

From these lists, and after performing a series of controls and filtering criteria, we obtain the framework from which we will select a sample of employees who will be a part of this investigation.

2.2 UNIT SAMPLING PLAN

The random unit selection procedure corresponds to a stratified two-stage sampling, in which the first stage units are the Social Security contribution accounts, and the second stage units are the employees.

The sample to investigate in the first stage is the same as for the QLCS, therefore the sample design of the survey is similar to that of the QLCS (for further information please consult the [QLCS methodology](#)).

The first stage units are stratified according to the following variables:

- Region (Comunidad autónoma)
- Economic activity according to CNAE-09 at two digit level
- Size of the unit in terms of number of employees

The CC with more than 500 employees are studied exhaustively in the first stage (are selected with probability 1)

For CC with less than 500 employees, a sample size is calculated by stratum applying an optimum allocation.

The list of units selected in the first stage is sent again to the Social Security General Treasury, as mentioned previously, which obtains the list of employees who were affiliated during the reference year. We selected the employees from this list, in which the employees to be selected in each centre depend on the total number of employees in said centre who were affiliated to Social Security at least 2 months including October. The number of employees that meet this characteristic is the total number of employees in each CC.

We have randomly selected a nominal and representative list of employees in the second stage. The number of employees to be selected in each CC depends on the total number of employees in said centre:

| Size group | Number of employees | Employees selected |
|------------|---------------------|----------------------|
| 1 | 1 - 4 | All |
| 2 | 5 - 9 | 4 |
| 3 | 10 -19 | 5 |
| 4 | 20 - 49 | 7 |
| 5 | 50 - 99 | 10 |
| 6 | 100 -199 | 16 |
| 7 | 200 - 499 | 22 |
| 8 | More than 500 | 25 ¹ o 50 |

¹ En algunos centros de cotización muy grandes se seleccionan 50 trabajadores en segunda etapa.

With the objective of obtaining maximum common sample with respect to the sample of the previous year, and thus gain in efficiency with respect to the estimates of the change, the sample of employees is obtained in a random way applying positive coordination in the CC present in both years. For the CC new this year, a simple random sample is obtained.

2.3 INFORMATION REQUEST, COLLECTION METHOD AND FIELD WORK

Together with the issue of the QLCS questionnaires corresponding to the months of October, September and November, we include an annex questionnaire with the sample of workers selected in each CA, identified by their Social Security number. The questionnaire will contain only two questions regarding occupation. Due to the conditions that the workers must verify to be included in the sample (days of affiliation to Social Security, and number of contracts, the sample does not coincide exactly with the quarterly survey.

The unit in charge of performing the field work carried out the collection and first filtering of all of the information required, via post, telephone and fax.

For each worker, the following information from the General Affiliation File is included: Tax Identification Number (NIF), Nationality, Sex, Date of birth, Date of affiliation, Date removed from affiliation, Social Security contract key.

Once the occupation variable has been coded from the descriptions given in the questionnaires, said information is sent to the State Tax Administration Agency and to the Statistics Institute of Navarra and Foral Tax Agencies, to be crossed with the Annual Summary of Withholdings and Advance Payments on Personal Income Taxes (Model 190).

The crossing is carried out in the following manner: for each "declaring NIF" (NIF from the CA), the data is obtained from the statements of said "declaring NIF" regarding the payments corresponding to key A of the "NIF of the recipients" included in their list of workers.

2.4 ESTIMATORS

Separated ratio estimators are used, with the auxiliary variable being the number of workers in each establishment, according to the directory of Social Security Contribution Accounts.

As it is a stratified two-stage sampling, being the first stage a simple random sampling and the second stage systematic random sampling, we have a grossing up factors at each stage. Let h be the crossing of the region (CCAA) r , branch of activity (according to CNAE-09 division) s and size group t . Then, the first and second stage grossing up factors for the j -th employee are following:

$$F_{1j} = \frac{\sum_{i=1}^{N_h} D_i}{\sum_{i=1}^{n_h} D_i} \quad \text{y} \quad F_{2j} = \frac{B_i}{b_i} \quad j \in i$$

where, subscripts 1 and 2 indicate first and second stage; N_h is the number of units in the population in the stratum h to which the j -th employee belongs; n_h is the number of units in the first stage sample in the stratum h to which the j -th employee belongs; D_i is the number of workers in the frame in i -th unit; B_i is the number of workers in the i -th establishment to which the j -th employee belongs in the frame and b_i is the number of workers in the i -th establishment to which the j -th employee belongs according to the sample collected.

- The estimator of total annual gross earnings, for a given domain C , any crossed of the variables (economic activity, occupation, sex, Autonomous Community), is given by the following expression:

$$\hat{X}_C = \sum_{j \in C} F_{1j} F_{2j} X_j$$

where X_j is annual gross earnings of the j -th employee.

- The estimator of the total number of employees for a given domain C is:

$$\hat{Z}_C = \sum_{j \in C} F_{1j} F_{2j}$$

- And the estimator for total annual hours worked for a given domain C is:

$$\hat{H}_C = \sum_{j \in C} F_{1j} F_{2j} h_j$$

where h_j is annual hours worked of the j -th employee.

Estimators for gross annual earnings per employee and per hour come given as follows:

- Gross annual earnings per employee:

$$\hat{GT}_C = \frac{\hat{X}_C}{\hat{Z}_C}$$

- Hourly gross earnings:

$$\hat{GH}_C = \frac{\hat{X}_C}{\hat{H}_C}$$

2.5 SAMPLING ERRORS

Estimates of relative sampling errors or coefficients of variation in % are calculated and published for the main variables (gross annual earnings) and domains (section of CNAE-09 by gender and Autonomous Community by gender).

The relative sampling error, for the gross annual earnings estimator in a given C domain, is given by the following expression:

$$\widehat{CV}(X_c) = \frac{\sqrt{V(\widehat{X}_C)}}{\widehat{X}_C} 100$$

The estimated variance $V(\widehat{X}_C)$ is approximated by the following expression:

$$V(\widehat{X}_C) = \sum_h V(\widehat{X}_{Ch}),$$

where $\widehat{X}_{Ch} = \sum_{j \in C, C \in h} F_{1j} F_{2j} X_j$, and

$$V(\widehat{X}_{Ch}) = \frac{N_h(N_h - n_h)}{n_h} \frac{\sum_{i=1}^{n_h} (\widehat{X}_{Ci} - \widehat{R}_{Ch} D_i)^2}{n_h - 1} + \frac{N_h}{n_h} \sum_{i=1}^{n_h} \frac{B_i(B_i - b_i)}{b_i} \widehat{S}_{Ci}^2$$

Being, $\widehat{X}_{Ci} = \frac{B_i}{b_i} \sum_{j=1}^{b_i} X_j$ with $X_j = 0$ if $j \notin C$

$$\widehat{R}_{Ch} = \frac{\sum_{i=1}^{n_h} \widehat{X}_{Ci}}{\sum_{i=1}^{n_h} D_i}, \quad \widehat{S}_{Ci}^2 = \frac{\sum_{j=1}^{b_i} (X_j - \frac{1}{b_i} \sum_{j=1}^{b_i} X_j)^2}{b_i - 1}.$$

3 Peculiarities of each reference year

3.1 COVERAGE BY SECTORS

Since the start of this survey in 2004 until 2007, the National Classification of Economic Activities CNAE-93 has been used.

In the year 2008 it moved to the CNAE-2009 and the Public Administration was included in the study, in other words, salaries of public employees belonging to the General Social Security Regime were collected.

4 Results

The survey results are published 18 months after the reference year, and are available [at this link](#).

Appendix

Sample sizes and rates of response for the different reference years

The sample sizes and corresponding response rates for each year for each year in which the Annual Wage Structure Survey (ASSS) has been conducted are presented below. The breakdown is made by the variables Section and Autonomous Community. Autonomous Community.

The tables are as follows:

- **Table 1:** Sample sizes by section and activity subsections of the CNAE.
- **Table 2:** Sample sizes by Autonomous Community.
- **Table 3:** Sample collection and response rates by section and activity subsections of the CNAE.
- **Table 4:** Sample collection and response rates by Autonomous Community.

Table 3. Sample collection and response rates by section and activity subsections of the CNAE-09

| | Units | Rate | Units | Rate |
|--|--------|--------|---------|--------|
| All Activities | 27,574 | 99.99 | 241,098 | 99.97 |
| B Mining and quarryng industries | 307 | 100.00 | 1,802 | 100.00 |
| C Manufacturing industry | 6,295 | 100.00 | 53,731 | 99.93 |
| D Electricity, gas, steam and air conditioning supply | 227 | 100.00 | 1,922 | 100.00 |
| | 774 | 100.00 | 6,572 | 100.00 |
| E Water supply; sewerage, waste management and remediation activitie | | | | |
| F Construction | 2,541 | 100.00 | 14,383 | 99.99 |
| | 2,099 | 99.95 | 19,339 | 99.95 |
| G Wholesale and retail trade; repair of motor vehicles and motorcycles | | | | |
| H Transportation and storage | 1,344 | 99.93 | 12,328 | 99.98 |
| I Accommodation and food service activities | 1,001 | 100.00 | 8,898 | 99.99 |
| J Information and communication | 1,592 | 100.00 | 14,211 | 99.98 |
| K Financial and insurance activities | 999 | 99.90 | 9,143 | 99.96 |
| L Real estate activities | 532 | 100.00 | 2,136 | 100.00 |
| M Professional, scientific and technical activities | 2,717 | 100.00 | 18,824 | 100.00 |
| N Administrative and support service activities | 2,188 | 100.00 | 23,505 | 99.99 |
| O Public administration and defence; Compulsory Social Security | 652 | 100.00 | 10,271 | 99.98 |
| P Education | 614 | 100.00 | 9,488 | 100.00 |
| Q Human health and social work activities | 1,434 | 100.00 | 20,781 | 100.00 |
| R Arts, entertainment and recreation | 1,122 | 99.91 | 7,513 | 99.92 |
| S Other service activities | 1,136 | 100.00 | 6,251 | 99.98 |

Table 4. Sample collection and response rates by Autonomous Community

| | Units | Rate | Units | Rate |
|------------------------------|--------|--------|---------|--------|
| NATIONAL TOTAL | 27,574 | 99.99 | 241,098 | 99.97 |
| Andalucía | 2,677 | 100.00 | 23,890 | 99.99 |
| Aragón | 1,269 | 100.00 | 10,432 | 99.89 |
| Asturias (Principado de) | 1,055 | 100.00 | 7,635 | 100.00 |
| Balears (Illes) | 1,135 | 99.91 | 8,432 | 99.98 |
| Canarias | 1,350 | 100.00 | 10,626 | 99.96 |
| Cantabria | 895 | 99.89 | 6,285 | 99.92 |
| Castilla y León | 1,484 | 99.87 | 11,906 | 99.95 |
| Castilla-La Mancha | 1,315 | 100.00 | 10,435 | 99.98 |
| Cataluña | 3,599 | 100.00 | 37,193 | 99.99 |
| Comunitat Valenciana | 2,290 | 100.00 | 20,352 | 100.00 |
| Extremadura | 1,013 | 100.00 | 6,912 | 100.00 |
| Galicia | 1,578 | 100.00 | 12,878 | 99.97 |
| Madrid (Comunidad de) | 3,326 | 100.00 | 38,667 | 99.98 |
| Murcia (Región de) | 1,201 | 100.00 | 8,825 | 99.84 |
| Navarra (Comunidad Foral de) | 1,013 | 100.00 | 7,843 | 99.96 |
| País Vasco | 1,568 | 100.00 | 13,817 | 99.94 |
| Rioja (La) | 806 | 100.00 | 4,970 | 99.98 |