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**THE DATASET, MEASUREMENT ISSUES AND THE METHODOLOGY
OF THE DUTCHWAGE INDICATOR INTERNET SURVEY**

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TABLE OF CONTENTS

I	THE DUTCH WAGE INDICATOR PROJECT	1
1.1	The history of the project	1
1.2	The aims of the project	2
1.3	The content of the website and of similar websites	3
1.4	Publicity and web visits	5
1.5	The Wage Indicator family	5
2	THE WEB-BASED WAGE INDICATOR QUESTIONNAIRE	7
2.1	The questionnaire	7
2.2	Target population and panel data	8
2.3	The Wage Indicator web-based self-administered questionnaires	9
2.4	Complex routing	11
2.5	Data-cleaning	12
3	MEASURING KEY CONCEPTS	15
3.1	The key concepts	15
3.2	The BOC database: Measuring Branch, Occupation and Collective Agreement	16
3.3	Measuring wages	18
3.4	Measuring working hours	20
3.5	Measuring education and job level	20
3.6	Measuring work and family history, including country of birth	21
3.7	Measuring the firm and the workplace	22
5	OCCUPATION WAGES AND THE SALARY CHECK	29
5.1	The Salary Check	29
5.2	Variations across occupations	31
5.3	Wage adjustments	31
5.4	Data from the Salary Check	32
4	SAMPLE SIZES AND REPRESENTATIVITY	23
4.1	Sample sizes	23
4.2	The methodology of volunteer Internet surveys	24
4.3	Is the Internet response skewed?	25
6	RESEARCH PLANS FOR FUTURE RESEARCH	33
6.1	Research so far	33
6.2	WOLIWEB	33
6.3	The gender wage gap	34
6.4	Working time	34

6.5	Collective bargaining	35
7	LIST OF WAGE INDICATOR PUBLICATIONS	37
7.1	Publications in Dutch	37
7.2	Publications in English and French	38
	REFERENCES	41
	APPENDIX I CALCULATING HOURLY WAGES	43
	APPENDIX 2 THE BOC- QUESTIONS	47
	APPENDIX 3 QUESTIONS FOR INDUSTRY AND COLLECTIVE AGREEMENT	51
	WORKING PAPERS	53
	RESEARCH REPORTS	55

I THE DUTCH WAGE INDICATOR PROJECT

In this section the history of the project is sketched briefly from its start in the summer of 1999. The aim of the project is to set up a website where visitors could find information on wages specific to their peer group in quite a number of occupations. To gather information on wages a questionnaire was developed and initially distributed through magazines, and later was also available on the project's website. Since its launch, the website has attracted millions of visitors, and tens of thousands of completed questionnaires. Press releases regarding research results based on the questionnaire have generated free publicity.

I.1 THE HISTORY OF THE PROJECT

In the summer of 1999, three women gathered together. The initiator of the meeting was, at that time, the manager of www.fnv.nl, the website of the largest trade union confederation FNV in the Netherlands. Currently, she runs her own company as a professional web manager. The second person was the manager of www.vrouwonline.nl¹, a frequently visited website related to the three largest magazines for women in the Netherlands, published by a major publishing company.² The third person, and author of this paper, was and still is the research coordinator at AIAS, University of Amsterdam, with a track record of research on women and employment issues. The three decided to develop a website where women could find accurate information about wages earned in occupations, particularly relevant to women. The website was intended to fill the gap caused by a major Dutch website with similar information aimed at highly skilled professionals, who happen to be predominantly male.

To launch the project, which was soon called the Women's Wage Indicator³, a survey was designed to measure women's occupations and wages. In the autumn of 2000, the questionnaire was enclosed for subscribers to the three largest women's magazines, and it was enclosed in a few trade union newsletters and magazines. The web version of the questionnaire was placed on the trade union's website and on the Vrouwonline website. In the women's magazines, women could take part in a poll to win a computer. The survey explicitly addressed working women in dependent employment. Between September 2000 and May 2001, a total of 15,508 usable questionnaires were returned, a little more than half of which were returned via the two websites at the Internet.

¹ In English: Womenonline.

² In May 2003, with 133,000 female visitors a month, it was the Dutch website most frequently visited by women ('Bijna helft van internetters vrouw', in NRC, 24-06-2003).

³ In Dutch: Vrouwenloonwijzer.

In May 2001, the Deputy Secretary of State of Women's Affairs officially launched the Women's Wage Indicator Website (www.vrouwenloonwijzer.nl). The website provided information on wages for approximately fifty occupations, based on calculations using the data from the questionnaire. In addition, it had the so-called occupational pages with descriptive information on occupations, also based on information derived from the questionnaire. The questionnaire remained available on the website. Due to widespread publicity in the media, the number of web visitors increased quickly.

In May 2001, the questionnaire was slightly changed, to also include men. Thereby, doubling questionnaire's list of occupations. In addition, two additional websites were launched, the general website www.loonwijzer.nl⁴ and a website www.mannenloonwijzer.nl⁵ specifically addressing men. Much of the content of the websites was similar, but some varied. Since February 2002, the websites have also provided wage information for occupations relevant to men's employment. The number of occupations had extended to approximately a hundred. From October 2002 onwards, Monsterboard, the world's largest career-site at the Internet, has taken out a licence in the Wage Indicator website, leading to an increase in the number of visitors.

In August 2003, three partners – FNV, Monsterboard and University of Amsterdam/AIAS – established the Wage Indicator Foundation to run the website as a non-profit making enterprise, appointing the web manager as the Director. Today, the Wage Indicator website is the largest Dutch Internet site, providing information about wages in approximately a 130 occupations. It has approximately 200,000 visitors monthly. Between September 2000 and October 2003, some 55,000 usable questionnaires were completed, which is almost 1,500 questionnaires a month. The data from the questionnaire is freely available for academic research.

1.2 THE AIMS OF THE PROJECT

In labour economics, the equilibrium models assume transparency of price setting processes for wages. However, this transparency may be different for employers and for employees. In most countries, access to large numbers of individual data on wages is limited to employers, because of their control over administrative data, and/or to holders of job classification systems, because they own databases with individual data on wages for a large number of companies. By examining data in job classifications systems, employers can find out what salaries are paid for certain jobs or groups of jobs in their own as well as in other companies or industries. Market surveys into the wages paid in certain industries or professional groups are also conducted regularly. IT employees asking for a

⁴ In English: Wage Indicator.

⁵ In English: Men's Wage Indicator.

raise may well prompt their bosses to first establish what other employers in the same industry or region are paying.

Employees do not usually have full information on wages earned in particular occupations. They can gather information by asking friends or colleagues or may check personnel advertisements to see what initial salaries are being offered elsewhere. These salaries, however, may not be the salary actually paid when joining the particular company, and wages for similar occupations may differ across industries. It is even more difficult to gain insight into salaries paid by other companies once years of experience are taken into account. Trade unions are likely to have access only to information such as scales, grades and pay bands, which are laid down in collective agreements. In the Netherlands, in Belgium and in some other countries a few websites provide salary indications for more highly qualified personnel, but not for other groups of employees. The popularity of these indicators on the Internet demonstrates that employees attach a great deal of importance to comparing their own salaries with those of colleagues with other companies.

From the outset, the project aimed to improve considerably the information on wages and their components. For the Dutch trade union confederation, FNV, the major argument in favour of joining the project was the opportunity to provide employees with 'real life' information on wages, beyond the information about 'formal' wages agreed in a specific collective bargaining agreement. For the publishing company, the major argument for joining was to provide the readership of its three women's magazines and its website www.vrouwonline.nl, mostly women with short part-time jobs, with relevant information on wages. For the University of Amsterdam/AIAS, the major argument was having access to micro-data related to wages for conducting research relatively economically compared to other means of data-collection. It would greatly expand the scope for research with the determinants of gender and ethnicity based wage differentials, especially related to occupations. Finally, the Dutch Ministry of Social Affairs and Employment provided a grant, supporting the view that it is helpful to gain more insight into women's wages.

1.3 THE CONTENT OF THE WEBSITE AND OF SIMILAR WEBSITES

The website consists of several features. The large readership is attracted to the website primarily because of the so-called Salary Check. Here, visitors receive information about average wages earned in 130 occupations, controlled for seven characteristics, such as education and years of service. The information includes average gross hourly and monthly wages in Euros, excluding bonuses and other fringe benefits.

Secondly, in order to generate up-to-date information on wages earned, the Wage Indicator Questionnaire (WIQ) is continuously available at the website. In return for the possibility of winning

a prize⁶, web visitors are asked to complete this questionnaire in order to keep the Salary Check information up-to-date. The wages in the Salary Check are calculated using the coefficients of the wage equations, based on the dataset from the questionnaire. Section 2 provides further information.

Thirdly, the Occupational Descriptions Pages provide extensive descriptions of a hundred occupations with regard to age, working hours, educational levels, re-entrants and other characteristics, all based on the data derived from the survey.

Finally, additional journalistic information is provided on the website's home page. The web manager runs the websites and answers visitors' emails.

A review of the publicly accessible salary check websites worldwide show that the Netherlands has two other salary check websites, Germany has two and Italy, Belgium, the UK and the US have one. None of the existing websites, however, has all features of the Wage Indicator website. As regards the other salary check websites, in only two websites (NL and BE) are the collected data also used for research purposes. In two websites (NL and BE) the questionnaire covers a broader range of issues than wages only. In only three websites (2*GE, IT) is the full range of occupations covered, whereas the remaining websites only address higher-level occupations or white-collar workers. The US site clearly presents its commercial purpose in selling reports about wages to individual visitors, rather than offering free of charge.

In most websites, it is not clear how the data for the salary check is collected. For some websites, visitors are required to give information, which is immediately inserted into the wage database. Data gathered in this way might be unreliable, because visitors do not only use salary checks to check one's own wage, but also want to check: 'what I would have earned had I chosen another occupation' or similar issues. What is more, the unemployed may want to check salaries in various occupations, but will not succeed in doing so, because they cannot leave wage information behind. Only two websites (2*NL) explicitly mention how the data is gathered and on how many observations a wage indication for a particular occupation is based. The median wages are drawn from a database for any specific category.

Trust is an important attribute of the Wage Indicator Website. The participation of the trade union is of extreme importance. We assume that visitors trust the information provided by the wage site and that they trust that the information they leave behind is handed with integrity.

⁶ A holiday in South Africa.

I.4 PUBLICITY AND WEB VISITS

In 2003, the Wage Indicator websites is attracting 200,000 visitors monthly. Within the category dedicated websites, the website ranks amongst the most visited websites in the Netherlands. Consistently high visitor numbers are crucial to all websites. Our experience shows that whenever the media pay attention to the Wage Indicator project, this is reflected in the number of visitors. Research results based on the Wage Indicator dataset have been published regularly.⁷ Press releases have attracted continuous media attention, primarily from the written press, but also from radio broadcasting. The partners in the project explicitly aim to attract as much publicity to the website as possible in their respective magazines, websites, and activities. In addition, the project's publicity aims for a consistently high ranking in the search engines on the Internet.

In October 2001, during the so-called Week of the Wage Indicator, both the Minister of Social Affairs and the chair of FNV publicly completed the questionnaire. In June 2002, a second Week of the Wage Indicator was organised. Each day, a press release was published on issues such as reorganisations, women in management, gender wage differences, use of leave arrangements, part-time jobs, and the reconciliation of work and family life. During this Week, the first winner of the prize was announced. In November 2003, the Week of the Wage Indicator has been organised for the third time. In June 2004, it will be organised for the fourth time. Together, these means of publicity have proved essential in generating a continuous stream of visitors to the website.

Other activities include demonstrations of the website, for example at the 2002 annual AIAS-conference, the 2002 FNV Women's conference and the 2003 international DEUCE conference. Several presentations have been given for a wider European audience at, for example, the 2003 international DEUCE conference in Brussels and the 2003 EU-workshop on the methodology of the gender wage gap analyses, also in Brussels.

I.5 THE WAGE INDICATOR FAMILY

In 2003, the Wage Indicator family includes

- the Wage Indicator website (www.loonwijzer.nl)
- the Women's Wage Indicator website (www.vrouwenloonwijzer.nl)
- the Men's Wage Indicator website (www.mannenloonwijzer.nl)
- the 40plus Wage Indicator website (www.40plusloonwijzer.nl)
- a special Wage Indicator website for the health care sector (www.zorgloonwijzer.nl).

- the Youth Wage Indicator website (www.jeugdloonwijzer.nl) (in progress).

The websites are different in style and format (the so-called look-and-feel), and some content is site specific for the addressed group. In June 2002, a special website for the health care sector was developed in cooperation with the ABVAKABO-FNV, the largest public service union. The trade union provides sector-related information for the dedicated pages in the website. In addition, it presents information about collective bargaining agreements and negotiations, best employers in the sector, and other sector-related information.

In August 2002, an Internet company in Shanghai initiated a Chinese Wage Indicator. In September 2002, web managers of www.trud.org and the Federation of Independent Trade Unions of Russia (FNPR) showed interest in setting up a Russian Wage Indicator, so too, in Spring 2003, the IT-trade union in India. In May 2003, for two reasons the Dutch Wage Indicator website added an English section of several pages. Firstly, to provide information for the many Dutch citizens that have not mastered the Dutch language (Problems with your Dutch? Click here) and secondly, in recognition of the fact that the concept of the Wage Indicator is likely to be transferable to other countries, based on the interest shown at several international meetings. Attempts to find funding for a European Wage Indicator website proved successful. The so-called WOLIWEB project will start in April 2004.

⁷ The Appendix presents a list of publications.

2 THE WEB-BASED WAGE INDICATOR QUESTIONNAIRE

This section describes how the WIQ extensively investigates the area of hours and wages. It defines the target population and describes its panel element. The advantages and disadvantages of volunteer web-based questionnaires are outlined. Finally, the complex routing and the data cleaning is detailed.

2.1 THE QUESTIONNAIRE

The questionnaire has approx. 60 questions (see Appendix 1). It is organised into six clusters of questions. Each cluster ends with a set of attitude items. In total, eleven broad topics dominate the questionnaire.

Table 1. Six clusters and eleven topics in the Wage Indicator Questionnaire (WIQ)

Nr	Cluster and topics
A.	profession and industry <ul style="list-style-type: none"> • job characteristics – occupation, industry, training, job satisfaction
B.	the workplace and the firm <ul style="list-style-type: none"> • firm characteristics – branch, firm size, female percentage, region • workplace characteristics – staffing levels, cooperation, division of labour • IT-use at the workplace, and attitudes towards IT-adaptation
C.	employment record <ul style="list-style-type: none"> • employment record – years of experience, career break, job search
D.	working hours <ul style="list-style-type: none"> • working hours, overtime, timing of work, and working time preferences • employment contract, dismissals at the workplace, and perceptions of job insecurity
E.	employment contract and salary <ul style="list-style-type: none"> • wages, fringe benefits, bonuses, and wage perceptions • collective bargaining coverage, and attitudes towards coverage
F.	personal questions <ul style="list-style-type: none"> • individual characteristics – age, gender, ethnic background, region, education • household composition – marital status, children's age, children within/without the home, division of household chores

The web visitor willing to complete the questionnaire is given the following advice before doing so:

“It is useful to have one of your last salary slips handy. This shows your last gross and net salary with and without all kinds of allowances. Please note: you may qualify for a holiday allowance in May and a Christmas allowance in November or December. In that case, it is better to use a salary slip from another month. You are also asked if you have tax relief in terms of mortgage interest, etc.”

Since September 2000, several versions have been developed. Table 2 shows that all versions are web-based self-administered questionnaires, with the exception of the first questionnaire, which is

paper-based self-administered. In January 2002, due to the introduction of the Euro, the questions on wages and income had to be 'Euro-proof'. Some minor other changes were made. In February 2003, a major attempt was undertaken largely to improve the questioning of occupation and industry by means of complex routing (see also section 3).

Table 2. Versions of the Wage Indicator Questionnaire (WIQ)

version	dates	name	mode	remarks
1a	09/00-12/00	Women's Wage Indicator	paper	women only
1b	10/00-05/01	Women's Wage Indicator	web	women only
2a	05/01-01/02	Wage Indicator	web	women and men
2b	01/02-02/03	Wage Indicator	web	adaptation to Euro + few minor changes
2c	10/02-02/03	Health Care Wage Indicator	web	seven extra questions for employees in health care
3a	02/03-09/03	Wage Indicator	web	better questioning of industry, occupation and collective agreement + minor changes
3b	09/03-to date	Wage Indicator	web	improved questioning of industry, occupation and collective agreement

2.2 TARGET POPULATION AND PANEL DATA

The WIQ covers all employees, including those without a written labour contract or in non-standard work, such as babysitters or partly retired librarians, with an age range of 13 to 70 years.

The WIQ excludes persons not in dependent employment, such as freelancers, employers, unemployed persons, and housewives, or youngsters, pensioners or disabled persons without a job. In 2003, with unemployment rising, some questions in the questionnaire were adapted to individuals without a job. They were asked to complete the questionnaire in relation to their last job. However, the dataset is by no means an adequate reflection of the unemployed workforce.

The WIQ obviously leads to a cross-sectional dataset. However, since May 2002 respondents have been asked whether they want to complete a questionnaire the following year with a prize as an incentive. If so, they are asked to complete questions about their email address and day and month of birth to identify the panel members. The time of completing the questionnaire is automatically registered. Approximately half of the monthly respondents – around 700 - agree to complete the following years questionnaire. As from March 2004, the monthly emails will be sent out to remind respondents of their promise. Email addresses and day and month of birth are removed from the dataset to guarantee anonymity.

Today, the Internet makes information available to consumers at an unprecedented scale, speed and price. Over recent years, the Internet is being increasingly used in hundreds of studies, mostly in marketing or public opinion research. As far as we know, data collection in large-scale surveys on working hours and wages is rarely based on Internet surveys with the exception of surveys

measuring IT adoption, such as in the EU-funded EMERGENCE project. In most European surveys, data collection is primarily based on the expensive mode of face-to-face interviews with one, two, or more recalls. The major reason for not using the relatively cheap mode of Internet surveying is that sampling is required to ensure representativity, and sampling is in most surveys based on home addresses.

2.3 THE WAGE INDICATOR WEB-BASED SELF-ADMINISTERED QUESTIONNAIRES

In the years to come, one can expect that Internet access rates will continue increasing rapidly in most European countries. In the Netherlands, the percentage of regular users grew from 30 percent in 1998 to 55 percent in 2002. Among the working population access rates are higher than among the wider population. The Internet will therefore offer great opportunities for surveys. What is more, the target population is potentially larger and more international than in any other survey mode, because of the worldwide access to the Internet and the easy design of multilingual websites.

A questionnaire on the Internet is a so-called web-based self-administered questionnaire based on HTML forms presented in the standard web browsers⁸. The responses are immediately transferred through the electronic networks to a dataset. The mode of web-based self-administered questionnaires combines the advantages of Paper and Pencil Interviewing (PAPI) and Computer Assisted Telephone or Personal Interviewing (CATI or CAPI). Table 3 shows that the Internet provides opportunities for questionnaires not available before, some of which will be discussed below.

⁸ Definition based on the FP5 funded project on Internet surveys, <http://WebSM.org>

Table 3. Advantages of PAPI, CAPI/CATI and web-based self-administered questionnaires

Advantage	PAPI	CATI CAPI	Web based
The respondent can complete the questionnaire at any desired time	x	-	x
The respondent can complete the questionnaire without personal or verbal presence of an interviewer	x	-	x
Low costs per completed questionnaire	-	-	x
Avoiding data-entry errors due to direct data-entry by the respondent	-	x	x
The use of a content management system to delete, add, or change questions	-	x	x
The use of alerts to warn respondents who are outside the target population	-	x	x
The use of alerts for unlikely combinations of answers	-	x	x
The use of immediate checks on the reliability of the data	-	x	x
The use of complex routing through the questionnaire	-	x	x
The use of obligatory questions	-	-	x
The use of radio buttons allowing for only one answer per question	-	x	x
The use of strictly defined response fields	-	x	x

The WIQ is a web-based self-administered questionnaire, which exploits to the full all its advantages. Most importantly, by using skips a complex routing through the questionnaire is possible. Skips are applied to the questions about industry, occupation, and collective agreement (see section 3). Skips are also used for questioning special groups, such as immigrants or those taking a career break.

The WIQ uses alerts which pop up to provide extra information during completion. Alerts are used when a respondent does not pass the reliability checks. Alerts are also used in the first question to warn respondents that they are outside the target population, for example when self-employed an alert pops up saying “this questionnaire does not address your group”.

In the WIQ, the response fields to all questions are strictly defined. Drop down menus appear in questions regarding calendar years, working hours or household income. Radio-buttons allow for only one answer per question. A list of radio-buttons allows for more responses to one question. In addition, a few open-ended questions allow the respondents to provide answers in text, particularly for detailing their occupation or industry.⁹ Attitude items consist of a radio button, presenting a choice of two or five values, resulting in a dichotomous variable or a five-point scale for the analysis. All attitude items present the option ‘not applicable’ in order to prevent respondents from dropping out the questionnaire. Finally, a few fields accept only numbers, such as the gross and net wages and the postal code. In the latter, no letters are allowed for privacy reasons.

Some WIQ questions are obligatory, for example, all questions necessary to perform the regression analyses for the Salary Check. This applies to the questions on occupation and industry, gross and net wages, pay period and number of hours the wage is based on. Therefore, the WIQ-data does

⁹ Open-ended questions are typically used for topics where researchers have little prior knowledge, where the

not have missings for wages, which is a major problem in other surveys questioning wages (Plasman et al., 2002). In addition, several questions about calendar years are obligatory. These are year of birth, year of labour market entrance, year of job start with current employer, year start in current position, and the incidence of a career break. In case of a break, the questions on the years of withdrawing and re-entering the labour market are obligatory. From the Women's WIQ, it appears that 10 percent of the female re-entrants have had two or more breaks. This percentage is considered too low for subsequent questions in the case of two or more breaks. Therefore, the instruction on the screen states 'if you have had more than one break, could you please indicate the longest episode'? Finally, education, firm size, incidence of promotion with current employer and gender of colleagues are obligatory.

The WIQ allows for immediate checks preventing inconsistent answers and improving the reliability of the data. When the respondent does not pass a check, an alert pops up indicating that the answers are not reliable and suggesting which question may be faulty. Over time, the checks have been improved. As from February 2003, checks are used to test the reliability of the gross and net wages. Once the respondents have completed the questions on their gross and net wages, the hourly wages are calculated instantly. Gross hourly wages are only accepted in the range of Euro 1 to 100, and net hourly wages are only accepted in the range of Euro 0.8 to 80, thus preventing extreme values. In comparison to other surveys questioning wages, the WIQ provides relatively reliable data on wages. In the data cleaning process, the net wages are tested to be within a range of 50 to 100 percent of the gross wages. In addition, checks are used to test the reliability of the calendar years. The year entering the current job must be the same as or later than the year starting with the current employer. The first child's year of birth must be at least 13 years later than year of own birth. The oldest child's year of birth has to be earlier or the same as the youngest child's year of birth.

2.4 COMPLEX ROUTING

Initially, technical limitations did not allow for a routing in the questionnaire with the so-called skip-option. This implied that all questions had to be posed to all respondents. Thus, all questions had to be formulated in such a way that all respondents could answer. No additional questions for specific groups could be posed, for example for employees with children. In addition, the list of occupations had to be relatively short, because otherwise the respondent could not tick the proper box.

For a routing through the questionnaire, the so-called 'forth and back' problem had to be solved. The Internet technique has to keep track of the routing of respondents who go back to previous

screens to change or to recall their answers, and then go forth to following questions. A complex routing increases the chance of back-and-forth problems.

In January 2002 (version 2a), however, routing through the questionnaire became possible. The skip-option was first used to facilitate the questioning of occupations from a large list, which was now grouped into categories and each ticked category came up with the appropriate occupations within the category. In October 2002 (version 2c), it was also used to pose a few extra questions to health care workers.

By February 2003, the Wage Indicator team had fully mastered the routing problem. This was of particular importance for the identification of a respondent's industry, occupation, and collective agreement. Now, in four to six questions, the industry and the occupation could be identified at a 4-digit level and the collective agreement from a list of 1000. This took a huge effort, detailed in Section 3.

In addition, skips could now be used for skipping questions on children's ages when the respondent had no children. Only relevant respondents were asked questions about the reasons for a career break, the duration of the break, and the job search after the break. Skips were also used in the question related to country of birth. Only respondents not born in the Netherlands were asked the questions about the year of arrival in the Netherlands, and the reasons for coming.

2.5 DATA-CLEANING

Over the years, the time spent on data-cleaning has reduced tremendously, due to the more advanced use of the skip technique and the check techniques. The initial paper-based questionnaire took weeks for data cleaning, including the recoding when the respondent had used the open-ended question to answer the question on occupation and branch. The latest version of the web-based questionnaire only took a few days to clean the data of approximately 10,000 questionnaires.

The data is controlled for outliers and missing data, particularly with regard to wages, working hours, and calendar years. The data is also checked to see whether respondents have completed the questionnaire more than once, by checking email address and response dates. Respondents may do so to increase their chance of winning the prize. A second reason for double or triple completion is that they cannot answer some questions without information gathered elsewhere. This particularly applies to wages, even though the questionnaire begins with the remark that questions about wages will follow and that respondents are encouraged to have a closer look at their payment slip. Since the questions on wages are obligatory, the respondents without the relevant information will not pass these questions. Cases with the same email addresses are subsequently checked for dates and wages. By doing so, members of the same household with the same email address are correctly

identified as separate persons. From our experience, a few respondents have completed the questionnaire a second time because they changed jobs. Therefore, when two observations are identified as being the same persons, but the response dates differ by at least one month, they are considered as appropriate for inclusion to the panel dataset, as has been discussed in section 2.2.

3 MEASURING KEY CONCEPTS

This section describes how the key concepts are measured in the questionnaire. The most important questions are listed.

3.1 THE KEY CONCEPTS

Six key concepts are measured in the WIQ, notably industry/occupation/collective agreement, wages, working hours, education/training, work/family history, and the workplace (see Table 4).

Table 4. Key concepts of the Wage Indicator Questionnaire (WIQ)

	1a/b	2a/b/c	3a/b
Measuring industry, occupation, and collective agreement			
occupations coded at level	2-dgt	3-dgt	4-dgt
job level based on the occupational code	-	-	y
branches of industry coded at level		y	y
name of collective agreement covered by		y	y
first job and employer different from current one		y	y
Measuring wages			
gross and net wages, excl allowances or overtime bonus	y	v	y
pay period	y	y	y
24 allowances and bonuses (yes/no, if yes, amount)	y	y	y
overtime bonus	y	y	y
Measuring working hours			
usual working hours	y	y	y
contractual working hours	y	y	y
weekly hours pay is based on	-	y	y
standard working week in the firm	y	y	y
Measuring education and training			
level of education attained	y	y	y
type of education attained	y	-	-
time needed to settle in job (8 categories 1 day - 1 year)	-	-	y
opinion: job is below educational level (yes/no/n.a.)	y	y	y
attended job specific training courses (yes/no/n.a.)	-	y	y
currently participating in training scheme (yes if applic.)	-	-	y
Measuring work and family history			
year of birth	y	y	y
year of entering first job	y	y	y
year of starting work with current employer	y	y	y
year of starting work in current job	y	y	y
if break > 1 year: years withdrawing + re-entering	y	y	y
if children: years of birth of oldest and youngest child	y	y	y
if not born in the Netherlands: country of birth	-	y	y
if not born in the Netherlands: year of arrival	-	y	y

Measuring the firm			
firm size	y	v	y
percentage women in the firm	y	y	y
one location or more	y	y	y
employment growth/decline in the firm	y	y	y

Note y = yes, dgt = digit, n.a. = not applicable

3.2 THE BOC DATABASE: MEASURING BRANCH, OCCUPATION AND COLLECTIVE AGREEMENT

Measuring industry, occupation or collective agreement in self-administered questionnaires allows for either a limited listing of necessarily very broad categories or an open-ended question with a recoding of the answers afterwards. Coding occupations or industries is a time-consuming activity and on average 10-20 percent of the cases remains unidentifiable. In recent years, the Wage Indicator team has developed a complex routing through the questionnaire, facilitating a detailed identification of the respondent's industry, occupation and collective agreement in four to six questions. See Appendix 2 for a listing of the pages asking for industry and occupation.

In September 2000, the paper version (1a) and the identical web-based version (1b) of the Women's Wage Indicator Questionnaire had three questions for industry, occupation and collective agreement. The first question asked 'In which industry are you employed' and presented 18 choices, as well as an open-ended option. The second question asked 'What is your occupation' and presented 45 choices, grouped into ten categories. The list included the largest occupations for female workers, based on labour force statistics of Statistics Netherlands. Each category had also an open-ended option if the listing did not provide the respondent's occupation. The third question asked 'Are you covered by a collective agreement?'. If ticked 'yes', the respondent had the option to write the name of the particular collective agreement. All open-ended options were as far as possible coded afterwards. Regarding occupations, 22 percent of the respondents in versions 1a and 1b (3,382 out of 15,508) used the open-ended option. Not only did they report a variety of occupations but also quite often they had a combination of several jobs, for example secretary and telephonist.

As from May 2001 (version 2a), the Wage Indicator Questionnaire also addressed male workers. Thus, the list of occupations had to include the occupations important for male employment. The list was extended to 107 occupations, grouped into 12 categories, each with an open-ended option. The list of industries now had 19 choices and an open-ended option. The collective bargaining coverage question now had a list of the 12 largest collective agreements and an open-ended option.

In January 2002 (version 2b), the list of industries was extended to 25 choices and an open-ended option. The list of occupations was extended to 199 occupations, grouped into 12 categories, each

with an open-ended option. For the first time, the skip-option was used to provide a simple routing through the questionnaire. Once the respondent had ticked one out of the 12 occupational categories, a screen with a list of occupations within the category would come up, including the open-ended option. The collective bargaining coverage question continued to have a list of the 12 largest collective agreements and an open-ended option.

From December 2002 to January 2004, Marianne Oldenburg-Van Meurs from the data-management firm Datamatch and Kea Tijdens jointly developed the BOC-database. BOC stands for Branch, Occupation and Collective agreement. The BOC-database links branches of industry with occupations and collective agreements. Meanwhile, the Wage Indicator team had improved the skip-technology so that it could be used for a complex routing through the questionnaire. The BOC database provides a routing that results in an adequate identification of the respondent's industry, occupation and collective agreement in four to six questions.

As from February 2003, the first screen poses the question "In which branch of industry are you employed" and presents a list of 20 choices.¹⁰ On a second and in some cases a third screen, detailed options for this particular branch of industry are presented. In total, 503 branches of industry are listed. Once the industry section is completed, the next screen presents a list of occupations that is most appropriate for the ticked industry. Each first occupation screen has two categories, notably a list of approximately 10-14 occupations or occupational categories that are specific for the ticked industry and 6 occupational categories that are found in all industries, such as secretarial work or bookkeeping. Most items presented on this screen will be followed by one or two other screens, each listing occupations in greater detail. Altogether, approximately 1500 occupations are listed. In addition, the next question asks whether the respondent wants to qualify the occupation in more detail, such as assistant, senior, junior, trainee, team leader, etcetera. The open-ended option is no longer available for each question, but at the end of this section, an open-ended option is offered to those respondents who want to comment on their choices for industry or occupation. Once the occupations section is completed, the next screen asks whether the respondent is covered by a collective agreement. If so, the following screen presents a list of collective agreements that apply to the ticked branch of industry to identify which of the approximately 900 collective agreements covers the respondent.

A major aim of WIQ is to use the standard taxonomies in order to undertake analysis and research. In the WIQ-dataset, all branches of industry have been classified at a four-digit level according to the Standard Industry Classification of Statistics Netherlands (SBI-code). All occupations have been

¹⁰ Initially, the list had been sorted according to the NACE classifications, i.e. from agriculture to culture and sports. The majority of respondents, however, could make no sense of this. Therefore, all lists are now sorted in an alphabetical order, facilitating easy search.

classified at a four- or five-digit level according to the Standard Occupational Classification of Statistics Netherlands (SBC-code, 1993, revised in 2001). Therefore, a SPSS program has been written to extend the number of occupations to approximately 2000, combining occupations with information on supervision and firm size, once the data has been collected. The SBC-code of occupations also allows for a classification of job level, based on a coding by Statistics Netherlands, indicating the required education for the particular occupation in five levels.

3.3 MEASURING WAGES

The WIQ includes questions on gross and net wages in Euros excluding allowances or overtime (see Table 5). There are questions on the period covered by the payment, on the number of weekly working hours covered by the payment, and whether the wage includes a tax-deductible mortgage. If so, the amount is requested. In order to compare wages, the reported wages have been converted into hourly rates based on the number of hours per week and corrected for the period covered by the payment. This is usually one month but could be four weeks, one week or otherwise. Where the reported contractual hours per week were zero or close to zero, the actual hours worked have been used for the calculations. Thus the calculated hourly wage rates exclude allowances, variable income elements, holiday allowances, expense allowances and overtime bonuses.

Table 5. The four questions to determine hourly wage rates in WIQ.

<i>Hoe hoog was je laatste salaris?</i>	<i>What were your last wages?</i>
<p>Het gaat om je salaris zonder toeslagen, variabele inkomensdelen, vakantiegeld, onkostenvergoedingen of overwerktoeslag. Hierna kun je aangeven of dit je salaris is voor een maand, 4 weken of een andere periode. Daar kun je ook aangeven op hoeveel uur werk dit salaris is gebaseerd.</p> <p>Gebruik bij het invullen alleen cijfers. Hele Euro's, geen cijfer achter de komma. Geen euro-tekens.</p> <p>Gross wages ,00 Euro Net wages ,00 Euro</p>	<p>This applies to your wages without allowances, variable income elements, holiday allowance, expense allowance or overtime. You can then indicate whether these are your wages for a month, four weeks or another period of time, with an indication of the number of hours on which these wages are based.</p> <p>Use figures only. Round Euros, no decimals. No Euro signs.</p> <p>Gross wages ,00 Euro Net wages ,00 Euro</p>
<i>Op welke periode is dit salaris gebaseerd?</i>	<i>On what period are these wages based?</i>
<input type="radio"/> maand <input type="radio"/> 4 weken <input type="radio"/> 2 weken <input type="radio"/> week <input type="radio"/> dag <input type="radio"/> uur <input type="radio"/> jaar <input type="radio"/> anders	<input type="radio"/> month <input type="radio"/> 4 weeks <input type="radio"/> 2 weeks <input type="radio"/> week <input type="radio"/> day <input type="radio"/> hour <input type="radio"/> year <input type="radio"/> other
<i>Op hoeveel uur werk per week is dit salaris gebaseerd?</i>	<i>On how many hours a week are these wages based?</i>
I - 80 hours	I - 80 hours
<i>Heb je een eigen huis en krijg jij daarvoor persoonlijk vooraf trek inkomstenbelasting, bijvoorbeeld vanwege hypotheekrente? Zo ja, hoeveel is dat per maand?</i>	<i>If you own a house, how much is your personal preliminary tax relief per month, for example for mortgage interest?</i>
<input type="radio"/> geen eigen huis <input type="radio"/> wel eigen huis, geen vooraf trek <input type="radio"/> tot Euro 50 <input type="radio"/> Euro 50 - 100 <input type="radio"/> tot Euro 1000 en meer	<input type="radio"/> no house-owner <input type="radio"/> house-owner, but no tax relief <input type="radio"/> until Euro 50 <input type="radio"/> Euro 50 - 100 <input type="radio"/> ... Euro 1000 and more

There are questions regarding additional bonuses and the amount of money involved. In total, 11 bonuses are listed, such as overtime bonus, performance allowance, tips, goods and services in kind, or shift allowances. In addition, it is asked whether the respondent receives bonuses paid largely on an annual basis or bonuses that are more difficult to quantify or predict in cash terms such as year-end bonus, holiday allowance, shares, contribution to medical insurance, contribution to pension scheme, contribution to day-care for children, or a lease car. Here, the amount of money involved is not asked.

The section of questions on pay ends with a set of attitude items addressing satisfaction with earnings, perceived possibilities for higher earnings with other employers, and importance of the wage received in relation to other work-related characteristics, such as working environment. In

addition, respondents are asked whether they received a raise during the past year and whether they have reached the top of their salary scale.

3.4 MEASURING WORKING HOURS

Four questions measure the employee's working time characteristics, notably the usual working hours, the contractual hours, the standard working week in the firm, and whether the overtime hours are paid with or without bonus, time-compensated or not paid at all. An employee whose overtime hours are neither paid nor time-compensated is defined as a salaried employee. All other employees are classified as hourly paid. A question referring to the customary overtime is not sufficient when it comes to part-time working women. Part-timers do not use the word overtime for surplus hours worked. Moreover, the data reveals differences: additional hours worked by part-timers are paid out more regularly than those worked by full-timers, but an overtime allowance hardly ever applies.

In addition, commuting time and means of transport for commuting is questioned. The section of time questions ends with a set of attitude items addressing the satisfaction with issues such as the starting and finishing time, the opportunities to choose one's own working hours, the pressure of work the job entails, and commuting time.

3.5 MEASURING EDUCATION AND JOB LEVEL

One question aims to identify the respondent's education from eight categories, ranging from primary school to university (see Table 6). In the WIQ-versions 1a and 1b, the type of education was also questioned. In later versions, this question was dropped, because too many respondents used the open-ended option to indicate their special diploma they had ever received. Not only did this require a huge effort for recoding but many responses could not be identified. For the sake of analyses, the nominal years of education after age 6 have been assigned to the dataset (see Table 6).

Table 6. The question to determine education in WIQ.

Wat is je hoogste voltooide schoolopleiding?	What level of education did you attain?	coded years after age 6
Als je je schoolopleiding in het buitenland hebt gevolgd, wil je dan het niveau van die opleiding aangeven?		
o basisschool / lagere school	o Primary school	7
o vbo (voorheen lager beroepsonderwijs)	o Preparatory vocational education	9
o mavo / mulo / 3 jaar hoger alg. onderwijs	o Lower general secondary education	10
o mbo (middelbaar beroepsonderwijs)	o Intermediate vocational education	12
o havo / mms	o Senior general secondary education	11
o vwo / atheneum / gymnasium / hbs	o Pre-university education	12
o hbo (hoger beroepsonderwijs)	o <input type="checkbox"/> Higher vocational education	15
o universiteit	o <input type="checkbox"/> University	16

As regards job specific training, questions address: “In your organisation, have you attended training courses (yes/no/na)”, “Are you currently a participant in / recipient of education or training scheme? (only yes if applicable)”, and “If you were looking for another job, how important would an adequate training opportunities be? (5 point scale/na)”. For respondents who have received education during their working life, a question addresses whether “Have you ever been in unpaid employment for more than a year since you started working for education / training course (y/n)”.

In order to identify the respondents’ job level independent of the educational level attained, three variables are at our disposal. Firstly, the respondents’ occupations is classified according to the SBC coding of Statistics Netherlands, which includes a coding for required education in five levels (see section 3.2). Secondly, one question addresses the learning time for the respondent’s occupation: “How much time is needed to settle in your job?” The answers range in eight steps from no training period required to more than 1 year. Thirdly, one item asks for the respondent’s opinion about having “a job that is beneath your educational level” with yes/no/not applicable as reply categories.

3.6 MEASURING WORK AND FAMILY HISTORY, INCLUDING COUNTRY OF BIRTH

The questionnaire addresses in great detail the respondent’s work and family history. For each respondent minimal four and maximal nine calendar years are asked.

As regards the family history, all respondents are obliged to tick year of birth. In case the respondent has children, year of birth of first child and year of birth of last child are asked. Until January 2003 (version 3a), the year of birth of children was not checked with the respondent’s own

year of birth. As a consequence, a limited number of respondents appeared to be youngsters living with their parents, but indicating year of birth for oldest and youngest child for the children at home, thus sisters and brothers. Since January 2003 (version 3a), respondents are also asked whether they or their partner will have a baby within three years time.

Ethnicity was judged to be a major variable. Therefore, in the web-based version, the country of birth has been asked, as well as the country of birth of the mother from seven options: Netherlands, another West-European country, a former East-European country, the former Dutch colonies Suriname/Antilles/Aruba/Curacao, Turkey, Morocco, any other country. Since October 2002, the country of birth of father is also asked. If not born in the Netherlands, the year of entering the country as well as the reason for coming to the Netherlands is asked. Four reasons are optional, notably family reasons, reasons of work, as a refugee or other reasons.

As regards the work history, all respondents tick year of labour market entrance, year of job start with current employer, including mergers or take-overs, and year start in current position. If the respondent has had a career break for at least one year, the year of the break and the year of re-entering the labour market are asked.

As regards future work status, a question addresses whether the respondents expect to be with their employer in a year's time. In addition, a few questions address job searching behaviour and the conditions for accepting another job.

3.7 MEASURING THE FIRM AND THE WORKPLACE

Quite a number of characteristics of the workplace are asked. Firm size is asked in ten categories, ranging from fewer than 10 employees to 5,000 or more. The percentage of females in the work force can be ticked in five categories, ranging from 0 - 20% to 80 - 100%. In addition, it is asked whether the firm has more than one location, and if so, whether this location is in the same municipality, same province, across the whole country, or international. In case of several locations, an additional question is posed about the number of employees national. Finally, it is asked whether the firm has four or more hierarchical levels, and whether employment is growing or shrinking at the firm.

The incidence of reorganisations and dismissals at the workplace is asked, and so is the state of the art of computerized equipment at the workplace. In addition, there are questions about the incidence of conflicts at the workplace, about cooperative support from the supervisor and about staffing levels at the workplace.

4 SAMPLE SIZES AND REPRESENTATIVITY

This section discusses the sample sizes of the subsequent Wage Indicator Questionnaires, followed by a discussion how representative the sample is.

4.1 SAMPLE SIZES

From October 2000 to September 2003, thus in three years, almost 54,000 people in wage employment have completed the Wage Indicator Questionnaire (WIQ). See Table 7. We have examined which women answered the paper-based mode and which the web-based mode. According to the results it is difficult to form a consistent image of groups that use the Internet and those who do not. Apparently the Internet has penetrated groups with a wide range of characteristics.

Table 7. Which questionnaire did you complete?

nr	from	name	mode	F	M	Tot
1a	10/00-12/00	Women's Wage Indicator	paper	6,710	6	
1b	10/00-05/01	Women's Wage Indicator	web	8,766	21	
2a	05/01-01/02	Wage Indicator	web	7,429	6,223	
2b	01/02-02/03	Wage Indicator	web	8,024	4,717	
3a	02/03-09/03	Wage Indicator	web	-	-	11,629
	09/00-09/03	Total		30,929	10,967	53,525

In the WIQ dataset, completion date is registered. It is therefore possible to examine the response by month of the year. Table 8 reveals that the dataset grows monthly with approximately 1,000 respondents, though the numbers vary largely.

Table 8. Month of survey by year of survey

month of survey	2000		2001		2002		2003	
1	-	-	-	-	1032	9.0	1620	83.2
2	-	-	-	-	942	8.2	327	16.8
3	-	-	-	-	980	8.5		
4	-	-	-	-	1052	9.2		
5	-	-	1483	11.4	610	5.3		
6	-	-	827	6.4	676	5.9		
7	-	-	983	7.6	649	5.6		
8	-	-	893	6.9	584	5.1		
9	-	-	1237	9.5	1247	10.9		
10	6716	47.5	3294	25.3	1141	9.9		
11	7076	50.0	3379	26.0	1079	9.4		
12	349	2.5	907	7.0	1500	13.1		
Total	14141	100	13003	100	11492	100	1947	100

Note: Between January and May 2001 and between February and September 2003, the month of survey has not been registered.

4.2 THE METHODOLOGY OF VOLUNTEER INTERNET SURVEYS

Solicitation is generally an inherent part of standard survey modes. Internet surveys may be solicited or voluntarily. In case of solicited Internet surveys the respondents are drawn from a known sampling frame and subsequently invited by email or mail, whereas respondents for volunteer Internet surveys are exposed to the invitation banners.¹¹ In a meta study of different modes of surveys, the characteristics of respondents in the solicited web mode were shown to be almost equal to the Internet users in the telephone mode of the same survey (Vehovar, 2003). Response rates however, appeared to be lower, presumably because of the remote nature of Internet surveys, the lack of devices or skills, or the perception of email invitation as spam.

For volunteer Internet surveys, by their nature therefore no response rates can be given. The great disadvantage of volunteer Internet surveys is that sampling errors are unknown and may be large, but if the characteristics of the target population are known, weighing can be applied. The great advantage of volunteer Internet surveys is that the target population is potentially larger and more international than in any other survey mode, because of the worldwide access to the Internet and because multilingual websites may easily cross borders and language barriers. According to Hewson *et al* (2003), the total number of worldwide Internet users well exceeds the 500 million mark and this population is becoming more and more representative to the target population at large.

¹¹ There may be a two-step recruitment. First, visitors are invited to register as a panel member and complete a short questionnaire. In the second step, a sample is drawn from the panel. This sample will be asked to complete once only or regularly a questionnaire.

Our experience with the Wage Indicator website shows that a major condition for its success seems to be that the two parts of the project are inextricably intertwined: collecting data for research purposes through an Internet questionnaire, and giving feedback on the major findings by means of a Salary Check to the general public. By doing so, the public is willing to complete the questionnaire. The Salary Check appears to be a great crowd puller, as it provides reliable information about wages per occupation that the visitors would hardly be able to gather otherwise. The great advantage from Internet is that it seems to be an optimal way of providing feedback of research results to the public at large. The project also shows that if extensively recruited by banners and publicity, large numbers of web visitors and thus of respondents can be reached.

4.3 IS THE INTERNET RESPONSE SKEWED?

An Internet survey of the population of the municipality of Groningen showed similar findings.¹² The population aged 15 to 25 was overrepresented (to be weighted by 0.5), whereas the population of 65 years of age and over was heavily underrepresented (to be weighted by 12.4). The WIQ target population is the working population aged between 15 and 65. We therefore expect a similar skewness compared to the municipality survey, but to a lesser extent.

An exploration of the possible bias in the WIQ data revealed that age, working hours and gender were likely to be crucial variables. To ascertain how representative the WIQ-data is, the distributions by age and working hours for women in waged employment for at least 12 hours per week have been compared with the comparable group in the Labour Force Survey (LFS) conducted by Statistics Netherlands. The most recent LFS data from Statistics Netherlands date from 2001. In Table 9 the distributions are shown. The table suggests that in nearly all cells the difference between LFS and WIQ is less than 5%, but that prime age women with full-time working hours are heavily and that part-time working women aged 45-54 are underrepresented.

¹² See SPSS Magazine, a magazine of SPSS Benelux, Vol.1, nr. 1, February 2003

Table 9. Distribution across age and working hours for women 2001 from LFS Statistics Netherlands and WIQ

	12-19 hrs pw	20-34 hrs pw	>= 35 hrs pw	tot
LFS				x 1,000
< 24 yrs	2.4%	4.6%	7.0%	400
25-34 yrs	3.6%	11.8%	14.4%	850
35-44 yrs	6.1%	14.7%	7.6%	808
45-54 yrs	4.4%	11.4%	6.4%	632
>=55 yrs	1.3%	2.8%	1.6%	164
tot x 1,000	507	1292	1055	2854 (100%)
WIQ				n
< 24 yrs	0.5%	3.2%	12.0%	1272
25-34 yrs	1.8%	13.1%	33.6%	3918
35-44 yrs	2.1%	11.7%	10.1%	1922
45-54 yrs	0.8%	5.0%	4.8%	856
>=55 yrs	0.1%	0.7%	0.5%	107
n	435	2716	4924	8075 (100%)
diff in % points (WIQ - StatNeth)				
< 24 yrs	-1.8%	-1.4%	4.9%	
25-34 yrs	-1.8%	1.3%	19.2%	
35-44 yrs	-4.0%	-3.0%	2.5%	
45-54 yrs	-3.5%	-6.4%	-1.6%	
>=55 yrs	-1.2%	-2.1%	-1.1%	

Source: Statistics Netherlands and WIQ 2001, women only (8,075)

Note: the LFS includes self-employed women, the WIQ does not

Statistics Netherlands also provides data about hourly wages.¹³ This allows a comparison of their data and the WIQ. Table 10 reveals that, compared to the data from Statistics Netherlands, the WIQ women aged 24 years or less earn higher average wages, whereas women aged 25 years or more earn lower average wages. Particularly, women working 12-19 hours earn much lower average wages. Women working more than 34 hours a week earn nearly as much as the women in the sample of Statistics Netherlands, except for women of 55 years and over.

¹³ These data stem from firm's personnel files. Statistics Netherlands does not use survey data for calculating wages. Therefore, they will not measure the informal or cash-in-hand labour market and probably not all atypical employment, such as temp agency workers.

Table 10. Mean gross hourly wages in Euro for age and working hours, women 2001 from Statistics Netherlands and WIQ

women	12-19 hrs	20-24 hrs	25-29 hrs	30-34 hrs	>= 35 hrs
StatNeth					
< 24 yrs	7.68	8.97	9.07	9.01	9.27
25-34 yrs	13.86	14.05	13.99	14.32	14.45
35-44 yrs	14.71	15.58	16.12	16.51	16.47
45-54 yrs	14.61	15.27	16.15	16.59	17.21
>=55 yrs	14.82	15.68	16.85	16.8	18.05
WIQ					
< 24 yrs	9.07	10.47	9.64	8.29	9.00
25-34 yrs	11.84	12.56	12.54	13.23	13.13
35-44 yrs	11.77	13.35	14.34	15.23	15.77
45-54 yrs	12.86	12.48	13.49	14.19	16.61
>=55 yrs	11.56	13.79	13.93	16.27	14.97
diff in % (StatNeth / WIQ)					
< 24 yrs	118%	117%	106%	92%	97%
25-34 yrs	85%	89%	90%	92%	91%
35-44 yrs	80%	86%	89%	92%	96%
45-54 yrs	88%	82%	84%	86%	97%
>=55 yrs	78%	88%	83%	97%	83%

Source: Statistics Netherlands and WIQ 2001, women only (8,075)

Exploring the gender wage gap

A major goal of the Wage Indicator is to investigate wages, particularly the gender wage gap. According to WIQ 2001-2002, men earn Euro 15.03 gross per hour at wage level 2002 and women earn Euro 13.50 gross per hour at wage level 2002 (see section 5.2 for an explanation of the wage levels).

For women, Table II suggests that preventing a career break is very profitable, that working hours do affect wages from age > 30, that having a child or a partner is not profitable, except age < 30, that higher levels of education are very profitable, and that more years of experience is very profitable.

For men, Table II suggests that working hours do not affect wages to a large extent, that having a child or a partner is profitable, that higher levels of education are very profitable, and that more years of experience is profitable.

Table 11. Men's and women's gross hourly wages in Euro at level 2002

	Age < 30		Age 30-39		Age 40-49		Age >=50	
	Mean	N	Mean	N	Mean	N	Mean	N
no motherh. break	11.29	9226	14.86	8759	16.06	3526	16.21	1042
break > 1 yr	10.71	109	11.78	1086	12.81	2744	14.00	1468
< 25 hrs per week	11.20	1046	13.76	2960	13.77	2381	13.87	916
25-34 hrs per week	11.22	1501	14.76	2237	14.69	1784	15.01	703
>=35 hrs per week	11.32	6788	14.89	4648	15.57	2105	15.91	891
no child	11.22	8485	14.75	4960	16.25	1300	17.06	364
child	12.00	850	14.28	4885	14.21	4970	14.55	2146
no partner	10.41	3491	14.32	2270	14.84	1284	15.16	673
partner	11.81	5844	14.58	7575	14.58	4986	14.82	1837
edu age <=15	8.73	468	10.69	674	11.01	727	11.42	269
edu age 16-18	10.33	5649	13.27	5559	13.56	3630	13.76	1478
edu age >=19	13.33	3218	17.14	3612	18.05	1913	18.39	763
exp <5 yrs	10.91	4643	13.15	490	10.17	92	11.26	19
exp 5-9 yrs	11.56	3699	15.27	2318	11.62	303	11.36	56
exp >=10 yrs	12.04	993	14.36	7037	14.86	5875	15.02	2435
Total	11.29	9335	14.52	9845	14.64	6270	14.91	2510
MEN								
< 25 hrs per week	10.34	193	15.82	43	16.42	31	17.22	21
25-34 hrs per week	10.95	188	16.62	219	17.86	169	19.07	63
>=35 hrs per week	11.58	3108	15.94	3611	17.90	1812	18.53	799
no child	11.38	3206	15.63	1968	17.32	399	18.51	120
child	12.64	283	16.34	1905	18.01	1613	18.54	763
no partner	10.45	1924	14.95	842	16.62	255	17.03	86
partner	12.75	1565	16.26	3031	18.05	1757	18.70	797
edu age <=15	8.81	428	12.05	521	13.62	425	13.94	215
edu age 16-18	10.75	2019	14.62	2015	16.90	995	17.48	425
edu age >=19	14.00	1042	19.56	1337	22.56	592	24.45	243
exp <5 yrs	11.05	1883	15.53	195	13.76	5	16.11	2
exp 5-9 yrs	11.94	1246	16.91	1001	13.03	17	13.65	4
exp >=10 yrs	12.12	360	15.66	2677	17.92	1990	18.56	877
Total	11.48	3489	15.98	3873	17.87	2012	18.53	883

Source: WIQ 2000/01/02, women (27,960), men (10,257)

5 OCCUPATION WAGES AND THE SALARY CHECK

This section details how the WIQ data are used for the Salary Check at the website.

5.1 THE SALARY CHECK

In 2003, the Salary Check calculates the average gross wage per hour and per month for 130 occupations. The web visitor is asked to choose an occupation, using a two-step click, first an occupational group and second an occupation within this group. Next, the visitor is asked to click the appropriate standard working hours in the firm, ranging from 35 to 40. Then, seven questions are asked (see next paragraph). The ticked answers to these questions are input for a calculation rule with regression coefficients and a constant. For the chosen occupation, the Salary Check calculates instantly a gross wage per hour, week and month. The calculations are made for a working week of 38 hours, but the screen with the results allows clicking standard working hours from 36 to 40 and instantly the gross wage is recalculated.

Seven variables are used for these calculations, notably education, total years of service, supervisory position, predominantly male colleagues, re-entrant women, firm size, and promoted in current firm (see Table 12). *Education* and *years of service* are the typical human capital variables in the wage equations. *Supervisory position* and *promoted in current firm* are variables reflecting the pay and grading systems used in most firms. The variable *predominantly male colleagues* is a proxy for inter-industry and inter-occupational wage differentials. Being a *re-entrant woman* reflects an effect of re-entry on wages beyond the effect of fewer years of service. *Firm size* reflects the commonly found wage differentials across firm sizes, which may reflect that a larger firm has more hierarchical levels and therefore more likely to have employees in higher wage groups.

Table 12. Variables used for the 2003 Salary Check calculations

Variable in the Salary Check	Values in the Salary Check	Variable in the dataset	Variable label in the dataset
Variable to be explained			
gross hourly wage		wagegrl2	log hourly gross wage in Euro at level 2002
Explanatory variables			
education	6 levels	EDUCATI3	education in 6 categories
total years of service	1-50 years	YYEXPERI	experience = yysurvey -yyfstjob AND IF BREAK GE 2 - (yyreenter - yybreak)
		YYEXPER2	total years of experience squared
supervisory position	yes/no	SUPVDICH	supervisory position
predominantly male colleagues	yes/no	DEPMALE2	most colleagues in similar positions are men (the answer not applicable is regarded 'no')
re-entrant women	yes/no	RENRANT	re-entrant incl late entrants WOMEN ONLY
firm size	< 100 employees	FIRMSIZ4	firm < 100 empl
	> 500 employees	FIRMSIZ5	firm > 500 empl
have been promoted in current firm	yes/no	JOBPROM2	have been promoted (the answer not applicable is regarded 'no')

The coefficients and the constant in the calculation rules have been derived from the Wage Indicator data, collected from September 2000 onwards. Data from separate questionnaires in the printing industry (2001) and in banking and insurance (2000) have been added to the dataset, which is called the Salary Check dataset. This dataset contains only the variables needed for the wage regressions. By February 2003, the Salary Check was last updated. Then, the dataset had altogether 42,805 observations, whereby each observation had data on occupational title, wage and all other variables used in the regression analyses.

The Salary Check is updated once or twice per year. A wage regression is calculated for any occupation with at least 50 observations. By February 2003, the Salary Check could present wages for 130 occupations. In some cases very detailed occupational titles in the dataset have been grouped into one occupation, for example several categories of nurses have been grouped into one nursing occupation. In the dataset, 36,852 observations were identified in one of the 130 occupations. For 2004, it can be expected that the continuously growing dataset will allow for wage calculations of 150 to 170 occupations.

5.2 VARIATIONS ACROSS OCCUPATIONS

Occupations differ as regards the impact of any of the seven variables used to estimate the wages per occupation. For example, for nearly all occupations education is a positive estimator for wage, as human capital theory predicts. The higher the educational level, the higher the wage. For a few occupations this theory does not hold, notably for the taxi driver and the trade union official. In Table 13 we present the occupations with signs in contrast to expected.

Table 13. Occupations with effects contrary to expected for the human capital variables

education	years or experience	years or experience squared
painter	taxi driver	taxi driver
hairdresser, beautician	department head in public service	webdesigner
cook		carpenter
police officer		department head in public service
trade union official		
cashiers		
web designer		
postman		

Source: Salary Check dataset 2003

5.3 WAGE ADJUSTMENTS

The data in the Salary Check dataset covers observations from 2000, 2001, 2002, and 2003. The observed wages for 2000, 2001, and 2002 have been adjusted to the 2003 wage level, thus being deflated and controlled for annual wage rises (Table 14). For doing so, we used the annual average of the indexes of the collectively agreed wages per hour including exceptional remunerations¹⁴, as is calculated by Statistics Netherlands (Statline Jan 2004). One has to bear in mind that the collectively agreed wages do not cover the full wage increases. We nevertheless have to rely on this index, because it is much faster available than the index for the full wages.

Table 14. Annual wage increases

	year	2000	2001	2002	2003
index 2000=100		100	104.4	108.2	111.2
adjustment factor for wages in the Salary Check data	1.112		1.065	1.028	1

Source: Statline, www.cbs.nl, Jan 2004

¹⁴ In Dutch bijzondere beloningen.

5.4 DATA FROM THE SALARY CHECK

Many times it has been asked why the data web visitors tick for the seven questions in the Salary Check is not added to the Wage Indicator dataset. The major argument for not doing so is that web visitors like to play with the Salary Check, answering questions such as ‘What would I have earned when I had chosen to become a carpenter instead of a truck driver?’, or ‘What will I earn when I will occupy a supervisory position in my occupation?’. We know how visitors use the Salary Check from their emails and from the web statistics showing that they go through the Salary Check several times during one visit. Therefore, we assume that data gathered from the Salary Check is not reliable. We have considered using filter, asking whether the visitors have ticked the questions of the Salary Check for their own occupation and their own situation. Yet, we do not judge this procedure to lead to fully reliable data. In addition, it is the web manager’s policy to offer quick web tools that are attractive for the visitor, and not to have a hidden agenda of deriving data.

6 RESEARCH PLANS FOR FUTURE RESEARCH

A number of plans for future research have been developed. They are presented in this section. We also present a list of the items touched in research so far.

6.1 RESEARCH SO FAR

Quite a number of topics have been touched in both minor and extensive research reports so far. We will present a list here.

- elderly on the labour market
- women at universities
- choices in collective agreements
- teleworking among employees
- conditions for women's re-entry in the labour force
- the reconciliation of work and family life
- the importance of a savings scheme
- preferences for fewer or longer working hours
- reorganisations and insecurity
- collective bargaining coverage
- the gender wage gap
- the ethnicity wage gap
- the inter-industry wage gap
- women in managerial positions
- employee's preferences for teleworking
- the impact of a career break on female re-entrants wages
- working women's choices for domestic help

All reports, some of which in English, others in Dutch, can be downloaded from the Wage Indicator website (www.loonwijzer.nl, click 'alles over loonwijzer' or from www.wageindicator.org, click 'research lab').

6.2 WOLIWEB

In May 2003, a research proposal has been sent to the European Union 6th framework. In November 2003, this WOLIWEB proposal was selected. WOLIWEB stands for working life websites. The

overall objective of the proposal is to contribute to the understanding of citizens' work life attitudes, preferences and perceptions - addressed in the EU's Research Area 3.2.2. - by a quantitative, nine-country analysis of the impact of citizens' socio-economic framework on their attitudes, preferences, and perceptions with regard to this framework. The analyses focus on four issues:

- perceptions of pay discrimination by gender or ethnicity in relation to any factual pay gap;
- preferences for more or fewer working hours in relation to working hours and household duties;
- attitudes towards collective bargaining coverage in relation to actual coverage by agreements;
- perceptions of job insecurity in relation to dismissals and reorganisations at the workplace.

In order to collect the data needed for the analyses, WOLIWEB aims to expand the Dutch web-based Wage Indicator Questionnaire to eight countries and to gather the responses of 350,000 citizens in these countries. European collection of work life data by means of volunteer Internet surveying is relatively new and the proposal foresees in an extensive evaluation.

6.3 THE GENDER WAGE GAP

Recently, the gender wage gap has been firmly addressed by the European Commission and by the European Trade Union Confederation, as well as by many national bodies. In the European Union, the wage gap remains at around 28 percent, and the persistence of gender-related wage inequalities are considered unacceptable. Before understanding the gender wage gap, it is necessary to understand wage differentials in the female work force, in particular the understanding of what is referred to as the 'family pay gap'. Are wage differentials between childless women and women with children due to the effects of motherhood, number and age of children, part-time working hours, career break, duration of the break, or to allocation to jobs particularly suited for women's demands to reconcile work and family life? Using data from the Wage Indicator, a few studies have been undertaken to deepen insight into the family wage gap, particularly with regard to the effect of a career break due to motherhood, and in case of a break the effect of the duration of the break. Further studies will be undertaken to disentangle gender and ethnicity based wage differentials.

6.4 WORKING TIME

Using the WIQ data, the issue of working time has been examined extensively, both with regard to individual time and time regulations. Working hours characteristics determine the working time preferences to a large extent. The longer the working hours, both the standard working week at the

workplace and the individual's current working hours, the more likely a preference for fewer hours and the less likely a preference for longer hours. According to a Dutch study, wage rates also have a large impact on working hours' preferences, as the low earnings category prefers far more often longer hours (Tijdens, 2003). In comparison to salaried employees, the hourly paid employees are less likely to express a preference for fewer hours, and the hourly paid employees with overtime hours are even more likely to express a preference for longer hours. In contrast to public opinion, female employees in the Netherlands apparently show a better fit between preferred and usual hours compared to male employees. Since both male and female employees have the legal right to change working hours, this leads to the conclusion that women adapt their working hours more easily to their preferences than males do. In most studies working time preferences are measured in hours per week, though the preference for less working days keeping hours constant is even higher. Cross-country comparisons are needed for an empirical underpinning of the explanatory models. In this field, cross-country comparisons are needed.

Future plans include research to model preferences regarding working hours and working days from (1) the characteristics of actual working hours, which includes actual and contractual hours, the firm's standard working week, presence of overtime payment and bonuses, the timing of work, staffing levels as a proxy for the daily workload, authority over working time, wage rates, and other variables, and (2) the characteristics of the household time, which includes number and age of children as a proxy for the daily workload in a standard family, housing, outsourcing of domestic duties, the use of day care, the use of employer's family-friendly policies, and other variables.

6.5 COLLECTIVE BARGAINING

Pay and working conditions of 70-80% of Dutch employees are covered by about 800 collective agreements. The Wage Indicator Questionnaire is the only survey in the Netherlands measuring not only the collective bargaining coverage, but also the name of the agreement at stake. Particularly since version 3a and later (2003), WIQ measures adequately the names of the agreements. The Collective Agreements Database holds detailed data about the many features of almost all agreements in the Netherlands. Therefore, the data of the two datasets can be merged. Currently, research is undertaken to analyse to what extent clauses regarding the reconciliation of work and family life are present in collective agreements, and to what extent these clauses are used by employees who are covered by agreements with such clauses. Plans for future research focus on the impact of institutional arrangements such as collective bargaining agreements on employees employment choices.

7 LIST OF WAGE INDICATOR PUBLICATIONS

7.1 PUBLICATIONS IN DUTCH

2004

Werknemers in de voedingsindustrie. *Zeggenschap*, 15, 3, Tijdens, K.G. & M. van Klaveren, 2004

Levensloop en POP. *Zeggenschap*, 15, 2, Tijdens, K.G. & M. van Klaveren,, 2004

Solliciteren, hoe?. *Zeggenschap*, 15, 1, Tijdens, K.G. & M. van Klaveren, 2004

Voorwaarden voor verlofsparen. *Economisch Statistische Berichten*, 1-3-2002, 42-43. Tijdens, K.G., J.M. de Winter & J.A.C Korteweg, 2004

2003

Keuzemogelijkheden in CAO's: wat is het de werknemer waard? Tilburg, Organisatie voor Strategisch Arbeidsmarktonderzoek, OSA-publicatie A202, Korteweg, J.A., K.G. Tijdens & J. de Winter, 2003.

ICT en Telewerken. In Ester, P. et al (red.), *ICT en de Nederlandse arbeidsmarkt*, Den Haag, Elsevier Bedrijfsinformatie, Klaveren, M. van, P. Peters, Wetzels, C. & K.G. Tijdens, 2003, pp. 185-206

Pensioen. *Zeggenschap*, 14, 4, 26. Tijdens, K.G. & M. van Klaveren, 2003

Ouderen. *Zeggenschap*, 14, 3, 52. Tijdens, K.G. & M. van Klaveren, 2003

Vrouwen op universiteiten. *Zeggenschap*, 14, 2, 59. Tijdens, K.G. & M. van Klaveren, 2003

Arbeid en zorg zwaarder voor moeders? *Zeggenschap*, 14, 1, 57. Tijdens, K.G. & M. van Klaveren, 2003

Verborgene reserves: onder welke voorwaarden willen welke vrouwen herintreden? Pp. 135-145 in H. Maassen van den Brink en W. Salverda (red.) *De Nederlandse ArbeidsmarktDag 2002*. Congresbijdragen. Uitg. Stichting Nederlandse Arbeidsmarktdag. Wetzels, C. & K.G. Tijdens, 2003.

2002

Het belang van de spaarloonregeling. *Zeggenschap*, 13, 4, Tijdens, K.G. & M. van Klaveren. 2002.

Wie wil korter of langer werken?. *Zeggenschap*, 13, 3, Tijdens, K.G. & M. van Klaveren, 2002.

Reorganisaties en onzekerheid. *Zeggenschap*, 13, 2, Tijdens, K.G. & M. van Klaveren, 2002.

Valt U onder een CAO? In P. Noordermeer et al. (red.) *Onderhandelen bij krimpende wind. CAO-Jaarboek, Jaarboek 2002-2003*. Amsterdam: Stichting FNV Pers, pp. 31-37, Tijdens, K.G., 2002.

Ficties en feiten over herintreedsters. *Economisch Statistische Berichten*, 1-3-2002, jrg. 87, nr 4349, p. 176-178, Wetzels, C.M.M.P. & K.G. Tijdens, 2002.

Gevraagd: herintreedsters. *Nemesis*, 18/2, pp. 39-45, Tijdens, K.G. & C. M.M.P. Wetzels, 2002.

De vrouwenloonwijzer. *Over Werk, Tijdschrift van het steunpunt WAV*, 12(1-2), 144-146, 8(1), 123-127, Tijdens, K.G., 2002.

Loonwijzers 2001/2002. Werk, lonen en beroepen van mannen en vrouwen in Nederland. AIAS Research Report RR02/10, Tijdens, Kea, Anna Dragstra, Dirk Dragstra, Maarten van Klaveren, Paulien Osse, Cecile Wetzels, Aslan Zorlu. 2002, www.uva-aias.net/files/aias/RR10.pdf

2001

De Vrouwenloonwijzer. Werk, lonen en beroepen van vrouwen. Amsterdam, AIAS Research Report RR01/07, Tijdens, K.G., 2001, www.uva-aias.net/files/aias/RR7.pdf

De FNV CAO DATABANK en de Vrouwenloonwijzer. Onderzoek naar arbeidsvoorwaarden: wat kun je ermee? In F. Catz & P. Plas (ed.) *BRAINS in actie, CAO Jaarboek 2001/2002*. Amsterdam, Stichting FNV-pers, pp. 115-121, Tijdens, K.G., 2001.

Vrouwenloonwijzer. Grote behoefte aan inzicht in lonen. *Zeggenschap*, 12, 3, pp. 32-35, Dragstra, Anna en Kea Tijdens, 2001.

Dubbel delen in de digitale delta. Delft: TNO-STB, 2001. Wetzels, C. & K.G. Tijdens. Order stb@stb.tno.nl

7.2 PUBLICATIONS IN ENGLISH AND FRENCH

2004

'Employees' Preferences for more or fewer Working Hours. The Effects of Usual, Contractual and Standard Working Time, Family Phase and Household Characteristics, and Job Satisfaction'. Forthcoming in A. Sharpe et al (eds), *Understanding and Improving Labor Market Statistics*. Chicago, University of Chicago Press. Tijdens, K.G., 2004.

'Women in Management, the Netherlands', in Davidson, Marilyn J. & Ronald J. Burke (eds). *Women in management Worldwide: Progress and Prospects*, Oxford: Ashgate Publishing, Tijdens, K.G., 2004. www.ashgate.com/subject_area/business_management/business_newfeature.htm#book3

Are workers in cultural industries paid differently? Wage differentials within and between industries, the case of the Netherlands Wetzels, C.M.M.P. & K.G. Tijdens. Submitted for publication.

Training the low skilled. Assessing the determinants and the wage effects of on-the-job-training for call centre employees in the Netherlands, using the web-based Wage Indicator Survey. Tijdens, K.G. & C.M.M.P. Wetzels. Submitted as congress paper.

2003

Working women's Choices for Domestic Help. The Effects of Financial and Time Resources. Amsterdam University of Amsterdam Amsterdam Institute for Advanced Labour Studies, AIAS Working Paper WP03/17, Tijdens, K.G., Lippe, T. van der & Ruijter, E. de 2003. www.uva-AIAS.net/files/AIAS/WP17.pdf

Teleworking Policies of Organisations – The Dutch Experience. Amsterdam, AIAS Working Paper 03/07. Klaveren, M. van & K.G. Tijdens. 2003. www.uva-aias.net/files/aias/WP07.pdf

2002

Pays-Bas. Un observatoire sur les salaires feminins a l'initiative de la FNV. *Chronique Internationale de IRES*, 74, Wierink, M. 2002.

Does product market competition exacerbate or mitigate the nature and extent of labour market discrimination? Paper for the ACEI-conference, Erasmus University, Rotterdam, June 12-15 2002, Wetzels, C.M.M.P. & K.G. Tijdens, 2002.

Ethnic and Gender Wage Differentials. An exploration of LOONWIJZERS2001/2002. AIAS Research Report RR02/13. Aslan Zorlu, 2002. www.uva-aias.net/files/aias/RR13.pdf

Employees' Preferences for more or fewer Working Hours. The Effects of Usual, Contractual and Standard Working Time, Family Phase and Household Characteristics, and Job Satisfaction. Amsterdam, AIAS Research Report 03/07. K.G. Tijdens. 2003. www.uva-AIAS.net/files/AIAS/RR15.pdf

Telework, rightly a timesaving or time-greedy strategy? An investigation into the relationships between output management, job teleworkability, telework and employees' actual working hours. Paper for the conference, Badajoz, Spain, September 12-15, 2002, Peters, P., Wetzels, C. & Tijdens, K., 2002.

The impact of a career break on a woman's wage. *Transfer*, 8(1), 123-127, Tijdens, K.G., 2002.

Women's career break due to motherhood and the effects on wages. *Cahiers Economique de Bruxelles*, 45, (1), 169-189, Wetzels, C.M.M.P. & K.G. Tijdens, 2002.

2001

A Digital Dutch Miracle in Households and Firms. Delft: TNO-STB, 2001. [Wetzels, C. & K.G. Tijdens](#).

Order stb@stb.tno.nl

Does motherhood really make women less productive? Paper for the LoWER-conference Combining Work, Home and Education, University of Minho, Braga, Portugal, October 26-27 2001, Wetzels, Cécile en K.G. Tijdens, 2001.

Women's Choices for a Domestic Help. The Effects of Working Time, Household Time, Household Characteristics, Women's Wages and Time Allocation Attitudes. Paper for the LoWER-conference Combining Work, Home and Education, University of Minho, Braga, Portugal, October 26-27 2001, Tijdens, K.G., Lippe, T. van der & Ruijter, E. de, 2001.

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- Cantillon, B., R. van Dam, K. Van den Bosch, B. Van Hoorebeeck (2003) *The impact of the reference period on measures of household income from surveys*. Antwerpen, Universiteit Antwerpen (USFIA) / Centrum voor Sociaal Beleid Berichten
- Vehovar, V. (2003) *Web Surveys: A meta-analysis*. Presentation at the Institute of Statistical Mathematics, Tokyo, March 25

APPENDIX I CALCULATING HOURLY WAGES

Once the data is collected, the hourly wages will be calculated using the hours-input according to the following rules: (1) if the contractual hours are equal to the usual hours, this number of hours will be used as input, regardless the waged hours; (2) if the contractual hours are not equal to the usual hours, but the waged hours are equal to either the contractual hours or the usual hours, the waged hours will be used as input; (3) if the three categories of hours are different and the respondent is in full-time employment, the firm's full-time working hours will be taken as input; (4) if the three categories of hours are different and the respondent is in part-time employment, the usual hours will be taken as input.

Descriptive Statistics

WAGEG3H4 CALC hourly gross wage in euro in 4 groups at level 2003
WAGEG3HL CALC log hourly gross wage in euro at level 2003 based on wageg3hr
WAGEG3HR CALC hourly gross wage in euro at level 2003
WAGEG3M4 CALC montly gross wage in euro in 4 groups at level 2003
WAGEG3MO CALC montly gross wage in euro at level 2003
WAGEGRH2 CALC hourly gross wage in euro low earner < 10 euro
WAGEGRH4 CALC hourly gross wage in euro in 4 groups
WAGEGRHL CALC log hourly gross wage in euro based on wagegrhr
WAGEGRHR CALC hourly gross wage in euro
WAGEGRM4 CALC montly gross wage in euro in 4 groups
WAGEGRMO CALC monthly gross wage in euro
WAGEGROI last gross wages in euro NOT CONTROLLED FOR PAYPERIOD
WAGEGROS last gross wages NOT TO BE USED
WAGENEHR CALC hourly nett wage in euro
WAGENEMO CALC monthly nett wage in euro
WAGENETI last nett wages in euro NOT CONTROLLED FOR PAYPERIOD
WAGENETT last nett wages NOT TO BE USED

*** DETERMINE LAST GROSS AND NETT WAGES ***.

```
compute wagegroI=wagegros.  
var lab wagegroI 'last gross wages in euro NOT CONTROLLED FOR PAYPERIOD'.  
compute wagenetI=wagenett.  
var lab wagenetI 'last nett wages in euro NOT CONTROLLED FOR PAYPERIOD'.  
format wagegroI wagenetI (f10.2).  
missing val wagegroI wagenetI (99999999).  
if (wagegros eq 0 ) wagegroI=prut.  
if (wagenett eq 0 ) wagenetI=prut.  
if (valid3 eq 0) wagegroI=prut.  
if (valid3 eq 0) wagenetI=prut.  
if (wagegroI ge 1000000) wagegroI=prut.
```

```
if (wagenetl ge 1000000) wagenetl=prut.
```

```
*** DETERMINE PAY PERIOD ***.
```

```
compute wageper3=wageperi.
```

```
format wageper3 (f4).
```

```
var lab wageper3 'pay period TO BE USED'.
```

```
val lab wageper3 1 'month' 2 '4 weeks' 3 '2 weeks' 4 '1 week' 5 'day' 6 'hour' 7 'year' 9 'other'.
```

```
missing val wageper3 (9).
```

```
*** DETERMINE WORKING HOURS ***.
```

```
compute hrswagl=hrswage.
```

```
format hrswagl (f4).
```

```
var lab hrswagl 'working hours a week used for calcul hourly wages TO BE USED'.
```

```
*** CALCULATE HOURLY GROSS WAGE ***.
```

```
compute wagegrhr=sysmis.
```

```
format wagegrhr (f8.2).
```

```
var lab wagegrhr 'CALC hourly gross wage in euro'.
```

```
do if (hrswagl ge 1 and wagegro1 ge 1 ).
```

```
if (wageper3 eq 1 ) wagegrhr=wagegro1/(4.33*hrswagl).
```

```
if (wageper3 eq 2 ) wagegrhr=wagegro1/(4*hrswagl).
```

```
if (wageper3 eq 3 ) wagegrhr=wagegro1/(2*hrswagl).
```

```
if (wageper3 eq 4 ) wagegrhr=wagegro1/(hrswagl).
```

```
if (wageper3 eq 6 ) wagegrhr=wagegro1.
```

```
if (wageper3 eq 7 ) wagegrhr=wagegro1/(4.33*hrswagl*12).
```

```
end if.
```

```
*** CALCULATE LOGARITME OF HOURLY GROSS WAGE ***.
```

```
compute wagegrhl = LN(wagegrhr) .
```

```
var lab wagegrhl 'CALC log hourly gross wage in euro based on wagegrhr'.
```

```
*** CALCULATE HOURLY NETT WAGE ***.
```

```
compute wagenehr=sysmis.
```

```
format wagenehr (f8.2).
```

```
var lab wagenehr 'CALC hourly nett wage in euro'.
```

```
do if (hrswagl ge 1 and wagenetl ge 1 ).
```

```
if (wageper3 eq 1 ) wagenehr=wagenetl/(4.33*hrswagl).
```

```
if (wageper3 eq 2 ) wagenehr=wagenetl/(4*hrswagl).
```

```
if (wageper3 eq 3 ) wagenehr=wagenetl/(2*hrswagl).
```

```
if (wageper3 eq 4 ) wagenehr=wagenetl/(hrswagl).
```

```
if (wageper3 eq 6 ) wagenehr=wagenetl.
```

```
if (wageper3 eq 7 ) wagenehr=wagenetl/(4.33*hrswagl*12).
```

```
end if.
```

```

do if (hrswagl ge 1 and wagegro1 ge 1 and hrsdaypw ge 1).
if (wageper3 eq 5 ) wagegrhr=wagegro1/(hrswagl/hrsdaypw).
if (wageper3 eq 5 ) wagenehr=wagenet1/(hrswagl/hrsdaypw).
end if.

*** CALCULATE MONTHLY GROSS WAGE ***.
compute wagegrmo=(wagegrhr*hrswagl*4.33).
format wagegrmo (f8.2).
var lab wagegrmo 'CALC monthly gross wage in euro'.
if (hrswagl eq 0 or hrswagl gt 40) wagegrmo=(wagegrhr*hrscont1*4.33).
if (hrswagl eq hrscont1 and hrswagl eq 0 and hrsreal ge 1) wagegrmo=(wagegrhr*hrsreal*4.33).

*** CALCULATE MONTHLY NETT WAGE ***.
compute wagenemo=(wagenehr*hrswagl*4.33).
format wagenemo (f8.2).
var lab wagenemo 'CALC monthly nett wage in euro'.
if (hrswagl eq 0 or hrswagl gt 40) wagenemo=(wagegrhr*hrscont1*4.33).
if (hrswagl eq hrscont1 and hrswagl eq 0 and hrsreal ge 1) wagenemo=(wagegrhr*hrsreal*4.33).

*** CALCULATE MONTHLY GROSS WAGE IN 4 GROUPS ***.
compute wagegrm4=wagegrmo.
format wagegrm4 (f2).
var lab wagegrm4 'CALC montly gross wage in euro in 4 groups'.
val lab wagegrm4 1 '<1500' 2 '1500-2000' 3 '2000-2500' 4 '>2500'.
recode wagegrm4 (lo thru 1499.9999999=1)(1500 thru 1999.9999999=2)(2000 thru 2499.9999999=3)(2500 thru hi=4)(else=sysmis).

*** CALCULATE HOURLY GROSS WAGE IN 4 GROUPS ***.
compute wagegrh4=wagegrhr.
var lab wagegrh4 'CALC hourly gross wage in euro in 4 groups'.
val lab wagegrh4 1 '<=10' 2 '10-15' 3 '15-20' 4 '>=20'.
format wagegrh4 (f2).
recode wagegrh4 (lo thru 9.999999999=1)(10 thru 14.999999999=2)(15 thru 19.999999999=3)(20 thru hi=4)(else=sysmis).

*** CALCULATE HOURLY GROSS WAGE LOW EARNER IN 2 GROUPS ***.
compute wagegrh2=wagegrh4.
var lab wagegrh2 'CALC hourly gross wage in euro low earner < 10 euro'.
val lab wagegrh2 1 'yes' 0 'no'.
format wagegrh2 (f2).
recode wagegrh2 (1=1)(2 thru 4=0)(else=sysmis).

*** CALCULATE HOURLY GROSS WAGE AT LEVEL 2003 ***.
compute wagegr3hr= wagegrhr.

```

```

format wage3hr (f8.2).
var lab wage3hr 'CALC hourly gross wage in euro at level 2003'.
if (surveyyyy eq 2000) wage3hr=wagegrhr *1.112.
if (surveyyyy eq 2001) wage3hr=wagegrhr *1.065134.
if (surveyyyy eq 2002) wage3hr=wagegrhr *1.027726.

*** CALCULATE HOURLY GROSS WAGE IN 4 GROUPS AT LEVEL 2003 ***.
compute wage3h4=wage3hr.
format wage3h4 (f2).
var lab wage3h4 'CALC hourly gross wage in euro in 4 gourps at level 2003'.
val lab wage3h4 1 '<=10' 2 '10-15' 3 '15-20' 4 '>=20'.
recode wage3h4 (lo thru 9.999999999=1)(10 thru 14.999999999=2)(15 thru
19.999999999=3)(20 thru hi=4)(else=sysmis).

*** CALCULATE LOGARITHME OF HOURLY GROSS WAGE AT LEVEL 2003 ***.
compute wage3hl= ln(wage3hr).
var lab wage3hl 'CALC log hourly gross wage in euro at level 2003 based on wage3hr'.

*** CALCULATE MONTHLY GROSS WAGE AT LEVEL 2003 ***.
compute wage3mo= wagegrmo.
format wage3mo (f8.2).
var lab wage3mo 'CALC montly gross wage in euro at level 2003'.
if (surveyyyy eq 2000) wage3mo=wagegrmo *1.112.
if (surveyyyy eq 2001) wage3mo=wagegrmo *1.065134.
if (surveyyyy eq 2002) wage3mo=wagegrmo *1.027726.

*** CALCULATE MONTHLY GROSS WAGE IN 4 GROUPS AT LEVEL 2003 ***.
compute wage3m4=wage3mo.
format wage3m4 (f2).
var lab wage3m4 'CALC montly gross wage in euro in 4 groups at level 2003'.
val lab wage3m4 1 '<1500' 2 '1500-2000' 3 '2000-2500' 4 '>2500'.
recode wage3m4 (lo thru 1499.9999999=1)(1500 thru 1999.9999999=2)(2000 thru
2499.9999999=3)(2500 thru hi=4)(else=sysmis).

```

APPENDIX 2 THE BOC- QUESTIONS

First page of the BOC-questions, identifying the industry (no translation available)

In welke sector werk je?

- agrarische sector, veiling, dieren
- arbeidsbemiddeling, schoonmaak, beveiliging, callcenter
- bank- en verzekeringswezen, financiële diensten
- bouw, industrie, energie, afval
- cultuur, sport, vrije tijd
- detailhandel, groothandel, horeca, verblijfsrecreatie
- drukkerij, uitgeverij, grafische sector, media
- gezondheidszorg
- handel en verhuur (on)roerend goed
- handel in en reparatie van auto's, motorfietsen, garage
- ict, internetprovider, web-ontwikkeling
- juridische en economische dienstverlening
- marketing, ontwerp-, organisatie- en ingenieursbureau
- onderwijs, universiteit
- onderzoek, keuring en certificering
- overheid, politie, rechtspraak, sociale zekerheid
- post, telecommunicatie, toeristische informatie, bevrachting
- verenigingen, stichtingen
- vervoer, transport, opslag, (lucht)havens, luchtvaart
- verpleging en verzorging, uitvaart, verzorging, kinderopvang

Second page of the BOC-questions, identifying the branch of industry (here the underlined industry in Table 15)
(no translation available)

Jouw sector (agrarische sector, veiling, dieren) nader bekeken. Waar werk je precies?

Als jouw bedrijf er niet bij staat, klik dan aan wat er het meest op lijkt. Na de volgende vraag kun je intypen bij welk bedrijf je wel werkt.

akker-, land en tuinbouw

- akkerbouw, grienderij
- bedrijfsverzorging landbouw, loonbedrijf, sorteerbedrijf
- fruitteelt
- gemengd landbouwbedrijf
- hoveniersbedrijf
- teelt, kweek van groente, bloemen, champignons, zaden, bomen

veehouderij, -fokkerij

- bedrijfsverzorging veeteelt, K.I.
- fokkerij pelsdieren, huisdieren, vissen
- paardenfokkerij, schapen- of geitenhouderij
- pluimveehouderij voor slacht, veren, eieren
- varkenshouderij
- veehouderij

Visserij

- kwekerij vis- of schaaldieren
- zee-, kust-, binnenwaterenvisserij

overige agrarische bedrijfssoorten

- bosbouw, houtvesterij
 - dierenartspraktijk
 - dierenasiel of -pension, trimmen van honden
 - dierentuin, kinderboerderij, beheer natuurgebied
 - groenvoederbedrijf, grasdrogerij
 - jacht
 - veiling landbouw-, tuinbouw- of visserijproducten, veemarkt
-

Third page of the BOC-questions, identifying the occupation within the branch of industry (here the branch of industry from Table I6) (no translation available)

Welke omschrijving pas het beste bij je functie?

Als jouw beroep er niet bij staat, klik dan aan wat er het meest op lijkt. Na de volgende vraag kun je intypen in welk beroep je wel werkt.

- algemeen medew.
- algemeen voorman
- bedrijfsleider, -beheerder
- bedrijfsverzorger
- boswachter
- caissiere, medew. balie, receptie
- champignon-, fruitplukker, bollenpeller, oogstmedew.
- chauffeur, bestuurder, monteur
- consulent, voorlichter
- controleur, inspecteur, keurmeester, selecteur
- griendwerker, rietsnijder,
- hovenier, bomenveller
- kweker bloemen, planten, bomen, bloembollen ed
- marktmeester
- veilingmeester
- werkzaam met dieren, vissen

Of heb je een algemeen beroep in jouw specifieke sector?

- administratief, bibliotheek, post, archief, pr, voorlichting
 - bedrijfsbureau, werkplanning, ict
 - facilitaire, technische, huish. dienst, magazijn, transport
 - financieel, marketing, inkoop, verkoop
 - personeel, organisatie, arbo, opleidingen, staf, beleid
 - secretariaat, receptie, telefoon, huisdrukkerij, tekenkamer
-

Fourth page of the BOC-questions, identifying the occupation in greater detail (here the underlined occupation in Table 175) (no translation available)

Wil je jouw beroep nog preciezer aangeven?

- bestuurder landbouwmachine
- chauffeur, bestuurder, monteur agrarische sector
- chauffeur vrachtvervoer
- heftruckchauffeur
- machinist dragline, grijper, kraan, shovel
- monteur landbouwmachines
- monteur zeevisserij

Fifth page of the BOC-questions, identifying whether the respondent is subject to a collective bargaining

Val je onder een cao?

Are you subject to a collective labour agreement?

- | | |
|---|--|
| <input type="radio"/> ja | <input type="radio"/> Yes |
| <input type="radio"/> er geldt voor mijn organisatie geen CAO | <input type="radio"/> No, my company is not subject to an agreement |
| <input type="radio"/> er geldt voor mijn organisatie wel een CAO, maar ik val daar niet onder | <input type="radio"/> No, I am not subject to an agreement, though my company is |
| <input type="radio"/> ik weet niet of er een CAO geldt | <input type="radio"/> I don't know whether an agreement applies |
| <input type="radio"/> anders | <input type="radio"/> Otherwise |

Sixth page of the BOC-questions, identifying the collective bargaining agreement if the respondent is subject to an agreement (no translation available)

cao's agrarische sector, veiling, dieren

- Agterberg
- Agrarische Sectoren Overbruggingsfonds
- Bedrijfsverzorgdiensten land-, tuinbouw
- Bloembollenbedrijf
- Bloemenveiling Eelde
- Bloemenveiling Holland
- Bloemenveiling Oost-Nederland
- Bloemenveiling Aalsmeer
- Boomkwekerij
- CNC (Coop. Champignon Nederland)
- Dierenartsassistenten
- Dierentuinen, Ned.
- Enk, de
- Greenery Intern.
- Hommel
- Hoveniersbedrijf
- Koppert
- Open Teelten (vh. landbouw)
- Landbouwwerktuigen exploiterende ondern.
- Landschapsbeheer Drenthe
- Noorderdierenpark
- Paddestoelen (champignons)

-
- Rundveeverbetering
 - Sorteerbedrijven voor Akkerbouwprod. NN
 - Staatsbosbeheer
 - Trawlvisserij
 - Glastuinbouw (v/h Tuinbouw)
 - Tuinbouw veilingen
 - Tuinzaadbedrijf
 - Veiling Vleuten
 - Veiling Zuid-Oost Nederland
 - Weefselkweek
 - weet niet welke cao / andere cao
-

APPENDIX 3 QUESTIONS FOR INDUSTRY AND COLLECTIVE AGREEMENT

Questions for industry in three Wage Indicator Questionnaires (one answer) (no translation available)

Women's Wage Indicator Questionnaire Sept 2000	Wage Indicator Questionnaire May 2001	Wage Indicator Questionnaire Jan 2002
1) In welke sector werkt u?	1) In welke sector werk je?	1) In welke sector werk je?
<input type="checkbox"/> winkels, warenhuizen, supermarkten, detailhandel	<input type="checkbox"/> landbouw, tuinbouw & visserij	<input type="checkbox"/> landbouw, tuinbouw, visserij
<input type="checkbox"/> horeca	<input type="checkbox"/> industrie, uitgeverijen, drukkerijen	<input type="checkbox"/> voedings-, textiel-, papier- en kartonindustrie
<input type="checkbox"/> vervoer, post, telecommunicatie, reisorganisaties	<input type="checkbox"/> nutsbedrijven (energie, water)	<input type="checkbox"/> uitgeverijen, drukkerijen
<input type="checkbox"/> bank- en verzekeringswezen, financiële dienstverlening	<input type="checkbox"/> bouwnijverheid	<input type="checkbox"/> chemische industrie, rubber- en kunststofindustrie
<input type="checkbox"/> zakelijke dienstverlening, advocaten, makelaars, ICT	<input type="checkbox"/> handel/reparatie auto's e.d., tankstations	<input type="checkbox"/> metaal-, machine- en apparatenindustrie
<input type="checkbox"/> media	<input type="checkbox"/> groothandel & handelsbemiddeling	<input type="checkbox"/> metaalnijverheid (kleinmetaal)
<input type="checkbox"/> schoonmaakbedrijven	<input type="checkbox"/> winkels, warenhuizen, supermarkten	<input type="checkbox"/> nutsbedrijven (energie, water)
<input type="checkbox"/> rijksoverheid, provincie, gemeenten, rechterlijke macht, politie	<input type="checkbox"/> horeca	<input type="checkbox"/> bouw, installatiebedrijven, weg- en waterbouw
<input type="checkbox"/> onderwijs	<input type="checkbox"/> (tele)communicatie, post, vervoer & reisorg.	<input type="checkbox"/> handel/reparatie van auto's e.d., tankstations
<input type="checkbox"/> ziekenhuizen, gehandicaptenzorg, overige gezondheidszorg	<input type="checkbox"/> bank- en verzekeringswezen, financiële inst.	<input type="checkbox"/> groothandel & handelsbemiddeling
<input type="checkbox"/> verpleeg- en bejaardentehuizen	<input type="checkbox"/> zakelijke dienstverl., computerservice, architectbur.	<input type="checkbox"/> winkels, warenhuizen, supermarkten
<input type="checkbox"/> welzijnszorg, maatschappelijke dienstverlening, kinderopvang	<input type="checkbox"/> schoonmaakbedrijven	<input type="checkbox"/> horeca
<input type="checkbox"/> cultuur, sport, vrije tijd, persoonlijke verzorging	<input type="checkbox"/> openbaar bestuur, overheid, gemeenten	<input type="checkbox"/> transport, (tele)communicatie, post, reisorganisatie
<input type="checkbox"/> landbouw, tuinbouw, visserij	<input type="checkbox"/> justitie, politie, brandweer, sociale verzekering	<input type="checkbox"/> bank- en verzekeringswezen, financiële instellingen
<input type="checkbox"/> industrie	<input type="checkbox"/> onderwijs	<input type="checkbox"/> zakelijke dienstverl., ict-dienstverlening, architectbureau's
<input type="checkbox"/> bouw, energiebedrijven	<input type="checkbox"/> ziekenhuizen, gehandicaptenzorg, overig gez-zorg	<input type="checkbox"/> schoonmaakbedrijven
<input type="checkbox"/> groothandel, distributie	<input type="checkbox"/> verpleeg- en bejaardentehuizen	<input type="checkbox"/> uitzendbureau's
<input type="checkbox"/> bij particuliere huishoudens	<input type="checkbox"/> welzijnszorg, maatschapp. dienstverl., kinderopv.	<input type="checkbox"/> openbaar bestuur, overheid, gemeenten
<input type="checkbox"/> anders, namelijk	<input type="checkbox"/> cultuur, sport, vrije tijd, persoonlijke verzorging	<input type="checkbox"/> justitie, politie, brandweer, sociale verzekering
	<input type="checkbox"/> anders, namelijk _ _ _ _ _	<input type="checkbox"/> onderwijs, universiteit
		<input type="checkbox"/> ziekenhuizen, gehandicaptenzorg, overige gezondheidszorg
		<input type="checkbox"/> verpleeg- en bejaardentehuizen
		<input type="checkbox"/> thuiszorg, kinderopvang
		<input type="checkbox"/> welzijnszorg, maatschapp. dienstverlening
		<input type="checkbox"/> cultuur, sport, vrije tijd, recreatie, pers. verzorging
		<input type="checkbox"/> anders, namelijk ... _ _ _ _ _

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