

**Documentation of statistics for  
The Annual and Quarterly Working Time Accounts 2015  
Quarter 4**

## 1 Introduction

The Danish Working Time Accounts (WTA) is an integrated statistics with consistent time series on employment, number of jobs, hours worked and compensation of employees in both annual and quarterly basis. The current time series goes back to 2008 (quarterly statistics as from the 1st quarter of 2008).

## 2 Statistical presentation

The Working Time Accounts produce integrated statistics with consistent time series on employment, jobs, number of hours worked and compensation of employees on an annual and quarterly basis. The data basis is made up by a number of primary statistical data, which are adapted and adjusted to achieve agreement of the concepts and definitions used in the WTA system.

### 2.1 Data description

The Danish Working Time Accounts (WTA) produce integrated statistics with consistent time series on employment, jobs, number of hours worked and compensation of employees on an annual and quarterly basis.

The WTA transmit quarterly data to the Eurostat short term business statistics (STS). The variables transmitted to STS are: - Number of Persons Employed (Variable 210) - Hours Worked (Variable 220): Paid hours worked in the jobs. - Gross Wages and Salaries (Variable 230)

An employed person can have one or more jobs. A job is defined as a person connected to a workplace (establishment). In each job the person performs a number of hours worked and receives as compensation a salary measured in DKK.

### 2.2 Classification system

[Danish Industrial Classification \(DB07\)](#) (compatible to NACE) is used for classifying workplaces according to their main activity. NACE aggregates are used in international reports. Also, the Danish working time accounts (WTA) are broken down on [national accounts industry groupings](#).

The workplace sector is determined using the national account sectors (ESA 2010 sectors) to make a 2 group sector breakdown: *general government* versus *Corporations and organizations*. A detailed description of the transformation to ESA 2010 sectors is given in the paper [Ny sektorkode i beskæftigelsesstatistikkerne](#) (New sector code in the employment statistics - in Danish only).

Socioeconomic status is a breakdown on three groups: employee, self-employed or assisting spouse.

Full-time work is defined as at least 32 paid hours of work in the job per week for employment over the entire week, or at least 139 paid hours of work in the job for employment over the entire month.

### 2.3 Sector coverage

WTA covers all the ESA 2010 sectors Danish registered companies can be assigned (i.e. all sectors excluding rest of the world and foreign-controlled entities).

However, WTA sectors aggregated to a division into 2 groups, respectively *Corporations and organizations* and *General government*.

*General government* include central government, regional government, municipal government, and social security funds.

*Corporations and organizations* includes private corporations, public corporations, private nonprofit organizations and sector not stated.

See sectors for more detailed information on ESA2010 sectors.

Regarding data transmitted to the Eurostat short term business statistics (STS), only data in sector group *Corporations and organizations* are transmitted.

No cut-off on the basis of the number of employees is used. All size classes are included (no breakdown on size classes).

### 2.4 Statistical concepts and definitions

**Employment:** Employment is an assessment of how many people (headcount) employed at any given time. Employed is, if one has an attachment to a workplace in the form of a job where you at least have one hour of paid work in the reference week. See [detailed description of concepts](#).

**Job:** Jobs shows the number of jobs that are active (excluding temporary absences in the form of eg. maternity or other leave) at any given time. The labour market statistics are a job actively, if there is a minimum of 1 paid hour per week. A job is defined as a person connected to a workplace. The same person can have several jobs at the same time. See [detailed description of concepts](#).

**Hours Worked:** Hours worked are defined as hours paid by employers, including paid overtime and excluding paid hours of absence. Unpaid overtime hours and black work are excluded from the calculation of hours worked in the WTA. See [detailed description of concepts](#).

**Compensation of Employees:** Compensation of employees in the WTA includes compensation of employees in cash or in kind which the employer pays to an employee for work performed in an accounting period. See [detailed description of concepts](#).

### 2.5 Statistical unit

The statistical unit in the Danish Working Time Accounts (WTA) is the job that the person has at the individual workplace (establishment).

## **2.6 Statistical population**

Employed employees, self-employed and assisting spouses of Danish registered enterprises.

The population covers persons working in Danish enterprises or on Danish ships. The population of the WTA are persons affiliated to Danish registered companies, which is consistent with ESA2010 boundaries. ESA2010 includes working in resident companies (see ESA 2010 paragraphs 2.04 to 2.11).

The WTA do not include employees of foreign business enterprises hired out for work in Denmark according to the rules governing hiring-out of labour.

Regarding data transmitted to the Eurostat short term business statistics (STS), only data in sector group *Corporations and organizations* are transmitted, and the indicators are broken down according to Annexes as defined in section *Sector coverage*.

## **2.7 Reference area**

The Danish Working Time Account covers, as in the Danish national accounts, the economic territory of the Kingdom of Denmark excluding the Faroe Islands and Greenland, which is in accordance with Commission Regulation (EC) No 109/2005.

## **2.8 Time coverage**

Q1 2008 - (for all indicators in all breakdowns).

## **2.9 Base period**

Not applicable to this statistic.

## **2.10 Unit of measure**

Employment is calculated as number of persons.

Job is calculated as the number of jobs.

Hours worked are calculated as the number of hours. In STATBANK these are calculated in 1000 hours.

Compensation of employees is measured in DKK. In STATBANK compensation of employees measured in millions DKK.

## **2.11 Reference period**

The reference period of the figures in the annual Working Time Accounts (WTA) is the calendar year whereas the reference period of the quarterly working time accounts are the quarters.

## 2.12 Frequency of dissemination

Annual and quarterly statistics are published.

## 2.13 Legal acts and other agreements

Not relevant for the Working Time Account as they are compiled exclusively on existing statistics.

WTA provides labour market data to EUROSTAT business short-term regulation (STS) and the national accounts (ESA / ESA).

STS: Council Regulation (EC) concerning short-term statistics:

- Council Regulation (EC) No 1165/98 of 19 May 1998 concerning short-term statistics, 1165/98, OJ L 165, p.1, 05-06-1998.
- European Parliament and Council Regulation (EC) No 1158/2005 of 6 July 2005 amending Council Regulation (EC) No 1165 / 98 concerning short time statistics. 1158/2005, OJ L 191, p.1, 22-07-2005.
- Commission Regulation (EC) No 586/2001 of 26 March 2001 implementing Council Regulation (EC) No 1165/98 concerning short-term statistics as regards the definition of Main Industrial Groupings. 586/2001, OJ L 86, p 11, 27-03-2001.
- Commission Regulation (EC) No 1503/2006 of 28 September 2006 implementing and amending Council Regulation (EC) No 1165/98 concerning short-term statistics as regards definitions of variables, list of variables and frequency of data compilation. 1503/2006, OJ L 281, p 15, 12-10-2006.
- Commission Regulation (EC) No 656/2007 of 14 June 2007 amending Regulation (EC) No 586/2001 implementing Council Regulation (EC) No 1165/98 concerning short-term statistics as regards the definition of industry groups. 656/2007, OJ L 155, p 3, 15/06/2007.
- COMMISSION REGULATION (EC) No 1178/2008 of 28 November 2008 amending Council Regulation (EC) No 1165/98 concerning short-term statistics and Regulation (EC) No 1503/2006 and (EC) No 657/2007 as regards adaptations following the revision of statistical classifications NACE and CPA. 1178/2008, OJ L 319, p 16, 29-11-2008.

ESA / ESA: Council Regulation (EC) on the European system of national accounts:

- Council Regulation (EC) No 2223/96 of 25 June 1996 on the European system of national and regional accounts in the European Community. 2223/96 OJ L 310, p.1, 30-11-1996.
- European Parliament and Council Regulation (EC) No 1392/2007 of 13 November 2007 amending Council Regulation (EC) No 2223 / 96 with respect to the transmission of national accounts data. 1392/2007, OJ L 324, p.1, 10-12-2007.
- Commission Regulation (EU) No 715/2010 of 10 August 2010 amending Council Regulation (EC) No 2223/96 as regards changes in the national accounts as a result of the revision of the statistical classification of economic activities NACE rev. 2 and the statistical products by activity (CPA). 715/2010, OJ 210, p.1, 11/08/2010.

## 2.14 Cost and burden

No response burden is calculated as the statistics build on existing statistical products.

## 2.15 Comment

The system for the Working Time Accounts (WTA) is the result of a three-year project established in Statistics Denmark in 1995 with grants by The European Social Fund. The purpose of the project was to improve the current statistical description of the Danish labour market. The background to the WTA is that there has been a considerable expansion in the number of statistics covering the labour market and the fact that the figures from different statistics are not immediately comparable. The project work has been concentrated on developing statistical systems integrating already existing labour market statistics. In December 1998 the project ended with the publication of a report (in Danish only): "Integrated Labour Market Statistics - the Labour Market Accounts and the Working Time Accounts 1995-97" ("Integreret arbejdsmarkedsstatistik - Arbejdsmarkedsregnskab og Arbejdstidsregnskab 1995-97") in which two new statistical systems were presented. In 1999 the WTA were presented by Statistics Denmark with the inclusion of annual as well as quarterly statistics.

Differences in concepts and statistics on employment and number of hours worked are described in the following paper [differences in concepts between employment statistics](#).

Additional documentation of differences between the employment statistics can be found at [employment](#).

Documentation relating exclusively to the working time accounts can be found at [the Working Time Accounts](#).

## 3 Statistical processing

The population and concepts as well as levels of the variables are defined by annual structural data sources. Short-term data sources are applied in projecting these levels over the months of the year and in periods for which structural data are not available. Summation of the data is conducted before they are projected. Data are seasonally adjusted both for use in Denmark as well as for use in Eurostat's business short term statistics (STS).

### 3.1 Source data

The WTA are based on a combination of census and survey data. The WTA are compiled on the basis of three primary data sources:

1) The Register of Employment Statistics forming the basis for both:

- the Register-based labour force statistics [RAS statistics](#)
- and for the Establishment-related Employment Statistics [ERE statistics](#)

The WTA use the Register of Employment Statistics for obtaining data on jobs and persons employed at end-November as well as annual data on aggregate payroll costs (compensation of employees) and annual paid hours of work for employees.

The structural data incorporated in the 2013 WTA, which are made up by the Register of Employment Statistics (the basis for the register-based labour force statistics, RAS and the Establishment-related Employment Statistics at the end of November 2013), are based on a special version exclusively for internal use in the Working Time Accounts, National Accounts and Industrial Accounts Statistics, where the former methods and sources are applied. This internal version is used for the purpose of avoiding breaks in the statistics mentioned.

Employment Statistics for Employees [BfL](#)

The Employment Statistics for Employees contain monthly data on jobs, paid hours of work and total wage and salary costs relating to employees throughout the year. The data are used in the WTA for projecting compensation of employees, hours worked, employment, primary and side line jobs for employees during the year.

The three above-mentioned statistics are compiled on the basis of eIncome:

## 2) [The Structural Earning Statistics](#)

The Statistics on Earnings are used in the WTA for converting paid hours of work into hours worked by employees during the year. Where the above-mentioned structural statistics set the level for the statistics in the WTA, the short-term statistics are used for describing the development throughout the year.

## 3) The Labour Force Survey [LFS](#)

The Labour Force Survey is used for describing the development in the number of hours worked during the year.

Furthermore, the Labour Force Survey is also used for measuring the effect derived from each day of absence from work during the Easter holiday on the distribution of hours worked between the months March and April. Subsequently, the effect derived from the Easter holiday is calculated by counting the number of Easter days of absence, falling in each of the two months during each year.

The Labour Force Survey is also applied in undertaking projections of employment and jobs for self-employed and assisting spouses during the period, following the latest November-statistics of the Register of Employment Statistics. Finally, the LFS is applied in describing how many more hours of work were performed by self-employed and assisting spouses compared to hours worked by employees.

For self-employed and assisting spouses, the development in employment and jobs is calculated as a steady development from one structural statistics to another (employed persons in the Register-based Labour Force Statistics and the number of jobs in the Establishment-related Employment Statistics). However, rolling annual statistics from the Labour Force Survey are used for projections in the period following the latest structural statistics (i.e. after the end of November 2011).

The basis for calculating hours worked by self-employed persons and assisting spouses are hours worked per job for employees. These hours are enumerated by the number of jobs for self-employed persons and assisting spouses and adjustments are made on the basis of the number of more hours worked by self-employed persons and assisting spouses compared to hours worked by employees according to the Labour Force Survey.

Average employment (and average number of jobs) over the year is estimated as an average figure of average employment during the 4 quarters of the year (respectively average number of jobs of 4 quarters). Against the background of the projections, it is possible to compile preliminary annual statistics for the period following the latest structural statistics.

In deciding which data sources to apply in compiling the WTA, attention is centred on the major advantages provided by each individual statistics. For example, register-based data are used to ensure complete coverage in the calculation of employment, number of jobs, aggregate payroll costs and paid hours of work. Register-based short-term statistics are used for describing the development throughout the year in the same variables. Information from the wage and salary system of the business enterprises is used to convert paid hours of work into hours worked during the year. Personal interviews are used to obtain information on the distribution of hours worked during the year as well as information on the groups that are not covered by the registers.

The Working Time Accounts are exclusively based on existing data sources, which are subsequently converted to the concepts used in the WTA. The WTA is flexible in its choice of primary sources, which can be replaced by other sources, if these have proved to be more accurate. The choice of primary source decides the amount of data editing necessary. When it comes to integrating all the sources, however, all the concepts are consistent in conforming to international standards and every variable fulfils the requirement of the system for the WTA.

### **3.2 Frequency of data collection**

The Danish Working Time Accounts (WTA) makes use of information retrieved from existing sources in Statistics Denmark when new data are available. Typically, WTA retrieves data from the structure of earnings statistics (LON) once a year (April), from the register based labour force statistics (RAS statistics) and the Establishment-related Employment Statistics (ERE statistics) once a year (May) and from Employment Statistics for Employees (BfL) eight time every Quarter.

### **3.3 Data collection**

The information is retrieved from these existing sources in Statistics Denmark when new data are available.

### **3.4 Data validation**

Data are already checked for errors in the primary statistics. In the Danish Working Time Accounts (WTA) further checks, troubleshooting and debugging are carried out. This is partly based on the information from the producers of the input sources, partly systematic (mostly figurative) controls the internal consistency between variables and over time, and by comparisons with other published statistics. Finally developments are systematically being discussed with stakeholders from other statistics in Statistics Denmark.

### **3.5 Data compilation**

The necessary data sources are loaded.

Data is aggregated, integrated and projected: BFL and the Structural Earning Statistics are used on micro-level, in a preliminary step: As data from Structural Earning Statistics is imported, more updated workplace information from Employment Statistics for Employees (BfL) is transferred to data from the Structural Earning Statistics (including information on line of industry and sectors). Data from different sources are aggregated (to the extent this have not already be done so when loading the data). Any previous corrections to the input data (BFL or RAS / ERE) is included. This is followed by a calculation of factors for the number of paid hours actually worked in relation to the number of hours paid per years. These factors are transferred to relatively detailed structural data from the Register of Employment Statistics. Factors are calculated (based on BFL) to distribute annual data. Further factors are computed (based on LFS) to describe the distribution of hours worked during the year. Enumeration factors calculated for BFL level to the level of The Register of Employment Statistics end of November statements (RAS, ERE Statistics) for variables paid hours of work, main job and side line jobs and salary for employees. The calculated projection factors (and in the initiation of the WTA also factors to project from 2009 to 2008), which describes the development of jobs, employment, compensation of employees, hours worked for employees over the year. Data from different sources are integrated and projected.

Aggregated publishing data are formed: The most current version of the structural data from The Register of Employment Statistics is found. Non-corrected data for jobs, hours worked and

compensation of employees are gathered in a single table. Non-corrected data is integrated with corrected data. Only data for the latest version of the reference period are included. Data is enriched with various aggregate line of industry (Dst's Std-groups) and it is ensured that the variables and formats match names and formats used for publishing purposes and troubleshooting. The WTA is broken up on detailed sectors by means of end of November statements (Register-based labour force statistics (RAS statistics) / the Establishment-related Employment Statistics (ERE statistics)). Based on these data (not least for the national accounts industry aggregates) data sets are generated to the National Accounts at various levels of aggregation.

Data are seasonally adjusted, debugged and corrected: Initially an overall quality checks are implemented to see if something is wrong, just to be sure there is not a need for new input data deliveries. If necessary, the process stops here and the responsible person for the input data is contacted to find out what the problem is about / possibly to secure new supplies, and it is agreed, if necessary, who makes the adjustments and how. Because Easter can have very serious consequences for the development of hours worked, data are seasonally adjusted. Actual data, trading day adjusted data and seasonally adjusted data are also formed on Business Short Regulation (STS) groups so that these may also be used for troubleshooting. Actual and seasonally adjusted data are error detected in detail, mainly due by means of graphics. In addition, consistency checks are carried out (between variables, over time and in comparison to other statistics). This also takes place primarily based on graphics. Where deviations look strange any corrections are calculated for input sources and/or output data. It is checked whether the cause is an industry shift. Responsible of the input statistics are contacted in order to carry out analysis. If it turns out that there is a need for corrections, these can be incorporated to the various input sources, or they can be incorporated to the WTA output data. Cyclical interest group meetings are held. This may reveal the need for additional troubleshooting and corrections.

Data are analysed and disseminated: When the average number of employees, respectively the average number of jobs, in the quarter (year) is calculated, this is done as an average of the 3 months of the quarter (12 months of the year). Actual hours worked and compensation of employees in the quarter (year) is calculated as the sum of hours worked and compensation of employees in the three months of the quarter (12 months of the year). The story in the data are found for the most recent data. If necessary notes on the subject site will be updated. Special features are described for use in eg News from Statistics Denmark and Documentation of statistics. Documentation of statistics in Danish and English are updated. Danish and English figures, tables, stories and explanations in News from Statistics Denmark, Statistical News, Yearbook, STS, etc. are updated and proofread. Various data deliveries to Macro Database, various series for the STS, deliveries to internal users (including National Accounts and various stakeholders in relation to the short term statistics forum) as well as deliveries to external users are formed, controlled at an overall level and delivered. Answers to questions from the press, questions from the national accounts, Eurostat, Labour Movement's Business Council (Arbejderbevægelsens Erhvervsråd, AE), Danish Industry (DI), Danish employers' association (DA), the trade unions (LO), the Productivity Commission, ministries, or just one-off requests from individuals or organizations / companies. Any press contacts are reported.

Data are archived.

The Danish Working Time Accounts (WTA) is a statistical product that is based on several input data sources. The statistics has ongoing revisions due to new data input sources, data breaks in existing input sources, revisions in line of industry codes, new sector codes, new or changing needs of users (national and international) etc.

### **3.6 Adjustment**

The data are seasonally adjusted, but otherwise no corrections of the data are carried out beyond what has already been described during data validation and data processing.

## **4 Relevance**

The statistics is relevant for users interested in social and economic statistics.

### **4.1 User Needs**

Among users are politicians, ministries, interest groups, businessmen, researchers, major private companies and others interested in the development of the Danish labour market. The areas of application are mainly the National Accounts, economic models, economic government departments and labour market organizations.

When major revisions are released, the changes are described in Documentation of statistics and in potential more comprehensive notes available at the website.

In addition users are oriented about the background for the changes, when the changes are put into force, and the reference period the changes are related to, as early as possible in the process via user committees (user committee for labour market statistics and user committee for economic statistics), in the forum of short term statistics and on interest group meetings. In addition, revisions of the Working Time Accounts are discussed and coordinated with the national accounts.

## **4.2 User Satisfaction**

Users interested in the social and economic statistics have expressed satisfaction with the quality of the statistics. However, they also expressed frustration over large data breaches, especially in the transition to e-Income-based sources.

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In addition users are oriented about the background for the changes, when the changes are put into force, and the reference period the changes are related to, as early as possible in the process via user committees (user committee for labour market statistics and user committee for economic statistics), in the forum of short term statistics and on interest group meetings. In addition, revisions of the Working Time Accounts are discussed and coordinated with the national accounts.

User Committee for Labour Market Statistics includes the areas employment, unemployment, wage subsidies jobs, earning statistics and statistics on absence. The user committee hold meetings once or twice a year to ensure running contact and dialog on the scope of statistics, developments, quality and communication. The members of the committees are important users of the products of Statistics Denmark within the subject areas of the user committee.

The User Committee for Economic Statistics covers the topics national accounts, public finances, short term statistics, external economy, globalization, employment, prices, consumption and financial statistics. The committee normally holds meetings in June and December. At these meetings the revisions of the Working Time Accounts have generally been embraced, as no users have doubted that the quality of the WTA has been improved significantly. However, the data breaks been more difficult for the users to deal with. Especially for the national accounts and its users and for the Productivity Commission has the restructuring to using the eIncome statistics - especially with the very significant drop in the levels of hours worked - has given rise to much frustration and additional work load.

## **4.3 Data completeness rate**

Up to now the delimitation of data supplies from the Working Time Account to the short-term business statistics (STS) has only been the sector group “business enterprises and organizations, i.e. exclusive of “general government sector”. In other words, the population in the short-term business statistics is for the time being greater than the market share of the economy, which is covered by the Regulation, as sector code 89: Non-profit institutions serving households (NPISH) is not excluded from the data deliveries from the Working Time Account.

## **5 Accuracy and reliability**

There are no calculations of the measures of accuracy.

See section quality assessment.

## 5.1 Overall accuracy

In general, the quality of data has improved significantly with the use of the new eIncome source. Previously, the WTA was calculated by combining a multitude of different sources. After the reorganization in 2012 the WTA is based primarily on eIndkomst sources. This is the same basic data for most of the sources included in the WTA, which ensures a high degree of internal consistency. In addition, the date markers, for when a job is active, have become much more precise, both in the annual structural statistics on jobs and employment at the end of November and the distribution over the year. Industry and sector rankings in eIncome are based on current work locations of employees. This is significantly more accurate than the projections underlying the former WTA. Hours statements have become much more precise, both because the date markers for when the job is active have become much more precise, but also because of eIncome now have a total population of employee relationships in Danish enterprises including reports on number of paid hours of work.

Not only has there been a significant quality improvement related to the transition to eIncome. Over time, the eIncome register have also been improved. Thus, a quality measure for the calculation of hours worked is the proportion of hours paid in eIncome that have been imputed because they have either not been reported or because they have proved to be invalid:

Year	Total	Corporations and organizations	General government
2008	14.6 percent	17.7 percent	7.8 percent
2009	11.6 percent	13.5 percent	7.7 percent
2010	10.6 percent	11.9 percent	8.1 percent
2011	8.3 percent	9.6 percent	5.7 percent
2012	5.8 percent	7.1 percent	3.1 percent
2013	4.2 percent	4.8 percent	2.9 percent
2014	3.6 percent	3.7 percent	3.2 percent

In general, there is a tendency that more and more report information on hours paid to eIncome, which guarantees a better quality over time. Furthermore, the guidelines from the tax authorities on the reporting of hours paid to eIncome have become more clear, and the precision and knowledge of concepts are increased in the reporting over time so that, for example, the reporters become aware that unpaid absences are not to be included in the reported hours paid.

## 5.2 Sampling error

Not applicable to this statistic.

### 5.3 Non-sampling error

Some reports to eIncome for employees lack information on hours paid or the reported information has been found to be invalid. Therefore, imputed (estimated) paid hours of work for these reports.

It is assumed in the WTA, that the end of November employment in RAS and number of jobs in ERE statistics equal the average employment (number of jobs) per. day in November. This is done because daily information on employment and the number of jobs are not available.

The structural statistics RAS and ERE statistics determine the WTA levels for each variable. Short-term statistics are used to project these levels over the year. Only the categories where there are non-missing figures in the RAS / ERE statistics will be projected. If the value is below 200 primary jobs, respectively 100 secondary jobs at the end of November, this level will be kept constant over the year (projection factor = 1). Are there too few observations in BFL category over the year the development from BFL at a more aggregate level is used (typically from a more aggregated industry level).

When the LFS is used to adjust for how much more self-employed and assisting spouses work compared to employees, it is not possible for us to take into account that the self-employed has a tendency to overstate their report more than employees do.

Adjusting to the non-response and lack of information on paid hours of work are carried out in the sources that the Danish Working Time Accounts (WTA) uses. For a description of the statistical uncertainty of the primary sources, see the respective Documentation of statistics.

In general, the quality of data has improved significantly with the use of the new eIncome source and has become even better with the transition to use LMA data.

Previously, the WTA was calculated by combining a lot of different sources. After the reorganization in 2012 the WTA is based primarily on eIncome sources. This is the same basic data for most of the sources included in the WTA, which ensures a high degree of internal consistency.

Not only has there been a significant quality improvement related to the transition to eIncome. Over time, the eIncome register have also been improved. Thus, a quality measure for the calculation of hours worked is the proportion of hours paid in eIncome that have been imputed because they have either not been reported or because they have proved to be invalid:

Year Total Corporations and organizations General government 2008 14.6 percent 17.7 percent 7.8 percent 2009 11.6 percent 13.5 percent 7.7 percent 2010 10.6 percent 11.9 percent 8.1 percent 2011 8.3 percent 9.6 percent 5.7 percent 2012 5.8 percent 7.1 percent 3.1 percent 2013 4.2 percent 4.8 percent 2.9 percent 2014 3.6 percent 3.7 percent 3.2 percent

In general, there is a tendency that more and more report information on hours paid to eIncome, which guarantees a better quality over time. Furthermore, the guidelines from the tax authorities on the reporting of hours paid to eIncome have become more clear, and the precision and knowledge of concepts are increased in the reporting over time so that, for example, the reporters become aware that unpaid absences are not to be included in the reported hours paid.

## 5.4 Quality management

Statistics Denmark follows the recommendations on organisation and management of quality given in the Code of Practice for European Statistics (CoP) and the implementation guidelines given in the Quality Assurance Framework of the European Statistical System (QAF). A Working Group on Quality and a central quality assurance function have been established to continuously carry through control of products and processes.

## 5.5 Quality assurance

Statistics Denmark follows the principles in the Code of Practice for European Statistics (CoP) and uses the Quality Assurance Framework of the European Statistical System (QAF) for the implementation of the principles. This involves continuous decentralized and central control of products and processes based on documentation following international standards. The central quality assurance function reports to the Working Group on Quality. Reports include suggestions for improvement that are assessed, decided and subsequently implemented.

## 5.6 Quality assessment

The margins of statistical uncertainty associated with the Working Time Accounts are related to the statistical uncertainty of the individual primary statistical data that are used. The conceptual consistency and the uniform adaptation of sources over time contribute to a reduction of the margins of statistical uncertainty in the Working Time Accounts. Especially, the juxtaposition of information from the primary sources in a joint system of the Working Time Accounts implies that the results will automatically be compared and thereby reveal any errors and inherent problems of consistency in the basic concepts and data. These errors and inconsistencies are reported back to the primary sources. The work on integrating statistical systems will thus be instrumental in enhancing the general data quality of the primary statistical data.

For a description of the statistical uncertainty of the primary sources, see the respective Documentation of statistics:

- Register-based Labour Force Statistics [RAS](#)
- Establishment-related Statistics on Employment [ERE statistics](#)
- [The Structural Earning Statistics](#)
- The Labour Force Survey [LFS](#)
- [Employment Statistics for Employees](#)

Self-employed and assisting spouses make up the group for whom the lowest quality of data is available on number of jobs (with activity over 1 weekly working hour), length of job (duration of each individual job) and number of hours worked in each individual job in the data sources.

When the LFS is applied in adjusting how many more hours are worked by self-employed and assisting spouses compared to hours worked by employees, it is impossible for us to take into account that there is a tendency for self-employed to overstate, to a greater extent, than is the case for employees. It would be extremely subjective, if we were to introduce a factor for the extent of this overstatement made by the self-employed compared to the employees. However, we have an assumption that this overstatement is greatest in cases where the workplace for the self-employed (and the assisting spouse) is the residence of the self-employed, as it must be assumed that the relation between working time and leisure time becomes more blurred. This applies, especially, to employment in agriculture, etc. and small businesses in retailing and hotels and restaurants.

In eIncome information is reported with regard to paid hours in the jobs in the individual reference month. This information is the primary source on paid hours of work in the LMA. The quality of this

information naturally reflects the quality of the data reports. Generally, we think that the information has a high quality. However, particularly related to the data on unpaid hours of absence and overtime hours there may be quality problems in the primary data of the eIncome register. Some problems have been revealed with respect to data reports of paid hours for employees paid by the month who are not paid for in periods of absence. Lack of impairment of hours paid for as a result of unpaid absence leads to an overestimation of paid hours. Lack of registration of paid overtime will result in an underestimation of hours paid. Typically, the registration problem worse related to hours of unpaid absence. There can be, especially for salaried who have not paid absences be a problem in that the hours are not always written down sufficiently during periods of absence.

In connection with publication of the Working Time Accounts (WTA) (1st quarter 2015 and annual WTA 2014), corrections have been made with regard to the missing entitlement to earned holiday pay during the lockout of school teachers in the spring of 2013. The missing entitlement to earned holiday pay rights has had an impact on paid hours of work in eIncome (and thereby statistics on employees in employment and public sector employment statistics), but due to the circumstance that there is a real fall in the number of paid hours of work, corrections are not to be made in the statistics on employees in employment as well as public sector employment statistics. However, the missing entitlement to earned holiday pay in the WTA does not have an impact on the number of hours worked, as the school teachers – for this reason – have not worked fewer hours than they would normally have done.

Furthermore, with respect to the statistics published in June 2013, adjustments have been made to the development in the number of hours worked for persons who are transferred from the former flex job scheme to the new flex job scheme. A new flex job scheme has been established, which has opened up the possibility to be transferred to this scheme as from 1 January 2013, which has an impact on the number of hours worked, so that instead of receiving full-time pay in accordance with the former flex job scheme, the new flex job scheme implies that pay is only received for the number of hours worked and is subsequently refunded by the municipality with regard to the number of hours for which worked has not been performed for the employer (consequently, these hours are excluded from the employment statistics). This implies that there is a change in the data reported with regard to the number of hours worked for persons working in flex jobs, so that fewer hours of work are reported in accordance with the new flex job scheme. Adjustments are not needed with regard to the statistics on employees in employment and public sector employment statistics as the hourly concept applied here is paid hours of work. However, in connection with publication of the WTA in June 2013, the statistics were subjected to adjustments with respect to the number of hours worked in order to reduce, to the greatest possible extent, the administrative break in the data series, so that the persons who have participated in the former flex job scheme but are transferred to the new flex job scheme, maintain in the WTA their number of hours worked from the former scheme. Persons who only appear in the new flex job scheme will not be subjected to adjustments, as we have no idea of a fictitious number of hours worked, if they had participated in the former flex job scheme. Neither are persons who only appear in the former flex job scheme subjected to adjustments.

Until now, it has not been possible to apply short-term sources for analyzing leave during the year, one reason is that it has not yet been possible to unequivocally decide when the information on leave stems from employment and when the information relate to persons who are not economically active. When WTA incorporate data from the Danish Labour Market Account, we will be better at analyzing the development of leave stemming from employment over the year. Incorporating a better description of leave from employment during the year in the WTA is scheduled to 2015/2016.

It is assumed in the WTA that persons on leave have not performed any hours worked. This assumption has been made, because we are unable to analyze, to a greater degree, the number of hours worked during leave, although it is, in principle, possible to be on, e.g. part-time maternity leave in Denmark.

The holidays with variable dates are of great importance to the number of hours worked. WTA seasonally adjusts with a model that as well as possible take into account the location of the holidays. In spite of this, the timing of Easter in 2015 right at the beginning of the second quarter implies that there is more uncertainty than usually in the seasonally adjusted hours worked from the first to the second quarter 2015.

There are no uncertainty calculations.

### **5.7 Data revision - policy**

Statistics Denmark revises published figures in accordance with the [Revision Policy for Statistics Denmark](#). The common procedures and principles of the Revision Policy are for some statistics supplemented by a specific revision practice.

### **5.8 Data revision practice**

The Quarterly Working Time Accounts will be currently published in accordance with Statistics Denmark's specialized goals of timeliness, which with respect to the quarterly statistics implies not later than by the end of the subsequent quarter.

Data on employment for employees is available from both the provisional version as well as from a final version, and consequently the two most recent quarters will be subject to revision in conjunction with the compilation of each quarterly statistic.

When new structural data are incorporated (register of employment statistics and structural statistics on earnings) in connection with the compilation of the Annual Working Time Accounts, the levels as from this year will be revised, i.e. also during the entire period of projection. When the structural data are incorporated, the data in the Working Time Accounts are considered to be final.

However, data in the Working Time Accounts can be subject to revision as a result of updated values in the primary sources, in the case of methodological changes or use of new information and sources.

## **6 Timeliness and punctuality**

Working hours are regularly published in accordance with Statistics Denmark's benchmark goals. For annual statistics concerned, this implies that publications to be released at the latest by the end of the following year. The quarterly WTA are published two months and 15 days after the reference quarter.

The statistics are usually published without delay in relation to the scheduled date.

## 6.1 Timeliness and time lag - final results

The Working Time Accounts are published once a year with annual figures, and four times a year with quarterly figures.

The present publication of the WTA statistics is published on the basis of eIncome statistics. Release time for the annual statistics is the reference year + 6 months. The latest year are preliminary figures calculated on the basis of the quarterly accounts. Release time for the quarterly statistics is the reference quarter +2 months and 15 days.

When new structural data (RAS, ERE-statistics and the structural statistics on earnings) are incorporated in connection with the calculation of the annual WTA, the levels from the latest year where structural data is available and throughout the projection period is revised. When the data structure is incorporated, data up to and including the last year with structural data is considered to be final in the Working Time Account.

The statistics are available both in a preliminary version and the final version, so WTA for the last two quarters will be reviewed at each quarterly statement of the WTA. New knowledge or time for thorough debugging can cause changes in the other quarters which do not affect the annual working time account.

There is consistency between the annual and quarterly WTA so that quarterly data is also final for periods where final annual statements are available.

## 6.2 Punctuality

For the quarterly Working Time Account 87.5 percent (7 out of 8 publications ) is published exactly as planned or ahead of schedule . One releases (third quarter 2013) did not comply with the pre-announced period, as the data quality was found too poor, and therefore the release was delayed for three days.

The annual WTA has been published three times on the basis of eIncome input data (since December 2012), and all the pre-announced publication dates were met (100 per cent).

Data to Eurostat short term business statistics (STS ) are evaluated against the requirements for quarterly interim STS data (a deadline within 2 months after the reference quarter) and here 71.4 per cent of the releases met the requirements (5 out of 7 were released as scheduled) .

For the final STS quarterly data 87.5 per cent (7 out of 8 of the releases) were transmitted according to the required deadline (within 2.5 months after the reference quarter).

## 7 Comparability

The Working Time Accounts (WTA) deliver labour market data to Eurostat's corporate short-term regulation (STS) and the national accounts (SNA / ESA). Therefore, changes in these regulations typically result in changes in the WTA. A description of the transitional tables between the WTA and the National Accounts can be found in the publications on the National Accounts. Transitional tables between the WTA and the Register-based Labour Force Statistics and the Establishment-related Employment Statistics are published in Statistical News ("Statistiske Efterretninger" - in Danish only) for the annual WTA.

### **7.1 Comparability - geographical**

The Danish Working Time Accounts (WTA) are worked out according to international guidelines, European System of Accounts (ESA 2010) and International Labour Organisation (1988: Current International Recommendations on Labour Statistics), the latest of which is reviewed in 2013 (Resolution concerning statistics of work, employment and labour underutilization, 19th International Conference of Labour Statisticians).

The population of the WTA are persons affiliated to Danish registered companies, which is consistent with ESA2010 boundaries. ESA2010 includes working in resident companies (see ESA 2010 paragraphs 2.04 to 2.11) (colloquially called 'the daytime population'). ILO / ICLS guidelines include the resident population (colloquially called 'the nighttime population').

Since the WTA is primarily a register-based statistics it does not include information about unpaid overtime, undeclared work and criminal work.

## 7.2 Comparability over time

In the current Working Time Account (WTA) time series there is no data breach. But compared to historical versions / releases of WTA, there have been the following data breach:

In December 2012 the Working Time Accounts (WTA) were adjusted, implying that new data sources (primarily based on eIncome) are used for the compilation. Subsequently, the WTA were compiled on the basis of a new system. As changes have been made to the population, concepts, sources as well as methods, this has resulted in revised levels and revised developments throughout the year. See [Break in WTA on transition to eIncome](#).

With eIncome the target population was expanded to include people who work in Danish companies but live abroad:

Year	No. employed	No. jobs	No. hours worked
2008	63,654	65,069	87,619,000
2009	56,017	56,639	75,339,000
2010	54,495	54,990	73,123,000
2011	55,578	56,017	74,467,000
2012	54,311	54,776	73,571,000
2013	54,045	54,604	73,619,000
2014	55,542	56,065	75,595,000

Furthermore, there were breaks in the WTA as a result of revisions to the classifications of sectors and industries, see [Break in WTA due to changed classifications since 2008]<https://www.dst.dk/ext/arbe/WTAbreak>).

In addition there are some minor revisions described below.

Upon publication of Q4 2014, a minor error has been corrected which to a limited extent has affected the figures in Q2 and Q3 2014. The revision is of the order of 0.2 per cent on employment, hours worked and wages in the sector group *corporations and organizations*. Within the sector group *general government* the revision is much less.

Upon publication of Q2 2013 minor changes back in time have been incorporated, especially within the sector group *general government*. The changes are due, inter alia, to updated sectors and industries in the business register incorporated in the employment statistics for employees in the entire time series from Q1 2008 to Q2 2013, not least with regard to:

- Family care (DB07 = 879020)
- Hospital activities (DB07 = 861000).
- General public administration activities (DB07 = 841100, 841200)

On publication of WTA Q1 2013 and the annual WTA June 2013 the data from the statistics of employees was based on a preliminary version of Q4 2012. These were revised at the end of July 2013.

## 7.3 Coherence - cross domain

A fundamental principle of the Working Time Accounts (WTA) is to document the coherence between statistics utilized in the WTA and to document coherence between the primary statistical data and the Working Time Accounts.

The WTA are worked out according to international guidelines.

However, since the WTA is primarily a register-based statistic, it does not include information on unpaid overtime and illegal (including undeclared) hours of work. In the Labor Force Surveys (LFS) and in the National Accounts, the hourly concept includes unpaid overtime and illegal (including black) work, as explained by respondents in LFS.

Transitional tables between the WTA and the RAS: Register-based Labour Force Statistics (employment) and the ERE: Establishment-related Employment Statistics (jobs and compensation of employees) is published in Statistical Reports (Statistiske Efterretninger in Danish only) for the annual WTA. A description of the transitional tables between the WTA and the National Accounts (employment, hours and compensation of employees) can be found in the publications on the National Accounts.

The basis of the number of jobs in the Working Time Account is end of November statements of the number of jobs in the Establishment-related Employment Statistics (ERE statistics). Unlike in the ERE statistics WTA number of jobs also include jobs in business statistics below the activity limit used in business statistics and also include jobs for people in eIncome not resident in Denmark.

Employment includes persons who are temporarily absent due to leave, but who have an affiliation to a workplace in the form of a job to return to. The transformation from job to employment include deduction of the persons' sideline (secondary, third etc.) jobs at the end of November and addition of the number of people who are either on sick leave, maternity leave or childcare leave from employment. Employment in The Register of Employment Statistics end of November (representing average employment per day in November in the WTA) includes, in addition to RAS employment also employment for persons not resident in Denmark. The Working Time Accounts employment for self-employed and assisting spouses is defined in the same manner as in the register-based labour force statistics (RAS), where self-employed consists of the following three groups: employers, VAT payers and other self-employed.

To get the average number of employees in Q4 WTA take an average of employment in October, November and December. The average employment during the year is calculated as the average number of employees in the 12 months of the year, or an average of employment in the four quarters of the calendar year. Similarly, the number of jobs in the year is calculated as the average number of jobs in each of the 12 months, where the number of jobs end of November in the Register of Employment Statistics represents the average number of jobs in the month of November in the WTA.

The concept of earnings in the WTA is the same as that used in the ERE statistics, but the population is slightly different because the ERE statistics operates with an activity limit (in accordance with international guidelines for business statistics), which is not used in labour market statistics (or economic statistics).

The revision in December 2012 implied a change in the division of labour between national accounts and work accounts so that the working time account adjusts what can be adjusted on job level, while national accounts make further adjustments on a more aggregate level. This change of labour division leads to greater differences between the working time accounts and national accounts figures. On the other hand, it implies that adjustments are made to the extent possible where the greatest expertise is. Finally, the changes in labour division also imply fewer revisions of the Working Time Accounts, which is hereby no longer dependent on the final data in the national accounts.

The new WTA also includes jobs for employees who do not live in Denmark, if they have jobs in companies in Denmark or on Danish ships. The WTA does not include employees of foreign companies working in Denmark the rules on hiring out of labour.

The compilation of Working Time Accounts is based on the idea that the figures are comparable over time to the highest possible degree. The sources will continuously be improved and replaced by other sources if these have proved to be more accurate. New sources will always be adapted to the concepts of the Working Time Accounts System. This implies that adjustments of existing sources cannot immediately be seen as changes of variables and concepts in the Working Time Accounts Statistics, although adjustments of the level of the specific variable may be made according to the new and improved information.

There may be several reasons for the lack of data comparability between the different statistics: - Differences in compilation methods - Differences in the population - Differences in the definitions - Differences in the margins of statistical errors - Differences in the time of publication.

#### **7.4 Coherence - internal**

The big improvement in relation to internal consistency between variables in the WTA is due to a system that primarily build on a single source, namely eIncome. Previously, data from many different statistics were used. See note on [data breach in ATR on transition to eIndkomst](#).

### **8 Accessibility and clarity**

The statistics are published in News from Statistics Denmark (Nyt fra Danmarks Statistik in Danish only), in the series Statistical Reports (Statistiske Efterretninger - in Danish only) and in the Statbank Denmark.

You can read more on our [website on the Working Time Account, WTA](#) and our [website on employment](#).

#### **8.1 Release calendar**

The publication date appears in the release calendar. The date is confirmed in the weeks before.

#### **8.2 Release calendar access**

The Release Calendar can be accessed on our English website: [Release Calendar](#).

#### **8.3 User access**

Statistics are always published at 8:00 a.m. at the day announced in the release calendar. No one outside of Statistics Denmark can access the statistics before they are published.

#### **8.4 News release**

The Working Time Accounts (WTA) is published in News from Statistics Denmark, [see - in Danish only](#).

#### **8.5 Publications**

The Working Time Accounts (WTA) is included in the Statistical Yearbook of Chapter Labour, earnings and income Section Employment.

A report: *Integrated labour market statistics - the Labour Market Accounts and the Working Time Accounts 1995-97 (Integreret arbejdsmarkedsstatistik - Arbejdsmarkedsregnskab og Arbejdstidsregnskab 1995-97)* was published in December 1998. In this report, the Working Time Accounts were presented including a far more detailed description of the applied primary sources and conceptual differences between these (The report is available at [Dst bookshop](#)).

## 8.6 On-line database

Data from the Danish Working Time Accounts (WTA) are available, free of charge, from the database [Statbank Denmark](#) ([Danmarks Statistikbank](#)), see [WTA-tables](#).

The quarterly tables are:

- ATR20: Quarterly Working Time Accounts distributed by Statistics Denmark's Industrial Classification of All Economic Activities (DB07), sector, type and socio-economic status (replaces ATR11KV)
- ATR24: Working Time Accounts (seasonally adjusted) distributed by industrial activity (DB07 10-grouping), type and socio-economic status (replaces ATR3KV)
- ATR26: Working Time Accounts (seasonally adjusted) distributed by sector, type and socio-economic status (replaces ATR4KV)

The annual tables are:

- ATR30: Annual Working Time Accounts distributed by Statistics Denmark's Industrial Classification of All Economic Activities 2007 (DB07), sector, type, socio-economic status and sex (replaces ATR11)
- ATR32: Annual Working Time Accounts on the basis of the National Accounts industrial classification by activity (DB07), sector, type, socio-economic status and sex (replaces ATR22)
- ATR: Index of working hours data (2010 = 100) by gender, sector and type (replacing ATRI)

The former (not continued) time series for the period covering quarters (1st quarter 1995 - 2nd quarter 2012) and the years 1995-2010\* are available from StatBank Denmark under finished series.

It is not possible to draw comparisons between the new WTA and the former WTA, as the sources, population, method and concepts have been changed compared to the previous WTA.

## 8.7 Micro-data access

Data is aggregated, where the number of hours worked, compensation of employees, the average number of jobs and the average employment summed to 6 digit industry level (DB), sector 2, socioeconomic status 3, sex, and 5 groups of scope of work. From this level data is summarized for publication level (including different types of industrial aggregates).

The basic material consists only of existing statistics. The primary statistical data for the compilation of quarterly working time accounts is widely stored, but detailed non-published information is not made available.

## 8.8 Other

The statistics transmit various market sector data series to the EUROSTAT-STS (regulation on business short term statistics).

In addition, the WTA delivers data to internal users, especially for the national accounts, but also to other stakeholders in relation to the short term statistical forum.

### **8.9 Confidentiality - policy**

There is usually no need to discretionate since the statistics is based on aggregated data. See also [Data Confidentiality Policy at Statistics Denmark](#).

### **8.10 Confidentiality - data treatment**

There is usually no need to subjct the data to Statistics Denmark's non-disclosure practice since the WTA is based on aggregated data.

However, data have been subjected to the non-disclosure practice in relation to deliveries to EU-STS, as some industry groups are not relevant or only relevant to a very limited extent in Denmark. These are industry 2-digit NACE groups : 'Bo6', 'Bo8', 'Bo9', 'C19'.

### **8.11 Documentation on methodology**

The methods used in the Working Time Accounts (WTA) are described in more detail in the series *Labour Marked* (Statistical Reports - in Danish only).

Method changes in connection with the transition to elncome are described in note [data break in WTA on transition to elncome](#).

A report: *Integrated labour market statistics - the Labour Market Accounts and the Working Time Accounts 1995-97* (*Integreret arbejdsmarkedsstatistik - Arbejdsmarkedsregnskab og Arbejdstidsregnskab 1995-97*) was published in December 1998. In this report, the Working Time Accounts were presented including a far more detailed description of the applied primary sources and conceptual differences between these (The report is available at [Statistics Denmark's bookshop](#)).

### **8.12 Quality documentation**

Results from the quality evaluation of products and selected processes are available in detail for each statistics and in summary reports for the Working Group on Quality.

## **9 Contact**

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