

what do



PhDs

do? – Trends

Commentary on 2004-2006 surveys of PhD graduates: key changes and first destination trends

What Do PHDs Do? – Trends provides insights into the first destinations of PhD graduates and helps:

- PhD researchers and prospective PhD researchers make well-informed career choices
- careers advisors and supervisors be aware of the breadth of potential careers
- employers better appreciate what PhD graduates can offer them.

What Do PhDs Do? – Trends published by CRAC Ltd (Careers Research and Advisory Centre) www.crac.org.uk

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GLOSSARY

- A&H** – arts and humanities
- BS** – biological sciences
- BMS** – biomedical sciences
- CDH** – Careers of Doctoral Holders project initiated by OECD
- DLHE** – Survey ‘Destinations of Leavers from Higher Education’ by HESA
- EHEA** – European Higher Education Area
- ERA** – European Research Area
- EU** – European Union
- EU-domiciled** – normal residence is in the European Union
- EUA** – European Universities Association
- Eurostat** – the Statistical Office of the European Commission
- FDS** – First Destination Survey by HESA
- HE** – Higher Education
- HEI** – Higher Education Institution
- HESA** – Higher Education Statistics Agency
- JSS** – Joint Skills Statement
- OECD** – Organisation for Economic Co-Operation and Development
- PDP** – personal development portfolio
- PS&E** – physical sciences and engineering
- QAA** – Quality Assurance Agency
- RC** – Research Councils
- RCUK** – Research Councils UK
- RDP** – research degree programmes
- SIC** – Standard Industrial Classification
- SOC** – Standard Occupational Classification
- SS** – social sciences
- UK-domiciled** – normal residence is in the UK, including the Channel Islands and Isle of Man
- UNESCO** – United Nations Educational, Scientific and Cultural Organization
- WDPD?** – *What Do PhDs Do?* – A national analysis of first destinations for PhD graduates (UK GRAD Programme)
- WDPDR** – *What Do PhDs Do?* – A regional analysis – of first destinations for PhD graduates (UK GRAD Programme)
- WDPDT** – *What Do PhDs Do? – Trends* (current publication)
- WDPD series** – all publications under the What Do PhDs Do? banner, currently *WDPD?*, *WDPDR* and *WDPDT*

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FOREWORD

I am delighted to introduce the third 'What Do PhDs Do?' publication from the UK GRAD Programme. Deemed "the best addition to the PhD careers advisor's toolkit in years" by one of our AGCAS members, the series has already made a significant impact in building the understanding of first destinations of our doctoral researchers.

This most recent edition focuses on the trends in first destinations of UK-domiciled PhD graduates. It analyses the data for those doctoral researchers graduating in 2003-5. One of the most striking things is the consistency. Patterns of employment have, broadly speaking, remained fairly consistent over the three-year period. Unemployment rates are low for doctoral researchers, compared to other degrees; around half those graduating work in the education sector; one third work in research roles; and around a fifth are employed as postdoctoral researchers in Higher Education. However, the overall pattern of consistency can mask larger variations at discipline group level, as shown in later chapters.

Researcher careers and employment patterns have been the focus of much attention in recent years. The impact of Sir Gareth Roberts Review conducted in 2001 has been far-reaching. Significantly for AGCAS, the Association of Graduate Careers Advisory Services, the additional funding provided as a result of the review has enabled university careers services to increase their provision for postgraduate researchers.

In coaching, supporting, guiding, advising and enquiring about careers with those undertaking doctoral studies the key questions we need to understand are where postgraduate researchers go on to work; what opportunities they take; what roles they carry out; what skills they need. We need to understand how to support our doctoral researchers to prepare for their future careers, such that they meet the needs of an economy with an increasing focus on innovation, creativity and enterprise. Most importantly, we need to support researchers develop their own career management skills, such that they take ownership for their careers and have them fit with their own values and lives.

Both AGCAS and the UK GRAD Programme are committed to building a better understanding of the motivations, careers and contributions of researchers. This ground-breaking study provides, for the first time, a comparison of first destinations data for doctoral researchers over a three-year period. I recommend it to anyone who is interested in supporting researchers, to current and prospective doctoral researchers, and all those who have an interest in learning more about the careers of researchers.



Margaret Dane

Chief Executive
Association of Graduate Careers Advisory Services

1. Introduction

In 2004, the UK GRAD Programme published *What Do PhDs Do? (WDPD?)*¹, a ground-breaking analysis of the first destinations of PhD² graduates. As the first publication to examine UK destination data at doctoral level, *WDPD?* aimed to demystify the PhD degree, show where and how PhD graduates were employed, and illustrate the diversity of the UK's PhD graduate population. Its intended audiences were university careers advisers, supervisors, employers, policy makers and, of course, PhD researchers. Feedback on the publication from all these groups has been extremely positive. *WDPD?* has helped:

- PhD researchers and prospective PhD students make well-informed career choices
- careers advisors and supervisors be aware of the breadth of potential careers
- employers better appreciate what PhD graduates can offer them.

The levels of stakeholder interest in labour market data led the UK GRAD Programme, in 2006, to produce *What Do PhDs Do? – A Regional Analysis*³ (*WDPDR*), which mapped the same cohort against nine English regions, and Scotland, Wales and Northern Ireland. Stakeholder groups have requested regular updates of *WDPD?* in order to track how and explore why the national picture of PhD graduate employment is changing. The UK GRAD Programme's response is the latest in the WDPD series: *What Do PhDs Do? – Trends* (*WDPDT*), which draws on three years of first destination statistics, covering those who graduated with PhDs in 2003, 2004 and 2005⁴.

WDPDT complements *WDPD?* by focusing on employment trends; providing a commentary on key changes and trends over the three years and up-to-date first destination information. It does not cover, however, the range or depth of perspectives covered in the original publication. We refer you to *WDPD?* for a more holistic picture that includes more detailed information about the UK PhD context (such as the various types of doctoral degrees), the make up and distribution of the PhD population in the UK and their many different career paths, including individual researcher case studies, employers' perspectives and references to longer term studies.

In order to facilitate cross-referencing, this publication generally follows the structure of *WDPD?*. We begin with updated information on national initiatives impacting on research degree programmes and PhD researchers in the UK. Next we focus on the first destination information at national level, followed by detailed examination of discipline groupings. In these discipline groupings there is one important difference with *WDPD?*, made in response to stakeholder feedback. Whereas *WDPD?* examined the biological and biomedical sciences⁵ as a single group, *WDPDT* analyses them separately. This change illuminates new details about PhD graduates in biological and biomedical subjects over the Destinations of Leavers from Higher Education (DLHE) survey period 2004-2006.

The complete WDPD series is available online and downloadable in pdf formats at www.grad.ac.uk/wdpd. You can also access detailed information about the WDPD series methodology to facilitate comparison with institutional datasets.

¹ *What Do PhDs Do?*, UK GRAD Programme, 2004, www.grad.ac.uk/wdpd

² In this publication we use the PhD as a generic term covering all doctoral research qualifications, including those under the umbrella of professional doctorates, NewRoute PhDs, PhD by practice and PhD by publication. For more information on types of doctoral degrees refer to *WDPD?, UK PhD in context*, www.grad.ac.uk/wdpd

³ *What Do PhDs Do? – A Regional Analysis*, UK GRAD Programme, 2006 www.grad.ac.uk/wdpdr

⁴ Readers should bear in mind that three points are the absolute minimum for a 'trend' and small sample sizes at some of the discipline levels mean that changes could be within statistical variation. We urge caution in interpreting patterns in the data and readers should take care when extrapolating.

⁵ Chapters 7 and 8 list the subjects that make up these respective discipline groups.

This analysis of the 2004-2006 DLHE survey data is particularly timely. Respondents to the next DLHE survey, in January 2008, will be the first cohort to graduate since the availability of public funding for skills training and career development for researchers resulting from Sir Gareth Roberts's 2001 Review *SET for Success*⁶. By mapping the distribution of, and patterns in, doctoral first destinations in the UK, the three WDPD? publications offer insights into employment patterns characterising the 'pre-Roberts landscape' and some baseline data for comparison with later studies⁷.

What the data tell us

WDPDT is based on the data collected through the Higher Education Statistics Agency⁸ (HESA) DLHE survey. A questionnaire is sent in January of each year to all UK and other European Union (EU) domiciled PhD researchers who graduated from UK institutions in the previous year. So, for example, the 2006 survey covered those graduating in 2005⁹.

Each year since the DLHE survey was first introduced in January 2004¹⁰, over 7000 UK-domiciled PhD graduates have been eligible for the annual survey (7080 in 2006) and almost 5000 respond (4880 in 2006). These annual respondent cohorts form the basis for all the statistics in Chapters 4 to 10. For data protection reasons, all figures have been rounded to the nearest five throughout *WDPDT*. Percentages may not total to 100% due to rounding.

The DLHE survey information enables *WDPDT* to comment on each cohort and broad discipline groupings on patterns in:

- current employment status, e.g. employment, unemployment, moving overseas
- sector of work, e.g. education, manufacturing
- occupations e.g. university lecturer, engineering professional
- employment contract status and length of contract.

The DLHE survey information does not enable *WDPDT* to comment on:

- non-EU domiciled researchers, i.e. 'international' PhD graduates, as this cohort are not covered by the survey
- salary information, although included as an optional question in the survey, response rates are too low
- trends by different forms of doctorates (the survey does not distinguish, for example, professional doctorates from PhDs)
- which 'first destinations' are new employers and which maintain employment with an existing employer
- career motivation, as questions about choice of career or future plans are not (yet) part of the survey
- trends at subject level, as the doctoral cohort is not large enough to support statistical analysis at this level.

Identifying 'postdoctoral researchers'

The DLHE survey information does not explicitly identify 'postdoctoral researchers' in the dataset. As this is one of the primary occupations of PhD graduates we have identified them by cross-referencing available information on industrial classification (sectoral), occupational classification and type of employment contract. A similar process has identified researchers employed in other sectors.

Methodology

Comprehensive information on the methodology used in the WDPD series, including the process by which we have identified postdoctoral researchers, is available at www.grad.ac.uk/wdpdmethod

Terminology

For ease of reference, the glossary provided (page 1) covers all the major terms used in this publication.

⁶ *SET for Success: the supply of people with science, technology, engineering and mathematical skills* (2002) available at www.grad.ac.uk/roberts. The report recommended that HEIs should provide training in transferable skills for PhD researchers.

⁷ Although it is useful to have some baseline data, we do not want to over-emphasise the usefulness of this data. First destinations are a crude indicator of PhD researchers long-term employment patterns. Furthermore, funding for the implementation of *SET for Success* recommendations was directed at Research Council-funded doctoral researchers and phased across three years at a time when many other changes also were impacting on research degree programmes (see Chapter 2). It is unlikely that any correlation between skills development and first destinations of PhD graduates will become apparent.

⁸ Higher Education Statistics Agency www.hesa.ac.uk

⁹ Submissions of doctoral theses and viva examinations occur throughout the calendar year. Therefore, the resulting 'snapshot' of first destinations may record the situation of PhD graduates anything up to 18 months after the actual completion of their degrees. However, by taking the survey at a fixed date, HESA ensures a consistent start point from which to view the data.

¹⁰ Prior to 2004 HESA used the First Destination Survey (FDS), which was only sent to full time PhD graduates and provided less data than DLHE. *WDPD?* and *WDPD? - A Regional Analysis* are based on data from the first DLHE survey issued by the Higher Education Statistics Agency (HESA) in January 2004.



2. Developments in research degree programmes

This chapter gives a brief overview of the recent developments impacting on research degree programmes. Up to date information on national and European policy development and current news are available on the UK GRAD Programme website¹.

The foundations of the ‘skills agenda’

When *WDPD?* was published in 2004, the UK’s Higher Education (HE) sector was starting to feel the impact of three major policy developments that were concerned with improving the effectiveness of research degree programmes (RDPs) and the employability of PhD graduates. These were:

- the publication of the ‘*Joint Skills Statement*’ (JSS) (2001)²
- Sir Gareth Roberts’ Review *SET for Success* (2002)³
- the Quality Assurance Agency (QAA) revised Code of Practice⁴ (2004).

The Joint Skills Statement, developed by the Research Councils and the UK GRAD Programme with input from the HE sector, defined the skills and attributes that research council-funded PhD researchers would be expected to develop as result of undertaking a PhD degree. These were set out in seven areas:

- 1 Research skills and techniques
- 2 Research environment
- 3 Research management
- 4 Personal effectiveness
- 5 Communication skills
- 6 Networking and teamworking
- 7 Career management

While research skills and techniques, the research environment and research management were familiar components within research training programmes, in 2001 institutions varied considerably in their approach to the remaining four areas. There were a few institutions or parts of institutions developing these areas, or elements of them, explicitly within research training programmes but the majority were addressing them implicitly or not at all. There was no common agreement that the broader ‘skills agenda’, i.e. the commitment to developing PhD researchers’ ‘transferable skills’ as well as their ‘research skills’, should have an important role in effective doctoral training programmes.

Commissioned by the Treasury, Sir Gareth Roberts’ *SET for Success* review of the UK supply of people with science, technology, engineering and mathematics skills hugely

accelerated the pace of change in the reshaping of doctoral degree programmes in general and research training programmes in particular. The review’s recommendations regarding doctoral researchers included: increasing the stipend (maintenance grant) for PhD degrees, increasing the average length of a PhD programme to 3.5 years and the introduction of two weeks (or equivalent) per year of formal skills training, principally in transferable skills. The Government accepted Sir Gareth’s recommendations and funding was earmarked for their implementation for research council-funded PhD researchers.

The QAA’s revised Section 1 of the ‘*Code of Practice for the assurance of academic quality and standards in higher education*’ put into effect the UK Funding Councils commitment to defining minimum standards for research degree programmes, thereby providing a link between the new developments and institutional quality assurance procedures (‘audit’). This revision, more student-focused than previously, embedded the JSS and the use of personal development portfolios (PDP). Its precepts cover all research degree programme processes, from selection, admission and induction of students to assessment and appeals⁵.

Developments since 2004

The UK’s higher education institutions (HEIs) have made substantial progress on the ‘skills agenda’ in providing postgraduate researchers with, in the words of the QAA Code of Practice Precept 18, ‘appropriate opportunities for personal and professional development’. Through the Research Councils, the Office of Science and Innovation has continued to channel significant funding to HEIs to develop transferable and research skills training in line with Sir Gareth Roberts’ review.

In 2006 the QAA undertook a Special Review to monitor HEIs’ implementation of the revised Code of Practice in England, Wales and Northern Ireland⁶. It reported that “most institutions now have formal research training programmes that are informed by the Research Councils UK (RCUK) Joint Skills Statement, financed at least in part by the RCUK Career Development and Transferable Skills Training Payments (sometimes referred to as ‘Roberts Money’), and combine both institutional and faculty/school-based provision”.

¹ www.grad.ac.uk/policy

² RCUK Joint Statement of Skills Training Requirements of Research Postgraduates (2001) www.grad.ac.uk/jss

³ *SET for Success: the supply of people with science, technology, engineering and mathematical skills (2002)* available at www.grad.ac.uk/roberts

⁴ *Code of practice for the assurance of academic quality and standards in higher education*, Section 1: postgraduate research programmes, QAA, September 2004 www.grad.ac.uk/qaa

⁵ Precepts also cover: institutional arrangements; the research environment; supervision; progress and review; development of research and other skills; feedback mechanisms; student representations, and complaints.

⁶ *Report on the review of research degree programmes*, QAA, 2007 www.grad.ac.uk/qaa

The review highlighted that “good practice in many institutions reflected positive engagement with the ‘skills agenda’ and was evidenced in the provision of cohesive, high quality, flexible and accessible programmes of research training”. Many of the areas for development identified by the review were related to improving take-up of opportunities by research students⁷. While the pace and extent of change has varied between institutions, the reshaping of research training programmes in the UK has developed much impetus. The Roberts’ Review sparked the first wave of change to PhD programmes of the 21st century; two recent reviews are poised to have a major impact on the PhD researcher experience in the coming years.

Increasing the economic impact of Government funding

The key concept underpinning the Government’s economic development agenda remains the ‘skills and knowledge-based economy’. Researchers, and other highly skilled graduates, are seen consistently as making a critical contribution to the UK’s international competitiveness. Two influential reports were published in 2006: the Warry report *Increasing the Economic Impact of the Research Councils* and the *Leitch Review of Skills*. These reports⁸ shape a current policy climate that stresses the importance of delivering economic impact to ensure national prosperity.

The Leitch Review’s assessment was that “one of the most powerful levers for improving productivity will be higher level skills. Postgraduate, or Level 5 skills, such as MBAs and PhDs...are one of the ‘most powerful levers for improving productivity’...as they are ‘key drivers of innovation, entrepreneurship, management, leadership and research and development critical to a high skills, high performance economy’”. These skills are “increasingly in demand from high performance, global employers’ and an important feature of greater employer collaboration with HE”.

The Warry report combines a second key governmental theme - that of ‘evidence-based policy’ - with the one of delivering economic impact. The report calls for the research councils to “make strenuous efforts to demonstrate the economic impact of their funding’ of both research and researchers”.

In response to the Warry Report, RCUK has summarised the main areas where PhD researchers’ impact on the economy can be strengthened as:

- skills for employability, such as entrepreneurship and knowledge transfer

- broader technical skills (e.g. quantitative methods)
- skills for interdisciplinary working
- helping to influence career flows and public perceptions (outreach to schools and public engagement activities)⁹.

The emphasis of the Warry and Leitch reports highlights tensions between the national, governmental view and the local HEI and individual postgraduate researcher interest. Both reports address economic impact in terms of the ‘public benefit’, that is, levels of business development, enterprise and innovation. Institutions and individuals have different perspectives on the ‘impact’ of RDPs and PhD graduates. For many in HEIs, measuring impact is a wider and more complex issue. It is more often equated with recognising individual choice and preferred career progressions, emphasising the need to recognise the diversity of researchers. Since 2005, a sector-led working group, ‘The Rugby Team’¹⁰ was tasked at a UK GRAD Programme Policy Forum¹¹ with developing “meaningful and workable ways of evaluating the effectiveness of skills development in researchers”¹². This group is currently developing a framework based on broader definitions of impact, including cultural and social impact, that suggests possible ways to evaluate impact which will be of value to the HE sector.

Evidence-based policy and PhD graduate careers

One of the effects of these recent reports is to underline the comparative paucity of current PhD graduate labour market information, leading to renewed recognition among the Government and funding bodies of the importance of resourcing studies into the impact of postgraduate researchers on the economy. *WDPD?* called for studies that surveyed individuals’ careers over time, not just first destinations. Better understanding of employer requirements was also highlighted as an urgent need. Since 2004, an important start has been made on improving the information on PhD graduate careers as follows:

- UK GRAD Programme survey of the career expectations of doctoral students¹³
- the Arts and Humanities Research Council’s career path study of its PhD graduates between 1997-2000¹⁴
- HESA’s commencement of its first longitudinal survey of DLHE respondents. This will take place on a biannual basis, approximately 3.5 years after graduation¹⁵.

⁷ The QAA 2007 report highlighted ‘specific areas for improvement, scattered between many institutions, include better embedding of skills development within RDPs, developing more formal and/or compulsory programmes of skills development, better alignment of programmes with the requirements of the RCUK Joint Skills Statement, and making sure that programmes are appropriate for and accessible to particular groups of students, such as part-time and international distance learning research students.’

⁸ *Increasing the Economic Impact of the Research Councils*, July 2006 and *Leitch Review of Skills*, December 2006 are available at www.grad.ac.uk/nationalpolicy/gov

⁹ *Report of proceedings of the UK GRAD Programme Roberts Policy Forum*, January 2007, [Iain Cameron, Head of RCUK Researcher Careers and Diversity Unit] www.grad.ac.uk/roberts

¹⁰ The Rugby Team is a sector-led group set up to find ways in which the sector can evaluate the effectiveness of skills development for researchers. It includes representatives of national stakeholder groups. www.grad.ac.uk/rugbyteam

¹¹ *Report of proceedings of the UK GRAD Programme Roberts Policy Forum*, January 2005 www.grad.ac.uk/roberts

¹² *Evaluation of skills development of early career researchers: a strategy paper from the Rugby Team*, March 2006 www.grad.ac.uk/rugbyteam

¹³ *A survey into the career motivations and expectations of doctoral researchers*, UK GRAD Programme, 2006, www.grad.ac.uk/publications

¹⁴ *Career path study of PhD students*, AHRC, December 2006, www.ahrc.ac.uk/about/ke/evaluation/pg_career_tracking.asp

¹⁵ *Destinations of Leavers from Higher Education Longitudinal Survey*, HESA www.hesa.ac.uk/dlhe_longitudinal/home.htm

- a proposed Research Councils and Wellcome Trust major longitudinal survey aimed at collecting data over ten years on the career pathways and impact of PhD graduates, which will focus on a single cohort of their PhD graduates and a comparable control group. The project will also engage employers and other stakeholders. The aim is to provide a comprehensive picture of the career trajectories and impact of PhD graduates supported by the Councils and Wellcome Trust and to help future policy analysis and development.

A number of ongoing studies¹⁶ have also started to yield better information about employer attitudes towards recruiting PhD graduates and skill requirements including:

- *Employers' views of researchers' skills*: a Rugby Team review of the existing literature on the 'pre-Roberts' views' of employers and employees of the skills of PhD graduates
- UK GRAD Programme *Recruiting PhDs – What Works?*: a 360-degree view of the PhD recruitment market PhD through the eyes of employers, careers advisers and PhD researchers.

The importance of tracking doctoral careers is also being recognised at international level. A project titled *Careers of Doctoral Holders* initiated by the Organisation for Economic Co-Operation and Development (OECD) in 2004 and implemented with United Nations Educational, Scientific and Cultural Organization (UNESCO) and the Statistical Office of the European Commission (Eurostat) is aiming to develop an internationally comparable system of indicators of the career patterns and mobility of doctoral holders in OECD countries¹⁷. It is based on the numbers of doctoral holders (both national and international doctoral graduates) in the 25 - 65 years old population. The UK is an active member of the Expert Group¹⁸, set up to develop the different components of the project.

European developments

WDPD¹⁹ described how the 1999 Bologna declaration¹⁹ launched a process to create a European Higher Education Area (EHEA) by 2010. It illustrated the great variety of approaches to doctoral education across Europe and looked ahead to much greater coherence of European research degree programmes in the future²⁰.

The doctoral, or 'third' cycle²¹, was brought into the Bologna Process at the Berlin summit of European Education Ministers in 2003. In recent years the UK has been seen as a European leader in some aspects of doctoral developments, in particular, the emphasis on enhancing employability

through personal and career development for postgraduate researchers.

In May 2007, at the fifth Bologna summit in London, ministers issued a Communiqué²², which highlighted the importance of aligning the EHEA with the European Research Area (ERA)²³. It stressed the importance of doctoral researchers in this process and made useful reference to the importance of maintaining the variety of doctoral programmes, enhancing provision and improving career prospects. The Communiqué went on to invite the European Universities Association (EUA)²⁴ "to continue to support the sharing of experience among HEIs on the range of innovative doctoral programmes that are emerging across Europe as well as on other crucial issues such as transparent access arrangements, supervision and assessment procedures, the development of transferable skills and ways of enhancing employability".

The Communiqué thus confirms the importance of an EUA project begun in 2006 entitled *From Innovative Doctoral Training to Enhanced Career Opportunities* (DOC-CAREERS)²⁵. This study explores the relationship between doctoral training programmes, career development and employability prospects for doctoral candidates. It aims to underline the need to incorporate demands from a highly diversified labour market directly in the planning of doctoral programme structures, introduce case studies from employers to highlight such demands and focus on mobility as an inter-sectoral as well as a cross-border activity. Information on doctoral careers is recognised as vital to the success of this initiative and the project report (due December 2007) will make 'recommendations on university-based data collection methodology and instruments' for tracking doctoral careers.

Looking ahead

It is clear that at both national and international level, policy makers are increasingly looking to the higher education sector to develop forms of doctoral education that are more closely informed by labour market needs. There is increasing diversity in the types of PhD programmes and PhD researchers. In future editions of the WDPD series we look forward to being able to explore the motivations of researchers undertaking PhDs, how the changing nature of research degree programmes impacts on the aspirations of PhD graduates, their employability and contribution to the wider economy and society.

¹⁶ www.grad.ac.uk/publications

¹⁷ *Labour market characteristics and international mobility of doctoral holders: results for seven countries*, February 2007, report of the first stage of the project, www.oecd.org/dataoecd/17/57/38055153.pdf

¹⁸ The UK has not made any decision to participate in the 'Careers of Doctoral Holders' (CDH). The UK is supportive of the intentions of the initiative and recognise mobility as a key issue, but are concerned by serious gaps in measurement and are opposed to regulation planned to compel European countries to supply data to a model format.

¹⁹ The Bologna Process is an intergovernmental initiative that aims to create a European Higher Education Area (EHEA) by 2010 and to promote the European system of higher education world-wide. There are now 45 countries signed up to it and it is conducted outside the formal decision-making framework of the European Union. www.grad.ac.uk/bologna

²⁰ WDPD?, Recent developments in UK research degree programmes, www.grad.ac.uk/wdpd

²¹ The original Bologna Process focused on the first (undergraduate) and second (masters) cycles.

²² www.grad.ac.uk/bologna

²³ The creation of the European Research Area (ERA) is part of the Lisbon Strategy to make 'Europe the most dynamic and competitive knowledge economy in the world by 2010' www.grad.ac.uk/lisbon

²⁴ European Universities Association www.eua.be

²⁵ *From Innovative Doctoral Training to Enhanced Career Opportunities* (DOC-CAREERS). <http://www.eua.be/index.php?id=106>

3. UK PhD degrees: trends and developments

The growth in PhDs

Since *WDPD?* was published, the number of registered PhD researchers in the UK has continued to rise but the rate of growth has noticeably slowed. Looking at the years 1999 - 2003 prior to *WDPD?*, the five-year growth in final year PhD researchers expected to graduate from UK HEIs was 31%¹. However, in the five-year period 2001-2005 growth fell to 12%. The largest year-on-year growth was between 2000 (11550² PhD researchers) and 2001 (14120 PhD researchers). In 2005 HESA had 15780 PhD researchers recorded in their final year.

The headline figures hide large variations in growth between the various groups studying for UK PhDs. For example in Table One, UK-domiciled part-time PhD researchers accounted for a large increase between 1999 and 2001, significantly enlarged by a growth in numbers from 1490 in 2000 to 2740 in 2001. During 2002 and 2003 there was a period of slight decline in part-time UK domiciled numbers, followed by one of recovery to previous levels, with a 2005 total of 2770.

Numbers of non-UK domiciled PhD researchers, both from other parts of the EU and non-EU countries, also grew most steeply between 2000 (3970) and 2001 (4980). At a growth rate of 23% between 2001-2005 they have continued to increase at almost double the overall five-year growth rate (12%) noted above.

For the three years (2003-2005) covered by this publication, overall numbers of PhD researchers in their final year grew by 6%. The largest increases were in full-time non-EU PhD researchers (11% growth over the period), followed by full-time EU excluding UK-domiciled (9% growth) and part-time UK-domiciled PhD researchers (8%). Full-time UK-domiciled PhD researchers in their final year grew by 3% overall, peaking in 2004. For the same period we see proportionately a quite stable trend in UK-domiciled final year PhD researchers, at between 61% (2005) and 63% (2004) compared with 37% - 39% from overseas³.

Table One compares the relative size of all these cohorts 1999-2005.

Registered in final year ⁴	Full-time UK	Full-time EU ex UK	Full-time non-EU	Part-time UK	Part-time EU ex UK	Part-time non-EU	F/T&P/T UK	F/T&P/T EU ex UK	F/T&P/T non-EU	TOTAL
2005	6870	1700	3460	2770	365	610	9640	2065	4070	15780
2004	6910	1500	3265	2735	305	535	9645	1805	3800	15255
2003	6670	1560	3110	2570	345	615	9240	1905	3275	14870
2002	6460		4200	2670		875	9130		5075	14205
2001	6400		4115	2740		865	9140		4980	14120
2000	6090		3010	1490		960	7580		3970	11550
1999	6016		2833	1494		995	7510		3828	11338

Table One: PhD researchers expected to graduate from UK universities 1999-2005

1. The split between EU and non-EU international PhD researchers was not available before 2003.
2. These figures (99-05) include 'dormant' PhD researchers due to complete their PhDs but who do not, and so over-estimate the actual number of graduations. We estimate that dormant PhD researchers may account for 15% - 20% of the total.

¹ *WDPD? UK PhD degrees in context*. www.grad.ac.uk/wdpd

² For data protection, all figures have been rounded to the nearest five. Numbers and percentages may not total due to rounding.

³ The split between EU and non-EU international PhD researchers was not available before 2003.

⁴ Information taken from successive editions of 'Students in Higher Education Institutions', Higher Education Statistics Agency. Because of changes in the way the data has been collected, it is not possible to calculate accurate year-on-year comparisons of actual graduations.

Total UK-domiciled PhD graduates	2003		2004		2005	
	7270		7035		7080	
	% female	% male	% female	% male	% female	% male
Arts and humanities	46%	54%	50%	50%	46%	54%
Biological sciences	53%	47%	54%	46%	53%	47%
Biomedical sciences	59%	41%	60%	40%	61%	39%
Physical sciences and engineering	26%	74%	28%	72%	28%	72%
Social sciences	49%	51%	48%	52%	51%	49%
ALL SUBJECTS	45%	55%	46%	54%	47%	53%

Table Two: Breakdown of all UK-domiciled PhD graduates from UK universities 2003-2005 by gender

Demographic data

What Do PhDs Do? – Trends focuses on the population of UK-domiciled PhD graduates from UK universities⁵. The total number of UK-domiciled PhD graduates from UK universities decreased from 7270 (2003) to 7035 (2004) and 7080 (2005), a 3% fall in numbers (see Table Two).

Very little demographic information is available through the HESA student data about these UK-domiciled PhD graduates, but we are able to identify their gender, some information about their experiences before their PhD and their distribution across disciplines and subjects.

Gender

Of the 7080 UK-domiciled PhD graduates in 2005, 53% were male and 47% female, compared with 55% male and 45% female in 2003. The 2003-2005 data showed a 2% increase in both the proportion and numbers of female PhD graduates, from 3240 (2003) to 3315 (2005). In contrast, numbers of 2005 male PhD graduates (3770) declined by over 6% compared with 2003 (4030).

Table Two gives more detail on gender breakdown by academic areas of study. Female PhD graduates formed a clear majority (around 60%) in the biomedical sciences, while physical sciences and engineering were dominated by male PhD graduates (over 70%). The gender balance in other discipline areas was more even. Over the period there were small gains in the proportion of female graduates in biomedical sciences, physical sciences and engineering and social sciences.

Age profile

Direct data on the age profile of UK-domiciled PhD graduates was not available for every year covered in this edition. By exploring the survey findings, however, *WDPDT* was able to show different patterns characterising the broad discipline groups⁶. The majority of PhD researchers in the arts and humanities, for example, had worked or had a career

before embarking on doctoral research. Researchers in the biological and physical sciences were significantly more likely to start a PhD immediately following first-degree graduation. Arts and humanities students were also more likely to undertake a Masters en route to a PhD.

The 2005 picture was quite consistent with 2003, in that 3020 researchers embarked on PhDs straight from first-degrees in 2005 compared with 3200 in 2003. Students in the physical sciences and engineering were again the most important group, making around half the total⁷. Reflecting the growth of PhD graduates in clinical medicine, and the growth in popularity of professional doctorates, the biomedical sciences had a lower 'direct entry' proportion of graduates than did other science subjects.

Trends in academic areas of study

As Figure One (see page 10) shows, the discipline profile of UK-domiciled PhD graduates over the period 2003-2005 has been relatively stable for biological sciences, physical sciences and subjects in the 'education and other' category. Biomedical sciences, however, have gained share by 2%. In contrast, social sciences have seen a fall of nearly 1.5% in the proportion of all UK-domiciled PhD graduates and arts and humanities have experienced a smaller (1%) decrease.

Table Three (see page 10), which compares the top subjects for PhD graduates from 2005 to 2003 and 2004, illustrates the increasing share taken by clinical medicine, which accounted for one in ten of all UK-domiciled PhD graduates from 2005. Molecular biology, biophysics and biochemistry experienced a smaller increase. Chemistry, ranked second, was almost unchanged. Subjects whose share of UK-domiciled PhD graduates was noticeably lower in 2005 than 2003 included biology and physics. Several subjects have similar proportions of PhD graduates in the 2-3% bracket. The 2004 list, for example, would include clinical psychology (3%) and general engineering (2.3%) displacing, in that year, English studies and pharmacology, toxicology and pharmacy. In both 2004 and 2005, computer science ranked 11th (2.2%).

⁵ The HESA DHLE survey only applies to UK and other EU-domiciled PhD graduates. *WDPDT* does not cover other EU-domiciled PhD graduates as numbers and responses rates are too low to provide representative data.

⁶ *WDPDT*? UK PhD degrees in context. www.grad.ac.uk/wdpd

⁷ For further information on undergraduate destinations, see www.prospects.ac.uk/links/wdgd

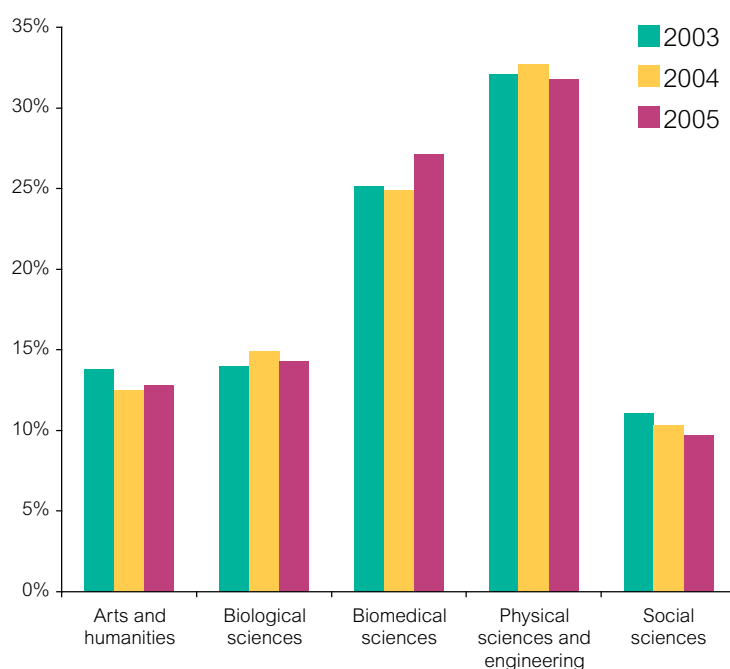


Figure One: Breakdown of all UK-domiciled PhD graduates from UK universities 2003-2005 by discipline group

	% 2005 PhD graduates	% 2003 PhD graduates and ranking	2004 ranking
1 Clinical medicine	10.1%	8.2% (1)	(1)
2 Chemistry	7.8%	7.7% (2)	(2)
3 Psychology	7.6%	7.6% (3)	(6)
4 Biology	4.4%	5.2% (4)	(3)
5 Physics	3.6%	4.4% (5)	(4)
6 Academic studies in education	3.3%	3.1% (6)	(5)
7 Molecular biology, biophysics & biochemistry	3.3%	2.5% (10)	(9)
8 History	3.2%	3.5% (9)	(8)
9 Pharmacology, toxicology & pharmacy	2.4%	2.9% (7)	(-)
10 English studies	2.3%	2.5% (8)	(-)

Table Three: Top subjects for UK-domiciled PhD graduates from UK universities 2003-2005

Geographic distribution

The geographic distribution of PhDs in UK universities has continued in established patterns, with the majority of PhD researchers concentrated in the pre-1992 universities, which historically have a stronger research base. The UK GRAD Programme publication *What Do PhDs Do? – A Regional Analysis*⁹ gives a full account of the graduation, employment and migration patterns between the regions.

Looking ahead

The future supply of PhD graduates from UK universities is marked by uncertainty. As seen in Table One (page 8), the flow of UK-domiciled PhD graduates in their final year plateaued in the period 2003-2005. Increasing first-degree graduate debt, resulting from the introduction of tuition fees in

the 2005/06 academic year, may act as a deterrent to moving directly on to further study. The popularity of doctoral qualifications as continuing professional development in some professions is likely to continue to grow, but this may have but patchy impact on overall supply needs across the disciplines. In addition, the UK's position as a foremost destination for overseas PhD researchers is under growing attack from European competitors, who are increasingly offering structured PhD programmes in English with lower or no fees. The strengthening of the HE infrastructures in large developing countries, such as China and India, also will impact on the potential supply of PhD researchers. The challenge for UK research degree programmes is to ensure that they represent for prospective researchers, both UK and overseas, an attractive environment to do research and a competitive career investment.

⁹ www.grad.ac.uk/wdpdr

4. Destinations of 2003-2005 PhD graduates at a glance

This section enables speedy comparisons to be made on a number of key indicators, both between the broad discipline groups and in relation to the overall UK-domiciled PhD population. We have condensed the data to give an indicative overview of the general changes over the three years covered by *What Do PhDs Do? – Trends*. We direct readers to the relevant chapters to understand the basis for and subtlety of these changes.

PhD graduate population from UK HEIs 2003-2005

- The overall numbers of PhD graduates are fairly constant over the three years at 12500
- Numbers of UK-domiciled PhD graduates fell 3% over the three years
- Proportion of other EU-domiciled PhD graduates was stable over the three years
- Proportion of non EU-domiciled ('international') PhD graduates grew by 2% over the three years

PhD graduate population	2003	2004	2005
Total PhD graduates from UK HEIs	12520	12170	12645
UK-domiciled PhD graduates	7270	7035	7080
UK-domiciled PhD graduates	58%	58%	56%
Other EU-domiciled PhD graduates	11%	11%	12%
Non EU-domiciled PhD graduates	30%	31%	32%

Employment status of UK-domiciled PhD graduate respondents

- The UK employment rate¹ of UK-domiciled PhD graduates was stable at around 80%
- Those combining work and study increased by 3% over the three years (with considerable variation between disciplines)
- The proportion working or studying abroad was stable over the three years (but there was variation between disciplines)
- The 'believed unemployed' rate was stable over the period (and consistently lower than first-degree and masters graduate rates)

Employment status of UK-domiciled PhD graduate respondents	2003	2004	2005
All UK-domiciled respondents	4695	4675	4880
Entered work in the UK	73%	68%	69%
Working and studying in the UK	8%	11%	11%
Working or studying abroad	8%	8%	7%
Believed unemployed	3%	4%	4%

Major employment sectors of UK-domiciled PhD graduate respondents working in the UK²

Education

- The education sector was the primary destination for UK-domiciled PhD graduates, except for biomedical sciences
- Arts and humanities had the highest rate, averaging over two-thirds
- Biomedical sciences had the lowest rate, but the largest increase over the three years
- The education sector employed around two-thirds of social scientists

Education sector employment	2003	2004	2005
All UK-domiciled	48%	50%	50%
Arts and humanities	67%	69%	68%
Biological sciences	48%	49%	51%
Biomedical sciences	34%	37%	40%
Physical sciences and engineering	39%	43%	44%
Social sciences	66%	65%	64%

¹ Includes both 'entered work in the UK' and 'working and studying in the UK' UK-domiciled respondents.

² All destination statistics relate to UK-domiciled respondents who 'entered work in the UK' or were 'working and studying in the UK'.

Other popular sectors

- The health and social work sector was the second most popular destination overall
- Health and social work was the destination for almost half of the biomedical sciences PhD graduates over the three years
- Manufacturing was the second most popular destination in the biological sciences, and physical sciences and engineering, but declined over the three years
- The balance of arts and humanities PhD graduates were spread across many employment sectors: the largest was 'other sectors', which includes the cultural sector
- Finance, business and IT was the second destination in social sciences and varied over the three years

Other popular sectors	2003	2004	2005
All UK-domiciled: health and social work	16%	16%	17%
Arts and humanities: 'other sectors'	13%	14%	14%
Biological sciences: manufacturing	25%	21%	21%
Biomedical sciences: health and social work	47%	47%	45%
Physical sciences and engineering: manufacturing	28%	25%	23%
Social sciences: finance, business and IT	10%	7%	13%

Major occupations of UK-domiciled PhD graduate respondents working in the UK

Research roles (all sectors)

- The overall proportion employed as researchers was stable at just over one-third
- Biological sciences had the highest rate employed as researchers, and increased to two thirds in 2005
- Biomedical scientists employed as researchers increased towards one-third in 2005
- Arts and humanities had the lowest rate employed as researchers over the three years

Research roles (all sectors)	2003	2004	2005
All UK-domiciled	36%	36%	36%
Arts and humanities	21%	14%	17%
Biological sciences	64%	63%	66%
Biomedical sciences	30%	29%	32%
Physical sciences and engineering	41%	42%	42%
Social sciences	22%	25%	24%

Postdoctoral researchers in HE

- The overall proportion employed as postdoctoral researchers was stable at just over one-fifth
- Biological scientists were most likely to be employed as postdoctoral researchers at just over one-third
- Highest growth was in the biomedical sciences to almost one-quarter in 2005
- Arts and humanities had the lowest rate, and declined over the three years

Postdoctoral researchers in HE	2003	2004	2005
All UK-domiciled	22%	22%	22%
Arts and humanities	16%	13%	12%
Biological sciences	35%	35%	36%
Biomedical sciences	19%	20%	23%
Physical sciences and engineering	25%	25%	25%
Social sciences	15%	18%	15%

HE lecturers

- The overall rate employed as HE lecturers was low at around 14%
- Social sciences had the highest rate at around one-third
- Biomedical sciences were stable at around one-tenth
- Biological sciences, and physical sciences and engineering both had low rates employed as HE lecturers

HE lecturers	2003	2004	2005
All UK-domiciled	15%	14%	13%
Arts and humanities	30%	29%	26%
Biological sciences	< 5%	< 5%	< 5%
Biomedical sciences	10%	11%	10%
Physical sciences and engineering	6%	7%	7%
Social sciences	39%	28%	32%

5. Destinations of UK-domiciled PhD graduates in all disciplines

The numbers and proportion of UK-domiciled PhD graduates¹ declined slightly over 2003-2005. However, key indicators of PhD employment patterns showed much consistency over the period. The employment rate² for UK-domiciled PhD graduates working in the UK was stable at around 80%. Unemployment among UK-domiciled PhD graduates remained considerably lower than among UK-domiciled first-degree graduates and also consistently lower than that of masters graduates. PhD graduates continued to be employed in a wide range of occupations in all sectors of the UK economy: the concentrations of PhD graduates in different types of work remained largely similar between 2003 and 2005. Small shifts in employment patterns included: an increase in those moving to jobs in the education sector from 48% to 50% of employed PhD graduates and growth in the category of those combining work and study in the UK. However, minor fluctuations at the 'all disciplines' level can mask larger variations at discipline group level, as shown in later chapters.

Key statistics

- The total number of PhD graduates from UK universities was 12520 in 2003, dropped to 12170 in 2004 and rose to 12645 in 2005. Between 11% (2003) - 12% (2005) were from other countries within the European Union (EU) and 30% (2003) - 32% (2005) from countries outside of the EU
- UK-domiciled graduates accounted for a slightly declining proportion of all PhD graduates from UK HEIs, accounting for 58% in 2003 and 2004 but down to 56% in 2005
- Almost 200 fewer UK-domiciled PhD researchers graduated in 2005 than in 2003, a 3% drop from 7270 to 7080
- Response rates to the DLHE survey rose from 65% (4695 respondents from 2003) to 69% (4880 respondents from 2005)
- The overall employment rate was stable at 80% - 81% over the period. However, more employed UK-domiciled PhD graduates from 2004 and 2005 were combining work with study: over 11% compared with 8% in 2003
- 7% of 2005 UK-domiciled PhD graduates chose to further their careers abroad, compared with 8% in 2003
- Unemployment rates at 3.6% for 2005 UK-domiciled PhD graduates consistently remained lower compared with UK-domiciled first-degree graduates (6.2%, 2005) and masters graduates (4.2%, 2005)

Looking in more detail at the UK-domiciled PhD graduates working in the UK³:

- Half were employed⁴ in the education sector: the balance in manufacturing, finance, business and IT, health, public administration and a wide range of other sectors
- The health and social work sector saw a small increase in PhD graduate employees, while manufacturing experienced a slight decline
- Other sectors, for example, finance, business and IT and public administration, employed stable numbers over the three-year period
- A stable 36% worked in research occupations (both within and outside academia)
- 22% worked as postdoctoral researchers in higher education institutions
- 22% worked as teaching professionals, the large majority in HE

¹ All references to PhD graduates, unless otherwise stated, refer to UK-domiciled respondents to the DLHE surveys.

² The combined totals of respondents who 'entered work in the UK' and 'working and studying' (see Figure One).

³ UK-domiciled respondents in the 'entered work in the UK' and 'working and studying' categories totalled 3895 (2005 PhD graduates), compared with 3670 (2004) and 3765 (2003).

⁴ This includes both 'entered work in the UK' and 'working and studying in the UK'.

Who responded to the surveys?

It is encouraging to see a gradual, if modest, rise in the response rate for UK-domiciled PhD graduates from 2003 (65%) and 2005 (69%) surveys. Response rates were representative in terms of type of study, subject area and gender⁵.

There are no clear differences between the profile of first destination statistics of UK-domiciled full-time and part-time PhD researchers. Employment outcomes are influenced by the subject of PhD study rather than by full-time or part-time status. However compared to full-time PhD graduates, part-time PhD graduates were more likely to move on to work combined with further study (11% - 15%) and less likely to be unemployed (1.7% - 2.5%).

Within the subject groupings, clinical medicine produced the most PhD graduates, its share increasing from 8% (2003) to 10% (2005). Chemistry and psychology each furnished almost 8% of the total in both 2003 and 2005. Response rates by discipline grouping were generally comparable over the three years: more information is given in the discipline chapters.

UK-domiciled PhD graduates	2003	2004	2005
Female respondents	2150 (46%)	2195 (47%)	2330 (48%)
Male respondents	2545 (54%)	2485 (53%)	2550 (52%)
All respondents	4695	4675	4880
Total eligible	7270	7035	7080
% response	64.6%	66.5%	68.9%

Table One: Response from UK-domiciled PhD graduates from UK universities 2003-2005

Table One presents the gender balance and response rates from PhD graduates in 2003, 2004 and 2005. Female respondents accounted for nearly all the increase in responses between 2003 and 2005, reflecting a similar growth in female PhD graduates.

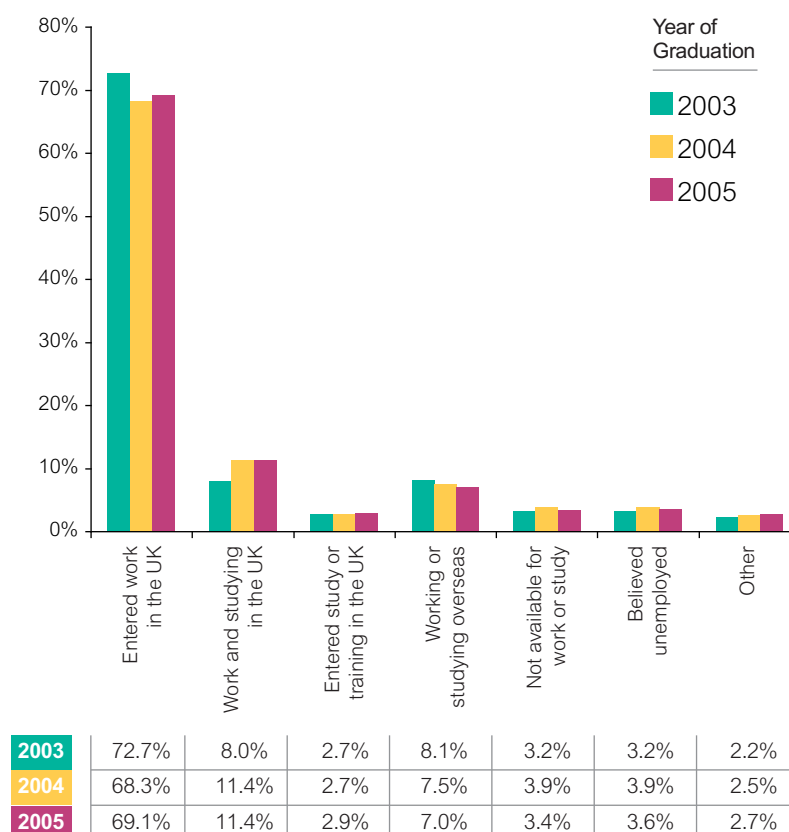


Figure One: Employment circumstances of UK-domiciled 2003, 2004 and 2005 PhD graduates: respondents in all subjects

⁵ There was a 1% or less difference in response rates by type of study (full-time/part-time) and by gender. Response rates by discipline group varied between 62% and 66% (2003), increasing to between 67% and 70% (2005).



What do PhD graduates do?

Figure One shows how, in broad terms, the employment picture for UK-domiciled PhD graduates has changed little over the three-year period. Although there was a decline of over 3% in the category 'entered work in the UK', this represented a fall of only 40 graduates (owing to the higher response rate from 2005 PhD graduates). More significant is the 3% rise in those PhD graduates combining work with further study, totalling 145 more respondents in 2005 compared with 2003. Those in the 'working and studying' category had a higher than average association with the following factors: part-time PhD study, short-term contract status, aged over 30 and working in the education or health sectors⁶.

There was a slight decline in the proportion choosing to further their careers outside the UK: from 8% (2003) to 7%

(2005). However, as this represents around 40 PhD graduates, this movement is not significant.

PhD graduates from 2004 were slightly less likely to enter UK employment (including work and study) than those from 2003 and 2005. The PhD unemployment rate also rose in the 2004 sample before falling to nearer 2003 levels the following year. As shown at the end of this section, PhD graduates from 2004 were also less likely to enter permanent positions than their 2003 and 2005 counterparts.

As Figure Two shows, the PhD graduate unemployment rate continues to compare very favourably with those of other graduates. 3.6% of UK-domiciled 2005 PhD graduates were unemployed compared with 6.2% of UK-domiciled first-degree graduates. This represented a small narrowing of the unemployment rates since 2003 (3.2% with PhDs and 6.6% with first-degrees). Masters graduate unemployment rose from 3.7% to 4.2% over the same period.

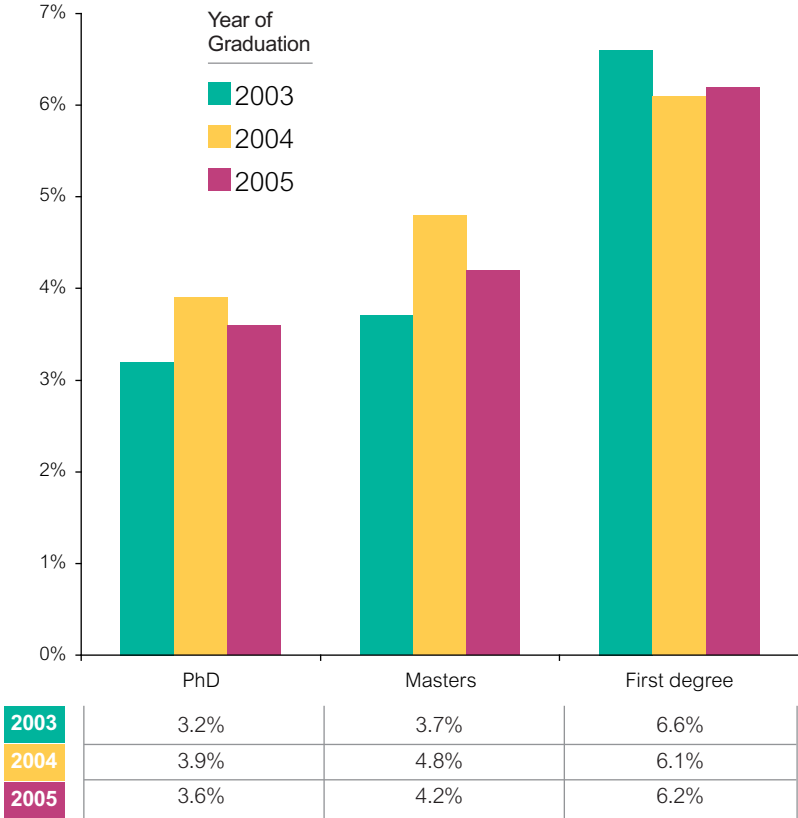


Figure Two: Comparisons of graduates 'believed unemployed' from 2003-2005 at bachelor, master and doctorate levels

⁶ One in five of all those combining work and study (2005 PhD graduates) were working as 'HE lecturers' (their most common role), around double the proportion for all working PhD graduates. Most described themselves as 'preparing a professional portfolio of work', or 'engaged in private, unsupervised study', which they were doing part time, as opposed to being formally registered on courses. Working and studying was most common in the biomedical sciences.

Employment sectors⁷

As shown in Figure Three, the largest proportional increase in the employment of UK-domiciled PhD graduates was seen by the education sector, up from 48% to 50%. This represents an additional 145 respondents⁸. Within the education sector, employment in higher education continues to dominate.

Health and social work was the other sector to employ an increasing share of UK-domiciled PhD graduates over the period growing from 15.5% in 2003 to 17.0% in 2005. This can be partly explained by the presence of progressively higher numbers of biomedical science PhD graduates eligible for and responding to the DHLE survey.

The largest percentage decline in UK-domiciled PhD graduates (a fall from 16.5% to 14% between 2003 and 2005) was in those employed in the manufacturing sector. Overall, this represented only 65 fewer PhD graduates, spread across the science subjects, but especially physical sciences and engineering.

Finance, business and IT (9%), public administration (5% - 6%) and 'other' sectors⁹ (5%) all had little or no change in their share of employed PhD graduates: there is no reason to believe that this anything other than normal year-on-year fluctuation.

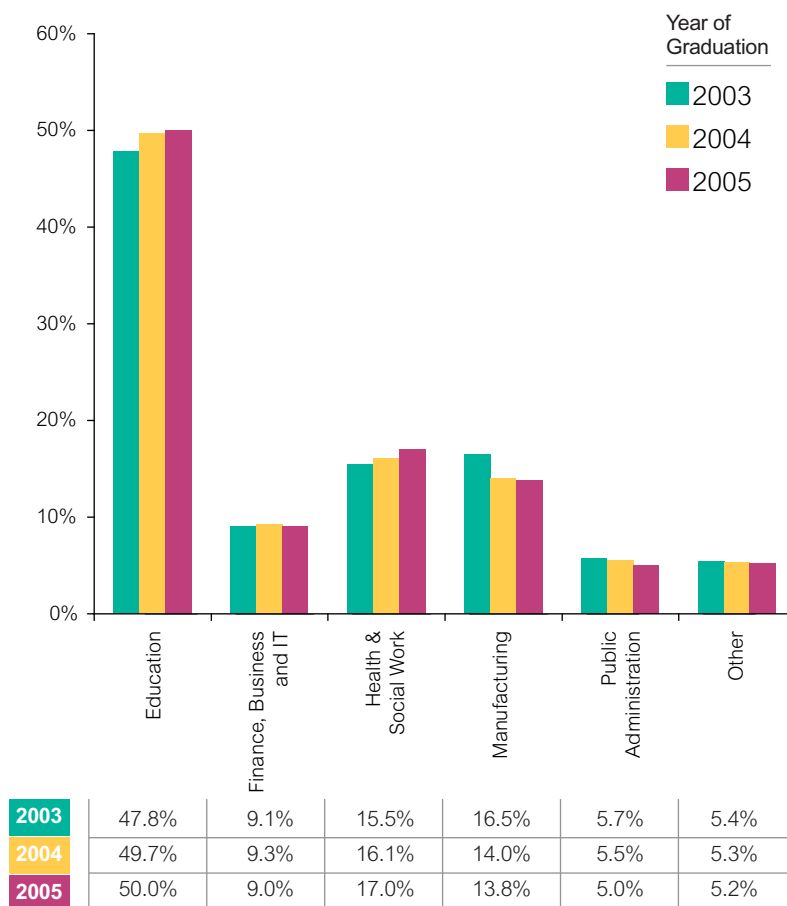


Figure Three: Employment sectors entered by UK-domiciled PhD graduates (2003-2005), based on Standard Industrial Classifications (SIC)

⁷ Employment sectors are broken down according to Standard Industrial Classification (SIC) codes. For further information go to www.grad.ac.uk/wdpdmethod

⁸ The main contributors to this overall increase were the physical sciences and biomedical sciences, the two largest discipline groups, where the percentage of PhD graduates entering the education sector rose, in each case, by 6%.

⁹ The other categories include, for example, the agriculture, construction, retail, hospitality, transport, property, recreational, cultural and sporting activity sectors. PhD graduates were distributed across a wide range of 'other sectors'. The largest was recreational, cultural and sporting activities, employing 60 2005 PhD graduates.

Occupations

The most striking aspect of the PhD graduate first destination landscape at the 'all disciplines' level is its consistency over the three-year period (see Table Two). Variations in the occupations of PhD graduate at first destination, as aggregated into these broad categories, were less

than 2%. The biggest growth, in those entering 'other professional, associate professional and technical occupations', was 1.7% and the greatest decline, in those entering 'scientific research, analysis and development', was 1.1%.

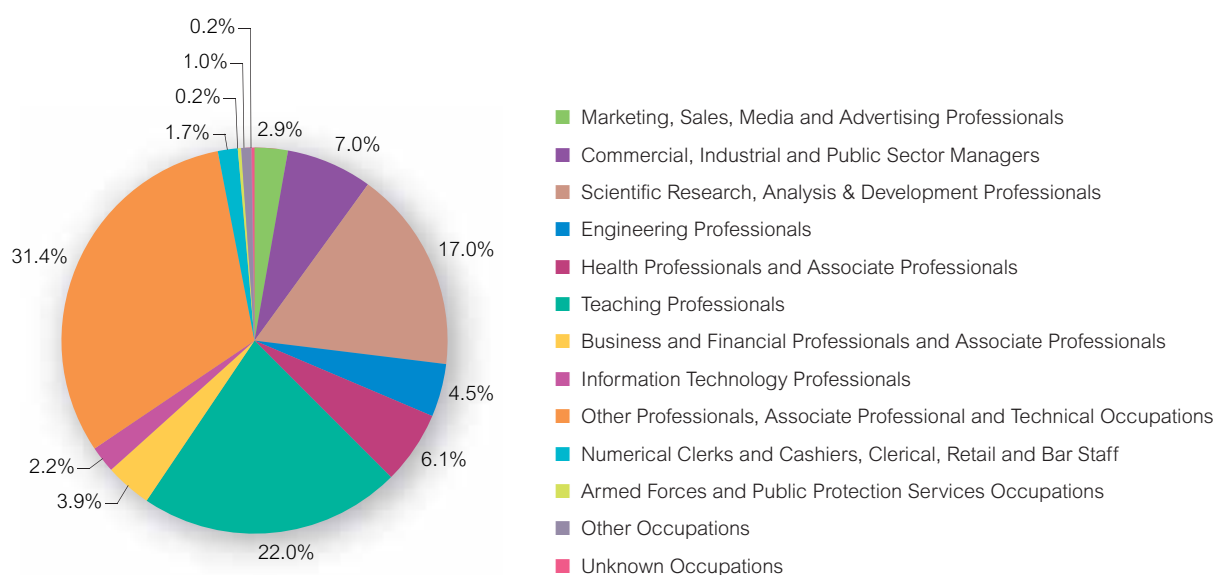


Figure Four: Types of work entered by UK-domiciled PhD graduates in 2005, based on Standard Occupational Classifications (SOC) returned in the DLHE survey

	2003	2004	2005
Marketing, Sales, Media and Advertising Professionals	3.2	2.7	2.9
Commercial, Industrial and Public Sector Managers	6.6	7.1	7.0
Scientific Research, Analysis & Development Professionals	18.1	17.4	17.0
Engineering Professionals	5.3	4.3	4.5
Health Professionals and Associate Professionals	5.0	5.9	6.1
Teaching Professionals	22.2	22.5	22.0
Business and Financial Professionals and Associate Professionals	3.5	4.0	3.9
Information Technology Professionals	2.9	2.4	2.2
Other Professionals, Associate Professional and Technical Occupations	29.8	30.0	31.5
Numerical Clerks and Cashiers, Clerical, Retail and Bar Staff	1.7	1.9	1.7
Armed Forces and Public Protection Services Occupations	0.4	0.2	0.2
Other Occupations	1.0	0.4	1.0
Unknown Occupations	0.1	0.4	0.2

Table Two: Types of work entered by UK-domiciled PhD graduates (2003 - 2005), based on Standard Occupational Classifications (SOC) returned in the DLHE surveys¹⁰

¹⁰ Types of work being undertaken in the UK on January 15 2004, 2005 and 2006 by UK domiciled PhD graduates from UK universities in 2003, 2004 and 2005.

Research occupations

Research roles (across all sectors) accounted for the highest proportion of UK-domiciled PhD graduates working in the UK: a stable 36% across all three years. Across all three surveys, 22% worked in academic research roles and a consistent 14% worked in research roles outside academia. Researchers as a group are not readily identifiable in Figure Four, as they are coded both in 'scientific research, analysis & development professionals' and in 'other professional, associate professional and technical occupations'¹¹.

Postdoctoral researchers

By using the process defined in the WDPD series methodology¹², we have identified that 22% of UK-domiciled PhD graduates working in the UK (880 PhD researchers) were employed in research roles within academia in 2005, an identical percentage as in 2003 (825) and 2004 (810). The growth in numbers between 2003 and 2005 is the result of some 80 additional postdoctoral researchers in the biomedical sciences in 2005, offset by around 20 fewer in arts and humanities. Other discipline groups saw stable numbers entering academic research roles over this period.

Researchers outside academia

The 14% of UK-domiciled PhD graduates working in the UK employed in research roles outside academia were principally employed in manufacturing (many in the pharmaceutical and chemical industries), the NHS and other parts of the public sector, such as government departments¹³. Employment of researchers remained proportionally stable in health and social work at 19% of PhD graduates in all research roles. Employment of researchers in the manufacturing sector showed a decline from 23% of PhD graduates in all research roles in 2003, down to 19% in 2005. In particular, there was a noticeable decrease in the numbers and proportion of physical sciences and engineering graduates entering research roles in the manufacturing sector over the period. There was little change in the small proportions of researchers working in finance, business and IT, public administration and other sectors.

Teaching professionals

Teaching roles accounted for the second highest proportion of UK-domiciled PhD graduates working in the UK, accounting for a stable 22%. Higher education lecturer roles continued to

dominate this category, but to a lesser degree: 13% of UK-domiciled PhD graduates working in the UK in 2005 compared with 15% in 2003, a fall from 565 to 505 respondents. Those in 'other teaching professional' roles within HE more than doubled to over 80 in 2004 and 2005¹⁴. The small minority employed in further education also more than doubled between 2003 and 2005, from 35 to 80. The numbers employed in school teaching, at around 80 a year, remained low.

Other occupations in education

There was also a small increase, from 4% (2003) to 6% (2005), of those working in the education sector in a wide variety of functions¹⁵ such as student support, administration, management, finance and IT.

Other occupations

Noteworthy increases between 2003 and 2005 were in the following health-related roles:

- Clinical psychologists increased from 6% (235) to 7% (275) of all UK-domiciled respondents working in the UK¹⁶
- Health professionals, such as medical doctors and nurses, grew from 5% (190) to 6% (240).

Other respondents engaged in non-research roles in the category of 'other professionals, associate professionals and technical occupations' included small proportions (around 1%) of science and engineering technicians, conservation associate professionals and psychologists.

Small shifts among other occupations in Table Two represent numbers below 30 that are insignificant statistically.

Employment status

The response rate to the optional survey question concerning employment status improved over the period. The proportion of respondents who chose not to declare their contractual status fell from 15% in 2003 to 12% in 2005.

Across respondents as a whole, the proportion of UK-domiciled PhD graduates on fixed-term¹⁷ contracts grew from 32% in 2003 to 34% in 2005¹⁸. As for those with open-ended contracts, 2% fewer PhD graduates from 2004 entered permanent positions (46%) but this proportion recovered to 2003 levels in 2005, when 48% of respondents held permanent contracts. Self-employed status remained steady at 3% - 4%, as did temporary work at 2 - 3%.

This section only presents a partial view of trends in PhD graduate first destinations: employment sectors, occupations and employment status vary considerably by subject area. The following chapters look in more detail at what we can conclude from the survey returns for UK-domiciled PhD graduates in five discipline-based groups: arts and humanities, biological sciences, biomedical sciences, physical sciences and engineering and social sciences.

¹¹ This latter category includes all researchers except those who identified the subject nature of their research occupation. The category also includes, for example, clinical psychologists, librarians, archivists and social welfare professionals.

¹² The WDPD series identifies postdoctoral researchers by cross-referencing information on employment sectors (SIC), occupational classifications (SOC) and type of employment contract. For further information see www.grad.ac.uk/wdpdmethod

¹³ The Standard Industrial Classification (SIC) method used by all surveys of UK university graduates does not classify sectors in such a way that researcher destinations are readily identifiable. For example, researchers working in research institutes are classed under the research and development subsection of the manufacturing sector.

¹⁴ Appointments to new researcher development support roles, possibly as a result of 'Roberts Funding', are likely to have accounted for part of the growth in both the 'other teaching professionals' category and those concerned with HE support functions.

¹⁵ See above.

¹⁶ Included within the 'Other Professionals, Associate Professional and Technical Occupations' category.

¹⁷ Fixed-term contracts of both '12 months or more' (the majority) and those of 'less than 12 months' duration.

¹⁸ It is quite likely that the reduction in the proportion of respondents who chose not to declare their contractual status is linked to the increasing proportion of those declaring fixed-term contract status.

6. Arts and humanities

Arts and humanities PhD graduates at a glance

- PhD graduates from arts and humanities (A&H) made up nearly 13% of all UK PhD graduates in 2005 and 2004, down from 14% in 2003
- In 2005, 905¹ UK-domiciled PhD graduates were eligible for the survey in 2005: a 10% fall in the number of UK-domiciled A&H PhD graduates from 2003
- The A&H response rate to the survey mirrored the overall improvement across the disciplines, rising from 64% (2003) to 69% (2005)
- The percentage of respondents working or working and studying in the UK peaked at 80% (2004) but was 75% amongst 2003 and 2005 A&H PhD graduates
- The proportion who chose to further their careers abroad varied between 4% and 6%
- Unemployment levels for A&H PhD graduates at 4% remained consistently lower than for A&H first-degree (8%) and masters (5%) graduates

Looking in more detail at the A&H PhD graduates working in the UK²

- Over two-thirds were employed³ in the education sector, predominantly in HE, in all three years
- University lecturer remained the most popular occupation, although by a smaller margin in 2005. The number of AH PhD graduates entering HE lecturer posts fell by over 10%, and proportionately from 30% to 26% of all employed A&H PhD graduates
- Across all sectors, the total entering research roles fell from 21% (2003) to 17% (2005). Entry to postdoctoral research roles within HE mirrored the overall pattern, falling from 16% (2003) to 12% (2005)
- With 38% on permanent contracts (2003 and 2005), A&H PhD graduates, were less likely to be on permanent contracts than the total PhD graduate population (48%)
- Self-employment among A&H PhD graduates rose from 6% (2003) to 8% (2005), double the overall rate for PhD graduates for those years

Subjects covered in this section

History and English studies remained the dominant disciplines for PhD graduates. In both 2003 and 2005, history accounted for 25% of all UK-domiciled A&H graduates, and 23% in 2004. English studies produced a steady 18% share of A&H PhD graduates over the three years. All other subjects had fewer than 10% of A&H PhD graduates. Those in the 5% - 10% ranges were music, theology and religious studies, philosophy and archaeology. French studies, classical studies and linguistics each accounted for 2% - 4%⁴.

Overall survey response for arts and humanities

A&H UK PhD graduates	2003	2004	2005
Female respondents	285	305	300
Male respondents	360	285	325
Total in sample	640	590	625
Total PhD graduates in A&H	1000	885	905
% response	64.1%	66.9%	68.8%

Table One. DLHE survey responses for UK-domiciled PhD graduates 2003, 2004 and 2005 in arts and humanities

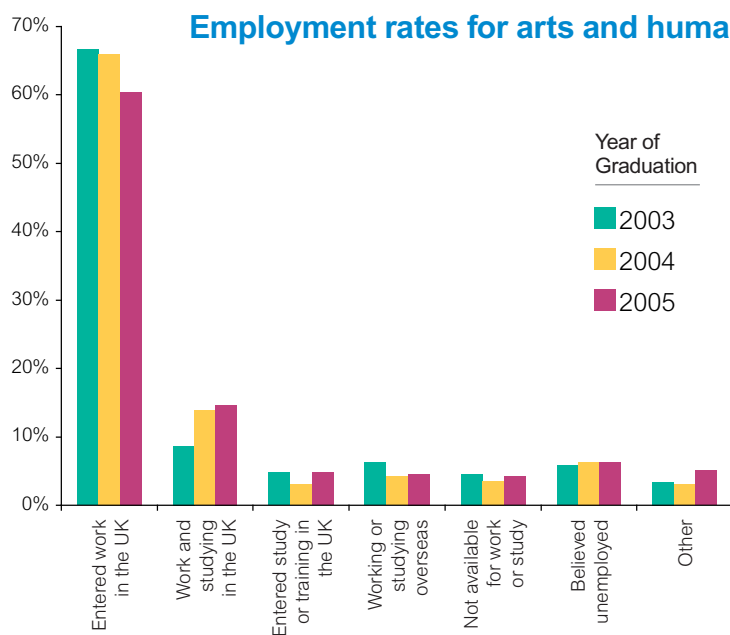
¹ For data protection, all figures have been rounded to the nearest 5. Percentages may not total to 100% due to rounding.

² UK-domiciled A&H respondents in the 'entered work in the UK' and 'working and studying' categories totalled 465 (2005 PhD graduates), compared with 470 (2004) and 485 (2003).

³ This figure includes both 'entered work in the UK' and 'working and studying in the UK'.

⁴ Other arts and humanities subjects include: American studies, art & design, cinematics, communication studies, comparative literature, design studies, drama, fine art, journalism, media studies, modern languages, literature and culture and ancient languages and related studies.

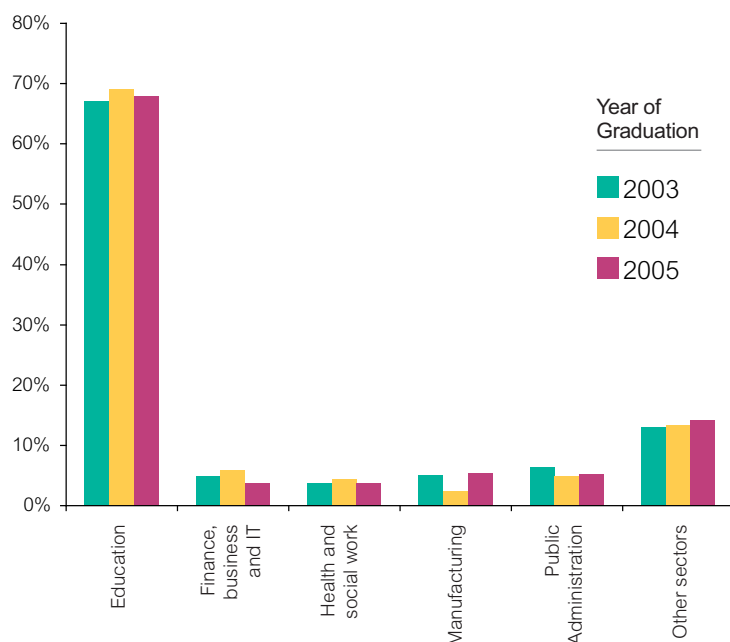
Employment rates for arts and humanities



Key statistics

- In 2004 at 80% the employment rate⁵ among A&H PhD graduates from 2004 matched the overall average for PhD graduates, but in 2003 and 2005 was 5% below the average for other subject groups at 75%
- 15% of A&H PhD graduates from 2005 combined work and study in the UK, compared with 9% from 2003⁶, above the growth across all disciplines (8% - 11%)
- Those working or studying abroad fell from 6% (2003) to under 5% (2005), compared to a more consistent 7% - 8% across all disciplines

Figure One: Employment circumstances of UK-domiciled PhD graduates 2003-2005: respondents in arts and humanities



2003	66.6%	8.6%	4.8%	6.2%	4.5%	5.8%	3.4%
2004	66.0%	13.9%	3.0%	4.2%	3.6%	6.3%	3.0%
2005	60.4%	14.7%	4.8%	4.5%	4.2%	6.2%	5.1%

Figure Two: Employment sectors entered by UK-domiciled A&H doctoral graduates 2003-2005, based on Standard Industrial Classifications (SIC)

⁵ Those in employment, or the employment rate refers to both 'entered work in the UK' and 'working and studying in the UK'.

⁶ Characteristics of those 'working and studying' are discussed on page 14.

Employment sectors for arts and humanities PhD graduates

Employment in the education sector continued to dominate first destination patterns among A&H PhD graduates (Figure Two on page 20). In all years the employment of more than two-thirds within the education sector confirmed A&H PhD graduates as the most likely to enter employment in education (predominantly higher education) of all the discipline groups. However, as the following section shows, employment patterns within the education sector did not remain static.

The distribution of A&H PhD graduates across the remaining employment sectors remained similar over the period⁷. Arts and humanities is characterised by the large proportion of PhD graduates in the category of 'other sectors': at 13% - 14% this is well above the all subjects 5% average. 'Other sectors' includes the cultural sector, which consistently employed 7% of A&H PhD graduates and the recreation sector.

Employment of A&H PhD graduates in the public administration sector (5% - 6%) was close to the all disciplines average. As might be expected, employment of A&H PhD graduates was significantly below the all disciplines average in manufacturing, health and social work, finance, business and IT.

Occupations chosen by arts and humanities PhD graduates

Teaching professionals

Teaching professionals (see Table Two on page 22) slightly increased their dominance of A&H PhD graduate first destinations destinations, with almost half of 2005 employed UK-domiciled A&H PhD graduates working in this category. This was more than double the all disciplines average of a consistent 22% over the three years. At 51% in 2004 and 48% in 2005, A&H PhD graduates in these years were more likely to enter teaching roles than any other discipline group⁸.

There was some evidence of increasing diversity in the teaching professionals category. Although numbers were small, there was a slight growth in those teaching in secondary schools (up from 4%, 2003 to 5%, 2005) and further education (up from 3%, 2003 to 5%, 2005). The largest category – university and higher education lecturers – fell from 30% to 26%. University tutorial and teaching assistants and 'other teaching and education professionals' made up the remainder.

Research occupations

Research positions⁹ accounted for 21% of all A&H PhD graduates in 2003, 14% in 2004 and 17% in 2005, well below the all disciplines average of 36% across all three years.

Further analysis of these researchers suggests that around 55 of 2005 A&H PhD graduates (12%) were employed in higher education as postdoctoral researchers, down from 75 in 2003 (16%) and 60 in 2004 (13%). Other research roles in the private and public sectors accounted for 5% of A&H PhD graduates in 2003 and 2005, and 1% in 2004.

Other occupations

The 10% - 13% in non-research roles within the category grouping of 'other professionals, associate professionals and technical occupations' were spread across a wide variety of occupations, of which the clergy formed the largest group (around 15 A&H PhD graduates in 2004 and 2005).

Manager roles in the commercial and non-commercial sectors were slightly up across the three surveys, seeing an increase from 6% to 9% of A&H PhD graduates employed in these occupations. Conversely, there was a 2% fall in those employed as media and marketing professionals.

Employment status

Arts and humanities PhD graduates were the least likely of any subject group to enter employment with a permanent contract: 38% did so in both 2003 and 2005, compared with 48% of all PhD graduates in the same years. In 2004 the A&H permanent contract rate was 40%, while the overall rate was 46%.

The incidence of fixed-term contracts remained close to the rate for all PhD graduates, at around one-third. A&H PhD graduates were more likely than other subject groups to be employed on temporary contracts. However, the percentage was relatively small, varying between 3% (2003) to 6% (2005).

In 2005 A&H graduates had the second highest self-employment rate (8%), exceeded only by social science PhD graduates (9%) from the same year, and double the rate for all PhD graduates (4%, 2005).

⁷ Any fluctuations are not statistically significant due to the size of the cohort.

⁸ At 46% Social science PhD graduates had a higher rate of employment as teaching professionals in 2003.

⁹ Research posts are classified alongside other roles in the category grouping of 'other professionals, associate professional and technical occupations' as well as 'scientific research, analysis and development professionals'. For further detail see *WDPD? Methodology* at www.grad.ac.uk/wdpdmethod

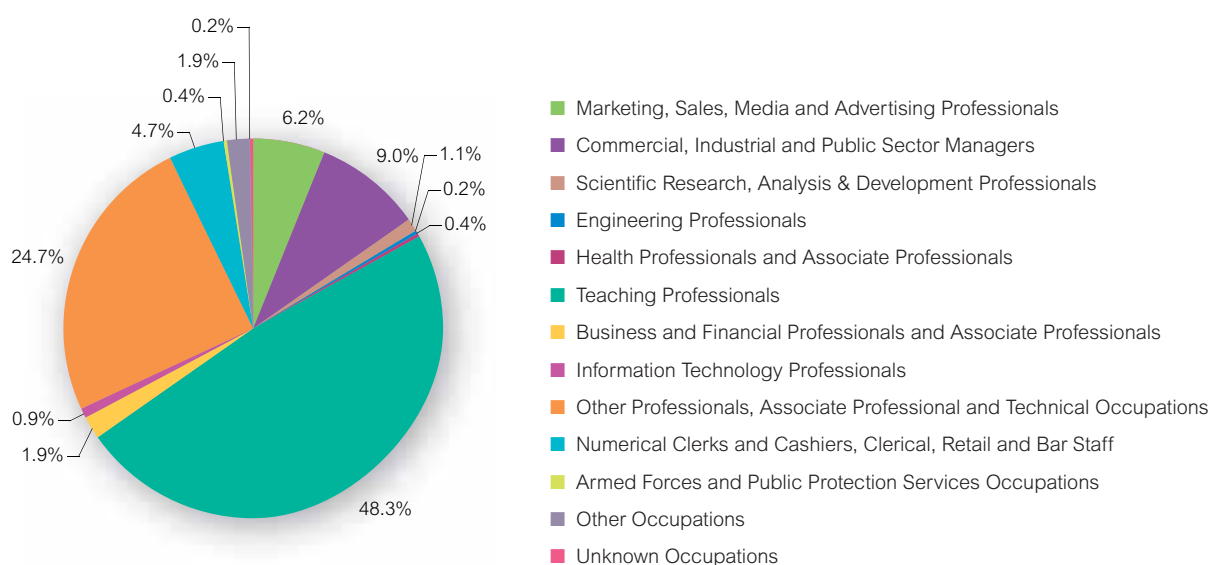


Figure Three: Types of work comparison: 2005 PhD graduates in arts and humanities, based on Standard Occupational Classifications (SOC) returned in the DLHE survey

	2003	2004	2005
Marketing, Sales, Media and Advertising Professionals	8.2	6.2	6.2
Commercial, Industrial and Public Sector Managers	6.1	6.8	9.0
Scientific Research, Analysis & Development Professionals	3.0	0.6	1.1
Engineering Professionals	0.6	0.0	0.2
Health Professionals and Associate Professionals	0.6	0.9	0.4
Teaching Professionals	45.2	50.7	48.2
Business and Financial Professionals and Associate Professionals	1.2	2.8	1.9
Information Technology Professionals	0.8	0.6	0.9
Other Professionals, Associate Professional and Technical Occupations	28.6	26.0	24.7
Numerical Clerks and Cashiers, Clerical, Retail and Bar Staff	3.1	3.7	4.7
Armed Forces and Public Protection Services Occupations	0.4	0.2	0.4
Other Occupations	2.1	1.3	1.9
Unknown Occupations	0.0	0.2	0.2

Table Two: Types of work comparison: PhD graduates in arts and humanities (2003-2005), based on Standard Occupational Classifications (SOC) returned in the DLHE surveys¹⁰

Although the education sector continued to absorb a stable two-thirds of arts and humanities PhD graduates (the highest proportion of all the discipline groups), the period saw shifts among the occupations entered within education. While the most popular roles remained university lecturer and postdoctoral researcher, these occupations accounted for a decreasing proportion of A&H PhD graduates. One-third of arts and humanities PhD graduates entered a wide range of roles across the other employment sectors. PhD graduates in the arts and humanities had a lower than average employment rate and were more likely to combine work with study, be on short-term contracts or choose self-employment than the total PhD population.

¹⁰ Types of work being undertaken in the UK on January 15 2004, 2005 and 2006 by UK domiciled PhD graduates in arts and humanities from UK universities in 2003, 2004 and 2005.

7. Biological sciences

Biological sciences PhD graduates at a glance

- PhD graduates from the biological sciences (BS) made up 14% of all UK PhD graduates in 2003 and 2005 and 15% in 2004
- 1015¹ UK-domiciled BS PhD graduates were eligible for the 2005 survey, of which 685 responded (67%), slightly higher than the 2003 and 2004 response rate (65%)
- The percentage of respondents working or working and studying in the UK fell from 78% of 2003 and 2004 BS PhD graduates to 74% in 2005
- BS PhD graduates are more likely to further their career abroad than any other discipline group, at 12% in both 2003 and 2005
- Unemployment levels for BS PhD graduates increased from 2% in 2003 to 4.5% in 2005, higher than the average for all disciplines. They remained consistently lower than for BS first-degree (6%) and masters (4% - 6%) graduates

Looking in more detail at the BS PhD graduates working in the UK²

- Those in the education sector employment³ (predominantly in HE) rose from 48% in 2003 to 51% in 2005
- Research roles in industry and academia dominated BS PhD graduate occupations, accounting for between 63% and 66%
- The percentage working in postdoctoral research roles within HE remained stable at 35% - 36% (180-185 researchers)
- At 35% - 37% BS PhD graduates had the lowest proportion employed on permanent contracts of all the discipline groups
- At less than 2% self-employment of BS PhD graduates was the lowest of all the subject groups

Subjects covered in this section

Biology's dominance among UK-domiciled BS PhD graduates declined from 41% (2003) to 35% (2005). In contrast, molecular biology, biophysics and biochemistry's share rose from 19% to 26% over this period. Other biological science subjects with more than 30 PhD graduates in a year include microbiology, agriculture, genetics, sports science, botany and zoology.⁴

Overall survey response for biological sciences

BS UK PhD graduates	2003	2004	2005
Female respondents	355	365	365
Male respondents	305	315	320
Total in sample	660	680	685
Total PhD graduates in BS	1020	1045	1015
% response	64.8%	65.1%	67.3%

Table One. DLHE survey response for UK-domiciled PhD graduates 2003, 2004 and 2005 in biological sciences

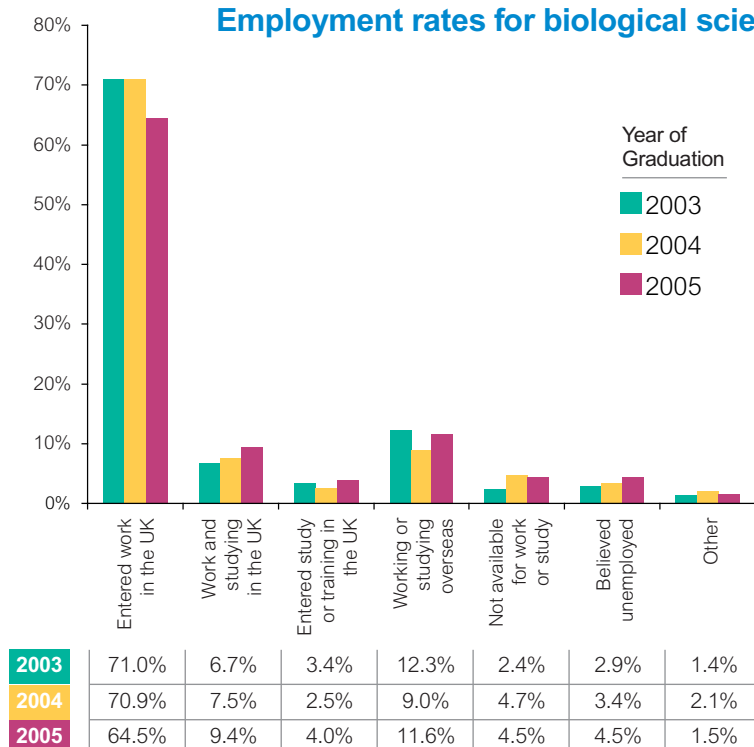
¹ For data protection, all figures have been rounded to the nearest 5. Numbers and percentages may not total due to rounding.

² UK-domiciled BS respondents in the 'entered work in the UK' and 'working and studying' categories totalled 505 (2005 PhD graduates), compared with 530 (2004) and 515 (2003).

³ In employment refers to both 'entered work in the UK' and 'working and studying in the UK'.

⁴ Other biological science subjects include: animal science, forestry, food and beverage studies, agricultural science, and clinical veterinary medicine and dentistry.

Employment rates for biological sciences



Key statistics

- The UK employment rate⁵ among UK-domiciled BS PhD graduates fell from 78% in 2003 and 2004 to 74% in 2005 - noticeably lower than the average for all PhD graduates (80% - 81%)
- Around 7% of BS PhD graduates from 2003 and 2004 combined work and study in the UK, rising to 9% in 2005. This was lower than the average increase across all disciplines, which rose to 11% in 2005
- 12% of BS PhD graduates chose to further their career abroad (2003 and 2005) – well above the all discipline average of 7% - 8%
- The unemployment rate for UK-domiciled BS PhD graduates increased more than any other discipline group, from 2.4% to 4.5%, though physical sciences had a consistently higher rate overall (5%)

Figure One: Employment circumstances of UK-domiciled PhD graduates 2003-2005: respondents in biological sciences

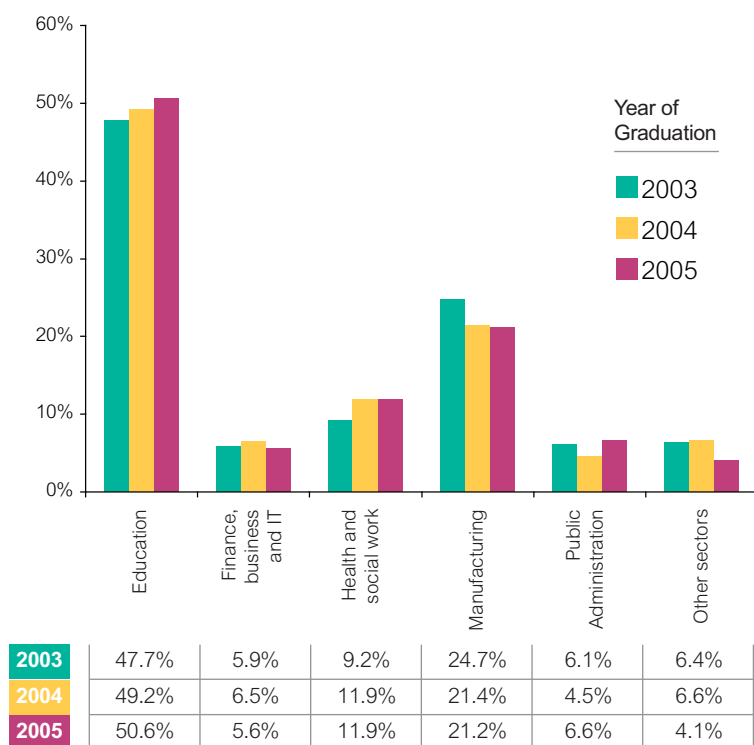


Figure Two: Employment sectors entered by UK-domiciled BS doctoral graduates 2003-2005, based on Standard Industrial Classifications (SIC)

⁵ This figure includes both 'entered work in the UK' and 'working and studying in the UK'.

Employment sectors for biological sciences PhD graduates

Employment in the education sector continued to dominate first destination patterns among BS PhD graduates, increasing from 48% to 51% (Figure Two on page 24). By 2005 half of the 505 BS respondents working in the UK were employed in the education sector, mirroring a similar growth across the total PhD population.

Employment of BS PhD graduates in the manufacturing sector declined over the period from 25% (125) in 2003 to 21% (105) in 2005, but remained above the comparable 17% - 14% average for all disciplines. BS PhD graduates were largely employed in the pharmaceutical and chemical industries.

The health and social work sector saw a small increase in BS PhD graduates from 9% (45) in 2003 to 12% (60) in 2005. Finance, business and IT, public administration and other sectors employed similar proportions of BS PhD graduates throughout the period⁶.

Occupations chosen by biological sciences PhD graduates

As shown in Table Two (on page 26), the first destinations of biological sciences PhD graduates followed a consistent pattern from 2003 to 2005.

Research occupations

Research positions⁷ absorbed a large share of BS PhD graduates over the period: 64% in 2003, 63% in 2004 and 66% in 2005, far higher than the all discipline average of 36%.

Postdoctoral researchers

Further analysis of those in research roles suggests three in five researchers (180 - 185) were employed in postdoctoral positions in HE – a stable 35% - 36% of all BS PhD graduates working in the UK. This represented a much higher proportion of BS PhD graduates moving on to postdoctoral roles than any other discipline group: the next highest proportion was 25% - 26%, among physical sciences graduates.

Research roles outside academia

Two out of five BS researchers worked outside the education sector. The majority (around 80 researchers) were found in manufacturing, followed by health and social care (around 25) with the remaining sectors together accounting for 25 - 35 BS UK-domiciled PhD graduates each year.

Other occupations

In contrast to their major presence in universities as research staff, relatively few BS PhD graduates took up lecturer appointments or other teaching roles within the education sector. At between 7% and 9% over the period, the rate for teaching professionals is well below that for the PhD population as a whole (22%) and represents the lowest proportion of all the discipline groups. Higher education lecturers accounted for 5% or fewer (up to 25) employed BS PhD graduates in all three years.

Small numbers of BS PhD graduates of between 20 and 35 each year were employed as commercial, industrial and public sector managers and health professionals. Other occupations listed in Table Two each attracted fewer than 20 BS PhD graduates per annum.

The growth of BS PhD graduates in education sector employment between 2003 and 2005 came from an increase in those employed in educational support roles, such as student support, administration, management, finance and IT.

Employment status

Biological sciences PhD graduates were the least likely of any discipline group to enter employment with a permanent contract: averaging 35% - 37% over the three-year period, reflecting the high proportion of postdoctoral positions with HE.

The proportion of BS PhD graduates on fixed-term contracts varied over the period from 47% (2003), down to 44% (2004, rising to 49% (2005). These were the highest rates of any discipline group, well above the all-discipline average of 32% - 34%. BS PhD graduates from 2005 had the lowest self-employment rate (1% - 2%) of all the subject groups.

⁶ Any fluctuations are not statistically significant.

⁷ Research posts are classified, not only as 'scientific research, analysis & development professionals' but also alongside other roles in the category grouping of 'other professionals, associate professional and technical occupations'.

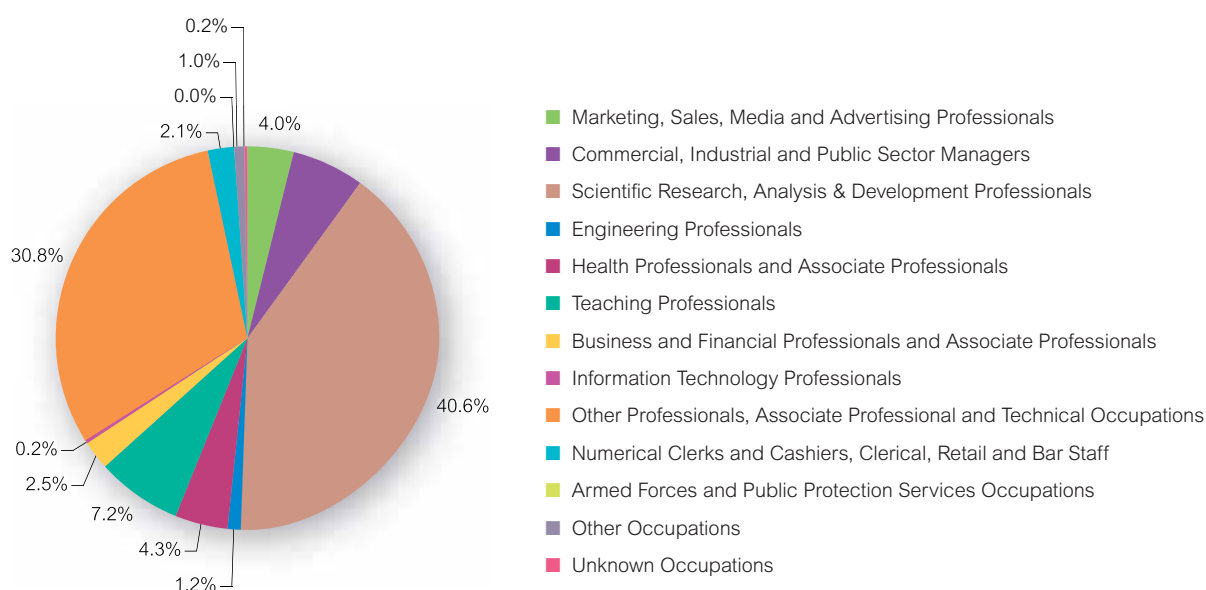


Figure Three: Types of work comparison: 2005 PhD graduates in biological sciences, based on Standard Occupational Classifications (SOC) returned in the DLHE survey

	2003	2004	2005
Marketing, Sales, Media and Advertising Professionals	3.5	2.4	4.0
Commercial, Industrial and Public Sector Managers	5.1	5.4	5.9
Scientific Research, Analysis & Development Professionals	40.7	38.7	40.6
Engineering Professionals	1.2	1.1	1.2
Health Professionals and Associate Professionals	4.3	4.0	4.3
Teaching Professionals	8.4	8.6	7.2
Business and Financial Professionals and Associate Professionals	3.3	2.7	2.5
Information Technology Professionals	1.4	0.9	0.2
Other Professionals, Associate Professional and Technical Occupations	29.7	32.5	30.8
Numerical Clerks and Cashiers, Clerical, Retail and Bar Staff	0.6	1.8	2.1
Armed Forces and Public Protection Services Occupations	0.2	0.2	0.0
Other Occupations	1.6	1.7	1.0
Unknown Occupations	0.0	0.0	0.2

Table Two: Types of work entered by UK-domiciled PhD graduates in biological sciences (2003-2005), based on Standard Occupational Classifications (SOC) returned in the DLHE surveys⁸

PhD graduates in the biological sciences were more likely to continue as researchers than any other discipline group. They had the highest rate of employment as researchers in both the education sector and beyond. Above-average employment as postdoctoral researchers can be linked to higher than average rates of fixed-term contracts over the period. They were also the most likely of all the discipline groups to choose to continue their career abroad. One-third of BS PhD graduates move out of research and pursue a range of careers as teaching professionals, managers and other specialists across a wide range of occupations and sectors.

⁸ Types of work being undertaken in the UK on January 15 2004, 2005 and 2006 by UK domiciled PhD graduates in biological sciences from UK universities in 2003, 2004 and 2005.

8. Biomedical sciences

Biomedical sciences PhD graduates at a glance

- PhD graduates from the biomedical sciences (BMS) made up a growing proportion of all UK PhD graduates: 27% in 2005 compared with 25% in 2003
- 1920¹ UK-domiciled BMS PhD graduates were eligible for the 2005 survey, of which 69% responded, a 7% rise from 62% in 2003
- The percentage of respondents working or working and studying in the UK was 87% in 2005, compared with 84% in 2003 and 82% in 2004
- BMS PhD graduates choosing to further their career abroad declined from 7% (2003) to 4% (2005)
- Unemployment levels for BMS PhD graduates at 1% - 2% remained consistently lower than for BMS first-degree (3%) and masters (2% - 3%) graduates

Looking in more detail at the BMS PhD graduates working in the UK²

- The health and social work sector remained the biggest employer, accounting for 45% - 47% over the three years
- The proportion working in the education sector increased from 34% in 2003 to 40% in 2005
- The most popular occupation remained researcher (within and beyond academia) accounting for between 29% (2004) and 32% (2005)
- Postdoctoral researchers in higher education institutions grew from 19% of all BMS PhD graduates working in the UK in 2003 (180 respondents) to 23% (260 respondents) in 2005
- BMS PhD graduates were more likely to be on permanent contracts (53% in 2003 and 50% in 2005) than the total PhD graduate population (46% - 48%)
- Self-employment among BMS PhD graduates at 2% - 3% was lower than the overall rate for all PhD graduates (3% - 4%)

Subjects covered in this section

Biomedical sciences doctorates were increasingly dominated by clinical medicine, whose share of BMS PhD graduates rose from 32% in 2003 to 37% in 2005.

Psychology remained the second most popular subject, with its share varying between 27% (2004) and 30% (2003). The popularity of 'pharmacology, toxicology and pharmacy' fell slightly from 12% in 2003 to 9% in 2005. 'Anatomy, physiology and pathology' accounted for a steadier 6% - 7% of BMS doctorate awards. Of the smaller subjects, nursing achieved a noteworthy 3% share in 2005, representing 65 PhD graduates³.

Overall survey response for biomedical sciences

BMS UK PhD graduates	2003	2004	2005
Female respondents	700	715	835
Male respondents	435	425	495
Total in sample	1135	1140	1330
Total PhD graduates in BMS	1825	1755	1920
% response	62.1%	64.9%	69.2%

Table One. DLHE survey response for UK-domiciled PhD graduates 2003, 2004 and 2005 in biomedical sciences

¹ For data protection, all figures have been rounded to the nearest 5. Numbers and percentages may not total due to rounding.

² UK-domiciled BMS respondents in the 'entered work in the UK' and 'working and studying' categories totalled 1160 (2005 PhD graduates) compared with 935 (2004) and 950 (2003).

³ Other subjects, all with 50 or fewer PhD graduates each year, included pre-clinical medicine, clinical dentistry, complementary medicine, nutrition, ophthalmics, aural and oral sciences and medical technology.

Employment rates for biomedical sciences

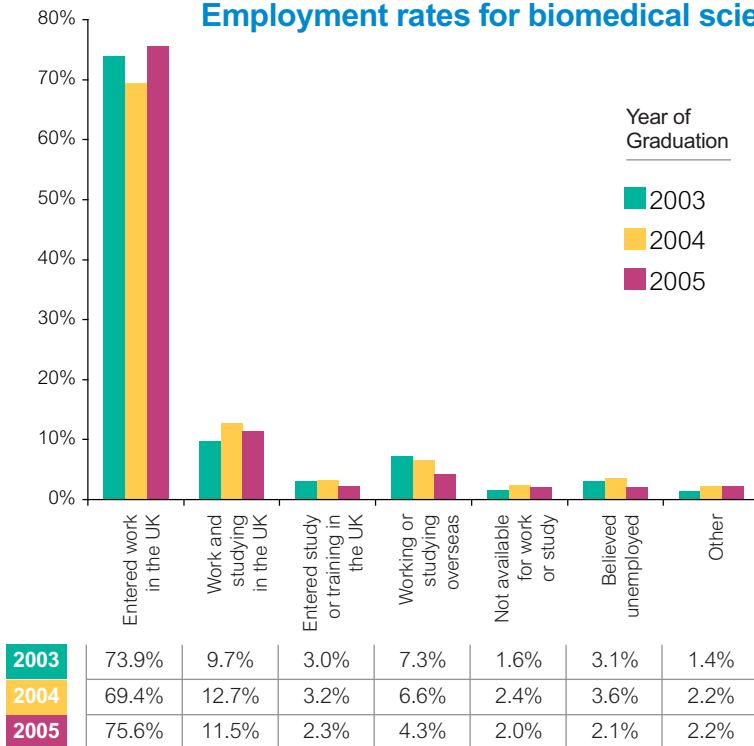


Figure One: Employment circumstances of UK-domiciled PhD graduates 2003-2005: respondents in biomedical sciences

Key statistics

- Biomedical sciences was the only subject group with increasing numbers of UK-domiciled PhD graduates, a 5% growth between 2003 and 2005, compared with a 3% fall across all disciplines
- The employment rate⁴ among BMS PhD graduates improved over the period to become the highest of all the discipline groups in 2005 (87%) compared to second (after social sciences) in 2003 (84%) and 2004 (82%)
- The proportion of BMS PhD graduates who combined work and study in the UK varied between 10% and 13%. This proportion was higher than the overall rate for PhD graduates, which rose from 8% to 11% between 2003 and 2005⁵
- Those working or studying abroad declined over the period from 7% to 4%, taking the proportion who did so below the average for the PhD graduate population as a whole (7% - 8%)
- Unemployment rates of around 2% were consistently the lowest of all the discipline groups in each year



Figure Two: Employment sectors entered by UK-domiciled BMS doctoral graduates 2003-2005 based on Standard Industrial Classifications (SIC)

⁴ The employment rate is the total of those 'working in the UK' and 'working and studying in the UK'.

⁵ The above average proportion of BMS PhD graduates combining work and study was disproportionately likely to be: aged over 30; completed a doctorate by part-time study; employed as specialist registrars, medical consultants or GPs on graduation or as HE lecturers. It is likely, therefore, that continuing professional development towards professional registration features prominently in the activities of this group. See page 14 for possible reasons for the overall rise in those 'working and studying' across the UK-domiciled PhD graduate population.

Employment sectors for biomedical sciences PhD graduates

Unsurprisingly, employment in the health and social work sector dominated first destination patterns among BMS PhD graduates, accounting for 45% - 47% (Figure Two on page 28). As the BMS PhD graduate population also grew, this totalled 440 respondents in 2003 and 2004 but rose to 520 in 2005.

However, the education sector saw the biggest percentage change, increasing its employment of all BMS PhD graduates from 34% (325) in 2003 to 40% (460) in 2005.

Manufacturing saw a declining share of BMS PhD graduates from 12% to 9%, but the picture in this sector was more stable in terms of actual numbers recruited: 115 BMS PhD graduates in 2003 compared with 105 in 2005.

The distribution of small percentages of BMS PhD graduates across the remaining employment sectors remained similar over the period.

Occupations chosen by biomedical sciences PhD graduates

Research occupations

Research positions⁶, across all sectors, consistently accounted for the largest group of BMS PhD graduates: 30% in 2003 and 29% in 2004, rising slightly to 32% in 2005. Although research roles were the most popular destination for BMS PhD graduates, they were below the 36% average rate for all disciplines and significantly less than seen in the biological sciences (62% - 67%).

Postdoctoral researchers

In common with other discipline groups, the majority of BMS researchers worked as postdoctoral researchers in universities. The proportion of employed BMS PhD graduates in postdoctoral roles grew from 19% (180) in 2003 to 23% (260) in 2005.

Researchers outside academia

The 9% - 11% working in research roles outside the education sector were dominated by healthcare scientists (working largely in the NHS). Four times as many researchers worked in the health and social work sector as worked in manufacturing. The latter worked largely in pharmaceutical companies, but also in research institutes.

Health professionals and clinical psychologists

The increasing popularity of doctoral study (particularly professional doctorates) in health-related subjects is indicated by the rise in numbers of health professional and clinical psychologist PhD graduates from 365 respondents (38%) in 2003 to 480 (41%) in 2005.

BMS PhD graduates working as clinical psychologists are categorised within 'other professionals, associate professional and technical occupations'. They made up a substantial proportion and growing number of all employed BMS PhD graduates: 220 (23%) in 2003 rising to 275 (24%) in 2005.

The increase in professional doctorates in clinical medicine and nursing noted above is reflected in the increasing share of health professionals among the occupations of BMS PhD graduates. The number of health professionals rose from 145 (15%) to 205 (18%) between 2003 and 2005.

Teaching professionals

Of the 13% - 14% employed in teaching roles over this period, 10% - 11% worked in higher education, and only 2% - 3% in other areas of teaching. Numbers gaining university lecturer positions rose from 95 in 2003 to 115 in 2005, 10% of all BMS PhD graduates working in the UK in both years.

Other occupations

The concentration of biomedical PhD graduates across professional roles in health, research, teaching and clinical psychology resulted in fewer than average entering occupations less directly related, or unrelated to their subject area. Only 3% - 4% were employed as managers in commerce, industry or the public sector, compared to 6% - 7% across the PhD graduate population as a whole and very small percentages entered business, finance and IT roles.

Employment status

2003 and 2004 biomedical sciences PhD graduates were the most likely of any subject group to enter employment with a permanent contract (only physical sciences and engineering had a slightly higher 2005 rate). The percentage varied between 50% (2004 and 2005) and 53% (2003)⁷. The education sector saw an increase in those attaining permanent contracts, slightly above the average for all BMS PhD graduates. The incidence of fixed-term contracts remained close to the rate for all PhD graduates, at around one-third.

BMS graduates from 2005, in common with other PhD graduates from the sciences, had a lower than average self-employment rate (2% - 3%).

⁶ Research posts are classified not only under 'scientific research, analysis and development' but also alongside other roles in the category grouping of 'other professionals, associate professional and technical occupations'.

⁷ The survey does not enable exploration of to what extent permanent contract status is linked to PhD graduates maintaining continuity of employment with existing employers.

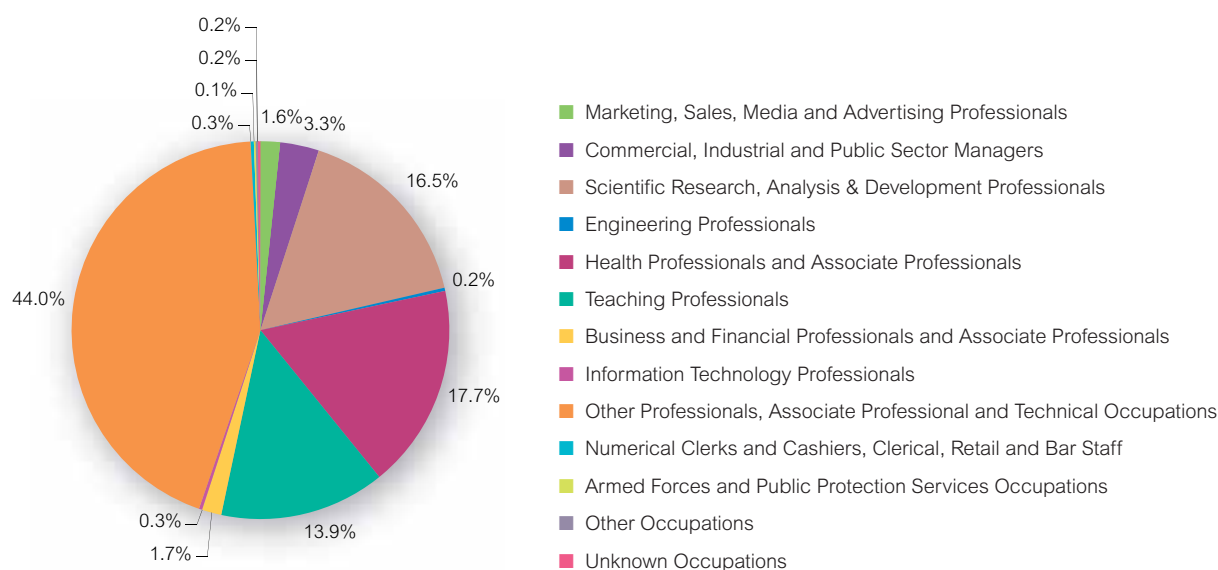


Figure Three: Types of work comparison: 2005 PhD graduates in biomedical sciences, based on Standard Occupational Classifications (SOC) returned in the DLHE survey

	2003	2004	2005
Marketing, Sales, Media and Advertising Professionals	2.7	2.6	1.6
Commercial, Industrial and Public Sector Managers	3.5	3.8	3.3
Scientific Research, Analysis & Development Professionals	16.6	15.6	16.5
Engineering Professionals	0.5	0.7	0.2
Health Professionals and Associate Professionals	15.1	18.9	17.7
Teaching Professionals	13.1	13.4	13.9
Business and Financial Professionals and Associate Professionals	1.6	1.6	1.7
Information Technology Professionals	0.2	0.4	0.3
Other Professionals, Associate Professional and Technical Occupations	44.9	41.0	44.0
Numerical Clerks and Cashiers, Clerical, Retail and Bar Staff	0.7	1.1	0.3
Armed Forces and Public Protection Services Occupations	0.3	0.1	0.1
Other Occupations	0.4	0.4	0.2
Unknown Occupations	0.2	0.4	0.2

Table Two: Types of work entered by UK-domiciled PhD graduates in biomedical sciences (2003-2005), based on Standard Occupational Classifications (SOC) returned in the DLHE surveys^a

From 2003 to 2005 PhD graduates in the biomedical sciences accounted for a growing proportion of all PhD graduates and clinical subjects took an increasing share of the BMS PhD graduate population. The education sector was an increasingly popular destination, accounting for 40% of employed BMS PhD graduates by 2005, although the health and social work sector still employed a larger proportion (46 - 48%). Over 90% of BMS PhD graduates worked in professional roles in research, health, clinical psychology and teaching. Along with social scientists, those with doctorates in the biomedical sciences enjoyed the highest employment rates of all UK-domiciled PhD graduates. Over the three-year period they also attained the highest proportion of PhD graduates with permanent contract status.

^a Types of work being undertaken in the UK on January 15 2004, 2005 and 2006 by UK-domiciled PhD graduates in biomedical sciences from UK universities in 2003, 2004 and 2005.

9. Physical sciences and engineering

Physical sciences and engineering PhD graduates at a glance

- PhD graduates from physical sciences and engineering (PS&E) are the largest group in our survey, making up 32% of all UK-domiciled PhD graduates
- The PS&E response rate to the survey rose from 66% (2003) to 69% (2005). Of the 2250 UK-domiciled PhD graduates eligible for the 2005 survey, 1555¹ replied
- The percentage of respondents working or working and studying in the UK was 79% in both 2003 and 2005, dipping to 76% in 2004
- A steady 10% of PS&E PhD graduates chose to further their careers abroad, above the average rate of 7% - 8% across all disciplines for the three years
- The unemployment rate for PS&E PhD graduates at approximately 5% was the highest of all the discipline groups², but remained consistently lower than for PS&E first-degree (8% - 9%) and masters (5% - 7%) graduates

Looking in more detail at the PS&E PhD graduates working in the UK³

- The education sector, the largest employer for PS&E PhD graduates, increased its share from 39% (2003) to 44% (2005)
- The most popular occupation remained researcher (both within and outside academia), which absorbed a steady 41% - 42% of all employed PS&E PhD graduates over the three years
- The proportion working in postdoctoral research roles within the education sector remained stable, at 25% each year
- The percentage of those holding permanent contracts varied between 47% (2004) and 51% (2005)
- 2% - 3% were self-employed, below the average rate for all disciplines (3% - 4%) across the three years

Subjects covered in this section

The PS&E PhD graduate population saw a slight decline of just over 3% between 2003 (2330) and 2005 (2250).

Chemistry and physics remained the dominant disciplines, together accounting for over a third of all UK-domiciled PS&E graduates. While chemistry's share remained stable at 24% - 25%, the proportion of UK-domiciled PhD graduates in physics fell slightly from 14% (2003) to 11% (2005). All other subjects had fewer than 10% of PS&E PhD graduates. Those in the 5% - 10% ranges were: computer science, physical and terrestrial geographical and environmental sciences, general engineering, electronic and electrical engineering, mathematics and mechanical engineering.⁴

Overall survey response for physical sciences and engineering sciences

PS&E UK PhD graduates	2003	2004	2005
Female respondents	430	430	440
Male respondents	1120	1120	1115
Total in sample	1550	1560	1555
Total PhD graduates in PS&E	2330	2300	2250
% response	66.4%	67.9%	69.2%

Table One. DLHE survey response for UK-domiciled PhD graduates 2003, 2004 and 2005 in physical sciences and engineering

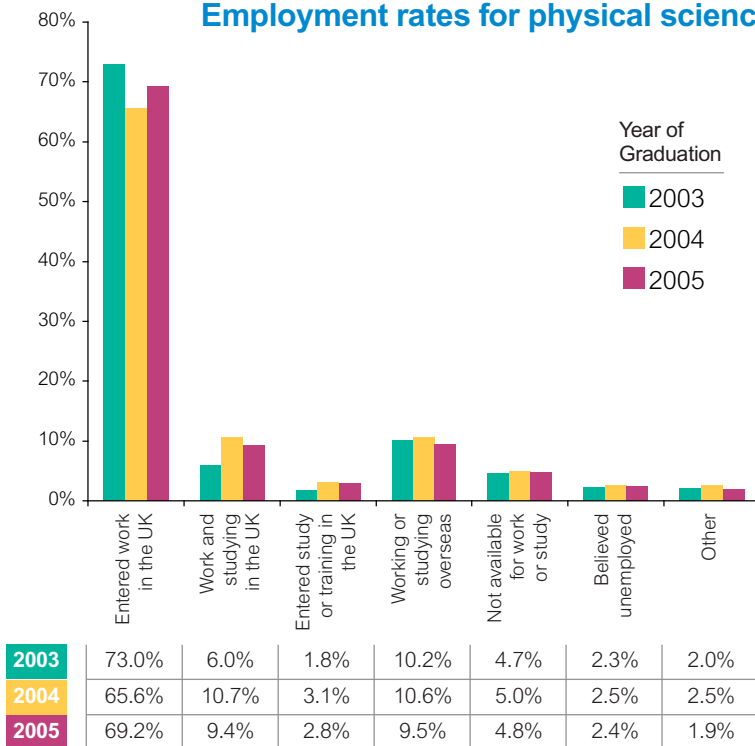
¹ For data protection, all figures have been rounded to the nearest 5. Numbers and percentages may not total due to rounding.

² Physical sciences and engineering also saw the highest unemployment rates of the subject groupings among first degree and masters graduates 2003 - 2005, with the exception of the masters degree unemployment rate in 2003, when the arts and humanities rate (5.0%) was slightly above PS&E (4.8%).

³ UK-domiciled PS&E respondents in the 'entered work in the UK' and 'working and studying' categories totalled 1220 (2005 PhD graduates), compared with 1190 (2004) and 1225 (2003).

⁴ Other physical science and engineering subjects include: aeronautical engineering, architecture, astronomy, building, chemical engineering, civil engineering, geology, maritime technology, materials science, metallurgy, minerals technology, production engineering, statistics, and town and country planning.

Employment rates for physical sciences and engineering sciences



Key statistics

- The employment rate⁵ for PS&E PhD graduates at 79% was just below the 81% rate for all disciplines in 2003 and 2005 and at 76% further below the 80% rate in 2004
- The proportion of PS&E PhD graduates who combined work and study in the UK was 9% in 2005 and 11% in 2004, up from 6% in 2003. This compares to an increase from 8% to 11% over the three years across the total PhD graduate population
- Those choosing to work or study abroad remained around 10%, the second-highest proportion after biological sciences

Figure One: Employment circumstances of UK-domiciled PhD graduates 2003-2005: respondents in physical sciences and engineering

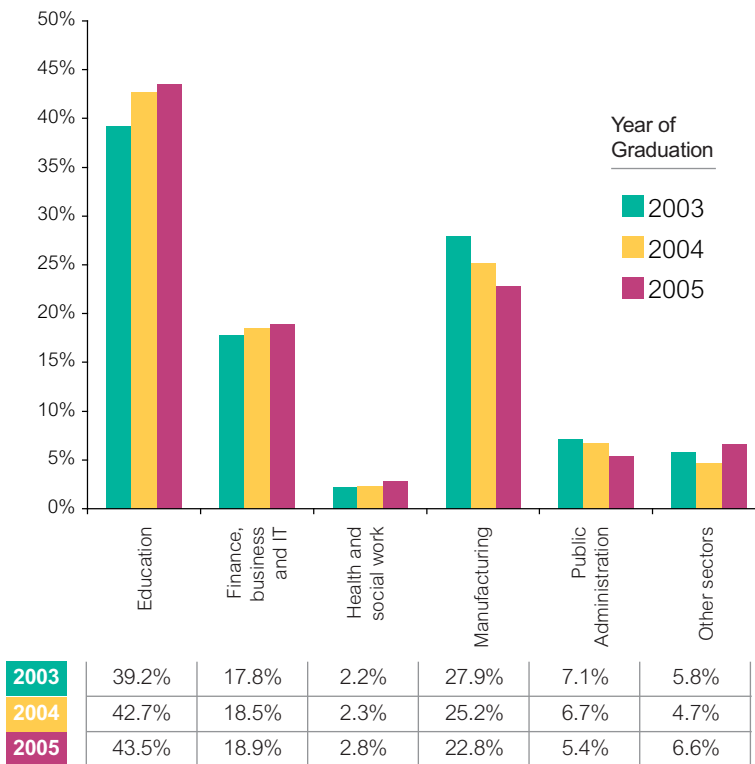


Figure Two: Employment sectors entered by UK-domiciled PS&E doctoral graduates 2003-2005 based on Standard Industrial Classifications (SIC)

⁵ The combined total of those 'working in the UK' and 'working and studying'.

Employment sectors for physical sciences and engineering PhD graduates

Although still below the average for all disciplines, employment in the education sector slightly increased its dominance of first destinations among PS&E PhD graduates, employing 525 respondents (44%) in 2005, mostly within higher education compared with 475 respondents (39%) in 2003 (Figure Two on page 32). As the following section illustrates, this growth in employment in education has come from a diversity of other teaching, management and support roles, rather than the dominant traditional roles of postdoctoral researcher and HE lecturer.

Employment of PS&E PhD graduates in manufacturing, the second most popular employment sector for PSE PhD graduates fell from 28% to 23% over the period, dropping from 340 PhD graduates (2003) to 275 (2005). However, this was still consistently above the 14% - 17% average for all disciplines. Most of the drop in the proportion working in the manufacturing sector was the result of fewer PhD graduates working in research posts, as described below.

The third most popular sector remained finance, business and IT with consistently 18% - 19% of the employed PS&E PhD population over the period, compared to 9% for all disciplines. This sector absorbs many PhD graduates from subjects such as mathematics and computer science. The distribution of PS&E PhD graduates across smaller employment sectors also remained similar over the period.⁶

Occupations chosen by physical sciences and engineering PhD graduates

Research occupations

Research positions⁷ were the most popular destination, absorbing a stable share of 41% - 42% of PS&E PhD graduates over the three-year period - higher than the all discipline average of 36%.

Postdoctoral researchers

Further analysis of those in research roles suggests that in 2005, 310 were employed in HE as postdoctoral researchers or equivalent, very similar to 2003 (305) and 2004 (295). This translates into 25% of all employed PS&E PhD graduates working as researchers in the education sector in all three years, a higher proportion than among the PhD population as a whole (22%).

Research roles outside academia

The proportion of PS&E PhD graduates entering research roles outside academia was 16% of all employed PS&E respondents in 2003 and 2005 and 18% in 2004. There was a significant fall in the numbers working as researchers in manufacturing, from 265 (2003) to 200 (2005), particularly in the pharmaceutical industry. Finance, business and IT

employed stable numbers of researchers (100 - 110 each year). Very small increases were recorded across a range of other sectors, compensating for the decline in those entering manufacturing.

Engineering professionals

Engineering professionals remained the second largest occupational group. The numbers and proportion of PhD graduates entering engineering professional roles remained fairly consistent over the period from 185 (15%) in 2003 to 165 (14%) in 2005. Two in five of these were PhD graduates in engineering, and around one third PhD graduates in chemistry.

Teaching professionals

Teaching professionals grew in number and proportion of employed PS&E PhD graduates, from 130 (11%) in 2003 to 160 (13%) in 2005. The proportion of PS&E PhD graduates employed as teaching professionals was still considerably lower than the all disciplines average (22%). Within the teaching professionals category, a stable 6% - 7% were employed as HE lecturers. The growth in teaching professionals came from the proportion in other teaching roles, which showed slightly more variation, ranging from 4% (2003) to 7% (2005). This latter group included small numbers of secondary school teachers, FE lecturers and non-lecturer teaching roles in HE.

While teaching professionals account for some of the growth in employment in the education sector, there was also a small increase (2%) in those entering the education sector in non-teaching, non-research roles in student support, administration, management, finance and IT.⁸

Other occupations

The remaining 30% of employed PS&E PhD graduates are distributed across a wide range of roles. Across all three years, a stable 21% - 22% were employed as commercial, industrial and public sector managers, business and financial professionals, IT professionals or marketing professionals. Only health professional roles saw very few entrants from PS&E subjects.

Employment status

PS&E PhD graduates achieved permanent contract rates of 47% - 51%, consistently above the (46% - 48%) average rate for the UK-domiciled PhD population as a whole. The 2005 rate of 51% was the highest of all discipline groups.

The proportion of PS&E PhD graduates employed on fixed-term contracts⁹ remained stable at 30% - 31% over the three years. This rate was slightly below the average for the UK-domiciled employed PhD population (32% - 34%).

PS&E PhD graduates had below average self-employment rates of 2% - 3% throughout the three year period, compared with 3% - 4% for the PhD graduate population as a whole.

⁶ Any fluctuations are not statistically significant.

⁷ Research posts are classified, not only as 'scientific research, analysis & development professionals' but also alongside other roles in the category grouping of 'other professionals, associate professional and technical occupations'.

⁸ Appointments to new researcher development support roles, possibly as a result of 'Roberts Funding', are likely to have accounted for part of the growth in both the 'other teaching professionals' category and those concerned with HE support functions.

⁹ Of both more than twelve months and less than twelve months duration.

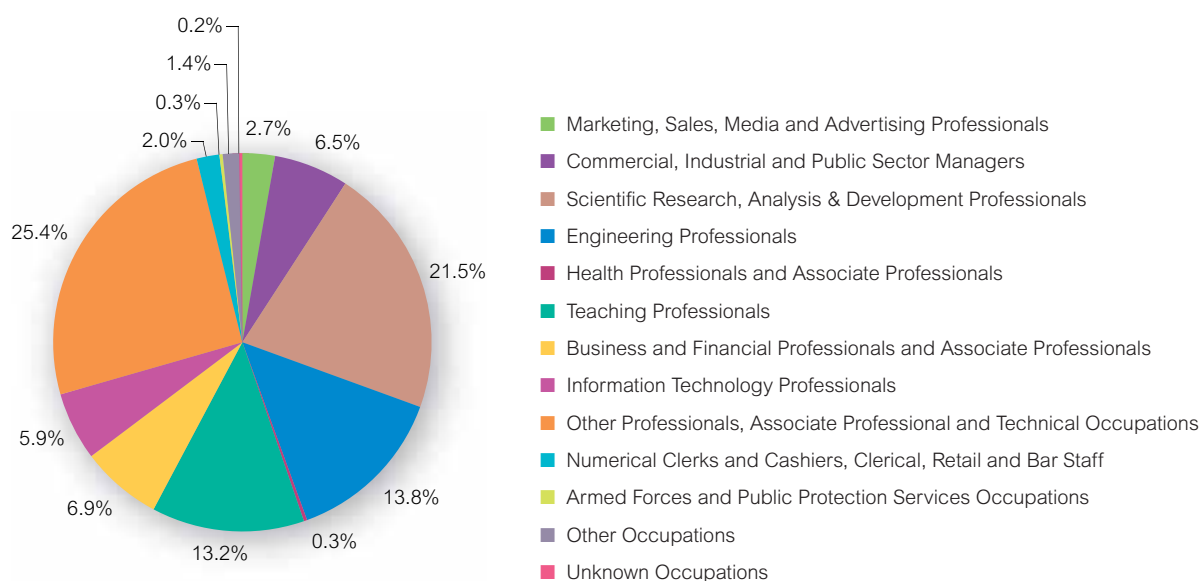


Figure Three: Types of work comparison: 2005 PhD graduates in physical sciences and engineering, based on Standard Occupational Classifications (SOC) returned in the DLHE survey

	2003	2004	2005
Marketing, Sales, Media and Advertising Professionals	2.3%	2.0%	2.7%
Commercial, Industrial and Public Sector Managers	7.8%	7.7%	6.5%
Scientific Research, Analysis & Development Professionals	24.1%	24.6%	21.5%
Engineering Professionals	15.3%	12.2%	13.8%
Health Professionals and Associate Professionals	0.7%	0.8%	0.3%
Teaching Professionals	10.7%	11.9%	13.2%
Business and Financial Professionals and Associate Professionals	5.3%	5.7%	6.9%
Information Technology Professionals	7.5%	6.3%	5.9%
Other Professionals, Associate Professional and Technical Occupations	21.2%	23.9%	25.5%
Numerical Clerks and Cashiers, Clerical, Retail and Bar Staff	2.7%	2.6%	2.0%
Armed Forces and Public Protection Services Occupations	0.7%	0.3%	0.3%
Other Occupations	1.3%	1.4%	1.4%
Unknown Occupations	0.1%	0.8%	0.2%

Table Two: Types of work entered by UK-domiciled PhD graduates in physical sciences and engineering (2003-2005), based on Standard Occupational Classifications (SOC) returned in the DLHE surveys¹⁰

In some respects, the picture of what PS&E PhD graduates do has changed little during 2003-2005. Research roles showed the most stability, with over two in five employed PS & E PhD graduates entering researcher positions within and beyond academia – consistently above the average across all disciplines. Engineering professionals form an important group, a little larger than those employed in teaching roles. However, the period has seen some growth in PS&E PhD graduates entering the wider education sector beyond researchers and HE lecturers, and a decline in those working in manufacturing. UK employment rates are a little below the all disciplines average, but an above-average proportion of PS&E PhD graduates choose to continue their career abroad.

¹⁰ Types of work being undertaken in the UK on January 15 2004, 2005 and 2006 by UK domiciled PhD graduates in physical sciences and engineering from UK universities in 2003, 2004 and 2005.

10. Social sciences

Social sciences PhD graduates at a glance

- PhD graduates from social sciences (SS) made up 10% of all UK PhD graduates in 2005 and 2004, down from 11% in 2003
- 690¹ UK-domiciled PhD graduates were eligible for the survey in 2005, 15% fewer than in 2003
- Response rates rose from 63% (2003 and 2004) to 70% in 2005, when 480 replied
- The percentage of respondents working or working and studying in the UK fell from 88% (2003) to 84% (2004 and 2005)
- The proportion that chose to further their careers abroad varied between 3% and 5%
- Unemployment levels for SS PhD graduates remained consistently lower, at 2% - 3%, than for first-degree (6%) and master (3% - 4%) graduates

Looking in more detail at the social sciences PhD graduates working in the UK²

- The education sector – predominantly higher education (HE) – continues to employ around two-thirds of this group
- University lecturer remained the most popular occupation, although by a smaller margin. The number of SS PhD graduates entering HE lecturer posts fell by almost 30% over the period, and proportionately from 39% to 32% of employed SS PhD graduates
- Between 22% and 25% entered research roles (across all sectors) over the period, two-thirds of whom were employed as postdoctoral researchers in universities (15% in 2003 and 2005, and 18% in 2004)
- In 2003 more SS PhD graduate respondents held permanent contracts than any other group (55%) but this proportion fell to 46% in 2004 and 49% in 2005 (the average for all disciplines)
- The proportion of respondents holding fixed-term contracts³ was the lowest of all the discipline groups, varying between 26% (2003), 30% (2004) and 28% (2005)
- Self-employment increased from 5% (2003) to 9% (2005), above the 3% - 4% average rate for all disciplines

Subjects covered in this section

The social sciences are jointly dominated by sociology and business studies with politics the third most popular subject area at PhD level.

The population of SS PhD graduates in business studies fell from 19% (2003) to 15% (2005). This represents a significant fall from 150 PhD graduates in 2003 to 105 in 2005. PhD graduates in sociology remained more stable at around 17% over the three-year period. PhD graduates in politics increased from 10% to 13%.

Subjects with between 7% and 10% of PhD graduates were human and social geography, social policy, law and management studies. Economics fell slightly below the 7% recorded for 2003 graduates. Other subjects, each with less than 5% PhD graduates, include social work, anthropology and finance.⁴

Overall survey response for social sciences

Social sciences (SS) UK PhD graduates	2003	2004	2005
Female respondents	275	230	245
Male respondents	235	230	235
Total in sample	510	460	480
Total PhD graduates in SS	810	725	690
% response	62.9%	63.4%	69.5%

Table One. DLHE survey response for UK-domiciled PhD graduates 2003, 2004 and 2005 in social sciences

¹ For data protection, all figures have been rounded to the nearest 5. Numbers and percentages may not total due to rounding.

² UK-domiciled SS respondents in the 'entered work in the UK' and 'working and studying' categories totalled 400 (2005 PhD graduates), compared with 385 (2004) and (2003).

³ Fixed term contracts of more than twelve months and less than twelve months duration.

⁴ Other social science subjects include catering and institutional management, land and property management, marketing and market research, psychology (without significant element of biological science), transport, other business and administrative studies, and 'other social studies'. Note that PhD studies in the field of education are not categorised in social sciences.

Employment rates for social sciences

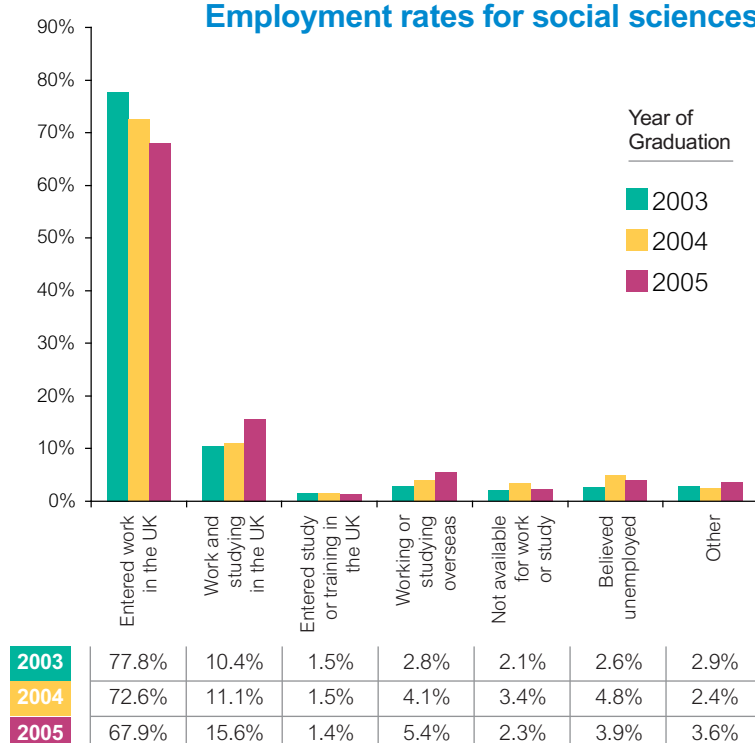


Figure One: Employment circumstances of UK-domiciled PhD graduates 2003-2005: respondents in the social sciences

Key statistics

- The social sciences saw the largest fall in PhD graduate numbers over the period, decreasing 15% between 2003 (810) and 2005 (690)
- The employment rates⁵ for 2003 (88%) and 2004 (84%) were highest of all the discipline groups and second only to the biomedical sciences in 2005 (84%)
- At 16% in 2005, up from 10% - 11% in previous years, a higher proportion of SS PhD graduate respondents were 'working and studying in the UK' than any discipline group 2003-2005⁶
- The proportion working or studying abroad rose from 3% (2003) to 5% (2005) but remained below the average for all disciplines (7% - 8%)
- SS PhD graduate unemployment rates of 2% in 2003 and 2005 and 3% in 2004 were below the 3% - 4% average for all PhD graduates – second only to the biomedical sciences

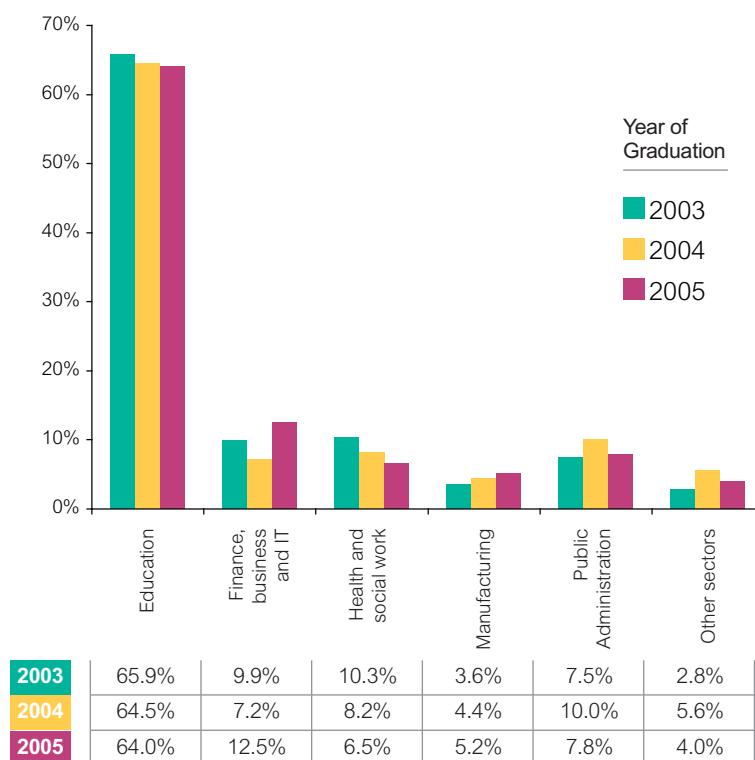


Figure Two: Employment sectors entered by UK-domiciled SS doctoral graduates 2003-2005, based on Standard Industrial Classifications (SIC)

⁵ These figures include both 'entered work in the UK' and 'working and studying in the UK'.

⁶ Characteristics of those 'working and studying' are discussed on page 14.

Employment sectors for social science PhD graduates

The education sector continued to dominate employment of SS PhD graduates, the great majority working in higher education. However, as Figure Two (on page 36) shows, there was a slight decline from 66% in 2003 to 64% in 2005. In all years the employment of almost two-thirds of SS PhD graduates within the education sector remained well above the average for all PhD graduates (48% - 50%). Type of employment within the sector showed greater variety in 2004 and 2005 than in 2003, as discussed below. Whereas HE lecturer and postdoctoral researcher roles together accounted for 54% of all employed respondents in 2003, the proportion in 2004 and 2005 years dropped to 45% - 47%.

There was a small increase in the relative popularity of employment in the finance, business and IT sector, absorbing 13% of 2005 SS PhD graduates (compared with 10% in 2003), well above the average for all disciplines (9%).

Employment in the public administration sector, which varied between 8% and 10% over the period, was above the average for all disciplines (5% - 6%). As might be expected, employment in the manufacturing sector (4% - 5%) was well below the 14% - 17% average for all disciplines. The period also saw a fall in the proportion of SS PhD graduates entering the health and social work sector from 10% in 2003 to 7% in 2005⁷. It is noteworthy that in 2005 the number of SS PhD graduates entering finance, business, IT and manufacturing exceeded those going into health, social work and public administration, whereas in the previous two years the reverse was the case.

Occupations chosen by social scientist PhD graduates

Teaching professionals

Teaching roles continued to dominate the types of work that SS PhD graduates entered (Table Two on page 38), although by a smaller margin, absorbing 39% in 2004 and 43% in 2005, down from 46% in 2003: the highest of any subject group in that year⁸.

The overall percentage fall in the teaching professionals category included a proportionately greater drop in HE lecturer roles. Whereas 39% (175) of 2003 SS PhD graduates worked as university lecturers, the figures for 2004 and 2005 SS PhD graduates were 28% (105) and 32% (125) respectively. Conversely, this was balanced to a degree by small increases in the relatively few SS PhD graduates becoming 'further education teaching professionals and 'other teaching professionals and teaching assistants within HE'.

Research occupations

The second most popular group of occupations were research positions⁹, absorbing 22% of SS PhD graduates in 2003, 25% in 2004 and 24% in 2005. This was consistently well below the all discipline average of 36%.

Further analysis of those in research roles suggests that between 60 and 70 SS PhD graduates across the three years were employed in the education sector in postdoctoral or equivalent posts. This represents 15% of SS PhD graduates in 2003 and 2005, and 18% in 2004.

The remaining proportion of researchers, 7% - 8% of SS PhD graduates in all three years, were employed in other public and private sector research positions.

Other occupations

Manager roles in the commercial and non-commercial sectors was the third-largest category overall and the only one to see a small net gain in comparative numbers employed across the three surveys. The proportion of SS PhD graduates in managerial roles rose from 12% to 15%. The proportion of business and finance professionals varied between 5% and 7%.

The non-researchers in the category grouping of 'other professionals, associate professional and technical occupations' included such groups as clinical psychologists and social welfare professionals, who made up 4% - 6% over the period.

Employment status

Variations in the rate of permanent employment contracts were more apparent among social scientists than for PhD graduates taken as a whole. Whereas SS PhD graduates from 2003 had the highest rate of permanent employment contracts of any discipline group at 55%¹⁰, this fell to 46% in 2004, but rose to 49% in 2005. The 2004 and 2005 rates were close to the average for all disciplines.

The fixed-term contract rate remained the lowest of all the discipline groups, rising slightly from 26% to 28%, in line with the general upward trend (32% - 34% across all disciplines).

SS PhD graduates from 2004 and 2005 were more likely to be self-employed than those from other subject groups¹¹. Self-employment rates rose consistently from 5% to 7% to 9% over the three years.

⁷ Given the size of the sample this data should be treated with caution.

⁸ In 2004 and 2005 higher proportions of social sciences PhD graduates entered teaching professional roles.

⁹ Research posts are classified alongside other roles in the category grouping of 'other professionals, associate professional and technical occupations' as well as 'scientific research, analysis and development professionals'.

¹⁰ This group was slightly more likely than other years to have an HE lecturer post and less likely to be in a research role.

¹¹ Among PhD graduates from 2003, social sciences had the highest self-employment rate at 6%.

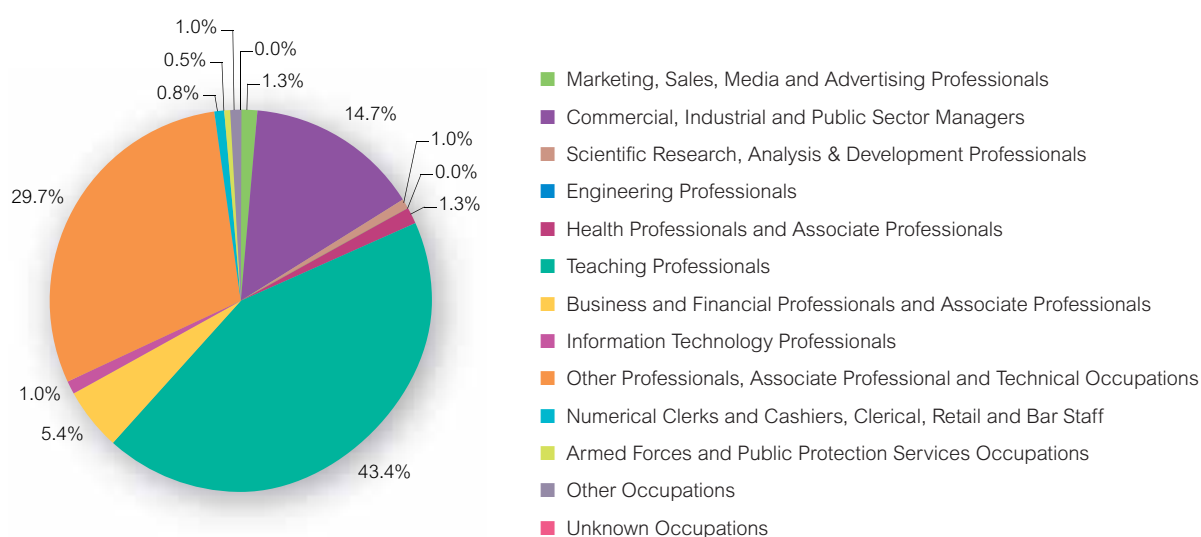


Figure Three: Types of work comparison: 2005 PhD graduates in social sciences, based on Standard Occupational Classifications (SOC) returned in the DLHE survey

	2003	2004	2005
Marketing, Sales, Media and Advertising Professionals	1.7%	2.1	1.3
Commercial, Industrial and Public Sector Managers	12.0	15.3	14.7
Scientific Research, Analysis & Development Professionals	1.7	0.3	1.0
Engineering Professionals	0.0	0.8	0.0
Health Professionals and Associate Professionals	2.1	1.0	1.3
Teaching Professionals	46.1	38.9	43.4
Business and Financial Professionals and Associate Professionals	5.6	7.7	5.4
Information Technology Professionals	0.9	0.7	1.0
Other Professionals, Associate Professional and Technical Occupations	28.1	30.5	29.7
Numerical Clerks and Cashiers, Clerical, Retail and Bar Staff	1.3	0.9	0.8
Armed Forces and Public Protection Services Occupations	0.0	0.3	0.5
Other Occupations	0.2	1.3	1.0
Unknown Occupations	0.2	0.3	0.0

Table Two: Types of work comparison: PhD graduates in arts and humanities (2003-2005), based on Standard Occupational Classifications (SOC) returned in the DLHE surveys¹²

PhD graduates in social sciences continued to have one of the highest employment rates, as well as an above-average proportion combining work with further study. Although the education sector absorbed the second highest percentage of PhD graduates (after arts and humanities) social sciences was the only discipline group to see a drop in the proportion of its PhD graduates entering the education sector over the period. While the most popular roles remained university lecturer and postdoctoral researcher, these 'top two' occupations accounted for a decreasing proportion of SS PhD graduates. Other social science PhD graduates entered a wide range of specialist and managerial functions across the UK economy.

¹² Types of work being undertaken in the UK on January 15 2004, 2005 and 2006 by UK domiciled PhD graduates in social sciences from UK universities in 2003, 2004 and 2005.

Notes

Notes

The role of the UK GRAD Programme is to support the academic sector to embed personal and professional skills development into research degree programmes.

Our vision is for all postgraduate researchers to be fully equipped and encouraged to complete their studies and to make a successful transition to their future careers. The UK GRAD Programme has a key role in enabling them to realise their potential.

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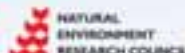
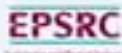
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