

PH.D.-STATISTICS

DANISH RESEARCH TRAINING
IN FACTS AND FIGURES
2000

DANISH RESEARCH AGENCY
2000

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Foreword

Research training in Facts and Figures has been published annually since 1998, and mainly presents data on enrolled PhD students, their place of study, main disciplines, gender and age over a 10 year period, where data exists. Most of the data are generated from The Danish Research Agency's PhD register, which builds on reports from the PhD students and the universities, where they are enrolled.

This year's publication has a different design and in contrast to previous years, there is an explanatory text to each table. The data presentation has also been extended to include more tables with gender distributions. Besides these changes, a series of tables resulting from questionnaires in the 1999 version have not been included in this year's edition.

The first part of the publication deals with new enrolments, the second deals with the students in progress and the latter part with the doctoral degrees conferred.

The data are presented in table and in graph form, and show the development over a 10-year period.

1. New enrolments

Figure 1.1: The total number of PhD students enrolled 1990-1999

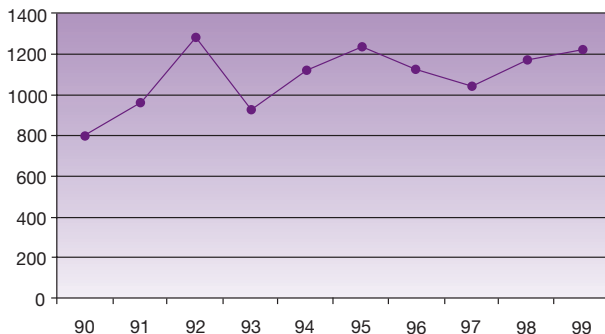


Figure 1.1 shows a minor increase in the number of newly enrolled PhD students seen over the entire survey period. A slight decrease is seen from 1995-1997, but 1998-99 marks a turning point, although the total number of enrolments never reaches the 1995 level.

Table 1.1 shows that all main disciplines have experienced an increase in enrolments in 1992, followed by a decrease in 1993. This can be related to the speeding up of enrolments to before the implementation of the Ministerial Order of 11th December 1992 on the PhD degree. In other words, 1994 was the first “normal” year after the implementation of the Order. The development differs from discipline to discipline. Using 1994 as a reference point, the largest relative increase is seen for Agricultural/Veterinary Sciences followed by the Humanities. Natural Sciences distinguishes itself by apparently having stabilised at a level, which is below the 1994 level.

Table 1.1: The total number of PhD students enrolled 1990-1999 according to main discipline

	90	91	92	93	94	95	96	97	98	99
Humanities	110	143	205	132	163	204	172	140	196	201
Social Sci.	104	105	124	87	133	166	162	137	139	160
Natural Sci.	176	266	341	222	241	268	228	233	227	213
Health Sci.	139	179	233	222	285	241	271	245	253	260
Agri./Vet.	72	56	98	85	83	93	68	79	101	127
Tech. Sci.	196	214	273	178	211	256	215	209	245	251
Total	797	964	1274	927	1116	1228	1116	1043	1161	1212

Figure 1.2: The percentage of women enrolled as PhD students 1990-1999

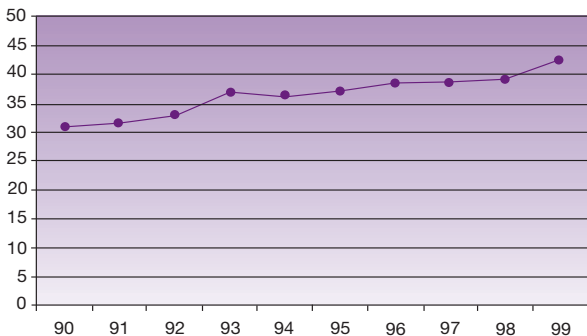


Figure 1.2 shows that the relative number of women amongst the newly enrolled PhD students has been increasing throughout the whole period. Table 1.2 shows the number of women according to main discipline. A decrease can be seen in the number of women in Natural Sciences, which is below the 1993 level. The decrease is, however, moderate in relation to the fluctuations seen in the intermediary years, and therefore it is too early to judge, whether this a general trend.

Agricultural/Veterinary Sciences is the discipline with the highest number of women, followed by Health Sciences.

Table 1.2: The percentage of women enrolled as PhD students 1990-1999 according to main discipline

	90	91	92	93	94	95	96	97	98	99
Humanities	46	47	46	48	46	47	49	51	52	51
Social Sci.	28	26	33	22	38	36	31	38	33	43
Natural Sci.	27	31	26	33	31	24	34	33	35	29
Health Sci.	48	39	41	47	45	54	49	49	50	56
Agri./Vet.	33	39	34	47	49	46	50	53	47	64
Tech. Sci.	14	18	23	21	17	24	24	19	23	22
Total	31	32	33	36	36	37	38	38	39	42

Figure 1.3: The average age at enrolment as PhD student 1990-1999

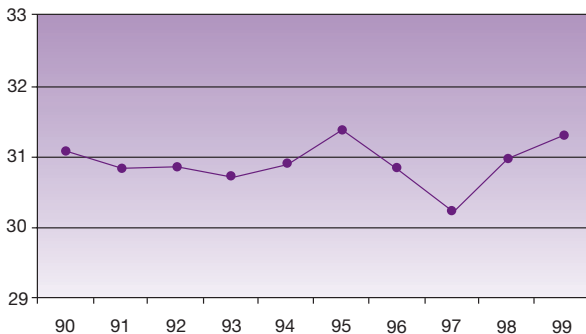


Figure 1.3 shows that the average age at enrolment is virtually the same in 1999 as it was in 1990. The period shows some fluctuation with a decrease during 1995-1997, and an increase during 1997-1999, restoring the average age to the previous level.

Table 1.3: The average age at enrolment as a PhD student 1990-1999, according to main discipline

	90	91	92	93	94	95	96	97	98	99
Humanities	35.9	37.4	36.3	36.8	36.1	36.0	35.9	33.9	35.9	37.1
Social Sci.	32.7	30.9	33.1	31.2	31.1	32.0	31.6	31.9	31.8	31.8
Natural Sci.	30.2	28.9	28.9	28.1	28.4	29.2	28.1	27.7	28.1	28.6
Health Sci.	32.4	32.7	32.0	32.8	32.3	32.8	32.1	31.6	32.1	31.6
Agri./Vet.	30.5	31.1	29.9	30.7	30.8	32.4	30.6	30.0	30.4	30.8
Tech. Sci.	27.8	27.5	27.8	26.7	27.7	27.9	27.5	28.0	28.2	28.8
Total	31.1	30.9	30.9	30.7	30.9	31.4	30.8	30.2	31.0	31.3

Table 1.3 shows the average age for each main discipline. The fluctuations are greatest for the Humanities, where the age varies from 33.9 to 37.1. In addition, the Humanities have seen the greatest increase in age. The average age has risen by 1.2 years from 1990-1999. The largest decrease in age can be seen for the Natural Sciences - 1.6 years during the survey period.

This development is especially noteworthy, as the average age within these two disciplines already represents both extremes.

Table 1.4 : The transition ratios for the main disciplines, assessed as the relation between the number of initiated PhDs for the calendar year 1999 and the number of Master degrees for the academic year 1998/99.

	Number of Master degrees 1998/1999	Number of PhDs enrolled 1999	Ratio Ph.D/Master % ^a
Humanities	2252 ¹	194	8 (8)
Social Sci.	2948	147	4 (4)
Natural Sci.	906	202	22 (22) ²
Health Sci.	691 ³	256 ⁴	37 (36) ⁵
Agri./Vet.	345	122	35 (30) ⁶
Tech. Sci.	1075	231	21 (26) ⁷
Total	8217	1152	14 (13)

1. This includes 200 MScs (Arch) 222 MScs (Psych) and 46 MScs (Anthr).
2. In 1999, 141 MScs enrolled for a PhD programme in other disciplines. Consequently, 37% of all MScs are enrolled as PhDs.
3. This includes 128 MScs (Pharm), 98 MSDents, 411 MScs (Med), 32 MScs (Nursing) and 22 chiropractor trained Masters.
4. This includes 46 persons enrolled at the Royal Danish School of Pharmacy. 112 of the remaining 215 enrolled at the universities of Copenhagen, Aarhus and Odense had an MSc (Med).
5. For MScs (Med) exclusively, the transition ratio is 29%.
6. For MScs (Agron/Vet) exclusively, the transition ratio is 22%. The rest come primarily from the Natural Sciences.
7. For MScs (Civil engineering) exclusively, the transition ratio is 16%. The rest come primarily from the Natural Sciences.
8. The numbers in brackets show the transition ratios for the calendar year 1998. The numbers outside the brackets show the transition ratios for 1999.

Table 1.4: The transition rates for the main disciplines, assessed as the relation between the number of initiated PhDs for the calendar year 1999 and the number of Master degrees for the academic year 1998/99. The data on the number of Masters originates from Statistics Denmark.

A comparison between last year's transition rates (in brackets) with this year's shows no change in the frequency for most of the main disciplines, with the exception of Agricultural/Veterinary Science, which has increased from 30 to 35 and Technical Science, which has decreased from 26 to 21.

2. PhDs in progress

Table 2.1: The percentage and total number of PhD students 1991-2000 according to main discipline, as of 15th March 2000

	91	92	93	94	95	96	97	98	99	2000
Humanities	19	18	18	18	17	17	18	17	18	17
Social Sci.	12	11	11	12	11	12	12	13	13	13
Natural Sci.	20	23	28	23	22	21	20	20	19	19
Health Sci.	13	17	18	20	21	22	23	23	23	23
Agri./Vet.	10	8	8	8	8	8	8	8	7	9
Tech. Sci.	26	23	17	19	21	20	19	19	20	19
	100	100	100	100	100	100	100	100	100	100
Total	2520	2998	3579	4028	4401	4594	4796	4712	4914	5035

Table 2.1 shows, that there are more enrolled PhD students than ever before. The distribution between the main disciplines has not changed noticeably over the years, although a relative increase can be seen for Agricultural/Veterinary Sciences and a relative decrease for Humanities and Technical Sciences.

Table 2.2: The number of Danish students taking their entire PhD training abroad as an alternative to enrolment at Danish institutions of higher education

	1998	1999	2000
Humanities	59	76	64
Social Sci.	44	53	71
Natural Sci.	81	91	101 ¹
Health Sci.	11	7	17
Agri./Vet.	4	4	4
Tech. Sci.	20	16	14
Total	219	247	271

Based on data from The Danish Research Agency, The Danish Council of Rectors¹, The Ministry of Research.

¹ 6 students at the EMBL are included for the year 2000.

Table 2.2 gives the number of Danish PhD students enrolled abroad and financed by Danish public funds. In other words, the table does not give a complete account of Danish PhDs abroad. The total number abroad has risen for the years shown in the table, primarily within the Natural and Social Sciences, whereas the other disciplines have remained relatively stable.

When comparing the number of PhDs at home (Table 2.1) and abroad (Table 2.2) within the main disciplines, it can be seen that the Humanities, Social and Natural Sciences have relatively more students abroad, while the Health Sciences, Agricultural/Veterinary and Technical Sciences have relatively fewer abroad.

3. Conferred PhD degrees

Figure 3.1: The number of PhDs conferred 1990-1999

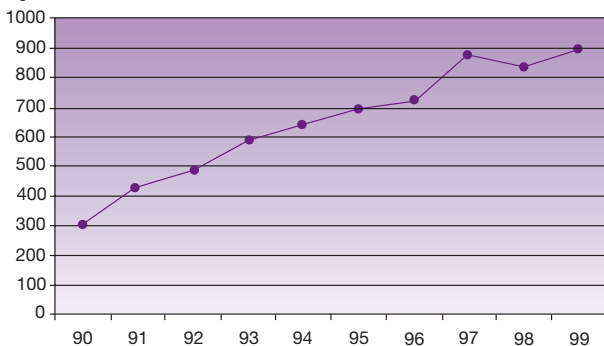


Figure 3.1 shows that the number of conferred PhD degrees has increased generally, although it seems to have stagnated after 1997. The number has, however, increased slightly from 1998 to 1999. Table 3.1 shows no great discrepancies between the main disciplines.

Table 3.1: The number of PhD degrees conferred 1990-1999, according to main discipline

	90	91	92	93	94	95	96	97	98	99
Humanities	41	55	74	60	53	56	90	94	105	124
Social Sci.	39	40	54	53	55	71	70	68	88	99
Natural Sci.	93	132	137	155	160	202	184	222	205	208
Health Sci.	25	34	52	104	123	119	178	199	221	224
Agri./Vet.	26	46	37	50	55	62	45	82	54	66
Tech. Sci.	77	126	130	168	195	189	153	206	173	181
Total	302	433	484	509	641	699	720	871	846	904

Figure 3.2: The number of PhD degrees conferred 1990-1999. The number of degrees is shown separately for both genders

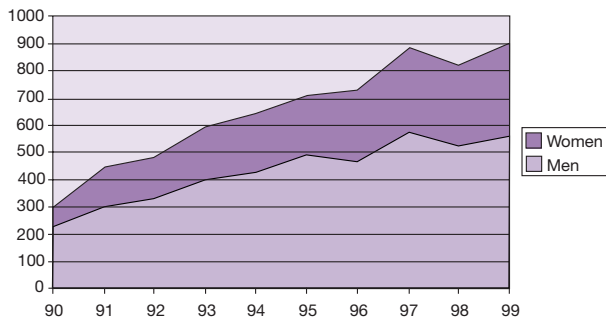


Figure 3.2 shows that the number of PhD degrees conferred to women has increased during the entire survey period. In 1990, it was 21.9%, while in 1999 it was 36.3%, which corresponds to an increase of approx. 1.5 percentage points per year.

Table 3.2: The percentage of women according to main discipline of the total number of PhD degrees conferred 1990-1999

	90	91	92	93	94	95	96	97	98	99
Humanities	43.9	52.7	36.5	45.0	47.2	44.6	52.2	43.6	37.1	46.8
Social Sci.	10.3	25.0	20.4	32.1	23.6	21.1	28.6	30.9	31.8	41.4
Natural Sci.	14.1	20.5	21.2	26.5	21.3	28.7	26.6	30.6	30.2	23.6
Health Sci.	44.0	47.1	46.2	40.4	46.3	39.5	34.3	46.2	47.5	48.7
Agri./Vet.	46.4	34.8	35.1	38.0	38.2	43.5	35.6	39.0	51.9	48.5
Tech. Sci.	10.4	15.1	15.4	13.7	17.4	19	24.2	21.8	17.9	21.5
Total	21.9	27.0	25.6	28.7	28.7	29.7	32.0	34.3	34.6	36.3

Table 3.2 demonstrates that disciplines, which in the beginning of the period presented the fewest women, have increased, whereas the other disciplines are more or less stable. The greatest deviation from this is a decreasing number of

women in Natural Sciences. The largest increase is seen in the Social Sciences.

Figure 3.3: The number of PhD degrees conferred in 1999 according to institutions of higher education

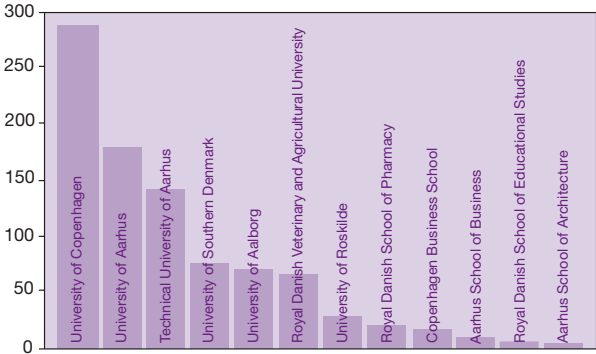


Figure 3.3 shows the distribution of PhD degrees conferred at the respective institutions of higher education. The University of Copenhagen produces the majority of PhD degrees with a third of the overall production, followed by the University of Aarhus with a fifth.

Table 3.3: The relative number of PhD degrees compared to other degrees conferred at the universities and other institutions of higher education

	Phd degrees	Other degrees	phD/other degrees
University of Copenhagen	287	2129	13%
University of Aarhus	179	1643	11%
Technical University of Denmark	141	992	14%
University of Southern Denmark	76	633	12%
University of Aalborg	70	1128	6%
Royal Danish Vet. and Agri. University	66	348	19%
University of Roskilde	29	572	5%
Royal Danish School of Pharmacy	21	128	16%
Copenhagen Business School	17	1561	1%
Aarhus School of Business	9	869	1%
Royal Danish School of Educational Studies	5	92	5%
Aarhus School of Architecture	4	81	5%
Total	904	10176	9%

Table 3.3 shows the relative number of PhD degrees compared to other degrees conferred at the institutions of higher education with the ratios ranging from 1% at the Business Schools to 19% at the Royal Danish Veterinary and Agricultural University. This reflects, to a great extent, the differences between the main disciplines.

Table 3.4 shows that the average age at procurement of the PhD degree has generally increased throughout the survey period.

There is, however, a decrease from 1998 to 1999, which could be a manifestation of random fluctuation. On the other hand, there is a decreasing tendency in all the main disciplines, why this could be interpreted as a more general trend.

Table 3.4: The average age at procurement of the PhD degree 1990-1999 according to main discipline.

	90	91	92	93	94	95	96	97	98	99
Humanities	40.4	40.4	38.3	39.5	40.2	41.1	40.4	39.6	41.4	40.1
Social Sci.	35.0	36.2	36.1	36.1	35.7	36.3	36.8	37.4	36.7	35.5
Natural Sci.	32.9	32.9	33.3	32.6	33.3	32.7	32.9	32.4	32.1	32.4
Health Sci.	32.7	34.3	35.0	35.6	36.4	36.2	36.1	36.5	37.2	36.8
Agri./Vet.	32.9	33.8	35.7	33.9	34.4	33.8	34.2	35.7	35.4	34.2
Tech. Sci.	30.4	31.0	31.4	31.4	31.3	31.3	31.7	31.5	32.2	31.7
Total	33.2	33.6	34.2	33.9	34.1	34.1	34.8	34.6	35.3	34.9

The women are generally older than the men, when they finish their PhD. The age difference between the sexes was less in the first part of the survey period, but has again risen to 2 years in 1999.

Table 3.5: The average age of women at procurement of the PhD degree 1990-1999 according to main discipline

	90	91	92	93	94	95	96	97	98	99
Humanities	42.0	41.2	39.3	40.4	42.5	42.2	41.3	40.3	41.0	41.2
Social Sci.	34.4	39.1	38.1	39.1	34.0	33.3	37.6	37.5	39.1	35.9
Natural Sci.	33.9	33.2	33.4	32.5	32.9	32.5	33.1	33.2	32.6	33.1
Health Sci.	32.1	34.1	34.4	34.0	36.4	36.9	36.3	35.8	36.9	36.7
Agri./Vet.	33.2	33.9	33.7	32.4	33.8	33.2	33.7	34.9	35.4	34.8
Tech. Sci.	30.0	30.6	31.7	31.2	31.7	30.8	30.7	32.0	32.5	32.4
Total	34.6	35.2	35.1	34.6	35.2	34.6	35.7	35.3	36.1	36.2

When comparing the main disciplines, it will be apparent that female PhD students within the Humanities and to some extent Social Sciences are older, while the opposite is the case amongst those, who study Health Sciences and Agricultural and Veterinary Sciences, although to a minor extent.

Table 3.6: The average age of men at procurement of the PhD degree 1990-1999 according to main discipline

	90	91	92	93	94	95	96	97	98	99
Humanities	39.1	39.3	37.7	38.7	38.1	40.2	39.5	39.0	41.6	39.0
Social Sci.	35.1	35.2	35.6	34.7	36.2	37.1	36.5	37.3	35.5	35.1
Natural Sci.	32.8	32.8	33.2	32.6	33.4	32.8	32.8	32.0	31.9	32.2
Health Sci.	33.1	34.4	35.4	36.7	36.4	35.8	36.1	37.1	37.5	37.0
Agri./Vet.	32.7	33.7	36.7	34.8	34.7	34.2	34.5	36.2	35.5	33.7
Tech. Sci.	30.4	31.0	31.3	31.5	31.1	31.4	32.0	31.3	32.1	31.6
Total	32.8	33.0	33.9	33.6	33.7	33.8	34.4	34.2	34.8	34.2

4. Classical Doctoral degrees

Table 4.1: The number of classical doctorates* conferred in Denmark 1990-1999, according to main discipline and gender for 1998 and 1999.

	90	91	92	93	94	95	96	97	98		99	
									M	K	M	K
Humaniora	13	21	20	29	19	14	19	6	12	1	14	4
Social Sci.	3	6	3	4	8	0	6	5	2	1	6	0
Natural Sci.	10	16	13	9	16	6	11	10	7	0	3	1
Health Sci.	69	58	77	78	75	69	63	61	46	14	37	10
Agri./Vet.	12	2	0	2	5	0	4	4	7	1	2	0
Tech. Sci.	2	2	3	3	2	7	3	1	3	1	2	0
									77	18	64	15
Total	109	105	116	125	125	96	106	87	95		79	

* not to be confused with the PhD degree

Although large fluctuations can be seen over the years, the general trend appears to be a decrease in the number of classical doctorates. Table 4.1 shows that Health Sciences is the main discipline, which confers the majority of classical doctorates. Health Sciences conferred between 55% and 72% of the doctorates for the years presented here.

Large fluctuations in gender frequencies due to the relatively small numbers will be seen over the years.

However the general tendency seems to be, that the main disciplines with the majority of female PhD degrees correspond accordingly with reference to classical degrees, although relatively fewer women receive classical doctorates.



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