

# East of England

The East of England produced 9.4% of UK-domiciled PhD graduates and employed 9.3% of the UK PhD workforce in the DLHE survey. The region was one of the most popular for mobile PhD graduates. When compared to the UK averages, PhD graduates from East of England HEIs had a slightly lower unemployment rate and were more likely to gain work outside the UK. Just under half of PhD graduates from the East of England remained in the East for work.

### Key statistics:

The 680<sup>1</sup> UK-domiciled PhD graduates from institutions in the East of England made up 9.4% of the UK total:

- 62% were male and 38% female, compared to the UK average of 55% and 45%
- 15% studied part-time, significantly lower than the UK average of 27%
- The most popular subjects were engineering, psychology, chemistry and history.

Of the 485 (71%) who responded to the 2004 DLHE<sup>2</sup> survey:

- 80% entered employment in the UK<sup>3</sup>
- 2.9% were unemployed, slightly lower than the UK average of 3.2%
- 12.2% continued their careers overseas compared to 8.1% across the UK.

Of the 385 PhD graduates from universities in the East who entered employment in the UK:

- 49.7% entered the education sector, predominantly in higher education
- 22% were employed in manufacturing and 11.8% in the health sector
- 53% remained in the East and 47% moved to other regions of the UK.

The East employed 385 (9.3%) of the UK-domiciled PhD graduate workforce:

- 53% gained their PhD at institutions in the East
- 47% moved to the East from other regions of the UK
- 42% were employed in the education sector: 57% as postdoctoral researchers; 29% in university teaching roles, primarily as lecturers
- 24% of all PhD graduates working in the East were employed as postdoctoral researchers.

The East was a net exporter (-13.5%) of UK-domiciled PhD graduates:

- PhD graduates who left the East for work were most likely to move to London, the South East and outside the EU
- The East attracted 12% of the UK-domiciled PhD graduates who left their region of study for known UK locations
- PhD graduates moving to the region are most likely to come from the South East, East Midlands and London and work in the manufacturing (37%) or education (23%) sector.

### Overview of East of England higher education institutions<sup>4</sup>

There are nine higher education institutions (HEIs) in the East of England: seven universities and two higher education colleges. The higher education student population at these institutions is over 87,000 full-time equivalent (FTE) students. The institutions range in size from the University of Cambridge (over 19,000 student FTEs) to Norwich School of Art and Design (around 700 student FTEs). According to HEFCE, the East of England has the highest proportion of postgraduate research students, and the highest percentage of part-time students.

Almost 8% of students in the region are registered for postgraduate research degrees (see Table One), predominantly at the institutions with a substantial research income – the University of Cambridge (which dominates the region in terms of research income), UEA, Cranfield University and the University of Essex.

Higher education institution	Final year PhD numbers
The University of Cambridge	865
The University of East Anglia	180
Cranfield University	145
The University of Essex	135
Anglia Polytechnic University	70
University of Hertfordshire	60
University of Luton	5
Total	1460

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

The research strengths of universities in the East are reflected in Figure One, derived from the results of the 2001 Research Assessment Exercise (RAE)<sup>6</sup>. Further analysis of the RAE results shows that 71% of submissions from the region's institutions were rated at 4 or above, with over half (53%) 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> All figures are rounded to the nearest five 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> 72.8% are classified as 'working in the UK'; 7.2% are 'working and studying in the UK'. The data in WDPDR on employment includes both classifications

<sup>4</sup> HEFCE 2004 Regional Profiles: East of England

<sup>5</sup> 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](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)

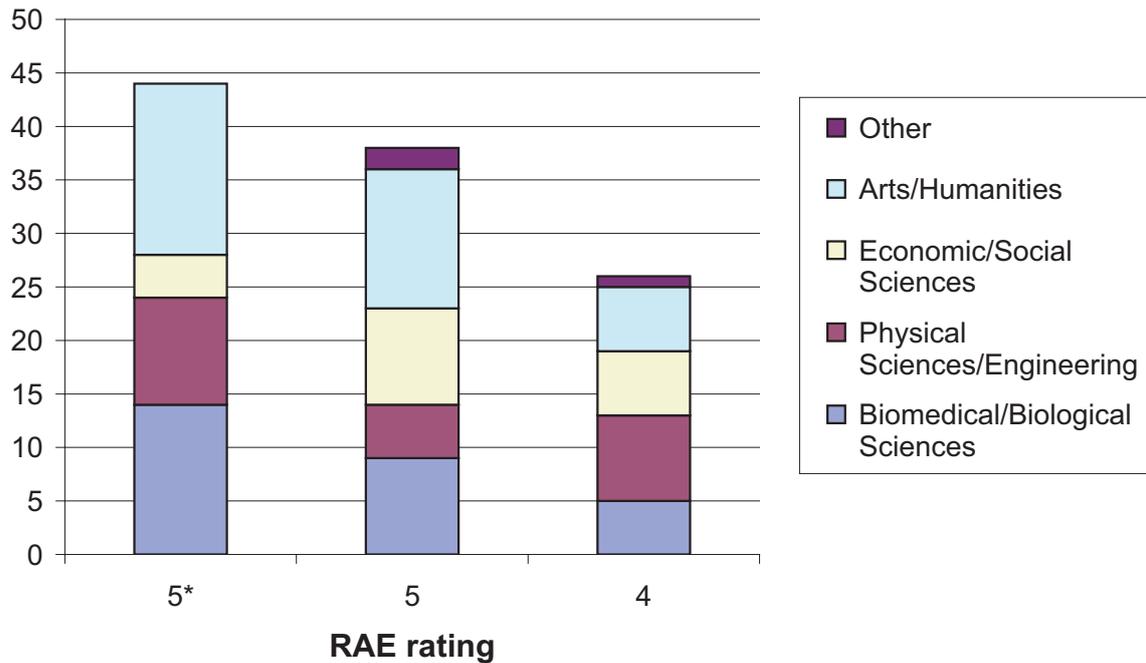


Figure One: Research subjects of top graded RAE submissions in the East of England

### Economic strengths

Unemployment in the East stands at 3.5%<sup>7</sup>, lower than the English average of 4.8%. The economy includes a range of industries that value knowledge and research, namely telecommunications, electronics, pharmaceuticals, agriculture and food processing. The Cambridge area has the highest concentration of biotechnology firms outside small areas of the United States.

The East of England Development Agency (EEDA) is keen to build upon the region's global strength in research, development and innovation<sup>8</sup>. The region has the highest proportion of employees in Research and Development (R&D) of anywhere in the UK and is the home of many large private companies which invest heavily in R&D. The EEDA is particularly keen to build links between the universities and research institutes, and the private sector, and to support the commercialisation of knowledge.

When compared to other UK regions, research in the East of England is in a strong position. Its levels of R&D expenditure are higher than any other UK region. The Business Enterprise R&D Survey, conducted by the Office of National Statistics<sup>9</sup>,

reported that in 2002, the gross domestic expenditure on R&D, as a percentage of Total Gross Value Added, was 4.2% for the East, compared to 2.0% for the UK as a whole.

### Profile of PhD graduates from the East of England

Of the 7270 UK-domiciled PhDs who graduated in the UK in 2003, 9.4% (680) graduated from higher education institutions in the East of England. Of these PhD graduates, 38% were female and 62% male, giving the East a lower proportion of female doctoral graduates than the UK average of 45%. Part-time study was much less common in the East than in other regions, accounting for 15% of degrees awarded, compared to the UK average of 27%.

Figure Two shows the breakdown of PhD graduates by subject groups. The East of England had the highest proportion of PhD graduates of any region from the arts and humanities (20.6% compared to 13.7% across the UK). Fewer PhD graduates came from medical sciences (21.3% compared to 26.9% across the UK). Most other subject groupings, including the biosciences, social sciences, and physical sciences were similar to the UK average figures.

<sup>7</sup> HEFCE 2004 Regional Profiles: East of England

<sup>8</sup> A Shared Vision, <http://www.eeda.org.uk/>

<sup>9</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/)

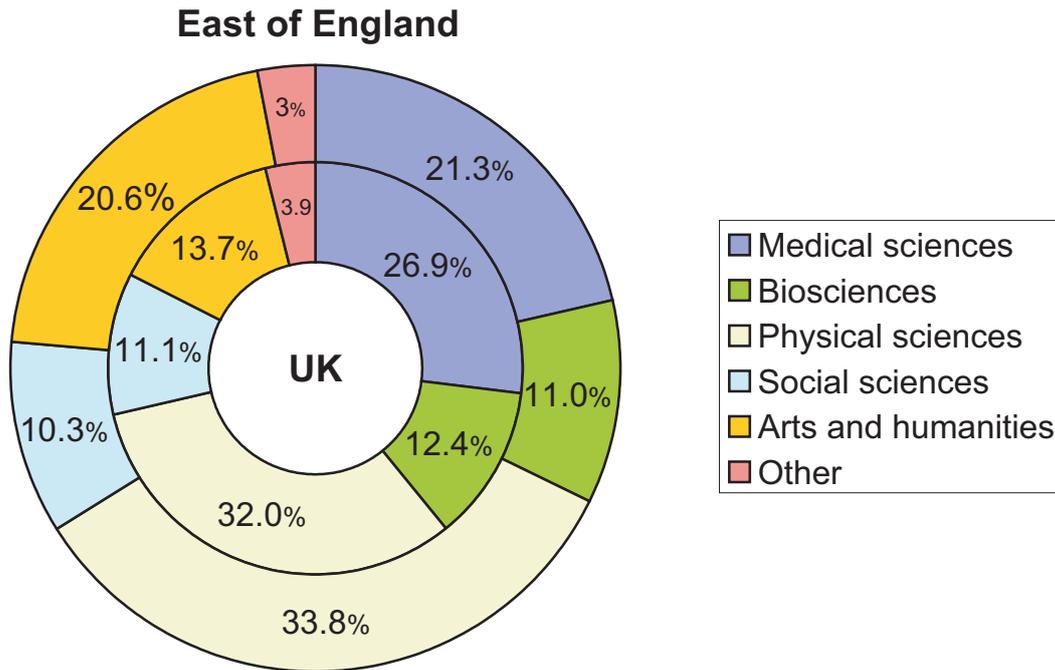


Figure Two: Subject groups of all UK-domiciled PhD graduates from East of England HEIs (outer ring) compared to all UK HEIs (inner ring) in 2003

The list of 'top ten' subject for PhD graduates from the East of England HEIs (Table Two) shows some striking differences with the average UK 'top ten' table. General engineering appears at the top of the subject ranking in the East, compared to 15th in the national table. Other differences reflect the strength of the arts and humanities research shown in Figure Two with Music, History and English all appearing in the table. The most common subject for PhD graduates in the UK, clinical medicine, appears only 7th in the table for the East of England.

Subject and ranking	East	Total (and position) in UK
1. General Engineering	5.0%	2.0% (15)
2. Psychology	4.9%	7.6% (3)
3. Chemistry	4.7%	7.7% (2)
4. History by period	4.3%	2.5% (9)
5. Music	4.3%	1.3% (21)
6. Physics	4.1%	4.4% (5)
7. Clinical Medicine	3.4%	8.2% (1)
8. Biology	2.9%	5.2% (4)
9. Academic studies in education	2.5%	3.1% (6)
10. English studies	2.1%	2.5% (8)

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

### What do PhDs from the East of England do?<sup>10</sup>

Of the 680 UK-domiciled PhD graduates from East of England Higher Education Institutions in 2003 eligible for the 2004 survey, 485 responded. At 71%, this is one of the highest response rates of any region.

Figure Three summarises the responses to the DLHE survey. 72.8% of UK-domiciled PhD graduates from East of England institutions had entered the workplace when the survey was conducted, almost identical to the overall UK figure of 72.7%. A further 7.2% were engaged in work and study simultaneously – slightly lower than the UK average of 8%. More PhD graduates had moved overseas (12.2%) than for the UK as a whole (8.1%). Unemployment rates for UK-domiciled PhD graduates from institutions in the region were slightly lower than the UK average (3.2%) at 2.9%.

<sup>10</sup> The data in this section refers to PhD graduates from East of England HEIs who were working in all regions of the UK

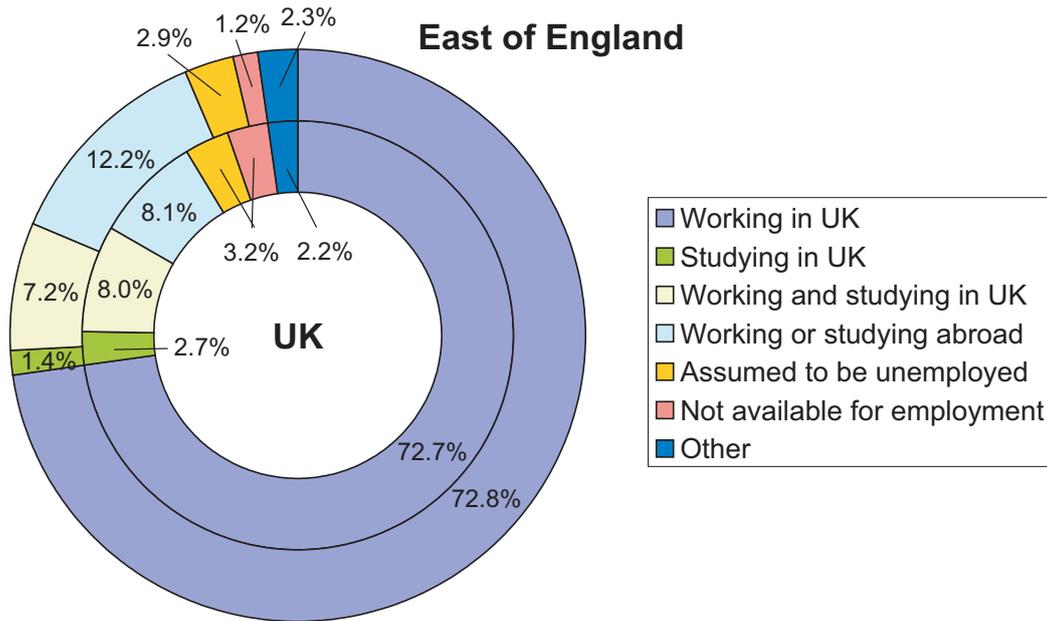


Figure Three: Survey response of UK-domiciled PhD graduates for all subjects from HEIs in the East of England (outer ring) compared to all UK HEIs (inner ring) from 2004 DLHE survey responses

### Employment sectors

The 80% of PhD graduates from East of England universities 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 was the dominant destination, employing 49.7%, predominantly in higher education.

The balance (50.3%) were employed in a range of occupations across all sectors, although as Figure Four illustrates, there are some differences with the UK average figures.

Manufacturing industries employed a significantly higher proportion of East of England graduates, accounting for 22% (compared to 16.3% across the UK as a whole). 67% of these were employed in the chemical and pharmaceutical industries, ie 15% of all East of England PhD graduates (compared to a national figure of 11%).

The health service employed fewer PhD graduates from the East of England’s institutions (11.8% compared to 15.5% across the UK). Slightly greater numbers were employed by business, finance and IT industries, but slightly fewer in the public sector than the UK average. Assorted other employment sectors account for the remaining 2.9% of PhD graduates.

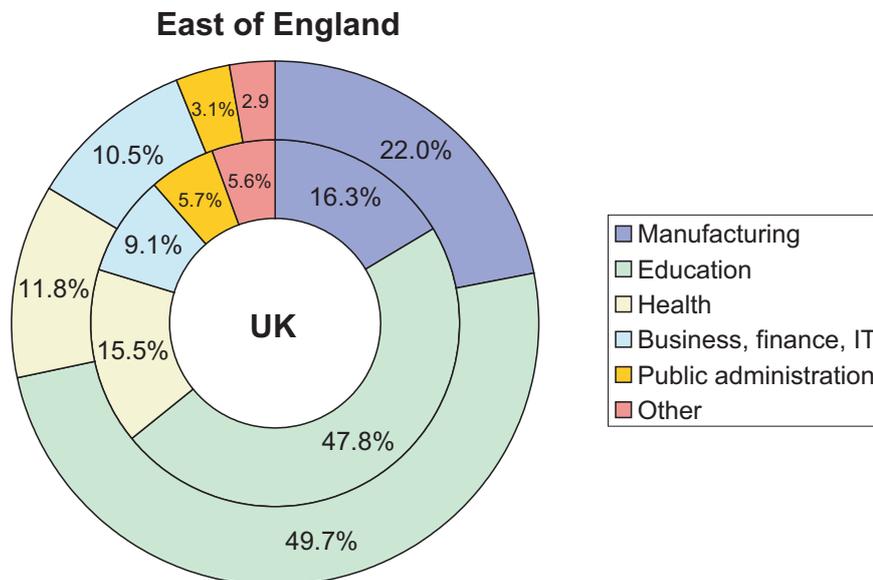


Figure Four: Employment sectors entered by UK-domiciled doctoral graduates from East of England HEIs (outer ring) compared to all UK HEIs (inner ring), based on Standard Industrial Classifications returned in 2004 DLHE survey

### Career occupations

We examined the specific occupations entered by PhD graduates from East of England HEIs. As the previous employment sector analysis predicts, when compared to the UK average figures, variations emerge.

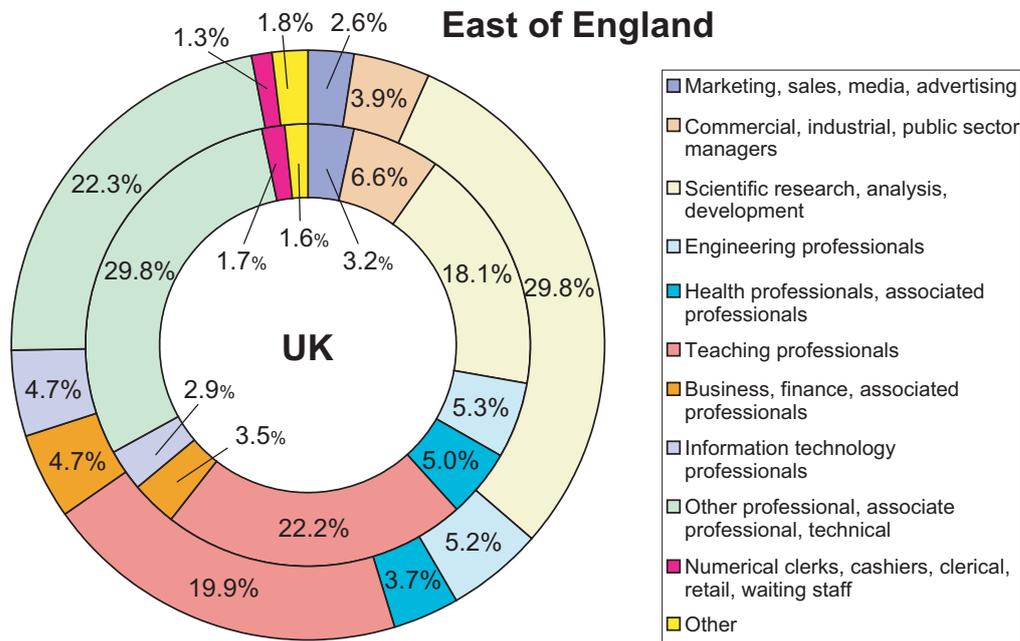


Figure Five: Types of work entered by UK-domiciled PhD graduates from East of England HEIs (outer ring) compared to all UK HEIs (inner ring), based on Standard Occupational Classifications returned in 2004 DLHE survey

The most striking difference is found in the proportion working in scientific research, analysis and development, which is significantly higher in the East of England (29.8% compared to 18.1% across the UK). The strength of the chemical and pharmaceutical industries partly accounts for the numbers working in this category. Also included in this category are some 'scientists' working in academic laboratories<sup>11</sup>. Business and finance (4.7%) and IT (4.7%) professions also account for a higher proportion of the occupations of East of England PhD graduates than the UK average (3.5% and 2.9% respectively). Smaller proportions are found in teaching and other professional roles – in this case, the latter is partly due to the coding of some postdoctoral researchers as scientists.

### Migration

We examined the migration patterns of UK-domiciled PhD graduates from the East of England's HEIs who were in employment at the time of the survey, shown in Figure Six.

180 PhD graduates (40% of total employed) left the East for employment in other regions in the UK. This proportion is slightly higher than the UK average of 38%. PhD graduates from the East move throughout the UK with London being the most popular, attracting 15%. Other popular regions were the South East, South West and North West<sup>12</sup>.

The East of England is a popular destination for mobile UK graduates and the closest to a balanced system. An equal number of PhD graduates (180) moved to the East of England from other regions on the UK.

The net loss of PhD graduates from the East of England is effectively accounted for by 65 PhD graduates (14% of total employed) leaving the East for work or work and study abroad: significantly more than the national proportion of 9%.

<sup>11</sup> 'What Do PhDs Do?' methodology describes the process of identifying postdoctoral researchers in universities [www.grad.ac.uk/wdpp](http://www.grad.ac.uk/wdpp)

<sup>12</sup> Data protection prohibits a full analysis of region to region migration

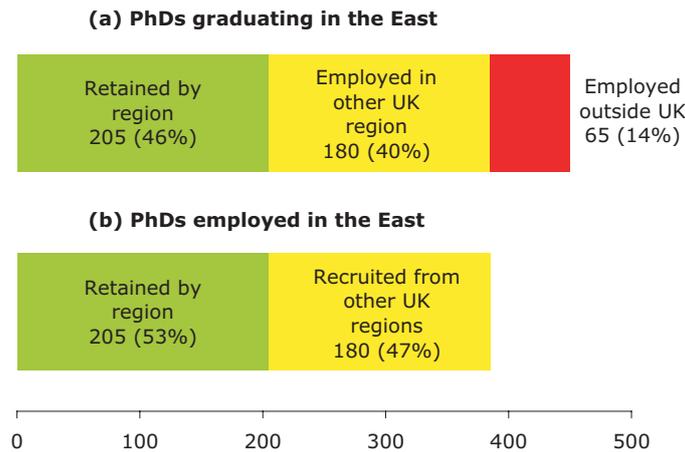


Figure Six: Mobility of East of England PhD graduates in employment (a) and origin (region of study) of PhD graduates working in the East of England (b)

### What do PhD graduates employed in the East of England do?<sup>13</sup>

205 UK-domiciled PhD graduates from the East of England HEIs were working in the East at the time of the 2004 DLHE survey, representing 53% of the total number of PhDs working in the region. These were joined by 180 UK-domiciled PhD graduates from other regions in the UK who gained employment in the region. Within this cohort, small numbers came from each of the other UK regions, but the South East provided the most substantial number (10% of those employed in the East), along with the East Midlands (7%) and London (7%). In total, 12% of those who left their regions of study for known UK locations moved to the East of England, making this region the third most popular destination for UK-domiciled PhD graduates.

### Employment sectors

The employment sectors for PhD graduates employed in the East are compared with the national picture in Figure Seven. A striking difference is that the manufacturing sector is a much more dominant employer of PhD graduates in the East than across the UK as a whole (29.6% compared to 16.3%). This represents the largest manufacturing PhD employment sector of all the UK regions. The education sector is less dominant in the East and employed 42.1% of PhD graduates in the region, predominantly in higher education, compared to 47.8% across the UK. The health sector also employed fewer PhD graduates (10.9%) compared to the UK average (15.5%). The balance (17.4%) were employed in business, finance and IT (7%), administration (4.7%) and 'other' sectors.

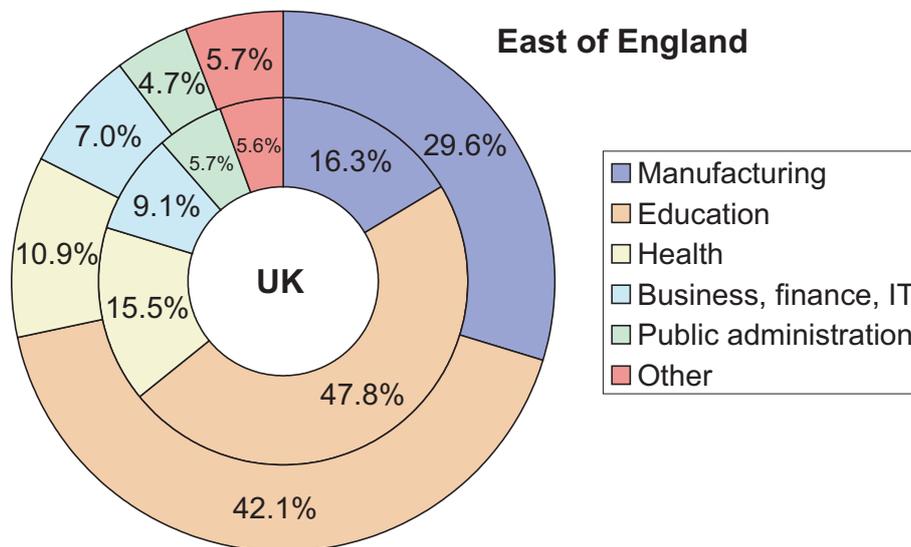


Figure Seven: Employment sectors entered by UK-domiciled PhD graduates employed in the East (outer ring) compared to all UK regions (inner ring), based on Standard Industrial Classifications returned in the 2004 DLHE survey

<sup>13</sup> The data in this section refers to PhD graduates from all regions of the UK who were working in the North East

Comparing Figure Seven with Figure Four, it appears that even though the East of England HEIs produced a greater than average proportion of PhD graduates who entered the manufacturing sector, the region was still a net importer of PhD graduates for this employment sector.

For the 180 PhD graduates who moved to the East for employment, the biggest employment sector was manufacturing (37%), followed by education (23%) with all other employment sectors employing around 10%.

### Career occupations

We examined the specific occupations entered by PhD graduates employed in the East. As expected from the employment sector analysis, the picture is quite different to the UK average, as outlined in Figure Eight.

The most obvious difference in types of work occurs in the scientific research classification (29.9% compared to 18.1% across the UK). The 'other professionals' category, which includes some postdoctoral researchers and the teaching classification are both less dominant in the region than across the UK.

Of those employed in education, 29% can be identified as university teaching staff, and 50% as postdoctoral researchers<sup>14</sup>. Overall, 24% of the PhD graduates working in the East of England were employed as postdoctoral researchers, slightly higher than the UK average of 22%.

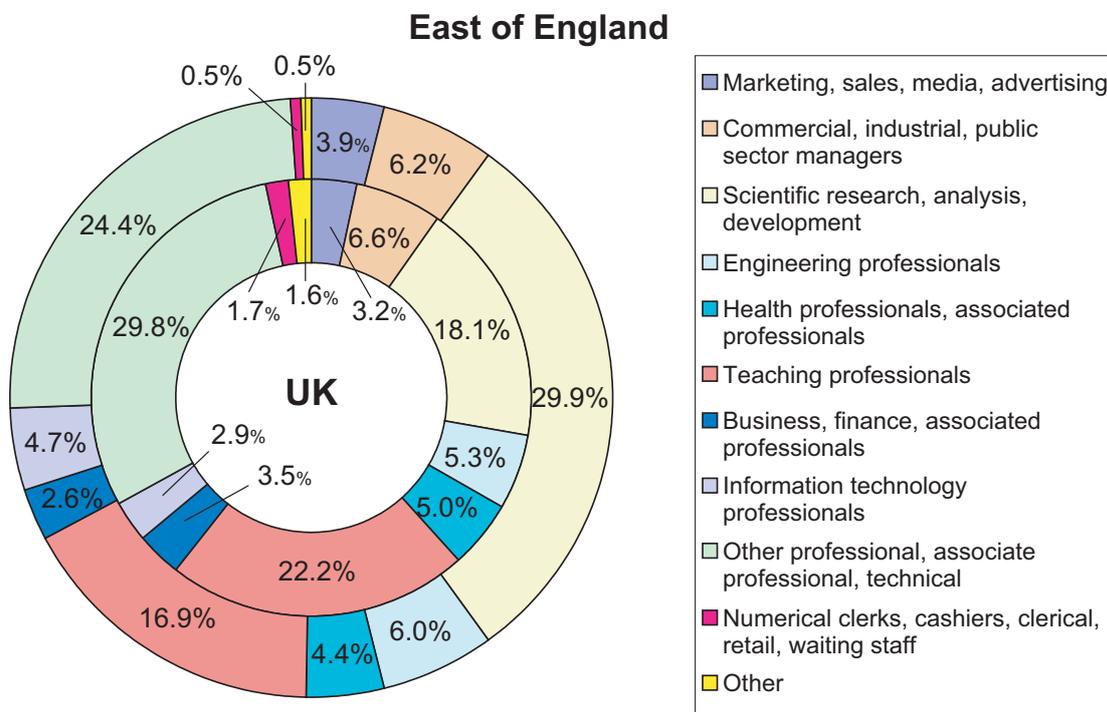


Figure Eight: Types of work entered by UK-domiciled PhD graduates employed in the East (outer ring) compared to all UK regions (inner ring), based on Standard Occupational Classifications returned in 2004 DLHE survey

<sup>14</sup> 'What Do PhDs Do?' methodology describes the process of identifying postdoctoral researchers in universities. [www.grad.ac.uk/wdpp](http://www.grad.ac.uk/wdpp)