

# West Midlands

The West Midlands produced 8.8% of UK-domiciled PhD graduates and employed 5.8% of the UK PhD workforce in the DLHE survey. The region saw the highest net outflow of PhDs of any region at almost 30%. When compared to the national averages, PhD graduates from West Midlands HEIs had slightly higher unemployment rates and were slightly less likely to gain work outside the UK. 45% of West Midlands PhD graduates remained in the West Midlands for work.

## Key statistics:

The 640<sup>1</sup> UK-domiciled PhD graduates from institutions in the West Midlands made up 8.8% of the UK total:

- 55.5% were male and 44.5% female, close to the UK average of 55% and 45%
- 25% studied part-time, slightly lower than the UK average of 27%
- The most popular subjects were psychology, medicine, biology and chemistry.

Of the 390 (61%) who responded to the 2004 DLHE<sup>2</sup> survey:

- 81.6% entered employment in the UK<sup>3</sup>
- 4.1% were unemployed, higher than the UK average of 3.2%
- 6.4% continued their careers overseas compared to 8.1% across the UK.

Of the 320 PhD graduates from West Midlands HEIs who entered employment in the UK:

- 44.5% entered the education sector, predominantly in higher education
- 16.9% were employed in manufacturing and 19.5% in the health sector
- 48% remained in the West Midlands and 52% moved to other regions of the UK.

The West Midlands employed 240 (5.8%) of the UK-domiciled PhD graduate workforce:

- 65% gained their PhD at West Midlands institutions
- 35% moved to the West Midlands from other regions of the UK
- 46.7% were employed in the education sector: 52% as postdoctoral researchers; 32% in university teaching roles, primarily as lecturers
- 24% of all PhD graduates working in the West Midlands were employed as postdoctoral researchers.

The West Midlands was a net exporter (-29.7%) of UK-domiciled PhD graduates:

- PhD graduates who left the West Midlands for work were most likely to move to the South East, London, the East and South West
- The West Midlands attracted 6% 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 East, North West, Wales and East Midlands and to work in the education (34%), manufacturing (15%) or health (14%) sectors.

## Overview of West Midlands higher education institutions<sup>4</sup>

There are 12 higher education institutions in the West Midlands: eight universities and four higher education colleges. The higher education student population is almost 130,000 full-time equivalent (FTE) students. The University of Birmingham is the largest in the region with over 24,000 student FTEs.

Just over 3% of students in the region were registered for postgraduate research degrees, predominantly at the institutions with a substantial research income – the Universities of Birmingham and Warwick (see Table One).

Higher education institution	Final year PhD numbers
The University of Birmingham	555
The University of Warwick	280
The University of Keele	75
Aston University	65
Coventry University	30
Staffordshire University	25
The University of Wolverhampton	20
University of Central England in Birmingham	20
University College Worcester	5
Total	1075

**Table One: Final year PhD researchers by HEI in the West Midlands<sup>5</sup>**

The research strengths of the institutions in the West Midlands, derived from the results of the 2001 Research Assessment Exercise (RAE)<sup>6</sup> are reflected in Figure One. Further analysis of the RAE results shows that 53% of submissions from the regions' institutions were rated at 4 or above, with over a third (37%) scoring the highest ratings of 5 and 5\* – the highest proportion of any UK region. These top rated departments are across the subject spectrum indicating the broad range of research expertise in the region.

<sup>1</sup> Note that all figures are rounded to the nearest 5 for data protection

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

<sup>3</sup> 72.7% are classified as 'working in the UK'; 8.9% are 'working and studying in the UK'. The data in on employment throughout WDPDR includes both classifications

<sup>4</sup> HEFCE 2004 Regional Profiles: West Midlands

<sup>5</sup> These figures were 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](http://www.hesa.ac.uk/pi/0203/research.htm)

<sup>6</sup> Data set available at [www.hero.ac.uk/rae/Results](http://www.hero.ac.uk/rae/Results)

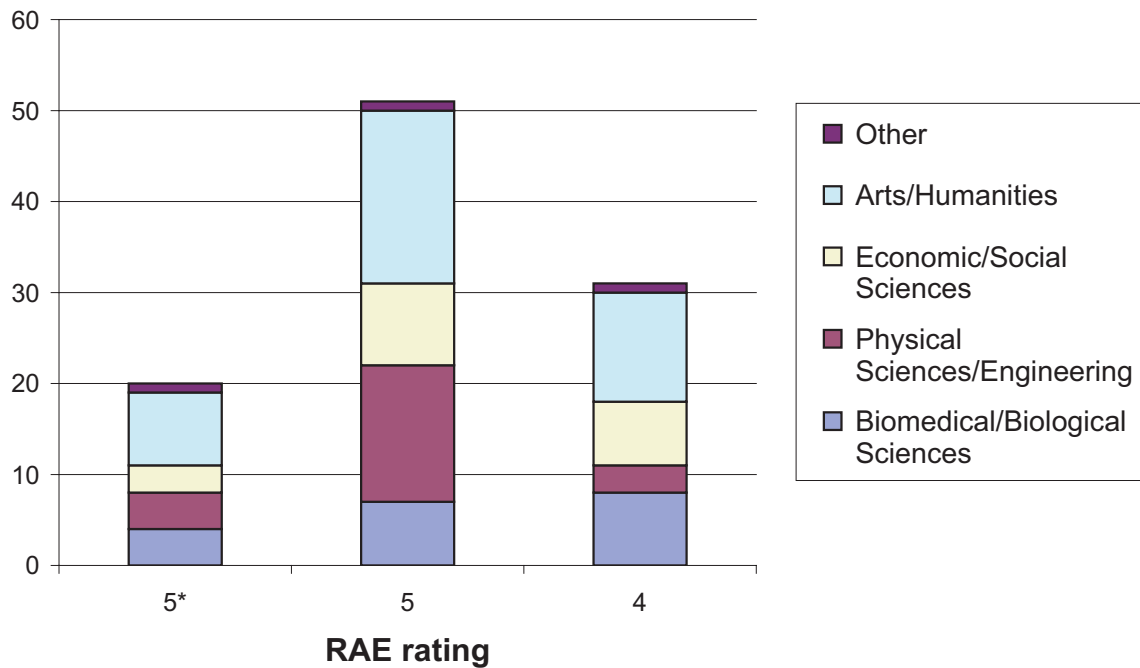


Figure One: Research subjects of top graded RAE submissions in the West Midlands

### Economic strengths

Unemployment in the West Midlands stands at 5.8%<sup>7</sup>, which is higher than the English average of 4.8%. The region is the heart of UK manufacturing and this sector makes a larger contribution to the local economy than it does in any other UK region. Over 20% of everyone in employment in the West Midlands work in the manufacturing sector, compared with just over 15% nationally.

The West Midlands development agency, Advantage West Midlands<sup>8</sup>, is keen to build upon the West Midlands' long standing reputation for innovation and creativity. A survey by the European Commission<sup>9</sup> places the West Midlands at the top of the league of innovating regions, with 52% of companies reporting innovative activity. Future development in the birthplace of the industrial revolution aims to exploit the existing industrial strengths and to promote high technology enterprises.

Advantage West Midlands is developing Business Clusters<sup>10</sup> to exploit existing industry strengths and promote emerging opportunities. These are based in a range of industrial sectors including information and communication technologies,

environmental technologies and medical technologies. However, the Business Enterprise R&D Survey, conducted by the Office of National Statistics<sup>11</sup>, reported that in 2002, the gross domestic expenditure on research and development (R&D), as a percentage of Total Gross Value Added, was 1.3% for the West Midlands, compared to 2.0% for the UK as a whole.

### Profile of PhD graduates from West Midlands

Of the 7270 UK-domiciled PhDs who graduated in the UK in 2003, 8.8% (640) graduated from higher education institutions in the West Midlands. Of these PhD graduates, 44.5% were female and 55.5% male, a similar proportion to the UK average of 45% and 55%. Part-time study was slightly less common in the West Midlands than in the rest of the UK, accounting for 25% of degrees awarded, compared to the UK average of 27%.

Figure Two shows the breakdown of PhD graduates by subject groups. Most subject groupings are similar to the UK average figures. Slightly more PhD graduates came from the biosciences (14.1% compared to 12.4%) and medical (27.3% compared to 26.9%) subjects and slightly fewer from the physical sciences (28.9% compared to 32%).

<sup>7</sup> HEFCE 2004 Regional Profiles: West Midlands

<sup>8</sup> [www.advantagewm.co.uk/](http://www.advantagewm.co.uk/)

<sup>9</sup> European Commission 'Community Innovation Survey – Innovative Activity'

<sup>10</sup> [www.advantagewm.co.uk/business-clusters.html](http://www.advantagewm.co.uk/business-clusters.html)

<sup>11</sup> [www.statistics.gov.uk/](http://www.statistics.gov.uk/); also useful is 'Regional Competitiveness and State of the Regions' by Mukund Lad at [www.dtiStats.net/sd/rci/](http://www.dtiStats.net/sd/rci/)

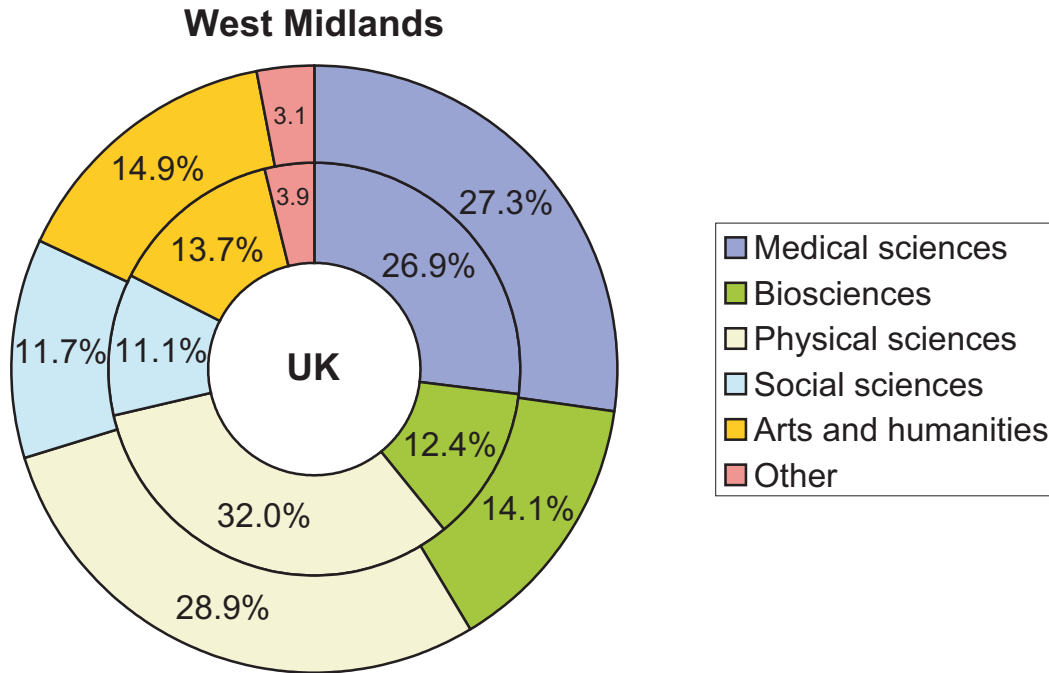


Figure Two: Subject groups of all UK-domiciled PhD graduates from HEIs in the West Midlands (outer ring) compared to all UK HEIs (inner ring) in 2003

The list of 'top ten' subjects for PhD graduates from the West Midlands (Table Two) shows parallels with those seen in the UK table. Psychology was the most popular research subject in the region, followed by biology, clinical medicine and chemistry. In contrast to the UK top table, general engineering and business studies appear in the region's top subjects.

Subject and ranking	West Midlands	Total (and position) in UK
1. Psychology	8.9%	7.6% (3)
2. Biology	5.2%	5.2% (4)
3. Clinical medicine	4.1%	8.2% (1)
4. Chemistry	3.4%	7.7% (2)
5. Physics	3.0%	4.4% (5)
6. Academic studies in education	2.3%	3.1% (6)
7. General engineering	2.3%	2.0% (15)
8. Molecular biology, biophysics and biochemistry	2.2%	2.5% (10)
9. Pharmacology, toxicology and pharmacy	2.0%	2.9% (7)
10. Business studies	1.0%	2.1% (14)

Table Two: Top subjects that were studied by PhD graduates in West Midlands universities with comparisons to UK figures

### What do PhDs from the West Midlands do?<sup>12</sup>

Of the 640 UK-domiciled PhD graduates from West Midlands higher education institutions in 2003 eligible for the 2004 survey, 390 responded. This response rate (57%) is lower than the UK average (66%) and is one of the lowest response rates of any region.

Figure Three summarises the responses to the DLHE survey. 72.7% of UK-domiciled PhD graduates from West Midlands institutions had entered the workplace when the survey was conducted, echoing the overall UK figure of 73%. A further 6.4% were engaged in work and study simultaneously – lower than the UK average of 8%. Fewer PhD graduates moved overseas (6.4%) than for the UK as a whole (8%). At 4.1%, the unemployment rate for UK-domiciled PhD graduates from institutions in the region was higher than the UK average of 3.2%.

<sup>12</sup> The data in this section refers to PhD graduates from West Midlands HEIs who were working in all regions of the UK

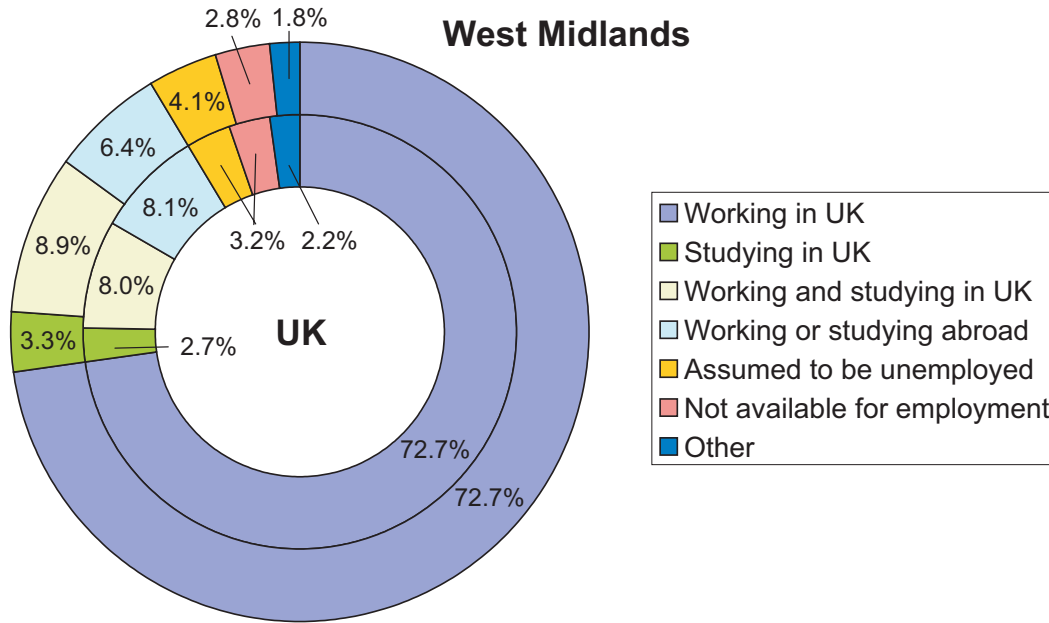


Figure Three: First destinations of UK-domiciled PhD graduates for all subjects from HEIs in the West Midlands (outer ring) compared to all UK HEIs (inner ring) from 2004 DLHE survey responses.

### Employment sectors

The 81.6% of PhD graduates from West Midlands HEIs 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%, predominantly in higher education.

The balance (55.5%) were employed in a range of sectors, and as Figure Four illustrates, there are only small differences compared to the UK average figures.

At 16.9% the manufacturing industries employed a slightly higher proportion of West Midlands PhD graduates than the UK average (16.3%). This sector is dominated by the chemical and pharmaceutical industries; accounting for 73% of those employed in this sector, or 12.5% of all West Midlands PhD graduates (compared to a national figure of 11%).

The health service employed significantly more PhD graduates from the West Midlands universities (19.5%) compared to 15.5% from across the UK. Slightly fewer were employed by business, finance and IT industries and the public sector. A variety of other employment sectors accounted for the remaining 6.9% of PhD graduates.

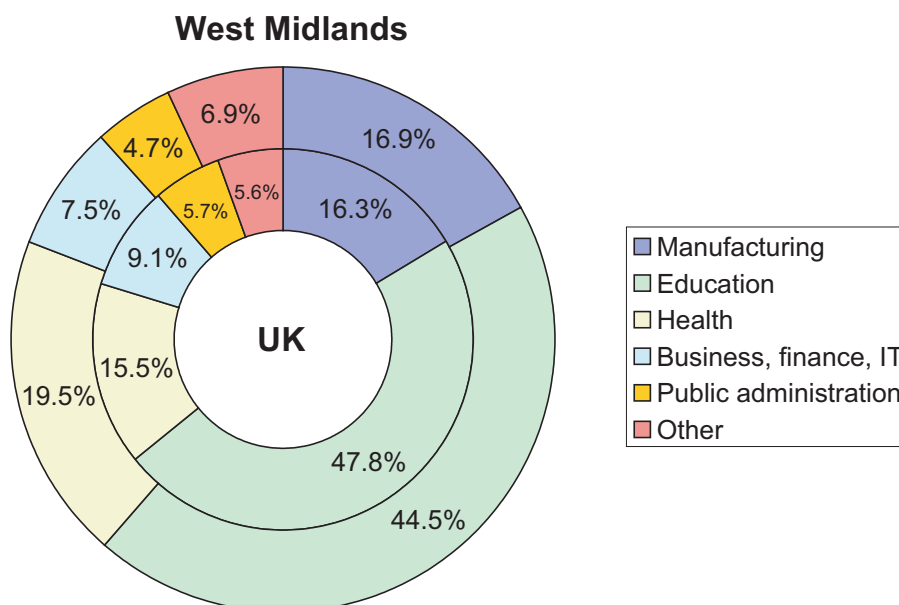


Figure Four: Employment sectors entered by UK-domiciled PhD graduates from West Midlands HEIs (outer ring) compared to all UK HEIs (inner ring), based on Standard Industrial Classifications returned in 2004 DLHE survey.

### Career occupations

We examined the specific occupations entered by PhD graduates from West Midlands HEIs. As the previous employment sector analysis might suggest, there are strong similarities with the UK average figures.

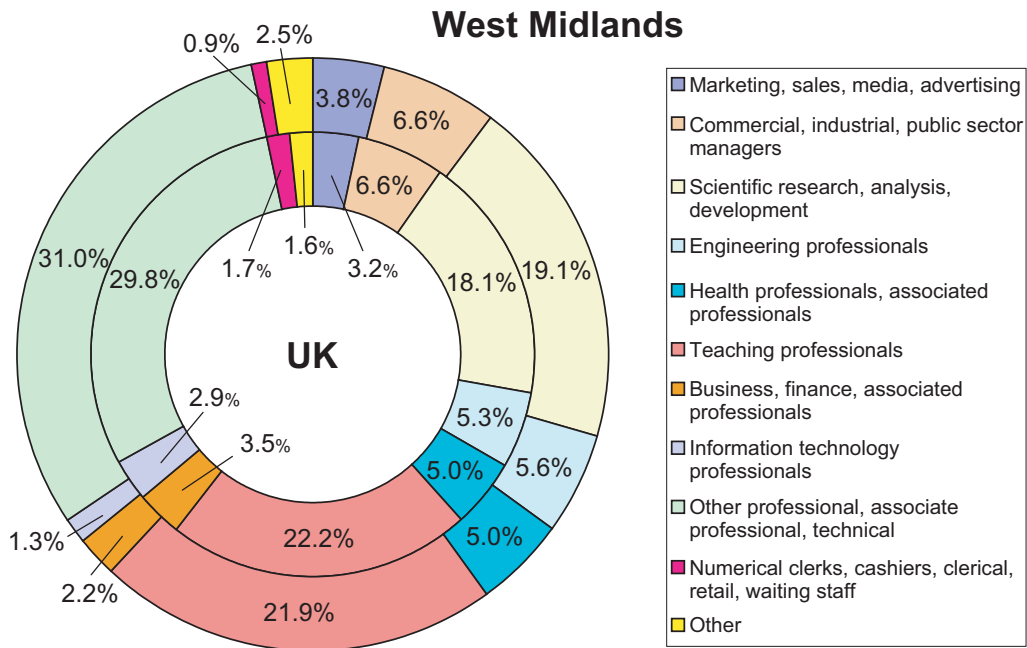


Figure Five: Types of work entered by UK-domiciled PhD graduates from HEIs in the West Midlands (outer ring) compared to all UK HEIs (inner ring), based on Standard Occupational Classifications returned in 2004 DLHE survey

All of the occupational categories are within 2% of the average UK figures. However, the greatest proportional differences are in IT professionals (1.3% compared to 2.9% across the UK) and business, finance and associated professionals (2.2% compared to 3.5% across the UK). The professions more popular than the UK average were scientific research (19.1% compared to 18.1%) and the other professions including psychologists and postdoctoral researchers (31% compared to 29.8%).

### Migration

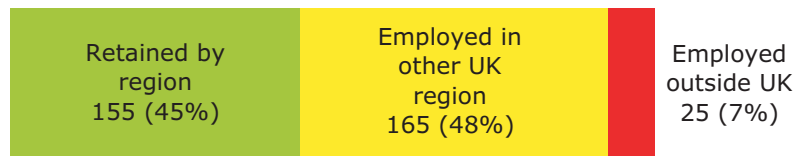
We examined the migration patterns of UK-domiciled PhD graduates from the West Midlands’s HEIs who were in employment at the time of the survey, shown in Figure Six. In common with most regions, the West Midlands saw a net loss of PhD graduates with 29.7% less starting work in the region than the total number of PhD graduates from the region. This is the highest proportional difference of any region in the UK<sup>13</sup>. 165 PhD graduates (48% of total employed) left the West Midlands for employment in other regions in the UK. This proportion is significantly higher than the average figure for all regions of 38%. PhD graduates from the West Midlands moved across the UK with the South East and London most popular, each attracting 7%. Other popular regions were the South West, East and North West<sup>14</sup>.

Another 25 PhD graduates (7% of total employed) left the West Midlands for work or work and study abroad: lower than the UK average of 9%.

<sup>13</sup> 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.

<sup>14</sup> Data protection prohibits a full analysis of region to region migration.

**(a) PhDs graduating from West Midlands**



**(b) PhDs employed in West Midlands**



Figure Six: Mobility of West Midlands PhD graduates in employment (a) and origin (region of study) of PhD graduates working in the West Midlands (b)

**What do PhD graduates employed in the West Midlands do?<sup>15</sup>**

155 UK-domiciled PhD graduates from West Midlands HEIs were working in the region at the time of the survey, representing 64% of the total working in the region. They were joined by 85 UK-domiciled PhD graduates from other regions in the UK who gained employment in the West Midlands. Within this cohort, small numbers came from each of the other UK regions, but the South East provided the most substantial number (7% of those employed in the region) along with the North West (6%), Wales (5%) and East Midlands (5%). In total, 6% of all UK-domiciled PhD graduates who left their regions of study for known UK locations moved to the West Midlands.

**Employment sectors**

The employment sectors for all UK-domiciled PhD graduates employed in the West Midlands are compared to the national picture in Figure Seven. As with all other regions, and in line with the national average, education was the largest single employment sector in the region. Surprisingly, given the predominance of the manufacturing sector in the West Midlands, this sector employed significantly less PhD graduates (11.6%) compared to the UK average of 16.3%. Conversely, the health sector employed significantly more (20.7% compared to 15.5%). The other employment sectors of business, finance and IT, public administration and other professions employed similar percentages of PhD graduates in the West Midlands as the UK average.

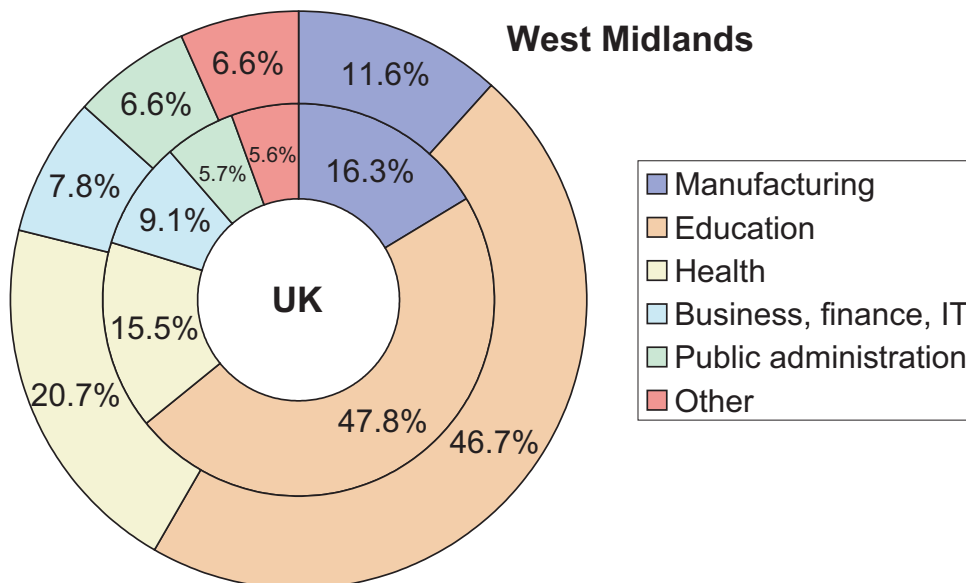


Figure Seven: Employment sectors entered by UK-domiciled PhD graduates employed in the West Midlands (outer ring) compared to all UK regions (inner ring), based on Standard Industrial Classifications returned in the 2004 DLHE survey

<sup>15</sup> The data in this section refers to PhD graduates from all regions of the UK who were working in the West Midlands

Like many regions, the education sector employed the highest proportion of the 85 PhD graduates moving into the West Midlands (34%) followed by manufacturing (15%) and health (14%). The business and finance public sectors employed 12% and 13% respectively.

### Career occupations

We examined the specific occupations entered by PhD graduates employed in the West Midlands. The picture is quite different to the UK as a whole, as outlined in Figure Eight. The largest difference occurs in the 'other professionals' category (35.1% compared to 29.8% across the UK), which includes most postdoctoral researchers and reflects the dominance of the higher education sector as an employer of PhD graduates in the region. Of those employed in the education sector, 45% were employed as university teaching staff and 35% as postdoctoral researchers<sup>16</sup>. Overall, 24% of the PhD graduates working in the West Midlands are identifiable as postdoctoral researchers, slightly higher than the UK average of 22%.

Compared to the national averages, the West Midlands employed a higher proportion of PhD graduates as engineering and health professionals, but fewer in teaching, scientific research, IT and business, finance and associated professionals.

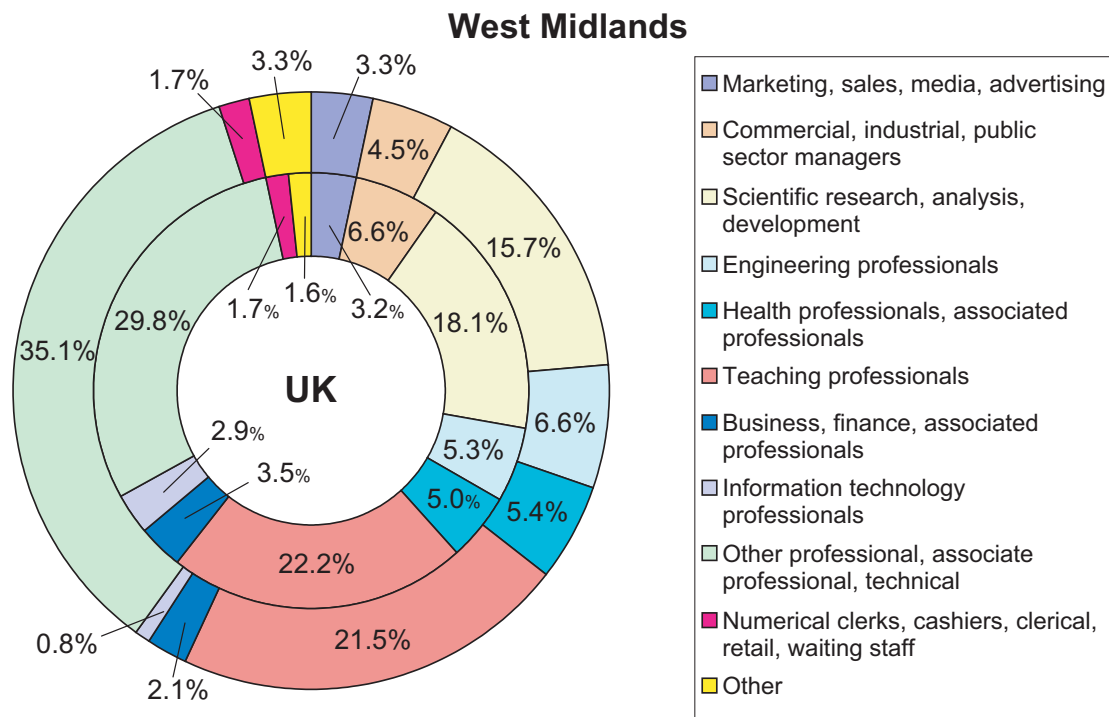


Figure Eight: Types of work entered by UK-domiciled PhD graduates employed in the West Midlands (outer ring) compared to all UK regions (inner ring), based on Standard Occupational Classifications returned in 2004 DLHE survey

<sup>16</sup> 'What Do PhDs Do?' methodology describes the process of identifying postdoctoral researchers in universities [www.grad.ac.uk/wdps](http://www.grad.ac.uk/wdps)