North East England

The North East produced 4% of UK-domiciled PhD graduates and employed 3% of the UK PhD workforce in the DLHE survey. PhD graduates from North East universities were less likely to be unemployed and less likely to move overseas at the start of their careers. Slightly more than half of them (51%) remained in the North East for work.

Key statistics:

The 295[1] UK-domiciled PhD graduates from institutions in the North East made up 4% of the UK total:

- 58% were male and 42% female, compared to the UK average of 55% and 45%
- 38% studied part-time, higher than the UK average 27%
- The most popular subjects were medicine, chemistry, biology and psychology.

Of the 180 (61%) who responded to the 2004 DLHE[2] survey:

- 85.5% entered employment in the UK[3]
- 2.2% were unemployed, lower than the UK average of 3.2%
- 5.6% continued their careers overseas compared to 8.1% across the UK.

Of the 155 PhD graduates from North East institutions who entered employment in the UK:

- 44.8% entered the education sector, predominantly in higher education
- 19.5% were employed in manufacturing and 16.2% in the health sector
- 55% remained in the North East and 45% moved to other regions in the UK.

The North East employed 120 (2.9%) of the UK-domiciled PhD graduate workforce:

- 70% gained their PhD at North East institutions
- 30% moved to the North East from other regions of the UK
- 58% were employed in the education sector: 50% of these as postdoctoral researchers; 38% in university teaching roles, primarily as lecturers
- 29% of all PhD graduates working in the North East were employed as postdoctoral researchers.

The North East was a net exporter (-27%) of UK-domiciled PhD graduates:

- PhD graduates who left the North East for work were most likely to move to the North West, Scotland and the South East
- The North East attracted only 2% 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 Yorkshire, Scotland, the North West and East Midlands and to work in the education (50%) or health (22%) sector.

Overview of North East higher education institutions[4]

There are five universities in the North East, ranging in size from 25,000 students studying at all levels at the University of Northumbria at Newcastle (around 71% full-time) to around 12,000 students at the University of Sunderland. Although there are no higher education colleges in the region, there are 18 further education colleges providing additional higher education courses. Most of the higher education provision is based in the Tyne and Wear area.

Figures from HEFCE for 2003/2004 state that 4.0% of the total student count of 95,968 were enrolled on postgraduate research degree programmes. The only two institutions with a significant number of PhD researchers are the University of Newcastle upon Tyne and the University of Durham.

Higher education institution	Final year PhD numbers
University of Newcastle upon Tyne	280
University of Durham	235
University of Northumbria at Newcastle	15
University of Teesside	10
Total	540

Table One: Final year PhD researchers by HEI in the North East[5]

The research strengths of universities in the North East 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 region's institutions were rated at 4 or above, with more than a third (37%) scoring the highest ratings of 5 and 5*. These top rated departments are across the subject spectrum indicating the broad range of expertise available in the region's institutions. Only the University of Newcastle upon Tyne and the University of Durham derive a significant proportion of their income from research grants.

[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] 74.4% are classified as 'working in the UK'; 11.1% are 'working and studying in the UK'. The data on employment throughout WDPDR includes both classifications
[4] HEFCE 2004 Regional Profiles: North East
[5] 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
[6] Data set available at www.hero.ac.uk/rae/Results

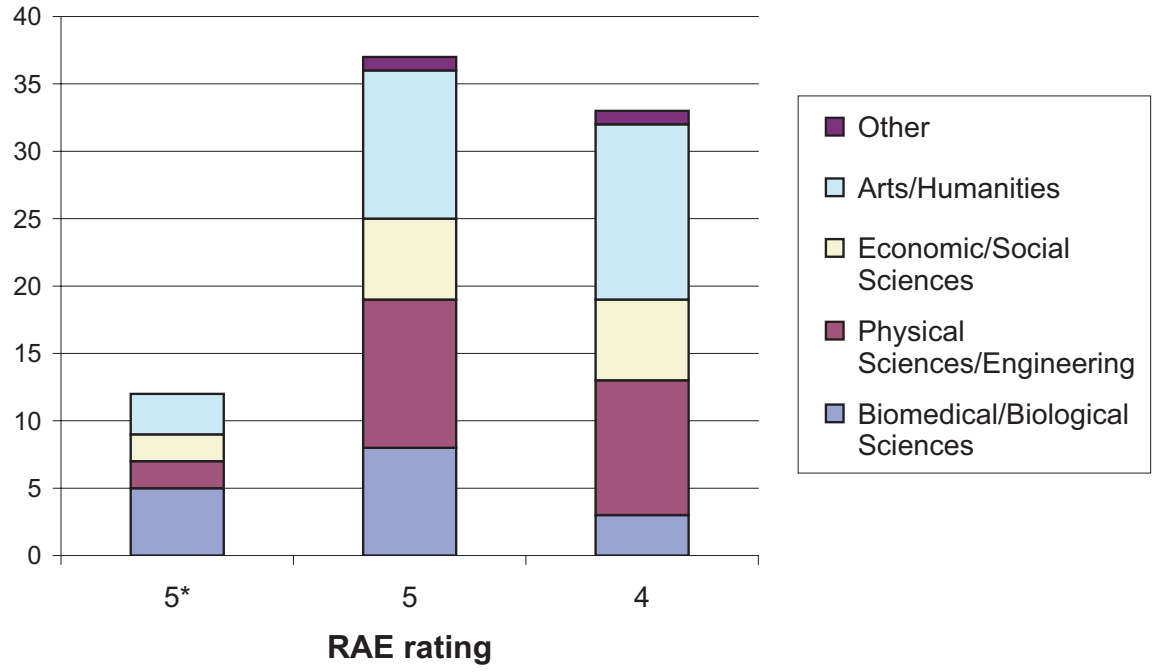

Figure One: Research subjects of top graded RAE submissions in the North East

Economic strengths

The North East has a traditional strength in the manufacturing industries that is still evident. Figures from HEFCE[7] for 2003/2004 report that these industries contribute a higher than average proportion to the regional economy (around 24% compared to the UK average of 19%). Although the region continues to attract inward investment, the North East has higher than average unemployment and only 25% of the labour force is educated to NVQ level four or equivalent, compared to the 29.5% English average.

When compared to other UK regions, levels of Research and Development (R&D) expenditure are low. The Business Enterprise R&D Survey, conducted by the Office of National Statistics[8], reported that in 2002, the Gross Domestic Expenditure on R&D, as a percentage of Total Gross Value Added, was only 0.9% for the North East, compared to 2.0% for the UK as a whole.

To address this, the region is actively promoting and developing research and innovation, which is seen as the basis of future economic strength. Science-based economic development is at the heart of an on-going regeneration strategy, with Newcastle named as one of the UK government's six 'Science Cities'. By 2010 up to 100 new technology-based companies could be set up or attracted to the region creating up to 5000 new jobs. The region's 'Strategy for Success'[9] aims to make the North East a leader in emerging technologies and has already achieved significant increases in research and development expenditure by business and the highest level of technology start-ups for any region.

Profile of PhD graduates from the North East

Of the 7270 UK-domiciled PhDs who graduated in the UK in 2003, 4.0% (295) graduated from North East Higher Education Institutions. Of the UK-domiciled PhD graduates, 42% were female and 58% male – a slight bias towards male researchers when compared with the UK average of 45% and 55%. Part time study was more common in the North East than in other regions, accounting for 38% of degrees awarded, compared to the UK average of 27%.

Figure Two shows the breakdown of PhD graduates by subject groups. More PhD graduates from universities in the North East came from the physical sciences than the UK as a whole (37% compared to 32%), but fewer from the biomedical and biological sciences (8.5% compared to 12%); the arts and humanities (10.2% compared to 14%) and the economic and social sciences (8.5% compared to 11.1%). A slightly larger proportion graduated from the medical sciences (28.8% compared to 27% in the UK). The 6.8% from education and related subjects and combinations of other subjects was also higher than the UK average of 3.9%.

[7] Regional profiles of higher education, HEFCE www.hefce.ac.uk/regions/
[8] www.statistics.gov.uk/; also useful is 'Regional Competitiveness and State of the Regions' by Mukund Lad, available from www.dtistats.net/sd/rci/
[9] www.strategyforsuccess.info

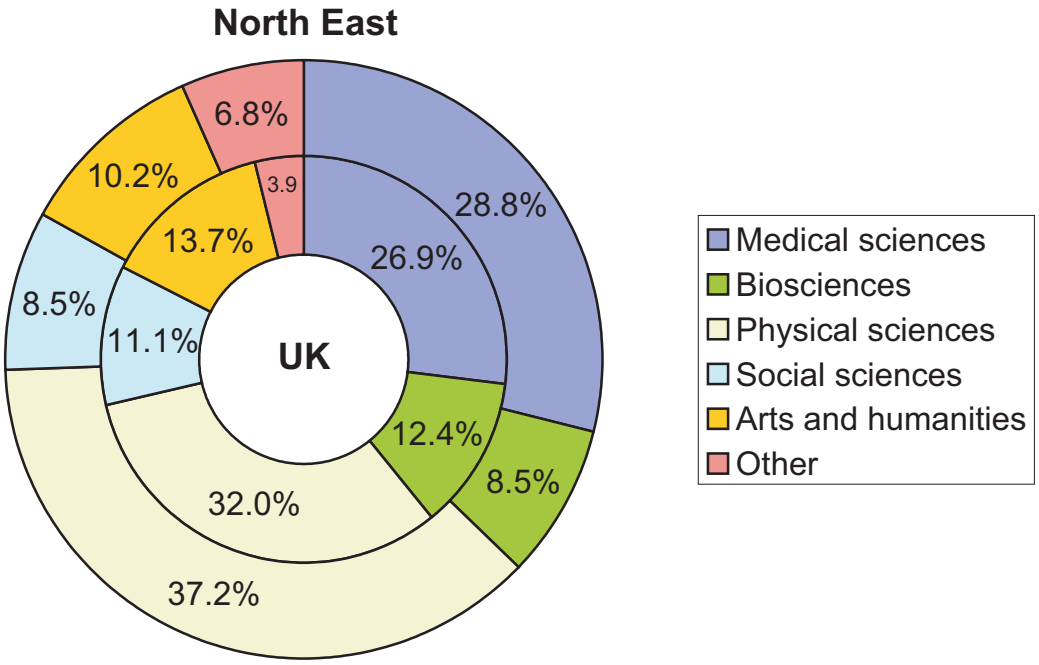

Figure Two: Subject groups of UK-domiciled PhD graduates from North East HEIs (outer ring) compared to all UK HEIs (inner ring) in 2003

The list of the 'top ten' subjects for PhD graduates from the North East HEIs (Table Two) is dominated by the same two subjects found at the top of the UK table: clinical medicine and chemistry. Although there are many consistent subjects in the North East table compared to the UK, the relative proportions are smaller. There are also a few notable differences – agriculture and geology jointly occupy 8th position in the North East, but only 32nd and 29th, respectively, in the national table. Mathematics also appears high in the top ten, compared to 13th place in the UK as a whole.

Subject and ranking	North East	Total (and position) in UK
1. Clinical medicine	8.1%	8.2% (1)
2. Chemistry	7.8%	7.7% (2)
3. Biology	4.4%	5.2% (4)
4. Psychology	3.1%	7.6% (3)
5. Mathematics	3.1%	2.1% (13)
6. Academic studies in education	2.7%	3.1% (6)
7. English studies	2.4%	2.5% (8)
8. Agriculture	2.0%	0.6% (32)
9. History by period	2.0%	2.5% (9)
10. Physics	2.0%	4.4% (5)
11. Geology	2.0%	0.9% (29)

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

What do PhD graduates from the North East do?[10]

Of the 295 UK-domiciled PhD graduates in 2003 from Higher Education Institutions in the North East who were eligible for the 2004 survey, 180 responded (61% response rate).

Over 74% of UK-domiciled PhD graduates from North East institutions had entered the workplace when the survey was conducted, consistent with the overall UK figure of 72.7%. A further 11.1% were engaged in work and study simultaneously – higher than the UK average of 8%. Fewer PhD graduates had moved overseas (5.6%) than for the UK as a whole (8%). Unemployment rates for UK-domiciled PhD graduates from North East institutions were lower than the UK average (3.2%) at just 2.2%.

[10] The data in this section refers to PhD graduates from North East HEIs who were working in all regions of the UK

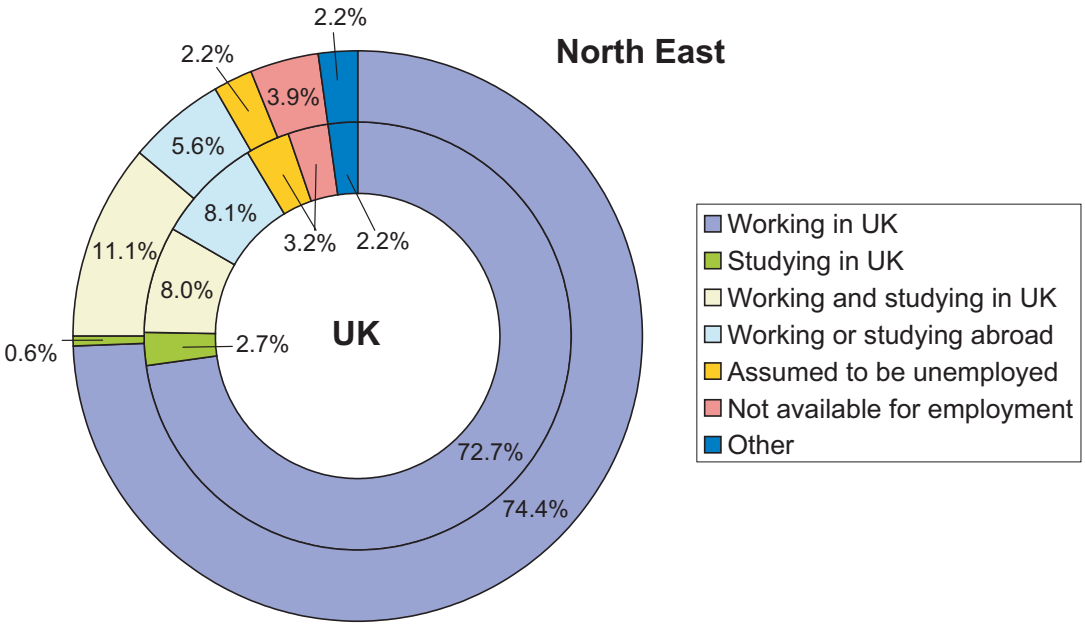

Figure Three: First destinations of UK-domiciled PhD graduates for all subjects from HEIs in the North East (outer ring) compared to all UK HEIs (inner ring) from 2004 DLHE survey responses

Employment sectors

The 85.5% of PhD graduates from North East HEIs working or working and studying in the UK were employed in a range of sectors across the UK. Consistent with the UK average (47.8%), the education sector employed 44.8% of PhD graduates from HEIs in the region, predominantly in higher education.

The balance (55%) were employed in a range of occupations across all sectors, as shown in Figure Four where small differences with the UK picture emerge.

Manufacturing industries employed 19.5% of PhD graduates from the North East, noticeably more than the 16.3% employed across the UK as a whole. 87% of these were employed in the chemical and pharmaceutical industries, i.e. 17% of all North East doctoral graduates (compared to a national figure of 11%).

The other employment sectors of health, business, finance, IT and public administration employed very similar proportions of PhD graduates from North East universities as they did of all UK PhD graduates.

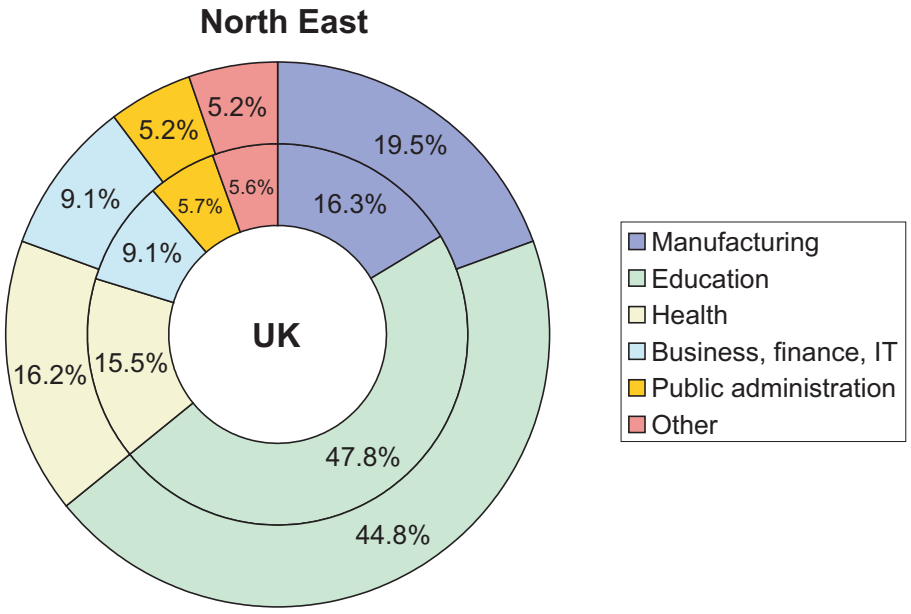

Figure Four: Employment sectors entered by UK-domiciled PhD graduates from North East HEIs (outer ring) compared to all UK HEIs (inner ring), based on Standard Industrial Classifications returned in the 2004 DLHE survey

Career occupations

We examined the specific occupations entered by PhD graduates from North East universities. A similar picture to the UK average emerges with anticipated variations caused by different types of employers and supply of PhD subjects. The most significant difference is in the 'other professionals' category, which includes postdoctoral researchers and psychologists. This reflects the dominance of the education sector as an employer of the region's PhD graduates and 40.9% of the region's PhD graduates worked in these occupations - a substantially higher proportion than the 30% nationally.

Differences also appear in the engineering professions where a smaller number were employed (1.9% of the North East PhD graduates, compared to 5.3% nationally), marketing, sales and media related occupations (1.3% North East c.f. 3.2% UK) and in scientific research and development (14.3% North East c.f. 18.1% UK).

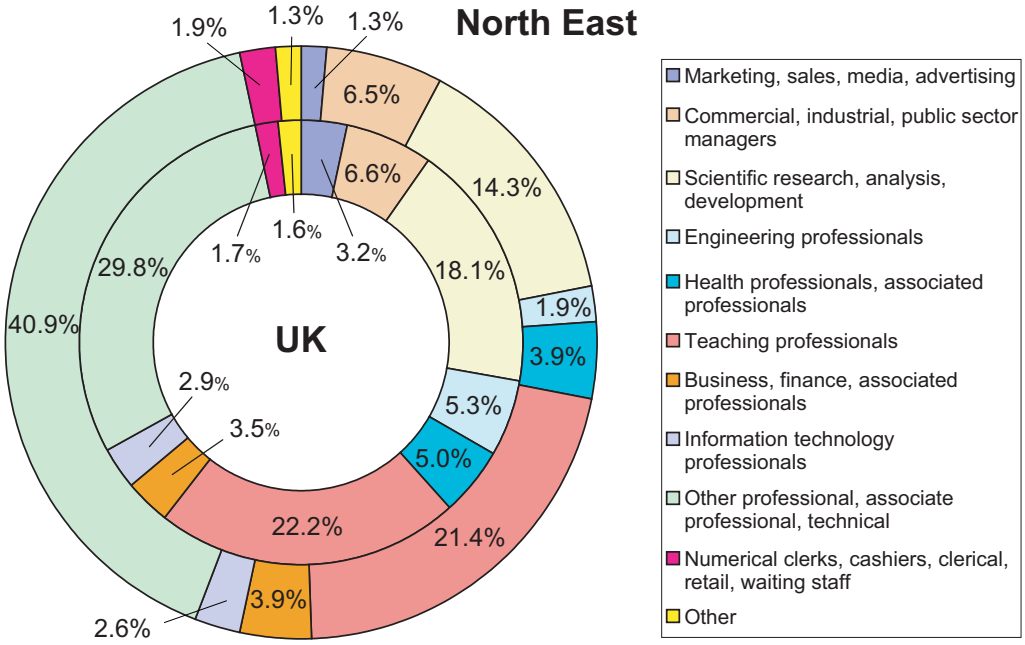

Figure Five: Types of work entered by UK-domiciled PhD graduates from HEIs in the North East (outer ring) compared to all UK HEIs (inner ring), based on Standard Occupational Classifications returned in 2004 DLHE survey

Migration

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

In common with most regions, the North East saw a net loss of PhD graduates with 27% fewer PhD graduates starting work in the region than the total number of PhD graduates from the region[11]. 70 PhD graduates (43% of total employed) left the North East for employment in other regions in the UK. This proportion is slightly higher than the average figure for all UK regions of 38%. PhD graduates from the North East move across the UK with the South East most popular, attracting 8%. Other popular regions were the North West and Scotland[12].

Another 10 PhD graduates (6% of total employed) left the North East for work or work and study abroad (compared to the national proportion of 9%).

[11] 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

[12] Data protection prohibits a full analysis of region to region migration

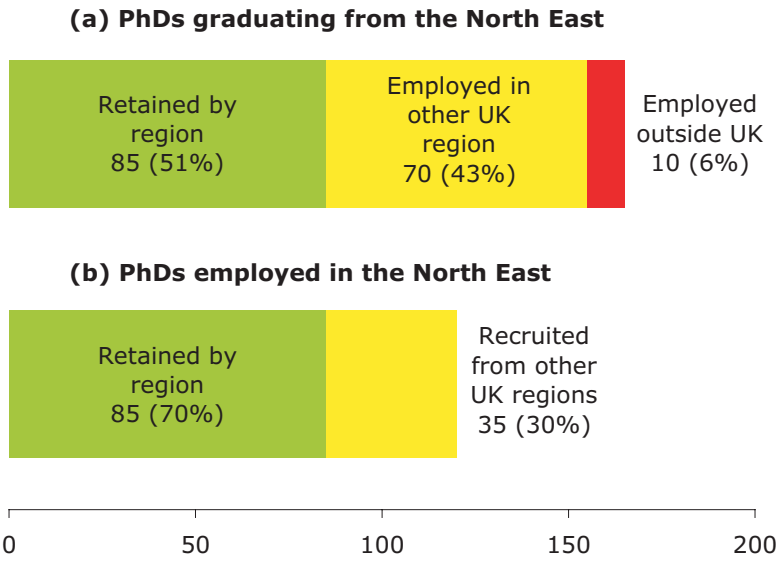

Figure Six: Mobility of North East PhD graduates in employment (a) and origin (region of study) of PhD graduates working in the North East (b)

What do PhD graduates employed in the North East do?[13]

85 UK-domiciled PhD graduates from North East HEIs were working in the region at the time of the survey, representing 70% of the total PhDs working in the region. These were joined by 35 UK-domiciled PhD graduates from other regions in the UK, who gained employment in the North East. Within this cohort, small numbers came from each of the other UK regions, but Yorkshire and the Humber provided the most substantial number (6% of those employed in the North East). Scotland, the North West and the East Midlands each provided a further 4% of the total employed in the region. In total, only 2% of UK-domiciled PhD graduates who left their regions of study for known UK locations moved to the North East. Amongst the regions, only Northern Ireland attracted smaller numbers of PhD graduates.

Employment sectors

The employment sectors for PhD graduates employed in North East are compared with the national picture in Figure Seven. The most obvious difference is that the education sector is even more dominant in the North East and employed 58.4% of PhD graduates in the region (compared to 47.8% across the UK), predominantly in higher education. The health sector also employed more PhD graduates (23.3% compared to 15.5% across the UK). The balance (18.3%) was employed in manufacturing (10%), business finance and IT (3.3%), administration (3.3%) and others. All of these sectors employed significantly less PhD graduates in the region when compared to the national picture.

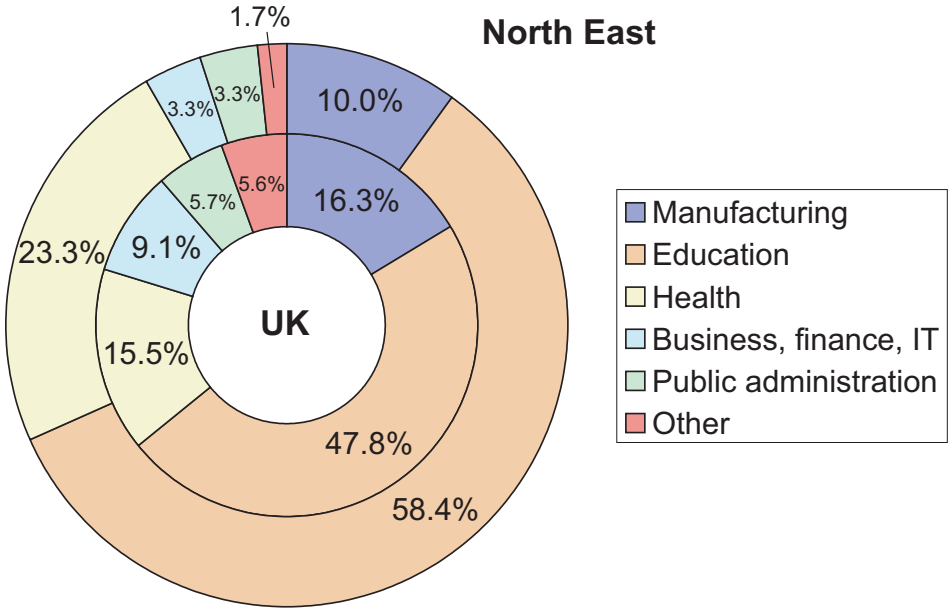

Figure Seven: Employment sectors entered by UK-domiciled PhD graduates employed in the North East (outer ring) compared to all UK regions (inner ring), based on Standard Industrial Classifications returned in the 2004 DLHE survey

[13] The data in this section refers to PhD graduates from all regions of the UK who were working in the North East

A comparison of Figure Seven and Figure Four indicates that the North East was a net exporter of those entering the manufacturing sector, but a net importer of those entering the education and health sectors.

For the 35 PhD graduates who moved to the North East for employment, the biggest employment sector was education (50%), predominantly in the universities. Of these, 50% were employed as lecturers and 44% as postdoctoral researchers[14]. The other significant employment sectors were the health sector, that employed 22% of the incoming PhD graduates, and the manufacturing sector that employed 14%.

Career occupations

We examined the specific occupations entered by PhD graduates employed in the North East. The picture is quite different to the UK as a whole, as outlined in Figure Eight.

The largest difference between the regional and national types of work occurs in the 'other professionals' category, which includes some postdoctoral researchers and reflects the dominance of the higher education sector as an employer of PhD graduates in the region. Half of those who gained employment in the education sector (50%) are identifiable as postdoctoral researchers. Of the remainder, 39% were in teaching positions, predominantly as lecturers in higher education. Others were employed in a range of positions encompassing educational advice and policy, administrative and other supporting roles. 7% of those employed in education were employed as secondary school teachers.

Overall, 29% of all the PhD graduates working in the North East are identifiable as postdoctoral researchers, higher than the UK average of 22%.

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

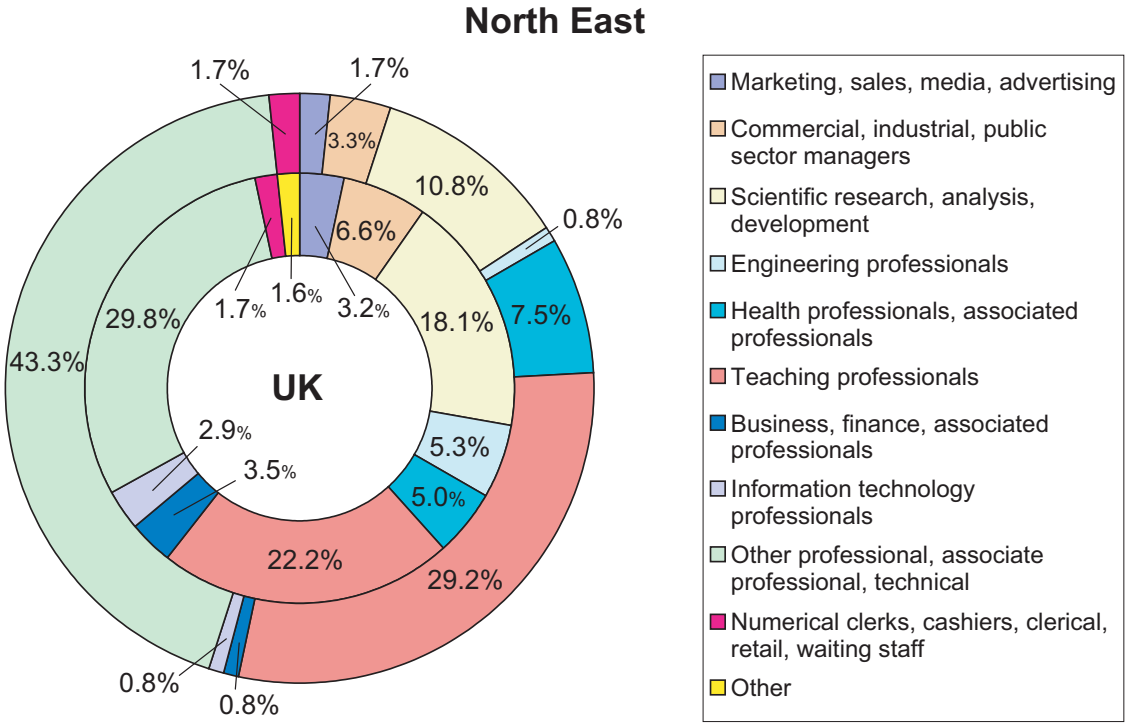

Figure Eight: Types of work entered by UK-domiciled PhD graduates employed in the North East (outer ring) compared to all UK regions (inner ring), based on Standard Occupational Classifications returned in 2004

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