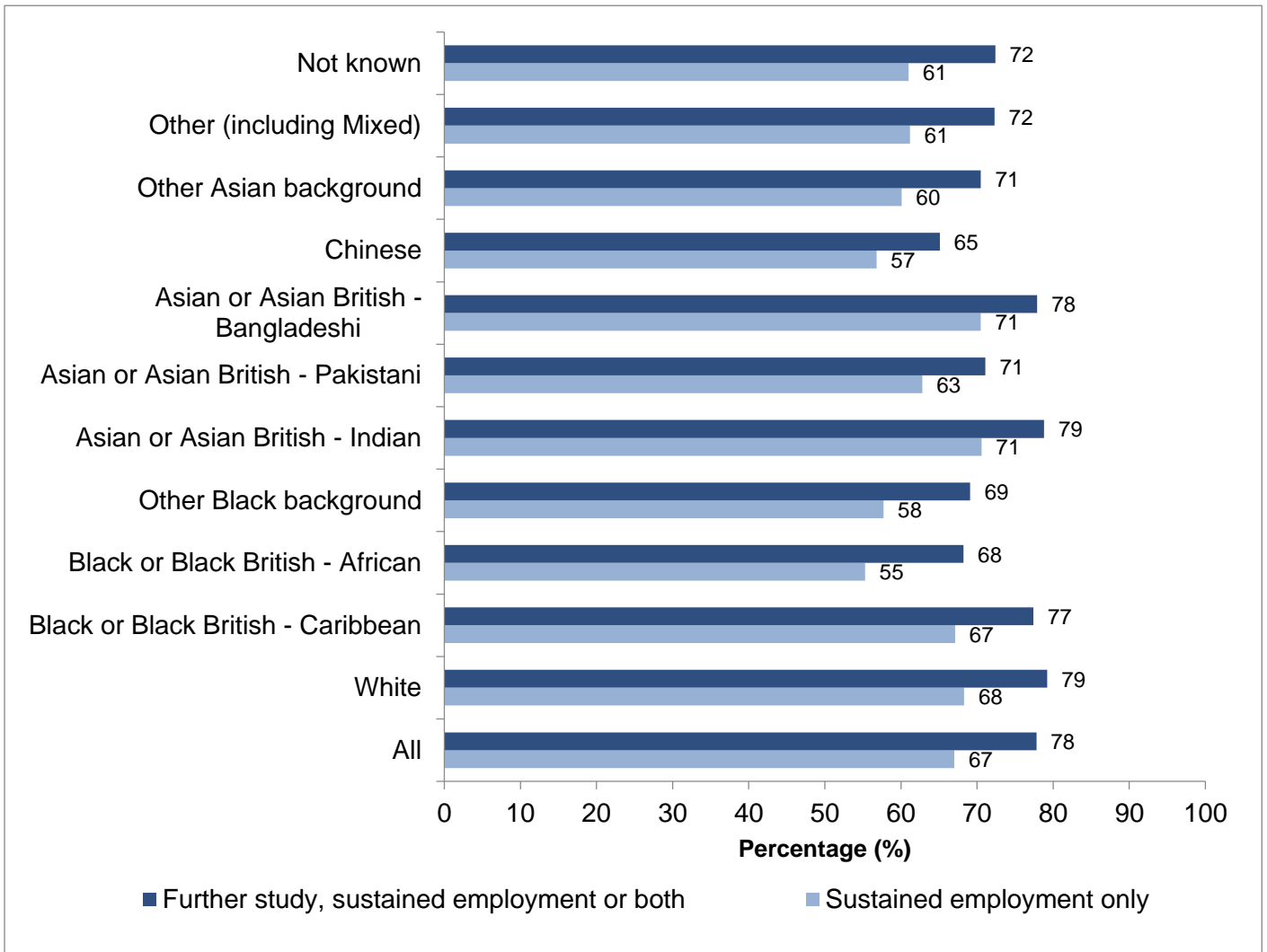
Sex	Number of matched graduates	Activity not captured (%)	No sustained destination (%)	Sustained employment only (%)	Sustained employment with or without further study (%)	Further study, sustained employment or both (%)
Female	130,330	13.2	8.0	67.1	75.9	78.8
Male	99,320	15.1	8.4	66.9	73.7	76.4

Ethnicity

Information about ethnicity is recorded on the HESA Student Record on the basis of the student's own self-assessment. Ethnicity is known for almost 97 per cent of the 2008/09 graduate cohort.

Figure 3 and table C show employment and further study outcomes by ethnicity. The Chinese ethnic group had the lowest proportion of graduates in sustained employment, further study or both five years after graduation, at 65.1 per cent. This compares to 77.8 per cent on average amongst all graduates. This was caused by a much larger proportion of Chinese graduates in the 'activity not captured' category (25.9 per cent compared to 14.0 per cent of all graduates). There are a number of reasons why graduates might fall into the 'activity not captured' category, such as being self-employed or moving abroad.

Figure 3: Activity of 2008/09 graduates by ethnicity five years after graduation

The two ethnic groups with the next lowest proportion of graduates in 'further study, sustained employment or both' were 'Black or Black British – African' (68.2 per cent) and 'Other Black background' (69.1 per cent). These proportions were caused by higher than average rates of both 'activity not captured' and of 'no sustained destination'.

**Table C: Activity of 2008/09 graduates by ethnicity five years after graduation**

Ethnicity	Number of matched graduates	Activity not captured (%)	No sustained destination (%)	Sustained employment only (%)	Sustained employment with or without further study (%)	Further study, sustained employment or both (%)
All	229,650	14.0	8.2	67.0	75.0	77.8
White	176,490	13.3	7.4	68.3	76.5	79.2
Black or Black British - Caribbean	3,385	11.6	11.1	67.1	74.6	77.4
Black or Black British - African	7,705	18.7	13.1	55.3	64.2	68.2
Other Black background	795	17.8	13.0	57.7	65.9	69.1
Asian or Asian British - Indian	11,000	11.7	9.5	70.6	76.4	78.8
Asian or Asian British - Pakistani	5,900	16.8	12.1	62.8	68.5	71.1
Asian or Asian British - Bangladeshi	2,330	12.3	9.8	70.5	76.1	77.9
Chinese	2,480	25.9	8.9	56.8	62.2	65.1
Other Asian background	3,215	18.2	11.3	60.1	66.5	70.5
Other (including Mixed)	8,715	16.7	10.9	61.2	68.8	72.3
Not known	7,630	18.3	9.4	61.0	69.0	72.4

Age Group

We define mature students as those who were 21 or above on the 30 September of the academic year in which they commenced their studies, and young students to be those who were below 21 on that date. 72.8 per cent of matched 2008/09 graduates are classed as young students and 27.2 per cent as mature.

Figure 4 shows the main employment and further study outcomes five years after graduation by age on entering higher education. Five years after graduation, 'young' graduates were more likely to be in sustained employment or further study than mature graduates (79.2 per cent compared to 74.1 per cent). This may be in part due to greater childcare responsibilities among older graduates.

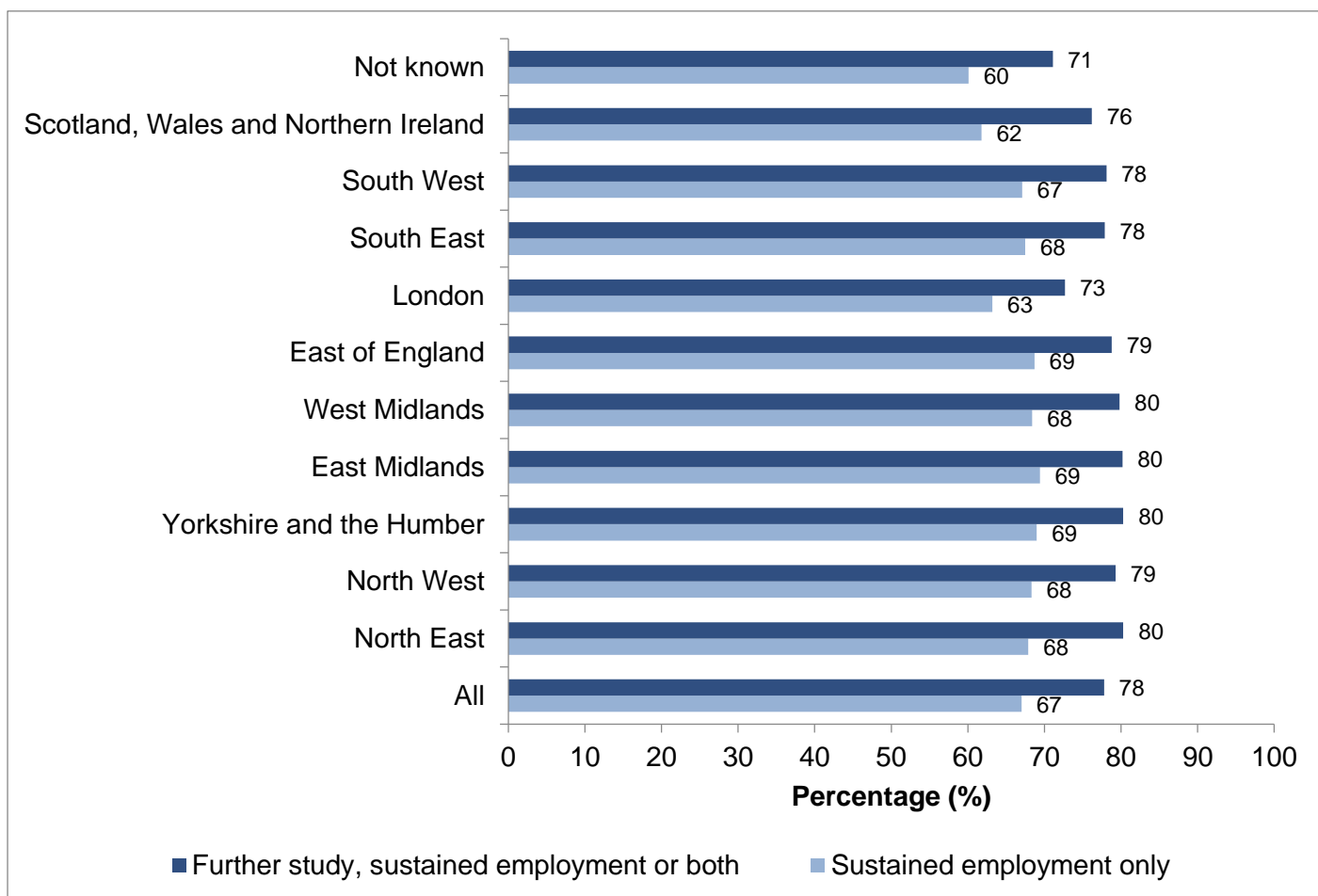**Figure 4: Activity of 2008/09 graduates by age group five years after graduation**
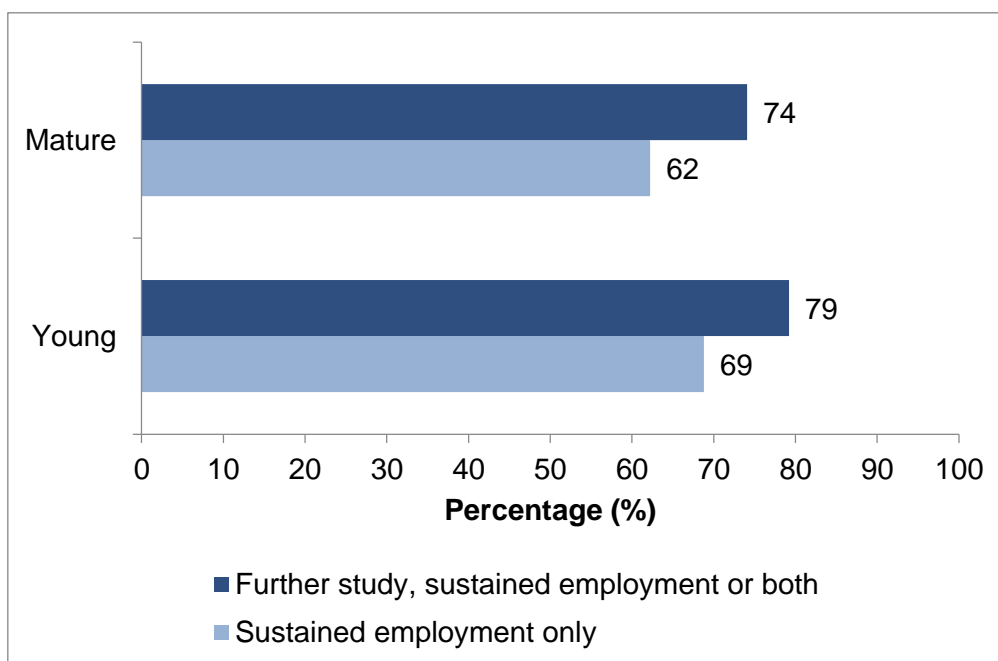
Home region

In this section we look at graduate employment and further study outcomes by the region in which graduates lived before entering higher education, as recorded on the HESA Student Record. Since this publication focuses only on graduates at English HEI's, there were comparatively few students from Scotland, Wales and Northern Ireland. We have grouped these countries for this analysis. A low proportion of graduates from Scotland, Wales and Northern Ireland go to university in England so the outcomes of the group studied here may not be representative of the general population of all graduates domiciled in Scotland, Wales and Northern Ireland.

There was limited variation in the proportion of graduates with a positive study or employment outcome by home region, with almost all regions differing by less than 3 percentage points from the national average (see figure 5). The only exception to this was London, in which only 72.7 per cent of students were in further study, sustained employment or both, 5.1 percentage points below the national level. This was driven in equal parts by a higher than average rate of students in the activity not captured and in the no sustained destination categories.

Figure 5: Activity of 2008/09 graduates by region five years after graduation

Further study, sustained employment or both / Sustained employment only

Region	Further study, sustained employment or both	Sustained employment only
Not known	71	60
Scotland, Wales and Northern Ireland	76	62
South West	78	67
South East	78	68
London	73	63
East of England	79	69
West Midlands	80	68
East Midlands	80	69
Yorkshire and the Humber	80	69
North West	79	68
North East	80	68
All	78	67

Prior Attainment

Figure 6 shows employment and further study outcomes split by graduates' attainment prior to entering higher education. Information on prior attainment was obtained from the National Pupil Database (NPD), which holds data on the key stage 5 qualifications obtained by 16-18 year olds in England since 2002. Not all graduates can be matched to an NPD record; for example, coverage excludes those who took their A levels prior to the 2001/02 academic year, those with qualifications obtained outside of England, or those who could not be matched to LEO employment or further study data. We were able to match 70 per cent of 2008/09 graduates to the NPD. For more detail on our prior attainment methodology please see section 9: prior attainment.

In this release, prior attainment groupings have been based on graduates' best three A levels[4] and have not been adjusted for the number of A levels taken. Graduates who were matched to the NPD but took qualifications other than A levels, such as BTECs or the International Baccalaureate, will not have their attainment reflected in our measure.

Prior attainment is grouped as follows:

- 360 points (equivalent to three A grades)
- 300 points (equivalent to three B grades) to 359 points
- 240 points (equivalent to three C grades) to 299 points
- Below 240 points
- Not matched to an NPD A level record

---

[4] Points for each grade were assigned as follows: A=120 points; B=100 points; C=80 points; D=60 points; E=40 points

Figure 6: Activity of 2008/09 graduates by prior attainment five years after graduation
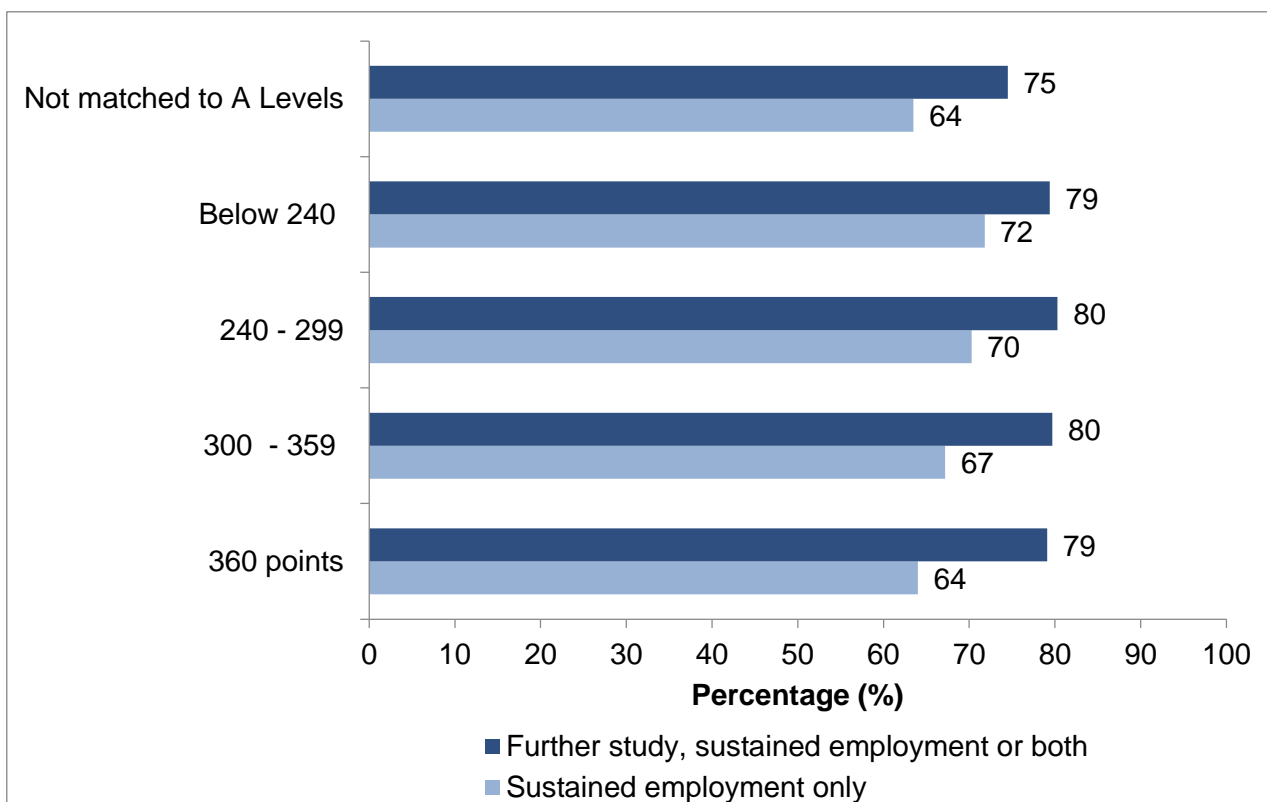
According to this definition, 9.3 per cent of matched 2008/09 graduates have 360 points, 17.2 per cent have between 300 and 359 points, 15.4 per cent have between 240 and 299 points, 21.5 per cent have below 240 points and 36.5 per cent were not matched to any A levels.

There was little difference in the proportion of graduates with a positive outcome between the four different A level attainment categories. The main difference was that the rate of further study increases with prior attainment grouping, so there was a markedly lower rate of graduates in sustained employment only among students from the higher attaining groups but a higher rate going onto further study. It is important to note that it is not possible to tell what kind of employment graduates are engaged in.

Students that we were unable to match to A level results had a lower rate of positive outcomes; this is mainly due to a higher proportion with 'activity not captured'. This may in part be explained by the age of graduates in our prior attainment measure. Graduates who took post-16 qualifications prior to 2001/02 will not have their data recorded on the NPD and are likely to be recorded as 'mature' students in our data. Indeed, 64.0 per cent of graduates in the 'not matched to A levels' group were 'mature' students. This is supported by comparison of figures 4 and 6, which show that employment and further study outcomes are broadly similar between mature students and graduates who were not matched to any A levels.

2.2 Earnings by graduate characteristic

In this section, we present annualised earnings figures for UK domiciled first degree 2008/09 graduates from English HEIs, split by sex, ethnicity, age at start of course, region of domicile prior to entering HE and prior attainment.

The boxes in figures 7 to 11 represent the interquartile range, which is the earnings of the middle 50 per cent of graduates in each category, and the black line in the middle shows the median. This chapter looks at each characteristic in turn but characteristics are linked; for example, each ethnic group is not represented equally in each region. In order to get a better understanding of the link between each characteristic and earnings, more detailed analysis (such as regression analysis) should be carried out.

Tables 4 to 7 in the accompanying Excel spreadsheets provide the full set of data one, three and five years after graduation. With the exception of earnings by sex this chapter mainly focuses on the earnings five years after graduation.

All earnings presented in this publication are for those graduates who meet the definition of being in sustained employment only (see section 8: methodology) in the relevant tax year and who could be matched to a PAYE earnings record: **earnings declared in self-assessment returns are not included in this publication**. All earnings figures are nominal.

Note that comparisons between earnings figures have been made on the unrounded figures. Thus the differences noted in the text may appear different to those calculated from the figures presented in the tables.

Sex

At each of one, three and five years after graduation, male median earnings are greater than female median earnings (see figure 7 and table D). This gap increases with the number of years after graduation. One year after graduation female earnings are £1,000 lower than males (5 per cent lower) compared to £3,000 (11 per cent) lower five years after graduation.

Figure 7: Annualised earnings for 2008/09 graduates by sex one, three and five years after graduation
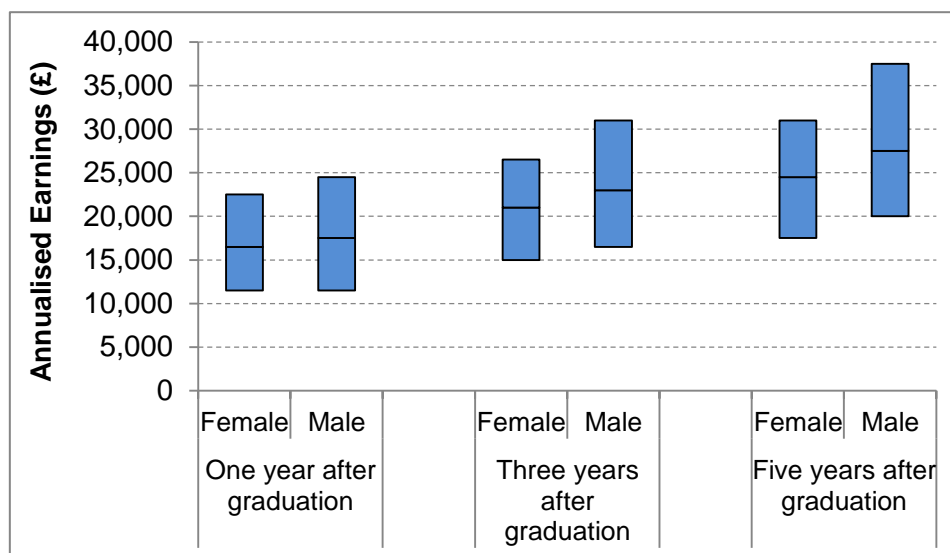
The gap between male and female earnings is particularly noticeable at the upper quartile. At one year after graduation, the upper quartile for female earnings is £2,000 (9 per cent) lower than the upper quartile for male earnings. This difference grows to £6,500 (18 per cent lower) 5 years after graduation. Male earnings also have a wider spread than female earnings. This is particularly noticeable at five years after graduation, when the interquartile range is £18,000 for male earnings compared to £13,500 for female earnings.

Some part of these variations will be due to the different incidences of part-time work by sex. These differences increase with age of worker, which may explain some of the increasing gap in earnings between males and females.

Table D: Median annualised earnings for 2008/09 graduates by sex one, three and five years after graduation

Sex	One Year after graduation (£)	Three years after graduation (£)	Five years after graduation (£)
Female	16,500	21,000	24,500
Male	17,500	23,000	27,500

Ethnicity

Figure 8 shows that earnings vary by ethnicity five years after graduation. Graduates from an 'other Asian background' had the highest earnings, with a median of £27,000. This is £1,500 (5 per cent) higher than the median earnings for all graduates. The 'Asian or Asian British – Indian' and 'Chinese' groups had earnings that were slightly below this, but still £1,000 (5 per cent) higher than the overall median. These differences were more pronounced at the upper quartile of earnings; for example, the upper quartile of earnings for graduates from an 'other Asian background' was £5,500 (16 per cent) above the upper quartile for all graduates.

Figure 8: Annualised earnings for 2008/09 graduates by ethnicity five years after graduation
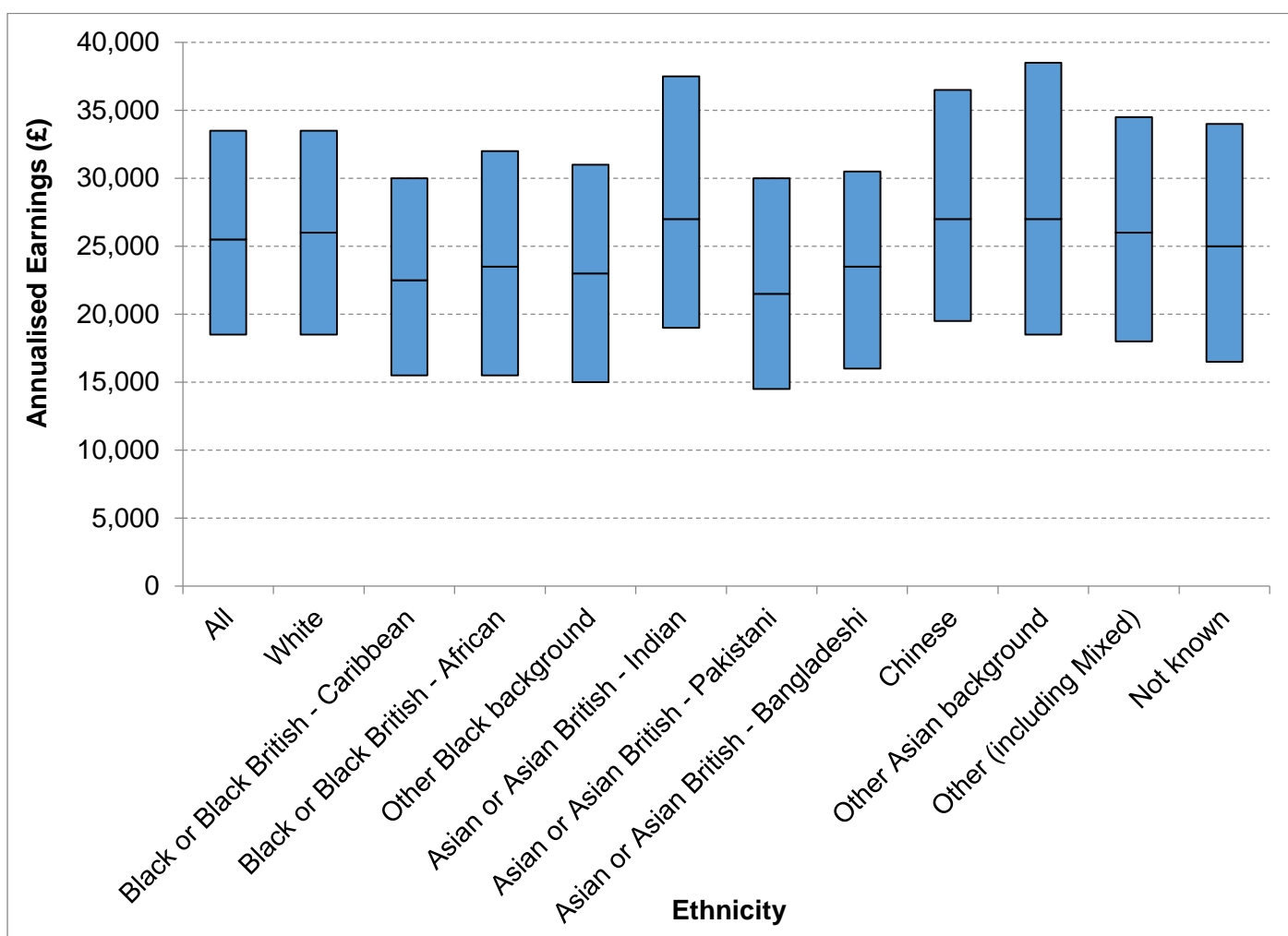
The lowest earning ethnic group was 'Asian or Asian British – Pakistani', which had median earnings of £21,500 (£4,500, or 17 per cent, below the median for all students). 'Black or Black British-Caribbean' graduates, and graduates from an 'other Black background' also had median earnings at least 10 per cent lower than the median for all students.

These overall trends were slightly different for male and for female graduates (see table E). The highest median female earnings were for the Chinese ethnic group (£26,500 compared to £24,500 for females as a whole). However, median earnings for female Chinese graduates were still £1,000 (3 per cent) less than the median for male Chinese graduates. This is a smaller gap when compared to a difference of £3,000 (11 per cent) for the population as a whole. Among females, Pakistani graduates had the lowest earnings at £19,500, £5,000 (21 per cent) below average. Male median earnings were also lower than average for male Pakistani graduates at £24,000, £3,500 (13 per cent) below the overall median male earnings. The lowest male earnings were for the Black Caribbean ethnic group, closely followed by Black African and Pakistani groups.

Some of the trends described here will be explained by differences in prior attainment, socio-economic background and subject of study, across the different ethnicities.

Table E: Median annualised earnings for 2008/09 graduates by ethnicity and sex five years after graduation

Ethnicity	All Graduates (£)	Female (£)	Male (£)
All	25,500	24,500	27,500
White	26,000	24,500	27,500
Black or Black British - Caribbean	22,500	22,000	23,500
Black or Black British – African	23,500	23,000	24,000
Other Black background	23,000	22,000	25,000
Asian or Asian British - Indian	27,000	25,500	29,000
Asian or Asian British - Pakistani	21,500	19,500	24,000
Asian or Asian British - Bangladeshi	23,500	22,000	25,000
Chinese	27,000	26,500	27,000
Other Asian background	27,000	26,000	28,500
Other (including Mixed)	26,000	25,000	27,500
Not known	25,000	23,500	27,000

Age Group

In this section we compare the earnings of mature students to those of young students (see figure 9 and table F). While median earnings of mature students were £1,500 (7 per cent) lower than those of young students, the effect at the lower quartile was more prominent, being £3,500 (19 per cent) less for mature students than for young students. Part of the reason for this could be due to the greater incidence of part-time work among older workers.

Figure 9: Annualised earnings for 2008/09 graduates by age group five years after graduation
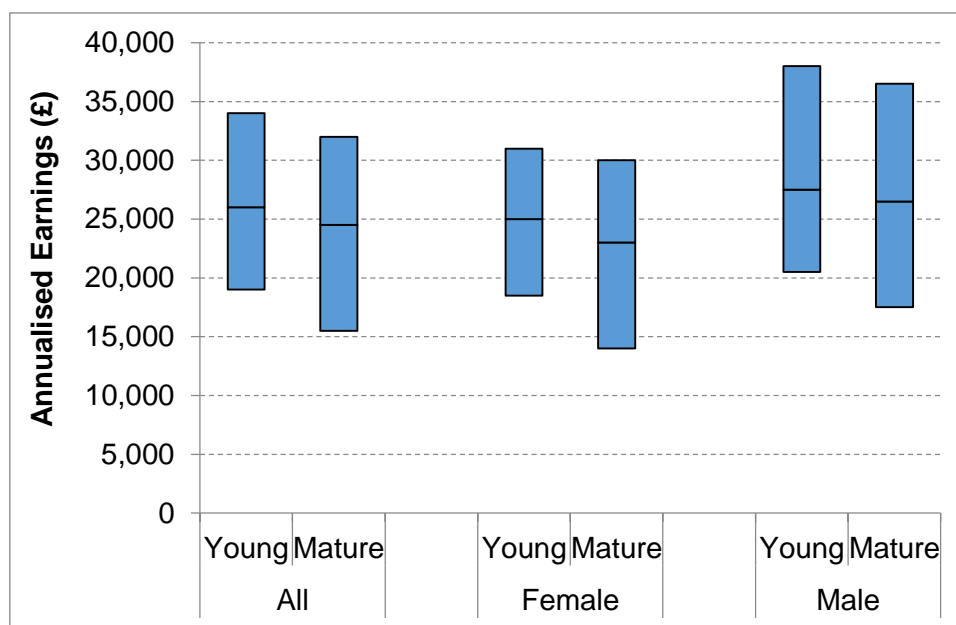
Among female students, these trends were very similar. The median earnings of female mature students were £2,000 (8 per cent) less than that of female young students, and lower quartile earnings were £4,000 (22 per cent) lower for each these students.

Female graduates are more likely to be in the mature age group compared to males (27 per cent of females with earnings records in this cohort were mature students, compared to 22 per cent of males with earnings records).

Table F: Median annualised earnings for 2008/09 graduates by age group and sex five years after graduation

Age group	All Graduates (£)	Females (£)	Males (£)
All	25,500	24,500	27,500
Young	26,000	25,000	27,500
Mature	24,500	23,000	26,500

Home region

In this subsection, we discuss earnings by home region of the graduates (see figure 10). Once more, we group Scotland, Wales and Northern Ireland as a single region. Please see the previous section for more details.

Graduates who were domiciled in the South East or London prior to entry into higher education had the joint highest median earnings (£27,500), £2,000 (7 per cent) higher than the national median in both cases. Graduates who were domiciled in the North West had the lowest median earnings at £23,500, £2,000 (7 per cent) lower than the national median. Figure 11 illustrates this geographically.

London was the region with the largest spread of earnings, with an interquartile range of £16,500. The region with the lowest spread of earnings was the North East, which had an interquartile range of £13,000.

Figure 10: Annualised earnings for 2008/09 graduates by home region five years after graduation
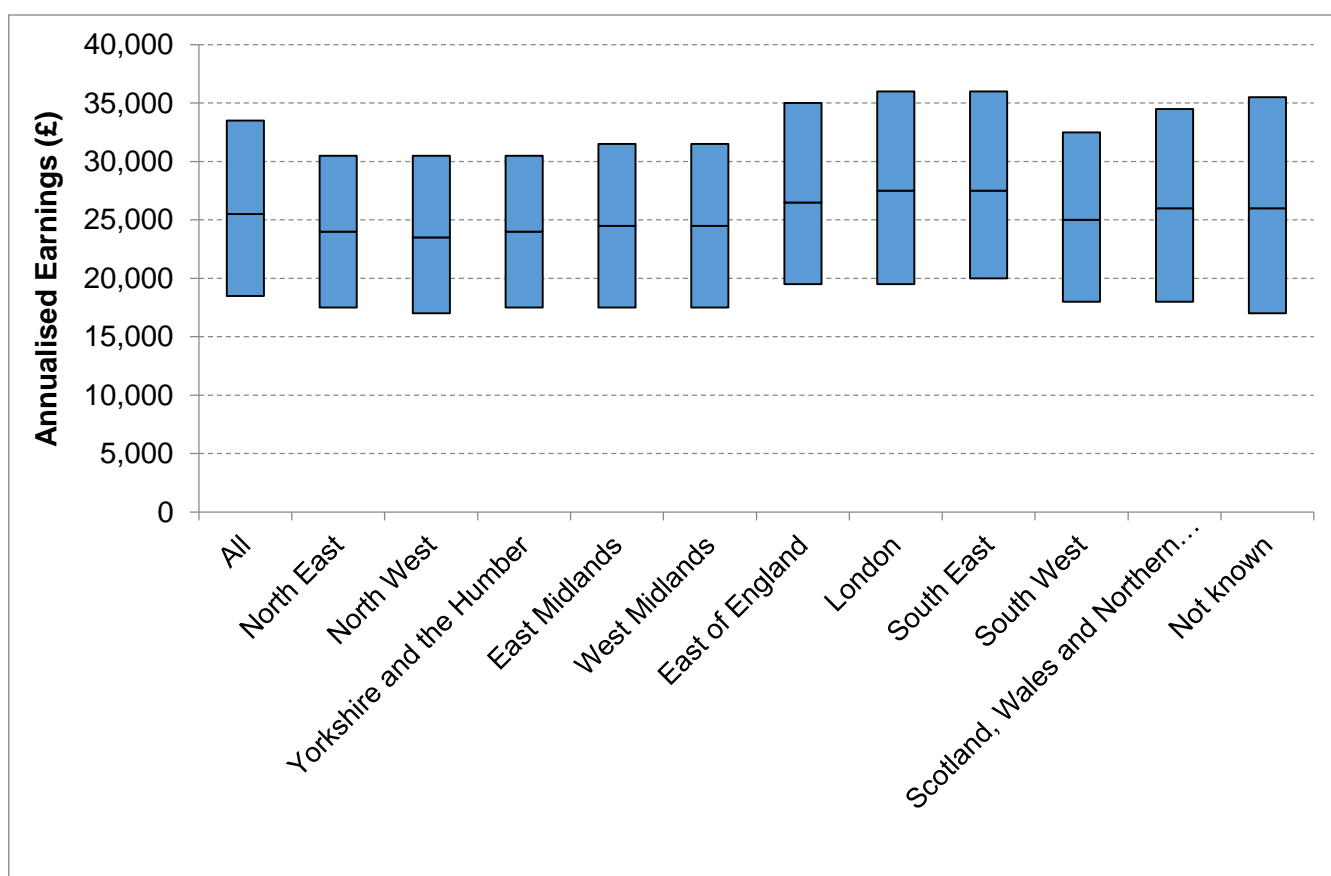

Table G shows median annualised earnings for males and females five years after graduation. Earnings are lower for females than males in all regions. The difference is smallest in the North West and Yorkshire and the Humber, at £2,000, and largest in the South West at £4,000.

Table G: Median annualised earnings for 2008/09 graduates by home region and sex five years after graduation

| Region	All Graduates (£)	Females (£)	Males (£)
All	25,500	24,500	27,500
North East	24,000	23,000	26,000
North West	23,500	23,000	25,000
Yorkshire and the Humber	24,000	23,000	25,000
East Midlands	24,500	23,500	26,500
West Midlands	24,500	23,500	26,500
East of England	26,500	25,500	29,000
London	27,500	26,500	29,000
South East	27,500	26,000	29,500
South West	25,000	23,500	27,500
Scotland, Wales and Northern Ireland	26,000	24,500	27,500
Not known	26,000	24,500	28,000

Figure 11: Map showing median annualised earnings (£) for 2008/09 graduates by home region five years after graduation
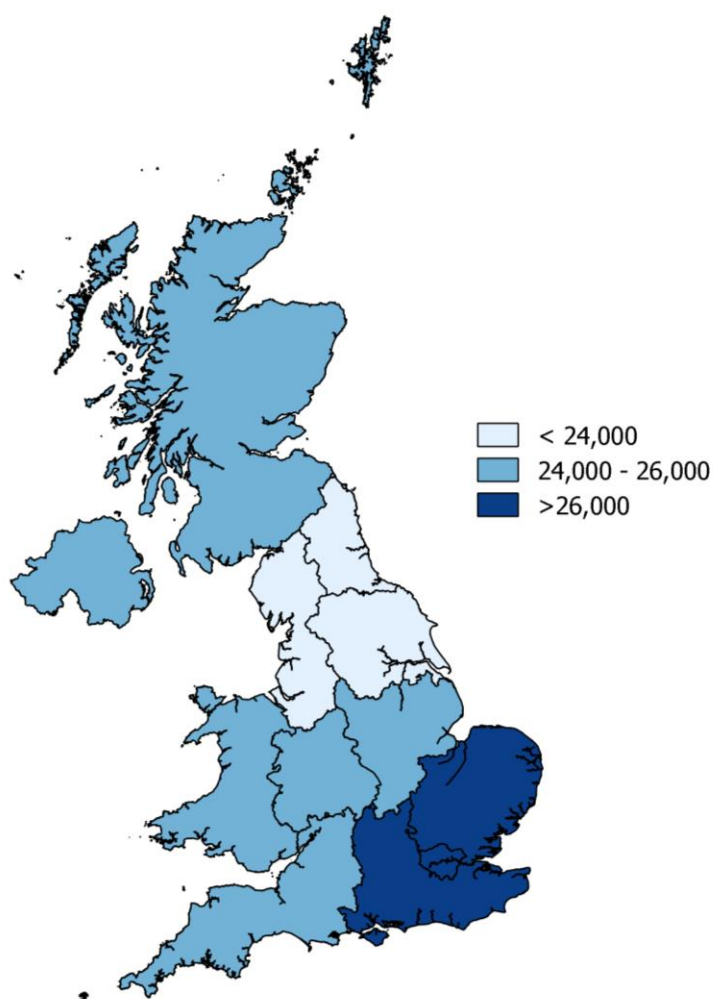
Prior Attainment

Figure 12 and table H show annualised earnings five years after graduation split by graduates' attainment prior to entering university. Prior attainment bandings have been defined identically to those in section 2.1. Please see section 9: prior attainment for further detail on the methodology underlying our prior attainment bandings.

Figure 12: Annualised earnings for 2008/09 graduates by prior attainment five years after graduation
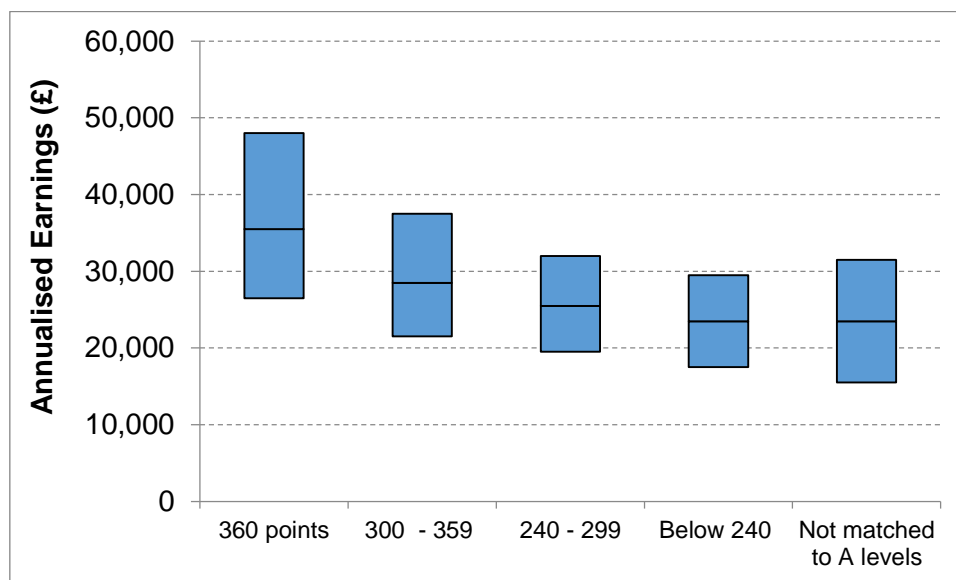
Median annualised earnings of graduates in our highest attainment grouping (360 points) were £35,500 five years after graduation, £7,500 (26 per cent) higher than the median earnings of graduates in the next prior attainment grouping (300 – 359 points). Median earnings in the 240 – 299 points category were £2,500 (9 per cent) lower than median earnings of the 300 – 359 category. Median earnings of the below 240 points category were £5,000 (17 per cent) below the earnings of the 300 – 359 category.

Figure 12 also shows that the spread of earnings was much higher for the 360 points category than any of the other attainment groups. There was also a very noticeable skew to the data, ensuring the upper quartile was £10,500 (28 per cent) higher than that for the 300 – 359 points category.

Table H: Median annualised earnings for 2008/09 graduates by prior attainment and sex five years after graduation

Prior Attainment	All (£)	Female (£)	Male (£)
All	25,500	24,500	27,500
360 points	35,500	32,500	40,000
300 - 359	28,500	27,000	31,000
240 - 299	25,500	24,500	27,500
Below 240	23,500	22,500	25,000
Not matched to A levels	23,500	22,500	25,500

2.3 Employment outcomes by subject studied

This section explores the employment and further study outcomes of 2008/09 graduates one, three and five years after graduation, split by subject studied and prior attainment. All figures can be found in tables 1a to 1d in the accompanying Excel subject speadsheet. Outcomes at the beginning of this section do not include self-assessment data, and so will not fully reflect activity of individuals who are self-employed.

As discussed in section 2, for this publication we have gained access to self-assessment data for the 2014/15 tax year. Later in this section we explore the effect that incorporating self-assessment data has on sustained employment outcomes at subject level. As data is only available for a single tax year, we cannot incorporate it into the five year time series for 2008/09 graduates as we cannot apply this methodology consistently across years for a single graduate cohort. Instead, we present figures one, three and five years after graduation for the 2008/09, 2010/11 and 2012/13 cohorts respectively and compare sustained employment outcomes when self-assessment information is included.

Outcomes of 2008/09 graduates without self-assessment data

One year after graduation

Figure 13 and table I show the main employment outcomes by subject studied in the first full tax year after graduation. There is substantial variation in the proportion of graduates in sustained employment only across subjects, ranging from 44.0 per cent for those studying a 'Combined' degree to 70.9 per cent for those studying 'Veterinary science'. The variation in the overall positive employment or further study outcome ('further study, sustained employment or both') is much smaller ranging from 74.8 per cent of those who studied 'Creative arts & design' to 87.0 per cent for those who studied 'Education'.

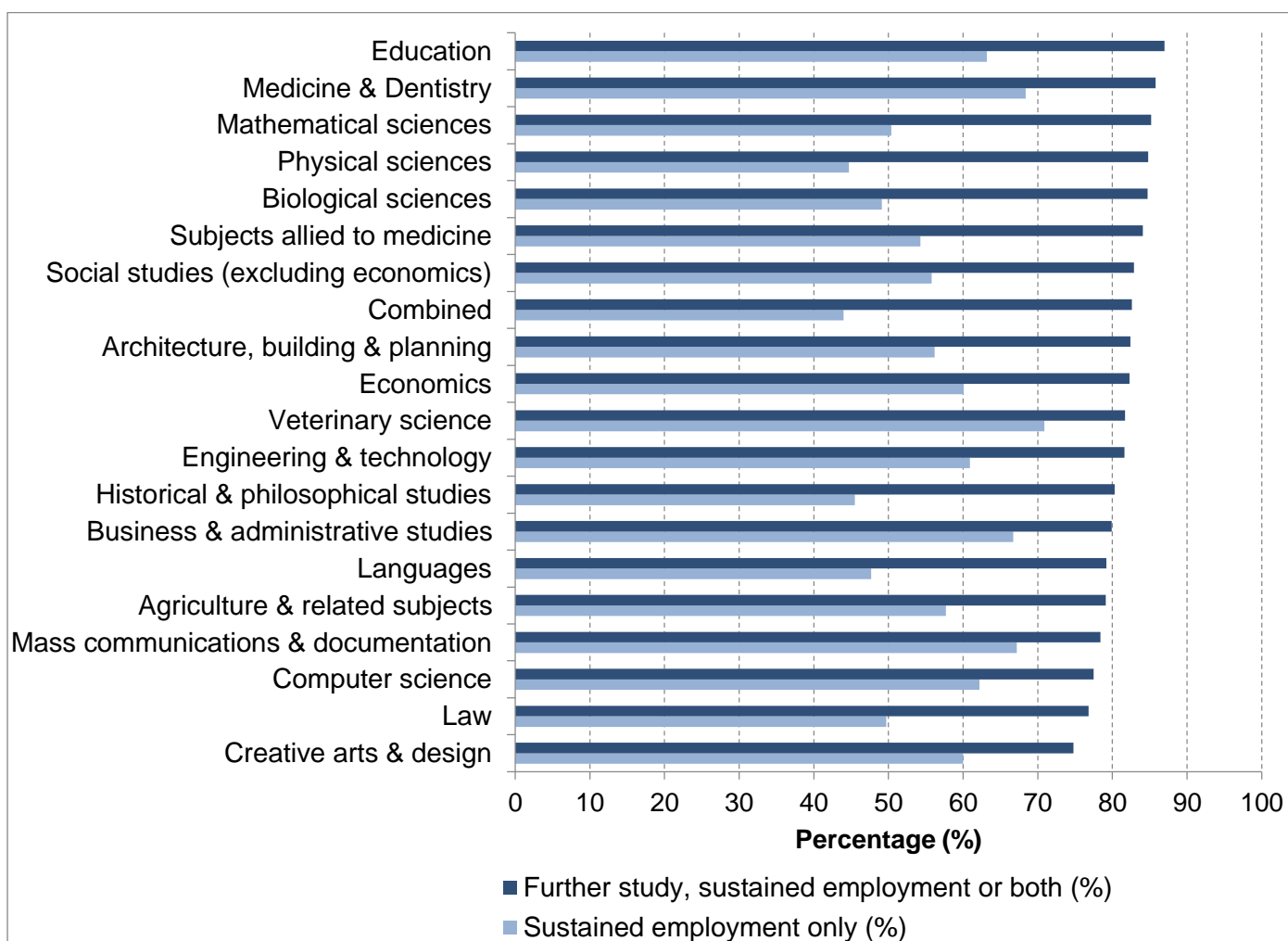**Figure 13: Activity of 2008/09 graduates one year after graduation**

Table I: Activity of 2008/09 graduates one year after graduation, ordered by the proportion of graduates in further study, sustained employment or both

Subject	Number of matched graduates	Sustained employment only (%)	Sustained employment with or without further study (%)	Further study, sustained employment or both (%)
Creative arts & design	26,750	60.0	69.2	74.8
Law	10,200	49.7	66.6	76.8
Computer science	9,460	62.2	71.2	77.5
Mass communications & documentation	7,315	67.2	74.0	78.4
Agriculture & related subjects	1,575	57.7	71.3	79.1
Languages	15,685	47.7	67.0	79.2
Business & administrative studies	25,640	66.7	75.0	79.9
Historical & philosophical studies	12,765	45.5	66.4	80.3
Engineering & technology	11,190	60.9	73.3	81.6
Veterinary science	545	70.9	78.6	81.7
Economics	3,705	60.1	72.8	82.3
Architecture, building & planning	5,860	56.2	70.4	82.4
Combined	4,200	44.0	70.2	82.6
Social studies (excluding economics)	19,945	55.8	74.0	82.9
Subjects allied to medicine	20,950	54.3	74.2	84.1
Biological sciences	22,725	49.1	71.5	84.7
Physical sciences	9,965	44.7	69.0	84.8
Mathematical sciences	4,175	50.4	72.2	85.2
Medicine & Dentistry	6,495	68.4	77.4	85.8
Education	11,620	63.2	81.6	87.0

Table I also implies that those studying 'Physical sciences' and 'Combined' degrees were most likely to go onto further study and those studying 'Mass communications and documentation' and 'Veterinary science' were least likely to do so.

Five years after graduation

Figure 14 and Table J show employment outcomes of 2008/09 graduates five years after graduation.

Figure 14: Activity of 2008/09 graduates five years after graduation
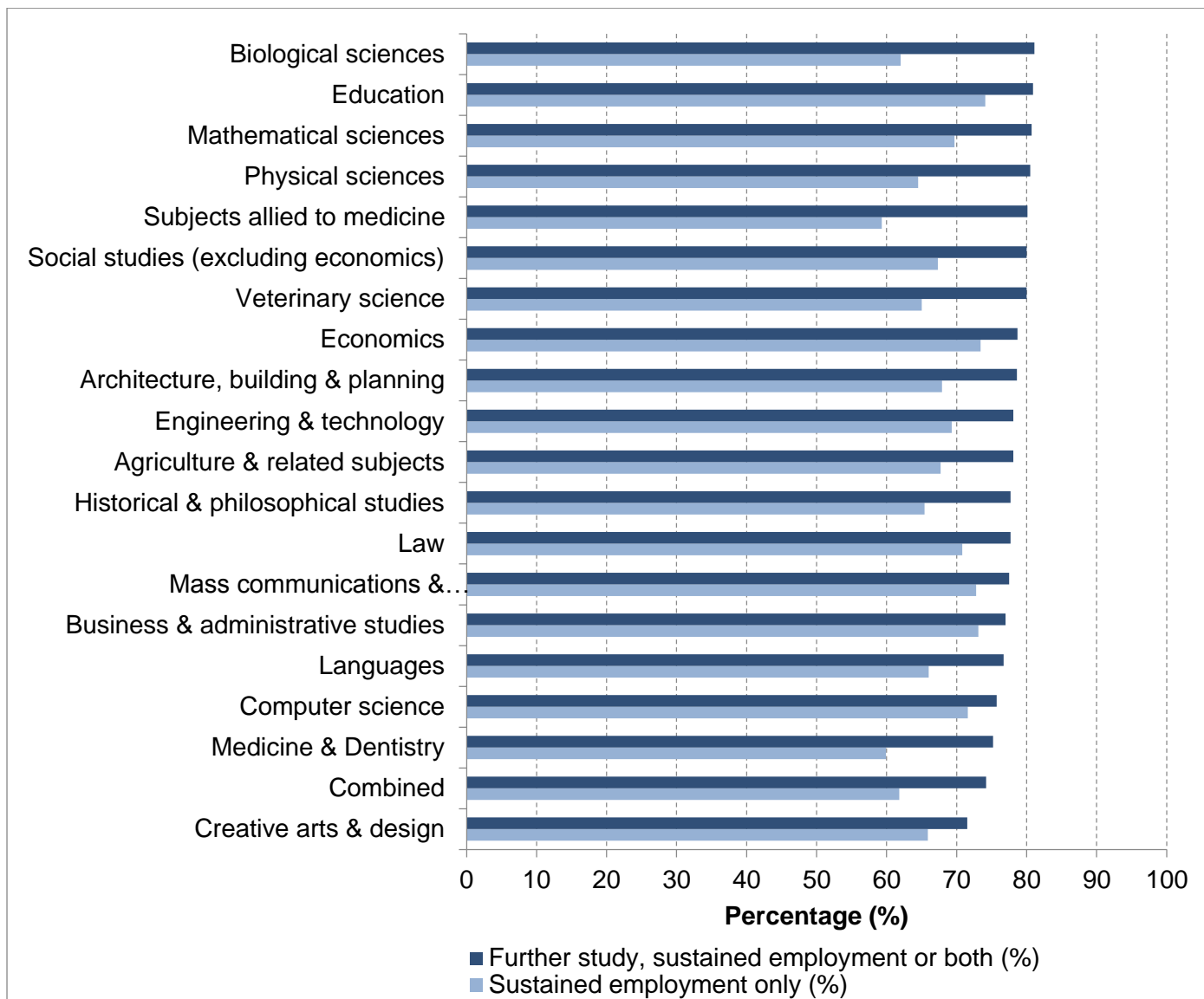
There is a general trend across subjects for the proportion of students in sustained employment only to increase between one and five years after graduation. This increase is most pronounced for those subjects with a low initial proportion of graduates in employment but a high proportion of graduates in further study: these graduates then begin to move into sustained employment over time. As a consequence, there is far less variation across subjects in the sustained employment only outcome five years after graduation than there was one year after graduation.

Table J: Activity of 2008/09 graduates five years after graduation, ordered by the proportion of graduates in further study, sustained employment or both

Subject	Number of matched graduates	Sustained employment only (%)	Sustained employment with or without further study (%)	Further study, sustained employment or both (%)
Creative arts & design	26,685	65.9	69.8	71.5
Combined	4,145	61.8	70.8	74.2
Medicine & Dentistry	6,485	59.9	71.2	75.2
Computer science	9,420	71.6	74.4	75.7
Languages	15,590	66.0	73.8	76.7
Business & administrative studies	25,515	73.1	76.1	77.0
Mass communications & documentation	7,305	72.8	76.0	77.5
Law	10,140	70.8	75.6	77.7
Historical & philosophical studies	12,695	65.4	73.9	77.7
Agriculture & related subjects	1,565	67.7	75.8	78.1
Engineering & technology	11,135	69.3	75.7	78.1
Architecture, building & planning	5,840	67.9	76.2	78.6
Economics	3,695	73.4	76.9	78.7
Veterinary science	550	65.0	77.0	80.0
Social studies (excluding economics)	19,860	67.3	77.1	80.0
Subjects allied to medicine	20,795	59.3	75.6	80.1
Physical sciences	9,925	64.5	75.6	80.5
Mathematical sciences	4,150	69.7	77.5	80.7
Education	11,560	74.1	79.4	80.9
Biological sciences	22,595	62.0	76.0	81.1

Subject outcomes including self-assessment data

Table K shows the effect of incorporating self-assessment information for the 2014/15 tax year into outcomes by subject studied. For this analysis, we focus on activity in the 2014/15 tax year and explore outcomes one, three, five and ten years after graduation for the 2012/13, 2010/11, 2008/09 and 2003/04 academic years respectively.

For the purposes of this section, individuals are classed as being in sustained employment in the 2014/15 tax year if they meet the PAYE definition of sustained employment used throughout this publication **or** have returned a self-assessment form stating that they have received income from self-employment. These individuals may or may not have an additional PAYE record. Individuals who have received income through self-assessed means other than self-employment, such as through rental of property, and do not have a PAYE record, are not classed as being in employment (either sustained or unsustained).

There is variation in the effect that inclusion of self-assessment data has on subject-level graduate outcomes (see table K and figure 15). The proportion of graduates with a positive employment outcome defined by self-assessment data is lowest for those who studied 'Economics', 'Mathematical sciences', 'Physical sciences', 'Social studies', 'Law', and 'Education' at around one per cent one year after graduation. Conversely, over five per cent of graduates of 'Medicine and dentistry' and 'Creative arts and design' have a positive outcome that is defined solely by self-assessment data one year after graduation. This rises to almost ten per cent ten years after graduation.

Table K: Percentage point difference in the proportion of graduates in sustained employment, further study, or both by subject when self-assessment information is included

	Years after graduation			
	One	Three	Five	Ten
Medicine & Dentistry	5.2	6.6	8.1	9.8
Subjects allied to medicine	2.3	2.9	3.1	3.0
Biological sciences	1.6	1.8	2.4	2.8
Veterinary science	1.9	2.6	3.1	3.7
Agriculture & related subjects	3.5	3.4	4.4	5.9
Physical sciences	1.2	1.2	1.6	2.2
Mathematical sciences	0.8	1.2	1.2	1.7
Computer science	2.2	2.5	2.8	2.9
Engineering & technology	1.9	2.6	2.6	2.6
Architecture, building & planning	2.6	2.9	3.8	3.6
Social studies (excluding economics)	1.1	1.3	1.7	2.3
Economics	0.7	1.5	1.5	1.8
Law	1.1	2.0	2.9	4.0
Business & administrative studies	1.4	1.9	2.1	2.4
Mass communications & documentation	3.1	3.5	3.9	5.1
Languages	1.8	2.7	3.1	3.9
Historical & philosophical studies	1.6	2.0	2.8	3.7
Creative arts & design	6.5	8.1	9.2	9.6
Education	1.2	1.6	1.6	2.1
Combined	2.7	3.1	2.9	2.5

Figures reflect activity of graduates one year after graduation (2012/13 cohort), three years after graduation (2010/11 cohort), five years after graduation (2008/09 cohort) and ten years after graduation (2003/04 cohort)

Looking at the 2008/09 graduating cohort five years after their graduation in Table 1d in the accompanying Excel subject spreadsheet, it is apparent that some of the subjects with a lower proportion of graduates in further study, sustained employment or both when only PAYE data is considered have much higher proportions once self-assessment data is taken into account. For example, 75.2 per cent of 'Medicine and dentistry' graduates were in further study, sustained employment or both when self-assessment data was not included: once self-assessment returns were taken into account, this rose to 83.3 per cent. Similarly, 71.5 per cent of 'Creative arts and design' graduates were in this category when only PAYE data was considered, but this rose to 80.7 per cent when self-assessment returns were taken into account.

Figure 15: Proportion of 2008/09 graduates in sustained employment, further study or both five years after graduation: comparison with and without self-assessment data
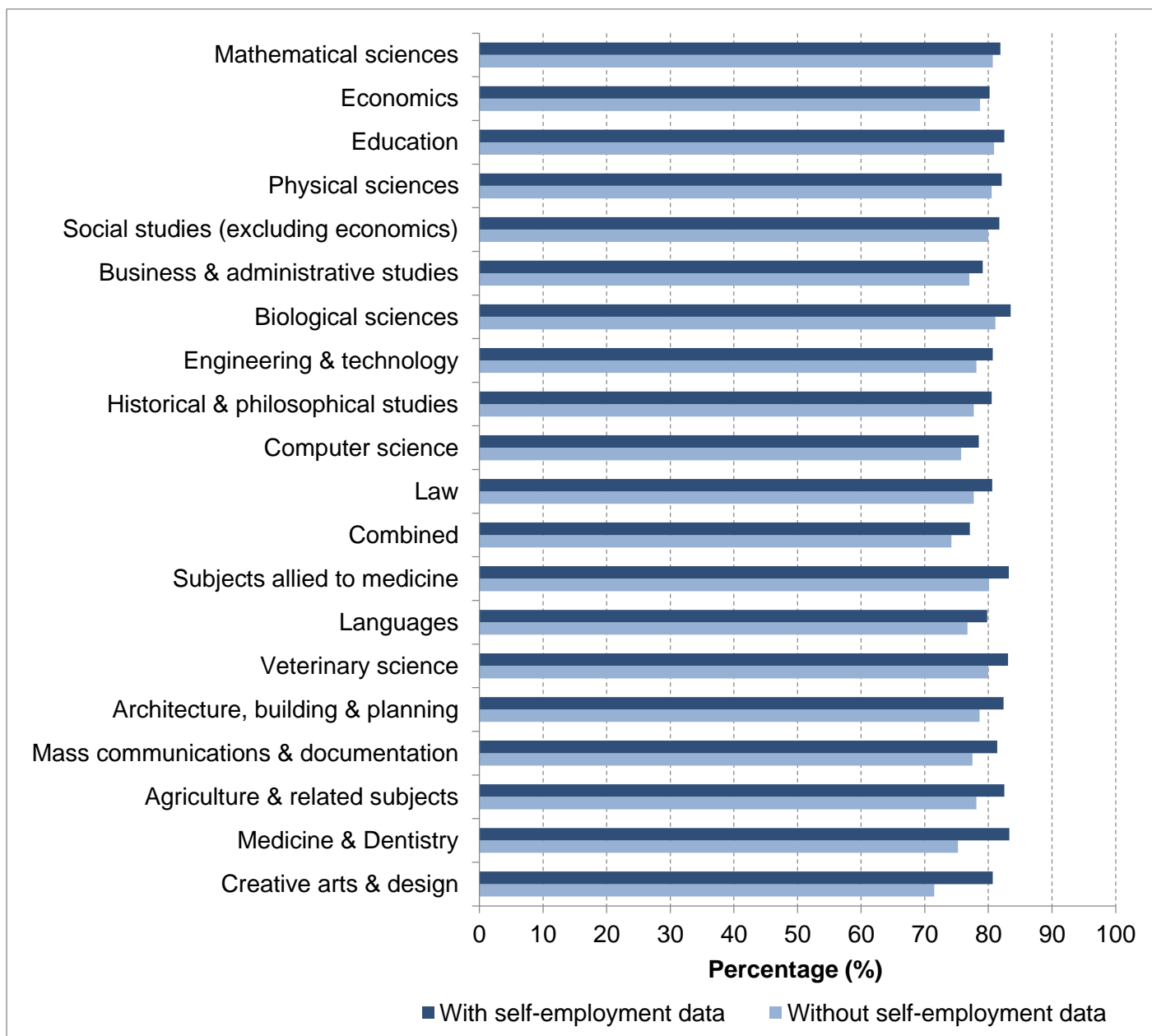

These data show that inclusion of self-assessment data can have a substantial effect on the proportion of graduates with a positive employment outcome in LEO. This is particularly apparent for 'Creative arts' subjects, which have a sustained employment or further study outcome in line with the sector-level average when self-assessment data is taken into account but far below the average when it is not.

Outcomes of 2008/09 graduates by subject and prior attainment

This section breaks down employment and further study outcomes by subject and prior attainment. The prior attainment bandings are the same as those used in the outcomes and earnings by graduate characteristics sections above. More information on the methodology that underlies our prior attainment calculations can be found in section 9: prior attainment.

Tables 1a and 1b in the Excel subject speadsheet split employment figures for each subject by graduates' attainment on entering university. The difference between prior attainment bands in the proportion of graduates in further study, sustained employment or both varies by subject. Figure 16 compares the employment outcomes of graduates in the lowest prior attainment band (those with A level grades equivalent to three Cs and below) with those of the highest prior attainment band (those with A level grades equivalent to three As and above) across subjects.

Figure 16: Activity of 2008/09 graduates in the highest and lowest prior attainment bands five years after graduation
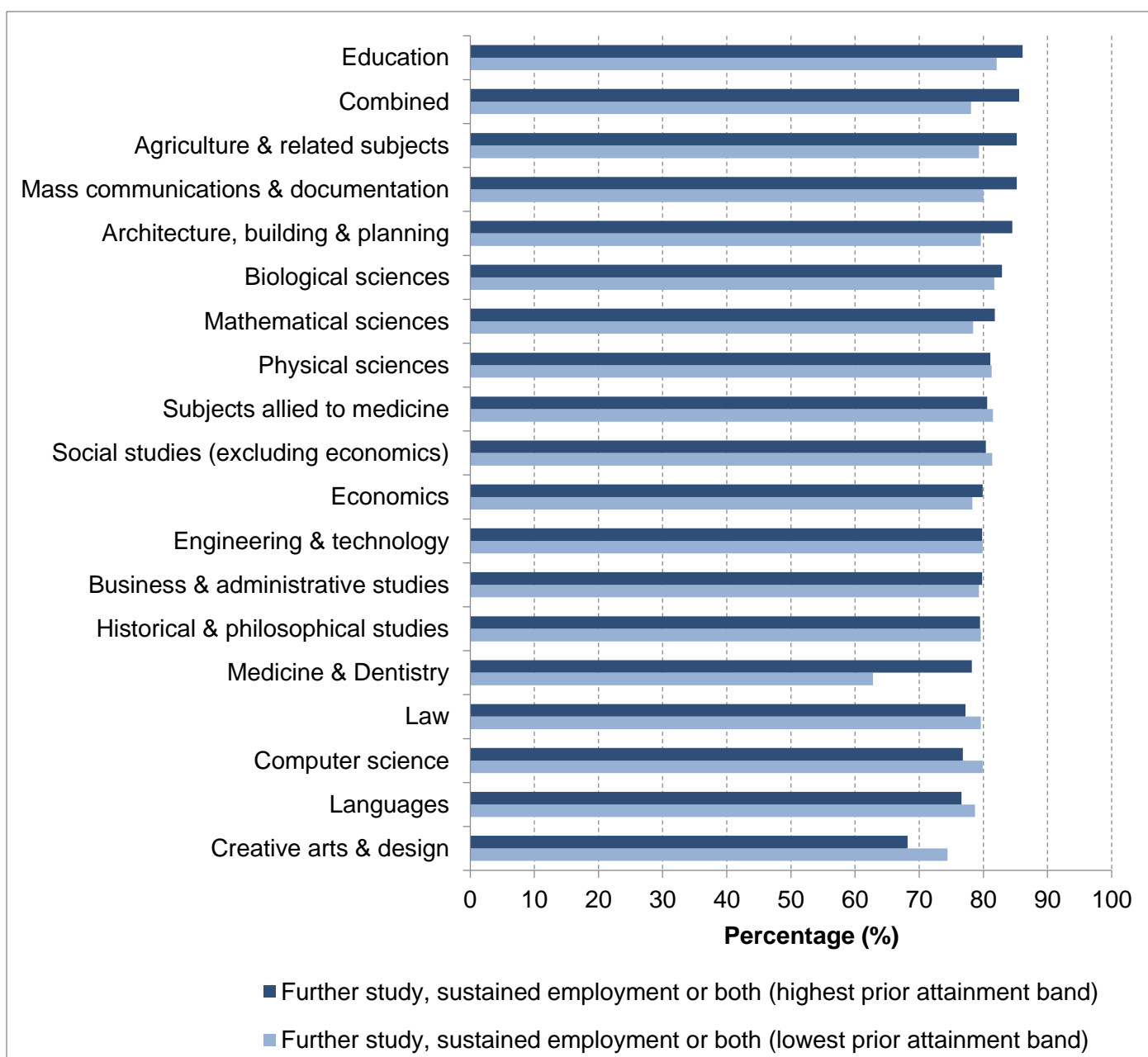
2.4 Earnings by subject studied

In this section we present annualised earnings split by subject studied, sex and prior attainment. There are a number of other factors and graduate characteristics that may also influence earnings, as illustrated in section 2.2, and in order to understand the impact of subject choice on earnings more detailed analysis will need to be carried out looking at all of these factors in combination.

All earnings are for those graduates who meet the definition of being in sustained employment only (section 8: methodology) in the relevant tax year and who could be matched to a PAYE earnings record. We do not currently have access to information about earnings from self-assessment returns and as such **earnings from self-employment are not included in this analysis**. All earnings figures are nominal. Unless otherwise stated, all earnings figures in this section refer to the 2008/09 graduating cohort.

Subject and sex

Figures 17 and 18 show earnings by sex and subject studied one year after graduation, and figures 19 and 20 show this five years after graduation. Differences in median earnings after five years are relatively small between many subjects (see table L).

Figure 17: Annualised earnings of <u>female</u> 2008/09 graduates one year after graduation by subject
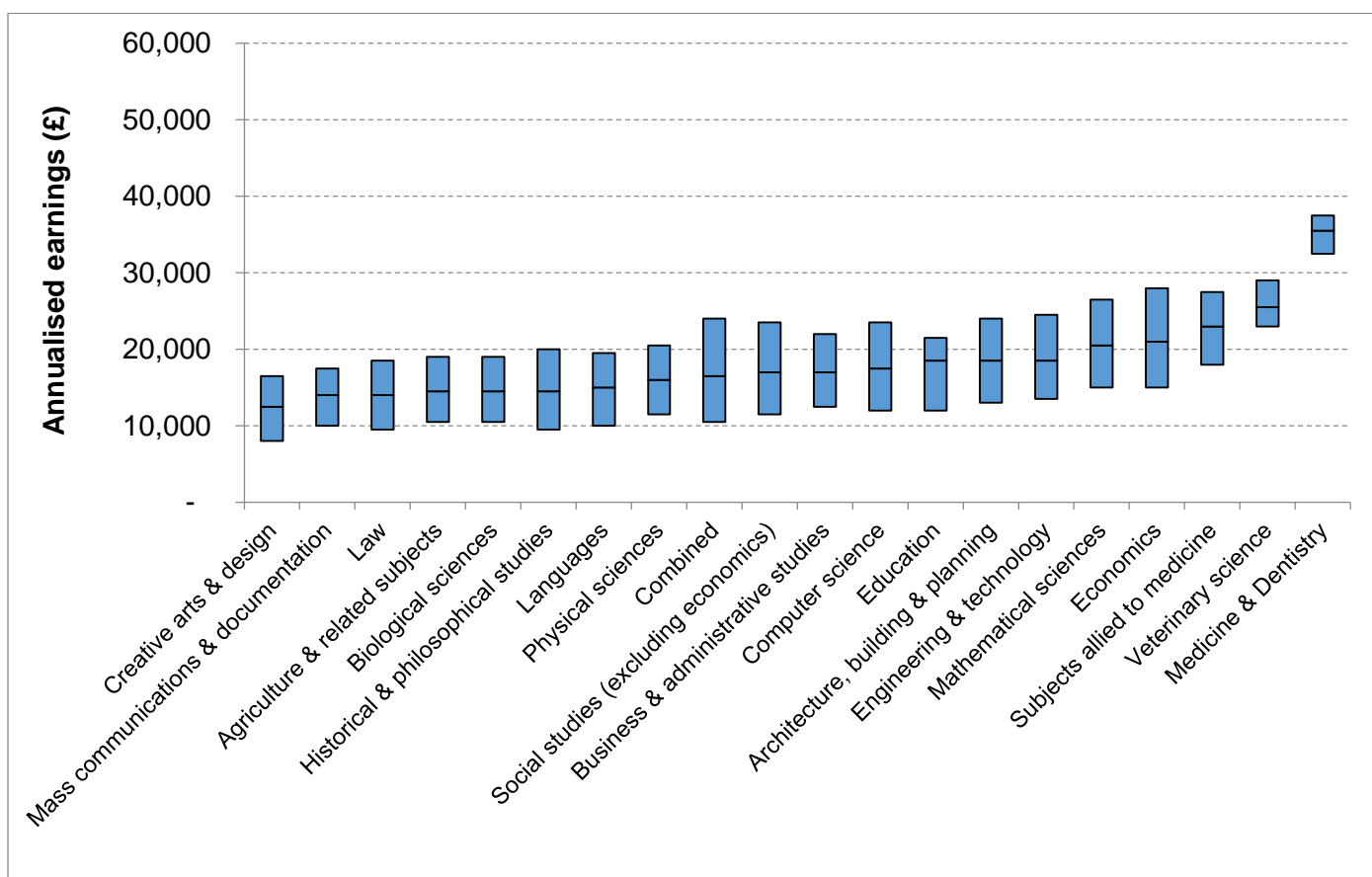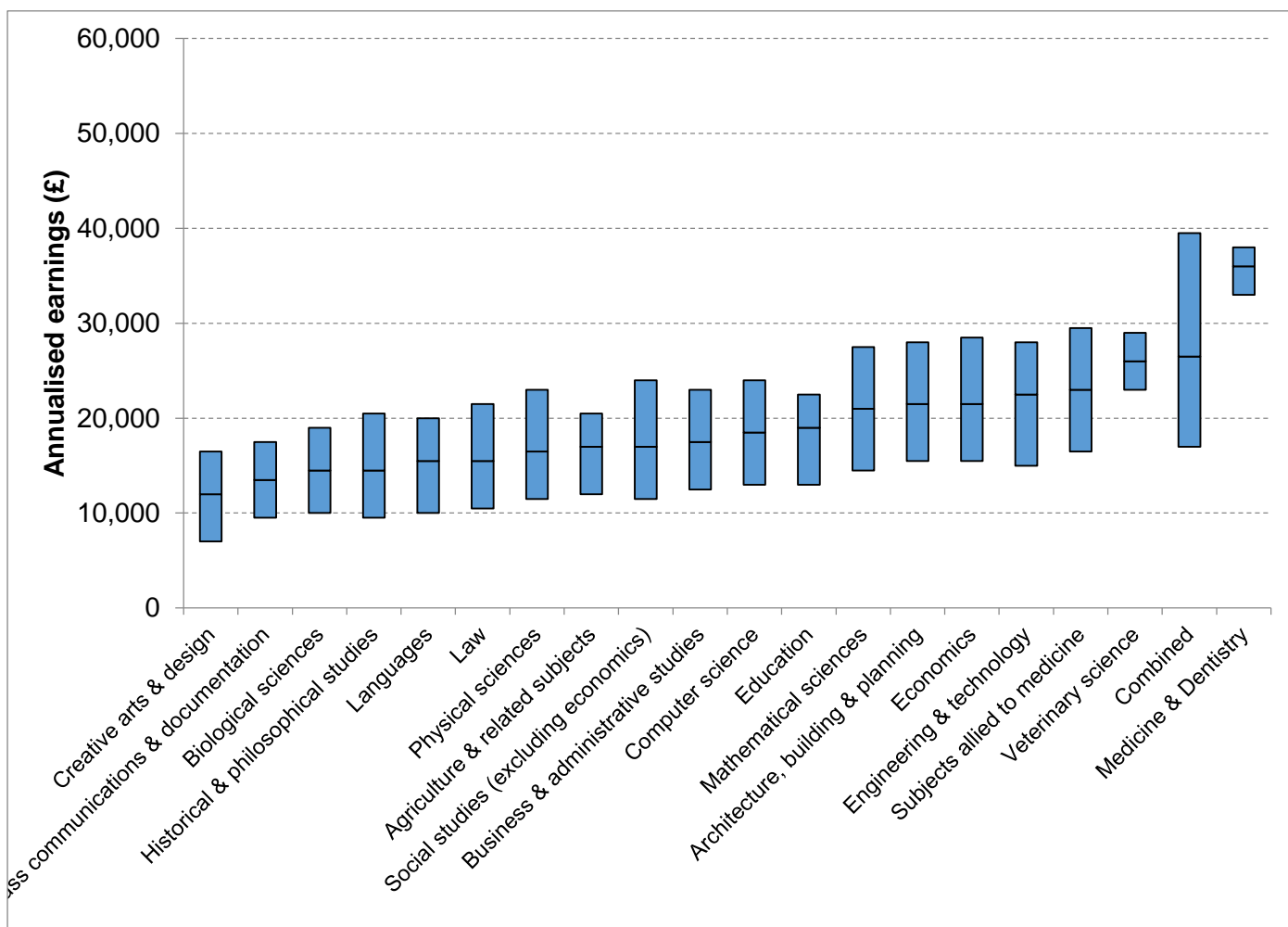
Figure 18: Annualised earnings of <u>male</u> 2008/09 graduates one year after graduation by subject

Figures 19 and 20 present earnings for the 2008/09 cohort five years after graduating for females and males respectively. Subjects are ordered from those with the lowest median earnings on the left to those with the highest median earnings on the right. The blue box represents the inter-quartile range – the earnings of the middle 50 per cent of graduates in each subject will fall in the box.

Those who studied 'Medicine and dentistry', 'Economics' or 'Veterinary science' had the highest median earnings after five years for both males and females. Those who studied 'Creative arts and design', 'Agriculture' or 'Combined' courses had the lowest median earnings for females. **'**Creative arts and design', 'Mass communications and documentation' and 'Biological sciences' had the lowest median earnings for males. Median earnings for females ranged from £45,500 ('Medicine and dentistry') to £20,000 ('Creative arts and design'). Median earnings for males ranged from £48,000 ('Medicine and dentistry') to £20,500 ('Creative arts and design').

Figures 19 and 20 also show that the spread of earnings *within* subjects is larger for some subjects than for others. In particular, the earnings distributions for both male and female economics graduates have larger interquartile ranges than other high earning subjects. For example, while the median earnings of male economics graduates were £9,500 lower than those of medicine and dentistry graduates after five years, their earnings at the upper quartile were £500 higher.

Table L: Median annualised earnings of 2008/09 cohort by subject studied and sex five years after graduation

Subject	Median earnings of 2008/09 cohort (£)		
	Female	Male	All
Medicine & Dentistry	45,500	48,000	46,500
Subjects allied to medicine	27,000	30,000	27,500
Biological sciences	23,000	24,500	23,500
Veterinary science	36,000	38,500	36,500
Agriculture & related subjects	21,000	24,500	22,000
Physical sciences	25,500	28,000	27,000
Mathematical sciences	30,500	34,500	33,000
Computer science	23,500	28,000	27,500
Engineering & technology	28,500	32,000	31,500
Architecture, building & planning	26,500	31,000	29,500
Social studies (excluding economics)	24,000	26,500	24,500
Economics	35,000	38,500	37,500
Law	24,000	27,000	25,000
Business & administrative studies	25,000	28,000	26,500
Mass communications & documentation	22,500	22,500	22,500
Languages	25,000	25,500	25,000
Historical & philosophical studies	24,500	25,500	25,000
Creative arts & design	20,000	20,500	20,000
Education	24,000	27,000	24,500
Combined	21,000	30,000	24,500

Figure 19: Annualised earnings of <u>female</u> 2008/09 graduates five years after graduation
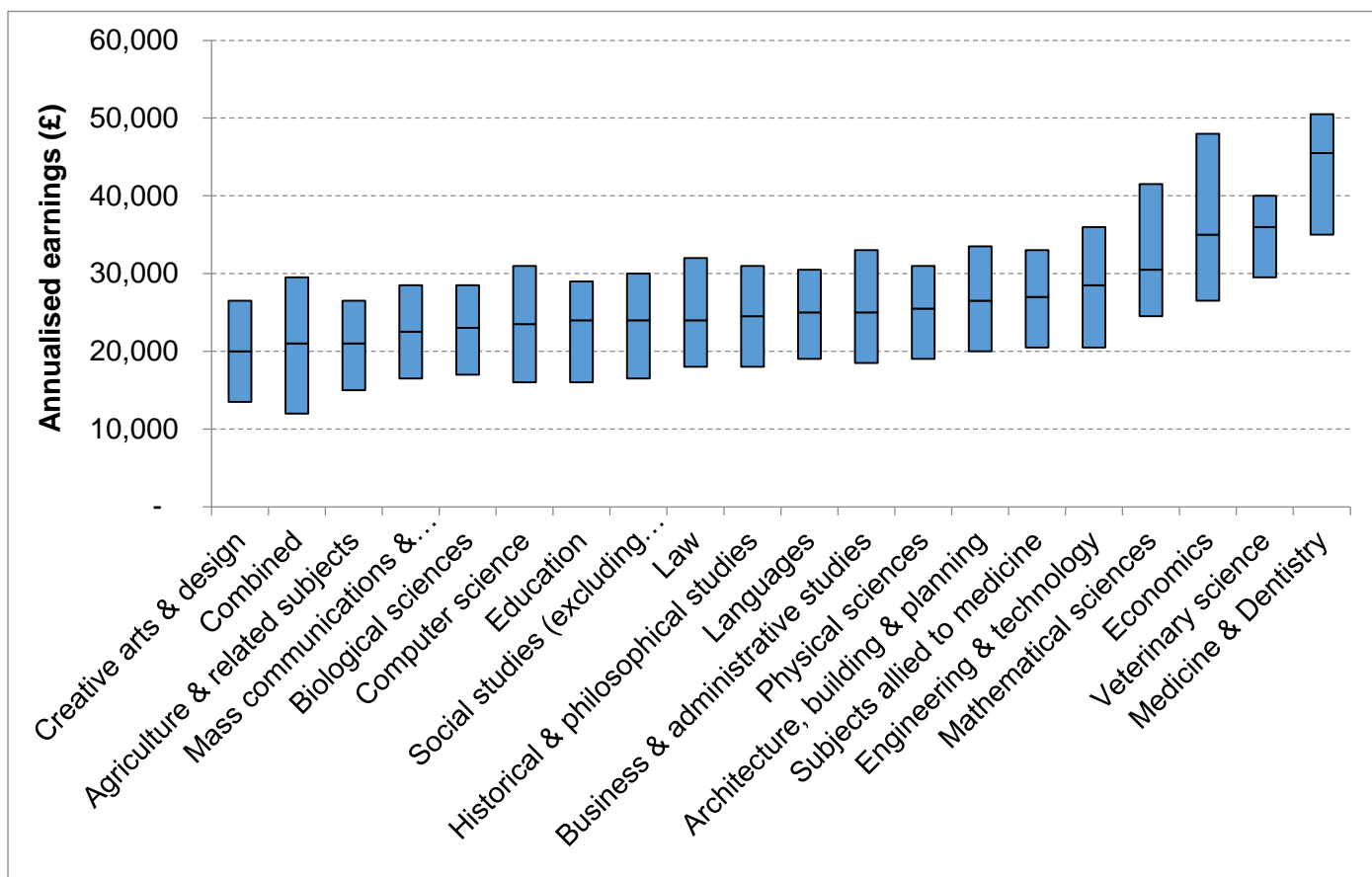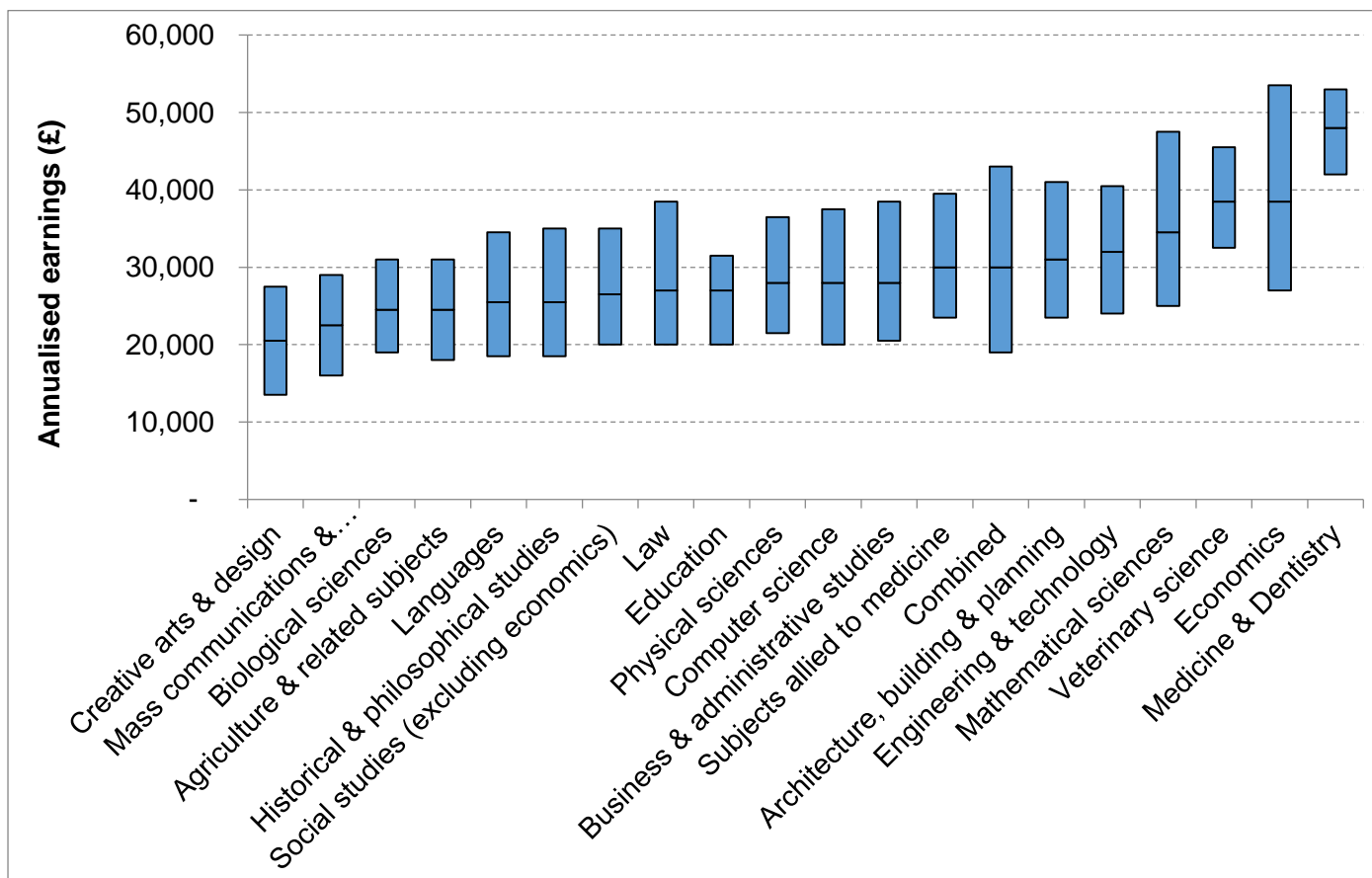

Figure 20: Annualised earnings of <u>male</u> 2008/09 graduates five years after graduation

Earnings growth over time

Comparing figures 17 and 18 (one year after graduation) to figures 19 and 20 (five years after graduation) shows that the ordering of subjects by median earnings changes between the two time points. Graduates of different subjects experienced different rates of earnings growth over this period.

For females, the highest percentage increase in median earnings was for 'Law' graduates while the lowest percentage increase was for 'Subjects allied to medicine'. One year after graduation, the median earnings for a female law graduate were £14,000. Five years after graduation, this had risen to £24,000 (a 70 per cent increase). By contrast, the median earnings for females who had studied 'Subjects allied to medicine' increased from £23,000 to £27,000 over this period, a percentage increase of 17 per cent.

For males, the lowest percentage growth in median earnings was for 'Combined' degree graduates while the highest was for those who had studied Economics. One year after graduation, the median wage for a male Economics graduate was £21,500. Five years after graduation, this had risen to £38,500 (a 78 per cent increase). The median earnings of those who had studied 'Combined' degrees increased from £26,500 to £30,000 over this period, a 13 per cent increase.

The smaller width of the bars in the charts indicate that the spread of earnings within subjects was lower after one year as compared to the spread of earnings for the same graduates four years later.

Subject and prior attainment

Tables 1a and 1b in the Excel subject spreadsheets break down the earnings figures for each subject by graduates' attainment at A level prior to entering higher education. Please see section 9: prior attainment for more details on the methodology underlying our prior attainment calculations. Figure 21 shows the earnings for all 2008/09 graduates with a total point score below 240 points (equivalent to three Cs and below) five years after graduating and figure 22 shows earnings for all graduates with a total of 360 points (equivalent to three As) in the same tax year. The ordering of subjects on the horizontal axis in both charts is based on the median earnings of **all** graduates for that subject (regardless of prior attainment) with the lowest earning subjects on the left and the highest earning on the right.

Where the median earnings shown do not appear to go from lowest to highest in figures 21 and 22, it indicates that the subject ranking is different for that prior attainment band to the overall ordering across all graduates. As an example, 'Education' appears to the left of 'Combined', 'Law', 'Languages' and 'Historical and philosophical studies' in figure 21 despite having higher median earnings in that chart. This is because 'Education' graduates had lower median earnings than these subjects when looking at graduates across all prior attainment groups, but higher median earnings when considering only those with below 240 points.

There is a smaller range in the median earnings between subjects for those in the lowest prior attainment category. When looking at all graduates, regardless of prior attainment, the median earnings by subject range from £20,000 to £46,500. When looking at just those with less than 240 points at A-level, the median earnings by subject range from £20,500 to £29,500.

Figure 21: Annualised earnings of 2008/09 graduates with a prior attainment score of below 240 points five years after graduation[5]
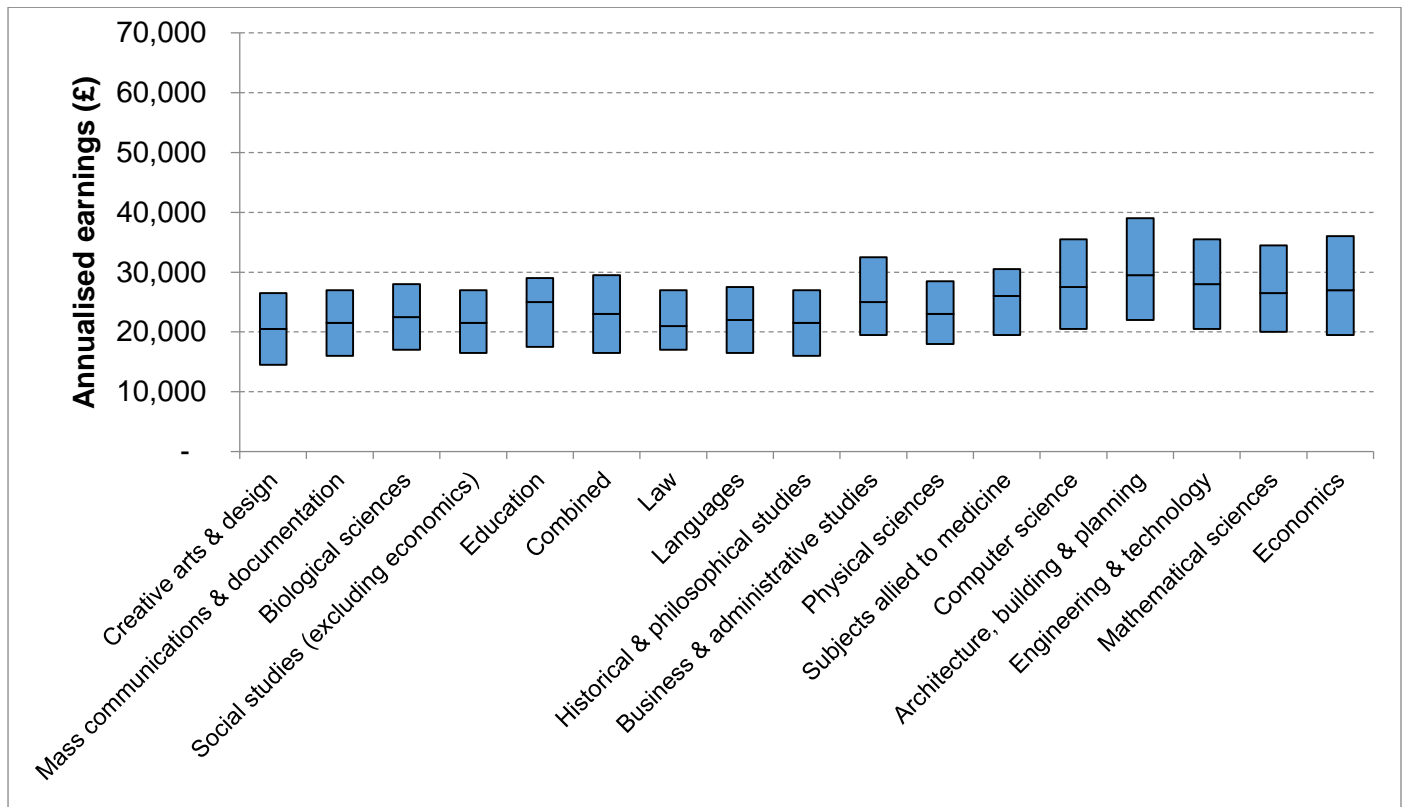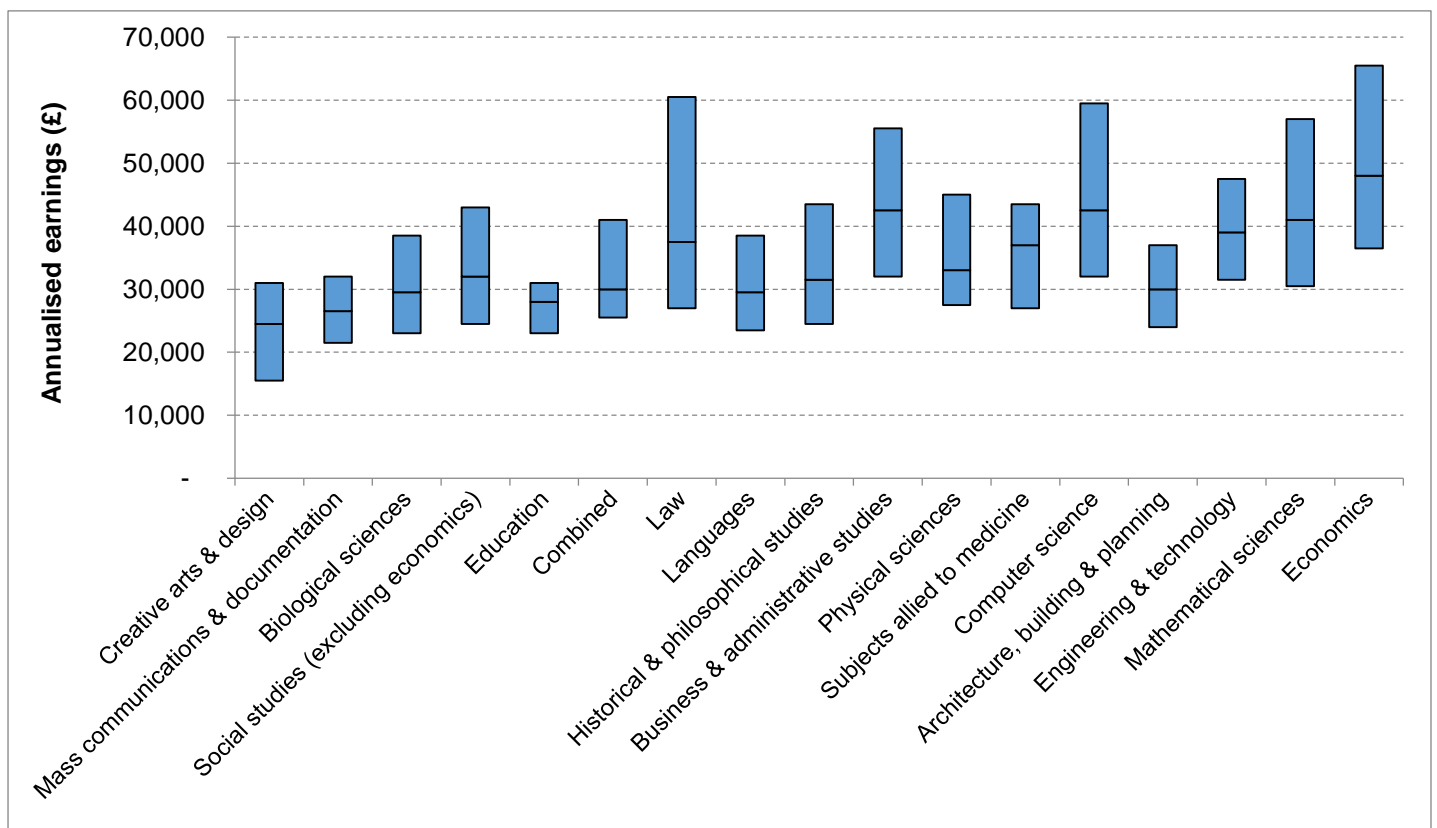

Figure 22: Annualised earnings of 2008/09 graduates with a prior attainment score of 360 points five years after graduation

---

[5] 'Medicine and dentistry', 'Veterinary science' and 'Agriculture and related subjects' have been excluded from figures 21 and 22 as the number of graduates for these subjects were too low for inclusion in one or both of the charts.

The variation in earnings across different subjects was larger for graduates with higher prior attainment. This was particularly apparent for earnings at the upper quartile, where differences between subjects were notably larger for those in the 360 points prior attainment band. The spread of earnings *within* subjects was also higher for those in the highest prior attainment band: the bars in Figure 22 are notably wider than in Figure 21 and represent a larger interquartile range.

For some subjects, average earnings were similar across prior attainment groups: the median earnings for 'Architecture, building and planning' graduates in the highest prior attainment band were £500 higher five years after graduating than the average earnings of those who studied the same subject in the lowest prior attainment band. By contrast, the difference between the median earnings of those in the lowest and highest prior attainment bands was particularly prominent for 'Law', 'Economics' and 'Business & administrative studies'. The median earnings figure for 'Economics' graduates in the highest prior attainment band was £21,000 higher five years after graduating than the average earnings for those in the lowest prior attainment band who studied the same subject.

2.5 Employment outcomes by institution

For the first time, this publication uses LEO data to present information on graduate employment outcomes for each higher education institution (HEI) in England. Figures can be found in tables 2a, 2b and 2c in the accompanying Excel institution tables spreadsheet.

The pattern of graduate outcomes at institution level is broadly similar to outcomes at a national level. The proportion of 2008/09 graduates whose activity could not be captured increased in the majority of institutions between one-and-three and three-and-five years after graduation. This was offset in part by a decrease in the proportion of graduates in no sustained destination. Conversely, the proportion of graduates with a record of sustained employment increased between one-and-three and three-and-five years after graduation in the majority of institutions.

Although the overall pattern of graduate outcomes over time at an institution level broadly follows the national picture, there is large variation across institutions in the proportion of graduates in each outcome group. For the 2008/09 cohort, the proportion of graduates whose activity could not be captured one year after graduation ranges from 5.2 per cent to 20.7 per cent. Likewise, the proportion of graduates with a positive employment or further study outcome ranges from 66.3 per cent to 88.9 per cent.

It is important to note that differences in institution level outcomes can be influenced by a range of factors beyond the educational benefits provided by that institution, for example: the subject mix offered; the characteristics of the student intake; and whether an institution's students are more likely to undertake activities after graduation that the data does not capture well, for example self-employment or working abroad. Outcomes may also reflect a particular set of factors in a given year, including random variation, and therefore may not be indicative of sustained performance. Comparisons between different institutions' outcomes should therefore be made with caution.

The following sections explore some of these issues in more detail, looking at the stability of institutional outcomes across different graduate cohorts and taking account of self-assessment tax returns for 2014/15 outcomes. Future releases and research will look to take this work further.

Stability of LEO outcomes across cohorts

Table M looks at how the one year, three year and five year graduate outcomes changed for each institution between the 2007/08 and 2008/09 graduate cohorts. This shows that the proportion of graduates in sustained employment, further study or both in the majority of institutions changed by no more than five percentage points from one year to the next, and that this is stable one, three and five years after graduation. However, almost ten per cent of institutions in 2008/09 fluctuated by more than five percentage points, so users may find it helpful to look at outcomes for more than one year when comparing institutions.

Table M: Percentage point (ppt) change in the proportion of graduates in sustained employment, further study or both between the 2007/08 and 2008/09 graduating cohorts. Figures show the proportion of institutions in each percentage point band.

Change in the proportion of graduates in further study, sustained employment or both	Proportion of institutions in each band (%)		
	One year after graduation	Three years after graduation	Five years after graduation
less than 2 ppt	63.4	60.3	59.5
2 to 5 ppt	22.9	24.4	22.9
More than 5 ppt	6.9	8.4	10.7
Data suppressed	*6.9*	*6.9*	*6.9*

Incorporation of self-assessment data

There is substantially more variation in the impact of self-assessment records when data is considered at an institution level rather than at a national level. For some institutions, inclusion of self-employment information has no effect on the proportion of graduates in a positive employment or study outcome. For others, self-assessment records can account for almost 40 per cent of an institution's sustained employment outcomes. Table 2c in the attached Excel institution tables shows the effect of the inclusion of self-assessment data at each institution in the 2014/15 tax year.

Figure 23 shows that there is little variation the proportion of graduates in sustained employment, further study or both between institutions once self-assessment information has been included: between 80 and 85 per cent of graduates are in this outcomes category in the majority of institutions.

Figure 23: Proportion of 2008/09 graduates in sustained employment, further study or both five years after graduation, by institution (including self-assessment data)
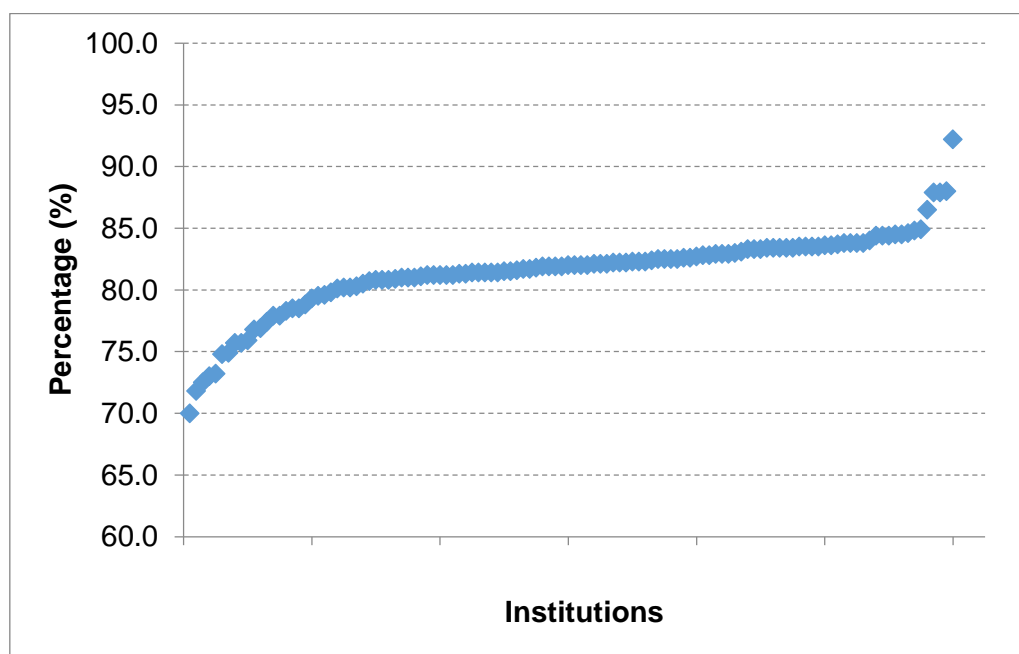
Institutions with a focus on the creative arts are particularly affected by inclusion of self-assessment data; indeed, the ten institutions with the highest proportion of sustained employment outcomes defined by self-employment records were all institutions with a focus on the creative arts. This may reflect the fact that students from these providers are more likely to pursue non-traditional employment routes. Therefore, inclusion of self-employment data is necessary to better understand graduate activity at an institution level.

2.6 Outcomes and earnings of law graduates by institution

As discussed above, this release looks at sustained employment and further study outcomes for each higher education institution. It does not look at earnings by institution because this can be strongly influenced by subject mix. We do, however, plan to publish subject by institution data in spring 2017. Ahead of this, we use this release to pilot an employment outcomes and earnings breakdown for law graduates at each institution to get user feedback in advance of the spring 2017 release. See table 3 in the accompanying Excel tables for a full breakdown of these figures.

We have chosen to pilot outcomes for law graduates as we can report outcomes for a large number of institutions. Not all institutions offer all subjects; however, we are able to present employment and/or earnings outcomes for law graduates in 76 institutions. There were eight institutions that had students recorded as studying law but had cohorts smaller than 22.5. In line with our disclosure control rules, we have suppressed information for these cohorts and therefore their outcomes have not been reported.

We have indicated which institutions are classed as 'most selective', to provide an indication of the prior attainment of each institution's intake. The methodology is the same as that used in the Department for Education's widening participation in higher education releases[6]. The 'most selective' indicator is based on the top third of HEIs when ranked by mean UCAS tariff score of the top three A level grades of entrants to each higher education institution by age 19. We have only marked institutions as 'most selective' if they have law graduates; thus, there are institutions in table 3 of the attached Excel spreadsheet that will be classed as 'most selective' according to this methodology but do not have any law graduates and so have not been flagged as such in the table.

There was a substantial range in the proportion of graduates at each institution in sustained employment, further study or both. This ranged from 59.4 to 95.8 per cent one year after graduation, 63.9 to 87.8 per cent three years after graduation, and 55.6 to 87.7 per cent five years after graduation. However, these figures do not include self-assessment data; it is possible that some of the variation in employment outcomes at each institution could be reduced if these were included. Therefore, employment outcomes must be interpreted with caution in the absence of self-assessment data.

Table N shows the range of annualised earning across institutions. Five years after graduation, the median earnings of law graduates ranged from £17,500 to £61,500 across institutions. Note that the ordering of institutions by average earnings changes at different time points after graduation, so that the institution with the lowest median earnings after one year is not the same as the one with the lowest after five years. Many of the institutions with the highest earnings were also the most selective.

Table N: Range of annualised earnings for 2008/09 law graduates across institutions at the lower quartile, median and upper quartile

Time after graduation	LQ	Median	UQ
One year	£6,500 - £16,500	£11,500 - £30,000	£14,500 - £44,500
Three years	£9,500 - £29,000	£15,500 - £41,000	£18,000 - £47,500
Five years	£9,500 - £37,500	£17,500 - £61,500	£21,500 - £78,000

Median earnings for males and females had similar ranges across institutions five years after graduation: female average earnings ranged from £16,000 to £65,500 and male average earnings ranged from £19,000 to £65,500. The institution with the highest average earnings for males was not the same as the one with the highest average earnings for females. Although male median earnings after five years are in most cases higher than female median earnings within the same institution, there are some institutions for which female average earnings are higher.

---

[6] https://www.gov.uk/government/collections/widening-participation-in-higher-education

3. Next Steps

As outlined in the higher education white paper: '*Success as a knowledge economy*'[7] published on 16 May 2016 we will be publishing further experimental statistical releases using the LEO data. The schedule of upcoming publications is shown below.

Spring 2017	We will publish breakdowns by subject within institution.
Beyond Summer 2017	We expect to have established a regular cycle of publications and to use this to help improve the information given to students when deciding on higher education institutions and subjects, for example by expanding on the Unistats website.

4. Accompanying Tables

The following tables are available in Excel format on the department's statistics website.

Subject tables (Excel .xls)
Table 1a: Activity of graduates by subject, prior attainment and sex one, three and five years after graduation
Table 1b: Activity of graduates by subject and prior attainment one, three and five years after graduation
Table 1c: Activity of graduates by subject and sex
Table 1d: Activity of graduates by subject and sex one, three and five years after graduation: comparisons with and   without self- assessment data

Institution tables (Excel .xls)
Table 2a: Activity of graduates by higher education institution (HEI) and sex one, three and five years after graduation
Table 2b: Activity of graduates by higher education institution (HEI) and sex
Table 2c: Activity of graduates by higher education institution (HEI) and sex one, three and five years after graduation: comparisons with and without self- assessment data

Subject by institution table (Excel .xls)
Table 3: Activity of Law graduates one, three and five years after graduation

Graduate characteristics tables (Excel .xls)
Table 4: Activity of graduates by ethnicity and sex one, three and five years after graduation
Table 5: Activity of graduates by age group on entry and sex one, three and five years after graduation
Table 6: Activity of graduates by region of domicile prior to study and sex one, three and five years after graduation
Table 7: Activity of graduates by prior attainment and sex one, three and five years after graduation

5. Feedback

We welcome feedback on this publication. Contact details can be found in <u>section 13: get in touch</u>

---

[7] The white paper can be accessed at the following link: https://www.gov.uk/government/publications/higher-education-success-as-a-knowledge-economy-white-paper

Technical Annex

6. Glossary

Academic year: Runs from 1 August to 31 July. For example, the 2012/13 academic year ran from 1 August 2012 to 31 July 2013.

The **Customer Information System (CIS)**: A computer system used by the Department for Work and Pensions that contains a record for all individuals that have been issued with a National Insurance (NINO) number. It contains basic identifying information such as name, address, date of birth and NINO.

First degree qualification: This covers qualifications commonly known as bachelor's degrees and also includes postgraduate bachelor's degrees at H level. Not all undergraduate courses are included: for example, the Professional Graduate Certificate in Education (PGCE), foundation degrees and Higher National Diplomas (HND) are excluded. For further information on this classification, please refer to the Higher Education Statistics Agency at the link referenced below.[8] Note that it does not necessarily mean that the degree is the first higher education qualification undertaken by the student.

Further study: The **HESA** Student Record is used to identify instances of further study in higher education. Students enrolled on further education courses, on some initial teacher training enhancement, booster and extension courses, or whose study status is dormant or who were on sabbatical are excluded from this indicator. Each tax year spans two academic years; therefore, graduates will be flagged as being in further study if they have a HESA record in one of these two academic years.

HEI: Higher Education Institution.

Higher Education Statistics Agency (HESA): collects data from universities, higher education colleges and other specialist providers of higher education. In this publication we have used the HESA Student Record to identify our graduate base population and higher education further study instances.

Individualised Learner Record (ILR): used by the further education (FE) and skills sector in England to collect data about learners in the system and the learning undertaken by each of them.

Joint Academic Coding System (JACS): a standardised way of classifying academic subjects and modules, maintained by HESA and the Universities and Colleges Admissions Service (UCAS). In this publication we group subjects using JACS high-level subject groupings. Previous research has shown that the earnings profile of economics graduates differs substantially from graduates of other social sciences; therefore, in this publication we have presented economics separately from other social sciences.

1	Medicine & dentistry
2	Subjects allied to medicine
3	Biological sciences
4	Veterinary science
5	Agriculture & related subjects
6	Physical sciences
7	Mathematical sciences
8	Computer science
9	Engineering & technology
A	Architecture, building & planning
B	Social studies (excluding economics)
L1	Economics
C	Law
D	Business & administrative studies
E	Mass communications & documentation
F	Languages

---

[8] Under 'Field Explanations': https://www.hesa.ac.uk/component/content/article?id=2813#c1

G   Historical & philosophical studies
H   Creative arts & design
I   Education
J   Combined

The **National Pupil Database (NPD):** contains information about pupils in schools and colleges in England. It includes information on test and exam results, prior attainment, and pupil progress, as well as pupil characteristics such as sex, ethnicity, and eligibility for free school meals.

Nominal earnings: Nominal earnings represent the cash amount an individual was paid. They are not adjusted for inflation (the general increase in the price of goods and services).

PAYE: HMRC's system to collect Income Tax and National Insurance from employment. The LEO project uses information from the **P45** to ascertain employment spell length and from the **P14 (P60)** to determine annual earnings. See section 8 for a discussion of how PAYE data has been used in LEO.

Self-assessment: Self-assessment data captures the activity of individuals with income that is not taxed through PAYE, such as income from self-employment, savings and investments, property rental, and shares.

Sustained employment: A learner is counted in sustained employment if they were recorded as being employed 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 2010/11 tax year.

Sustained annualised earnings: The calculated average daily wage across the tax year grossed up to the equivalent annual figure. This is only calculated where the learner was in sustained employment. Earnings figures in this publication are **nominal**.

Tax year: Runs from 6 April to 5 April the following year. For example, the reference period covered by the 2014/15 tax year runs from 6 April 2014 to 5 April 2015.

UK Domiciled: indicates that the student was domiciled in England, Scotland, Wales or Northern Ireland prior to entry of the course. Students that were domiciled in the Channel Islands or the Isle of Man are not considered to be UK domiciled in this publication.

7.   Data Quality

Employment and earnings data

The **employment data** covers those with P45 and P14 records submitted through the Pay as you Earn (PAYE) system. These figures have been derived from administrative IT systems which, as with any large scale recording system, are subject to possible errors with data entry and processing. While some data cleaning was necessary the resulting data looks to provide a good reflection of an individual's employment and earnings for the year.

Issues encountered with the employment data included duplicate records and invalid records (for example where an employment start date occurred after the end date).

Additionally, for the purposes of collecting taxes accurate start dates are not required, just the tax year and earnings. Therefore a number of returns are found to have missing start dates due to the employer not forwarding a timely P45. The default dates recorded in the dataset are either 6 April (the first day of the tax year), or where only an end date is known as the day before that end date. Similarly for records where the employment is known to have come to an end within a tax year but the end date is not known the record is given a default 5 April end date, the last day of the tax year.

Individuals also have overlapping spells of employment. Before carrying out analysis, the P45 and P14 records for each individual were cleaned and then merged into a single record to give a longitudinal picture of their employment and a total sum of their earnings in each tax year.

Before cleaning, the dataset contained just under 73 million P45 records. Of these, just over 6.5 million invalid records were removed (the majority were duplicate records). Of the remaining records around 20 per cent had an uncertain start date and around 20 per cent an uncertain end date. For each uncertain date we used dates from other employment/benefits records for that individual to create a merged employment spell with a known start and end date.

Example 1: Two employment spells

Spell A |--------|

Spell B |---------------|------------|

Merged result |---------------------|

In example 1, the start date of spell B is uncertain with its possible range shown in blue. In this instance we can merge the two records resulting in an employment spell with the start date of spell A and an end date from spell B.

Any remaining uncertain dates were imputed through random sampling of gap lengths from a frequency distribution that was constructed from gaps with a known length.

Coverage

The employment data largely covers those who pay tax through PAYE. The core purpose of this process is to collect tax from those who are eligible to pay it through this mechanism, as such there is not complete coverage due to the taxation system. Employers are not required to supply information to HMRC for individuals who earn below the tax threshold, although for large employers these individuals are thought to be included due to the methods of data transfer.

In June 2009 HMRC introduced a new computer system, the new National Insurance and PAYE System (NPS). This is able to bring information about each taxpayer together into a single record reducing the need for the manual intervention often needed under the previous COP system (Computerisation of PAYE). NPS replaced COP between 2007/08 and 2008/09, so from this point onwards we have better coverage of earnings data.

Beginning in April 2013, the P45 reporting system was phased out in favour of the Real Time Information (RTI) system, which requires employers to submit information to HMRC each time an employee is paid. This system has now reached full deployment. RTI offers substantial improvements to the P45 system in terms of data coverage, since employers must now provide information on all their employees if even one employee of the company is paid above the Lower Earnings Limit. The move to RTI will mean that data coverage is higher for the most recent tax years.

The main tables do not currently include self-assessment tax returns hence employment and earnings figures do not fully reflect those who are self-employed. However, since the last publication we have obtained self-assessment data for the 2014/15 tax year. The effect of this data can be seen in tables 1d and 2c in the accompanying Excel spreadsheet. We are currently in the process of obtaining more self-assessment data (including earnings) so it can be included more fully in the future.

Timeliness

All data used in this process is drawn from administrative sources, which take time to process and collate. There are therefore lags between the reference period and availability of the dataset for analysis. Employment data is matched to DWP data on a regular basis. There are cleaning rules applied to this data, which identify old records when updated with new information. As new information can come through about a job after it has ended this is a source of constant change, analysis suggests that the data are about 90 per cent complete 6 months after the end of the tax year. Self-assessment data takes longer to collect. The

data used in this publication was extracted one year after the end of the tax year but is considered less complete than the PAYE data.

Benefits data

Benefits data are taken from the underlying payments systems and are supplemented by the information entered by Jobcentre advisers. The data therefore captures basic information accurately, but non-compulsory fields in either the labour market system or the payment system may be incomplete. Due to the size and technical complexity, these systems are not accessed directly, but at regular intervals scans are taken that build up a longitudinal picture from repeated snapshots of the data.

Start dates are entered on to the system and are accurate dates of benefit payment, thus provide certain timing and duration of benefit claim. However, while Job Seekers Allowance (JSA) dates have very few discrepancies due to the way the data is scanned, the end dates recorded for other benefits may diverge to some extent from the events they are recording. The potential discrepancy varies from up to two weeks for Employment Support Allowance (ESA) to up to six weeks for Incapacity Benefit (IB).

The National Benefits Database (NBD) does not currently include any information relating to claims to Universal Credit. Further work is being undertaken to assess whether Universal Credit claims can be brought into the matching database.

Graduates are considered to be in receipt of an out-of-work benefit if they have a record at any point in the tax year for: Job Seekers Allowance (JSA), Incapacity Benefit (IB), Income Support (IS), Permanent Injury Benefit (PIB), Severe Disablement Allowance (SDA), Pension Credit (PC), Employment and Support Allowance (ESA).

8. Methodology

Time period

The earliest time period for which employment/earnings data are reported is 'one year after graduation'. This refers to the first full tax year after graduation. So, for the 2012/13 graduation cohort the figures one year after graduation refer to employment/earnings outcomes in the 2014/15 tax year. This time period was picked as using the tax year which overlaps with the graduation date would mean that graduates are unlikely to have been engaged in economic activity for the whole tax year.
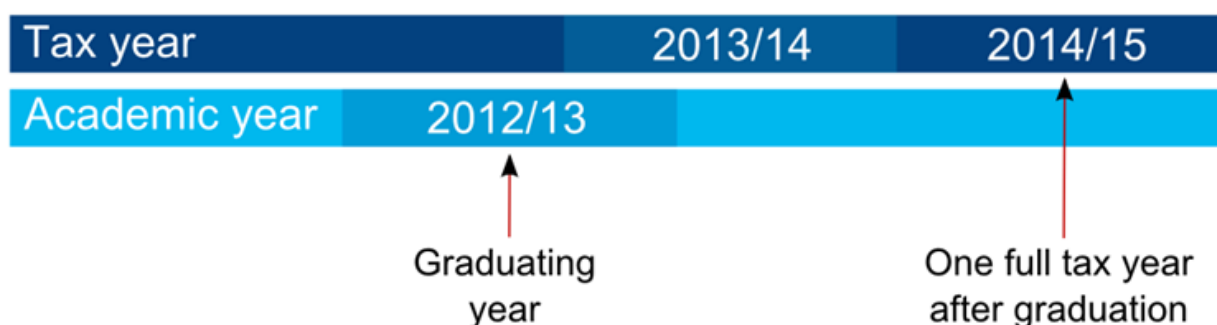
Sustained employment

The 'sustained employment' measure aims to count the proportion of graduates in sustained employment following the completion of their course. The definition of sustained employment is consistent with the definition used for 16-19 accountability and the outcome based success measures published for adult further education[9]. This definition looks at employment activity in the six month October to March period starting from the first tax year after graduation. A graduate needs to be in paid employment for five out of six months between October and March to be classified as being in 'sustained employment'.

For example, those who graduated in the 2012/13 academic year would be counted as being in sustained employment one year after graduation if they were in paid employment for at least one day a month in the five out of six months between October 2014 and March 2015. If they are employed in all five months from October to February, but do not have an employment record for March, then they must have an additional employment record in April to be considered as being in sustained employment.

Sustained employment defined by self-assessment data

This publication incorporates self-assessment data into measures of sustained employment and for the first time has allowed us to explore the difference that self-employment data makes to graduate outcomes. Self-assessment data captures the activity of individuals with income that is not taxed through PAYE, such as income from self-employment, savings and investments, property rental, and shares[10]. Currently, only data for the 2014/15 tax year is available for inclusion in LEO. For this reason we have not included the self-assessment data in the main tables as it would make data for 2014/15 incomparable with earlier years and make any time-series analysis misleading. We are exploring the possibility of including historical information in future publications.

For the purposes of this publication, individuals are classed as being in sustained employment in the 2014/15 tax year if they meet the PAYE definition of sustained employment used throughout this publication **or** have a returned a self-assessment form stating that they have received income from self-employment. These individuals may or may not have an additional PAYE record. Individuals who have received income through self-assessed means other than self-employment, such as through rental of property, and do not have a PAYE record, are not classed as being in employment (either sustained or unsustained).

Self-assessment data is finalised by HMRC 16 months after the end of the tax year. The data used in this publication was received just before the cut-off point and should therefore be treated as provisional

Further Study

A graduate is defined as being in further study if they have a valid higher education study record at any UK HEI on the HESA database in the relevant tax year. The further study does not have to be at postgraduate level to be counted. The purpose of this category is to identify how students spent their time in the relevant tax year and as such cannot be used to calculate the proportion of graduates that go onto postgraduate study.

As a tax year overlaps with two academic years then some students would be coming to the end of their further study in the tax year in question and some would be starting their further study. For example, those who graduated in the 2012/13 academic year and went straight onto a one-year masters course would be counted as being in further study in the 2014/15 tax year (i.e. one year after graduation) as their course would finish in September 2014. If a graduate from 2012/13 waited a year before starting their one-year masters course then they would be counted as being in further study in the 2014/15 tax year (i.e. one year after graduation) as their course would start in September 2014.

---

[9] https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/385111/bis-14-1250-further-education-learners-average-earnings-post-study-2010-to-2013.pdf

[10] A full list of income sources that must be declared through a self-assessment return can be found…

We have not used a sustained definition when defining further study. The majority of higher education courses last longer than 6 months and dropout rates tend to be low, especially at postgraduate level.

No Sustained destination

This category consists of graduates who have an employment or out-of-work benefits record in the tax year in question but were not classified as being in 'sustained employment' (and do not have a further study record as defined above).

Activity not captured

These graduates are successfully matched to DWP's Customer Information System (CIS) but do not have any employment/'out of work' benefits records. Reasons for appearing in this category include: moving out of the UK after graduation, being self-employed in the relevant tax year or earning below the Lower Earnings Limit.

Unmatched

These graduates were not found on DWP's Customer information System (CIS), either because they had never been issued with a National Insurance number or because the personal details provided from the HESA data did not fulfil the matching criteria. **These graduates are excluded from any calculations**. More information on match rates is given in section 9. If a graduate is unmatched on the CIS but has a further study record for the tax year in question then they will be moved out of the 'unmatched' category and into the 'Further Study' category.

Table O: Classification of graduate outcomes

Further study	Sustained employment	Any employment	Out-of-work Benefits	LEO category
⊠	Unmatched to CIS	Unmatched to CIS	Unmatched to CIS	**Unmatched**
⊠	⊠	⊠	⊠	**Activity not captured in tax year**
⊠	⊠	✓	⊠	**No sustained destination**
⊠	⊠	⊠	✓	
⊠	⊠	✓	✓	
⊠	✓	✓	⊠	**Sustained employment only**
⊠	✓	✓	✓	
✓	Unmatched to CIS	Unmatched to CIS	Unmatched to CIS	
✓	⊠	⊠	⊠	**Sustained employment, further study or both**
✓	⊠	✓	⊠	
✓	⊠	⊠	✓	
✓	⊠	✓	✓	
✓	✓	✓	⊠	**Further study and sustained employment**
✓	✓	✓	✓	

Annualised earnings

Earnings figures are only reported for those classified as being in sustained employment and where we have a valid earnings record from the P14. Those in further study are excluded as their earnings would be more likely to relate to part-time jobs. **Earnings from self-assessment are not included.**

For each graduate, the earnings reported for them on the HMRC P14 data for a given tax year are divided by the number of days recorded in employment across that same tax year. This provides an average daily wage which is then multiplied by the number of days in the tax year to calculate their annualised earnings.

This calculation has been used to maintain consistency with figures reported for further education learners post study. It provides students with an indication of the earnings they might receive once in stable and sustained employment.

The annualised earnings calculated are slightly higher than the raw earnings reported in the tax year. This is because the earnings of those who did not work for the entire tax year will be higher when annualised. The difference between the annualised and raw figures decreases as time elapses post-graduation. Median annualised earnings one year after graduation are around £1,000 higher than the median raw earnings reported in the P14 data. Five years after graduation, the median annualised earnings are less than £500 higher than the median raw earnings.

All earnings presented are nominal. They represent the cash amount an individual was paid and are not adjusted for inflation (the general increase in the price of goods and services).

9. Prior Attainment

Information on prior attainment was obtained from the National Pupil Database (NPD). The NPD contains data on the key stage 5 qualifications obtained by 16-18 year olds in England since 2002. Both the NPD and the HESA data have been matched to DWP's Customer Information System (CIS) through the process set out in out in section 10: data matching and match rates; this; this enables HESA and NPD records to be linked through matches to a common CIS record.

Coverage

The main tables in this publication focus on the 2008/09 cohort; of the graduates in this cohort 70% could be matched to a key stage 5 NPD record and 62% could be matched to an A level record through this method.

 Some of the reasons why a graduate could not be matched to an A level record include:

- They took an alternative key stage 5 level qualification (e.g. a BTEC, the IB).
- They took their A levels prior to the 2001/02 academic year or when they were aged above 18.
- They took their key stage 5 qualifications outside of England.
- The HESA record we have for them could not be matched to DWP's CIS spine and therefore could not be matched back to an NPD record using this method.

When we restrict the 2008/09 graduating cohort to those that we could reasonably expect to find an NPD record for (i.e. those whose domicile was classified as 'English' and who weren't classified as a 'mature' student) then we match 95% to an NPD record and 84% to an A level record.

The following scores were assigned for each grade: A=120 points; B=100 points; C=80 points; D=60 points; and E=40 points.

Each graduate's total points were calculated from their best three A levels as recorded on the NPD. If the student took more than three A levels, only their best three would be included in the total. If they received an E grade or higher in fewer than three A levels, only those A levels they did pass were included: scores were not adjusted for the number of A levels taken. The time period covered in the table meant that no A* grades were awarded.

Banding

Graduates were placed into one of four prior attainment bands based on their A level results. The bands are:

- 360 points (equivalent to three A grades)
- 300 points (equivalent to three B grades) to 360 points
- 240 points (equivalent to three C grades) to 300 points
- Below 240 points
- Not matched to an NPD A level record

The cut-off points for the bandings were decided by looking at the impact of prior attainment on earnings and taking into account the number of graduates falling into each band (to ensure each band had enough graduates to enable further breakdowns to be calculated).

It is recognised that the prior attainment bandings can be expanded further to include the points for those who took other key stage 5 qualifications.

10. Data Matching and Match Rates

The HESA student records are matched to DWP's Customer Information System (CIS)[11] using an established matching algorithm based on the following personal characteristics: National Insurance Number (NINO), forename, surname, date of birth, postcode and sex. Some of these characteristics are simplified to make the matching process less time-intensive and allow more matches. Only the first initial of the forename is used, the surname is encoded using an English sound-based algorithm called SOUNDEX[12], and for most matches only the sector of the postcode is used.

All records accessed for analysis are anonymous so that individuals cannot be identified. The personal identifying records used in the actual matching process are accessed under strict security controls.

There are five match processes carried out, ranging from the highest quality and most likely to be accurate (Green) to the lowest quality and most likely to be a false match (Red-Amber). Table P shows the criteria for each match type.

Once the HESA records have been matched to the CIS the corresponding tax and benefits records for that individual can then be linked to their HESA record.

All match rate analysis in this chapter is restricted to the HESA population covered in this publication i.e. UK domiciled, first degree graduates from English Higher Education Institutions

---

[11] The CIS is a computer system used by the Department for Work and Pensions to store basic identifying information about customers and provides information on all individuals who have ever had a national insurance number.
[12] SAS function which turns a surname into a code representing what it sounds like, which allows some flexibility for different spellings. For example Wilson=Willson

Table P: Criteria for each type of match

Match quality	NINO (National Insurance number)	Forename (initial)	Surname (soundex)	Date of birth	Sex	Postcode (sector)
1. Green	✓	4 or 5 ✓✓✓✓✓				
2. Amber	✓	3 ✓✓✓				
3. Green-Amber	✗	✓	✓	✓	✓	✓
4. Amber-Red	✗	✓	✓	✓	1 ✓	
5. Red-Amber	✗	✗	✗	✓	✓	✓ (full postcode)

Overall match rates

Table Q shows the overall CIS match rates for graduates that studied full-time as well as the proportion with a tax or benefit record. Potential reasons for not being able to find a P45 record, despite having a match to the CIS spine, include: earning being below the Lower Earnings Limit (LEL), self-employment, moving abroad and death.

Table Q: Match rates for UK domiciled first degree graduates at English HEI's, by year of graduation

Academic year	Matched to tax/ benefit record (%)	Matched to CIS spine (%)
2003/04	94	94
2004/05	94	95
2005/06	95	95
2006/07	95	96
2007/08	96	97
2008/09	96	97
2009/10	97	97
2010/11	96	96
2011/12	96	97
2012/13	98	99

Table Q shows that the match rate was very high for the most recent cohorts: 99 per cent of full-time graduates in 2012/13 were matched using the CIS, and almost all of these had at least one tax or out-of-work benefit record. This compares to a match rate of 94 per cent of graduates in 2003/04. The higher match rates for more recent cohorts is at least partly explained because the CIS holds the most recent names and addresses for individuals, and so if the details change after someone graduates there is less chance that they will be matched.

Due to improvements in the matching process since our previous publication, our match rates have increased slightly. This is particularly apparent for the 2010/11 and 2011/12 cohorts, which had a dip in the

match rate in our previous publication compared to other cohorts. Match rates for these cohorts are now more comparable with other cohorts.

Match rate by graduate characteristic

Table R shows the match rate by sex. The match rate for females is slightly lower in the earlier years than for males, but this difference is negligible or non-existent in recent cohorts. As the CIS holds the latest information about an individual, anyone that has changed their name since graduation will have a different name on the CIS compared to their HESA record. This particularly affects females, due to a higher likelihood than males of changing their name upon marriage.

Table R: CIS match rate by sex

Academic year	Female (%)	Male (%)
2003/04	92	97
2004/05	93	97
2005/06	93	98
2006/07	95	98
2007/08	96	98
2008/09	96	98
2009/10	97	98
2010/11	96	97
2011/12	96	97
2012/13	99	99
2013/14	99	99

The match rates were also compared for different ethnic groups out of the UK-domiciled students. There was little consistent difference between the groups, the only exception being graduates whose self-declared ethnicity was Chinese, where the match rate was 91 per cent in 2012/13. Further investigation showed that this was most likely due to the ethnically Chinese forenames and surnames being switched on one of the databases. This is more common for Chinese names, because the family name traditionally comes before the individual name. This hypothesis is further corroborated by the fact that ethnically Chinese students with common English names have match rates that are very similar to graduates from other ethnic groups.

The number of forenames or surnames an individual has can affect the match rate, because with multiple names it is more likely that they will not all be recorded, or there may be forenames recorded as surnames or vice versa. Analysis of the match rates showed that those with at least two surnames had a slightly lower match rate than those with only one.

Differences between Phase 2b and Phase 3

There are small differences between the overall employment and earnings figures published 4 August 2016 and those produced for this publication. This publication is based on a later data feed (Phase 3). For each cohort, the proportion of graduates in sustained employment or further study decreased by between 0.2 and 1.1 percentage points. Similarly, there was a small decrease in the graduate earnings, however this is not noticeable in the published figures as the change was not big enough to affect the rounded data.

There are two main reasons for these slight decreases. Firstly, we changed the methodology for identifying a person across the datasets, made to reflect forthcoming changes in the identifiers produced by DWP. This uses a slightly stricter criteria for associating records with a single person, thus, with the new method, the employment rate was slightly lower.

Another contributory factor was the slight increase in the matched population for this publication. In each graduation cohort, the matched population rose slightly, by about 1% in most years. The newly matched

individuals were less likely to have a sustained employment outcome than individuals matched in the previous data feed. Individuals who were matched in the most recent data only must have been updated on the CIS spine, and this update would have had to be a better match to the data held on the individual in the education data at the time of enrolment in Higher Education. In most cases, this indicates that the previous CIS spine information was more out of date than the education data for that individual and hence suggests the individual was unlikely to be employed in the intervening period (or the spine would have been updated).

Together, these two factors account for the majority of the difference between the publications. Using the same matched population and the same person resolution rules on both the current data and the August data, the rates of sustained employment were marginally higher with the present data, by up to 0.2% in tax years prior to 2013/14. This was balanced out by small decreases in the no activity captured and no sustained destination categories. In 2014/15, and to a lesser extent in 2013/14, the difference was reversed, with decreases of up to 0.2% in the sustained employment category. This is due to the effect of updates to the tax record – there were a number of records that were flagged as continuing spells at the time of the last extraction but which were updated with an end date in our more recent data.

11. Comparison to the Destinations of Leavers from Higher Education (DLHE) Survey

Background

The Destinations of Leavers from Higher Education (DLHE) Survey is conducted by the Higher Education Statistics Agency (HESA) and has been used to collect information on graduate outcomes since 1994/95 (until 2002/03 it was known as the First Destination Survey). In this section we explore comparisons between graduate outcomes on the DLHE and on the LEO dataset. Comparisons are made for graduates who obtained a qualification in 2012/13, to maintain consistency with other tables presented in this publication.

The DLHE Survey collects information on self-reported graduate outcomes approximately six months after successful completion of study, including employment, earnings and further study, as well as personal characteristics. A second survey, the Longitudinal DLHE, is conducted approximately three and a half years after the DLHE and follows the outcomes of a sample of graduates who responded to the first survey.

Administration of the DLHE

The DLHE is administered by higher education providers (HEPs) and returned to HESA as a condition of HEFCE funding. Graduates are asked to report on their main activity on one of two reference (census) dates, approximately six months after successful completion of study, depending on when they completed their course of study.

In the 2012/13 DLHE, those who obtained a qualification between 1 August 2012 and 31 December 2012 were asked to report on their activities on 15 April 2013 (these are mostly postgraduates). Those who obtained the qualification between 1 January 2013 and 31 July 2013 were asked to report on their activities on 12 January 2014 (these are mostly undergraduates). The DLHE statistical first release combines responses from these two reference dates into a single 'six months after graduation' metric. More information can be found on the HESA website:

https://www.hesa.ac.uk/index.php?option=com_content&view=article&id=1899&Itemid=634.

Figure 24: Timeline of DLHE census dates for the 2012/13 academic year
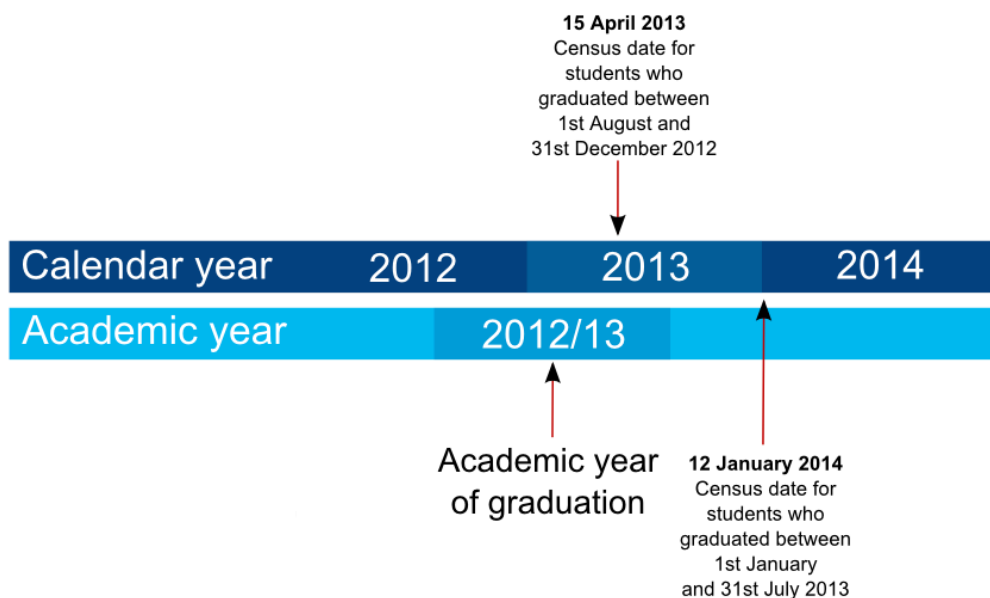
Response rates

The DLHE survey has a high response rate (79 per cent[13] of eligible graduates in the 2010/11 cohort responded), The Longitudinal DLHE is a survey (not a census) and contains responses from 28 per cent[14] of the eligible population. Thus, although the DLHE provides rich information on graduate outcomes at six months after graduation, the smaller number of respondents in the longitudinal DLHE means that data for individual universities aren't published. In contrast, all HE leavers on the LEO dataset have the potential to be matched to employment, earnings and 'out-of-work' benefits outcomes and be tracked for as many years as records are available.

Comparison of published outcomes on DLHE and LEO

Annualised earnings figures from the LEO dataset for 2008/09 graduates in the first full tax year after their graduation were compared to average earnings calculated from salaries reported in the 2008/09 DLHE survey. The DLHE figures presented are based on the responses of UK domiciled, first degree leavers from English HEIs who reported that they were in full-time work. The LEO dataset figures in this publication are also for UK domiciled, first degree leavers who studied at English HEIs. Table S presents the lower quartile, median and upper quartile earnings from each of these two sources by subject studied.

Median earnings were higher in the DLHE than in the LEO dataset for nearly all subjects, with the exceptions being 'Medicine and Dentistry', 'Subjects allied to medicine' and 'Veterinary science'. Earnings at the upper and lower quartiles were also higher in the DLHE for most subjects. The difference between the two sources was smallest on average at the upper quartile and largest at the lower quartile. 'Mathematical sciences', 'Engineering and technology' and 'Architecture, building and planning' had higher upper quartile earnings in the LEO dataset than in the DLHE survey, but lower median earnings.

Part of the difference between salaries on LEO and DLHE could be explained by the proportion of students who go on to full-time or part-time work. DLHE salary statistics are calculated for individuals in full-time paid employment only. In contrast, it is not possible to use tax and earnings data on LEO to determine whether an individual is in full-time or part-time employment, and therefore LEO reflects earnings of all graduates. This means that average earnings in the LEO data are likely to be lower than those calculated from the DLHE.

---

[13] https://www.hesa.ac.uk/intros/dlheintro1011
[14] https://www.hesa.ac.uk/dlhelong1011_intro

Table S: Comparison of earnings between the LEO dataset and the reported salaries of those in full-time work in the 2008/09 DLHE survey

Subject (and high level JACS code)	2008/09 graduates in LEO dataset				2008/09 DLHE				
	Number included in earnings figures	Lower quartile (£)	Median (£)	Upper quartile (£)	Number included in earnings figures	Lower quartile (£)	Median (£)	Upper quartile (£)	% in full-time employ-ment
Agriculture & related subjects (5)	865	11,000	15,000	20,000	335	14,000	18,000	21,000	86%
Architecture, building & planning (A)	3,150	15,000	21,000	27,000	1,410	17,000	21,000	25,000	93%
Biological sciences (3)	10,700	10,000	14,500	19,000	4,625	14,000	17,000	21,000	82%
Business & administrative studies (D)	16,375	12,500	17,500	22,500	7,150	15,000	18,000	23,000	89%
Combined (J)	1,710	12,000	19,500	30,000	820	19,000	25,000	33,000	82%
Computer science (8)	5,600	13,000	18,000	24,000	2,275	16,000	20,000	25,000	89%
Creative arts & design (H)	15,005	7,500	12,500	16,500	3,600	13,000	16,000	20,000	78%
Economics (L1)	2,140	15,500	21,500	28,000	1,030	17,000	23,000	28,000	93%
Education (I)	7,165	12,500	18,500	21,500	3,850	18,000	21,000	22,000	88%
Engineering & technology (9)	6,500	14,500	22,000	27,500	3,005	18,000	24,000	26,500	93%
Historical & philosophical studies (G)	5,440	9,500	14,500	20,000	2,295	14,000	17,000	22,000	82%
Languages (F)	7,035	10,000	15,000	20,000	3,555	14,000	17,000	21,000	84%
Law (C)	4,785	10,000	14,500	19,500	1,445	14,000	16,000	20,000	81%
Mass communications & documentation (E)	4,680	9,500	14,000	17,500	1,525	13,000	15,000	18,000	83%
Mathematical sciences (7)	2,020	14,500	20,500	27,000	1,225	17,000	21,000	26,000	93%
Medicine & Dentistry (1)	4,425	32,500	35,500	37,500	2,840	27,000	30,000	32,000	100%
Physical sciences (6)	4,285	11,500	16,500	22,000	2,170	15,000	19,000	23,000	86%

Social studies (excluding economics) (B)	10,665	11,500	17,000	24,000	5,045	15,000	20,000	25,000	85%
Subjects allied to medicine (2)	11,000	18,000	23,000	28,000	6,665	20,000	21,000	24,000	89%
Veterinary science (4)	375	23,000	26,000	29,000	315	21,000	25,000	28,000	98%

Median earnings were higher in the DLHE than in the LEO dataset for nearly all subjects, with the exceptions being 'Medicine and Dentistry', 'Subjects allied to medicine' and 'Veterinary science'. Earnings at the upper and lower quartiles were also higher in the DLHE for most subjects. The difference between the two sources was smallest on average at the upper quartile and largest at the lower quartile. 'Mathematical sciences', 'Engineering and technology' and 'Architecture, building and planning' had higher upper quartile earnings in the LEO dataset than in the DLHE survey, but lower median earnings.

Part of the difference between salaries on LEO and DLHE could be explained by the proportion of students who go on to full-time or part-time work. DLHE salary statistics are calculated for individuals in full-time paid employment only. In contrast, it is not possible to use tax and earnings data on LEO to determine whether an individual is in full-time or part-time employment, and therefore LEO reflects earnings of all graduates. This means that average earnings in the LEO data are likely to be lower than those calculated from the DLHE.

Table S shows the proportion of respondents in each subject group that were reported as being in full-time employment on the DLHE. Although we cannot distinguish between full-time and part-time employment on LEO, we would expect the proportion in full-time employment to be similar to that on the DLHE. We would therefore expect salaries from the two sources to be more comparable for subjects with a high proportion of graduates who go into full-time employment. Table S shows that subjects where the proportion of full-time workers in the DLHE salary-reporting population was highest do indeed tend to have closer median earnings between the two sources.

Additionally our previous publication on 4 August 2016 noted that not all DLHE respondents supplied their salary[15]. Comparing the earnings recorded in LEO for those who did and those who did not give a salary in response to the DLHE (but who all indicated they were in full-time paid employment), suggests that the former had slightly higher average earnings (by just over £1,500).

Summary

The comparisons presented here have demonstrated that employment and earnings records on the LEO dataset compare closely to responses on the DLHE for those who are reported to be in mainstream UK employment (whether on its own or in combination with further study). However, a higher proportion of valid records on the LEO dataset are found when the whole tax year is considered rather than when the comparison is restricted to records on the DLHE census date. Valid records have also been found for graduates who claim to be engaged in activity that should not produce an employment or out-of-work benefits record, such as self-employment or unemployment.

There are a number of possible reasons why these differences exist. Human factors may contribute to this discrepancy to an extent; the DLHE is filled in retrospectively, sometimes several months after the census date, so some error in recall can be expected. There may also be a discrepancy in the image that graduates wish to project to their former HEI and the reality of their employment situation. There are also certain types of individuals that are difficult to link to LEO (such as those with earnings below the tax threshold).

---

[15] See page 32 - https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/543794/SFR36-2016_main_text_LEO.pdf

Administration error by employers may also create uncertainty around employment start and end dates; for example, it may be that employers are slow to record employees as leaving a job when they are engaged in casual work and would therefore appear as employed on the LEO census date but as unemployed on the DLHE. Similarly, employers who do not provide accurate start date information could be recorded as unemployed on census day despite having secured employment and having declared so on the DLHE. This uncertainty could contribute towards the number of individuals whose LEO records on census date do not corroborate their self-reported employment activity on the DLHE.

The DLHE is a rich dataset and provides contextual information that the LEO dataset cannot, such as: type of employment; working pattern (full- or part-time); hours worked; overseas work; data for graduates with low earnings; and information on employment outcomes for graduates who are engaged in economic activity but do not have a valid employment or benefits record (such as those undertaking unpaid or low paid internships). The DLHE also provides qualitative information that the LEO dataset cannot, such as graduates' impression of how beneficial their course was in helping them to secure employment.

The LEO dataset, on the other hand, offers insight into the longitudinal outcomes of higher education leavers that the DLHE cannot match. It is created through linking of administrative data, rather than through self-report, so avoids the error associated with self-report methods such as misremembering, misrepresentation and participant attrition.

The LEO has the potential to link graduates to employment, earnings and out-of-work benefits outcomes for as long as the individual is in contact with UK financial or benefits collections. In comparison the Longitudinal DLHE, conducted three and a half years after the DLHE, has a response rate of less than a third of the graduates that responded to the DLHE (equating to one in five of the overall HESA population). Therefore, while the LEO dataset cannot match the contextual depth of the DLHE, it can provide longitudinal insight into graduate outcomes as they move from higher education into the workplace and beyond that far surpasses what is currently available.

12. Experimental Statistics

Experimental statistics are new official statistics that are undergoing evaluation. These statistics are being published as experimental statistics in order to involve users and stakeholders in their development and as a means to further improve the use of the data in the future.

The Department has a set of statistical policies in line with the Code of Practice for Official Statistics.

13. Get in touch

Media enquiries

Press Office News Desk, Department for Education, Sanctuary Buildings, Great Smith Street, London SW1P 3BT.

Tel: 020 7783 8300

Other enquiries/feedback

Alison Judd, Higher Education Analysis, Department for Education, 1 Victoria Street, London, SW1H 0ET.

Tel: 0207 215 0539 Email: Alison.Judd@bis.gsi.gov.uk

About this publication:

    enquiries   Alison Judd, Division, Department for Education, Address. Tel: 0207 215 0539 Email: he.statistics@bis.gsi.gov.uk

https://www.gov.uk/government/statistics?departments%5B%5D=department-for-education

Reference: [SFR60/2016]

Follow us on Twitter:
@educationgovuk

Like us on Facebook:
facebook.com/educationgovuk