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What do researchers do?

Early career progression of doctoral graduates 2013

Comparative analysis of two doctoral cohorts three years on

- Progression and earnings since graduation
- Comparison of employment circumstances with masters and first degree graduates

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Analysis has been undertaken using data from the 2008 and 2010 HESA Longitudinal Destinations of Leavers from Higher Education Surveys (© Higher Educations Statistics Agency Limited). HESA does not accept responsibility for any inferences or conclusions derived from the data by third parties.

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Foreword

What do researchers do? Early career progression of doctoral graduates

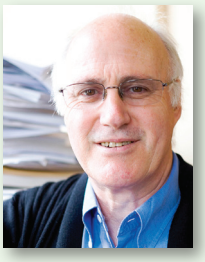
It is a great pleasure to provide the foreword for 'What do researchers do? Early career progression of doctoral graduates'. As the UK entered into recession there were concerns that an individual's extra investment of time, energy and resources into a doctoral degree would not be manifested in differential outcomes when compared with other degrees. It is good to see that this is not in fact the case.

'What do researchers do? Early career progression of doctoral graduates' provides evidence of the employability and value of doctoral graduates compared with masters and good first degrees. It shows that doctoral graduates continue to enjoy a salary premium relative to those with Masters and good first degrees. Furthermore, the incomes of doctoral graduates' have broadly kept pace with overall UK growth in earnings, whereas those of holders of Masters and first degree have fallen back.

It is reassuring to see that the salaries of those employed as research staff in higher education have improved, although there is still some way to go in reducing the proportion employed on fixed-term contracts. The emerging evidence of increasing proportions employed on contracts of a year or less is disturbing and worthy of further investigation by institutions.

More generally, it is heartening to know how highly-skilled doctoral graduates, particularly those in the humanities and social sciences, are contributing to our society, culture and economic competitiveness. In our work at the British Academy we have consistently emphasised the importance of advanced research and research training across the whole range of disciplines if the UK is to maintain its reputation for academic excellence.

This publication is essential reading for multiple audiences. It is an invaluable resource to inform policy making and investment in doctoral education, particularly in the current challenging funding environment. It gives actual and prospective doctoral researchers clear evidence of the value of their degree. It provides careers advisors, researcher developers and supervisors with comparative information on the employability of doctoral graduates and the breadth of potential careers. Finally, it will enable employers in all employment sectors to appreciate better what doctoral graduates can offer them. Striking in this connection is the evidence the report offers of the continued diversity of career avenues open to those with doctorates. We have moved on a long way from the days when only those who aspired to an academic career embarked on the doctoral path.



Professor Nigel Vincent,
Vice-President for Research and HE Policy, The British Academy

Data source: Destinations of Leavers from Higher Education Longitudinal Surveys 2008 and 2010 (IES analysis)

Executive summary

This publication presents results from doctoral graduate respondents to the HESA 'Longitudinal' Destinations of Leavers from Higher Education (L DLHE) survey in November 2010. This survey considered UK and EU graduates' circumstances, employment outcomes and attitudes around three and a half years after graduation. Comparisons are also made with results from those at a similar career stage who responded to the equivalent survey in 2008. Together they provide insights into the employment and early career development of doctoral graduates as the UK entered economic recession.

Broadly, there is little evidence for major change between the two cohorts. At these two survey points, around three and a half years after graduation, the vast majority of doctoral graduate respondents were in employment, with a consistently high proportion in full-time employment. Unemployment was very slightly higher in the 2010 survey but still at a very low rate of around 2%. Although 18% had experienced a period of unemployment at some stage since graduation, for around half it was three months or less. The employment destinations of these graduates were very similar to those found in the 2008 survey, although with a small decrease in the proportion working in research occupations.

Comparison of these doctoral graduates' earnings six months after graduation and three years later indicate that doctoral graduates continued to enjoy a salary premium relative to masters and good first degree graduates. Comparison between the two L DLHE survey cohorts suggests that doctoral graduates' earnings broadly kept pace with overall UK earnings growth during this period, whereas earnings for masters and first degree graduates fell back.

There is evidence that earnings for those employed in higher education occupations tended to have risen more in relation to those in 2008, than for those in the other main occupational sectors analysed. Many employed in HE research roles at this early career stage in 2010 earned more than many of their counterparts working in research posts outside HE, a reversal of the position observed in the 2008 survey.

Across all occupational clusters there were increases in the proportion of doctoral graduate respondents working on fixed-term contracts, most notably in research outside higher education. There was also evidence for shortening of fixed-term employment contracts, not only within HE research occupations where fixed-term contracts are much more prevalent than open-ended employment, but in other sectors too. However, the use of fixed-term contracts increased more for first degree graduates and particularly masters degree respondents.

On the basis of these measures, there is evidence that doctoral graduates have generally fared better during the early years of the economic downturn and therefore may be regarded as more 'recession-proof' than those with masters or good first degrees.

Doctoral graduates within the arts and humanities appear to have been most affected by changes in the labour market. This was seen in a slight fall in median salary, higher proportions in part-time employment and employed in other occupations, a faster-rising proportion employed on fixed-term contracts, especially on short-term contracts, and higher levels of portfolio working compared with other disciplinary groups. On the other hand this group reported the most positive impact of doctoral study on their life outside employment.

In general the majority who reported portfolio working did so because they liked the variety of work that it offered. However, for some (highest in the arts and humanities) it was a requirement to progress and response to difficult economic circumstances.

Overall, the results present a relatively consistent picture that the large majority of doctoral graduates are satisfied with their early career progress and feel that they have been well prepared by their doctoral degree experience to progress towards their career aspirations. Although doctoral degree experience seems to prepare them better for employment than for self-employment or entrepreneurship, over half report that they would consider self-employment or setting up their own business. However, the proportions of doctoral graduates self-employed are still very small, and just over half of the proportion of first degree and masters graduates.

Doctoral graduates consistently perceive positive impact of their doctoral degree experience on their workplace activities, career progression and to a lesser extent their wider lives. Within the workplace this experience helps them to be more innovative and influence the work of others, as might be expected of those with very high level knowledge. Many also report that it enables them to change organisational culture and working practices, presumably reflecting their high competency levels.

This report provides further insight into the careers and impact of doctoral graduates and particularly the resilience of their employability compared with good first degree and masters graduates. However, there is still much that we do not know about doctoral graduate careers and we propose a series of next steps to increase our knowledge and understanding of this important cohort.

Data source: Destinations of Leavers from Higher Education Longitudinal Surveys 2008 and 2010 (IES analysis)

1 Context and background

1.1 Context

The UK Research Councils and other research funders have for some time been committed to developing the UK research base through a programme of enhanced training and professional development of postgraduate and early career researchers.[1] In parallel the Research Councils have sought to understand the experience, value and impact of doctoral training through a series of research studies, including investigations of the career pathways of doctoral graduates. An analysis of options[2] identified that an enhancement of HESA's 'Longitudinal' Destinations of Leavers from Higher Education (L DLHE) could collect statistical information about doctoral graduates in their early careers.

Vitae has published a number of studies in its 'What do researchers do?' series which present statistical analysis of HESA DLHE and L DLHE data, as well as case studies and narrative career profiles, to provide insight into the employment circumstances and careers pathways of doctoral graduates. This included, in 2010, 'Doctoral graduate destinations and impact three years on' which presented analysis of the outcomes of doctoral graduates qualifying in 2004/05, using data from the 2008 HESA L DLHE survey.[3]

This new report presents findings from the L DLHE survey in November 2010 targeting those who had graduated in 2006/07 at a similar point in their career progression, i.e. around three and a half years after graduation. As this collected similar data to the prior survey, an opportunity exists to make certain comparisons of the outcomes of these two graduating cohorts, as well as to present additional data from new questions. Comparison at these two points in time is potentially interesting as they span the time when the UK entered economic recession, which offers the opportunity of considering the extent to which employment and early career outcomes for doctoral graduates might have been impacted by the economic climate.

This report provides further insights into the early careers of doctoral graduates:

- employment circumstances and outcomes for UK and EU-domiciled graduates who qualified in 2006/07, roughly three and a half years after graduation, analysed within key disciplinary groupings
- exploration of the employment of those who entered the labour force, including employment rates and periods of unemployment
- for those in the UK labour force, details of their occupations, current earnings and wage progression, employment contracts and any portfolio working
- reflections and perceptions of the value of doctoral degree study and related experiences, in relation to obtaining employment, career development and satisfaction, and the impact of the experience in the workplace and more widely
- analysis of these characteristics within the main different occupational clusters that doctoral graduates enter
- where feasible, comparison with findings from doctoral graduates who qualified two years earlier, potentially reporting areas of consistency and/or the impact of the changing economic backdrop in the UK.

1.2 Survey and methodology

This report uses data from the Longitudinal Destinations of Leavers from Higher Education (L DLHE) survey to provide an understanding of the early career development, progression and earnings of doctoral graduates. The L DLHE for doctoral graduates is a follow-up survey of all respondents three years after the census-based DLHE survey, which explores destinations and circumstances approximately six months after graduation for UK and rest of EU graduates at all UK higher education institutions[4]. Both surveys are led by the Higher Education Statistics Agency (HESA).

In this report we present findings from analysis of the L DLHE survey carried out in November 2010 that targeted those who graduated with doctoral degrees during 2006/07[5]. In order to present a comparative view of doctoral graduate employment destinations and impact, comparable data are provided where possible with doctoral graduates participating in the previous L DLHE survey, which targeted 2004/05 graduates and explored their destinations as at November 2008[6].

The focus of this report is on doctoral graduate employment and earnings, but it also reports other key data from the 2010 L DLHE survey, including new questions on periods of unemployment, multiple jobs and the impact of doctoral degrees and programmes.

[1] RCUK Research careers and diversity strategy www.rcuk.ac.uk/rescareer/strategy.htm

[2] Doctoral career pathways, skills and training: Options analysis for the collection of information about the early careers of UK doctoral graduates, IER/RCUK, 2008 www.rcuk.ac.uk/documents/researchcareers/opana.pdf

[3] What do researchers do? Doctoral graduate destinations and impact three years on, Vitae, 2010; www.vitae.ac.uk/destinations-3years-on

[4] Currently the DLHE surveys do not cover international researchers. Unless otherwise shown, results in this report refer to UK and EU doctoral graduates. www.hesa.ac.uk/index.php?option=com_studrec&Itemid=232&mnl=08019

[5] The 2010 L DLHE survey captures activity at 24 November 2010, and in line with HESA terminology is deemed to represent a time period of approximately three and a half years after completion but in reality may be up to four and a half years after completion.

[6] What do researchers do? Doctoral graduate destinations and impact three years on, Vitae, 2010 www.vitae.ac.uk/destinations-3years-on

Data source: Destinations of Leavers from Higher Education Longitudinal Surveys 2008 and 2010 (IES analysis)

1.3 Demographics and representativeness

In total, 2505 UK and EU doctoral graduates responded to the 2010 L DLHE survey, which was 46% of the 6404 who had completed the DLHE survey for this cohort. For comparison, 2073 doctoral graduate responses were obtained in the prior (2008) L DLHE survey.

Table 1 shows the characteristics of the 2010 L DLHE respondent sample, compared with doctoral graduate respondents to the 2008 DLHE survey for the same graduating cohort, which is widely held to be representative of all UK and EU 2006/07 doctoral graduates. The final column presents equivalent data for doctoral graduate respondents in the 2008 L DLHE survey who graduated in 2004/05.

After weighting[7], characteristics of doctoral graduate respondents to the 2010 L DLHE survey compare well with those of respondents to the respective (2008) DLHE survey. This provides a strong level of confidence that the responses are representative of the population of UK and EU doctoral graduates in that cohort.

Comparison with the profile of doctoral respondents to the 2008 L DLHE survey (i.e. those who graduated in 2004/05) shows very close similarities, with the exception of their age profile, with fewer 2010 L DLHE respondents under 30 years of age.

Table 1 Characteristics of doctoral graduate respondents

Characteristics	L DLHE (2010) graduated - 2006/7	DLHE (2008) graduated - 2006/7	L DLHE (2008) graduated - 2004/5
UK domiciled	88.1%	83.6%	87.8%
Rest of EU domiciled/ wider Europe	11.9%	16.4%	12.2%
Total	2505	6720	2075
Gender			
Male	50.7%	52.5%	51.2%
Female	49.3%	47.5%	48.8%
Total	2505	6720	2075
Age group (at L DLHE survey date)			
Under 30 years	9.9%	9.8%	17.1%
30-34 years	46.3%	47.5%	42.4%
35-39 years	14.5%	16.2%	14.8%
40-49 years	14.0%	14.5%	12.9%
50-59 years	9.4%	7.6%	8.7%
60+ years	5.9%	4.5%	4.0%
Total	2505	6720	2075
Disability status			
Disabled	5.5%	4.9%	5.2%
No known disability	94.5%	95.1%	94.8%
Total (known)	2385	6350	2075
Ethnicity (UK domiciled only)			
White	93.1%	90.8%	92.6%
Black and minority ethnic	6.9%	9.2%	7.4%
Total (known)	1985	4900	2075
Mode of study			
Full-time	72.2%	75.9%	72.5%
Part-time	27.8%	24.1%	27.5%
Total	2505	6720	2075

Note: DLHE survey date 14 January 2008, survey date for L DLHE was 29 November 2010

7 The data from the 2010 L DLHE survey were weighted during analysis to correct for selection and response bias against the initial DLHE survey respondent profile. Following HESA guidelines, all percentages quoted in this report are reported as weighted data. All totals are given as un-weighted bases, rounded to the nearest five (for reasons of data protection)

1.4 Disciplinary comparability

The disciplinary profile of 2010 L DLHE doctoral graduate respondents compares well with the profile of doctoral graduate respondents in the 2008 DLHE survey, although with slightly higher proportions of arts and humanities and slightly lower physical science and engineering graduates. The DLHE respondents are held to be highly representative of the overall cohort of UK and EU graduates in that cohort.

When compared with the 2008 L DLHE doctoral graduate respondents, there is a higher proportion of arts and humanities graduate respondents in 2010 than 2008 (16% vs.11%) and a lower proportion of biomedical sciences graduates (22% vs. 26%). The greater proportion of arts and humanities respondents is also reflected in the somewhat older age profile of respondents, as the majority of doctoral researchers in this disciplinary group undertake doctoral study at a later stage rather than directly after first or masters degrees (as is also the case for social scientists).

Table 2 Disciplinary profile of doctoral graduate respondents

	L DLHE (2010)	DLHE (2008)	L DLHE (2008)
Arts and humanities	16.0%	14.9%	11.1%
Biological sciences	12.4%	12.4%	13.4%
Biomedical sciences	22.1%	23.0%	26.3%
Physical sciences and engineering	32.1%	34.0%	33.0%
Social sciences	11.7%	11.2%	11.9%
Other[8]	5.8%	4.4%	4.2%
Total	2505	6720	2075

The greater representation in the 2010 L DLHE of arts and humanities doctoral graduates, and lower of biomedical sciences doctoral graduates, compared with those in the 2008 L DLHE survey, reduces the value of comparisons between the overall 2010 and 2008 data samples. Comparisons of the 2010 and 2008 data are more reliable when made within disciplinary groups. This is the basis on which the majority of comparisons are made within this report.

8 'Other' disciplines tend to be education. Due to the small size of this group it has not been separated out in any disciplinary analysis. Additional source: WDRD Trends, 2007, UK-domiciled respondents to DLHE by discipline (2005)

Data source: Destinations of Leavers from Higher Education Longitudinal Surveys 2008 and 2010 (IES analysis)

2 Employment circumstances

Key statistics

- Comparison of the 2010 L DLHE data with 2008 L DLHE data does not identify any strong recession-driven impacts on doctoral graduate employment.
- Over 90% of doctoral graduate respondents in 2010 were in employment, mostly working in the UK (79%), very similar to the position two years earlier.
- 77% of doctoral graduate respondents were in full-time employment, consistent with two years earlier, while masters and good first degree graduate respondents had seen falls of 5% over the same period.
- More than 80% of UK-domiciled biological sciences and physical sciences and engineering doctoral graduate respondents were in full-time paid work; a significantly lower proportion of arts and humanities respondents (59%) were in full-time paid work.
- There were significant rises in part-time working for arts and humanities (15% to 22%) and to a lesser extent social sciences respondents (11% to 13%).
- Unemployment at 2.4% was very low although slightly higher than had been the case two years earlier (1.7%).
- 18% of respondents had experienced unemployment for at least a month at some point since graduation; two fifths of these had experienced unemployment for a total of three months or less.
- 42% of respondents were still in the same job since graduation; 26% had held three or more jobs, higher still for arts and humanities respondents at 33%.
- 14% of respondents were engaged in portfolio working, notably higher for arts and humanities (27%) and social sciences (20%) respondents.
- Over 70% of the respondents engaged in portfolio working claimed it was their choice and liked the variety; arts and humanities were least likely to engage in portfolio working by choice (59%).
- 40% of those arts and humanities respondents, and a quarter overall, who were engaged in portfolio working did so because they could not find a full-time position in their preferred employment.

2.1 Employment circumstances

The large majority of doctoral graduate respondents to the 2010 L DLHE survey were either working or working and studying in the UK (79%), and a further 11% were working or working and studying overseas (Table 3). Just over 2% were unemployed while around 5% were not available for work for reasons such as taking time out, maternity, retirement etc.

Despite the November 2010 L DLHE survey being undertaken in a difficult employment market (national unemployment rates peaked in autumn 2011), the overall employment circumstances of doctoral graduate respondents closely resemble those obtained in the 2008 L DLHE survey when the employment market, pre-recession, had been relatively buoyant. The proportion reporting unemployment was low (2%) but somewhat higher amongst non-UK EU doctoral graduates (4%).

When compared with other graduates in the 2010 L DLHE survey (Table 4), the proportion of doctoral graduates in full-time employment at 77% is consistent with 2008 levels, while masters and high achieving first degree graduates[9] both have seen 5% falls in full-time employment and slight increases in further study and part-time work.

Unemployment rates have remained low although small increases were seen for all graduates between the 2008 and 2010 L DLHE surveys.

The high and consistent overall employment rate and consistently low unemployment figures amongst respondents would appear to suggest that there has been relatively little impact of the recession on those doctoral graduates who entered the employment market in 2006/07, particularly compared with masters and good first degree graduates.

[9] Considered to be those with a 1st or 2:1 degree grade

Data source: Destinations of Leavers from Higher Education Longitudinal Surveys 2008 and 2010 (IES analysis)

Table 3 Employment circumstances 3.5 years after graduation for doctoral graduate respondents from UK HEIs by original domicile

	2010 L DLHE			2008 L DLHE		
Employment circumstances	All	UK	Rest of EU	All	UK	Rest of EU
Working in the UK	76.6%	81.2%	42.6%	74.1%	79.3%	36.4%
Working and studying in the UK	2.3%	2.4%	1.4%	5.5%	6.1%	1.0%
Working overseas	11.2%	6.4%	47.0%	11.5%	6.2%	50.0%
Working and studying overseas	0.4%	0.3%	1.3%	0.7%	0.3%	4.0%
Not available for work or study	5.1%	5.7%	1.2%	3.3%	3.4%	2.8%
Assumed unemployed*	2.4%	2.1%	4.0%	1.7%	1.6%	2.2%
Work/study location unknown or other	2.0%	2.0%	2.5%	3.1%	3.1%	3.5%
(N) – Unweighted number of responses	2505	2215	290	2075	1815	255

*Note: includes work status unknown

Table 4 Comparison of main activity of graduate respondents by level of degree for UK and rest of EU domiciles

	2010 L DLHE			2008 L DLHE		
	Doctoral graduates	Masters graduates	First degree 1st/2:1	Doctoral graduates	Masters graduates	First degree 1st/2:1
Full-time paid work	77.5%	72.0%	71.5%	77.3%	76.1%	74.8%
Part-time paid work	9.5%	6.7%	5.7%	7.7%	5.2%	4.5%
Work and further study	2.7%	5.7%	6.0%	6.3%	7.8%	7.5%
Further study only	1.4%	7.9%	10.2%	1.7%	5.2%	8.4%
Assumed unemployed	2.1%	2.8%	3.1%	1.7%	2.1%	2.6%
Other	6.7%	4.9%	3.5%	5.4%	3.4%	2.2%
(N)	2505	6300	20040	2070	4720	15905

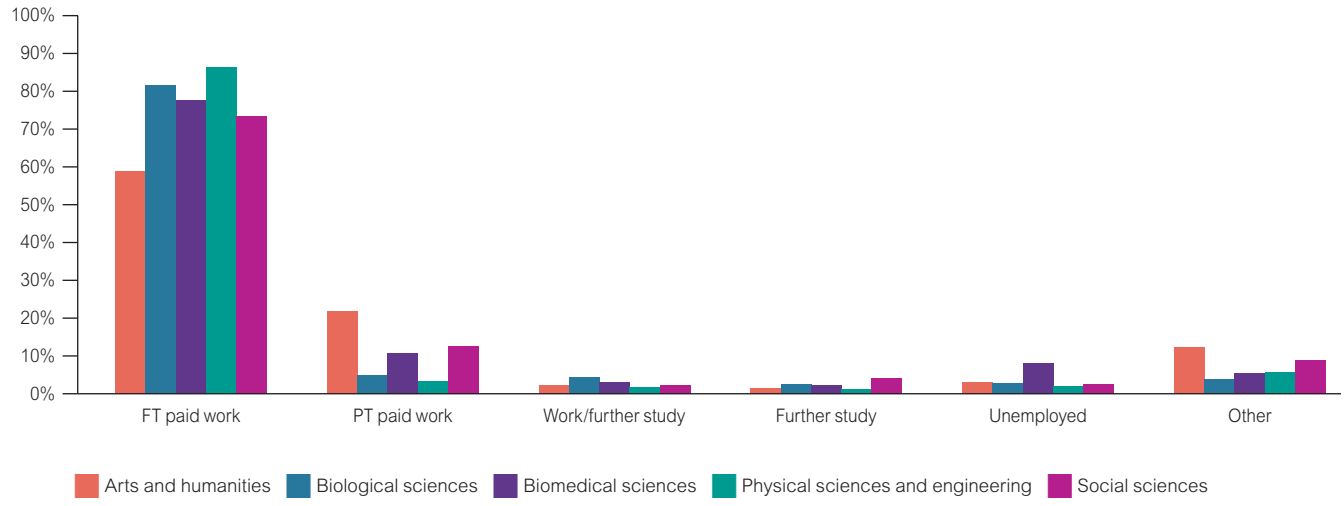
2.2 Employment circumstances by discipline

Analysis by disciplinary groups for UK-domiciled doctoral graduate respondents revealed significant differences in the employment circumstances (Figure 1). The discipline groups for which the highest proportions of respondents were in full-time paid work were biological sciences and physical sciences and engineering (both over 80% of UK-domiciled respondents).

A significantly lower proportion of arts and humanities respondents (59%) were in full-time paid work. A noticeably higher proportion of arts and humanities respondents (22%) were in part-time paid work than other discipline groups.

The proportions engaged in further study were relatively consistent between disciplines. However, markedly higher proportions of arts and humanities respondents (12%) and social sciences respondents (9%) were not available for work, than respondents of the other discipline groups (all under 6%). The proportion unemployed was slightly higher for arts and humanities respondents, but still at a relatively very low level.

Figure 1 Employment circumstances of UK-domiciled doctoral graduate respondents by disciplinary group



Data source: Destinations of Leavers from Higher Education Longitudinal Surveys 2008 and 2010 (IES analysis)

Table 5 compares the employment circumstances of UK-domiciled doctoral graduate respondents to the 2010 and 2008 L DLHE surveys. Overall, the proportion in full-time work was similar for each cohort, but more respondents in 2010 were in part-time work and fewer undertaking further study.

Within disciplinary groups, lower proportions were in full-time work in 2010 than 2008 of those from biological sciences (-3%, down to 82%) and social sciences (-5%), but higher for biomedical sciences (+6%, up to 78%) and slightly higher for physical sciences and engineering (+1%) and arts and humanities (+1%). There were significant rises in the proportion undertaking part-time work amongst arts and humanities respondents (from 15% to 22% in 2010) and to a lesser extent social sciences (from 11% to 13%).

The slight rise in the overall proportion unemployed was not uniformly reflected, with falls in unemployment amongst those in arts and humanities and the biomedical sciences, however the proportion was 3% or less in all groups. Relatively higher proportions not available for work for various reasons were seen in the arts and humanities and social sciences, as had been the case in the 2008 survey.

Table 5 Main activity of UK-domiciled doctoral graduate respondents by disciplinary group

	2010 L DLHE					
	All	Arts and humanities	Biological sciences	Biomedical sciences	Physical sciences and engineering	Social sciences
Full-time paid work	77.0%	58.9%	81.5%	77.6%	86.4%	73.3%
Part-time paid work	9.7%	21.9%	4.9%	10.8%	3.2%	12.6%
Work and further study	2.7%	2.3%	4.3%	3.0%	1.7%	2.2%
Further study only	1.4%	1.4%	2.5%	2.2%	1.1%	0.4%
Assumed unemployed	1.9%	3.0%	2.8%	0.8%	2.0%	2.6%
Other	7.3%	12.4%	3.8%	5.5%	5.6%	8.9%
(N)	2215	340	280	480	740	240

	2008 L DLHE					
	All	Arts and humanities	Biological sciences	Biomedical sciences	Physical sciences and engineering	Social sciences
Full-time paid work	76.9%	58.4%	84.5%	72.4%	85.1%	78.5%
Part-time paid work	8.2%	15.1%	3.6%	9.9%	4.6%	10.5%
Work and further study	6.5%	7.2%	4.0%	11.3%	4.9%	1.4%
Further study only	1.7%	1.6%	1.7%	2.6%	1.7%	0.4%
Assumed unemployed	1.6%	3.6%	1.0%	1.4%	1.1%	2.2%
Other	5.2%	14.2%	5.2%	2.4%	2.6%	7.0%
(N)	1815	220	250	435	600	200

2.3 Mobility

Over half (56%) of 2010 respondents had changed jobs at least once since graduation, fractionally higher than had been the case amongst 2008 respondents (54%). Around 26% had held three or more jobs since graduation, compared to just over 22% for 2008 respondents. When analysed by discipline, the group with the greatest mobility are arts and humanities doctoral graduates, 33% of who had undertaken three or more jobs (Table 6).

Table 6 Number of jobs held by 2010 L DLHE doctoral graduate respondents since graduation*

Number of jobs	All	Arts and humanities	Biological sciences	Biomedical sciences	Physical sciences and engineering	Social sciences	All (2008)
0	2.1%	4.4%	2.4%	0.8%	1.8%	1.6%	2.6%
1	41.5%	39.9%	43.5%	43.4%	38.2%	43.7%	43.8%
2	30.6%	22.4%	31.8%	33.2%	33.0%	31.4%	31.8%
3	16.1%	19.4%	14.7%	14.3%	18.2%	13.1%	14.5%
4	5.5%	4.3%	4.8%	6.0%	5.8%	5.4%	5.6%
5 or more	4.2%	9.6%	2.9%	2.4%	3.0%	4.7%	1.7%
(N)	2505	400	305	515	850	285	2075

Note: multiple jobs are concurrently counted as only one current job, for consistency with previous report; number of jobs includes current job; different jobs in same company are counted separately

Data source: Destinations of Leavers from Higher Education Longitudinal Surveys 2008 and 2010 (IES analysis)

2.4 Experiences of unemployment

The 2010 L DLHE survey for the first time provided information on whether doctoral graduate respondents had experienced periods of unemployment since graduation. 18% had experienced unemployment for at least a month at some point since graduation (Table 7). By discipline, this varied from 12% of physical scientists and engineers to 22% of biological scientists and 21% arts and humanities respondents.

Over three quarters of those who had experienced at least a month of unemployment since graduation had only done so once. 42% of respondents who had experienced unemployment had experienced it in total for 3 months or less since graduation.

Almost 10% had experienced cumulative unemployment for more than a year, equivalent to around 2% of total respondents. This was higher for arts and humanities respondents than for those in other discipline groups.

Table 7 Experiences of unemployment amongst doctoral graduate respondents

		All	Arts and humanities	Biological sciences	Biomedical sciences	Physical sciences and engineering	Social sciences
Have you ever been unemployed and seeking work for a period lasting one month or more since you graduated?	Yes	17.7%	20.8%	22.0%	12.0%	20.1%	17.2%
	No	82.3%	79.2%	78.0%	88.0%	79.9%	82.8%
	(N)	2495	395	305	515	850	280
Number of periods (lasting more than one month) spent unemployed since graduating, for those who have experienced unemployment	1	76.7%	63.7%	84.3%	77.4%	78.7%	80.4%
	2	13.8%	14.4%	8.6%	15.3%	16.0%	-
	3	4.2%	8.2%	3.1%	4.2%	2.3%	-
	4	2.0%	6.0%	1.3%	0.0%	1.2%	-
	5	1.4%	2.5%	1.3%	1.7%	0.6%	-
	6	2.0%	5.2%	1.4%	1.3%	1.2%	-
	(N)	440	80	70	60	170	50
Total time spent unemployed since graduating* (for those who have experienced unemployment)	3 months or less	42.4%	36.0%	41.5%	54.9%	41.9%	-
	4 to 6 months	29.3%	23.4%	39.9%	22.8%	30.6%	-
	7 to 12 months	18.8%	24.3%	13.1%	17.8%	18.5%	-
	more than one year	9.6%	16.3%	5.5%	4.5%	9.0%	-
	(N)	445	80	70	60	170	50

* not necessarily consecutive months
Note: Some data for social sciences respondents cannot be reported where sub-sample sizes are below HESA's reporting threshold

2.5 Portfolio working

The 2010 L DLHE included new questions about current portfolio working. In total, 14% of respondents indicated that at the time of survey they were engaged in more than one job (Table 8). This was notably higher for arts and humanities (27%) and social sciences respondents (20%). Over three quarters of the respondents reporting multiple employments held two jobs and 8%, equivalent to 1% of the total respondents, reported having four or more sources of employment concurrently. It is not possible to report analysis of multiple working of respondents within some disciplinary groups because the sample size is below the reporting threshold[10].

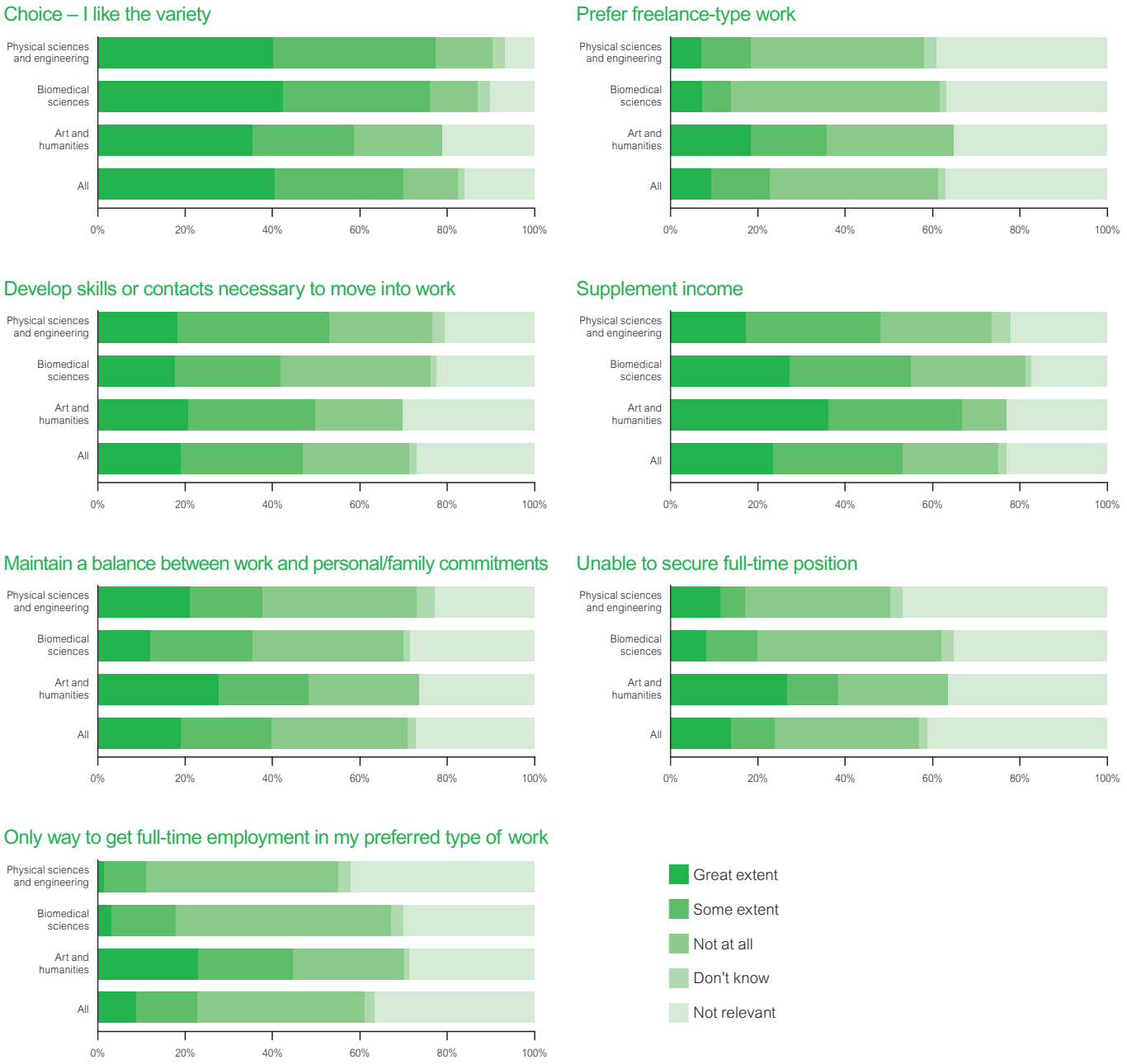
Table 8 Portfolio working (multiple jobs) by doctoral graduate respondents

		All	Arts and humanities	Biological sciences	Biomedical sciences	Physical sciences and engineering	Social sciences
Portfolio worker (currently in more than one job)	Yes	14.1%	27.3%	6.1%	13.9%	8.3%	19.9%
	No	85.9%	72.7%	93.9%	86.1%	91.7%	80.1%
	(N)	2000	290	250	445	690	210
Number of jobs held	2 jobs	76.9%	76.8%	-	76.8%	81.3%	-
	3 jobs	14.7%	16.1%	-	16.9%	13.7%	-
	4 or more jobs	8.4%	7.1%	-	6.3%	5.0%	-
	(N)	285	80	15	60	60	45

[10] HESA specifies a minimum sample size of 52 respondents

Data source: Destinations of Leavers from Higher Education Longitudinal Surveys 2008 and 2010 (IES analysis)

Figure 2 Reasons for doctoral graduate respondents undertaking portfolio working by disciplinary group[11]



Those doctoral graduates engaging in portfolio working reported the following key reasons and attitudes:

- over 70% (and over 40% strongly) stated that it was their choice to pursue different jobs and liked the variety of work that resulted
- just under a quarter overall, and up to 40% of arts and humanities respondents expressed a preference for freelance-type work
- around half reported that one of the jobs specifically allowed them to develop the skills or contacts they needed to seek and potentially move into the type of work they wanted in the long term
- 40%, and 50% of arts and humanities respondents reported that multiple employment gave them time to maintain a balance between work and personal or family commitments
- just over a fifth overall, and around 40% of arts and humanities respondents, combined two or more jobs as a necessary strategy to secure the equivalent of a full-time employment position in their preferred type of work or were unable to find a full-time position
- over half overall, and two thirds of relevant arts and humanities graduates, stated that portfolio working was a strategy to supplement their income.

These statements present something of a mixed picture of the reasons for undertaking concurrent multiple employments. Although overall it appears to have been a positive choice for the majority (70%), compared to those who reported that they had been forced by circumstances to adopt this employment strategy, this balance tended to be different for arts and humanities doctoral graduates, many more of whom were undertaking multiple jobs due to their employment needs.

[11] Based on HESA's requirement of a minimum sample size of 52 respondents, only data for the arts and humanities, biomedical sciences, and physical sciences and engineering are reported in this analysis.

Data source: Destinations of Leavers from Higher Education Longitudinal Surveys 2008 and 2010 (IES analysis)

3 Employment destinations and occupational clusters

Key statistics

- Overall the proportions of respondents working in different employment sectors in 2010 were very similar to those obtained in the survey in 2008, although there was some decrease in the proportion working in research and development.
- The proportion of respondents working in the five key doctoral occupational clusters fell from 86% in 2008 to 81% in 2010, perhaps partly reflecting deeper and more representative sampling of arts and humanities doctoral graduates achieved in the 2010 survey.
- The proportion of arts and humanities respondents working in other occupations increased from 22% in 2008 to 31% in 2010.
- Overall the proportion working in HE research fell from 19% in 2008 to below 17% in 2010.
- Within individual disciplinary groups, there were more significant and complex changes between the two surveys, possibly in part due to improved sampling and changes in organisational employment practices.

3.1 Employment sectors

The broad breakdown of employment sectors in which the doctoral graduate respondents were working in the UK[12] was extremely similar to that observed in the 2008 L DLHE survey (Table 9). Half were working in education (44% in higher education), while health and social work accounted for 13%, finance, business and IT for 11%, and manufacturing for 9%. Those employed in research and development fell from 9% in 2008 to less than 7% in 2010.

When analysed by discipline, a more complex picture emerges (Table 10). For example, for arts and humanities doctoral graduates, the proportion in higher education was lower in 2010 (58%) than had been the case in 2008 (67%). However, it is worth noting that due to the larger sample of arts and humanities respondents obtained in 2010, the actual number of those respondents employed in higher education reported in the survey was higher at 165 than it had been in the 2008 survey (120).

There was a slight fall in the percentage of physical sciences and engineering respondents working in higher education, compared to 2008, and also slightly lower proportions of biomedical sciences respondents. For biological sciences and social sciences the percentage working in higher education increased.

Table 9 Employment sectors for all doctoral graduate respondents in UK employment by original domicile

	2010 L DLHE			2008 L DLHE		
Employment sector	All	UK	Rest of EU	All	UK	Rest of EU
HE	43.9%	42.9%	56.9%	43.9%	43.5%	49.7%
Education (other)	6.0%	6.3%	1.4%	5.8%	6.1%	0.8%
Finance, business and IT	10.8%	10.7%	12.8%	10.8%	10.3%	19.5%
Health and social work	13.1%	13.6%	7.0%	12.9%	13.6%	2.0%
Manufacturing	9.1%	9.1%	8.1%	8.4%	8.5%	10.1%
Research & development	6.5%	6.5%	8.2%	8.9%	8.7%	11.9%
Public administration	4.1%	4.2%	2.3%	4.9%	4.9%	4.7%
Other sectors	6.6%	6.8%	3.3%	4.3%	4.5%	1.2%
(N)	2000	1870	130	1625	1535	95

[12] 'Working in the UK' includes those working full-time, part-time and combining work and study in the UK

Data source: Destinations of Leavers from Higher Education Longitudinal Surveys 2008 and 2010 (IES analysis)

Table 10 Employment sectors of doctoral graduate respondents in UK employment by disciplinary group

	2010 L DLHE					
	All	Arts and humanities	Biological sciences	Biomedical sciences	Physical sciences and engineering	Social sciences
HE	43.9%	57.5%	43.2%	36.5%	33.9%	67.6%
Education (other)	6.0%	11.2%	4.3%	3.2%	4.7%	3.5%
Finance, business and IT	10.8%	4.8%	9.7%	3.8%	22.1%	8.5%
Health and social work	13.1%	5.7%	7.7%	38.9%	3.2%	5.2%
Manufacturing	9.1%	1.1%	11.9%	5.0%	18.2%	1.9%
Research & development	6.5%	0.7%	13.4%	8.6%	7.5%	2.5%
Public administration	4.1%	5.4%	4.5%	1.2%	5.3%	4.7%
Other sectors	6.6%	13.6%	5.3%	2.8%	5.2%	6.1%
(N)	2000	290	240	445	680	215
HE at 6 months, for comparison	48.5%	58.9%	49.0%	42.0%	38.6%	70.7%

	2008 L DLHE					
	All	Arts and humanities	Biological sciences	Biomedical sciences	Physical sciences and engineering	Social sciences
HE	43.9%	67.0%	37.2%	40.0%	35.8%	62.1%
Education (other)	5.8%	11.8%	7.8%	2.7%	4.6%	4.2%
Finance, business and IT	10.8%	3.2%	5.0%	2.9%	24.0%	9.6%
Health and social work	12.9%	0.0%	12.4%	35.8%	1.7%	4.1%
Manufacturing	8.4%	1.3%	12.2%	5.6%	15.3%	0.6%
Research & development	8.9%	3.0%	14.8%	7.5%	10.8%	8.2%
Public administration	4.9%	3.4%	5.5%	5.2%	3.5%	6.8%
Other sectors	4.3%	10.3%	5.0%	0.4%	4.2%	4.3%
(N)	1625	180	220	405	550	180
HE at 6 months, for comparison	46.6%	62.6%	42.5%	40.6%	41.3%	65.2%

Data source: Destinations of Leavers from Higher Education Longitudinal Surveys 2008 and 2010 (IES analysis)

3.2 Occupational clusters

'What do researchers do? Doctoral graduate destinations and impact three years on' (2010) introduced a categorisation of labour market outcomes termed 'occupational clusters', which have particular resonance with the researcher community. These resulted from an analysis of the total doctoral population in the Labour Force Survey[13]. The six resulting clusters comprise groupings of similar doctoral graduate occupations and provide a useful typology to explore the extent to which doctoral graduates are working in research in and beyond higher education, in other roles in higher education and in other occupations outside higher education.

Some significant changes were evident between the proportions of respondents working in occupational clusters reported in the 2010 and 2008 L DLHE surveys (Table 11). The proportion in the five key doctoral occupation clusters fell from 86% to 81% between the two surveys.

- The 17% of respondents working in HE research occupations in UK employment was somewhat lower than in the 2008 survey (19%).
- Around 12% were working in research occupations outside the higher education sector, compared with 13% in 2008, in roles such as analytical chemists, pharmaceutical or biomedical researchers, clinical scientists and other scientists in research and development.
- The proportion in teaching and lecturing roles in higher education was very similar at just over 21%, although some of these may previously have been coded as HE research occupations[14].
- Just over 7% were employed in teaching occupations outside higher education, slightly higher than the 6% in 2008, mostly in the further education and schools sectors.
- Around one quarter were employed in 'other common doctoral occupations' (23%), lower than the 27% in 2008, which included health professionals, engineering and IT professionals, production and function managers and also professionals and associate professionals in the business and financial sectors.
- Almost 1 in 5 (19%) were in 'other occupations', an increase from 14% in 2008, a cluster including science and engineering technicians, information-handling occupations (including libraries and archives), associate professionals in public services and managers and associate professionals in a variety of service industries.

It should be noted that 6% of respondents were employed within higher education (44% in Table 10) who do not fall into the HE research (17%) or teaching and lecturing in HE (21%) clusters. Over half of these were classified within the 'other occupations' cluster, including those working in IT and other support services, library and archive staff and a range of administrative roles. A number of them were classified in 'other common doctoral occupations' including research managers and ICT managers.

When analysed by discipline groups, the proportions employed in different occupational clusters showed considerable differences, as was seen in the 2008 L DLHE survey respondents.

The key clusters for arts and humanities respondents were teaching and lecturing in HE (37%) and other occupations (31%). For biomedical respondents and physical sciences and engineering respondents the largest cluster was other common doctoral occupations, while for biological sciences respondents it was HE research (Figure 3).

Table 11 Occupational clusters for doctoral graduate respondents in UK employment by original domicile

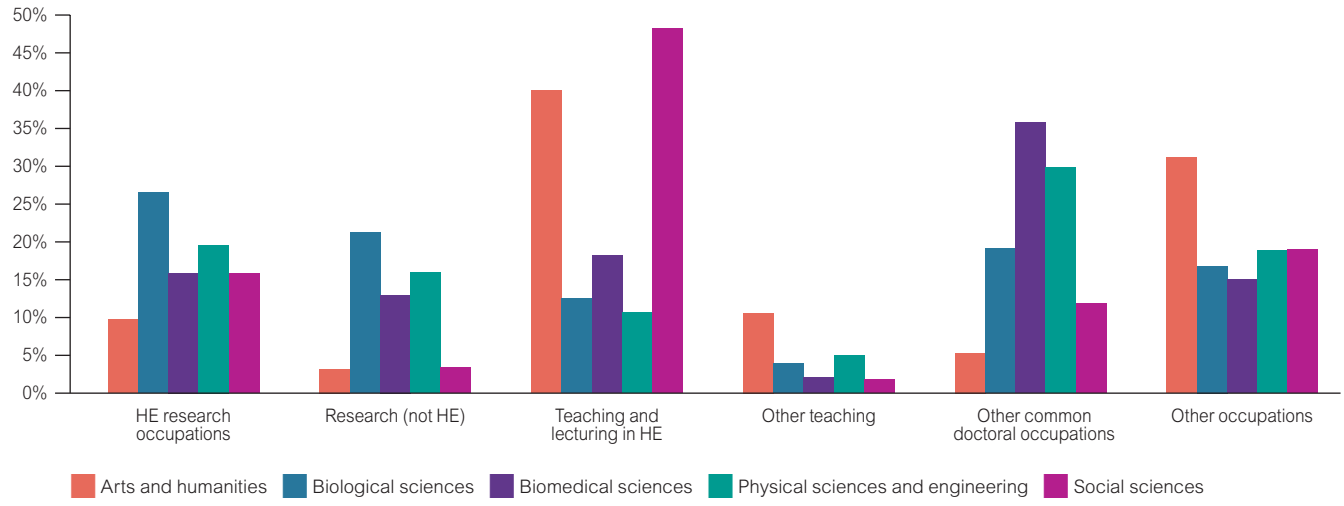
	2010 L DLHE			2008 L DLHE		
	All	UK	Rest of EU	All	UK	Rest of EU
HE research occupations	16.7%	16.3%	21.2%	19.2%	19.4%	17.0%
Research (not in HE sector)	12.2%	12.3%	11.1%	13.1%	12.6%	20.9%
Teaching in HE	21.4%	20.9%	28.7%	21.6%	21.0%	31.2%
Other teaching occupations	7.3%	7.5%	4.8%	5.7%	6.0%	0.8%
Other common doctoral occupations	23.2%	23.6%	18.8%	26.5%	26.8%	20.7%
Other occupations	19.2%	19.4%	15.5%	13.9%	14.2%	9.4%
Total	2000	1870	130	1625	1535	95

[13] What do researchers do? Doctoral graduate destinations and impact three years on: Methodology, Vitae, 2010 www.vitae.ac.uk/CMS/files/upload/WDRD_Methodology_final_16Dec.pdf

[14] Some institutions are increasingly utilising research and teaching contracts to employ research staff so that they are available to teach if required. This trend could reduce the accuracy with which these data reflect those working principally in HE research.

Data source: Destinations of Leavers from Higher Education Longitudinal Surveys 2008 and 2010 (IES analysis)

Figure 3 Occupational clusters for doctoral graduate respondents in UK employment by disciplinary group



3.3 Comparisons by discipline

When the 2010 L DLHE figures were compared with those from 2008 by discipline group (Table 12), the overall pattern remained broadly consistent, although there were significant changes within certain discipline groups. For example, the proportion of arts and humanities respondents teaching and lecturing in 2010 was lower at 37% compared with 50% in 2008. This may be at least partly related to the improved sampling of doctoral graduates in this disciplinary group in 2010.

The proportion of arts and humanities respondents employed in other occupations was higher at 31% in 2010 compared with 22% in 2008.

Other significant differences included a greater proportion of biological sciences respondents employed in teaching and lecturing in HE than in 2008 (13% compared with 7%). There was a significant fall in the proportion of biomedical sciences respondents working in HE research from 23% in 2008 to 16% in 2010. It is possible that some transfers could occur between HE research and teaching and lecturing in HE as a result of contractual changes, rather than genuine occupational changes.

There was a rise in the proportion of biomedical sciences respondents employed in other occupations from 9% to 15%.

Table 12 Occupational clusters for doctoral graduate respondents in UK employment by disciplinary group

	2010 L DLHE					
Clusters	All	Arts and humanities	Biological sciences	Biomedical sciences	Physical sciences and engineering	Social sciences
HE research occupations	16.7%	9.3%	26.7%	15.7%	19.1%	14.6%
Research (not in HE sector)	12.2%	3.2%	20.6%	13.0%	16.0%	3.4%
Teaching and lecturing in HE	21.4%	36.9%	12.5%	17.0%	10.3%	44.1%
Other teaching occupations	7.3%	14.1%	4.3%	3.3%	5.7%	8.0%
Other common doctoral occupations	23.2%	5.3%	18.9%	35.9%	29.7%	12.1%
Other occupations	19.2%	31.2%	17.0%	15.1%	19.2%	17.8%
(N)	2000	290	250	445	690	210

	2008 L DLHE					
Clusters	All	Arts and humanities	Biological sciences	Biomedical sciences	Physical sciences and engineering	Social sciences
HE research occupations	19.2%	7.5%	27.3%	23.2%	18.8%	13.7%
Research (not in HE sector)	13.1%	3.4%	23.1%	10.1%	17.6%	8.1%
Teaching and lecturing in HE	21.6%	50.0%	7.0%	14.8%	14.0%	46.5%
Other teaching occupations	5.7%	11.2%	7.5%	2.7%	4.5%	3.7%
Other common doctoral occupations	26.5%	5.8%	17.5%	40.3%	31.4%	12.6%
Other occupations	13.9%	22.2%	17.6%	8.9%	13.7%	15.4%
(N)	1625	180	220	405	555	180

Data source: Destinations of Leavers from Higher Education Longitudinal Surveys 2008 and 2010 (IES analysis)

4 Earnings

Key statistics

- In general doctoral graduate respondents earn more than masters graduates or those who obtained good first degrees.
- 72% of doctoral graduate respondents were earning over £30,000 in 2010, compared with 56% of masters and 22% of graduates obtaining good first degrees.
- The proportion of doctoral graduate respondents earning less than £30,000 fell from 34% in 2008 to 28% in 2010; those earning over £40,000 increased from 25% to 29%.
- The median salary for doctoral graduates rose in line with the overall UK labour market (+3%) between 2008 and 2010, whereas earnings for good first degree or masters graduates did not, at 0% and -3%, respectively.
- Median salaries of doctoral graduate respondents working in higher education, in both research and teaching and lecturing, have increased by around 5% between 2008 and 2010.
- Many doctoral graduates in HE research earn more than those working in non-HE research roles, which saw one of the lowest increases in median salaries between 2008 and 2010.
- Arts and humanities doctoral graduate respondents were the only discipline group that did not demonstrate improvement in earnings between the 2008 and 2010 surveys, although this may partly reflect the improved sampling of this group in 2010.
- The 25% three-year salary progression of respondents graduating with doctoral degrees in 2006/07 was similar to those with masters degrees (19%) and good first degrees (25%); in absolute terms doctoral graduates' median salary increased by £7,000, compared with £5,000 for other degree holders.
- Doctoral graduates earning over £50,000 were mostly found in the 'other common doctoral occupations' category, typically health professionals and other professionals, and also in teaching and lecturing in HE.

4.1 Earnings in current employment

Figure 4 summarises the distribution of the earnings of 2010 doctoral graduate respondents compared with 2008 respondents. The chart shows lower proportions of doctoral graduate respondents earning in the lower salary ranges, with 28% earning £30k or less in 2010 compared with 34% of respondents in 2008. Higher proportions were earning in the higher salary ranges in 2010, for example in the £40-50k range (16% in 2010, compared with 12% in 2008). The proportion earning over £50,000 remained fairly static at about 13%.

Figure 4 Annual earnings of doctoral graduates in UK employment

Data source: Destinations of Leavers from Higher Education Longitudinal Surveys 2008 and 2010 (IES analysis)

Table 13 Gross annual earnings for graduate respondents in UK full-time employment

	2010 L DLHE			2007 DHLE			2008 L DLHE		
	Doctoral graduates	Masters (taught or research)	First degree 1st/2:1	Doctoral graduates	Masters (taught or research)	First degree 1st/2:1	Doctoral graduates	Masters (taught or research)	First degree 1st/2:1
£25,000 or less	8.4%	22.6%	54.2%	28.2%	45.7%	85.0%	10.6%	25.4%	55.8%
£25,001 to £30,000	19.4%	21.3%	24.3%	37.2%	17.4%	9.2%	22.9%	16.7%	22.9%
£30,001 to £40,000	43.7%	28.0%	16.0%	19.5%	20.1%	4.4%	41.3%	26.6%	15.2%
£40,001 to £50,000	16.1%	14.0%	3.8%	7.9%	8.2%	0.9%	12.3%	14.8%	4.2%
£50,001 or more	12.4%	14.1%	1.8%	7.1%	8.6%	0.4%	12.9%	16.5%	1.9%
(N)	1385	2575	11010	1055	1990	6625	1205	2365	9819
Median £	35000	32000	25000	28000	27000	20000	34000	33000	25000

Table 13 compares the salary ranges and median salary for doctoral graduates with masters and good first degrees in full-time UK employment, as reported in the 2010 L DLHE survey, the 2007 DLHE conducted six months after graduation for the same cohort, and respondents to the 2008 L DLHE survey, who graduated in 2004/05.

In all three surveys, the median salary for doctoral graduates was higher than that of masters graduates, which in turn was considerably higher than that of good first degree graduates. For example in 2010, doctoral graduate respondents had a median salary of £35,000, compared with £32,000 for masters and £25,000 for good first degree graduate respondents.

Comparing 2004/05 and 2006/07 graduates at the same point in their careers, three and a half years after graduation, there was a 3% increase in median salary for doctoral graduates (from £34,000 to £35,000). This was similar to the rise in overall average earnings in the UK over the same period (3.1%)[15]. Although it appears that doctoral graduate earnings were only keeping pace with national earnings trends, this was better than those respondents with masters and good first degrees. The median salary for good first degree graduates remained static at £25,000, while the median salary for masters graduates fell by £1,000 to £32,000.

72% of doctoral graduate respondents in 2010 were earning over £30,000, compared with 56% of masters graduates and only 22% of good first degree graduates. Conversely, less than 10% of doctoral graduate respondents earned £25,000 or less, compared to over half of good first degree graduate respondents.

The general trend of doctoral graduate salaries being higher than those of masters or good first-degree graduates is reflected in the distribution of graduates within almost all salary ranges. For example, at the higher end of the earnings spectrum, the proportion of doctoral respondents earning over £40,000 was higher in 2010 at 29% than for the 2008 respondents (25%), whereas it was lower for masters (28% down from 31%) and did not change for good first degree graduates at 6%.

4.2 Salary progression since graduation

Table 13 also enables comparison of salary progression for the cohort of graduates who graduated in 2006/07. The median salaries six months after graduation were £28,000 for doctoral graduate respondents, £27,000 for masters and £20,000 for good first degree graduates. Three and a half years after graduation, the median salaries for all three graduate groups had increased by a similar proportion (19% to 25%). For doctoral graduates this represented a 25% salary increase of £7,000 over the three years to £35,000. Both masters and good first degree graduate respondents experienced a £5,000 salary increase over the same period.

Overall, the percentage earnings premium of a doctoral degree, compared with a good first degree or masters, is maintained through the first three to four years of employment.

[15] Annual Surveys of Hours and Earnings 2008-2010: www.ons.gov.uk/ons/rel/ashe/annual-survey-of-hours-and-earnings/index.html

Data source: Destinations of Leavers from Higher Education Longitudinal Surveys 2008 and 2010 (IES analysis)

4.3 Earnings by disciplinary group

Table 14 Gross annual earnings of doctoral graduate respondents in UK full-time employment by disciplinary group

	2010 L DLHE					
	All	Arts and humanities	Biological sciences	Biomedical sciences	Physical sciences and engineering	Social sciences
£25,000 or less	8.4%	18.7%	9.5%	5.4%	8.9%	3.3%
£25,001 to £30,000	19.4%	18.4%	34.4%	13.2%	22.4%	12.2%
£30,001 to £40,000	43.7%	41.2%	41.2%	38.4%	51.9%	44.6%
£40,001 to £50,000	16.1%	15.7%	9.2%	21.8%	10.0%	23.9%
£50,001 or more	12.4%	6.0%	5.7%	21.2%	6.8%	16.0%
(N)	1385	140	200	315	520	145
Median £	35000	34000	32000	40000	33060	39000

	2008 L DLHE					
	All	Arts and humanities	Biological sciences	Biomedical sciences	Physical sciences and engineering	Social sciences
£25,000 or less	10.6%	13.9%	13.7%	8.5%	12.6%	6.5%
£25,001 to £30,000	22.9%	14.3%	36.3%	19.3%	27.6%	11.9%
£30,001 to £40,000	41.2%	52.0%	38.5%	38.5%	43.1%	39.0%
£40,001 to £50,000	12.3%	14.0%	5.7%	11.9%	9.9%	26.5%
£50,001 or more	12.9%	5.8%	5.8%	21.8%	6.8%	16.1%
(N)	1205	105	180	315	435	125
Median £	34000	35000	30500	35000	32000	39000

When analysed by disciplinary group (Table 14), the overall pattern of higher earnings for doctoral graduates in the 2010 survey compared to the 2008 survey, is replicated in all discipline groups except for the social sciences and arts and humanities. The median salary of social science respondents remained the same at £39,000, although there were some minor changes within salary bands, with an increase in those earning between £30,000-£40,000 and a fall in those earning £40,000-£50,000.

For arts and humanities respondents, although the proportions earning more than £40,000 showed a slight increase from 20% in 2008 to 22% in 2010, the proportions earning less than £30,000 increased significantly in 2010 to 37% compared to 28% in 2008. The proportion of arts and humanities graduates earning the middle range (£30,000-£40,000) also fell, from 52% in 2008 to 41% in 2010. Overall, the median salary for arts and humanities respondents fell from £35,000 in 2008 to £34,000 in 2010.

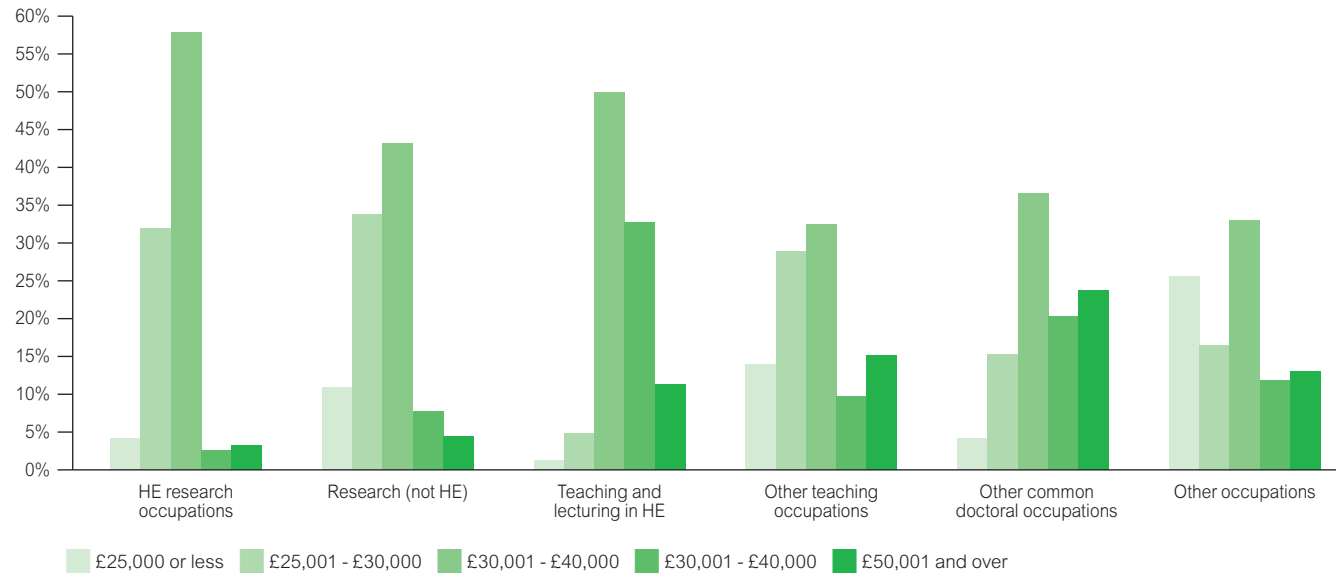
This opposing trend compared with the overall picture, may partly reflect the improved sampling of arts and humanities doctoral graduates in the 2010 survey. There is a higher proportion of arts and humanities doctoral graduates employed in the other occupations cluster in 2010, compared with 2008, where salaries are generally lower than other clusters (see section 4.4). Notably higher proportions of arts and humanities doctoral graduates report that they are engaged in portfolio working to earn a living, compared to other disciplinary groups (see section 2.5) and more have had a longer, and/or more than one period of unemployment which would likely impact on their earning potential and/or salary progression (section 2.4).

Despite the increase in sampling of arts and humanities doctoral graduates in 2010 and the associated complexity of interpreting the fall in median salaries between 2008 to 2010, the overall earnings for doctoral graduates in 2010 have improved compared with 2008 and therefore reflects genuine improvements to remuneration between these two cohorts.

Data source: Destinations of Leavers from Higher Education Longitudinal Surveys 2008 and 2010 (IES analysis)

4.4 Earnings by occupational cluster

Figure 5 Annual earnings of doctoral graduates in full-time UK employment, by occupational cluster



When earnings are analysed by occupational cluster, the most common salary range in all clusters was £30,000-£40,000, although with very different distributions between salary ranges for different clusters (Figure 5). For example, the salary distribution in HE research was very narrow with very few respondents earning over £40,000 (4%) or less than £25,000 (4%), while the spread of salaries in other common doctoral occupations is much wider with 44% earning over £40,000.

When analysed in terms of median salary, the occupational clusters with the highest median earnings of doctoral respondents in full-time UK employment were teaching and lecturing in HE and other common doctoral occupations, both at £40,000 (Table 15). The lowest median salary was for employment in research outside higher education at £31,000.

Comparison of median earnings by occupational cluster between the 2008 and 2010 surveys was also undertaken (Table 15). Increases were seen in all occupational clusters between the two surveys, including increases in median salaries of more than 5% in the two teaching occupational clusters and also other common doctoral occupations[16]. Research outside of higher education had the lowest median salary in 2008 (£30,000) and experienced one of the lowest percentage increases (3.3%) between the two surveys.

Table 15 Median gross annual earnings of doctoral graduate respondents in UK full-time employment, 3.5 years after graduation

	2010 L DLHE (£)	2008 L DLHE (£)	increase
HE research	32000	30500	4.9%
Research (not in HE sector)	31000	30000	3.3%
Teaching and lecturing in HE	40000	38000	5.3%
Other teaching	32000	30000	6.7%
Other common doctoral occupations	40000	38000	5.3%
Other occupations	33000	32000	3.1%
All	35000	34000	2.9%

Table 16 illustrates the comparable salary ranges for the two cohorts surveyed in 2008 and 2010, by occupational cluster. This reveals a more complicated pattern of changes beneath the overall improvement trend. In almost all occupational clusters the proportions of doctoral graduate respondents in salary ranges below £30,000 reduced between 2008 and 2010.

For most occupational clusters the proportions of respondents in salary ranges above £30,000 increased significantly. However, there were some exceptions to this trend (some of which represented relatively small groups of respondents). The most prominent was a marked reduction in the proportion of respondents working in other common doctoral occupations earning over £50,000.

Greater improvements in earnings across the salary bands were apparent in HE research, and teaching and lecturing occupational clusters[17], and in other teaching occupations between 2008 and 2010. Smaller increases in earnings across the salary bands were seen in non-HE research, other common occupations and other occupations.

[16] Differences in weighting effects and relative distributions of salaries in different occupational clusters results in an apparent discrepancy between the increase in median salaries for the whole sample and those at cluster level. It should also be noted that many respondents reported their salary in thousands rather than a specific salary

[17] This relatively greater improvement in HE occupation earnings most probably reflects the implementation of the HE pay framework agreement. Since 2009/10 HE salary scales have been relatively static. www.ucu.org.uk/index.cfm?articleid=2210

Data source: Destinations of Leavers from Higher Education Longitudinal Surveys 2008 and 2010 (IES analysis)

Table 16 Gross annual earnings of doctoral graduate respondents in full-time UK employment, by occupational cluster

	2010 L DLHE					
	Annual salary (banded)					
	£25,000 or less	£25,001 to £30,000	£30,001 to £40,000	£40,001 to £50,000	£50,001 or more	(N)
HE research occupations	4.3%	31.8%	59.3%	2.7%	1.9%	260
Research (not in HE sector)	10.9%	33.8%	43.2%	7.7%	4.4%	185
Teaching and lecturing in HE	1.4%	5.1%	48.3%	33.5%	11.7%	285
Other teaching occupations	9.8%	23.7%	39.2%	11.0%	16.4%	90
Other common doctoral occupations	4.1%	15.3%	36.6%	20.3%	23.8%	340
Other occupations	25.6%	16.5%	33.0%	11.9%	13.0%	230
All	8.4%	19.4%	43.7%	16.1%	12.4%	1390

	2008 L DHLE					
	Annual salary (banded)					
	£25,000 or less	£25,001 to £30,000	£30,001 to £40,000	£40,001 to £50,000	£50,001 or more	(N)
HE research occupations	7.9%	41.5%	45.8%	3.3%	1.4%	235
Research (not in HE sector)	16.3%	34.0%	38.4%	6.5%	4.7%	170
Teaching and lecturing in HE	1.8%	8.8%	53.4%	25.7%	10.4%	265
Other teaching occupations	20.0%	31.3%	22.4%	11.4%	15.0%	70
Other common doctoral occupations	9.1%	13.5%	36.6%	12.1%	28.6%	300
Other occupations	22.5%	19.7%	34.4%	12.4%	11.1%	170
All	10.6%	22.9%	41.2%	12.3%	12.9%	1205

HE Research

Doctoral graduate respondents employed in HE research have earnings within a fairly narrow band compared to other clusters. 60% of doctoral graduate respondents employed in HE research earned between £30,000-£40,000 in 2010, a 30% increase on the proportion in 2008 (46%). 42% were earning between £30-35,000, which is equivalent to Grade 7 (Senior Research Officer) and Grade 8 university posts.[18] Fewer than 5% earned less than £25,000 in 2010, a reduction from 8% in 2008. Equally, fewer than 5% earned more than £40,000 in 2010, which was similar to the position in 2008.

On the basis of the 2010 earnings data, it is clear that many doctoral graduates working in HE research are now earning at a higher level at this early career stage than many of their counterparts undertaking research outside HE, in contrast to the situation in 2008.

Research (not in HE)

The salary profile of doctoral graduate respondents employed in research outside higher education was generally lower than for those working within higher education, with smaller increases between 2008 and 2010 than for those working in HE research. 43% of doctoral graduate respondents employed in research outside higher education earned between £30,000-£40,000 in 2010, which was a 13% increase from 2008. The proportion earning between £25,000-£30,000 held fairly constant at 34%, while 11% earned less than £25,000, a reduction from 16% in 2008, although still a considerably higher proportion than those employed in HE research (4%). 12% earned more than £40,000 in 2010, similar to the 11% reported in 2008.

Teaching and lecturing in HE

The earnings of most doctoral graduate respondents working in teaching and lecturing in HE were quite tightly clustered, and at a higher rate than those in many other clusters. In 2010, only 6% earned £30,000 or less, compared to 11% in this salary range in 2008; while 45% earned over £40,000 compared with 36% in 2008. Within the 80% of this cluster earning between £30,000 and £50,000, a clear shift upwards in salary is observed with a greater proportion in the upper half of this range in 2010.

Other teaching occupations

The smallest of the clusters in terms of doctoral graduate respondents, over half of these respondents had earned £30,000 or less in the 2008 survey. This had fallen to a third in the 2010 survey, while the proportion earning £30,000-£40,000 almost doubled to over 40%.

Around a quarter of respondents in other teaching occupations earned over £40,000, much as in 2008, probably teaching professionals who had undertaken a doctorate mid-career. The generally lower salary profile of this cluster reflects doctoral graduates who have entered school and college teaching, in which many starting salaries are relatively modest.

[18] University and College Union HE pay framework: www.ucu.org.uk/index.cfm?articleid=2210

Data source: Destinations of Leavers from Higher Education Longitudinal Surveys 2008 and 2010 (IES analysis)

Other common doctoral occupations

This cluster had the highest salary profile in 2008 with over 28% earning in excess of £50,000 and less than a quarter below £30,000. In the 2010 survey, although the proportion earning over £50,000 was smaller (24%) than in 2008, there were many more earning in the £40,000-£50,000 range (over 20%) while fewer than 20% earned under £30,000. These figures represent a narrowing salary profile compared with 2008, which may partly reflect a drop in the number of graduates entering highly paid finance, banking and other private sector jobs as the impact of the recession was felt, while the pay of those in public sector occupations such as health was largely static over this period.

Other occupations

Within the 'other occupations' cluster, there was relatively little change in the salary profile between 2008 and 2010, with 58% in both cohorts earning over £30,000. However, there was a rise in the proportion of respondents earning less than £25,000 in 2010, to the extent where a quarter of respondents earned within this salary range.

4.5 High-earning doctoral graduates

A significant range of occupational earnings was expected, including some at relatively high levels, due to the diverse profile of doctoral graduates. The majority, and large majority in certain disciplinary groups, do not undertake doctoral research immediately after first and/or masters degrees, and a significant proportion do so much later in their careers.

In order to investigate in more detail those who were the highest earners within the occupational clusters, a cross-tabulation was undertaken by discipline group on the 2010 earnings data for the doctoral graduate respondents in full-time UK employment. The size of some of the resulting sub-groups, especially social sciences and arts and humanities doctoral graduates, within several clusters was too small to analyse robustly, but the following observations and trends emerged:

- of those employed in HE research, social sciences respondents had the highest median salary at over £34,000 and those in arts and humanities the lowest at under £30,000
- amongst those working in research outside higher education, biomedical sciences respondents had the highest median salary at £33,000 and biological sciences respondents the lowest at £30,000
- biomedical sciences respondents had the highest median salary amongst those teaching and lecturing in HE at £42,000 and biological sciences respondents the lowest at £37,000
- biomedical sciences respondents had the highest median salary amongst those in 'other common doctoral occupations' at £44,000, while physical sciences and engineering respondents had the lowest median at £35,000
- within other occupations, social sciences respondents had the highest median salary and arts and humanities respondents the lowest, but all groups were rather small
- the 'other teaching occupations' group was too small to report disciplinary differences robustly at this level.

Detailed investigation of individual responses from those earning over £50,000 annually revealed a number of fairly prominent sub-groups. Within the common doctoral occupations cluster, around half were health professionals or associate professionals, largely biomedical sciences respondents, working in health and social care, presumably working in clinical and related occupations, such as medical registrars, consultants etc. There was also a significant number of highly paid managerial level professionals working in business, finance and IT within this cluster. Although the highest proportion was physical sciences and engineering doctoral graduates, there were doctoral graduates from all the discipline groups.

Within high-earning respondents employed in teaching and lecturing in HE, it was noticeable that around two thirds of those earning over £50,000 were aged 50 or more, presumably institutional staff who had undertaken their doctoral study at later career stages or mid-career professionals who had made a transition to higher education after their doctorate, or those combining both careers. The largest sub-group of these were biomedical sciences graduates (who had potentially been health professionals), many now working part-time, although there was also a significant number of social sciences graduates (perhaps lawyers or business professionals). The age profile of the high earners in teaching and lecturing in HE was in marked contrast to those employed in finance, business and IT (within the other common doctoral occupations), where the majority were aged 40 or younger.

Data source: Destinations of Leavers from Higher Education Longitudinal Surveys 2008 and 2010 (IES analysis)

5 Employment status

Key statistics

- Over two thirds (68%) of doctoral graduate respondents were employed on an open-ended contract, slightly below the 2008 figure of 70% and below the proportion of masters (76%) and good first degrees (78%).
- There were falls in the proportion of open-ended contracts across all disciplinary groups except biological sciences, and across all occupational clusters except other teaching occupations.
- There were increases in the proportion of fixed-term contracts across all disciplinary groups except biomedical sciences, and across all occupational clusters except other common doctoral occupations; there was a 40% increase in fixed-term contracts in research (not in HE) between 2008 and 2010.
- The proportion of respondents with a contract of less than 12 months duration rose overall from 3% in 2008 to 5% in 2010. For those employed in HE research it more than doubled from 5% to 11% in 2010, and also for arts and humanities doctoral graduates.
- For respondents employed on fixed-term contracts, the proportion with contracts of shorter than 12 months increased for all disciplinary groups, except social sciences. The most significant increases were seen for doctoral graduates in biological sciences (from 4% to 7%) and arts and humanities (from 5% to 9%).
- Doctoral graduate respondents were less likely to be self-employed at 5% compared to masters and good first degree respondents, at 8% and 9% respectively.

5.1 Contractual status

68% of the doctoral graduate respondents in UK employment in 2010 were employed on an open-ended contract (Table 17), which was slightly lower than the 2008 figure of 70%. Higher proportions of masters and first degree graduates were employed on open-ended contracts at 76% and 78% respectively, although these proportions were also slightly lower than in 2008.

Overall the proportion of doctoral graduates on fixed-term contracts remained fairly consistent between 2008 and 2010 at around 25%, almost double that for masters and good first degree graduate respondents.

There was however some evidence of a change in contract length, with the proportion employed on fixed-term contracts of over 12 months length falling from 22% in 2008 to 21% in 2010. Although small percentages, the proportion of doctoral graduate respondents with an employment contract of less than 12 months rose overall from 3% in 2008 to 5% in 2010. Similar increases in short-term contracts were seen for holders of other degree types, particularly masters degrees.

The proportions self-employed or in other forms of employment (such as agencies) were both slightly higher in 2010 than in 2008, but essentially remained at low levels. Self-employed status was reported at around half the proportion of doctoral graduates compared with masters and good first degree graduate respondents in 2010.

Table 17 Employment contract status (where known) for graduate respondents in UK employment

	2010 L DLHE			2008 L DLHE		
	Doctoral	Masters	First degree	Doctoral	Masters	First degree
On a permanent or open-ended contract	67.8%	76.4%	77.7%	69.7%	79.8%	79.7%
On a fixed-term contract lasting 12 months or longer	21.2%	9.2%	9.6%	22.3%	8.6%	9.7%
On a fixed-term contract lasting less than 12 months	4.6%	4.3%	3.9%	2.8%	2.5%	3.2%
Self employed/freelance	4.4%	7.3%	4.6%	3.6%	7.4%	4.2%
Other	2.1%	2.7%	4.0%	1.5%	1.7%	3.2%
(N)	1995	4225	15685	1620	3360	12700

Data source: Destinations of Leavers from Higher Education Longitudinal Surveys 2008 and 2010 (IES analysis)

5.2 Contractual status by disciplinary group

Open-ended contracts were most common amongst physical sciences and engineering doctoral graduate respondents (72%) and least common among those from biological sciences (61%) and arts and humanities (62%) (Table 18).

Although the overall proportion employed on open-ended contracts fell by 2% compared with 2008 results, this was more marked for social sciences (-10%) and arts and humanities respondents (-4%), while there was a rise of 3% in open-ended contracts for biological sciences respondents.

A higher proportion of biological sciences doctoral graduates (36%) were employed on fixed-term contracts than of any other disciplinary group, including over 6% on contracts of less than 12 months duration. Over a third of those arts and humanities respondents who were on fixed-term contracts had contracts of less than 12 months (9%).

The proportions employed on fixed-term contracts rose for all disciplinary groups compared to 2008, except for biomedical sciences respondents. There were significant rises, in some cases doubling, in the proportions of respondents employed on contracts of less than 12 months in all disciplinary groups, except for social sciences, which fell. This apparent trend of 'shortening' of fixed-term contractual employment is addressed in the next section.

Although the proportion self-employed rose from 2% to 4% overall, this masked trends in different directions for different disciplinary groups. Self-employment or other forms of employment (including temporary) was highest amongst arts and humanities doctoral graduates at 12%.

Table 18 Employment contract status (where known) for doctoral graduate respondents in UK employment, by disciplinary group

	2010 L DLHE					
	All	Arts and humanities	Biological sciences	Biomedical sciences	Physical sciences and engineering	Social sciences
Open-ended contract	67.8%	62.1%	61.1%	67.7%	71.7%	68.0%
Fixed term (12 mon+)	21.2%	16.7%	29.7%	23.9%	20.1%	19.8%
Fixed term (<12 mon)	4.6%	9.1%	6.6%	3.6%	3.5%	2.7%
Self-employed	4.4%	7.0%	1.5%	3.9%	3.3%	6.1%
Other (incl temp agency)	2.1%	5.1%	0.8%	0.9%	1.5%	3.4%
(N)	1995	290	245	445	685	215

	2008 L DLHE					
	All	Arts and humanities	Biological sciences	Biomedical sciences	Physical sciences and engineering	Social sciences
Open-ended contract	69.8%	66.2%	58.0%	67.8%	74.1%	77.9%
Fixed term (12 mon+)	22.3%	17.8%	31.9%	27.9%	18.8%	13.2%
Fixed term (<12 mon)	2.8%	4.4%	3.6%	2.1%	2.4%	3.1%
Self-employed	3.6%	9.4%	3.8%	1.1%	3.3%	4.6%
Other (incl temp agency)	1.5%	2.2%	2.8%	1.2%	1.4%	1.3%
(N)	1620	180	220	405	550	180

Data source: Destinations of Leavers from Higher Education Longitudinal Surveys 2008 and 2010 (IES analysis)

5.3 Contractual status by occupational cluster

When analysed by occupational cluster (Table 19), there were falls in the proportion of respondents employed on open-ended contracts between 2008 and 2010 in all clusters, except for other teaching occupations.

The most significant falls were in other occupations from 78% in 2008 to 72% in 2010, and in HE research from 19% in 2008 to 17% in 2010. This is in contrast to responses to the Careers in Research Online Survey (CROS)[19] which reported an increase in the proportion of HE research staff employed on open contracts from18% in 2009 to 23% in 2011, although 70% of those respondents had three or more years' working in HE research.

In terms of the change in the proportions who were employed on fixed-term contracts, there were significant rises for those employed in research outside higher education from 15% to 21%, teaching and lecturing in HE from 14% to 17%, and other occupations from 9% to 12%. Whether these changes, particularly outside HE, were short-term responses to uncertainly in the economic outlook for employers, or are indicative of long-term trends, cannot be known at this stage.

The proportions employed on fixed-term contracts of less than 12 months increased in all occupational clusters. For those employed in HE research, the proportion with a fixed-term contract of shorter than 12 months more than doubled from 5% in 2008 to 11% in 2010. This trend correlates with responses to the Careers in Research Online Survey (CROS) in 2009 and 2011, which showed an increase in the use of such short-term contracts for HE research staff from 19% to 23%

The proportion of doctoral graduate respondents employed in HE research on fixed-term contracts of more than 12 months fell from 74% in 2008 to 70% in 2010. Equivalent figures reported in CROS were 75% in 2009 and 60% in 2011, consistent with this downward trend.

Table 19 Employment contract status (where known) for doctoral graduate respondents in UK employment, by occupational cluster

	2010 L DLHE					
	Open-ended contract	Fixed term (12 mon+)	Fixed term (<12 mon)	Self-employed	Other (incl temp agency)	(N)
HE research occupations	16.5%	70.4%	11.3%	0.0%	1.8%	330
Research (not in HE sector)	75.6%	16.7%	4.2%	3.1%	0.4%	240
Teaching and lecturing in HE	80.4%	12.5%	4.7%	0.6%	1.8%	425
Other teaching occupations	79.2%	8.8%	5.2%	3.1%	3.7%	150
Other common doctoral occupations	81.9%	9.2%	1.9%	5.3%	1.7%	460
Other occupations	71.7%	10.2%	2.2%	12.6%	3.3%	390
All	67.8%	21.2%	4.6%	4.4%	2.0%	2000

	2008 L DLHE					
	Open-ended contract	Fixed term (12 mon+)	Fixed term (<12 mon)	Self-employed	Other (incl temp agency)	(N)
HE research occupations	19.2%	74.3%	5.1%	0.0%	1.4%	295
Research (not in HE sector)	78.8%	11.7%	3.0%	4.5%	2.0%	210
Teaching and lecturing in HE	84.0%	10.3%	3.5%	1.4%	0.8%	370
Other teaching occupations	77.7%	9.3%	2.7%	6.5%	3.8%	105
Other common doctoral occupations	84.7%	10.0%	0.9%	3.6%	0.8%	400
Other occupations	77.7%	7.4%	1.8%	10.1%	2.9%	245
All	69.7%	22.3%	2.8%	3.6%	1.5%	1620

[19] Careers in Research Online Survey (CROS) UK aggregate results, 2009 and 2011, Vitae www.vitae.ac.uk/cros

Data source: Destinations of Leavers from Higher Education Longitudinal Surveys 2008 and 2010 (IES analysis)

6 Career satisfaction and value of the doctorate

Key statistics

- 92% of respondents reported high levels of career satisfaction; those in teaching and lecturing in HE were most satisfied; least satisfied were those in HE research and other occupations.
- 86% of respondents felt their doctoral degree experience prepared them well for or helped them progress towards their career aspirations.
- 52% of doctoral graduate respondents had considered self-employment or setting up their own business.
- Overall, doctoral graduates felt that their doctoral degree experience prepared them better for employment than for self-employment or entrepreneurship.
- 79% of doctoral graduates in 2010 believed that their doctorate was a formal requirement or important in gaining current employment; this was considerably lower for masters (63%) and good first degree respondents (66%).
- 82% of doctoral graduates in 2010 believed that their skills and competencies were a formal requirement or important in gaining current employment; similar to masters (84%) and good first degree respondents (86%).
- 76% of doctoral graduates in 2010 believed that their relevant work experience was a formal requirement or important in gaining current employment, compared to masters at 80% and good first degree respondents (70%).

6.1 Career satisfaction

The vast majority of respondents reported that they were satisfied with their career to date (45% very satisfied, 47% fairly satisfied and only 2% not at all satisfied). This was extremely similar to the picture obtained in the 2008 L DLHE survey, for respondents as a whole and also within comparable disciplinary groups.

Respondents teaching and lecturing in HE reported the highest proportion very satisfied with their career (56%), with only 7% not very or not at all satisfied (Table 20). 95% of those in other common doctoral occupations were very (50%) or fairly (45%) satisfied, and only 5-6% not satisfied, although the proportion very satisfied had fallen from 56% in 2008. The proportion very satisfied working in research not in HE increased from 35% in 2008 to 42% in 2010. The least satisfied groups were those in HE research (33% very satisfied, and 11% not satisfied) and other occupations (39% very satisfied, 11% not satisfied).

In 2010 respondents were invited to consider how well their doctoral degree experience had prepared them for or helped them to progress their career aspirations. Almost half (49%) reported that it had prepared or helped them very well, and 37% quite well, with only 12% reporting not very or not at all well (Table 21).

Table 20 Career satisfaction of doctoral graduate respondents in UK employment, by occupational cluster

	2010 L DLHE					2008 L DLHE				
	Satisfaction					Satisfaction				
Clusters	Very	Fairly	Not very	Not at all	(N)	Very	Fairly	Not very	Not at all	(N)
HE research occupations	33.0%	56.2%	9.2%	1.5%	330	32.0%	58.9%	8.1%	1.0%	290
Research (not in HE sector)	41.5%	49.3%	8.0%	1.2%	240	34.5%	57.2%	7.8%	0.5%	205
Teaching and lecturing in HE	55.6%	37.8%	5.3%	1.3%	420	57.9%	37.2%	4.5%	0.4%	365
Other teaching occupations	46.5%	47.4%	3.4%	2.7%	145	47.6%	48.6%	3.0%	0.7%	100
Other common doctoral occupations	49.9%	44.5%	4.8%	0.9%	460	55.7%	39.7%	4.0%	0.6%	395
Other occupations	39.3%	49.8%	7.7%	3.1%	380	39.5%	47.8%	9.0%	3.7%	235
All	45.0%	46.8%	6.5%	1.7%	1980	46.2%	46.8%	6.0%	1.1%	1585

Data source: Destinations of Leavers from Higher Education Longitudinal Surveys 2008 and 2010 (IES analysis)

Table 21 How well higher education experience prepared doctoral graduate respondents for progress towards career aspirations and self-employment

	Very well	Quite well	Not very well	Not at all	Don't know	Never considered becoming self-employed	(N)
How well did your HE experience prepare you for or help you progress your career aspirations?	48.7%	37.4%	7.9%	3.9%	2.1%		2500
Overall, how well did your HE experience prepare you for being self employed or setting up your own business?	4.7%	11.0%	13.6%	18.2%	4.3%	48.2%	2480
Excluding those who never considered being self employed or setting up in business, how well did HE experience prepare for it?	9.1%	21.2%	26.2%	35.1%	8.4%		1290

Of the 52% of respondents who had considered self-employment or setting up their own business, 30% felt their doctoral experience had prepared them very or quite well but 61% felt that it had not (and the remainder did not know). Overall, doctoral graduates felt that their degree experience had prepared them better for employment than for self-employment or entrepreneurship, but it is notable that over half reported that they would consider self-employment or setting up their own business.

6.2 Requirement of doctorate for employment

Almost half (46%) of respondents in UK employment believed that their doctoral degree had been a formal requirement in gaining their current position, compared to 50% in 2008 (Table 22). 33% believed that it had been important and only 7% that it had not helped at all. Similarly, 49% believed their research subject was formally required, higher than in 2008 at 41%. Only 8% of respondents believed that their doctoral degree was unimportant.

The overwhelming majority (90%) believed that their skills and competencies had been formally required or important in gaining their employment, reinforcing the benefit of emphasising professional development within research degree programmes.

The importance of relevant work experience gained during previous employment was also questioned in the 2010 L DLHE survey, in relation to gaining their current job. This was deemed important by 76% of respondents (28% formal requirement, 48% important), which would suggest that integration of work experience opportunities into doctoral training could be beneficial in relation to employment outcomes.

When compared to graduates with other levels of qualification in the survey, considerably more doctoral graduates believed their qualification (46%) and subject of study (49%) were formal requirements for their job than was the case for masters graduates (26% and 30%, respectively) or good first degree graduates (37% and 29%, respectively).

The differences between perceptions of importance by different levels of graduates were somewhat less pronounced in relation to their skills and competencies, with 46% of doctoral graduates believing them a formal requirement, compared to 36% for masters and 35% for good first degree, similar to 2008.

Slightly more masters graduates (34%) believed their relevant work experience to have been required in gaining their job, than of doctoral graduates (28%) or good first degree graduates (22%).

When analysed by occupational cluster, there were some marked differences in the importance of different factors as reported by the doctoral graduate respondents in gaining their current employment (Table 23). Much higher proportions of those in HE research (80%) and teaching and lecturing in HE (66%) believed their doctorate to have been a requirement for their current job, than was the case in other clusters including research not in HE (47%), other common doctoral occupations (32%) or other occupations (14%). However, in all clusters fewer than 10% believed that it had not been important in gaining their current job, except in other occupations at 19%.

The subject of their doctoral degree was rated similarly, most highly in teaching and lecturing in HE (68% reporting it a formal requirement), and higher by those in HE research (60%), than those in research not in HE (51%).

Skills and competencies were much more evenly rated across the occupational clusters, while the importance of relevant work experience was most highly rated by those in other common doctoral occupations (36% reporting it formally required) and least by those in HE research (19%).

Data source: Destinations of Leavers from Higher Education Longitudinal Surveys 2008 and 2010 (IES analysis)

Table 22 Comparison of perceived importance by graduate respondents in UK employment of educational and other factors in gaining current employment

	2010 L DLHE					
	Importance to employer					
Factors	Formal requirement	Important	Not very important but helped	Not important	Don't know	(N)
Qualification type						
Doctoral graduates	45.8%	32.8%	13.8%	7.0%	0.5%	1995
Masters graduates	26.1%	37.2%	22.7%	13.2%	0.8%	4220
First degree graduates (1st/2:1 only)	36.8%	29.6%	19.2%	13.7%	0.7%	15695
Subject						
Doctoral graduates	49.0%	32.9%	9.6%	8.1%	0.4%	1995
Masters graduates	29.9%	35.6%	19.0%	14.8%	0.7%	4225
First degree graduates (1st/2:1 only)	29.4%	28.9%	22.8%	18.3%	0.6%	15690
Skills and competencies						
Doctoral graduates	45.7%	44.7%	4.6%	4.3%	0.8%	1995
Masters graduates	36.9%	47.6%	8.4%	6.1%	0.9%	4225
First degree graduates (1st/2:1 only)	35.3%	51.3%	7.9%	4.8%	0.6%	15695
Relevant work experience						
Doctoral graduates	28.1%	48.3%	15.0%	7.3%	1.2%	1895
Masters graduates	33.5%	46.2%	13.3%	5.9%	1.1%	4075
First degree graduates (1st/2:1 only)	21.5%	48.7%	20.7%	8.1%	0.9%	14970

	2008 L DLHE					
	Importance to employer					
Factors	Formal requirement	Important	Not very important but helped	Not important	Don't know	(N)
Qualification type						
Doctoral graduates	49.5%	31.7%	12.1%	6.4%	0.4%	1615
Masters graduates	27.3%	35.3%	22.4%	14.1%	0.9%	3345
First degree graduates (1st/2:1 only)	46.3%	24.9%	18.3%	9.8%	0.6%	12685
Subject						
Doctoral graduates	40.6%	41.2%	11.0%	7.1%	0.2%	1610
Masters graduates	21.9%	40.5%	20.3%	16.7%	0.5%	3340
First degree graduates (1st/2:1 only)	24.7%	30.8%	24.0%	20.0%	0.5%	12680
Skills and competencies						
Doctoral graduates	46.2%	46.7%	3.6%	2.8%	0.8%	1610
Masters graduates	39.1%	47.1%	6.6%	6.4%	0.7%	3350
First degree graduates (1st/2:1 only)	34.5%	52.9%	8.0%	3.9%	0.7%	12690

Note: Response options on relevant work experience were new in 2010

Data source: Destinations of Leavers from Higher Education Longitudinal Surveys 2008 and 2010 (IES analysis)

Table 23 Perceived importance by doctoral graduate respondents in UK employment of educational factors and work experience in gaining current employment, by occupational cluster

Factors	Formal requirement	Important	Not very important but helped	Not important	Don't know	(N)
Qualification type (All)	45.8%	32.8%	13.8%	7.0%	0.5%	1995
HE research occupations	79.7%	16.5%	2.1%	1.4%	0.3%	330
Research (not in HE sector)	47.2%	41.1%	10.0%	1.6%	0.0%	245
Teaching and lecturing in HE	65.6%	28.1%	2.7%	3.4%	0.2%	425
Other teaching occupations	35.9%	28.6%	24.7%	9.4%	1.4%	150
Other common doctoral occupations	32.0%	42.3%	18.6%	6.7%	0.4%	460
Other occupations	13.9%	37.3%	28.8%	19.0%	1.0%	390
Subject (All)	49.0%	32.9%	9.6%	8.1%	0.4%	1995
HE research occupations	60.3%	32.2%	3.1%	3.6%	0.8%	330
Research (not in HE sector)	50.7%	41.1%	5.0%	3.2%	0.0%	245
Teaching and lecturing in HE	68.3%	26.6%	3.3%	1.6%	0.2%	425
Other teaching occupations	49.9%	24.5%	15.6%	9.2%	0.8%	150
Other common doctoral occupations	41.4%	36.7%	13.0%	8.7%	0.2%	460
Other occupations	25.5%	34.0%	19.0%	21.0%	0.5%	390
Skills and competencies (All)	45.7%	44.7%	4.6%	4.3%	0.8%	1995
HE research occupations	51.0%	45.2%	2.1%	1.4%	0.3%	330
Research (not in HE sector)	41.7%	50.6%	5.0%	2.0%	0.7%	245
Teaching and lecturing in HE	51.1%	43.0%	1.9%	3.0%	1.1%	425
Other teaching occupations	41.2%	44.1%	7.1%	6.3%	1.4%	150
Other common doctoral occupations	47.1%	44.3%	4.6%	3.6%	0.4%	460
Other occupations	37.6%	43.0%	8.5%	9.8%	1.0%	390
Relevant work experience (All)	28.1%	48.3%	15.0%	7.3%	1.2%	1895
HE research occupations	19.4%	53.5%	15.8%	10.2%	1.0%	310
Research (not in HE sector)	18.2%	51.8%	25.0%	4.7%	0.4%	225
Teaching and lecturing in HE	31.3%	55.1%	8.0%	3.8%	1.8%	415
Other teaching occupations	32.4%	44.6%	8.6%	8.1%	6.3%	145
Other common doctoral occupations	36.2%	41.6%	14.7%	7.0%	0.5%	430
Other occupations	26.6%	43.4%	19.1%	10.6%	0.2%	370

Data source: Destinations of Leavers from Higher Education Longitudinal Surveys 2008 and 2010 (IES analysis)

7 Impact of doctorate

Key statistics

- 91% of doctoral graduate respondents believed their doctoral experience enabled them to be innovative in the workplace; this was highest amongst biological sciences respondents at 97%.
- 88% of doctoral graduate respondents believed their doctoral experience enabled them to make a difference in the workplace.
- 78% of doctoral graduate respondents believed their doctoral experience enabled them to influence the work of others; this was highest in HE research (86%) and lowest for arts and humanities (67%).
- 52% of doctoral graduate respondents believed their doctoral experience enabled them to change organisational culture and/or working practice; this was highest for biological sciences (58%) and biomedical sciences respondents (56%).
- 85% of doctoral graduate respondents believed their doctoral experience enabled them to progress towards long term career aspirations; this was highest for HE research (93%) and teaching and lecturing in HE (94%) and lowest for other teaching (78%) and other occupations (79%).
- 67% of doctoral graduate respondents believed their doctoral experience enabled them to access immediate job opportunities.
- Over 85% of doctoral graduate respondents believed their doctoral experience enabled them to enhance their social and intellectual capabilities outside employment and quality of life generally; this was highest amongst arts and humanities respondents (over 90%). It was also highest for those employed in teaching occupations, whether in higher education or not.

7.1 Use of doctoral competencies in the current workplace

Respondents were questioned about the extent to which they believed their doctoral degree experience had enabled them to have other impacts, in the workplace, in their careers and in wider life. New options had been included in the 2010 survey in relation to impact on changing organisational culture and/or working practices, and influencing the work of others.

Overall, respondents offered very positive reflections on the extent to which they felt their doctoral experience helped them to have impact in their workplace and career (Figure 6). 91% believed their doctoral experience helped them to be innovative in the workplace and 88% to make a difference there. About 80% believed their experience had helped them influence the work of others, although only 15% to a great extent. Just over half believed that it had helped them to change organisational culture and/or work practices, although only around 11% to a great extent.

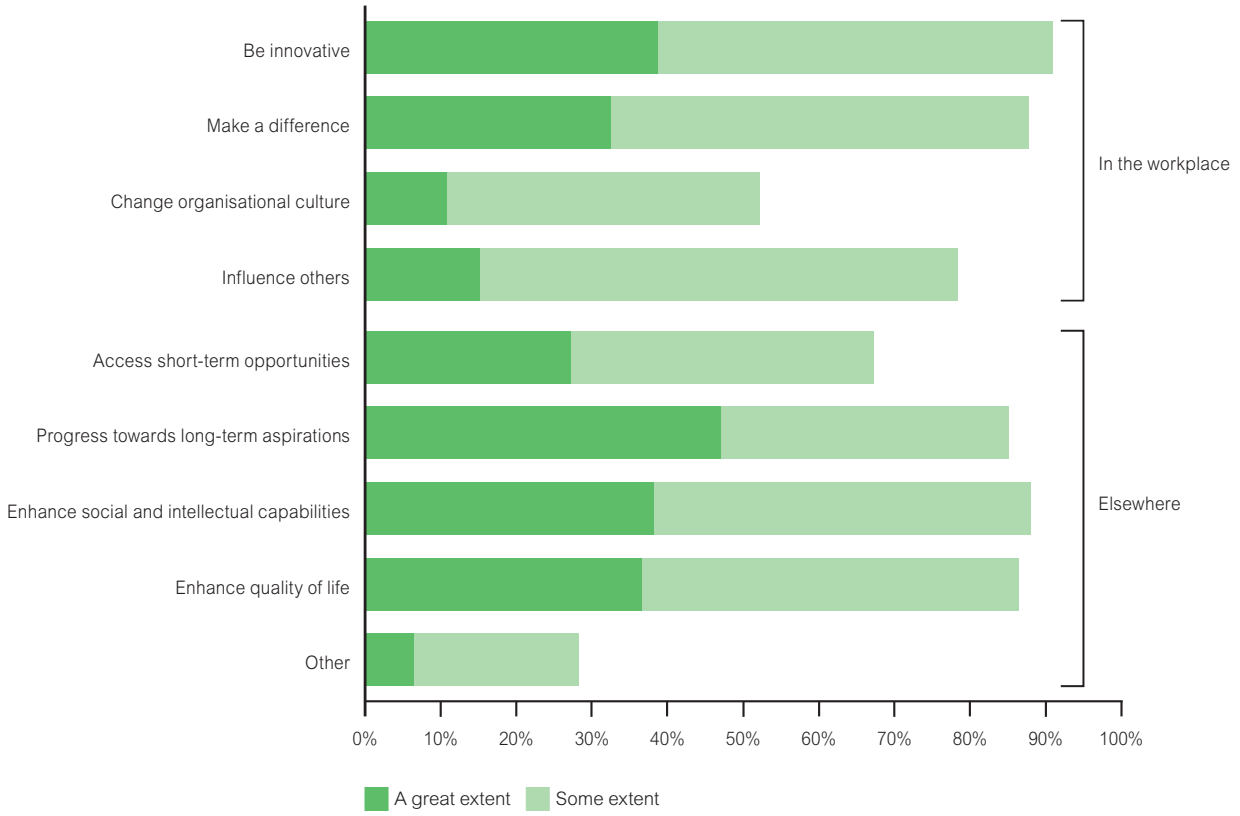
A strong majority (85%) believed their doctoral degree experience was helping them to progress towards their long-term career aspirations, and 67% to access job opportunities in the short-term.

High proportions (over 85%) believed that their doctoral experience enhanced their social and intellectual capabilities outside employment and also enhanced their quality of life.

The pattern of the results overall was broadly similar to those obtained in 2008, suggesting that respondents continued to reflect positively on the on-going impact of their doctoral degree experience.

Data source: Destinations of Leavers from Higher Education Longitudinal Surveys 2008 and 2010 (IES analysis)

Figure 6 Extent to which doctoral degree experience has enabled respondents to have different impacts in their workplace, careers and wider lives



7.2 Impact by disciplinary group

When analysed by disciplinary group, only modest variations were observed between those in different discipline groups, but these included:

- Larger proportions of biological sciences respondents believed their doctoral experience enabled them to a great extent to be innovative in the workplace (46%) and make a difference in the workplace (38%), than all other disciplinary groups (Table 24).
- A higher proportion of physical sciences and engineering respondents reported that their doctoral degree experience had not enabled them to impact organisational culture and/or working practices (49%), compared with other discipline groups (Table 24).
- Higher proportions of arts and humanities respondents (27%) indicated that their doctoral degree experience had not enabled them to influence the work of others, compared with the overall average of 18% (Table 24).
- More than half of arts and humanities respondents believed their doctoral degree experience gave them a great deal of impact in terms of their wider lives, compared to around a third of other discipline groups (Table 25).
- Higher proportions of biomedical sciences respondents than other disciplinary groups reported that their doctoral degree experience had enabled progress towards their long-term career aspirations (54% to a great extent, Table 25).

These trends by discipline group were consistent with those observed in the 2008 L DLHE survey responses, where comparable data were available.

Data source: Destinations of Leavers from Higher Education Longitudinal Surveys 2008 and 2010 (IES analysis)

Table 24 Extent to which doctoral degree experience has enabled respondents to have different impacts in their workplace, by discipline

	All	Arts and humanities	Biological sciences	Biomedical sciences	Physical sciences and engineering	Social sciences
Be innovative in the workplace						
A great extent	38.7%	37.2%	45.9%	31.6%	41.8%	36.5%
Some extent	52.2%	48.5%	50.6%	59.4%	49.7%	53.2%
Not at all	7.2%	10.6%	2.6%	7.5%	6.9%	8.2%
Don't know	2.0%	3.7%	1.0%	1.6%	1.6%	2.1%
(N)	2440	380	300	505	840	275
Make a difference in the workplace						
A great extent	32.2%	29.8%	37.7%	29.1%	33.1%	28.7%
Some extent	55.5%	50.0%	53.6%	60.3%	55.3%	60.8%
Not at all	8.9%	13.7%	6.8%	9.1%	8.5%	7.2%
Don't know	3.3%	6.5%	1.9%	1.5%	3.2%	3.4%
(N)	2445	380	300	510	840	275
Change organisational culture and/or working practices						
A great extent	10.8%	11.0%	11.7%	10.8%	8.8%	10.7%
Some extent	41.4%	37.0%	45.9%	45.0%	38.2%	41.2%
Not at all	43.5%	46.2%	39.8%	40.5%	49.0%	42.2%
Don't know	4.3%	5.8%	2.7%	3.8%	4.0%	5.9%
(N)	2440	380	300	505	840	275
Influence the work of others in the workplace						
A great extent	15.1%	10.8%	17.6%	17.6%	13.1%	15.0%
Some extent	63.3%	56.4%	63.1%	64.5%	65.0%	66.2%
Not at all	18.0%	26.6%	17.5%	15.3%	18.7%	13.8%
Don't know	3.7%	6.1%	1.9%	2.6%	3.2%	4.9%
(N)	2440	380	295	510	840	275

Table 25 Extent to which doctoral degree experience has enabled respondents to undertake activities in their work and lives, by discipline

	All	Arts and humanities	Biological sciences	Biomedical sciences	Physical sciences and engineering	Social sciences
Access immediate or short-term job opportunities in your chosen career						
A great extent	27.2%	28.8%	29.9%	29.0%	25.4%	25.8%
Some extent	40.0%	37.2%	40.0%	42.4%	40.9%	39.1%
Not at all	26.8%	27.9%	22.9%	23.8%	27.6%	29.9%
Don't know	6.0%	6.1%	7.2%	4.8%	6.1%	5.2%
(N)	2435	380	300	505	840	275
Progress towards your long-term career aspirations						
A great extent	47.0%	42.9%	50.7%	53.7%	43.2%	51.0%
Some extent	38.1%	36.4%	34.5%	35.9%	42.0%	36.2%
Not at all	10.7%	14.2%	11.6%	8.8%	9.9%	8.7%
Don't know	4.2%	6.5%	3.2%	1.5%	4.9%	4.1%
(N)	2480	390	305	510	850	280
Enhance your social and intellectual capabilities beyond employment						
A great extent	38.2%	54.8%	31.0%	34.4%	32.2%	41.5%
Some extent	49.9%	38.2%	56.8%	49.5%	54.9%	49.0%
Not at all	9.2%	3.8%	9.6%	13.2%	10.0%	7.4%
Don't know	2.8%	3.3%	2.6%	2.9%	2.8%	2.1%
(N)	2480	390	305	510	850	280
Enhance the quality of your life generally						
A great extent	36.6%	49.1%	31.3%	32.3%	33.5%	38.2%
Some extent	49.8%	42.5%	51.2%	53.2%	51.8%	48.5%
Not at all	10.5%	5.9%	12.7%	11.5%	11.7%	10.2%
Don't know	3.0%	2.6%	4.8%	3.1%	2.9%	3.1%
(N)	2485	390	305	510	850	280

Data source: Destinations of Leavers from Higher Education Longitudinal Surveys 2008 and 2010 (IES analysis)

7.3 Impact by occupational cluster

When analysed by occupational cluster, those reporting the greatest extent of impact of their doctoral degree experience in being innovative in the workplace were respondents now employed in HE research (51%, Table 26). This was the only cluster where more respondents reported 'a great extent' of impact than 'some extent' of impact.

Somewhat more of those in other teaching occupations and other occupations reported that their doctoral degree experience had not enabled them to be innovative in their current workplace at all, at around 11% compared with the overall average of 7%.

Many more of those in HE research (59%) and teaching and lecturing in HE (67%) reported their doctoral experience to have had a great effect on their progress towards their long-term career aspirations, than of other groups, although this was still the case for 30-40% of those in non-research employment (Table 27).

Respondents in all occupational clusters disciplinary groups reported positive impact of the doctoral degree experience on their wider lives. Those reporting the strongest impact on enhanced quality of life and social and intellectual capabilities were respondents in teaching occupations (both in and, especially, outside HE).

These trends were very consistent with results from the previous survey in 2008.

Respondents were for the first time also invited to specify other impacts in the workplace and around 560 respondents believed their doctoral experience had led to other workplace impacts to some or a great extent. The impacts they specified related to their personal and professional confidence, particularly through their perception of greater professional respect and standing, as well as the existence of their global networks of contacts, the wider perspectives they could introduce, and their creativity in relation to improving design and provision of products and services.

Table 26 Extent to which doctoral degree experience has enabled respondents to have different impacts in their workplace, by occupational cluster

	All	HE research occupations	Research (not in HE sector)	Teaching and lecturing in HE	Other teaching occupations	Other common doctoral occupations	Other occupations
Be innovative in the workplace							
A great extent	38.7%	51.2%	43.6%	40.0%	33.8%	30.8%	33.8%
Some extent	52.2%	44.3%	51.2%	52.2%	52.7%	60.7%	53.1%
Not at all	7.2%	2.2%	3.9%	6.0%	10.7%	6.3%	11.7%
Don't know	2.0%	2.2%	1.3%	1.9%	2.9%	2.2%	1.4%
(N)	2440	385	295	490	165	505	440
Make a difference in the workplace							
A great extent	32.2%	37.0%	34.7%	35.6%	28.4%	30.6%	27.8%
Some extent	55.5%	53.6%	55.7%	53.7%	54.7%	59.7%	57.1%
Not at all	8.9%	5.9%	6.7%	6.7%	11.5%	8.0%	11.7%
Don't know	3.3%	3.6%	2.9%	4.0%	5.4%	1.7%	3.4%
(N)	2445	385	295	490	165	505	440
Change organisational culture and/or working practices							
A great extent	10.8%	9.5%	7.9%	12.2%	9.8%	11.4%	12.4%
Some extent	41.4%	36.0%	40.5%	41.8%	42.4%	44.9%	44.4%
Not at all	43.5%	49.4%	44.6%	42.5%	41.1%	41.4%	40.4%
Don't know	4.3%	5.2%	7.0%	3.5%	6.7%	2.3%	2.9%
(N)	2440	385	295	490	165	505	440
Influence the work of others in the workplace							
A great extent	15.1%	17.2%	12.8%	16.0%	12.9%	16.0%	14.9%
Some extent	63.3%	68.6%	67.5%	64.3%	59.2%	63.9%	58.1%
Not at all	18.0%	10.7%	15.4%	15.1%	23.8%	18.3%	23.2%
Don't know	3.7%	3.5%	4.2%	4.6%	4.2%	1.8%	3.8%
(N)	2440	385	295	490	165	505	440

Data source: Destinations of Leavers from Higher Education Longitudinal Surveys 2008 and 2010 (IES analysis)

Table 27 Extent to which doctoral degree experience has enabled respondents to undertake activities in their work and lives, by occupational cluster

	All	HE research occupations	Research (not in HE sector)	Teaching and lecturing in HE	Other teaching occupations	Other common doctoral occupations	Other occupations
Access immediate or short-term job opportunities in your chosen career							
A great extent	27.2%	33.5%	24.6%	36.7%	24.1%	25.1%	18.4%
Some extent	40.0%	42.8%	44.7%	34.3%	33.4%	42.7%	41.6%
Not at all	26.8%	17.2%	23.5%	22.0%	36.9%	27.9%	33.3%
Don't know	6.0%	6.5%	7.2%	7.0%	5.5%	4.4%	6.7%
(N)	2435	385	290	485	165	505	440
Progress towards your long-term career aspirations							
A great extent	47.0%	58.8%	47.3%	67.1%	35.3%	41.1%	34.7%
Some extent	38.1%	34.5%	43.6%	26.5%	44.0%	42.6%	44.5%
Not at all	10.7%	3.2%	5.2%	3.8%	15.2%	13.0%	16.5%
Don't know	4.2%	3.5%	4.0%	2.6%	5.5%	3.3%	4.2%
(N)	2480	385	295	490	165	505	440
Enhance your social and intellectual capabilities beyond employment							
A great extent	38.2%	34.5%	27.7%	42.7%	50.3%	33.1%	40.3%
Some extent	49.9%	52.7%	57.7%	46.7%	37.7%	52.5%	50.6%
Not at all	9.2%	9.5%	10.9%	7.9%	7.8%	11.5%	7.8%
Don't know	2.8%	3.2%	3.7%	2.7%	4.2%	3.0%	1.4%
(N)	2480	385	295	490	165	505	440
Enhance the quality of your life generally							
A great extent	36.6%	32.8%	35.9%	43.5%	45.7%	31.7%	34.4%
Some extent	49.8%	55.9%	49.9%	45.8%	42.6%	51.9%	53.0%
Not at all	10.5%	8.5%	9.7%	8.4%	9.8%	13.3%	9.9%
Don't know	3.0%	2.8%	4.4%	2.4%	1.9%	3.1%	2.6%
(N)	2485	385	295	490	165	505	440

Data source: Destinations of Leavers from Higher Education Longitudinal Surveys 2008 and 2010 (IES analysis)

8 Conclusions and next steps

8.1 Summary

Results from doctoral graduate respondents to the 2010 L DLHE survey, and comparison with results from those at a similar career stage who responded to the 2008 survey, provide a rich insight into the employment and early career development of doctoral graduates. Despite the UK's entry into economic recession during this time, doctoral graduates remained highly employable and most continued to achieve early career satisfaction in their chosen pathway. The perceived benefits and impacts of the experience of doctoral degree study appeared to remain high and relatively consistent.

At around three and a half years after graduation, the vast majority of doctoral graduates were in employment, and the proportion in full-time employment was similar to that of comparable graduates surveyed two years earlier. Unemployment was very slightly higher, but still at a very low rate of around 2%. The employment destinations of these graduates were very similar to those found in the 2008 survey, although with a small decrease in the proportion working in research occupations both inside and outside higher education.

Investigation of the earnings of these doctoral graduates six months after graduation and three years later confirms that doctoral graduates enjoyed a salary premium immediately after graduation relative to masters and good first degree graduates, and that premium was maintained in percentage terms and increased in absolute terms. Comparison with data from the graduating cohort two years earlier indicates that doctoral graduates respondents' earnings kept pace with overall UK earnings between the two survey points, whereas earnings for masters and first degree graduates fell back.

Earnings in higher education occupations tended to have risen more, in relation to those in 2008, than those in many other occupational sectors. Many employed in HE research roles at this early career stage in 2010 were earning more than many of their counterparts working in research posts outside HE, a reversal of the position observed in the 2008 survey.

These benefits were generally seen for doctoral graduates in all disciplinary groups, although arts and humanities graduates appeared to have been most affected by changes in the labour market, with little improvement to their earnings, a higher and faster-rising proportion working part-time and more working in diverse occupations. It should be noted, however, that arts and humanities graduates undertaking doctoral study are a particularly diverse group in the first place, most undertaking doctoral research later in their careers than is the case in physical sciences or biosciences.

On the other hand there was evidence, across different occupational sectors, of increases in the proportion working under fixed-term employment contracts, and a particular rise in the use of short contracts (a year's duration or less), which may have been a cautious response by employers to tightening economic circumstances.

New understanding has come about concerning periods of unemployment experienced by doctoral graduates and also multiple jobs (i.e. portfolio working). The majority who reported portfolio working liked the variety of work that it offered, although for some it was a requirement in order to progress in difficult economic circumstances. Portfolio working was most common, and more likely to be a necessity, amongst arts and humanities doctoral graduates.

The large majority of respondents reported high levels of career satisfaction and felt well prepared by their doctoral degree experience to progress their career aspirations. Overall, doctoral graduates felt that their doctoral degree experience prepared them better for employment than for self-employment or entrepreneurship, although over half reported that they would consider self-employment or setting up their own business.

An underlying and consistent picture emerged that doctoral graduates remain very positive in their reflections on the benefit of their doctoral degree experience and satisfied with their experiences. They continued to perceive positive impact of their doctoral degree experience on workplace activities, career progression and to a lesser extent also in their wider lives, with little apparent effect of changed underlying UK economic circumstances. Arts and humanities doctoral graduates reported the greatest impact outside employment.

While the great majority believed that their experience helped them to be innovative in the workplace and influence the work of others, over half also claimed that it had enabled them to change organisational culture and/or work practices (and a significant minority had done so to a great extent). Those reporting greatest impact in relation to innovation in the workplace were graduates working in HE research occupations, and those working in higher education more generally tended to report the greatest impact of their doctoral degree qualification and experience on their career progression, although this was also reported by respondents in other occupational sectors.

Improved earnings and very positive reflections by those working in higher education occupations, especially HE research, may well reflect effort on the part of the sector to improve conditions for those working as research staff in higher education[20], while there have been tight constraints on earnings for many entering the private sector during the recession. Although the shift is not sufficiently marked to indicate that research in higher education is now systemically better paid than research outside HE, at comparable career stages, this appears to be the case for an increasing number of doctoral graduates.

[20] Concordat to Support the Career Development of Researchers, Universities UK, 2008 www.vitae.ac.uk/concordat

Data source: Destinations of Leavers from Higher Education Longitudinal Surveys 2008 and 2010 (IES analysis)

8.2 Next steps

The following areas offer potential to extend and deepen understanding in relation to doctoral graduate career pathways and development, and the long-term impact of doctoral qualifications and research degree experiences:

- The doctoral graduates studied here were only 3-4 years into their careers since graduation, and understanding their longer term outcomes and the sustained impact of their doctoral study requires further research into later stages of their careers. The Research Councils are currently funding a quantitative study of employment outcomes and impact around seven years after graduation, which should provide additional insights into the longitudinal aspect of doctoral graduate careers particularly employed outside higher education[21].
- An academic or research career is an objective for a significant proportion but not all of those entering doctoral programmes[22]. Much better understanding is needed of the career pathways of those who continue in higher education beyond doctoral study to be employed as research staff. Although 'What do researchers do? Career paths of doctoral graduates'[23] revealed the mobility of doctoral researchers employed as HE research staff, the flows into, through and out of academic career paths in the UK generally are not currently well understood. A Vitae project is underway to provide a better understanding of HE research staff career progression.
- The Concordat to Support the Career Development of Researchers highlights the value of improving the stability of employment conditions for researchers employed in higher education. Overwhelmingly, HE research staff are employed on fixed-term contracts, particularly compared with other employment sectors, and there is mixed evidence in this report and from CROS[24] of a trend towards the use of open-ended contracts. What does appear common to both is a recent 'shortening' of fixed-term contracts for researchers, in particular rising proportions working under contracts of a year's duration or less, most notably for HE research staff. This could be a temporary cautious response by employers to difficult economic circumstances, or may be part of a longer-term trend. Renewed investigation of the employment circumstances of researchers in higher education, and the underlying drivers for shorter-term contracts, would be beneficial to understand these trends more fully.
- Further and comparative analysis of forthcoming L DLHE surveys of doctoral graduates will provide additional insight into the impact of the evolving economic backdrop on the careers and employment of doctoral graduates and whether the trends observed in this report are short-term or sustained, particularly compared with masters and first degree graduates, and potentially any future impact of different study funding regimes.
- With an increasingly global higher education market and a significant presence of international graduates undertaking postgraduate research degrees in the UK, the government has recognised that studies of the employability and career paths of international doctoral graduates and early career researchers will be valuable[25]. To this end the DLHE survey has been extended to include international graduates from 2013. However, L DLHE survey results for this cohort will not be available until 2017.
- Although arts and humanities doctoral graduates have reported sustained impact of their doctoral degree study on their lives, they appear to have been affected more than those in other disciplinary groups by challenges in the employment market. This might suggest that greater effort be given to supporting their enterprise skills and employability to pursue a wide variety of potential career destinations and styles of working.
- With current policy attention on the issue of work experience and its inclusion within many doctoral training programmes, more systematic investigation of the outcomes and impact of work experience and internship programmes during and after doctoral degree study will be beneficial. It would be worth considering whether to include specific questions about these within future DLHE and L DLHE surveys.
- The 2010 L DLHE survey results reveal new information about portfolio working, which is quite prevalent especially amongst arts and humanities doctoral graduates. While this may be seen as a positive approach to career management or even self-employment, more detailed study through case studies of doctoral graduates working this way could reveal more clearly the drivers, challenges and opportunities for this style of career.

[21] RCUK Doctoral impact and career tracking study www.rcuk.ac.uk/ResearchCareers/value/Pages/valueresearchcareer.aspx
[22] What do researchers want to do? Career intentions of doctoral graduates, Vitae, 2012 www.vitae.ac.uk/wdrd
[23] 'What do researchers do? Career paths of doctoral graduates, Vitae, 2011 www.vitae.ac.uk/wdrd
[24] Careers in Research Online Survey (CROS) Aggregate UK results, 2011 and 2009, Vitae www.vitae.ac.uk/cros
[25] Tracking International Graduate Outcomes 2011, BIS, 2012 www.gov.uk/government/uploads/system/uploads/attachment_data/file/32422/12-540-tracking-international-graduate-outcomes-2011.pdf

Data source: Destinations of Leavers from Higher Education Longitudinal Surveys 2008 and 2010 (IES analysis)

The Institute for Employment Studies is an independent, apolitical, international centre of research and consultancy in public employment policy and organisational human resource issues. It works closely with employers in the manufacturing, service and public sectors, government departments, agencies, and professional and employee bodies. For over 40 years the Institute has been a focus of knowledge and practical experience in employment and training policy, the operation of labour markets, and human resource planning and development. IES is a not-for-profit organisation which has over 70 multidisciplinary staff and international associates. IES expertise is available to all organisations through research, consultancy, publications and the Internet.

Vitae champions the professional and career development of postgraduate researchers and research staff in higher education institutions and research institutes. Vitae works in partnership with higher education institutions, research organisations, funders, and national organisations to meet society's need for high-level skills and innovation and produce world-class researchers.

Vitae is a network based organisation, consisting of a central team based in Cambridge and a series of 8 regional Hubs throughout the UK and international networks. Vitae works with higher education institutions (HEIs) to embed professional and career development in the research environment. It undertakes activities such as:

Vitae's vision is to lead world-class professional and career development of researchers.

Vitae aims:

- Build human capital by influencing the development and implementation of effective policy relating to researcher development
- Enhance higher education provision to train and develop researchers
- Empower researchers to make an impact in their careers
- Evidence the impact of professional andcareer development support for researchers

Vitae is supported by Research Councils UK (RCUK), UK HE funding bodies and managed by CRAC: The Career Development Organisation and delivered in partnership with regional Hub host universities.

Further information on Vitae's activities with HEIs, researchers and employers may be found on its website, www.vitae.ac.uk.