



Labour market conditions for PhD graduates from the University of Copenhagen 2010-2019

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6 June 2023



Preface

This report provides an overview of labour market conditions for PhD graduates from the University of Copenhagen. The report has been ordered by Prorektor for Research David Dreyer Lassen. The structure of the report follows the general labour market report for graduates from the Faculty of Social Sciences¹, while the data cover the 2010–2019 period.

The data come from a number of Statistics Denmark registers, including the Population Register (BEF), the Education Register (UDDA) and the Income Register (IND). Information and classifications from Statistics Denmark's PhD Register (PHD) have also been used.

The PhD Register contains information about enrolments and disenrolments as well as awarded PhD degrees at faculty level. To ensure anonymity, it has been necessary to combine faculties with relatively few PhD students and graduates.

In the report, PhD students are thus divided into four faculty groupings:

- Faculty of Humanities and Faculty of Theology (HUM and THEO)
- Faculty of Social Sciences and Faculty of Law (SOC.SCI. and LAW)
- Faculty of Science (SCIENCE)
- Faculty of Health and Medical Sciences (SUND)

All persons registered in Statistics Denmark as enrolled in a PhD programme at one of these faculty groups during the 2010–2019 period are included in the descriptions. All figures are presented for each of the four faculty groups, and broken down by gender, where possible. As certain populations are small, figures are also presented for all PhD graduates from the University of Copenhagen (UCPH) in many of the sections. In the main text, the statistics are primarily shown graphically, while the underlying tables are attached in Appendix B.

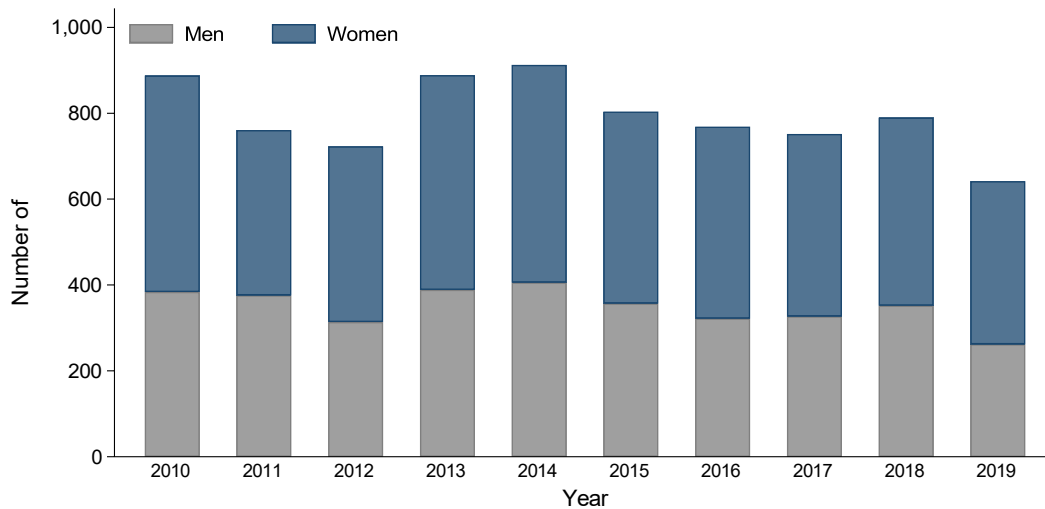
¹Lyhr, Ejrnæs & Hansen, Arbejdsmarkedsforhold for kandidater fra Det Samfundsvidenskabelige Fakultet 1990-2017, Faculty of Social Sciences, University of Copenhagen, 16 July 2021. In the following Lyhr, Ejrnæs & Hansen (2021).

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1. Enrolment and production

Figure 1.1: PhD students enrolled at UCPH, 2010-2019



Note: The figure shows the number of PhD students enrolled at the University of Copenhagen 2010-2019, broken down by gender.

Source: Own calculations based on data from Statistics Denmark. Data shown in Table B.1.

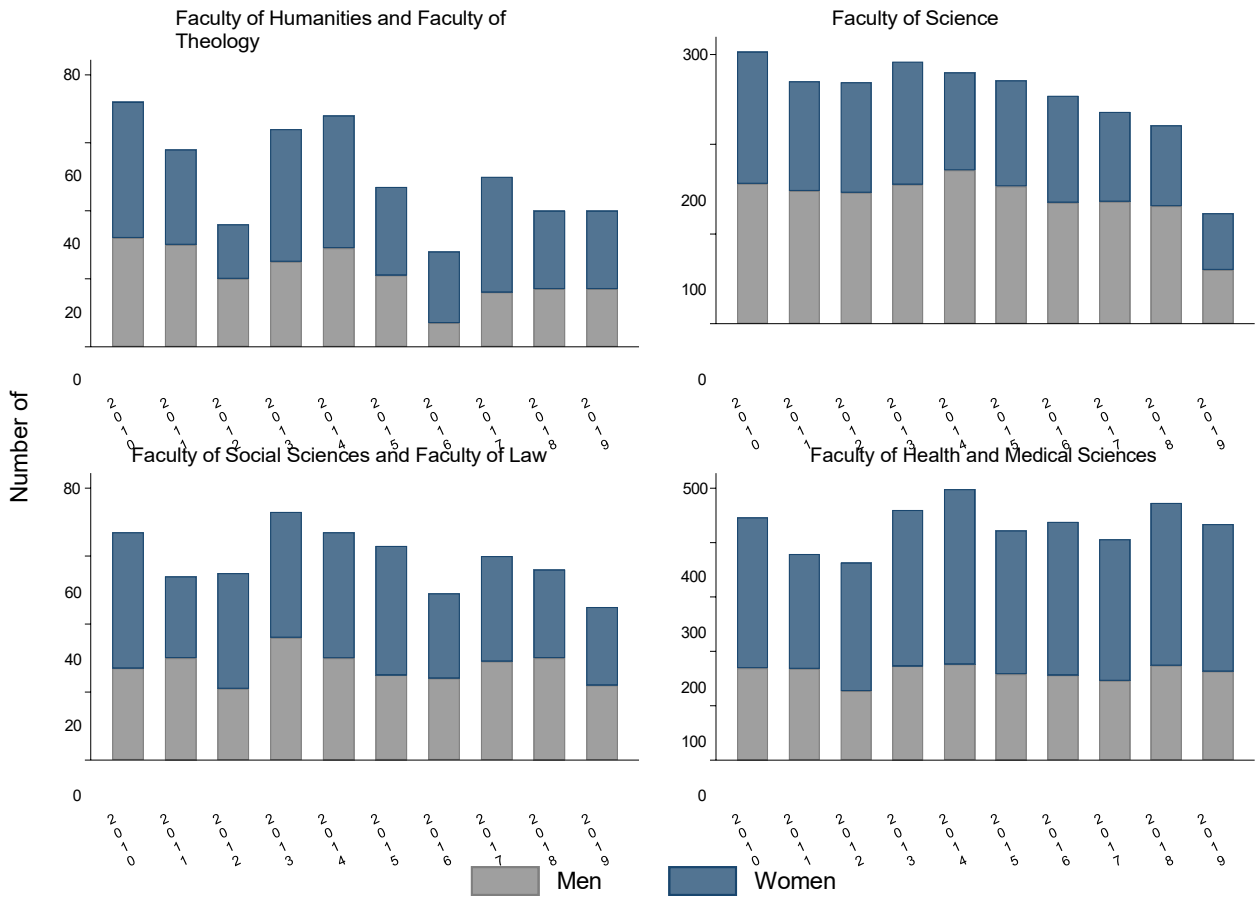
The University of Copenhagen admitted an average of 810 new PhD students a year in the 2010–2018 period (Figure 1.1).¹ Just over 450 of the admitted PhD students were women, equal to 56 per cent of total enrolments. The highest number of enrolments were seen in 2013 and 2014. Since the peak in 2014, there has been a slight decrease, ascribable to declining enrolments at **SCIENCE**. The average annual variation in enrolment numbers is approx. 70 persons, equal to 9 per cent of the average number of enrolments for the period. The highest relative variation in enrolments is seen for **HUM** and **THEO** (29 per cent).

The breakdown by faculty in Figure 1.2 shows that **SUND** accounts for more than half (53 per cent), while **SCIENCE** has a third of total enrolments. The rest are distributed almost equally between **SOC.SCI.** and **LAW** (7 per cent) and **HUM** and **THEO** (6 per cent). Women constitute more than half of the enrolments for each faculty group, except for **SCIENCE**, where the share of women is 44 per cent. The largest share of women is found at **SUND**, where they constitute nearly two thirds of enrolments.

Table 1.1 shows a number of characteristics of PhD students at UCPH in the 2010-2019 period. The table shows that the students are relatively old when they start their PhD programme. The variation across the faculties shows that **SCIENCE** has the youngest PhD students, while **HUM** and **THEO** have the oldest students, and the difference in average age is nearly five years. Among other things, the age differences have a bearing on the share of PhD students who have children at the time of their enrolment. More than one in three newly enrolled PhD students at **HUM** and **THEO** have one or more children, while this is only the case for one in seven at **SCIENCE**. At **SUND**, **SOC.SCI.** and **LAW**, the share of students with children is also fairly high, so that more than one in four newly enrolled PhD students at UCPH have at least one child.

More than four in five students are Danish citizens, and a slightly larger share held a qualifying degree from a Danish university. Looking at the variation across faculty groups, the picture is much the same as for the age profile. **SCIENCE** has the largest share of students with foreign citizenship and/or qualifying degree, while **HUM** and **THEO** have by far the lowest share; less than one in twenty PhD students at **HUM** and **THEO** hold a foreign qualifying degree. **SOC.SCI.** and **LAW** are also very Danish faculties, with less than one in ten PhD students holding a foreign qualifying degree.

¹For all the years, deviations are seen between the number of enrolled PhD students in Statistics Denmark's PhD Register and the figures provided in the UCPH annual reports (<https://rc.ku.dk/publikationer/aarsrapporter/>). Registrations by Statistics Denmark are typically lower than the figures stated in the annual reports. The deviation is particularly pronounced for 2019 (234 enrolments). We assume that this is due to delays in the submission of information from UCPH to Statistics Denmark.

Figure 1.2: PhD enrolments at UCPH faculties, 2010-2019

Note: The figure shows number of PhD enrolments at the University of Copenhagen 2010-2019, broken down by gender and faculty.

Source: Own calculations based on data from Statistics Denmark. Data shown in Table B.2.

Table 1.1: Characteristics of PhD students enrolled 2010-2019

	UCPH	HUM and THEO	SCIENC E	SOC.SCI. and LAW	SUND
Age as of 1 January (year)	29.5	32.4	27.6	29.8	30.0
<i>Figures below are stated in per cent of total population</i>					
Female	57.2	57.0	43.7	53.7	63.6
Share with children	27.8	34.4	14.8	26.8	32.9
Danish citizenship	82.8	92.3	75.5	87.4	84.4
Danish qualifying degree	86.2	95.6	79.1	92.7	87.4
Qualifying degree Bachelor	3.0	0.0	6.6	10.3	0.8
Industrial PhD	4.2	3.6	5.5	4.9	3.6
Re-admission	1.3	5.4	0.5	3.3	0.9
Awarded PhD degree	88.8	76.2	86.3	82.1	92.7
Enrolled persons	6,560	442	1,734	485	3,898

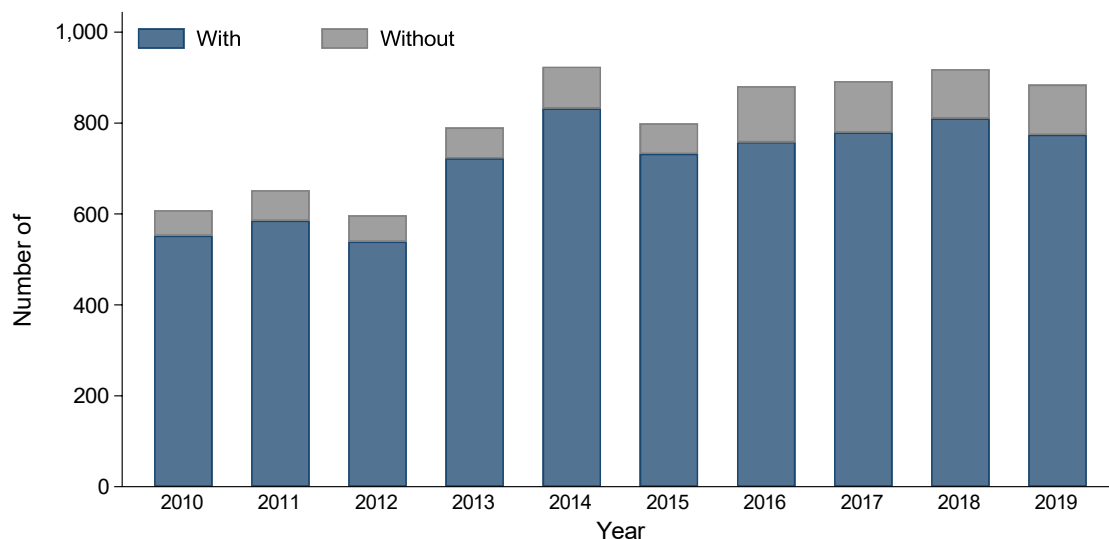
Note: The table shows the average age and relevant shares for PhD students enrolled in 2010-2019 at the University of Copenhagen, broken down by faculty. Age, citizenship and children are observed in the year of enrolment. The table only includes persons with an address in Denmark as of 1 January in their year of enrolment.

Some degree programmes at Danish universities have expressed a wish for longer PhD programmes. In selected disciplines, an attempt has been made to make more extensive use of especially the so-called 4+4 scheme, where students are enrolled in the PhD programme before they have completed their Master's degree. Table 1.1 shows that this has especially been the case in the social sciences and, to a lesser extent, in the natural sciences, while the schemes are not used at all by humanities and theology programmes. In the 2010-2019 period, UCPH thus enrolled less than 200 PhD students with a Bachelor's degree as a qualifying degree, equal to 3 per cent of enrolled students.

Politicians are keen to see an increase in the number of industrial PhDs, but so far this type of PhD programme has not gained particular traction at UCPH. Less than one in twenty newly enrolled PhD students are enrolled on an industrial PhD programme. The largest shares (5.5 and 4.9 per cent, respectively) are found at SCIENCE, SOC.SCI and LAW. However, figures for SUND and at HUM and THEO are only just over 1.5 percentage points lower. Shares of industrial PhDs are low for all faculty groups.

Finally, the table shows that almost nine in ten enrolled PhD students are awarded a PhD degree at the end of their programme. The high success rate can be ascribed especially to SUND, where nearly 93 per cent complete the programme. HUM and THEO have a significantly lower completion rate, as only 76 per cent of the enrolled PhD students have been awarded a PhD degree.

Figure 1.3: PhD disenrolments at UCPH, 2010-2019



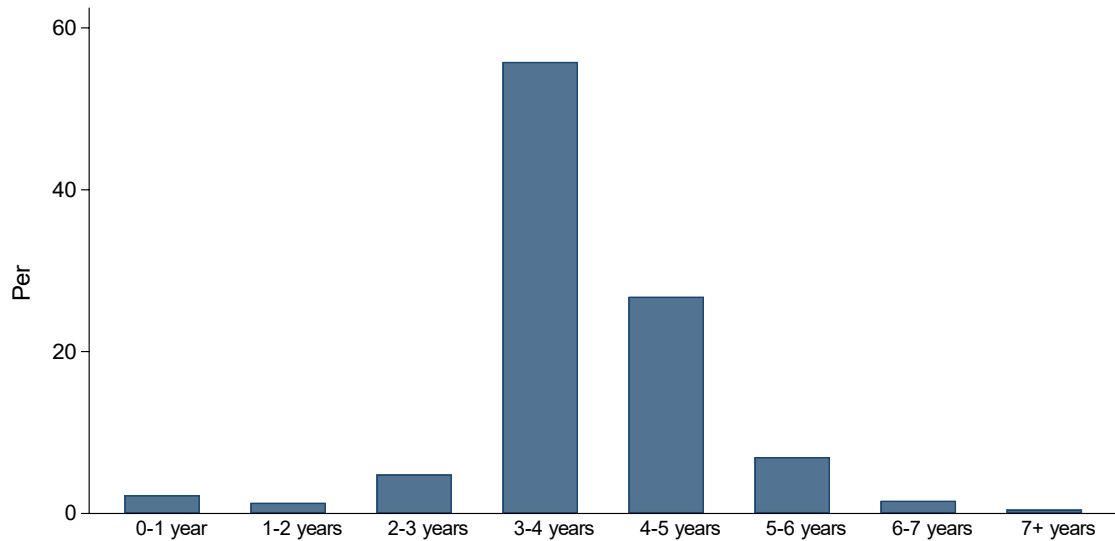
Note: The figure shows the number of PhD disenrolments at the University of Copenhagen 2010-2019, as well as the number of persons who are disenrolled after having been an awarded PhD degree.

Source: Own calculations based on data from Statistics Denmark. Data shown in Table B.3.

The total average completion rate of 88.8 per cent conceals a certain variance across the years (Figure 1.3). In the 2010-2015 period, the share of disenrolments with a PhD degree was 90-92 per cent, averaging 91 per cent. After 2015, the success rate has fallen to 87 per cent. The decreasing success rate for the most recent cohorts may be due to the calculation method. Some of the PhD students who are disenrolled without a degree are subsequently re-enrolled and awarded a degree. Only their last disenrolment is included. For the most recent cohorts, this means that some of the students who are disenrolled without a degree may be disenrolled with a degree at a later point in time (outside the data window). Therefore, the success rate for the most recent cohorts is expected to increase.

Figure 1.4 shows the duration of enrolment for students who disenrolled with a PhD degree. The duration of enrolment is calculated as the number of days from date of enrolment to date of disenrolment. Any periods of leave are thus included in the period of enrolment. The figure shows that more than two thirds of PhD graduates from UCPH complete their programme in less than four years. Slightly more than a quarter (27 per cent) are awarded their PhD degree within four to five years, while less than 10 per cent are enrolled for more than five years. As opposed to what is seen for US top universities, there does not appear to have been an increase in the duration of enrolment for students in Danish PhD programmes.

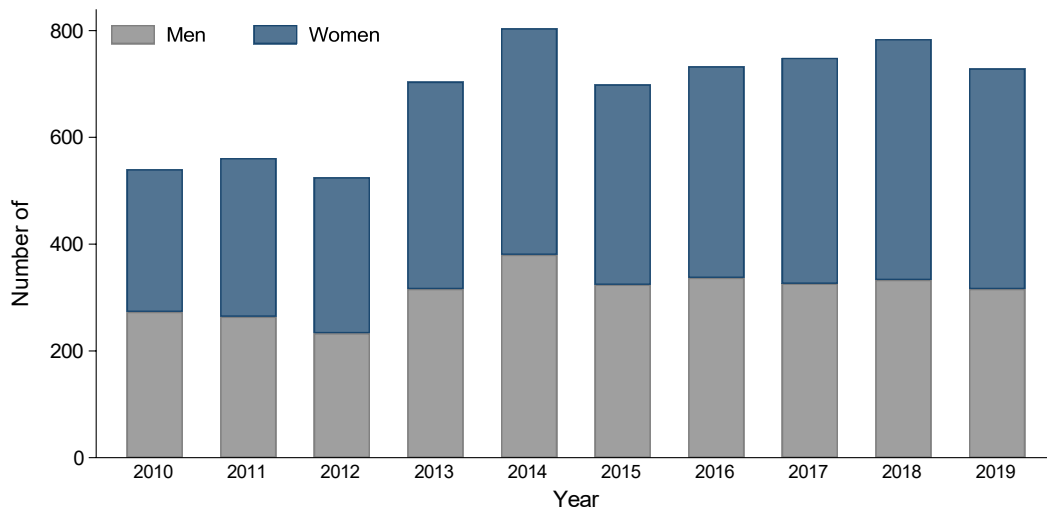
Figure 1.4: Duration of enrolment for PhD students who have completed their programme, 2010-2019



Note: The figure shows the duration of enrolment for persons who are awarded a PhD degree on disenrolment. The figure includes persons enrolled in the 2010-2019 period. If a person is disenrolled without a PhD degree, then re-enrolled and subsequently disenrolled with a PhD degree, the duration is calculated from the first date of enrolment.

Source: Own calculations based on data from Statistics Denmark. Data shown in Table B.4.

Figure 1.5: PhD degrees awarded at UCPH, 2010-2019



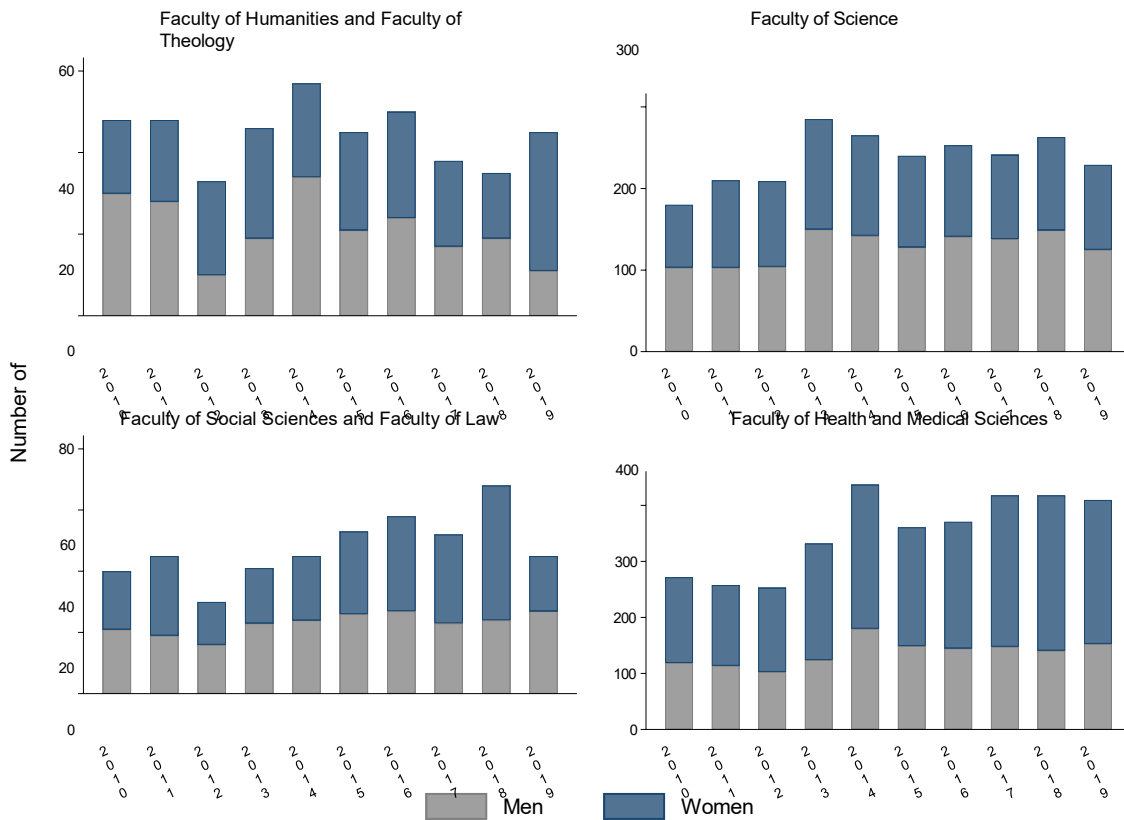
Note: The figure shows the number of PhD degrees awarded at the University of Copenhagen 2010-2019, broken down by gender. The figure excludes persons disenrolled without being awarded a PhD degree.

Source: Own calculations based on data from Statistics Denmark. Data shown in Table B.5.

Finally, Figure 1.5 shows the number of PhD degrees awarded at UCPH for the 2010-2019 period, broken down by year and gender, while Figure

1.6 shows a breakdown by faculty groups. The figures show a shift in levels from 2012 to 2013. In 2010-2013, UCPH awarded approx. 540 PhD degrees a year. Numbers then increased to an average of 740 a year. Half of this shift can be attributed to an increase in degrees awarded at SUND, while the rest are distributed on SCIENCE (approx. 50 extra degrees a year) and SOC.SCI. and LAW. No shift was seen in levels at HUM and THEO, which fluctuated around an average of 45 PhD degrees a year throughout the period.

Figure 1.6: PhD degrees awarded at UCPH faculties, 2010-2019



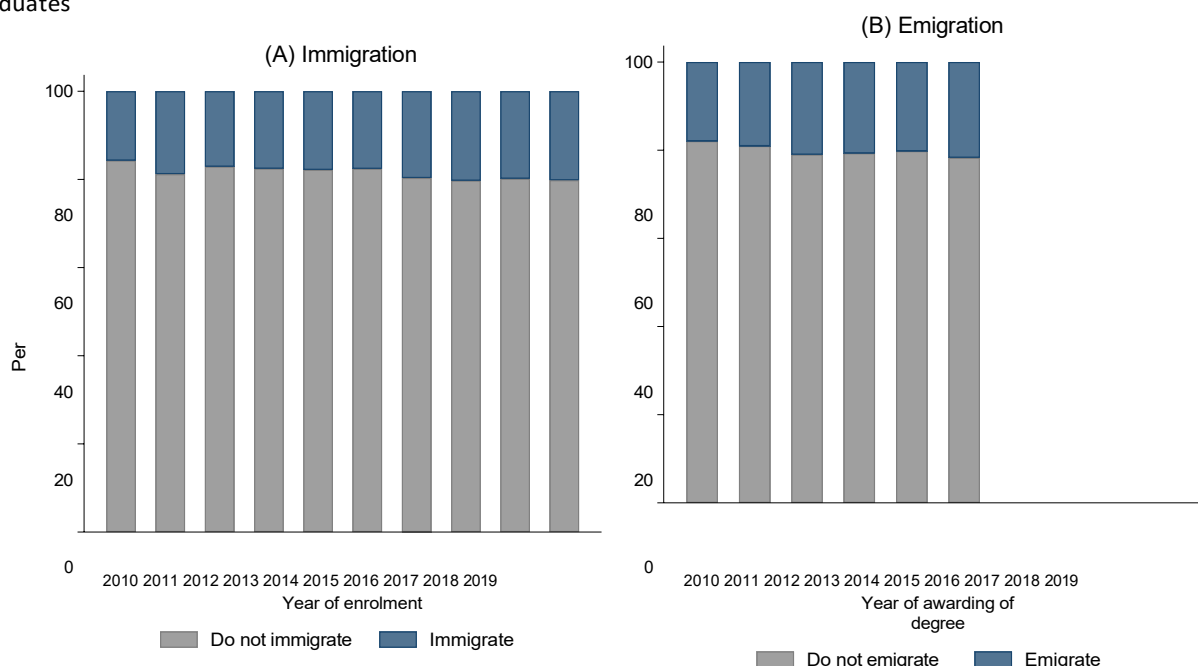
Note: The figure shows the number of PhD degrees awarded at the University of Copenhagen 2010-2019, broken down by gender and faculty. The figure excludes persons disenrolled without being awarded a PhD degree.

Source: Own calculations based on data from Statistics Denmark. Data shown in Table B.6.

In the following sections, we describe the labour market conditions for persons awarded a PhD degree from UCPH in the 2010-2019 period. It should be noted that in some cases the descriptions of PhD graduates from the small faculties cover very few persons.

2. Immigration and emigration of PhD graduates

Figure 2.1: Immigration and emigration of PhD graduates



Note: Panel (A) shows the share of PhD graduates from UCPH immigrating during the five-year period prior to their enrolment in the 2010-2019 period. Panel (B) shows the share of PhD graduates from UCPH emigrating within the first five years of being awarded their PhD degree. The figure does not include persons disenrolled without being awarded a PhD degree. As we want to be able to follow the graduates for at least five years, we can only show emigration figures for persons who were awarded the degree prior to 2015.

Source: Own calculations based on data from Statistics Denmark. Data shown in Table B.7.

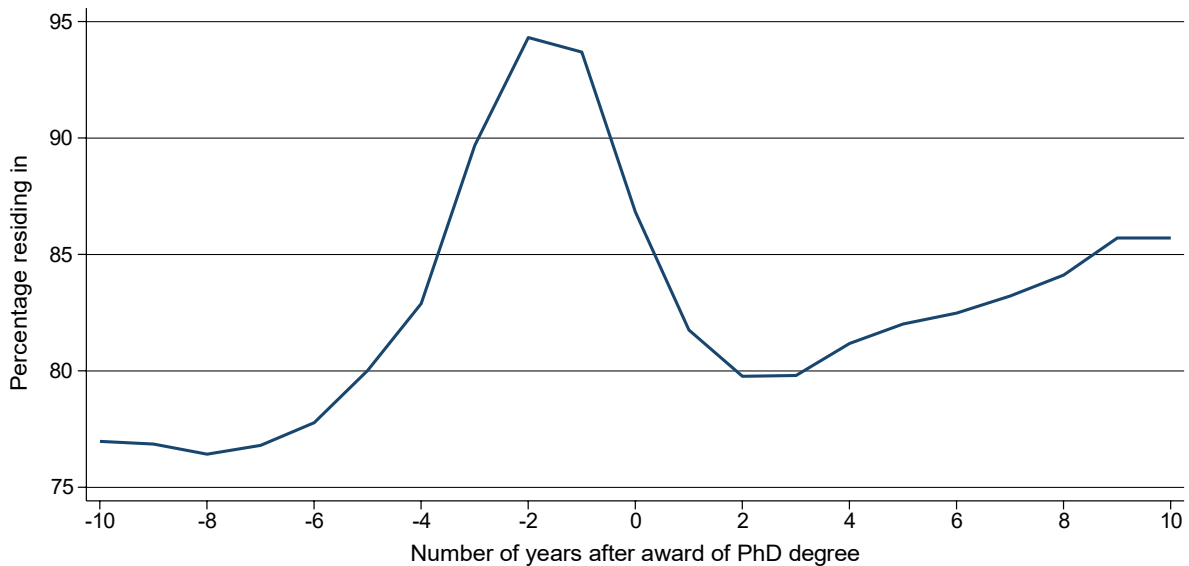
One in five PhD graduates immigrated to Denmark less than six years before enrolling in the PhD programme. Similarly, one in five graduates leave Denmark within the first five years of graduating. This does not mean that one in five graduates are foreign citizens doing their PhD degree in Denmark. Danish citizens may have studied abroad and then immigrated to Denmark and enrolled in a PhD programme. Conversely, foreign citizens may have resided and studied in Denmark before enrolling in a PhD programme. Table 1.1 shows that 83 per cent of the enrolled students are Danish citizens, while 86 per cent hold a Danish qualifying degree.

The time profile shows a slight increase in migrations to and from Denmark over time. The share of immigrated graduates thus increased from 16 per cent in 2010 to 20 per cent in 2019. Concurrently, the share of emigrated graduates increased from 18 per cent in 2010 to 22 per cent in 2015. UCPH is thus increasingly involved in the global education of young researchers.

Figure 2.2 shows migrations to and from Denmark relative to year of award of PhD degree. Nearly all students reside in Denmark during their studies (-4 to 0 years after award of PhD degree). One in five graduates have left Denmark two years after their graduation. Some graduates subsequently return to Denmark, as more than 85 per cent of graduates are resident in Denmark 8-10 years after award of their degree.¹

Table 2.1 shows migration patterns in the form of the ten most popular countries of origin and destination. The patterns are not surprising. English-speaking countries with top universities – the United States and the UK – are the most frequent partner countries, followed by the Nordic countries, European countries and China. However, it is noteworthy that the United States and, in part, the UK, account for a relatively small share of emigration.

¹This result must be interpreted with great caution due to possible selection bias. The only graduates we can follow for 8-10 years are those who graduated in 2010-2012. It cannot be ruled out that international mobility may have increased over time. This means that the share of graduates residing in Denmark will gradually decrease if the emigrated graduates who graduated in the 2013-2019 period do not return to Denmark.

Figure 2.2: Share of graduates residing in Denmark x number of years after awarding of PhD degree

Note: The figure shows the share of graduates with an address in Denmark x number of years after being awarded their PhD degree. The figure excludes persons who have not had an address in Denmark at any time up to 2019. The figure only includes people disenrolled with a PhD degree.

Source: Own calculations based on data from Statistics Denmark. Data shown in Table B.8.

Table 2.1: Top 10 immigration and emigration countries

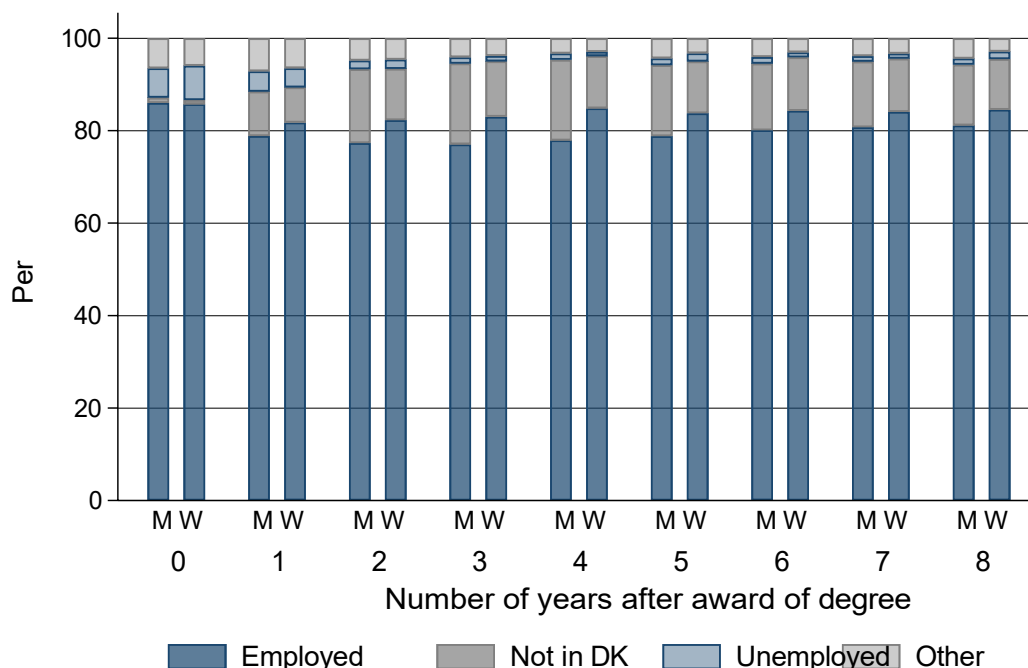
Panel (A): Immigration			Panel (B): Emigration	
	Country	Per cent	Coun try	Per cent
1	United States	11.3	United States	17.7
2	United Kingdom	10.0	United Kingdom	11.2
3	Germany	8.8	Germany	9.9
4	Norway	5.9	Sweden	7.0
5	Sweden	5.8	China	5.9
6	France	4.8	Norway	4.7
7	Italy	4.1	Australia	3.6
8	Spain	3.4	France	3.4
9	China	3.3	The Netherlands	3.1
10	Australia	3.0	Switzerland	2.9

Note: Panel (A) shows the ten countries from which the highest number of persons immigrate to Denmark during the five-year period prior to their enrolment in 2010-2019. For persons immigrating several times during the five-year period, the country from which they most recently immigrated is selected. The percentage is measured in relation to all those immigrating in the five-year period. Panel (B) shows the ten countries to which the largest number of graduates emigrate from Denmark within a period of five years of being awarded their PhD degree 2010-2019. For persons emigrating several times, the country to which they most recently emigrated is selected. The percentage is measured in relation to all those emigrating in the five-year period. As we want to follow each graduate for at least five years, we can only show emigration figures for persons graduating prior to 2015.

Source: Own calculations based on data from Statistics Denmark.

3. Employment, unemployment and migration

Figure 3.1: PhD graduates' labour market status



Note: The figure shows the development in the graduates' labour market status in the years after being awarded their PhD degree, broken down by gender (M: Men and W: Women). The figure includes persons awarded a PhD degree in the 2010-2019 period. As information about employment and unemployment is only available up to 2019, persons who were awarded their degree in 2019 are only included in year 0, those awarded their degree in 2018 are included in years 0 and 1, etc.

Source: Own calculations based on data from Statistics Denmark. Data shown in Table B.9.

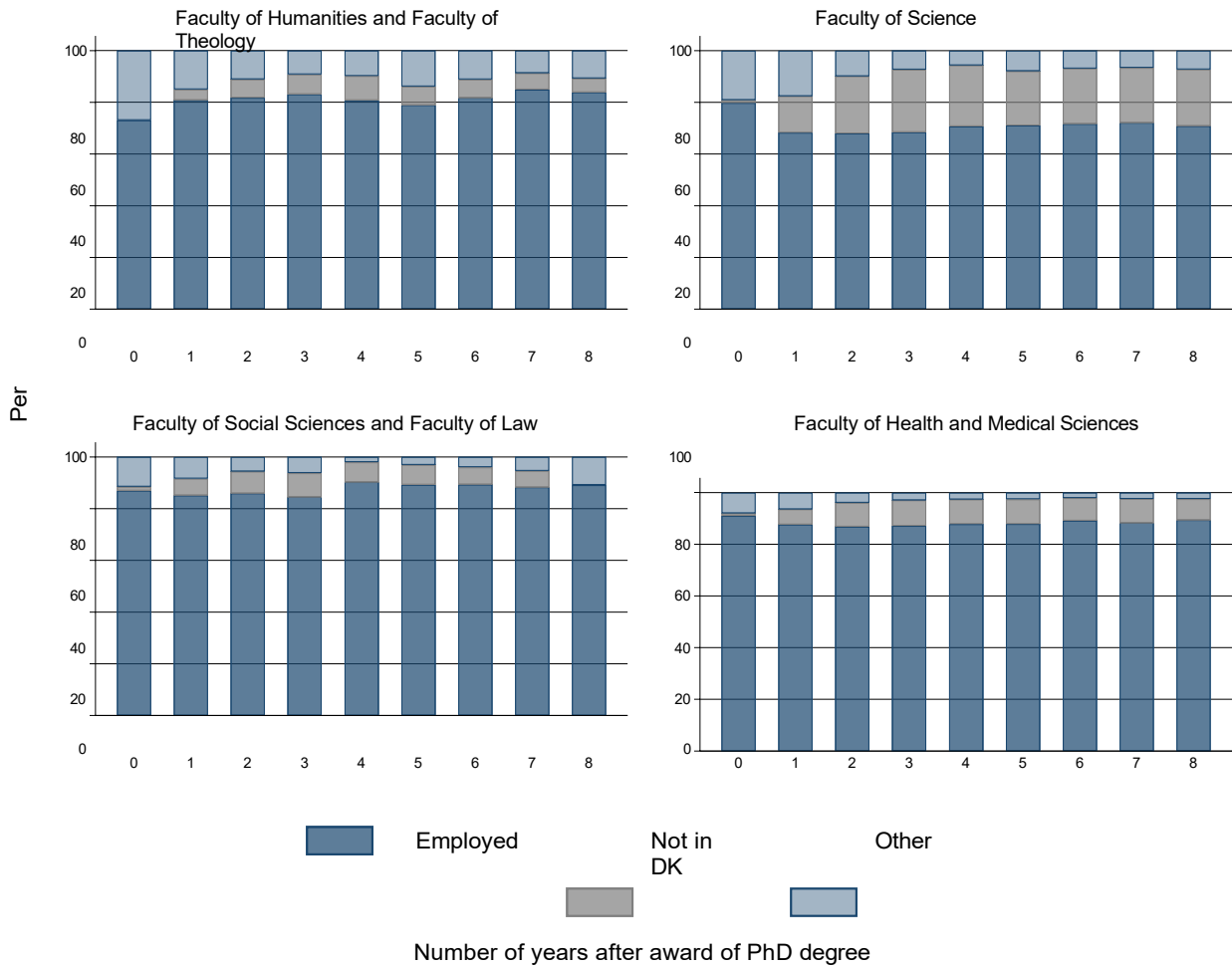
Figures relating to the labour market affiliation of PhD graduates must be interpreted with caution. As a significant share of graduates move from and to Denmark in the period after their graduation, there is considerable variation in the share of graduates with employment in Denmark. This variation does not relate to unemployment.

Figure 3.1 shows the labour market status of graduates in the years after their graduation. Based on the registers, each graduate can be classified in one of four groups. The person may be (i) in employment in Denmark, (ii) registered as unemployed in Denmark, (iii) in Denmark, but not registered as employed or unemployed (other) or (iv) not in Denmark.¹

As anybody leaving Denmark is personally responsible for registering this, there are cases of persons who are not residing in Denmark, but who have not been registered as having left Denmark. These persons are classified in the group 'Other' together with other graduates who are not registered as being employed or unemployed or having left Denmark. The share of graduates who have left Denmark without registering this has increased over time, as Statistics Denmark changed its calculation method in 2016. Up until 2016, emigration and immigration were counted from the actual dates of migration registered. After 2016, migration is counted from the date of registration. As the share of migrants among PhD graduates from UCPH is high, and as they often migrate for short periods of time, it must be regarded as highly likely that significant numbers of graduates classified as having 'other affiliation to the labour market' have actually left Denmark. This means that, a couple of years after having graduated, PhD graduates can, for practical purposes, be regarded as being employed either in Denmark or abroad.

¹Calculations of migration figures in this report are based on different definitions. In Figure 2.2, graduates are classified as having emigrated if they do not have an address in Denmark on 1 January of the same year. In Figures 3.1 and 3.2, graduates are registered as being employed in Denmark if they have had income corresponding to at least six months of employment during the year. Graduates who have spent some time abroad at the beginning of a year, and who have also been employed in Denmark and earned a significant income in the same year will be registered as having emigrated in the figures in section 2 and as being employed in Denmark in this section.

Figure 3.2: Labour market status of PhD graduates, broken down by faculties



Note: The figure shows the development in the labour market status of graduates in the years after being awarded their PhD degree for UCPH’s faculties. The figure includes persons awarded a PhD degree in the 2010-2019 period. As information about employment and unemployment is only available up to 2019, persons who were awarded their degree in 2019 are only included in year 0, those awarded their degree in 2018 are included in years 0 and 1, etc. For certain faculty groups, there are so few observations of unemployed graduates and/or persons without information that it has been necessary to combine the two groups in the classification ‘Other’. In selected years, all ‘non-employed’ graduates have been included in the group ‘Other’.

Source: Own calculations based on data from Statistics Denmark. Data shown in Table B.10.

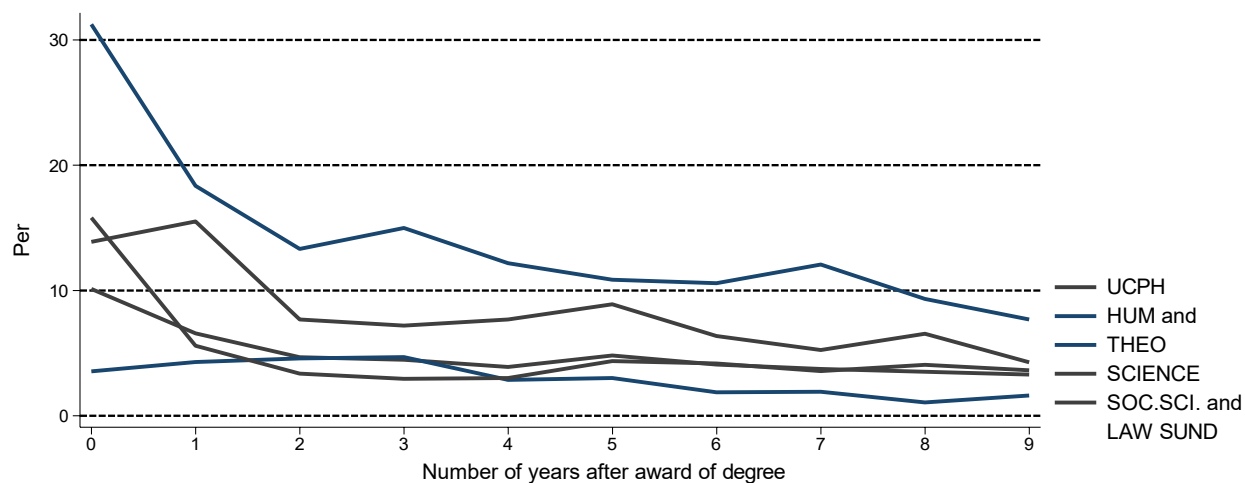
Figure 3.1 shows that just under 7 per cent of PhD graduates are unemployed in their first year. The unemployment rate falls to below 5 per cent in the second year, and to less than 2 per cent for more experienced PhD graduates. The breakdown by gender shows the same unemployment pattern for men and women. The breakdown also shows that migration patterns differ in that a larger share of the male graduates do not reside in Denmark.

This gender difference can be attributed to some extent to disciplinary differences in migrations, as shown by Figure 3.2. SCIENCE, which has the lowest share of women, has by far the highest share of graduates who are not residing in Denmark (16 per cent), where the other faculty groups are at around 5-7 per cent. In addition, the breakdown by faculty groups in Figure 3.2 shows that graduates from SOC.SCI. and LAW and SUND have either found employment or have emigrated very shortly after their graduation, whereas it takes longer for graduates from HUM and THEO.

For experienced PhD graduates, there is no significant difference in unemployment across the faculty groups. However, there are differences in the ratios between wage earners and self-employed persons across the faculty groups. Figure 3.3 shows that nearly one in three of the employed graduates from HUM and THEO become self-employed right after their graduation. The share decreases relatively rapidly towards a level of around 10 per cent. On

the other hand, there are hardly any self-employed persons among employed graduates from SCIENCE. The share¹² fluctuates initially around 4 per cent, but decreases to below 2 per cent in the longer term. The other two faculty groups (SUND, SOC.SCI. and LAW) have initial shares of around 15 per cent and long-term shares of around 4 per cent. Overall, just over 95 per cent of employed graduates are thus employees approx. two to three years after their graduation.

Figure 3.3: PhD graduates engaged in self-employed activity

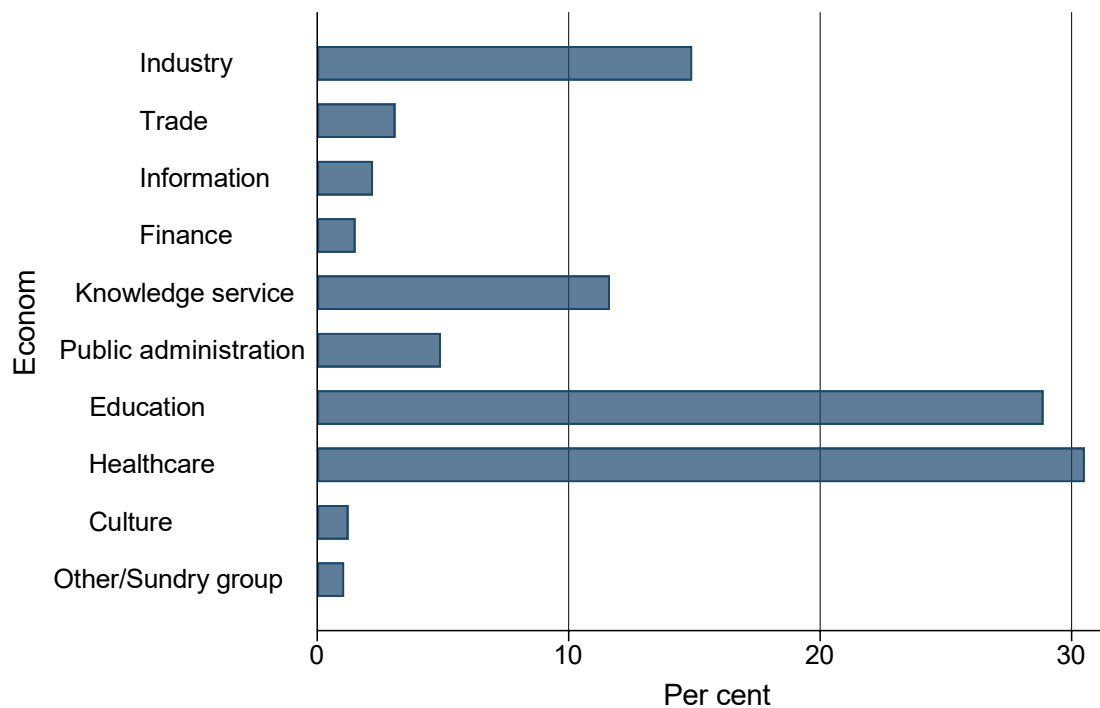


Note: The figure shows the development in the share of self-employed persons after awarding of a PhD degree from the University of Copenhagen, broken down by faculty group. The figure includes persons awarded a PhD degree in the 2010-2019 period. A person is regarded as being self-employed if they are the sole owner of a business, and the profit generated by the business is higher than the sum total of the person's salary and old-age pension or early retirement pension.

Source: Own calculations based on data from Statistics Denmark. Data shown in Table B.11.

4. Employment, broken down by economic activities and position

Figure 4.1: Economic activity breakdown for employed PhD graduates from UCPH in 2019



Note: The figure shows the economic activity breakdown for employed persons in 2019 (in per cent). The figure includes persons with an address and employment in Denmark who were awarded a PhD degree in the 2010-2019 period.

Source: Own calculations based on data from Statistics Denmark. Data shown in Table B.12.

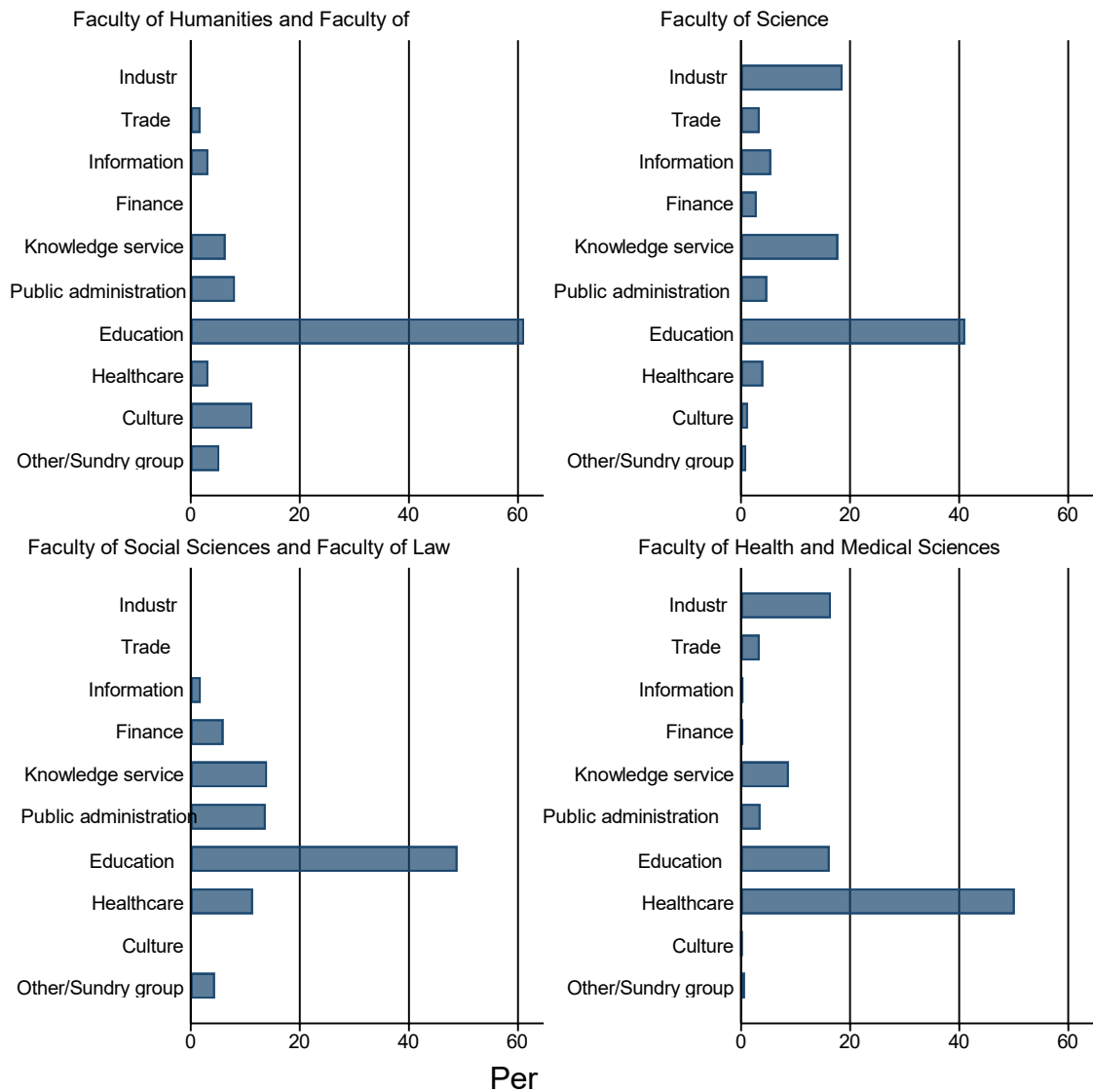
PhD graduates from UCPH find employment primarily in three sectors: healthcare, education and industry. The distribution is explained primarily by the large number of graduates from the Faculty of Health and Medical Sciences.

With 31 per cent in the healthcare sector, 29 per cent in the education sector and 15 per cent in industry, three in four PhD graduates were employed in these sectors in 2019 (Figure 4.1). The majority of the remaining 25 per cent are employed in either knowledge service (i.e. the consulting industry, 12 per cent) or in the public administration (5 per cent), which comprises the police and the legal system.

The distinct variation across faculty groups is clearly seen in Figure 4.2., as education is by far the most frequent sector of employment for all faculties other than SUND, for which the healthcare sector is the dominant sector (50 per cent). At HUM and THEO, more than 60 per cent find employment in the education sector, while the shares are 49 per cent at SOC.SCI. and LAW and 41 per cent at SCIENCE. The large share of graduates employed in industry does not surprisingly come from SCIENCE and SUND.

PhD graduates from SCIENCE have the widest sector distribution, with employments in all shown economic activity groupings, whereas PhD graduates from 'dry' faculties do not feature to any noticeable degree in industry and trade.

Figure 4.2: Economic activity breakdown for employed PhD graduates from UCPH faculties in 2019

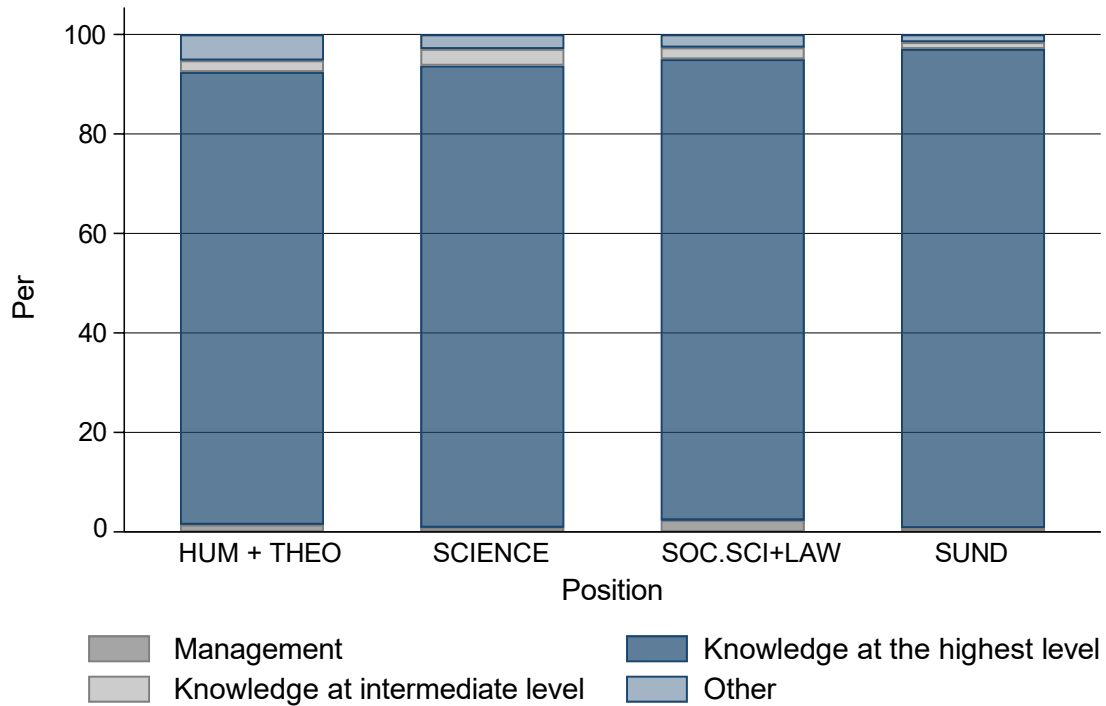


Note: The figure shows the economic activity breakdown for employed persons in 2019 (in per cent). The figure includes persons with an address and employment in Denmark who were awarded a PhD degree in the 2010-2019 period.

Source: Own calculations based on data from Statistics Denmark. Data shown in Table B.13.

The employed PhD graduates can also be categorised according to their job function. This categorisation follows Statistics Denmark’s Classification of Occupations, which classifies jobs or positions according to the tasks performed. This makes it possible to compare persons with the same work function, regardless of their formal title and education. Given that PhD graduates have the highest possible level of education, their job functions can be expected to be either management or work that requires knowledge at the highest level in the field in question. Graduates who have left their field may be engaged in work which (only) requires knowledge at intermediate level or work that is not based on academic knowledge.

Figure 4.3: Position of employed PhD graduates in 2019



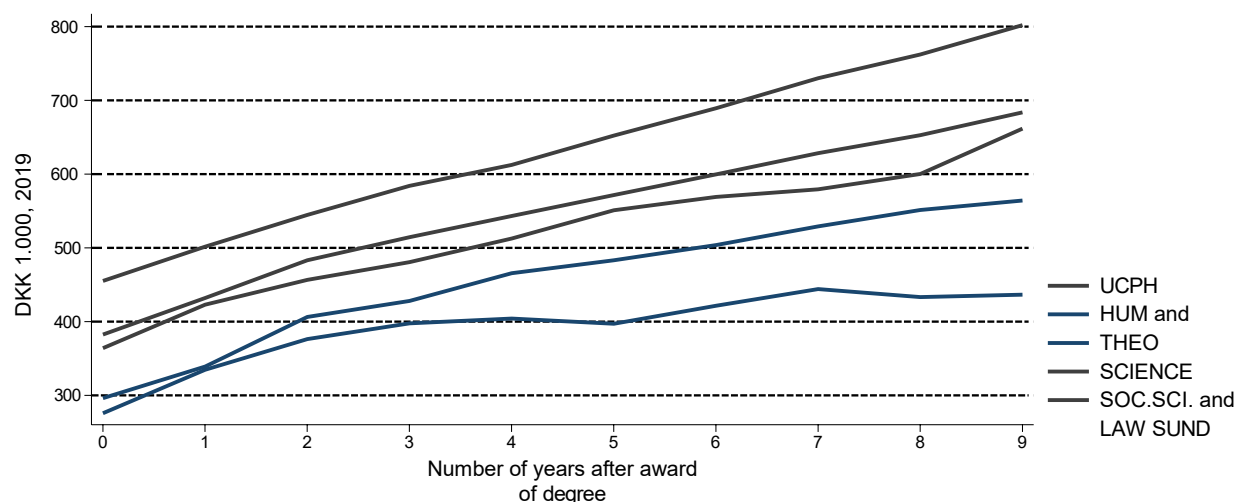
Note: The figure shows the breakdown of persons with a PhD degree from the University of Copenhagen by position in 2019 (in per cent). The figure includes persons with an address and employment in Denmark who were awarded a PhD degree in the 2010-2019 period.

Source: Own calculations based on data from Statistics Denmark. Data shown in Table B.14.

Figure 4.3 shows the distribution of positions held by PhD graduates in 2019. Nearly all employed PhD graduates (95 per cent) perform tasks that require knowledge at the highest level, while less than 1 per cent have management functions. Just under 8 per cent of graduates from HUM and THEO work in positions that require knowledge below the highest level, while this is the case for 6 per cent of graduates from SCIENCE, 5 per cent of graduates from SOC.SCI.+THEO and only 3 per cent of graduates from SUND. PhD graduates from UCPH thus tend to work within their fields of expertise.

5. Salary

Figure 5.1: Salary progression for PhD graduates



Note: The figure shows the development in real salary after awarding of PhD degree from the University of Copenhagen, broken down by faculty. Salaries are stated in 2019 prices. The figure includes persons awarded a PhD degree in the 2010-2019 period.

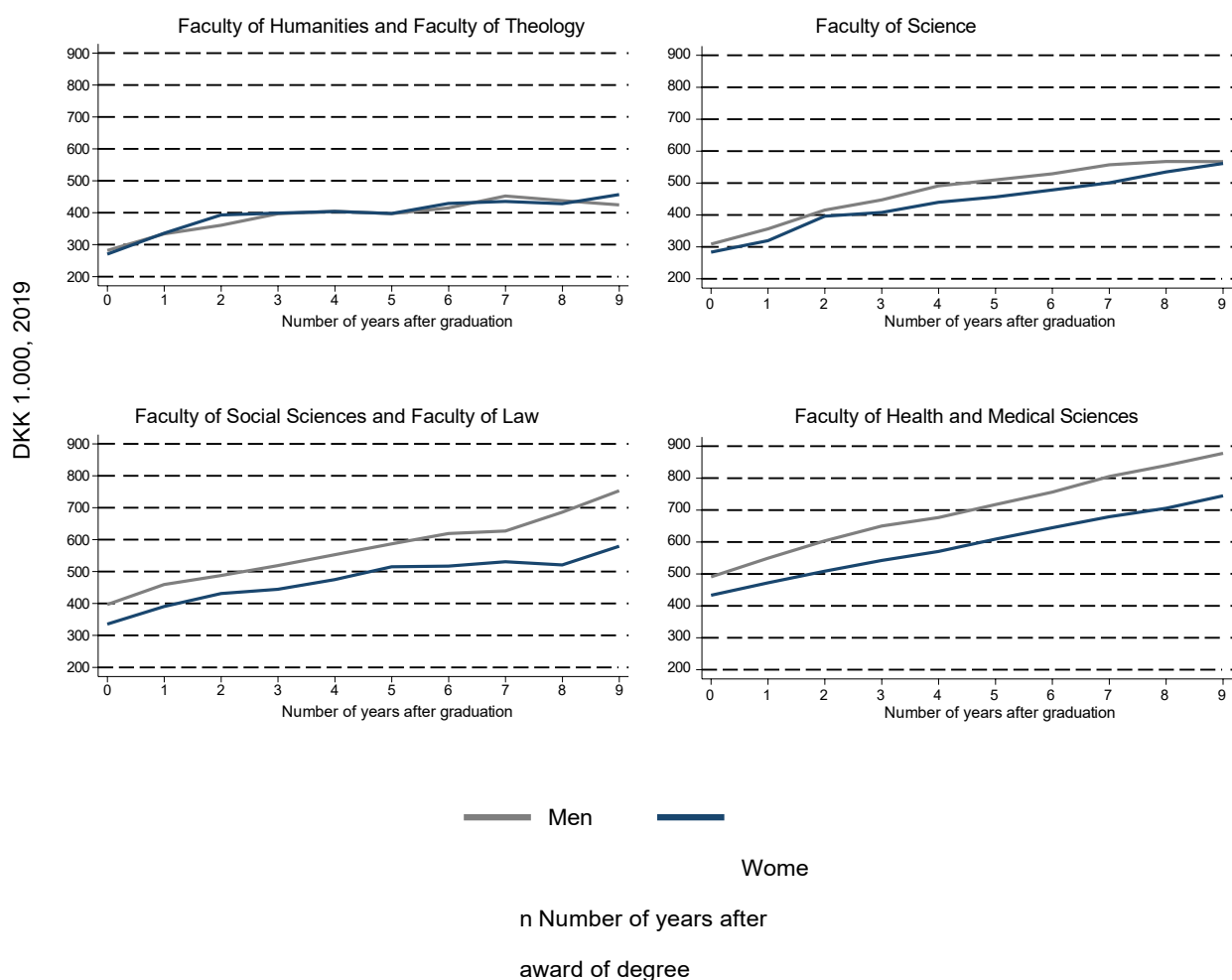
Source: Own calculations based on data from Statistics Denmark. Data shown in Table B.15.

PhD graduates from UCPH are paid an average annual salary of just under DKK 400,000 in their year of graduation. This is shown in Figure 5.1,, which illustrates the development in salary in the years after graduation. Ten years later, PhD graduates earn an average of nearly DKK 700,000 a year.

This equates to a salary increase of just under 80 per cent over ten years, or 6.2 per cent a year. The average salary of graduates from SUND is higher than the average for UCPH as a whole, while the average salary of graduates from the other faculties is lower. The annual increase in average salary is relatively constant for graduates from SUND, SOC.SCI. and LAW, while it decreases for graduates from SCIENCE, HUM and THEO. After ten years, the average salary of PhD graduates from SUND is nearly twice the average salary of PhD graduates from HUM and THEO.

Figure 5.2 shows the development in salary in the years after graduation, broken down by gender and faculty group. Female and male PhD graduates from HUM and THEO earn on average the same throughout the period. At the other faculties, the average salary is higher for men. The difference is especially significant for graduates from SUND, SOC.SCI. and LAW, where the salary difference increases in line with years after graduation. The biggest salary difference after ten years in the labour market is found among PhD graduates from SOC.SCI. and LAW, where male graduates earn an average of DKK 175,000 more than female graduates, equal to a salary gap of approx. 30 per cent. For PhD graduates from SUND, the difference ten years after graduation is DKK 133,000, which is a salary gap of 18 per cent.

Figure 5.2: Salary progression after award of PhD degree, broken down by gender and faculty



Note: The figure shows the development in real salary after awarding of PhD degree from the University of Copenhagen, broken down by gender and faculty. Salaries are stated in 2019 prices. The figure includes persons awarded a PhD degree in the 2010-2019 period.

Source: Own calculations based on data from Statistics Denmark. Data shown in Table B.15.

A. Definitions of variables

Definitions of variables

The employment rate is defined by the share of persons classified as employed in the current year relative to all persons in the same category. A person is classified as employed if the person's main source of income or employment in the income year is categorised under 'self-employed' or 'wage earner'.

Enrolment of PhD students follows the calendar year. The enrolment figures for 2019 thus cover persons who were enrolled in a PhD programme in the period 1 January to 31 December 2019. Enrolments are based on the registered date in Statistics Denmark's PhD Register.

Immigration/Emigration shows migrations to and from Denmark for both Danish and foreign citizens. Statistics Denmark changed the calculation method for migrations to and from Denmark in 2016. In the 2010-2015 period, immigration and emigration figures were thus calculated based on the date of migration. From 2016, migrations have been calculated based on the date of registration. This may have an impact on the emigration rate in Figure 2.2,, as emigrations may be registered much later than the actual date of migration.

Gender is defined binarily based on the last digit of civil registration numbers, which is the method used in all other statistics published by Statistics Denmark. According to the Danish Civil Registration System, persons with the final digits 1, 3, 5, 7 or 9 are defined as men, and persons with the final digits 0, 2, 4, 6 or 8 are defined as women.

The unemployment rate corresponds to the share of people who are regarded as being unemployed on an annual basis. A person is regarded as being unemployed if they have been unemployed for more than half the year, either in one consecutive period or in several periods. A person who is categorised as employed and who is also registered in the unemployment register is classified as employed.

Salary is defined as earned income, salary and net profit from self-employed activity. The salary is thus only calculated for employed persons. The income has been deflated based on the consumer price index, and it thus indicates a real income in 2019 prices.

Production of PhD graduates follows the calendar year. The production figures for 2019 thus cover persons awarded a PhD degree in the period 1 January to 31 December 2019. Production has been calculated on the basis of the registered date of the awarding of the PhD degree in Statistics Denmark's PhD Register.

Definitions of economic activities and job categories

Economic activities show the type of enterprise in which a person is employed. The economic activity breakdown is based on Statistics Denmark's economic activity code DB07 with 19 groupings. To ensure sufficient coverage of economic activity areas for the study programmes with relatively few students, the 19 economic activities have been reduced to 10.

The ten economic activities cover

Industry: C: Manufacturing; D: Electricity, gas and district heating supply; E: Water supply; sewerage, waste management and cleaning of soil and subsoil water; F: Building and construction

Trade: G: Wholesale and retail trade; repair of motor vehicles and motorcycles; H: Transportation and goods handling; I: Accommodation facilities and food service activities

Information: J: Information and communication **Finance:** K: Banking and financial activities, insurance; L: Real estate
Knowledge-based services: M: Liberal, scientific and technical services; N: Administrative services and support services

Public adm.: O: Public administration and defence; social security

Education: P: Education

Health: Q: Healthcare and social services

Culture: R: Arts, entertainment and sports activities

Other/Sundry group: S: Other services

Position is a classification of the work functions of employed persons. The classification is based on Statistics Denmark's Classification of Occupations, DISCO-08. To ensure that faculty groups with relatively few PhD graduates are covered and to ensure a sufficiently informative division, the job categories shown are aggregated from 10 to 4 groups.

The job categories used are

Management: 1: Management work

Knowledge at the highest level: 2: Work that requires knowledge at the highest level within the field in question

Knowledge at intermediate level: 3: Work that requires knowledge at intermediate level

Other: 4: Ordinary office and customer service work; 5: Service and sales work; 6: Work in agriculture, forestry and fisheries excl. assistant; 7: Artisan work; 8: Operator and installation work as well as transport work; 9: Other manual work; 0 Military work.

B. Tables

Table B.1: PhD enrolments at UCPH faculties, 2010-2019

		2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
University of Copenhagen	Women	504	385	409	500	507	447	447	425	438	380
	Men	384	376	314	389	406	357	322	327	352	262
	Total	888	761	723	889	913	804	769	752	790	642

Note: The table shows the number of PhD enrolments at the University of Copenhagen 2010-2019, broken down by gender.

Source: Own calculations based on data from Statistics Denmark.

Table B.2: PhD enrolments at UCPH faculties, 2010-2019

	Gender	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Faculty of Humanities and Theology	Women	40	28	16	39	39	26	21	34	23	23
	Men	32	30	20	25	29	21	7	16	17	17
	Total	72	58	36	64	68	47	28	50	40	40
Faculty of Science	Women	147	122	123	137	109	118	119	100	90	63
	Men	156	148	146	155	171	153	135	136	131	60
	Total	303	270	269	292	280	271	254	236	221	123
Faculty of Social Sciences and Faculty of Law	Women	40	24	34	37	37	38	25	31	26	23
	Men	27	30	21	36	30	25	24	29	30	22
	Total	67	54	55	73	67	63	49	60	56	45
Faculty of Health and Medical Sciences	Women	277	211	236	287	322	264	282	260	299	271
	Men	169	168	127	173	176	158	156	146	174	163
	Total	446	379	363	460	498	422	438	406	473	434

Note: The table shows the number of PhD enrolments at the University of Copenhagen 2010-2019, broken down by gender and faculty.

Source: Own calculations based on data from Statistics Denmark.

Table B.3: PhD disenrolments at UCPH, 2010-2019

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Without degree	56	67	58	68	92	67	123	113	108	110
With degree	552	585	539	722	832	732	758	779	810	774
Total	608	652	597	790	924	799	881	892	918	884

Note: The table shows number of PhD disenrolments at the University of Copenhagen 2010-2019, as well as number of persons who are disenrolled with an awarded PhD degree.

Source: Own calculations based on data from Statistics Denmark.

Table B.4: Duration of enrolment for PhD students who have completed their programme, 2010-2019

	0-1 year	1-2 years	2-3 years	3-4 years	4-5 years	6-7 years	7+ years
Number Completed	83	49	177	2052	985	256	75
Per cent	2.3	1.3	4.8	55.8	26.8	7.0	2.0

Note: The table shows the duration of enrolment for persons who are awarded a PhD degree on disenrolment. The figure includes persons enrolled in the 2010-2019 period. If a person is disenrolled without a PhD degree, then re-enrolled and subsequently disenrolled with a PhD degree, the duration is calculated from the first date of enrolment.

Source: Own calculations based on data from Statistics Denmark.

Table B.5: PhD degrees awarded at UCPH, 2010-2019

		2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
University of Copenhagen	Women	267	297	292	388	424	375	396	423	451	413
	Men	273	264	233	316	380	324	337	326	333	316
	Total	540	561	525	704	804	699	733	749	784	729

Note: The table shows the number of PhD degrees awarded at the University of Copenhagen 2010-2019, broken down by gender and faculty. The figure excludes persons disenrolled without being awarded a PhD degree.

Source: Own calculations based on data from Statistics Denmark.

Table B.6: PhD degrees awarded at UCPH faculties, 2010-2019

		2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Faculty of Humanities and Theology	Women	18	20	23	27	23	24	26	21	16	34
	Men	30	28	10	19	34	21	24	17	19	11
	Total	48	48	33	46	57	45	50	38	35	45
Faculty of Science	Women	77	107	105	135	123	112	112	103	114	104
	Men	103	103	104	150	142	128	141	138	149	125
	Total	180	210	209	285	265	240	253	241	263	229
Faculty of Social Sciences and Faculty of Law	Women	19	26	14	18	21	27	31	29	44	18
	Men	21	19	16	23	24	26	27	23	24	27
	Total	40	45	30	41	45	53	58	52	68	45
Faculty of Health and Medical Sciences	Women	153	144	150	208	257	212	226	270	277	257
	Men	119	114	103	124	180	149	145	148	141	153
	Total	272	258	253	332	437	361	371	418	418	410

Note: The table shows the number of PhD degrees awarded at the University of Copenhagen 2010-2019, broken down by gender and faculty. The figure excludes persons disenrolled without being awarded a PhD degree.

Source: Own calculations based on data from Statistics Denmark.

Table B.7: Immigration and emigration of PhD graduates

Year of enrolment	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
<i>Figures below are stated in per cent of total population</i>										
Immigrate	15.7	18.8	17.1	17.6	17.8	17.6	19.7	20.3	19.8	20.2
Do not immigrate	84.3	81.2	82.9	82.4	82.2	82.4	80.3	79.7	80.2	79.8
Year of awarding of degree	2010	2011	2012	2013	2014	2015				
Emigrate	17.9	19.0	21.0	20.7	20.2	21.7				
Do not emigrate	82.1	81.0	79.0	79.3	79.8	78.3				

Note: The upper part of the table shows the share of PhD graduates from UCPH immigrating during the five-year period prior to their enrolment in the 2010-2019 period. The lower part shows the share of PhD graduates from UCPH emigrating within the first five years of being awarded the PhD degree. The figure does not include persons disenrolled without being awarded a PhD degree. As we want to be able to follow the graduates for at least five years, we can only show emigration for persons who were awarded the degree up until 2016.

Source: Own calculations based on data from Statistics Denmark.

Table B.8: Share of graduates residing in Denmark x number of years after awarding of PhD degree

Number of years after award of PhD degree	Number in DK	Share of production
-10	5311	77.0
-9	5303	76.7
-8	5272	76.4
-7	5299	76.8
-6	5366	77.8
-5	5521	80.0
-4	5719	82.9
-3	6187	89.7
-2	6506	94.3
-1	6464	93.7
0	5990	86.8
1	5038	81.8
2	4282	79.8
3	3684	79.8
4	3149	81.2
5	2603	82.0
6	1955	82.5
7	1380	83.2
8	948	84.1
9	474	85.7
10	6	85.7

Note: The table shows the share of persons with an address in Denmark x number of years after being awarded their PhD degree. The table excludes persons who have not had an address in Denmark at any time up to 2019. The table only includes persons disenrolled after being awarded a PhD degree in the 2010-2019 period.

Source: Own calculations based on data from Statistics Denmark.

Table B.9: Labour market status of PhD graduates

		Number of years after award of PhD degree									
		0	1	2	3	4	5	6	7	8	
<i>Figures below are stated in per cent of total population</i>											
Other	Men	6.5	7.1	4.8	4.1	3.3	4.3	4.1	3.8	4.4	
	Women	5.9	6.5	4.6	3.8	2.9	3.2	3.0	3.3	2.9	
Employed	Men	86.0	78.9	77.3	77.1	77.9	78.8	80.1	80.8	81.1	
	Women	85.8	81.8	82.3	83.0	84.9	83.8	84.3	84.1	84.5	
Not in DK	Men	1.1	9.6	16.0	17.5	17.4	15.3	14.4	14.2	13.1	
	Women	0.9	7.6	11.1	12.0	11.3	11.2	11.6	11.5	11.0	
Unemployed	Men	6.4	4.4	1.9	1.4	1.4	1.5	1.4	1.2	1.3	
	Women	7.4	4.1	2.0	1.2	0.9	1.8	1.1	1.1	1.6	

Note: The table shows the development in the labour market status of graduates in the years after being awarded their PhD degree, broken down by gender. The table includes persons awarded a PhD degree in the 2010-2019 period. As information about employment and unemployment is only available up to 2019, persons who were awarded their degree in 2019 are only included in year 0, those awarded their degree in 2018 are included in years 0 and 1, etc.

Source: Own calculations based on data from Statistics Denmark.

Table B.10: Labour market status of PhD graduates, broken down by faculties

		Number of years after award of PhD degree									
		0	1	2	3	4	5	6	7	8	
<i>Other, Employed and Not in DK are stated as a percentage of the population (stated in Total)</i>											
	Other	26.9	15.0	11.1	9.2	9.8	13.9	11.2	8.7	10.8	
Faculty of Humanities and	Employed	73.1	80.8	81.8	83.1	80.8	78.9	81.8	84.9	83.9	
Faculty of Theology	Not in DK	0	4.1	7.1	7.6	9.4	7.2	7.1	6.3	5.4	
	Total	427	386	351	314	265	223	170	126	93	
Faculty of Science	Other	19.1	17.6	9.9	7.4	5.7	8.0	6.9	6.6	7.3	
	Employed	79.8	68.2	67.9	68.4	70.7	71.0	71.6	72.1	70.8	
	Not in DK	1.1	14.1	22.1	24.2	23.6	21.0	21.44	21.3	21.9	
	Total	2307	2088	1834	1597	1351	1119	864	588	384	
Faculty of Social Sciences and	Other	11.5	8.4	5.6	6.2	2.0	3.1	4.0	5.4	10.8	
Faculty of Law	Employed	87.0	85.2	86.0	84.6	90.3	89.2	89.3	88.3	89.2	
	Not in DK	1.5	6.5	8.4	9.2	7.7	7.7	6.7	6.3	0	
	Total	461	418	356	305	248	195	150	111	83	
Faculty of Health and	Other	8.0	6.4	3.9	2.9	2.6	2.5	2.1	2.4	2.5	
Medical Sciences	Employed	91.0	87.7	86.8	87.1	87.8	87.9	89.1	88.3	89.4	
	Not in DK	1.0	5.9	9.2	9.9	9.5	9.6	8.8	9.2	8.1	
	Total	3478	3080	2667	2254	1891	1534	1105	779	528	

Note: The table shows the development in the labour market status of graduates in the years after being awarded their PhD degree for UCPH's faculties. The table includes persons awarded a PhD degree in the 2010-2019 period. As information about employment and unemployment is only available up to 2019, persons who were awarded the degree in 2019 are only included in year 0, those awarded their degree in 2018 are included in years 0 and 1, etc. For certain faculty groups, there are so few observations of unemployed graduates and/or persons without information that it has been necessary to combine the two groups under the classification 'Other'. In selected years, all 'non-employed' graduates have been included in the group 'Other'.

Source: Own calculations based on data from Statistics Denmark.

Table B.11: PhD graduates engaged in self-employed activity

		Number of years after award of PhD degree									
		0	1	2	3	4	5	6	7	8	9
<i>Figures below are stated in per cent of total population</i>											
University of Copenhagen		10.1	6.6	4.7	4.5	3.9	4.8	4.1	3.8	3.5	3.3
Faculty of Humanities and Faculty of Theology		31.3	18.4	13.3	15.0	12.2	10.9	10.6	12.1	9.3	7.7
Faculty of Science		3.6	4.3	4.6	4.7	2.9	3.0	1.9	1.9	1.1	1.6
Faculty of Social Sciences and Faculty of Law		13.9	15.5	7.7	7.2	7.7	8.9	6.4	5.3	6.6	4.3
Faculty of Health and Medical Sciences		15.8	5.6	3.4	3.0	3.0	4.4	4.2	3.6	4.1	3.6

Note: The table shows the development in the share of self-employed persons after awarding of a PhD degree from the University of Copenhagen, broken down by faculty group. The figure includes persons awarded a PhD degree in the 2010-2019 period. A person is regarded as being self-employed if they are the sole owner of a business, and the profit generated by the business is higher than the sum total of the person's salary and old-age pension or early retirement pension.

Source: Own calculations based on data from Statistics Denmark.

Table B.12: Economic activity breakdown for employed PhD graduates from UCPH in 2019

Economic activity	Number	Per cent
Industry	807	14.9
Trade	168	3.1
Information	120	2.2
Finance	82	1.5
Knowledge service	630	11.6
Public administration	266	4.9
Education	1563	28.9
Healthcare	1652	30.5
Culture	67	1.2
Other/Sundry group	58	1.1

Note: The table shows the economic activity breakdown for employed persons in 2019 (in per cent). The figure includes persons with an address and employment in Denmark who were awarded a PhD degree in the 2010-2019 period.

Source: Own calculations based on data from Statistics Denmark.

Table B.13: Economic activity breakdown for employed PhD graduates from UCPH's faculties in 2019

	Economic activity	Number	Per cent
Faculty of Humanities and Faculty of Theology	Trade	6	1.7
	Information	11	3.2
	Knowledge service	22	6.3
	Public administration	28	8.1
	Education	212	61.1
	Healthcare	11	3.2
	Culture	39	11.2
	Other/Sundry group	18	5.2
Faculty of Science	Industry	301	18.6
	Trade	55	3.4
	Information	89	5.5
	Finance	46	2.8
	Knowledge service	288	17.8
	Public administration	77	4.7
	Education	666	41.1
	Healthcare	65	4.0
	Culture	20	1.2
Other/Sundry group	15	0.9	
Faculty of Social Sciences and Faculty of Law	Information	7	1.8
	Finance	23	5.9
	Knowledge service	54	14.0
	Public administration	53	13.7
	Education	189	48.8
	Healthcare	44	11.4
	Other/Sundry group	17	4.4
Faculty of Health and Medical Sciences	Industry	502	16.4
	Trade	103	3.4
	Information	13	0.4
	Finance	12	0.4
	Knowledge service	266	8.7
	Public administration	108	3.5
	Education	495	16.2
	Healthcare	1532	50.1
	Culture	5	0.2
Other/Sundry group	20	0.7	

Note: The table shows the economic activity breakdown for employed persons in 2019 (in per cent). The figure includes persons with an address and employment in Denmark who were awarded a PhD degree in the 2010-2019 period.

Source: Own calculations based on data from Statistics Denmark.

Table B.14: Position of employed PhD graduates in 2019

Faculty	Position	Number	Per cent
Faculty of Humanities and Faculty of Theology	Management	5	1.5
	Knowledge at the highest level	313	91.0
	Knowledge at intermediate level	8	2.3
	Other	18	5.2
Faculty of Social Sciences and Faculty of Law	Management	9	2.4
	Knowledge at the highest level	354	92.7
	Knowledge at intermediate level	9	2.4
	Other	10	2.6
Faculty of Science	Management	14	0.9
	Knowledge at the highest level	1497	92.9
	Knowledge at intermediate level	54	3.3
	Other	47	2.9
Faculty of Health and Medical Sciences	Management	24	0.8
	Knowledge at the highest level	2933	96.3
	Knowledge at intermediate level	42	1.4
	Other	47	1.5

Note: The table shows the breakdown of persons with a PhD degree from the University of Copenhagen by work position in 2019 (in per cent). The figure includes persons with an address and employment in Denmark who were awarded a PhD degree in the 2010-2019 period.

Source: Own calculations based on data from Statistics Denmark.

Table B.15: Salary progression for PhD graduates

		Number of years after award of PhD degree									
		0	1	2	3	4	5	6	7	8	9
<i>Stated in DKK thousand</i>											
University of Copenhagen	Men	394.2	450.7	504.2	545.0	576.6	604.1	631.1	665.2	690.5	710.6
	Women	373.6	416.9	466.5	490.0	516.3	544.9	573.3	597.4	619.9	659.1
Faculty of Humanities and Faculty of Theology	Men	281.7	333.4	360.4	396.6	404.4	396.8	414.9	452.2	437.4	424.3
	Women	269.9	335.6	392.7	398.4	403.5	397.1	428.9	435.1	428.0	456.8
Faculty of Science	Men	308.4	356.0	414.9	446.8	490.7	509.5	528.6	556.8	567.3	567.0
	Women	283.1	319.1	396.2	407.7	439.4	456.1	478.2	500.5	534.6	561.1
Faculty of Social Sciences and Faculty of Law	Men	396.9	459.5	487.7	519.0	552.9	586.8	619.2	627.1	685.9	753.2
	Women	335.0	390.1	430.9	444.2	474.6	514.7	516.9	530.6	520.4	578.9
Faculty of Health and Medical Sciences	Men	490.8	549.4	603.7	650.2	676.8	717.4	756.3	805.2	839.8	877.9
	Women	433.1	472.4	508.9	542.3	570.7	609.2	644.8	679.3	705.7	744.7

Note: The table shows the development in real salary after awarding of PhD degree from the University of Copenhagen, broken down by faculty. Salaries are stated in 2019 prices. The figure includes persons awarded a

PhD degree in the 2010-2019 period.

Source: Own calculations based on data from Statistics Denmark.