

# Profile of UK PhD graduates by region

This chapter presents an overview of the profile of UK-domiciled PhD graduates by region, with variations by gender balance and mode of study. It explores the popularity of subject areas in each of the regions. It then looks at the employment rates and the principle employment sectors for UK-domiciled PhD graduates working in the UK by their region of study. Finally, it presents the employment sectors for PhD graduates leaving the UK for work.

## Key Facts:

There were 7270<sup>1</sup> UK-domiciled PhD graduates from UK institutions in 2003:

- 55%<sup>2</sup> were male and 45% female, with significant regional variations
- 27% studied part-time, with large regional variations from 15% to 38%
- The most popular subjects were medicine, chemistry, psychology and biology, also with regional variations.

Of the 4695 who responded to the 2004 DLHE<sup>3</sup> survey:

- 80.7%<sup>4</sup> entered employment in the UK, with regional variations from 76.4% to 85.5%
- 3.2% were unemployed, with regional variations from 1.4% to 5.1%
- 8.1% continued their careers outside the UK, with regional variations ranging from 4.7% to 12.2%.

Of the 3765 UK-domiciled PhD graduates who entered employment in the UK:

- 47.8% entered the education sector, with relatively small variations across the regions of the UK
- 16.3% were employed in manufacturing, 15.5% in health, 9.1% in business, finance and IT and 5.7% in public administration. These sectors saw more considerable variations across the regions.

Of the 390 UK-domiciled PhD graduates who left the UK for work or work and study:

- 59.1% were employed in the education sector, predominantly higher education
- 25.7% were employed in manufacturing, and 6.7% in the health sector, with the other employment sectors accounting for the remaining 8.5%.

## Who responded to the survey?

The DLHE questionnaire is sent to all PhD graduates whose home domicile is within the EU. Non-EU international researchers are excluded from the survey. For the purpose of this analysis EU researchers domiciled outside of the UK have been excluded. The overall response rate for UK domiciled PhD graduates was 65% and representative in terms of gender, type of study and subject area. Response rates for each region are given in Table One.

Region	Percentage of total PhD graduates	Number of PhD graduates	Number of respondents	% response rate
North East	4.0%	295	180	61.0
North West	8.1%	590	415	70.3
Yorkshire & The Humber	9.6%	695	375	54.0
East Midlands	6.6%	480	290	60.4
West Midlands	8.8%	640	390	60.9
East	9.4%	680	485	71.3
London	10.9%	790	495	62.7
South East	16.8%	1220	730	59.8
South West	6.0%	435	325	74.7
Scotland	10.9%	795	550	69.2
Wales	5.2%	380	255	67.1
Northern Ireland	3.6%	265	205	77.4
UK Total	100.0%	7270	4695	64.6

**Table One: Response to the DLHE survey: UK-domiciled PhD graduates only**

<sup>1</sup> All figures quoted in WDPDR are rounded to the nearest five for data protection

<sup>2</sup> The regional male / female proportions are rounded to the nearest percent

<sup>3</sup> Destination of Leavers from Higher Education – a survey of all UK and EU first and higher degree graduates

<sup>4</sup> 72.7% are classified as 'working in the UK'; 8.0% are 'working and studying in the UK'. The data throughout WDPDR on employment includes both classifications

## Overview of PhD graduates from the regions

The higher education institutions in the UK produced 12520 PhD graduates in 2003. Of these, 7270 (58%) were UK-domiciled. Table Two shows a regional breakdown of these PhD graduates and includes their gender balance and the proportion that studied part-time.

Region of origin	Number of PhD graduates	Proportion of UK total (%)	Male/Female ratio (%)	Proportion part-time (%)
North East	295	4.1	58 / 42	38
North West	590	8.1	52 / 48	29
Yorkshire and the Humber	695	9.6	55 / 45	26
East Midlands	480	6.6	62 / 38	36
West Midlands	640	8.8	55 / 45	25
East	680	9.4	62 / 38	15
London	790	10.9	50 / 50	37
South East	1220	16.8	57 / 43	25
South West	435	6.0	55 / 45	31
Scotland	795	10.9	52 / 48	21
Wales	380	5.2	56 / 44	16
Northern Ireland	265	3.6	55 / 45	36
UK Total	7270	100.0	55 / 45	27

**Table Two: Breakdown of PhD graduates from institutions in the UK regions in 2003**

The South East produced the greatest number of PhD graduates (1220, 16.8% of the total). This region was followed by Scotland (795, 10.9%), London (790, 10.9%), Yorkshire and the Humber (695, 9.6%) and the East of England (680, 9.4%). These five regions account for well over half the total number of PhD graduates and contain a high proportion of research-active institutions including 10 of the 19 members of the Russell Group<sup>5</sup> of research-driven institutions.

### Gender balance

The national male to female ratio for UK-domiciled PhD graduates in 2003 was 55% and 45%. The regional breakdown presented in Table One shows that this ratio varied significantly across the regions. For example, females accounted for just 38% of the UK-domiciled PhD graduates from HEIs in the East of England and the East Midlands. However, in London, they accounted for 50% of the PhD graduates.

These differences in gender balance between regions can be rationalised by considering the discipline variations discussed below (Table Two). For instance, the East Midlands produced the highest proportion of PhD graduates from the physical sciences, which have the lowest percentage of female PhD graduates (25.8%) compared to other disciplines. Conversely, London has the highest proportion of PhD graduates from the medical and biosciences: subject groupings that have the highest percentage of female PhD graduates (57%).

### Mode of study

Across the UK, 27% of all UK-domiciled PhD graduates studied for their qualification part-time. However, within the regions there was significant variation. Part-time study was more common in London, the North East, East Midlands and Northern Ireland, accounting for 36% to 38% of PhD graduates from these regions. The East of England and Wales had the lowest proportion of those who studied part-time at 15% and 16%, respectively.

Although it is difficult to fully rationalise these figures, it is likely that some of these variations in mode of study are associated with the profile of the institutions in a region. For example the figures for the East of England are dominated by PhD graduates from the University of Cambridge, which only recently started accepting registrations for part-time PhD study.

### Popularity of subject groups by region

The discipline breakdown presented in 'What Do PhDs Do?' gave four subject areas – biomedical and biological sciences (including all clinical and medical subjects), physical sciences (including engineering), social sciences, and arts and humanities. Following feedback from the sector for WDPDR we have further broken down the biomedical and biological sciences into two subject groups, medical sciences and biosciences, to allow a better understanding of the different employment trends of both groups.

A regional analysis of PhD graduates by these five subject groups shows that there are significant variations compared to the UK average. In Table Three the top three regions for each subject group are highlighted. Institutions in London produced the most medical science PhDs (40.7% compared to 26.9% across the UK). Scotland had the highest proportion of PhD graduates from the biosciences (16.3% compared to 12.4%) and the East Midlands produced the greatest proportion of physical scientists and engineers (40.7% compared to 32%). The North West produced the highest proportion of social scientists (15.1% compared 11.1%). Finally, the East was the region with the highest proportion of PhD graduates in the arts and humanities (20.6% compared to 13.7% across the UK).

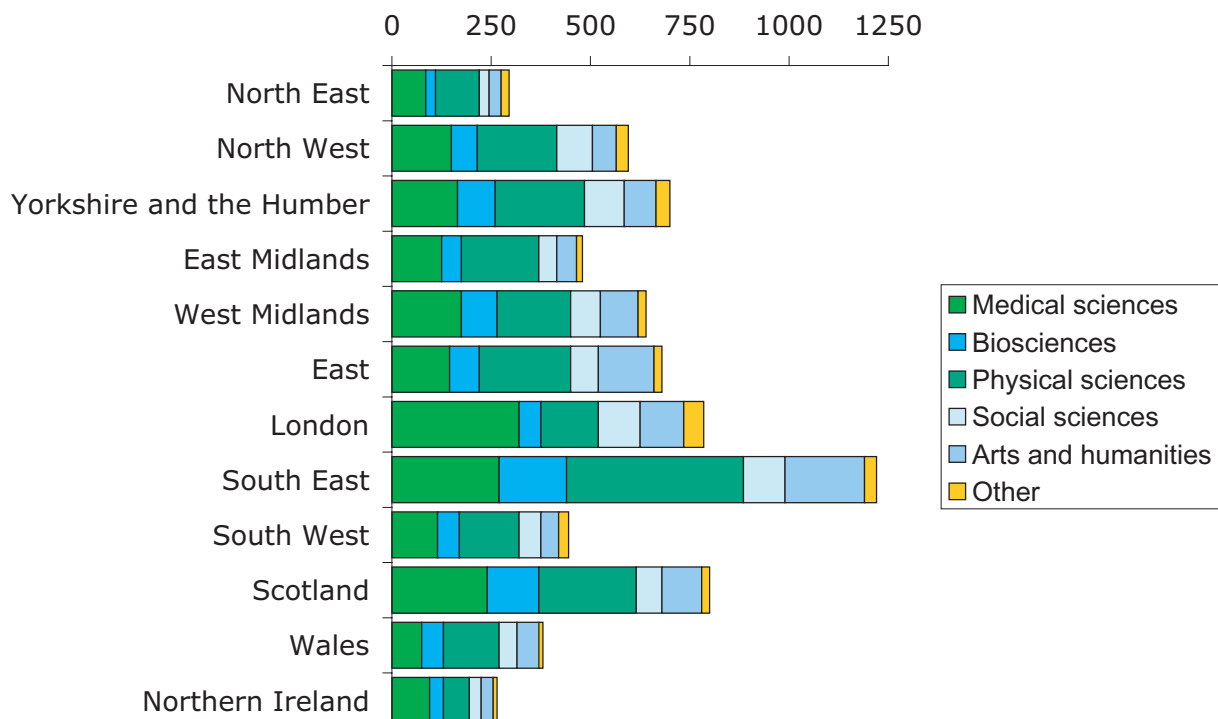
<sup>5</sup> The Russell Group consists of 19 research-led institutions, [www.russellgroup.ac.uk](http://www.russellgroup.ac.uk)

<sup>6</sup> What Do PhDs Do? 2004, p5, Table two: gender breakdown for UK-domiciled PhD graduates across subject groups, [www.grad.ac.uk/wdpp](http://www.grad.ac.uk/wdpp)

Region of origin	Subject groups (%), top three regions are highlighted					
	Medical sciences	Bio-sciences	Physical sciences	Social sciences	Arts and Humanities	Other
North East	28.8	8.5	<b>37.2</b>	8.5	10.2	6.8
North West	25.2	10.9	33.6	<b>15.1</b>	10.1	5.1
Yorkshire and the Humber	23.6	13.6	32.1	<b>14.3</b>	11.4	5.0
East Midlands	26.0	10.4	<b>40.7</b>	9.4	10.4	3.1
West Midlands	27.3	14.1	28.9	11.7	<b>14.9</b>	3.1
East	21.3	11.0	33.8	10.3	<b>20.6</b>	3.0
London	<b>40.7</b>	7.0	18.5	<b>13.4</b>	14.0	6.4
South East	22.1	<b>13.9</b>	36.5	8.6	<b>16.4</b>	2.5
South West	25.8	12.4	33.7	12.4	10.1	5.6
Scotland	<b>30.0</b>	<b>16.3</b>	30.6	8.1	12.5	2.5
Wales	19.7	<b>14.5</b>	<b>36.9</b>	11.8	14.5	2.6
Northern Ireland	<b>35.9</b>	13.2	24.5	11.3	11.3	3.8
UK Total	26.9	12.4	32.0	11.1	13.7	3.9

**Table Three: Subject groups of UK-domiciled PhD graduates from institutions in the UK regions expressed as a percentage of the total from each region**

Figure One compares the total numbers of UK-domiciled PhD graduates by region by subject group. Although the South East cannot claim the highest proportion of PhD graduates in any subject grouping, as Figure One illustrates, it produced the largest number of PhD graduates in the biosciences, physical sciences and arts and humanities. London and the South East jointly produced the largest number of social science PhD graduates, closely followed by Yorkshire and the Humber. London produced the highest number of medical science PhD graduates.



**Figure One: Subject groups of UK-domiciled PhD graduates from the UK regions**

More information on the popularity of the subjects studied is given in the regional chapters.

## Employment rates of PhD graduates from the UK regions

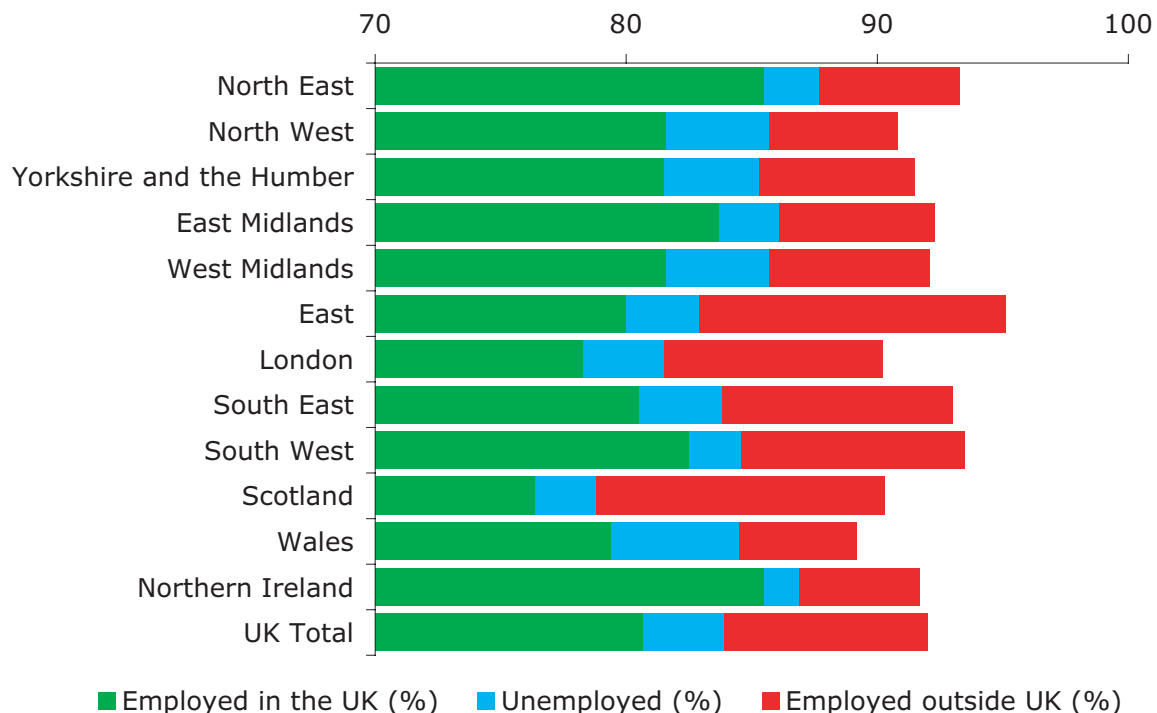
Of the 7270 UK-domiciled PhD graduates in 2003 from UK higher education institutions who were eligible for the HESA survey, 4695 (65%) responded. Overall 80.7% were employed in the UK (72.7% of the respondents had started work and 8% were engaged in work and study). 8.1% of the UK-domiciled PhD graduates had moved abroad for employment and the average unemployment rate amongst all respondents was 3.2%. Table Four and Figure Two provide an overview of the regional variations.

Region of origin	Number of respondents	Employed in the UK (%)	Unemployed (%)	Employed outside UK (%)
North East	180	<b>85.5</b>	2.2	5.6
North West	415	81.6	<b>4.1</b>	5.1
Yorkshire and Humber	375	81.5	3.8	6.2
East Midlands	290	<b>83.7</b>	2.4	6.2
West Midlands	390	81.6	<b>4.1</b>	6.4
East	485	80.0	2.9	<b>12.2</b>
London	<b>495</b>	78.3	3.2	8.7
South East	<b>730</b>	80.5	3.3	<b>9.2</b>
South West	325	82.5	2.1	8.9
Scotland	<b>550</b>	76.4	2.4	<b>11.5</b>
Wales	255	79.4	<b>5.1</b>	4.7
Northern Ireland	205	<b>85.5</b>	1.4	4.8
UK Total	4695	80.7	3.2	8.1

**Table Four: Regional analysis of employment rates for PhD graduates who responded to the 2004 DLHE survey, with the top three highlighted in each case**

The employment rates<sup>7</sup> range from 85.5% for graduates from institutions in the North East and Northern Ireland to 76.4% for graduates from HEIs in Scotland. The largest single region, the South East was close to the UK average at 80.5%. In terms of a proportional deviation from the average, these regional variations are not large.

The regional unemployment rates display proportionally larger variations, with the highest unemployment rates being for PhD graduates from Welsh institutions (5.1%), the North West and West Midlands (both 4.1%). The lowest unemployment rates were for PhD graduates from Northern Ireland (1.4%), the South West (2.2%).



**Figure Two: Proportions of UK-domiciled PhD graduates in employment in the UK, unemployed and employed outside the UK**

<sup>7</sup> Throughout WDPDR employment statistics include the classification 'working in the UK' and 'working and studying in the UK'

The proportion of PhD graduates from the regions that continued their careers outside the UK also varied from region to region. PhD graduates from institutions in Wales and Northern Ireland were the least likely to move outside the UK (4.7% and 4.8% respectively). In contrast, 12.2% of PhD graduates from institutions in the East England continued their careers overseas, compared to a UK total of 8.1%.

### Employment sectors of regional PhD graduates working across the UK<sup>8</sup>

3765 UK-domiciled PhD graduates from the UK regions were in employment across the UK at the time of the 2004 DLHE survey. There were significant variations between the regions in terms of the employment sectors entered by their PhD graduates, particularly in the relative proportions of the smaller sectors. Table Five and Figure Three provide an overview here. More detail is presented in the regional chapters.

As Table Five shows, the East Midlands produced the highest proportion of PhD graduates who were employed in the manufacturing sector (22% compared to 16.3% across the UK). Although education was the largest employment sector for PhD graduates from institutions in all regions, it was particularly strong for those from Northern Ireland (52.3% compared to the UK average of 47.8%). Northern Ireland also produced the highest proportion of those employed in the health sector (19.9% compared to 15.5% across the UK). The South West produced the highest proportion on those employed in business, finance and IT (11.6% compared to 9.1%), Wales produced the highest proportion of those employed in public administration (10.4% compared to 5.7%) and 'other' sectors (8.9% compared to 5.6% across the UK).

Region of origin <sup>9</sup>	Employment sector (%), top three regions are highlighted					
	Manufacturing	Education	Health	Business, finance, IT	Public Administration	Other
North East	<b>19.5</b>	44.8	16.2	9.1	5.2	5.2
North West	12.3	49.6	<b>19.2</b>	6.9	5.1	6.9
Yorkshire and Humber	14.8	<b>50.0</b>	13.5	<b>10.5</b>	<b>6.9</b>	4.3
East Midlands	<b>24.1</b>	46.9	10.0	9.1	6.6	3.3
West Midlands	16.9	44.5	<b>19.5</b>	7.5	4.7	6.9
East	<b>22.0</b>	49.7	11.8	<b>10.5</b>	3.1	2.9
London	10.7	<b>50.3</b>	18.7	8.3	4.7	7.3
South East	18.2	44.6	17.0	9.4	5.3	5.5
South West	13.1	48.7	14.6	<b>11.6</b>	5.6	6.4
Scotland	17.5	48.2	12.5	9.4	6.2	6.2
Wales	13.9	44.5	12.4	9.9	<b>10.4</b>	8.9
Northern Ireland	10.2	<b>52.3</b>	<b>19.9</b>	5.1	<b>9.1</b>	3.4
UK Total	16.3	47.8	15.5	9.1	5.7	5.6

**Table Five: Percentage of UK-domiciled PhD graduates by employment sector expressed as a total of UK-domiciled PhD graduates from that region in employment across all regions in the UK**

Figure Three illustrates the comparative numbers of PhD graduates by region by employment sector employed across the UK. The South East provided the highest number of PhD graduates employed in all sectors, reflecting the dominance of this region in volume of PhD graduates. The East of England and Scotland provided other notable contributions into the manufacturing sector, whilst other large contributions to the health sector came from London, the North West and West Midlands.

<sup>8</sup> This section refers to UK-domiciled PhD graduates from the regions working in all regions across the UK

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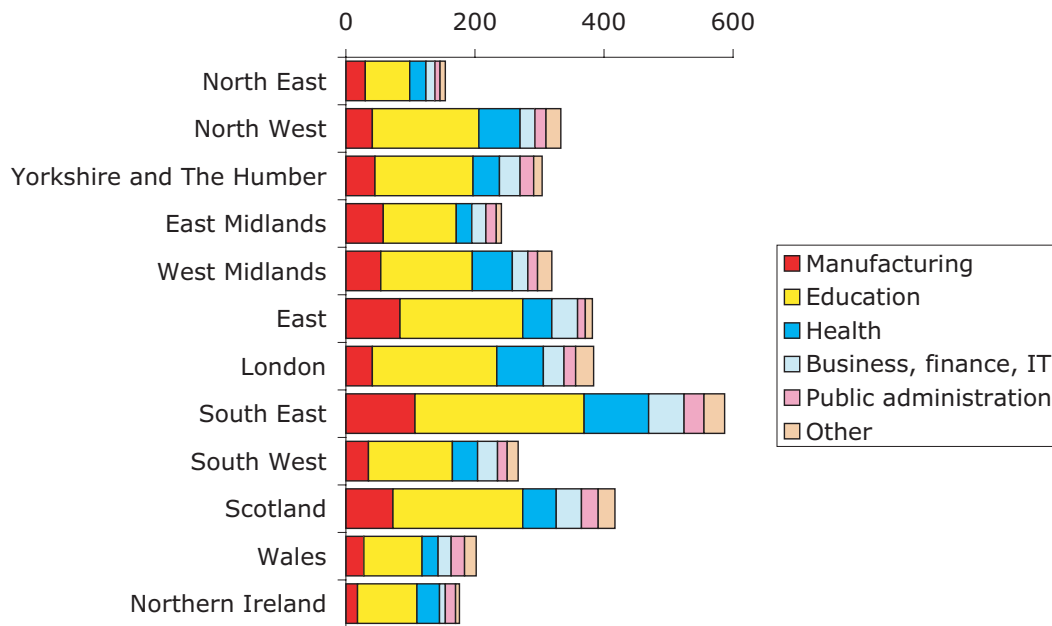


Figure Three. Employment sectors of UK-domiciled PhD graduates from the regions entering into employment across the UK

### Employment sectors for PhD graduates leaving the UK

The 390 UK-domiciled PhD graduates who left the UK for work or work and study were employed in a range of sectors as outlined in Figure Four<sup>10</sup>, which provides a comparison to the figures for those UK-domiciled PhD graduates employed in the UK.

In particular, the education sector is even more dominant in these PhD graduates leaving the UK, and accounts for 59.1% (compared to 47.8% for UK employed PhD graduates). Around half of these are employed as post-doctoral researchers. The manufacturing sector also accounted for a high proportion of PhD graduates leaving the UK for employment, accounting for over a quarter (25.7% compared to 16.3%). All of the other employment sectors represented less than half their normal proportion of the total. Thus the health sector employed just 6.7% of those PhD graduates continuing their careers overseas, business, finance and IT 3.3%, public administration and assorted other sectors 2.6% each.

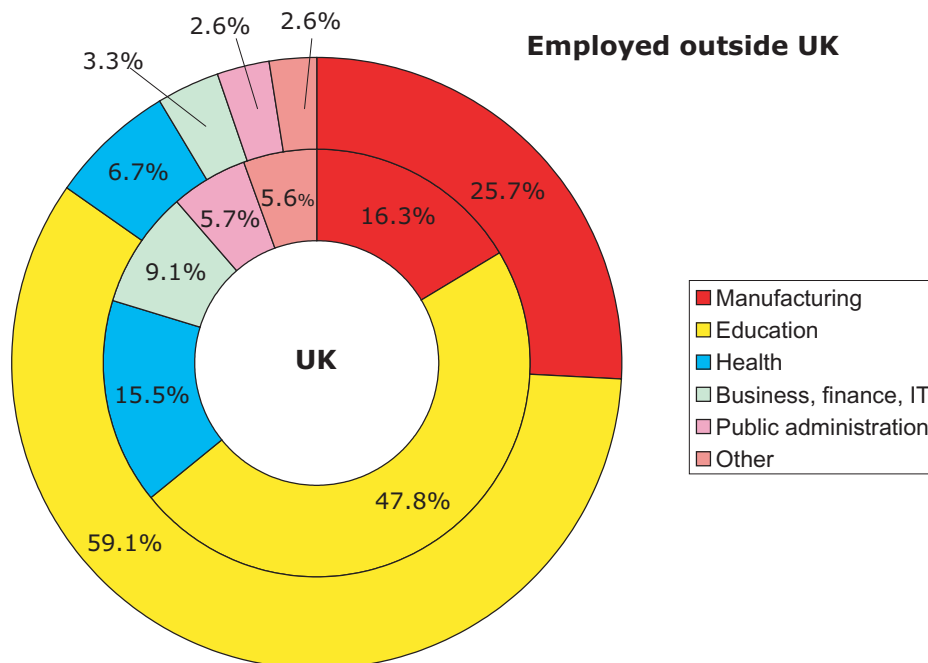


Figure Four: Employment sectors entered by UK-domiciled PhD graduates employed outside the UK (outer ring) compared to UK employed PhD graduates (inner ring), based on Standard Industrial Classifications returned in the 2004 DLHE survey

### Summary

This overview of the regional characteristics of PhD graduates demonstrates that there are significant variations by region in terms of gender balance, mode of study and subject studied. There were also significant variations in the employment sectors entered by PhD graduates from institutions in the regions. These factors influence the UK migration patterns and type of work undertaken by these PhD graduates, as will be explored in more detail in the next chapter.

<sup>10</sup> Only the national picture is presented here. Data protection prohibits us from a full regional analysis of this data