

# Employment outcomes of engineering graduates: key factors and diversity characteristics





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# Employment outcomes of engineering graduates: key factors and diversity characteristics

## Royal Academy of Engineering

November 2016

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ISBN: 978-1-909327-30-6

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# Executive summary

**This report investigates the employment destinations of recent engineering graduates from UK HE institutions. The study presents a detailed analysis of the factors affecting engineering graduate employment and provides new insights into longer-term graduate employment outcomes for engineering.**

The analysis used Higher Education Statistics Agency (HESA) Destinations of Leavers of Higher Education (DLHE) data, for first destinations annually between 2009/10 and 2013/14 to examine trends. In addition, data from the 'Longitudinal DLHE' survey, which records outcomes 40 months after graduation, were also available for the cohort that graduated in 2010/11. This enabled tracking of this cohort from 6 months to 3.5 years after graduation.

The general results of the study show the importance of engineering skills to the economy with overall employment outcomes from engineering being very strong. For UK-domiciled, first degree graduates from 2010/11 who had studied on a full-time basis:

- **81% had entered full-time work, were pursuing further study or a combination of both six months after graduation;**
- **This rose to 94% three and a half years after graduation;**
- **These proportions were both about 8 percentage points higher for engineering graduates than for all graduates combined;**

The outcomes for engineering graduates in 2013/14 were similar, with 81% in full-time work, further study or a combination of both 6 months after graduation. This compares to 76% for graduates across all subjects.

The analysis also shows that employment outcomes within engineering occupations specifically were also very strong:

- **56% of all 2013/14 engineering graduates had entered engineering occupations after 6 months, while just under 20% pursued further study;**
- **For 2010/11 engineering graduates, this proportion had been 55%, but after three and a half years had risen to 69%.**

This shows that the majority of graduates wanted to continue in engineering careers following their studies; a positive endorsement of the quality of engineering higher education and encouraging news for UK engineering industry.

The study also analysed employment outcomes of engineering graduates by different diversity characteristics, such as gender, age and ethnicity. In addition, the research examined other factors such as degree classification, prior attainment (on the basis of UCAS tariff points) and HE institution attended (in three broad groups: Russell Group, other 'pre-92' and 'post-92' institutions).



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## A summary of the key findings are as follows:

### Gender

A key issue for the engineering community is the very poor gender diversity across the sector with only around 12–15% of women in the undergraduate engineering cohort, and a lower proportion still in the professional engineering workforce. However, the data showed:

- There were only small differences between male and female engineering graduates in terms of their outcomes after 6 months; a slightly higher proportion of men entered full-time employment than women, but a higher proportion of women than men pursued further study. These are the reverse of the trends observed for all graduates;
- There was a small difference in the proportion of male and female engineering graduates entering engineering occupations; for the 2013/14 cohort, 56% of men and 52% of women took on engineering roles.

### Ethnicity

While the employment outcomes of women relative to men in engineering are encouraging, of greater concern for the engineering profession is the stark differences in employment outcomes between engineering graduates of white and minority ethnic origin:

- There was a 20 percentage point difference between the proportion of white engineering graduates entering full-time employment (71%) and their black and minority ethnic (BME) counterparts (51%) after 6 months;
- Black engineering graduates had the lowest proportion in full time work at 46%;
- After 6 months, 60% of white engineering graduates were employed in engineering occupations, compared with only 40% for BME graduates. Again black graduates had the lowest proportion in engineering employment at 37%;
- Six months after graduation, 14% of black engineering graduates were unemployed, compared with only 7% of white engineering graduates;
- These differences were significantly greater for engineering graduates than across all subjects.

## Degree classification

- For the 2013/14 cohort, UK engineering graduates with 2:1 or above were significantly more likely to be in full time employment 6 months after graduation (69%) compared with graduates with a 2:2 or below (53%).
- There was a 20 percentage point difference between the proportion of engineering graduates with a 2:1 or higher (60%) who were working in an engineering occupation, compared with graduates with a 2:2 or below (40%).

## Regression analysis

Many of the factors impacting on employment outcomes are inter-related. Therefore, a statistical regression analysis was undertaken to understand the relative weighting of the various influences. The results of the analysis show that, controlling for all other factors, ethnicity is a major characteristic affecting employment outcomes, particularly for engineering roles.

The reasons for this are not fully understood. There is evidence to suggest that students from BME backgrounds may not always have as much social capital to draw on as their white counterparts. Also, current student recruitment is often targeted at universities with lower proportions of BME students. More work needs to be undertaken to properly understand the factors that are causing weaker employment outcomes among BME graduates, and why these differences are greater for engineering graduates.

This analysis also demonstrated that obtaining a 2:2 or below and studying at a post-92 university were key factors associated with unemployment, for engineering graduates especially.

## Longer term graduate destinations

The longer term (40-month) L-DLHE survey data showed very positive results for 2010/11 graduates who had studied an engineering degree:

- There was a positive longer term full-time employment outcome for engineering graduates, rising from 60% after 6 months to 84% after 40 months. This compared favourably with the proportion of all graduates in full-time employment by that stage (73%);
- 55% of engineering graduates were in engineering occupations after 6 months but this had risen to 69% after 40 months;
- Only 3% of engineering graduates were unemployed 40 months after graduation, similar to the rate for all graduates.



## Conclusions

Between 2009/10 and 2013/14 increasing proportions of engineering graduates entered full-time employment 6 months after graduation and decreasing proportions of graduates were finding themselves unemployed at that stage. These trends were also seen for all graduates. These findings are in line with the recovery of the graduate labour market following the UK's emergence from the recession.

Across the period, the data consistently demonstrate that a higher proportion of engineering graduates enters full-time employment within 6 months of graduation compared with all graduates. Also, encouragingly for the engineering community, a significant majority (69%) of engineering graduates enter engineering occupations, dispelling previous concerns that a significant amount of talent was being lost to other sectors.

With specific attention to diversity, the study confirms findings from previous research that ethnicity has a larger impact on the early employment outcomes for engineering graduates than the average graduate. Some differences with ethnicity persist 40 months after graduation but, by this point, the employment outcomes for BME graduates in engineering are similar to those for BME graduates across all subjects. The initial weak employment outcomes for BME graduates in engineering is of concern and more work needs to be undertaken to better understand why these arise.

The recruitment of engineering graduates appears to correlate more highly with measures of academic attainment (class of degree, UCAS tariff) than the recruitment of all graduates. This is particularly evident in recruitment into engineering occupations. This suggests there is greater emphasis placed on academic attainment during engineering employer recruitment, rather than other measures of graduates' potential, compared with graduate recruitment in general. Conclusions cannot be made about the impact of integrated master's (MEng) compared to BEng degree courses from this research, however, so employers may have a preference for MEng graduates and this could be fuelling the differences.

# 1. Introduction and aims

**The Royal Academy of Engineering has commissioned the Careers Research & Advisory Centre (CRAC) to review Higher Education Statistics Agency (HESA) Destinations of Leavers from Higher Education (DLHE) data for recent engineering graduates.**

There is continued concern in the UK engineering community, and periodically in government, about potential future graduate- and technician-level skill shortages in the profession. This has led to campaigns to bolster the supply of students into study of engineering subjects in higher education (HE) and vocational routes.

Employers in certain UK regions in particular report an inability to fill engineering vacancies at graduate level, yet at the same time the rate of unemployment among new engineering graduates has been reported to be above that of the average graduate. This apparent paradox appears to be quite persistent and may tend to undermine arguments for activity to stimulate the number of students studying engineering subjects. It is more pronounced in computer science, which was the subject of the recent Shadbolt review<sup>1</sup>. The parallel Wakeham review<sup>2</sup> identifies a number of STEM (science, technology, engineering and mathematics) disciplines where employment outcomes are of concern.

The Royal Academy of Engineering has pioneered work to understand and improve the diversity of those entering the engineering workforce. Previous investigations of DLHE data by CRAC have highlighted significant variations in employment outcomes, and rates of unemployment, among recent engineering<sup>3</sup> and computer science<sup>4</sup> graduates with different characteristics, and in particular ethnicity. The Higher Education Funding Council for England (HEFCE) has also recently undertaken model-based research using HESA data to investigate how outcomes for 2008/09 graduates varied with certain aspects of equality and diversity.<sup>5</sup>

A thorough understanding of recent 'destinations' data and trends is valuable in making a well-informed case for support for graduation pathways into the engineering profession, and efforts to increase the diversity of those entering the profession. This new work aims to identify and confirm trends in employment and unemployment outcomes for engineering graduates in recent years, and how these vary with key aspects of diversity.

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<sup>1</sup> *Shadbolt Review of Computer Sciences Degree Accreditation and Graduate Employability*, Department for Business, Innovation & Skills, 2016

<sup>2</sup> *Wakeham Review of STEM Degree Provision and Graduate Employability*, Department for Business, Innovation & Skills, 2016

<sup>3</sup> *'Exploring unemployment among recent engineering graduates, using HESA destinations data'* Engineering Professors Council, 2013

<sup>4</sup> *'An exploration of unemployment statistics within computer science graduate destinations data'* Council of Professors & Heads of Computing, 2012

<sup>5</sup> *'Differences in employment outcomes - equality and diversity characteristics'* HEFCE, 2015



## 2. The DLHE and 'L-DLHE' surveys

HESA's annual DLHE survey has obtained information from UK and EU graduates qualifying from UK universities on a census basis for many years. Although recording what are referred to as six-month destinations (i.e. the employment and other circumstances of recent graduates at the point of survey), the process in reality comprises two 'sweeps' of data collection. For the graduating year that is referred to as 2010/11, for example, students qualifying between 1 August and 31 December 2010 were surveyed in April 2011, and those who completed degrees between 1 January and 31 July 2011 were surveyed in January 2012. These data are combined to produce statistics referred to as the 2010/11 first (or six-month) destinations. Data are collected by participating HE institutions and returned to HESA where they are matched with other data about these graduates from the HESA student record and other datasets.

Very high response rates are achieved in the DLHE so the dataset obtained is large (for example, over 250,000 UK, full-time, first degree qualifiers in 2013/14, which was over three quarters of the estimated 320,000 qualifiers) and is highly representative. The scale and robustness of the data, and consistency in its collection over many years, are unrivalled in terms of graduates' early career-related outcomes. The data also underpin several items in the key information set (elements of information consistently collected for all first degree courses at all UK universities) made available to prospective students when choosing HE courses, and as a performance indicator for universities.

A second survey by HESA is the *Longitudinal DLHE* (L-DLHE) that records destinations of graduates three years further into their careers (than the point recorded in the DLHE survey). This is also referred to as the

3.5 year or 40-month destinations survey. In terms of methodology, it differs from the DLHE in that it is not a census but is instead based on a random sample of those who responded to the DLHE survey. This is partly because it is inherently harder for institutions to reach graduates several years post graduation, as many will have moved physically and not notified their alma mater. The scale of the survey is therefore smaller than the DLHE, but large enough for analysis of many interesting sub-populations. Although not all participants can be matched to their original DLHE data, where this is the case for respondents there is particular value in being able to use the two survey points to assess employment or career progression of that graduate.

### 2.1 Datasets used: presenting employment-related 'destinations' data

The performance indicator for UK universities in relation to graduate employment outcomes ('employment indicator') is the ratio from DLHE data of the number of graduates who report that they were working or studying (or both) to the number of graduates who were working or studying (or both) or were available for work. This excludes those unavailable for work for personal reasons or who were deliberately taking time out to travel. The indicator is one of the figures used in the key information set, although as a measure of employment outcomes it is limited as it includes progression to further study as well as into employment. For this reason, some other statistics are widely used in practice, including the rate of unemployment of graduates, and also the proportion entering employment (or 'graduate employment' that tries to take into account the quality of the employment).

It is important when considering DLHE statistics to note the specific cohort being reported, as the results can vary significantly with, for example, mode of study (e.g. full time vs. part time) or domicile (UK vs. EU). For simplicity and consistency, the analysis in this report is only for graduates of UK domicile who studied first degree courses full time.

For this project, data records from the DLHE surveys corresponding to cohorts graduating in academic years 2011/12, 2012/13 and 2013/14 were acquired, which could be compared with results compiled in previous work using the 2009/10 and 2010/11 survey data. The most recent L-DLHE data was also obtained, which are for those who graduated in 2010/11, enabling insights into that cohort's progression over the longer period using both their DLHE and L-DLHE results.

A complication that had to be considered in this study is that the destination response options (such as circumstances) in the survey were adjusted and extended for the 2011/12 survey onwards. While this means that the full range of responses is not comparable with earlier survey results, our analysis has been designed to ensure comparability for the key elements, such as full-time employment, further study and unemployment.

It should be noted that HESA's first-degree data includes those who studied on integrated master's courses (including for MEng degrees). It also includes both single-subject and combined degree courses; a student studying 50% engineering and 50% French is counted as 0.5 of a single-subject engineering student. HESA also imposes certain analysis and reporting protocols; it rounds all data to the nearest five graduates prior to deriving any percentages, and does not permit reporting of very small groups of graduates for confidentiality reasons.

## 2.2 Engineering classifications

Rather than using the broad 'engineering and technology' course grouping that HESA tends to report, it was agreed with the Royal Academy of Engineering that the analysis should define engineering graduates as those who studied courses listed under JACS 3.0 principal subject codes H100 to H900 inclusive,<sup>6</sup> together with software engineering (I300) and metallurgy (J200), which is a small population). This maintains the approach used in previous analysis<sup>7</sup> and enables comparability with those results. The two comparator groupings of graduates used in this report are these 'engineering' graduates and also 'all graduates', which is the aggregate figure for all UK, full-time, first-degree respondents (including the engineering graduates). Results for the latter can essentially be considered as those of the average UK graduate.

Within the analysis of employment outcomes, EngineeringUK's definition of engineering occupations (used in its annual statistical digests<sup>8</sup>) based on a range of Standard Occupational Codes (SOC), has been adopted for potential comparability and consistency.

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<sup>6</sup> H100 general; H200 civil; H300 mechanical; H400 aerospace; H500 naval; H600 electronic & electrical; H700 production & manufacturing; H800 chemical, process & energy; H900 other

<sup>7</sup> 'Exploring unemployment among recent engineering graduates', op cit

<sup>8</sup> Annex to *EngineeringUK 2016* [http://www.engineeringuk.com/\\_resources/documents/EngineeringUK-Report-2016-Annex.pdf](http://www.engineeringuk.com/_resources/documents/EngineeringUK-Report-2016-Annex.pdf)

### 3. First destination outcomes

Table 1 summarises the major first (DLHE) destinations data for UK-domiciled, full-time first-degree engineering graduates, and for comparison for graduates across all science subjects and for all graduates, for the years analysed. Among the 2013/14 graduating cohort, at the point of survey:

- 65.9% of engineering graduates were employed full time (and a further 7.0% part time)
- 15.1% were participating in further study (11.5% further study only and 3.6% further study while also working)
- 7.7% were unemployed
- 55.6% were employed within engineering occupations (showing

that the majority who entered work did so in an engineering role, on the basis of the definition used).

Corresponding data for all 2013/14 graduates show 57.6% to have been employed full time (and 12.8% part time), while 18.2% were undertaking further study and 6.5% unemployed. Thus, from this particular snapshot, a higher proportion of engineering graduates entered full-time employment than of all graduates, but a slightly higher proportion was unemployed (and somewhat lower proportions entered part-time work or undertook further study).

It may be useful to note here that some of the most widely published depictions of graduate destinations may contain results that differ slightly from these results, because

	Full-time work only	Part-time work only	Work and further study	Further study only	Unemployed	Other	Engineering occupation
<b>2013/14</b>							
Engineering	65.9%	7.0%	3.6%	11.5%	7.7%	4.4%	55.6%
Science subjects *	61.3%	10.4%	4.9%	13.5%	6.0%	4.0%	
<b>Total - all subjects</b>	<b>57.6%</b>	<b>12.8%</b>	<b>5.4%</b>	<b>13.0%</b>	<b>6.5%</b>	<b>4.7%</b>	
<b>2012/13</b>							
Engineering	65.8%	7.0%	3.0%	11.8%	8.6%	3.8%	54.3%
Science subjects	59.7%	11.1%	4.9%	13.6%	7.0%	3.7%	
<b>Total - all subjects</b>	<b>55.4%</b>	<b>13.8%</b>	<b>5.5%</b>	<b>13.3%</b>	<b>7.6%</b>	<b>4.5%</b>	
<b>2011/12</b>							
Engineering	62.7%	7.6%	3.4%	12.0%	10.4%	3.9%	51.9%
Science subjects	56.7%	11.9%	5.0%	14.4%	8.1%	4.0%	
<b>Total - all subjects</b>	<b>52.6%</b>	<b>14.4%</b>	<b>5.8%</b>	<b>13.9%</b>	<b>8.8%</b>	<b>4.6%</b>	
<b>2010/11</b>							
Engineering	57.5%	6.9%	6.1%	13.9%	10.7%	4.9%	47.1%
<b>Total - all subjects</b>	<b>48.6%</b>	<b>12.8%</b>	<b>8.2%</b>	<b>14.5%</b>	<b>9.2%</b>	<b>6.8%</b>	
<b>2009/10</b>							
Engineering	55.6%	7.6%	5.3%	14.4%	11.8%	5.3%	na
<b>Total - all subjects</b>	<b>49.6%</b>	<b>12.4%</b>	<b>7.2%</b>	<b>15.0%</b>	<b>9.1%</b>	<b>6.6%</b>	

**Table 1. First destinations of UK-domiciled, full-time first-degree graduates. Results for science subjects combination sourced from HESA DLHE publications**

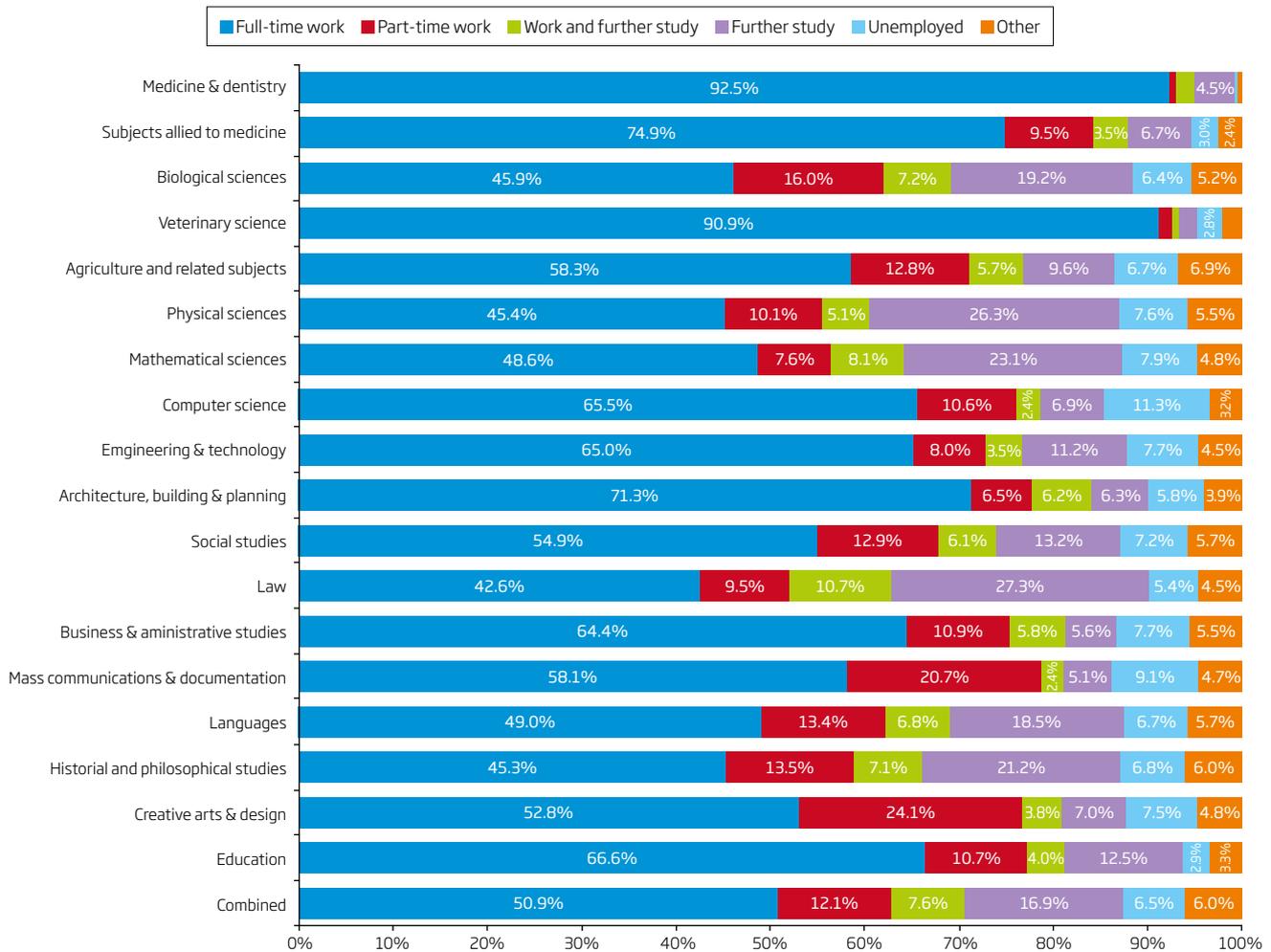
of differences in the composition of engineering-related subject groupings used (and in some cases because published charts contain data for both UK and EU graduates). Figure 1 is a typical HESA publication of 2013/14 graduate destinations by subject, using an 'engineering and technology' subject grouping, and hence shows slight differences in results from those in Table 1 for the engineering graduates group. Nonetheless, a chart such as Figure 1 provides a useful depiction of how first destinations vary for graduates in different subject groups.

Presentation of similar data for successive years in Table 1 allows for

potentially interesting comparisons to be made over a five-year period (2009/10 to 2013/14). Figure 2 presents the same data as in Table 1, from which it can be seen that the proportion of engineering graduates who were employed full-time six months after graduation increased between 2009/10 and 2013/14 from 55.6% to 65.9% (although the proportion entering part-time work remained roughly constant). The proportion of engineering graduates who were unemployed at the survey point decreased from 11.8% in 2009/10 to 7.7% in 2013/14. Although not depicted in Figure 2, the proportion employed in engineering occupations

**Chart 4 - Percentage of UK domiciled full-time first degree leavers by subject area\*\* and activity 2013/14**

Percentage labels in this chart for values less than 2.0% are not shown, all other percentages have been rounded to one decimal place, therefore they may not sum exactly to 100%.



\* Analyses of subject information show Full Person Equivalents (FPE). These are derived by splitting student instances between the different subjects that make up their qualification aim.

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**Figure 1. DLHE first destination results by subject, for UK-domiciled, full-time first-degree 2013/14 graduates. Source: HESA**

rose from 47% to 56% between 2010/11 and 2013/14, in parallel with the increase in those entering full-time employment.

Comparisons of these statistics with those for all graduates (shown in the lower part of Figure 2) across the period are also instructive. As for engineering graduates, the proportion of all graduates in full-time employment also increased (from 49% to 58%), and the proportion unemployed decreased (9% to 6.5%) during this period. The proportion of graduates undertaking further study also decreased across the period, for both engineering and all graduates.

These data would seem to be in line with a broad picture of graduate labour market recovery during this period, which was essentially the UK's emergence from recession. Increasing proportions of entrants to full-time employment, and decreasing proportions entering further study or being unemployed, for both engineering graduates and all graduates, would seem to reflect this labour market evolution.

The data also demonstrate strong consistency over time in terms of:

- a higher proportion of engineering graduates entering full-time employment than of all graduates
- the majority of engineering graduates entering employment doing so into engineering occupations (this proportion has remained roughly constant)
- a somewhat higher proportion of engineering graduates than all graduates being unemployed six months after graduation, but this difference reducing somewhat over time.

### 3.1 Variations with graduate characteristics

#### 3.1.1 Gender

One of the key purposes of this report is to shed light on variations that exist in destinations statistics for different characteristics of student/graduate, including some key aspects of diversity.

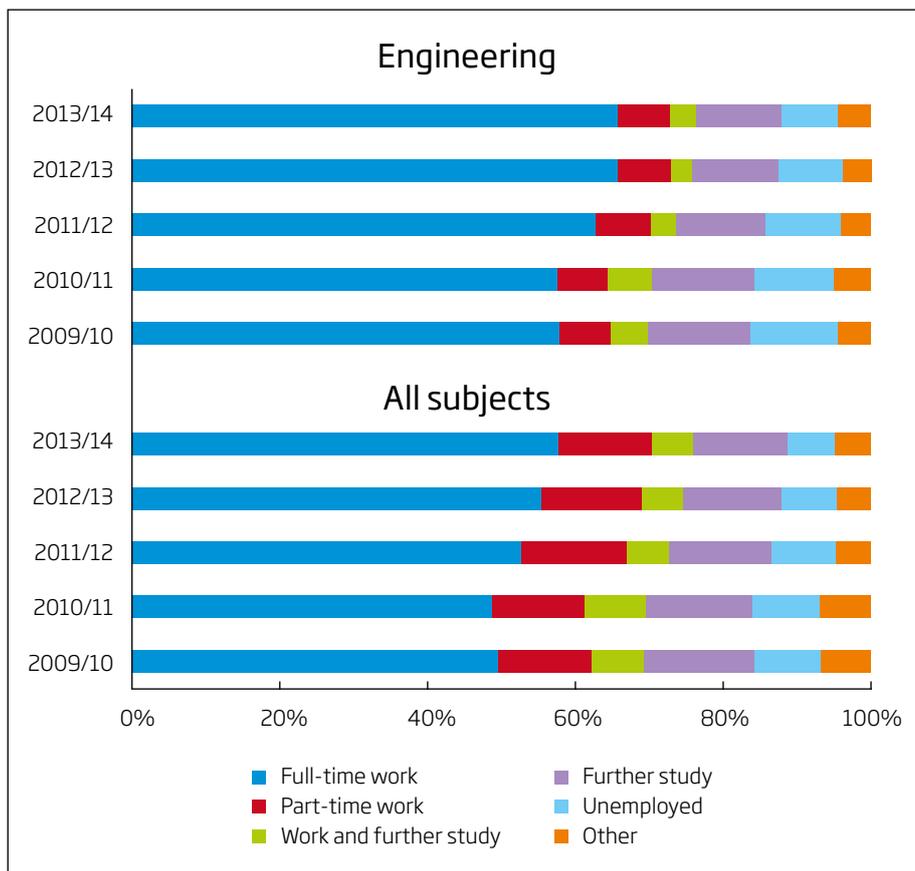


Figure 2. First destinations of UK-domiciled, full-time first-degree graduates, by year

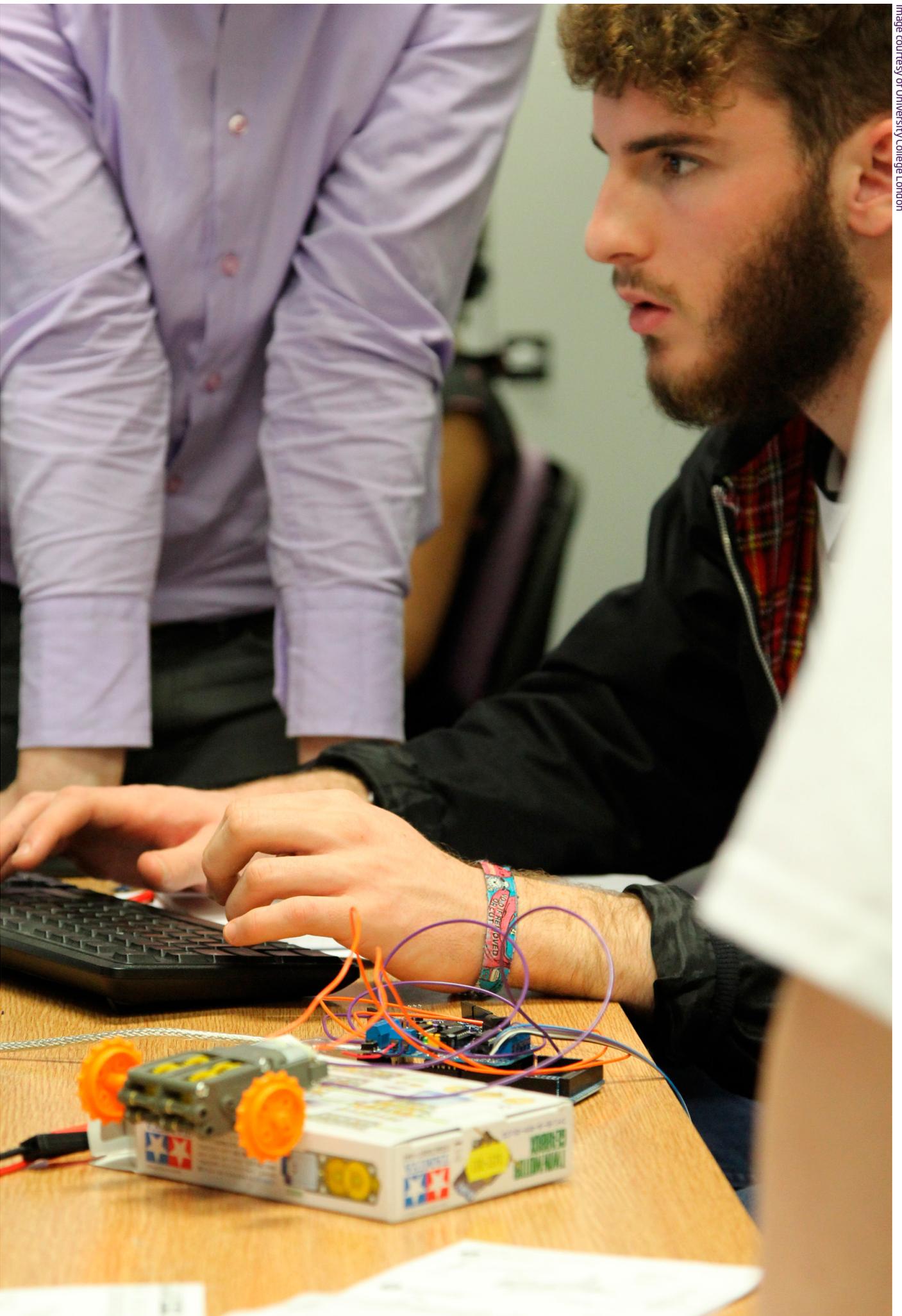
Table 2 summarises the destinations results for engineering graduates by gender, remembering that females are a minority in engineering study (see section 5.1 on profiles).

For 2013/14, the proportion of female engineering graduates who entered full-time employment (65.3%) was very similar to that among males

(66%), although a slightly lower proportion entered part-time work. However, a higher proportion of females (almost 18%, compared with under 15% of males) entered further study. Unemployment among female engineering graduates (6.1%) was lower than among males (7.9%). Interestingly, although the proportions entering full-time work

	Full-time work only	Part-time work only	Work and further study	Further study only	Unemployed	Other	Engineering occupation
<b>2013/14 - Engineering graduates</b>							
Male	66.0%	7.2%	3.4%	11.3%	7.9%	4.2%	56.1%
Female	65.3%	5.4%	5.0%	12.7%	6.1%	5.6%	52.4%
<b>Total</b>	<b>65.9%</b>	<b>7.0%</b>	<b>3.6%</b>	<b>11.5%</b>	<b>7.7%</b>	<b>4.4%</b>	<b>55.6%</b>
<b>2012/13 - Engineering graduates</b>							
Male	66.3%	7.1%	2.9%	11.2%	9.0%	3.5%	55.2%
Female	63.5%	7.0%	3.4%	13.5%	7.1%	5.2%	48.6%
<b>Total</b>	<b>65.9%</b>	<b>7.1%</b>	<b>2.9%</b>	<b>11.5%</b>	<b>8.8%</b>	<b>3.8%</b>	<b>54.3%</b>
<b>2011/12 - Engineering graduates</b>							
Male	62.8%	7.7%	3.3%	11.9%	10.7%	3.8%	53.1%
Female	62.1%	7.3%	3.9%	12.9%	8.6%	5.1%	44.3%
<b>Total</b>	<b>55.4%</b>	<b>13.8%</b>	<b>5.5%</b>	<b>13.3%</b>	<b>7.6%</b>	<b>4.5%</b>	<b>51.9%</b>
<b>2010/11 - Engineering graduates</b>							
Male	57.9%	6.6%	6.0%	13.7%	11.0%	4.9%	48.4%
Female	54.8%	8.6%	7.4%	15.0%	9.1%	5.1%	43.6%
<b>Total</b>	<b>57.5%</b>	<b>6.9%</b>	<b>6.1%</b>	<b>13.8%</b>	<b>10.7%</b>	<b>4.9%</b>	<b>47.1%</b>
<b>2013/14 - All graduates</b>							
Male	57.1%	11.9%	5.0%	13.5%	8.1%	4.4%	
Female	57.9%	13.5%	5.7%	12.6%	5.2%	4.8%	
<b>Total</b>	<b>57.6%</b>	<b>12.8%</b>	<b>5.4%</b>	<b>13.0%</b>	<b>6.5%</b>	<b>4.7%</b>	
<b>2012/13 - All graduates</b>							
Male	55.0%	12.6%	4.9%	13.8%	9.5%	4.3%	
Female	57.9%	13.5%	5.7%	12.6%	5.2%	4.8%	
<b>Total</b>	<b>55.4%</b>	<b>13.8%</b>	<b>5.5%</b>	<b>13.3%</b>	<b>7.6%</b>	<b>4.5%</b>	
<b>2011/12 - All graduates</b>							
Male	52.1%	13.0%	5.2%	14.3%	10.9%	4.4%	
Female	52.9%	15.4%	6.2%	13.6%	7.2%	4.8%	
<b>Total</b>	<b>52.6%</b>	<b>14.4%</b>	<b>5.8%</b>	<b>13.9%</b>	<b>8.8%</b>	<b>4.6%</b>	
<b>2010/11 - All graduates</b>							
Male	48.0%	11.1%	7.8%	15.5%	11.4%	6.2%	
Female	49.0%	14.0%	8.5%	13.8%	7.6%	7.2%	
<b>Total</b>	<b>48.6%</b>	<b>12.8%</b>	<b>8.6%</b>	<b>14.5%</b>	<b>9.2%</b>	<b>6.8%</b>	

**Table 2. First destinations of graduates, by gender**



were essentially similar, a slightly lower proportion of females entered work in an engineering occupation (52% compared with 56% of males).

In comparison, results for all 2013/14 graduates show very little difference with gender in terms of the proportions entering work or further study but, as for engineering, a lower proportion of female graduates being unemployed at the point of survey than males.

The trends across the five-year time period described in the previous section in relation to entry to employment, further study and unemployment also held for both male or female graduates (within engineering, and overall). However, one particular area where some difference with gender is seen is the proportion entering work in engineering occupations. This rose somewhat more strongly with time for female than male engineering graduates (females: from 44% for 2011/12 to 52% for 2013/14; males: from 53% to 56% over the same period).

### 3.1.2 Ethnicity

Much more substantial differences (than with gender) emerge within the destinations statistics in relation to ethnic background, particularly for engineering graduates.

As Table 3 shows, while almost 71% of white 2013/14 engineering graduates were employed full-time when surveyed, the comparable proportions of engineering graduates with Black or minority ethnic (BME) backgrounds were markedly lower (below 51% for all BME backgrounds, and 46% for Black graduates). On the other hand, higher proportions of BME engineering graduates entered part-time employment (10.5%) or further study (almost 21%) than among their white counterparts (5.9% to part-time; 13% to further study).

The proportion of 2013/14 BME engineering graduates who were unemployed (13.5%) was more than double than white engineering graduates that year (5.8%).

In terms of the proportion of engineering graduates who entered

engineering occupations, there was also a marked difference with ethnicity. 60% of white engineering graduates entered engineering occupations but only 40% of those of BME origin (below 37% for those of Black background). This is a proportionally greater difference than seen for entry to any full-time employment.

The differences in destination results by ethnicity that were highlighted in a previous study (which used 2010/11 data) persist in the 2013/14 results, and in some aspects are more pronounced. Table 3 shows that there was a difference with ethnicity in the proportion of 2013/14 graduates from all subjects entering full-time employment (52% of all BME graduates, 59% of all white graduates), but this difference was substantially more marked among engineering graduates (51% and 71%, respectively).

While there was a similar difference with ethnicity in relation to entry to part-time work across all subjects (12% of white graduates; just under 15% of BME graduates), there was no difference in relation to further study – around 18% of both white and BME graduates.

For all 2013/14 graduates a key measure of the unemployment rate was 4.6% for white graduates across all subjects and 10% for BME graduates, i.e. a similar but slightly less pronounced difference than existed for engineering graduates.

Carefully viewing comparable statistics over the years analysed shows that the differential with ethnicity in the proportion of engineering graduates entering full-time employment decreased somewhat over time, although it remained significant in 2013/14. However, that difference with ethnicity did not erode (proportionally) as much as it did for all graduates. A difference (between white and BME) of 24% for 2010/11 for engineering reduced to 20% for 2013/14, while over the same period the difference fell from 10% to less than 7% across all subjects. This seems to suggest that the 'improvement' in the labour market in relation to ethnicity has been lower

	Full-time work only	Part-time work only	Work and further study	Further study only	Unemployed	Other	Engineering occupation
<b>2013/14 - Engineering graduates</b>							
Black	45.9%	12.8%	4.5%	17.9%	14.3%	4.6%	36.7%
Asian	52.0%	10.4%	3.0%	17.0%	13.0%	4.8%	40.9%
Mixed/Other	52.3%	8.2%	2.9%	18.1%	13.8%	4.7%	43.4%
All BME	50.6%	10.5%	3.4%	17.5%	13.5%	4.7%	40.4%
White	70.8%	5.9%	3.7%	9.5%	5.8%	4.3%	60.4%
<b>Total</b>	<b>65.9%</b>	<b>7.0%</b>	<b>3.6%</b>	<b>11.5%</b>	<b>7.7%</b>	<b>4.4%</b>	<b>55.6%</b>
<b>2012/13 - Engineering graduates</b>							
Black	44.1%	13.7%	2.4%	18.5%	16.5%	4.8%	33.4%
Asian	49.9%	10.6%	2.8%	16.0%	16.7%	3.9%	38.9%
Mixed/Other	59.4%	7.7%	1.9%	15.7%	12.5%	2.8%	43.2%
All BME	50.1%	10.9%	2.5%	16.6%	15.9%	3.9%	38.3%
White	71.0%	5.9%	3.0%	9.9%	6.5%	3.7%	59.4%
<b>Total</b>	<b>65.9%</b>	<b>7.1%</b>	<b>2.9%</b>	<b>11.5%</b>	<b>8.8%</b>	<b>3.8%</b>	<b>54.3%</b>
<b>2011/12 - Engineering graduates</b>							
Black	41.9%	10.6%	2.8%	16.8%	24.8%	3.2%	34.1%
Asian	44.1%	12.2%	2.6%	17.8%	19.0%	4.3%	35.7%
Mixed/Other	48.0%	8.9%	3.3%	18.2%	16.1%	5.4%	39.8%
All BME	44.3%	11.1%	2.8%	17.7%	19.9%	4.2%	36.1%
White	68.2%	6.6%	3.5%	10.3%	7.7%	3.8%	56.7%
<b>Total</b>	<b>62.7%</b>	<b>7.6%</b>	<b>3.4%</b>	<b>12.0%</b>	<b>10.4%</b>	<b>3.9%</b>	<b>51.9%</b>
<b>2010/11 - Engineering graduates</b>							
Black	31.4%	10.5%	5.6%	22.1%	22.9%	7.5%	24.7%
Asian	39.5%	9.2%	6.3%	22.5%	17.8%	4.7%	31.2%
Mixed/Other	43.4%	6.7%	4.8%	22.2%	15.0%	7.9%	32.9%
All BME	38.4%	8.9%	5.7%	22.3%	17.8%	6.9%	30.0%
White	62.7%	6.4%	6.3%	11.3%	8.6%	4.7%	52.7%
<b>Total</b>	<b>57.5%</b>	<b>6.9%</b>	<b>6.1%</b>	<b>13.9%</b>	<b>10.7%</b>	<b>4.9%</b>	<b>47.1%</b>
<b>2013/14 - All graduates</b>							
Black	50.5%	17.9%	4.8%	11.1%	10.8%	5.0%	
Asian	52.2%	13.3%	5.3%	14.5%	10.5%	4.3%	
Mixed/Other	53.9%	13.6%	5.6%	13.2%	8.5%	4.8%	
All BME	52.1%	14.5%	5.2%	13.4%	10.1%	4.6%	
White	58.9%	12.4%	5.5%	13.0%	4.6%	5.7%	
<b>Total</b>	<b>57.6%</b>	<b>12.8%</b>	<b>5.4%</b>	<b>13.0%</b>	<b>6.5%</b>	<b>4.7%</b>	
<b>2012/13 - All graduates</b>							
Black	47.0%	19.0%	4.7%	11.8%	13.2%	4.3%	
Asian	49.2%	14.8%	5.2%	14.5%	12.5%	3.8%	
Mixed/Other	51.8%	14.5%	5.2%	13.8%	9.3%	5.2%	
All BME	49.2%	15.8%	5.1%	13.7%	12.0%	4.2%	
White	56.9%	13.3%	5.5%	13.2%	6.5%	4.5%	
<b>Total</b>	<b>55.4%</b>	<b>13.8%</b>	<b>5.5%</b>	<b>13.3%</b>	<b>7.6%</b>	<b>4.5%</b>	
<b>2011/12 - All graduates</b>							
Black	42.1%	17.8%	5.1%	13.2%	17.0%	4.8%	
Asian	46.5%	13.9%	6.0%	16.1%	13.6%	3.8%	
Mixed/Other	47.9%	13.6%	5.0%	15.8%	12.2%	5.6%	
All BME	45.7%	14.8%	5.5%	15.3%	14.1%	4.5%	
White	54.1%	14.3%	5.8%	13.5%	7.6%	4.7%	
<b>Total</b>	<b>52.6%</b>	<b>14.4%</b>	<b>5.8%</b>	<b>13.9%</b>	<b>8.8%</b>	<b>4.6%</b>	
<b>2010/11 - All graduates</b>							
Black	36.2%	15.1%	7.1%	15.1%	17.2%	9.3%	
Asian	41.5%	12.3%	8.7%	16.7%	14.2%	6.6%	
Mixed/Other	42.2%	11.8%	7.1%	18.2%	12.5%	8.2%	
All BME	40.4%	12.8%	7.9%	16.7%	14.5%	7.7%	
White	50.3%	12.8%	8.2%	14.0%	8.1%	6.6%	
<b>Total</b>	<b>48.6%</b>	<b>12.8%</b>	<b>8.2%</b>	<b>14.5%</b>	<b>9.2%</b>	<b>6.7%</b>	

**Table 3. First destinations of graduates, by ethnicity**

for engineering graduates, as the UK emerged from recession.

Looking specifically at the proportion of graduates entering employment in engineering occupations, there have been increases over the years analysed for both white and BME engineering graduates, although the difference between the two has not closed significantly.

There has been a fall in unemployment of white graduates from 8% in 2010/11 to just under 5% in 2013/14, and a roughly similar fall for white engineering graduates from 9% to just under 6%. Among BME graduates, the proportion unemployed fell in the same period from 15% to 10% for all subjects, but for engineering graduates it fell from just under 18% to 13.5% (although it was actually worst in 2011/12). Again, this would seem to suggest that the differences in relation to ethnicity are not decreasing strongly with time, and even less so in engineering.

Figure 3 shows the differences in rate of unemployment for white and BME engineering graduates and how this has fallen during the period studied, as well as the increase in rates of entry to full-time employment.

To summarise these issues in relation to ethnicity:

- Higher proportions of white graduates than BME graduates enter full-time employment, and this difference is more pronounced for engineering graduates.
- This difference is decreasing with time, but more slowly among engineering graduates.
- A similar difference in ethnicity applies for engineering graduates in relation to entry to employment in engineering occupations, and is not improving substantially with time.
- There is markedly higher unemployment among BME engineering graduates than their white counterparts, a larger difference than is evident for graduates across all subjects.
- Although rates of unemployment have decreased in the last few years, differences within ethnicity remain.
- The rate of unemployment among white engineering graduates is similar to (or only slightly higher than) that for all white graduates, whereas it is higher among BME engineering graduates than other BME graduates.

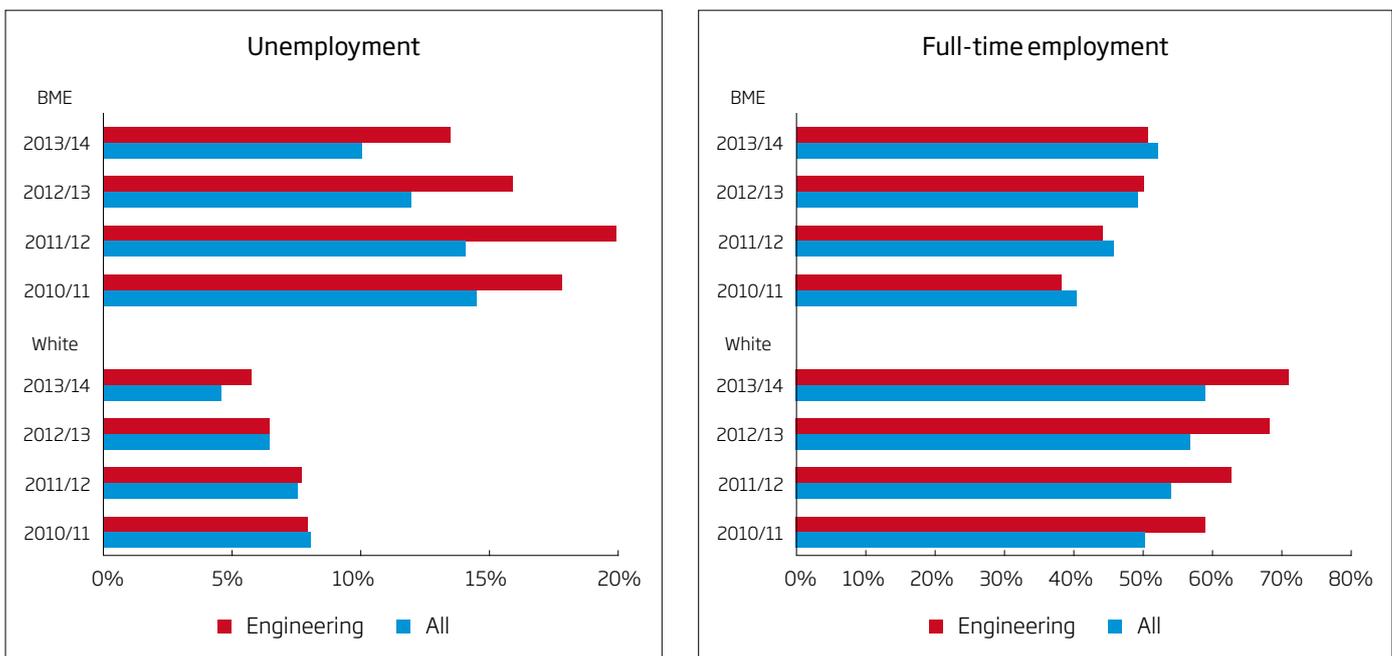


Figure 3. Variation in rates of unemployment and full-time employment over time for BME graduates

- Unemployment is consistently highest, and full-time employment lowest, for BME engineering graduates. based on two age ranges of graduates – up to and including 25 years of age (referred to here as ‘young’), and those over 25 years (‘older’).

### 3.1.3 Age

Some analysis of graduate destinations by age show potentially interesting differences between results for engineering and all graduates. However, this is a very simple analysis

Table 4 illustrates that for 2013/14 engineering graduates, a lower proportion of the older graduates (58%) entered full-time employment than the young graduates (almost 67%), while slightly higher proportions entered part-time work

	Full-time work only	Part-time work only	Work and further study	Further study only	Unemployed	Other	Engineering occupation
<b>2013/14 - Engineering graduates</b>							
25 or under	66.8%	6.8%	3.5%	11.4%	7.2%	4.3%	56.1%
Over 25	58.0%	8.5%	4.4%	12.5%	12.4%	4.3%	50.9%
<b>Total</b>	<b>65.9%</b>	<b>7.0%</b>	<b>3.6%</b>	<b>11.5%</b>	<b>7.7%</b>	<b>4.4%</b>	<b>55.6%</b>
<b>2012/13 - Engineering graduates</b>							
25 or under	66.9%	6.9%	2.8%	11.4%	8.3%	3.8%	54.7%
Over 25	57.2%	8.4%	4.5%	13.0%	13.3%	3.5%	50.1%
<b>Total</b>	<b>65.9%</b>	<b>7.1%</b>	<b>2.9%</b>	<b>11.5%</b>	<b>8.8%</b>	<b>3.8%</b>	<b>54.3%</b>
<b>2011/12 - Engineering graduates</b>							
25 or under	63.7%	7.7%	3.4%	11.8%	9.5%	4.0%	52.7%
Over 25	52.8%	6.9%	3.5%	14.0%	19.1%	3.8%	44.6%
<b>Total</b>	<b>55.4%</b>	<b>13.8%</b>	<b>5.5%</b>	<b>13.3%</b>	<b>7.6%</b>	<b>4.5%</b>	<b>51.9%</b>
<b>2010/11 - Engineering graduates</b>							
25 or under	58.3%	7.0%	6.1%	13.6%	10.1%	4.9%	48.3%
Over 25	48.9%	5.5%	6.7%	16.4%	17.2%	5.2%	42.9%
<b>Total</b>	<b>57.5%</b>	<b>6.9%</b>	<b>6.1%</b>	<b>13.8%</b>	<b>10.7%</b>	<b>4.9%</b>	<b>47.1%</b>
<b>2013/14 - All graduates</b>							
25 or under	57.4%	12.7%	5.4%	13.5%	6.4%	4.6%	
Over 25	59.1%	13.8%	5.1%	9.5%	7.3%	5.2%	
<b>Total</b>	<b>57.6%</b>	<b>12.8%</b>	<b>5.4%</b>	<b>13.0%</b>	<b>6.5%</b>	<b>4.7%</b>	
<b>2012/13 - All graduates</b>							
25 or under	55.4%	13.6%	5.4%	13.6%	7.4%	4.4%	
Over 25	55.4%	14.9%	5.5%	10.2%	8.3%	4.7%	
<b>Total</b>	<b>55.4%</b>	<b>13.8%</b>	<b>5.5%</b>	<b>13.3%</b>	<b>7.6%</b>	<b>4.5%</b>	
<b>2011/12 - All graduates</b>							
25 or under	52.8%	14.2%	5.7%	14.3%	8.4%	4.6%	
Over 25	51.2%	15.5%	5.9%	10.7%	11.3%	5.3%	
<b>Total</b>	<b>52.6%</b>	<b>14.4%</b>	<b>5.8%</b>	<b>13.9%</b>	<b>8.8%</b>	<b>4.6%</b>	
<b>2010/11 - All graduates</b>							
25 or under	<i>na</i>	<i>na</i>	<i>na</i>	<i>na</i>	<i>na</i>	<i>na</i>	
Over 25	<i>na</i>	<i>na</i>	<i>na</i>	<i>na</i>	<i>na</i>	<i>na</i>	
<b>Total</b>	<b>48.6%</b>	<b>12.8%</b>	<b>8.6%</b>	<b>14.5%</b>	<b>9.2%</b>	<b>6.8%</b>	

Table 4. First destinations of graduates, by broad age groupings

or pursued further study. The rate of unemployment was significantly higher among the older engineering graduates (12%, compared with the younger group at 7%).

For all 2013/14 graduates, a different picture emerges. A slightly higher proportion of the older graduates (59%) entered full-time employment than the young graduates (57%). However, a slightly lower proportion of the older graduates progressed to further study (and the proportion entering part-time work was quite similar). Unemployment among the older graduates was slightly higher (7.3%) than among the younger group (6.4%), but this was a much smaller difference than for engineering graduates.

These trends were observed to persist across the years studied, and the difference in unemployment rate for engineering graduates was higher still in some years (in 2011/12 the rate among older engineering graduates was double that among their younger

counterparts). However, it should be noted that these older graduates, on this basis, comprise only around 10% of UK full-time, first-degree graduates, both in engineering and overall (see section 5.1). More detailed analysis also identifies that a significantly higher proportion of these older engineering graduates is of ethnic minority origin, particularly Black origin, and this could potentially impact on the apparent differences in destinations with age. More sophisticated analysis of differences by age would be possible and this may be examined in a future project.

### 3.1.4 Academic attainment: class of degree and UCAS tariff

Table 5 illustrates how first destinations vary in relation to the class of degree obtained, although only 2013/14 and 2010/11 results are shown for brevity. In engineering, a much higher proportion of those with a 'good' degree class, such as a First or 2:1 grade, entered full-time employment (for example, 69% in 2013/14) than

	Full-time work only	Part-time work only	Work and further study	Further study only	Unemployed	Other	Engineering occupation
<b>2013/14 - Engineering graduates</b>							
1st & 2:1	69.1%	5.2%	3.5%	11.5%	6.2%	4.4%	59.7%
2:2 & below	53.4%	13.7%	3.5%	11.8%	13.0%	4.5%	40.4%
<b>Total</b>	<b>65.9%</b>	<b>7.0%</b>	<b>3.6%</b>	<b>11.5%</b>	<b>7.7%</b>	<b>4.4%</b>	<b>55.6%</b>
<b>2010/11 - Engineering graduates</b>							
1st & 2:1	62.1%	5.0%	6.6%	13.7%	8.1%	4.5%	54.1%
2:2 & below	47.5%	10.9%	5.2%	14.1%	16.3%	5.9%	34.5%
<b>Total</b>	<b>57.5%</b>	<b>6.9%</b>	<b>6.1%</b>	<b>13.8%</b>	<b>10.7%</b>	<b>4.9%</b>	<b>47.1%</b>
<b>2013/14 - All graduates</b>							
1st & 2:1	56.3%	11.8%	6.1%	15.2%	5.8%	4.8%	
2:2 & below	55.5%	17.5%	3.7%	8.2%	9.9%	5.2%	
<b>Total</b>	<b>57.6%</b>	<b>12.8%</b>	<b>5.4%</b>	<b>13.0%</b>	<b>6.5%</b>	<b>4.7%</b>	
<b>2010/11 - All graduates</b>							
1st & 2:1	47.2%	11.5%	9.2%	17.3%	7.9%	6.9%	
2:2 & below	51.3%	15.3%	6.1%	9.0%	11.7%	6.6%	
<b>Total</b>	<b>48.6%</b>	<b>12.8%</b>	<b>8.6%</b>	<b>14.5%</b>	<b>9.2%</b>	<b>6.8%</b>	

**Table 5. First destinations of graduates, with degree classification (where known)**

those with a poorer degree class (53% in 2013/14), and this difference was seen in both of the years shown here. Interestingly, this difference was not observed for all graduates in either year (among whom similar proportions of different degree classes entered full-time work in 2013/14, and fewer with 'good' degree classes in 2010/11). The proportion of engineering graduates with a good grade who entered employment in an engineering occupation in 2013/14 was also much higher (almost 60%) than among those with a poorer grade (40%).

Part-time work was a much more common outcome for engineering graduates with a poorer grade than those with a good degree. This was a greater difference than observed for all graduates.

Similar proportions of engineering graduates with both good and poorer degree classes entered further study, whereas across all subjects a significantly higher proportion of graduates with good degree classes entered further study (than those with poorer degree classes) - which, intuitively, is what might be expected.

The proportion of graduates who were unemployed at the time of the survey was considerably lower among engineering graduates with a good degree class (6% for 2013/14) than those with a poorer class (13%). This trend was also seen for all graduates, but there was a greater difference among the engineering graduates.

From these results, it seems that entry to full-time employment quite strongly correlates with degree attainment for engineering graduates, more so than is the case for all graduates. This is exaggerated further in relation to employment in an engineering occupation. If employers have been particularly targeting those with high degree grades, this could also potentially contribute to the relatively lower attainment of engineering graduates who entered further study; for example, some graduates with poorer degree classes could

have studied a master's degree to compensate for their first degree result.

From these data, it is not possible to investigate any impact on outcomes in relation to whether the graduates had studied an integrated master's (MEng) as opposed to BEng degree courses, but it seems likely that many of the higher-attaining students in a cohort will have obtained MEng degrees. Evidence exists that a higher proportion of BEng graduates (than MEng graduates) may pursue further study in the form of a taught master's course in order to compete with MEng graduates in the job marketplace.<sup>9</sup> The requirement for master's level study in registration for Chartered Engineer status may also be a significant influencing factor in these variations.

Attainment prior to higher education can be assessed using graduates' UCAS tariff at entry to university, which has been available for an increasing proportion of DLHE respondents since 2010/11. Table 6 illustrates how first destinations have varied in relation to UCAS tariff, using 2013/14 and 2010/11 results. For both 2013/14 and 2010/11 engineering graduates, there is some correlation between those entering full-time employment and their pre-university tariff:

- A higher proportion of those who entered engineering study with a high tariff (i.e. over 420 points, equivalent to three A levels at A\* or three at grade A plus additional points from a fourth subject at AS level, for example) subsequently entered full-time employment, than of those who had had a lower tariff.
- The proportion entering employment in an engineering occupation was also somewhat higher among those with a high pre-university tariff than those with lower tariffs.

Interestingly, the overall trend for all graduates is actually the reverse, with more of the lower tariff graduates entering full-time employment than the

<sup>9</sup> *Pathways to success in engineering degrees and careers*. Royal Academy of Engineering, 2015

high-tariff graduates. This is likely to be linked to the observation that a higher proportion of high-tariff graduates progressed with further study.

On the other hand, the proportion of engineering graduates with high tariffs who entered part-time work was less than among those with poorer tariffs, a trend also observed for all graduates. The UCAS Tariff did not seem to strongly correlate with entry to further study for engineering graduates, whereas it did for all graduates (especially in 2010/11, which was a particularly poor graduate labour market).

The proportion of unemployment was lower among engineering graduates with a high tariff (5% for 2013/14) than those with a poorer tariff (almost 10%). A similar trend, but slightly less pronounced, was seen for all graduates.

The results discussed in this section suggest that many key employment outcomes, such as entry to full-time employment, entry to an engineering occupation and unemployment, correlate more strongly with academic attainment (both degree class and attainment prior to higher education) for engineering graduates than across all subjects.

	Full-time work only	Part-time work only	Work and further study	Further study only	Unemployed	Other	Engineering occupation
<b>2013/14 - Engineering graduates</b>							
>420	71.4%	3.7%	3.7%	11.0%	5.0%	5.2%	60.1%
361-420	64.6%	7.7%	3.7%	12.4%	7.2%	4.6%	56.0%
300-360	65.4%	7.4%	3.5%	12.7%	7.2%	3.8%	55.4%
<300	63.5%	9.1%	3.4%	10.4%	9.9%	3.7%	51.7%
<b>Total</b>	<b>65.9%</b>	<b>7.0%</b>	<b>3.6%</b>	<b>11.5%</b>	<b>7.7%</b>	<b>4.4%</b>	<b>55.6%</b>
<b>2010/11 - Engineering graduates</b>							
>420	61.0%	3.1%	8.3%	14.8%	7.5%	5.3%	51.6%
361-420	58.4%	5.6%	6.0%	14.5%	9.9%	5.6%	47.2%
300-360	55.2%	7.1%	6.1%	16.2%	10.4%	5.0%	42.5%
<300	52.0%	10.9%	4.7%	14.3%	12.5%	5.6%	40.0%
<b>Total</b>	<b>57.5%</b>	<b>6.9%</b>	<b>6.1%</b>	<b>13.8%</b>	<b>10.7%</b>	<b>4.9%</b>	<b>47.1%</b>
<b>2013/14 - All graduates</b>							
>420	56.0%	8.8%	6.5%	18.6%	5.0%	5.0%	
361-420	57.0%	12.1%	5.8%	13.9%	6.2%	5.0%	
300-360	58.3%	13.3%	5.4%	12.4%	6.1%	4.5%	
<300	57.8%	15.8%	4.4%	9.9%	7.8%	4.3%	
<b>Total</b>	<b>57.6%</b>	<b>12.8%</b>	<b>5.4%</b>	<b>13.0%</b>	<b>6.5%</b>	<b>4.7%</b>	
<b>2010/11 - All graduates</b>							
>420	42.0%	8.2%	10.8%	24.7%	7.1%	7.2%	
361-420	46.7%	11.2%	9.2%	18.0%	7.8%	7.1%	
300-360	48.6%	13.1%	7.9%	15.2%	8.4%	6.8%	
<300	47.8%	16.2%	6.9%	11.6%	10.9%	6.6%	
<b>Total</b>	<b>48.6%</b>	<b>12.8%</b>	<b>8.6%</b>	<b>14.5%</b>	<b>9.2%</b>	<b>6.8%</b>	

**Table 6. First destinations of graduates, by UCAS tariff on entry to university, where known**

## 3.2 Variations with study characteristics

### 3.2.1 University type attended

Table 7 summarises destinations for graduates who attended universities of three broad types. For comparability with our previous report's results, the groupings selected are Russell Group institutions, other 'pre-92' institutions and 'post-92' institutions. Results for 2010/11 graduates who studied at post-1994 Russell Group institutions have been included in the 'pre-92' group for simplicity (i.e. ignoring the fact that four of these institutions joined the Russell Group subsequently).

Slightly higher proportions of engineering graduates who studied at Russell Group institutions entered full-time work than those who studied

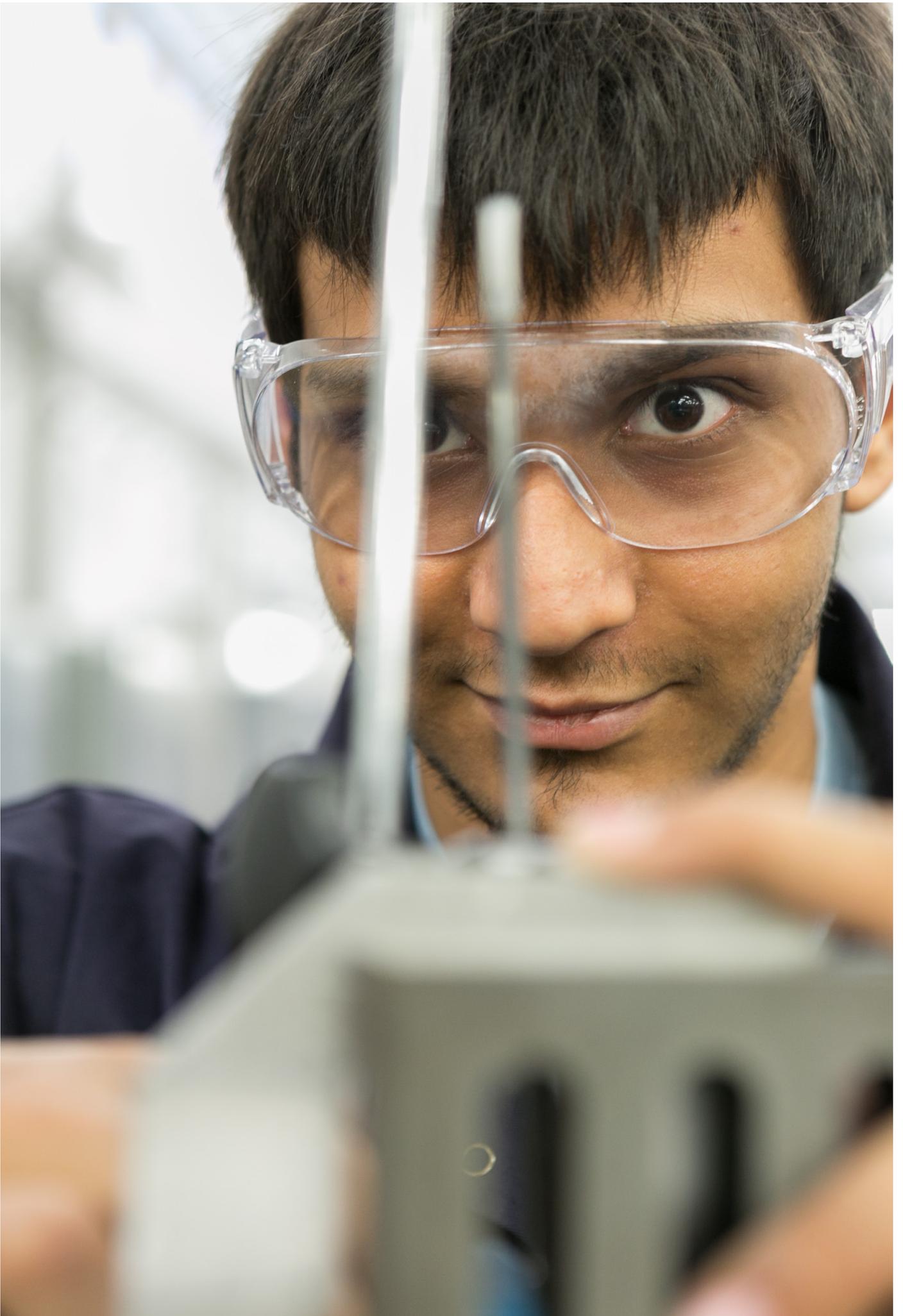
at other types of institution, especially post-92 institutions. However, this was not observed for all graduates.

There was also a modest correlation of this type in relation to entry to an engineering occupation. On the other hand, the proportion of those who studied at post-92 universities that entered part-time employment was roughly double the proportion among those at Russell Group or other pre-92 universities. The reverse was the case for entry to further study (i.e. a higher proportion of those who studied at Russell Group universities).

Unemployment was higher among those who had attended post-92 universities (than pre-92 or Russell Group universities) for engineering graduates and all graduates, in both years shown. The difference in university type was marginally greater

	Full-time work only	Part-time work only	Work and further study	Further study only	Unemployed	Other	Engineering occupation
<b>2013/14 - Engineering graduates</b>							
Russell Gp	68.1%	4.6%	3.1%	12.5%	5.9%	5.8%	57.0%
Other pre-92	66.1%	5.3%	4.5%	13.1%	7.2%	3.7%	59.7%
Post-92	63.8%	10.2%	3.3%	9.5%	9.5%	3.6%	51.7%
<b>Total</b>	<b>65.9%</b>	<b>7.0%</b>	<b>3.6%</b>	<b>11.5%</b>	<b>7.7%</b>	<b>4.4%</b>	<b>55.6%</b>
<b>2010/11 - Engineering graduates</b>							
Russell Gp	59.4%	4.2%	6.6%	15.0%	9.7%	5.1%	51.2%
Other pre-92	58.2%	5.6%	6.8%	16.1%	8.5%	4.8%	51.1%
Post-92	55.0%	10.5%	5.1%	11.0%	13.5%	4.9%	42.0%
<b>Total</b>	<b>57.5%</b>	<b>6.9%</b>	<b>6.1%</b>	<b>13.8%</b>	<b>10.7%</b>	<b>4.9%</b>	<b>47.1%</b>
<b>2013/14 - All graduates</b>							
Russell Gp	56.7%	7.8%	6.0%	18.4%	5.6%	5.5%	
Other pre-92	55.4%	11.3%	6.3%	16.4%	6.4%	4.2%	
Post-92	58.8%	15.9%	4.8%	9.1%	7.0%	4.4%	
<b>Total</b>	<b>57.6%</b>	<b>12.8%</b>	<b>5.4%</b>	<b>13.0%</b>	<b>6.5%</b>	<b>4.7%</b>	
<b>2010/11 - All graduates</b>							
Russell Gp	48.7%	7.6%	8.5%	21.0%	7.6%	6.6%	
Other pre-92	45.8%	11.2%	9.2%	18.7%	8.5%	6.6%	
Post-92	49.9%	16.1%	7.5%	9.3%	10.4%	6.8%	
<b>Total</b>	<b>48.6%</b>	<b>12.8%</b>	<b>8.6%</b>	<b>14.5%</b>	<b>9.2%</b>	<b>6.8%</b>	

Table 7. First destinations of graduates, with type of university attended



for engineering than all graduates, particularly for 2013/14. Interestingly, in 2013/14, the unemployment rate among engineering graduates who studied at Russell Group or pre-92 institutions was similar to that for all graduates of those institutions, whereas for graduates of post-92 institutions it was higher among engineering graduates.

Broadly, these data appear to show that key employment outcomes for engineering graduates are modestly correlated with the type of university attended, but more strongly by graduates' academic attainment. The correlation is greater than for all graduates. On the other hand, their unemployment rate seems to be influenced by both their attainment and the type of institution, and this is common to both engineering graduates and all graduates.

### 3.2.2 Variations with engineering subject

In Table 8, first destination data are summarised for 2013/14 and 2010/11 graduates split by their engineering subject. Within the 2013/14 results, the proportion of graduates that entered full-time employment ranged from 70% among civil engineering graduates to just under 60% for those in the chemical and process engineering group. Unemployment ranged from under 6% (civil and other engineering subjects, which included general engineering courses) to almost 10% for software engineering graduates. The highest proportions that entered engineering occupations were seen in civil engineering (66%), and the lowest in chemical and electrical/electronic (just under 50%).

	Full-time work only	Part-time work only	Work and further study	Further study only	Unemployed	Other	Engineering occupation
<b>2013/14 - Engineering graduates</b>							
Civil	70.1%	5.0%	4.9%	9.6%	5.6%	4.9%	65.8%
Mechanical	65.8%	7.1%	3.1%	11.8%	7.6%	4.5%	55.2%
Electrical & Electronic	63.4%	8.9%	3.3%	11.5%	9.2%	3.5%	50.2%
Chemical and process	59.4%	6.3%	4.1%	16.7%	9.2%	4.4%	49.5%
Software	66.8%	8.9%	2.0%	8.6%	9.9%	3.9%	61.2%
Other	67.9%	6.1%	3.5%	11.6%	5.9%	5.0%	49.2%
<b>Total</b>	<b>65.9%</b>	<b>7.0%</b>	<b>3.6%</b>	<b>11.5%</b>	<b>7.7%</b>	<b>4.4%</b>	<b>55.6%</b>
<b>2010/11 - Engineering graduates</b>							
Civil	54.2%	7.4%	7.5%	15.1%	10.9%	4.9%	<i>na</i>
Mechanical	60.3%	5.1%	6.2%	14.0%	9.6%	4.8%	<i>na</i>
Electrical & Electronic	55.7%	8.9%	4.9%	12.4%	13.2%	4.9%	<i>na</i>
Chemical and process	57.4%	4.9%	4.8%	19.3%	9.1%	4.5%	<i>na</i>
Software	56.9%	11.0%	4.8%	8.2%	13.5%	5.6%	<i>na</i>
Other	57.5%	7.3%	7.4%	13.2%	9.3%	5.3%	<i>na</i>
<b>Total</b>	<b>57.5%</b>	<b>6.9%</b>	<b>6.1%</b>	<b>13.8%</b>	<b>10.7%</b>	<b>4.9%</b>	<b>47.1%</b>

**Table 8. First destinations of engineering graduates, by principal subject groupings. General engineering courses included within 'other'**

For comparison, the 2010/11 results showed slightly different trends but with a broadly similar extent of variance with subject. Proportions entering full-time employment were slightly more tightly clustered than in 2013/14, being in the range of 54-60% (highest for mechanical engineering), while unemployment ranged from 9% (chemical) to over 13% (software and electrical/electronic).

It could be inferred from these snapshots that entry to full-time employment, and to some extent also unemployment, was somewhat more volatile for civil and software engineering graduates, and more stable for mechanical and chemical engineering graduates, although more detailed time-series analysis would be beneficial to investigate this in depth.

### 3.3 Summary

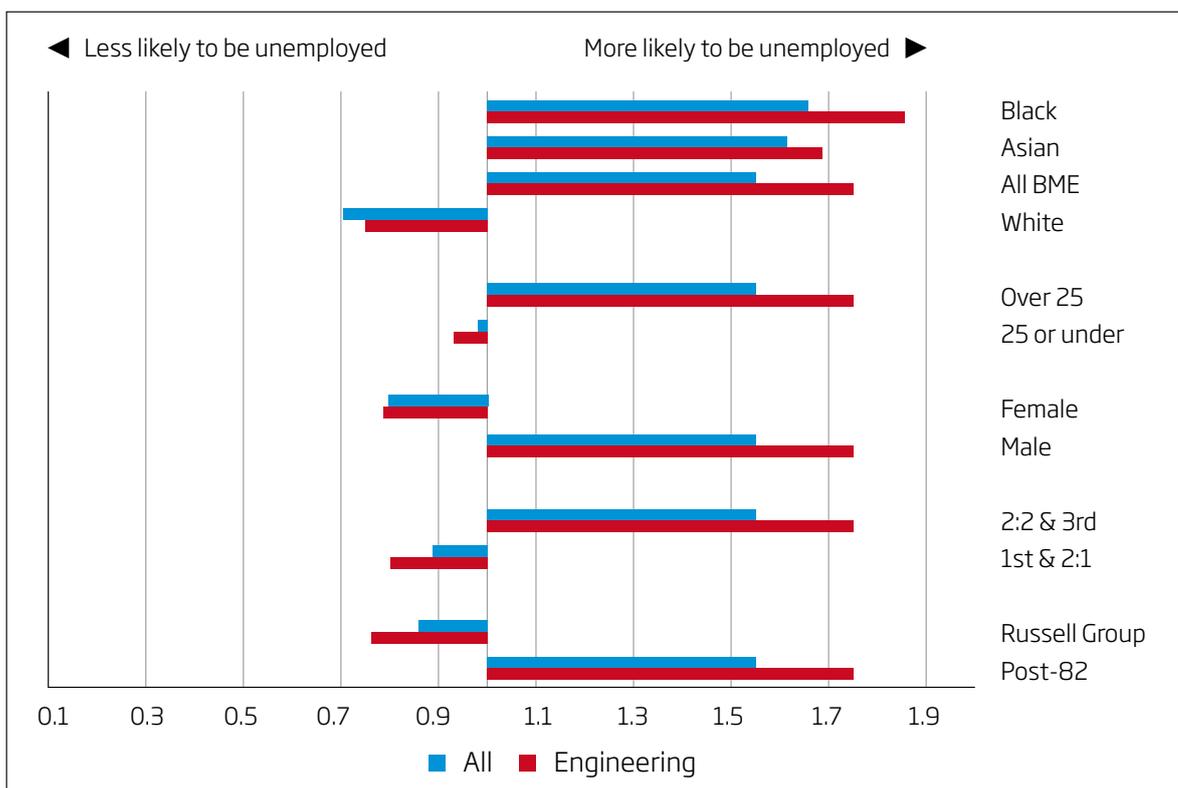
The extent of the relationships between different graduate characteristics and the rate of unemployment, within first destinations results for 2013/14 graduates, is shown in Figure 4. The

chart shows the unemployment rate for the group highlighted as a proportion of the underlying rate (for all engineering, or all graduates, respectively). For example, unemployment among Black engineering graduates is over 1.8 times the rate among all engineering graduates.

The chart illustrates that a BME background seems to be correlated more strongly with unemployment for engineering graduates than other graduates. The higher proportion of unemployment in the older age range can also be attributed to a higher number of BME graduates within this category. For gender, the situation is reversed and female engineering graduates are slightly less prone to unemployment than other female graduates.

Academic characteristics, such as a higher degree classification and studying in a high-tariff institution, appear to also have greater effect on engineering graduates than overall.

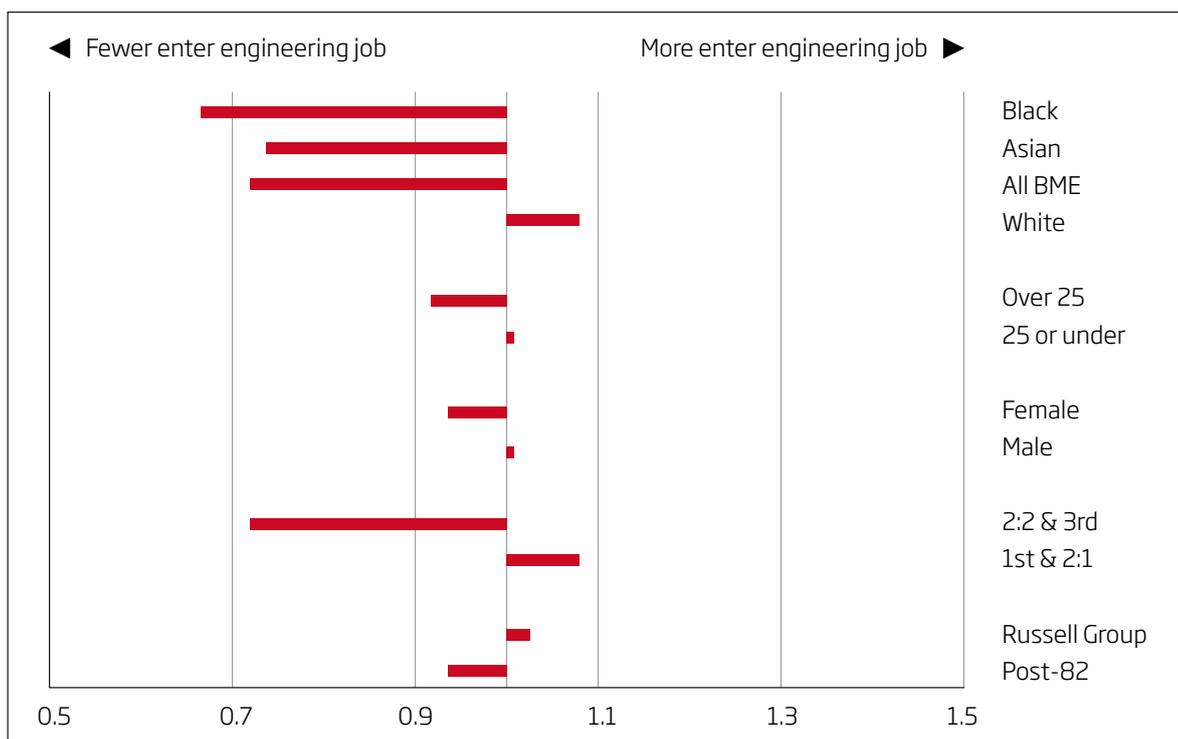
The chart depicted in Figure 5 focuses on the proportion of engineering graduates that entered employment in



**Figure 4. Relative impact of selected characteristics on unemployment rate, for 2013/14 graduates. Horizontal axis shows unemployment rate for a sub-group as a multiple of the rate for all graduates or all engineering graduates, respectively**

an engineering occupation. This again shows an apparent strong correlation with ethnicity in particular, but also with certain academic characteristics.

Broadly, differences in outcomes for engineering graduates with different characteristics tend to persist across the period studied. In addition, some other trends with time exist, such as a gradual increase in the proportion of graduates entering full-time employment, and in the proportion of engineering graduates entering employment in an engineering occupation, and in parallel a reduction in the proportion unemployed. These would be consistent with an improving labour market as the UK recovered from the recession. However, at the point being assessed by the DLHE survey (i.e. six months after graduation), there is some evidence to suggest that the recovering labour market did not result in a substantial diminution of the impact of diversity upon outcomes for engineering graduates.



**Figure 5. Relative impact of selected characteristics on employment in an engineering occupation, for 2013/14 graduates. Horizontal axis shows proportion employed in an engineering occupation for a sub-group as a multiple of rate for all engineering graduates**



## 4. Outcomes 3.5 years after graduation

### 4.1 'Long' destination results

Table 9 presents the 'long' destinations for 2010/11 graduates based on their responses to the L-DLHE survey, conducted approximately 3.5 years (40 months) after graduation. Results are available from 2,121 engineering graduates. In Table 9, their first destination results are given and it should be noted that these differ slightly from the 2010/11 results in section 3 because they are only a sub-sample of that original cohort. Nonetheless, the pattern of first destinations for these 2,121 was broadly similar to that of all engineering graduates from 2010/11: 60% had entered full-time employment; just under 55% were employed in an engineering occupation; and almost 10% were unemployed six months after graduation. The corresponding figures for the full sample of 2010/11 engineering graduates were 58%, 47% and just under 11%, respectively.

The circumstances three years later for these 2010/11 engineering graduates are shown in the row entitled 'Long destination (total)' in Table 9. These show that at this time (40 months after graduation) nearly 84% were in full-time employment, with 69% working in an engineering occupation. These

are clearly higher proportions than for engineering graduates six months after graduation. By this time, there were also lower proportions of graduates working part time or in further study, or both, compared with the number six months after graduation. Most significantly, the proportion that was unemployed 40 months after graduation was just 2.5%, compared with almost 10% at six months.

Through this comparison of the two sets of results, it can be inferred that many of those who had been undertaking further study, part-time work or were unemployed six months after graduation had progressed in the next three years into full-time work, in many cases in an engineering occupation. This will be demonstrated through further analysis in the next section.

Among all graduates a similar pattern of progression over time can be seen: 73% were in full-time employment after 40 months (compared with 48% at six months), with a lower proportion in further study and 2.5% unemployed (compared with nearly 9% at six months). It is interesting to note that after 40 months, unemployment among engineering graduates was no higher than among all graduates.

Destination	Full-time work only	Part-time work only	Work and further study	Further study only	Unemployed	Other	Engineering occupation
<b>Engineering graduates</b>							
First destination (total)	60.0%	6.7%	7.6%	13.0%	9.8%	2.9%	54.5%
Long destination (total)	83.7%	2.2%	3.3%	6.9%	2.5%	1.3%	68.9%
<b>All graduates</b>							
First destination (total)	47.9%	14.8%	10.3%	15.1%	8.8%	3.2%	
Long destination (total)	73.4%	6.9%	5.3%	9.0%	2.5%	2.9%	

**Table 9. 'Long' (40 month) and first destinations of 2010/11 graduates. First destinations based only on those responding to both surveys**

## 4.2 'Progression' - comparison of first and 3.5 year outcomes

More detailed analysis of the 40-month (3.5 year) destinations data has been used to study the progression of sub-groups of respondents who had had different circumstances six months after graduation.

For engineering graduates, Table 10 shows that 92% of those who had been in full-time work six months after graduation were also in full-time work at 40 months, while under 1% of those graduates were now unemployed. Almost 77% of these graduates were working in engineering occupations at the 40-month point.

Over three quarters of the engineering graduates who had been in part-time work or combined work and study at six months were now employed full time, while of those who had been

undertaking only further study, 55% had now entered employment (and 30% were again undertaking further study) at 40 months. It could be inferred that many of the latter will have been undertaking doctoral study.

Importantly, 77% of engineering graduates who had been unemployed at six months were in full-time work at 40 months. Only 1 in 10 of those who had been unemployed six months after graduation were still, or again, unemployed at 40 months. This is equivalent to around 1% of the 2010/11 cohort of engineering graduates.

Among all 2010/11 graduates who responded to both surveys, the lower part of Table 10 shows that:

- 83% of those who had been working full time at six months were in full-time employment at 40 months.

Long destination	Full-time work only	Part-time work only	Work and further study	Further study only	Unemployed	Other	Engineering occupation
<b>Engineering graduates</b>							
<i>First destination had been..</i>							
Full-time work only	92.3%	0.9%	2.6%	2.3%	0.9%	1.0%	76.8%
Part-time work only	75.2%	8.0%	4.8%	4.8%	4.8%	2.4%	57.6%
Work and further study	81.5%	1.2%	4.9%	9.3%	1.9%	1.2%	64.8%
Further study only	55.1%	2.9%	6.2%	30.4%	3.3%	2.1%	48.9%
Unemployed	76.9%	6.3%	1.4%	4.8%	9.6%	1.0%	58.2%
Other	85.5%	3.2%	0.0%	3.2%	3.2%	4.8%	65.4%
<b>Total</b>	<b>83.7%</b>	<b>2.2%</b>	<b>3.3%</b>	<b>6.9%</b>	<b>2.5%</b>	<b>1.3%</b>	<b>68.9%</b>
<b>All graduates</b>							
<i>First destination had been..</i>							
Full-time work only	82.7%	3.8%	5.1%	4.3%	1.3%	2.9%	
Part-time work only	65.9%	16.1%	5.1%	6.9%	2.8%	3.2%	
Work and further study	71.7%	6.4%	8.7%	9.6%	1.1%	2.5%	
Further study only	59.9%	3.8%	5.2%	25.4%	2.8%	2.9%	
Unemployed	65.1%	9.7%	3.4%	7.7%	8.0%	6.1%	
Other	63.5%	7.1%	5.1%	10.0%	5.2%	9.1%	
<b>Total</b>	<b>73.4%</b>	<b>6.9%</b>	<b>5.3%</b>	<b>9.0%</b>	<b>2.5%</b>	<b>2.9%</b>	

Table 10. 'Long' (40 month) destinations for 2010/11 graduates, analysed by their circumstances six months after graduation

- 66% of those who had been in part-time work, and 60% of those who had been engaged only in further study had entered full-time work.
- In relation to unemployment, 65% of those who had been unemployed at six months were now in full-time work - and 8% of them were unemployed - at the 40-month point.

The results in Table 10 show broad progression trends that are relatively similar for both engineering and all graduates, albeit with higher proportions of engineering graduates in full-time work at both the six month and 40-month survey points (than among all graduates). For both groups, fewer than 1 in 10 of those who had been unemployed at six months were still, or again, unemployed at 40 months, suggesting that long-term unemployment is rare among 2010/11 graduates.

These trends and comparisons are illustrated using Sankey diagrams in Figure 6. Among engineering graduates (Figure 6a) the diagram demonstrates the substantially higher proportion who were employed full time at 40 months

than at six months, and significant 'flows' from part-time work, work and further study, further study only, and unemployment, all to full-time employment at 40 months. Only very small flows occur from full-time work at six months to other destinations at 40 months.

In terms of unemployment, a very small flow can be seen from work at six months (about 1% of those employed) to being out of work at 40 months, while around 1% were unemployed at both survey points.

The corresponding diagram for all 2010/11 graduates (Figure 6b) shows broadly similar patterns overall, but with the comparatively lower proportion in full-time work at six months evident (than was the case for engineering graduates), and a somewhat lower proportion employed full time at 40 months than for engineering graduates. Again, significant flows occur from other six month destinations to full-time employment at 40 months.

However, also noticeable are relatively larger magnitude (albeit still modest) flows from full-time work at six months to other destinations three years later;

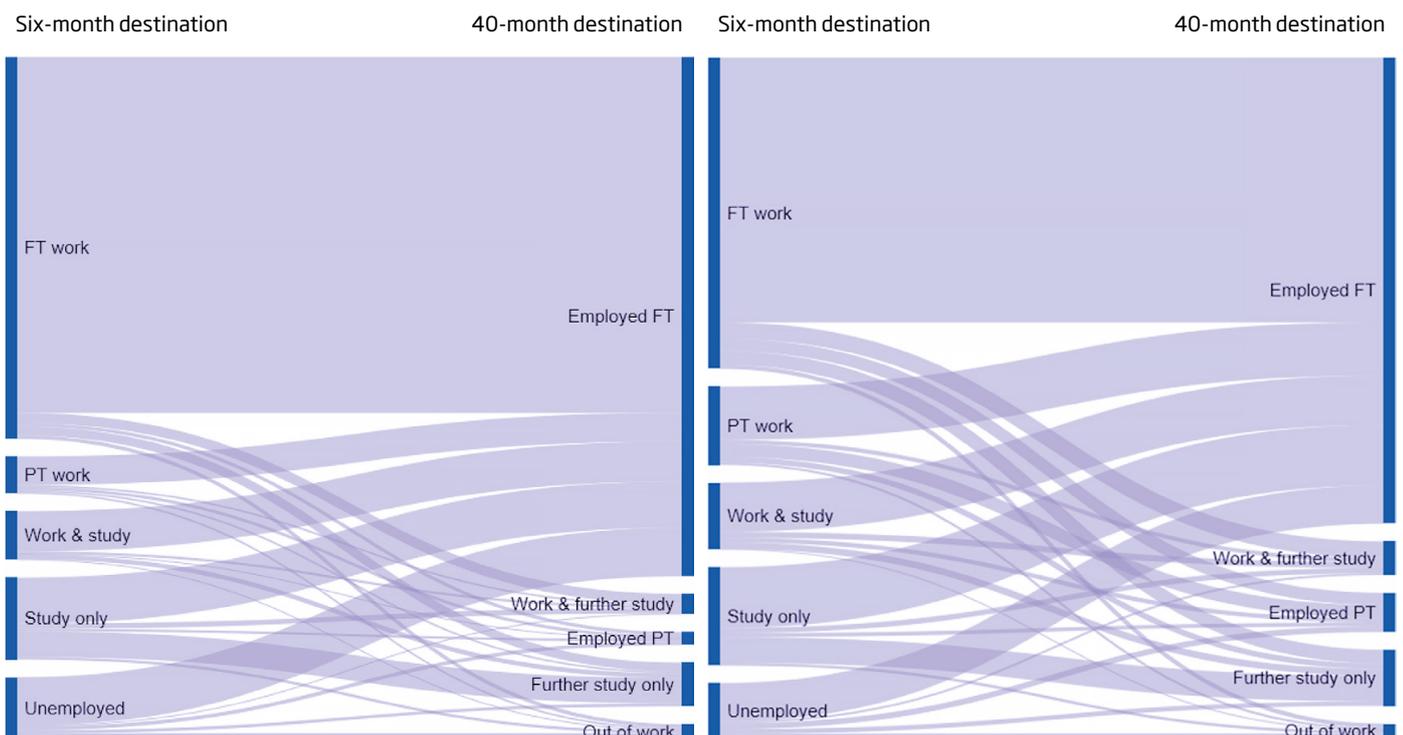


Figure 6. Sankey diagrams showing progression from six month to 40-month destinations, where both are known, for: (a, left) 2010/11 engineering graduates; and (b, right) all 2010/11 graduates

these appear to be significantly larger than corresponding flows among engineering graduates, perhaps showing employment to be more stable for the latter.

### 4.3 Variations in 3.5 year destinations for different types of graduate

#### 4.3.1 Variation with gender

The extent of analysis possible for different types of engineering graduate using L-DLHE (40 month) data is limited by the sample size, as the response sample was only 2,121 graduates (comprising 1,820 males and 301 females). Table 11 shows that the 'long' (40 month) destinations of male engineering graduates were very similar to those of the total engineering sample, which is not surprising given that males comprised 86% of the responses. Because of HESA's restrictions on reporting results for small samples, report results for all destinations for female engineering graduates cannot be reported, but 81% were in full-time employment, a slightly lower figure than male respondents (84%). Although 70% of male engineering graduates were employed in engineering occupations at this point, this was the case for under 60% of their female counterparts. Comparison with first destinations results suggests the difference by gender in those employed in an

engineering occupation is greater at 40 months than at six months, at which point the proportions of males and females entering full-time employment and/or engineering occupations had been very similar. From this it could be inferred that relatively fewer of those females who had not been in full-time employment at six months have subsequently entered full-time or engineering employment, than was the case for comparable males.

The limited size of the sample means that detailed analysis of their 'progression' (i.e. of the 2010/11 engineering graduates who had had different circumstances six months after graduation) by gender cannot be reported; the numbers of females in most sub-samples are simply too small for robust analysis or reporting. The one feature that can be reported is that similar high proportions (around 90%) of males and females who had been in full-time employment at six months were also in full-time work at 40 months.

Although more robust by virtue of the larger samples, analysis of all graduates suggests that there are only modest differences by gender in destinations at 40 months. Comparison with the corresponding first destination by gender (as shown in Table 2) does however show that the proportion of male graduates in full-time employment at 40 months (75%) was slightly higher than of females (72%), whereas at six months it had

Long destination	Full-time work only	Part-time work only	Work and further study	Further study only	Unemployed	Other	Engineering occupation
<b>Engineering graduates</b>							
Male	84.2%	2.3%	3.0%	6.5%	2.7%	1.3%	70.4%
Female	81.1%	<i>ns</i>	<i>ns</i>	<i>ns</i>	<i>ns</i>	<i>ns</i>	59.5%
<b>Total</b>	<b>83.7%</b>	<b>2.2%</b>	<b>3.3%</b>	<b>6.9%</b>	<b>2.5%</b>	<b>1.3%</b>	<b>68.9%</b>
<b>All graduates</b>							
Male	75.4%	3.9%	4.9%	9.9%	3.1%	2.8%	
Female	72.2%	7.8%	5.6%	8.4%	2.1%	3.9%	
<b>Total</b>	<b>73.4%</b>	<b>6.9%</b>	<b>5.3%</b>	<b>9.0%</b>	<b>2.5%</b>	<b>2.9%</b>	

Table 11. 'Long' (40-month) destinations of 2010/11 graduates, by gender; ns indicates sub-sample too small to report

been slightly lower. This suggests that somewhat greater proportions of males than females who had been undertaking activities other than full-time employment at six months subsequently progressed to full-time work. However, the differences in outcomes by gender within these individual sub-samples were not large.

### 4.3.2 Variation with ethnicity

As indicated in relation to gender, the size of the L-DLHE sample limits what can be analysed or reported in relation to the ethnicity of engineering graduates. Table 12 illustrates the 40-month destinations of engineering graduates by their ethnicity: 85% of white engineering graduates were in full-time employment 40 months after graduation, compared with 75–80% of those from an ethnic minority background (78% for BME graduates combined). Over 70% of white graduates were working in an engineering occupation, and 62% of BME graduates.

A difference also existed in relation to unemployment: 40 months after graduation 6.9% of BME engineering graduates were unemployed while only 1.5% of their white counterparts were.

Only this consolidated BME figure can be reported because of the small sub-samples involved, but the data suggest that unemployment may be highest among Black engineering graduates at 40 months (as it was at six months). However, it should be remembered that this result is based on a relatively small number of graduates.

Results for all graduates are reportable and show similar trends to those observed in engineering, although with lower proportions in full-time employment compared with engineering. Thus 74% of white graduates had entered full-time work at 40 months, compared with 64% of Black graduates and just under 70% of all BME graduates. Meanwhile, the rate of unemployment among all white graduates (1.9%) was lower than for all BME graduates (4.8%) and especially Black graduates (6.6%).

Comparison of reportable 40-month destination results for engineering graduates with results for all graduates seems to suggest that the extent of the differences by ethnicity is similar for both engineering and all graduates at the 40-month point, although perhaps slightly more exaggerated in relation to unemployment. This is in contrast

Long destination	Full-time work only	Part-time work only	Work and further study	Further study only	Unemployed	Other	Engineering occupation
<b>Engineering graduates</b>							
Black	74.7%	<i>ns</i>	<i>ns</i>	<i>ns</i>	<i>ns</i>	<i>ns</i>	63.3%
Asian	77.6%	<i>ns</i>	<i>ns</i>	<i>ns</i>	<i>ns</i>	<i>ns</i>	61.2%
Other	79.8%	<i>ns</i>	<i>ns</i>	<i>ns</i>	<i>ns</i>	<i>ns</i>	62.0%
<i>All BME</i>	77.7%	4.0%	3.7%	6.4%	6.9%	1.2%	61.9%
White	85.1%	1.8%	3.1%	7.0%	1.5%	1.3%	70.5%
<b>Total</b>	<b>83.7%</b>	<b>2.2%</b>	<b>3.3%</b>	<b>6.9%</b>	<b>2.5%</b>	<b>1.3%</b>	<b>68.9%</b>
<b>All graduates</b>							
Black	64.3%	10.0%	6.5%	7.7%	6.6%	4.9%	
Asian	72.2%	6.0%	5.4%	8.1%	4.4%	3.9%	
Other	68.9%	6.5%	5.2%	10.2%	4.2%	5.0%	
<i>All BME</i>	69.5%	7.0%	5.6%	8.6%	4.8%	4.5%	
White	74.4%	6.1%	5.3%	9.1%	1.9%	3.2%	
<b>Total</b>	<b>73.4%</b>	<b>6.3%</b>	<b>5.3%</b>	<b>9.0%</b>	<b>2.5%</b>	<b>3.5%</b>	

Table 12. 'Long' (40-month) destinations of 2010/11 graduates by ethnicity (*ns* indicates sub-sample too small to report)

to the situation reported earlier, where variances by ethnicity at six-month destinations were more exaggerated for engineering graduates than overall.

As was the case for gender, the sizes of the respondent samples are not sufficient to undertake analysis of the 'progression' of engineering graduates from different ethnicities who had had different circumstances six months after graduation. However, purely from comparison of the six-month and 40-month destinations, it seems that many of the BME graduates who had not found full-time work, and/or work in engineering, at the six-month point had done so three years later, and this has contributed to some decrease in the variance in outcomes over time.

#### 4.3.3 Variation with age

Potential analysis of the L-DLHE data, and especially comparisons between DLHE and L-DLHE results, by age is by definition more complicated than by a static characteristic such as ethnicity. The number of older 2010/11 engineering graduates who had responded to both the DLHE and L-DLHE surveys was also particularly small. For these reasons, we are not reporting 40-month destinations results by age (or comparisons with comparable six-month results) here.

## 4.4 Summary

Analysis of the 40-month ('long') destinations data for both 2010/11 engineering graduates and all graduates that year shows that the majority were in full-time employment at the L-DLHE survey point (3.5 years after graduation). Nearly 85% of engineering graduates were employed full time (higher than the proportion among all graduates at nearly 75%), and 69% employed in an engineering occupation. Comparative analysis of the first and long destinations of this cohort shows that most of those who had been unemployed six months after graduation, or engaged in part-time work or undertaking further study, had progressed into full-time work three years later.

Differences in outcomes by ethnicity persist in the 40-month destinations results, but these are mostly of lower magnitude than the variances that are seen in the six-month destination data, particularly in relation to entry to employment. Although the magnitude of differences in first destination outcomes by ethnicity was larger among engineering graduates than for all graduates, the extent of these differences in the 40-month results appears to be similar for both engineering graduates and all graduates. This might suggest that most engineering graduates of ethnic minority background do transition successfully into the labour market but more slowly than white graduates. However, it should be noted that a variance by ethnicity does persist at 40 months in the proportion that are unemployed, and the extent of that variance is slightly higher for engineering graduates than all graduates.

## 5. What drives unemployment among engineering graduates?

### 5.1 The profile of engineering graduates

When considering employment or unemployment rates for engineering graduates and comparing these with results for all graduates, it is important to remember the somewhat distinctive profile of engineering graduates (students) as a cohort. Table 13 summarises the characteristics of engineering graduates - and all graduates for comparison - for the cohorts graduating from 2010/11 to 2013/14. These results are for DLHE respondents but should be representative of the entire qualifying cohorts.

Table 13 demonstrates the consistency of a number of distinctive features of engineering graduates as a cohort compared with all graduates. In addition to the much lower proportion of females in engineering (around 13%, compared with 57% overall), there has consistently been a higher proportion of BME graduates in engineering than among all graduates, although

the proportions have risen across the period for both engineering and overall. In relation to age, there is a slightly lower proportion of graduates aged 25 years within engineering, compared with overall.

In terms of academic characteristics, the proportion of engineering graduates obtaining a 'good' degree (i.e. First class or 2:1 grade) has been very slightly higher than for all graduates, although arguably some 'grade inflation' can be seen across the period for both groups. There was also a fairly consistent slight difference in entry tariff for the graduates when they arrived at university, with a higher proportion in engineering having a UCAS Tariff of 360 points or more, than for all subjects combined.

The type of university the graduates studied at is somewhat more distinctive, with 35-37% of engineering graduates studying in Russell Group institutions, compared with 25-28% of all graduates. On the other hand, while just over half

	% female	% BME	% >25 yrs	% 1st & 2:1	% high tariff entry	% Russell GP HEI	% Post-92 HEI
<b>2013/14</b>							
<b>Engineering</b>	<b>13.0%</b>	<b>24.0%</b>	<b>9.7%</b>	<b>73.8%</b>	<b>53.4%</b>	<b>35.2%</b>	<b>39.3%</b>
Total - all graduates	56.7%	19.0%	11.0%	73.0%	49.2%	26.7%	53.2%
<b>2012/13</b>							
<b>Engineering</b>	<b>13.5%</b>	<b>23.5%</b>	<b>9.8%</b>	<b>71.6%</b>	<b>49.8%</b>	<b>36.0%</b>	<b>38.6%</b>
Total - all graduates	56.7%	18.8%	11.3%	70.6%	44.8%	27.6%	51.6%
<b>2011/12</b>							
<b>Engineering</b>	<b>13.3%</b>	<b>22.3%</b>	<b>9.6%</b>	<b>70.0%</b>	<b>45.7%</b>	<b>37.0%</b>	<b>38.4%</b>
Total - all graduates	57.2%	17.8%	11.5%	68.7%	40.6%	28.7%	50.4%
<b>2010/11</b>							
<b>Engineering</b>	<b>12.6%</b>	<b>21.1%</b>	<b>9.2%</b>	<b>68.2%</b>	<b>47.8%</b>	<b>34.7%</b>	<b>36.4%</b>
Total - all graduates	57.3%	17.2%	12.0%	66.1%	44.6%	24.8%	50.3%

Table 13. Characteristics of engineering and all graduates, using key sub-groupings

of all graduates studied at post-92 institutions, this was the case for 36-39% of engineering graduates.

Some of these facets of the profile of engineering graduates as a cohort are in reality related; more of those with a high UCAS entry tariff will have studied at Russell Group institutions, and are likely to have obtained a relatively good degree classification. There is growing evidence that females tend, on average, to attain more highly than males, but also that graduates with an ethnic minority background on average attain less strongly than their white counterparts. At the same time, some post-92 institutions have much more diverse student cohorts ethnically than Russell Group member institutions.

### 5.1.2 Profile of unemployed engineering graduates

With this context, the profile of key sub-groups of engineering graduates can be considered, including those who were unemployed in the DLHE surveys. As Table 14 shows, the profile of engineering graduates who were unemployed six months after graduation displays a number of

differences in characteristics compared with the total engineering graduate cohort. More of those who were unemployed tended to:

- be male
- be from a BME background
- be older (at least on the basis of this very broad age banding)
- have attained a 'poorer' degree grade
- have entered university with a lower UCAS tariff
- have studied at a post-92 institution (and fewer at a high tariff institution).

These differences were strongly consistent across the period studied, suggesting that detailed study of a single cohort (such as 2013/14), for simplicity, should be reasonably representative of the longer-term picture. Particularly prominent is the statistic that 42% of unemployed engineering graduates from 2013/14 were of BME background, compared with 24% of all engineering graduates that year.

	% female	% BME	% >25 yrs	% 1st & 2:1	% high tariff entrv	% Russell GP HEJ	% Post-92 HEI
<b>2013/14</b>							
<b>Engineering - unemployed</b>	<b>10.5%</b>	<b>42.3%</b>	<b>15.7%</b>	<b>59.7%</b>	<b>41.2%</b>	<b>26.9%</b>	<b>49.1%</b>
Engineering total	13.0%	24.0%	9.7%	73.8%	53.4%	35.2%	39.3%
<b>All graduates - unemployed</b>	<b>45.9%</b>	<b>29.7%</b>	<b>12.3%</b>	<b>65.1%</b>	<b>42.7%</b>	<b>23.2%</b>	<b>56.9%</b>
All graduates total	56.7%	19.0%	11.0%	73.0%	49.2%	26.7%	53.2%
<b>2012/13 Engineering</b>							
<b>Unemployed</b>	<b>10.9%</b>	<b>42.9%</b>	<b>15.0%</b>	<b>55.8%</b>	<b>38.6%</b>	<b>31.9%</b>	<b>48.0%</b>
Total	13.5%	23.5%	9.8%	71.6%	49.8%	36.0%	38.6%
<b>2011/12 Engineering</b>							
<b>Unemployed</b>	<b>11.0%</b>	<b>42.8%</b>	<b>17.7%</b>	<b>55.3%</b>	<b>33.4%</b>	<b>31.3%</b>	<b>47.8%</b>
Total	13.3%	22.3%	9.6%	70.0%	45.7%	37.0%	38.4%
<b>2010/11 Engineering</b>							
<b>Unemployed</b>	<b>10.6%</b>	<b>36.4%</b>	<b>14.8%</b>	<b>51.6%</b>	<b>46.1%</b>	<b>31.4%</b>	<b>45.7%</b>
Total	12.6%	21.1%	9.2%	68.2%	47.8%	34.7%	36.4%

**Table 14. Characteristics of engineering graduates who were unemployed six months after graduation, compared with all engineering graduates, using key sub-groupings**

Focusing on the 2013/14 cohort, the profile of unemployed graduates across all subjects shows broadly similar distinctive characteristics to those observed to be distinctive for unemployed engineering graduates (Table 14). That is to say, more of the unemployed graduates tended to be male, from a BME background and an older age, with lower attainment and have studied outside the Russell Group universities, than the average graduate.

A broad comparison of the extent of these variances for engineering graduates with those for all graduates can be made simply by observing the ratios of corresponding percentages in Table 14. The extent of the profile variances between unemployed engineering graduates and all engineering graduates tends to be greater than the corresponding variances between all unemployed graduates and all graduates, for almost all the characteristics studied. For example, the proportion of unemployed engineering graduates who were of BME origin was 1.75 times higher than the corresponding proportion among all engineering graduates, whereas the equivalent variance was just over 1.5 across all subjects. This suggests that the apparent correlation between BME background and unemployment is stronger for engineering graduates than for graduates as a whole. A similar picture is seen in relation to studying at a post-92 university; for example, this may have more effect on unemployment for engineering graduates than it does for graduates as a whole. Similar but less pronounced differences are seen for academic attainment, whereas there is no

difference in the apparent strength of correlation with gender.

### 5.1.3 Engineering graduates employed in engineering

The profile of the 2013/14 engineering graduates who were employed in an engineering occupation six months after graduation is summarised in Table 15. In terms of their gender and age, their profile is relatively similar to that of all engineering graduates in that cohort, but there are significant differences in relation to their ethnicity and also their attainment characteristics. In particular, a lower proportion of those employed in an engineering occupation were of BME origin (18%) compared with the proportion in the overall engineering cohort (24%). On the other hand, a higher proportion of engineering graduates working in engineering had achieved a good degree grade (79%) than in the overall engineering cohort (74%) and, possibly linked to that, a larger proportion had entered university with a high UCAS tariff.

It is unclear whether these differences in profile are a result of particular post-degree intentions of various types of graduates, or whether this is a result of recruitment practices by employers, or both. However, it is clear that on this basis the graduate engineering workforce is likely to be less ethnically diverse than those who study engineering at university, but also focused on those who achieve more highly academically.

As would be expected, the differences between the profile of engineering graduates employed in an engineering occupation and engineering graduates

	% female	% BME	% >25 yrs	% 1st & 2:1	% high tariff entry	% Russell GP HEI	% Post-92 HEI
<b>2013/14 Engineering</b>							
<b>Employed in Engineering occupation</b>	<b>12.3%</b>	<b>18.1%</b>	<b>8.7%</b>	<b>79.3%</b>	<b>57.3%</b>	<b>36.1%</b>	<b>36.5%</b>
Unemployed	10.5%	42.3%	15.7%	59.7%	41.2%	26.9%	49.1%
Total	13.0%	24.0%	9.7%	73.8%	53.4%	35.2%	39.3%

**Table 15. Characteristics of engineering graduates who were employed in an engineering occupation six months after graduation, compared with all engineering graduates and those who were unemployed, using key sub-groupings**

who were unemployed six months after graduation were more exaggerated still. For example, BME graduates made up 42% of unemployed engineering graduates in 2013/14, but only 18% of those who entered engineering occupations.

## 5.2 Ethnicity and other factors driving unemployment

In the earlier sections of this report, there has been evidence of various outcomes for engineering graduates of different types, and that the magnitude of these can be larger than comparable variances among graduates across all subjects. Lower proportions of engineering graduates from BME backgrounds, and also of those with weaker academic attainment, entered full-time employment or entered employment in an engineering occupation, while higher proportions remained unemployed six months after graduation, than was the case for all graduates.

However, several of these characteristics are to some extent related to each other, which complicates the picture. For example,

a higher proportion of BME graduates (than white graduates) studied in post-92 institutions, and somewhat fewer of them achieved a 'good' degree class, both of which are known to be factors in employment-related outcomes. Thus a difference in outcome by ethnicity might not entirely be due to ethnicity itself, but could partly result from the impact of these other characteristics (such as place of study or attainment), which are in turn related to ethnicity variations.

Given the particular interest of the Royal Academy of Engineering in ethnicity as one of the aspects of diversity, Table 16 is important in confirming the key importance of ethnicity in relation to unemployment among engineering graduates. Within any of the sub-groups analysed, based on other key characteristics, differences in the rate of unemployment by ethnicity still persist. For example, for 2013/14 graduates unemployment was higher among those from a BME background whether they were male or female, and also in both of the age groupings studied. Equally, the proportion of BME graduates unemployed was almost twice the proportion than white graduates,

	White	Black	Asian	Other / mixed	Total BME	Total
<b>Gender</b>						
Female	4.9%	<i>ns</i>	<i>ns</i>	<i>ns</i>	9.2%	6.1%
Male	5.9%	15.9%	13.5%	14.2%	14.2%	7.9%
<b>Age</b>						
25 and under	5.7%	9.4%	12.5%	13.9%	12.2%	7.2%
Over 25	7.5%	24.2%	<i>ns</i>	<i>ns</i>	20.4%	12.4%
<b>Degree class</b>						
1st & 2:1	4.9%	12.1%	9.7%	13.8%	11.1%	6.2%
2:2 % 3rd	9.6%	17.5%	20.6%	<i>ns</i>	18.7%	13.0%
<b>HEI type</b>						
Russell Group	4.5%	<i>ns</i>	10.5%	<i>ns</i>	11.0%	5.9%
Other pre-92	4.9%	<i>ns</i>	10.8%	<i>ns</i>	11.2%	7.2%
Post-92	7.0%	17.4%	16.5%	14.1%	17.4%	9.5%
<b>Total</b>	<b>5.8%</b>	<b>14.3%</b>	<b>13.0%</b>	<b>13.8%</b>	<b>13.5%</b>	<b>7.7%</b>

Table 16. Rate of unemployment among 2013/14 engineering graduates with different characteristics

whether they obtained a good or weaker degree classification. The same was observed for the type of institution in which they studied – higher proportions of BME graduates were unemployed irrespective of where they had studied.

What is also notable from Table 16 is the particularly high rates of unemployment among certain sub-groups, such as older Black graduates or Asian graduates who did not obtain a First or 2:1 degree.

Broadly, this seems to confirm the results of previous work on DLHE data that suggested that ethnicity is one of the most significant factors in unemployment among recent engineering graduates. However, given that many of these potential drivers of outcomes tend to be inter-related, it is not possible through simple cross-tabulation analysis to control all of these factors at the same time. In order to investigate this more deeply, in the next section a regression method is used to try to isolate the significance of these different characteristics on unemployment or employment.

### 5.2.1 Regression analysis

For 2013/14 engineering graduates, a simple logistic regression model for the outcome of unemployment based on ethnicity gave significant positive regression coefficients (B), showing that ethnic minority background was positively associated with unemployment (Table 17). The values of the odds ratio  $\text{Exp}(B)$  indicate that, in this simple model, Black engineering graduates were almost three times more likely, and Asian graduates over two and a half times more likely, to be unemployed than white graduates.

However, in order to isolate the effect of ethnicity by controlling the other key variables – some of which are associated at least to some extent with ethnicity – a more complex regression was run for engineering graduates. The ‘variables in the equation’ results are shown in Table 18, which uses male graduates aged 25 or under who obtained a good degree from a Russell Group university as a reference group. Here it can be seen that the B coefficients and  $\text{Exp}(B)$  odds ratios in relation to ethnicity are lower than in the uncontrolled analysis (Table 17), but are still significant and large. Thus,

		B	S.E.	Wald	df	Sig.	Exp(B)
Step 1*	ETH00001(White)			175.470	4	.000	
	ETH00001(1) (Black)	1.083	.122	78.662	1	.000	2.953
	ETH00001(2) (Asian)	.950	.092	107.313	1	.000	2.585
	ETH00001(3) (Other/Mixed)	.976	.140	48.574	1	.000	2.653
	ETH00001(4) (Not known)	.842	.323	6.810	1	.009	2.322
	Constant	-2.966	.049	3698.170	1	0.000	.052

\*Variable(s) entered on step 1: ETH00001.

**Table 17. Regression model output for ethnicity relating to unemployment among 2013/14 engineering graduates**

		B	S.E.	Wald	df	Sig.	Exp(B)
Step 1*	ETH00001 (White)			119.205	4	.000	
	ETH00001(1)(Black)	.733	.130	31.807	1	.000	2.081
	ETH00001(2)(Asian)	.861	.093	85.497	1	.000	2.367
	ETH00001(3)(Other/Mixed)	.892	.142	39.458	1	.000	2.440
	ETH00001(4)(Not Known)	.815	.326	6.237	1	.013	2.260
	GENDER0002 (Female)			5.717	2	.057	
	GENDER0002(1) (Male)	.300	.125	5.717	1	.017	1.349
	GENDER0002(2) (Other)	-18.898	19119.161	.000	1	.999	.000
	AGE00001(1)(26 or Over)	.334	.109	9.420	1	.002	1.397
	Class00001(1st or 2.1)			79.560	2	.000	
	Class00001(1)(2.2 or 3)	.713	.080	79.267	1	.000	2.040
	Class00001(2)(Other)	.162	.183	.790	1	.374	1.176
	HE00001(Russell Group)			28.735	2	.000	
	HE00001(1)(Other pre-92)	.228	.106	4.600	1	.032	1.256
	HE00001(2)(Post-92)	.488	.093	27.777	1	.000	1.629
	Constant	-3.709	.137	734.456	1	.000	.024

\*Variable(s) entered on step 1: ETH00001, GENDER0002, AGE00001, Class00001, HE00001.

**Table 18. 'Variables in the equation' regression output for unemployment among 2013/14 engineering graduates**

even when controlling for gender, age, attainment and type of institution, Black and Asian graduates were more than twice as likely to be unemployed as their white counterparts. In other words, this suggests statistically that ethnicity itself is correlated with an unemployment outcome, and is a stronger effect than any of the other factors studied.

What Table 18 also offers is the insight that unemployment is associated, on a significant statistical basis ( $p < 0.001$ ), with each of the following characteristics (strongest first):

- Ethnic minority background
- Obtaining a 2:2 or Third class degree grade (i.e. not a 2:1 or First)
- Studying at a post-92 university.

There are also associations with age (based on the simplified ranges used) and gender, but with lower statistical significance.

When run for 2013/14 graduates across all subjects, the model again suggests that ethnicity is the strongest of these characteristics in relation to unemployment, although the odds ratio values are somewhat lower than for engineering graduates (Table 19). Similarly, the effect of academic and attainment characteristics (obtaining a 2:2 or Third class degree, or studying at a post-92 university), greater age and, to a lesser extent, male gender are all significant. However, the effect of these characteristics is somewhat less for graduates of all subjects than for engineering graduates, especially ethnicity and attainment.

	B	S.E.	Wald	df	Sig.	Exp(B)
Step 1*			1312.508	4	.000	
ETH00001 (White)						
ETH00001(1)(Black)	.628	.031	399.716	1	.000	1.873
ETH00001(2)(Asian)	.716	.023	976.142	1	.000	2.047
ETH00001(3)(Other/Mixed)	.449	.036	153.175	1	.000	1.567
ETH00001(4)(Not Known)	.652	.078	69.842	1	.000	1.919
GENDER0001(Male)			912.105	2	.000	
GENDER0001(1)(Female)	-.503	.017	912.105	1	.000	.604
GENDER0001(2)(Other)	-18.731	9312.915	.000	1	.998	.000
AGE_Group01(1) (26 or Over)	.184	.026	51.684	1	.000	1.202
CLASS_Group01 (1st or 2.1)			1067.432	2	.000	
CLASS_Group01(1) (2.2 or 3)	.498	.018	761.634	1	.000	1.646
CLASS_Group01(2) (Other)	-.878	.059	224.960	1	.000	.416
INS_Group01 (Russell Group)			78.512	2	.000	
INS_Group01(1) (Other pre-92)	.145	.026	31.697	1	.000	1.157
INS_Group01(2) (Post-92)	.191	.022	78.363	1	.000	1.211
Constant	-3.015	.020	21954.475	1	0.000	.049

\*Variable(s) entered on step 1: INS\_Group01, AGE\_Group01, CLASS\_Group01, ETHNIC01, GENDER01.

**Table 19. 'Variables in the equation' regression output for unemployment among all 2013/14 graduates**

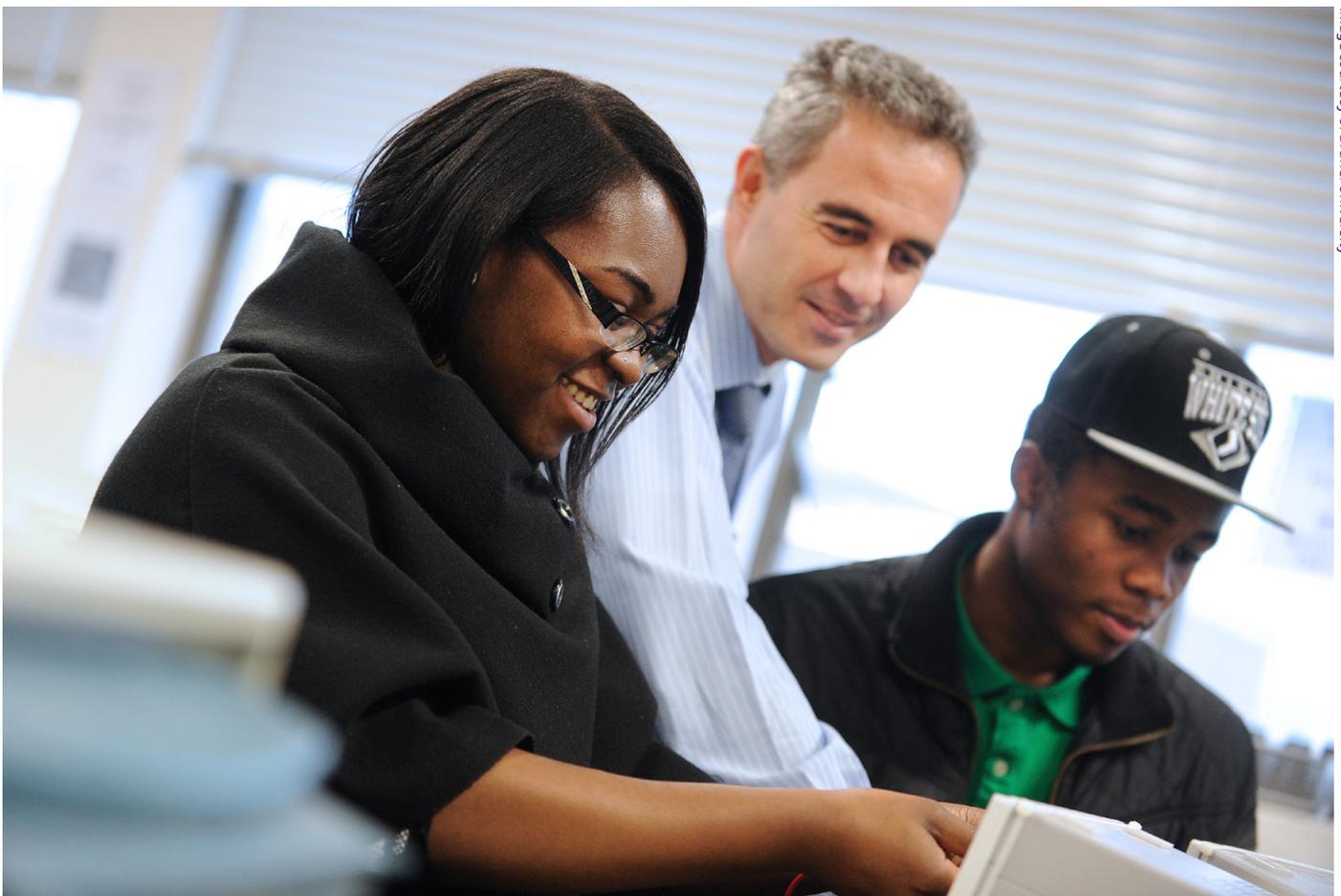


Image courtesy of Brunel University



## 6. Summary of key findings

- Analysis of HESA first destinations data for full-time, UK-domiciled, first-degree graduates from the five academic years 2009/10 to 2013/14 has provided employment outcome results that are consistent with an improving graduate labour market as the UK emerged from recession. Among engineering graduates, increasing proportions entered full-time employment within six months of graduation and decreasing proportions were unemployed or entered further study through this period, trends that were also seen for all graduates.
- There was consistency across the period in terms of a higher proportion of engineering graduates entering full-time employment than of all graduates, and the majority of engineering graduates entering engineering occupations. Although the rate of unemployment six months after graduation was higher for engineering graduates than for all graduates, this difference eroded over time.
- Higher proportions of white graduates entered full-time employment than comparable graduates of BME background, and these differences were greater for engineering graduates than overall. These differences did reduce somewhat across the period studied, as the labour market improved, although more slowly for engineering graduates.
- Similar differences applied in relation to engineering graduates who entered engineering occupations, such as higher proportions of white graduates than BME graduates, but these variances did not markedly decrease with time during this period.
- There has been consistently higher unemployment among BME graduates than comparable white graduates, although the difference has been reducing in magnitude over time. However, this difference is greater for engineering graduates than all graduates and its magnitude has been decreasing more slowly over time for engineering graduates. Among the 2013/14 graduating cohort, 13.5% of BME engineering graduates were unemployed six months after graduation but only 5.8% of white engineering graduates.
- There were also differences in first destination outcomes for engineering graduates by age (broadly, younger graduates do better in terms of entry to full-time employment), although this was not seen among all graduates. This could partly be an artefact of the particular age ranges used, and/or the profile of older engineering graduates.
- There were also differences in outcomes, as might be expected, in relation to academic attainment and place of study. Higher proportions of those with a 'good' degree class (First or 2:1) entered full-time employment, and/or employment in an engineering occupation, and fewer of them were unemployed six months after graduation. These differences were stronger for engineering graduates than overall, which could reflect a greater focus during engineering employer recruitment on attainment. The type of university in which graduates studied also had some impact on rates of entry to full-time employment for engineering graduates but not all graduates (and entry to an engineering occupation), and impacted on the unemployment rate for all graduates, being highest for those who studied at post-92 universities.

- The profile of graduates shows that several of these characteristics are at least partly related to each other. For example, there is a somewhat higher proportion of BME graduates in engineering than overall, and BME graduates tend to have somewhat lower attainment and more of them study in post-92 universities; both of these factors could contribute to a relatively higher unemployment rate. However, detailed analysis shows that differential outcomes with ethnicity persist when controlling for other characteristics. Use of a logistic regression technique, in order to control all these factors, reveals with statistical significance that the characteristics most strongly associated with unemployment are ethnicity and obtaining a weak degree grade. These factors operate more strongly for engineering graduates than graduates overall: a Black or Asian engineering graduate is more than twice as likely to be unemployed as a white counterpart of similar age and gender with similar study and attainment characteristics.
- Analysis of the 'long' destinations of 2010/11 graduates shows that 3.5 years after graduation over 83% of engineering graduates had entered full-time employment, and nearly 70% in engineering occupations, while few were in part-time work.

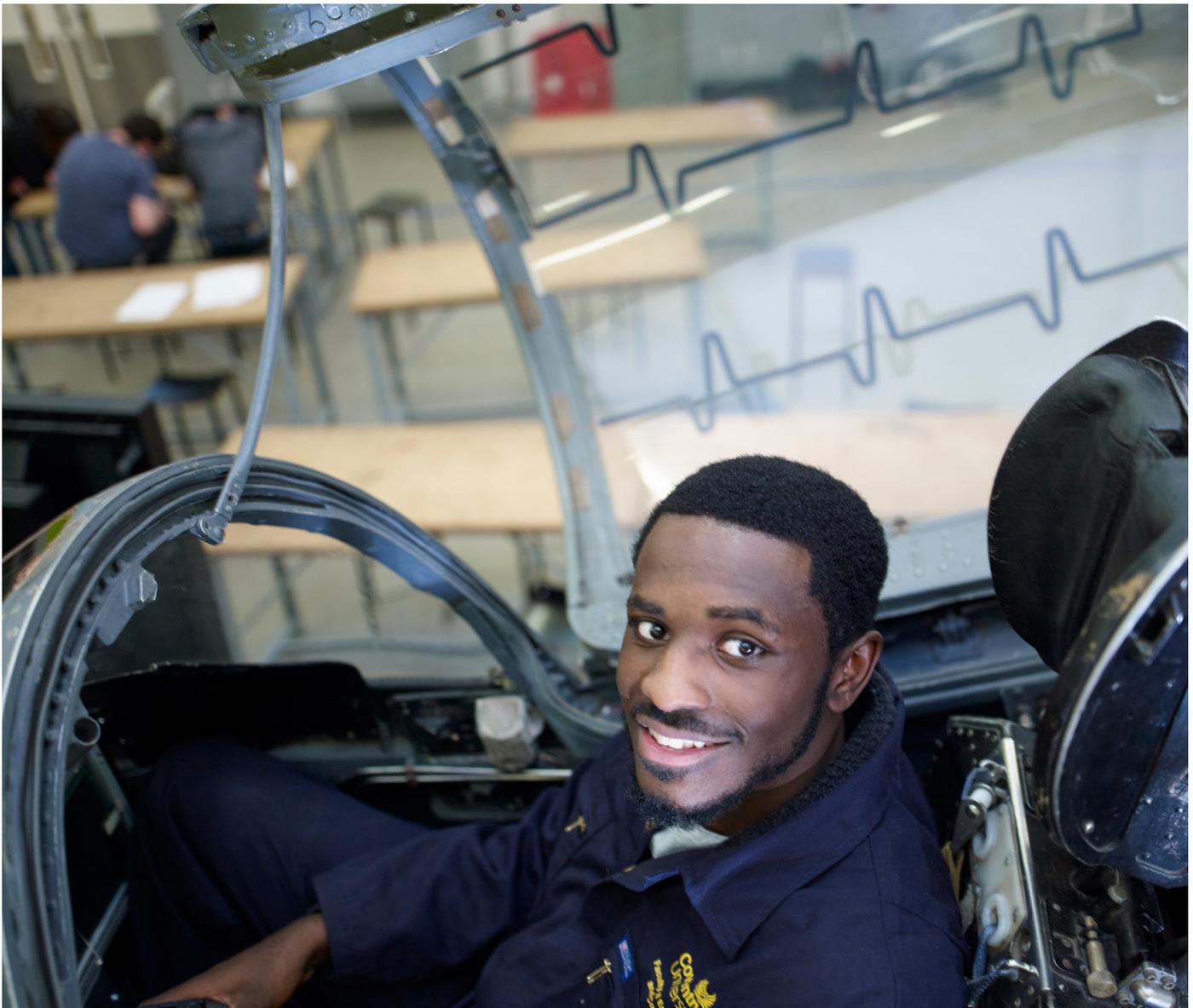


Image courtesy of Coventry University

- Analysis of the 2010/11 graduating cohort at both the six-month and 40-month points shows that the majority of engineering graduates who had been unemployed at six months (or working part-time or undertaking further study) had progressed to full-time employment three years later, a clear majority of whom were in engineering occupations. Unemployment 40 months after graduation was at a very low level (just over 2%), of whom about half had been unemployed at both survey points and half had been employed at six months. The rate of unemployment among engineering graduates was no higher than for all graduates at this later career stage.
- Some differences with ethnicity persisted in relation to long destinations. While three quarters of BME engineering graduates had entered full-time employment 40 months after graduation, the proportion among white engineering graduates was even higher. Unemployment among BME engineering graduates at this point was low (6%) but higher than among their white engineering counterparts (under 2%). However, it should be stressed that these differences in employment outcomes by ethnicity among engineering graduates were smaller in magnitude at 40 months, at which point they were broadly similar in magnitude to those among all graduates, than they had been six months after graduation.
- One key issue that arises from this research is that it robustly confirms the findings of a previous study suggesting that ethnicity plays a greater role in early employment outcomes for engineering graduates than other graduates. Three years later, there are still differences with ethnicity, but they are no larger for engineering graduates than others. Why this difference should persist over time in an industry that is striving for a more diverse workforce is a concern, and requires further investigation.
- A second key issue is the inference that recruitment of engineering graduates, especially into engineering occupations, seems to be more highly correlated with measures of academic attainment than is the case for graduates overall. In this respect it is possible that engineering employers have not progressed to the same extent as graduate recruiters in other sectors, many of whom currently place relatively little emphasis on academic attainment and more on other measures of graduates' potential. However, investigation of recruitment practices would be required to understand this more fully. It is also possible that some differences in outcomes are due to employers targeting those on integrated master's (MEng) courses, a factor that is invisible in these data.



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