Careers of Doctorate Holders 2005

Feasibility study and first results

Centre of Policy Related Statistics

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Statistics Netherlands

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Explanation of symbols

.	= data not available
*	= provisional figure
x	= publication prohibited (confidential figure)
–	= zero
–	= (between two numbers) inclusive
0 (0,0)	= less than half of unit concerned
blank	= category not applicable
2003–2004	= 2003 to 2004 inclusive
2003/2004	= average for the years 2003 up to and including 2004
2003/'04	= crop year, school year etc., beginning in 2003 and ending in 2004
2001/'02–2003/'04	= crop year etc. 2001/'02 up to and including 2003/'04

Because of rounding, some totals may not correspond with the sum of the separate cells.
Revised figures are not marked as such.

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Summary

The Dutch Ministry of Education, Culture and Science has asked Statistics Netherlands to compute information on the demographic characteristics, education history, work experience and mobility of doctorate holders. This information is required for the Survey of Careers of Doctorate Holders, a joint project of the Organisation for Economic Co-operation and Development (OECD), the Statistical Office of the European commission (Eurostat) and UNESCO Institute for Statistics (UIS).

Statistics Netherlands has been able to compute results based on a three-year average over 2004, 2005 and 2006 for 14 of the 32 pre-defined tables. For three tables a two-year average over 2004 and 2005 was computed. As the number of doctorate holders is small, for a number of tables the results are given at a higher aggregation level than in the pre-defined tables.

In 2005, 80 thousand people in the Netherlands had a doctorate, of whom 70 percent were male; almost 90 percent of doctorate holders younger than 70 years worked for at least one hour a week. Roughly one third of doctorate holders had a degree in health and welfare, a quarter in sciences, and another quarter in social sciences, business and law.

1 Introduction

The international Survey on Careers of Doctorate Holders (CDH) is a joint project carried out by the Organisation for Economic Co-operation and Development (OECD), the Statistical Office of the European commission (Eurostat) and UNESCO Institute for Statistics (UIS). Collecting information on doctorate holders is important, because they are considered to be crucial to the production, application and diffusion of knowledge in an international and national context. The objective of the project is to collect the most recent statistics on educational history, work experience and international mobility of doctorate holders throughout the world. Every country is asked to collect information on doctorate holders in their country. At the moment, participation in the project is voluntary. The ultimate goal is to cover the total population of doctorate holders worldwide.

The project requests countries to complete 32 pre-defined tables, divided into seven categories (a more detailed description is given in figure 1):

- P tables containing demographic information;
- ED tables containing information on education;
- EMP tables containing information on employment status and income;
- PERC tables containing information on job perception and satisfaction;
- IMOB tables containing information on inward mobility;
- OMOB tables containing information on outward mobility;
- OUTP tables containing information on output and publications.

The Dutch Ministry of Education, Culture and Science has asked Statistics Netherlands to study the possibilities of completing these tables using information available at Statistics Netherlands. The tables were divided into three categories:

- Tables containing personal characteristics and data on immigration or emigration of doctorate holders (P1-P8, IMOB1 and IMOB2). Statistics Netherlands completed these tables, with the exception of the categorisation into citizen by birth and citizen by naturalisation. Some categories had to be aggregated because the cell count was not sufficient.
- Tables containing information on employment status and income of doctorate holders (ED4, EMP1, EMP2, EMP4, EMP5, EMP6 and EMP8). It was not clear beforehand whether Statistics Netherlands would be able to compute statistically reliable results for these tables. Therefore, this feasibility study was used to examine the problems arising during completion. In principle, only preliminary results would be computed for these tables. However, for these tables also statistically reliable results could be computed. Again, some categories had to be combined because of the low number of observations per category.
- Tables that cannot readily be completed by Statistics Netherlands or were marked ‘optional’ in the CDH project (ED1-ED3, ED5, EMP3, EMP7, PERC1, PERC2, IMOB3, OMOB1-OMOB4, OUTP1 and OUTP2). These tables mainly contain information about topics on which Statistics Netherlands does not have any available information: e.g. perceptions of their job qualification and

intentions of moving out of the country. Neither does Statistics Netherlands have information on source of funding during the doctorate nor the output generated.

Figure 1. Overview of the tables requested in the CDH project and whether they were included in this study.

Figure 1
Overview of the tables asked in the CDH-project and whether they were included in this study.

Number	Title	Included in study
P1	Number of doctorate holders by sex and age class	x
P2	Number of doctorate holders by country of birth, type of citizenship and residential status	x
P3	Number of doctorate holders by sex and country of citizenship	x
P4	Number of doctorate holders by citizenship/residential status and age class	x
P5	Number of doctorate holders by citizenship/residential status and field of doctorate degree	x
P6	Number of doctorate holders by sex and country of birth	x
P7	Number of doctorate holders by place of birth/residential status and age class	x
P8	Number of doctorate holders by place of birth/residential status and field of doctorate degree	x
ED1	Number of doctorate holders by citizenship/residential status and country of doctorate award	
ED2	Number of doctorate holders by place of birth/residential status and country of doctorate award	
ED3	Number of doctorate holders by country of doctorate award and prior education	
ED4	Recent doctorate recipients: age at graduation and time to completion by sex and main field of doctorate degree	x
ED5	Number of doctorate holders by primary source of funding during completion of doctorate	
EMP1	Number of doctorate holders by employment status and year of doctorate award	x
EMP2	Number of doctorate holders by employment status, age and field of doctorate degree	x
EMP3	Number of recent doctorate recipients by primary source of funding during completion of doctorate and employment status	
EMP4	Occupations of employed doctorate holders by field of doctorate degree	x
EMP5	Number of doctorate holders employed as researchers by sex and field of doctorate degree	x
EMP6	Median gross annual earnings of employed doctorate holders	x
EMP7*	Gross annual earnings of employed recent doctorate recipients by source of funding during completion of doctorate	
EMP8	Job to job mobility: length of stay with the same employer	x
PERC1	Perception of doctorate holders regarding their job qualification	
PERC2	Satisfaction of doctorate holders with their employment situation	
IMOB1	Number of doctorate holders by citizenship/residential status and length of stay in the country	x
IMOB2	Number of doctorate holders by citizenship/residential status and previous country of residence	x
IMOB3	Reasons for moving into the country for doctorate holders having entered the country in the last five or ten years	
OMOB1*	Intentions to move out of the country in the next year by country of intended destination	
OMOB2*	Reasons for intentions to move out of the country in the next year	
OMOB3*	Number of doctorate holders having left the country in the last five or ten years by citizenship/resident status and country of destination	
OMOB4*	Reasons for moving out of the country in the last five or ten years	
OUTP1	Average output of doctorate holders working as researchers in the last three years by field of doctorate degree and by age	
OUTP2	Average output of doctorate holders working as researchers in the last three years by sex and citizenship/residential status	

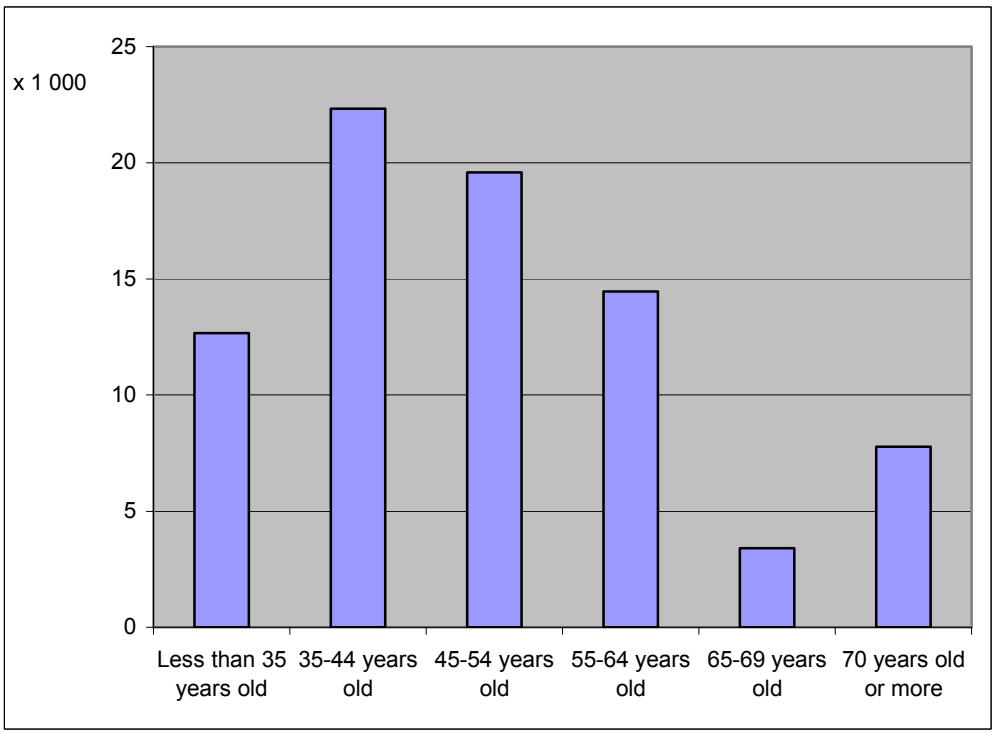
* optional table

Chapter 2 gives a summary of the results. Chapter 3 describes the research method and data sources. Chapter 4 gives an overview of the definitions and how they were operationalised to compute the tables. Chapter 5 outlines the problems that arise when computing the results and describes possible solutions. The conclusions are summed up in chapter 6, which also gives recommendations for future research. In chapter 7 a list of abbreviations and their Dutch translations is given.

2 Results

In 2005, on average 80 thousand people in the Netherlands had a doctorate. 8 thousand are 70 years or older. Most doctorate holders (28 percent) are between 35 and 44 years old. The results below refer only to doctorate holders younger than 70.

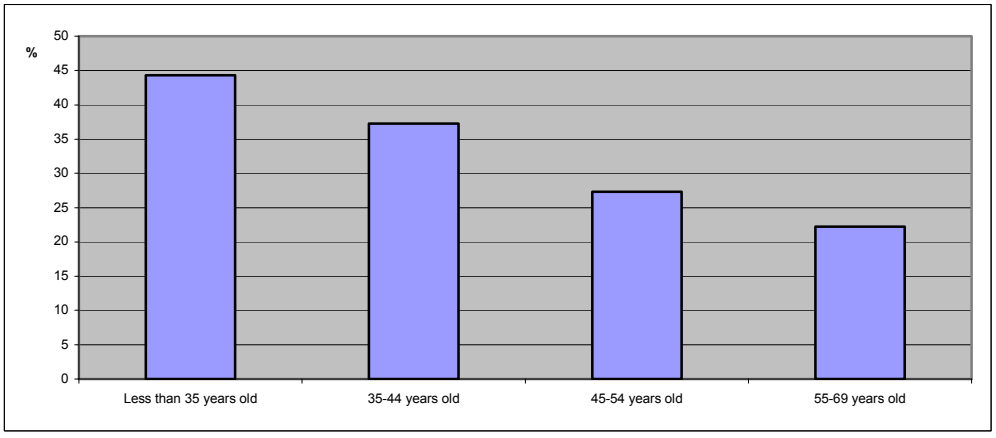
Figure 2. Doctorate holders by age class, average 2004-2006



Most doctorate holders are men

On average, 30 percent of the doctorate holders are women. However, there is a clear age effect: 44 percent of all doctorate holders younger than 35 are women compared with only 22 percent of those aged 55 and older.

Figure 3. Percentage of female doctorate holders by age class, average 2004-2006



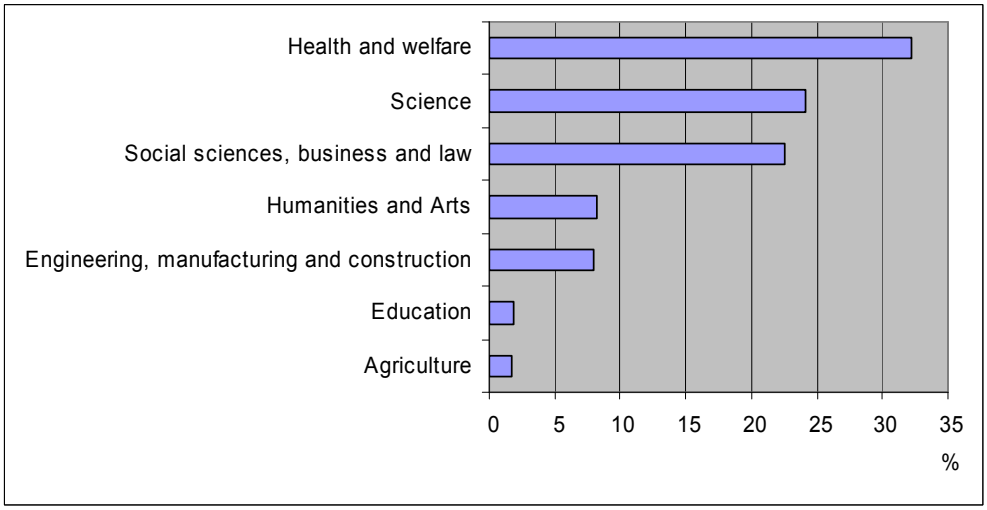
Almost all doctorate holders born in the Netherlands

Only 6 thousand doctorate holders were born outside the Netherlands. 3 thousand of these were born in other EU countries and 2 thousand in Asian countries. Only 2 thousand doctorate holders did not have the Dutch nationality.

Health and welfare most popular field of study

Almost one third of the doctorate holders have a doctorate in the field of health and welfare. One quarter have a doctorate in science (life sciences, physical sciences, mathematics and statistics and computing) and another quarter in social sciences, business and law.

Figure 4. Percentage of doctorate holders by field of doctorate degree, average 2004-2006



Almost all doctorate holders are employed

89 percent of all doctorate holders were employed for at least one hour a week. If we include only doctorate holders in the potential labour force, i.e. those younger than 65, 92 percent are employed.

One in five doctorate holders were self-employed, of whom over half have a doctorate in health and welfare. 13 thousand out of 64 thousand employed doctorate holders worked as researchers.

3 Methods and data sources

Target population

The target population consists of all doctorate holders under the age of 70 living in the Netherlands in 2005, excluding those living in homes for the elderly and institutions (institutional population). A more specific target population is studied in tables ED4a and ED4b, namely all doctorate holders who had received their doctorate within the twelve months preceding the date of survey. Other specific groups studied are all doctorate holders who are employed (tables EMP4, EMP6a and EMP6b), employed as researchers (table EMP5a and EMP5b) or in paid employment (table EMP8).

Method

Various data sources were combined to compute the results. The main data source is the Labour Force Survey (LFS) which contains, among other things, information on education level and employment situation. At the moment, the LFS is the main data source available to identify doctorate holders.

In principle, all doctorate holders should be classified as ISCED level 6. Unfortunately, in a number of cases ISCED level was not correctly established for doctorate holders in the LFS. Therefore, an alternative method was used to identify a doctorate holder, which is an approximation of the ISCED level 6 definition. This method is described in more detail in chapter 4.

The LFS was enriched with information on demographic characteristics (such as age, nationality and country of birth) from the Longitudinal Municipal Population Register (MPR-L) and information on wages and work from the Social Statistics Database (SSD). Using data from the LFS in combination with data from the MPR-L and SSD, 17 of the 32 required tables can be filled. The MPR-L and the SSD are linked on a person-by-person basis to the LFS on the survey date.

To reduce the margin of error, a three-year average was calculated using the LFS 2004, 2005 and 2006. As not all of the required information on sector of employment and income was available for 2006, a two-year average was calculated for tables EMP5a, EMP5b, EMP6a, EMP6b and EMP8, using the LFS 2004 and 2005.

In chapter 5 we describe the strong and the weak points of this method, which we shall call the ‘average method’. We introduce two alternative methods to compute the results. Chapter 6 gives a recommendation on which method would be most suitable for use in future research.

Data sources

LFS

The LFS is a year round survey which covers the population aged 15 years and older resident in the Netherlands, excluding persons living in homes for the elderly and institutions. The survey collects data on some 120,000 respondents every year. This is the equivalent of 0.8 percent of the population of the Netherlands. The LFS asks mainly for information about prior and present education, the employment situation and household characteristics. In 2004, 2005 and 2006 together, there were 355,533 respondents to this survey, of whom 1,760 were doctorate holders.

MPR-L

The Municipal Population Register (MPR) is a computerised population register used by all municipalities in the Netherlands to record vital events and migration. It was introduced on 1 October 1994. In principle, all persons living in a municipality are registered in the MPR. The register includes information on date of birth, gender, country of birth, address, household composition, immigration and emigration. The MPR-L is a longitudinal register, composed of all entries in the MPR from 1 January 1995.

SSD

The SSD is a database compiled by Statistics Netherlands which combines data from a variety of sources. In the SSD, information on persons from registers and surveys is integrated and made consistent. We used four different datasets from the SSD, namely SSD-jobs, SSD-self-employed, SSD-work abroad and SSD-other work.

SSD-jobs contains information about all jobs in the Netherlands. The main source for this information is the Employee Insurance Schemes Registration System (EIS-Employees), which contains information about social insurances of employees. Additional information is taken from the FIBASE register which contains tax information and the Survey on Employment and Earnings (SEE), a large scale survey containing information about jobs and wages

The datasets SSD-self-employed, SSD-work abroad and SSD-other work contain data per person on profit from, among other things, own business, wages from work done abroad, and wages from other sources.

Weighting and quality

Weighting the data

The LFS is a sample survey. To compute results that are representative for the entire target population, the totals must be weighted. For the LFS weights have been calculated that ensure that the weighted population is consistent with the average number of persons aged 15 years and older in the Netherlands, excluding the institutional population. These weights also partly correct for selective non-response.

Quality of the results

As in every sample survey, the results are subject to a margin of error. Therefore, weighted totals based on 25 observations or fewer (equalling weighted totals around 1 thousand) are not published. The absolute totals in the tables are rounded off to the nearest thousand. Calculating percentages on absolute totals smaller than 10 thousand must be done with care. These percentages will have high margins of error.

4 Definitions and operationalisation

This chapter presents the definitions used in computing the tables, and how they were operationalised. The definition is the definition as given in the CDH project. The operationalisation is how they were used in practice in this study. For each variable, the data source used the variables in the data source and the variables in the dataset used for this study are also described. Where applicable, differences between the definition as asked in the CDH project and the operationalisation in this study are noted

Target population

The target population is defined using information from the LFS on highest completed level of education and information on the year the doctorate was awarded.

1. Doctorate holders in 2005	
Tables	All
Source	LFS
Definition	Persons who have ISCED level 6 as their highest level of education
Operationalisation	Doctorate holders are all persons who: – have ISCED level 5 or 6 as their highest completed level of education, and – have stated that they have completed a doctorate, or have given information on academic education they have completed which is classified as a doctorate, and – the time elapsed between former attained educational degrees and the doctorate degree is consistent with the time to complete a doctorate. The total number of doctorate holders in 2005 is estimated by taking the average number for 2004, 2005 and 2006 together.
Variable(s) in file	Doctorate holder
Classes in file	– yes – no

Remarks	As the level of education according to ISCED was not allocated correctly in the LFS for doctorate holders, the CDH definition could not be used. The definition was therefore operationalised as described, using several variables from the LFS, with the aim to approximate the CDH definition as close as possible.
Quality	Sufficient.

2. Recent doctorate recipients	
Tables	ED4a, ED4b
Source	LFS
Definition	Recent doctorate recipients are persons who attained their doctorate degree at any time within one year before the date of survey.
Operationalisation	Persons who received their doctorate within one year before the date of survey.
Variable(s) in file	Year of doctorate degree Month of doctorate degree
Classes in file	Self-evident
Publication variable(s)	Recent doctorate
Classes publication variable(s)	– yes – no
Remarks	For doctorate holders with two or more doctorates we used only information on the most recent doctorate.
Quality	Good.

Demographic characteristics

Demographic information is taken from the MPR-L.

3. Gender	
Tables	P1, P3, P6, ED4b, EMP1, EMP5b, EMP6a, EMP6b
Source	MPR-L
Definition	Self-evident
Operationalisation	Self-evident
Variable(s) in file	Gender

Classes in file	– men – women
Publication variable(s)	Gender
Classes publication variable(s)	– men – women
Remarks	
Quality	Good

4. Age	
Tables	P1, P4, P7, EMP2b
Source	MPR-L
Definition	Self-evident
Operationalisation	Age on date of survey
Variable(s) in file	Date of birth
Classes in file	Self-evident
Publication variable(s)	Age
Classes publication variable(s)	– 15-34 years old – 35-44 years old – 45-54 years old – 55-64 years old – 65-69 years old – 70 years old or older
Remarks	
Quality	Good

5. Country of birth	
Tables	P2, P6, P7, P8
Source	MPR-L
Definition	Country in which the person was born.
Operationalisation	Self-evident
Variable(s) in file	Country of birth
Classes in file	Self-evident
Publication variable(s)	Country of birth, Netherlands Continent of birth

	Country of birth, EU
	Country of birth, OECD
Classes publication variable(s)	*Country of birth, Netherlands*
	– born in the Netherlands
	– not born in the Netherlands
	Continent of birth
	– born in Africa
	– born in North America
	– born in Central and South America
	– born in Asia
	– born in Europe
	– born in Oceania
	Country of birth, EU
	– born in EU country
	– born in non-EU country
	Country of birth, OECD
	– born in OECD country
	– born in non-OECD-country
Remarks	
Quality	Good.

6.Citizenship	
Tables	P2, P3, P4, P5, IMOB1, IMOB2
Source	MPR-L
Definition	Citizens are persons with the legal nationality of a country. Citizens of the Netherlands by birth are citizens of the Netherlands of whom at least one parent had the Dutch nationality at the moment of birth. Citizens of the Netherlands by naturalisation are Dutch citizens, but not by birth.

Operationalisation	Persons are a citizen of a country if they have the nationality of that country as their first nationality on the date of survey. As no information on the nationality of the parents was readily available in the MPR-L, the distinction between citizen by birth and citizen by naturalisation could not be made. See chapter 5 for more information.
Variable(s) in file	First nationality
Classes in file	Self-evident
Publication variable(s)	Country of citizenship, Netherlands Continent of citizenship Country of citizenship, EU Country of citizenship, OECD
Classes publication variable(s)	*Country of citizenship, Netherlands* – Dutch citizens – citizens of other countries *Continent of citizenship* – African citizens – North-American citizens – Central- and South-American citizens – Asian citizens – European citizens – Oceanian citizens *Country of citizenship, EU* – citizens of EU countries – citizens of non-EU countries *Country of citizenship, OECD* – citizens of OECD countries – citizens of non-OECD countries
Remarks	
Quality	Good

7. Residential status	
Tables	P3, P4, P5, P6, P7, P8, IMOB1, IMOB2
Source	MPR-L
Definition	Foreign citizens are a permanent resident of a country if they are staying in the country for an indefinite period.
Operationalisation	Foreign citizens are a permanent resident of the Netherlands if they have a visa or permit for an indefinite period on the date of survey. As persons from EU countries do not need a visa or permit, they have been categorised separately.
Variable(s) in file	Permit status
Classes in file	48 different classes
Publication variable(s)	Residential status

Classes publication variable(s)	– Dutch citizens
	– foreign citizens
	  – permanent residents
	  – non-permanent residents
	  – citizens of EU countries

Remarks	
Quality	Mediocre. The information on residence permit is not always correctly registered in the MPR-L, and the distinction between permanent and non-permanent is not made for every permit.

8. Length of stay in the country	
Tables	IMOB1
Source	MPR-L
Definition	Duration of stay in the Netherlands
Operationalisation	Length of consecutive period before date of survey in which person was registered in the MPR-L.
Variable(s) in file	Begin date and end date record
Classes in file	Self-evident
Publication variable(s)	Length of stay
Classes publication variable(s)	– less than 5 years

	– 5 - < 9 years – 9 years or more
Remarks	In the pre-defined CHD-tables the highest two classes requested are 5 to 10 years and 10 years or more. Since the MPR-L information is only available from 1 January 1995 and we use data from the LFS 2004 and onward, we changed the classes to 5 to 9 years and 9 years or more.
Quality	Good

9. Previous country of residence	
Tables	IMOB2
Source	MPR-L
Definition	Country person stayed in before coming to the Netherlands.
Operationalisation	Country registered in the MPR-L as previous country of residence before the date of survey.
Variable(s) in file	Previous country of residence
Classes in file	Self-evident
Publication variable(s)	Previous continent of residence Previous country of residence, EU Previous country of residence, OECD
Classes publication variable(s)	*Previous continent of residence* – not applicable – Africa – North-America – Central- or South-America – Asia – Europe – Oceania *Previous country of residence, EU* – not applicable – EU country – non-EU country

	Previous country of residence, OECD – not applicable – OECD country – non-OECD country
Remarks	Previous country of residence is only defined for doctorate holders who moved into the Netherlands in the last nine years since only information from 1 January 1995 and onwards is available in the MPR-L.
Quality	Good

Information on doctorate

Information on the doctorate is taken from the LFS. If a doctorate holder has two or more doctorates, the information on the most recent doctorate was used.

10. Field of doctorate degree	
Tables	P5, P8, ED4a, EMP2a, EMP4, EMP5a, EMP6a, EMP6b
Source	LFS
Definition	The field of study in which the doctorate degree was completed.
Operationalisation	ISCED field of study as specified in the LFS.
Variable(s) in file	ISCED field of study, 3 digit
Classes in file	27 different classes
Publication variable(s)	ISCED field of study - 1 digit and 2 digit
Classes publication variable(s)	*ISCED field of study, 1 digit* – education – humanities and arts – social sciences, business and law – science (life sciences, physical sciences, mathematics and statistics and computing) – engineering, manufacturing and construction – agriculture – health and welfare – services

	ISCED field of study, 2 digit Subdivision of *ISCED field of study, 1 digit* into 23 classes.
Remarks	The required classification is the OECD field of science classification. This classification is not readily available at Statistics Netherlands. Therefore, in this feasibility study, the ISCED field of study was used.
Quality	Good

11. Year of graduation	
Tables	EMP1
Source	LFS
Definition	Year of attaining the doctorate degree
Operationalisation	Year of graduation.
Variable(s) in file	Year of doctorate degree
Classes in file	Self-evident
Publication variable(s)	Year of doctorate degree
Classes publication variable(s)	– before 1950 – 1950-1959 – 1960-1969 – 1970-1979 – 1980-1989 – 1990-1999 – from 2000 onwards
Remarks	
Quality	Good

12. Age at graduation	
Tables	ED4a, ED4b
Source	LFS and MPR-L
Definition	Age of person at the moment of attaining the doctorate degree.
Operationalisation	Self-evident
Variable(s) in file	Year and month of doctorate degree (LFS) Date of birth (MPR-L)

Classes in file	Self-evident
Publication variable(s)	Age at graduation
Remarks	
Quality	Only for doctorate holders who obtained there degree within three years before date of survey, the month of attaining the doctorate degree is known. For other cases, the month was set to June.

13. Time to completion of doctorate	
Tables	ED4a, ED4b
Source	LFS
Definition	Time to completion is the number of months elapsed between the start of the doctorate study and the awarding of the degree.
Operationalisation	Self-evident
Variable(s) in file	Year and month of starting doctorate degree
	Year and month of attaining doctorate degree
Classes in file	Self-evident
Publication variable(s)	Time to completion of graduation (months)
Classes publication variable(s)	Average and median
Remarks	The starting date is only available for persons younger than 36 on the date of survey. For persons aged 36 or older the time to completion of graduation cannot be established.
Quality	Only for doctorate holders who obtained there degree within three years before date of survey, the month of attaining the doctorate degree is known. For other cases, the month was set to June.

Information on employment

Information on weekly working hours, the categorisation into employee/self-employed and temporary/permanent employment, and information on occupation is taken from the LFS. Information on wages and income, sector of employment and the length of stay with the same employer is taken from the SSD.

14. Employment status	
Tables	EMP1, EMP2a, EMP2b
Source	LFS
Definition	Categorisation of doctorate holders into employed, unemployed and economically inactive. Categorisation of the employed doctorate holders into: – paid employment versus self-employed – permanent versus temporary employment – weekly working hours (30 hours or more versus less than 30 hours)
Operationalisation	All characteristics are established according to the information in the LFS on the date of survey. *Employed* Persons are employed if they work for at least 1 hour a week. *Unemployed* Persons are unemployed if they do not work but: – are willing to work at least 1 hour a week, are available to do so and are actively seeking work for at least 1 hour a week, or; – have accepted work for at least 1 hour a week. *Economically inactive* All those not employed or unemployed *Paid employment versus self-employed* Employees are persons who are in paid employment. Persons who have their own business, work in the business of a relative or are doing freelance work are self-employed. *Permanent versus temporary employment*

	Persons who have a contract for an indefinite period are permanently employed. In all other cases they are temporarily employed. Only for persons in paid employment the distinction between permanent and temporary employment is made.
Variable(s) in file	Labour force Hours worked Work relation Contract
Classes in file	*Labour force* – employed – unemployed – inactive *Hours worked* – self-evident *Work relation* – employee – own business – works in company owned by relatives – freelancer *Contract* – permanent – not permanent – partly permanent, partly not permanent
Publication variable(s)	Labour force Work relation Contract Hours worked
Classes publication variable(s)	*Labour force* – employed – unemployed – inactive

	Work relation – paid employment – self-employed *Contract* – permanent employment – temporary employment *Hours worked* – works for 30 hours or more a week – works for less than 30 hours a week
Remarks	A person may work in more than one job. The classification is based on the job this person gives as his or her first job.
Quality	Good

15. Occupation	
Tables	EMP4
Source	LFS
Definition	Occupation as classified following the International Standard Classification of Occupations, revised 1988 (ISCO-88).
Operationalisation	Self-evident
Variable(s) in file	ISCO_COM
Classes in file	5-digit standard ISCO-88.
Publication variable(s)	Occupation

Classes publication variable(s)	– legislators, senior officials and managers
	– professionals
	  – physical mathematical and engineering science
	  – life science and health professionals
	  – teaching professionals
	  – other professionals
	– other occupations

Remarks	A person may work in more than one job. The classification is based on the job this person gives as his or her first job.
Quality	Good

16. Sector of employment	
Tables	EMP5a, EMP5b, EMP6a, EMP6b, EMP8
Source	SSD jobs
Definition	Sector in which person works.
Operationalisation	The classification of the enterprise into sectors according to the SBI classification (the standard industrial classification as used by Statistics Netherlands). The following classification has been used: SBI 75 - government sector SBI 803 - higher education sector SBI 801, 802, 804 - other education sector Other SBI categories - other sectors
Variable(s) in file	SBI
Classes in file	5 digit SBI
Publication variable(s)	Sector of employment
Classes publication variable(s)	– government sector – higher education sector – other education sector – other sectors
Remarks	Information on sector of employment is only available for persons in paid employment. In the SBI enterprises are classified by economic activity. This is not the same as sector. However, at the level of aggregation as published, the differences are small. The division between business enterprise and private non-profit sector cannot be made based on the SBI. This problem is described in more detail in chapter 5.
Quality	Good

17. Employed as researcher

Tables	EMP5a, EMP5b, EMP6a, EMP6b, EMP8
Source	LFS
Definition	Researchers are professionals engaged in the conception or creation of new knowledge, products, processes, methods and systems and also in the management of the projects concerned.
Operationalisation	Persons are classified as a researcher if their work involves research activities as defined in the ISCO-88.
Variable(s) in file	ISCO_COM
Classes in file	5-digit standard ISCO-88
Publication variable(s)	Researcher
Classes publication variable(s)	– employed as researcher – not employed as researcher
Remarks	A person may work in more than one job. The classification is based on the job this person gives as his or her first job.
Quality	Good

18. Employed as postdoc	
Tables	EMP5a, EMP5b, EMP6a, EMP6b
Source	None available

19. Length of stay with same employer	
Tables	EMP8
Source	SSD
Definition	Duration in years of job contract with current employer
Operationalisation	Number of years between survey date and date of first contract with the current employer.
Variable(s) in file	Date of first contract with employer
Classes in file	Self-evident
Publication variable(s)	Length of stay with same employer

Classes publication variable(s)	– less than 1 year – 1 - < 2 years – 2 - < 3 years – 3 - < 4 years – 4 - < 5 years – 5 - < 10 years – 10 years or more
Remarks	
Quality	Good

20. Gross annual earnings	
Tables	EMP6b
Source	SSD
Definition	Remuneration in cash and in kind paid in one year before any tax deductions and social-security contributions payable by wage earners and retained by the employer.
Operationalisation	Total of fiscal wage and profit from own enterprise during the year of survey. The SSD does not provide information about gross annual earnings. The annual fiscal wage was used instead. The most important difference between these fiscal wage and gross annual earnings is the absence of pension contributions in the fiscal wage.
Variable(s) in file	Fiscal wage (SSD-jobs) Profit (SSD-self-employed) Wage (SSD-other work and SSD-work abroad)
Classes in file	Self-evident
Publication variable(s)	Total income from work
Classes publication variable(s)	Self-evident
Remarks	The operationalisation does not include payment in kind.
Quality	Good

5 Problems and solutions

Using the average method, we were able to compute statistically reliable results for all tables in the study. For most tables (P1-P8, IMOB1 and IMOB2, ED4a, ED4b, EMP1, EMP2a, EMP2b and EMP4) a three-year average over 2004, 2005 and 2006 was computed. For five tables (EMP5a, EMP5b, EMP6a, EMP6b and EMP8) a two-year average over 2004 and 2005 was computed. In tables P3, P6, ED4a, ED4b, EMP1, EMP2a, EMP4, EMP5a, EMP5b, EMP6a, EMP6b and IMOB2 the results are given at a higher aggregation level than specified in the pre-defined tables.

As pointed out briefly in previous chapters, we came across several problems during this feasibility study. In general these problems are small and for most a solution is available. In this chapter, we start by explaining why we need to use more than one year of the LFS. Subsequently, we describe the problems with using the average method and present two alternative methods. Chapter 6 gives a recommendation for a method to be used in future.

Multiple years of the LFS

At the moment, the only way to identify doctorate holders is from information in the LFS. As this is a sample survey, and as the number of doctorate holders in the Netherlands is quite small (roughly 80 thousand), the cell count in detailed classifications is too low to compute reliable results. However, the cell count is enough to publish results at a higher aggregation level that still provides some information. Another related problem is that the relative margin of error is high for these low cell counts. By using more than one year of the LFS, and thus increasing the sample size, we reduce the margin of error.

In principle, it would be best to use as many years as possible. However, the method of establishing the level of education changed in 2004. The number of doctorate holders calculated according to the LFS before 2004 is lower than the number from 2004 and onwards (table 1). Based on other sources, the totals calculated based on the years before 2004 seem to be too low to be reliable. More time is needed to study whether it is possible to use the years before 2004.

Table 1. Number of doctorate holders, 2000-2006

2000	2001	2002	2003	2004	2005	2006
x 1 000						
49	46	57	54	74	89	78

Identification of doctorate holders

The definition of a doctorate holder as given in the CDH survey is ‘a person who has attained ISCED-level 6’. Unfortunately, in the LFS ISCED level is not always correctly established for persons who have attained a doctorate. Therefore, we used

the alternative operationalisation. This alternative operationalisation is specifically made to be as similar to the ISCED-level 6 classification as possible.

Doctorate holders are all persons who:

- have ISCED level 5 or 6 as their highest completed level of education, and
- have stated that they have completed a doctorate, or have given information on academic education they have completed which is classified as a doctorate, and
- the time elapsed between former attained educational degrees and the doctorate degree is consistent with the time to complete a doctorate.

Average method

In this feasibility study we used the average method, calculating results for 2004, 2005 and 2006 (for most tables) or 2004 and 2005 (for tables EMP5a, EMP5b, EMP6a, EMP6b and EMP8). The average method calculates average totals over the years 2004, 2005 and 2006. The results are an estimation of the results for 2005.

One of the main advantages of using the average method is that information from the LFS can be used. Some information, for example whether a person is unemployed or economically inactive, is only available in the LFS.

A drawback of the average method is that if a large number of years is used, the results are less meaningful. For example, a ten-year average of doctorate holders by age and gender over 1995-2005 to estimate results in 2000, will differ substantially from the real results for 2000. Also, year on year changes will be more difficult to see in an average over years. Besides, as explained above only the years 2004 and more recent years of the LFS can be used reliably at the moment.

Identification method

In the identification method, the LFS is used only to identify doctorate holders and to establish when and in which field the doctorate was completed. All other information requested in the tables is taken from registers. For the identification of doctorate holders, multiple years of the LFS can be used. The other information can be taken from registers using a reference date. In this way, a total on a reference date can be calculated, while still using multiple years to increase the sample size. Thus only the sample increases and no information is lost if multiple years of LFS are used.

A drawback of this method is that information from the LFS that is time-dependent, for example information on whether someone works for 30 hours a week, cannot be used. As this information is currently not available in registers at Statistics Netherlands, the identification method cannot be used for tables which give information on these variables. This means that the identification method can only be used for tables P1-P8, IMOB1 and IMOB2.

Furthermore, as explained above, at the moment only years 2004 and later can be used to identify doctorate holders. Therefore the advantage of the identification method is irrelevant, as we are not yet able to use more than three years of LFS.

Register method

Another alternative research method is the use of a register of doctorate holders to identify doctorate holders. If a register is used, we can publish at every level of

detail. Of course, just as in the identification method, this means that we cannot use the method for the tables which request information only available in the LFS. Furthermore, at the moment no such register is available and we do not expect it to become available in the near future.

Method independent problems

Field of study

In the LFS field of study is classified according to the ISCED field of study classification. At the moment, no conversion to the OECD field of study classification (as requested in the pre-defined tables) is available. However, in the future a conversion scheme could be developed.

Citizen by birth

According to Dutch regulations, a person is a citizen by birth if he or she is a Dutch citizen and has/had at least one parent who was a Dutch citizen at the moment of birth. As this information was not readily available, this classification could not be made in this study. However, in principle it is possible to compute results for this variable using information from the MPR-L.

Residential status

The operationalisation we now use to distinguish between permanent and non-permanent residents is tentative. We use information from the MPR-L which describes under which regulation the person is registered with the Immigration and Naturalisation Service. For citizens from EU countries, no registration is required so no information is available on their residential status. Furthermore, the distinction between a definite or indefinite period is not made for every permit. Further study of this variable and the possible sources might improve this information.

Time to completion

In the LFS from 2004 onwards, only persons aged 35 and younger are asked to state the year and month in which they started their doctorate. All persons are asked for the year and month in which they received their doctorate. This means that no information on time to completion is available for persons aged 36 and older.

Sector of employment

In this study, SBI ’93 was used to establish sector of employment. As the SBI ’93 uses economic activity to classify enterprises, the resulting classification is not completely correct. SBI ’93 was used because information on sector is not yet available for all jobs. In the near future, when the ‘*polisadministratie*’ becomes available, information on sector will be available for all jobs. Also, SBI ’93 is only available from the SSD-jobs, thus only for employees, and not for the self-employed. This will not change when the ‘*polisadministratie*’ is available.

Postdoc

In this study we were not able to identify postdocs based on information from the LFS, MPR-L or SSD. A more detailed study of the LFS might suggest a solution for this problem.

6 Conclusions and recommendations

Conclusions

1. Based on a three-year average, statistically reliable results can and have been calculated for all tables except EMP5a, EMP5b, EMP6a, EMP6b and EMP8. For these three tables a two-year average was calculated. The required information on 2006 for these tables is not yet available at Statistics Netherlands. When SSD 2006 is available, a three-year average can be calculated.
2. For tables P3, P6, ED4a, ED4b, EMP1, EMP2a, EMP4, EMP5a, EMP5b, EMP6a, EMP 6b and IMOB2 the required level of detail cannot be published as the cell count is too low. In these cases, the results are published at a higher aggregation level.
3. At the moment, only years 2004 and later of the LFS can be used to identify doctorate holders. More study is needed to establish whether the years before 2004 could be used. This is relevant when using the identification method.
4. For the tables P1-P8, IMOB1 and IMOB2 totals on a reference date (identification method) instead of an average over years (average method) could be calculated. For the other tables only totals based on an average over years are possible.
5. Further study might improve the classification of residential status and sector of employment, and make it possible to distinguish between postdoc and not postdoc, and between citizen by birth and citizen by naturalisation.
6. It is not possible to establish the time to completion of the doctorate for persons older than 35.

Recommendations

In the future, the identification method will have advantages over the average method, as more years of LFS can be used. The register method will not be an option in the near future as no such register is available. Therefore, for P1- P8, IMOB1 and IMOB2 we recommend that the identification method will be used in future. For the other tables the average method is the best method available.

As long as a register is not available, for tables P3, P6, ED4a, ED4b, EMP1, EMP2a, EMP4, EMP5a, EMP5b, EMP6a, EMP6b and IMOB2 only results at a higher aggregation level can be published.

In a future project in 2008, the following could be done:

- Totals on reference date 1 December 2004, 2005 and 2006 for tables P1-P8, IMOB1 and IMOB2.
- Three-year averages for tables ED4, EMP1, EMP2a, EMP2b, EMP4, EMP5a, EMP5b, EMP6a and EMP6b over 2004, 2005 and 2006.
- For later years, the totals for year 200X-2 could be given in year 200X.

In a future project, time should be reserved for a more detailed examination of the use of pre-2004 LFS years, the identification of doctorate holders, classifications of residential status, sector of employment and the distinctions postdoc/not postdoc and citizen by birth/citizen by naturalisation.

7 Abbreviations and translations

Abbreviation in English	Description	Abbreviation in Dutch
CDH	International survey on Careers of Doctorate holders	**CDH**
EIS-Employees	Employee Insurance Schemes Registration System	**VZA**
EUROSTAT	Statistical Office of the European Union	**EUROSTAT**
ISCED 1997	International Standard Classification of Education	**ISCED 1997**
ISCO 1988	International Standard Classification of Occupations	**ISCO 1988**
LFS	Labour Force Survey	**EBB**
MPR	Municipal Population Register	**GBA**
MPR-L	Longitudinal Municipal Population Register	**GBA-BUS**
OECD	Organisation for Economic Co-operation and Development	**OECD**
OECD FOS	OECD Field of Science classification	**OECD FOS**
SEE	Survey on Employment and Earnings	**EWL**
SSD	Social Statistics Database	**SSB**
UIS	Unesco Institute for Statistics	**UIS**

Set of tables

Overview

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Table P2	Doctorate holders (15-69) by type of citizenship and country of birth, average 2004-2006
Table P3	Doctorate holders (15-69) by sex and country of citizenship, average 2004-2006
Table P4	Doctorate holders by citizenship, residential status and age class, average 2004-2006
Table P5	Doctorate holders (15-69) by citizenship, residential status and field of doctorate degree, average 2004-2006
Table P6	Doctorate holders (15-69) by sex and country of birth, average 2004-2006
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Table ED4a	Recent doctorate recipients (15-69): age at graduation and time to completion by field of doctorate degree, average 2004-2006
Table ED4b	Recent doctorate recipients (15-69): age at graduation and time to completion by sex, average 2004-2006
Table EMP1	Doctorate holders (15-69) by employment status and year of doctorate award, average 2004-2006
Table EMP2a	Doctorate holders (15-69) by employment status and field of doctorate degree, average 2004-2006
Table EMP2b	Doctorate holders by employment status and age, average 2004-2006
Table EMP4	Employed doctorate holders (15-69) by field of doctorate degree and occupation, average 2004-2006
Table EMP5a	Doctorate holders (15-69) employed as researchers by sector of employment and field of doctorate degree, average 2004-2005
Table EMP5b	Doctorate holders (15-69) employed as researchers by sector of employment and sex, average 2004-2005
Table EMP6a	Employed doctorate holders (15-69) by sector of employment, sex and field of doctorate degree, average 2004-2005
Table EMP6b	Median gross annual earnings of employed doctorate holders (15-69) by sector of employment, sex and field of doctorate degree, average 2004-2005
Table EMP8	Doctorate holders (15-69) in paid employment by sector of employment and length of stay with same employer, average 2004-2005
Table IMOB1	Doctorate holders (15-69) by citizenship, residential status and length of stay in the country, average 2004-2006
Table IMOB2	Doctorate holders (15-69) by citizenship, residential status and previous country of residence, average 2004-2006

Table P1
Doctorate holders by sex and age class, average 2004-2006

	Total	Men	Women
	x 1 000		
Total	80	56	24
Less than 35 years old	13	7	6
35-44 years old	22	14	8
45-54 years old	20	14	5
55-64 years old	14	11	3
65-69 years old	3	3	.
70 years old or more	8	7	.

Table P2
Doctorate holders (15-69) by type of citizenship and country of birth, average 2004-2006

	Total[1)]	Dutch citizens	Foreign citizens	
			Total	o.w. citizens of EU countries
	x 1 000			
Total[1)]	72	70	2	2
Born in the Netherlands	66	66	.	.
Foreign born	6	4	2	1

1) The category 'Unknown' is suppressed, therefore the sum of the subtotals does not always equal the total.

Table P3
Doctorate holders (15-69) by sex and country of citizenship, average 2004-2006

	Total	Men	Women
	x 1 000		
Total[1)]	72	49	23
Dutch citizens			
Total	70	48	23
Foreign citizens			
Total[1)]	2	.	.
Permanent residents	.	.	.
Non-permanent residents	.	.	.
Citizens of EU countries	2	.	.
African citizens	.	.	.
North-American citizens	.	.	.
Central- and South-American citizens	.	.	.
Asian citizens	.	.	.
European citizens	2	.	.
Oceanian citizens	.	.	.
Citizens of EU countries	2	.	.
Citizens of non EU countries	.	.	.
Citizens of OECD countries	2	.	.
Citizens of non OECD countries	.	.	.

1) The category 'Unknown' is suppressed, therefore the sum of the subtotals does not always equal the total.

Table P4
Doctorate holders by citizenship, residential status and age class, average 2004-2006

	Total[1)]	Dutch citizens	Foreign citizens			
			Total[1)]	Permanent residents	Non-permanent residents	Citizens of EU countries
	x 1 000					
Total	80	78	2	.	.	2
Less than 35 years old	13	12	.	.	.	.
35-44 years old	22	21	.	.	.	.
45-54 years old	20	19	.	.	.	.
55-64 years old	14	14	.	.	.	.
65-69 years old	3	3	.	.	.	.
70 years old or more	8	8	.	.	.	.

1) The category 'Unknown' is suppressed, therefore the sum of the subtotals does not always equal the total.

Table P5
Doctorate holders (15-69) by citizenship, residential status and field of doctorate degree, average 2004-2006

	Total[1)]	Dutch citizens	Foreign citizens			
			Total[1)]	Permanent residents	Non-permanent residents	Citizens of EU countries
	x 1 000					
Total[1)]	72	70	2	.	.	2
Education	1	1	.	.	.	.
Teacher training and education science	1	1	.	.	.	.
Humanities and Arts	6	6	.	.	.	.
Arts	.	.	.	.	.	.
Humanities	5	5	.	.	.	.
Social sciences, business and law	16	16	.	.	.	.
Social and behavioural science	7	7	.	.	.	.
Business and administration	5	5	.	.	.	.
Law	4	4	.	.	.	.
Science	17	17	.	.	.	.
Life sciences	4	4	.	.	.	.
Physical sciences	10	10	.	.	.	.
Mathematics and statistics	2	1	.	.	.	.
Computing	.	.	.	.	.	.
Sciences, other	.	.	.	.	.	.
Engineering, manufacturing and construction	6	6	.	.	.	.
Engineering and engineering trades	4	4	.	.	.	.
Manufacturing and processing	.	.	.	.	.	.
Architecture and building	2	1	.	.	.	.
Agriculture	1	1	.	.	.	.
Agriculture, forestry and fishery	1	1	.	.	.	.
Veterinary	.	.	.	.	.	.
Health and welfare	23	23	.	.	.	.
Health	21	21	.	.	.	.
Social services	2	2	.	.	.	.
Services	.	.	.	.	.	.
Personal services	.	.	.	.	.	.
Environmental protection	.	.	.	.	.	.
Security services	.	.	.	.	.	.

1) The category 'Unknown' is suppressed, therefore the sum of the subtotals does not always equal the total.

Table P6
Doctorate holders (15-69) by sex and country of birth, average 2004-2006

	Total	Men	Women
	x 1 000		
Total[1)]	72	49	23
Born in the Netherlands			
Total[1)]	66	45	21
Foreign born			
Total[1)]	6	4	2
Permanent residents	.	.	.
Non-permanent residents	.	.	.
Citizens of EU countries	6	4	2
Born in Africa	.	.	.
Born in North-America	.	.	.
Born in Central- or South-America	.	.	.
Born in Asia	2	1	.
Born in Europe	3	2	.
Born in Oceania	.	.	.
Born in EU country	3	2	.
Born in non EU country	4	2	1
Born in OECD country	3	2	.
Born in non OECD country	4	2	1

1) The category 'Unknown' is suppressed, therefore the sum of the subtotals does not always equal the total.

Table P7
Doctorate holders by country of birth, residential status and age class, average 2004-2006

	Total[1)]	Born in the Netherlands	Foreign born			
			Total[1)]	Permanent residents	Non-permanent residents	Citizens of EU countries
	x 1 000					
Total	80	72	8	.	.	8
Less than 35 years old	13	11	.	.	.	.
35-44 years old	22	20	2	.	.	2
45-54 years old	20	18	2	.	.	2
55-64 years old	14	13	.	.	.	.
65-69 years old	3	3	.	.	.	.
70 years old or more	8	6	.	.	.	.

1) The category 'Unknown' is suppressed, therefore the sum of the subtotals does not always equal the total.

Table P8
Doctorate holders (15-69) by country of birth, residential status and field of doctorate degree, average 2004-2006

	Total[1]	Born in the Netherlands	Foreign born			
			Total[1]	Permanent residents [2]	Non-permanent residents [2]	Citizens of EU countries [3]
	x 1 000					
Total[1]	72	66	6	.	.	6
Education	1	1	.	.	.	.
Teacher training and education science	1	1	.	.	.	.
Humanities and Arts	6	5	.	.	.	.
Arts	.	.	.	.	.	.
Humanities	5	5	.	.	.	.
Social sciences, business and law	16	15	1	.	.	1
Social and behavioural science	7	7	.	.	.	.
Business and administration	5	5	.	.	.	.
Law	4	3	.	.	.	.
Science	17	16	2	.	.	1
Life sciences	4	4	.	.	.	.
Physical sciences	10	9	.	.	.	.
Mathematics and statistics	2	1	.	.	.	.
Computing	.	.	.	.	.	.
Sciences, other	.	.	.	.	.	.
Engineering, manufacturing and construction	6	5	.	.	.	.
Engineering and engineering trades	4	4	.	.	.	.
Manufacturing and processing	.	.	.	.	.	.
Architecture and building	2	1	.	.	.	.
Agriculture	1	1	.	.	.	.
Agriculture, forestry and fishery	1	1	.	.	.	.
Veterinary	.	.	.	.	.	.
Health and welfare	23	21	2	.	.	2
Health	21	19	.	.	.	.
Social services	2	2	.	.	.	.
Services	.	.	.	.	.	.
Personal services	.	.	.	.	.	.
Environmental protection	.	.	.	.	.	.
Security services	.	.	.	.	.	.

1) The category 'Unknown' is suppressed, therefore the sum of the subtotals does not always equal the total.
2) Only non-EU citizens
3) Including Dutch citizens

Table ED4a
Recent doctorate recipients (15-69): age at graduation and time to completion by field of doctorate degree, average 2004-2006

	Total	Age at graduation		Time to completion [2]	
		Average	Median	Average	Median
	x 1 000	*years*		*months*	
Total[1]	5	33	31	70	62
Education	.	.	.	.	.
Humanities and Arts	.	.	.	.	.
Social sciences, business and law	2	32	29	.	.
Science	.	.	.	.	.
Engineering, manufacturing and construction	.	.	.	.	.
Agriculture	.	.	.	.	.
Health and welfare	2	34	31	.	.
Services	.	.	.	.	.

1) The category 'Unknown' is suppressed, therefore the sum of the subtotals does not always equal the total.
2) Time to completion was only calculated for persons aged 35 or younger.

Table ED4b
Recent doctorate recipients (15-69): age at graduation and time to completion by sex, average 2004-2006

	Total	Age at graduation		Time to completion [1]	
		Average	Median	Average	Median
	x 1 000	*years*		*months*	
Total	5	33	31	70	62
Men	3	33	31	74	65
Women	2	32	30	65	53

1) Time to completion was only calculated for persons aged 35 or younger.

Table EMP1
Doctorate holders (15-69) by employment status and year of doctorate award, average 2004-2006

	Total	Employed							Unemployed	Inactive
		Total[1]	o.w.		o.w.		o.w.			
			Paid employment	Self-employed	Permanent employment[2]	Temporary employment[2]	Works 30 hours or more a week	Works less than 30 hours a week		
	x 1 000									
Total[1]	72	64	53	11	46	7	56	9	.	7
Before 1970	2	.	.	.	.	.	.	.	.	.
1970-1979	8	6	4	2	4	.	4	1	.	2
1980-1989	16	14	11	3	11	.	12	2	.	2
1990-1999	26	24	20	4	18	2	21	3	.	.
From 2000 onwards	21	19	17	2	13	4	17	2	.	.
Men										
Total[1]	49	44	35	8	31	4	41	3	.	5
Before 1970	2	.	.	.	.	.	.	.	.	.
1970-1979	7	5	3	2	3	.	4	1	.	2
1980-1989	12	11	9	2	9	.	11	.	.	.
1990-1999	16	16	13	3	12	.	15	.	.	.
From 2000 onwards	11	11	9	1	7	2	10	.	.	.
Women										
Total[1]	23	21	18	3	15	3	15	6	.	2
Before 1970	.	.	.	.	.	.	.	.	.	.
1970-1979	.	.	.	.	.	.	.	.	.	.
1980-1989	4	3	2	.	2	.	2	.	.	.
1990-1999	9	9	7	1	6	.	6	3	.	.
From 2000 onwards	9	9	8	.	6	2	7	2	.	.

1) The category 'Unknown' is suppressed, therefore the sum of the subtotals does not always equal the total.
2) Only doctorate holders in paid employment are included.

Table EMP2a
Doctorate holders (15-69) by employment status and field of doctorate degree, average 2004-2006

	Total	Employed							Unemployed	Inactive
		Total[1)]	o.w.		o.w.		o.w.			
			Paid employment	Self-employed	Permanent employment[2)]	Temporary employment[2)]	Works 30 hours or more a week	Works less than 30 hours a week		
	x 1 000									
Total[1)]	72	64	53	11	46	7	56	9	.	7
Education	1	1	.	.	.	.	.	.	.	.
Humanities and Arts	6	5	5	.	4	.	4	1	.	.
Social sciences, business and law	16	15	13	2	11	.	13	2	.	.
Science	17	15	14	.	12	2	13	1	.	2
Engineering, manufacturing and construction	6	5	.	.	3	.	4	.	.	.
Agriculture	1	1	.	.	.	.	.	.	.	.
Health and welfare	23	21	15	6	13	2	18	3	.	2
Services	.	.	.	.	.	.	.	.	.	.

1) The category 'Unknown' is suppressed, therefore the sum of the subtotals does not always equal the total.
2) Only doctorate holders in paid employment are included.

Table EMP2b
Doctorate holders by employment status and age, average 2004-2006

	Total	Employed							Unemployed	Inactive
		Total[1)]	o.w.		o.w.		o.w.			
			Paid employment	Self-employed	Permanent employment[2)]	Temporary employment[2)]	Works 30 hours or more a week	Works less than 30 hours a week		
	x 1 000									
Total	80	65	53	12	46	7	56	9	.	14
Less than 35 years old	13	12	11	.	8	4	11	.	.	.
35-44 years old	22	21	18	3	16	2	19	2	.	.
45-54 years old	20	19	15	4	14	.	16	2	.	.
55-64 years old	14	12	8	3	8	.	9	3	.	3
65-69 years old	3	.	.	.	.	.	.	.	.	3
70 years old or more	8	.	.	.	.	.	.	.	.	7

1) The category 'Unknown' is suppressed, therefore the sum of the subtotals does not always equal the total.
2) Only doctorate holders in paid employment are included.

Table EMP4
Employed doctorate holders (15-69) by field of doctorate degree and occupation, average 2004-2006

	Total[1)]	Education	Humanities and Arts	Social sciences, business and law	Science	Engineering, manufacturing and construction	Agriculture	Health and welfare	Services
	x 1 000								
Total[1)]	64	1	5	15	15	5	1	21	.
Legislators, senior officals and managers	7	.	.	2	3	.	.	1	.
Professionals	45	.	4	10	9	3	.	18	.
Physical, mathematical and engineering science professionals	8	.	.	2	4	2	.	.	.
Life science and health professionals	17	.	.	.	.	.	.	15	.
Teaching professionals	11	.	2	3	4	.	.	1	.
Other professionals	9	.	1	5	.	.	.	1	.
Other occupations	12	.	.	3	3	1	.	2	.

1) The category 'Unknown' is suppressed, therefore the sum of the subtotals does not always equal the total.

Table EMP5a
Doctorate holders (15-69) employed as researchers by sector of employment and field of doctorate degree, average 2004-2005

	Total[1)]	Government sector	Higher education sector	Other education sector	Other sectors
	x 1 000				
Total[1)]	13	.	3	.	8
Education	.	.	.	.	.
Humanities and Arts	.	.	.	.	.
Social sciences, business and law	3	.	.	.	2
Science	5	.	.	.	3
Engineering, manufacturing and construction	.	.	.	.	.
Agriculture	.	.	.	.	.
Health and welfare	2	.	.	.	2
Services	.	.	.	.	.

1) The category 'Unknown' is suppressed, therefore the sum of the subtotals does not always equal the total.

Table EMP5b
Doctorate holders (15-69) employed as researchers by sector of employment and sex, average 2004-2005

	Total[1)]	Government sector	Higher education sector	Other education sector	Other sectors
	x 1 000				
Total	13	.	3	.	8
Men	9	.	3	.	6
Women	4	.	.	.	2

1) The category 'Unknown' is suppressed, therefore the sum of the subtotals does not always equal the total.

Table EMP6a
Employed doctorate holders (15-69) by sector of employment, sex and field of doctorate degree, average 2004-2005

	Total	Employed as resarcher					Not employed as researcher				
		Total[1)]	Government sector	Higher education sector	Other education sector	Other sectors	Total[1)]	Government sector	Higher education sector	Other education sector	Other sectors
	x 1 000										
Total[1)]	64	13	.	3	.	8	52	4	8	.	28
Education	.	.	.	.	.	.	.	.	.	.	.
Humanities and Arts	6	.	.	.	.	.	5	.	.	.	.
Social sciences, business and law	16	3	.	.	.	2	13	2	3	.	6
Science	14	5	.	.	.	3	10	.	3	.	5
Engineering, manufacturing and construction	5	.	.	.	.	.	4	.	.	.	3
Agriculture	1	.	.	.	.	.	.	.	.	.	.
Health and welfare	19	2	.	.	.	2	17	.	.	.	11
Services	.	.	.	.	.	.	.	.	.	.	.
Men											
Total[1)]	44	9	.	3	.	6	35	3	6	.	19
Education	.	.	.	.	.	.	.	.	.	.	.
Humanities and Arts	4	.	.	.	.	.	3	.	.	.	.
Social sciences, business and law	10	.	.	.	.	.	9	.	2	.	4
Science	12	4	.	.	.	2	8	.	2	.	4
Engineering, manufacturing and construction	4	.	.	.	.	.	3	.	.	.	3
Agriculture	.	.	.	.	.	.	.	.	.	.	.
Health and welfare	11	.	.	.	.	.	10	.	.	.	7
Services	.	.	.	.	.	.	.	.	.	.	.
Women											
Total[1)]	21	4	.	.	.	2	17	.	3	.	9
Education	.	.	.	.	.	.	.	.	.	.	.
Humanities and Arts	2	.	.	.	.	.	2	.	.	.	.
Social sciences, business and law	6	.	.	.	.	.	4	.	.	.	2
Science	3	.	.	.	.	.	2	.	.	.	.
Engineering, manufacturing and construction	.	.	.	.	.	.	.	.	.	.	.
Agriculture	.	.	.	.	.	.	.	.	.	.	.
Health and welfare	8	.	.	.	.	.	7	.	.	.	5
Services	.	.	.	.	.	.	.	.	.	.	.

1) The category 'Unknown' is suppressed, therefore the sum of the subtotals does not always equal the total.

Table EMP6b
Median gross annual earnings of employed doctorate holders (15-69) by sector of employment, sex and field of doctorate degree, average 2004-2005

	Total	Employed as resarcher					Not employed as researcher				
		Total	Government sector	Higher education sector	Other education sector	Other sectors	Total	Government sector	Higher education sector	Other education sector	Other sectors
	x 1 000 euro										
Total	53	47	.	51	.	48	55	56	48	.	56
Education	.	.	.	.	.	.	.	.	.	.	.
Humanities and Arts	39	.	.	.	.	.	36	.	.	.	.
Social sciences, business and law	52	44	.	.	.	43	54	70	48	.	54
Science	51	50	.	.	.	48	54	.	59	.	55
Engineering, manufacturing and construction	59	.	.	.	.	.	61	.	.	.	61
Agriculture	50	.	.	.	.	.	.	.	.	.	.
Health and welfare	61	51	.	.	.	53	61	.	.	.	57
Services	.	.	.	.	.	.	.	.	.	.	.
Men											
Total	59	51	.	50	.	53	63	60	56	.	67
Education	.	.	.	.	.	.	.	.	.	.	.
Humanities and Arts	43	.	.	.	.	.	42	.	.	.	.
Social sciences, business and law	63	.	.	.	.	.	64	.	59	.	63
Science	56	53	.	.	.	55	57	.	61	.	63
Engineering, manufacturing and construction	65	.	.	.	.	.	67	.	.	.	67
Agriculture	.	.	.	.	.	.	.	.	.	.	.
Health and welfare	81	.	.	.	.	.	81	.	.	.	81
Services	.	.	.	.	.	.	.	.	.	.	.
Women											
Total	41	40	.	.	.	40	41	.	39	.	41
Education	.	.	.	.	.	.	.	.	.	.	.
Humanities and Arts	35	.	.	.	.	.	35	.	.	.	.
Social sciences, business and law	44	.	.	.	.	.	45	.	.	.	45
Science	43	.	.	.	.	.	41	.	.	.	.
Engineering, manufacturing and construction	.	.	.	.	.	.	.	.	.	.	.
Agriculture	.	.	.	.	.	.	.	.	.	.	.
Health and welfare	45	.	.	.	.	.	45	.	.	.	41
Services	.	.	.	.	.	.	.	.	.	.	.

Table EMP8
Doctorate holders (15-69) in paid employment by sector of employment and length of stay with same employer, average 2004-2005

	Total	Not employed as researcher	Employed as researcher				
			Total[1)]	Government sector	Higher education sector	Other education sector	Other sectors
	x 1 000						
Total[1)]	53	41	12	.	3	.	8
Less than 1 year	5	4	.	.	.	.	.
1 to < 2 years	5	4	.	.	.	.	.
2 to < 3 years	5	4	.	.	.	.	.
3 to < 4 years	5	4	.	.	.	.	.
4 to < 5 years	4	3	.	.	.	.	.
5 to < 10 years	14	10	3	.	.	.	2
10 years or more	14	11	3	.	2	.	2

1) The category 'Unknown' is suppressed, therefore the sum of the subtotals does not always equal the total.

Table IMOB1
Doctorate holders (15-69) by citizenship, residential status and length of stay in the country, average 2004-2006

	Total[1)]	Dutch citizens	Foreign citizens			
			Total[1)]	Permanent residents	Non-permanent residents	Citizens of EU countries
	x 1 000					
Total[1)]	72	70	2	.	.	2
Less than 5 years	1	1	.	.	.	.
5 -< 9 years	3	3	.	.	.	.
9 years or more	67	66	.	.	.	.

1) The category 'Unknown' is suppressed, therefore the sum of the subtotals does not always equal the total.

Table IMOB2

Doctorate holders (15-69) by citizenship, residential status and previous country of residence, average 2004-2006[1)]

	Total[2)]	Dutch citizens	Foreign citizens			
			Total[2)]	Permanent residents	Non-permanent residents	Citizens of EU countries
	x 1 000					
Total[2)]	72	70	2	.	.	.
Not applicable	66	65	.	.	.	.
Africa	.	.	.	.	.	.
North-America	.	.	.	.	.	.
Central- or South-America	.	.	.	.	.	.
Asia	.	.	.	.	.	.
Europe	3	2	.	.	.	.
Oceania	.	.	.	.	.	.
Not applicable	66	65	.	.	.	.
EU country	3	2	.	.	.	.
Non EU country	2	2	.	.	.	.
Not applicable	66	65	.	.	.	.
OECD country	4	3	.	.	.	.
Non OECD country	.	.	.	.	.	.

1) Previous country of residence was only calculated for persons who moved into the country within the last 9 years.
2) The category 'Unknown' is suppressed, therefore the sum of the subtotals does not always equal the total.

Centre for Policy Related Statistics

Statistics Netherlands collects information from individuals, companies and institutions and processes it into statistics on groups in society, the economy and the environment. The results are available to the public free of charge. For some purposes, however, this information, which is available at www.cbs.nl, is not enough.

People with more specific requirements can contact the Centre for Policy Related Statistics which on request from clients conducts analyses on basic statistical data. In close consultation with the client the Centre ascertains which information is available at Statistics Netherlands and what questions can be answered. The Centre can also conduct the research. All results of the research are available to the public on the website of the Centre of Policy related statistics (www.cbs.nl/cvb) and in most cases a printed version is published.