

Institute of Geologists of Ireland

Graduate and Industry Survey Results



Consultation draft, December 2004



IGI Graduate and Industry Survey

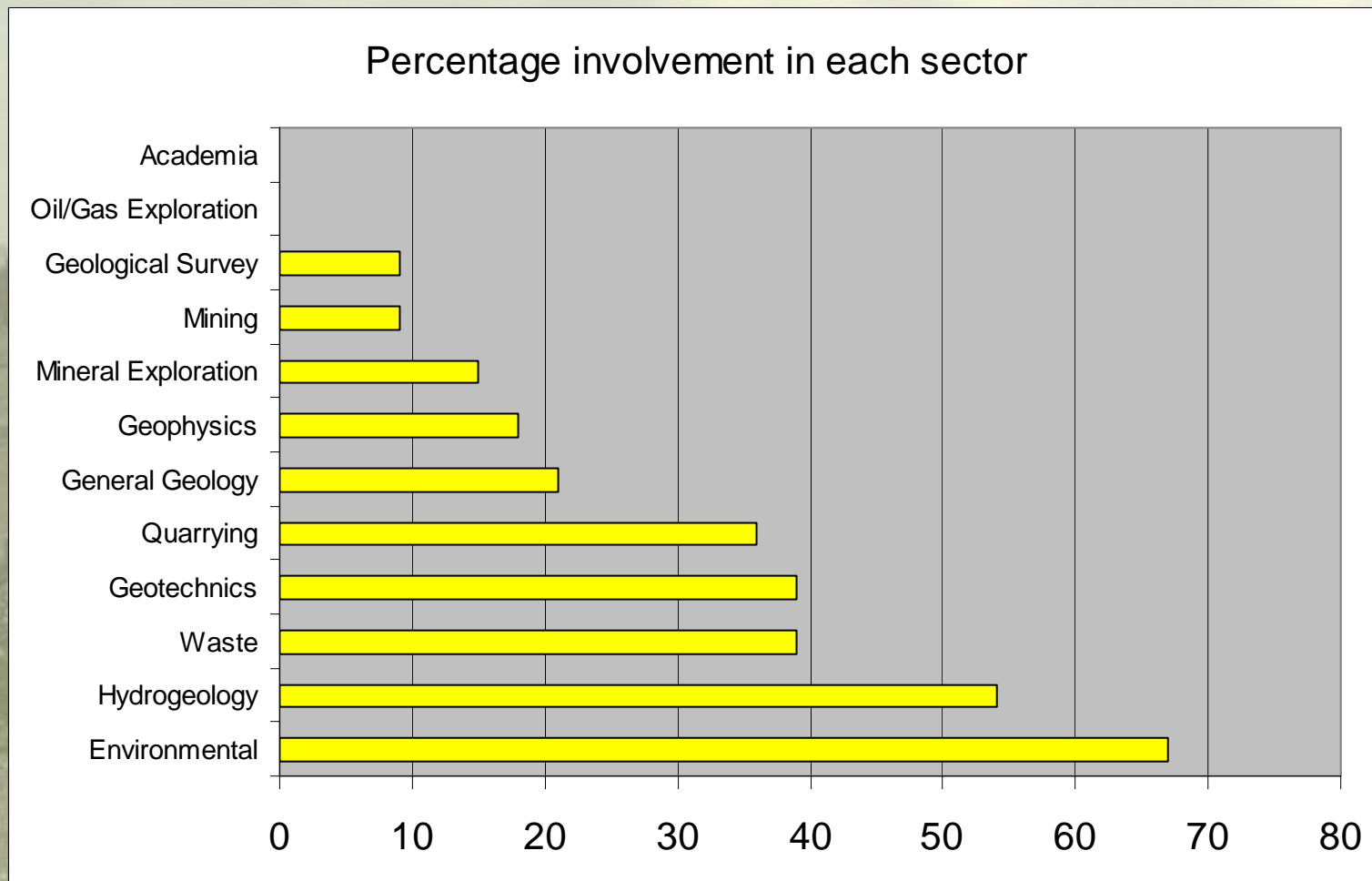
- In 2003-2004 the IGI undertook to complete a Geology Employment and Industry Survey. The initiative of conducting such a survey was welcomed within the general geology industry and resulted in the procurement of grants from the GSI and GSNI. This survey of the geology community in Ireland had two constituent parts:
- *A survey of Geology-related companies to discover how, on the employer side, they found the recruitment process for geologists and;*
- *A survey of Geology Graduates from the last five years to discover on the employee side how graduates found the job-seeking process.*

IGI Graduate and Industry Survey

- The *Industry Survey* has been completed. The survey was conducted in two stages.
- Firstly, a geology industry database was compiled; this chronicles points-of-contact details for over 550 companies involved in the geology sector in Ireland, and includes those involved in peat; coal; ores and heavy metal; plutonic rocks; sandstone and quartzite; marble and travertine; calcareous stone; volcanic rocks; slate; gravel, sand and earth; gypsum; clays and alumina; salt; minerals; geological, geotechnical, geochemical and oilfield engineering consultants; offshore and coastal engineering consultants; environmental, anti-pollution and public health consultants; hydrogeologists; soil exploration and analysis; transportation and traffic engineering consultants; civil, structural, hydroelectric and mining engineering consultants; and land surveyors. This database is now housed in the IGI Office at UCD.
- Following this, survey questionnaires were sent out to the Managing Directors of the 120 most geologically-related of these companies. Completed replies were had from 33 of the companies, and four companies replied saying that there were no geologists working with them, **a response rate of 31% in all, and one of 27.5% with full responses.**
- The questionnaires asked geology-related companies to answer a number of questions about the geology element of their business. On the industry side the idea was to find out areas where shortages exist in staffing, how companies find the recruitment process for geologists and other related matters.

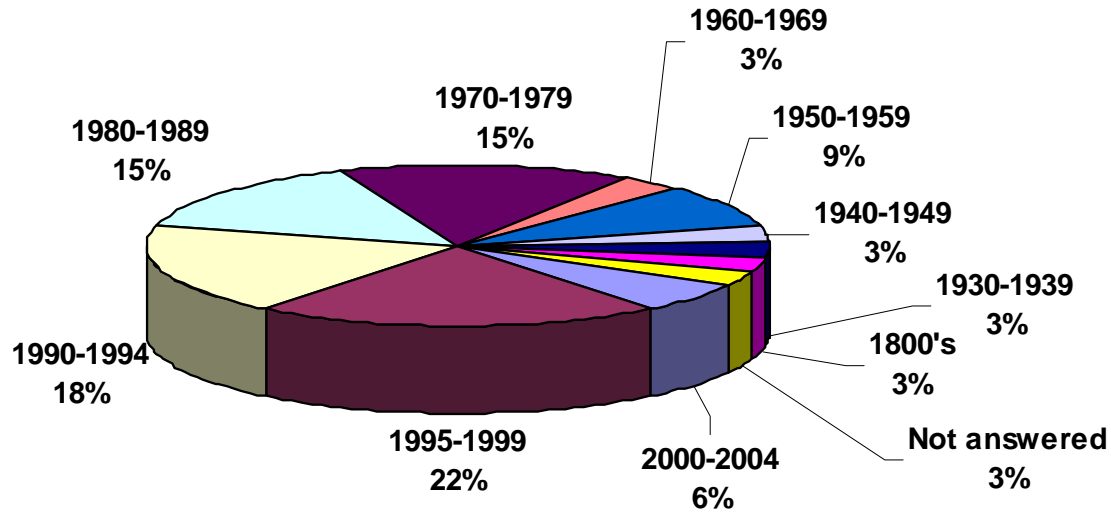
IGI Industry Survey - Sectors

- The first part of the questionnaire dealt with the **sectors of geology** that each company was involved in.



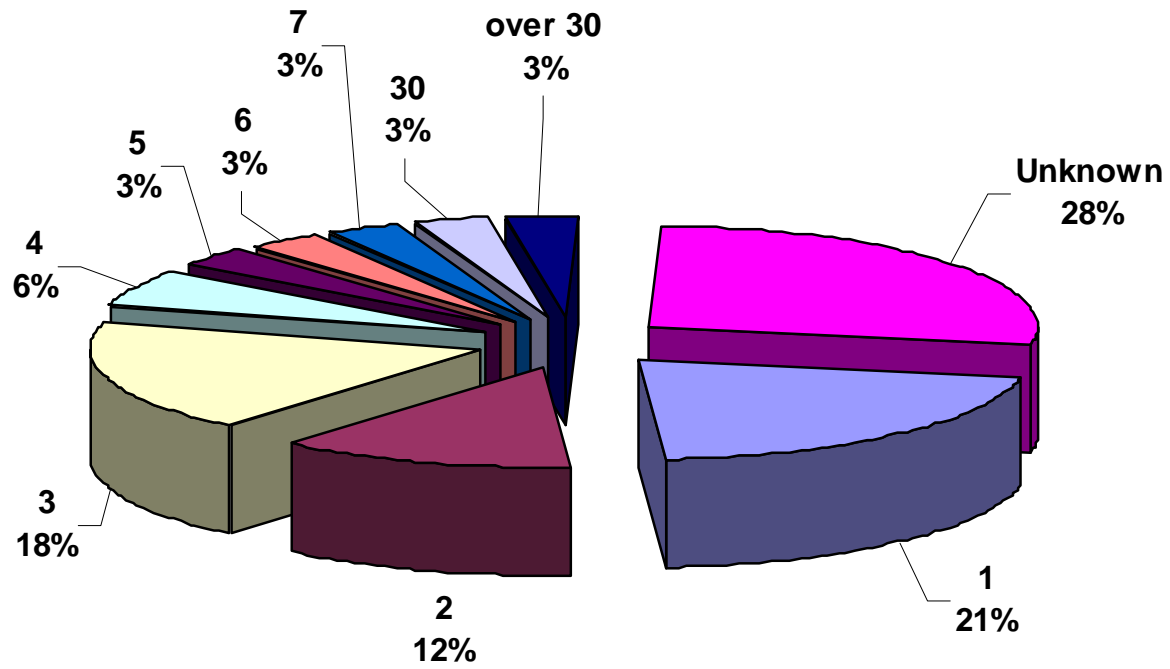
IGI Industry Survey - Growth of industry

- Companies were asked **in what year their business was established.**



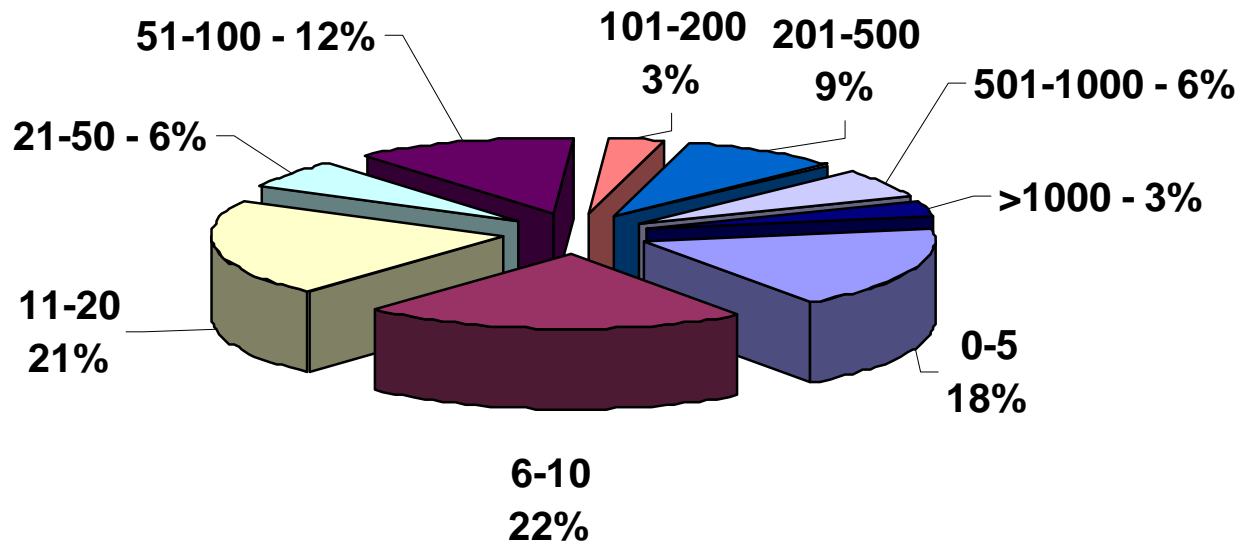
IGI Industry Survey - Growth of industry

- Companies were asked how many employees they had in their first year



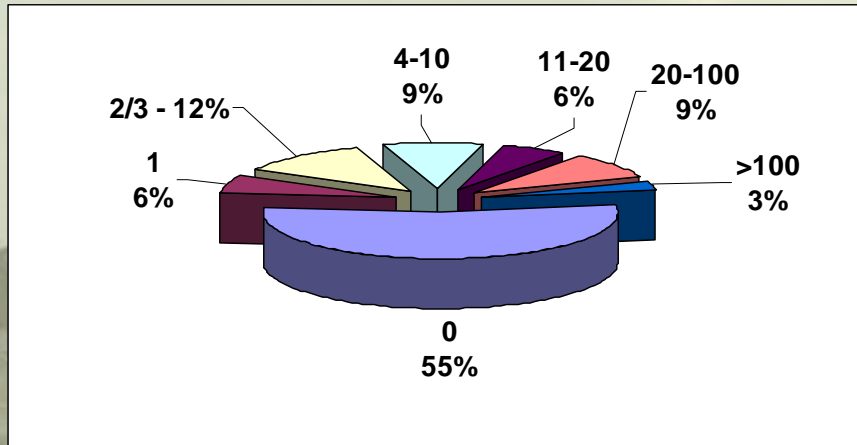
IGI Industry Survey - Growth of industry

- Companies were asked **how many they currently employ**.

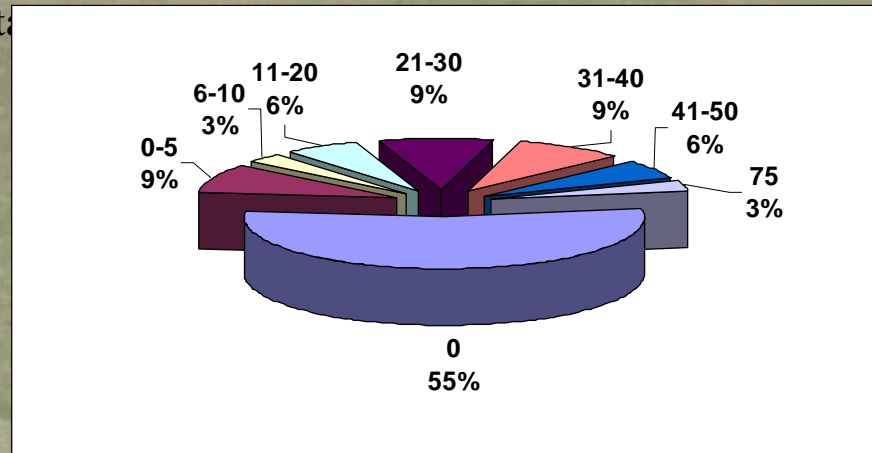


IGI Industry Survey - Growth of industry

- Companies were asked the number of contract workers they employed.

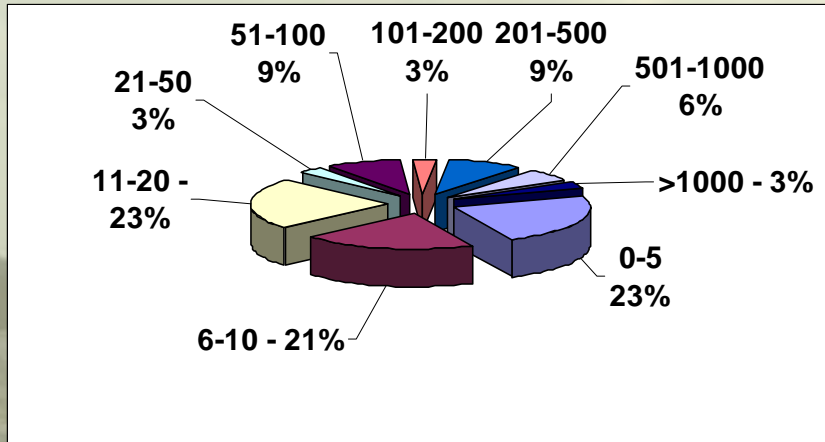


- Expressed as a percentage of the total

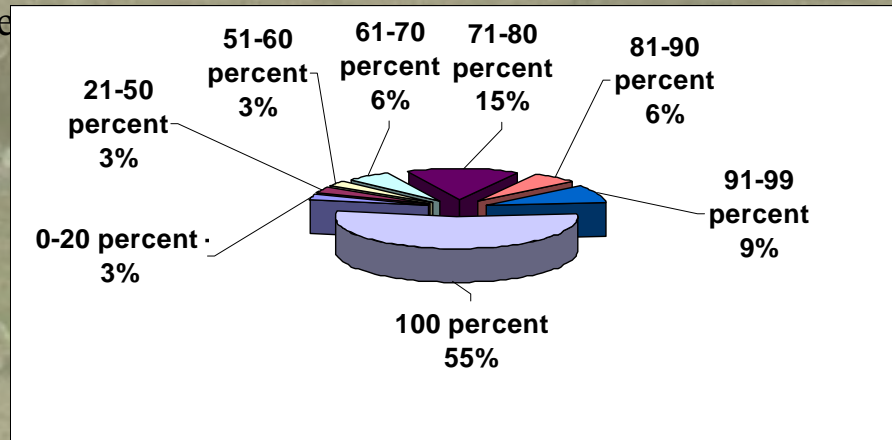


IGI Industry Survey - Growth of industry

- Then the number of permanent workers was requested.

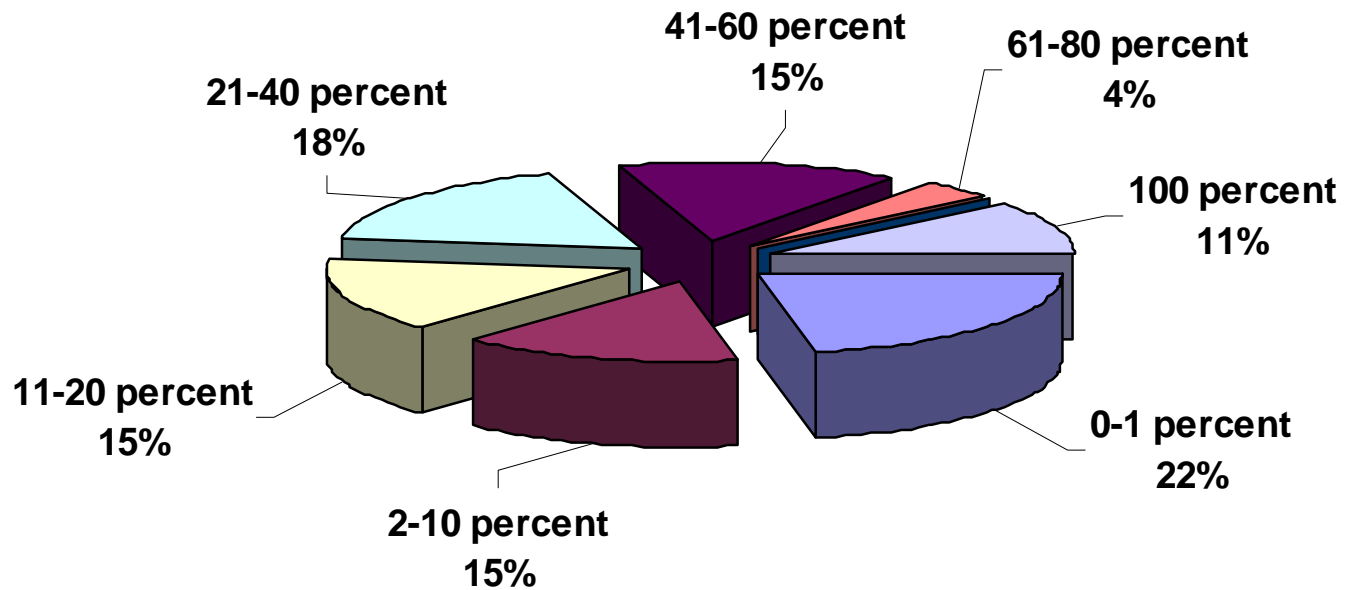


- Expressed as a percentage



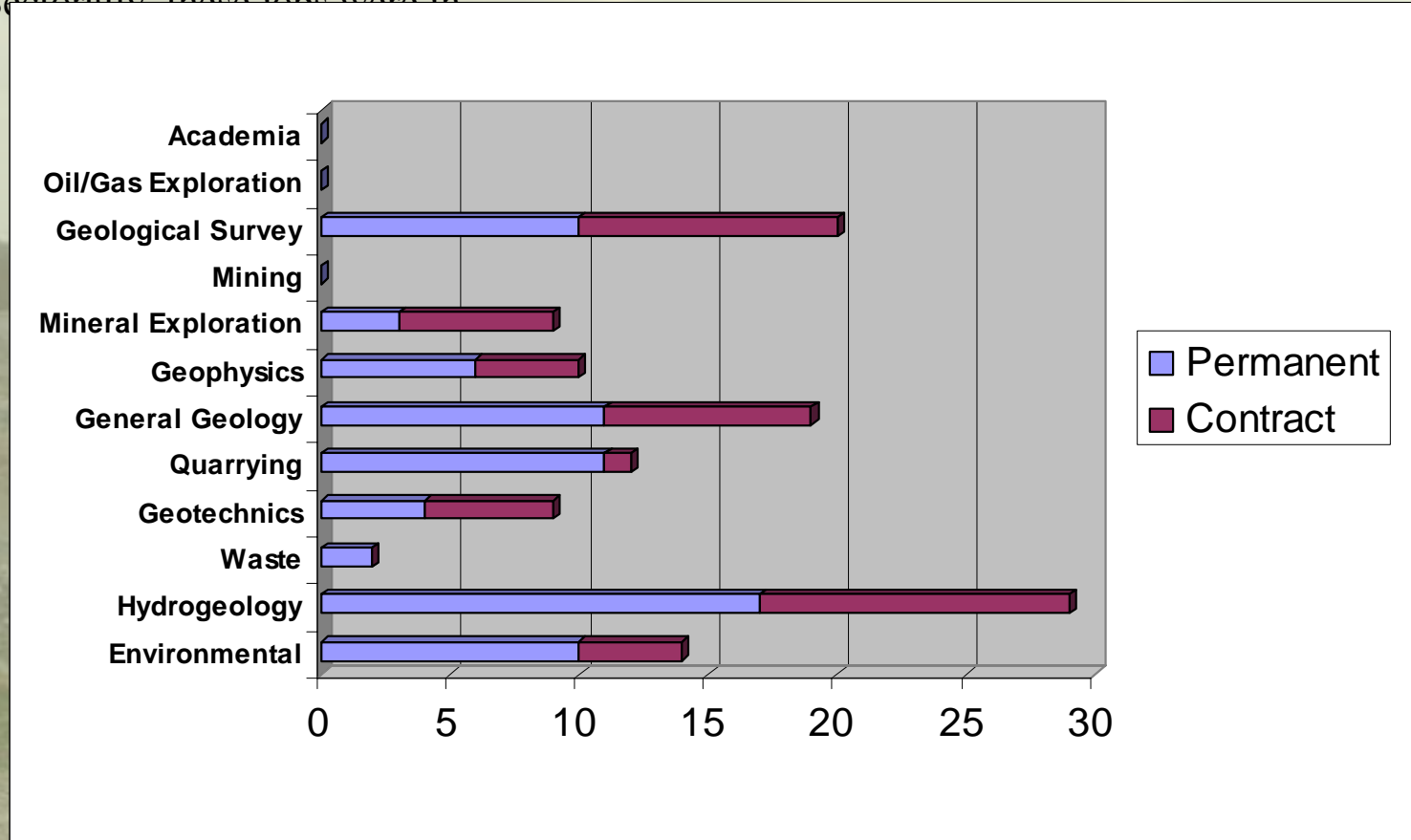
IGI Industry Survey - Geology employment

- Companies were asked **how many geology graduate posts they held**. Expressed as percentages of the total workforce ...



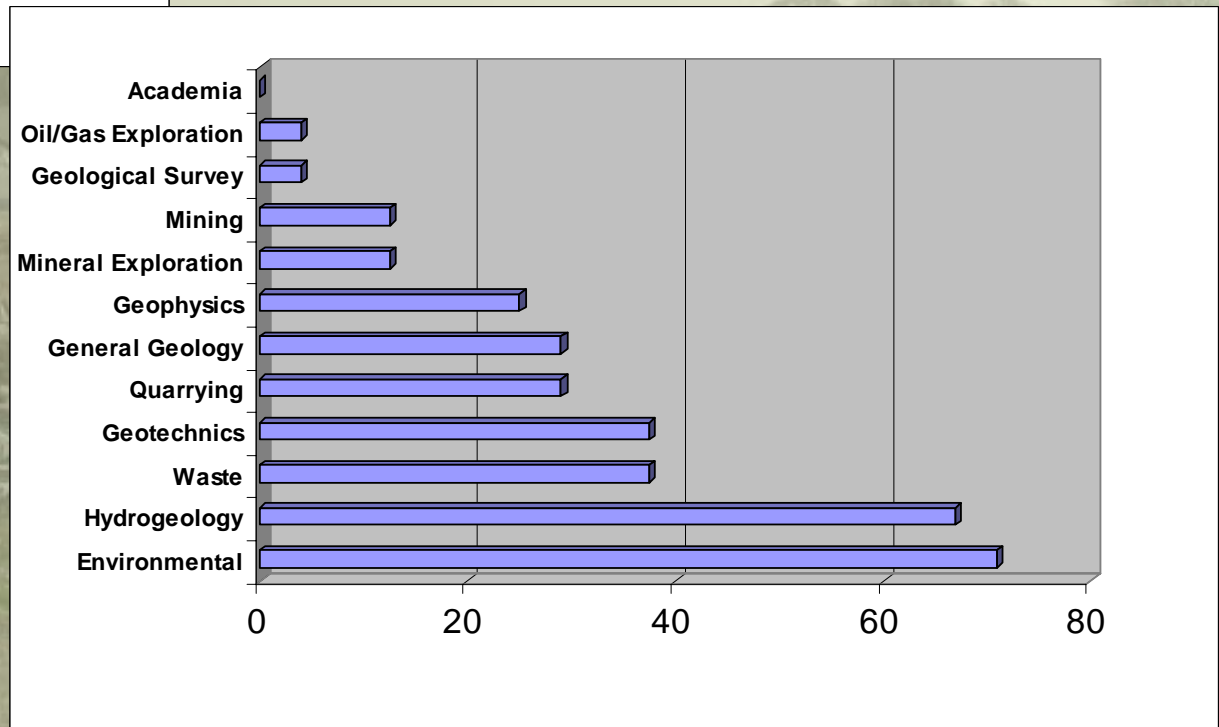
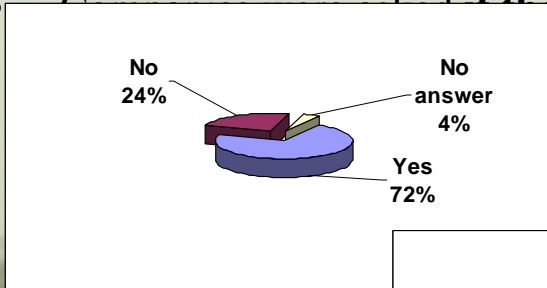
IGI Industry Survey - Geology employment

- Sectorally, these jobs were in



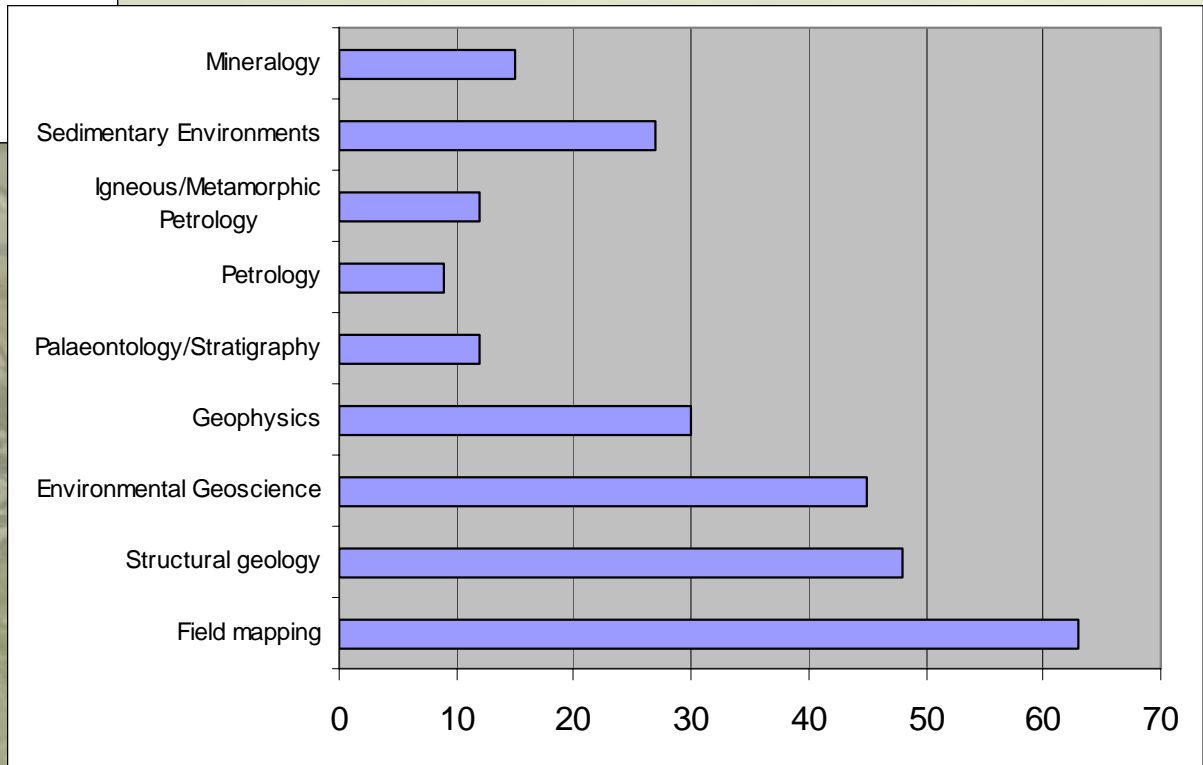
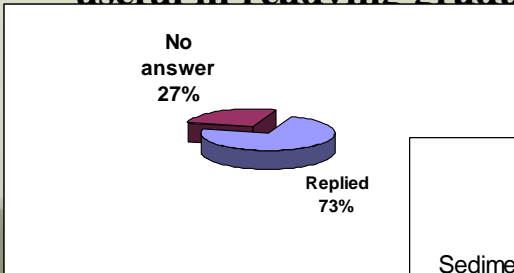
IGI Industry Survey - Geology employment

- Geology graduates offered training in specialist geological disciplines.



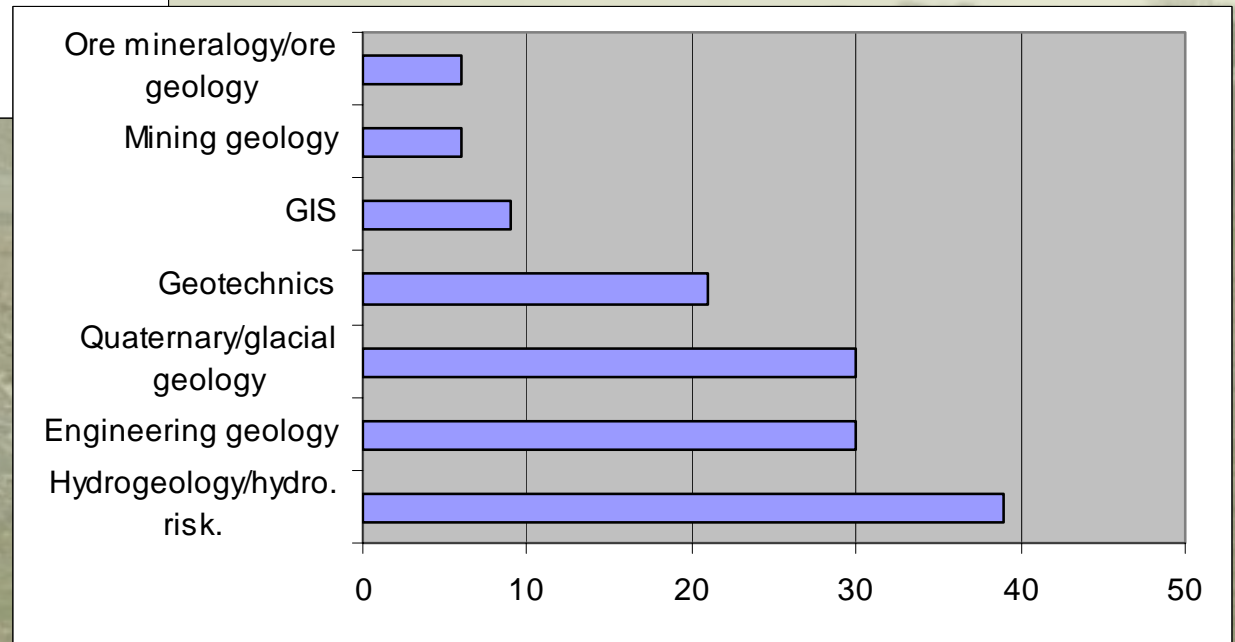
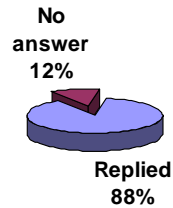
IGI Industry Survey - University education

- Companies were asked **which geology courses at University they considered to be most useful in reading graduates for employment with their own respective companies.**



IGI Industry Survey - University education

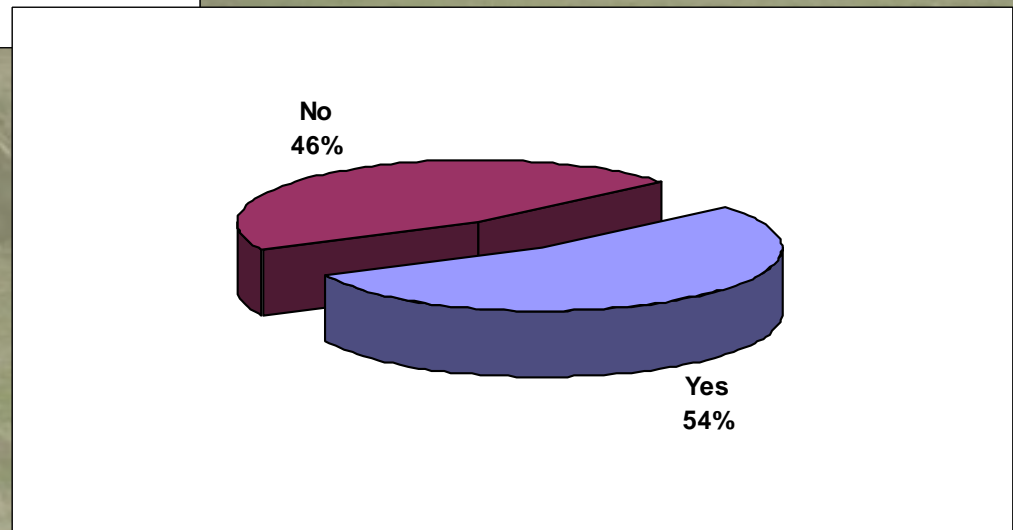
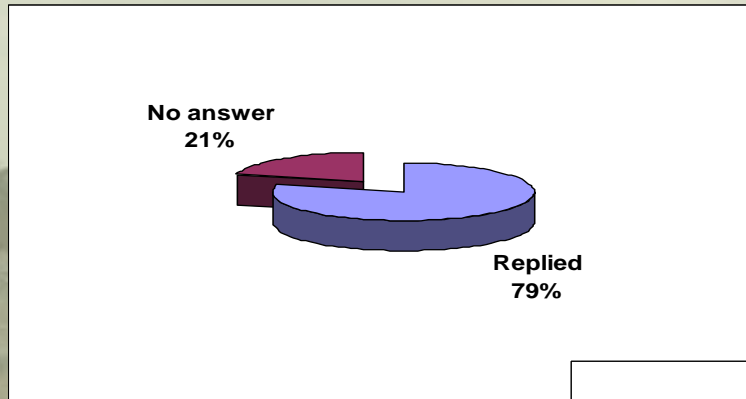
- Companies were asked **which courses were not currently offered at Irish Universities that they would prefer their employees to have.** This was an open question.



Others (3% each): Geomorphology, soil science, hydrology, mineral exploration, commercial geology courses, geophysics, quarrying, env. geology, stats with geology, general field techniques, core logging

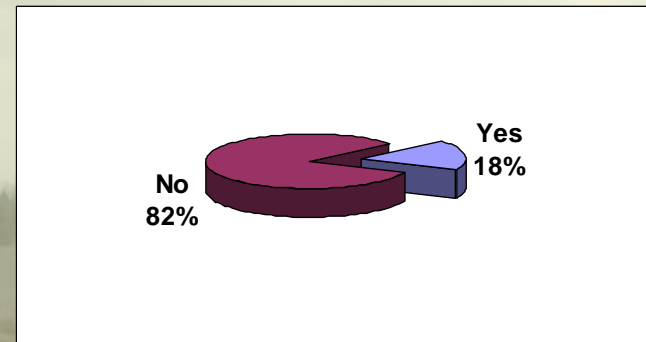
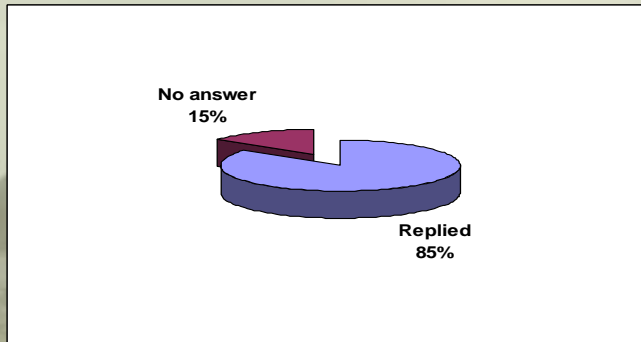
IGI Industry Survey - Standard of graduates

- Are you getting the **right supply** of geology graduates?



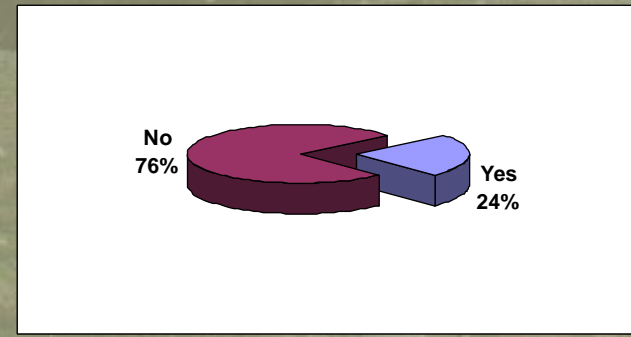
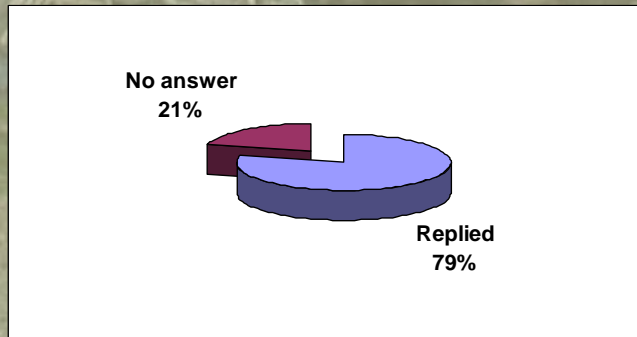
IGI Industry Survey - Standard of graduates

- Do you employ **geology graduates from other countries that are of better quality than the Irish graduates?**



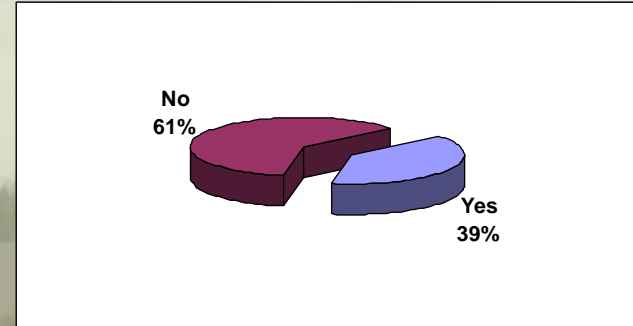
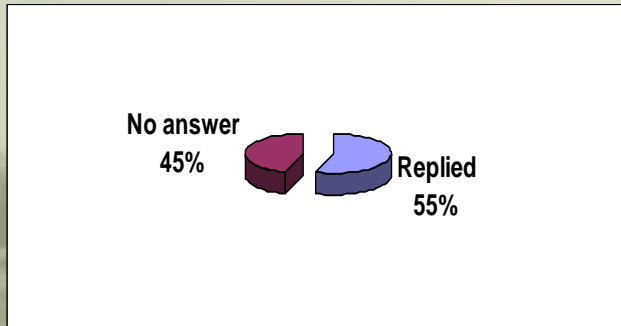
- ** Only employ foreign graduates as shortage of Irish ones.

- Do you employ **graduates from other disciplines that are of better quality than the Irish graduates?**

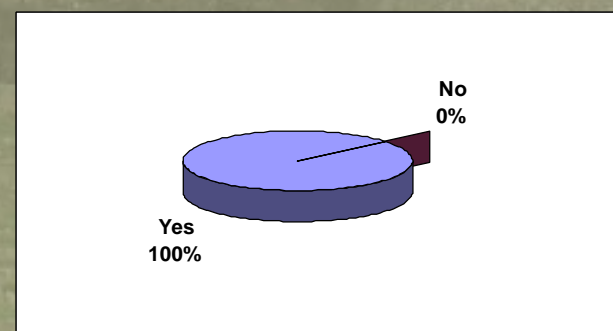
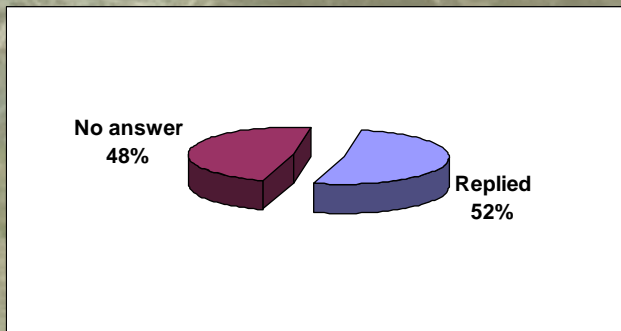


IGI Industry Survey - Standard of graduates

- Are the geology graduates able to **write reports**?

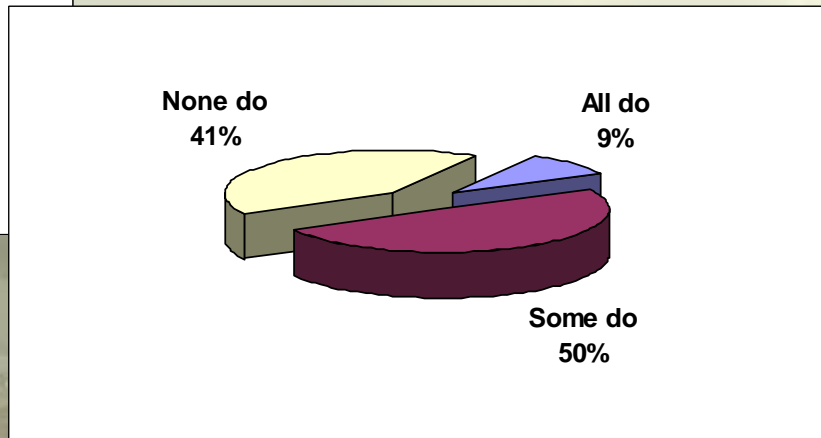
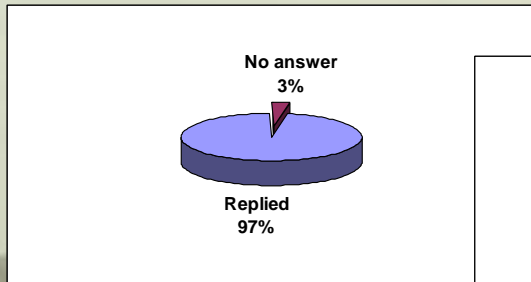


- Are the geology graduates **computer literate**?

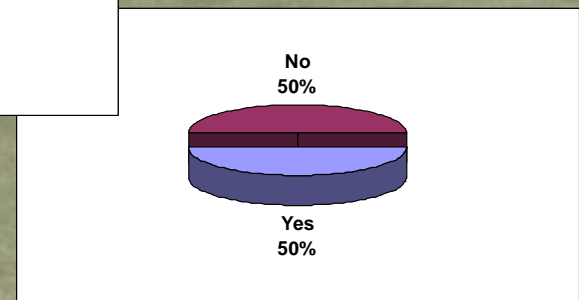
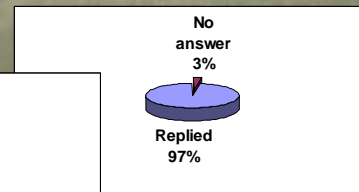
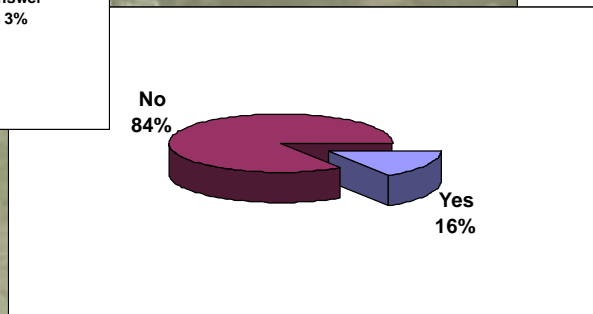
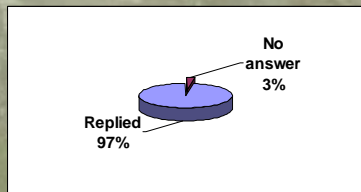


IGI Industry Survey - Professional accreditation

- Do your geology graduates have **professional accreditation** ('PGeo.)?

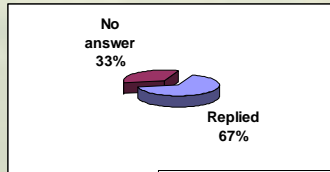


- Is professional accreditation **required**? Is it paid for?

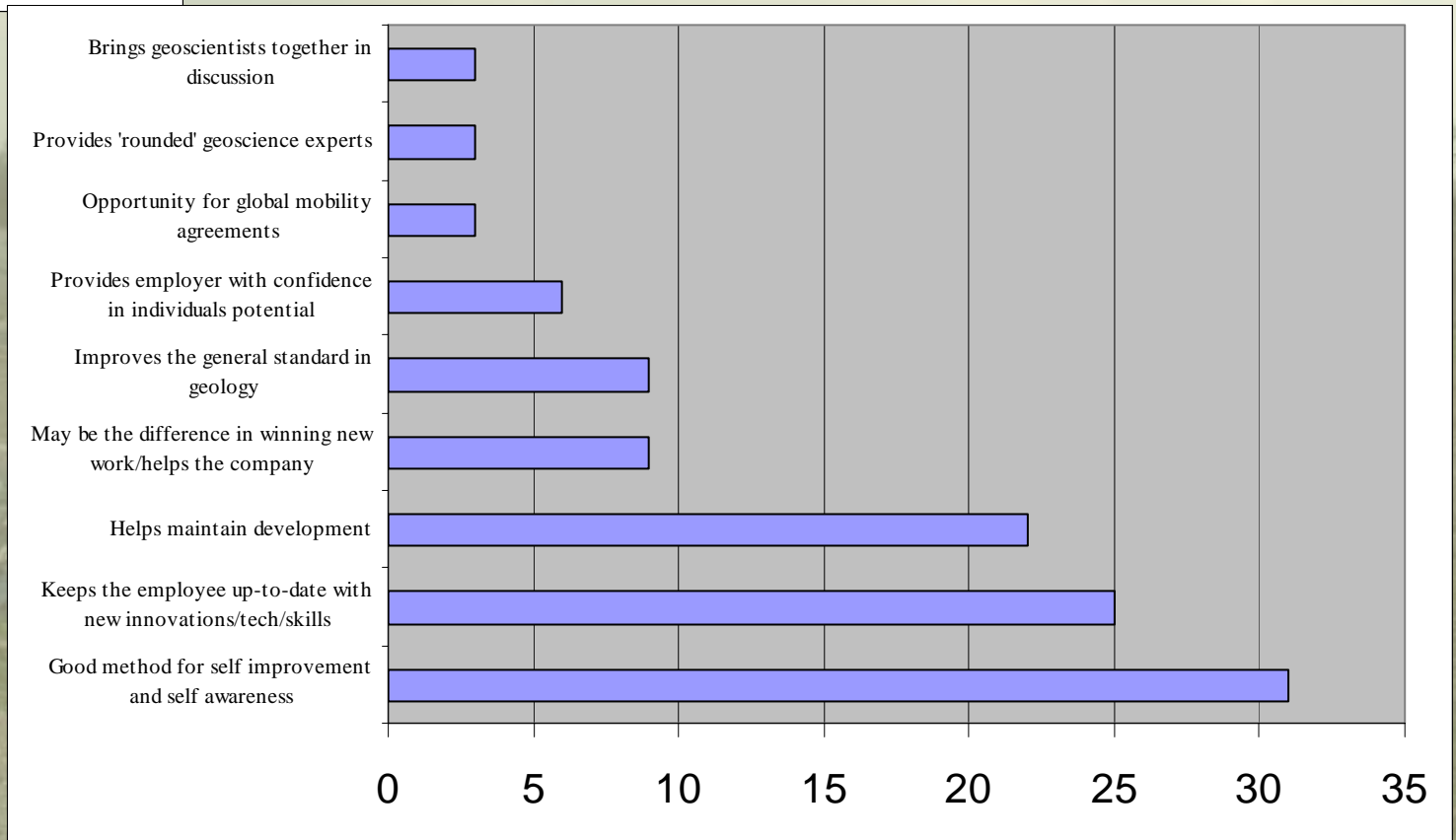


IGI Industry Survey - Professional accreditation

- What are the **benefits of CPD**? Again, an open question ...



- » IGI form is too specific (2 companies)
- » Needs to be a company initiative to be successful
- » Should be experience related, with higher grades for senior members
- » Should be 'lifetime', but is not ...



IGI Industry Survey - Overall trends

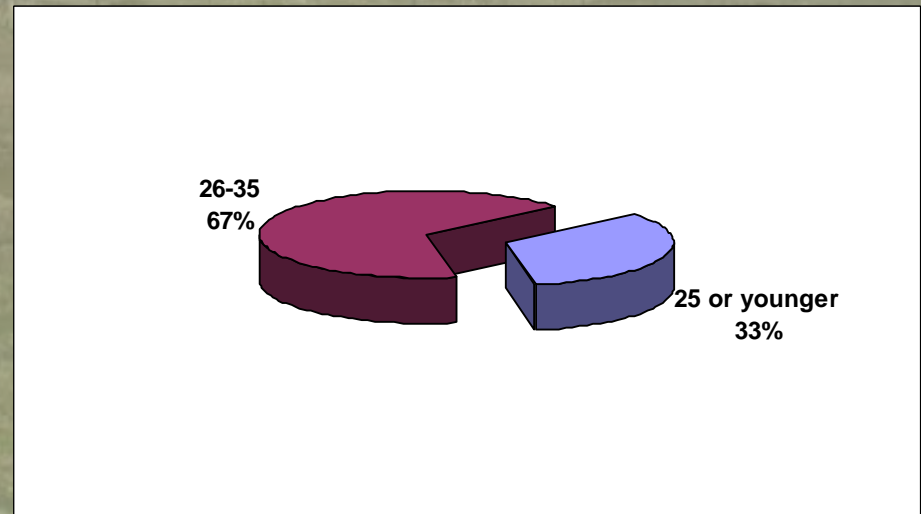
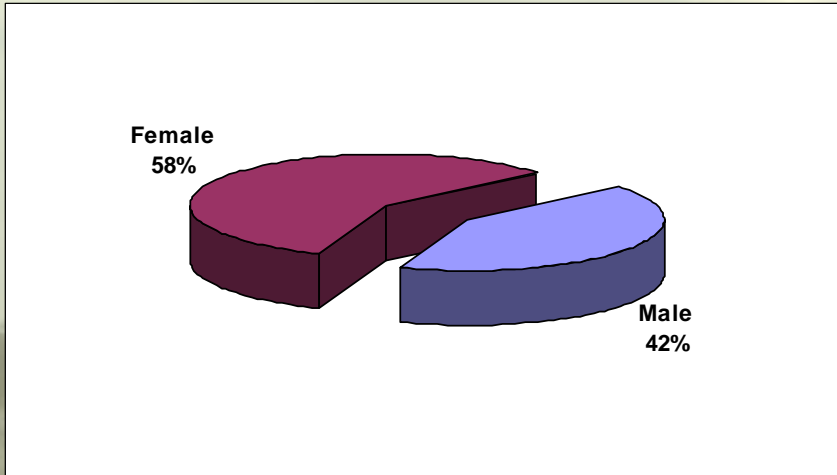
- **Environment, waste and hydrogeology are the dominant sectors in Irish geology with most companies involved in these sectors; followed by quarrying and geotechnics**
- **Following steady growth since the 1930's in the industry, there was an explosion of new companies in the 1990's, a growth trend which continues still**
- **The numbers working in each individual company has also grown, and permanent workers outnumber those on contract**
- **Only eleven percent of companies surveyed employ 'geologists only'**
- **The highest number of jobs are in hydrogeology, geological survey, general geology and environment (over half of the total jobs in those four sectors)**
- **Most companies provide training, again weighted towards the dominant sectors**
- **Field mapping, structural geology and environmental geoscience are considered the most useful University geology courses by employers**
- **Companies would strongly prefer their graduate employees to have done courses in hydrogeology, engineering geology, Quaternary geology & geotechnics before graduating ... an opportunity for postgrad. courses in Depts.?**
- **Most companies feel they are getting the right supply of graduates ... but only just (54-46)**
- **They feel they do not get graduates from other countries or other disciplines that are better than Irish geology graduates**
- **They feel graduates are highly computer literate but poor at writing reports**
- **Only some employees have professional accreditation, and this is generally not required but is usually paid for**
- **CPD is regarded as highly advantageous overall by employers**

IGI Graduate Survey

- The *Graduate Survey* has also been completed. The first stage of this involved liaison with University Geology Departments, in order to find out what records they held of their graduates. As differing systems were used in each of the Universities in recording their students, it was decided to survey graduates with questionnaires from the last five years only, and to survey numbers only from times previous to this.
- Survey questionnaires were sent out to graduates who have graduated over the last five years (1999-2003) from each of the four major Irish Universities which have Geology as a final year subject (UCG, UCD, UCC and TCD). Completed replies were had from 24 of the graduates, **a very low response rate of only around 8%**.
- The questionnaires asked graduates to answer a number of questions about their qualifications, their previous job history in both geology and non-geology sectors, current employment conditions and pay scales, and how they saw the role of the IGI in Irish geology. On the graduate side the idea was to find out how graduates found getting posts in geology, how they perceived their 'readiness' for posts, and what the IGI can do for them in the future.

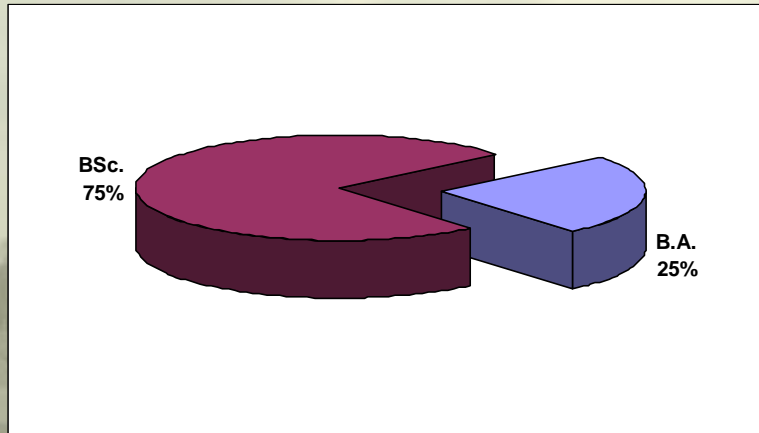
IGI Graduate Survey - Gender and Age

- The first section dealt with the **gender and age of the geology graduate** responding.

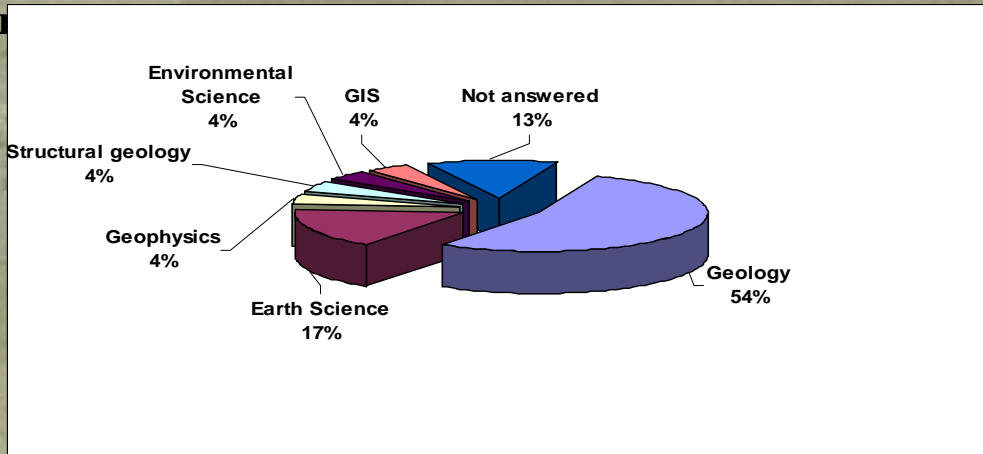


IGI Graduate Survey - Qualifications

- Graduates were asked **what their primary academic qualification was ...**

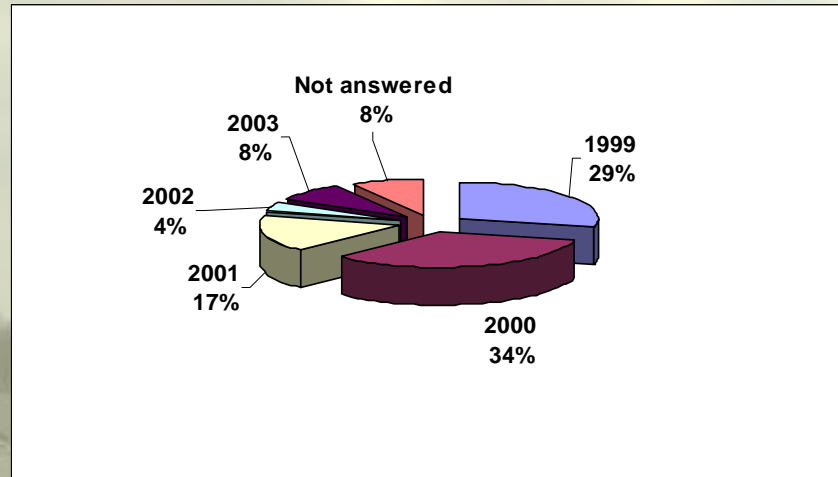


- ... and the area

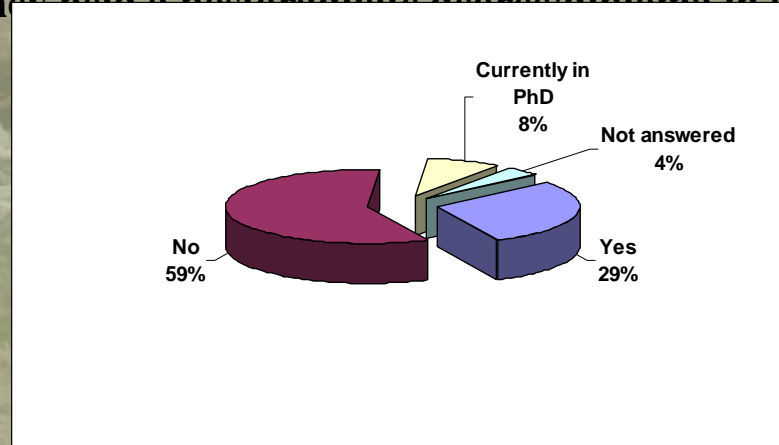


IGI Graduate Survey - Graduation year and further study

- Graduates were asked in **what year they graduated**



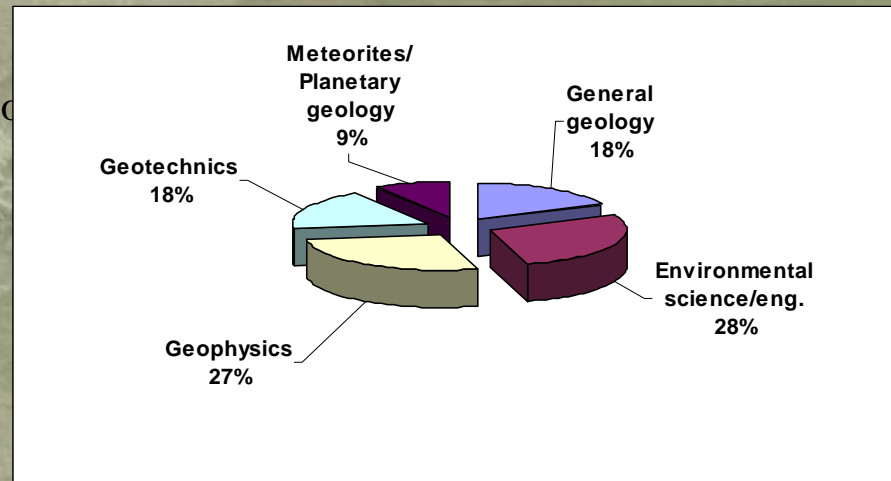
- They were asked **if they held a postgraduate degree/diploma in ecology?**



IGI Graduate Survey - Further study

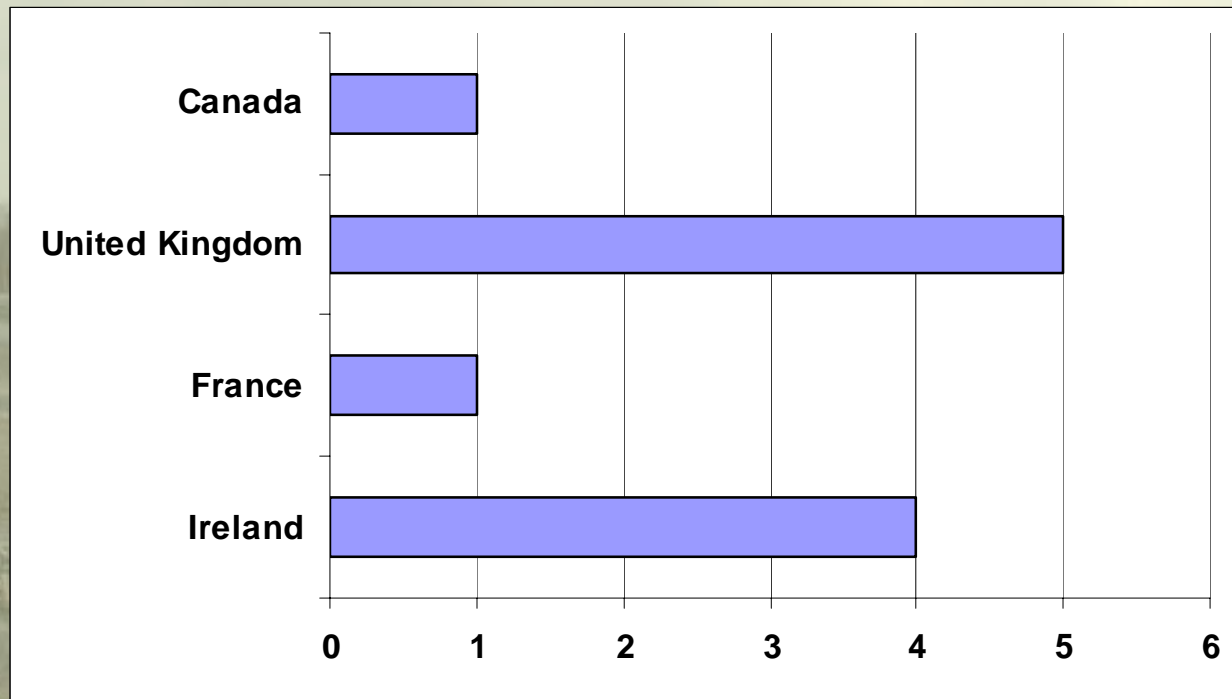
- Graduates were asked **if they do not have a postgrad in geology, have they completed another postgrad?**
 - Of seven positive replies, **one** had completed a postgrad. in **engineering**, **one** in **information technology**, **one** in **environmental conservation**, **one** in **GIS**, **one** in **education** and **two** in **'other'** categories.
- Of those that had/are doing postgrads in geology (11) ... **5 had MSc's, 5 had PhD's, 1 had both.**
- Of the MSc's, **1 was taught and 4 were research.**

- Of the 11 Geology



IGI Graduate Survey - Further study

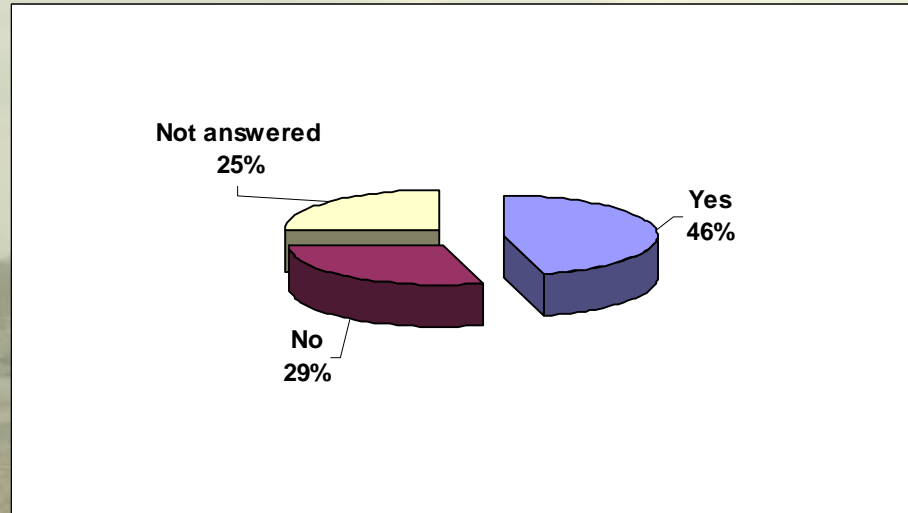
- Graduates were asked **where they completed their postgraduate geology study?**



- Six were still completing their postgraduate geology courses; one was seeking employment having recently finished.

IGI Graduate Survey - First postgraduate job

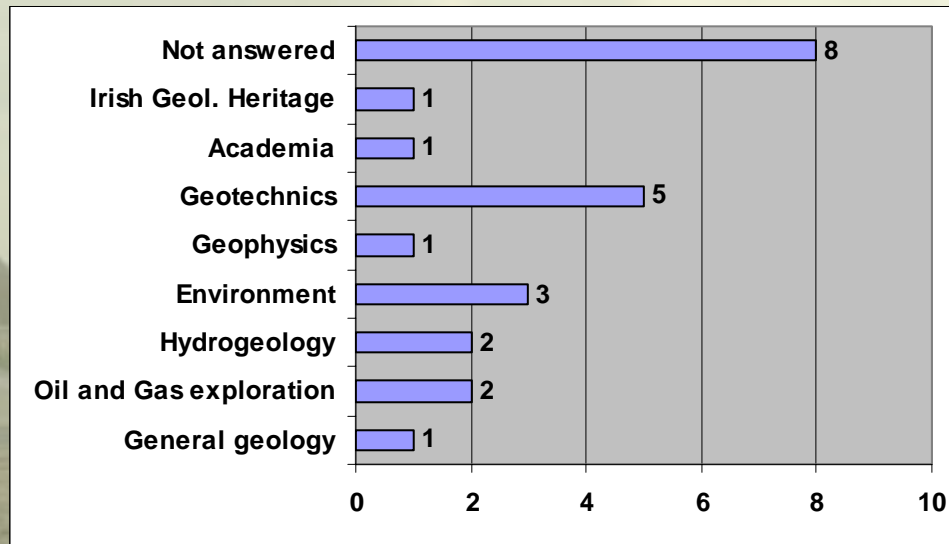
- All of the graduates were asked if their **first postgraduate job was in geology.**



- Of those that answered 'No' (7), five specified their first job titles. **One worked as a cartographer, one worked in archaeology, one worked as an environmental consultant, one worked in environmental science and one worked as a sales rep.**
- Of those that answered 'Yes' (11), seven specified their first job titles. **One worked as a project scientist, one as a geotechnical engineer, one as a mine geologist, three as environmental scientist and one as an environmental engineer.**

IGI Graduate Survey - First geology job

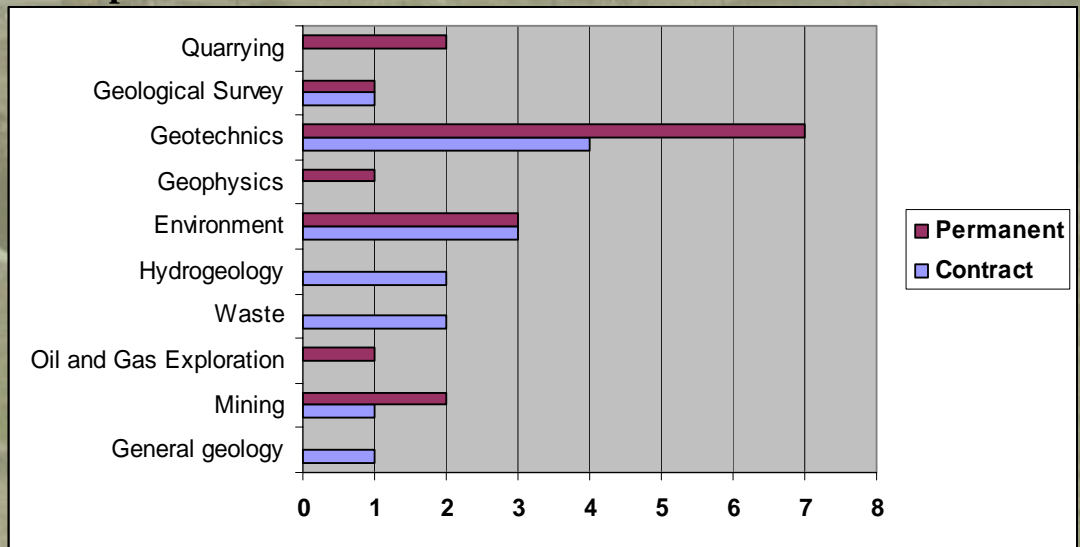
- The graduates **first job in geology** was in ...



- Thirteen** graduates replied as to **how long it took them to get their first jobs in geology**. Six got jobs immediately but seven graduates took between one and six months. None answered that it took them over six months to get their first geology job.
- Of the **sixteen** who gave information about their first geology job, **nine attained permanent positions and five got contracts**. Of these fourteen, only one had to choose between jobs; **thirteen had no other job offers**.

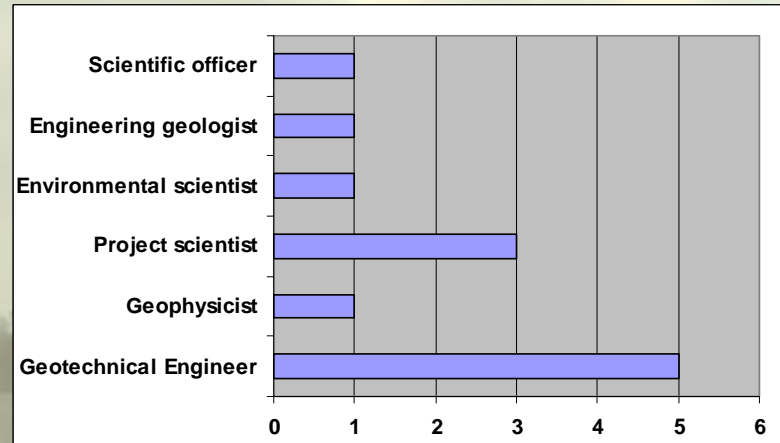
IGI Graduate Survey - Number of geology jobs

- Of twelve that answered as to **how many geology jobs they have had ...**
 - **Four were still in their first geology job**
 - **One had one previous geological post**
 - **Four had two previous geology jobs**
 - **Two had three previous geology jobs**
 - **One had four previous geology jobs**
- This makes 31 posts in all ... the twelve current and nineteen previous posts. Of these 31 posts ...
 - **13 were contract and 18 were permanent**
 - **19 were in Ireland (11 contract, 8 permanent)**
 - **2 were in the UK (0 contract, 2 permanent)**
 - **4 were in the U.S.A. (1 contract, 3 permanent)**
 - **6 were in the EU (2 contract, 4 permanent)**

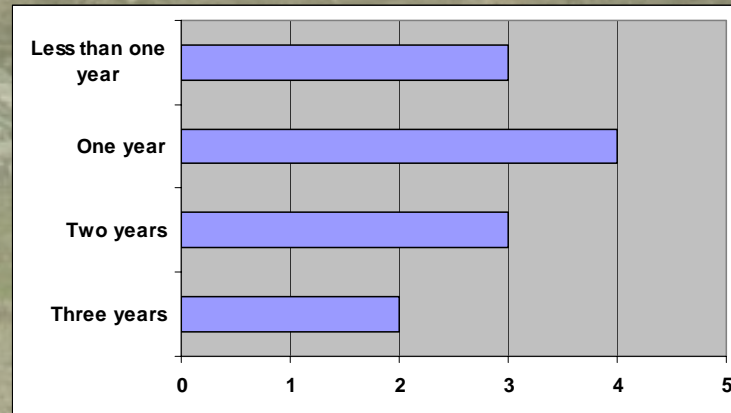


IGI Graduate Survey - Current job

- Of twelve that answered as to **their exact current job title ...**

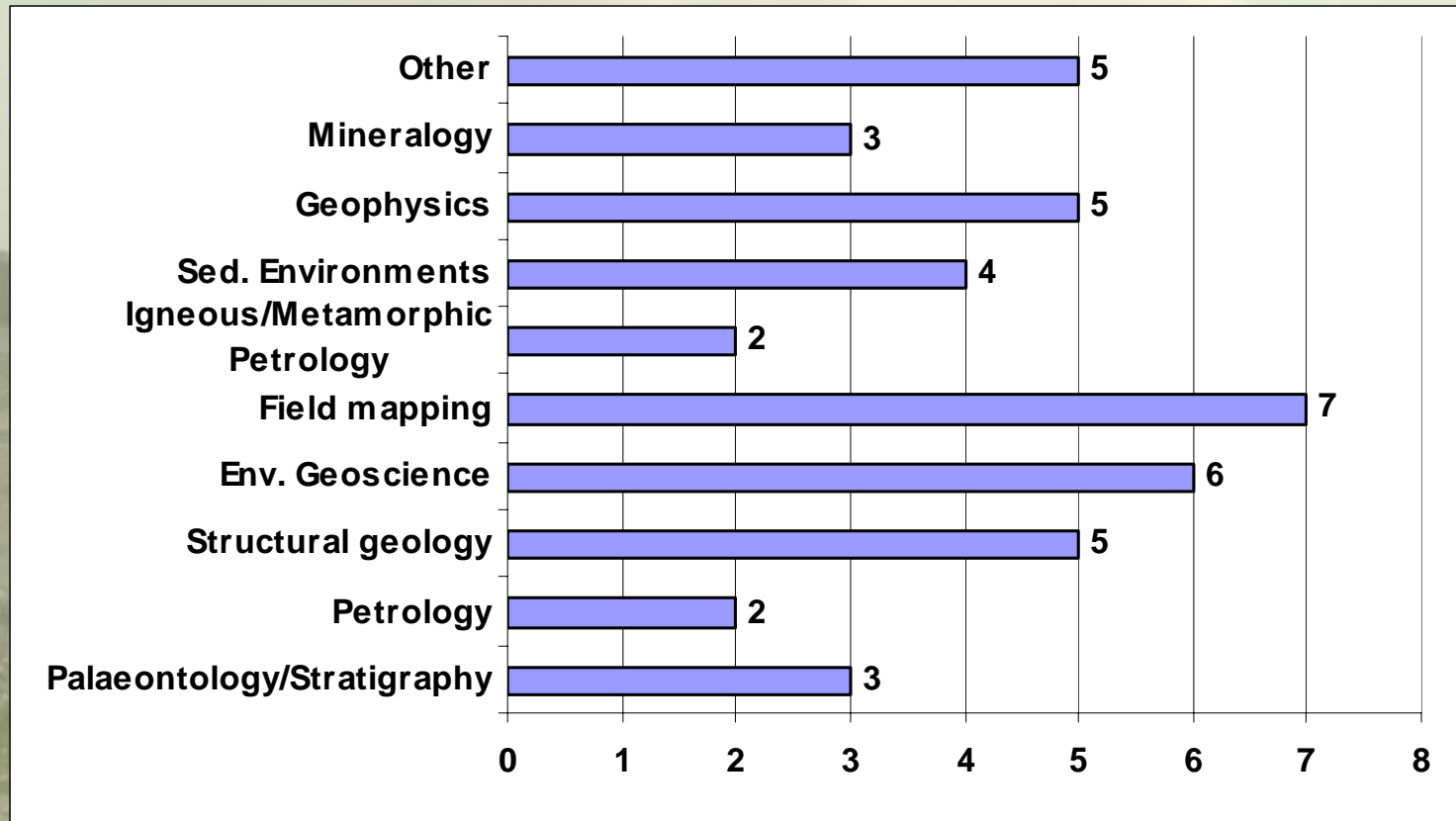


- Of these twelve, **four were contract, with eight permanent. Ten were in Ireland, with two elsewhere in the EU.**
- Graduates were asked **how long they have spent in their present job?**



IGI Graduate Survey - University usefulness / job

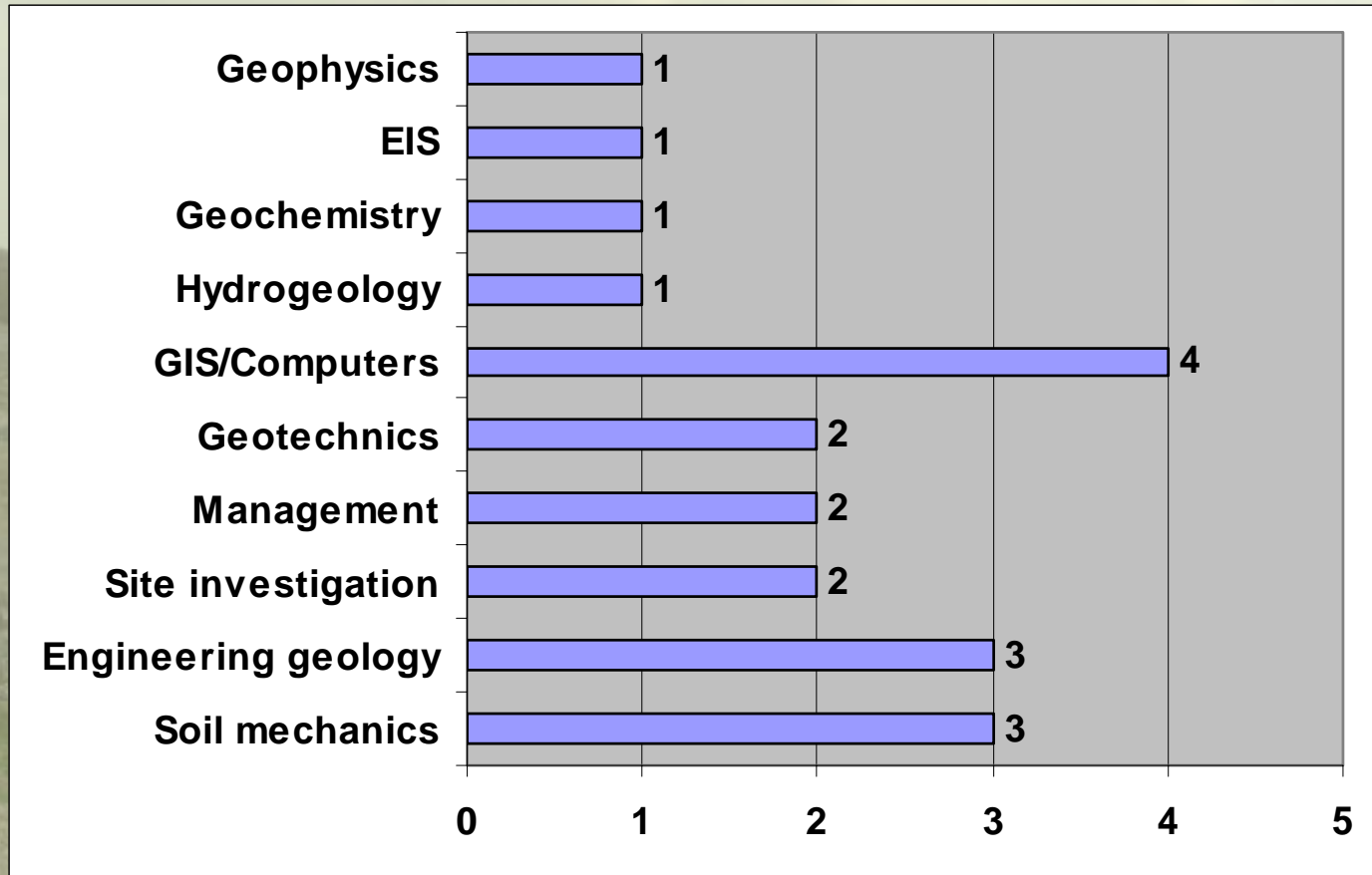
- Graduates were asked **which courses that they undertook at University were most useful to them in their career ...**



- The 'other' subjects were **computer applications, hydrogeology, engineering geology, petroleum geology and environmental management systems ...**

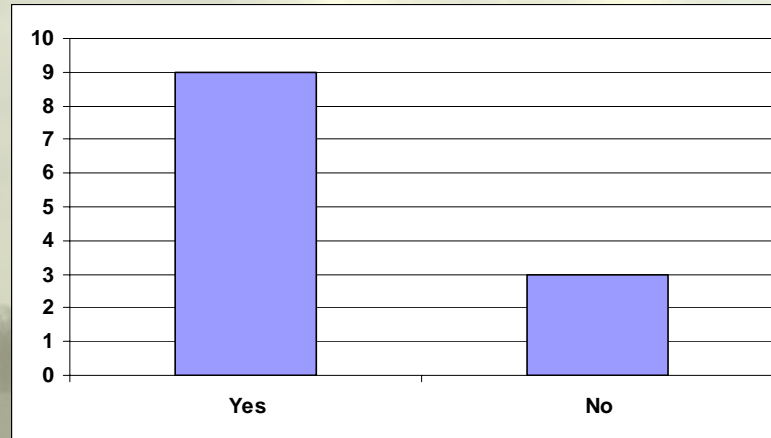
IGI Graduate Survey - University usefulness / job

- Graduates were asked which were not available at University which, in hindsight, they wish they had ...

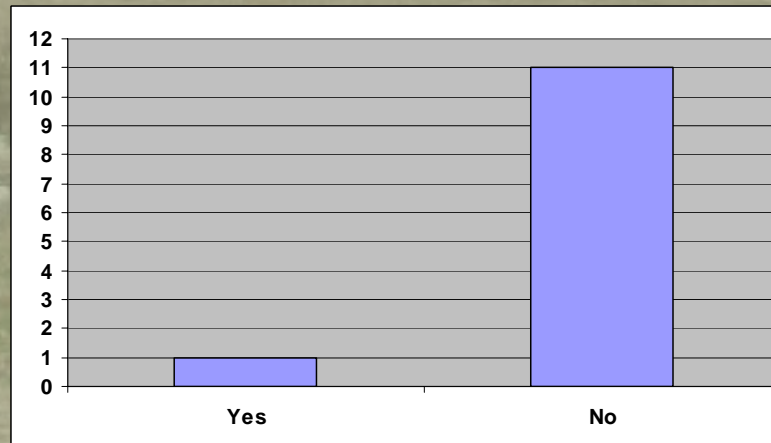


IGI Graduate Survey - Professional development

- Graduates were asked if they were interested in **diversifying/retraining ...**

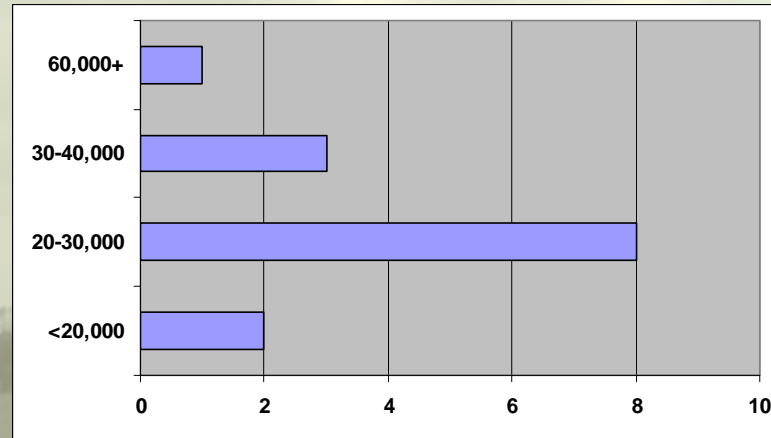


- They were then asked **if they were aware the IGI are currently holding courses which offer these options?**

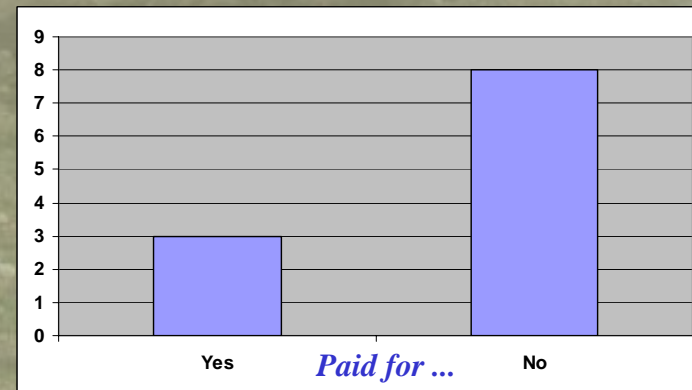
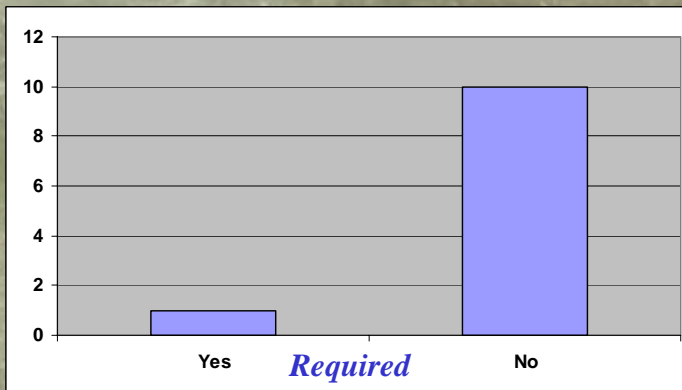


IGI Graduate Survey - Salary, rates and CPD

- Graduates were asked **what their current salary is ...**



- **Only four replied about their daily charge out rates ... all four charged less than 500 euros ...**
- Graduates were asked **if CPD was required, and paid for, in their job ...**



IGI Graduate Survey - Professional development and the IGI

- What are the **benefits of CPD**? This was an open question with no multiple choice options ... (only **three** graduates answered this question)
 - Important for career development and advancement
 - Important for making contacts through its' pursuit, and gaining industry related knowledge
 - Helps improvement of technical knowledge
- What **role would you like to see the IGI playing in assisting geology employment opportunities**? Again, an open question ... (**ten** answered this question)
 - Sending job info. to graduates and creating awareness of jobs out there before final year **5**
 - Offer courses and more seminars **3**
 - Consulting with Universities to advise subject areas to aid job opportunities, esp. wrt MSc.'s **2**
 - Links with British and other Geological Societies **1**
 - Evaluating academic degree courses to see relevancy for industry **1**
 - Get companies to advertise on the IGI Website **1**
 - Encourage industry to be more active with respect to recruitment **1**
 - Provide lists of companies to graduates, with contact information **1**

IGI Graduate Survey - Overall trends

- Of graduates from the last five years that replied, females were in the majority.
- One third were 25 or younger, with two-thirds being between 26 and 35.
- Three quarters had a BSc as a primary degree, with the remaining 25% having completed BA's.
- Within this, over half specialised in geology, with the rest specialising in GIS, environmental science, geophysics, earth science and structural geology.
- Almost two-thirds did not complete a postgrad. in geology ...
- ... but many completed postgrads. in 'related' disciplines, such as GIS, IT, engineering and environment.
- Of those doing geology postgrads, there was an even split between Masters and PhD's.
- Most did research Masters.
- Over half of the geology postgrads also specialised in environmental science or geophysics.
- Over half went abroad to do postgrad. work, mostly to the UK.
- Most of the graduates first jobs were in geology. If not, many of them went into 'related' disciplines too, such as archaeology, environment and cartography. Only one had a first job 'alien' to geology (sales rep.).
- Of those that had their first job in geology, again, environment and geotechnics were the chief areas.
- Half of the graduates get geology jobs immediately, with half having to wait between one and six months. No one who answered took over six months to get their first geology jobs.
- The majority (almost two-thirds) of these jobs are permanent.

IGI Graduate Survey - Overall trends

- Most of the graduates had no other offers when it came to accepting their first job. Only one had another option.
- Graduates tend to move between jobs quite regularly, and quite healthily.
- Again, most of the jobs are permanent.
- Most are in Ireland, with the EU, the US and finally the UK most popular as other centres.
- Interestingly, in Ireland, the majority of jobs previously-had or currently-in by graduates with less than five years experience were contract positions. Elsewhere, permanency is the standard. This may be a reason why graduates go abroad in the first place?
- Again, geotechnics and environment formed the bulk of the jobs previously-had or currently-in by those who answered.
- The courses at University thought to be most useful by graduates in readying them for their careers are field mapping, environmental geoscience, geophysics and structural geology.
- The courses graduates would most like to have provided at University, but which were not available to them, are GIS/Computers, engineering geology, soil mechanics, geotechnics, management and site investigation.
- Three quarters of graduates who responded were interested in diversifying/retraining.
- Only one of twelve knew that the IGI offered courses which offer these options.
- Most have relatively low salaries (<€30K), and low charge out rates per day (<€500).
- CPD is not required in the majority of jobs, and is rarely paid for.
- The graduates would like the IGI to increase graduates awareness of jobs before and during their final year at University, offer more courses and seminars, and to consult with Universities to advise subject areas to aid job opportunities, especially with respect to MSc.'s.

IGI Graduate Survey - UCC Growth

UCC Geology Department began taking graduate records in 1970. The student number trends in the Department since then has been ...

1970	1	1991	3
1971	0	1992	3
1972	0	1993	12
1973	1	1994	14
1974	1	1995	23
1975	1	1996	15
1976	2	1997	15
1977	1	1998	7
1978	3	1999	16
1979	4	2000	12
1980	5	2001	15
1981	0	2002	9
1982	3	2003	17
1983	6	2004	12
1984	1		
1985	9	Total	266
1986	10		
1987	8		
1988	14		
1989	14		
1990	9		

IGI Graduate Survey - UCD Growth

UCD Geology Department began taking graduate records in 1965. The student number trends in the Department since then (BSc. Honours Geology) has been ...

1965	1	1986	8
1966	1	1987	2
1967	1	1988	8
1968	1	1989	6
1969	2	1990	6
1970	4	1991	9
1971	3	1992	4
1972	2	1993	4
1973	4	1994	5
1974	6	1995	5
1975	7	1996	8
1976	3	1997	4
1977	5	1998	5
1978	7	1999	3
1979	5	2000	0
1980	4	2001	1
1981	8	2002	8
1982	10	2003	11
1983	14	2004	9
1984	7		
1985	9	Total	210

IGI Graduate Survey - TCD Growth

TCD Geology Department began taking graduate records in the early 1900's. The student number trends in the Department since 1965 (BSc. Honours Geology) has been ...

1965	4	1986	13
1966	5	1987	23
1967	4	1988	9
1968	7	1989	9
1969	7	1990	10
1970	4	1991	5
1971	8	1992	7
1972	9	1993	7
1973	12	1994	11
1974	8	1995	3
1975	13	1996	5
1976	17	1997	9
1977	13	1998	10
1978	10	1999	10
1979	18	2000	10
1980	18	2001	15
1981	13	2002	13
1982	10	2003	14
1983	7		
1984	19	Total	401
1985	12		

IGI Graduate Survey - UCG Growth

UCG Geology Department has graduate records for the last ten years. The student number trends in the Department since 1994 has been ...

1994	15 honours	3 pass	6 honours Erasmus
1995	15 honours	3 pass	6 honours Erasmus
1996	19 honours	2 pass	7 honours Erasmus
1997	21 honours	0 pass	4 honours Erasmus
1998	13 honours	0 pass	1 honours Erasmus
1999	14 honours		
2000	12 honours	4 pass	2 honours Erasmus
2001	11 honours	2 pass	2 honours Erasmus
2002	11 honours	2 pass	3 honours Erasmus
2003	14 honours	2 pass	
2004	18 honours	3 pass	
Total	163 honours	21 pass	31 honours Erasmus

IGI Graduate Survey - Total number of graduates

*The total number of honours graduates since 1965 (i.e. over the last forty years) in the four universities is **1040** (noting that UCG records only stretch back 10 years)*.*

*The total number of honours graduates since 1975 (i.e. over the last thirty years) in the four universities is **965**.*

*The total number of honours graduates since 1985 (i.e. over the last twenty years) in the four universities is **731**.*

** Given that there are an estimated 300 geologists working in the country at present ... over 700 seem to have left Geology ?*

IGI Graduate and Industry Survey - Summary and a way forward ...?

- Geology has been steadily growing in Universities since the 1960's. Following peaks in the early to mid 1980's and mid 1990's and two subsequent declines, the graduate numbers are increasing again ...
- In industry, there was an explosion of new companies in the 1990's, a growth trend which continues still.
- Industry regards field mapping, structural geology and environmental geoscience as the most important courses their employees have done at University, a view agreed on by the graduates themselves.
- The dominant sectors in Irish geology now, though, are environment, waste, hydrogeology, quarrying and geotechnics. Most companies would prefer their employees to have done courses in hydrogeology, engineering geology, Quaternary geology and/or geotechnics, and most graduates would prefer to have done courses in these as well as in GIS, soils, site investigation and management.
- Because of the lack of modules in GIS, environmental geoscience, earth science and geophysics, most graduates need to do these as postgraduate courses, usually research-based and often in the UK.
- Many of the first jobs graduates get in Ireland are contract, and most are got within six months of graduation. Elsewhere permanency is easier to attain at this stage of their career.
- Pay rates are poor in general for graduates with less than 5 years experience.
- Most companies feel that graduates are computer literate but poor at writing reports.
- Industry says it pays for professional accreditation, but the graduates do not agree with this !!
- Employers see CPD as highly advantageous, yet it is not required or encouraged (as it is not paid for) in most companies.
- Very few graduates were aware the IGI held courses regularly which allowed them to retrain and diversify ... something most want to do.
- *The graduates feel that the IGI needs to increase graduates awareness of jobs before and during their final year at University, offer more courses and seminars, and to consult with Universities to advise subject areas to aid job opportunities, especially with respect to MSc.'s. The results of this Survey gives the IGI an excellent opportunity to begin this process immediately ... do we need to look at setting up or putting together a framework for employer-student seminars??*