



**Zeszyt metodologiczny**

**Wynagrodzenia w gospodarce narodowej na podstawie źródeł administracyjnych**

Methodological report

Wages and salaries in the national economy based on administrative data sources



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Urząd Statystyczny w Bydgoszczy    Statistical Office in Bydgoszcz

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## Main abbreviations

<b>Abbreviation</b>	<b>Meaning</b>
BJS	Base of Statistical Units
CRP KEP	Central Register of Entities of the National Records of Taxpayers
FTE	full-time equivalent
GUS	Statistics Poland
MF	Ministry of Finance
PESEL	Universal Electronic System for Registration of the Population
PKD 2007	Polish Classification of Activities 2007
REGON	National Official Business Register
TERYT	National Official Register of the Territorial Division of the Country
ZUS	Social Insurance Institution

## Introduction

This methodological report is a document devoted to the methodology of surveying wages and salaries in the national economy based on administrative data sources. The primary objective of the survey on **Wages and salaries in the national economy based on administrative data sources** was to test the possibility of providing information on average monthly wages and salaries as well as median monthly wages and salaries in the national economy based on administrative data sources. The survey is based on data from the registers of the Social Insurance Institution (ZUS) and, additionally, on data from the registers of the Ministry of Finance and data from the Base of Statistical Units of Statistics Poland.

The methodological report consists of seven chapters. The first chapter defines statistical units and scope of data in the survey. The second chapter describes the type and method of the survey and the third chapter describes the data sources used. The fourth chapter defines the variables included in the survey, the definitions of the basic concepts and the indicators and methods of their calculation. The fifth chapter presents the organisation and method of conducting of the survey, and the sixth chapter – the proposed forms of presentation of the results, including possible cross-sections of data aggregation. The final chapter – the seventh – assesses the quality of the survey. Appendix A, on the other hand, presents a comparison of the basic definitions and methodology of the survey on Wages and salaries in the national economy based on administrative data sources and the survey on **Wages and salaries in the national economy** based on statistical reports of entities.

The survey on Wages and salaries in the national economy based on administrative data sources is intended to provide data that best describe the actual level of wages and salaries while maintaining as much definitional consistency as possible with the survey 1.24.01 Wages and salaries in the national economy [1, 2] and taking into account the methodology used by the administrators of administrative sources. The methodology of the survey is linked to the legal conditions of the administrators and, in the event that the methodology needs to be adapted to legal changes at the administrators, the methodological report will be supplemented and updated. The results of the survey on Wages and salaries based on administrative data sources prompt further development work, which may result in a shift to administrative data sources and reduced reporting by entities.

The legal basis for surveys conducted by official statistics is the Act on Official Statistics [9]. The scope and times of collecting data as well as the thematic scope, data sources, times of conducting the surveys, types of results information and dates of data dissemination are specified in the Programme of statistical surveys of official statistics, introduced annually by the regulation of the Council of Ministers.

## Historical overview

Since 2009, the Statistical Office in Bydgoszcz has been carrying out activities aimed at using information from administrative registers and public administration information systems as data sources for statistical surveys devoted to the labour market. Initially, the Labour Market Department of Statistics Poland was also involved in the work on this matter.

In 2016, thanks to the amendment to the Act on Official Statistics, Statistics Poland obtained the right to access individual data identifiable from administrative sources. Provisions were introduced to the Programme of statistical surveys of official statistics, in which the scope and times of data transmission to Statistics Poland were specified.

In the years 2017-2018, as part of the Technical Assistance Operational Programme, a study work entitled Development of a methodology and estimation of the number of employed persons in the national economy by place of residence and main workplace at NTS level 4, the registered unemployment rate at NTS level 5 and measures of gross wages and salaries at NTS level 4 [5] was carried out. Its main objective was to develop a methodology for obtaining information on the number of employed persons and measures of gross wages and salaries in the national economy at the powiat level, broken down by sex and groups of PKD 2007 / NACE sections based on data from administrative sources. The achievement of this aim required an analysis of data collected in public administration information systems in terms of the possibility of using them in labour market statistics and the development of a methodology for determining wages and salaries and measures of wages and salaries based on these data. The work carried out showed that it is necessary to adapt the survey methodology for the data available in administrative sources. It was necessary to compromise on the comparability of the obtained data, limited by the needs and legal conditions of administrators of administrative sources, with the data currently collected by official statistics as part of the survey conducted so far. In the presented survey, Statistics Poland reuses data collected by administrators for its own needs, and the purposes of the functioning of administrative registers differ from the objectives of official statistics. Therefore, among other things, the concepts used in the registers do not always coincide with the definitions used in the official statistics.

In subsequent years, obtaining additional data from the administrators has improved the methodology for determining the number of employed persons and estimating wages and salaries. The first result of this work was the publication of Methodological report. Employment in the national economy according to administrative data sources at the beginning of 2021 [4].

The next step was to prepare this Methodological report. Wages and salaries in the national economy based on administrative data sources. The methodology of estimating wages and salaries, which is the subject of this publication, is related to the methodology of identifying employed persons, described in the previous methodological report, and is based on the experience gained while working with administrative registers.



# 1. Statistical units and scope of data in the survey

## 1.1. Statistical units

The statistical units include persons insured with ZUS under the title of their employment, in all national economy entities.

The units of statistical analysis and observation units are the individual salaried jobs (i.e. in the case of persons with more than one salaried job, each of them is considered separately).

## 1.2. Scope of data

The scope of data in the survey includes wages and salaries in the national economy.

The survey covers wages and salaries for work performed on the basis of an employment or service relationship, which is the contribution assessment basis for social and/or health insurance. These are mainly monetary payments and the monetary value of benefits in kind or their equivalents, in particular basic salaries, overtime pay, allowances, awards or payments in lieu of leave. The survey does not cover anniversary awards, which are not paid more frequently than every 5 years, or retirement and disability severance pays. The survey does, however, cover payments under contracts of mandate, contracts to perform a specified task or agency agreements concluded with the same employer or for the same employer with whom a given person is employed on the basis of an employment relationship.

The basic indicators calculated in the survey are the average monthly wage and salary and the median monthly wage and salary.

## 2. Type and method of the survey

The survey on Wages and salaries in the national economy based on administrative data sources is a complete enumeration survey, conducted monthly, approximately 90 days after the end of the month to which the data relate.

The survey is entirely based on data from the following administrative registers:

- The Central Register of Contribution Payers and the Central Register of Insured Persons, the administrator of which is ZUS,
- The Central Register of Entities of the National Records of Taxpayers, the administrator of which is MF.

The survey also uses data from the Base of Statistical Units kept by Statistics Poland.

At the time of publication of the report, the survey is experimental.

### 3. Data sources

The survey is based on administrative data sources.

#### **The Social Insurance Institution – Comprehensive IT System, including the Central Register of Contribution Payers and the Central Register of Insured Persons**

The main purpose of the system is to keep records of contributions on individual accounts of insured persons, and also to establish the right to and amount of retirement pensions, other pensions and social insurance benefits, as well as to support sick leaves. The data in the system are updated on the basis of insurance documents concerning insured persons sent by contribution payers, sick leave notes and state registers.

There are the following types of insurance:

- social insurance (retirement, disability, sickness, accident insurances),
- health insurance.

The rules of social insurance are regulated by the Act on the Social Insurance System [10]. Retirement insurance and disability insurance are obligatory for, among others: persons who receive income due to employment, i.e. their remuneration.

The rules of health insurance are regulated by the Act on Healthcare Services Financed from Public Funds [11]. Obligatory health insurance covers, i.a., all persons who meet the criteria for being covered by social insurance in accordance with the Act on the Social Insurance System [10], but also persons who are covered by a different pension security system, for instance officers, judges, prosecutors.

A contribution payer is obligated to report an insured person to social insurance and health insurance, settle and pay monthly due contributions on the appropriate dates (budgetary units and local government budgetary establishments by the 5th day of the following month, payers with legal personality by the 15th day of the following month, other contribution payers until 20th day of the following month), and in the event of termination of an insurance title, deregister it. The rules for being subject to insurance are not uniform for all persons insured with ZUS and depend on an insurance title.

The main information elements available in the register administered by ZUS, from the point of view of the survey on Wages and salaries in the national economy based on administrative data sources, are: the contribution assessment basis for retirement insurance and disability insurance, the contribution assessment basis for health insurance, working time – percentage of full-time equivalent (FTE), amounts of contributions for retirement, disability and sickness insurances (financed by the insured person), information on exceeding the annual contribution assessment basis for retirement insurance and disability insurance, effective date of insurance coverage, insurance title, information on receiving a benefit or a break in paying contributions, sex, year of birth, PESEL number, address details of an insured person.

A detailed list of variables is included in Annex 3.

#### **The Ministry of Finance – Central Register of Entities of the National Records of Taxpayers**

The purpose of the system is to meet the obligations arising from the provisions of law and the performance by the tax administration of tasks defined by law for the public benefit. The register collects data on natural persons, legal entities, organisational units without legal personality and other entities, if they are taxpayers on the basis of separate acts, and data on payers of taxes and insurance contributions. The data in the system are updated with information from the PESEL register and on the basis of documents and updating applications of taxpayers.

Pursuant to the Act on the Principles of Registration and Identification of Taxpayers and Payers [13], taxpayers are required to submit an identification application to the head of a tax office or the competent authority on the basis of separate regulations. The identification application is made once, regardless of the type and number of

taxes paid by a taxpayer, the form of taxation, the number and kinds of economic activities and the number of enterprises run. The identification application is not submitted by taxpayers who are natural persons included in the PESEL register, who do not conduct economic activity or are not registered taxpayers of the Value Added Tax.

From the point of view of the survey, the basic information available in the register is the identification and address details of taxpayers, as well as address details and information on the kind of activity of taxpayers. Data from CRP KEP are used as an auxiliary source to supplement information obtained from ZUS.

A detailed list of variables is included in Annex 3.

#### **Statistics Poland – Base of Statistical Units**

The database is considered a statistical register of enterprises. Its purpose is to provide information necessary to create sampling frames for statistical surveys on the activities of national economy entities, conducted by official statistics. The main source of data for BJS is the National Official Business Register REGON, and data update is made on the basis of many sources, including datasets of Statistics Poland, MF and ZUS. The characteristics of entities such as: legal and economic status, kind of activity (according to the PKD 2007/NACE classification) or address details are updated on an ongoing basis in the BJS.

The basic characteristics of entities available in the BJS, used in this survey, are legal and organisational characteristics, ownership characteristics and the kind of activity (according to the PKD 2007/NACE classification). These data are used to supplement information obtained from ZUS and CRP KEP.

A detailed list of variables is included in Annex 3.

## 4. Variables covered in the survey

### 4.1. Characteristics of variables

In the survey on Wages and salaries in the national economy based on administrative data sources there are both variables characterising employees and their salaried jobs, and variables describing national economy entities in which they are employed.

Variables characterising employees and their salaried jobs are:

- monthly wage or salary,
- working time (FTE percentage),
- monthly wage or salary in full-time equivalent,
- sex,
- age,
- citizenship,
- place of residence at the level of macroregions, regions, voivodships, subregions, powiats and gminas,
- occupation.

Variables characterising entities, in which employees perform work:

- size (expressed by the number of employed persons),
- kind of activity (according to the PKD 2007/ NACE classification),
- the seat of the unit at the level of macroregions, regions, voivodships, subregions, powiats and gminas,
- ownership sector.

The result data of this survey are individual data, so they can be freely aggregated according to the characteristics of employees and their salaried jobs, as well as according to the characteristics of the entity.

### 4.2. Definitions of key terms

#### **Definitions used in the survey on Wages and salaries in the national economy based on administrative data sources<sup>1</sup>**

**A salaried job** is any job based on an employment relationship (established on the basis of an employment contract, appointment, nomination or election) or a service relationship, regardless of the working time (FTE percentage) and the period for which the contract was concluded.

**Employees** are persons performing work on the basis of an employment relationship (established on the basis of an employment contract, appointment, nomination or election) or a service relationship, regardless of the working time (FTE percentage) and the period for which the contract was concluded.

**Wages and salaries** are monetary payments (or the monetary value of benefits in kind or their equivalents) under the title of an employment relationship or a service relationship for employees, constituting expenditure incurred by employers to pay for performed work, regardless of their sources of financing, which are included in the contribution assessment basis for social insurance and/or health insurance. Data on wages and salaries are presented in gross terms, i.e. including advance personal income tax payments and obligatory social insurance contributions (retirement, disability, sickness insurances) paid by the employee. The survey covers wages and salaries paid in a given month.

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<sup>1</sup> A comparison of the basic definitions and methodology of the survey on Wages and salaries in the national economy based on administrative data sources and the survey on Wages and salaries in the national economy is presented in Appendix A.

Wages and salaries also include payments under contracts of mandate, contracts to perform a specified task and agency agreements if these contracts were concluded with the same employer or for the same employer with whom a given person is employed on the basis of an employment relationship.

**Monthly working time (FTE percentage)** is an employee's scheduled hours divided by the number of hours in a full-time schedule in a given month, corrected with the time of non-performance of work, for which no remuneration is due.

**The minimum monthly wage** is the value of the minimum remuneration for work in a given calendar year, set out annually in the regulation of the Council of Ministers on the basis of the Act on the Minimum Remuneration for Work [14].

### Definitions used at ZUS

**An insured person** is a natural person who is covered by at least one of the social insurance schemes (retirement, disability, sickness, accident insurances) and / or health insurance, e.g. an employee.

**A contribution payer** is a person who has an obligation to pay social and other contributions in respect of insured persons, e.g. an employer.

**An insurance title** is a circumstance that gives reason for insurance with ZUS. In the application for insurance, it is marked with a six-digit code, which ZUS uses to distinguish individual groups of insured persons.

- the first four digits refer to a basic subject with extension,
- the fifth digit means an established or not established right to a retirement pension or a disability pension,
- the sixth digit means the degree of disability.

A detailed list of insurance title codes is provided in Annex 1.

**Working time (FTE percentage)** is full-time or part-time work arrangement specified in the contract. According to the publication *Zasady podlegania ubezpieczeniom społecznym i ubezpieczeniu zdrowotnemu oraz ustalania podstaw wymiaru składek* (the Rules for being subject to social insurance and health insurance as well as determining contribution assessment basis) [7], it should be entered in the insurance documents as a common fraction.

**A benefit or a break** is a circumstance that causes a stoppage in paying contributions. Breaks in paying contributions may be caused by: illness, unpaid leave, maternity leave, parental leave, etc. Some of them are related to receiving benefits (e.g. sickness allowance, maternity allowance). In ZUS settlement documents, a benefit or a break is marked with a three-digit code.

A detailed list of benefit codes and break codes is included in Annex 2.

**Contribution assessment basis for social insurance** is the value, which is the income from employment relationship and related relationships<sup>2</sup>, i.e. all kinds of monetary payments and the monetary value of benefits in kind or their equivalents (regardless of the source of their financing), in particular basic salaries, overtime pay, various types of allowances, awards, payment in lieu of leave, and also monetary benefits paid for the employee, as well as the value of other unpaid benefits or partially paid benefits.

The calculation of social insurance contributions does not include a sick pay, payable for the period of incapacity for work due to sickness or isolation as a result of infectious disease, and benefits. The annual contribution assessment basis for retirement insurance and disability insurance<sup>3</sup> may not exceed the thirty-fold amount of the projected average monthly wage and salary in the national economy for a given calendar year. When this

<sup>2</sup> Revenue within the meaning of the provisions of the Act on Personal Income Tax [12].

<sup>3</sup> Specified annually by way of an announcement of the minister competent for social security, in accordance with the Act on the Social Insurance System [10].

limit is reached, the so-called exceeding of the annual contribution assessment basis for retirement insurance and disability insurance takes place. The contributions for these types of insurance are not paid above the limit.

**Contribution assessment basis for health insurance** is the amount from which the contribution for this insurance should be calculated. It is the contribution assessment basis for retirement insurance and disability insurance with some exceptions, including:

- the contribution assessment basis for health insurance is also a sick pay, payable for the period of incapacity for work due to sickness or isolation as a result of infectious disease,
- this assessment basis is not limited to the thirty-fold amount of the projected average monthly wage and salary in the national economy for a given calendar year,
- before calculating the health insurance contribution, the assessment basis is reduced by the amounts of contributions for retirement, disability and sickness insurances financed by the insured person.

**The amount of contribution for retirement insurance** for employees is 19.52% of the contribution assessment basis for social insurance. This contribution is financed in half by the insured person and in half by the contribution payer.

**The amount of contribution for disability insurance** for employees is 8.00% of the contribution assessment basis for social insurance. This contribution is financed in 3/16 by the insured person and in 13/16 by the contribution payer.

**The amount of contribution for sickness insurance** for employees is 2.45% of the contribution assessment basis for social insurance and is financed entirely by the insured person.

**The amount of contribution for health insurance** for employees is 9.00% of the contribution assessment basis for health insurance and is financed entirely by the insured person.

### 4.3. Basic indicators of wages and salaries

Basic indicators calculated in the survey are:

- average monthly wage and salary,
- median monthly wage and salary.

Due to the fact that data in the survey are individual, it is also possible to determine other measures of wages and salaries.

In the survey on Wages and salaries in the national economy based on administrative data sources all measures of wages and salaries refer to wages and salaries in gross terms.

In order to calculate the value of the indicators, first of all, it is necessary to determine a set of all salaried jobs in a given month. Then, for each salaried job, on the basis of information from ZUS on working time (FTE percentage), the date of commencement of contributions and the length of breaks in paying contributions, a monthly working time (FTE percentage) is determined. Finally, using information from ZUS, i.a. on the contribution assessment basis for retirement insurance and disability insurance or the contribution assessment basis for health insurance, a monthly wage or salary is estimated for each salaried job.

#### 4.3.1. Identification of employees

A necessary condition for recognising a given person as an employee in a given month is the fact that he or she is insured with ZUS for performance of work on the basis of an employment relationship or a service relationship. Persons insured under this title by more than one employer appear in the dataset as many times as is the number of their salaried jobs, and each of their salaried jobs is considered separately.

Persons who meet the following criteria at the same time are considered to be employees in a given month:

- are aged 15 or over on the last day of the month,
- for at least one day in a given month are insured with the ZUS under the title of performing work based on an employment relationship or a service relationship<sup>4</sup>,
- the payer paid for them contributions for retirement insurance and disability insurance and / or health insurance for a given month, and the assessment basis for at least one of these contributions was greater than zero.

#### 4.3.2. Methodology of determining monthly working time (FTE percentage)

The monthly working time (FTE percentage) is determined for individual salaried jobs. This working time (FTE percentage) is determined in order to relate the amount of remuneration to the volume of work for which it is due. A number from 0.000 to 1.000 is assumed to be a monthly working time (FTE percentage). When establishing the methodology for determining working time (FTE percentage), the rules for calculating the level of paid employment applied in the survey on Wages and salaries in the national economy were used.

The key information from ZUS in the process of determining a monthly working time (FTE percentage) are:

- working time (FTE percentage),
- insurance title code,
- date of commencement of contributions,
- code of a benefit or a break in paying contributions,
- length of the period in which a benefit or a break in paying contributions occurred.

In this survey, a monthly working time (FTE percentage) is determined in three stages.

In the first stage, information from ZUS about the title under which a given person is insured and the working time (FTE percentage) of the employee is taken into account. In the ZUS dataset, an FTE percentage is recorded as a common fraction (numerator/ denominator). The following solutions were adopted:

- for employees<sup>5</sup>, for whom the numerator and denominator of an FTE percentage are equal, a monthly FTE percentage of 1.000 was assumed;
- for employees, for whom the numerator and denominator of an FTE percentage are different from 0, and the numerator is lower than the denominator, and the value of the quotient of the numerator and denominator is greater than or equal to 0.001, a monthly FTE percentage equal to this quotient was assumed;
- for professional soldiers, officers, judges, prosecutors, deputies, senators<sup>6</sup> a monthly FTE percentage of 1.000 was assumed.

In the second stage of determining a monthly FTE percentage, the information from ZUS on the date of commencement of contributions is taken into account, which for the purposes of the survey was considered to be the date of commencement of employment of this person. The following solutions were adopted:

- for persons who became employed earlier than in the month preceding the analysed month, the monthly FTE percentage determined in the first stage was assumed;
- for persons who became employed during the analysed month, the monthly FTE percentage determined in the first stage was multiplied by the number of employment days for these persons and divided by the number of all days in that month.

In the third stage of determining a monthly FTE percentage, the information on breaks in paying contributions by the insured person in connection with the receipt of a care allowance, sickness allowance or rehabilitation

<sup>4</sup> Insurance title code beginning from: 0110, 0111, 0610, 0800, 1112, 1113, 1120, 1130, 1131, 1132, 1133, 1134, 1135, 1140, 2010, 2020

<sup>5</sup> Insurance title code beginning from: 0110, 0111, 0800

<sup>6</sup> Insurance title code beginning from: 0610, 1112, 1113, 1120, 1130, 1131, 1132, 1133, 1134, 1135, 1140, 2010, 2020



benefit is taken into account. There is no remuneration for the period covered by such a break, therefore, in the event of such a situation, a monthly FTE percentage is reduced proportionally. The following solutions were adopted:

- for persons who in a given month were not receiving a care allowance, sickness allowance or rehabilitation benefit<sup>7</sup>, the monthly FTE percentage determined in the second stage was assumed;
- for persons who in a given month were receiving a care allowance, sickness allowance, rehabilitation benefit and the resulting break in paying contributions lasted shorter than the number of days in the analysed month, the FTE percentage, determined in the second stage is multiplied by the number of days in this month less the number of days of break and is divided by the number of total days in that month.

In these three stages, final FTE percentages for individual salaried jobs are determined, to which the estimated wages and salaries are related.

A monthly FTE percentage is not determined in cases not listed above, e.g. for persons who were receiving a care allowance, sickness allowance or rehabilitation benefit for the period equal to or longer than the number of days in the analysed month, for persons on unpaid leave or for persons who became employed during the month preceding the analysed month.

### 4.3.3. Methodology of estimating wages and salaries

The methodology for estimating wages and salaries based on administrative sources has been designed to best describe the actual level of wages and salaries, while taking into account the assumptions used in the survey on Wages and salaries in the national economy, insofar as the data source allows them to be used.

Pursuant to the Act on Personal Income Tax [12], wages and salaries, in particular: basic salaries, overtime pay, various allowances and awards are considered as revenue. Under the Act on the Social Insurance System [10], this revenue constitutes the contribution assessment basis for the insured persons' retirement insurance and disability insurance. In turn, it follows from the Act on Health Care Services Financed from Public Funds [11] that, as a rule, the provisions specifying the contribution assessment basis for retirement insurance and disability insurance are applied to determine the contribution assessment basis for health insurance. The amount of wages and salaries is therefore closely related to the amounts of contribution assessment bases for retirement insurance and disability insurance as well as health insurance.

The methodology for estimating wages and salaries described in this report is based on the 'transition' from the contribution assessment basis for retirement insurance and disability insurance or from the contribution assessment basis for health insurance to the wage or salary.

**Scheme 1.** Estimation of wages and salaries based on data available at ZUS



Source: own work

Wages and salaries are estimated for individual salaried jobs. Payers report to ZUS on settlement documents for a given month the amounts that have been paid in a given month, regardless of the month for which they are

<sup>7</sup> Benefit/break code: 312, 313, 314, 321, 322

due. Therefore, the survey covers wages and salaries paid in a given month. This is a different approach than in the existing surveys carried out by official statistics, which focus on wages and salaries due for a given month.

As a rule, wages and salaries include payments resulting from an employment relationship or a service relationship, and does not include, i.a., payments under civil law contracts. The exceptions, however, are payments under contracts of mandate, contracts to perform a specified task or agency agreements concluded with the same employer or for the same employer with whom a given person is employed on the basis of an employment relationship. In such cases, all these payments are included in the wage or salary. This results from the rules in force at ZUS – such persons are reported with the insurance title being an employment relationship, and the contribution assessment basis for social and / or health insurance is the total revenue obtained from the employment relationship and from contracts of mandate, contracts to perform a specified task or agency agreements.

The crucial information elements from ZUS in the process of estimating wages and salaries are:

- contribution assessment basis for retirement insurance and disability insurance,
- contribution assessment basis for health insurance,
- amounts of contributions for retirement, disability and sickness insurances (financed by the insured person).

Additionally, the following data are used:

- insurance title code,
- date of commencement of contributions,
- code of a benefit or a break in paying contributions,
- length of the period in which a benefit or a break in paying contributions occurred,
- information on exceeding the annual contribution assessment basis for retirement insurance and disability insurance.

The basic variable for estimating wage or salary is the contribution assessment basis for retirement insurance and disability insurance or the contribution assessment basis for health insurance. The choice depends on the insurance title, the occurrence of a break in paying contributions and the exceeding of the annual contribution assessment basis for retirement insurance and disability insurance.

Within the analysed month  $i$  the set  $J_i$  of all salaried jobs in that month is determined. From this set, three disjoint subgroups are distinguished:

- $SA_i$  is a set of all salaried jobs of employees subject to social insurance<sup>8</sup>, who worked a whole month  $i$  without a break due to sickness for which a sick pay was due<sup>9</sup> and for whom the annual contribution assessment basis for retirement insurance and disability insurance was not exceeded,
- $SB_i$  is a set of all salaried jobs of professional soldiers, officers, judges, prosecutors<sup>10</sup>, who are covered by a different social security pension system and there is no information about the contribution assessment basis for retirement insurance and disability insurance at ZUS, but there is information on the contribution assessment basis for health insurance in the month  $i$  as well as of deputies and

<sup>8</sup> Insurance title code beginning from: 0110, 0111, 0800

<sup>9</sup> Benefit / break code: 331, 332

<sup>10</sup> Insurance title code beginning from: 1112, 1113, 1120, 1130, 1131, 1132, 1133, 1134, 1135, 1140, 2010, 2020

senators<sup>11</sup>, who are subject to social insurance and health insurance, and their salary is the contribution assessment basis for health insurance in the month  $i$ ,

- $SC_i$  is a set of all salaried jobs of employees being subject to social insurance and health insurance in the month  $i$ , who had a break in paying contributions due to sickness for which they were entitled to remuneration, or for whom the annual contribution assessment basis for retirement insurance and disability insurance was exceeded (above this amount, the retirement and disability pension contributions are no longer paid, but still the health insurance contribution is paid in full).

The estimate of a monthly wage or salary for each salaried job  $j$  from the set  $SA_i$  is the value of the contribution assessment basis for retirement insurance and disability insurance, which is expressed by the following formula:

$$\forall_{j \in SA_i} Wage_{ij} = CAB_{rd_{ij}} \quad (1)$$

where

$Wage_{ij}$  is a monthly wage or salary for a single salaried job  $j$  in the analysed month  $i$ ,

$CAB_{rd_{ij}}$  is the contribution assessment basis for retirement insurance and disability insurance for a single salaried job  $j$  in the analysed month  $i$ .

The estimate of a monthly wage or salary for each salaried job  $j$  from the set  $SB_i$  is the value of the contribution assessment basis for health insurance, which is expressed by the following formula:

$$\forall_{j \in SB_i} Wage_{ij} = CAB_{hea_{ij}} \quad (2)$$

where

$Wage_{ij}$  is a monthly wage or salary for a single salaried job  $j$  in the analysed month  $i$ ,

$CAB_{hea_{ij}}$  is the contribution assessment basis for health insurance for a single salaried job  $j$  in the analysed month  $i$ .

The estimate of a monthly wage or salary for each salaried job  $j$  from the set  $SC_i$  is the value of the contribution assessment basis for health insurance less the amounts of contributions for retirement, disability and sickness insurances, which is expressed by the following formula:

$$\forall_{j \in SC_i} Wage_{ij} = CAB_{hea_{ij}} - C_{r_{ij}} - C_{d_{ij}} - C_{s_{ij}} \quad (3)$$

where

$Wage_{ij}$  is a monthly wage or salary for a single salaried job  $j$  in the analysed month  $i$ ,

$CAB_{hea_{ij}}$  is the contribution assessment basis for health insurance for a salaried job  $j$  in the analysed month  $i$ ,

$C_{r_{ij}}$  is the amount of contribution for retirement insurance (financed by the insured person) for a single salaried job  $j$  in the analysed month  $i$ ,

$C_{d_{ij}}$  is the amount of contribution for disability insurance (financed by the insured person) for a single salaried job  $j$  in the analysed month  $i$ ,

$C_{s_{ij}}$  is the amount of contribution for sickness insurance (financed by the insured person) for a single salaried job  $j$  in the analysed month  $i$ .

In all other cases not considered above, and for salaried jobs for which no FTE percentage has been determined, wages and salaries are not estimated. Moreover, the survey assumes that a salaried job for which a monthly FTE

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<sup>11</sup> Insurance title code beginning from: 0610

percentage is lower than 0.05 and for which a full-time equivalent wage or salary is lower than 80% of the minimum monthly wage are excluded from the analysis.

The above exclusions refer in total to approximately 5% of all salaried jobs. These cases are not taken into account when calculating basic indicators of wages and salaries in the presented survey.

#### 4.3.4. Methodology of calculating basic indicators in the survey

**The monthly paid employment** in the analysed month (expressed in full-time equivalent employees) is the level of paid employment calculated on the basis of the sum of monthly working time (FTE percentages) for particular salaried jobs in this month.

$$EMPL_i = \sum_{j \in J_i} FTE_{ij} \quad (4)$$

where

$EMPL_i$  is the monthly paid employment in the analysed month  $i$ ,

$FTE_{ij}$  is a monthly FTE percentage for a single salaried job  $j$  in the analysed month  $i$ ,

$J_i$  is a set of all salaried jobs in the analysed month  $i$ .

Example 1.

A certain firm employs 2 full-time employees and one half-time employee. In the analysed month  $i$ , one of the full-time employees received a sickness allowance for half a month. The rest of the employees worked the whole month. In this case, FTE percentages for these people are: 1.0 FTE (the employee who worked the whole analysed month), 0.5 FTE (the full-time employee who received sickness allowance for a half of the analysed month) and 0.5 FTE (the person employed half-time who worked for the whole analysed month).

Based on the formula (4) the monthly paid employment in the analysed month  $i$  in this firm is:

$$EMPL_i = 1.0 \text{ FTE} + 0.5 \text{ FTE} + 0.5 \text{ FTE} = 2.0 \text{ FTE}$$

**The average monthly paid employment** in the analysed period (quarter/year) is the quotient of the sum of monthly FTE percentages for all salaried jobs in individual months of the analysed period and the number of months in the analysed period.

$$A\_EMPL = \frac{\sum_{i=1}^N EMPL_i}{N} \quad (5)$$

where

$A\_EMPL$  is the average monthly paid employment in the analysed period (quarter/year),

$EMPL_i$  is the monthly paid employment in the month  $i$ ,

$N$  is the number of months in the analysed period (quarter/year).

**Monthly wages and salaries** in the analysed month are the sum of monthly wages and salaries for individual salaried jobs in that month, which wages and salaries are estimated, depending on the case, on the basis of formula (1), (2) or (3).

$$WAGE_i = \sum_{j \in J_i} Wage_{ij} \quad (6)$$

where

$WAGE_i$  is a monthly wage or salary in the analysed month  $i$ ,

$Wage_{ij}$  is a monthly wage or salary for a single salaried job  $j$  in the analysed month  $i$ ,

$J_i$  is a set of all salaried jobs in the analysed month  $i$ .

**The average monthly wage and salary** in the analysed period (month/quarter/year) is the quotient of the sum of monthly wages and salaries from individual months of the analysed period and the sum of monthly paid employment from individual months of the analysed period.

$$A\_WAGE = \frac{\sum_{i=1}^N WAGE_i}{\sum_{i=1}^N EMPL_i} \quad (7)$$

where

$A\_WAGE$  is the average monthly wage and salary in the analysed period (month/quarter/year),

$WAGE_i$  are monthly wages and salaries in the month  $i$ ,

$EMPL_i$  is the monthly paid employment in the month  $i$ ,

$N$  is the number of months in the analysed period (month/quarter/year).

Example 2.

A certain firm employs 3 persons, whose wages and salaries in the analysed month amounted to PLN 1 000, PLN 3 000 and PLN 4 500. The monthly FTE percentages for these persons are respectively 0.25 FTE, 0.75 FTE and 1.0 FTE. Then, based on the formula (7), the average monthly wage and salary in this firm is:

$$A\_WAGE = \frac{PLN\ 1\ 000 + PLN\ 3\ 000 + PLN\ 4\ 500}{0.25\ FTE + 0.75\ FTE + 1.0\ FTE} = PLN\ 4\ 250$$

Access to individual data makes it possible to calculate **the median monthly wage and salary**. Wages and salaries for individual salaried jobs should be considered in relation to working time (FTE percentages) for these salaried jobs. Whereas, in order to be able to compare wages and salaries regardless of an FTE percentage, it is necessary to normalise them. Conversion to full-time equivalents is assumed as the normalisation of wages and salaries. Then, a monthly wage or salary is divided by a monthly FTE percentage, e.g. for a person employed half-time (0.5 FTE) and receiving a monthly wage or salary in the amount of PLN 2 000, a wage or salary converted into full-time equivalent is PLN 4 000. The conversion of a monthly wage or salary into a full-time equivalent wage or salary is expressed by the following formula:

$$\forall_{j \in J_i} Wage\_norm_{ij} = \frac{Wage_{ij}}{FTE_{ij}} \quad (8)$$

where

$Wage\_norm_{ij}$  is a monthly wage or salary in full-time equivalent for a single salaried job  $j$  in the analysed month  $i$ ,

$Wage_{ij}$  is a monthly wage or salary for a single salaried job  $j$  in the analysed month  $i$ ,

$FTE_{ij}$  is a monthly FTE percentage for a salaried job  $j$  in the analysed month  $i$ ,

$J_i$  is a set of all salaried jobs in the analysed month  $i$ .

As a result of the normalisation, a set of full-time wages and salaries for all salaried jobs is created, which is then arranged in ascending order. Then the median is determined, which divides this set into two equal groups. In one half there will be salaried jobs for which a monthly full-time equivalent wage or salary is not higher than the median, and in the other half – not lower.

Example 3.

A certain firm employs 5 employees who work in various positions, and a monthly wage or salary of each of these employees is PLN 6 000. The monthly FTE of the first of these employees is 1.0 FTE (40 hours of work per week), of the second employee is 0.75 FTE (30 hours of work per week), of the next two are 0.5 FTE (20 hours of work per week) and of the fifth employee is 0.25 FTE (10 hours of work per week). They earn the same amount of money

but devote different amounts of time to their work. In order to be able to compare wages and salaries with each other at different FTEs, a conversion into full-time wage or salary is applied. The monthly wages and salaries converted into full-time equivalent wages and salaries for these five persons are then PLN 6 000, PLN 8 000, PLN 12 000, PLN 12 000 and PLN 24 000, respectively. The median monthly wage or salary in this case is PLN 12 000.

It is also possible to determine the median monthly wage and salary for particular FTE percentages. Then it is not necessary to normalise wages and salaries. For a specific monthly FTE percentage, the value of the median monthly wage and salary is determined as the middle wage/salary of the set of monthly wages and salaries in the ascending order for all salaried jobs with such an FTE percentage.

## 5. Organisation and management of conducting of the survey

The author unit of the survey on Wages and salaries in the national economy based on administrative data sources is the Statistical Office in Bydgoszcz. The survey uses datasets provided by ZUS and, as an auxiliary source, datasets provided by MF, as well as information from BJS.

**The datasets made available by ZUS** contain individual data and are transferred to Statistics Poland twelve times a year, within 50 days after the end of the month to which the data relate. It should be noted, however, that the information provided by payers to ZUS regarding a given month may be corrected even up to 5 years from the date on which the deadline for payment of contributions for this period has expired – i.e. after the datasets were transferred to Statistics Poland. The analyses conducted by the Statistical Office in Bydgoszcz showed that the 50-day period after the end of the month is a compromise between providing data of the best possible quality and in the shortest possible time.

**The datasets made available by MF** contain individual data and are transferred once a year in February and refer to the previous tax year.

Sets of individual data from the ZUS and the MF are transferred to the IT Storehouse of National Statistical Data run by the Statistical Computing Centre of Statistics Poland. The transferred datasets are controlled and processed by the employees of the Statistical Computing Centre and by the employees of the Data Engineering Division at the ICT Systems, Geostatistics and Census Department of Statistics Poland. The completeness of the datasets and the compliance of the transferred data with the requirements of official statistics as well as dictionaries and classifications are checked. Then, the datasets are placed in the safe environment of the Operational Microdata Database and made available to author units, including the Statistical Office in Bydgoszcz. At each stage of work, access to the datasets is limited and only authorised employees can use them.

Employees of the Statistical Office in Bydgoszcz carry out multi-stage processing of the shared datasets in order to obtain information on the wages and salaries in accordance with the adopted methodology. The scope of the work performed and the description of the methodology used are presented in detail in Chapter 4.

## 6. Presentation of the survey results

The result data obtained in the survey on Wages and salaries in the national economy based on administrative data sources may only be published in an aggregated form. Individual data are subject to statistical confidentiality and are not made available. The rules for publishing and sharing statistical data are regulated by the Act on Official Statistics [9].

The survey allows for presenting measures of wages and salaries such as the average monthly wage and salary, median monthly wage and salary and other measures, e.g. quartiles, deciles, percentiles.

The result statistical information on measures of wages and salaries may be presented in total and broken down by, i.a., the following characteristics of employees and their salaried jobs and the characteristics of entities:

- sex,
- age,
- citizenship,
- working time (FTE percentage),
- place of residence at the level of macroregions, regions, voivodships, subregions, powiats and gminas,
- the seat of the unit at the level of macroregions, regions, voivodships, subregions, powiats and gminas,
- kind of activity (according to the PKD 2007/ NACE classification),
- entity size (expressed by the number of employed persons),
- ownership sector.

In May 2021, ZUS started collecting data on an occupation. Since then, information on occupations of employees has been gradually completed together with the provision of new or updated insurance applications. According to data for June 2022, the information on this variable was complete for around 20% of all salaried jobs. A higher level of completeness of information on this variable will probably allow for analysing wages and salaries also by occupation in the future.

All wage indicators can be presented for each month approximately 120 days after the end of that month.

The results of the survey on Wages and salaries in the national economy based on administrative data sources are currently experimental statistics. In accordance with the standards in force at Statistics Poland, experimental statistics are made available on the website of Statistics Poland in the website tab concerning experimental statistics at the link <https://stat.gov.pl/en/experimental-statistics/>

Data on wages and salaries obtained from administrative data sources and prepared in accordance with the methodology presented in this report are currently used in the survey on Wages and salaries in the national economy in the process of data imputation. In addition, they are used to prepare estimated annual wages and salaries in member organisations, foundations, associations, economic self-governments, employers' organisations, political parties, trade unions and other social organisations, as well as estimated quarterly wages and salaries in entities with up to 9 employed persons.



## 7. Quality assessment of the survey

In order to assess the quality of each survey, it is necessary to define its necessary dimensions. When assessing the quality of a survey based on data from administrative sources, unlike in surveys based on statistical reports of entities, there are no errors resulting from the design of a questionnaire or random errors. Nevertheless, the survey itself is subject to the same assessment as other statistical surveys. In official statistics, the assessment criteria are based on the definition prepared by the European Statistical System, and the survey quality is assessed on the basis of the following six components:

- relevance,
- accuracy,
- timeliness and punctuality,
- accessibility and clarity,
- comparability,
- coherence.

The quality of the survey on Wages and salaries in the national economy based on administrative data sources was assessed in reference to the above criteria. Additionally included were:

- costs and the burden on respondents,
- information on missing data and other non-random errors.

The survey responds to the data users' demand for monthly data on wages and salaries for the whole national economy. These data may be presented with breakdowns expected by users – e.g. sex, age, place of residence up to the gmina level, entity size. The target recipients of the information mentioned are, i.a., government and local government offices, scientific and research institutions, universities (academic teachers and students), ministries and central offices, entrepreneurs and employers, individuals, national and local media. These data will also be used by internal users, statisticians participating in the integration of surveys, carrying out analyses of wages and salaries or secondary research.

The results of the survey are comparable in time (between individual months), spatially (data for all available territorial aggregations) and across domains (e.g. for all sections of the Polish Classification of Activities/NACE). Data comparability is ensured by the use of standards, e.g. in terms of concepts, classifications and statistical registers.

The data are provided by the administrators in accordance with the specified scope and within time limits specified in the Programme of statistical surveys of official statistics.

As a survey based entirely on administrative sources, it is not a burden for respondents.

Source datasets used in the survey are subject to double control. In the first place, they are controlled by data administrators to the extent necessary for their purposes. Then, after the data are transferred to Statistics Poland, the datasets are controlled to the extent necessary for the purposes of the survey, i.e. they are verified, standardised, deduplicated and supplemented. Employees of the Statistical Office in Bydgoszcz, after receiving the controlled sets, analyse the correctness of the most important variables from the point of view of this survey. In the survey on Wages and salaries in the national economy based on administrative data sources, a developed scheme of control, monitoring and error prevention activities is used – analysing data in order to identify missing entries and potential erroneous entries. Variables specifying sex, age, place of residence, registered office of the entity or PKD 2007/NACE section are subject to imputation procedures, which are described in detail in the Methodological report. Employment in the national economy according to administrative data sources [4].

The accuracy of the survey results depends primarily on the accuracy of the data sources. ZUS datasets contain controlled data, therefore the quality of the data does not raise any objections. This does not mean, however, that the survey is error-free, in particular, when it comes to non-random errors, such as over-coverage errors,

which may be caused, for example, by applications for insurance by people who do not actually perform work. However, such situations are controlled and eliminated by the administrator. Payers have a legal obligation to submit correct declarations, and administrators have instruments for controlling and verifying the information provided by payers. Errors may also result from a delay in submitting applications for insurance or from incorrect or false applications. Such errors, however, are beyond the control of the authors of the survey.

In the survey on Wages and salaries in the national economy based on administrative data sources, errors in measurement may concern information specifying working time (FTE percentage), because the administrator does not verify the correctness of the payers' declarations in this respect. However, this information is controlled to the extent resulting from the objectives of this survey.

In the case of a survey using administrative data, important for the assessment of its quality, in addition to the above-mentioned data collection standards, are also i.a. variability in the procedures of collecting data by the administrator, or the number of data providers. They also affect the quality of the survey and the risk of making the statistics burdened with errors. As regards the administrative data used in the survey on Wages and salaries in the national economy based on administrative data sources, most statistics bear a low risk in terms of the quality of the underlying data. This is due, apart from the issues described above, also to the fact that the survey uses data provided by one supplier. In addition, well-defined classifications are used in the data collection process and the code key is unambiguous. The better the data collection system is defined, the better the quality. In the survey on Wages and salaries in the national economy based on administrative data sources, we are dealing with the recording of variables according to transparent classification systems. In addition, control and validation procedures are built into the information system designed to collect, process and analyse data at the administrator. The level of reliability of the administrative data used in the survey is therefore high.

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## Appendices

### Appendix A Comparison of basic definitions and methodology of the survey on Wages and salaries in the national economy based on administrative data sources and the survey on Wages and salaries in the national economy

Both the survey on Wages and salaries in the national economy based on administrative data sources and the survey on Wages and salaries in the national economy examine wages and salaries in the national economy. However, due to different data sources, the surveys differ slightly.

The survey on Wages and salaries in the national economy based on administrative data sources is a complete enumeration survey based entirely on data from administrative sources. On the other hand, the survey on Wages and salaries in the national economy is a multi-source survey based on information collected through surveys conducted using reporting forms submitted by national economy entities [1]. Some of them are conducted using the complete enumeration method, and some of them are sample surveys. None of them covers all national economy entities at the same time.

Due to the rules for providing data by contribution payers in force at ZUS, wages and salaries estimated on the basis of administrative data sources include wages and salaries paid in a given period (month / quarter / year), and not, as in the survey on Wages and salaries in the national economy, wages and salaries due for a given period ( month / quarter / year).

The survey on Wages and salaries in the national economy based on administrative data sources and the survey on Wages and salaries in the national economy are almost entirely consistent in terms of the components of wages and salaries. The main definitional and methodological differences between the surveys are presented in Table 1. The definitions of basic terms and the detailed scope of components of wages and salaries included in the survey on Wages and salaries in the national economy can be found in methodological reports [1, 2, 3]. In the survey on Wages and salaries in the national economy based on administrative data sources, the surveyed wages and salaries include those components that are included in the contribution assessment basis for social and / or health insurance. A detailed list of components of wages and salaries included in the contribution assessment basis for social and / or health insurance can be found in ZUS guides [7, 8] and in acts [10, 11].

**Table 1. Main definitional and methodological differences between the survey on Wages and salaries in the national economy based on administrative data sources and the survey on Wages and salaries in the national economy**

Specification	Wages and salaries in the national economy based on administrative data sources	Wages and salaries in the national economy
Type of the survey	Complete enumeration survey.	In part a complete enumeration survey and in part a sample survey.
Data sources	Information collected from administrative data sources (mainly ZUS data).	Information collected on reporting forms submitted by national economy entities.
Reference period	Wages and salaries paid in a given period (month/quarter/year).	Wages and salaries due for a given period (month/quarter/year).

**Components of wages and salaries**

<p>Service anniversary awards</p>	<p>The survey does not cover service anniversary awards.</p> <p>These awards are not included in wages and salaries if they are not paid more frequently than every 5 years, because they do not fall within the scope of the contribution assessment basis for social and / or health insurance.</p>	<p>The survey covers service anniversary awards.</p>
<p>Retirement and disability severance pays</p>	<p>The survey does not cover retirement and disability severance pays.</p> <p>These pays are not included in wages and salaries, because they do not fall within the scope of the contribution assessment basis for social and / or health insurance.</p>	<p>The survey covers retirement and disability severance pays.</p>
<p>Wages and salaries under contracts of mandate, contracts to perform a specified task and agency agreements if these contracts were concluded with one's own employer or for one's own employer.</p>	<p>When calculating basic indicators, the survey covers wages and salaries under contracts of mandate, contracts to perform a specified task and agency agreements if these contracts were concluded with one's own employer or for one's own employer.</p> <p>In accordance with the rules in force at ZUS, a person employed on the basis of an employment relationship and additionally having a contract of mandate, a contract to perform a specified task or an agency agreement concluded with the same employer or for the same employer is reported to ZUS with an insurance title being an employment relationship and the contribution assessment basis for social and /or health insurance is total revenue from an employment relationship and contracts of mandate, contracts to perform a specified task or agency agreements.</p> <p>It is not possible to separate these components of wages and salaries.</p>	<p>When calculating basic indicators, the survey does not cover wages and salaries under contracts of mandate, contracts to perform a specified task and agency agreements if these contracts were concluded with one's own employer or for one's own employer.</p>

Source: own work.

## Annexes

### Annex 1. List of ZUS insurance title codes

As of January 2022 [6]

Insurance title codes <sup>12</sup>	Insurance title
0110	an employee subject to social and health insurance
0111	an employee subject to social insurance and, under special provisions, not subject to health insurance
0112	a person receiving a training benefit paid after termination of employment
0113	an employee in respect of whom the contribution payer benefited from co-financing of social insurance contributions from the state budget and the State Fund for Rehabilitation of Disabled People pursuant to Article 25, paragraph 2, 3 or 3a of the Act of 27 August 1997 on Vocational and Social Rehabilitation and Employment of Persons with Disabilities, in the version in force until 1 January 2008, and currently is obligated to pay additional contributions and after 30 June 2008 submits corrective settlement documents for the period until December 2007.
0120	an adolescent worker
0124	a former nominated employee or former civil servant with whom employment was terminated, receiving a monetary benefit after the termination of employment.
0125	an employee subject to social and health insurance, paying contributions for his or her own insurance in the case specified in Article 109 of Regulation (EEC) No 574/72 of the Council of 21 March 1972 fixing the procedure for implementing Regulation (EEC) No 1408/71 on the application of social security schemes to employed persons and their families moving within the Community (OJ L 74, 27.3.1972, p.1, as amended, OJ L Special edition in Polish Chapter 05 Volume 001, p. 83), hereinafter referred to as Council Regulation (EEC) No 574/72 or in Article 21, paragraph 2 of Regulation (EC) No 987/2009 of the European Parliament and of the Council of 16 September 2009 laying down the procedure for implementing Regulation (EC) No 883/2004 on the coordination of social security systems (OJ L 284, 30.10.2009, p. 1, as amended), hereinafter referred to as Regulation (EC) No 987/2009
0126	an employee subject to social insurance and, under special provisions, not subject to health insurance, paying contributions for his or her own insurance in the case specified in Article 109 of Council Regulation (EEC) No 574/72 or in Article 21, paragraph 2 of Regulation (EC) No 987/2009
0200	an outworker
0213	an outworker in respect of whom the contribution payer benefited from co-financing of social security contributions from the state budget and the State Fund for Rehabilitation of Disabled People pursuant to Article 25, paragraph 2, 3 or 3a of the Act of 27 August 1997 on Vocational and Social Rehabilitation and Employment of Persons with Disabilities, in the version in force until 1 January 2008, and currently is obligated to pay additional contributions and after 30 June 2008 submits corrective settlement documents for the period until December 2007.

<sup>12</sup> A basic subject with extension (4 digits).

Insurance title codes <sup>12</sup>	Insurance title
0310	a member of an agricultural production cooperative, agricultural circles cooperative or other cooperative engaged in agricultural production
0320	a person performing work in a cooperative or on a farm of a cooperative on a basis other than an employment relationship, who is not its member and remunerated in accordance with the rules applicable to members of a cooperative, including a candidate for a member of a cooperative
0411	a person performing an agency agreement, contract of mandate or services agreement
0417	a person performing an agency agreement, contract of mandate or services agreement, under special provisions not subject to health insurance
0421	a person cooperating with a person performing an agency agreement, contract of mandate or services agreement
0424	a person cooperating with a person performing an agency agreement, contract of mandate or services agreement, under special provisions not subject to health insurance
0426	a person performing an agency agreement, contract of mandate or services agreement paying contributions for his or her own insurance in the case specified in Article 109 of Council Regulation (EEC) No 574/72 or in Article 21, paragraph 2 of Regulation (EC) No 987/2009
0428	a person performing an agency agreement, contract of mandate or services agreement, under special provisions not subject to health insurance, paying contributions for his or her own insurance in the case specified in Article 109 of Council Regulation (EEC) No 574/72 or in Article 21, paragraph 2 of Regulation (EC) No 987/2009
0430	a person caring for children up to 3 years of age on the basis of an activation agreement, whose contributions are financed by the state budget
0431	a person caring for children up to 3 years of age on the basis of an activating agreement, for whom the contribution assessment basis for insurance is a surplus over the amount financed by the state budget
0510	a person conducting non-agricultural activity under the provisions on economic activity or other special provisions, who does not have an established right to a disability pension, for whom the contribution assessment basis for social insurance is a declared amount not lower than 60% of the average monthly wage and salary, a person running a non-public or public school, establishment, school complex pursuant to the regulations on the education system and a person conducting non-agricultural activity as well as a person conducting non-agricultural activity in the scope of a liberal profession
0511	a person cooperating with a person conducting non-agricultural activity as well as with a natural person referred to in Article 18, paragraph 1 of the Act of 6 March 2018 – the Entrepreneurs' Law
0512	a person conducting non-agricultural activity under the provisions on economic activity or other special provisions, who does not have an established right to a disability pension, for whom the contribution assessment basis for social insurance is a declared amount not lower than 60% of the average monthly wage and salary

Insurance title codes <sup>12</sup>	Insurance title
0513	a disabled person who for the first time started conducting non-agricultural economic activity and benefited from co-financing of social insurance contributions from the state budget and the State Fund for Rehabilitation of Disabled People pursuant to Article 25, paragraph 3b of the Act of 27 August 1997 on Vocational and Social Rehabilitation and Employment of Persons with Disabilities, in the version in force until 1 January 2008, and currently is obligated to pay additional contributions and after 30 June 2008 submits corrective settlement documents for the period until December 2007.
0520	an author
0530	an artist
0540	a person not subject to social insurance and subject to health insurance, in accordance with Article 18, paragraph 1 of the Act of 6 March 2018 – the Entrepreneurs' Law
0543	a partner in a single-person limited liability company and partners of a general partnership, limited partnership or professional partnership and a shareholder of a simple joint-stock company contributing the provision of work or services
0544	a person conducting non-agricultural activity, under special provisions not subject to health insurance
0545	a person cooperating with a person conducting non-agricultural activity, under special provisions not subject to health insurance
0570	a person conducting non-agricultural economic activity who does not have an established right to a disability pension, for whom the contribution assessment basis for social insurance is a declared amount not lower than 30% of the minimum wage
0572	a person conducting non-agricultural economic activity who has an established right to a disability pension, for whom the contribution assessment basis for social insurance is a declared amount not lower than 30% of the minimum wage
0580	a person conducting non-agricultural activity whose maternity allowance does not exceed the amount of a parental benefit
0581	a person cooperating with a person conducting non-agricultural activity whose maternity allowance does not exceed the amount of a parental benefit
0590	a person conducting non-agricultural economic activity who does not have an established right to a disability pension, for whom the contribution assessment basis for social insurance depends on revenue
0592	a person conducting non-agricultural economic activity who has an established right to a disability pension, for whom the contribution assessment basis for social insurance depends on revenue
0610	a deputy or senator receiving salary
0710	a sport scholar receiving a scholarship and under this title being subject to social insurance and health insurance or only to health insurance
0720	a sport scholar receiving a scholarship and under this title being subject only to social insurance



<b>Insurance title codes<sup>12</sup></b>	<b>Insurance title</b>
0800	a person performing paid work on the basis of a referral to work, while serving a sentence of imprisonment or being in temporary detention
0910	an unemployed person receiving an unemployment benefit, a person receiving an integration benefit
0911	an unemployed person who does not receive an unemployment benefit or a scholarship
0920	a person receiving a scholarship during a training course, internship or vocational preparation for adults, for which was referred by a powiat labour office or a managing entity other than a powiat labour office, and a person receiving a scholarship during postgraduate studies
0940	a person residing in the Republic of Poland receiving a pre-retirement allowance or a pre-retirement benefit
0941	a person receiving a pre-retirement allowance or a pre-retirement benefit, residing in a Member State of the European Union other than the Republic of Poland, a Member State of the European Free Trade Association (EFTA) or in the United Kingdom of Great Britain and Northern Ireland
1010	a clergyman who does not conduct non-agricultural economic activity, paying a contribution from the minimum contribution assessment basis
1011	a clergyman who does not conduct non-agricultural economic activity, paying a contribution from the minimum contribution assessment basis and from a declared surplus over the minimum contribution assessment basis, due for the period until 31 March 2004.
1012	a clergyman who does not conduct non-agricultural economic activity, paying a contribution from a declared surplus over the minimum contribution assessment basis
1020	a clergyman who does not conduct non-agricultural economic activity, being a member of an enclosed contemplative order, paying a contribution from the minimum contribution assessment basis
1050	a seminarian, novice, postulant and junior brother or sister, subject to health insurance
1110	non-professional soldiers on active military service
1111	persons undergoing alternative military service
1112	a person undergoing extended compulsory military service
1113	a person undergoing temporary military service
1114	an officer in a period of service as a candidate and a candidate for a professional soldier
1120	a professional soldier
1130	an officer of the Police
1131	an officer of the Internal Security Agency and the Foreign Intelligence Agency
1132	an officer of the Polish Border Guard
1133	an officer of the State Fire Service of Poland

Insurance title codes <sup>12</sup>	Insurance title
1134	an officer of the Tax and Customs Service
1135	an officer of the Central Anti-Corruption Bureau, the Military Counterintelligence Service, the Military Intelligence Service, the State Protection Service or the Marshal's Guard
1140	an officer of the Prison Service
1150	a retired person receiving an emolument
1151	a person receiving a family emolument
1152	a person receiving an emolument after dismissal from the service or benefits of the same nature
1153	a soldier or an officer in respect of whom it is obligatory to pay contributions for retirement insurance and disability insurance in connection with dismissal from service or loss of the right to a retirement pension or a disability pension
1211	a person on a childcare leave
1240	a person receiving a maternity allowance
1310	a person who, on the basis of separate regulations or collective labour agreements, receives a social benefit paid during a leave other than a railway leave
1320	a person receiving a social benefit for the period of professional retraining and looking for a new job
1321	a person who, on the basis of separate regulations or collective labour agreements, receives a social benefit paid during a railway leave
1322	a person receiving a social benefit during the period of release from the obligation to provide work
1422	a beneficiary in respect of whom an organisational unit of social assistance or a village mayor, mayor or a president of a city is obligated to pay contributions
1811	a student or a participant of doctoral studies in respect of whom a university or an organisational unit conducting doctoral studies is obligated to pay health insurance contributions
1812	a doctoral student, under this title subject to social and health insurance
1813	a doctoral student, under this title subject to social insurance and not subject to health insurance
1830	a student of Lech Kaczyński National School of Public Administration
1900	a person who is subject to voluntary retirement insurance and disability insurance, pursuant to Article 7 of the Act of 13 October 1998 on the Social Insurance System
1910	a person who is subject to voluntary retirement insurance and disability insurance during the period of suspension of economic activity
2010	a judge

<b>Insurance title codes<sup>12</sup></b>	<b>Insurance title</b>
2020	a prosecutor, juror, applicant of the National School of Judiciary and Public Prosecution
2030	a judge or a prosecutor, in respect of whom it is obligatory to pay social insurance contributions in connection with the termination or expiry of a service relationship
2110	a child or a student who is not subject to health insurance under another title
2120	a student of a teacher training institution, not subject to health insurance under another title
2210	a war veteran or a victim of oppression as well as an anticommunist opposition member or a victim of oppression due to political reasons, in respect of whom the Head of the Office for War Veterans and Victims of Oppression is obligated to pay health insurance contributions
2230	a person subject to health insurance under the title of entitlement to maintenance on the basis of a court settlement or a legally binding court decision
2240	a member of a supervisory board, subject only to health insurance
2241	a member of a supervisory board, under this title subject to retirement insurance and disability insurance as well as to health insurance
2242	a member of a supervisory board, under this title subject to retirement insurance and disability insurance and not subject to health insurance
2250	a person appointed to perform a function under an act of appointment who receives remuneration under this title
2330	Spouse of the President of the Republic of Poland
2410	a person covered by voluntary health insurance or a volunteer who is not subject to health insurance under another title, in respect of whom a health insurance contribution is voluntarily financed by the beneficiary referred to in the provisions on public benefit and volunteer work
2500	an old age pensioner or disability pensioner, or a person receiving a supplementary parental benefit, residing in the Republic of Poland, whose health insurance contribution is financed by the beneficiary
2501	an old age pensioner or a disability pensioner residing in a Member State of the European Union other than the Republic of Poland, a Member State of the European Free Trade Association (EFTA) or in the United Kingdom of Great Britain and Northern Ireland, whose health insurance contribution is financed by the beneficiary
2510	an old age pensioner or a disability pensioner residing in the Republic of Poland, whose health insurance contribution is financed from the state budget
2511	an old age pensioner or a disability pensioner residing in a Member State of the European Union other than the Republic of Poland, a Member State of the European Free Trade Association (EFTA) or in the United Kingdom of Great Britain and Northern Ireland, whose health insurance contribution is financed from the state budget
2600	a person receiving a teachers' compensatory benefit, residing in the Republic of Poland

<b>Insurance title codes<sup>12</sup></b>	<b>Insurance title</b>
2601	a person receiving a teachers' compensatory benefit, residing in a Member State of the European Union other than the Republic of Poland, a Member State of the European Free Trade Association (EFTA) or in the United Kingdom of Great Britain and Northern Ireland
2700	a person receiving a bridge pension, residing in the Republic of Poland
2701	a person receiving a bridge pension, residing in a Member State of the European Union other than the Republic of Poland, a Member State of the European Free Trade Association (EFTA) or in the United Kingdom of Great Britain and Northern Ireland
3000	a person in respect of whom contributions or due benefits should be settled and paid in settlement documents submitted not earlier than for the next month after the end of the insurance title
5000	other insurance title

## Annex 2. List of ZUS benefit / break codes

As of January 2022 [6]

<b>Benefit / break codes</b>	<b>Description of benefit / break codes</b>
<b>Break in paying contributions</b>	
111	unpaid leave
121	childcare leave granted pursuant to Article 186, paragraph 2 of the Act of 26 June 1974, – the Labour Code
122	childcare leave granted pursuant to Article 186, paragraph 3 of the Act of 26 June 1974, – the Labour Code
151	period of excused absence from work, without the right to remuneration or a benefit
152	period of unexcused absence from work
<b>Type of benefit</b>	
212	compensatory allowance from sickness insurance
214	compensatory allowance from accident insurance
215	compensation of a compensatory allowance from sickness insurance
216	compensation of a compensatory allowance from accident insurance
<b>Type of a benefit and a break</b>	
311	maternity allowance from sickness insurance for the period determined as the period of maternity leave or leave on the terms of maternity leave
312	care allowance from sickness insurance
313	sickness allowance from sickness insurance
314	sickness allowance from accident insurance
315	compensation of a maternity allowance from sickness insurance for the period determined as the period of maternity leave or leave on the terms of maternity leave
316	compensation of a care allowance from sickness insurance
317	compensation of a sickness allowance from sickness insurance
318	compensation of a sickness allowance from accident insurance
319	maternity allowance from sickness insurance for the period determined as the period of parental leave
320	compensation of a maternity allowance from sickness insurance for the period determined as the period of parental leave
321	rehabilitation benefit from sickness insurance

Benefit / break codes	Description of benefit / break codes
322	rehabilitation benefit from accident insurance
323	compensation of a rehabilitation benefit from sickness insurance
324	compensation of a rehabilitation benefit from accident insurance
325	maternity allowance from sickness insurance for the period determined as the period of an additional maternity leave or an additional leave on the terms of maternity leave
326	compensation of a maternity allowance from sickness insurance for the period determined as the period of an additional maternity leave or an additional leave on the terms of maternity leave
327	maternity allowance from sickness insurance for the period determined as the period of paternity leave
328	compensation of a maternity allowance from sickness insurance for the period determined as the period of paternity leave
329	increasing a maternity allowance to the amount of a parental benefit
331	sick pay, financed from the funds of the employer
332	sick pay, financed from the Fund of Guaranteed Employee Benefits
335	compensation of a sick pay, financed from the funds of the employer
336	compensation of a sick pay, financed from the Fund of Guaranteed Employee Benefits
350	other benefits / breaks

## Annex 3. List of source variables

### ZUS dataset of individual data on insured persons and contribution payers:

Variable	Variable description
ubezp_PESEL_ZUS	PESEL number of the insured person
ubezp_plec_ZUS	Sex of the insured person
ubezp_rok_ur_ZUS	Year of birth of the insured person
ubezp_kod_tytul_ubez_ZUS	Insurance title code
ubezp_wymiar_czas_praca_ZUS	Working time (FTE percentge)
ubezp_kod_obyw_ZUS	Citizenship code of the insured person
ubezp_zawod_kod_ZUS	Occupational code of the insured person
ubezp_rodzaj_ubez_ZUS	Type of insurance (social insurance, health insurance, social and health insurances)
ubezp_data_skladki_ZUS	Date of commencement of contributions
ubezp_kod_sw_ZUS	Code of a benefit or a break in paying contributions
ubezp_data_od_sw_ZUS	The date from which the payment of a benefit or a break in paying the contribution took place
ubezp_data_do_sw_ZUS	The date to which the payment of a benefit or a break in paying the contribution took place
ubezp_podst_skladki_uber_ZUS	Contribution assessment basis for retirement insurance and disability insurance
ubezp_kod_przekr_podst_uber_ZUS	Code of information on exceeding the annual contribution assessment basis for retirement insurance and disability insurance
ubezp_kod_kraj_ZUS	Country code of the insured person
ubezp_adr_zam_kod_gmn_ZUS	7-digit TERYT code of the gmina of the residence address of the insured person
ubezp_podst_skladki_ubz_ZUS	Contribution assessment basis for health insurance
ubezp_kwota_skladki_ube_ZUS	Amount of retirement insurance contribution (financed by the insured person)
ubezp_kwota_skladki_ubr_ZUS	Amount of disability insurance contribution (financed by the insured person)
ubezp_kwota_skladki_abc_ZUS	Amount of sickness insurance contribution (financed by the insured person)
ubezp_kwota_skladki_ubw_ZUS	Amount of accident insurance contribution (financed by the insured person)
platnik_kod_deklar_ZUS	Insurance declaration code
platnik_NIP_ZUS	Tax Identification Number of the payer
platnik_REGON_ZUS	REGON identification number of the payer
platnik_nazwa_ZUS	Full name of the payer/company
platnik_data_skladki_ZUS	Date of commencement of contributions

Variable	Variable description
platnik_adr_zam_kod_kraj_ZUS	Country code of residence of the payer
platnik_adr_zam_kod_gmn_ZUS	7-digit TERYT code of the gmina of the place of residence of the payer
platnik_adr_s_kod_kraj_ZUS	Country code of the registered office of the payer
platnik_adr_s_kod_gmn_ZUS	7-digit TERYT code of the gmina of the registered office of the payer

**CRP KEP dataset of individual data on natural persons:**

Variable	Variable description
PESEL_KEP	PESEL number of the taxpayer
plec_KEP	Sex of the taxpayer
data_ur_KEP	Date of birth of the taxpayer
adr_zam_kod_kraj_KEP	Country code of the residence address of the taxpayer
adr_zam_kod_gmn_KEP	7-digit TERYT code of the gmina of the place of residence of the taxpayer

**CRP KEP dataset of individual data on natural persons conducting independently economic activity:**

Variable	Variable description
NIP_KEP	Tax Identification Number of the taxpayer
REGON_KEP	REGON identification number of the taxpayer
pkd2007_KEP	PKD/NACE code of the kind of activity of the taxpayer
adr_zam_kod_gmn_KEP	7-digit TERYT code of the gmina of the place of residence of the taxpayer

**CRP KEP dataset of individual data on legal persons and organisational units without legal personality:**

Variable	Variable description
NIP_KEP	Tax Identification Number of the taxpayer
REGON_KEP	REGON identification number of the taxpayer
pkd2007_KEP	PKD/NACE code of the kind of activity of the taxpayer
adr_s_kod_gmn_KEP	7-digit TERYT code of the gmina of the registered office and correspondence address



**BJS dataset of individual data on statistical units:**

<b>Variable</b>	<b>Variable description</b>
REGON_BJS	REGON identification number of the unit
NIP_BJS	Tax Identification Number of the unit
PKD07_BJS	PKD/NACE code of the kind of activity of the unit
SEKC_PKD7_BJS	PKD/NACE section of the kind of activity of the unit
FW_BJS	Ownership form of the unit
FWM_BJS	Ownership form of the parent unit
SEK_BJS	Ownership sector of the unit
SEKM_BJS	Ownership sector of the parent unit
FPN_BJS	Legal form of a new unit