

# **Social namea with a coupling to Sustainable Development Indicators - including environmental industry**

**Maja Larsson & Martin Villner**

**Statistics Sweden, 2005**

# Preface

This report has been prepared on commission from EUROSTAT, which supports and coordinates the development of environmental statistics in the EU Member States. The European Commission through DG Environment has contributed financially to the project. Martin Villner and Maja Larsson have carried out the work and are responsible for the report.

In 1993, Statistics Sweden, the National Institute of Economic Research and the Swedish Environmental Protection Agency were instructed by the Government to prepare a study covering the physical links between the economy, the environment and natural resources, the monetary reflection of these relations, and the state of the environment. The aim of the work on environmental accounts at Statistics Sweden is to develop a system of physical accounts that are linked to the production and consumption activities described in the national accounts. In practice this means developing a system of environmental and natural resource statistics that can be linked to the industry, product and sector categories used in the national accounts, thus forming a satellite system of accounts around the national accounts.

According to the UN, a system of environmental accounts should in principle cover:

- Flows of materials through the economy, e.g. energy and chemicals, together with the emissions and waste to which these flows give rise. Within the EU, many countries have opted to use the NAMEA system<sup>1</sup> to describe these flows.
- Economic variables that are already included in the national accounts but are of obvious environmental interest, such as investments and expenditure in the area of environmental protection, environment-related taxes and subsidies, and environmental classification of activities and the employment associated with them.
- Natural resources. Environmental accounts should make it possible to describe stocks and changes in stocks of selected finite or renewable resources. They should deal both with questions related to the monetary valuation of this natural capital and qualitative aspects that do not have any market or other defined monetary value, e.g. the value of outdoor life and biodiversity.

Statistics Sweden, February 2006

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<sup>1</sup> NAMEA stands for National Accounting Matrix including Environmental Accounts. In principle this is a Social Accounting Matrix (SAM) supplemented by environmental accounts data on, e.g., emissions to air and waste, linked to the Use and Supply Matrices that a SAM is constructed around. Just as a SAM is a way of presenting national accounts data, NAMEA is a way of presenting environmental accounts data.

# Table of contents

<b>Preface</b> .....	<b>2</b>
<b>Summary</b> .....	<b>4</b>
Conclusions .....	5
<b>1 Introduction</b> .....	<b>6</b>
1.1 Background .....	6
1.2 Purpose .....	7
1.3 Limitations .....	7
1.4 Report structure.....	7
<b>2 Sources and method</b> .....	<b>8</b>
2.1 Sources .....	8
2.2 Data, indicators and industry grouping in the report .....	11
<b>3 Employment and education</b> .....	<b>13</b>
3.1 Introduction .....	13
3.2 Employment-related indicators .....	14
3.3 Salary and compensations .....	15
3.4 Education.....	17
<b>4 Environment industry</b> .....	<b>18</b>
4.1 Introduction .....	18
4.2 Employment-related indicators .....	19
4.3 Salary and compensations .....	20
4.4 Education.....	21
<b>5 Working environment</b> .....	<b>23</b>
5.1 Introduction .....	23
5.2 Physical working environment .....	24
5.3 Psychosocial working environment .....	26
<b>6 Health</b> .....	<b>30</b>
6.1 Introduction .....	30
6.2 Public health.....	31
<b>7 Environmental accounts and social statistics</b> .....	<b>36</b>
7.1 Social statistics in the environmental accounts.....	36
<b>8 Conclusions</b> .....	<b>41</b>
8.1 Conclusions of the results by social theme.....	41
8.2 The Swedish strategy for sustainable development .....	42
8.3 Future work.....	42
<b>Appendix 1 - The Swedish Living Conditions Survey</b> .....	<b>43</b>
<b>Appendix 2 - The Work Environment Survey</b> .....	<b>49</b>
<b>Appendix 3 - The Work-related disorders survey</b> .....	<b>56</b>
<b>Appendix 4 - Industry classification according to NACE</b> .....	<b>62</b>
<b>Appendix 5 - Number of observations and employed persons</b> .....	<b>63</b>

# Summary

The system of integrated environmental and economic accounts (SEEA) was created as a means of including environmental information in the dominating economic policy debate. The UN has recommended the development of the SEEA in order to make international comparisons and analyses possible. One of the intentions of the SEEA is to serve as an information system for the issue of sustainable development. Many of the policy interventions that aim to stimulate economic growth or protect the environment have social effects.

By including social data by industry, it is possible to include more social aspects in the environmental accounts. Data in different social areas from the Living Conditions Survey, the Work Environment Survey, the work-related disorders survey and the Labour statistics based on administrative sources (RAMS) have been chosen and are presented by industry and gender for a number of indicators in this report (see the table below).

## Indicators in the report

### Employment

- Employed persons
- Unemployment compensation
- Unemployment compensation among employed born abroad
- Average yearly salary
- Daily sickness allowance per employed
- Parent's allowance per employed
- Employed with higher education
- Employed in education

### Environmental industry

- Employment
- Unemployment compensation
- Average yearly salary
- Daily sickness allowance per employed
- Parent's allowance per employed
- Employed with higher education
- Employed in education

### Working environment

- Accidents
- Pain in the shoulders or arms
- Unsuitable working positions
- Deafening noise
- Mentally strenuous work
- Hectic/monotonous work
- Working more than regular hours
- Trouble or conflicts at work with superiors
- Sicklisted due to other conditions in work

### Health

- Bad state of health
- Severe problems due to long illness
- Impaired hearing
- Reduced working capacity due to long illness
- Visit to the dentist during the last year
- Everyday smoker
- Obesity
- Incidents with violence or physical threats

The indicators are divided into three areas; employment and education (for all industries as well as for environmental industry), working environment and health. Each area is discussed in a separate chapter. A separate chapter for the environmental industry has been included which includes the same indicators as in the employment chapter. There is also a chapter discussing uses of these new social data in the environmental accounts, e.g. industry profiles and decoupling diagrams.

Each indicator is presented by gender for the period 2000-2003. Some of the results are more unreliable than others. To enhance the data quality, three years have been added together.

# Conclusions

The report shows that it is possible to include many different aspects of the social field in the environmental accounts. A social dimension included in the environmental accounts would make it possible to analyse social data together with the system's economic and environmental data. Adding social data on industry level to the environmental accounts complements the environmental accounts with the social dimension of sustainable development, which makes it possible to analyse the area further on an industry level. The indicators in this report could be used to follow up aspects of the Swedish strategy for sustainable development.

The report shows that presenting data on employment and education, working environment and health in an accounting framework, such as by industry, works well and presents new angles of social data, since these are not normally presented by industry. Presenting social data together with other economic and environmental data gives the information new dimensions and uses.

The finance industry generally scores better and hotel and restaurant industry generally scores worse on social indicators compared with the other industries. It is apparent how farmers have physically strenuous and lonelier working conditions compared with other industries. The gender issue is also apparent, as the workforce is highly skewed. The difference between the unemployed and the total population is sometimes unexpected.

## Conclusions of the results by theme

### *Employment and education*

There are large differences between which industries men and women are working in. Women dominate in education and health service industries while men dominate in manufacturing and construction industries. Employed persons in service industries are generally higher educated than employed persons in goods producing industries. There are more men than women employed in the environmental industry.

### *Working environment*

The finance industry, real estate activities industry and renting and business service industry have a better working environment than other industries.

### *Health*

The finance industry and renting and business service industry generally score better on the health indicators compared with the other industries. Men in the hotel and restaurant industry score badly on many indicators e.g. smoking and severe health problems. Compared to unemployed persons employed persons score better on almost all the health indicators. One exception is unemployed men with impaired hearing, smoking and obesity.

# 1 Introduction

## 1.1 Background

The system of integrated environmental and economic accounts (SEEA) was created as a means of including environmental information in the dominating economic policy debate. By arranging data in a satellite system to the system of national accounts (SNA), it is possible to use the economic data together with the environmental data, thus enabling environmental economic analyses. The UN has recommended the development of the SEEA in order to make international comparisons and analyses possible. The development is encouraged by means of one of the UN city groups, called the London group.

One of the intentions of the SEEA is to serve as an information system on the issue of sustainable development. It is designed to integrate the issue of economic growth with the environmental pressures and resource depletion that are side effects of the production and consumption patterns. The SNA provides the most widely used indicators of economic performance, growth, and the economic counterpart of social welfare. The SEEA provides information on the environmental impact of the different actors that produce and consume goods and services and also information on natural resources. These actors are the different industries, the public sector and households. However, in the various definitions or conceptualisations of sustainable development, social issues also play an important role.

Many of the policy interventions that aim to stimulate economic growth or protect the environment have social effects. Therefore, it is of interest to investigate ways to incorporate more social information into the SEEA, to provide better information for policymaking. Some of the environmental concerns are also social, as the health aspects of chemical usage and air pollution, as well as water quality or food quality. The working environment can be regarded as included in environmental issues but is often neglected because of lack of data. These areas are of importance in the different strategies for sustainable development that are being made. Hence, if it is possible to link such information to the SEEA, this could be of interest for the users.

In Sweden social statistics have a long history and are in many ways more elaborated and established than environmental statistics. It is therefore appropriate to include certain important aspects but necessary to set up some limits as to what can be regarded as a part of an accounting system. In a similar way, it can be said that there is much environmental and economic data that will never be a part of the SEEA, as the system mainly attempts to shed light on certain aspects of policy closely linked to production and consumption by economic agents. It can be said that some social variables are already included in the environmental accounts, as employment is a vital part of the national accounting structure. This makes it possible to analyse, for example, how many people may be affected by a particular policy that addresses some specific industries. In some countries, such as Holland, social accounting matrices (SAM) have been created and linked with the environmental accounts, analysing gender issues coupled to environmental policy and looking deeper into the environmental performance of households<sup>2</sup>. In some of the analyses related to the environmental industry, social aspects such as education, gender and regional issues on employment have also been addressed. Households are also treated as a sector of their own<sup>3</sup>.

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<sup>2</sup> Accounting for goods and for bads, de Haan, [2004], Statistics Netherlands.

<sup>3</sup> See for example: Households in the environmental accounts, [2003], Eurostat report (*download at [www.scb.se/mi1202](http://www.scb.se/mi1202)*)

Still, there are many aspects of the sustainability strategy in Sweden that are not covered by the existing system. All of them are not likely to fit into the SEEA, but some may benefit from a closer connection to environmental or economic data.

Statistics Sweden has made attempts at including social data in the environmental account framework. In 2003, a report<sup>4</sup> on Sustainable Development Indicators was published, which included indicators on the working environment, e.g. sick leave, work-related injuries and jobs with a high level of stress. A second report<sup>5</sup> was published in 2004, which included data by industry from the Living Conditions Survey. The second report included a broad spectrum of issues: working environment, health and political resources, etc. Many of the indicators in the last report have been included in this report but more indicators on working environment from other surveys have been included too. New in this report is also a chapter with social data, such as health and working environment, in the environment industry.

## 1.2 Purpose

The overall aim is to be able to present social data by sector together with economic and environmental data in Sweden. Accompanying analyses will be performed both for the environment industry and for the industry in general. In order to fulfil our targets further methods for the dissemination of social statistics by sector have to be prepared.

The objective is to further develop:

- the methods for presenting social statistics by sector, as well as for the environmental industry since it covers more than just one sector.
- decoupling indicators containing all three elements of sustainable development.
- to perform relevant analyses linking environment and social dimensions.

## 1.3 Limitations

The data in this report has been taken from surveys that can provide the data by industry. Only social data that exist on a detail industry level (5-NACE) has been possible to use for the environmental industry (also see *section 2.2*).

## 1.4 Report structure

*Chapter two* describes the sources as well as the methods used.

*Chapter's three to six* present social statistics by industry in four different areas. Chapter three begins with employment and education, followed by the environmental industry. Working environment in chapter five and health in chapter six. The indicators in each chapter are presented at the beginning of the chapter and every chapter follows the same structure. *Chapter seven presents* examples of additional ways of presenting social data within environmental accounts, so-called decoupling diagrams.

*Chapter eight concludes* the report and discusses the future use of social statistics in the environmental accounts. It also includes a summary of the results for each of the three social themes.

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<sup>4</sup> Sustainable Development Indicators - based on environmental economic and social statistics, 2003:3 [2003], Statistics Sweden.

<sup>5</sup> Social statistics by industry, 2004:1 [2004], Statistics Sweden.

# 2 Sources and method

This chapter gives a short description of the surveys used in the present report as well as the selection of indicators. The environmental industry database is presented below. More detailed descriptions of the methods in the used surveys can be found in *Appendixes 1, 2, 3 and 4*.

## 2.1 Sources

The following sources have been used in this project:

- **The annual Living Conditions Survey** has been conducted since 1974 and includes indicators in ten “social domains”. Read more in Appendix 1.
- **The Work Environment Survey** has been conducted since 1989 and contains variables such as working hours, physical and psychosocial pain, exposure to chemicals and influence at the place of work. Read more in Appendix 2.
- **The Work Related Health Problems Survey** describes health problems people relate to their work and has been conducted since 1991. The survey contains variables similar to the Work Environment Survey. Read more in Appendix 3.
- **Labour statistics based on administrative sources (RAMS)** allow data to be presented in great detail. In Swedish this survey is shortened to RAMS. It aims to offer annual information on employment, commuters, employees and industrial structures and also to illustrate occurrences and flows on the labour market. The statistics are based on total population surveys and can be broken into smaller regional areas. The statistics are produced annually and are presented approximately 14 months after the measured period (November) each year.
- **The Environmental industry database** has been developed since 1999 and includes all establishments that according to a given definition<sup>5</sup>. This information can be used to gather additional information from different registers such as the Swedish Business Register or, as in this report, “RAMS”.

### 2.1.1 The Environmental industry database at Statistics Sweden

Since 1998 the unit of Environmental Accounts at Statistics Sweden has developed a database consisting of establishments active in the environmental industry. One driving force behind the work has been the interest of the European Union and Eurostat. The environmental industry has been predicted to be one area of possible economic growth and the demand for environmental technology is possibly also increasing according to several actors<sup>6</sup>. In this perspective, it is important also to try to measure what this industry is like. Is it increasing/decreasing in terms of, for example, employees, exports, turnover etc? The database helps to answer such questions among others. So far the work at Statistic Sweden has resulted in four reports published by Statistics Sweden and a few “working papers” published by Eurostat based on data from the database.

#### Definition

Statistics Sweden has followed the definition of an environmental enterprise given by OECD/Eurostat in their manual for data collection from 1999<sup>7</sup>:

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<sup>6</sup> See for example Swedish Trade Council, 2003, “*Svensk miljöteknikexport 2003*” (only in Swedish with an English summary) or Commission of the European communities, 2004, “*Stimulating Technologies for Sustainable Development: An Environmental Technologies Action Plan for the European Union*”.

<sup>7</sup> OECD/Eurostat, 1999, *The Environmental Goods & Service Industry – Manual for Data Collection and Analysis*.



*“The environmental goods and service industry consists of activities which produce goods and services to measure, prevent, limit, minimize or correct environmental damage to water, air and soil, as well as problems related to waste, noise and ecosystems. This includes cleaner technologies, products and services that reduce environmental risk and minimize pollution and resource use.”*

This definition is based on how goods and services are used. In principle, activities and products where the production to some extent is less damaging to the environment are not included. The database consist – for the time being – of around 12 000 establishments (one enterprise includes one or more establishment).

### **Share of the establishment and its environmental domain**

According to which good or service the establishment produces and which information that can be gathered, the establishment is classified both to a specific environmental domain and to what extent the production is environmental related. From the 12 000 establishments approximately 9 000 are classified as “primary establishments”, meaning that most of the establishment’s production (more than 50 per cent) fall into the definition of an environmental enterprise. Around 3 000 establishments are classified as “secondary establishments” meaning that an important share, although less than 50 per cent, of its production is environmentally related.

Every establishment is given an environmental domain when put in the database. Table 1 below illustrates the different domains. Three main areas exist, namely *Pollution management*, *Cleaner technologies and products* and *Resource management*.

### **Table 1. Environmental domains in the Environmental industry database**

<b>Environmental domain</b>	<b>Examples of including activities:</b>
<b>Pollution management</b>	
Air pollution control	Treatment and/ or removal of exhaust gases
Waste water management	Emissions to water. Collection, treatment and transport of wastewater. Wastewater reuse systems
Waste management	Collection, treatment, management, storage and recovery of waste. Excludes manufacture of new products from recovered material.
Soil and groundwater	Emissions to soil and groundwater. Soil sanitation. Sometimes classifies under " <u>Other pollution management</u> "
Noise and vibration	Reduction of (mainly outdoor) noise. Sometimes classifies under " <u>Other pollution management</u> "
Monitoring, control etc	For example R&D, Environmental education and information, Environmental consultants and similar.
<b>Cleaner technologies and products</b>	
Cleaner/resource-efficient technologies	Reduced impact from production e.g.: decrease material inputs, reduce energy consumption, recover valuable by-products, reduce emissions, minimise waste disposal problems.
Cleaner/resource-efficient products	Reduced impact from use of products e.g.: decrease material inputs, improve product quality, reduce energy consumption, reduce emissions, minimise waste disposal problems
<b>Resource management</b>	
Indoor air pollution control	Treatment and renewal of indoor air to remove pollutants. Excludes air-conditioning
Water supply	Collect, purify and distribute potable water
Recycled materials	Manufacturing new materials or products from recovered waste or scrap.
Renewable energy	Generation, collection and transmission of energy from renewable sources, including biomass, solar, wind, water or geothermal.
Heat/energy saving and management	Reduce heat and energy use or minimise loss
Sustainable agriculture and fisheries	Reduce environmental impact of agriculture and fishery.
Sustainable forestry	Programmes and projects for reforestation and forest management on a long-term sustainable basis
Other resource management	Eco-tourism, nature conservation, biodiversity and other.

### **Methodology behind the database**

The approach Statistics Sweden has chosen is to establish a database of producers of environmental goods and services, based on the OECD/Eurostat definition, and then use and combine this with existing registers and surveys. It was foreseen that in this way a lot of detailed information could be produced without the introduction of new surveys, which has shown to be true.

The method on how to find these environmental establishments can be simplified in two parts. The database today consist of on one hand the so-called "core industries" and on the other hand individually chosen establishments that descend from all industries in Sweden. The core industries consist of "Retreading" (NACE 25.12), "Recycling" (NACE 37), "Collection, purification and distribution of water (NACE 41), "Wholesale of waste and scrap" (NACE 51.57) and "Sewage and refuse disposal, sanitation and similar activities" (NACE 90). These are considered to contain 100 % environment industry. Besides these core industries additional environmental establishments need to be found and for this several different sources have been used in the past. The largest sources have been the Swedish yellow pages, Market manager (tool which gives additional information about Swedish companies), the Swedish Business register at Statistics Sweden, different industry specific organisations and their members, the Energy statistics at Statistics Sweden (for renewable energy) and companies included in the Swedish Trade Councils network of environmental technology.

When each new establishment is found and put in the database for the first time it is given both an environmental domain and is classified according to how important the environmental

activity is (primary or secondary). Also changes in an establishment already included in the database can lead to changes of domain and/or classification.

The quality of the establishment not found in the so-called core industries is not yet ideal. Work is still carried out to make it as complete as possible and therefore the results should be interpreted with some caution.

## **2.2 Data, indicators and industry grouping in the report**

The environmental accounts provide information on, for example, environmental pressures and economic performance. This information is presented by industry. The social data in this report show the percentage of employed men and women within each industry for each indicator, for example the percentage of employed women exposed to heavy lifting work in the manufacturing industry. The indicators are presented for one year, but most of the data have been collected for 1993-2004. The diagrams in *chapter 7.1.1* are an exception, showing how much, in per cent, each industry contributes to the total of all industries, for example employed women exposed to heavy lifting in the manufacturing industry account for X per cent of all the employed women that are exposed to heavy lifting. The estimated number of employed persons in each industry is included in Appendix 6.

Gaps in the diagrams mean that data are missing. If an indicator has value "0", it is written as such in the diagram.

### **2.2.1 Quality of data**

The diagrams generally show estimates based on at least 50 observations. There are a few exceptions, such as for women in some industries, which have around 40 observations. 50 observations are considered to give sufficiently reliable data while 40 observations give unreliable data. However, without these estimates based on 40 observations, there would be too many gaps in the diagrams. This is why there are gaps in some diagrams, such as for the agricultural, forestry and fishery industry. As a result of too few observations for the agricultural, forestry and fishery industry in general, it has been difficult to draw conclusions about this industry. Therefore, there are few comments on this industry in the report.

### **The Living Conditions Survey, the Work Environment Survey and the work-related disorders survey**

Industry is a background variable in these surveys. When the data are broken down into industries, gender, etc., the number of observations is reduced. If the number of observations is too low, this can result in unreliable data. In order to produce more observations for the Living Conditions Survey data, three years have been aggregated and a mean value is calculated for these three years. The number of observations (respondents) by industry is shown in Appendix 6.

### **2.2.2 Selection of indicators**

The selection of indicators in the present report has been limited by the number of observations for each indicator. Also some indicators only have values for one or two years, which result in too few observations and, therefore, these indicators have not been included in the report.

Indicators have also been excluded because it has not been possible to present them by industry, such as indicators on pensioners, or because some indicators are very similar.

### **2.2.3 Industry grouping**

The industry in which the respondent works is coded using the same set of two-digit codes that is used in the Statistics Sweden's Labour Force Surveys. This set of codes is compatible with Sweden's Standard for the Classification of Industrial Activity, which is, in turn, compatible with the international standard, NACE.

The number of observations limits the degree to which the industries can be broken down. The industries, which are included in this report, have at least 40-50 observations and industries with fewer observations have been excluded.

### **2.2.4 Age**

For many of the indicators, age is an important factor, such as for impaired hearing. It is therefore important to consider the average age in an industry when conclusions are drawn about an indicator. For example, the average age in the agricultural, forestry and fishing industry is 45.5 years compared to 31.4 years in the hotel and restaurant industry.

# 3 Employment and education

*This chapter uses the Labour statistics based on administrative sources (RAMS) as a source.*

## 3.1 Introduction

Employment is a key to economic and social development. Work is often cited as a basic need alongside food, housing, etc. Unemployment is therefore an important factor for social exclusion. Education has individual importance and varies in relation to many health aspects, salary and employment status, all of which are essential to our well-being.

### Indicators in chapter 3

In addition to the diagrams on working environment in this chapter, see also industry profiles and decoupling diagrams for indicators on working environment in *chapter 7.1*.

- **Employed persons**

The number of employed men and women in each industry

- **Unemployment compensation**

The share of employed persons that received unemployment compensation.

- **Unemployment compensation among employed born abroad**

The share of employed persons born abroad that received unemployment compensation.

- **Salary income**

Average salary, thousands SEK

- **Daily sickness allowance**

Daily sickness allowance payment, average per employed, hundreds of SEK

- **Parents allowance**

Parents allowance payments, average per employed, hundreds of SEK.

- **Education level**

The share of employed persons within the postsecondary education.

- **Employed in education**

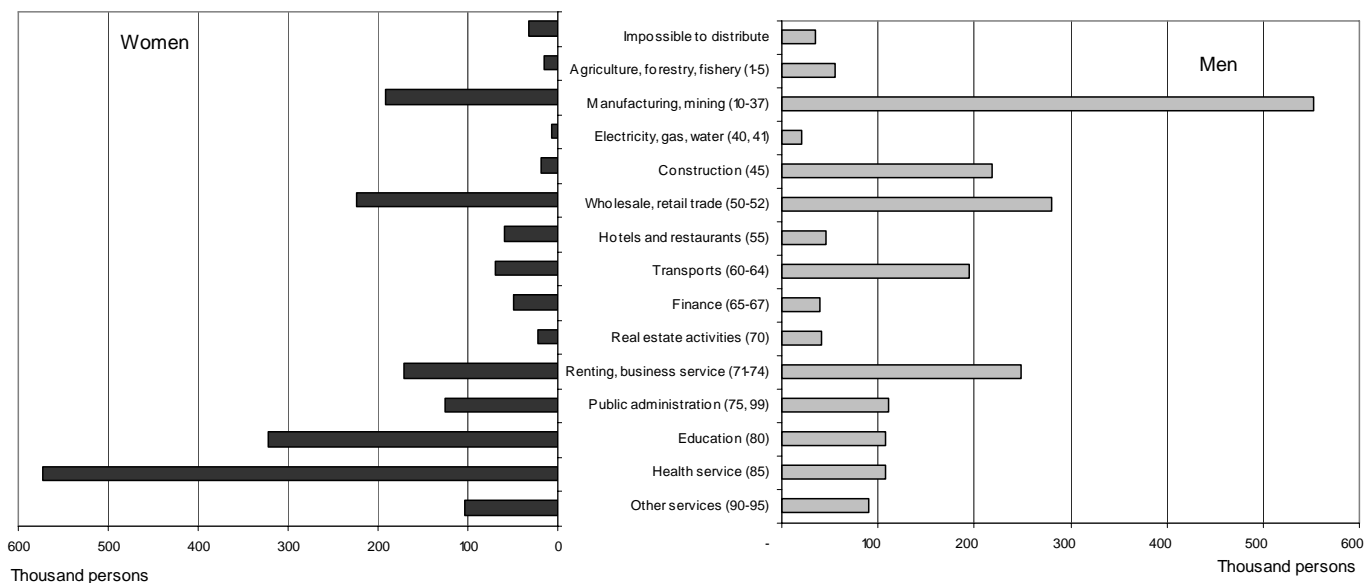
The share of employed persons that are studying

## 3.2 Employment-related indicators

### 3.2.1 Employed persons

There are large differences between in which industries men and women are working. Women dominate in education and health service industries while men dominate in manufacturing and construction industries.

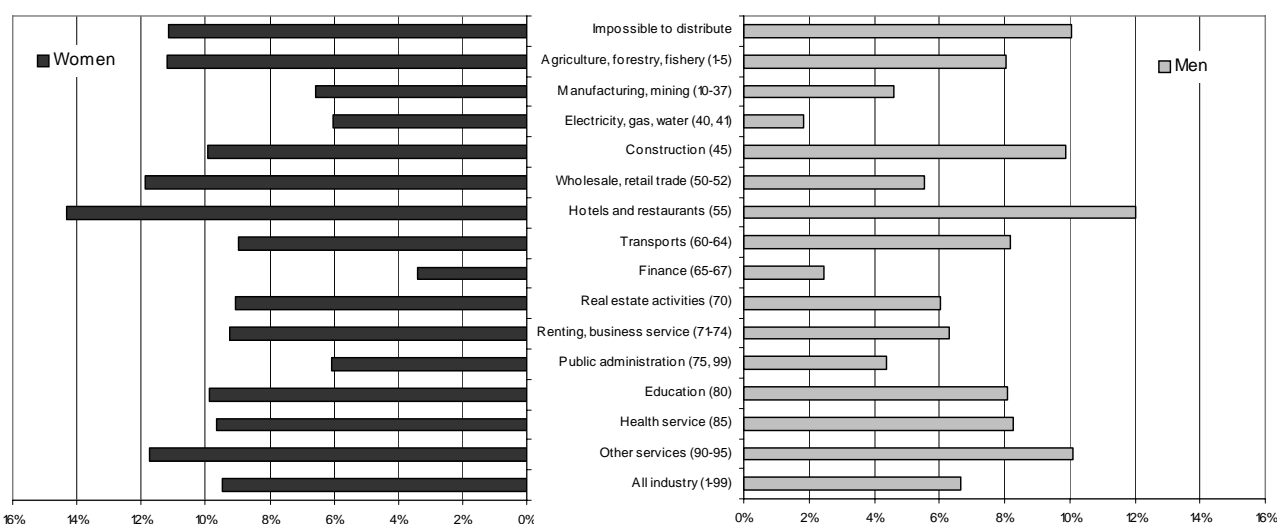
**Diagram 1. Number of employed persons by gender in 2003, thousands.**



### 3.2.2 Unemployment compensation

Employed persons in hotels and restaurants received unemployment compensation in a larger extent than other industries. More women than men received unemployment compensation, 10 compared to 7 per cent.

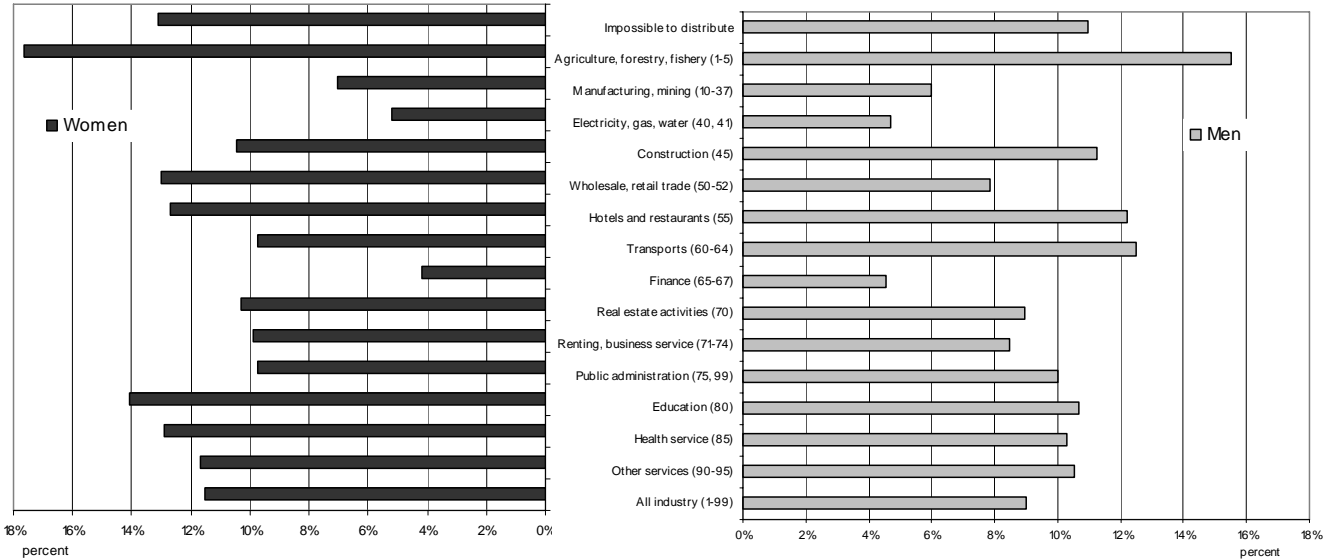
**Diagram 2. Share of employed persons in 2003 that received unemployment compensation in 2002.**



### 3.2.3 Unemployment compensation among employed born abroad

It is also possible to analyse the data regarding in what country the employed was born. Diagram 3 shows that employed women born abroad received unemployment compensation in a larger extent than men. Agriculture, fishery, forestry was the industry where most employed persons born abroad received unemployment compensation.

**Diagram 3. Share of employed that were born abroad that received unemployment compensation previous year (2002). Per cent of total employed**

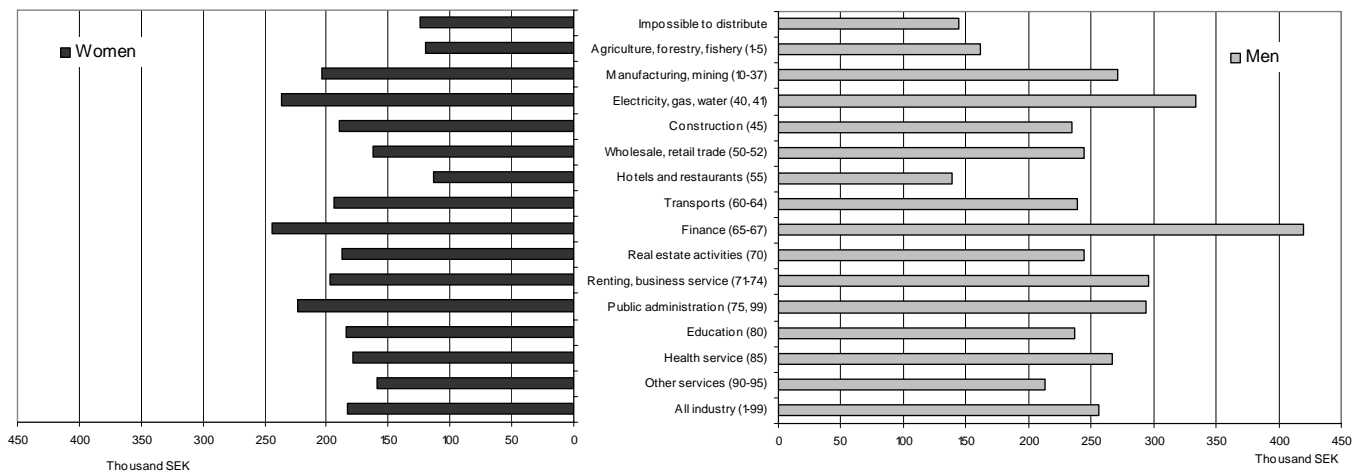


## 3.3 Salary and compensations

### 3.3.1 Average salary

There are considerable differences in average salary between men and women, men have an average salary of 250 000 SEK compared with 180 000 SEK for women. There are also considerable differences in salaries between industries, for example men in the finance industry earn about 400 000 SEK compared to men in the hotels and restaurants industry who earn about 150 000 SEK.

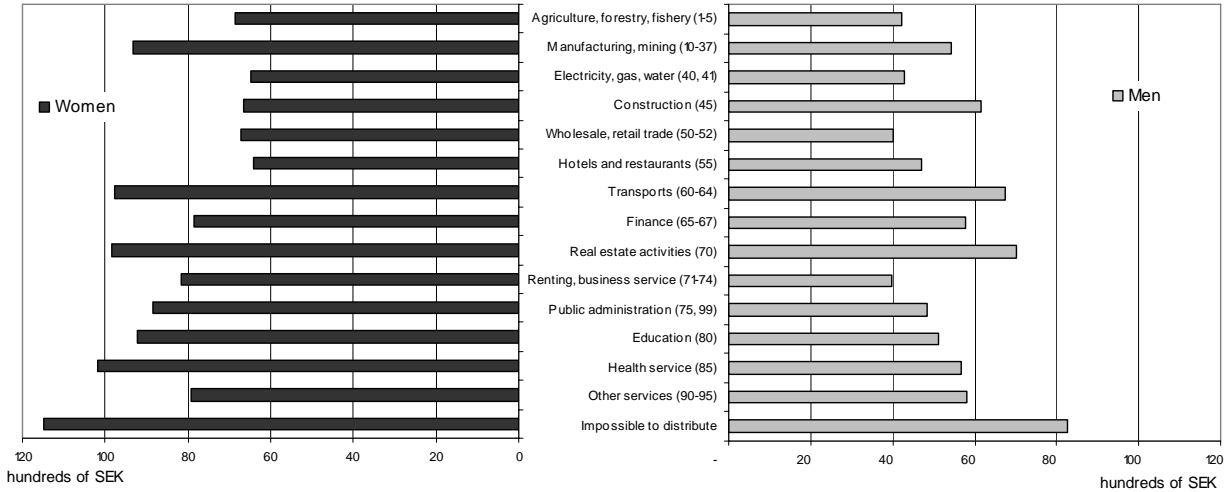
**Diagram 4. Average salary per industry. Thousand SEK, 2003**



### 3.3.2 Daily sickness allowance

Diagram 5 shows that women received more in sickness allowance than men in 2003. Employed men in hotels and restaurants industry received the highest sickness allowance while among women it is the employees in health service industry.

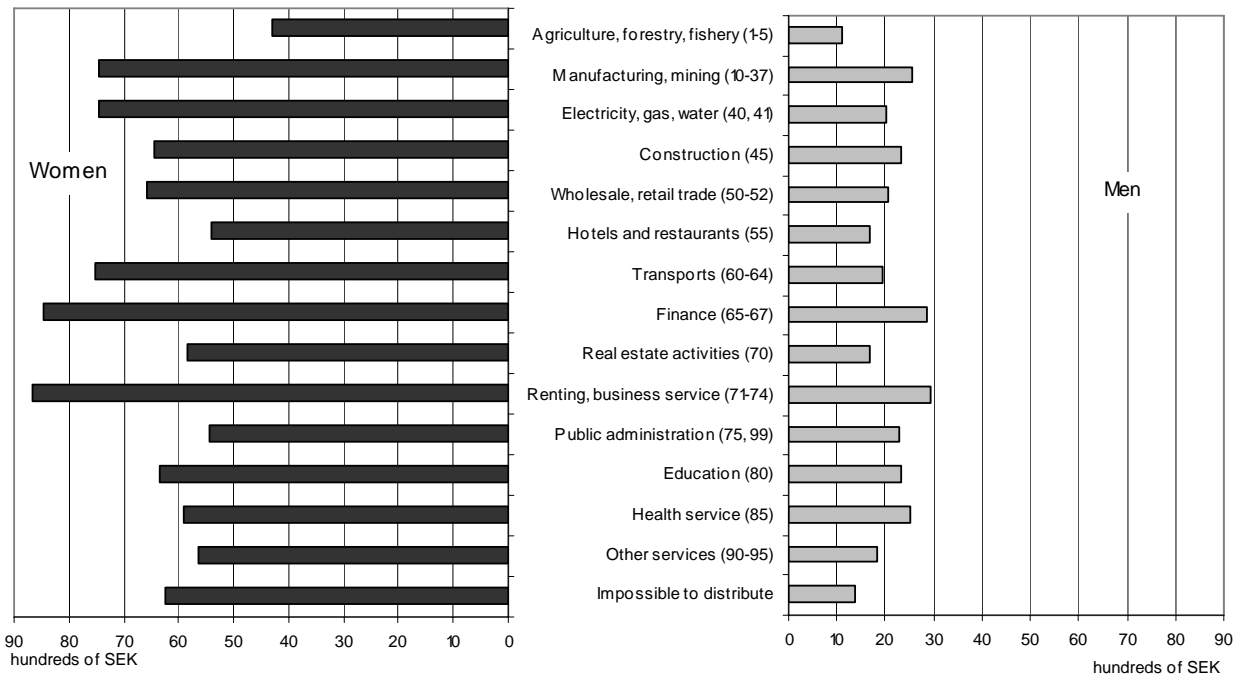
**Diagram 5. Daily sickness allowance payments average per employed. Hundreds of SEK, 2003.**



### 3.3.3 Parent's allowance

There is a considerable difference between employed men and women regarding allowance for staying at home taking care of sick children. For example in the finance industry women received three times as much as men.

**Diagram 6. Parents allowance payments, average per employed. Hundreds of SEK, 2003.**



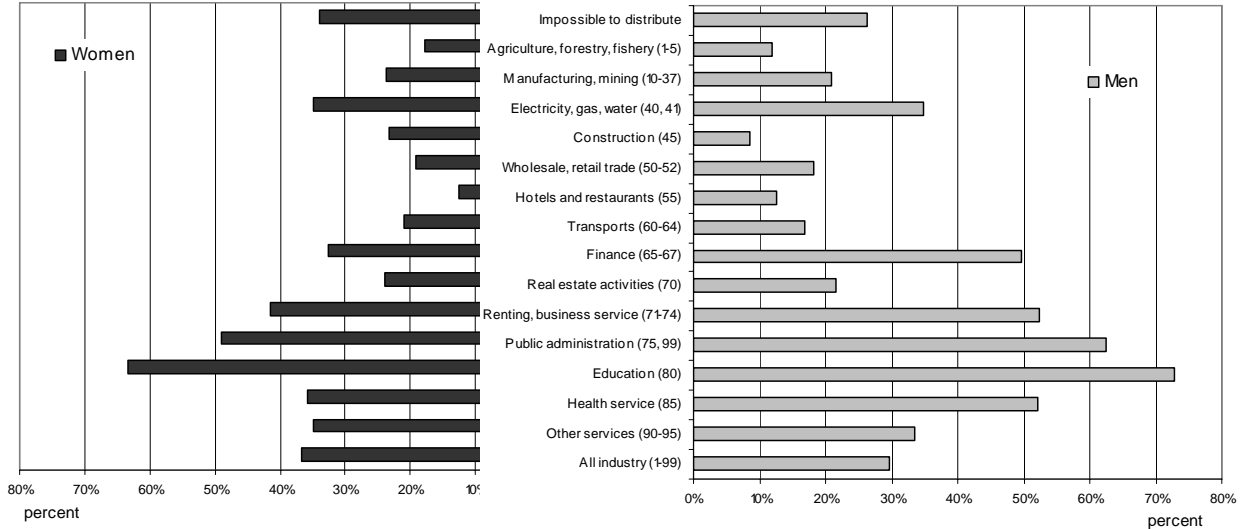


# 3.4 Education

## 3.4.1 Employed with higher education

Employed persons in goods producing industries (for example the manufacturing and construction industries) are higher educated than employed persons in service industries (for example the education and public administration).

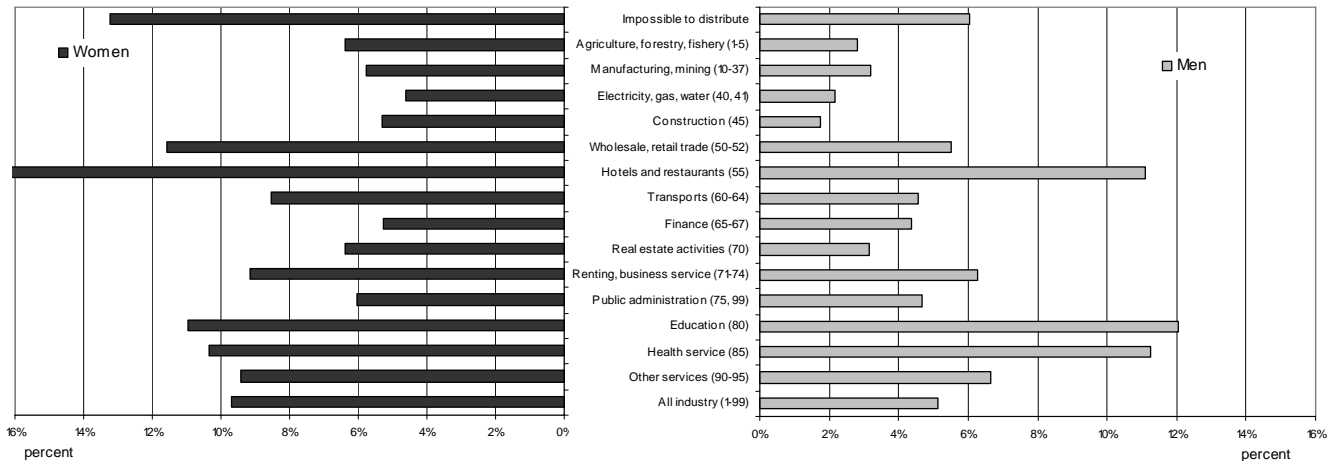
Diagram 7. Share of the employed with postsecondary education in 2003.



## 3.4.2 Employed persons in education/training

Nearly twice as many of the employed women compared with employed men are studying. There are also considerable differences between the industries, for example as much as 16 per cent of the employed women in the hotels and restaurants industry are studying compared with 5 per cent in the construction industry.

Diagram 8. Share of employed persons that are studying in 2003.



# 4 Environment industry

This chapter uses the same source of information as in chapter 3, the Labour statistics based on administrative sources (RAMS).

## 4.1 Introduction

Interest in the environment industry has grown over the last few years. There is, however, a certain lack of information since this industry is not a given industry according to the current industry classification system used (NACE) and this has made it important to produce basic figures about the environment industry. Environmental companies exist in all industries and may therefore be found one-by-one in order to make it possible to describe this sector in similar ways as we today describe for example the energy industry or the agricultural industry. In order to make such descriptions possible Statistics Sweden has since 1998 developed a database consisting of establishments active in the environmental industry.

In this chapter we will include a more social picture to the environmental industry than what has been presented in previous published reports of the industry. Usually this industry has mainly been described by economic variables such as, for example, turnover and export. Some socially-related variables have also been used, such as for example employment and education levels. The latter and a selection of new “more socially-related” variables are presented in this chapter in order to give a new dimension to the industry. This also makes it possible to compare different environmental domains to specific industries according to the NACE classification. The indicators used in this chapter, see the box, are the same as presented for all industries in the previous chapter 3.

### Indicators in chapter 4

In addition to the diagrams on working environment in this chapter, see also industry profiles and decoupling diagrams for indicators on working environment in *chapter 7.1*.

- **Employed persons**

The number of employed men and women in each industry

- **Unemployment compensation**

The share of employed persons that received unemployment compensation.

- **Salary income**

Average salary, thousands SEK

- **Daily sickness allowance**

Daily sickness allowance payment, average per employed, hundreds of SEK

- **Parents allowance**

Parents allowance payments, average per employed, hundreds of SEK.

- **Education level**

The share of employed persons within the postsecondary education.

- **Employed in education**

The share of employed persons that are studying

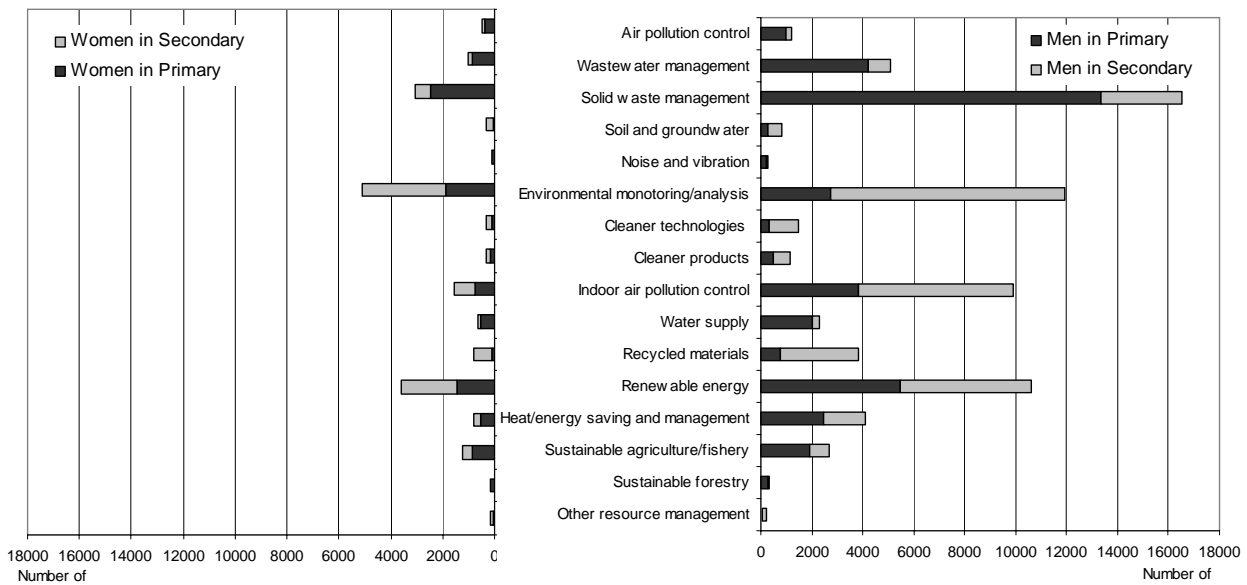
Indicators on health and working conditions could not be distributed on environmental industry, as the data quality was not sufficient for such a detailed population. The data will have to be provided by the companies themselves, if this is to be studied.

## 4.2 Employment-related indicators

### 4.2.1 Employment

There are more men than women employed in the environmental industry. The industries with most employed persons are solid waste management, environmental monitoring and analysis, indoor air pollution control and renewable energy.

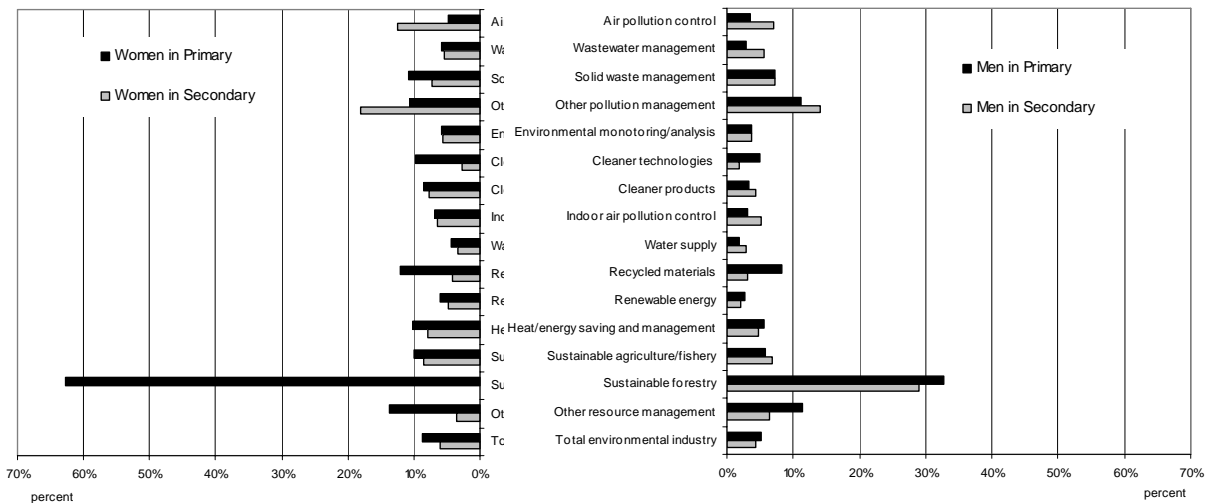
Diagram 9. Employed in environmental industry 2003, number of employed



### 4.2.2 Unemployment compensation

Diagram 10 below illustrates the share of employed that received unemployment compensation in 2002.

Diagram 10. Share of employed in 2003 that received unemployment compensation previous year (2002)

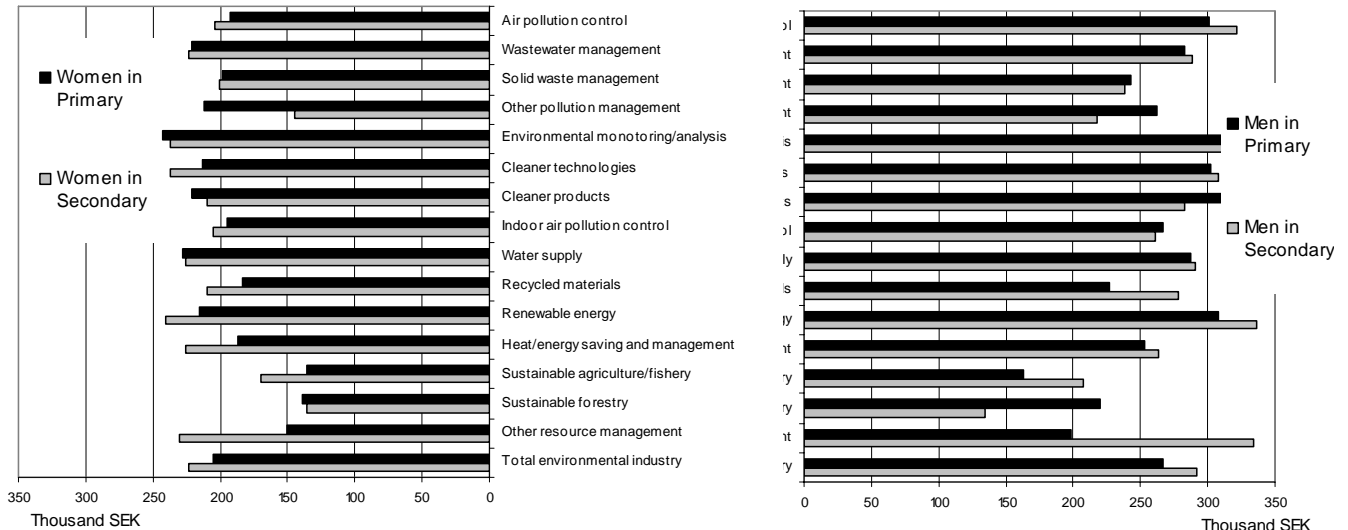


## 4.3 Salary and compensations

### 4.3.1 Average salary

Men in the environmental industry have higher salary than women. There are also differences between different industries, for example women in environmental monitoring and analyses earn about 100 000 SEK more than women in sustainable forestry.

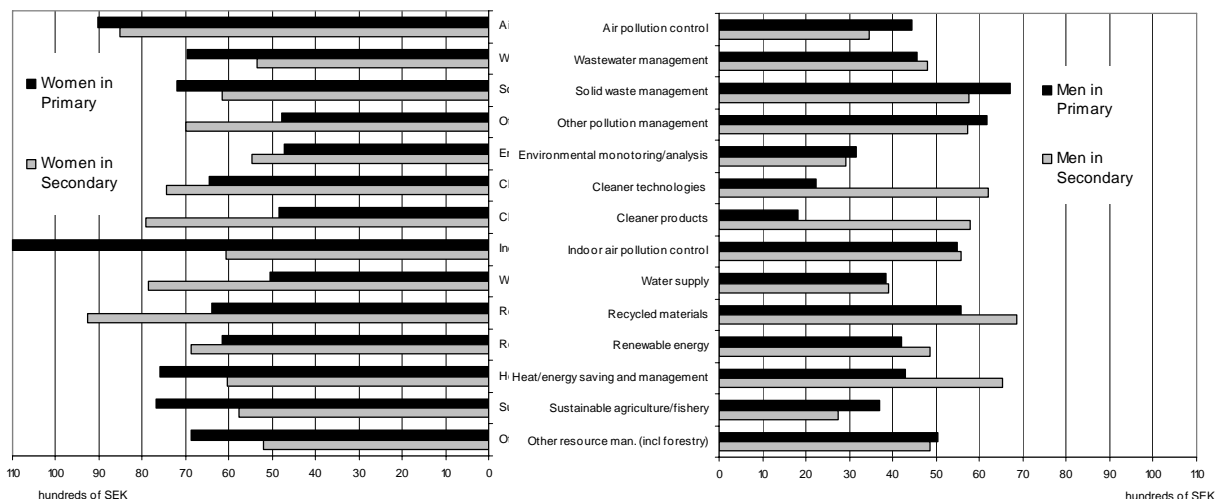
Diagram 11. Average yearly salary by environmental domain. Thousand SEK, 2003.



### 4.3.2 Daily sickness allowance

Women employed in the environmental industry received sickness allowance payments in a larger extent than men. Women in the indoor air pollution control domain received the highest sickness allowance payments.

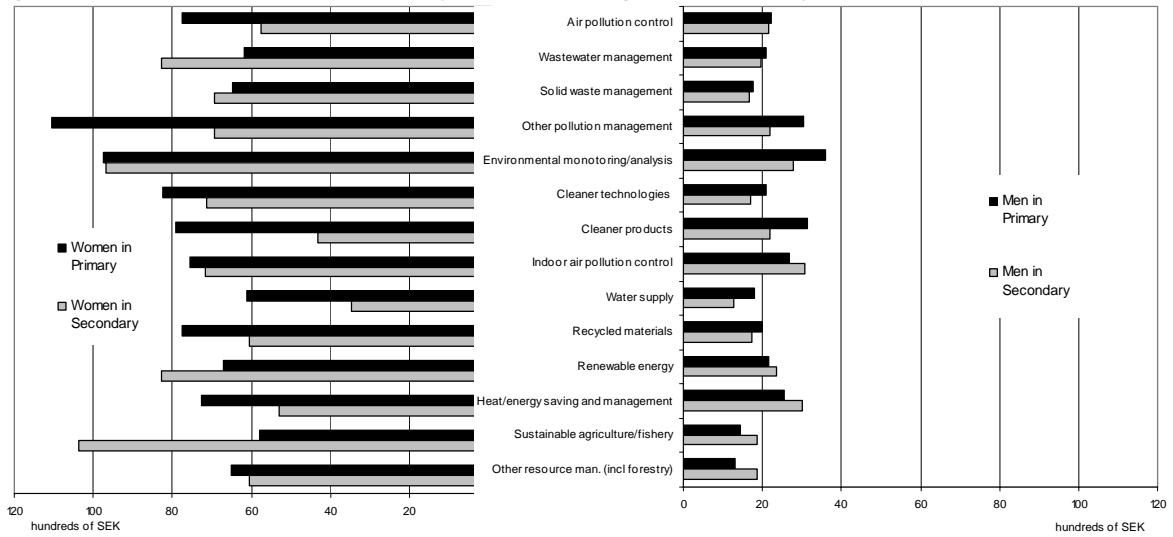
Diagram 12. Daily sickness allowance payment average per employed, hundreds of SEK.



### 4.3.3 Parent's allowance

Women employed in the environmental industry received more parents allowance payments than men. For example women in the sustainable agriculture and fishery domain (secondary) received five times as much parents allowance payments as men in this part of the industry.

**Diagram 13. Parent's allowance payment, average per employed, hundreds of SEK.**

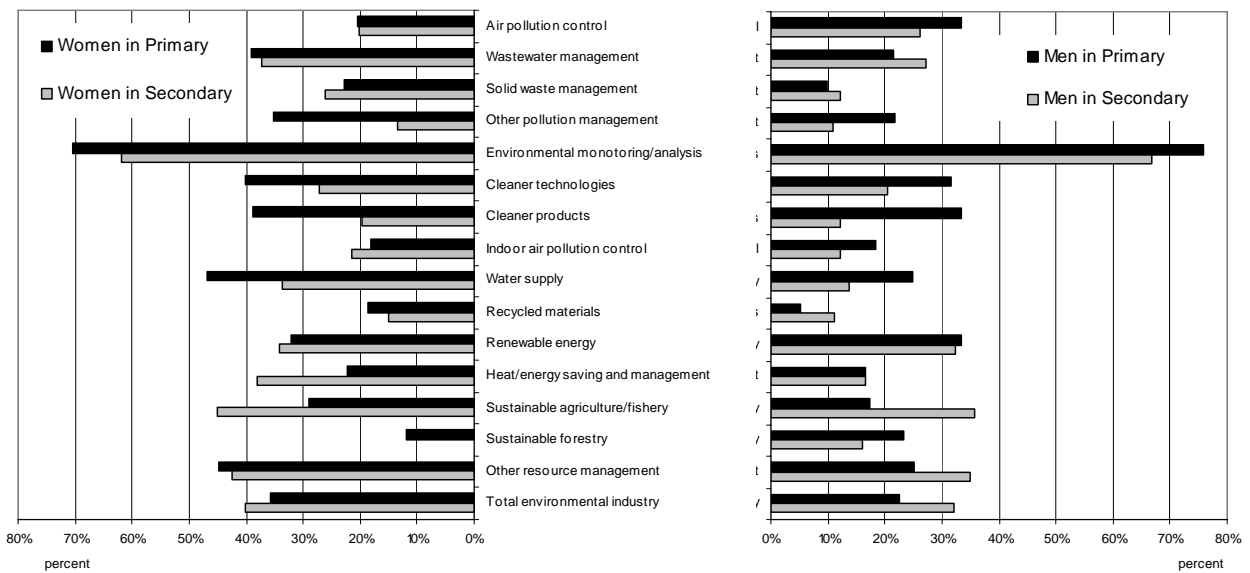


## 4.4 Education

### 4.4.1 Employed with higher education (postsecondary)

Employed women in the environmental industry are more highly educated than men. As much as about 70 per cent of the employed men and women in the environmental monitoring and analyses domain have a postsecondary education.

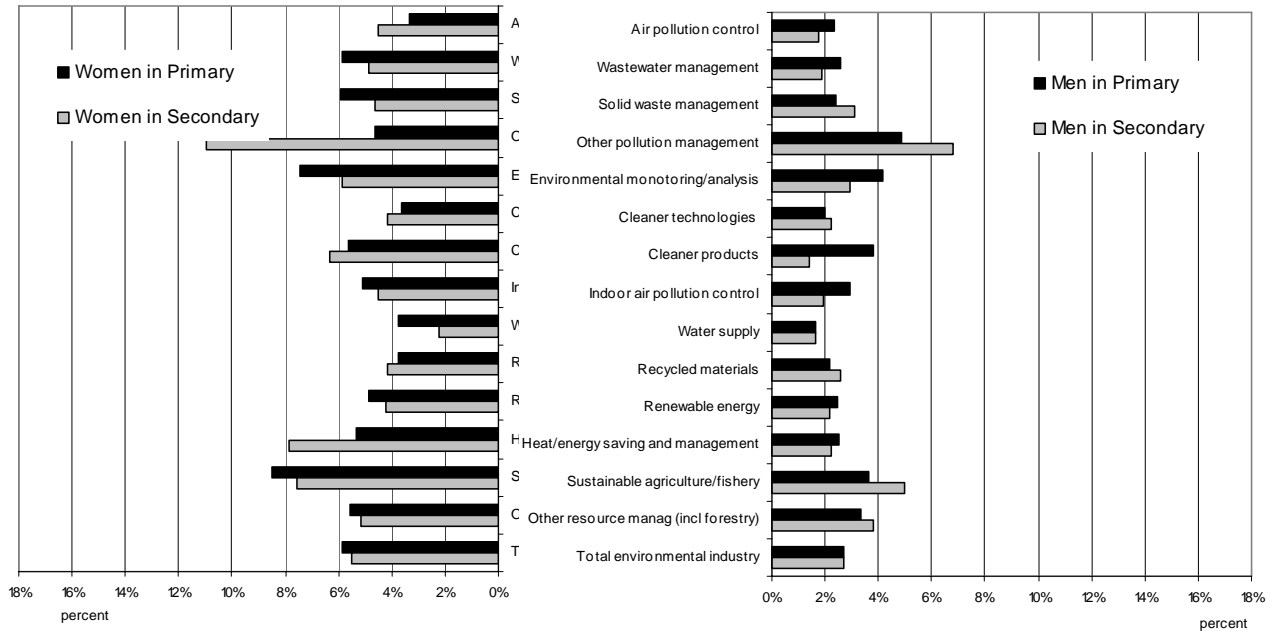
**Diagram 14. Share of employed persons with postsecondary education.**



#### 4.4.2 Share of the employed that are studying

Nearly 6 per cent of the employed women are studying compared to 3 per cent of the men. Highest share of employed persons that are studying are found in the other pollution management domain.

**Diagram 15. Share of employed persons that are studying.**



# 5 Working environment

*The sources in this chapter are the Swedish Living Conditions Survey, the work environment survey and the work-related disorders survey*

## 5.1 Introduction

The working environment is important from a welfare perspective because of its connection to health. The working environment can be harmful to health in the form of, for example, accidents and explosions. It can also be damaging in the form of allergies and stress-related health problems in the long-term. A harmful working environment can also cause absence from work and a high staff turnover, which can have an impact on the national economy.

Concept working environment contains both physical and psychosocial aspects. Physical aspects include strenuous work, heavy lifting, unsuitable working positions and noise. Psychosocial aspects include mentally strenuous work and hectic/monotonous work.

### Indicators in chapter 5

In addition to the diagrams on working environment in this chapter, see also industry profiles and decoupling diagrams for indicators on working environment in chapter 7.1.

- **Accident during the last 12 months**

Answered "yes" to the question: Have you been exposed to an accident at work at some time during the last 12 months? No distinction is made for big or small accidents, and it is not necessary for the person to have been harmed.

- **Every week experience pain in the shoulders or arms**

Answered "Shoulders or arms" and "One day a week or more" to the question: After work, do you experience pain in any of the following places.

- **Unsuitable working positions**

Answered "yes" to the question: Does your work require you to stand or sit in crooked, twisted or other unsuitable working positions?

- **Constant deafening noise**

Answered "all the time" to the question: Is it noisy all the time or only occasionally? and also answered "yes" to the question: Is the noise deafening?

- **Mentally strenuous work**

Answered "yes" to the question: Is your work mentally strenuous?

- **Hectic/monotonous work**

Answered "yes" to the question: Is your work hectic and monotonous?

- **Working more than regular hours every week**

Answered "At least one day per week" to the question: How often are you working more than regular hours?

- **Involved in trouble or conflicts at work with superiors during the last 12 months**

Answered "Superiors" and "At least once during the last 12 months" to the question: Are you involved in any type of conflict or trouble at work with?

- **Sicklisted five weeks or more due to other conditions in work than occupational accidents**

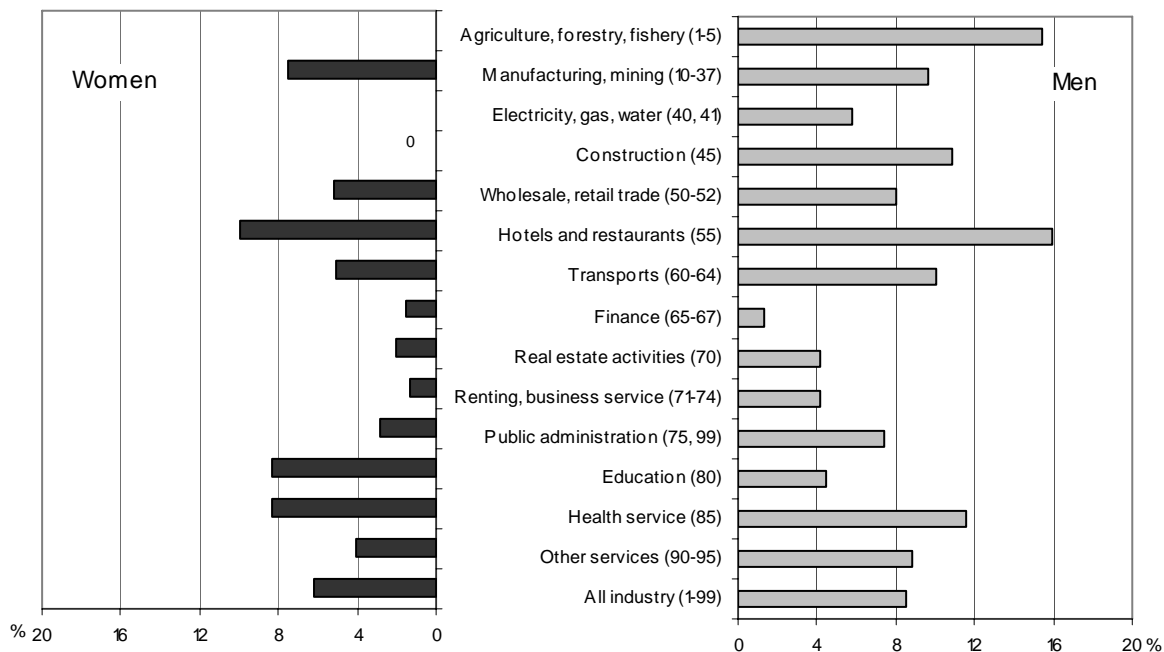
Answered "At least 25% of the working time" to the question: Have you during the last 12 months been absence (due to sickness) from work and/or had sickness benefits/early retirement pension (full- or part time) due to these troubles? Also answered "At least five weeks" to the question: How long during the last 12 months did the absence (due to sickness) from work and/or the sickness benefits/early retirement pension last due to these problems? Also, answered "Other conditions in work" to the question: Were you absence due to sickness due to?

## 5.2 Physical working environment

### 5.2.1 Accidents at work

*Diagram 16* illustrates accidents at work reported by employed men and women during 2000-2002. Employed men reported more accidents at work than employed women and there were considerable differences between industries. Employed men in the hotel and restaurant industry reported the most accidents at work, while those employed in the finance industry had the lowest accident rate.

**Diagram 16. Accidents at work by gender in 2000-2002. Per cent of employed persons.**

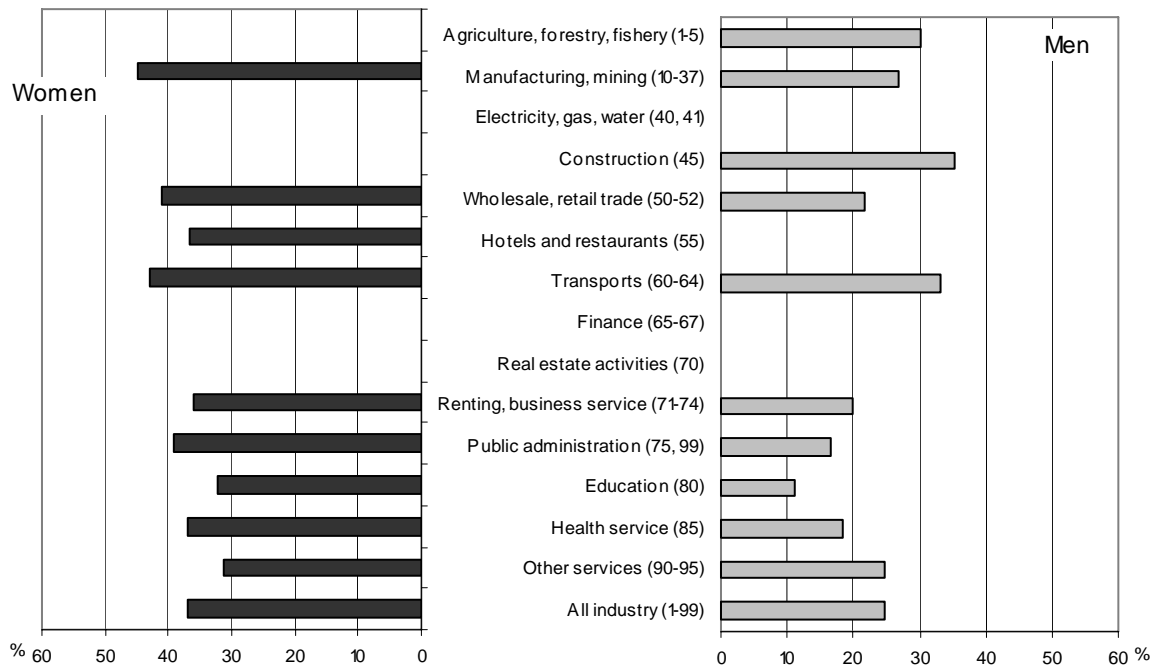


### 5.2.2 Experience pain in the shoulders or arms every week

Approximately a third of all employed women experienced pain in the shoulders or arms compared to a fourth of all employed men (*diagram 17*). Employed persons in industries producing goods (such as the manufacturing and construction) experienced pain in the shoulders or arms to a larger extent than those employed in service industries (such as the health service industry).



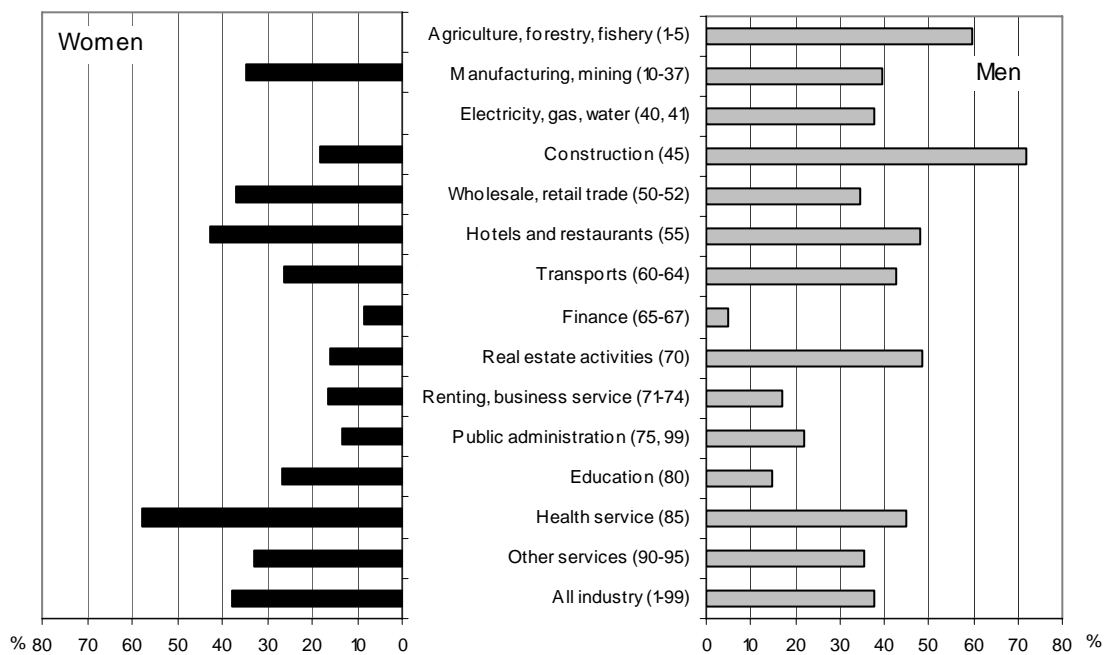
**Diagram 17. Every week experience pain in the shoulders or arms by gender in 2003. Per cent of employed persons.**



### 5.2.3 Unsuitable working positions

Diagram 18 shows that approximately 40 per cent of employed women and men were exposed to unsuitable working positions in 2000-02. There were substantial differences between the industries, for example, 70 per cent of the men in the construction industry had unsuitable working positions compared to only 5 per cent of the men in the finance industry.

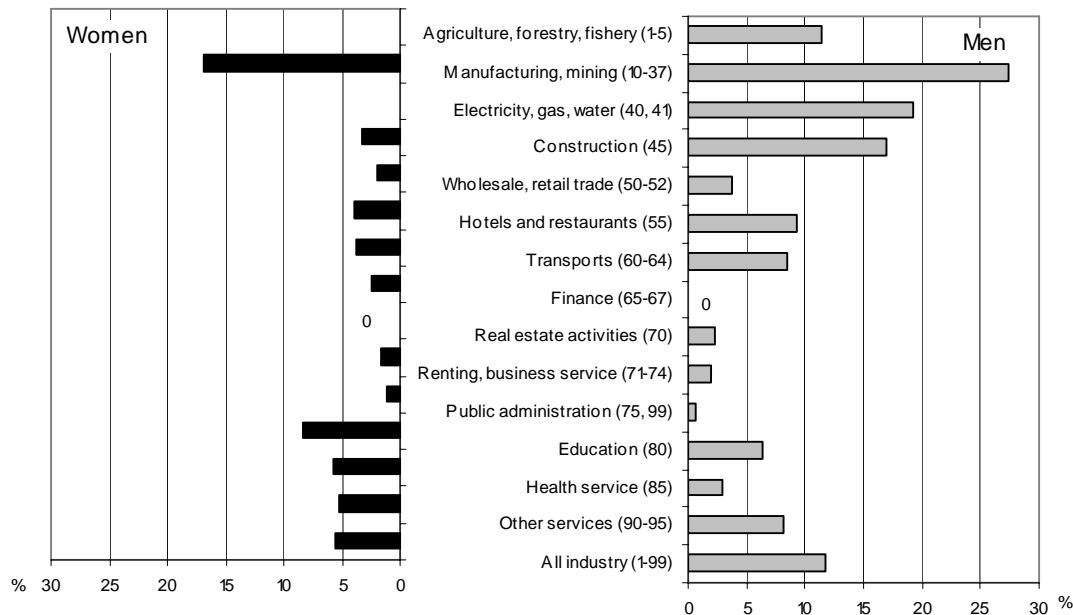
**Diagram 18. Unsuitable working positions by gender in 2000-2002. Per cent of employed persons.**



## 5.2.4 Deafening noise

*Diagram 19* illustrates that men and women employed in industries producing goods (such as the manufacturing and mining industry) were exposed to deafening noise to a larger extent than those employed in service industries (such as the health service industry) in 2000-02. Twice as many men than women were exposed to deafening noise.

**Diagram 19. Exposure to deafening noise by gender in 2000-2002. Per cent of employed persons.**

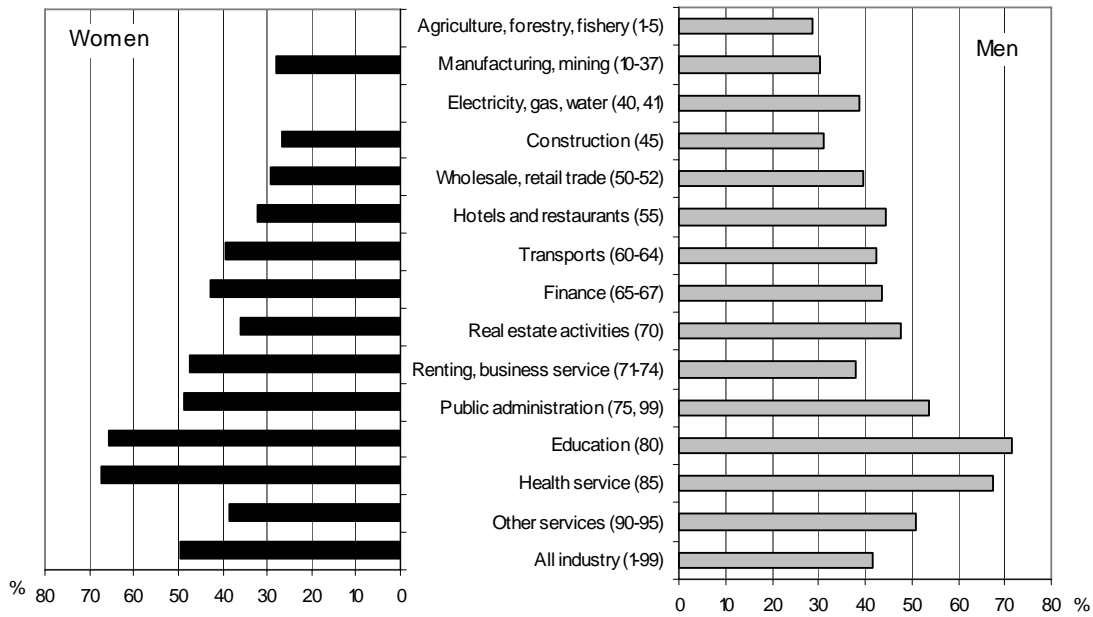


## 5.3 Psychosocial working environment

### 5.3.1 Mentally strenuous work

*Diagram 20* shows that employed men and women were in general exposed to mentally strenuous work to a lesser degree in the goods-producing industries (e.g. the manufacturing and mining industry) than in the service industries (e.g. the public administration industry) in 2000-02. Women were also more exposed to mentally strenuous work than men.

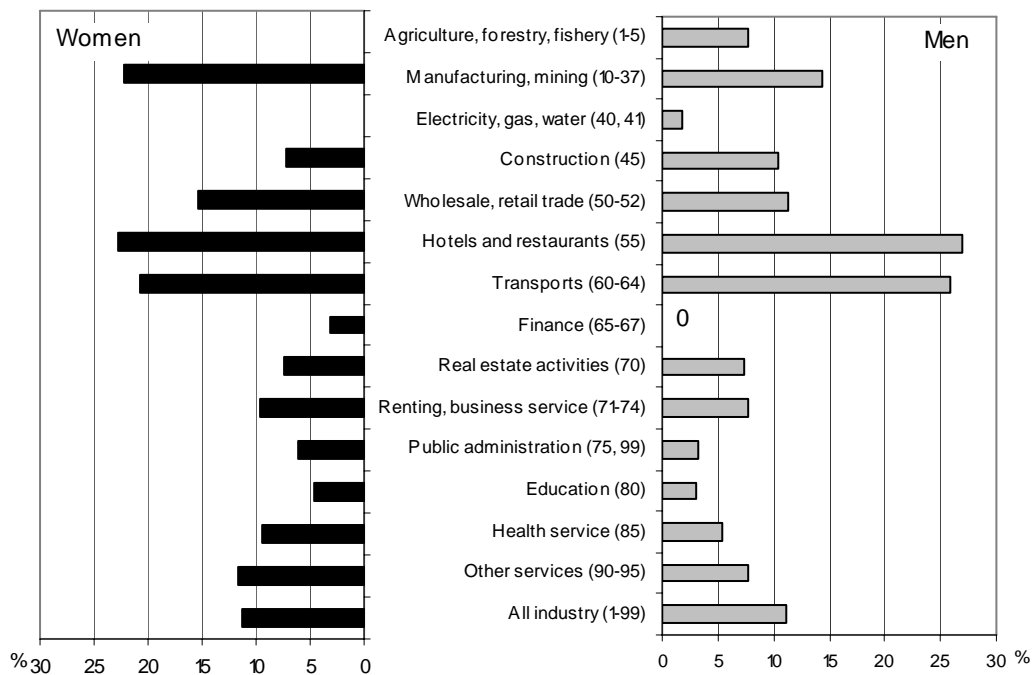
**Diagram 20. Mentally strenuous work by gender 2000-2002. Per cent of employed persons.**



**5.3.2 Hectic and monotonous work**

Diagram 21 shows that women and men working in the hotel and restaurant industry and in the transport industry, together with women in the manufacturing and mining industry were the most exposed to hectic and monotonous work in 2000-02. Over 20 per cent of those employed in these industries experienced hectic and monotonous work.

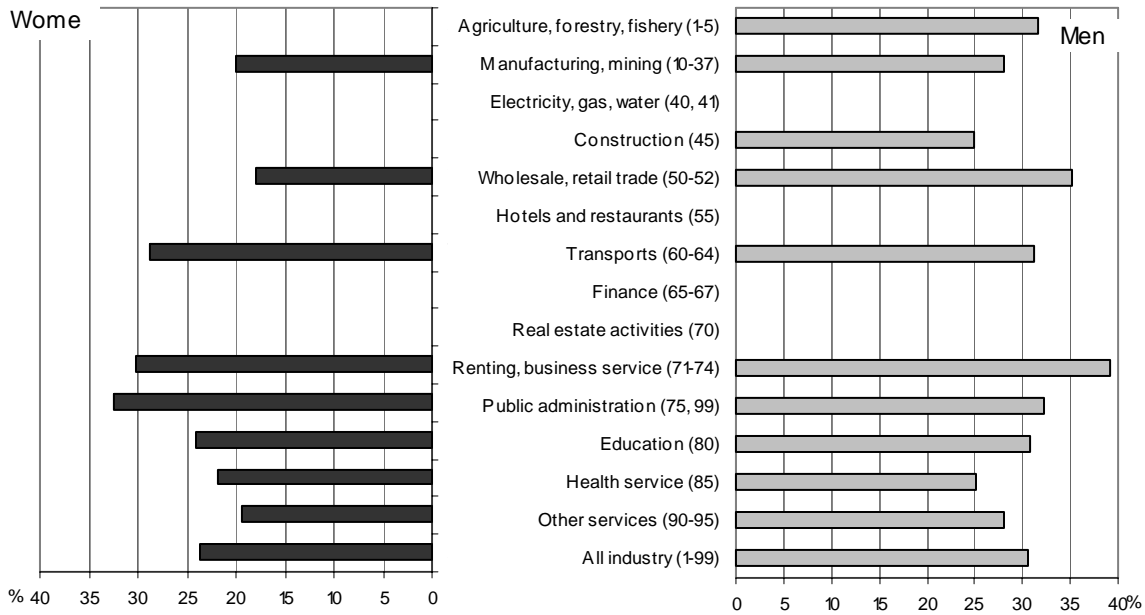
**Diagram 21. Hectic and monotonous work by gender in 2000-2002. Per cent of employed persons.**



**5.3.3 Working more than regular hours every week**

A fifth to a third of all employed persons work more than regular hours every week (diagram 22). Men in renting and business service and women in public administration work over time most.

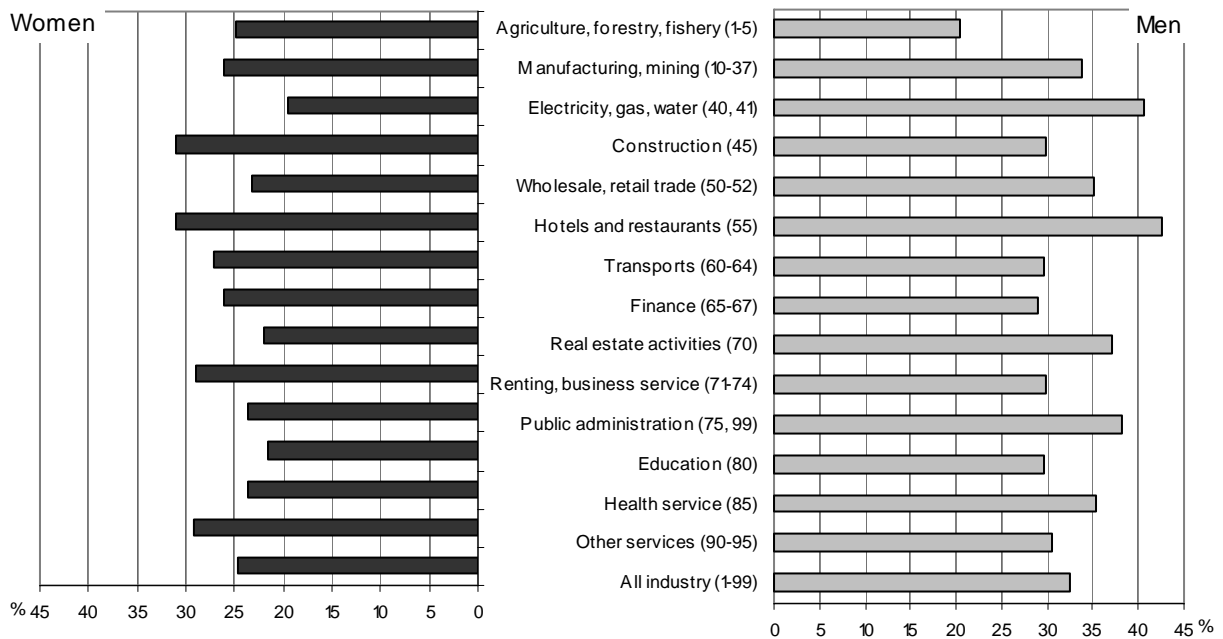
**Diagram 22. Working more than regular hours every week by gender in 2003. Per cent of employed persons.**



### 5.3.4 Involved in trouble or conflicts at work with superiors

About a third respectively a quarter of the men and women have been involved in trouble or conflicts at work with superiors during the last 12 months. As much as 43 per cent of the men in the hotel and restaurant industry have been involved in trouble or conflicts with superiors.

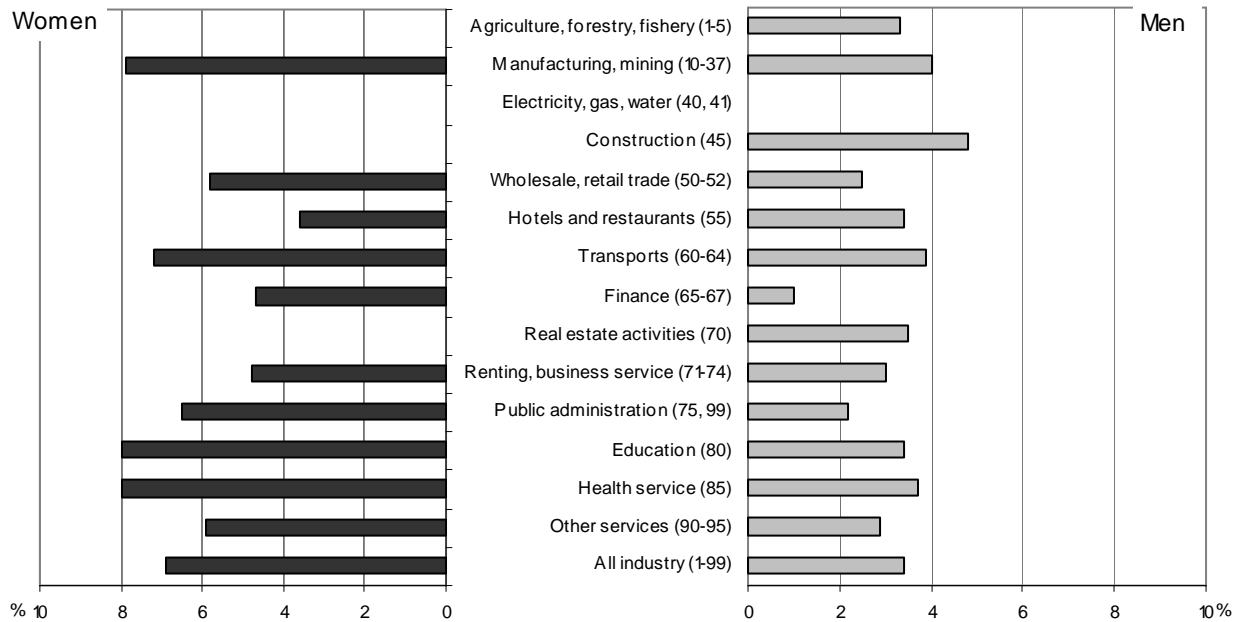
**Diagram 23. Involved in trouble or conflicts at work with superiors by gender in 2003. Per cent of employed persons.**



### 5.3.5 Sick listed five weeks or more due to other conditions in work

During 2003/04 women were more often sick listed five weeks or more due to other conditions in work than men. The differences between the industries were considerable, from 1 per cent among men in the finance sector to 8 per cent among women in the manufacturing industry.

**Diagram 24. Sick listed five weeks or more due to other conditions in work by gender in 2003/04. Per cent of employed persons.**



# 6 Health

The source in this chapter is the Swedish Living Conditions Survey

## 6.1 Introduction

The perception of health, well-being and the absence of pain are important for the possibility to live a good life. In this context, both subjective and objective definitions of health can be used, even though the subjective is more related to well-being. However, it is abilities that are of interest when the state of health is studied as a resource for material and social welfare. Impaired hearing and physical ability can, for example, have a negative impact on a person's income or ability to take part in society. In this chapter, unemployed persons are included as a special category.

### Indicators in chapter 6

In addition to the diagrams on health in this chapter, see also industry profiles for indicators on health in chapter 7.1.

- **Bad state of health**

Answered "bad" to the question: How do you consider your state of health?

- **Severe problems because of long illness**

Answered "long illness" to the question: Do you have a long-term illness, pains due to an accident, a handicap or other weakness? Also answered "all the time" or "occasionally" to the question: How often do you have problems due to long illness? Also answered "severe" or "very severe" to the question: Are the problems insignificant, moderate, severe or very severe?

- **Reduced working capacity because of long illness**

Answered "long illness" to the question: Do you have a long illness, pains due to an accident, a handicap or other weakness? Also answered "to a great extent" to the question: Does the illness you have result in a reduction in your working capacity to a great extent, to some extent or not at all?

- **Impaired hearing**

Answered "no" to the question: Are you able to hear what is said in a conversation between several persons without difficulty (with or without hearing aid)?

- **Everyday smoker**

Answered "yes" to the question: Do you smoke daily?

- **Obesity**

The person has a Body Mass Index (BMI) of 30 or more. BMI is measured by this equation: Weight (kilogram) / Height<sup>2</sup> (metre).

- **Incidents with violence or physical threat**

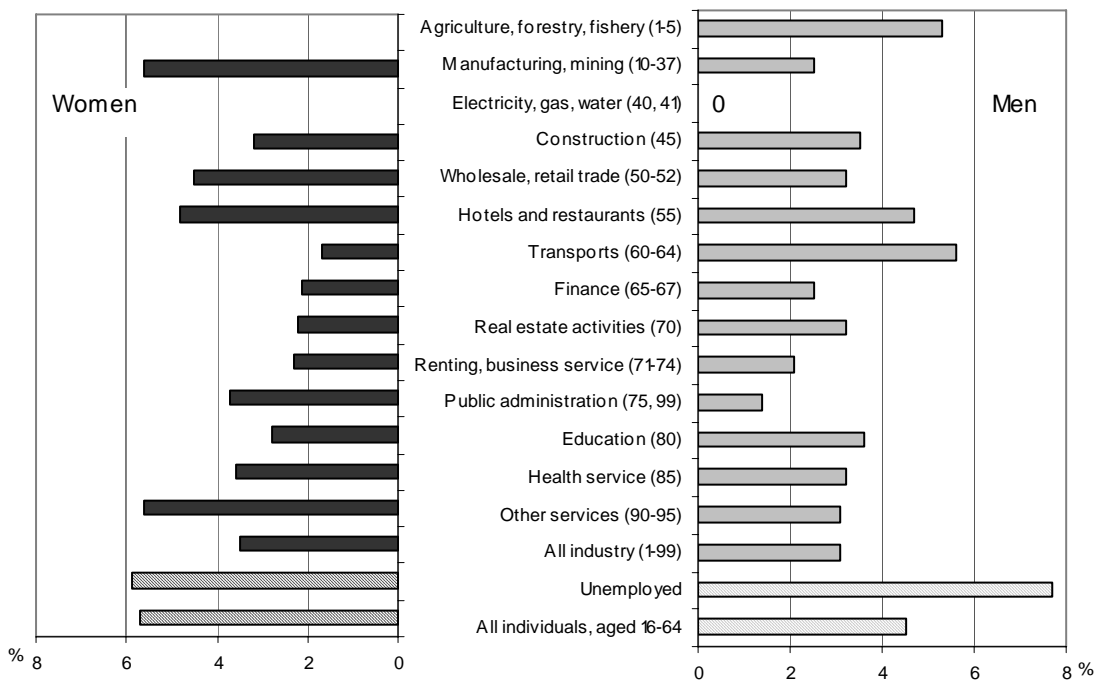
Answered "yes" to the question: Have you during the last 12 months been exposed to violent incidents, violence with bodily injury, violence or threat in a dwelling or violence or physical threat in a public area?

## 6.2 Public health

### 6.2.1 Bad state of health

It was more common to consider the health as bad among unemployed persons and among all individuals than among employed persons in all industries, as seen in *diagram 25*. However, there were differences between the industries. For example, 5.5 per cent of men in the transport industry considered their health to be bad compared to only 1.5 per cent of men working in public administration.

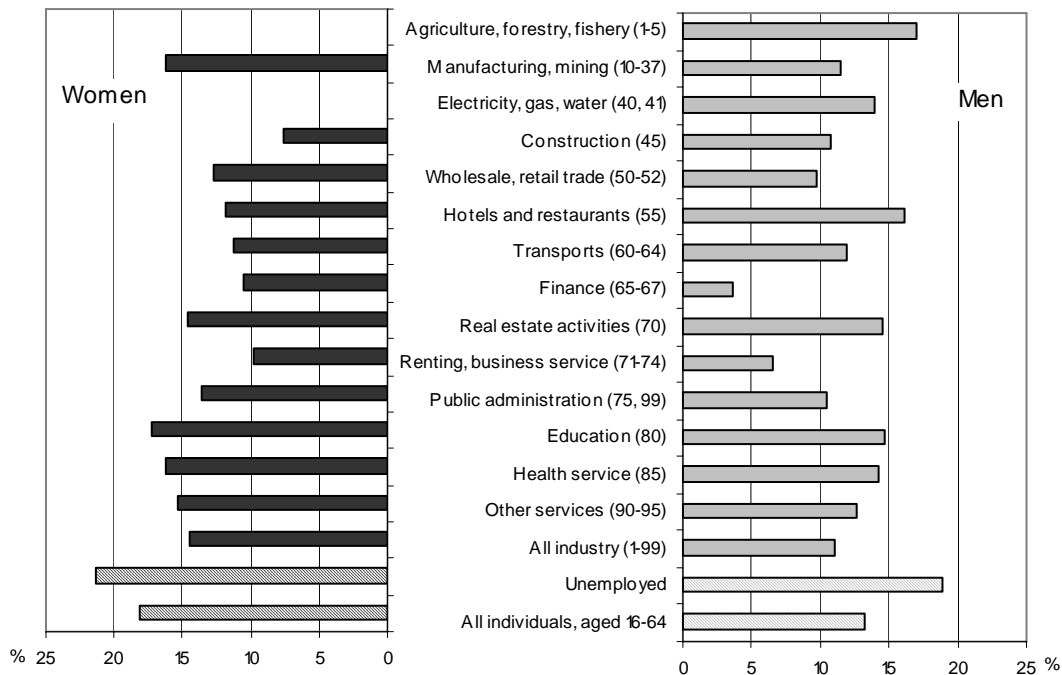
**Diagram 25. Bad state of health by gender 2000-2002. For industries, per cent of employed persons.**



### 6.2.2 Severe health problems because of long illness

Diagram 26 shows that employed women overall suffered severe problems because of long illness more often than employed men in 2000-02, almost 15 per cent compared to 11 per cent. The largest difference between industries was between men working in the hotel and restaurant industry and men in the finance industry. A higher share of the unemployed had severe problems because of long illness, about a fifth of unemployed women and men.

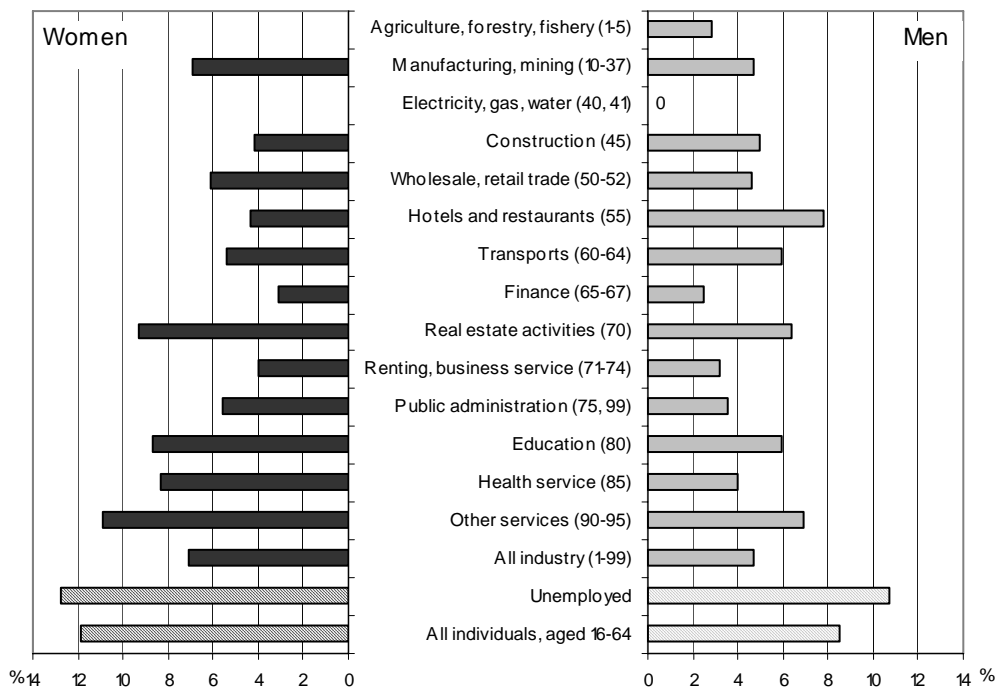
**Diagram 26. Severe health problems by gender 2000-2002. For industries, per cent of employed persons.**



**6.2.3 Reduced working capacity because of long illness**

Employed persons with a reduced working capacity because of long illness were more common among women than men in 2000-02 (*diagram 27*). As much as 11 per cent of women in the other services industry had a reduced working capacity because of long illness. Persons having a reduced working capacity were more common among unemployed, which can perhaps be seen as an explanation as to why they are unemployed.

**Diagram 27. Reduced working capacity by gender 2000-2002. For industries, per cent of employed persons.**

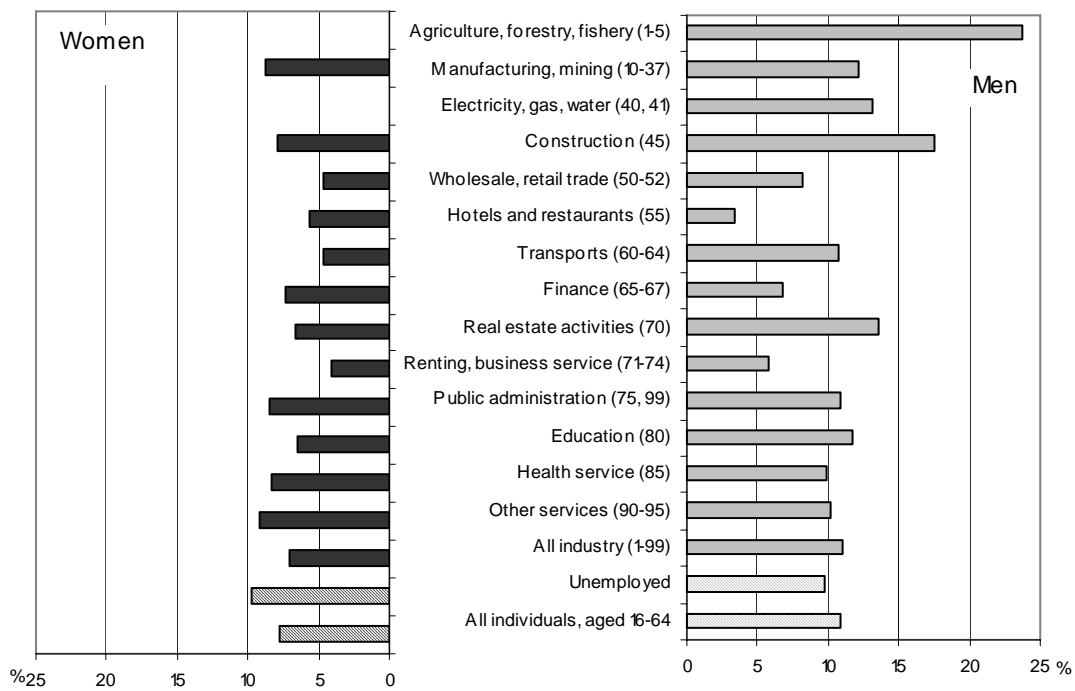




### 6.2.4 Impaired hearing

There were fairly small differences regarding impaired hearing between employed women working in the different industries in 2000-02 (*diagram 28*). Employed men, on the other hand, showed more variation. Almost 18 per cent of men in the construction industry had impaired hearing compared to only 3 per cent in the hotel and restaurant industry. Age is an important factor for this indicator, i.e. impaired hearing is more common among older persons.

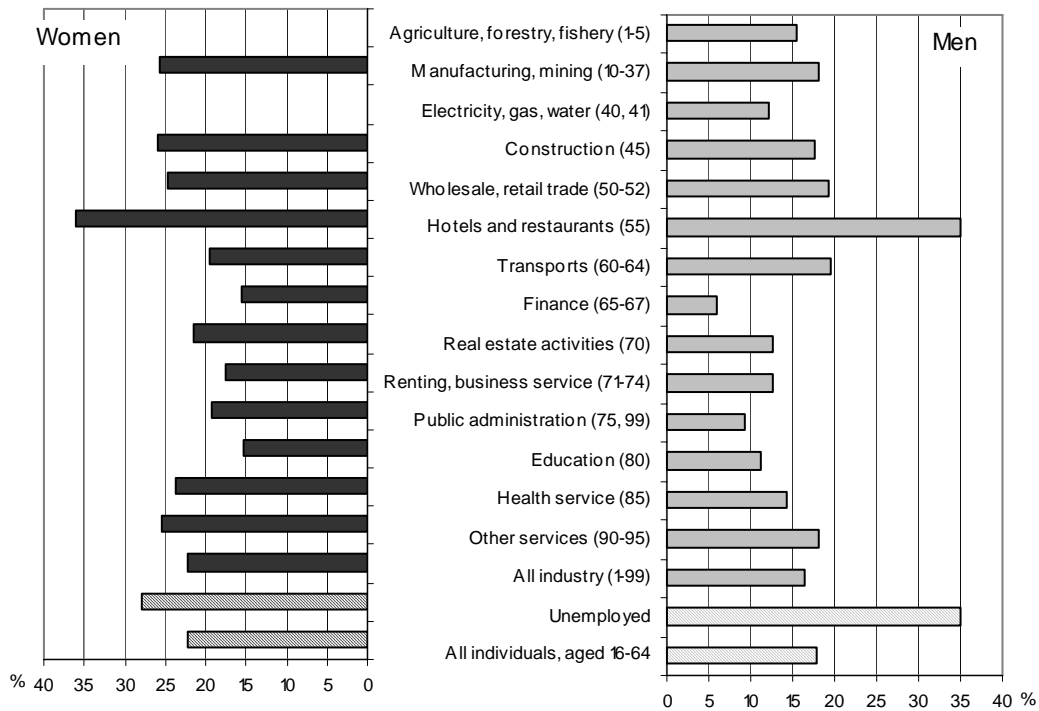
**Diagram 28. Impaired hearing by gender in 2000-2002. For industries, per cent of employed persons.**



### 6.2.5 Everyday smoker

22 per cent of women in all industries were everyday smokers in 2000-02, compared to 17 per cent of the men, which can be seen in *diagram 29*. One third of employed men and women in the hotel and restaurant industry smoked daily. Twice as many unemployed men smoked compared to employed men.

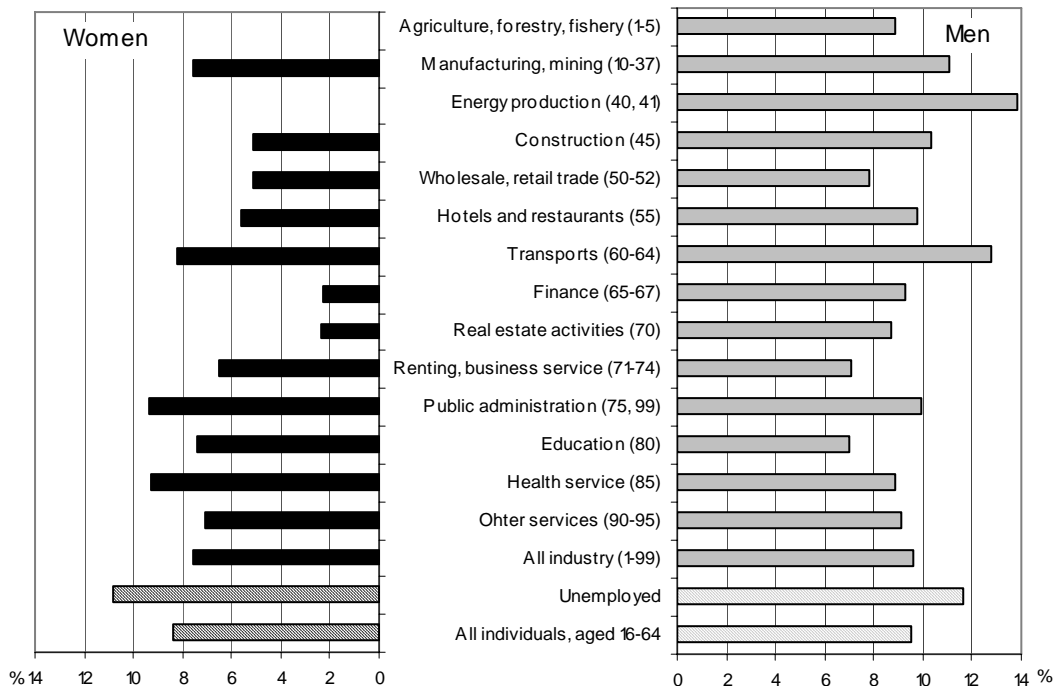
**Diagram 29. Everyday smoker by gender in 2000-2002. For industries, per cent of employed persons.**



**6.2.6 Obesity**

Obesity was most common for employed men in the energy industry, followed by men in the transport industry and amongst unemployed men, with 14, 13 and 12 per cent respectively (*diagram 30*). For women, it was most common amongst the unemployed followed by those working in public administration and the public service sector. Obesity was found in industries overall to approximately the same extent as in the population in general.

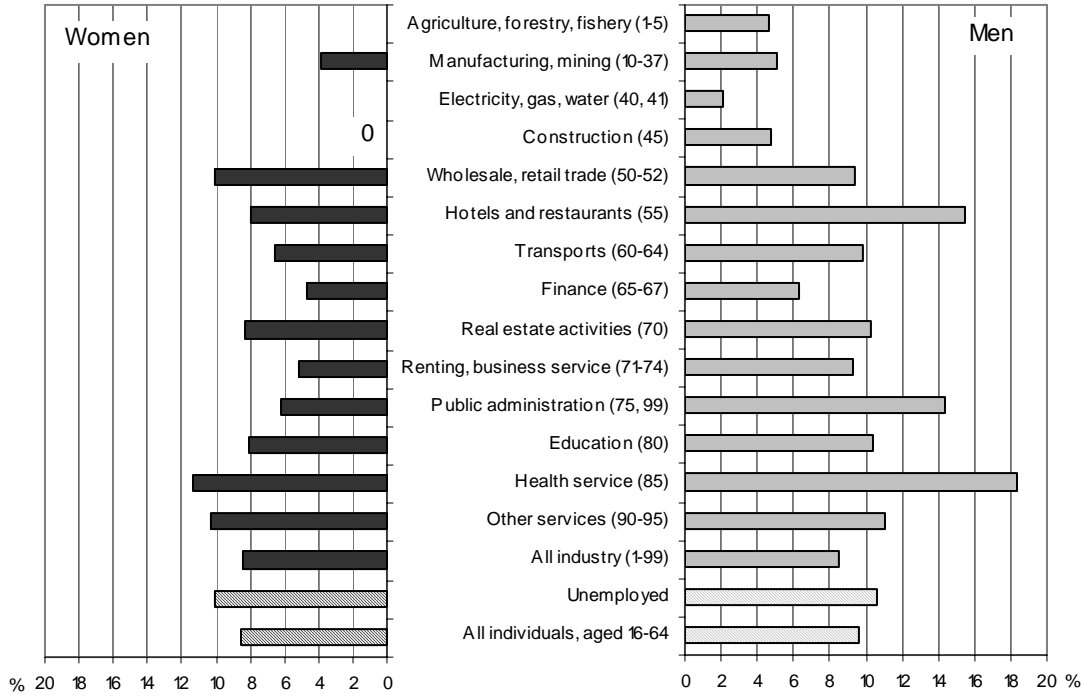
**Diagram 30. Obesity by gender in 2000-2002. For industries, per cent of employed persons.**



### 6.2.7 Incidents with violence or physical threat

Approximately 9 per cent of all employed men and women had been exposed to incidents with violence or physical threat in 2000-02 (*diagram 31*). Men in the health services industry and in the hotel and restaurant industry were exposed to violence or threats to a higher degree than those employed in the other industries.

**Diagram 31. Persons who had experienced an incident with violence or physical threat by gender in 2000-2002. For industries, per cent of employed persons.**



# 7 Environmental accounts and social statistics

## 7.1 Social statistics in the environmental accounts

One of the main purposes with environmental accounts is to link the environmental field with the economic field to see how they interact with each other. This is achieved, among other things, by accounting on emissions by industry, for example, to see how the economic sector affects the environment. These interactions are often shown in so-called industry profiles and decoupling diagrams, which are both presented in this chapter.

Industry profiles show how much each industry contributes to the total for all industries for different variables and decoupling diagrams compare an economic variable (such as value added) with an environmental variable (such as CO<sub>2</sub> emissions) over time as an index.

These types of diagrams can also be used for social statistics, making it possible to connect the social field with the environment and economics. Social data from the Swedish Living Conditions Survey have been included in the industry profiles and decoupling diagrams below, to show how the three fields can be linked together.

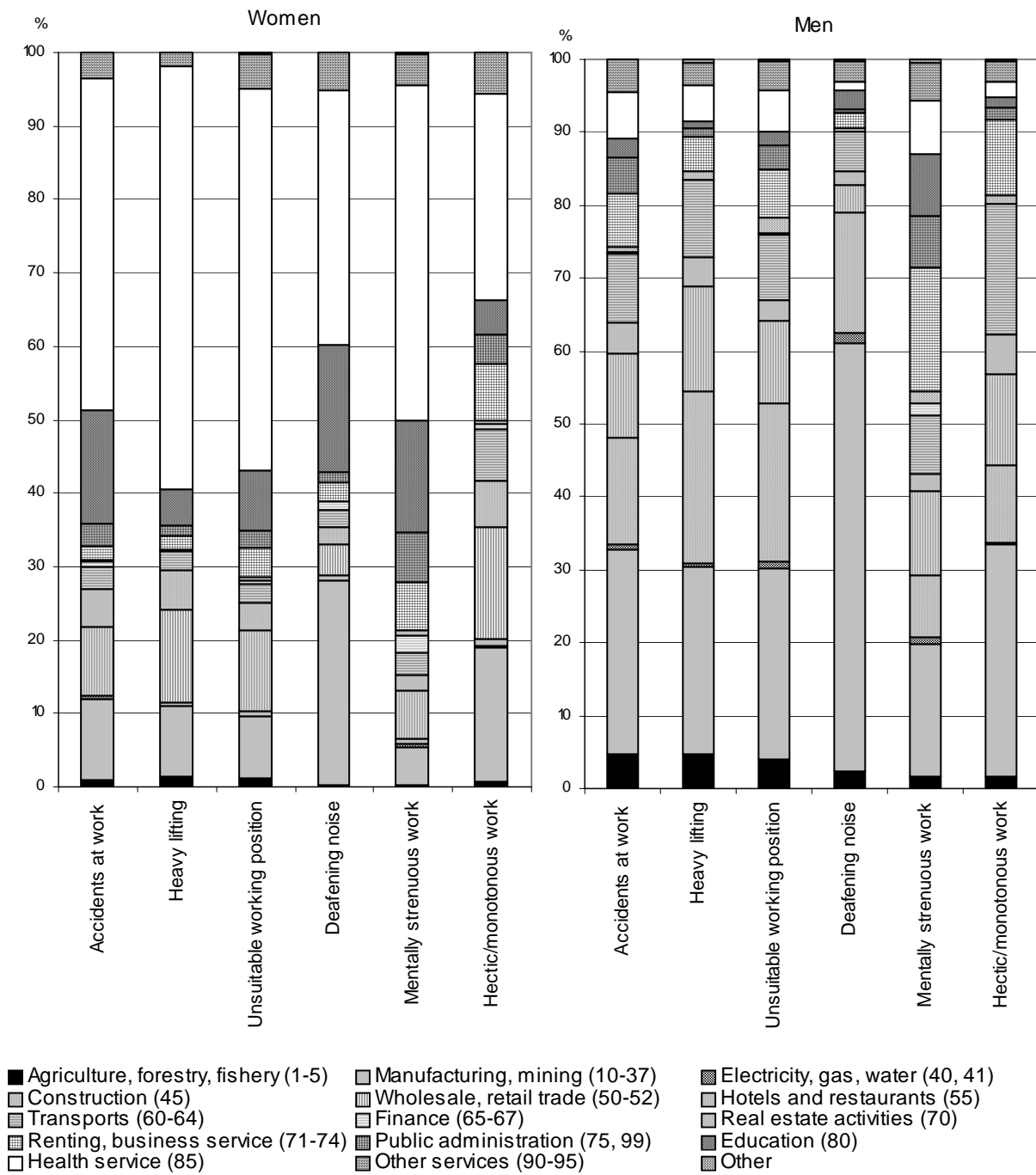
### 7.1.1 Industry profiles

The diagrams so far in the report have shown the percentage of employed persons within each industry for each indicator, for example the percentage of employed women performing heavy lifting in the manufacturing industry. Another way to present the data is to show how much, in per cent, each industry contributes to the total for all industries, for example employed women performing heavy lifting in the manufacturing industry make up X per cent of all employed women that perform heavy lifting. This way of presenting data is common in the environmental field, to show industries emissions, for example.

However, it is important to keep in mind that, in general, the higher number of employees, the higher the value for the industry.

*Diagram 32* (next page) shows the structure of the labour market on the basis of gender. Industries like education and health services have high values for employed women because a large part of the employed women work in these industries. In the same way, industries such as the manufacturing industry and the construction industry score high values for men. The profiles show that the data in its disaggregated form show interesting differences between industries.

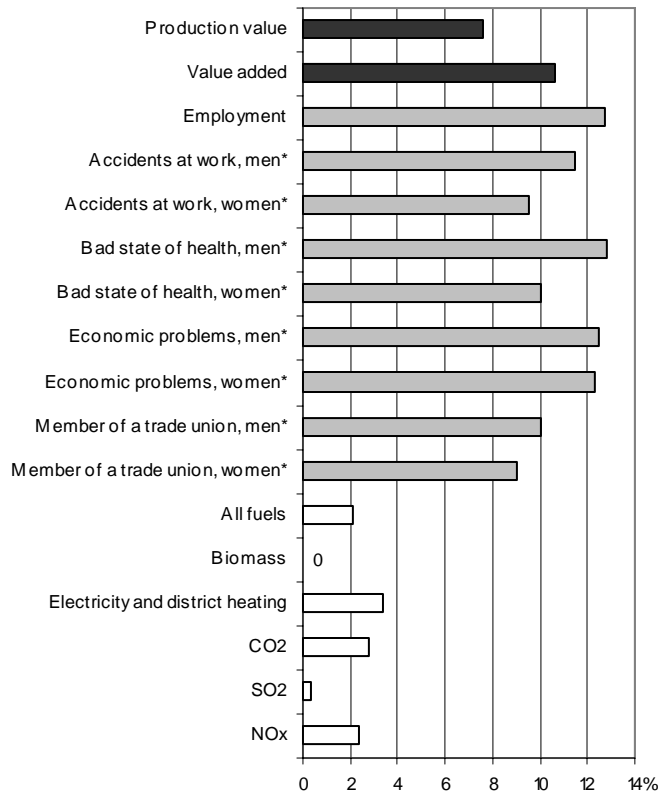
**Diagram 32. Industry profiles for indicators on working environment in 2000-2002. Per cent of total employed persons by each industry.**



Another type of industry profile shows variables from all three dimensions of sustainable development<sup>8</sup> in the same diagram for one selected industry, as shown in *diagram 33*. This diagram shows how much, in per cent, the wholesale and retail trade industry contributes to the total of all industries in the same way as *diagram 32*. For example, the wholesale and retail trade industry makes up 12 per cent of all reported accidents at work for men, emits 3 per cent of all carbon dioxide and contributes to 11 per cent of the total value added.

<sup>8</sup> The three dimensions of sustainable development are social, environmental and economic.

**Diagram 33. Industry profile for wholesale/retail trade industry (NACE 50-52) in 2000.**



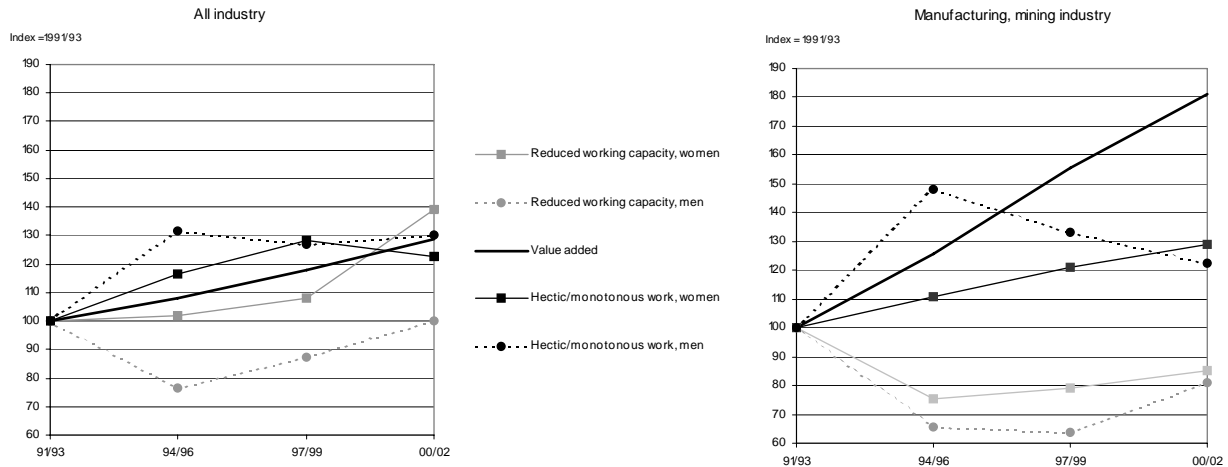
\* Data for 2000-2002.

### 7.1.2 Decoupling

Decoupling diagrams are used to compare economic growth (e.g. GDP) and environmental impact (e.g. CO<sub>2</sub> emissions). Decoupling means that the connection between economic growth and environmental impact is broken. By indexing the variables, comparison of these changes are shown despite different measurement units.

*Diagram 34* shows that the value added has increased by 30 per cent in all industries and the share of employed men and women exposed to hectic and monotonous work increased by 30 per cent (men) and 23 per cent (women). This means that no decoupling has occurred in this case. No decoupling had occurred either for employed persons with reduced working capacity, since there was no decline between 1991 and 2002. By reasoning in the same way and looking specifically at the manufacturing and mining industry (*diagram 34*), it can be seen that decoupling has occurred for reduced working capacity but not for hectic and monotonous work.

**Diagram 34. Reduced working capacity and hectic/monotonous work between 1991-2002. Index 1991/93=100.**

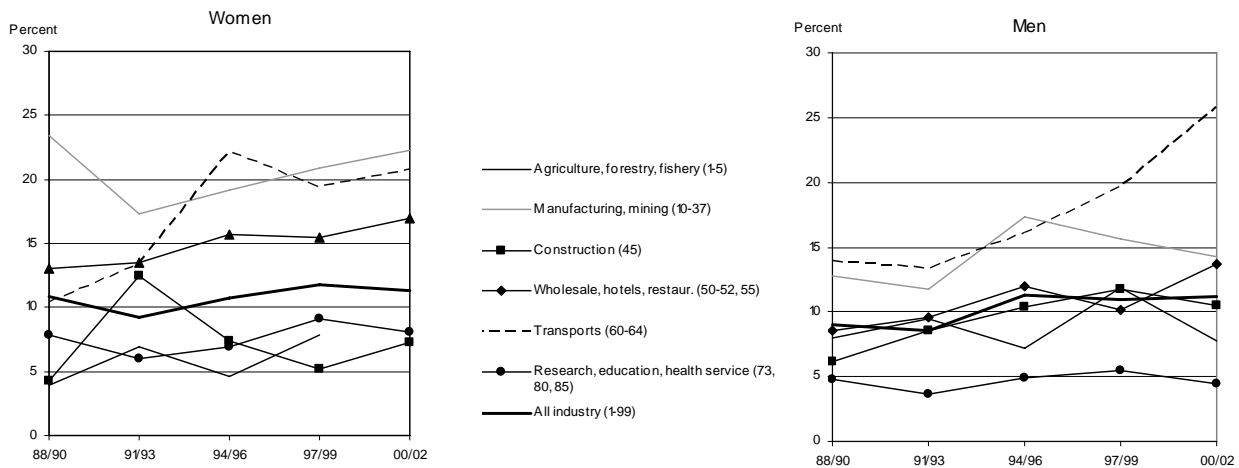


Note: value added, 91/93=93, 00/02=00/01

**7.1.3 Time series and industry**

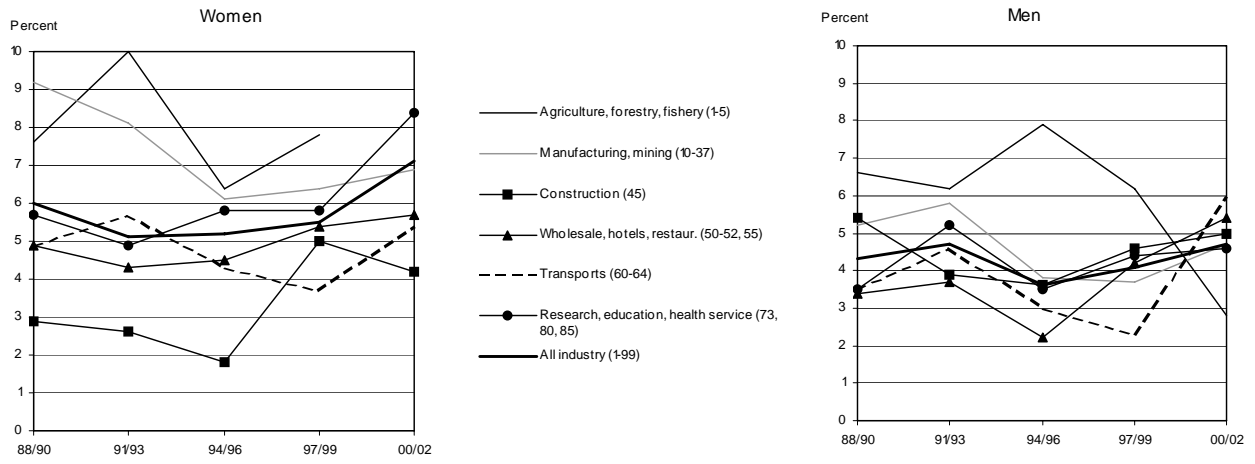
Another way to present social data by industry is to do it by time series, which is shown in diagram 35 and 36. It was not possible to get the same industry grouping for the time series diagrams as for the other diagrams pitch down pitch down. Overall, a small increase of employed persons with experience of hectic and monotonous work can be noticed in *diagram 35*. One exception was in the transport industry, were a sharp increase occurred for both men and women.

**Diagram 35. Hectic and monotonous work between 1988-2002. Per cent of employed persons.**



*Diagram 35* shows that the number of employed men with a reduced working capacity because of long illness was fairly constant between 1988 and 2002, while the number of employed women increased somewhat after 1991/93.

**Diagram 35. Reduced working capacity between 1988-2002. Per cent of employed persons.**





# 8 Conclusions

This report shows that it is possible to include many different aspects of the social field in the environmental accounts. This is demonstrated by presenting data distributed by industry from the Swedish Living Conditions Survey, the Work Environment Survey and the work-related disorder survey in Sweden, surveys which has industry as a background variable. Including this social dimension in the environmental accounts also makes it possible to analyse the social data together with the system's economic and environmental data. This can be done using methods frequently used in the environmental accounts, such as different kinds of industry profiles and decoupling diagrams, in which social data are treated in the same way as economic and environmental data. Adding social data on industry level to the environmental accounts also adds the social dimension of sustainable development to the environmental accounts, which makes it possible to analyse the area further on an industry level.

In the report, it is shown that it is possible to present data on working environment, health by gender in an accounting framework, such as by industry. This can present new angles of social data. Presenting social data together with other economic and environmental data also gives the information new dimensions and usages.

Throughout the report, the results have shown that there are significant differences between the presented industries, proving that it is interesting to look at social data also in this way. The results also show that, for some industries, the social data are comparable with the situation for unemployed persons. The finance industry generally scores better and hotel and restaurant industry generally scores worse on social indicators compared to the other industries.

## 8.1 Conclusions of the results by social theme

### 8.1.1 Employment and education

There are large differences between in which industries men and women are a working. Women dominate in education and health service industries while men dominate in manufacturing and construction industries. Employed persons in service industries are generally higher educated than employed person in goods producing industries. There are more men than women employed in the environmental industry.

### 8.1.2 Working environment

The finance industry, real estate activities industry and renting and business service industry have a better working environment than the other industries.

### 8.1.3 Health

Finance industry and renting and business service industry generally score better on the health indicators compared with the other industries. Men in the hotel and restaurant industry also score badly on many indicators e.g. smoking and severe health problems. Compared with unemployed persons employed persons score better on almost all the health indicators. Exception is unemployed men with impaired hearing, smoking and obesity.

## 8.2 The Swedish strategy for sustainable development

The indicators in this report could be used to follow up parts of the Swedish strategy for sustainable development<sup>9</sup>, for example, for the area “working life”. The objective for this area, among other things, is to ensure good working conditions. Because the working environment indicators in the report are presented by industry, they could be a useful tool when this area of the strategy is followed up, as a complement to indicators covering all employed persons. It may therefore be useful to look into which industries show the worst results for the different indicators and then reflect on what can be done.

Another area in the strategy where the indicators could be used for follow-up is “sustainable economic life”, meaning that enterprises should accept greater social and environmental responsibility. Since the indicators in this report cover and illustrate different areas of living conditions by industry, they could be used to provide a picture of the living conditions for persons employed in Swedish enterprises. Comparisons could be made between the enterprises that accept more social and environmental responsibility and the results on the living condition indicators for those employed in the industry that the enterprise is in.

## 8.3 Future work

An area of interest would be to look further into the reasons behind the results presented in this report. The underlying factors of why the results differ so much between industries, gender, socioeconomic group, region and educational level are issues that could be of scientific interest.

Statistic Sweden will in the year 2006 produce a report involving further analysis of indicators in the field of sustainable development using the environmental accounts and social statistics.

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<sup>9</sup> En svensk strategi för hållbar utveckling 2003/04:129 [2004], (*A Swedish strategy for sustainable development 2003/04:129*).

# Appendix 1 - The Swedish Living Conditions Survey<sup>10</sup>

## Introduction

The Living Conditions Survey (ULF) in Sweden aims to shed light on the living conditions of the Swedish population, including current living conditions and changes over time, relationships between problems in different areas and differences between various social categories.

The ULF survey has been expanded in stages. The first survey was implemented in 1974 and included five social domains: health, economic resources, employment and working environment, education and housing. Leisure and social relations were added in 1976 and, in 1978, political resources, safety and security and transportation were added. Since 1979, the four main themes of ULF have been according to the schedule below.

**Table A1. Themes in the ULF survey**

MAIN THEME	SCHEDULED INCLUSION			
<b>SOCIAL RELATIONS</b>				
Political resources	1978	1984-85	1992-93	2000-2001
Safety and security	1978			
Social relations, family	1976			
<b>WORK</b>				
Employment and working environment	1975 (1977)	1979	1986-87	1994-1995
Economic resources				
Education				
<b>HEALTH</b>				
	1975 (1977)	1980-81	1988-89	1996-1997
<b>"PHYSICAL ENVIRONMENT"</b>				
Housing	1975	1982-83	1990-91	1998-1999
Transportation	1978			
Leisure	1976			

Every ULF survey includes a number of basic indicators for all of the above mentioned domains. Certain questions are asked every year in order to provide consistent background variables, such as lifecycle stage, family type and socioeconomic status. Other recurrent questions provide an information base that makes it possible to continuously follow developments in selected areas.

The first survey, conducted in 1974, was regarded as a pilot, and all data collected at that time have been discarded. Otherwise, the data from all surveys from 1975 onwards are available for further analysis.

During the period 1975-1979, all individuals who were married or cohabiting with the selected respondents were also included in the interview sample. From 1980 onwards, the sample was

<sup>10</sup> Living conditions, appendix 16, The Swedish living conditions survey, design and methods, Technical report from ULF 1990-93 (*download at [www.scb.se](http://www.scb.se)*).

limited to the selected respondents and only those individuals were interviewed; the interview did, however, include several questions on the employment of the spouse/partner.

An experiment with panel selection was conducted during one quarter of 1983. Since 1986, a panel has been routinely included in the surveys.

The samples during 1975-1979 included individuals aged 16-74. From 1980 onwards, the upper age limit has been 84 years. In the 1988-1989 surveys, there was no upper age limit.

**Table A2. Annual variation of sample size and non-response**

	Net sample	Number of Interviews	Total non-response %	... of which: Refused	Unavailable
1975	14 256	11 582	18.8	17.8	0.6
1976	14 411	11 144	21.0	19.5	1.1
1977	14 494	11 699	19.3	17.6	1.1
1978	12 119	10 307	15.0	13.6	0.8
1979	11 389	9 468	16.9	15.4	1.0
1980	8 418	7 261	13.7	11.3	1.6
1981	8 903	7 703	13.5	10.3	2.1
1982	8 419	7 290	13.4	10.4	2.1
1983	7 952	6 663	16.2	13.2	2.2
1984	8 673	7 211	16.9	13.6	2.2
1985	7 915	6 585	16.8	12.3	2.8
1986	6 171	4 774	22.6	17.7	3.1
1987	8 754	7 052	19.4	14.4	2.9
1988	8 189	6 514	20.5	14.6	3.7
1989	8 552	6 781	20.7	14.5	4.0
1990	7 946	6 191	22.1	16.7	3.5
1991	7 402	5 827	21.3	16.0	4.0
1992	7 481	5 980	20.1	14.8	3.3
1993	7 685	6 190	19.5	13.8	4.1
1994	7 494	6 001	19.9	13.9	4.5
1995	7 475	6 014	19.6	13.2	4.4
1996	7 483	5 891	21.3	14.4	5.0
1997	7 467	5 807	22.2	14.4	5.8
1998	7 472	5 732	23.3	16.3	5.1
1999	7 482	5 734	23.4	15.1	6.1
2000	7 456	5 680	23.9	15.3	6.8
2001	7 469	5 805	22.1	14.6	5.9
2002	7 969	5 973	25.0	16.0	6.8

## Interview objects, population and population groups

The purpose of each annual survey is to gather statistics on all permanent residents in Sweden, aged 16-84 years during the year in question. To qualify as a permanent resident, the individual must be officially registered as such, and not have been outside the country for any great length of time.

The survey results are usually shown by various categories of the population, e.g. gender, age, lifecycle stage, socioeconomic status, region of residence, nationality, etc.

Data collection continues throughout the year, and the results are expressed as an average for the year for the relevant age categories. For that reason, the demographic totals in ULF deviate somewhat from official statistics, which reflects the composition of the population at the turn of the year. The deviation is a consequence of mortality, emigration and immigration, and is

limited in size. For certain variables, it is also possible to derive data relating to households or children, for example.

The relatively detailed information from the interviews on the composition of households makes it possible to sort them by alternative criteria. By one definition that is used in certain contexts, households are divided into *married, cohabiting couple* and *single*, with or without children under eighteen years of age. According to this definition, children aged 18 and over, as well as other individuals sharing the dwelling place, comprise their own households.

In the following technical discussion, *object* is used as a common term for all social entities, including individuals, households, etc.

## **Sampling procedure**

The survey involves a large number of variables, with varying demands for statistical precision. Accordingly, there is no simple formula for determining sample size. It is determined, instead, on the basis of data analysis requirements for various population groups. Population groups are any category of the population on which specific data are collected. Every year a systematic sample is drawn by age group from Statistics Sweden's Total Population Register (TPR). Such a sample is regarded as a simple random sample. All individuals who have been included in ULF at any time during the preceding seven years are eliminated from the sample. The final sample also includes a panel of individuals who participated in the survey eight years previously. The panel is supplemented with immigrants and other individuals aged 16-23 who have "grown into" the population.

## **Over- / under-coverage and non-response**

Over-coverage means that the sampling frame includes subjects that are not part of the population. These are individuals who have died, or have lived outside the country for a long period of time.

Under-coverage refers to individuals who are part of the population, but are not included in the sample and who therefore cannot be selected. Under-coverage is due primarily to errors in essential statistics, or to the fact that some individuals are not registered in essential statistics until after the sampling frame has been defined.

Non-response refers to individuals who are part of the sample but who do not participate in the survey. There is also a category of partial non-response, referring to individuals who participate but do not respond to all questions. The non-response rate for single questions does not usually exceed a couple of per cent.

## **Estimation and variance calculations**

The survey focuses primarily on three measures of both population groups and the total population: total number of objects with a certain characteristic (in most cases, individuals and households), percentage and mean value.

As noted above, the sample is systematically selected. When characteristics of the estimators are discussed, however, the selection is made under the assumption that it has the same value as a

simple random sample. The systematic selection procedure can be more precise than a simple random sample, for which the variance estimators tend to result in overestimation.

Post-stratification weightings are computed for non-response. The data are stratified into 82 strata, by region, age, gender and marital status. The estimators of the post-strata are unbiased. Estimates of other variables may be somewhat biased as a result of non-response, but empirical studies indicate that the effect is negligible in most cases.

For cost reasons, precise variance estimates have not been carried out. In order to permit some kind of statement regarding the estimates, tables showing the approximate length of half the confidence interval have been calculated for both estimates of percentages and differences between percentages in population groups.

Partial responses occur in connection with several variables, although at a fairly low frequency in ULF. Partial responses lead to problems of quality and calculation. The quality problem arises from the uncertain effect of an increase in non-response for certain variables. The calculation problem stems from the fact that the estimated distribution of responses to a given question may not equal the number of subjects in the entire population.

Normally the ULF tables are corrected for partial responses on a proportional basis. When the frequency of such responses is low (i.e. not greater than three per cent) not much attention is paid to them. However, when there is a high frequency of partial responses, the importance of the proportional adjustments may be discussed in connection with presentation of the survey results.

## **Research implementation**

The interview questionnaires have been processed by SCB in consultation with expert committees on the various domains of living conditions. Before every new survey, a number of sample interviews are conducted in order to field-test new questions and to get some idea of much response time they require.

Data collection is primarily carried out through face-to-face interviews. Telephone interviews are conducted if the subject specifically expresses such a preference (a small number of cases) or in connection with the follow-up phase. About 20 per cent of the interviews are done by telephone.

Prior to the start of the ULF series in 1974, over 200 interviewers were provided with the necessary training. Since then, additional interviewers have been recruited and trained every year. Following a basic introductory course in survey methods, new interviewers participate in an additional one-day course that includes approximately six hours of intensive training. The various aspects of interview protocol are thoroughly reviewed and practice in handling certain complicated questions is provided.

Prior to being interviewed, every interviewee receives a brief explanatory letter and a brochure describing the purpose of the survey and the relevant provisions of Swedish privacy law. The subjects included in the panel receive a slightly different version of the letter which includes a reminder that he or she has been interviewed previously. Interview appointments are usually made by telephone.

Interviewees who are interested in the survey results are given a collection of articles that are based on ULF research findings and discuss living conditions from various perspectives.

The data registration, editing and coding is done interactively in a PC and visual basic environment. The coding applies primarily to the following variables:

*Education level* in ULF corresponds to official Swedish education nomenclature (SUN), with the single exception that SUN's Level 3 (maximum two years of high school) is broken down into two levels: level 31 - between two months and one complete academic year of high school and level 32 - one to two years of high school.

*Industry* of the interview object is coded with the same set of two-digit codes that are used in Statistics Sweden's Labour Force Surveys (AKU). This set of codes is compatible with Sweden's standard for industrial classification (SNI), which in turn is compatible with the international standard NACE.

*Occupation* is recorded alphabetically and matched against the national occupational register which includes codes for both occupation and socioeconomic status. In cases for which there is no match, the coding is done manually. The occupational codes follow, for the most part, the Nordic Classification of Occupations (NYK), which is in turn based on the International Standard Classification of Occupations (ISCO).

*Socioeconomic status* is based largely on information about occupation and job position, past or present.

*Illness* codes follow the same principles as those of the International Classification of Diseases (ICD).

In addition to the interview data, various kinds of information from the same year are also obtained from other Statistics Sweden databases, such as on income.

## **Statistical reliability**

Coverage errors stemming from non-observations can be the result of under-coverage; that is, some subjects in the survey population are not included in the sample frame. In ULF, under-coverage errors are few, in both absolute and proportional terms, and can therefore be dismissed as negligible.

Over-coverage presents another type of error but this does not lead to any systematic error, since the objects in question (deceased, emigrants) are excluded from the sample prior to the interview phase. However, over-coverage does result in a lower grade of precision than would be the case if it did not occur. However, this effect is very low in ULF. Over-coverage amounts to roughly one per cent for both the sample and the population. Estimates are corrected for over-coverage.

Non-response stems from the complete non-participation of the interview object and/or from partial non-response regarding certain variables. The extent of non-response error is a function of the relationship between the value of a given variable and the object's willingness to participate in the survey or to respond to the relevant question. If there is no such relationship, there is no risk of error in the estimates. Evaluating the extent of non-response error is generally very difficult.

Obviously, the more that non-response objects resemble those who do respond, the less the effect the non-response error has on the estimates. Combining data in subgroups tends to reduce the effect of non-response error but it cannot completely eliminate it. A large amount of non-response among a given subgroup can result in a sizable systematic error. For example, frequent non-response among social welfare recipients could distort the data on the living conditions of lower socioeconomic categories.

The extent of sampling or random error can be estimated from the survey data. It is normally stated in terms of a confidence interval. The degree of confidence is a measure of the probability that a given procedure will result in an interval that includes the expected value of the estimate. The interviewer may misunderstand certain instructions or the object's responses, which contributes to the survey's level of systematic error. Systematic mistakes by an occasional interviewer may not distort the survey data to any great extent but it is not possible to specify how many errors of that sort occur.

The respondent may remember incorrectly, deliberately or unconsciously provide distorted responses or may simply be unable to answer the question. Most of the questions in ULF refer to the present time, for which memory errors should not constitute a major source of error. However, responses to questions such as "How often during the past twelve months have you..?" should be interpreted with caution. Errors may arise from attempts by the respondent to present him or herself in the most favourable light - to provide "socially acceptable" answers or those that the respondent believes the interviewer would agree with. ULF contains only a small number of attitude questions that might possibly carry this risk. But there are a number of questions related to habits and behaviour, for which this particular risk of error cannot be excluded.

The questions in ULF are, for the most part, not very difficult to answer. It is fairly certain that some questions are interpreted differently by different respondents. Particular care should be taken when interpreting responses to questions relating to attitudes and the frequency of specific activities, such as physical exercise and spending time with family and friends.

Apart from simple carelessness, data processing errors may be the result of misunderstood instructions regarding data registration and coding. The majority of such errors are corrected using a quality control process. Some limited studies of coding accuracy have been carried out (coding of socioeconomic status, illness, etc.), and the results do not indicate any significant incidence of systematic error.

## Reports

Information on the Living Conditions series of research is published in four different kinds of report. Basic information from ULF is published in the so-called *component reports*, which are divided into sectors and are issued every eighth year.

In addition to these basic reports, there is another type of report providing an overview of the distribution and development of living conditions. A third type of report deals with the situation of disadvantaged groups, including broad analyses of the living conditions of special categories, such as disabled persons, social welfare recipients and retired persons. Finally, there is a fourth type of report dealing with special limited problems related to living conditions.



# Appendix 2 – The Work Environment Survey

## Objective and background

The statistics aim to illustrate physical and psychosocial work environment conditions and their changes over time.

Since 1989, Statistics Sweden has made regular surveys every other year on the work environment within Swedish working life. Some 10 000 - 15 000 persons have been included in these surveys. The surveys have been conducted using the same methods since the beginning in 1989, while the sample size has varied somewhat. Some of the questions were also used in a survey conducted in 1984. The Work Environment Survey is conducted by using supplementary questions for a sub-sample of respondents of the Labour Force Survey (LFS), and via questionnaires sent to those who answered the supplementary questions. The information collected in the LFS serves as background information to separately report various groups in working life. The results are presented in a detailed occupational and industrial classification, as well as socio-economic classification, age and gender.

### Use of statistics

Users: Government ministries and agencies, mainly the Ministry of Industry, Employment and Communication, the Swedish Work Environment Authority, the National Institute for Working Life and other researchers on working life and the labour market, industry organisations, medical clinics, the parties of the labour market, occupational health care services, the mass media.

Usage: The statistics shall provide information for answering various questions within the work environment area and provide information for prioritisations of various efforts for the work environment. They shall also allow access to reference data that can be used in local surveys and shall give general information on work environment conditions.

## Structure and implementation

Supplement to LFS. Telephone interviews and postal questionnaires.

All employed persons (16-64 years) who are registered in the country, about 4 million people.

The sample frame consists of people aged 16-64 who have participated in the LFS and who are classified as employed at the time of the interview. When drawing the sample for the LFS, a division into strata is carried out by county, gender, citizenship and employment according to the Employment Register (RAMS). Within each stratum, the people are sorted by age, and then a systematic sample is drawn for each month. Each sample, which for each month in 2003 is made up of around 21 000 persons, is rotated in a way so that one eighth is renewed in the next two following survey rounds. Persons in the sample are interviewed once per quarter and in total

eight times over a two-year period, after which time they are exchanged for new sample individuals.

The sample for the 2003 Work Environment Survey is a sub-sample of those persons who took part in the LFS for the 2nd to 6th time during October, and the 3rd to 6th time during November (up to and including October, November, December 1995 and October-November from 1997 onwards) who were employed at the time of the interview. Those persons who were included in the LFS sample for the first and last time respectively are thus not included in the sample of the Work Environment Survey.

Updating of the LFS sample occurs about 3 weeks before the current measurement month with regard to moves, deaths, changes in marital status and citizenship. Changes that occur between the update and the interview can lead to overcoverage (e.g. deaths or moves). Overcoverage also occurs since the Work Environment Survey does not include those persons who, at the time of the interview, had been on leave of absence or on long-term sick leave three months back in time at the time of the interview. Overcoverage is identified and removed from the sample and thus does not affect estimations. Undercoverage consists of non-response for the employed part of the LFS.

The 2003 Work Environment Survey has been conducted by Statistics Sweden on behalf of the Swedish Work Environment Authority. Since 1989, Statistics Sweden has made regular surveys every other year on the working conditions within Swedish working life. Some 10 000 - 15 000 persons have been included in the survey. Some of the questions were also used in a survey conducted in 1984. Questions in the 2003 Work Environment Survey were given as supplementary questions in Statistics Sweden's Labour Force Surveys (LFS) during October-November 2003, and via questionnaires that were sent to those who answered the supplementary questions and had informed they would also like to answer the questionnaire.

The survey has been conducted with the same definitions and methods since the start in 1989. The sample size has varied somewhat, since the number of employed persons according to the LFS has varied.

The surveys of 1989, 1991 and 1993 are by and large comparable with regard to the contents of the variables. Some 25 questions were changed in the 1995 survey. No changes in the questions have occurred between 1995 and 1997. In 1999 and 2001, some questions were deleted and a few new ones added.

From 1995 onwards, the survey has been presented according to Swedish Industrial Classification SE-SIC 92. Surveys from previous years have been re-coded to SE-SIC 92.

From 1997 onwards, occupations are coded according to the Swedish Standard Classification of Occupations. The 1995 survey has been re-coded from NYK (Nordic Classification of Occupations) to SSK (Swedish Standard Classification of Occupations). To increase the usefulness of the survey, the 1997 survey was also re-coded to the NYK.

Data collection from the telephone interviews of the 2003 survey continued from the beginning of October up until the beginning of December. Data collection from the questionnaires began about a week after the first telephone interview was finished, and continued during January 2004. The questions mainly concerned conditions during the last three months, while some variables concerning the last 12-month period.

## The 2003 Work Environment Survey

The overall goal for the government's work environment policy is a work environment that prevents illness and accidents, is adapted to people's different physical and mental conditions, and encourages development of individuals. The Swedish Work Environment Authority has the main responsibility for carrying out the government's work environment policy. Since 1 July 1994, the Swedish Work Environment Authority is responsible for the official statistics on the work environment.

The 2003 Work Environment Survey has been conducted by Statistics Sweden on behalf of the Swedish Work Environment Authority. Since 1989, Statistics Sweden has made regular surveys every other year on the working conditions within Swedish working life. Some 10 000 - 15 000 persons have been included in the survey. Some of the questions were also used in a survey conducted in 1984. Questions in the 2003 Work Environment Survey were given as supplementary questions in Statistics Sweden's Labour Force Surveys (LFS) during October-November 2003, and via questionnaires that were sent to those who answered the supplementary questions and had informed they would also like to answer the questionnaire.

This Statistical Report presents results from the 2003 survey as well as results from previous surveys. The results for all incoming questions are presented both on a total level and for women and men in three age groups. A selection of the questions is also presented on a relatively detailed level by occupation, economic activity and socio-economic class. These breakdowns are possible by using information collected in the LFS. A selection of questions for a more detailed presentation has been made jointly by the Swedish Environmental Work Authority and Statistics Sweden.

### Objects and population

All employed persons (16-64 years) who are registered in the country, about 4 million.

### Variables

Occupation: background variable from LFS

Economic activity: background variable from LFS

Socio-economic classification: background variable from LFS

Gender: background variable from LFS

Age: background variable from LFS

Work environment variables, shown in table 1

### Statistical measures

Per cent, weighted figures

### Study domains

Occupation, industry, socio-economic classification, gender, age for the employed population.

Presentation is made for groups with at least 100 respondents.

### Reference time

Data collection from the telephone interviews of the 2003 survey continued from the beginning of October up until the beginning of December. Data collection from the questionnaires began about a week after the first telephone interview was finished, and continued during January 2004. The questions mainly concerned conditions during the last three months, while some variables concerned the last 12-month period.

## Accuracy

### Overall accuracy

The fact that the survey is based on a sample is a source of inaccuracy. Regarding sample statistics, the uncertainty of the statistical information is always due to the relative size of the topical study domain.

### Sources of inaccuracy

The fact that the survey is based on a sample is a source of inaccuracy. Regarding sample statistics, the uncertainty of the statistical information is always due to the relative size of the topical study domain. In addition to the sample uncertainty, accuracy of the survey is also affected by the method of posing the questions and how the interviewees interpret the questions, as well as the fact that non-response is relatively high. For more information, see "Att utveckla sociala indikatorer - en surveyansats belyst med exemplet arbetsmiljö" (A. Wikman, Urval nr 21, SCB 1991).

Detailed descriptions of how respondents interpret different questions have been made in the MOA project (modern employment- and life terms for women and men). The project reports can be downloaded in PDF format on Statistics Sweden's website: [www.sll.se/w/amm](http://www.sll.se/w/amm)).

### Sampling

The sample frame consists of people aged 16-64 who have participated in the LFS and who are classified as employed at the time of the interview. When drawing the sample for the LFS, a division into strata is carried out by county, gender, citizenship and employment according to the Employment Register (RAMS). Within each stratum, the people are sorted by age, and then a systematic sample is drawn for each month. Each sample, which for each month in 2003 is made up of around 21 000 persons, is rotated in a way so that one eighth is renewed in the next two following survey rounds. Persons in the sample are interviewed once per quarter and in total eight times over a two-year period, after which time they are exchanged for new sample individuals.

The sample for the 2003 Work Environment Survey is a sub-sample of those persons who took part in the LFS for the 2nd to 6th time during October, and the 3rd to 6th time during November (up to and including October, November, December 1995 and October-November from 1997 onwards) who were employed at the time of the interview. Those persons who were included in the LFS sample for the first and last time respectively are thus not included in the sample of the Work Environment Survey.

### Coverage

Updating of the LFS sample occurs about 3 weeks before the current measurement month with regard to moves, deaths, changes in marital status and citizenship. Changes that occur between the update and the interview can lead to overcoverage (e.g. deaths or moves). Overcoverage also occurs since the Work Environment Survey does not include those persons who, at the time of the interview, had been on leave of absence or on long-term sick leave three months back in time at the time of the interview. Overcoverage is identified and removed from the sample and thus does not affect estimations. Undercoverage consists of non-response for the employed part of the LFS.

### Measurement

Data is partly collected via supplementary questions posed to the interviewee in direct connection with the LFS, and partly via postal questionnaires. Following the regular LFS

interview, the interviewee is asked a number of questions for about six minutes, and is then requested to answer a postal questionnaire that takes about 20 minutes to fill in.

Measurement errors occur and the questions are misinterpreted. Previous studies on methods point out that relatively satisfactory answers are received with the questions used, but certain problems always remain. It may be difficult to estimate the size of the problem, but the scope is believed to be small.

#### Non-response

Non-response consists of three parts - the LFS, the supplementary questions and the questionnaire.

Figures on non-response are available for the LFS (13% in 1991, 12% in 1993, 13% in 1995, 14% in 1997, 16% in 1999, 15.7% in 2001 and 16.2% in 2003). However, no information is available for the sub-groups of employed persons and unemployed persons. As a result of the non-response studies in the LFS, non-response is estimated at about 10 per cent for employed persons in the LFS part of the 1991 survey. The Work Environment Survey is based on the group of employed persons. It is not possible to reasonably estimate non-response among employed persons during 1993-2003.

In connection with the LFS interview, those who were on leave of absence or on long-term sick leave were deleted at the time of the interview. Due to refusal, language difficulties and indirect interviews etc, non-response increases in the various parts of the surveys.

#### Data processing

The information in the supplementary questions is collected via computerised interviews which are examined automatically. The information in the postal questionnaires is scanned and registered on computer.

Three rounds of reminders were sent out for the 2003 survey, as was done for the surveys of 1997-1999. In 1997, project work led to the decision that the third reminder would be different for each category of recipient. The group of young people and self-employed persons were told that their particular group had not replied to the extent that others had, and that their work environment would not be adequately described unless more people in the group responded to the survey. (The others received a normal reminder.) It was estimated that replies increased by a few per cent compared to the previous survey. In 1999, an extra reminder was made for all groups. Starting in 2001, reminders were written with a special request to young people and older ones, self-employed persons and employed persons, permanent and temporary staff, and to all, regardless whether their work environment was good or bad.

#### Presentation of accuracy measures

Based on the number of respondents to the questionnaire and the formula in Appendix 1, significant differences can be calculated for other confidence intervals than the 95 percentage one used in this report. This report does not include any specific presentation of accuracy measures.

## Timeliness

#### Frequency

The survey has been carried out every other year since 1989.

#### Production time

Information will be available in Statistics Sweden's databases about seven months after the end of the reference period, and Statistical Reports are published about seven months after the end of the reference period.

#### Punctuality

Publishing occurs according to the publication plan for the Official Statistics of Sweden (Statistics Sweden, Statistics 2004).

## Comparability and coherence

#### Comparability over time

The survey has been conducted with the same definitions and methods since the start in 1989. The sample size has varied somewhat, since, among other things, the number of employed persons according to the Labour Force Survey has varied.

The surveys of 1989, 1991 and 1993 are by and large comparable with regard to the contents of the variables. Some 25 questions were changed in the 1995 survey. No changes in the questions have occurred between 1995 and 1997. In 1999, ten new questions were added and two were deleted. In 2001, eleven new questions were added and fifteen were deleted. In 2003, fourteen new questions were added and two were deleted.

In 1997, the collection period for telephone interviews was changed from having included the entire last quarter to only including October and November. The consequences of the change were studied with the help of the 1993 and 1995 surveys. The October-November parts of the sample were compared with the December parts for each year. After this study, it was concluded that a change of collection period would not involve any considerable disturbances in the results on the whole.

From 1997 onwards, occupations are coded according to the Swedish Standard Classification of Occupations. Information from 1995 has been re-coded from Nordic Occupational Classification 83 to Swedish Standard Occupational Classification, and information from 1997 has been re-coded to Nordic Occupational Classification 83 so that comparisons can be made on an occupational level for a longer period of time, as well as for women and men 1995/1997.

The change of standard of occupational classification implied that calculation procedures of weights for upward adjustment needed to be changed. The previous estimation system was based on post-stratification by gender and occupational groups classified according to the Nordic Occupational System with LFS estimations of the number of employed persons per post strata as auxiliary information. Since the Nordic Occupational Classification System was replaced by the Swedish Occupational Classification System, the estimation system was also changed, and was based on a post stratification by gender and occupational groups classified according to the Swedish system. This change in the weights system could not be done before the 1997 surveys, since there was no code key between the Nordic and Swedish systems. Roughly estimated, the new weight system based on the Swedish Occupational Classification System will only result in small differences compared to the system based on the Nordic Occupational Classification System.

From 1995 onwards, the survey has been presented according to Swedish Industrial Classification SE-SIC 92. Surveys from previous years have been re-coded from SE-SIC 69 to SE-SIC 92 by using a matrix that has been created for use in connection with re-coding LFS results.

This method of re-coding can also involve uncertainty on the presentation. From the 2003 survey onwards, the Swedish Standard Industrial Classification 2002.

New ways to classify economic activities and occupations involve difficulties in making comparisons between the results from newer and older surveys.

Coherence with other statistics

Record linkage is used with the Survey on Work-related Disorders. Records from the 1999 Work Environment Survey were linked with data from the register of persons on sick leave from the National Social Insurance Board when the health insurance investigation was conducted. Prior to the action plan for increased health in the workplace, records from the 1999 Work Environment Survey were linked with Statistics Sweden's LOUISE database.

## **Availability and clarity**

Forms of dissemination

The statistics of the product are published in Statistics Sweden's databases, the AM series of the Statistical Reports (AM 69) and in series on Information on Education and the Labour Market (IAM) and in other reports. Some of the information is available on the websites of the Swedish Work Environment Authority and Statistics Sweden.

Presentation

Tables, graphs and explanatory text in Statistical Reports and in the IAM series.

Documentation

SCB DOK

# Appendix 3 - The Work-related disorders survey

## Objective and background

The survey on work-related disorders aims to survey health problems that are caused by work of employed persons on the Swedish labour market. The survey refers to disorders as a result of work that people have had during the last twelve months. The survey is a sample survey that gives information on how many people have reported work-related disorders during a certain period of time, the part of the body which has been affected, and what kind of work may have caused the problem. The survey has been conducted annually since 1991 as a supplement to the Labour Force Survey (LFS). The information collected in the LFS serves as background information to separately report various groups in working life.

### Use of statistics

Users: Government ministries and agencies, mainly the Ministry of Industry, Employment and Communication, the Swedish Work Environment Authority, the National Institute for Working Life and other researchers on working life and the labour market, industry organisations, medical clinics, the parties of the labour market, occupational health care services, the mass media.

Usage: The statistics shall provide information for answering various questions within the work environment area and provide information for prioritisations of various efforts for the work environment. The statistics can be used as reference information which can be related to specific local conditions and to reconcile with the statistics on reported occupational injuries from the Information System on Occupational Accidents (ISA).

## Structure and implementation

Supplement to LFS. Telephone interview.

All employed persons (16-64 years) who are registered in the country, about 4 million people.

Data is collected via supplementary questions posed to the interviewee in direct connection with the Labour Force Survey. After the regular LFS interview, all interviewees are asked two questions: 1) Have you had any physical disorders? and 2) Have you had any other disorders (stress, psychological symptoms, etc) as a result of work that have made it difficult to work or carry out daily housework? Those who answered yes to one or both questions were asked further questions which took about 5 minutes.

The survey has been conducted with the same definitions and methods since the start in 1991. The sample size has varied somewhat, since the number of employed persons according to the LFS has varied.

The surveys of 1991-1994 are completely comparable with regard to questions and variables. The questionnaire was changed in 1995. It includes more variables and begins with two questions in contrast to the previous questionnaire which began with one question on physical/other



disorders as a result of work. The introductory questions (previously one introductory question) determine if the interviewee will be asked further questions. Minor adjustments in the questionnaire were made in 1996 and 1998. New questions were added in 2001, 2003 and 2004.

Classification of economic activities also follows the classification used in the LFS and was coded under SE-SIC (Swedish Industrial Classification) 92 up until 2002. In 2003, the Swedish Standard Industrial Classification SNI2002 has been used. The economic activity of persons in the labour force is determined on the basis of the principal activity of the particular enterprise at the local unit where the sample member is employed.

From 1997 onwards, occupations are presented according to the Swedish Standard Classification of Occupations.

Data collection for the 2005 survey continued from the beginning of January up until the beginning of April.

Statistical Reports are usually published about 3 months from the end of the reference period.

## **The survey on work-related disorders 2005**

The survey is conducted by Statistics Sweden on behalf of the Swedish Work Environment Authority. The survey on work-related disorders aims to survey health problems that are caused by work of employed persons on the Swedish labour market. The survey refers to disorders as a result of work that people have had during the last twelve months. The survey is a sample survey that gives information on how many people have reported work-related disorders during a certain period of time, the part of the body which has been affected, and what kind of work may have caused the problem. The survey has been conducted annually since 1991 as a supplement to the Labour Force Survey (LFS). The information collected in the LFS serves as background information to separately report various groups in working life.

The survey has been conducted with the same definitions and methods since the start in 1991. The sample size has varied somewhat, since the number of employed persons according to the LFS has varied. The sample in the 1999 survey was half the size of the other surveys. This was due to supplements from the EU.

The surveys of 1991-1994 are completely comparable with regard to questions and variables. The questionnaire was changed in 1995. It includes more variables and begins with two questions in contrast to the previous questionnaire which began with one question on physical/other disorders as a result of work. The introductory questions (previously one introductory question) determine if the interviewee will be asked further questions. Minor adjustments in the questionnaire were made in 1996 and 1998. New questions were added in 2001, 2003 and 2004.

Classification of economic activities follows the classification used in the LFS and is coded according to SE-SIC 92 up to and including 2001. In 2003, the 2002 Swedish Standard Industrial Classification has been used. The economic activity of persons in the labour force is determined on the basis of the principal activity of the particular enterprise at the local unit where the sample member is employed.

From 1997 onwards, occupations are presented according to the Swedish Standard Classification of Occupations.

## Objects and population

All employed persons (16-64 years) who are registered in the country, about 4 million people.

## Variables

Occupation: background variable from LFS

Economic activity: background variable from LFS

(Socio-economic classification: background variable from LFS

Gender: background variable from the Total Population Register (TPR)

Age: background variable from the TPR

Physical or other disorders resulting from occupational accident, commuting accident or other causes

Year of occurrence

Sick leave and its length

Contact with doctor

Location of disorder on the body

Reason for the disorder

Whether rehabilitation has been carried out

Change of working duties

Change in the workplace

Whether the disorder has been registered as an occupational injury. If not, why.

## Statistical measures

Per cent, weighted figures

## Study domains

Occupation, industry, socio-economic classification, gender, age for the employed population,

Results for groups with less than 400 respondents (or 800 respondents if occurrence of disorders is slight) are not presented.

## Reference time

The Survey on Work-Related Disorders 2005 was carried out during the period January to March 2005 and concerns the conditions from the past 12 months.

## Accuracy

### Total Accuracy

The fact that the survey is based on a sample is a source of inaccuracy. Regarding sample statistics, the uncertainty of the statistical information is always due to the size of the topical study domain.

### Sources of inaccuracy

In addition to the sample uncertainty, accuracy of the survey is also affected by the method of posing the questions and how the interviewees interpret the questions.

### Sampling

The sample frame consists of people aged 16-64 who have participated in the LFS and who are classified as employed at the time of the interview. When drawing the sample for the LFS, a division into strata is carried out, by county, gender, citizenship (Swedish, foreign) and employment (employed, unemployed) according to the Employment Register (RAMS). Within each stratum, the people are sorted by age, and then a systematic sample is drawn for each month. Each sample, which for each month is made up of around 19 000 persons, is rotated in a way so that one eighth is renewed in the next two following survey rounds. Persons in the

sample are interviewed once per quarter and in total eight times over a two-year period, after which time they are exchanged for new sample individuals.

From April 2005 onwards, the European harmonised Labour Force Survey LFS has been used. The main change of the harmonisation is the introduction of a new interview questionnaire to improve measurement and present the population's attachment to the labour market. In the first quarter of 2005, two parallel LFS surveys were made. 70 per cent of the sample were asked to use the old form and 30 per cent the new one. The survey on work-related disorders 2005 - which follows the old form - can thus only use 70 per cent of the LFS sample. A total of 39 520 persons took part in the 2005 survey (the corresponding number for the first quarter of 2004 was 59 373). The sub-sample of the 2005 Disorders Survey consists of five of the LFS rotation groups and amounted to 32 923 persons, of whom 19 823 were classified as employed and thus were a part of the 2005 survey sample.

### Coverage

Updating of the LFS sample occurs about 3 weeks before the current measurement month with regard to moves, deaths, changes in marital status and citizenship. Changes that occur between the update and the interview can lead to overcoverage (deaths or moves). Undercoverage consists of those persons who were registered in Sweden between the drawing of the sample and the occasion of the survey.

### Measurement

The survey has been conducted since 1991 as a supplementary survey to a sub-sample of the LFS. Today the survey is carried out during the first quarter of every year. Data collection for the Disorders Survey begins in direct connection with the LFS telephone interview. When the normal LFS interview is completed, all interviewees who are included in the sample for the Disorders Survey are asked two questions: 1) Have you had any physical disorders?, and 2) Have you had any other disorders (stress, psychological symptoms, etc.) as a result of work, which have made it difficult to work in your occupation or carry out daily housework? Those who answer one or both questions are then asked another 23 questions. The supplementary survey takes about 8-10 minutes. Measurement errors occur and the questions are misinterpreted. Previous studies on methods point out that relatively satisfactory answers are received with the questions used, but certain problems always remain. It may be difficult to estimate the size of the problem, but the scope is believed to be small.

### Non-response

Non-response in the LFS is 16.9 per cent for all the 32 923 persons in the part of the LFS that was used - regardless whether they are employed or not. It is difficult to estimate the size of non-response among employed and unemployed persons respectively. It is only after the interview that this can be determined. Employment is thus unknown among those who cannot be reached or who refuse to participate.

This report describes work-related disorders of employed persons. It would thus be very relevant to have information on non-response of these persons in particular. Older studies on non-response show a lower non-response among employed persons than others; consequently, the above information (16.9 per cent) ought to indicate a certain over-estimation as a measure of non-response among employed persons. In the 2005 survey, 19 823 employed persons were asked the questions on disorders, of whom 19 175 persons have participated. Accordingly, non-response in this stage amounted to 542 persons, or 2.7 per cent of employed persons in the sample of the survey. The chart below shows that about one third of the non-response is accounted to refusal, and the remaining two-thirds to other reasons.

Any distorted effects of non-response are limited to a degree in that the results are stratified afterwards, i.e. weighted so that distribution in the main background variables remains correct. In the disorders survey, the sample is stratified after estimations in the LFS of the number of employed persons for the variables gender, 3 age groups and 25 occupational groups.

#### Data processing

The information in the supplementary questions is collected via computerised interviews which are examined automatically.

#### Presentation of accuracy measures

Based on the number of respondents and the formula in Appendix 1, significant differences can be calculated for other confidence intervals than the 95 percentage one used in this report. This report does not include any specific presentation of accuracy measures.

## **Timeliness**

#### Frequency

The survey has been carried out annually since 1991.

#### Production time

The reference period is slightly more than three months, and information will be available in Statistics Sweden's databases about seven months after the end of the reference period. Statistical Reports are usually published about three months from the end of the reference period.

#### Punctuality

Publishing occurs according to the publication plan for the Official Statistics of Sweden (2005, Statistics Sweden, Statistics 2005).

## **Comparability and coherence**

#### Comparability over time

The survey has been conducted by using the same methods and basically the same definitions as in the beginning in 1991. The sample size has varied somewhat, and thus also the number of interviewees.

The surveys of 1991-1994 are comparable with regard to questions and variables. The questionnaire was changed in 1995. It includes more variables and begins with two questions in contrast to the previous questionnaire which began with one question on physical/other disorders as a result of work. The introductory questions (previously one introductory question) determine if the interviewee will be asked further questions. Minor adjustments in the questionnaire were made in 1996 and 1998. New questions were added in 2001, 2003 and 2004.

Classification of economic activities also follows the classification used in the LFS and was coded under SE-SIC (Swedish Industrial Classification ) 92 up until 2002. In 2003, the Swedish Standard Industrial Classification SNI2002 has been used. The economic activity of persons in the labour force is determined on the basis of the principal activity of the particular enterprise at the local unit where the sample member is employed.

From 1997 onwards, occupations are presented according to the Swedish Standard Classification of Occupations (SSYK).

New ways to classify economic activities and occupations involve difficulties in making comparisons between the results from newer and older surveys when these variables are involved in comparisons.

#### Coherence with other statistics

Record linkage is made with the Labour Force Survey and the information system of the Swedish Work Environment Authority regarding reported occupational injuries.

Statistics from the Swedish Work Environment Authority on reported occupational injuries measure the inflow of new injuries during a calendar year. The Survey on Work-Related Disorders measures the existence of both new and older remaining disorders. The concept of work-related disorders is broader than the concept of occupational injuries.

To create better understanding for the quality of the collected data from the supplementary questions to the LFS and the data being generated in the statistics from the Swedish Work Environment Authority on reported occupational accidents presented in the Information System on Occupational Accidents (ISA), record linkage has been conducted on three occasions. These comparative studies allow the assessment of how both systems are in agreement and how they differ. Analysis of the material has been published in the series "Background Facts on Labour Market- and Education Statistics" under the title Occupational injuries and work-related disorders. A comparative study on two statistical products, 1994:5 and Information system on occupational injuries and the survey on work-related disorders - A comparative study, 1999:4. The latter report is also translated into English and has been published in the same series, 2000:2. There is also a third Swedish version, 2003:5

It is important to point out that none of the systems can be seen as a validation key for the other one. Both systems have their special conditions and the systems by and large measure different things.

## **Availability and clarity**

#### Forms of dissemination

The statistics of the product are published in Statistics Sweden's databases, the AM series of the Statistical Reports (AM 43) and in other reports. Some of the information is available on the websites of the Swedish Work Environment Authority and Statistics Sweden.

#### Presentation

Tables, graphs and explanatory text in Statistical Reports.

#### Documentation

SCB DOK

# Appendix 4 - Industry classification according to NACE

Table A3. Industry classification according to NACE

NACE (code)	Industry
01	Agriculture
02	Forestry
05	Fishing
10-14	Mining and quarrying
15-37	Manufacturing industry
15-16	Food products, beverages and tobacco industry
17-19	Textiles, clothing and leather
20	Wood and wood products
21	Pulp and paper
22	Publishing and printing
23	Coke and petroleum products
24	Chemicals and chemical products
25	Rubber and plastic products
26	Other non-metallic mineral products
27	Basic metals
28	Fabricated metal products
29	Machinery and equipment
30	Office machinery and computers
31	Electrical machinery and apparatus
32	Telecommunications
33	Medical and optical instruments, watches and clocks
34-35	Transport equipment
36-37	Manufacturing industry n.e.c., e.g. furniture and games and toys.
40	Electricity, gas, steam and hot water supply
41	Water purification
45	Construction
50-52	Wholesale and retail trade
55	Hotels and restaurants
60-63	Transport and storage
60.1	Transport by rail
60 other	Other land transport
61	Transport by sea
62	Transport by air
63	Supporting transport activities, activities by travel agencies
64	Post and telecommunications
65-67	Financial intermediation, e.g. banking and insurance.
70.2	One and two-family houses and leisure houses
70 other	Other real estate activities
71-74	Renting and business service companies, e.g. renting of automobiles computer activities and advertising.
73	Research and development
80-85	Educational and health work establishments
90-95	Other community and personal service establishments, e.g. motion picture, sporting activities, hairdressing and treatment of sewage.

# Appendix 5 - Number of observations and employed persons

**Table A4. Living Conditions Survey - number of observations (respondents) by industry in 2000-2002**

Industry	Men	Women
Agriculture, forestry, fishing (1-5)	138	37
Manufacturing, mining (10-37)	1 336	476
Electricity, gas, water (40, 41)	50	19
Construction (45)	596	73
Wholesale & retail trade (50-52)	650	576
Hotels and restaurants (55)	121	168
Transport (60-64)	416	184
Finance (65-67)	83	135
Real estate (70)	89	40
Renting & business services (71-74)	774	459
Public administration (75, 99)	291	355
Education (80)	259	590
Health services (85)	243	1 747
Ohter services (90-95)	220	278
All industries (1-99)	5 283	5 140

**Table A4. Work Environment Survey - number of observations (respondents) by industry in 2003**

Industry	Men	Women
Agriculture, forestry, fishing (1-5)	142	43
Manufacturing, mining (10-37)	1 159	421
Electricity, gas, water (40, 41)	46	25
Construction (45)	496	39
Wholesale & retail trade (50-52)	554	496
Hotels and restaurants (55)	67	119
Transport (60-64)	356	149
Finance (65-67)	61	100
Real estate (70)	75	50
Renting & business services (71-74)	548	422
Public administration (75, 99)	290	315
Education (80)	257	889
Health services (85)	246	1 402
Ohter services (90-95)	181	237
Data missing	7	12
All industries (1-99)	4 485	4 719

**Table A4. Work Related Health Problems Survey - number of observations (respondents) by industry in 2003/04**

Industry	Men	Women
Agriculture, forestry, fishing (1-5)	775	223
Manufacturing, mining (10-37)	5807	2008
Electricity, gas, water (40, 41)	226	85
Construction (45)	2314	195
Wholesale & retail trade (50-52)	3009	2487
Hotels and restaurants (55)	490	674
Transport (60-64)	2013	835
Finance (65-67)	407	536
Real estate (70)	429	218
Renting & business services (71-74)	2884	2002
Education (80)	1284	3489
Health services (85)	1181	7372
Other services (90-95)	1000	1236
Public administration (75, 99)	1286	1438
All industries (1-99)	23105	22798

**Table A5. Estimated employed persons by industry in 2000-02, 000s**

Industry	Men	Women
Agriculture, forestry, fishing (1-5)	55	14
Manufacturing, mining (10-37)	551	184
Electricity, gas, water (40, 41)	21	7
Construction (45)	248	29
Wholesale, & retail trade (50-52)	272	225
Hotels and restaurants (55)	49	65
Transport (60-64)	174	73
Finance (65-67)	35	54
Real estate (70)	37	16
Renting, business services (71-74)	328	182
Public administration (75, 99)	119	137
Education (80)	109	232
Health services (85)	101	676
Other services (90-95)	93	109
All industries (1-99)	2 202	2 006