



Report

PhDs – their research training and entry into the labour market



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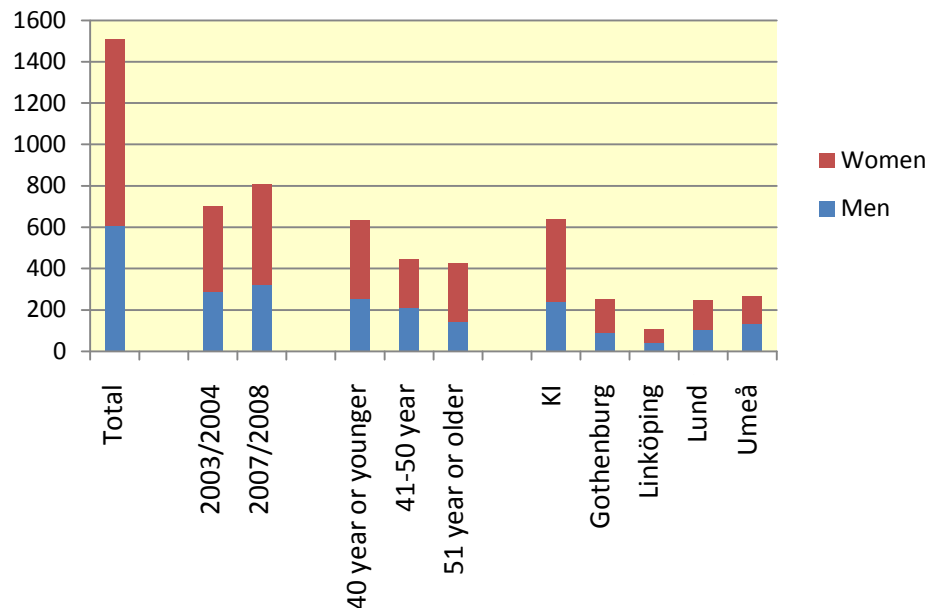
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Introduction

During winter 2011 Statistics Sweden (SCB) conducted a survey commissioned by Karolinska Institutet (KI). This targeted people who had been awarded their PhD during the academic years 2003/04 or 2007/08 from KI and the medical faculties at the universities in Gothenburg, Linköping, Lund and Umeå. *This group shall hereafter be referred to as the 'PhDs'.*

The aim of the survey was to evaluate the education received by the PhDs and to describe their entry into the labour market. The format was a census. Of 1,500 people approximately 1,021 answered the survey, corresponding to a response rate of 68%.

Figure 1.
Number of PhDs stratified by gender, academic year, age and university.

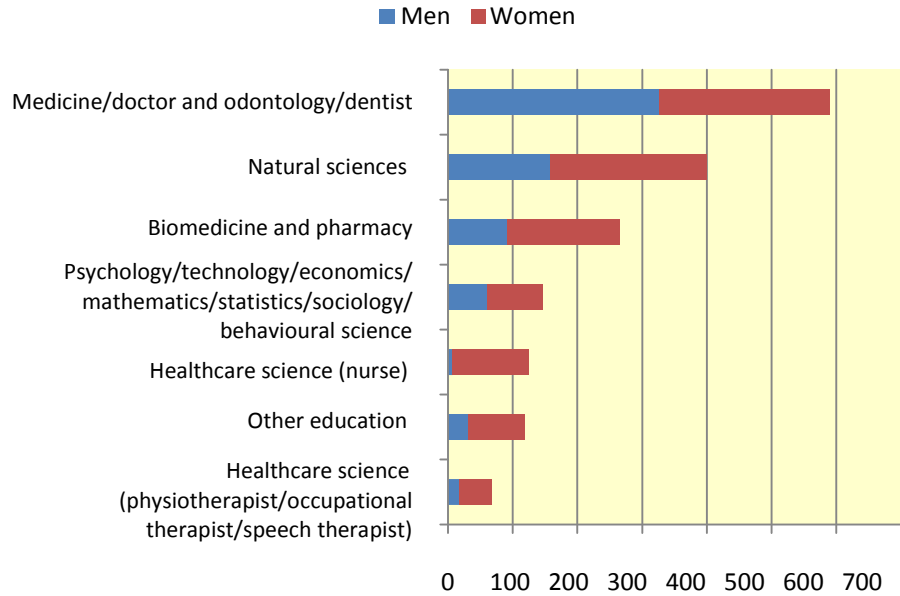


The survey included approximately 900 women and 600 men (60% women and 40% men). Of these, 85% were married or lived with a partner and 15% lived alone. Six-out-of-ten had children under the age of 19 living at home.

A total of 700 people were awarded their PhD degree during the academic year 2003/04 and a total of 800 during 2007/08. KI had the greatest number of participants in the survey (approximately 640 (43%)).

83% (approximately 1,250 people) had completed their undergraduate education in Sweden and 17% abroad. 54% had conducted their PhD education on a full-time basis.

Figure 2.
Number of PhDs stratified by undergraduate education.



Half of all postgraduates had pre-clinical/experimental research as the subject area of their thesis, a somewhat larger proportion of men than women. Compared with 16% of the eldest group, 77% of the youngest group (40 years old or younger) had pre-clinical/experimental research as the subject area of their thesis (Table 1).

Table 1
Thesis subject area. Postgraduates, by gender and age. Per cent¹.

		What was the subject area of your thesis?					Total
		Preclinica/ experimental research	Clinical/ patient- focused research	Public Health/ epidemiology	Healthcare science	Other	
All	Total	51	34	13	6	8	1,508
Gender	Women	49	32	13	10	7	901
	Men	54	37	13	2	9	607
Age	< 41 years	77	17	6	1	7	633
	41-50 years	48	38	19	6	6	449
	> 50 years	16	54	18	14	9	426

¹ The respondent could choose more than one answer (question 11 on the form). The statistics therefore do not add up to 100%.

Nine-out-of-ten have employment as their main occupation

Employment was the most common occupation among PhDs, 86% having work during the reference week, 26th September – 2nd October 2011. The proportion of men (84%) who had work was slightly higher than that of the women (84%). Another 2% of PhDs ran their own companies and 4% were on leave of absence or parental leave during the reference week, a larger proportion of these being women.

Eight-out-of-ten in the group aged 40 and under had employment as their main occupation. The corresponding proportion in the 41-50 age group was 94% and 86% among those over 50 years old. One-out-of-ten in the youngest group was on leave of absence or parental leave during the reference week.

The proportion that had employment as their main occupation was approximately the same between the PhD students with different areas of undergraduate education. The biggest proportion contained those who gained their undergraduate education in the field of healthcare science (physiotherapist/occupational therapist/speech therapist). In this group, 96% had employment as their main occupation. The smallest proportion (79%) contained those with undergraduate education in biomedicine and pharmacy. The explanation as to why so few among those educated in the field of biomedicine and pharmacy were working was that parental leave (and leave of absence) was highest within this group.

In a comparison between different subject areas for the thesis, the highest proportion with employment (or their own company) was among individuals who had defended their thesis in the field of clinical/patient-focused research (94%), closely followed by those who had public health/epidemiology as the subject area of their thesis (93%). Of those with pre-clinical/experimental research as the subject area of their thesis 7% were on leave of absence or parental leave during the reference week.

The majority have worked in universities and colleges

After gaining their PhD the majority go on to work in universities and colleges. Of those who had employment (or ran their own company), more than 40% worked in universities. One-third worked within county councils and approximately 15% within the private sector. A small proportion worked within other public sectors or municipalities.

Women were largely employed within universities and colleges while to a somewhat larger extent men worked within county councils and in the private sector.

Half of the youngest group (40 years and under) had employment in universities and colleges, whereas half of the eldest group (over 50) worked in county councils. Two-out-of-ten in the youngest group worked in the same sector (county councils).

Approximately 590 (39%) were employed within universities. 88% said that research was part of the work that they had during the reference week. 56% indicated that they were teaching, 37% worked in administration and 15% said that clinical work was part of their job description.

Of the total working hours among those employed in universities and colleges, an average 59% were spent on research, 19% teaching, 11% administration, 7% clinical work and 4% 'other'.

64% of men's and 56% of women's working hours were research. Teaching constituted 22% of the women's and 14% of men's working hours, among those who employed within universities and colleges.

Seven-out-of-ten have permanent employment

More than 70% of the PhDs had permanent employment, a somewhat higher percentage of men than women. Permanent employment was more common among those who graduated during the academic year 2003/04 than among those graduating in 2007/08 (79% compared to 66%). It was also more common for the older people than it was for the younger to have permanent employment, 87% among people over 50 compared to 58% in the youngest group. One of four postgraduates had casual/fixed-term employment. A small group ran companies or had another type of employment.

Three of four PhDs worked more than 50 hours during a normal working week². A somewhat higher proportion of men than women worked more than 50 hours. It was somewhat more common among the older respondents compared with the younger age categories to work more than 50 hours per week. The longest working week was determined to be among the PhDs with undergraduate education within medicine/doctor and odontology/dentist, nearly four out of ten working more than 50 hours per week.

A further 50% of all PhDs worked between 40-50 hours per week; 3% worked part-time, i.e. less than 35 hours per week. The rest worked between 35-40 hours per week.

² Normal working week including (40 hours) unpaid working hours, overtime and time for additional work (employment) or side-line.

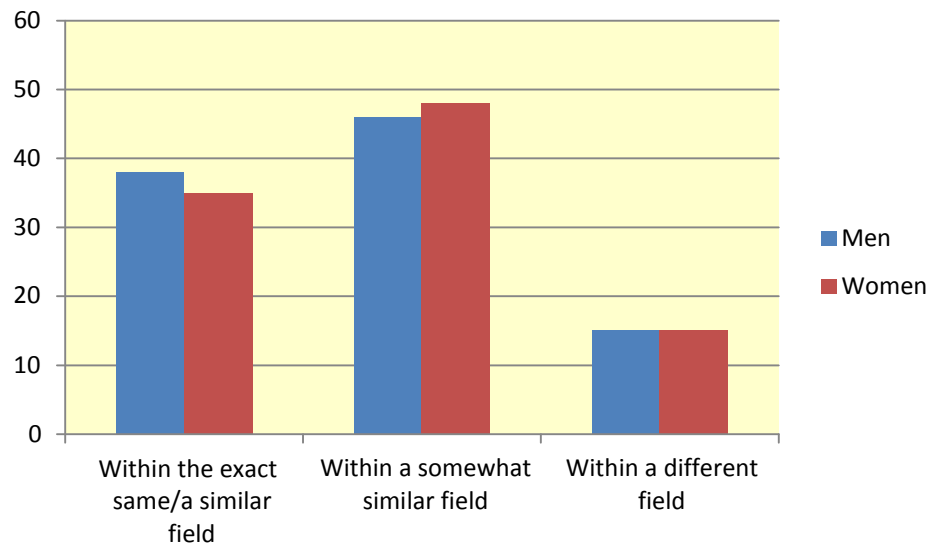
Correspondence of employment to doctoral education

15% of all postgraduates who were employed (or had their own company) worked within a field of research other than that of their PhDs education. There were no large differences between men and women. With regard to age groups the proportion was lowest among people over 50 years of age.

The largest proportion working in a field other than that of their postgraduate education was among PhDs with undergraduate education within biomedicine and pharmacy. The lowest proportion working within a field other than that of their doctoral education was among PhDs with undergraduate education within healthcare science (nurse) and healthcare science (physiotherapist, occupational therapist and speech therapist).

Figure 3

Correspondence of employment to doctoral level education³. Percent PhDs who had work/their own company during the reference week.



³ Question 22 from the survey: How did the work you had during the week 26 September – 2 October 2011 correspond to the field of research in which you carried out your postgraduate education?

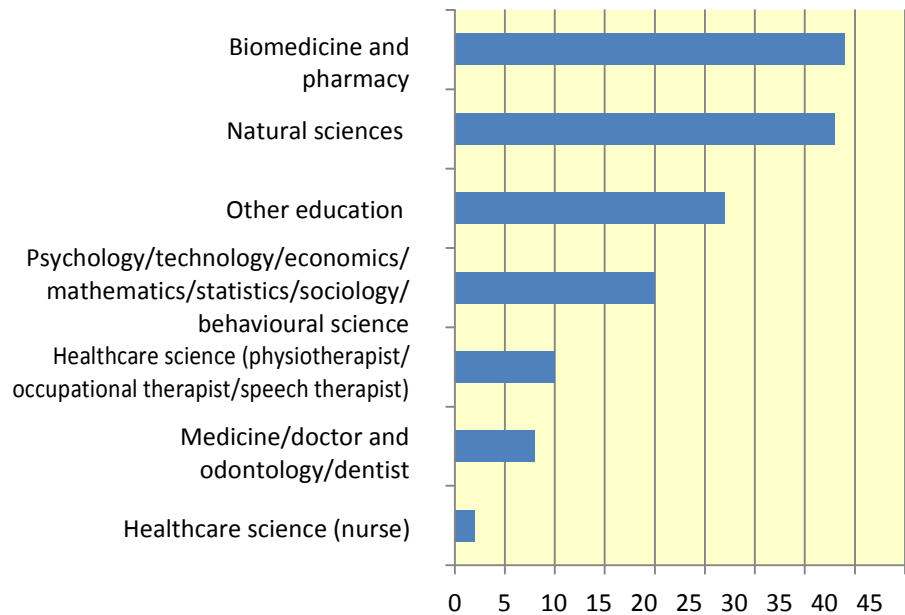
Two-out-of-ten are unemployed at some point after gaining doctorate

Two-out-of-ten postgraduates had been unemployed at some point since graduating from their doctoral education. This applies to a greater proportion of women than men.

In the youngest age group, one third was unemployed at some point after gaining their doctorate. In the other two age groups it was not as common; 16% among 41-50 year-olds and 6% in the over-50 group.

The highest proportion (nearly four-out-of-ten) to have been unemployed at some point following graduation from doctoral education was among PhDs with undergraduate education within biomedicine and pharmacy as well as natural sciences. The lowest proportion was among individuals with undergraduate education in healthcare science (nurse); less than 5% (Figure 4).

Figure 4
Percent unemployed at some point after completion of PhD education stratified by undergraduate education.



Job description

Two thirds of all PhDs who had employment (or who were self-employed) felt that their PhD was important for the work that they had during the reference week.

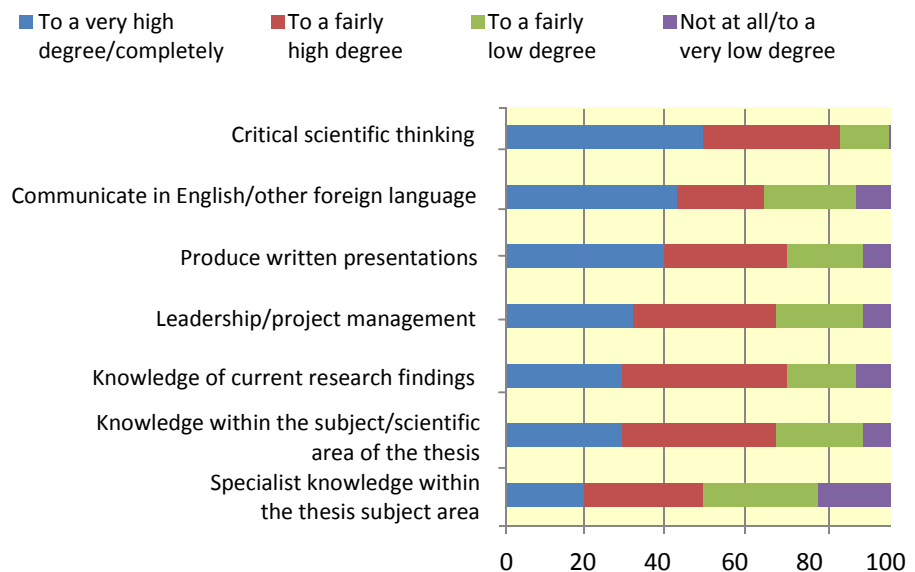
One-out-of-four considered that a 4-5 year university education was sufficient for the work that they had during the reference week. 5% said that a licentiate's degree was required. A small proportion considered that it was enough to have a three-year university education or no academic background at all. There were no notable differences between genders.

Regarding what level of education/qualifications was formally required for their employment two-thirds considered that a doctorate was required, slightly more being women than men. Younger people gave the answer 'PhD' to a greater extent than older people.

Eight-out-of-ten were of the opinion that the doctoral education had provided them with the proficiency they required (*to a moderately/very high degree/completely*) for the work that they had during the reference week. Female PhDs were of this opinion to a somewhat greater extent than their male counterparts.

A number of the questions asked in the survey were directed at people who had employment (or who were self-employed) during the reference week and related to their job description and the extent to which it involved requirements within seven different areas. All assessments were rated on a scale of one-to-four and are summarised in Figure 5.

Figure 5
Assessment of the job description's requirements in different areas. PhDs who had work/their own company during the reference week. Percent⁴



⁴ People did not answer the question and therefore the statistics do not add up to 100 per cent.

Above all else, PhDs were of the opinion that their job description required critical scientific thinking (eight-out-of-ten considered this was true to *a very high degree/completely true* in their case). Conversely, they did not feel that the job description required a high degree of specialist knowledge within the subject area of their thesis (half said this was true to a fairly low degree or not at all/to a very low degree). There was generally a higher proportion of women than men who answered *to a very high degree/completely* in this respect.

Higher salary as a result of the doctorate

Two-out-of-ten PhDs who were employed (or who were self-employed) had a second job or paid side-line. This was slightly more common among men than women, and among the older age groups compared to the younger.

Around one-third of all working PhDs had a monthly income of SEK 45,000 or more⁵. A somewhat higher proportion of women than men had a monthly income of SEK 45,000 or more. Half of all men and one out of four women were represented in this group. It was also more common for graduates in the academic year 2003/04 to have a higher salary than those graduating in 2007/08 and for the older age groups to earn more than the younger.

PhDs with undergraduate education within medicine/doctor and odontology/dentist encompassed the largest proportion of high-salary earners. Seven-out-of-ten in this group were among those who had a monthly income of SEK 45,000 or more. One-out-of-ten with undergraduate education within healthcare science (nurse) had a monthly income of less than SEK 20,000.

Seven-out-of-ten believed that higher salaries were gained through possessing a doctorate. More women than men were of this opinion. Nearly all (96%) PhDs with undergraduate education within healthcare science (nurse) were of the opinion that higher salaries were the result of their doctorate.

Desired sector of the labour market

If they had the liberty to choose, one-third of all PhDs would like to work within universities and one out of four within the private sector. 15% would like to work within county councils and just as many said that they did not know. There were no notable differences with regard to gender or academic year. However, a larger proportion of younger people than older people would like to work within the private sector, while the older age groups, to a greater extent than the younger, would like to work within county councils if they could choose.

⁵ Monthly income before tax for all jobs during the reference week, excluding extra income from overtime. Where the monthly income is in a currency other than Swedish kronor, this has been converted.

Research grant

Just over 40% of all PhDs had, as the main applicant, received research grants following PhD graduation. The remaining 60% had not received or applied for a research grant as the main applicant. No notable differences were evident between women and men. A slightly higher proportion of graduates from the academic year 2003/04 received research grants when compared with those graduating in 2007/08. Of those who have received research grants, 15% received these from the Swedish Research Council.

Somewhat less than half of all PhDs had been employed as postdoctoral fellows. This was slightly more common among the younger age groups than the older, although there were no differences between genders. Two-out-of-ten answered “the Swedish Research Council” when asked who financed their position as a postdoctoral fellow.

Less than two-out-of-ten had obtained an externally financed position as a researcher in competition with other applicants. Of the approximately 270 individuals who had gained such a position, the financing was in the majority of cases obtained through the Swedish Research Council (22%) or other financier(s) (59%).

Personal development, satisfaction with doctoral education, including supervision

On a scale of one to four the postgraduates were asked to rate their postgraduate education and how it corresponded to their own understanding (Figure 6).

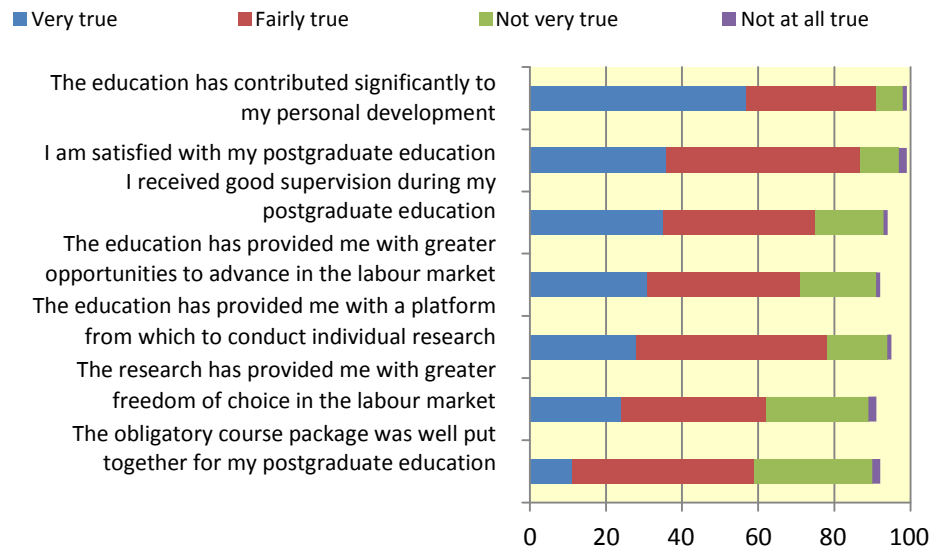
PhDs felt first and foremost that the education contributed to their personal development (nearly all respondents felt this was *very true* or *fairly true*). There was an almost equal degree of satisfaction⁶ with the undertaken doctoral education (more than 90%). Three-out-of-four were satisfied with the supervision during their PhD.

They were, however, less satisfied with how the obligatory course package for their postgraduate education was put together.

There was generally a higher proportion of men than women who answered *very true* to the various statements about their education. Younger people also responded more positively to the various statements when compared with older people.

⁶ People answered “Very true” or “Fairly true”.

Figure 6
PhDs' opinions on various statements about their postgraduate education. Percent⁷



Information from the university concerning career planning

When asked if they had received information from the university on possible areas of work (career planning), half of all PhDs answered *not at all/to a very low degree*. Nearly 40 per cent answered *to a fairly low degree*. It was primarily the graduates of 2003/04 who were dissatisfied with the information from the university. Greater dissatisfaction was also noted among people who carried out their undergraduate education in Sweden when compared with those who studied abroad. There were no large differences between men and women.

Those most satisfied⁸ with the university's information on career planning were the PhDs with undergraduate education within healthcare science (physiotherapist, occupational therapist and speech therapist) and healthcare science (nurse).

⁷ People did not answer the question and therefore the statistics do not add up to 100 per cent.

⁸ People answered "To a very high degree" or "To a fairly high degree".

Desire to undertake graduate level education today

Eight-out-of-ten of all PhDs would undertake doctoral education if they were making the choice today. No notable differences were recorded between genders or different graduation years. Older people answered to a slightly greater extent than younger people that they would undertake postgraduate education if they were making the choice today.

Figure 7
Percent of PhDs who would undertake a PhD if they were making the choice today stratified by undergraduate education.

