



National methodology description for statistics on the Careers of Doctorate Holders (CDH)

0. Reporting country

(Please specify the name of the reporting country) **Denmark**

1. Institution

(Please provide name and contact information on the institution(s) and person(s) responsible for CDH statistics)

1.1 Institution(s) responsible: The Danish Centre for Studies in Research and Research Policy, University of Aarhus, Finlandsgade 4, 8200 Aarhus N.

1.2 Contact person(s) for CDH statistics:

Peter Stendahl Mortensen, e-mail psm@cfa.au.dk and

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2. Main data sources used for the compilation of CDH statistics

(Please only list the main data sources, more detailed information is to be reported under section 5 and 6.)

2.1 Enumeration of the statistical survey(s) used: Our own R&D Statistics (Private sector)

2.2 Enumeration of the administrative data source(s) used: Our own National Register of Doctorate holders and The National employment register.

3. Main variable definitions and classifications used

(Please indicate which main variable classifications and definitions have been used and their coherence with the classifications and definitions recommended.)

3.1 For doctorate holder

Identical to the definition used by OECD and EUROSTAT.

3.2 For time to completion of doctorate

Identical to the definition used by OECD and EUROSTAT.

3.3 For post-doc (*proposal for recommendation is under development*)

Identical to the definition proposed by OECD and EUROSTAT.

3.4 For researcher

Identical to the definition used by OECD and EUROSTAT.

3.5 For annual basic salary

We used the definition used by OECD and EUROSTAT and in our statistics we have only used the salaries stated by the individual doctorate holders. Surprisingly few were unwilling or unable to state their salary.

3.6 Other definitions and classifications used: None

4. Statistical units

(Please indicate any deviation from the statistical unit recommended.) No deviation

5. Detailed information on the CDH survey(s)

(Please provide detailed information on the survey(s) listed in section 2 that specifically targets doctorate holders.)

5.1 Name of the survey(s)

Statistics on the Careers of Doctorate holders (Karrierestatistikken)

5.2 General information about survey frame(s) used

- Name of survey frame(s)
*The National Register of Doctorate Holders,
The R&D statistics – Private sector and
The National employment register*

Type of survey frame(s)

1. National registers of education
The National Register of Doctorate holders contain information as reported by the universities since the late eighties. It was used to locate doctorate holders with a Danish degree and still living in Denmark.
 2. Universities information system
Indirectly – see under national registers of education
 3. Previously conducted surveys on doctorate holders
To locate as many doctorate holders with a foreign degree we conducted a survey using only a small questionnaire based on information from the National employment register and our R&D statistics. This survey should however be seen as an integrated part of the CDH-survey since it would not have been conducted otherwise.
 4. National libraries
 5. Alumni organisations
 6. Censuses
 7. Central registers of foreigners
 8. Other *(please explain)*: We also used data from the Civil Registration office (CPR-kontoret). These data were mainly used to identify current address, place of birth and citizenship.
- Date(s) of creation and major changes
The National Register of Doctorate holders was created around 1992. The register received a major update in 2004-5 including re-validation of already included data based on re-collected data from universities.
The R&D statistics goes back to the late sixties/early seventies.
The National employment register – no additional information.

- Limits of legal right of access to information within the survey frame(s)
We did not have any problems with limited access due to legal rights. In our effort to locate doctorate holders with a foreign degree we did however meet a sort of Goodwill limit from some private companies and public offices. This may have had an effect on the number of Doctorate holders with a foreign degree included in the survey since the direct contact with central employers was one of our main sources in our search for foreign Doctorate holders living in Denmark.
- Population coverage
 1. Population covered, jointly and respective, by the survey frame(s):
We were able to identify all doctorate holders with a degree from Danish universities. In regards to those with a foreign degree we have only limited knowledge about the exact number living in Denmark. Therefore it is very difficult to say anything about the coverage of the total number.
 2. Updating of the survey frame(s): Yearly.
 3. Identified overlaps if multiple survey frames are used: Identified overlaps were eliminated before any actions were taken to contact the respondents, using the National Person Identification Number (CPR).
- Information available within respective frame (please describe)
The National Register of Doctorate holders: Age, name, address, type of master degree, university graduate from and which year, in most cases title of the project, year of registration, when was doctorate awarded, field of science. In most cases we also have information on how the Ph.d.-studies were financed, citizenship.

The R&D statistics: In regards to the survey it only contains information on number of doctorate holders employed by each company included in the survey.

The National employment Register: Information in regards to their current employment such as salary and position.

5.3. Population coverage

- Observation unit: Individual Doctorate holder
- Geographical coverage (national territory only or inclusion of abroad also): Only national coverage of people with a foreign degree is unknown since there are no information on how many with a doctoral degree that are living in Denmark.
- Ages covered: All ages - date of birth was not used as a method of inclusion or exclusion.
- Other specific inclusions or exclusions: None

5.4. Time span covered by data:

1978-2005

5.5. Primary data collection method

- Frequency of data collection: Every second year
- List of recent reference years: 1987-2005 (data) with December 31st 2006 as the reference date in the survey.
- Timetable of data collection: Started February 1st 2007 and ended July 1st 2007
- Survey or census: Census in some strata and survey in others.
- Media used for data collection: Paper and online versions of the questionnaire.
- Criteria for stratification: In regards to the PhDs registered in the National Register of Doctorate holders all PhDs graduated in 2004 and 2005 were included in our survey, half of the graduates from 2000-2003 were also included and finally we selected one third of the graduates from 1986-1999. The stratification was made by year of graduation and Faculty of enrolment. Unfortunately we not able to locate a valid address for some of the PhDs in our sample which is why the sampling percentages listed below do not match the sample frame described above. In regards to doctorate holders with a foreign degree we included all 578 that we located during our mini survey (see 5.2.3).
- Threshold values and sampling percentages

Sampling percentages by field of science (only those with a Danish degree)

	Sampling	Response rate		
		Population/sample		
Natural	29	18	/	60
Engineering and technology	32	20	/	60
Medical	40	24	/	60
Agricultural	37	24	/	65
Social	33	18	/	55
Humanities	38	21	/	57
Overall	34	21	/	60
Year				
1978-1999	25	15	/	58
2000-2003	38	22	/	59
2004-2005	61	38	/	63
Overall	34	21	/	60

- Actions to speed up or increase the rate of response: We posted Reminders
- Expected changes in data collection methodology: Not planned

5.6. Production of results

- Imputation methods to compensate for non-response: Hot deck – this was however only necessary and done in regards to a few selected variables.
- Estimation methods for grossing-up: Simple up weighing.

- Confrontation with other data sets: As part of our validation of our survey data we compared some variables with data found in our survey frames. But in most cases we did not have any source for comparison.
- Other calculations made: None
- Criteria for the identification of confidential data: Groups no smaller than 6.
- Expected changes in production methods: Not planned.

5.7 Quality

- Description of the calculation procedure of the coefficients of variation, including any procedure applied thereby to take into account misclassification or imputation of missing survey data: No calculation has been made since no calibration has been made and the use of imputation has been very limited.
- Summary description of quality criteria calculated for national purposes: None
- Expected changes in quality evaluation: None

5.8 National dissemination: New publication has been published.

Name and media of national dissemination used:

The Careers of Phds - Employment and career in numbers. Has been published in paper form and is available as a download on www.forskningsanalyse.dk/karriere.htm.

- Description of standard tables produced
Tables will only be available in electronic form (excel and pdf versions). It will be possible to download them from www.forskningsanalyse.dk/karriere.htm
Our collection of tables includes PhDs with a Danish degree by the following main fields (most tables include gender division and/or a division by field of science):
 - Number of doctorate Holders still living in Denmark (including average age and gender).
 - Sector of employment, average age by sector, current and first job after graduation.
 - Changes in sector of employment shown as a comparison between first and current sector of employment.
 - Type of position, by gender and sector of employment
 - Changes (and the lack of changes) in type of position
 - Number working as a Researcher
 - Reasons for working as a Researcher and why not
 - Rating of and satisfaction with principal job by selected job priorities
- Timetable for the dissemination
Both publication and tables have been published early Marts 2008.
- Expected changes in national dissemination methods
Unknown
- Treatment of confidential data i.e. Are confidential data suppressed or aggregated? Aggregated

6. Detailed information on other data sources

(For each of the other data source(s) enumerated in section 2, please give the following information.)

Impossible to describe at this stage since we do not know exactly which other sources of information that will be able to reach the remaining PhDs (with a foreign degree, but living in Denmark).

6.1 Name of the survey or of the administrative data source

6.2. Population coverage

- Observation unit(s)
- Reporting unit
- Geographical coverage (national territory only or inclusion of abroad also)
- Ages covered
- Other specific inclusions or exclusions

6.3. Time span covered by data

6.4 Typical use of the survey or of the administrative data source

6.5. *Please, explain how this data source is used in combination with the others enumerated in 2 to produce the required statistics.*

7. Plans on how to handle the CDH-surveys in Denmark

As part of the contract with Eurostat we were asked to set up a plan on how to handle the CDH-surveys in Denmark. Caused by the Danish Governments decision to deprive *The Danish Centre for Studies in Research and Research Policy* of the STI-statistics no plan has been set up. However, we would not have changed much, if we were to conduct the survey again, apart from trying to identify more PhDs with a foreign degree.