

Wales

Wales produced 5% of UK-domiciled PhD graduates and employed 4% of the UK-domiciled PhD workforce in the DLHE survey. PhD graduates from Welsh universities were less likely to move overseas at the start of their careers and more than half of them (54%) remained in Wales for work.

Key statistics:

The 380¹ UK-domiciled PhD graduates from Welsh institutions made up 5% of the UK total:

- 56% were male and 44% female, in line with the UK average of 55% and 45%
- 16% studied part-time, significantly lower than the UK average 27%
- The most popular subjects were chemistry, biology, psychology and materials.

Of the 255 (67%) who responded to the 2004 DLHE² survey:

- 79.4% entered employment in the UK³
- 5.1% were unemployed, higher than the UK average of 3.2%
- 4.7% continued their careers overseas compared to 8.1% across the UK.

Of the 200 PhD graduates from Welsh HEIs who had entered employment in the UK:

- 44.5% entered the education sector, predominantly in higher education
- 13.9% were employed in manufacturing and 12.4% in the health sector
- 58% remained in Wales and 42% moved to other regions of the UK.

Wales employed 165 (4.0%) of the UK-domiciled PhD graduate workforce:

- 69% gained their PhD at Welsh institutions
- 31% moved to Wales from other regions of the UK
- 53.9% were employed in the education sector: 43% of these as postdoctoral researchers; 39% in university teaching roles, primarily as lecturers
- 23% of all PhD graduates working in Wales were employed as postdoctoral researchers.

Wales was a net exporter (-23%) of UK-domiciled PhD graduates:

- PhD graduates who left Wales for work were most likely to move to the South West and the West Midlands
- Wales attracted only 3.5% of the UK-domiciled PhD graduates who left their region of study for known UK locations
- PhD graduates moving to the region were most likely to come from the South West and South East and work in the education sector (61%).

Overview of Welsh higher education institutions⁴

Wales is home to 13 higher education institutions (HEIs) ranging in size from over 24,000 students at Cardiff University (around 70% full-time) to 7,000 at University of Wales, Lampeter (where a large majority are part-time students). Figures from HEFCW and NECTW for 2002/03 state that 5,085 students were enrolled on research degree programmes and that 605 doctorates were awarded (see Table One).

Higher education institution	Final year PhD numbers
Cardiff University	215
University of Wales, Swansea	135
University of Wales, Bangor	90
University of Wales, Aberystwyth	75
University of Wales College of Medicine	35
University of Glamorgan	25
University of Wales Institute, Cardiff	10
The University of Wales, Lampeter	10
University of Wales College, Newport	5
The North-East Wales Institute of Higher Education	5
Total	605

Table One: Final year PhD researchers by HEI in Wales⁵

The research strengths of the Welsh HEIs are reflected in Figure One, derived from the results of the 2001 Research Assessment Exercise (RAE)⁶. Further analysis of the RAE results shows that 62% of submissions from the regions' institutions were rated at 4 or above, with a third scoring the highest ratings of 5 and 5*. These top rated departments were across the subject spectrum indicating the broad range of expertise available in the Principality's institutions: arts and humanities subjects are particularly strong.

¹ All figures are rounded to the nearest five for data protection

² Destination of Leavers from Higher Education – a survey of all UK and EU first and higher degree graduates

³ 67.7% are classified as 'working in the UK'; 11.7% are 'working and studying in the UK'. The data throughout WDPDR on employment includes both classifications

⁴ Higher Education, Further Education and Training Statistics in Wales, National Council for Education and Training for Wales (NECTW) and the Higher Education Funding Council for Wales (HEFCW), 2002/03. www.elwa.org.uk/doc_bin/Research%20Reports/HE_FE_training_statistics_wales_2002_03.pdf

⁵ These figures are derived from the HESA student record data for those who were scheduled to complete their enrolment period in 2002/03. They include international PhD researchers who were not included in the DLHE survey www.hesa.ac.uk/pi/0203/research.htm

⁶ Data set available at www.hero.ac.uk/rae/Results

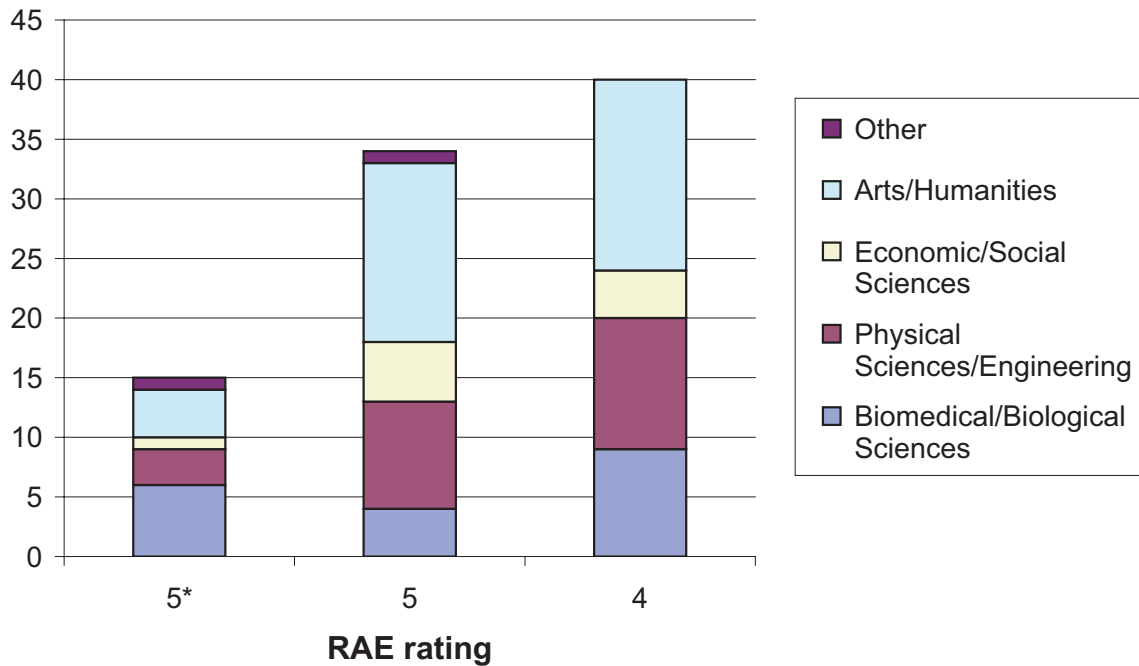


Figure One: Research subjects of top graded RAE submissions in Wales

Economic strengths

In November 2005, a report⁷ from the Welsh Assembly Government set out the recent transformation of the Welsh economy: 100,000 more people in work since 1999 and increased earnings and exports. At the heart of the plans for future development are commitments to “improve business productivity generally, create innovative, high value-added products, processes and services, and get more companies to base their head office, R&D units and other senior management functions in Wales”. If these plans come to fruition, there should be ample opportunities for researchers with a range of subject specialisms. The report notes that a number of sectors will be important to the future of the Welsh economy, namely aerospace, agriculture and food, high technology, tourism, financial services, automotive and the creative industries, most of which will depend on high skills levels and specific technical knowledge.

However, research and development (R&D) spending in Wales currently is low at 1.2% of GVA⁸, compared to 2.1% for the UK as a whole, largely because of lower levels of spending from the private sector. This is due to the current composition of the Welsh economy having fewer major R&D active businesses than the rest of the UK. With an apparent commitment to develop links between higher education and

business and a priority to develop jobs in innovative, knowledge-intensive sectors, those planning the future of the Welsh economy appear keen to exploit the skills and knowledge of its researchers.

Profile of PhD graduates from Wales

Of the 7270 UK-domiciled PhD graduates in the UK in 2003, 5.2% (380) graduated from Welsh HEIs. Of these PhD graduates, 44% were female and 56% male, consistent with the UK average of 45% and 55%. Part-time study was much less common in Wales than in other regions, accounting for just 16% of degrees awarded, compared to the UK average of 27%.

Figure Two shows the breakdown of PhD graduates by subject groups. A higher percentage of PhD graduates from Welsh universities came from the physical sciences than the UK average (36.9% compared to 32%). The biomedical and biological sciences were also higher at 14.5% compared to the UK average of 12.4%. Slightly higher percentages came from the arts and humanities (14.5% compared to 13.7%) and the economic and social sciences (11.8% compared to 11.1%). A significantly smaller proportion graduated from the medical sciences at 19.7% compared to 26.9% across the UK.

⁷ ‘Wales: A Vibrant Economy’ www.wales.gov.uk/subitradeindustry/content/wave/wave-report-e.pdf

⁸ GVA (Gross Value Added) differs from GDP in that subsidies are added and taxes on products are deducted

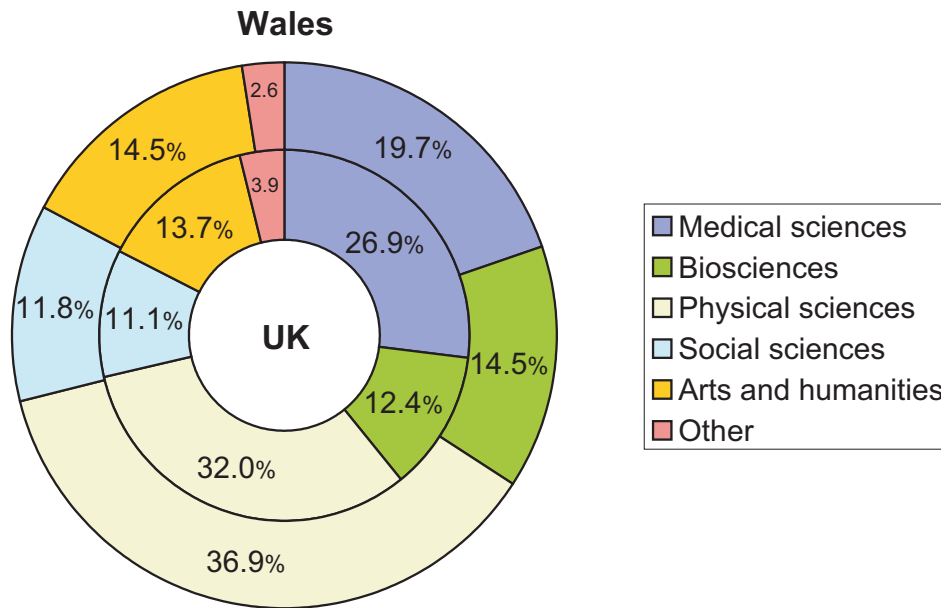


Figure Two: Subject groups of all UK-domiciled PhD graduates from Welsh HEIs (outer ring) compared to all UK HEIs (inner ring) in 2003

The list of the 'top ten' subjects for PhD graduates from the Welsh universities (Table Two) is headed by three of the top four subjects in the UK; chemistry, biology and psychology. However, the most popular UK subject, clinical medicine, does not rank highly in Wales, reflecting the small number of medical schools in the region. The region's strengths are spread across all discipline areas: ranging from technical and engineering subjects (materials technology and general engineering are both substantially more common than in the UK as a whole) to theology and politics.

Subject and ranking	Wales	Total (and position) in UK
1. Chemistry	7.1%	7.7% (2)
2. Biology	5.8%	5.2% (4)
3. Psychology	5.3%	7.6% (3)
4. Materials technology	4.5%	0.8% (33)
5. General engineering	3.4%	2.0% (15)
6. English studies	2.9%	2.5% (8)
7. Pharmacology	2.6%	2.9% (7)
8. Physical and terrestrial geography and environmental sciences	1.8%	2.1% (11)
8. Mathematics	1.8%	2.1% (13)
8. Theology	1.8%	1.2% (24)
8. Politics	1.8%	1.1% (25)

Table Two: Top subjects studied by PhD graduates in Welsh HEIs compared to the UK figures

What do Welsh PhDs do?⁹

Of the 380 UK-domiciled PhD graduates from Welsh HEIs in 2003 eligible for the 2004 survey, 255 responded: a 67% response rate, fractionally higher than the UK average of 65%.

Almost 68% of UK-domiciled PhD graduates from Welsh institutions had entered the workplace when the survey was conducted, compared to the overall UK figure of 72.7%. A further 11.7% were engaged in work and study simultaneously – higher than the UK average of 8%. Fewer PhD graduates had moved overseas (4.7%) than for the UK as a whole (8.1%). At 5.1%, unemployment rates for UK-domiciled PhD graduates from Welsh institutions were higher than the UK average 3.2% (see Figure Three).

⁹ The data in this section refers to PhD graduates from Welsh HEIs who were working in all regions of the UK

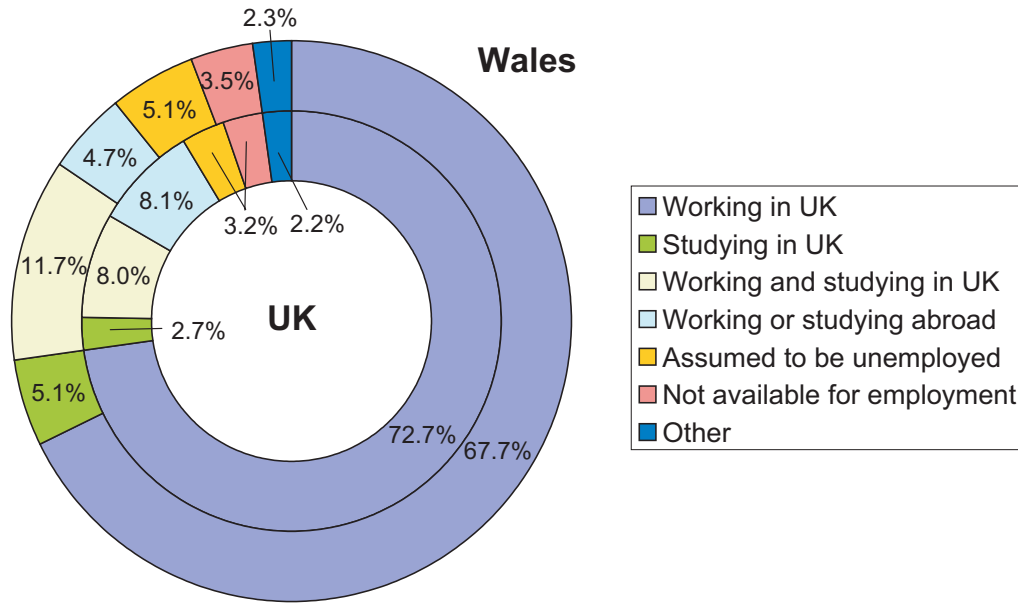


Figure Three: First destinations of UK-domiciled PhD graduates for all subjects from Welsh HEIs (outer ring) compared to all UK HEIs (inner ring) from 2004 DLHE survey responses

Employment sectors

The 79.4% UK-domiciled PhD graduates from Welsh universities working or working and studying in the UK were employed in a range of sectors across the UK. Consistent with the UK average of 47.8%, the education sector was the dominant destination, employing 44.5% of PhD graduates from Wales, predominantly in higher education.

The balance (55.5%) were employed in a range of occupations across all sectors, with some differences compared to the UK picture as shown in Figure Four.

Manufacturing industries employed fewer UK-domiciled PhD graduates from Welsh HEIs at 13.9% compared to 16.3% across the UK as a whole. 57% of these were employed in the chemical and pharmaceutical industries, accounting for 8% of all Welsh PhD graduates, compared to a national figure of 11%).

The health service also employed slightly fewer PhD graduates from Welsh universities (12.4% compared to 15.5% across the UK), reflecting the smaller numbers coming from clinical medicine. A significantly higher percentage was employed in the public sector at 10.4% compared to the UK average of 5.7%. The business, finance and IT sector employed fractionally more at 9.9% compared to 9.1%. Assorted other industrial sectors accounted for the remaining 8.9% of UK-domiciled PhD graduates from Welsh HEIs.

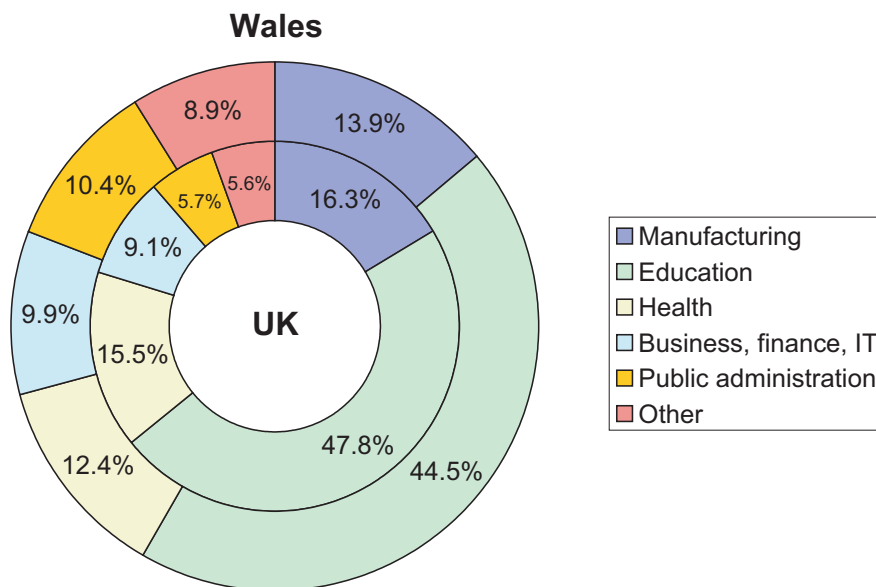


Figure Four: Employment sectors entered by UK-domiciled doctoral graduates from Welsh HEIs (outer ring) compared to all UK HEIs (inner ring), based on Standard Industrial Classifications returned in 2004 DLHE survey

Career occupations

We examined the specific occupations entered by UK-domiciled PhD graduates from Welsh HEIs. A similar picture to the UK average emerged, as shown in Figure Five.

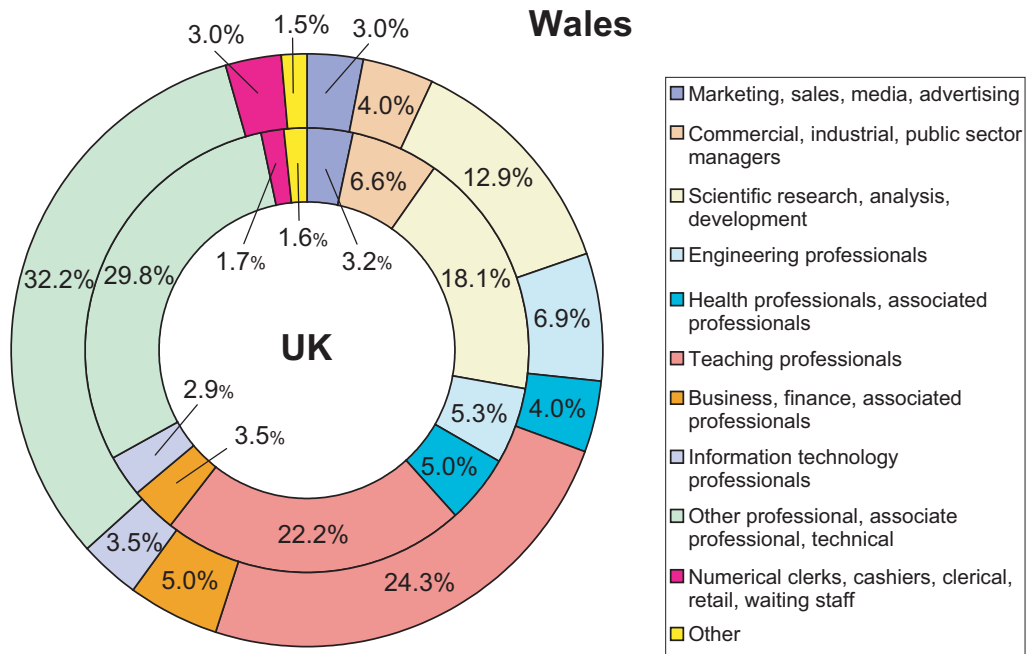


Figure Five: Types of work entered by UK-domiciled PhD graduates from Welsh HEIs (outer ring) compared to all UK institutions (inner ring), based on Standard Occupational Classifications returned in 2004 DLHE survey

The largest variation occurs in the scientific research category, which accounted for 12.9% of PhD graduates employed from this region, compared to 18.1% across the UK. More were employed as engineers (6.9% compared to 5.3% across the UK), and in 'other professions', which includes some postdoctoral researchers (32.2% compared to 29.8%). Fractionally more were employed in teaching (24.3% compared to 22.2%) and business and finance occupations (5% compared to 3.5%).

Migration

We examined the migration patterns of UK-domiciled PhD graduates from Welsh HEIs who were in employment at the time of the survey.

In common with most regions, Wales saw a net loss of PhD graduates. 23% fewer PhD graduates started work in Wales than the total number of PhD graduates from the region¹⁰. 85 PhD graduates (40% of total employed) left Wales for employment in other regions of the UK. This proportion is similar to the average figure for all regions of 38%. PhD graduates from Wales moved across the UK with the South West the most popular region, attracting 7% of PhD graduates. Other popular regions were the West Midlands, North West and London¹¹.

Another 15 PhD graduates (6% of total employed) left Wales for work or work and study abroad (compared to the national proportion of 9%).

¹⁰ The net migration figures should be treated with care. 2.5% of the total DLHE respondents did not identify a specific region of employment. If these respondents are skewed to one region this will impact significantly on the net migration figures

¹¹ Data protection prohibits us from a full analysis of region to region migration

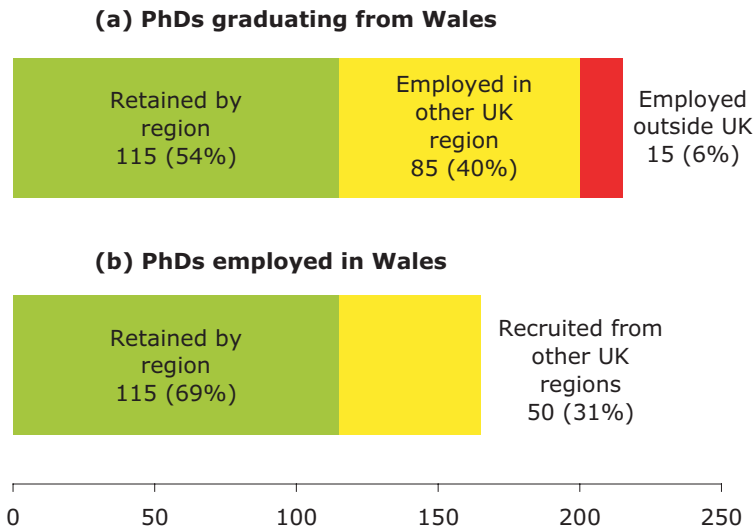


Figure Six: Mobility of PhD graduates from Wales in employment (a) and origin (region of study) of PhD graduates working in Wales (b)

What do PhD graduates employed in Wales do?¹²

115 UK-domiciled PhD graduates from Welsh HEIs were working in Wales at the time of the survey, representing 69% of the total number of PhD graduates working in the region. These were joined by 50 PhD graduates from other regions in the UK who gained employment in Wales. Within this cohort, small numbers of PhD graduates came from each of the other UK regions. Only the South East and South West supplied more than a handful at 6% and 5% of the Welsh doctoral labour force, respectively. Only 3.5% of the UK-domiciled PhD graduates who left their regions of study for known UK locations moved to Wales. Amongst the regions, only the North East and Northern Ireland attracted smaller numbers of PhD graduates.

Employment sectors

The employment sectors for all PhD graduates employed in Wales are compared to the national picture in Figure Seven. The education sector was particularly dominant in Wales and employed 53.9% of PhD graduates in the region compared to 47.8% across the UK. Of these, 43% were employed as postdoctoral researchers and 39% in university teaching roles, primarily as lecturers.

Manufacturing employed a lower proportion of PhD graduates in Wales at 13.8% compared to the UK average of 16.3%. The health sector was also smaller in Wales at 12% compared to 15.5%, as was the business, finance and IT sector (6.6% compared to 9.1%). The public administration sector was slightly larger in Wales (7.8% compared to 5.7% across the UK).

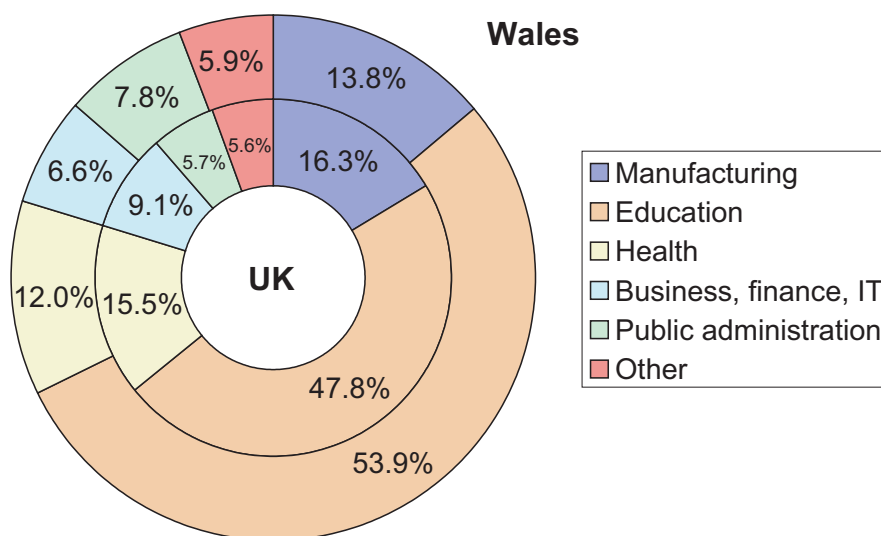


Figure Seven: Employment sectors entered by UK-domiciled PhD graduates employed in Wales (outer ring) compared to all UK regions (inner ring), based on Standard Industrial Classifications returned in the 2004 DLHE survey

¹² The data in this section refers to PhD graduates from all regions of the UK who were working in Wales

For the 50 UK-domiciled PhD graduates who moved to Wales for employment, the biggest employing sector was education (61%). Of these, 42% were employed as lecturers, 42% as postdoctoral researchers and the remainder in a range of administrative and supporting roles. Other popular employment sectors for PhD graduates moving to Wales for employment were manufacturing and business, finance and IT, each employed around 10% of the total incoming PhD graduates.

Career occupations

We compared the specific occupations entered by PhD graduates employed in Wales to the UK picture as shown in Figure Eight.

A higher proportion of PhD graduates were employed as teaching professionals (25.7% compared to 22.2% across the UK) and in the 'other professionals' classification, which includes some postdoctoral researchers (34.1% compared to 29.8%). In total 25% of the PhD graduates working in Wales were employed as postdoctoral researchers¹³, higher than the UK average of 22%.

A lower percentage of PhD graduates in Wales were employed in the scientific research classification at 15% compared to the UK average of 18.1%. Conversely, a higher percentage was employed as engineering professionals at 7.2% compared to the 5.3% UK average.

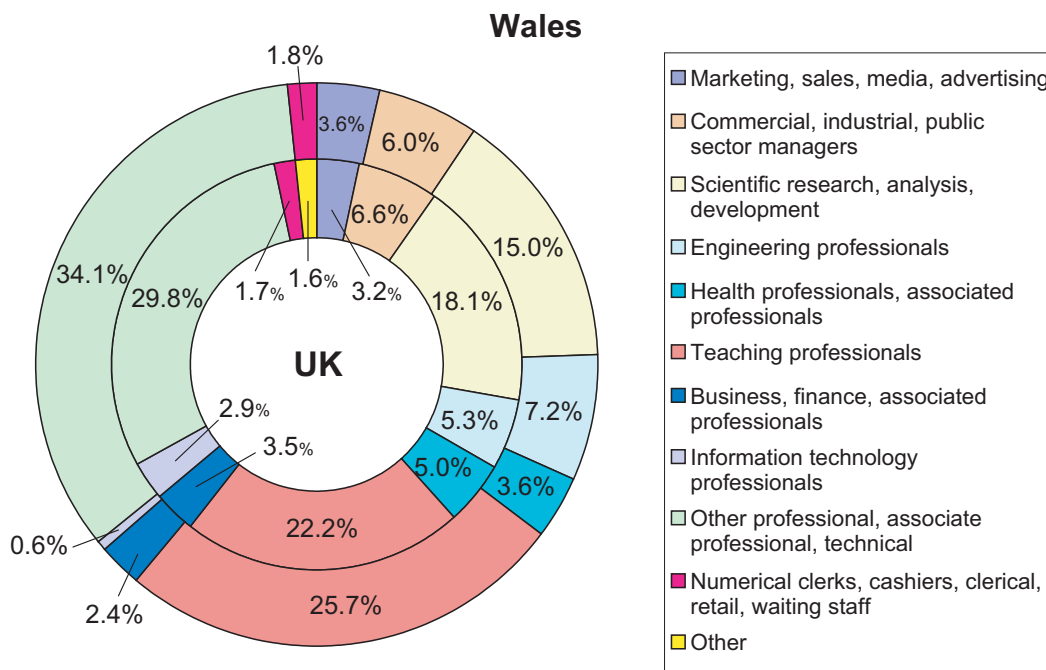


Figure Eight: Types of work entered by UK-domiciled PhD graduates employed in Wales (outer ring) compared to all UK regions (inner ring), based on Standard Occupational Classifications returned in 2004 DLHE survey

¹³ 'What Do PhDs Do?' methodology describes the process of identifying postdoctoral researchers in universities www.grad.ac.uk/wdpd