

**Documentation of statistics for  
Job Vacancies 2016 Quarter 4**

## 1 Introduction

The purpose of the statistics is to analyse the development in the number of job vacancies held by employers in the Danish labour market. The job vacancy statistics is an important labour market indicator as businesses typically reduce the number of job vacancies before they begin the dismissal of employees. Data on job vacancies is collected in accordance with similar guidelines by all EU Member States, which implies that the statistics are suitable for comparing the development in the number of job vacancies across the EU Member States.

## 2 Statistical presentation

The statistics shows the quarterly development in the real number of job vacancies and job vacancy rates in relation to the sum of job vacancies and occupied posts in the Danish labour market. The statistics are broken into economic activity and size, which makes it possible to monitor and analyse the scope and structure of the demand for labour by industry and size level of the workplaces. Furthermore, the number of job vacancies and job vacancy rates at regional level are estimated.

### 2.1 Data description

The statistics show the quarterly development in the real number of job vacancies and job vacancy rates in relation to the sum of job vacancies and occupied posts in the Danish labour market. The statistics are broken into economic activity and size, which makes it possible to monitor and analyse the scope and structure of the demand for labour by industry and size level of the workplaces. Furthermore, the number of job vacancies and job vacancy rates at regional level are estimated.

### 2.2 Classification system

The standard grouping comprising ten sectors indicated by a 1-digit code and a general text is used in the Danish statistics. Statistical data are published for the following industries:

- (2) Manufacturing, mining and quarrying, electricity, gas and water supply
- (3) Construction
- (4) Wholesale and retail trade, transport, etc.
- (5) Information and communication services
- (6-7) Financial intermediation, insurance and real estate
- (8) Business activities

Data are not published for the following industries:

- (1) Agriculture, forestry and fishing
- (9) Public administration, education and health
- (10) Culture, leisure time and other activities

A complete description of the industrial classification is available in the publication [Dansk Branchekode 2007](#) (Danish Industrial Classification of All Economic Activities 2007).

### 2.3 Sector coverage

Business Units belonging to section B-N primarily covered by the private sector.

## **2.4 Statistical concepts and definitions**

**Job Vacancy Rate:** The job vacancy rate measures the percentage of job vacancies in relation to the total sum of job vacancies and occupied posts.

**Local Unit:** A local unit is defined as an organizational defined part of a company that is located at a given address and produces one or predominantly one kind of goods and services.

**Occupied Posts:** The number of employees is defined as all persons who at the reference day receive pay from the workplace concerned irrespective of the number of hours worked.

**Job Vacancies:** A job vacancy is defined as a paid post which at the reference day is newly created, unoccupied or soon to be vacated, and for which the employer is taking active steps to and is prepared to take further steps to fill with a suitable candidate outside the business concerned, and which the employer intend to fill either immediately or within a specified period of time.

## **2.5 Statistical unit**

The statistical unit is the local unit defined as workplaces with at least one employee. On the basis of the workplace number, the workplaces are extracted from the Central Business Register of Statistics Denmark.

*Fictitious workplaces:* The population also comprises fictitious workplaces, i.e. workplaces to which employees without a physical workplace are grouped, e.g. salesmen, sailors and bicycle messengers.

## **2.6 Statistical population**

The population consists of workplaces in the private sector associated in Sections B to N (defined by NACE Rev. 2), which has at least one employee. The population also comprises fictitious workplaces, i.e. workplaces to which employees without a physical workplace are grouped, e.g. salesmen, sailors and bicycle messengers.

## **2.7 Reference area**

The statistics covers job vacancies in Denmark

## **2.8 Time coverage**

The Job Vacancy Statistics have been produced since 1st quarter 2010.

## **2.9 Base period**

Not relevant for these statistics.

## **2.10 Unit of measure**

Data is shown as number of job vacancies and as a job vacancy rate.

### **2.11 Reference period**

01-01-2014 - 31-03-2014

### **2.12 Frequency of dissemination**

Quarterly.

### **2.13 Legal acts and other agreements**

Data are collected according to section 8 of the Act on Statistics Denmark. The job vacancy data must be reported digitally by using the Telephone data entry system or on the Internet ([www.dst.dk/virk](http://www.dst.dk/virk)) by using a digital signature. The reporting of data is governed by Regulation (EC) No 453/2008 of the European Parliament and of the Council of 23 April 2008 on quarterly statistics on Community job vacancies and the related implementing regulations, Commission Regulation (EC) No 1062/2008 of 28 October 2008 and Commission Regulation (EC) No 19/2009 of 13 January 2009.

### **2.14 Cost and burden**

The response burden is estimated to DKK 1,665,000 total.

### **2.15 Comment**

[Subject page](#) for Job vacancies.

## **3 Statistical processing**

The statistics are compiled with use off a digital questionnaire, with a quarterly survey population of approximately 7,000 local units . Data are corrected for errors and for not reported data an imputation is conducted.

### **3.1 Source data**

The statistics are compiled with an annual survey population of approximately 28,000 local units (defined as workplaces with at least one employee). Statistics Denmark's Central Business Register is used in selecting business units for the sample survey.

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

Even though the statistics are published quarterly, data are collected monthly, and consequently the quarterly sample is equally distributed over the three months of the quarter. The variation among the workplaces in each individual stratum is equally distributed, and each individual workplace is only selected once every quarter.

### **3.3 Data collection**

The job vacancy data must be reported digitally by using the Telephone data entry system or on the Internet [www.dst.dk/virk](http://www.dst.dk/virk) by using a digital signature. On the reference date (which is the second Wednesday of the month) the business units receive a digital letter requesting the data. The business units have 14 days for reporting data punctually. The businesses are legally obliged to report data for the statistics. Therefore, businesses will be reminded of this duty if they do not report data. In case the companies still lack to report, we will send a recommended letter stating that failure to report data will result in a police notification, cf. the Act on Statistics Denmark.

### **3.4 Data validation**

The data is continuously subjected to data editing and correction. In order to ensure that data is reported for the individual workplace, the number of employees reported is validated with the register-based information concerning the number of employees from The Central Business Register of Statistics Denmark. If there are major differences in the data reported, compared to the data stored in the Central Business Register, we will contact the workplace for the purpose of verifying the data reported.

The data on job vacancies are also scrutinised in relation to the number of employees reported, and if there are any major differences in the data reported on the number of job vacancies, compared to the number of employees that is expected for a workplace of the size stated, we will contact the workplace.

In connection with subjecting the data to editing and correction, we contact about 10 per cent of the workplaces. It must be assumed that not all errors are detected, and consequently some sample errors remain.

For the business units with more than 100 employees which have not reported data an imputation is conducted.

### **3.5 Data compilation**

For the compulsorily selected workplaces (more than 100 employees) which have not reported data or have been exempted from reporting an imputation of data is conducted. The method is ratio imputation from the program Banff.

As a first choice, the imputation is done in relation to business units within the same business and as a second choice to business units within the same stratum.

We make an effort to ensure that all compulsorily selected workplaces have reported data, so that the imputation is only conducted for those workplaces which for one reason or another have been exempted from reporting.

The imputation rate was for 4th quarter 2016 0.4 percent of the total sample and 1.3 percent for workplaces with over 100 employees.

Statistics Denmark estimates the number of job vacancies (and occupied posts) by using the generalised regression estimator with the number of registered employees (through the Central Business Register) in each business unit as auxiliary information. When grossing-up Statistics Denmark uses model-assisted estimation from the program CLAN.

### **3.6 Adjustment**

Every time we publish a new quarter we also publish revised data from the previous four quarters. The main reason for this is that we receive data from business units which do not report data punctually. As a consequence, on-going error correction of reported data takes place.

The number of job vacancies tends to decline between 0.5-1.5 per cent while the job vacancy rates often are stable and never have declined more than 0.1 percentage points before the data obtaining the status of final.

Data regarding third quarter 2010 and after has been revised in connection with the publication of second quarter 2015. The estimation method for the enumeration of exempted units with over 100 employees has been changed. This has had no impact on the vacancy rate and only a minimal impact on the number of vacancies.

## **4 Relevance**

The users of the statistics are primary the press, private companies, private persons and Eurostat. The statistic is used in analysis about the demand for labour and in the public debate. Data on job vacancies are collected in accordance with similar guidelines by all EU Member States, which implies that the statistics are suitable for comparing the development in the number of job vacancies across the EU Member States.

### **4.1 User Needs**

The users of the statistics are primary the press, private companies, private persons and Eurostat. The statistics can be used in analysis about the demand for labour and in the public debate.

### **4.2 User Satisfaction**

The users in general view the Job vacancy statistics as an important an fast short term indicator.

### **4.3 Data completeness rate**

According to Regulation (EC) No 453/2008 there are no missing variables or missing breakdowns of the variables and there are no deviations from EU concepts.

## **5 Accuracy and reliability**

As with all other sample-based statistics, there are some sample errors associated with the estimates. As is the case in other EU Member States, the variation coefficient (CV), which is the standard deviation in relation to the estimate, is used in calculating the sample errors. For the total number of occupied posts the variation coefficient is under 1 per cent, while for the total number of job vacancies the variation coefficient is 3-5 per cent. For the NACE sections and size classes the CV are relatively high. This is due to the great variations between the number of job vacancies reported and the many data reported concerning zero vacancies in each stratum.

## 5.1 Overall accuracy

The overall accuracy of the statistics is considered high as the delimitation of the population is effected on the basis of Statistics Denmark's Central Business Register comprising the industry codes stated. Furthermore, the statistics are compiled in accordance with legislation and the reminder procedure is intensive, which results, as expected, in a response rate of over 95 pct.

For the business units with more than 100 employees which have not reported data, an imputation is conducted. The imputation rate is usually less than 2.5 per cent.

The number of job vacancies tends to decline between 0.5-1.5 per cent while the job vacancy rates often are stable and never have declined more than 0.1 percentage points, before the data obtain status of final the same quarter a year after the first publication.

## 5.2 Sampling error

As with all other sample-based statistics, there are some sample errors associated with the estimates. The information on the statistical uncertainty is used for assessing to which extent a change, e.g. in the number of job vacancies, reflects some degree of uncertainty or the increases or falls are real. The margins of sample errors are influenced by the sample size, and the statistical uncertainty is reduced by 50 per cent when the sample size is increased fourfold. As is the case in other EU Member States, the variation coefficient, which is the standard deviation in relation to the estimate, is used in calculating the sample errors.

For the total number of occupied posts the variation coefficient were 0.5 per cent, while for the total number of job vacancies the variation coefficient were 3.5 per cent. The coefficient of variation for a large part of the NACE sections and size classes are relatively high. The reason why the latter variation coefficient is relatively high is not due to the raising of figures or the design and size of the sample, but due to the great variations between the number of job vacancies reported and the many data reported concerning zero vacancies in each stratum.

The variation coefficient CV for job vacancies for the 4th quarter of 2016:

- **Manufacturing, mining and quarrying and utility services (B+C+D+E):** 5.9 per cent.
- **Construction (F):** 18.0 per cent.
- **Trade and transport etc. (G+H+I):** 6.0 per cent.
- **Information and communication (J):** 10.2 per cent.
- **Financial, insurance and real estate (K+L):** 7.8 per cent.
- **Other business services (M+N):** 6.5 per cent.
- **Total (B-N):** 3.5 per cent.

### 5.3 Non-sampling error

In the Job Vacancy Statistics the sampling frame is the Central Business Register, which covers all registered businesses in Denmark. The register is currently updated on a daily basis and is expected to have full coverage.

Every quarter a new sample is extracted from the Central Business Register and at that moment there are very few differences between the register and the sample. As times goes the register will be updated (some business units are no longer statistically active and new business unit have entered the register). Before grossing-up we update the sample with information on business units no longer statistically active. Unweighted is the over coverage below 1 per cent.

Errors caused by (partial) non-response, incorrect submitted data and misunderstandings are sought to be minimised by repeated reminders (response-chasing) and a thorough error-checking of the submitted data.

Statistics Denmark assumes that the number of job vacancies reported by the business units, in some degree, is a variable with non-negligible measurement error. The main source of non-negligible measurement error in connection with job vacancies reports is uncertainty among the respondents regarding how to measure job vacancies and which units they have to report data for (business unit or the entire business). Furthermore, we have some business units called 'fictitious workplaces', i.e. business units in which employees without a physical workplace are grouped, e.g. salesmen and sailors. Reporting data for these fictitious workplaces can sometimes be difficult. Statistics Denmark is aware of the problem with these measurement errors. Most of the measurement errors are captured in micro validation where corrections to the reported data are made.

It is mandatory to submit data electronically, either by the website [www.dst.dk/virk](http://www.dst.dk/virk) or by the telephone entry system, and it is not possible to submit a form with blank fields. Partial non-response is therefore zero.

The response rate is high due to the fact that the businesses are legally obliged to report to the statistics. Un-weighted the unit non-response rate is below 5 per cent.

Even though the statistics are published quarterly, data are collected monthly, and consequently the quarterly sample is equally distributed over the three months of the quarter. The variation among the workplaces in each individual stratum is equally distributed, and each individual workplace is only selected once every quarter. The aim is to fill job vacancies throughout the quarter and avoid variation due to e.g. holiday periods.

The Job Vacancy Statistics only imputes unit non-response for business units with more than 100 employees, and the imputation is done just before the enumeration procedure.

The method is ratio imputation from the program Banff. As a first choice, the imputation is done in relation to business units within the same business and as a second choice to business units within the same stratum. The number of job vacancies (and occupied posts) is estimated by using the generalised regression estimator with the number of registered employees (through the Central Business Register) in each business unit as auxiliary information.

In the enumeration process the model-assisted estimation from the program CLAN is used.



## 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

As with all other sample-based statistics, there are some sample errors associated with the estimates. The information on the statistical uncertainty is used for assessing to which extent a change in, e.g. the number of job vacancies reflects some degree of uncertainty or the increases or falls are real. The margins of sample errors are influenced by the sample size, and the statistical uncertainty is reduced by 50 per cent when the sample size is increased fourfold.

As is the case in other EU Member States, the variation coefficient, which is the standard deviation in relation to the estimate, is used in calculating the sample errors.

Every quarter a sample is selected of approximately 7,000 workplaces with at least one employee at the time of selection. All workplaces with more than 100 employees are selected in the sample and the remaining part of the sample is based on random selection. The sample is stratified in accordance with 13 industries and 6 size groups. In connection with the selection of the sample, the workplaces are classified into the 6 size groups on the basis of the number of employees who are registered at the workplace according to Statistics Denmark's Central Business Register.

When the statistics are published the workplaces are re-classified, implying that they are classified to the size groups which correspond with the data reported on the number of employees. The reason for this re-classification is that register-based information is frequently a couple of years old. On the basis of new employment figures from Statistics Denmark's Central Business Register, the sample is optimised once every year with regard to movements, i.e. small workplaces which are now employing more than 100 persons are compulsorily selected, and large workplaces which are now employing less than 100 persons are released.

1/12 of the workplaces employing less than 100 persons are replaced every quarter. In this way, it is ensured that the sample size is maintained at the same level and that the sample gives an up-to-date picture of the number of occupied posts and job vacancies. This implies that a workplace employing less than 100 persons participates in 12 consecutive quarters and is subsequently exempted from participating over a long period of time. Workplaces employing more than 100 persons are compulsorily selected and consequently always participate in the sample. This is in compliance with Statistics Denmark's data supplier policy.

The businesses are legally obliged to report data for the statistics and failure to report data will result in a police notification, cf. the Act on Statistics Denmark. The response rate is normally over 95 per cent.

The data are continuously subjected to data editing and correction. In order to ensure that data are reported for the individual workplace, the number of employees reported is validated with the register-based information concerning the number of employees from Statistics Denmark's Central Business Register, and if there are major differences in the data reported, compared to the data stored in the Central Business Register, we contact the workplace for the purpose of verifying the data reported.

The data on job vacancies are also subjected to editing in relation to the number of employees reported. If there are any major differences in the data reported on the number of job vacancies, compared to the number of employees that is expected for a workplace of the size stated, we contact the workplace. In connection with subjecting the data to editing and correction, we contact about 10 pct of the workplaces. It must be assumed that not all errors are detected, and consequently some sample errors remain.

For the compulsorily selected workplaces which have not reported data or have been exempted from reporting, imputation is conducted, in cases where it is possible, on the basis of the data reported from the same CVR no. over the same period. We make efforts to ensure that all compulsorily selected workplaces have reported data, so that the imputation is only conducted for those workplaces which for one reason or another have been exempted from reporting. The program CLAN is used in connection with the raising of figures.

For the total number of occupied posts the variation coefficient is under 1 per cent, while for the total number of job vacancies the variation coefficient is 3-5 per cent. The coefficient of variation for a large part of the NACE sections and size classes are relatively high. The reason why the latter variation coefficient is relatively high is not due to the raising of figures or the design and size of the sample, but due to the great variations between the number of job vacancies reported and the many data reported concerning zero vacancies in each stratum.

Every time we publish a new quarter we also publish revised data from the previous four quarters. The main reason for this is that we receive data from business units which do not report data punctually. As a consequence, on-going error correction of reported data takes place.

The number of job vacancies tends to decline between 0.5-1.5 per cent while the job vacancy rates often are stable and never have declined more than 0.1 percentage points before the data obtain the status of final.

## **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**

Every time we publish a new quarter we also publish revised data from the previous four quarters. The main reason for this is that we receive data from business units which do not report data punctually. As a consequence, on-going error correction of reported data takes place.

The number of job vacancies tends to decline between 0.5-1.5 per cent while the job vacancy rates often are stable and never have declined more than 0.1 percentage points before the data obtain the status of final.

## 6 Timeliness and punctuality

Data are released around 75 days after the reference quarter. The punctuality is very high, as delays in planned releases happen very rarely.

### 6.1 Timeliness and time lag - final results

The statistics are published quarterly in the publication [News from Statistics Denmark - Denmark](#). The publication takes place no later than, by the end of the subsequent quarter.

### 6.2 Punctuality

Efforts are made to ensure that the statistics are published without any delay in relation to the time of publication announced in advance. Until now, all deadlines are met.

## 7 Comparability

From the third quarter of 2012 a new more updated population is used in the enumeration process. The population is drawn from the ESR-register and contains information on the number of occupied posts, which are only three quarters old compared to the former population which was based on a less updated register. The changed enumeration process is estimated to have impact on the number of job vacancies, but not on the JVR (Job Vacancy Rate), which means that the number of job vacancies are not comparable historically in contrast to the JVR.

### 7.1 Comparability - geographical

Every quarter figures are submitted to the statistical office of EU, Eurostat. Data for all EU countries can be found in the [Eurostat database](#). Data are collected in accordance with similar guidelines by all EU Member States. Consequently, data on job vacancy rate (JVR) in EU contexts can be directly compared with other EU Member States.

### 7.2 Comparability over time

At present, only data series going back to the 1st quarter of 2010 are available.

### 7.3 Coherence - cross domain

Data are collected in accordance with similar guidelines by all EU Member States. Consequently, data on *job vacancy rate (JVR)* in EU contexts can be directly compared with other EU Member States.

### 7.4 Coherence - internal

Not relevant for these statistics.

## 8 Accessibility and clarity

Data are published quarterly in News from Statistics Denmark. Figures are published in the tables [LSK01](#), [LSK02](#) and [LSK03](#). Furthermore the figures are included in Statistical Yearbook. See more at the statistics [subject page](#).

### 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

Data are published quarterly in [News from Statistics Denmark](#).

### 8.5 Publications

The figures are included in [Statistical Yearbook](#).

### 8.6 On-line database

Data are published in the on-line database Statbank under: Labour, income and wealth - Labour force - Job vacancies.

Quarterly data: - [LSK01](#): Job vacancies by industry, unit and size  
- [LSK02](#): Job vacancies by region and unit - [LSK03](#): Job vacancies (seasonal adjustment) by unit and seasonal adjustment

Annual data: - [LS01](#): Job vacancies by industry, unit and size - [LS02](#): Job vacancies by region and unit

### 8.7 Micro-data access

Researchers can via The Division of Research Services get access to micro data. Access is given to anonymised micro data, i.e. data at an individual personal or corporate level.

### 8.8 Other

International figures regarding Job vacancies are published by [Eurostat](#).

### **8.9 Confidentiality - policy**

Read about [Data confidentiality policy](#) at Statistics Denmark.

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

Job vacancy data are not published at a level of detail that requiring confidentiality.

### **8.11 Documentation on methodology**

There is no separate descriptions of the method for this statistic.

### **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**

These statistics are placed in the division of Labour Market. The person responsible is Henriette Rosenstrøm, tel. +45 39 17 34 44, email: [hro@dst.dk](mailto:hro@dst.dk)

### **9.1 Contact organisation**

Statistics Denmark

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