Comparative Starting Salaries and Career Progression of Graduates in Science, Engineering and Technology (SET)

June 2006

DisCoVer Science + Engineering

Forfás

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Acknowledgements

This report was prepared by Publica Consulting on behalf of the Forfás and the Discover Science and Engineering Awareness Programme.

The consultants wish to acknowledge, with thanks, the assistance of the following organisations in providing data.

- The Statistics Section of the Higher Education Authority provided anonymised data from the First Destination of Award Recipients Survey of graduates of 2004.
- The Central Statistics Office approved the release of COPSAR (Census of Population Sample Anonymised Record) data to Forfás by the Irish Social Science Data Archive for the purposes of this study.
- ICT Ireland provided information on salary progression.

Executive Summary

This report looks at graduate salaries and graduate career progression in Ireland, focusing on graduates in Science, Engineering and Technology (SET) disciplines, and making comparisons with those in other disciplines.

As it provides considerable levels of statistical detail, the report is more suitable for browsing, or for scanning for information on specific disciplines, than for reading straight through. Gaps in the information provided exist mainly where the data sample is too small to allow useful figures to be produced.

Chapter 1 looks at trends in college applications. It finds that, after falling with the onset of the ICT sector downturn around 2001/02, overall applications in SET disciplines are now stable or increasing, while applications in Business and Law are falling. The introduction of degree programmes in Nursing has caused applications for Healthcare courses to rise.

Chapter 2 analyses starting salaries at Honours Bachelor Degree level and above. Based on an original analysis of data provided by the Higher Education Authority from its First Destination of Award Recipients Survey, it provides detailed information on salaries obtained by graduates in a wide range of SET and non-SET disciplines, at a range of levels of qualification.

It shows that:

- graduates in disciplines with a strong science and technology content tend to be paid better after graduation than graduates in other disciplines, with graduates in Medicine and other Healthcare disciplines being among the best paid, followed by those in Engineering and then those in Computing and Science; and
- graduates with higher qualifications, such as PhDs, tend to be paid significantly more than those with just primary degrees, with over 80% of PhD graduates in a range of areas including Engineering and Biosciences earning starting salaries in excess of €33,000 in starting salary.

Chapter 3 addresses the employment sectors and occupations entered by primary degree graduates. It demonstrates that graduates in most disciplines enter a diverse range of employment sectors and occupations, and are thus not locked into a particular career path.

Chapter 4 draws on published by the Higher Education Authority in its First Destination of Award Recipients in Higher Education report for graduates of 2003 to provide information on starting salaries achieved by certificate and diploma graduates.

Chapter 5 draws on anonymised data from Census 2002 to analyse how the careers of past graduates have progressed for different disciplines. Drawing on two indicators - the percentage in employment and the percentage of those employed in higher socio-economic groups - it shows that careers of both male and female graduates in SET disciplines tend to progress well.

Chapter 6 looks at how salaries progress with career development in a sample of two SET professions.

Chapter 7 uses data on graduate salaries from the US and the UK to make international comparisons. It demonstrates that SET graduates in the US are very well paid relative to those with other bachelor degrees, while those in the UK occupy the middle ground in graduate salaries. While SET graduates in Ireland are paid well relative to their counterparts in other disciplines, those in the US and the UK are paid better. This supports the view that Ireland remains competitive as a location in which to obtain access to technically skilled graduates.

Chapter 1 - College Application Trends

1.1 Introduction

This chapter reviews trends in college applications recorded by the Central Applications Office (CAO).

The first section addresses Honours Bachelor Degree applications, which are positioned at Level 8 in the National Framework of Qualifications.

The second section addresses higher education courses positioned at Levels 6 and 7 in the National Framework of Qualifications. Historically these were the National Certificate and DIT Certificate (positioned retrospectively at Level 6), and the National Diploma and DIT Diploma (positioned retrospectively at Level 7). Now, they are the Higher Certificate (Level 6) and the Ordinary Bachelor Degree (Level 7).

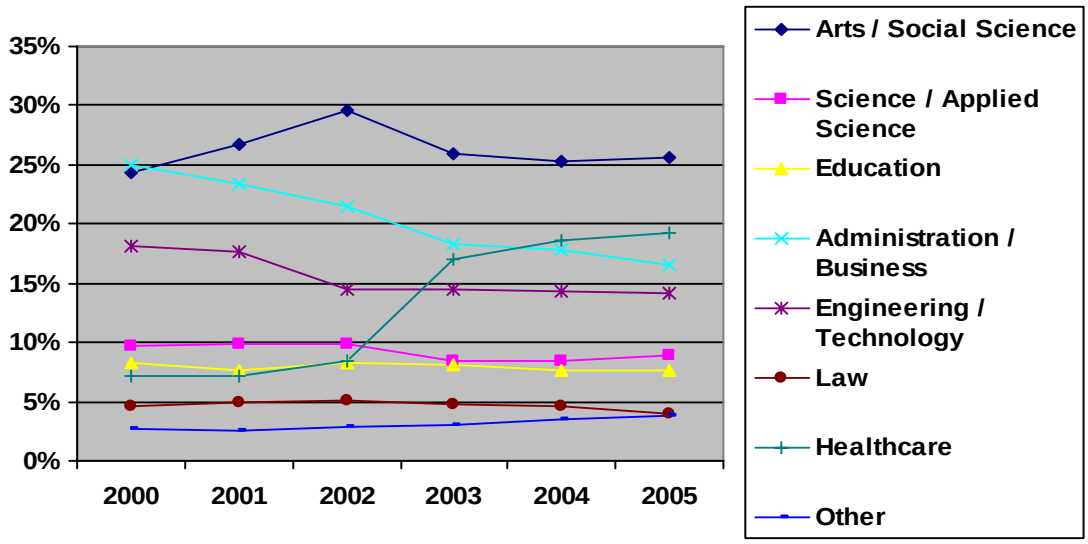
1.2 Level 8 Applications

Figure 1.1 shows how first preference applications for different subject groupings have developed since 2000, at Level 8 in the National Framework of Qualifications.

Key points are as follows:

- The share of applications for Engineering / Technology, which includes many Information and Communications Technology (ICT) oriented courses, fell a little in 2001, and more steeply in 2002, in response to a severe global slowdown in ICT business. However, it has been steady since then, supported in part by strong demand for graduates in construction related disciplines, but numbers taking Electronic Engineering and Computing have yet to recover.
- Nursing degree courses were introduced in 2003, accounting for a major increase in applications for healthcare courses. This coincided with step losses in share of applications for Arts/Social Science and Science/Applied Science.
- The share of applications accounted for by Science/Applied Science is now rising gradually.
- The share of applications accounted for by Administration/Business has been falling steadily since 2000. The share accounted for by Law has been falling since 2002.

Figure 1.1 Shares of First Preference Applications Attained by Different Subject Groupings



Source: Based on CAO data

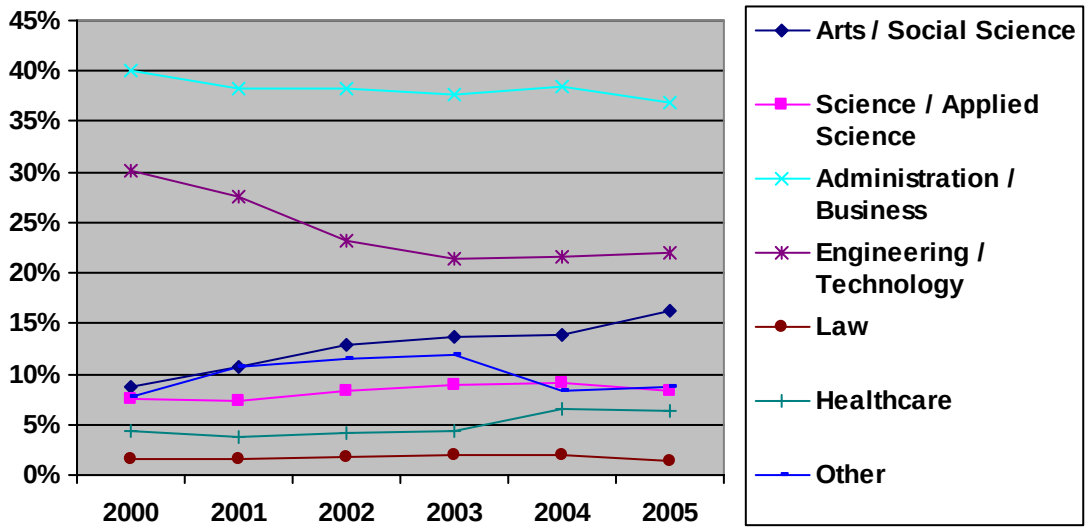
1.3 Level 6 and Level 7 Applications

Figure 1.2 shows how first preference applications for different subject groupings have developed since 2000, at Levels 6 and 7 in the National Framework of Qualifications.

Key points are as follows:

- The share of applications for Engineering / Technology, which includes many Information and Communications Technology (ICT) oriented courses, fell between 2000 and 2003, at least partly in response to the global slowdown in ICT business. However, it has been steady since then.
- The share of applications accounted for by Science / Applied Science rose up to 2004, but dipped in 2005.
- The share of applications accounted for by Arts / Social Science has been rising steeply, particularly with the expansion of Humanities programmes at Institutes of Technology (IoTs).
- The share of applications accounted for by Administration / Business has fallen since 2000.

Figure 1.2 Shares of First Preference Applications Attained by Different Subject Groupings



Source: Based on CAO data

1.4 Acceptances of Higher Education Places by Graduates with High Points

36% of those accepting courses through the CAO in 2005 had 450 points or more. Of these 37% chose science, technology, medical and related courses. The numbers on 450+ points choosing science courses increased from 1,001 in 2000 to 1,155 in 2005 and the numbers for engineering and architecture also increased. However, numbers choosing computing fell from 464 in 2000 to 61 in 2005.

Figure 1.3 Share of High Point (450+) Acceptors of Places on Higher Education Courses by Discipline

		2000	2003	2005
Technology		2,456	2,108	2,265
of which …	Science	1,001	1,049	1,155
	Computing	464	57	61
	Engineering/Construction	894	909	915
	Architecture	94	93	134
Education		781	1,037	1,179
Arts		1,560	2,094	1,862
Medical Related and Nursing		728	934	1,238
Law		687	701	700
Business		1,779	1,696	1,772
Total		**7,991**	**8,570**	**9,016**

Source: Discipline Choices and Trends for High Points CAO Acceptors, Sean McDonagh

Chapter 2 - Starting Salaries of Graduates at Honours Bachelor Degree Level and Above

2.1 Introduction

Each spring, the Higher Education Authority (HEA) coordinates and collates a survey of graduates from the previous year, asking what they are currently doing. The front line survey work is undertaken by the careers services of individual colleges and by the Higher Education and Training Awards Council (HETAC). Those in employment are asked what industry they are working in, what type of work they are doing, and how much they are being paid.

The survey asks graduates to position the amount they are being paid in one of eight bands. The majority of the bands are €4,000 in width. The top band is simply "Over €33,000". The bands now in use have been in place for a number of years, maintaining consistency in the statistics produced from year to year. Over this time graduate salaries have increased, bringing significant numbers to levels in excess of €33,000, particularly among graduates in healthcare disciplines and with postgraduate research degrees, as can be seen in the tables and charts presented.

This section presents a detailed analysis of salary data from the survey of graduates of 2004 at primary degree level and above. Primary degrees are equivalent to Honours Bachelor Degrees, which are positioned at Level 8 in the National Framework of Qualifications.

Three relevant types of qualification have been positioned at Level 9 in the National Framework of Qualifications.

These are:

- Higher Diplomas and Graduate Diplomas, such as the Higher Diploma in Education and various Graduate Diplomas in Computing;
- Taught Masters Degrees, which are Masters level qualifications obtained from a taught courses; and
- Research Masters Degrees, which are Masters level qualifications obtained on the basis of research.

The PhD and other Doctoral level qualifications are positioned at Level 10 in the National Framework of Qualifications.

Higher Diplomas, Graduate Diplomas, Taught Masters Degrees and Research Masters Degrees are generally undertaken by graduates who already have Honours Bachelor Degree qualifications. In some cases, a Higher Diploma or Graduate Diploma serves as an intermediate step on the way to a Masters qualification.

Higher Diploma and Graduate Diploma courses are typically of one, or sometimes one and a half, academic years in duration. Some Taught Masters courses are of one year in duration, others of two years. Research Masters qualifications are generally awarded after anything from one to three years of research.

Entrants to PhD research programmes generally have an Honours Bachelor Degree, and may have a Masters degree. A PhD is typically awarded after three to four years of study, although it is not unusual for the process to take longer.

2.2 Disciplines of Study in Higher Education

Science, Engineering and Technology (SET) disciplines account for a substantial minority of primary degrees awarded, and account for the majority of Research Masters and PhD degrees awarded. There is a great diversity of disciplines within the broad SET area, much of which is reflected in the detailed salary information provided in this section of the report.

Detailed salary information is also provided on Medical and Paramedical disciplines, which have a substantial scientific content. Information is also provided on other disciplines, such as Business, Humanities, Teaching, Social Studies and Law for comparison, although at a lower level of detail.

The following are some points of explanation.

- Electronic Engineering, Computer Engineering and Telecommunications Engineering are closely related disciplines that share a considerable amount of content.
- The Mechanical, Production and Manufacturing Engineering category encompasses courses with a wide range of titles concerned with production operations. Mechanical Engineering courses are frequently concerned both with design and production operations, but graduates more commonly work in operations after graduation.
- The Chemical and Process Engineering category encompasses both Chemical Engineering and Food Process Engineering.
- Within Biosciences, some specialisms have a particular relevance to Biotechnology, and to other industrial applications of Biology. The analysis distinguishes graduates in these “Core Biotech” disciplines from graduates who have specialised in other Biosciences disciplines.
- The Computer Applications / Computer Science / Software Engineering category encompasses the majority of computing-focused courses. Computing courses with a very substantial (often 50%) business content are classified as Business Information Systems courses.
- In many Arts courses, final year students specialise in two or more distinct subjects. The analysis separates these from other disciplinary categories in three areas: where the graduate has studied both Computing and another discipline; where the graduate has studied both Mathematics and another discipline; and where the graduate has studied both Law and another discipline. For analytic purposes, the third of these groups has been amalgamated with courses that combine Business Studies and Law with similar emphasis on both.
- It was difficult to classify the disciplines taken by some graduates at the level of detail used for the more general analysis. The salaries obtained by these graduates are set out under “Remaining” categories.

The following tables provide data on 25th, 50th and 75th percentile salary levels. The 25th percentile level indicates 25% of graduates earn below that level, and 75% above. The 50th percentile level (or median) indicates 50% of graduates earn below that level, and 50% above. The 75th percentile level indicates that 75% of graduates earn below that level, and 25% above.

The consultants have analysed the data to identify the salary band into which each 25th, 50th and 75th percentile salary level fits, and have applied a formula to estimate where in the band it sits.

2.3 Primary Degrees

Table 2.1 summarises the salaries obtained by 2004 Primary Degree Graduates in different disciplines. Figure 2.1, which follows, summarises key information from Table 2.1 graphically.

Table 2.1 Starting Salaries by Discipline for 2004 Graduates with Primary Degrees

	Percentile			% over
	25th	50th	75th	€33,000
Electronic & Electrical Engineering	€23,100	€26,800	€29,400	8.9%
Computer Engineering and Telecommunications Engineering	€21,700	€25,700	€28,800	11.4%
Mechanical, Production and Manufacturing Engineering	€22,200	€26,100	€29,400	9.6%
Biomedical Engineering	€21,700	€26,500	€28,700	11.1%
Civil and Structural Engineering	€25,700	€27,400	€31,100	9.6%
Quantity Surveying / Valuation Surveying	€25,200	€27,800	€31,900	17.1%
Chemical and Process Engineering	€25,800	€28,400	€32,700	22.7%
Other Engineering Disciplines	€25,100	€27,700	€32,200	20.6%
Materials Science and Materials Engineering	€23,200	€27,000	€30,400	10.0%
Physics	€17,100	€19,900	€24,500	10.0%
Chemistry	€22,300	€26,400	€28,900	6.7%
Biosciences - Core Biotech Disciplines (Genetics, Biochemistry …)	€21,200	€23,500	€27,700	4.7%
Biosciences - Other (Zoology, Botany …)	€14,700	€19,000	€22,700	9.1%
Food Science and Technology	€19,400	€23,500	€27,700	3.7%
Pharmacy	€17,800	€20,000	€23,700	0.0%
Medical Sciences / Health Sciences / Sport Science	€17,800	€21,000	€25,000	3.1%
Psychology	€13,400	€19,700	€23,900	0.0%
Environmental Science	€21,400	€26,100	€32,800	24.7%
Marine Science	€15,200	€20,000	€27,000	0.0%
Mathematics	€22,500	€27,300	€32,500	23.5%
Arts degree with Mathematics as one of 2 or more subjects	€12,700	€19,600	€24,100	3.4%
Computer Applications / Computer Science / Software Engineering	€21,400	€24,600	€28,600	8.9%
BA with Computing as one of two or more subjects	€18,700	€22,800	€26,900	0.0%
Business Information Systems	€21,900	€25,500	€31,000	20.5%
Multimedia Computing	€20,000	€22,800	€24,700	4.0%
IT Systems Management / Administration	€18,600	€22,200	€24,600	0.0%
Agricultural Science	€20,300	€23,100	€24,900	5.9%
Geology / Earth Sciences	€23,000	€27,200	€31,300	17.4%
Architecture	€25,500	€27,500	€31,200	14.7%
Medicine	€29,500	€31,100	>€33,000*	29.1%
Dentistry	€33,000	>€33,000*	>€33,000*	75.0%
Nursing	€25,700	€29,000	€32,000	6.7%
Physiotherapy	€29,900	>€33,000*	>€33,000*	51.9%
Other Paramedical	€31,000	>€33,000*	>€33,000*	66.7%
Veterinary Medicine	€26,900	€32,300	>€33,000*	47.6%

Humanities	€22,600	€26,800	€28,200	3.0%
Social Work / Social Care / Sociology / Community Development	€19,700	€25,900	>€33,000*	25.2%
Art & Design	€15,600	€20,800	€25,800	5.4%
Teaching Qualifications*	**	**	**	
Other Education / Learning Support / Early Childhood Studies	€15,600	€21,000	€26,800	8.9%
Commerce & Business Studies	€18,000	€22,400	€25,800	5.1%
Law	€11,000	€20,300	€23,600	0.0%
Combinations of Law with Business and BA degrees with Law as one of two or more Subjects	€16,300	€19,800	€23,800	0.0%
Remaining Science	€22,000	€26,800	€31,300	16.0%
Remaining Engineering	€26,000	€29,000	€32,000	7.1%

* The highest salary band in the First Destination Survey is "Over €33,000".

** Salaries of primary degree graduates in teaching are not covered by the HEA's First Destination of Award Recipients Survey.

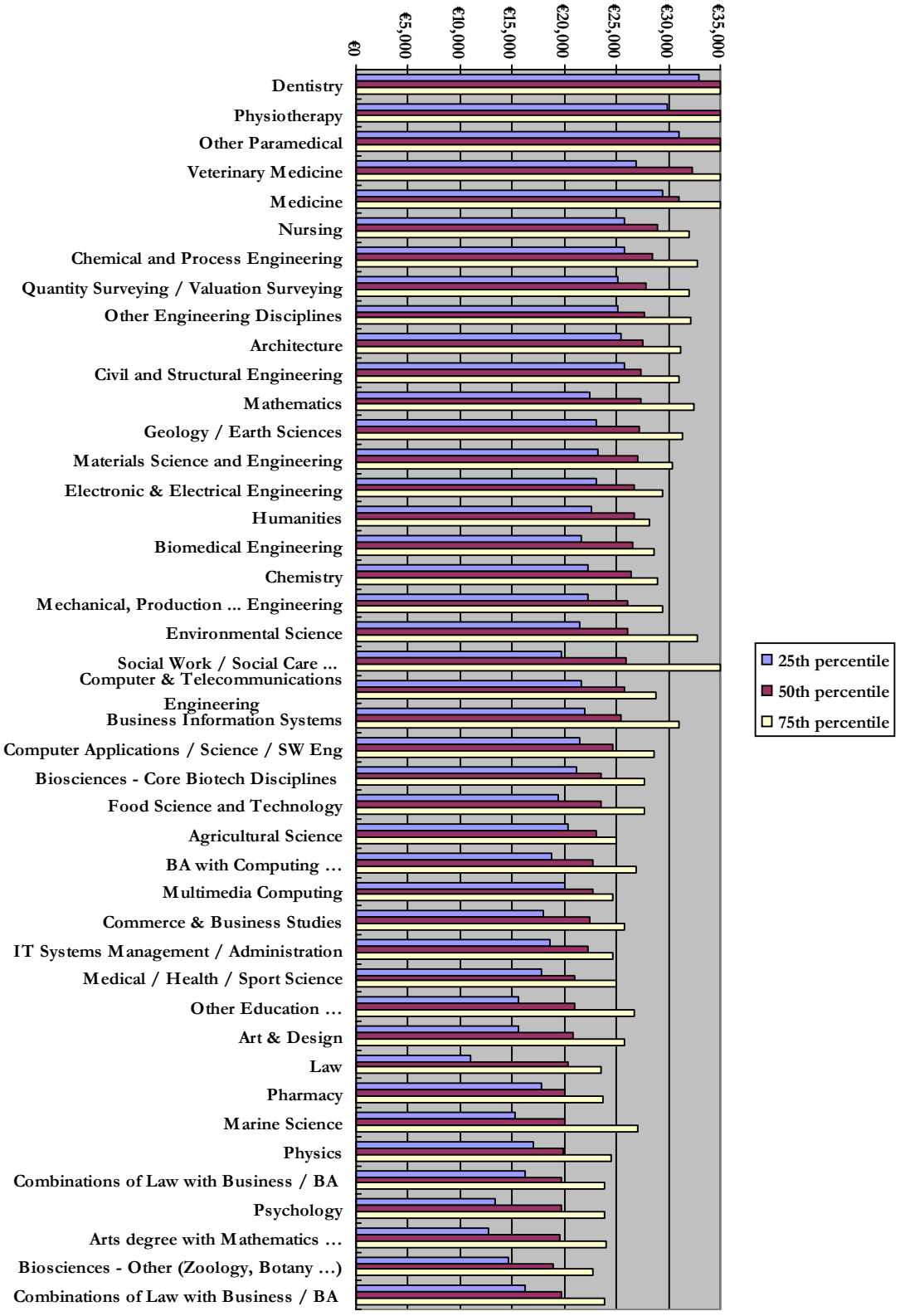
Source: Based on an original analysis of responses to the HEA's First Destination of Award Recipients Survey for Graduates of 2004.

The main points that emerge from the analysis are as follows:

- Medical and paramedical qualifications lead to the highest starting salaries. Among the paramedical professions this appears to reflect in part the fact that most graduates are recruited as qualified professionals on full professional pay scales.
- The next band of starting salaries is associated with the majority of Engineering disciplines, along with a number of Construction-related qualifications and also Mathematics and Geology/Earth Sciences.
- The next band of starting salaries is associated with most of the Sciences and with Computing-related disciplines.
- Salaries for graduates in the Humanities also fall into this band, with their fairly strong positioning reflecting in part the presence of vocationally-focused disciplines such as Economics within the category. Salaries for graduates in Social Work, Social Care and related disciplines also fall into the band, apparently reflecting the recruitment of many graduates onto full professional Social Work and Social Care pay scales.
- The final band is associated with Business Studies, Law, Art & Design and Psychology. It is also associated with a number of Science disciplines that produce relatively small numbers of graduates.

The overall picture is that disciplines with a strong science or technology content lead to higher starting salaries than those without.

Figure 2.1 Starting Salaries by Discipline for 2004 Graduates with Primary Degrees, Sorted by Median Salary



* Note that a value of €35,000 in this chart represents an indication that the value is over €33,000.

Source: Based on an original analysis of responses to the HEA's First Destination of Award Recipients Survey for Graduates of 2004.

2.4 Higher Diplomas and Graduate Diplomas

Table 2.2 summarises the salaries obtained by 2004 Primary Degree Graduates in different disciplines. Figure 2.2, which follows, summarises key information from Table 2.2 graphically.

Table 2.2 Starting Salaries by Discipline for 2004 Graduates with Higher Diplomas and Graduate Diplomas

	Percentile			% over
	25th	50th	75th	€33,000
Mechanical, Production and Manufacturing Engineering	€21,600	€23,200	€27,600	0.0%
Chemical and Process Engineering	€22,200	€23,200	€31,200	20.0%
Physics	€21,600	€23,200	€26,700	0.0%
Food Science and Technology	€27,200	€30,700	€32,400	0.0%
Psychology		€14,000		0.0%
Psychotherapy	<€8,999	€13,000	€23,000	16.7%
Mathematics		€23,000		0.0%
Computer Applications / Computer Science / Software Engineering	€20,000	€26,200	>€33,000*	30.6%
Computation / Modelling / Informatics	€21,000	€25,000	€29,000	25.0%
Business Information Systems	€22,400	€23,800	>€33,000*	28.6%
Nursing	€30,100	>€33,000*	>€33,000*	62.6%
Other Paramedical	€23,200	€27,000	€30,700	0.0%
Humanities	€14,900	€22,600	€28,500	16.7%
Social Work / Social Care / Sociology / Community Development	€25,700	€30,200	>€33,000*	41.7%
Art & Design	€10,200	€19,000	€28,000	0.0%
Teaching Qualifications	€18,500	€24,500	€30,700	17.0%
Other Education / Learning Support / Early Childhood Studies	€21,700	€28,100	>€33,000*	30.3%
Commerce & Business Studies	€20,900	€24,100	€28,700	13.6%
Law	€18,300	€24,600	€28,300	9.8%

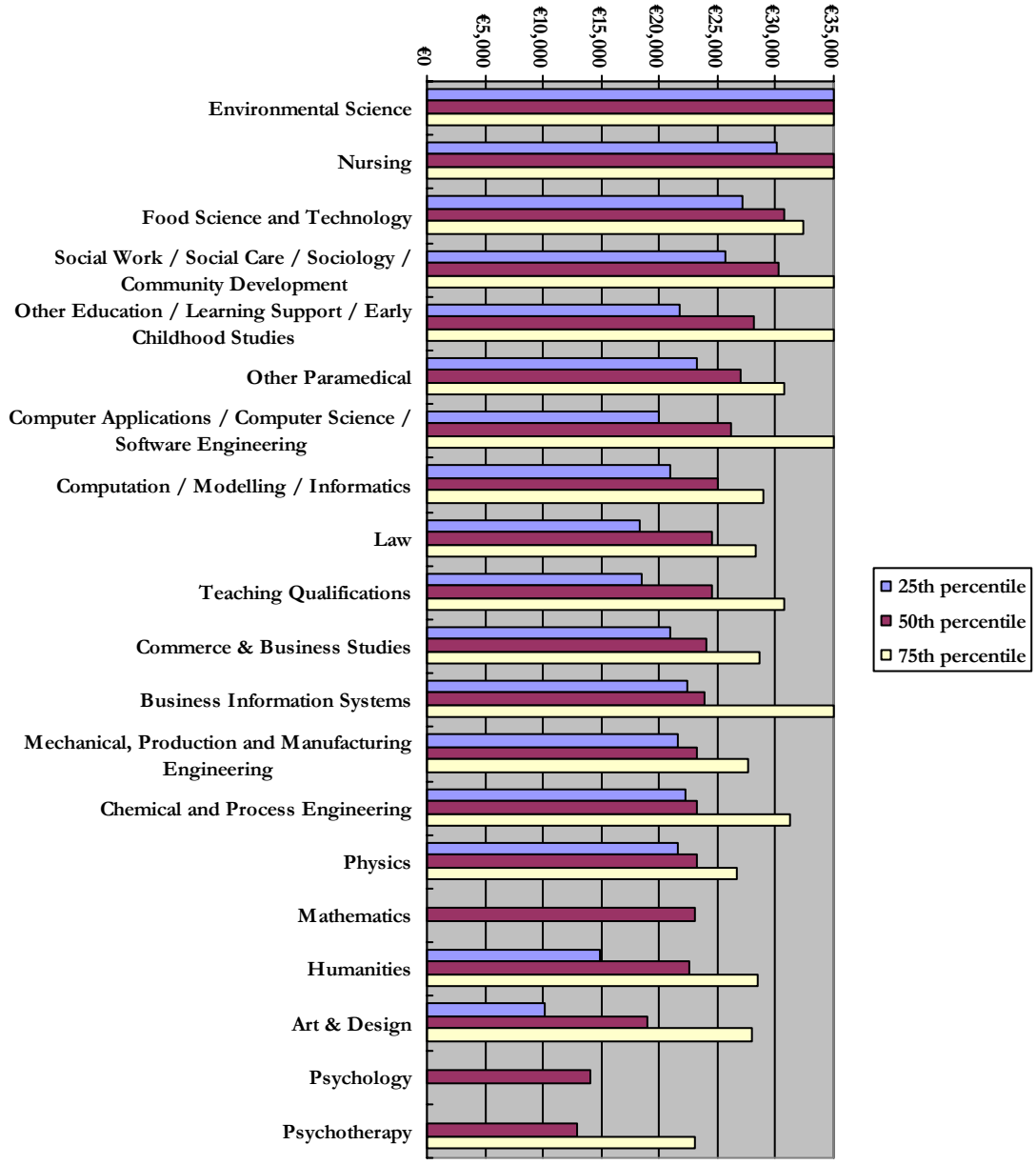
* The highest salary band in the First Destination Survey is "Over €33,000".

Source: Based on an original analysis of responses to the HEA's First Destination of Award Recipients Survey for Graduates of 2004.

Higher Diplomas and Graduate Diplomas differ from primary degrees in terms of the disciplines attracting the highest starting salaries. Some disciplines ranked relatively poorly for holders of primary degrees are ranked better for Higher Diplomas and Graduate Diplomas. This can be explained, in part at least, by the fact that some of these qualifications are designed to convert graduates from one discipline to another different one, while others are designed to impart more advanced or specialised knowledge in the discipline in which the student already has a qualification.

Even so, the dominant pattern is that holders of Higher and Graduate Diplomas in disciplines with a strong science or technology content obtain higher starting salaries than those in other disciplines.

Figure 2.2 **Starting Salaries by Discipline for 2004 Graduates with Higher Diplomas and Graduate Diplomas, Sorted by Median (50th percentile) Salary**



* Note that a value of €35,000 in this chart represents an indication that the value is over €33,000.

Source: Based on an original analysis of responses to the HEA's First Destination of Award Recipients Survey for Graduates of 2004.

2.5 Taught Masters Degrees

Table 2.3 summarises the salaries obtained by 2004 Taught Masters Degree Graduates in different disciplines. Figure 2.3, which follows, summarises key information from Table 2.3 graphically.

Table 2.3 Starting Salaries by Discipline for 2004 Taught Masters Degrees

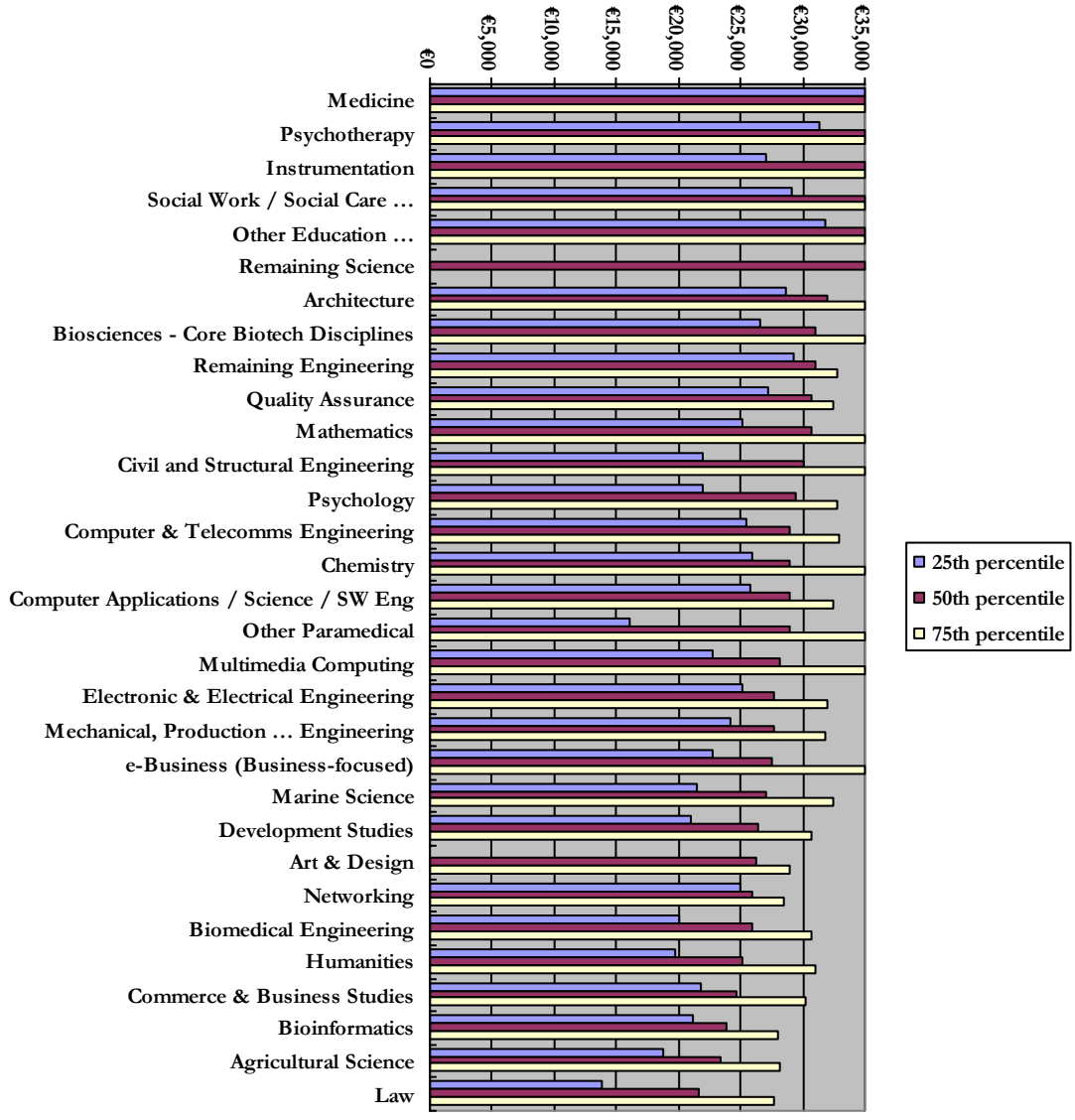
	Percentile			% over
	25th	50th	75th	€33,000
Electronic & Electrical Engineering	€25,100	€27,700	€32,000	17.6%
Computer Engineering and Telecommunications Engineering	€25,400	€29,000	€33,000	25.0%
Mechanical, Production and Manufacturing Engineering	€24,200	€27,700	€31,800	16.7%
Biomedical Engineering	€20,000	€26,000	€30,700	0.0%
Quality Assurance	€27,200	€30,700	€32,400	0.0%
Civil and Structural Engineering	€22,000	€30,000	>€33,000*	40.0%
Physics			>€33,000*	
Instrumentation	€27,000	>€33,000*	>€33,000*	
Chemistry	€26,000	€29,000	>€33,000*	33.3%
Biosciences - Core Biotech Disciplines (Genetics, Biochemistry …)	€26,600	€31,000	>€33,000	40.0%
Bioinformatics	€21,200	€23,800	€28,000	7.7%
Psychology	€22,000	€29,400	€32,700	23.1%
Psychotherapy	€31,400	>€33,000*	>€33,000	72.7%
Mathematics	€25,100	€30,700	>€33,000	44.4%
Computer Applications / Computer Science / Software Engineering	€25,800	€29,000	€32,500	20.4%
Multimedia Computing	€22,800	€28,100	>€33,000	29.4%
Networking	€25,000	€26,000	€28,400	0.0%
Agricultural Science	€18,700	€23,400	€28,200	13.3%
Architecture	€28,600	€31,900	>€33,000	43.5%
Medicine	>€33,000	>€33,000	>€33,000*	80.0%
Nursing		>€33,000*		
Other Paramedical	€16,000	€29,000	>€33,000*	33.3%
Humanities	€19,700	€25,200	€31,000	19.0%
Social Work / Social Care / Sociology / Community Development	€29,100	>€33,000*	>€33,000*	64.2%
Art & Design	<€8,999	€26,300	€29,000	25.0%
Other Education / Learning Support / Early Childhood Studies	€31,800	>€33,000*	>€33,000*	73.9%
Commerce & Business Studies	€21,800	€24,700	€30,200	18.0%
e-Business (Business-focused)	€22,700	€27,500	>€33,000*	28.6%
Development Studies	€21,000	€26,400	€30,700	7.1%
Law	€13,900	€21,600	€27,700	12.2%
Remaining Science		>€33,000*		
Remaining Engineering	€29,300	€31,000	€32,700	20.0%

* The highest salary band in the First Destination Survey is "Over €33,000".

Source: Based on an original analysis of responses to the HEA's First Destination of Award Recipients Survey for Graduates of 2004.

For all disciplines, starting salaries are higher for those with Taught Masters Degrees than for those with Primary Degrees. As at other levels, graduates with Taught Masters Degrees in disciplines with a strong science or technology content mostly obtain higher starting salaries than those in other disciplines.

Figure 2.3 Starting Salaries by Discipline for 2004 Graduates with Taught Masters Degrees, Sorted by Median (50th percentile) Salary



* Note that a value of €35,000 in this chart represents an indication that the value is over €33,000.

Source: Based on an original analysis of responses to the HEA's First Destination of Award Recipients Survey for Graduates of 2004.

2.6 Research Masters Degrees

Table 2.4 summarises the salaries obtained by 2004 Research Masters Degree Graduates in different disciplines. Figure 2.4, which follows, summarises key information from Table 2.4 graphically.

Table 2.4 Starting Salaries by Discipline for 2004 Graduates with Research Masters Degrees

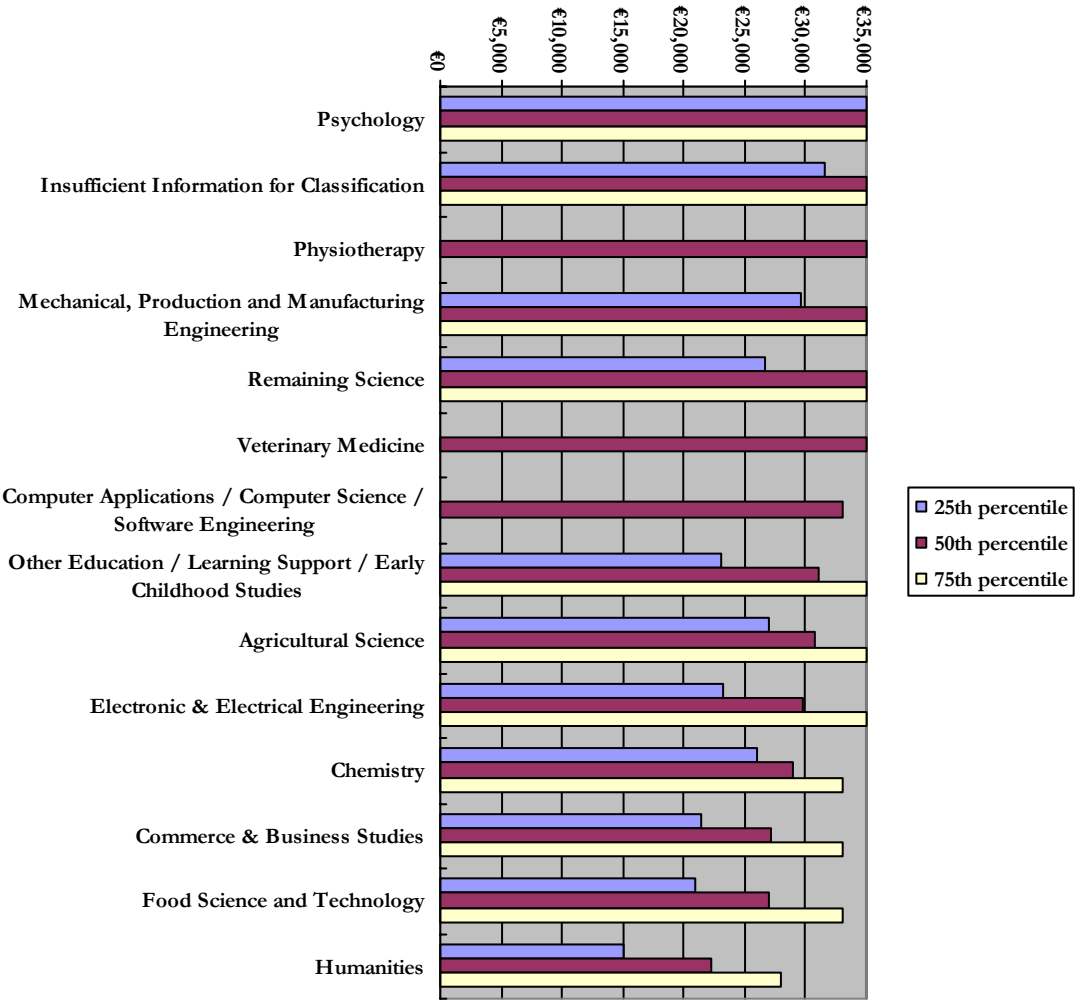
	Percentile			% over
	25th	50th	75th	€33,000
Electronic & Electrical Engineering	€23,200	€29,700	>€33,000*	28.6%
Mechanical, Production and Manufacturing Engineering	€29,600	>€33,000*	>€33,000*	60.0%
Chemistry	€26,000	€29,000	€33,000*	25.0%
Food Science and Technology	€21,000	€27,000	€33,000*	25.0%
Psychology	>€33,000*	>€33,000*	>€33,000*	100.0%
Computer Applications / Computer Science / Software Engineering		€33,000		50.0%
Agricultural Science	€27,000	€30,800	>€33,000*	33.3%
Physiotherapy		>€33,000*		
Veterinary Medicine		>€33,000*		
Humanities	€15,000	€22,300	€28,000	20.0%
Other Education / Learning Support / Early Childhood Studies	€23,000	€31,000	>€33,000*	50.0%
Commerce & Business Studies	€21,400	€27,200	€33,000*	25.0%
Remaining Science	€26,700	>€33,000*	>€33,000*	57.1%
Insufficient Information for Classification	€31,500	>€33,000*	>€33,000*	71.4%

* The highest salary band in the First Destination Survey is "Over €33,000".

Source: Based on an original analysis of responses to the HEA's First Destination of Award Recipients Survey for Graduates of 2004.

Many graduates with Research Masters Degrees obtain starting salaries in excess of €33,000 (which is the top point in scale in the survey on which the analysis is based). They tend to earn more than graduates at lower levels of qualification and with Taught Masters Degrees, and less than those with PhD Degrees. Most degrees awarded at this level are for research into areas of science and technology.

Figure 2.4 Starting Salaries by Discipline for 2004 Graduates with Research Masters Degrees, Sorted by Median (50th percentile) Salary



* Note that a value of €35,000 in this chart represents an indication that the value is over €33,000.

Source: Based on an original analysis of responses to the HEA's First Destination of Award Recipients Survey for Graduates of 2004.

2.7 PhD Degrees

Table 2.5 summarises information on the salaries obtained by 2004 PhD Degree Graduates in different disciplines. A majority of PhD graduates of 2004 entering employment obtained salaries in excess of €33,000, the top reference point in the survey that lies behind the analysis. For this reason, a table similar to that provided for other levels of qualification would not be informative. Instead, the table indicates the percentage of graduates entering employment obtaining in excess of €33,000.

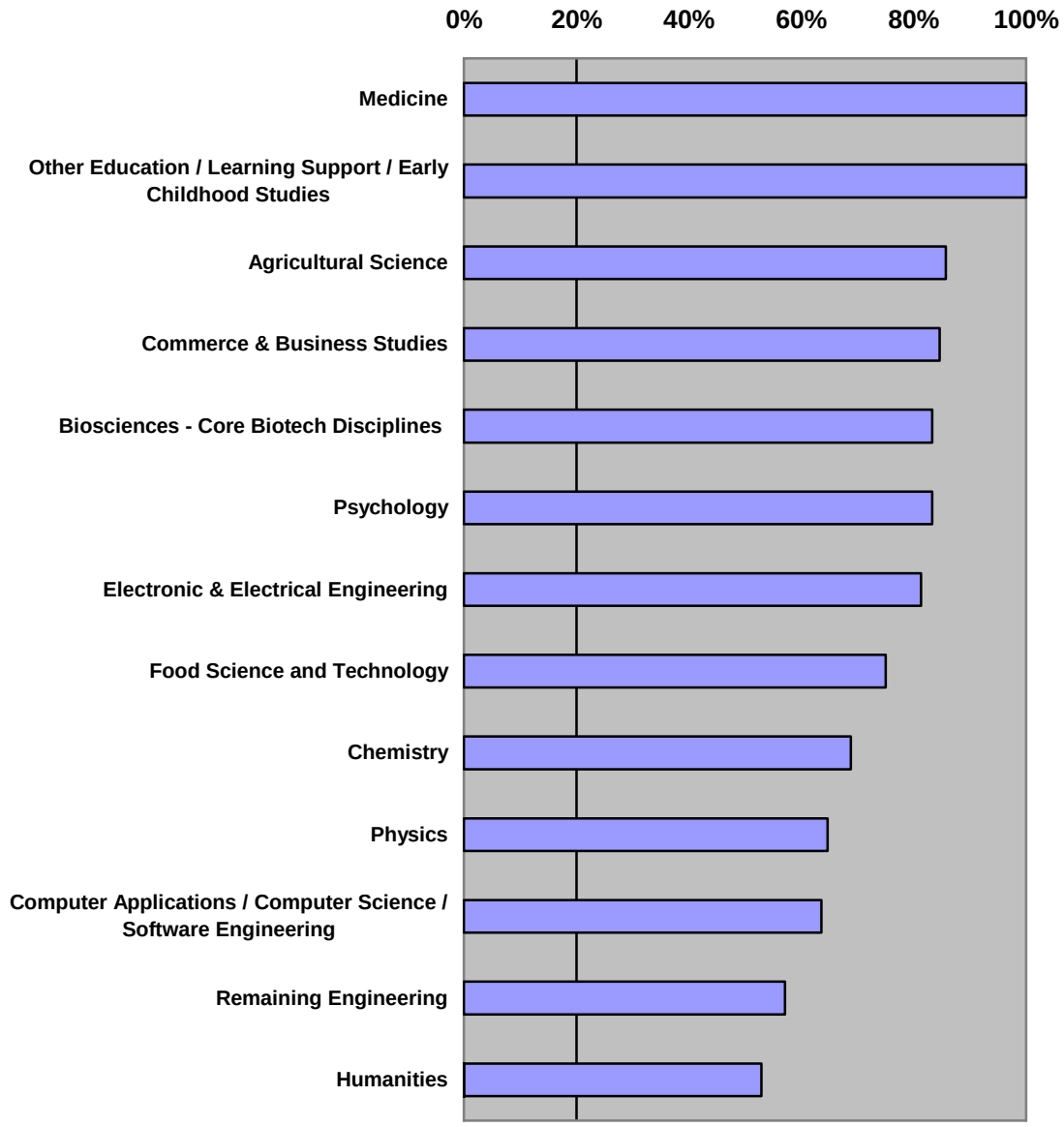
Figure 2.5, which follows, presents the information from Table 2.5 graphically.

Table 2.5 Percentages of PhD Graduates Entering Employment Earning Over €33,000

Discipline	% Earning Over €33,000
Electronic & Electrical Engineering	81.3%
Physics	64.7%
Chemistry	68.8%
Biosciences - Core Biotech Disciplines (Genetics, Biochemistry …)	83.3%
Food Science and Technology	75.0%
Psychology	83.3%
Computer Applications / Computer Science / Software Engineering	63.6%
Agricultural Science	85.7%
Medicine	100.0%
Humanities	52.9%
Other Education / Learning Support / Early Childhood Studies	100.0%
Commerce & Business Studies	84.6%

Source: Based on an original analysis of responses to the HEA's First Destination of Award Recipients Survey for Graduates of 2004.

Figure 2.5 Percentages of PhD Graduates Entering Employment Earning Over €33,000



Source: Based on an original analysis of responses to the HEA's First Destination of Award Recipients Survey for Graduates of 2004.

2.9 Comparisons of Graduate Salaries with Incomes Available to Research Students

Honours Bachelor Degree graduates in SET disciplines increasingly continue their studies by undertaking research towards a PhD or a research Masters degree. Significant funding is now available from a variety of sources to support this.

Two of the major routes for funding are:

- Employment as a research assistant by research programmes funded by bodies such as Science Foundation Ireland; and
- Postgraduate stipends under the Embark Programme administered on behalf of the Government by the Irish Research Council for Science, Engineering and Technology.

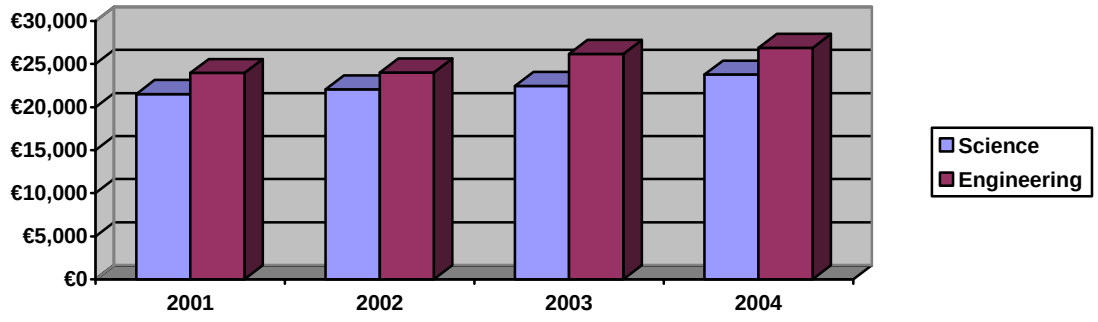
As of June 2006, the Irish University Association's salary scale for Research Assistants starts at €20,850, and extends to €33,800, which is comparable with the range of salaries available in industry for students in SET disciplines.

An award under the Embark Programme pays €24,003 each year, of which one third is intended to cover the cost of education. The remaining €16,002 is to maintain the student. As this amount is free of tax, it is equivalent to a larger sum in the form of a salary. The exact amount will vary depending on individual circumstances, but for a typical single person with only standard tax credits it is equivalent to approximately €18,900. While this is somewhat less than a graduate with a good degree is likely to obtain from an employer, it has proven to be sufficiently attractive to encourage effective competition for research places amongst the most able candidates from Ireland and overseas.

2.10 Trends in SET Graduate Salaries

Table 2.6 shows how salaries of primary degree graduates in SET disciplines have increased since 2001.

Figure 2.6 Median Salaries of Graduates in Science and Engineering



Source: Based on an original analysis of responses to the HEA's First Destination of Award Recipients Survey for Graduates of 2004 and on an analysis of data published by the HEA for the surveys of 2001 to 2003.

Chapter 3 Employment Sectors and Occupations Entered by Level 8 Graduates

3.1 Introduction

This chapter provides tabular information on the employment sectors entered by primary degree graduates of 2004 in SET and related disciplines, and on the occupations they pursued.

A key point to note is that graduates in most disciplines enter a diverse range of employment sectors, and, in many cases, pursue a diverse range of occupations. They are not locked in to a particular career path, and are mostly not dependent on a specific sector to provide them with employment.

A comparison with the salary data provided in Chapter 2 will show that the disciplines in which there is the tightest link between discipline of study and occupation are healthcare disciplines that are relatively well rewarded straight out of college.

3.2 Employment Sectors

Table 3.1 summarises the employment sectors entered by Primary Degree graduates in SET disciplines in 2004, using the occupational categories of the HEA's First Destination of Award Recipients survey.

Table 3.1 Employment Sectors Entered by Primary Degree Graduates of 2004 in SET Disciplines

Electronic & Electrical Engineering		Electronic & Electrical Engineering (cont'd)	
Agriculture, forestry and fishing	1.0%		
Food and Drink industries	0.5%	Consultant engineering and architectural services	8.4%
Pharmaceuticals, perfumery and toilet preparations	4.0%	Other Business services (incl. Management and IT Consulting)	6.4%
Metals, Metal Products, Mechanical and Electrical engineering (incl. Appliances)	8.4%	Computing and Software Applications	12.9%
Computer and electronic equipment, office machinery, instrument engineering (incl healthcare equipment)	17.3%	Transport, storage and support services	1.0%
Other Industries (incl. mining etc.)	3.0%	Telecommunications, postal services	11.4%
Electricity, gas and water supply	4.5%	Civil Service, Local Authorities (other than Building and Construction)	0.5%
Other (private) building and construction	5.0%	Third Level education	2.0%
Food retailing etc	0.5%	Health Services (both Health Board and other)	2.0%
Other Retailing (excl. bars etc.)	2.0%	Professional services n.e.c * (not elsewhere classified)	2.0%
Banking, Finance and Insurance	1.0%	Hotels and guesthouses, bars, restaurants etc.	0.5%

Accountancy and Legal Services	1.5%

Electronic & Electrical Engineering (cont'd)	
Other personal services (incl. recreational activities)	1.5%
Other industries or industry not stated	3.0%
Computer Engineering and Telecommunications Engineering	
Agriculture, forestry and fishing	1.8%
Metals, Metal Products, Mechanical and Electrical engineering (incl. Appliances)	1.8%
Computer and electronic equipment, office machinery, instrument engineering (incl healthcare equipment)	12.5%
Other Industries (incl. mining etc.)	3.6%
Other (private) building and construction	1.8%
Banking, Finance and Insurance	3.6%
Accountancy and Legal Services	3.6%
Other Business services (incl. Management and IT Consulting)	5.4%
Computing and Software Applications	26.8%
Transport, storage and support services	3.6%
Telecommunications, postal services	14.3%
Defence Forces, Gardai	3.6%
Civil Service, Local Authorities (other than Building and Construction)	1.8%
Third Level education	5.4%
Other education (incl. language schools)	1.8%
Professional services n.e.c * (not elsewhere classified)	3.6%
Other personal services (incl. recreational activities)	1.8%
Other industries or industry not stated	3.6%
Mechanical, Production and Manufacturing Engineering	
Agriculture, forestry and fishing	1.6%
Food and Drink industries	4.0%
Pharmaceuticals, perfumery and toilet preparations	6.4%

Mechanical, Production and Manufacturing Engineering (cont'd)	
Other chemical products (incl. fertilisers, rubber and plastics)	0.8%
Metals, Metal Products, Mechanical and Electrical engineering (incl. Appliances)	15.3%
Computer and electronic equipment, office machinery, instrument engineering (incl healthcare equipment)	15.3%
Other Industries (incl. mining etc.)	4.0%
Electricity, gas and water supply	3.6%
Other (private) building and construction	8.4%
Wholesale distribution	0.4%
Other Retailing (excl. bars etc.)	2.4%
Banking, Finance and Insurance	2.4%
Accountancy and Legal Services	0.4%
Consultant engineering and architectural services	8.4%
Other Business services (incl. Management and IT Consulting)	4.4%
Computing and Software Applications	4.0%
Transport, storage and support services	2.4%
Defence Forces, Gardai	1.2%
Civil Service, Local Authorities (other than Building and Construction)	0.4%
Third Level education	1.2%
Health Services (both Health Board and other)	0.8%
Research, Planning, Art Galleries etc.	0.8%
Professional services n.e.c * (not elsewhere classified)	3.2%
Hotels and guesthouses, bars, restaurants etc.	0.4%
Other personal services (incl. recreational activities)	0.8%
Other industries or industry not stated	6.8%

Biomedical Engineering	
Agriculture, forestry and fishing	16.7%
Pharmaceuticals, perfumery and toilet preparations	16.7%
Metals, Metal Products, Mechanical and Electrical engineering (incl. Appliances)	16.7%
Computer and electronic equipment, office machinery, instrument engineering (incl healthcare equipment)	16.7%
Electricity, gas and water supply	16.7%
Health Services (both Health Board and other)	16.7%
Civil and Structural Engineering	
Pharmaceuticals, perfumery and toilet preparations	0.5%
Metals, Metal Products, Mechanical and Electrical engineering (incl. Appliances)	5.3%
Computer and electronic equipment, office machinery, instrument engineering (incl healthcare equipment)	4.3%
Other Industries (incl. mining etc.)	1.0%
Electricity, gas and water supply	0.5%
Local authority building and construction (incl. OPW)	2.4%
Other (private) building and construction	33.2%
Consultant engineering and architectural services	42.8%
Transport, storage and support services	0.5%
Defence Forces, Gardai	0.5%
Civil Service, Local Authorities (other than Building and Construction)	2.9%
Secondary education	0.5%
Third Level education	0.5%
Professional services n.e.c * (not elsewhere classified)	4.3%
Other industries or industry not stated	1.0%

Quantity Surveying / Valuation Surveying (cont'd)	
Local authority building and construction (incl. OPW)	1.4%
Other (private) building and construction	52.1%
Food retailing etc	2.7%
Banking, Finance and Insurance	2.7%
Consultant engineering and architectural services	2.7%
Civil Service, Local Authorities (other than Building and Construction)	2.7%
Professional services n.e.c * (not elsewhere classified)	24.7%
Other personal services (incl. recreational activities)	2.7%
Other industries or industry not stated	8.2%
Chemical and Process Engineering	
Food and Drink industries	10.5%
Pharmaceuticals, perfumery and toilet preparations	42.1%
Other chemical products (incl. fertilisers, rubber and plastics)	7.9%
Metals, Metal Products, Mechanical and Electrical engineering (incl. Appliances)	5.3%
Other Industries (incl. mining etc.)	2.6%
Electricity, gas and water supply	2.6%
Food retailing etc	2.6%
Other Retailing (excl. bars etc.)	2.6%
Banking, Finance and Insurance	2.6%
Consultant engineering and architectural services	7.9%
Telecommunications, postal services	2.6%
Civil Service, Local Authorities (other than Building and Construction)	2.6%

		Other education (incl. language schools)	5.3%
Chemical and Process Engineering (cont'd)		**Physics**	
Other industries or industry not stated	2.6%	Agriculture, forestry and fishing	5.8%
Other Engineering Disciplines		Food and Drink industries	5.8%
Other Industries (incl. mining etc.)	2.6%	Pharmaceuticals, perfumery and toilet preparations	3.8%
Other (private) building and construction	23.1%	Metals, Metal Products, Mechanical and Electrical engineering (incl. Appliances)	5.8%
Wholesale distribution	2.6%	Computer and electronic equipment, office machinery, instrument engineering (incl healthcare equipment)	21.2%
Other Retailing (excl. bars etc.)	5.1%	Local authority building and construction (incl. OPW)	1.9%
Accountancy and Legal Services	2.6%	Food retailing etc	1.9%
Consultant engineering and architectural services	23.1%	Other Retailing (excl. bars etc.)	5.8%
Other Business services (incl. Management and IT Consulting)	2.6%	Banking, Finance and Insurance	5.8%
Transport, storage and support services	25.6%	Other Business services (incl. Management and IT Consulting)	15.4%
Telecommunications, postal services	2.6%	Transport, storage and support services	1.9%
Civil Service, Local Authorities (other than Building and Construction)	7.7%	Telecommunications, postal services	1.9%
Research, Planning, Art Galleries etc.	2.6%	Secondary education	3.8%
Materials Science and Materials Engineering		Other education (incl. language schools)	3.8%
Pharmaceuticals, perfumery and toilet preparations	10.0%	Health Services (both Health Board and other)	5.8%
Other chemical products (incl. fertilisers, rubber and plastics)	10.0%	Research, Planning, Art Galleries etc.	1.9%
Metals, Metal Products, Mechanical and Electrical engineering (incl. Appliances)	10.0%	Other personal services (incl. recreational activities)	1.9%
Other Industries (incl. mining etc.)	20.0%	Other industries or industry not stated	5.8%
Other (private) building and construction	20.0%	**Chemistry**	
Other Business services (incl. Management and IT Consulting)	20.0%	Agriculture, forestry and fishing	3.2%
Other education (incl. language schools)	10.0%	Food and Drink industries	3.2%
		Pharmaceuticals, perfumery and toilet preparations	51.6%
		Other chemical products (incl. fertilisers, rubber and plastics)	6.5%
		Metals, Metal Products, Mechanical and Electrical engineering (incl. Appliances)	4.8%
		Computer and electronic equipment, office machinery, instrument engineering	6.5%

		(incl healthcare equipment)	
Chemistry (cont'd)		**Biosciences - Core Biotech Disciplines (Cont'd)**	
Other Industries (incl. mining etc.)	1.6%	Primary education	1.2%
Other Retailing (excl. bars etc.)	1.6%	Secondary education	3.2%
Accountancy and Legal Services	1.6%	Third Level education	5.6%
Other Business services (incl. Management and IT Consulting)	1.6%	Other education (incl. language schools)	1.6%
Secondary education	6.5%	Health Services (both Health Board and other)	8.5%
Health Services (both Health Board and other)	1.6%	Research, Planning, Art Galleries etc.	3.6%
Research, Planning, Art Galleries etc.	1.6%	Social and charitable services	0.4%
Professional services n.e.c * (not elsewhere classified)	3.2%	Professional services n.e.c * (not elsewhere classified)	2.4%
Hotels and guesthouses, bars, restaurants etc.	3.2%	Hotels and guesthouses, bars, restaurants etc.	2.4%
Other industries or industry not stated	1.6%	Other personal services (incl. recreational activities)	1.2%
Biosciences - Core Biotech Disciplines (Genetics, Biochemistry ...)		Other industries or industry not stated	4.4%
Agriculture, forestry and fishing	5.2%	**Biosciences - Other (Zoology, Botany ...)**	
Food and Drink industries	3.2%	Agriculture, forestry and fishing	4.0%
Pharmaceuticals, perfumery and toilet preparations	35.1%	Pharmaceuticals, perfumery and toilet preparations	4.0%
Other chemical products (incl. fertilisers, rubber and plastics)	1.2%	Local authority building and construction (incl. OPW)	4.0%
Metals, Metal Products, Mechanical and Electrical engineering (incl. Appliances)	0.4%	Other Retailing (excl. bars etc.)	8.0%
Computer and electronic equipment, office machinery, instrument engineering (incl healthcare equipment)	8.9%	Banking, Finance and Insurance	4.0%
Other Industries (incl. mining etc.)	0.4%	Computing and Software Applications	4.0%
Other (private) building and construction	0.8%	Telecommunications, postal services	4.0%
Food retailing etc	0.8%	Secondary education	8.0%
Other Retailing (excl. bars etc.)	5.6%	Health Services (both Health Board and other)	12.0%
Banking, Finance and Insurance	1.6%	Research, Planning, Art Galleries etc.	8.0%
Other Business services (incl. Management and IT Consulting)	1.2%	Professional services n.e.c * (not elsewhere classified)	12.0%
Telecommunications, postal services	0.4%	Other industries or industry not stated	28.0%
Civil Service, Local Authorities (other than Building and Construction)	0.4%		

Biomedical Sciences		**Pharmacy**	
Pharmaceuticals, perfumery and toilet preparations	1.7%	Pharmaceuticals, perfumery and toilet preparations	87.5%
Computer and electronic equipment, office machinery, instrument engineering (incl healthcare equipment)	3.3%	Other Retailing (excl. bars etc.)	3.1%
Other Retailing (excl. bars etc.)	1.7%	Health Services (both Health Board and other)	6.3%
Secondary education	3.3%	Professional services n.e.c * (not elsewhere classified)	3.1%
Health Services (both Health Board and other)	88.3%	**Medical Sciences / Health Sciences / Sport Science**	
Hotels and guesthouses, bars, restaurants etc.	1.7%	Agriculture, forestry and fishing	2.1%
Food Science and Technology		Food and Drink industries	2.1%
Food and Drink industries	33.3%	Pharmaceuticals, perfumery and toilet preparations	2.1%
Pharmaceuticals, perfumery and toilet preparations	16.7%	Computer and electronic equipment, office machinery, instrument engineering (incl healthcare equipment)	4.2%
Other chemical products (incl. fertilisers, rubber and plastics)	2.8%	Other (private) building and construction	4.2%
Computer and electronic equipment, office machinery, instrument engineering (incl healthcare equipment)	4.2%	Other Retailing (excl. bars etc.)	2.1%
Food retailing etc	20.8%	Banking, Finance and Insurance	8.3%
Other Retailing (excl. bars etc.)	9.7%	Consultant engineering and architectural services	4.2%
Civil Service, Local Authorities (other than Building and Construction)	4.2%	Call Centres and Shared Services facilities	2.1%
Secondary education	2.8%	Other Business services (incl. Management and IT Consulting)	4.2%
Third Level education	1.4%	Computing and Software Applications	2.1%
Other education (incl. language schools)	1.4%	Transport, storage and support services	2.1%
Hotels and guesthouses, bars, restaurants etc.	2.8%	Defence Forces, Gardai	2.1%
Pharmacology		Primary education	2.1%
Pharmaceuticals, perfumery and toilet preparations	28.6%	Secondary education	2.1%
Other Retailing (excl. bars etc.)	28.6%	Third Level education	6.3%
Hotels and guesthouses, bars, restaurants etc.	14.3%	Health Services (both Health Board and other)	12.5%
Other personal services (incl. recreational activities)	14.3%	Research, Planning, Art Galleries etc.	2.1%

Other industries or industry not stated	14.3%	Social and charitable services	2.1%

Medical Sciences / Health Sciences / Sport Science (cont'd)		**Psychology (cont'd)**	
Hotels and guesthouses, bars, restaurants etc.	8.3%	Other personal services (incl. recreational activities)	20.8%
Other personal services (incl. recreational activities)	20.8%	Other industries or industry not stated	2.1%
Other industries or industry not stated	2.1%	**Environmental Science**	
Psychology		Agriculture, forestry and fishing	3.9%
Food and Drink industries	0.8%	Food and Drink industries	2.0%
Pharmaceuticals, perfumery and toilet preparations	0.8%	Pharmaceuticals, perfumery and toilet preparations	11.8%
Metals, Metal Products, Mechanical and Electrical engineering (incl. Appliances)	0.8%	Other Industries (incl. mining etc.)	2.0%
Computer and electronic equipment, office machinery, instrument engineering (incl healthcare equipment)	1.7%	Local authority building and construction (incl. OPW)	2.0%
Electricity, gas and water supply	0.8%	Other (private) building and construction	7.8%
Food retailing etc	2.5%	Food retailing etc	1.0%
Other Retailing (excl. bars etc.)	9.3%	Other Retailing (excl. bars etc.)	6.9%
Banking, Finance and Insurance	5.9%	Banking, Finance and Insurance	2.0%
Consultant engineering and architectural services	0.8%	Consultant engineering and architectural services	1.0%
Call Centres and Shared Services facilities	0.8%	Call Centres and Shared Services facilities	1.0%
Other Business services (incl. Management and IT Consulting)	3.4%	Other Business services (incl. Management and IT Consulting)	1.0%
Telecommunications, postal services	2.5%	Computing and Software Applications	1.0%
Civil Service, Local Authorities (other than Building and Construction)	1.7%	Telecommunications, postal services	1.0%
Primary education	8.5%	Defence Forces, Gardai	1.0%
Secondary education	2.5%	Civil Service, Local Authorities (other than Building and Construction)	6.9%
Third Level education	3.4%	Third Level education	2.0%
Other education (incl. language schools)	11.9%	Health Services (both Health Board and other)	23.5%
Health Services (both Health Board and other)	16.9%	Research, Planning, Art Galleries etc.	2.9%
Social and charitable services	11.0%	Professional services n.e.c * (not elsewhere classified)	3.9%
Professional services n.e.c * (not elsewhere classified)	2.5%	Hotels and guesthouses, bars, restaurants etc.	5.9%
Hotels and guesthouses, bars, restaurants etc.	5.1%	Other personal services (incl. recreational activities)	2.9%
		Other industries or industry not stated	6.9%

Marine Science		**Arts degree with Mathematics as one of 2 or more subjects (cont'd)**	
Agriculture, forestry and fishing	11.1%	Other Retailing (excl. bars etc.)	9.8%
Pharmaceuticals, perfumery and toilet preparations	11.1%	Banking, Finance and Insurance	21.6%
Computer and electronic equipment, office machinery, instrument engineering (incl healthcare equipment)	11.1%	Accountancy and Legal Services	3.9%
Food retailing etc	11.1%	Other Business services (incl. Management and IT Consulting)	2.0%
Banking, Finance and Insurance	11.1%	Transport, storage and support services	2.0%
Third Level education	22.2%	Defence Forces, Gardai	5.9%
Professional services n.e.c * (not elsewhere classified)	11.1%	Civil Service, Local Authorities (other than Building and Construction)	3.9%
Other personal services (incl. recreational activities)	11.1%	Primary education	5.9%
Mathematics		Secondary education	23.5%
Pharmaceuticals, perfumery and toilet preparations	1.2%	Third Level education	2.0%
Metals, Metal Products, Mechanical and Electrical engineering (incl. Appliances)	1.2%	Other education (incl. language schools)	3.9%
Banking, Finance and Insurance	68.3%	Research, Planning, Art Galleries etc.	2.0%
Accountancy and Legal Services	3.7%	Social and charitable services	2.0%
Other Business services (incl. Management and IT Consulting)	3.7%	Professional services n.e.c * (not elsewhere classified)	2.0%
Computing and Software Applications	1.2%	Hotels and guesthouses, bars, restaurants etc.	3.9%
Transport, storage and support services	2.4%	Other personal services (incl. recreational activities)	2.0%
Secondary education	4.9%	**Computer Applications / Computer Science / Software Engineering**	
Third Level education	1.2%	Agriculture, forestry and fishing	1.0%
Health Services (both Health Board and other)	1.2%	Food and Drink industries	1.2%
Professional services n.e.c * (not elsewhere classified)	7.3%	Pharmaceuticals, perfumery and toilet preparations	2.1%
Hotels and guesthouses, bars, restaurants etc.	2.4%	Other chemical products (incl. fertilisers, rubber and plastics)	0.4%
Other industries or industry not stated	1.2%	Metals, Metal Products, Mechanical and Electrical engineering (incl. Appliances)	1.2%
Arts degree with Mathematics as one of 2 or more subjects		Computer and electronic equipment, office machinery, instrument engineering (incl healthcare equipment)	8.1%
Agriculture, forestry and fishing	2.0%	Other Industries (incl. mining etc.)	1.4%
Local authority building and construction	2.0%	Electricity, gas and water supply	1.6%

(incl. OPW)			

Computer Applications / Computer Science / Software Engineering (cont'd)		**Business Information Systems**	
Other (private) building and construction	1.9%	Agriculture, forestry and fishing	6.0%
Wholesale distribution	0.2%	Food and Drink industries	2.4%
Food retailing etc	1.0%	Pharmaceuticals, perfumery and toilet preparations	0.6%
Other Retailing (excl. bars etc.)	3.9%	Other chemical products (incl. fertilisers, rubber and plastics)	0.6%
Banking, Finance and Insurance	11.8%	Metals, Metal Products, Mechanical and Electrical engineering (incl. Appliances)	1.2%
Accountancy and Legal Services	2.9%	Computer and electronic equipment, office machinery, instrument engineering (incl healthcare equipment)	1.8%
Consultant engineering and architectural services	0.2%	Electricity, gas and water supply	0.6%
Call Centres and Shared Services facilities	0.4%	Other (private) building and construction	1.2%
Other Business services (incl. Management and IT Consulting)	14.0%	Food retailing etc	0.6%
Computing and Software Applications	23.1%	Other Retailing (excl. bars etc.)	3.6%
Transport, storage and support services	1.0%	Banking, Finance and Insurance	23.8%
Telecommunications, postal services	7.2%	Accountancy and Legal Services	6.5%
Defence Forces, Gardai	0.6%	Consultant engineering and architectural services	0.6%
Civil Service, Local Authorities (other than Building and Construction)	2.3%	Call Centres and Shared Services facilities	0.6%
Primary education	0.2%	Other Business services (incl. Management and IT Consulting)	16.1%
Secondary education	0.6%	Computing and Software Applications	23.8%
Third Level education	3.5%	Transport, storage and support services	0.6%
Other education (incl. language schools)	0.4%	Telecommunications, postal services	1.8%
Health Services (both Health Board and other)	1.2%	Civil Service, Local Authorities (other than Building and Construction)	3.0%
Research, Planning, Art Galleries etc.	0.2%	Other education (incl. language schools)	0.6%
Professional services n.e.c * (not elsewhere classified)	1.9%	Health Services (both Health Board and other)	0.6%
Hotels and guesthouses, bars, restaurants etc.	1.6%	Social and charitable services	0.6%
Other personal services (incl. recreational activities)	0.6%	Professional services n.e.c * (not elsewhere classified)	1.8%
Other industries or industry not stated	2.7%	Hotels and guesthouses, bars, restaurants etc.	0.6%
		Other industries or industry not stated	0.6%

Multimedia Computing		**Agricultural Science (cont'd)**	
Agriculture, forestry and fishing	12.5%	Computing and Software Applications	1.2%
Metals, Metal Products, Mechanical and Electrical engineering (incl. Appliances)	2.5%	Civil Service, Local Authorities (other than Building and Construction)	2.4%
Computer and electronic equipment, office machinery, instrument engineering (incl healthcare equipment)	2.5%	Research, Planning, Art Galleries etc.	7.1%
Wholesale distribution	2.5%	Professional services n.e.c * (not elsewhere classified)	6.0%
Other Retailing (excl. bars etc.)	2.5%	Other industries or industry not stated	2.4%
Banking, Finance and Insurance	7.5%	**Geology / Earth Sciences**	
Call Centres and Shared Services facilities	2.5%	Agriculture, forestry and fishing	2.6%
Other Business services (incl. Management and IT Consulting)	5.0%	Pharmaceuticals, perfumery and toilet preparations	2.6%
Computing and Software Applications	2.5%	Computer and electronic equipment, office machinery, instrument engineering (incl healthcare equipment)	5.3%
Transport, storage and support services	2.5%	Other Industries (incl. mining etc.)	10.5%
Telecommunications, postal services	7.5%	Electricity, gas and water supply	2.6%
Third Level education	10.0%	Local authority building and construction (incl. OPW)	5.3%
Health Services (both Health Board and other)	5.0%	Other (private) building and construction	18.4%
Social and charitable services	2.5%	Other Retailing (excl. bars etc.)	5.3%
Professional services n.e.c * (not elsewhere classified)	32.5%	Banking, Finance and Insurance	2.6%
Agricultural Science		Consultant engineering and architectural services	5.3%
Agriculture, forestry and fishing	16.7%	Telecommunications, postal services	5.3%
Food and Drink industries	20.2%	Civil Service, Local Authorities (other than Building and Construction)	10.5%
Other chemical products (incl. fertilisers, rubber and plastics)	1.2%	Secondary education	2.6%
Metals, Metal Products, Mechanical and Electrical engineering (incl. Appliances)	2.4%	Third Level education	2.6%
Other Industries (incl. mining etc.)	1.2%	Health Services (both Health Board and other)	2.6%
Wholesale distribution	2.4%	Research, Planning, Art Galleries etc.	5.3%
Food retailing etc	2.4%	Hotels and guesthouses, bars, restaurants etc.	2.6%
Other Retailing (excl. bars etc.)	3.6%	Other personal services (incl. recreational activities)	2.6%
Banking, Finance and Insurance	4.8%	Other industries or industry not stated	5.3%
Consultant engineering and architectural services	11.9%		

Other Business services (incl. Management and IT Consulting)	14.3%		
Architecture		**Architecture (cont'd)**	
Other (private) building and construction	26.8%	Civil Service, Local Authorities (other than Building and Construction)	1.8%
Accountancy and Legal Services	1.8%	Professional services n.e.c * (not elsewhere classified)	1.8%
Consultant engineering and architectural services	62.5%	Other industries or industry not stated	5.4%

Source: Based on an original analysis of responses to the HEA's First Destination of Award Recipients Survey for Graduates of 2004

3.3 Occupations

Table 3.2 summarises the occupations entered by Primary Degree graduates in SET and Healthcare disciplines in 2004, using the occupational categories of the HEA's First Destination of Award Recipients survey.

Table 3.2 Occupations Entered by Primary Degree Graduates of 2004 in SET and Healthcare Disciplines

Electronic & Electrical Engineering		Electronic & Electrical Engineering (cont'd)	
Managers, Administrators and Executives (general purpose)	0.5%	Engineering Technicians	4.5%
Managers, Executives etc. in Sales, Marketing, Advertising, etc.	1.0%	Electrical and Electronic Technicians	6.6%
Managers in Personnel, Human Resource Development, Training etc	0.5%	Building and Civil Engineering Technicians	0.5%
Other Managers, Executives, exercising specific functions	1.0%	Surveyors / Support	0.5%
Managers/Admin/Execs Not Further Specified	0.5%	Social Care, Community and Youth Workers	0.5%
Industrial Academic Research Scientists	0.5%	Software Maintenance and Support	1.0%
Quality Control / Analytical Work	1.0%	Technical Writing	0.5%
Scientific and Technical Advisors / Consultants	0.5%	Other Computer Support Staff incl Computer Training	2.0%
Other Professional Scientific and Technical activities	1.0%	Photographers, Sound and Video Equipment Operators etc	0.5%
Design and Development Engineers (excl software development)	12.6%	Other Literary, Artistic and Sports	0.5%
Engineering Advisors / Consultants	9.1%	Receptionists / telephonists / clerk-typists / secretaries	0.5%
Manufacturing, Production, Process Engineers	9.6%	Computer Operators, Data processors	0.5%
Other Engineering Professionals	23.2%	Skilled electrical, electronic workers	0.5%
Civil and Structural Engineers	2.5%	Other Skilled manual occupations	1.0%
Quantity etc. Surveyors	0.5%	Industrial and other operatives	1.0%
Software Design and Development	2.5%	Security guards and related activities	0.5%
Systems Analysts	0.5%	Sales representatives, manufacturers agents, import / export	0.5%
Computer Programming Professionals	3.5%	Sales assistants, check-out operators	0.5%
Accountants	0.5%	Telephone salespersons (incl customer support)	1.0%
Management Consultants, Business Analysts	2.5%	Other sales occupations	0.5%
Non Scientific Research, Technical Workers, Translators etc	0.5%	Bar Staff, etc	0.5%
Other Professionals	0.5%	Other Unskilled Manual, Other	1.0%

		Occupations	
Computer Engineering and Telecommunications Engineering		**Mechanical, Production and Manufacturing Engineering (cont'd)**	
Managers, Administrators and Executives (general purpose)	3.6%	Managers in Personnel, Human Resource Development, Training etc	0.4%
Officers in Defence Forces, Gardai	1.8%	Other Managers, Executives, exercising specific functions	6.3%
Managers/Admin/Execs Not Further Specified	1.8%	Officers in Defence Forces, Gardai	0.4%
Quality Control / Analytical Work	3.6%	Farmers, Horticulturists (Own account)	0.4%
Industrial Academic Research Engineers	1.8%	Managers/Admin/Execs Not Further Specified	0.4%
Design and Development Engineers (excl software development)	14.5%	Quality Control / Analytical Work	2.0%
Manufacturing, Production, Process Engineers	1.8%	Other Professional Scientific and Technical activities	1.2%
Other Engineering Professionals	10.9%	Industrial Academic Research Engineers	0.8%
Software Design and Development	23.6%	Design and Development Engineers (excl software development)	5.1%
Systems Analysts	1.8%	Engineering Advisors / Consultants	2.0%
Computer Programming Professionals	7.3%	Manufacturing, Production, Process Engineers	28.2%
Accountants	3.6%	Other Engineering Professionals	31.4%
Management Consultants, Business Analysts	3.6%	Civil and Structural Engineers	1.6%
Other Business etc Professionals	1.8%	Architects	0.4%
Other Teachers (eg language, special etc schools)	1.8%	Regional, Urban and Environmental Planners	0.4%
Non Scientific Research, Technical Workers, Translators etc	1.8%	Quantity etc. Surveyors	0.4%
Software Maintenance and Support	5.5%	Other Architecture and Planning	0.4%
Other Computer Support Staff incl Computer Training	3.6%	Software Design and Development	0.4%
Actors, Broadcasters, Musicians, Sports Professionals	1.8%	Accountants	0.4%
Clerical assistants / clerical officers / bookkeepers (except Bank Officials)	1.8%	Management Consultants, Business Analysts	1.2%
Defence Forces and Gardai (non-commissioned)	1.8%	Other Business etc Professionals	1.2%
Mechanical, Production and Manufacturing Engineering		Third Level (Assistants, Demonstrators)	0.4%
Managers, Administrators and Executives (general purpose)	0.4%	Non Scientific Research, Technical Workers, Translators etc	0.4%
Managers, Executives etc. in Sales, Marketing, Advertising, etc.	0.4%	Laboratory Technicians (non-Medical)	0.8%

		Engineering Technicians	1.2%
Mechanical, Production and Manufacturing Engineering (cont'd)		**Civil and Structural Engineering**	
Electrical and Electronic Technicians	0.4%	Design and Development Engineers (excl software development)	6.0%
Architectural and Town Planning Technicians	0.4%	Engineering Advisors / Consultants	11.0%
Building and Civil Engineering Technicians	0.8%	Manufacturing, Production, Process Engineers	1.0%
Other Computer Support Staff incl Computer Training	0.8%	Other Engineering Professionals	4.5%
Estimators, Claims Assessors	0.4%	Civil and Structural Engineers	69.5%
Other Literary, Artistic and Sports	0.4%	Software Design and Development	0.5%
Aircraft and Ships Officers, Air Traffic Controllers	1.2%	Other Business etc Professionals	0.5%
Bank Officials	0.4%	Second Level	0.5%
Computer Operators, Data processors	0.4%	Laboratory Technicians (non-Medical)	0.5%
Skilled electrical, electronic workers	0.4%	Laboratory Technicians (Medical)	0.5%
Other Skilled manual occupations	2.4%	Electrical and Electronic Technicians	0.5%
Transport ops, road and rail drivers, seafarers, crane drivers, postal workers, couriers	0.4%	Building and Civil Engineering Technicians	2.5%
Security guards and related activities	0.4%	Site Clerks (skilled, non-clerical)	0.5%
Sales representatives, manufacturers agents, import / export	0.4%	Authors, Writers, Journalists	0.5%
Sales assistants, check-out operators	1.2%	Other Skilled manual occupations	0.5%
Bar Staff, etc	0.4%	Transport ops, road and rail drivers, seafarers, crane drivers, postal workers, couriers	0.5%
Other Service Occupations	0.8%	Defence Forces and Gardai (non-commissioned)	0.5%
Other Unskilled Manual, Other Occupations	0.4%	**Quantity Surveying / Valuation Surveying**	
Biomedical Engineering		Managers, Administrators and Executives (general purpose)	3.8%
Other Managers, Executives, exercising specific functions	6.7%	Other Managers, Executives, exercising specific functions	3.8%
Scientific and Technical Advisors / Consultants	6.7%	Quality Control / Analytical Work	1.9%
Design and Development Engineers (excl software development)	33.3%	Quantity etc. Surveyors	39.6%
Engineering Advisors / Consultants	6.7%	Other Surveyors	24.5%
Manufacturing, Production, Process Engineers	26.7%	Other Architecture and Planning	1.9%
Other Engineering Professionals	13.3%	Other Business etc Professionals	9.4%
Laboratory Technicians (Medical)	6.7%	Surveyors / Support	1.9%

		Site Clerks (skilled, non-clerical)	1.9%
Quantity Surveying / Valuation Surveying (cont'd)		**Physics**	
Estimators, Claims Assessors	1.9%	Managers, Executives etc. in Sales, Marketing, Advertising, etc.	2.0%
Receptionists / telephonists / clerk-typists / secretaries	3.8%	Managers in Personnel, Human Resource Development, Training etc	2.0%
Other Skilled manual occupations	1.9%	Other Managers, Executives, exercising specific functions	2.0%
Other sales occupations	1.9%	Farmers, Horticulturists (Own account)	2.0%
Other Service Occupations	1.9%	Industrial Academic Research Scientists	2.0%
Chemical and Process Engineering		Industrial / Commercial, Design and Development Scientists	2.0%
Managers, Administrators and Executives (general purpose)	10.5%	Quality Control / Analytical Work	2.0%
Other Managers, Executives, exercising specific functions	2.6%	Scientific and Technical Advisors / Consultants	3.9%
Quality Control / Analytical Work	7.9%	Other Professional Scientific and Technical activities	2.0%
Design and Development Engineers (excl software development)	7.9%	Engineering Advisors / Consultants	2.0%
Engineering Advisors / Consultants	2.6%	Manufacturing, Production, Process Engineers	2.0%
Manufacturing, Production, Process Engineers	55.3%	Other Engineering Professionals	13.7%
Other Business etc Professionals	2.6%	Other Surveyors	2.0%
Other Teachers (eg language, special etc schools)	5.3%	Accountants	2.0%
Environmental and Conservation Officers	2.6%	Insurance Professionals (non-sales)	2.0%
Authors, Writers, Journalists	2.6%	Second Level	2.0%
Materials Science and Materials Engineering		Other Teachers (eg language, special etc schools)	7.8%
Industrial / Commercial, Design and Development Scientists	7.7%	Non Scientific Research, Technical Workers, Translators etc	2.0%
Quality Control / Analytical Work	7.7%	Laboratory Technicians (non-Medical)	3.9%
Other Professional Scientific and Technical activities	7.7%	Software Maintenance and Support	2.0%
Other Engineering Professionals	15.4%	Accounts Assistants / Technicians	3.9%
Other Architecture and Planning	15.4%	Clerical assistants / clerical officers / bookkeepers (except Bank Officials)	2.0%
Other Business etc Professionals	7.7%	Bank Officials	3.9%
Other Teachers (eg language, special etc schools)	7.7%	Computer Operators, Data processors	2.0%
Laboratory Technicians (non-Medical)	7.7%	Industrial and other operatives	7.8%
Clerical assistants / clerical officers / bookkeepers (except Bank Officials)	7.7%	Security guards and related activities	2.0%

Other Skilled manual occupations	15.4%	Sales assistants, check-out operators	3.9%
Physics (cont'd)		**Biosciences - Core Biotech Disciplines (cont'd)**	
Waiters, Waitresses, etc	2.0%	Industrial Academic Research Scientists	5.8%
Bar Staff, etc	2.0%	Industrial / Commercial, Design and Development Scientists	3.3%
Other Service Occupations	2.0%	Quality Control / Analytical Work	25.9%
Agricultural Labourers	2.0%		
Other Unskilled Manual, Other Occupations	5.9%	Scientific and Technical Advisors / Consultants	6.6%
Chemistry		Other Professional Scientific and Technical activities	7.4%
Managers, Executives etc. in Sales, Marketing, Advertising, etc.	1.6%	Industrial Academic Research Engineers	0.8%
Industrial Academic Research Scientists	1.6%	Engineering Advisors / Consultants	0.4%
Industrial / Commercial, Design and Development Scientists	6.5%	Other Engineering Professionals	0.4%
Quality Control / Analytical Work	45.2%	Management Consultants, Business Analysts	0.4%
Scientific and Technical Advisors / Consultants	8.1%	Other Business etc Professionals	0.8%
Other Professional Scientific and Technical activities	1.6%	Solicitors - Other	0.4%
Software Design and Development	1.6%	Primary Teachers (incl Nursery)	0.8%
Accountants	1.6%	Second Level	2.9%
Primary Teachers (incl Nursery)	1.6%	Other Teachers (eg language, special etc schools)	2.1%
Second Level	4.8%	Non Scientific Research, Technical Workers, Translators etc	1.2%
Laboratory Technicians (non-Medical)	11.3%	Laboratory Technicians (non-Medical)	9.5%
Laboratory Technicians (Medical)	4.8%	Laboratory Technicians (Medical)	8.2%
Nurses	1.6%	Dental / Medical auxiliaries	1.2%
Sales assistants, check-out operators	3.2%	Environmental, Health, etc. Officers	0.4%
Bar Staff, etc	3.2%	Social Care, Community and Youth Workers	0.8%
Agricultural Labourers	1.6%	House Parents etc and other Childcare Workers	0.8%
Biosciences - Core Biotech Disciplines (Genetics, Biochemistry ...)		Actors, Broadcasters, Musicians, Sports Professionals	0.8%
Managers, Administrators and Executives (general purpose)	0.4%	Clerical assistants/clerical officers/bookkeepers (except Bank Officials)	3.3%
Managers, Executives etc. in Sales, Marketing, Advertising, etc.	0.8%	Receptionists / telephonists / clerk-typists / secretaries	0.4%
Other Managers, Executives, exercising specific functions	2.1%	Bank Officials	0.8%

Farmers, Horticulturists (Own account)	0.4%	Other Skilled manual occupations	0.8%
Biosciences - Core Biotech Disciplines (cont'd)		**Biosciences - Other (cont'd)**	
Industrial and other operatives	1.2%	Telephone salespersons (incl customer support)	4.8%
Transport ops, road and rail drivers, seafarers, crane drivers, postal workers, couriers	0.4%	Other Service Occupations	4.8%
Sales representatives, manufacturers agents, import / export	1.6%	**Food Science and Technology**	
Sales assistants, check-out operators	2.9%	Managers, Administrators and Executives (general purpose)	1.4%
Other sales occupations	0.4%	Other Managers, Executives, exercising specific functions	5.6%
Waiters, Waitresses, etc	1.2%	Industrial Academic Research Scientists	1.4%
Bar Staff, etc	0.8%	Industrial / Commercial, Design and Development Scientists	1.4%
Other Service Occupations	0.4%	Quality Control / Analytical Work	34.7%
Other Unskilled Manual, Other Occupations	0.8%	Scientific and Technical Advisors / Consultants	6.9%
Biosciences - Other (Zoology, Botany ...)		Other Professional Scientific and Technical activities	5.6%
Managers, Executives etc. in Sales, Marketing, Advertising, etc.	4.8%	Design and Development Engineers (excl software development)	1.4%
Industrial Academic Research Scientists	4.8%	Manufacturing, Production, Process Engineers	5.6%
Quality Control / Analytical Work	4.8%	Computer Programming Professionals	1.4%
Scientific and Technical Advisors / Consultants	9.5%	Management Consultants, Business Analysts	1.4%
Second Level	9.5%	Second Level	1.4%
Non Scientific Research, Technical Workers, Translators etc	4.8%	Third Level (Assistants, Demonstrators)	1.4%
Other Professionals	4.8%	Other Teachers (eg language, special etc schools)	2.8%
Laboratory Technicians (non-Medical)	4.8%	Laboratory Technicians (non-Medical)	8.3%
Dental / Medical auxiliaries	4.8%	Environmental, Health, etc. Officers	1.4%
Other Literary, Artistic and Sports	4.8%	Producers, Stage Managers, Directors etc	2.8%
Clerical assistants / clerical officers / bookkeepers (except Bank Officials)	4.8%	Other Skilled manual occupations	1.4%
Receptionists / telephonists / clerk-typists / secretaries	4.8%	Industrial and other operatives	1.4%
Industrial and other operatives	4.8%	Sales representatives, manufacturers agents, import / export	1.4%
Security guards and related activities	4.8%	Sales assistants, check-out operators	9.7%
Sales representatives, manufacturers agents, import / export	4.8%	Other Unskilled Manual, Other Occupations	1.4%

Sales assistants, check-out operators	9.5%		
Pharmacology		**Medical Sciences / Health Sciences / Sport Science (cont'd)**	
Industrial / Commercial, Design and Development Scientists	14.3%	Social Care, Community and Youth Workers	2.1%
Pharmacists / Pharmacologists	28.6%	Artists, Commercial Artists, Graphic Designers	2.1%
Other Literary, Artistic and Sports	14.3%	Actors, Broadcasters, Musicians, Sports Professionals	6.3%
Industrial and other operatives	14.3%	Other Literary, Artistic and Sports	14.6%
Sales assistants, check-out operators	14.3%	Receptionists / telephonists / clerk-typists / secretaries	2.1%
Waiters, Waitresses, etc	14.3%	Bank Officials	2.1%
Pharmacy		Industrial and other operatives	2.1%
Pharmacists / Pharmacologists	100.0%	Defence Forces and Gardai (non-commissioned)	2.1%
Medical Sciences / Health Sciences / Sport Science		Sales assistants, check-out operators	2.1%
Managers, Executives etc. in Sales, Marketing, Advertising, etc.	2.1%	Telephone salespersons (incl customer support)	4.2%
Other Managers, Executives, exercising specific functions	2.1%	Bar Staff, etc	2.1%
Managers/Admin/Execs Not Further Specified	2.1%	Other Service Occupations	4.2%
Industrial Academic Research Scientists	2.1%	**Psychology**	
Industrial / Commercial, Design and Development Scientists	2.1%	Managers, Administrators and Executives (general purpose)	2.5%
Other Engineering Professionals	4.2%	Managers, Executives etc. in Sales, Marketing, Advertising, etc.	3.4%
Other Business etc Professionals	8.3%	Managers in Personnel, Human Resource Development, Training etc	1.7%
Medical Practitioners	2.1%	Other Managers, Executives, exercising specific functions	0.8%
Opthalmic, Dispensing Opticians	2.1%	Other Engineering Professionals	0.8%
Primary Teachers (incl Nursery)	2.1%	Insurance Professionals (non-sales)	0.8%
Second Level	2.1%	Primary Teachers (incl Nursery)	1.7%
Third Level (Assistants, Demonstrators)	2.1%	Second Level	1.7%
Non Scientific Research, Technical Workers, Translators etc	2.1%	Third Level (Lecturers)	0.8%
Laboratory Technicians (non-Medical)	4.2%	Other Teachers (eg language, special etc schools)	16.1%
Laboratory Technicians (Medical)	2.1%	Psychologists	5.9%
Environmental and Conservation Officers	2.1%	Librarians, Archivists, Curators, etc	0.8%
Dental / Medical auxiliaries	2.1%	Non Scientific Research, Technical Workers, Translators etc	2.5%
Environmental, Health, etc. Officers	8.3%	Nurses	0.8%

Psychology (cont'd)		**Mathematics**	
Other Therapists (Occupational, Speech etc)	0.8%	Managers, Executives etc. in Sales, Marketing, Advertising, etc.	1.2%
Social Care, Community and Youth Workers	16.9%	Other Managers, Executives, exercising specific functions	1.2%
House Parents etc and other Childcare Workers	4.2%	Quality Control / Analytical Work	6.1%
Authors, Writers, Journalists	0.8%	Software Design and Development	1.2%
Other Literary, Artistic and Sports	0.8%	Computer Programming Professionals	2.4%
Clerical assistants / clerical officers / bookkeepers (except Bank Officials)	4.2%	Accountants	8.5%
Receptionists / telephonists / clerk-typists / secretaries	4.2%	Actuaries, Statisticians	26.8%
Bank Officials	2.5%	Management Consultants, Business Analysts	4.9%
Industrial and other operatives	2.5%	Insurance Professionals (non-sales)	1.2%
Security guards and related activities	0.8%	Stockbrokers	2.4%
Sales assistants, check-out operators	10.2%	Other Business etc Professionals	26.8%
Telephone salespersons (incl customer support)	3.4%	Solicitors - Other	1.2%
Other sales occupations	0.8%	Second Level	3.7%
Chefs, Cooks, etc	1.7%	Other Teachers (eg language, special etc schools)	2.4%
Waiters, Waitresses, etc	2.5%	Authors, Writers, Journalists	1.2%
Bar Staff, etc	0.8%	Clerical assistants / clerical officers / bookkeepers (except Bank Officials)	1.2%
Other Unskilled Manual, Other Occupations	1.7%	Receptionists / telephonists / clerk-typists / secretaries	1.2%
Marine Science		Bank Officials	2.4%
Industrial Academic Research Scientists	11.1%	Computer Operators, Data processors	1.2%
Other Professional Scientific and Technical activities	33.3%	Transport ops, road and rail drivers, seafarers, crane drivers, postal workers, couriers	1.2%
Industrial Academic Research Engineers	11.1%	Other Service Occupations	1.2%
Laboratory Technicians (non-Medical)	22.2%	**Arts degree with Mathematics as one of 2 or more subjects**	
Clerical assistants / clerical officers / bookkeepers (except Bank Officials)	11.1%	Managers, Administrators and Executives (general purpose)	8.2%
Sales assistants, check-out operators	11.1%	Managers, Executives etc. in Sales, Marketing, Advertising, etc.	2.0%
		Officers in Defence Forces, Gardai	4.1%
		Accountants	8.2%
		Management Consultants, Business Analysts	2.0%

		Insurance Professionals (non-sales)	2.0%
Arts degree with Mathematics as one of 2 or more subjects (cont'd)		**Computer Applications / Computer Science / Software Engineering (cont'd)**	
Other Business etc Professionals	6.1%	Scientific and Technical Advisors / Consultants	0.2%
Primary Teachers (incl Nursery)	4.1%	Other Professional Scientific and Technical activities	0.4%
Second Level	22.4%	Design and Development Engineers (excl software development)	0.4%
Other Teachers (eg language, special etc schools)	8.2%	Engineering Advisors / Consultants	0.2%
House Parents etc and other Childcare Workers	4.1%	Manufacturing, Production, Process Engineers	1.2%
Accounts Assistants / Technicians	2.0%	Other Engineering Professionals	3.7%
Actors, Broadcasters, Musicians, Sports Professionals	2.0%	Software Design and Development	24.5%
Other Associate Professionals	2.0%	Systems Analysts	4.7%
Clerical assistants / clerical officers / bookkeepers (except Bank Officials)	6.1%	Computer Programming Professionals	8.8%
Bank Officials	6.1%	Accountants	1.2%
Defence Forces and Gardai (non-commissioned)	2.0%	Actuaries, Statisticians	0.4%
Sales assistants, check-out operators	4.1%	Management Consultants, Business Analysts	1.6%
Telephone salespersons (incl customer support)	2.0%	Stockbrokers	0.4%
Waiters, Waitresses, etc	2.0%	Other Business etc Professionals	1.8%
Computer Applications / Computer Science / Software Engineering		Barristers - Other	1.2%
Managers, Administrators and Executives (general purpose)	2.2%	Medical Practitioners	0.2%
Managers, Administrators in the Public Service (including Local Authorities)	0.2%	Primary Teachers (incl Nursery)	0.2%
Managers, Executives etc. in Sales, Marketing, Advertising, etc.	0.6%	Second Level	0.2%
Managers in Personnel, Human Resource Development, Training etc	0.4%	Third Level (Lecturers)	0.2%
Other Managers, Executives, exercising specific functions	3.9%	Third Level (Assistants, Demonstrators)	0.2%
Officers in Defence Forces, Gardai	0.2%	Other Teachers (eg language, special etc schools)	0.2%
Proprietors in Distribution and Services	0.2%	Other Professionals	0.2%
Managers/Admin/Execs Not Further Specified	0.2%	Engineering Technicians	0.2%
Industrial Academic Research Scientists	0.2%	Software Maintenance and Support	6.5%
Quality Control / Analytical Work	1.8%	Technical Writing	0.2%

Computer Applications / Computer Science / Software Engineering (cont'd)		BA with Computing as one of two or more subjects (cont'd)	
Other Computer Support Staff incl Computer Training	13.7%	Accountants	12.0%
Accounts Assistants / Technicians	0.2%	Other Business etc Professionals	4.0%
Artists, Commercial Artists, Graphic Designers	0.2%	Second Level	4.0%
Aircraft and Ships Officers, Air Traffic Controllers	0.2%	Non Scientific Research, Technical Workers, Translators etc	8.0%
Clerical assistants / clerical officers / bookkeepers (except Bank Officials)	2.7%	Laboratory Technicians (Medical)	4.0%
Receptionists / telephonists / clerk-typists / secretaries	0.4%	Other Therapists (Occupational, Speech etc)	4.0%
Bank Officials	2.0%	Software Maintenance and Support	8.0%
Computer Operators, Data processors	0.6%	Clerical assistants / clerical officers / bookkeepers (except Bank Officials)	4.0%
Other Skilled manual occupations	0.2%	Receptionists / telephonists / clerk-typists / secretaries	4.0%
Industrial and other operatives	0.8%	Bank Officials	4.0%
Defence Forces and Gardai (non-commissioned)	0.4%	Industrial and other operatives	8.0%
Security guards and related activities	0.2%	Defence Forces and Gardai (non-commissioned)	4.0%
Sales representatives, manufacturers agents, import / export	0.8%	Sales assistants, check-out operators	4.0%
Sales assistants, check-out operators	1.2%	Waiters, Waitresses, etc	4.0%
Telephone salespersons (incl customer support)	3.5%	Bar Staff, etc	4.0%
Other sales occupations	0.2%	**Business Information Systems**	
Waiters, Waitresses, etc	0.4%	Managers, Administrators and Executives (general purpose)	1.9%
Bar Staff, etc	0.4%	Managers, Executives etc. in Sales, Marketing, Advertising, etc.	1.9%
Other Service Occupations	0.6%	Other Managers, Executives, exercising specific functions	3.8%
Other Unskilled Manual, Other Occupations	1.8%	Industrial Academic Research Scientists	0.6%
BA with Computing as one of two or more subjects		Quality Control / Analytical Work	0.6%
Managers, Administrators and Executives (general purpose)	4.0%	Other Engineering Professionals	1.9%
Managers, Executives etc. in Sales, Marketing, Advertising, etc.	4.0%	Software Design and Development	13.8%
Architects	4.0%	Systems Analysts	4.4%
Software Design and Development	4.0%	Computer Programming Professionals	17.5%

Computer Programming Professionals	4.0%	Accountants	10.0%
Business Information Systems (cont'd)		**Multimedia Computing (cont'd)**	
Actuaries, Statisticians	1.9%	Librarians, Archivists, Curators, etc	2.7%
Management Consultants, Business Analysts	4.4%	Social Care, Community and Youth Workers	5.4%
Other Business etc Professionals	10.6%	Authors, Writers, Journalists	8.1%
Other Teachers (eg language, special etc schools)	0.6%	Artists, Commercial Artists, Graphic Designers	10.8%
Other Professionals	0.6%	Actors, Broadcasters, Musicians, Sports Professionals	2.7%
Software Maintenance and Support	10.6%	Other Literary, Artistic and Sports	2.7%
Technical Writing	0.6%	Clerical assistants / clerical officers / bookkeepers (except Bank Officials)	2.7%
Other Computer Support Staff incl Computer Training	1.9%	Receptionists / telephonists / clerk-typists / secretaries	5.4%
Accounts Assistants / Technicians	0.6%	Bank Officials	8.1%
Clerical assistants / clerical officers / bookkeepers (except Bank Officials)	1.9%	Telephone salespersons (incl customer support)	2.7%
Receptionists / telephonists / clerk-typists / secretaries	1.3%	**Agricultural Science**	
Bank Officials	3.1%	Managers, Administrators and Executives (general purpose)	9.8%
Computer Operators, Data processors	0.6%	Managers, Administrators in the Public Service (including Local Authorities)	2.4%
Other Skilled manual occupations	0.6%	Managers, Executives etc. in Sales, Marketing, Advertising, etc.	3.7%
Sales representatives, manufacturers agents, import / export	1.9%	Other Managers, Executives, exercising specific functions	1.2%
Sales assistants, check-out operators	1.3%	Farmers, Horticulturists (Own account)	9.8%
Telephone salespersons (incl customer support)	0.6%	Industrial Academic Research Scientists	3.7%
Waiters, Waitresses, etc	0.6%	Quality Control / Analytical Work	3.7%
Multimedia Computing		Scientific and Technical Advisors / Consultants	19.5%
Managers, Executives etc. in Sales, Marketing, Advertising, etc.	2.7%	Other Professional Scientific and Technical activities	2.4%
Managers in Personnel, Human Resource Development, Training etc	5.4%	Other Engineering Professionals	1.2%
Other Managers, Executives, exercising specific functions	24.3%	Other Architecture and Planning	11.0%
Software Design and Development	2.7%	Insurance Professionals (non-sales)	1.2%
Computer Programming Professionals	2.7%	Laboratory Technicians (non-Medical)	1.2%
Other Business etc Professionals	5.4%	Laboratory Technicians (Medical)	4.9%
Third Level (Lecturers)	2.7%	Software Maintenance and Support	1.2%
Third Level (Assistants, Demonstrators)	2.7%	Other Associate Professionals	2.4%

Agricultural Science (cont'd)		**Architecture**	
Clerical assistants / clerical officers / bookkeepers (except Bank Officials)	1.2%	Architects	94.6%
Receptionists / telephonists / clerk-typists / secretaries	1.2%	Other Architecture and Planning	1.8%
Bank Officials	2.4%	Actuaries, Statisticians	1.8%
Sales representatives, manufacturers agents, import / export	9.8%	Artists, Commercial Artists, Graphic Designers	1.8%
Sales assistants, check-out operators	2.4%	**Medicine**	
Agricultural Labourers	3.7%	Medical Practitioners	99.0%
Geology / Earth Sciences		Other Therapists (Occupational, Speech etc)	0.8%
Industrial Academic Research Scientists	2.7%	Aircraft and Ships Officers, Air Traffic Controllers	0.3%
Industrial / Commercial, Design and Development Scientists	2.7%	**Dentistry**	
Scientific and Technical Advisors / Consultants	10.8%	Dental Practitioners	100.0%
Other Professional Scientific and Technical activities	2.7%	**Nursing**	
Civil and Structural Engineers	2.7%	Other Managers, Executives, exercising specific functions	0.4%
Architects	2.7%	Nurses	99.6%
Quantity etc. Surveyors	5.4%	Physiotherapy	
Other Surveyors	18.9%	Physiotherapists	100.0%
Other Architecture and Planning	2.7%	**Other Paramedical**	
Computer Programming Professionals	2.7%	Industrial Academic Research Scientists	0.9%
Other Business etc Professionals	2.7%	Opthalmic, Dispensing Opticians	14.3%
Second Level	2.7%	Dental / Medical auxiliaries	9.8%
Other Professionals	5.4%	Other Therapists (Occupational, Speech etc)	45.5%
Laboratory Technicians (Medical)	2.7%	Dieticians	29.5%
Environmental and Conservation Officers	8.1%	**Veterinary Medicine**	
Building and Civil Engineering Technicians	2.7%	Veterinarians	100.0%
Environmental, Health, etc. Officers	2.7%	**Environmental Science**	
Clerical assistants / clerical officers / bookkeepers (except Bank Officials)	2.7%	Managers, Administrators and Executives (general purpose)	3.2%
Other Skilled manual occupations	5.4%	Other Managers, Executives, exercising specific functions	2.2%
Industrial and other operatives	2.7%	Quality Control / Analytical Work	11.8%
Sales assistants, check-out operators	2.7%	Scientific and Technical Advisors / Consultants	5.4%
Bar Staff, etc	2.7%	Other Professional Scientific and Technical activities	2.2%

Other Service Occupations	2.7%		
Environmental Science (cont'd)		**Environmental Science (cont'd)**	
Regional, Urban and Environmental Planners	8.6%	Dental / Medical auxiliaries	1.1%
Other Architecture and Planning	1.1%	Environmental, Health, etc. Officers	21.5%
Insurance Professionals (non-sales)	1.1%	Clerical assistants / clerical officers / bookkeepers (except Bank Officials)	3.2%
Other Business etc Professionals	1.1%	Industrial and other operatives	1.1%
Non Scientific Research, Technical Workers, Translators etc	1.1%	Sales representatives, manufacturers agents, import / export	1.1%
Laboratory Technicians (non-Medical)	1.1%	Sales assistants, check-out operators	6.5%
Laboratory Technicians (Medical)	4.3%	Telephone salespersons (incl customer support)	1.1%
Engineering Technicians	1.1%	Waiters, Waitresses, etc	1.1%
Environmental and Conservation Officers	10.8%	Bar Staff, etc	3.2%
Building and Civil Engineering Technicians	1.1%	Other Service Occupations	1.1%
Nurses	1.1%	Other Unskilled Manual, Other Occupations	2.2%

Source: Based on an original analysis of responses to the HEA's First Destination of Award Recipients Survey for Graduates of 2004.

Chapter 4 Starting Salaries of Higher Education Graduates at Levels 6 and 7

4.1 Introduction

This chapter presents data on the starting salaries of 2003 graduates with National Certificates, DIT Certificates, National Diplomas and DIT Diplomas, based on the HEA's First Destination of Award Recipients Report for graduates of 2003.

These historical qualifications which were positioned retrospectively at Levels 6 and 7 in the National Framework of Qualifications have been discontinued since 2003. New qualifications have been created at these levels; the Higher Certificate at Level 6 and the Ordinary Bachelor Degree at Level 7.

The new qualifications are not simple replacements for those that have been discontinued, and it is not yet clear how employers will respond to the changes. Some anticipate that they will place a greater value on an Ordinary Bachelor Degree than on a National Diploma or DIT Diploma.

Given this uncertainty, some caution is in order when reading data on the historical qualifications.

4.2 Certificate Level Salaries

Table 4.1 presents data on starting salaries of Certificate level graduates entering employment. However, these starting salaries represent just part of the picture. Most 2003 Certificate level graduates continued their studies to Diploma and Degree level, and would thus have entered the labour market in 2004 or 2005 better qualified.

Table 4.1 Starting Salaries by Discipline for 2003 Graduates with National Certificates and DIT Certificates

	Percentile		
	25th	**50th**	**75th**
Business	€13,800	€18,700	€24,600
Engineering	€14,700	€19,100	€23,800
Humanities	€17,200	€22,400	€28,600
Science	€14,900	€20,000	€26,100

Source: Adapted from First Destination of Award Recipients in Higher Education, 2003, HEA

4.3 Diploma Level Salaries

Table 4.2 presents data on starting salaries of Diploma level graduates entering employment. However, these starting salaries represent just part of the picture. Again, many 2003 Diploma level graduates continued their studies to Degree level, and would thus have entered the labour market in 2005 better qualified. An exception is in Engineering, where graduates continued to enter the labour market at Diploma level in substantial numbers.

Table 4.2 Starting Salaries by Discipline for 2003 Graduates with National Diplomas and DIT Diplomas

	Percentile		
	25th	**50th**	**75th**
Business	€17,100	€22,400	€31,500
Engineering	€19,100	€24,300	€29,300
Humanities	€17,800	€24,100	€29,400
Science	€13,300	€17,600	€23,700

Source: Adapted from First Destination of Award Recipients in Higher Education, 2003, HEA

Chapter 5 Destinations after Graduation

Figures 5.1 and 5.2 present data on the destinations of 2003 graduates in Science and Engineering. They reflect the position when these graduates were surveyed in the Spring and early Summer of 2004.

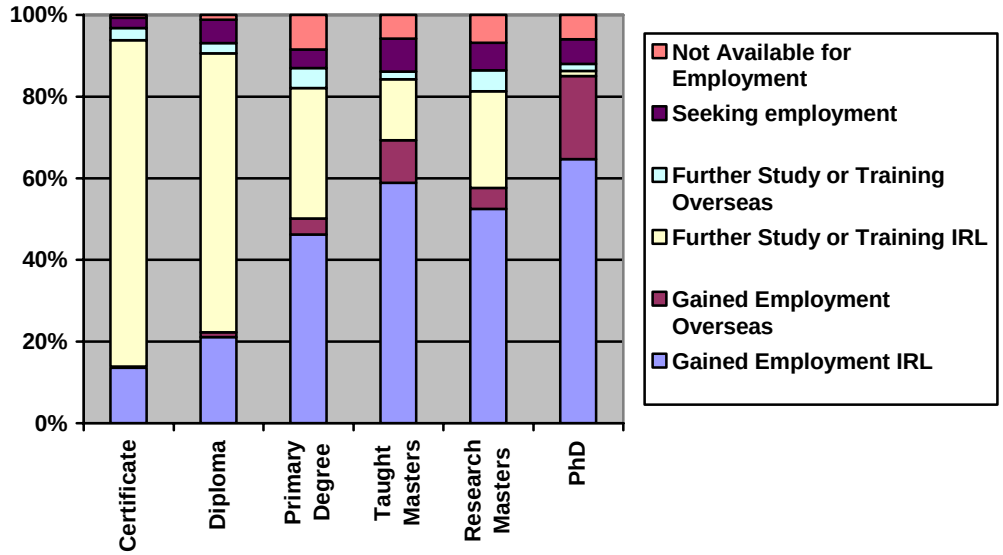
The majority of graduates at Certificate and Diploma level continued their studies, generally with a view to obtaining higher levels of qualification. Most of the remainder entered employment. Only modest numbers were still seeking employment or unavailable for employment despite demand for graduates in many disciplines in these areas still being depressed by the latter stages of the ICT sector downturn.

Proportions of graduates continuing their studies were substantially lower for degree level qualifications in both Science and Engineering, and numbers entering employment were accordingly much higher. Proportions entering employment were particularly high among PhD graduates, reflecting in part the fact that those who continue in academic life generally do so as employees.

Significant numbers of graduates, at a range of levels, were found to be unavailable for employment. Much of this appears to be related to graduates taking a year out for travel after graduation.

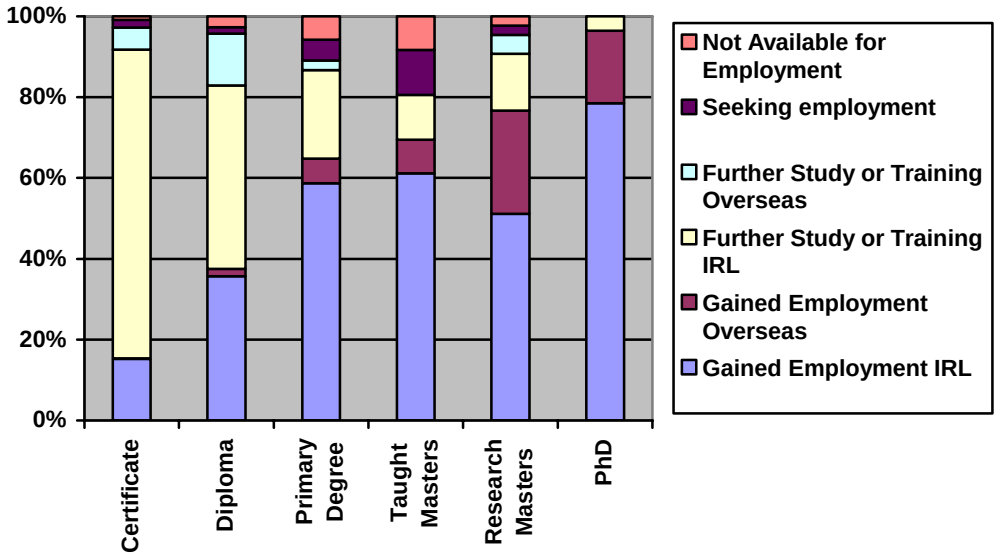
Despite demand for graduates in a number of disciplines within Science and Engineering being depressed by the ICT sector downturn, the proportions still seeking employment were under 6% for most categories addressed by Figures 5.1 and 5.2.

Figure 5.1 "Present Situation" of Science Graduates of 2003 when Surveyed



Source: 2003 First Destinations Report, HEA

Figure 5.2 "Present Situation" of Engineering Graduates of 2003 when Surveyed



Source: 2003 First Destinations Report, HEA

Chapter 6 Career Progression - Data from Census 2002

6.1 Introduction

This chapter presents information on what past graduates have done as their lives progressed, drawing in data from Census 2002, focusing on groups then aged 30-34 and 40-44.

It presents information on the percentages of people with different qualifications in employment, for males and females. This provides an indication as to how well the qualification prepares a person to be active in the workplace over the years. People may be out of employment for a variety of reasons, including further looking after home/family, unemployment, further study and disability.

The chapter also presents information on the percentages of people with different qualifications and in employment in the upper socio-economic groups[1]. This provides an indication as to how well the qualification prepares a person to work at a high level through their career.

The analysis is presented for people with third level "degree" qualifications (i.e. those with qualifications at Level 8 or above in the National Framework of Qualifications), and for people with "non-degree" third level qualifications (i.e. those with qualifications at Levels 6 and 7 in the National Framework of Qualifications). Readers should bear in mind that the Irish higher education system has developed rapidly since the early 1980s, when many of those who were aged 40-44 at the time of Census 2002 originally graduated. Numbers undertaking higher education have increased dramatically throughout the system.

The numbers presented are based on a 5% sample of anonymised responses provided by the Central Statistics Office, rather than on the full set of responses to the Census of Population. In cases where the number of graduates in a particular discipline and in a particular age group is low, data has been omitted in response to the risk of significant sampling errors.

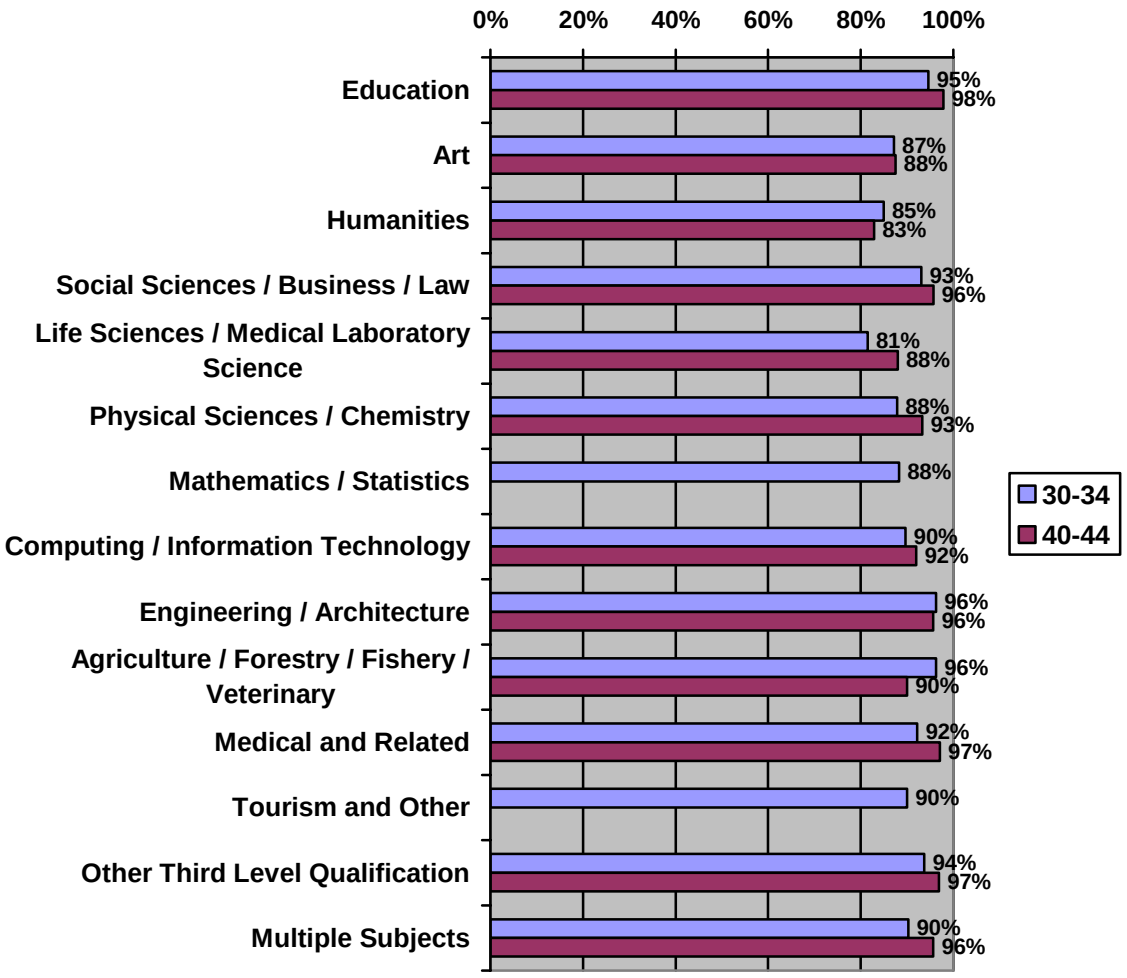
[1] Defined for these purposes as employers and managers, higher professionals, lower professionals and own account workers.

6.2 Employment Data for Past Graduates at Level 8 and Above

Figure 6.1 presents data on employment among male graduates aged 30-34 and 40-44 for degree graduates in each discipline. It shows high rates of employment for graduates in almost all disciplines, with lowest levels among graduates in Humanities, Art and Mathematics. Numbers in Life Sciences / Medical Laboratory Science appear lower than they would otherwise have been primarily because of a proportion of graduates continuing their studies past the age of 30.

Rates of employment among graduates in Computing/Information Technology were lower than for some other disciplines, reflecting weak demand for skills in this area at what was probably the lowest point in the ICT sector downturn. Rates of employment among male graduates in Engineering/Architecture were high, which is particularly noteworthy given the large numbers of Engineering graduates employed in the ICT sector.

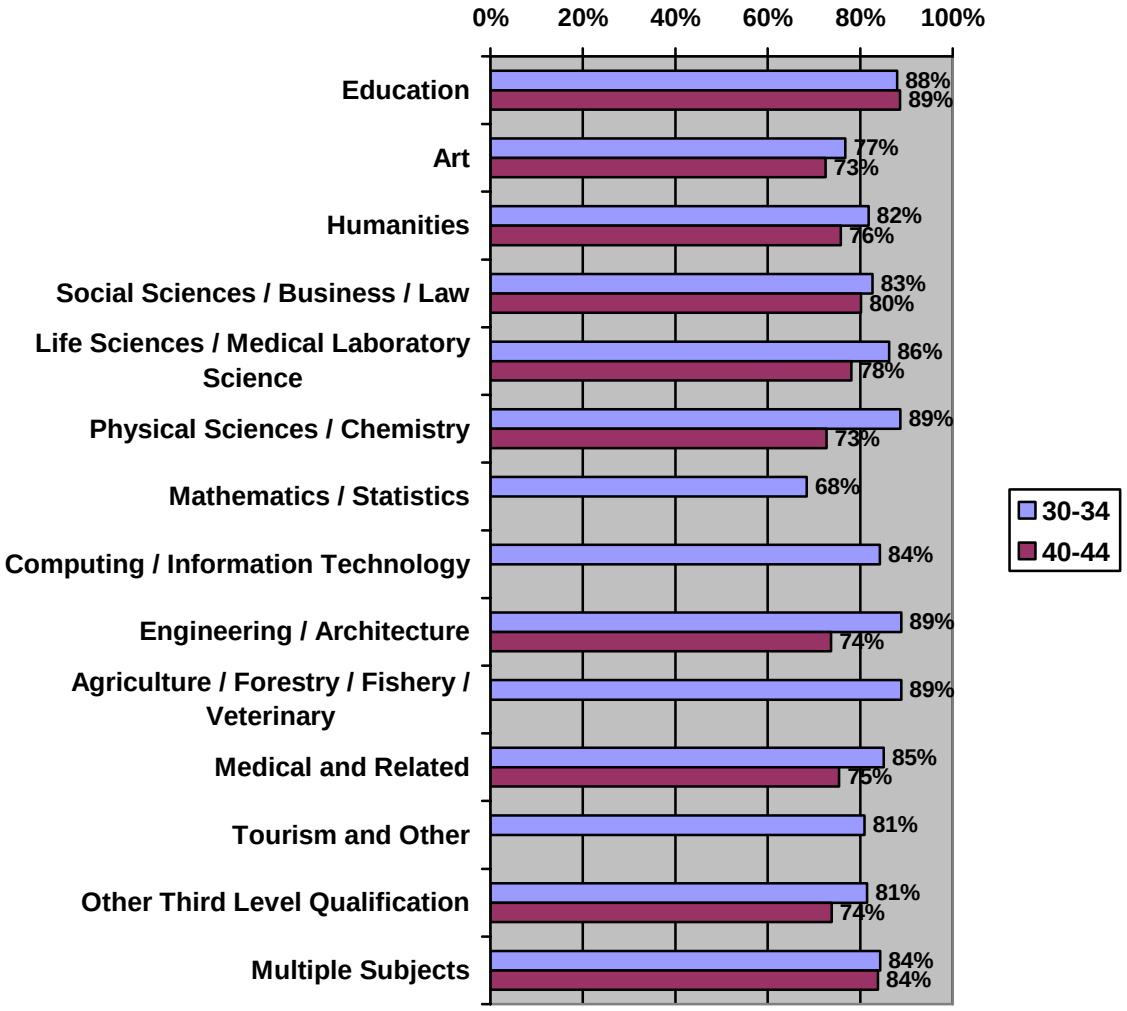
Figure 6.1 Percentages of Males with Degree Level Qualifications in Employment for Age Groups 30-34 and 40-44 in 2002



Source: Based on analysis of COPSAR data from CSO

Figure 6.2 presents equivalent data on employment among female graduates. Rates of employment were lower than for males, primarily because significant numbers were recorded as "looking after home / family". For example, up to a quarter of female engineering and physical sciences/chemistry graduates aged 40-44 were not in employment.

Figure 6.2 Percentages of Females with Degree Level Qualifications in Employment for Age Groups 30-34 and 40-44 in 2002



Source: Based on analysis of COPSAR data from CSO

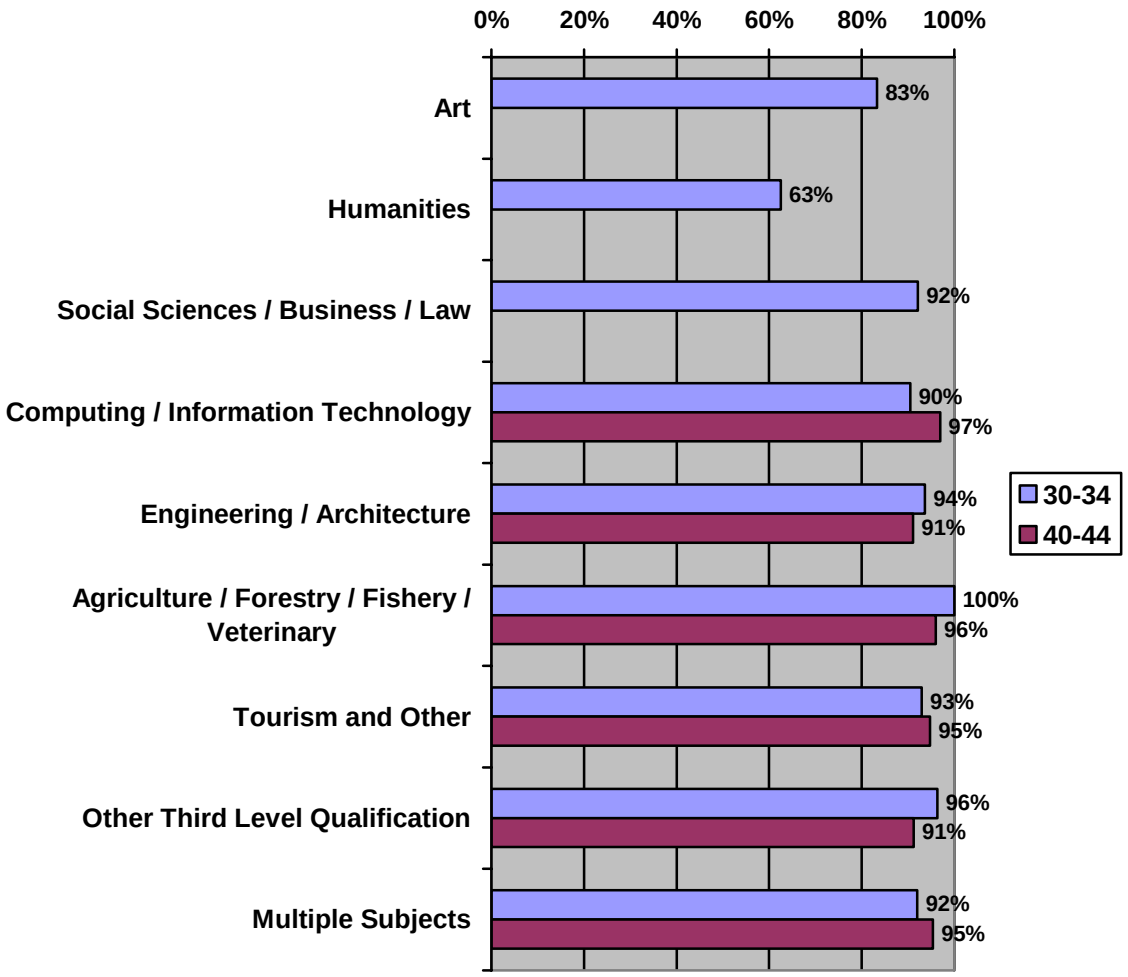
6.3 Employment Data for Past Graduates at Levels 6 and 7

Figure 6.3 presents data on employment among male graduates aged 30-34 and 40-44 for non-degree graduates in each discipline. It shows high rates of employment for graduates in most disciplines, with lowest levels among graduates in Humanities and Art.

Rates of employment among graduates in Computing/Information Technology were not much different to those for some other disciplines, despite the downturn in ICT activity at the time.

Rates of employment among male graduates in Engineering/Architecture were high, which is particularly noteworthy given the large numbers of Engineering graduates employed in the ICT sector.

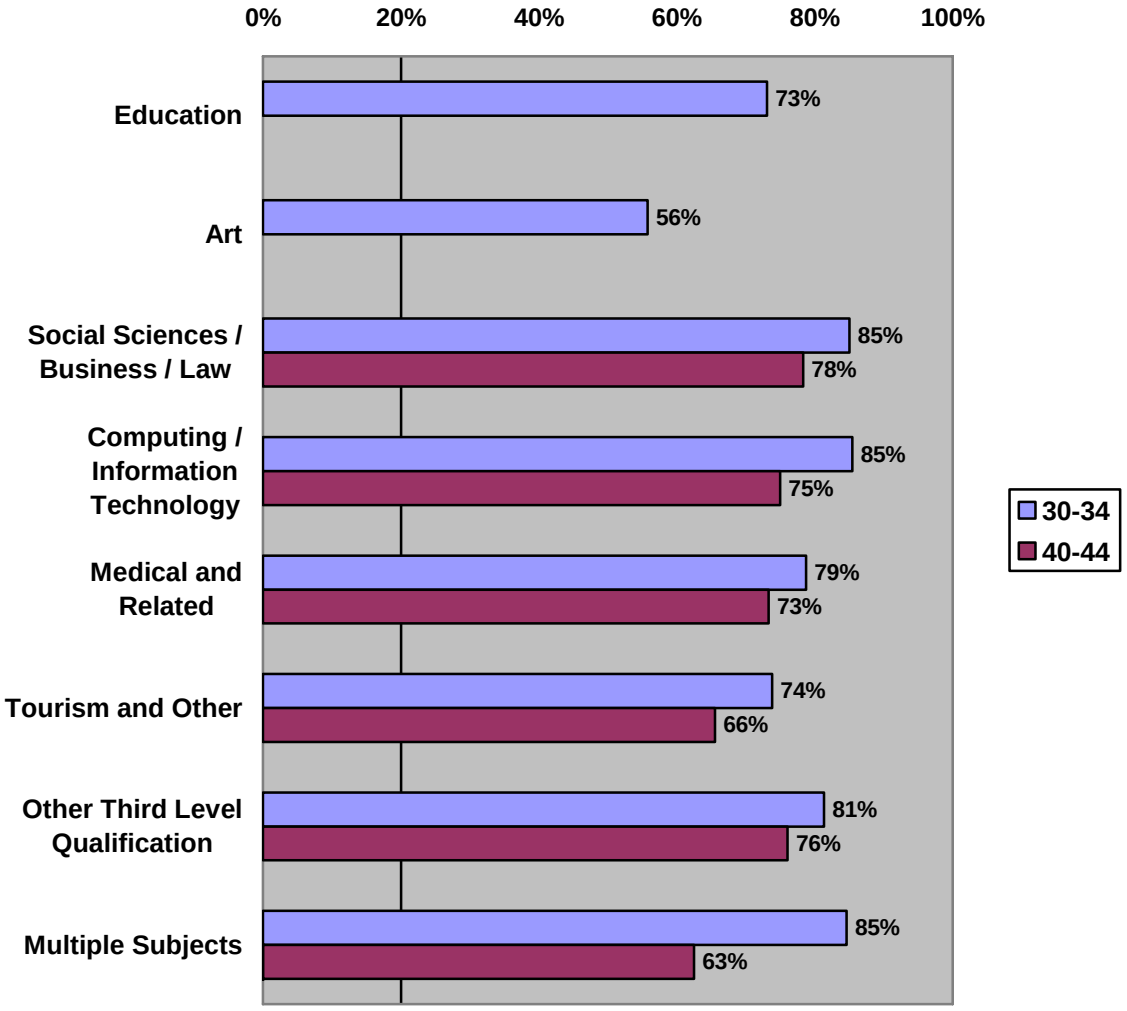
Figure 6.3 Percentages of Males with Non-degree Third Level Qualifications in Employment for Age Groups 30-34 and 40-44 in 2002



Source: Based on analysis of COPSAR data from CSO

Figure 6.4 presents equivalent data on employment among female graduates. Rates of employment were lower than for males, again primarily because significant numbers were recorded as "looking after home / family".

Figure 6.4 Percentages of Females with Non-degree Third Level Qualifications in Employment for Age Groups 30-34 and 40-44 in 2002

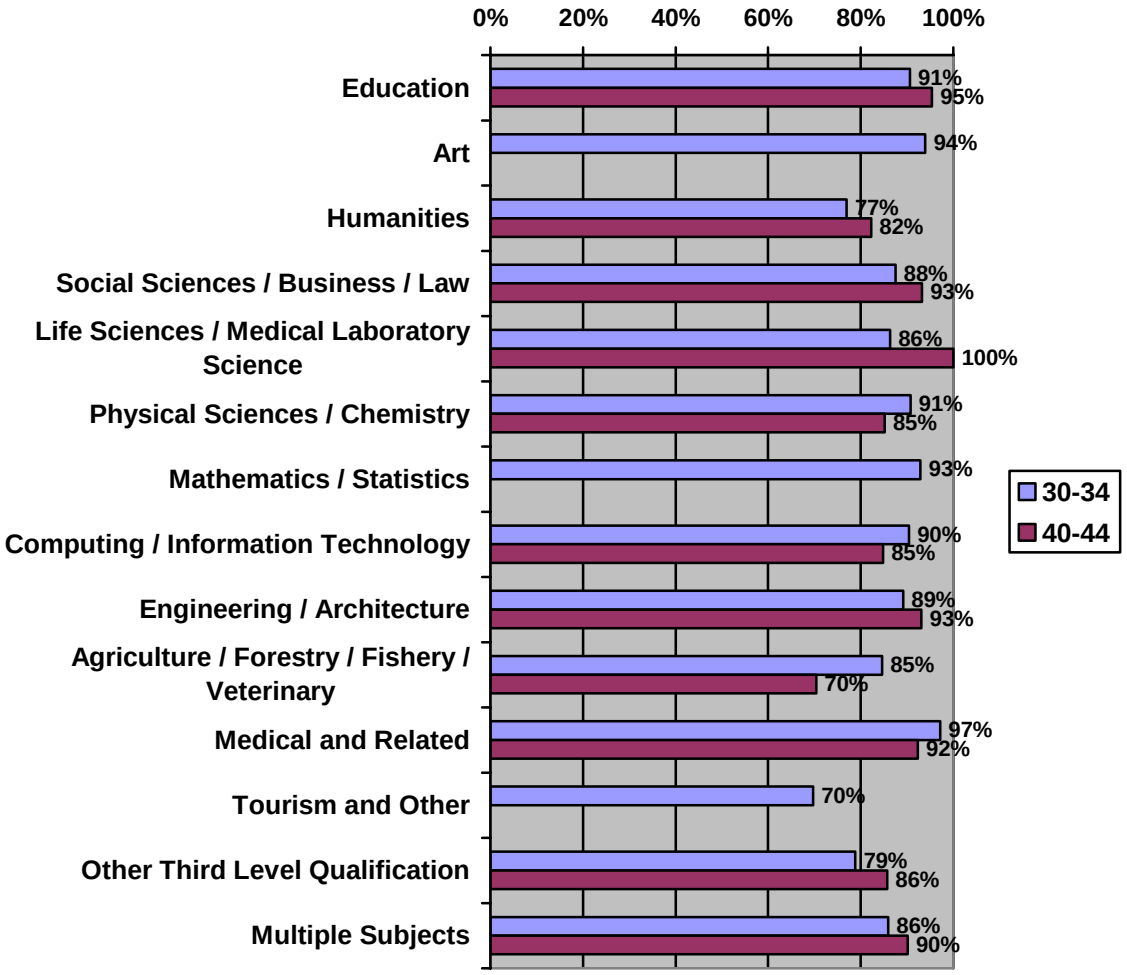


Source: Based on analysis of COPSAR data from CSO

6.4 Socio-Economic Groups at Level 8

Figure 6.5 presents data on the share of employment accounted for by high socio-economic group occupations aged 30-34 and 40-44 among male degree graduates in each discipline. It shows that most of these graduates work in high socio-economic group occupations, across all disciplines.

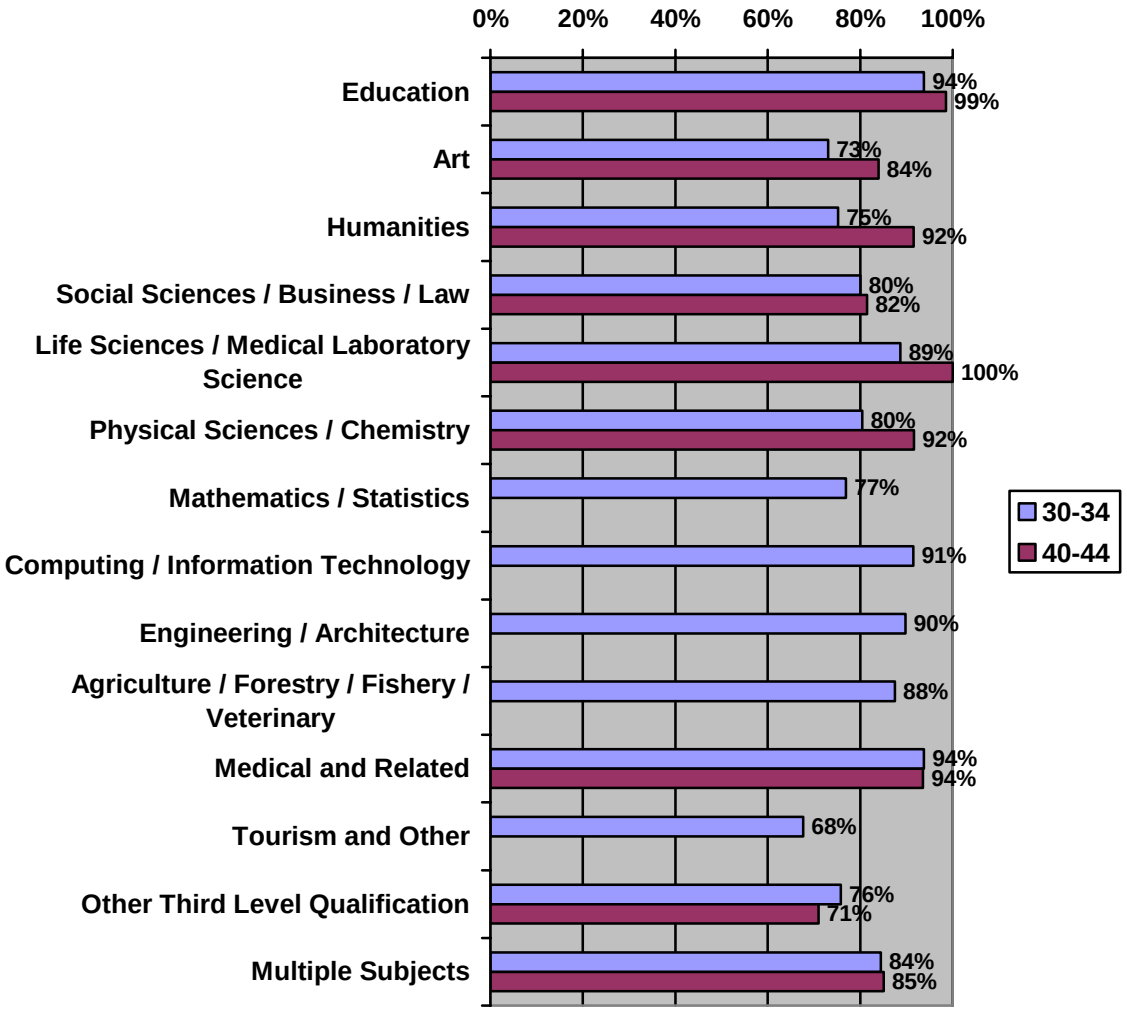
Figure 6.5 Percentages of Males with Degree Level Qualifications in Upper Socio-Economic Groups for Age Groups 30-34 and 40-44 in 2002



Source: Based on analysis of COPSAR data from CSO

Figure 6.6 presents equivalent data for female degree graduates in each discipline. It shows that most of these graduates work in high socio-economic group occupations, across all disciplines. Differences from the pattern with male graduates are quite limited.

Figure 6.6 Percentages of Females with Degree Level Qualifications in Upper Socio-Economic Groups for Age Groups 30-34 and 40-44 in 2002

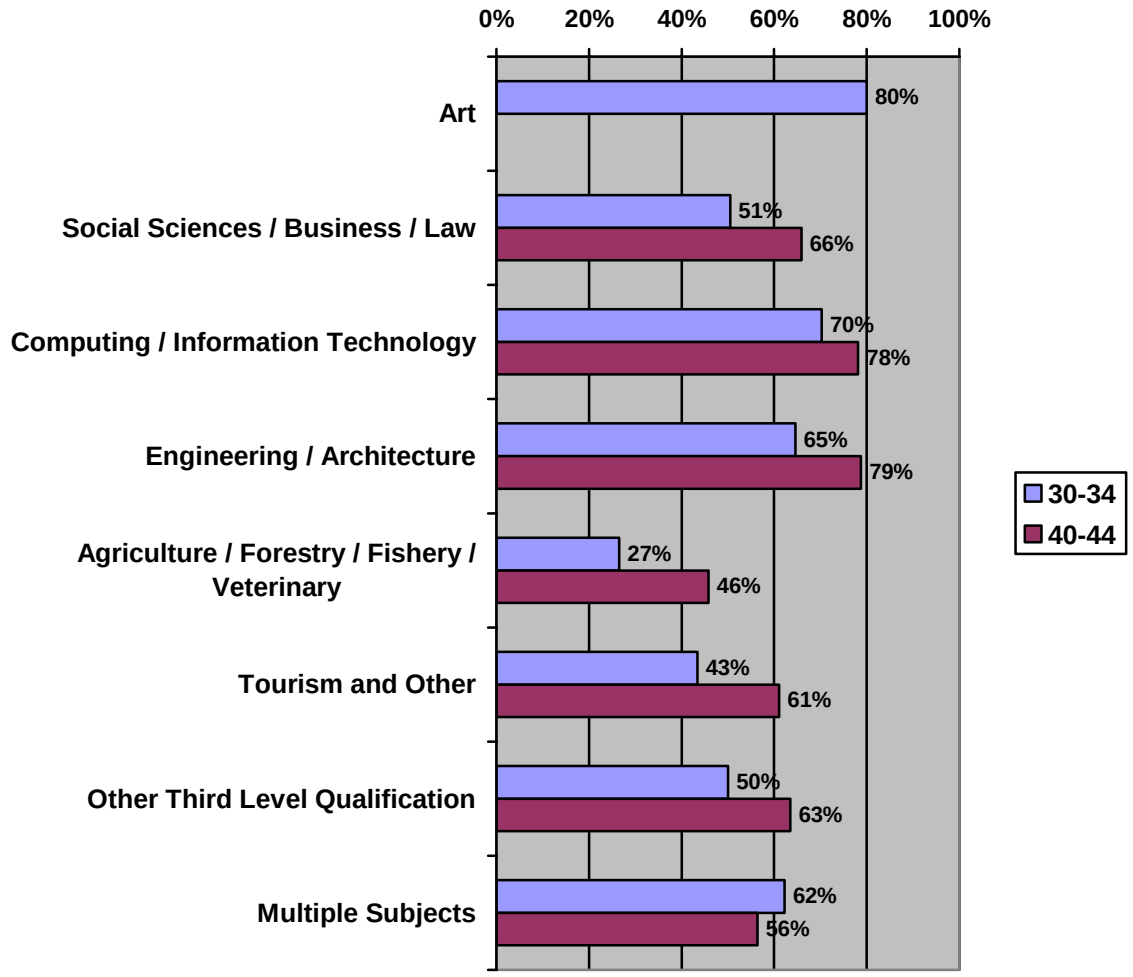


Source: Based on analysis of COPSAR data from CSO

6.5 Socio-Economic Groups at Levels 6 and 7

Figure 6.7 presents data on the share of employment accounted for by high socio-economic group occupations aged 30-34 and 40-44 among male non-degree graduates in each discipline. It shows that past graduates at these levels in Engineering /Architecture and Computing / Information Technology are more likely than those in most other disciplines to work in high socio-economic group occupations.

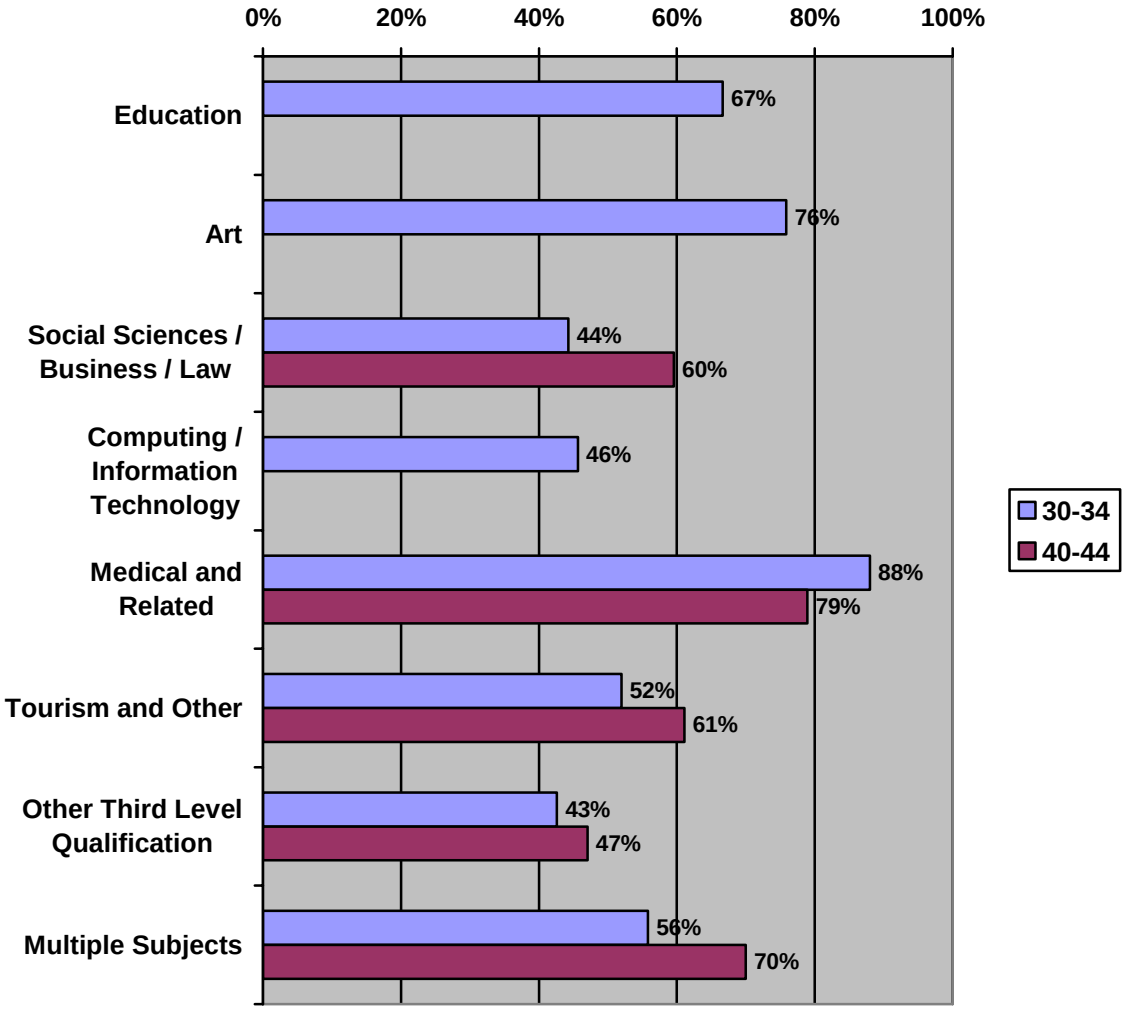
Figure 6.7 Percentages of Males with Degree Level Qualifications in Upper Socio-Economic Groups for Age Groups 30-34 and 40-44 in 2002



Source: Based on analysis of COPSAR data from CSO

Figure 6.8 presents equivalent for female non-degree graduates in each discipline. The different patterns it shows appear primarily to reflect a significant gender divide between many disciplines at these levels.

Figure 6.8 Percentages of Females with Degree Level Qualifications in Upper Socio-Economic Groups for Age Groups 30-34 and 40-44 in 2002



Source: Based on analysis of COPSAR data from CSO

Chapter 7 Salary Progression

7.1 Introduction

Graduate starting salaries provide only a snapshot of pay at career start. Salaries tend to increase substantially as careers progress. This chapter provides a selection of information on how salaries in SET occupations increase with experience.

7.2 Progression in Engineering Salaries

Engineers Ireland is the main professional body for engineers in Ireland. It has a number of grades of membership, ranging from Technician to Fellow. Table 7.1 draws on its 2003 salary survey to illustrate how engineering salaries increase with career progression. It is important to remember that the numbers quoted are medians, and that high fliers may earn significantly more.

Table 7.1 Relationship Between Time in Employment and Median Salary for Members of Engineers Ireland in 2003

Years of Experience	Technician	Ordinary Member	Chartered Engineer	Fellow
<1		€22,500		
1-2	€22,500	€27,500		
3-5	€27,500	€37,500	€40,000	
6-10	€37,500	€47,500	€47,500	
11-15	€37,500	€57,500	€57,500	
16-20	€47,500	€62,500	€62,500	
21-25	€47,500	€65,000	€67,500	€77,500
26-30		€62,500	€67,500	€77,500
31+		€62,500	€67,500	€85,000

Source: IEI Salary Survey

7.3 Progression in Software Salaries

Table 7.2 indicates how salaries in software development increase as careers progress, both in terms of increasing experience and in terms of advancement to key senior positions such as Software Development Manager and Chief Technology Officer (CTO).

Table 7.2 Relationship between Pay and Career Progression in Software

	Difference from Median Starting Salary for Newly Qualified Software Engineer
Software Engineer with 2 to 4 years experience	39% higher
Senior Engineer with 6 to 8 years experience	82% higher
Senior Engineer with 10 to 12 years experience	131% higher
Software Development Manager	213% higher
Software Engineering Director / Chief Technology Officer	301% higher

Source: ICT Ireland/Irish Software Association

Chapter 8 Data from Overseas

8.1 Introduction

Data on graduate pay from the US and the UK shows different ordering between disciplines, relative to Ireland. It also shows that US and UK graduates in disciplines with a substantial science and technology content tend to be better paid than their Irish counterparts.

8.2 US Data

Data from the US shows that graduates in disciplines with a strong science and technology content are paid well relative to bachelor's degree graduates in other disciplines, and indeed relative to their Irish counterparts.

Table 8.1 US Median Starting Salary by Bachelor's Degree Discipline

Bachelor's Degree Discipline	Median Starting Salary*
Chemical Engineering	€44,700
Computer Engineering	€42,900
Electrical/Electronics Engineering	€42,800
Mechanical Engineering	€40,900
Computer Science	€40,300
Accounting	€36,500
Civil Engineering	€36,000
Economics / Finance	€35,600
Management Information Systems / Business Data Processing	€35,400
Business Administration / Management	€32,400
Marketing / Marketing Management	€29,600

* Converted from USD at rate of $1 = €1.2644 and rounded to nearest €100.

Source: Spring 2006 Salary Survey, National Association of Colleges and Employers

8.3 UK Data

The available UK data shows new graduates in areas suited to SET qualifications being paid at a mid-level. Financial, consulting and legal work is paid best, with graduate pay in science and technology areas being somewhat lower.

Table 8.2 UK Median Starting Salary by Career Area or Business Function, 2005

Career Area or Business Function	Median Starting Salary*
Investment Banking	€50,800
Legal Work	€42,100
Consulting	€41,400
Actuarial Work	€36,300
Accountancy	€36,300
Financial Management	€34,800
IT	€31,900
Mechanical Engineering	€31,900
Marketing	€31,900
Manufacturing Engineering	€31,900
Human Resources	€30,700
Civil Engineering	€30,500
Science	€30,500
Research & Development	€30,500
Electrical/Electronic Engineering	€30,500
Retail Management	€29,000
Purchasing	€29,000
Logistics	€29,000
General Management	€29,000
Sales	€25,400

* Converted from sterling at rate of £1 = €.6888, and rounded to nearest €100.

Source: AGR Graduate Recruitment Survey 2006, Winter Review