FINAL

QUALITY REPORT FOR STATISTICAL SURVEYS
- Guidelines for preparation -

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CONTENT

INTRODUCTION

The overall objective of the ESS Handbook for Quality Reports is to provide recommendations for the preparation of comprehensive reports on quality for the full range of statistical processes and statistical products.

ESS standard for quality report relates to the following types of statistical processes:

1. Sample based surveys

Sample based surveys are surveys mostly based on the probabilistic sampling procedure, which includes the collection of data directly from respondents. For this type of survey theory of accuracy that allows reporting by precisely defined components of accuracy is grounded (sampling errors and errors that are not caused by sampling).

2. Census

Census is a statistical process i.e. survey where all frame units are included (census units).

3. Statistical processess using administrative sources

The process of using the data collected for purposes other than direct production of statistics. An example is the statistical tabulation produced out of administrative databases maintained by the Central Election Commission.

4. Statistical processess using multiple data sources

In many statistical areas, production of statistics is such that it requires different approaches at different stages of the statistical process. For example, surveys in the field of business statistics, in which the basic economic data on business is aggregated (production, finance, etc.), different units, questionnaires, sampling schemes and/or other survey procedures can be used for different segments of the survey.

5. Prices and other economic index processes

Prices and other economic index processes involving complex surveys, often with non-probabilistic design, such as economic indices as specific types of statistical processes: (i) there is a specialized economic theory that defines the target concepts of economic indices; (ii) structure of error indicies includes specialized concepts such as quality adjustments, replacements and re-sampling; (iii) sampling surveys are used in several dimensions (weights, outputs, outlets).

6. Statistical compilation

This statistical process combines a number of different primary sources, including the ones mentioned above, in order to produce the aggregate of sources and is of particular conceptual significance. These are mainly economic aggregates, such as national accounts and balance of payments.

The structure of the quality report comprises the following sections:

(1) Introduction to statistical process and statistical output;

(2) Relevance, assessment of user needs and perceptions;

(3) Accuracy and reliability;

(4) Timeliness and punctuality;

(5) Coherence and comparability;

(6) Accessibility and Clarity, Dissemination Format;

(7) Costs and burden on respondents;

(8) Confidentiality and

(9) Statistical processing.

The list of indicators is made on the basis of the following documents: ESS Handbook for Quality Reports, 2014 and the ESS Quidelines for the Implementation of the ESS Quality and Performance Indicators, 2014 as well as the Tehnical Manual of the **S**ingle **I**ntegrated **M**etadata **S**tructure – SIMS, 2014).

In this document, we provide guidance for the preparation of the report on quality in a standardized format. Thus, for each component once again brief definitions of sub-components and the short guidelines are provided. In cases where the sub-component is tied to calculation of specific indicators, instructions for calculation are provided. Examples for calculating all the indicators of quality and performance are provided.

The main objectives of the quality report are provision to various statistics producers' analytical insight into the entire statistical process and to the users of statistical outputs additional information for the correct use and interpretation of the outputs.

The main purpose of the quality indicators is to provide insight into quality of statistical outputs, the quality of the process through which these outputs were obtained, and to some extent an insight into the overall quality of the institutional environment in which the survey is conducted to statistical producer and users of statistical data.

Although these guidelines are focused on producers of statistics, a quality report prepeared with the help of these guidelines also includes all information necessary for the preparation of reports oriented to the user.

The indicators, by definition, can be related to three different subjects in the context of the survey conduction:

- The survey,
- The variable and
- The statistics (statistical outputs).

In the first case, while conducting a specific survey there is no doubt about the value that indicator reffers to. In the other two options this is not the case, because usually in one survey several variables are measured and more statistics calculated (estimated).

Indicators related to variables and statistics in the quality reports are presented only for the key variables i.e. statistics.

Although the indicators in the quality reports are reported at annual (or multi-year) level, indicators for surveys whose periodicity is shorter than one year are calculated for each time when survey is conducted (eg. monthly and quarterly surveys). In the quality reports of these surveys all values in the observed year are included and the annual averages are given.

Where applicable, in addition to the basic value of the indicator, which relates to the whole population observed, values of indicators for some important domains are calculated. For example in some surveys in addition to the basic values of the non-response rate for the entire sample, we will also present the rate of non-response by major domains on which basis the output tables are made.

In some cases, the value of indicator has to be graphically shown as well. That is the case with multi-annual surveys, where (time) values of indicator are expressed in line diagrams used for presentation of the trends in value of indicators at different times.

The quality report is prepeared by statisticians responsible for specific statistical survey in cooperation with colleagues in charge for the sample, analysis and IT.

The quality report should have a standard structure with precisely articulated content. The structure of the report is prepared with the intention of "coverage" of as a broader range of different surveys and the responsibility of the authors of the report is - to judge which parts of the reports given are relevant to the survey.

In case that an item of standard report for specific survey is not relevant, it should be stated, without avoiding the whole item.

The report should indicate the website address, which leads users to detailed information about specific topic. First of all this refers to the chapters on accessibility and user-friendliness (online publication).

Frequency of quality reports according to the guidelines in this document varies depending on the needs and update of the reports is recommended after major changes of data structures or core business processes. Annual quality reports are standard, so that persons in charge of prepearing of the report would not be overburdened, and if the major changes do not happen, materials from previous year could simply be copied to the next, and only the new materials such as data on indicators of quality and performance would be updated.

1. STATISTICAL PROCESS AND STATISTICAL OUTPUTS

This introductory section brings a brief description of the statistical processes and outputs, first of all - why and how a statistical survey is conducted.

It is necessary to provide a brief overview of the following information:

1.1 The purpose of the survey

A brief description of the purpose, objectives and the subject of the statistical survey is provided.

1.2 Legal basis and responsibility of statistical institutions

This overview provides explicitly existing legal basis (laws, programs, plans, regulations, etc.) for conduction of the statistical survey. Then, it provides explicitly the responsibility of statistical institutions in conducting the survey.

1.3 Classifications used

The list of classifications and nomenclatures that were used in survey is provided.

1.4 Reporting unit

Reporting unit is the unit that provides data by the content and terms defined in plan of conducting the statistical surveys for statistical purposes only. It may be legal entity (company) and/or its components, individuals, enterprenauers, freelancers, households, government bodies and bodies of local self-government units as well as all other providers.

1.5 Statistical observation unit

The basic unit to which data relate, ultimately collected or produced in any other way (person, legal entity and its part, enterprenauer, freelancer, household, government body, local and district (regional) government units and other main units of observation). The statistical unit is the subject of statistical surveys and the holder of statistical features.

1.6 Coverage

The following information is provided:

- Which method was used in the selection of observation unit (random sample, Census - full coverage);

- Number of observation units, and in the case of the sample, the number of units within sample, and data on potential stratification.

1.7 Statistical concepts and definitions

Definitions of key variables are stated.

2 RELEVANCE

Relevance is the degree to which statistical outputs meet the current and potential users needs. It depends on whether all statistics that are needed are produced and on the extent to which concepts used (definitions, variables, classifications, etc.) reflects user needs.

2.1 Users of statistical survey data

The initial phase of the design and management of statistical processes is defining users needs. Assessment of user needs generally includes classification of users, indication of the purpose for the outputs to be obtained, the priorities in meeting their needs, the ways in which this information were obtained from the user, eg. through advisory committees, regular meetings of user groups, feedback/complaints from users, survey.

2.1.1 Key users of statistical survey data

Key users by main segmentation groups are public sector, enterprises, justice, science, research and education, the public, the media, foreign users. Key users are determined by information on the publications ordered, membership/subscription, or other types of records.

2.1.2 Assessment of users needs

If there are no ESS regulations and recommendations for specific statistical survey, main users of the statistical survey for which report is being prepeared should be indicated (if known) and the purposes for which they will use data should be described, as well as if there are documented/known requests for data that could not have been produced by survey.

2.1.3 Assessment of the perception and user satisfaction

User satisfaction is the first priority. The most effective method of assessment is conduction of survey on user satisfaction in accordance with best practices using a representative sample of users from apropriate frame. Measuring the perception and users satisfaction is determined by the values on the scale of users satisfaction. Index of user satisfaction can measure the degree of satisfaction of users about services and products offered. Other, less burdened by costs of measurement, assessments include analysis of publications sale, users comments, received requests and complaints, website visits, etc.

2.2 Completeness of data

2.2.1. Quality and performance indicators - Data completeness rate (R1)

Definition of indicator

This rate is calculated as the ratio between the number of statistics (data) that are published in the survey and the number of data prescribed (required) by the relevant regulations and legislation.

Note: This indicator is applicable only if there is ESS regulation or guidance on the required outputs (statistics).

The value of the indicator reffers to the intire survey.

The calculation procedure

$$R1_{PDR} = \frac{\#A_D^{rqd}}{\#D^{rqd}}$$

Where:

$\#D^{rqd}$ … *Number of elements in the set of reqired statistics* (data) by EU regulations

$\#A_D^{rqd}$ … *Number of elements in subset of statistics available* (data)

Explanations and calculation examples

For example, if certain regulative recomends that **5** statistics should be published at BiH level and for level of statistical regions (NUTS 2), then the number of regulated (requested) statistics is ***5 + (5x3) = 20*.**

Assumed that for certain survey there was **4** statistics published at BiH level, and **4** statistics published for **2** statistical regions in BiH, then ***4 + (4x2) = 12***.

The value of the indicator:

$$R1_U = \frac{12}{20} = 0{,}60 = 60\%$$

3 THE ACCURACY AND CLARITY

The accuracy and clarity are defined as degree of congruence/propinquity between estimated/ calculated values (resulted at the end of statistical processing) and valid but unknown population values.

Most often it is expressed in absolute form (standard error), the relative form (coefficient of variation) or in terms of reliability as a confidence interval. The size of sampling error depends on the estimates and the sample design used.

The value of indicators reffers to key statistics and key variables.

Sampling errors should be provided in the table. There should be noted for which statistics and/or variables the sampling errors are presented. In the monthly survey, the values of errors for each month (or quarter) in particular are presented, as well as the average annual value of the sampling error. In the case that there are more different statistics or levels of the publishing, errors for the main groups are presented only and other results are provided in the appendix.

In surveys where the unit of observation is household, often the errors in the random sample are presented not only in the form of variation coefficient, but also through confidence interval.

In *business surveys,* particularly where for example, turnover can be negative (production, incomes, exports, etc.) the best way to express sampling error is the coefficient of variation.

In monthly surveys it is recommend that the "trend" of sampling errors should be presented also in graphical form.

3.1 Sampling errors

Sampling errors occur in surveys that are random sample based, and are the consequence of observation of the part of population, observation of a sample. In this case, for the key statistics it is needed to evaluate the sampling error. Sampling error can be presented in several ways.

3.1.1 Quality and performance indicators - Sampling error (A1)

The calculation procedure is determined by sample design and estimator used, so it is not possible to set a general formula. Here is the basic formula only for case of assessment of the average value of the population when simple random sample without repetition is the case.

Supposengly that from a population of ***N*** elements we have chosen a simple random sample of size ***n*** and we want to, on the basis of the sample, estimate the average variable ***Y***.

Explanations and calculation examples

Evaluation of sampling error of statistical estimates is complex, both from the theoretical and practical aspects. Simple formulas are valid only in simple random sampling, which in practice is rarely used. When using a complex sample design or when using non-linear estimator theoretical results are much more demanding and sometimes ineffable in exact analytical form.

If after conducting statistical surveys (in which based on a simple random sampling without repeatition we estimate the value of the mean of variable ***Y***) we have data as shown in the following table:

Size of population (*N*)	Sample size (*n*)	Estimated value of the mean of population ($\hat{Y}$)	Estimation of variance in population (s^2)
10.000	500	800	50.000

The calculation is:

$$\hat{Var}\left(\hat{Y}\right) = \left(1 - \frac{n}{N}\right) \cdot \frac{s^2}{n}$$

$$\hat{Var}\left(\hat{Y}\right) = \left(1 - \frac{500}{10000}\right) \cdot \frac{50000}{500} = 0{,}95 \cdot 100 = 95$$

The standard error of estimate equals to the square root of sampling error, i.e.:

$$se\left(\hat{Y}\right) = \sqrt{Var(\hat{Y})}$$

$$se\left(\hat{Y}\right) = \sqrt{V95} = \mathbf{9,75}$$

The coefficient of variation is defined as the ratio between the standard deviation and the mean and is usually expressed as a percentage:

$$CV(\hat{Y}) = \frac{se(\hat{Y})}{\hat{Y}}$$

$$CV(\hat{Y}) = \frac{9,75}{800} = \mathbf{1,22\%}$$

Lower and upper limits of the *confidence interval* at the 95% level of confidence are calculated as follows:

$P_{DG} = \hat{Y} - 1,96 \cdot se(\hat{Y})$; $I_{DG} = 800 - 1,96 \cdot 9,75 = 780,9$

$P_{GG} = \hat{Y} + 1,96 \cdot se(\hat{Y})$; $I_{GG} = 800 + 1,96 \cdot 9,75 = 819,1$

Confidence interval: (**780,9 ; 819,1**)

From results obtained it can be concluded that average deviation of variable observed from it's average value is 9,75 or in relative amount 1,22%.

At the same time, due to improvement of precision of estimations, confidence interval of mentioned variable is calculated so with 95% of reliability it is estimated that value of variable is in interval between 780,9 and 819,1.

3.1.2 Activities to reduce the sampling errors

Comment on sampling error should be stated and first of all there should be identified the reasons and the causes of the sampling errors that exceed predetermined and standardized limits of acceptable sampling error.

In the case that the intervals of confidentiality were not published, instructions are given on how to calculate intervalsm from already published sampling errors.

In the case that the estimated sampling error is too high by the criteria used, it is necessary to describe the actions to reduce errors in the future.

3.2 Non-sampling errors

3.2.1 Non-sampling errors - Coverage errors

Coverage error (error of the frame) is resulting from the difference between the population covered by frame and the target population.

There are three types of coverage errors: over-coverage, under-coverage and multiple listing (duplication).

3.2.1.1 Quality and performance indicators – Over- coverage rate (A2)

Definition of indicator

Over-coverage is the share of (irrelevant) units available in the frame of the non-target population. Irrelevant units are units that were (usually due to errors or outdated information) included in the frame or in the survey itself, although they are not the part of the target population.

If survey is conducted on a sample, the rate of over-coverage is estimated based on data collected in the sample and in this case weighted and unweighted rate of over-coverage can be calculated. If the survey is based on a sample and each unit in the sample represents a certain number of units in the target population, it is reasonable to count weighted rate of over-coverage.

In the case that all units in the sample have equal weight, the weight in the process of calculation is disregarded and this is what we call calculation of the unweighted rates of over-coverage.

In the case that we conduct periodic survey (for example, monthly, quarterly), it is necessary to specify the values of the indicators for each period (for example, month, quarter) as well as the average annual value of the indicator. The values of indicators should be provided in the table. For periodic surveys graphic presentation of value of the indicators trend over time (for example, a line graph) can be shown. There should also be explanations about the extremes of indicators.

The value of indicators is related to the units in the sample.

Calculation

$$OCr_w = \frac{\sum_o w_j + (1-\alpha)\sum_Q w_j}{\sum_o w_j + \sum_E w_j + \sum_Q w_j}$$

Where:

O... Number of units out of coverage (do not belong to target population)

E... Number of units within the coverage (do belong to target population)

Q... Number of units of unknown value

w_j...sample weight of unit

α... the estimated share of units with unknown relevance that are actually relevant (in practice it is generally assumed that they amount to 1: the numerator in this case applies only to units out of coverage)

Explanations and calculation examples

Example 1: For the sample for the Household Budget Survey was elected 9 400 address (dwellings), out of which 815 were empty. At 205 addresses dwelling unit was not available or was not possible to find. The example shows the process of calculating the unweighted rates of over-coverage (i.e. rates for addresses) under the assumption that all units have the same weight.

$$OCr_w = \frac{815+205}{9400} = 0{,}1085 = 10{,}85\%$$

Indicator is calculated by creating the ratio of units which are not relevant (i.e. empty dwellings), including units that were not available, with all the units selected in the sample.

It is concluded that 10.85% of the units out of the sampling frame do not belong to the target population.

Example 2 shows the calculation of the weighted rate of over-coverage under the assumption that all units have their weight, according to the relevance of the unit.

Relevance status of the unit:

1 – Relevant unit belonging to the target population
2 - Unit that does not belong to the target population (out of coverage) - irrelevant units
3 – Units with unknown values (unavailable, and the units that can not be found).

Markation of unit relevance	Unit weight
1	6,3
3	19,0
2	3,7
1	112,3
2	115,5
3	31,2
1	8,8

$$OCr_w = \frac{(3{,}7+115{,}5)+(19{,}0+31{,}2)}{296{,}8} = \frac{169{,}4}{296{,}8} = 0{,}571\% = 57{,}1\%$$

The numerator is the sum of the weights of all units that for specific reasons were not relevant or contact was not established. Those are the weights of units that in the example are marked with 2 and 3. The denominator contains the sums of the weights of all the units in the sample.

Concluson is that 57.1% of all units in the sample do not belong to the target population.

3.2.1.2 Quality and performance indicators - Joint units share (A3)

Definition of indicator

The share of units covered from two different sources (statistical survey and administrative source) in relation to the total number of units in the survey.

The indicator is used when administrative data are combined with data from the survey, i.e. when unit-level data are obtained from both sources (i.e, some variables are from survey and other variables are from administrative sources), or when the data for the part of units are from the survey and for the other part of units from one or more administrative sources.

The indicator provides us with information on completeness/coverage of sources – i.e. the extent to which units (variables) exist in both sources (statistical survey and administrative data source).

Calculation

$$Ad = \frac{\text{Number of joint units from statistical survey and administrative sources}}{\text{Number of single units in statistical survey}}$$

Joint/Common units refer to those units that are included in both the sources of data coming from survey and administrative source.

Indicator "single unit in the statistical survey" in the denominator means that if the unit exists in multiple sources, then it is counted only once.

3.2.1.3 Errors of under-coverage

The problem of under-coverage compared to over-coverage is difficulty of measurement, and it occurs in cases where the unit was not included in the frame (and therefore not in the sample), even though, by definition, it belongs there. There is no direct information on these units. Therefore, no defining of a specific indicator should be made, except provision of any (indirect) information, which at least suggests the extent of error.

3.2.1.4 Measures to reduce coverage errors

It is necessary to describe all procedures that are performed in order to reduce coverage error. It is necessary to describe current and planned activities as well. Problems occurred due to incorrect coverage can be solved as follows: (1) in the observation year record the units information obtained in the field and assign them the status of a reporting unit, then in the next year admit this new status; (2) before sending the questionnaires in the field, prepare statistical list (address book) of, for example, higher education institutions and compare it with the list upheld by the Ministry of Education. If there is a discrepancy between these address books, statistical address book should be updated.

3.2.2 Non-sampling errors - Errors of measurement

Errors of measurement are errors that occur during data collection and lead to the difference between the values of the variables recordded and the actual values.

Causes for these differences are as follows:

(1) The survey instruments: a questionairre used to collect data may cause the appereance of errors in values;

(2) Responder/reporting unit: respondents may knowingly or unknowingly provide false information;

(3) The interviewer: interviewer can affect the answers to be provided by the respondent/reporting unit.

3.2.2.1 The reasons for the occurrence of errors of measurement

It is necessary to state the main reasons that cause the occurrence of errors of measurement. If there is feedback from the reporting units, it is necessary to, first of all, state the main reasons (in their opinion) for errors of measurement. In some surveys (especially when carried out in households), there should be indicated notes of interviewer (if any).

The most common reasons for the occurrence of errors of measurement are:

- a person who fills in the questionnaire is not qualified enough;
- a person who fills in the questionnaire, did not read carefully the instructions;
- insufficient care of the person who enters the data in the table;
- lack of records in reporting units;
- too extensive or isufficient methodological instructions for completing the questionnaires
- questionnaire is imprecise and instruction is incomplete.

3.2.2.2 Measures to reduce the number of errors of measurement

The process of data editing identifies inconsistencies. They are usually the result of errors in the original data, but they can also be the result of procedural errors in coding and data entry. It is necessary to briefly describe the procedure in case of detection of errors. It is necessary to indicate first, whether the unit is re-interviewed, data is corrected manually or the automatic editing process was used. It is necessary to list all the activities that are undertaken in order to reduce errors of measurement. The most effective way to reduce the number of errors in measurement are accurate and understandable notes on methodology which should not be too extensive and direct contact with the reporting units.

3.2.3 Non-sampling errors – Non-response errors

Non-response errors are difference between the statistics calculated from the data collected and those which would be calculated if there were no missing values is the non-response error.

There are two types of non-response:

(1) Non-response of reporting unit, which occurs when there was no collected data on reporting unit designed for data collection, and

(2) Non-response to certain variables, which occurs when the data are collected only for some - but not for all variables that are required by specific survey.

3.2.3.1 Quality and performance indicators - Units non-response rate (A4)

Definition of indicator

The ratio between the number of observation units for which we collected data (at least for some variables) and the total number of units (designed – specified for data collection). Observation units not contacted and ones with unknown status (whether they are relevant or irrelevant) are also considered as non-response.

Depending on weather the calculation of indicators for sample or the whole population is done, weighted and unweighted rate of non-response units can be calculated.

In case that we conduct periodic survey (eg, monthly, quarterly), it is necessary to specify the value of the indicator for each period (eg, month, quarter) as well as the average annual value of the indicator.

The value of indicator is related to the entire survey. The values of indicators should be given in the table.

The calculation procedure

Upon completion of data, collection units of the sample can be divided into four groups:

Irrelevant units (***NJ***). Units that would be otherwise selected in the sample, but the data collection phase showed that they are not any more part of the target population that we observe. The most common reason that these units are still in the sample is inefficiency and incomplete sources that are used for determining the sampling frame.

Non-response (***NR***). Units that are relevant for survey, but did not provide the data. In this group the most common units are the one that refuse to participate in the survey.

Units with an unknown validity (***Q***). Units for which we could not get the data and we do not know, whether they are relevant for survey or not. This applies mainly to the units with which it was not possible to establish contact.

Answers (**R**). The units for which we managed to get all the data. Here it is necessary to determine (for each survey), which is the minimum amount of required information that must be provided by units so we could include it in the answers.

The unweighted rate

In relation to the defined categories unweighted response rate of units are calculated by the formula:

$$NR_r = 1 - \frac{R}{R+NR+\alpha \cdot Q}$$

Where:

R… Number of relevant units that responded

NR… Number of relevant units that have not responded

Q… Number of selected units of unknown relevance

α… (Estimated) share of units of unknown relevance but actually relevant.

If there is no justified assumptions to estimate of the parameter α, we consider α = 1, which means that all units with unknown relevance are considered as non-response.

The weighted rate

Weighted rate is calculated according to the formula:

$$NRr_w = 1 - \frac{\sum_R w_j}{\sum_R w_j + \sum_{NR} w_j + \alpha \cdot \sum_Q w_j}$$

Where:

R… Number of relevant units that responded

NR… Number of relevant units that have not responded

Q… Number of selected units of unknown relevance

w_j… Sample weights of the unit

α… The estimated proportion of units of unknown relevance that are actually relevant (if there is no sound assumption to estimate the parameters, they are generally assumed to amount to 1)

This approach should be used in surveys with persons and households.

In business and agricultural surveys, part of the units is more important then others due to their impact on the final results, and in these case as auxiliary variable must be taken the variable that determines the size of the unit (eg, the number of employees in the enterprise).

Explanations and calculation examples

Here is a hypothetical example of survey where we after the final data collection got the following data:

	Number of observation units	Summation of sampling weighting	The sum of the value of the auxiliary variable of observation units	The weighted sum of the auxiliary variables
Reponse (*R)*	700	5 500	15 600	62 500
Non-response (*NR)*	250	1 520	2 900	6 200
Non-relevant (NR)	150	1 050	2 320	5 850
Relevance unknown (*Q)*	80	550	1 400	2 850
Sample	1 030	7 570	19 900	71 550

If we assumed that the value of the share of valid units among units of unknown relevance equals α = 0.90 - the value of the indicator is:

Unweighted rate of non-response units

- $NRr = 1 - \frac{700}{700+250+0{,}90 \cdot 80}$ = 1 - 0,68 = 0,32 = 32%

Weighted rate of non-response units

- *With weights of sample design*

$$NRr_w = 1 - \frac{5500}{5500+1520+0{,}90 \cdot 550} = 1 - 0{,}73 = 0{,}27 = 27\%$$

- *Auxiliar variable only*

$$NRr_w = 1 - \frac{15600}{15600+2900+0{,}90 \cdot 1400} = 1 - 0{,}79 = 0{,}21 = 21\%$$

- *With correction of weight for auxiliar variable*

$$NRr_w = 1 - \frac{62500}{62500+6200+0{,}90 \cdot 2850} = 1 - 0{,}88 = 0{,}12 = 12\%$$

3.2.3.2 Quality and performance indicators – Item non-response rate (A5)

Definition of indicator:

The ratio between the numbers of observation units for which we did not acquire data for a specified variable and the number of all the units that were supposed to provide data on the variable observed. This ratio is calculated only within the observation units, which are relevant for the observed variable.

The value of the indicator applies only to the key variable.

The calculation procedure

Same as with the rate of non-response, unweighted rate, weighted rate with sampling weights and weighted rate with weights corrected with values of auxiliary variables can be calculated.

$$NR_Y r_w = 1 - \frac{\sum_{R_Y} w_j}{\sum_{R_Y} w_j + \sum_{NR} w_j}$$

where:

R_Y... number of relevant units that responded to the variable Y

NR_Y ... number of relevant units that did not respond to a variable Y though the answer to the same was required

w_j... weight of unit

The three main ways of calculating the rates are:
• Unweighted rate: $w_j = 1$
• The rate weighted by weights of sample design: $w_j = d_j$
• The rate weighted by significance of units: $w_j = d_j x_j$, where x_j is the *value* of auxiliary variable X

Explanations and calculation examples

For the selected variable relevant units are those units for which we should obtain data. It is not necessary that all relevant units and are also relevant to the selected variable.

The difference between the number of relevant units and the number of units, also relevant for the selected variable is most associated with the so-called “go to” instruction in the questionnaire. Accordingly, the units in which “go to“occure are not included in the calculation of the rate of non-response for a specified variable which was skipped.

Example:

If after question "Does your household have access to the Internet?" follows the question, "Does the household have access to the Internet via a PC", answering to the second question is only for units, which answered to the first question with "Yes".

The table below shows the default values for the selected key variable:

	Number of observation units	Sum of sampling weighting	The sum of the value of the auxiliary variable of observation units	The weighted sum of the auxiliary variables
Unit response	700	5 500	15 600	70 000
Relevant units that are expected	450	3 800	11 500	55 000

to give an answer to key variable				
Answers of relevant units to a key variable	370	3 000	10 500	52 000

The unweighted non-response rate to a key variable

- $NR_Yr = 1 - \frac{370}{450}$ = 0,18 = 18%

The weighted non-response rate to a key variable

- With weights of sample design

$$NR_Yr_w = 1 - \frac{3000}{3800} = 0,211 = 21,1\%$$

- Auxiliar variable only

$$NR_Yr_w = 1 - \frac{10500}{11500} = 0,087 = 8,7\%$$

- *With correction of weight for auxiliar variable*

$$NR_Yr_w = 1 - \frac{52000}{55000} = 0,055 = 5,5\%$$

In the case that we conduct the periodic survey (eg, monthly, quarterly), it is necessary to specify the value of the indicator for each period (eg, month, quarter) as well as the average annual value of the indicator. The values of indicators should be provided in the table. A graphical presentation (eg. line diagram) of movement of indicator values in time can also be provided.

3.2.3.3 Procedures in the case of non-response

It is necessary to describe all procedures (eg. weighting, imputation), which are used for non-response, as for the case of non-response of the units observed as well as for case of non-response of variables. If weighting procedure is used, it is necessary to specify a formula for calculating the weights.

For example, if data on certain variables are missing, a telephone connection with reporting units is to be established and, if necessary, missing values to be added. Exceptionally, if contact is not established, the variable value can be estimated.

3.2.3.4 Methods for reducing the rate of non-response

It is necessary to describe all procedures that are completed in order to reduce the rate of non-response of the units observed and variables. For example, in instructions on how to calculate the equivalent of full-time work, it is necessary to add some examples for solving the most common combination. In addition, it is necessary to send a note to reporting units, explaining

possibilities of cooperation via phone or e-mail if some difficulties and ambiguities are experienced while completing the questionairres.

3.2.4 Imputation

Imputation is an answer to the deficiencies in the data obtained. In statistical surveys based on a sample or in Census, the reason for imputation can be non-response (usually non-response of variable), while in the treatment of price index, the reason for imputation could be missing prices.

3.2.4.1 Quality and performance indicators – Imputation rate (A7)

Definition of indicator:

The indicator is calculated for the key variables and defined as *the ratio between the number of units, for which we have imputed data for key variables observed (due to incomplete or inadequate values) and the number of units for which we have any kind of data.*

The rate of imputed data is an indicator that is calculated in cases where a part of the values of key variables is estimated (imputed) with one of the more common method of imputation. The data can be imputed due to missing values or inadequate values obtained during the data editing.

This indicator is influenced by non-response variables and by the process of editing, and measures the relative amount of imputed values and the relative impact on the final assessment in the imputation procedures.

Also, weighted and unweighted values of the indicator can be calculated.

The value of indicator is related to the key variable. The values of indicators should be provided in the table.

In the case that we conduct periodic survey (eg, monthly, quarterly), it is necessary to specify the value of the indicator for each period (eg, month, quarter) as well as the average annual value of the indicator. In periodic surveys graphic presentations of the movement of the indicators over time could be provided as well (for example, a line graph).

The calculation procedure

An unweighted value of the indicator is calculated as follows:

$$A9 = \frac{\sum Iy}{\sum Iy + \sum Ky}$$

where:

I_y ... the number of units for which the variable *Y* is imputed,

K_y... the number of units for which values of the variable Y remained unchanged.

If $\boldsymbol{w_j}$ is final weight, weighted value is calculated as follows:

$$A9_w = \frac{\sum I_Y w_j y_j}{\sum I_Y w_j y_j + \sum K y w_j y_j}$$

Explanations and calculation examples

When calculating the rate of imputed data we need to consider only those values that have been imputed with the relevant statistical (imputation) method.

The units, which were in the process of data editing and were corrected with re-checking with reporting units, we do not consider as units with imputed data.

The table contains data for example:

	Number of observation units	The weighted sum of variables *Y*
Data for variable *Y*	500	12500
Imputed data	150	1750

Unweighted value of the indicator $A9 = \frac{150}{500} = 0{,}30$

Weighted value of the indicator $A9_w = \frac{1750}{12500} = 0{,}14$

3.2.5 Revisions

The revision can be planned and unplanned. Unplanned revisions are caused mainly by detection of errors in the published results. ESS Code of Practice requires that the planned revisions follow standard, well-established and transparent procedures. This means that the pre-announced revisions are desirable and that the reasons for the undertaking and the nature of the revision it self (new source of data, new methods, etc ...) should be stated.

3.2.5.1 Quality and performance indicators - Average size of data revisions (A6)

Definition of indicator:

The revision is defined as the difference between the later and the earlier assessments of key variables. The average size of data revision is an average of revisions of the key variables during the specific period.

	Observation period				
Release	1	...	*t*	...	*n*
1th release	X_{11}	...	X_{1t}	...	X_{1n}
...	...	...	...	...	...

k-th release	X_{k1}	...	X_{kt}	...	X_{kn}
...	...	...	...	...	...
K-th and final release	X_{K1}	...	X_{Kt}	...	X_{Kn}

The calculation procedure

Due to the two-dimensional situation that is described in the definition, there is a number of strategies to calculate the indicator. It is suggested to take the average of certain release in n observed period, or MAR (average of absolute revision).

MAR (average absolute revision):

$$MAR = \frac{1}{n} \sum_{t=1}^{n} \left| X_{Lt} - X_{Pt} \right|$$

where:

X_{Lt} - „later“ publishing/release,

X_{Pt} - „previous/early“ publishing/release,

n - number of revisions

Average absolute revision is mainly applied to the index, proportion and other relative data.

AR (absolute revision):

The revision of data can be counted as difference of the first and last release.

$$AR = \left| X_{Lt} - X_{Pt} \right|$$

where:

X_{Lt} - „later“ release,

X_{Pt} - „previous/early“ release.

The number of revisions (n) is calculated as the number of differences in releasing by time series. In general, it is the number of releases reduced by 1, ie, if we have four releases n = 4-1 = 3

Average relative revision (RMAR): $$RMAR = \frac{1}{n} \sum_{t=1}^{n} \left| \frac{X_{Lt} - X_{Pt}}{X_{Pt}} \right|$$

The average relative revision is applied to the data in absolute terms (eg, number of employees).

Explanations and calculation examples

The data are published and related to a specific reference period t, over time data can be changed. Numbers of observed periods for which data are published are marked with **n**, and the number of releases over time with **K**. Revision of data occurs between individual releases in certain period, and this can be defined as the difference between the earlier and later estimates.

Example 1: Survey in which the monthly index in the obseved period is reviewed six months consecutively is carried out and revision of data is calculated. Since this is the case with indices, average absolute revision (MAR) is calculated.

If we have the following values of the monthly index of the total number of employees (from the first to the sixth release):

	1st release	2nd release	3rd release	4th release	5th release	6th release
The value of Index	98,20	98,40	98,20	98,30	98,10	98,00
Difference	-	0,20	0,20	0,10	0,20	0,10

$$MAR = \frac{0,20+0,20+0,10+0,20+0,10}{5} = \frac{0,80}{5} = 0,16$$

The conclusion is that the monthly index of total number of employment in average has changed for 0.16 in these six releases.

Example 2: Survey in which total number of employed persons in observed period per month is under revision in twelve months consecutively is conducted. As indicator is in apsolute value, average relative revision is calculated (RMAR). Indicator is calculated for each month and then for whole year (as average of all relative revisions averages by months).

Month	First results	Final results	Average relative revision (%)
I	695 250	696 870	0,23
II	696 200	697 480	0,18
III	697 100	699 200	0,30
IV	696 350	697 800	0,21
V	698 210	698 210	0,00
VI	698 480	699 400	0,13
VII	697 100	699 100	0,29
VIII	701 200	702 850	0,24
IX	700 150	701 800	0,24
X	701 200	702 750	0,22
XI	701 330	702 990	0,24
XII	702 350	702 950	0,09
2014	-	-	**0,20**

RMAR = (0,23+0,18+0,30+0,21+0,00+0,13+0,29+0,24+0,24+0,22+0,24+0,09)/12 = 0,20

The conclusion is that the total number of employed persons in these twelve releases at anual average has changed for 0.20%.

4 TIMELINESS AND PUNCTUALITY OF PUBLISHING

Timeliness refers to the time between the last day of the reference period to which the data refer and the date of release.

The punctuality is the time lag between the actual date of release and announced date indicated in the official calendar of the publication.

4.1 Timeliness

Some statistics are published in several versions (eg, preliminary, revised and final). In this case, each edition has its own timeliness profile.

It is necessary to explain and state the reasons for the possible delays in the publishing, as well as the efforts that have been taken to improve the situation.

4.1.1 Quality and performance indicators – Time lag of first results (TP1)

Definition of indicator

Time lag of first results is a time gap between the end of the period for which the data are calculated and the exact date of the first publication of the results.

Data on the timeliness of first publication of the results should be shown in the table.

The calculation procedure

If date that marks the last day (date) of statistical data observation period is marked with d_{refp}, and date of publishing of the first results with d_{frst}, value of indicator is:

$T_1 = d_{frst} - d_{refp}$

Explanations and calculation examples

The value of indicators in monthly, quarterly and semi-annual surveys is reported in the total number of days, while in annual and multi-annual surveys unit is reported in number of months. In any case, at the presentation of indicator values of unit used for time should be clearly stated.

Example 1: If the results of monthly survey that refer to January 2014 were first published on 17.03.2014, the value of indicator equals: T_1 = (17.3.2014) − (31.1.2014) = T+45.

Example 2: If the results of HBS (Household Budget Survey) refer to 2014 were first published on 20.11.2015, the value of indicator is: T_1 = (20.11.2015) − (31.12.2014) = T+11.

In quality report should be stated: observation period; date of publishing of the first results; time gap in format *T+x*, where *T* stands for the end of observation period, and *x* for number of days (or months).

4.1.2 Quality and performance indicators – Time lag of final results (TP2)

Desription of indicator

Time lag of final statistical results is the time between the end of the observation period to which the published results refer and the date of release of the final results.

Time lag of final results should be presented in table.

The calculation procedure

If date that marks last day (date) of statistical data obseration period we mark with d_{refp}, and date of release of final results with d_{finl}, the value of indicator is:

$$T_2 = d_{frst} - d_{refp}$$

Explanations and calculation examples

The value of indicators in monthly, quarterly and multi-annual surveys is reported in the total number of days, while in annual and multi-annual surveys unit is reported in number of months. In any case, time unit should be clearly stated.

Example 1: If final results of monthly survey that refer to January 2014 were published on 25.03.2015, the value of indicator equals: T_2 = (25.03.2015) − (31.1.2014) = T+53.

Example 2: If final results of HBS (Household Budget Survey) that refer to 2014 were published on 15.02.2016, the value of indicators equals: T_1 = (15.02.2016) − (31.12.2014) = T+13.

In quality report should be stated: observation period; date of publishing of the first results; time gap in format T+x, where T stands for the end of observation period, and x for number of days (or months).

If only one (final) results of the survey are to be published, the indicator TP1 is not to be calculated, so under this section it is needed only to provide the note about it.

4.2 Punctuality

4.2.1 Quality and performance indicators – Publishing punctuality (TP3)

Desription of indicator

The punctuality is the interval (number of days) between the date of publication of the data and the scheduled/planned date for publication of the data. Announced date refers to the date planned for releasing in the Annual calendar of publishing.

The indicator is calculated in two ways.

a) The calculation procedure of indicator for producers:

If expected date for publishing of statistics is d_{sch}, and actual date of releasing is d_{act}, the value of the indicator is: $P_3 = d_{act} - d_{sch}$

Explanations and calculation examples

The value of the indicator is calculated and reported as the number of days. If the results of certain statistics were published before the scheduled date, the value of the indicator is negative.

Example 1: If expected date of publishing is 16.3.2015, and results were published on 20.3.2015, the value of indicator is P_3 = (20.3.2015) − (16.3.2015) = 4.

Example 2: If expected date of publishing is 16.3.2015, and results were published on 13.3.2015, the value of indicator is P_3 = (13.3.2015) − (16.3.2015) = −3.

In quality report should be stated: observation period; date of publishing of the first results; time lag in format T+x, where T stands for the end of observation period, and x for number of days (or months).

a) The calculation procedure of indicator for users:

Rate of accuracy for data release is calculated (P_{3R}).

If the number of statistics/results published at the expected date in calendar or ones published earlier are marked with m_{pc}, and number of statistics/results that have not been published until date in the calendar with m_{up}, the value of the indicator is:

$$P_{3R} = \frac{m_{pc}}{m_{pc}+m_{up}}$$

Explanations and calculation examples

The value of indicator is calculated and reported in percentage.

Example 1: If 8 statistics/results are published on/ or before expected date of publishing, and by Calendar of publishing it is planed total of 12 statistics/results, the value of indicator equals to:

$$P_{3R} = \frac{m_{pc}}{m_{pc}+m_{up}} = \frac{8}{8+4} = 0{,}667 = 66{,}7\%$$

4.3 The reasons for the major delays and measures to improve the timeliness and punctuality

It is necessary to state the reasons and provide additional explanations in case of major time lag for the indicators values TP1, TP2 and TP3. If those exist, the measures taken to improve the timeliness and punctuality should be stated.

5 COHERENCE AND COMPARABILITY

Coherence of two or more statistical (data) products refers to the degree to which the statistical processes by which they are produced are using the same concepts, classifications, definitions, target population and harmonized methods.

Comparability refers to the need for the data and information obtained to be comparable in different periods of observation, between different domains and between different geographical areas.

5.1 Coherence

5.1.1 Quality and performance indicators - Coherence between different sources, coeff.(CH1)

Description of indicator

Coherence with the results from the reference sources shows the connection between the statistical results that are produced by surveys and statistical results from other sources (eg. administrative resources, short-term and structural business indicators, national accounts, etc.).

In the case of absolute amounts, coherence is shown in relative form, and in the case with the relative data (ie, indices, percentages) coherence is expressed in absolute form.

The calculation procedure

The value of indicator for key variables, where possible (if we have comperable variable from reference source), is calculated by formula:

$$CH1 = \frac{Xiref - Xi}{Xi}$$

Where:

Xi_{ref} ... Value of variable in observed statistical survey

Xi ... Value of variable from other (reference) source

i ... Number of sources of data

Explanations and calculation examples

Example 1:

If the number of persons employed is obtained as result in Labour Force Survey and equals to 816 036, and data for the same key variable in other reference survey equales to 693 941, the value of indicator is:

$$CH1 = \frac{Xiref - Xi}{Xi} = \frac{816036 - 693941}{693941} = 0{,}18$$

Conclusion is that number of persons employed that is result of survey is 18% bigger then number of persons employed from other source (in this case reference survey).

Example 2:

If the number of unemployed persons is obtained as result in Labour Force Survey and equals to 310 947, and data for the same key variable from other reference survey equales to 529 446, the value of indicator is:

Unemployed: $CH1 = \frac{Xiref - Xi}{Xi} = \frac{310947 - 529446}{529446} = -0{,}41$

Conclusion is that number of persons unemployed that is result of survey is 41% smaller then the number of unemployed persons from other (reference) source (records in administrative sources, ie. official record of persons unemployed in institutes for employment).

5.1.2 The reasons for the major delays

In case of major delays in release of survey results, the reasons should be stated.

5.2 Comparability

5.2.1 Quality and performance indicators – Asymmetry for mirror flows statistics, coeff. (CC1)

Description of indicator

In the domains where there is comparable statistics it is possible to assess the geographical comparability by measuring of discrepances of the outgoing and incoming flows for selected pairs of countries. A example for this are foreign trade statistics. In general, exports of country A to country B through a certain period of time should be equal to the import of country B from country A. In addition, example for these statistics is migration statistics, tourism, FATS, balance of payments, etc.

Bilateral comparable statistics is the difference of outgoing and incoming flows between the two countries divided by the average of the two values.

An example for countries A and B

$$CC1A_B = \frac{OF_{AB} - mIF_{AB}}{\frac{OF_{AB} + mIF_{AB}}{2}}$$

$$CC1B_A = \frac{OF_{BA} - mIF_{BA}}{\frac{OF_{BA} + mIF_{BA}}{2}}$$

Common measures can be obtained from the two differences in relation to the average of flows (one of the possibilities is shown in the following formula):

$$CC1_{AB} = \frac{|OF_{AB} - mIF_{AB}| + |OF_{BA} - mIF_{BA}|}{\frac{OF_{AB} + mIF_{AB}}{2} + \frac{OF_{BA} + mIF_{BA}}{2}}$$

Where:

OF_{AB} ... Outgoing flow (export) from country A to country B

mIF_{AB}... Comparable incoming flow for country A

OF_{BA} ... Outgoing flow (export) from country B to country A

mIF_{BA}... Comparable outgoing flow for country B

Explanations and calculation examples

Example: If we have data of Foreign Trade between BiH and Croatia for 2014, where country A is Bosnia and Herzegovina, and country B is Croatia.

Foreign Trade data with Croatia (published in BiH statistics):

EXPORT (OF_{AB} - 488.308 (in 000 €)

IMPORT (mIF_{BA})- 946.756 (in 000 €)

Foreign Trade data with Bosnia and Herzegovina (published in Croatia's statistics):

EXPORT (OF_{BA})- 1.223.664 (in 000 €)

IMPORT (mIF_{AB}) - 460.275 (in 000 €)

Based on this data, incomparability between these statistics is calculated:

$$CC1_{AB} = \frac{|OF_{AB} - mIF_{AB}| + |OF_{BA} - mIF_{BA}|}{\frac{OF_{AB} + mIF_{AB}}{2} + \frac{OF_{BA} + mIF_{BA}}{2}} = \frac{(488308-460275)+(1223664-946756)}{\frac{949083}{2} + \frac{2170420}{2}} =$$

$$= \frac{(28033)+(276908)}{474542 + 1085210} = \frac{304941}{1559752} = 0{,}20$$

If the coefficient equaled to zero, there would be a perfect symmetry (coincidence) of data (ie outgoing flows in this case were the egzect with comparable incoming flows).
But in our case, we see that the coefficient of asymmetry (discrepancies) equals to 0.20 – ie we conclude that discrepancy of these statistics is 20%.

5.2.2. Quality and performance indicators - Length of comparable time series (CC2)

Description of indicator

Length of comparable time series is length since the last interruption in time series ie. the number of observed periods in the time series since the last interruption.

The value of indicator is related to key statistics of survey.

The calculation procedure

If J_{last} is the ordinal number of the last period of observation for which data were published (the last point in time series), and J_{first} is ordinal number of first period of observation with already comparable statistical results (the first time point accorging to possible interruption), the value of indicator is:

CC2 = J_{last} **–** J_{first} +1

Explanations and calculation examples

The value of the indicator shows the number of periods in the time series; this means that the unit of measurement depends on the periodicity of the survey. In the monthly survey the value of indicator is expressed as a number of months, and in quartrly surveys as a number of quarters, etc.

The value of the indicator is mostly determined by how we define a interruption in the time series. The fact is that it is impossible to set completely accurate scales, with which the termination would be noticed, which means that sometimes - at least partially - subjective judgment must be applied. In general one could say that a interruption in the time series arises when it comes to such a change of one or more aspects of the survey causing that the final results among themselves are no longer reasonably comparable (eg. changes in the source of data or the methodology used).

If time series have no interruption, the value of indicator shows whole lenght of time series (Example 1, Example 2).

Example 1: Let's assume that beginning of camparable time series of monthly survey represents period of observation-January 2005. In that case, indicator has the value for period observed - June 2012. CC2 = (June '12 – January '05) = 90 (months).

Example 2: If there is anual survey, with year of first comparable releasing of results 2001, then for releasing of results in 2012 the value of indicator equals P1 = 12 (years).

If at the beginning of 2011 there was change of CA (Clalssification of Acitivities), causing the change of the sample of observation units so it is not possible to establish an appropriate connection with the previous data, there was an interruption in the time series. As time series have interruption in certain extent of the series, and the data is still published, it is possible to calculate two values of indicators (see Example 3).

Example 3: If in qurtaly survey of the index of distributative trade (the first observation period is Q1 2007 and the last is the end of Q4 2014) there was an interruption in time series in 2011 (due to changes in CA), the lenght of time series equals:

CC2 = J_{last} **–** J_{first} +1 = 16 - 1 + 1 =16

CC2 = J_{last} **–** J_{first} +1 = 15 - 1 + 1 =15

5.2.3 Interruptions in the time series

All interruptions in time series are described, as well as the reasons for the occurrence of interruptions. All the factors, that had in some way affected the comparability of results at different time points are also described (even dough they did not cause interruption of the time series).

5.3 Geographical comparability

5.3.1 Comparability with other members of the European Statistical System

All the factors that could affect that results of specific survey are not completely comparable with the results of similar surveys in the European Statistical System are stated. It is also stated if there is regulation which regulates the use of harmonized methodology (some parts).

6 ACCESSIBILITY AND CLARITY, DISSEMINATION FORMAT

Definition of component:

Accessibility and clarity of statistical products/results imply simple and easy way for users to access statistics using a simple and easy procedure. The accessibility of statistical results/products is related to concrete physical settings of data available to the user: where the data is physically located, what are the possibilities of using, releasing calendar, clear payment policies, both macro and micro data availability, different formats and media (eg, press releases, publications, on-line databases, documentation on methodology and quality).

6.1 Press releases with published data

List the names of regular and irregular press releases with a list of published data sets and on-line link to the press release.

6.2 Publications with published data

List the names of regular and special publications with a list of published data sets and on-line link to the publication.

6.3 On – line data base

Indicate the information about available on-line database to access the disseminated data with a link to it.

6.4 Access to microdata

Specify the information if microdata is available, and if so briefly describe the rules of anonymization of microdata.

6.5 Accessibility of methodological documentation

Indicate information on the availability of reference metadata files, important methodological manuals (title, publisher, year and a link to the online document), etc.

6.6 Measures to improve the user-friendliness

Describe any activities that are planned in connection with improving of the user-friendlines of print and online publication, as well as the dissemination of databases.

6.7 Quality and performance indicators – Data set consultations (AC1)

Description of indicator

Number of consultations of datasets within the statistical domain in a certain period. Note: The internal reviews of pages are excluded.

The calculation procedure, example and explanation

AC1 = *#CONS*

Number of users consultations related to statistics of *Index of consumer prices* in 2014 equals 1.255 (web pages hits).

6.8 Quality and performance indicators – Metadata consultations (AC2)

Description of indicator

Number of consultations of reference metadata (ESMS) within the statistical domain in a certain period (feedback for review or download at the respective statistical domain - topic).

The calculation procedure, example and explanation

AC2 = *# ESMS*

Number of consultations of reference metadata (ESMS) related to statistics of *Index of consumer prices* in 2014 equals 1.120 (web pages hits).

6.9 Quality and performance indicators – Metadata completeness rate (AC3)

Description of indicator

The ratio of available (completed) metadata elements to the total number of recommended metadata elements.

The calculation procedure, example and explanation

Out of total number of (60) metadata elements included in ESMS V.2.0 (*EURO-SDMX Metadata Structure*) for statistics of Index of consumer prices 55 of them was ensured.

$$AC3 = \frac{\sum \#\, ML}{\sum \#\, L} = 55/60 = 0{,}92$$

Meaning – rate of metadata completeness for statistics of Index of consumer prices is 92%.

7 COSTS AND BURDEN ON RESPONDENTS

Definition of component:

The costs and burden on respondents are not real dimensions of quality. However, the compromises between costs and burden on data providers should be considered, in other words, the cost and burden on data providers limit the quality of statistical data.

Calculating the costs is necessary for the effective management, and in particular to assess the quality and impact. The analysis of benefits and costs is needed in order to determine the appropriate compromises between costs and burden (in terms of the quality of statistical data). In the same way, the participation of data providers should be seen as a cost (for data providers) that must be balanced with the *benefits* of the information provided.

7.1 Costs of statistical survey conduction

When calculating the costs of the statistical institutions for conducting the survey it is necessary to take into account material costs, and the costs arising from the consumption of working time of statistical personnel.

Calculation of annual operating expenditure by major costs are presented in a standard table:

Number of labor hours	
Material costs (printing and sending the questionnaires to the field)	
The annual number of forms sent to the reporting units	

7.2 Respodents burden

Indicator of the respodents burden is the time which is necessary for the reporting units to complete the questionnaire in one year. Data is presented in a standard table:

Calculation of the annual respodents burden is presented in the standard table:

Number of respodents that completed form	
The time required to complete a questionnaire (hours)	
Total used time (hours)	

7.3 Measures to reduce costs and burdens

List the possible measures to reduce the costs and respodents burden (for example, reducing the size and coordination of sample, reducing the frequency of data collection, reducing the number of required data per survey, reducing the number of contacts with reporting units; the use of administrative data (or parts); testing of questionnaires with reporting units in order to better understand it and complete; in calendar of survey that is available to reporting units state the data request; if help in completing the questionnaire is needed reporting unit may contact statistical institution, etc ...).

8 CONFIDENTIALITY

Code of Practice in the principles states that the confidentiality of data providers (persons, households, businesses) and the confidentiality of information obtained must be absolutely guaranteed, and that data can be used for statistical purposes only (Principle 5); statistical institutions must produce and disseminate statistics (respecting professional independence) in objective, professional and transparent way in which all users will be treated equaly (Principle 6).

8.1 Confidentiality - policy

By default the confidentiality of statistical data is required by law and the personnel, conducting statistical survey by the same legal basis has the obligation to protect confidentiality. Laws on the statistics determine confidentiality as one of the main principles. Law has a special chapter related to this matter - part that contains the definition of confidential information, anticipates the use of confidential data for statistical purposes, determines the obligations of producers of data to precisely define measures and procedures to protect the confidentiality of data. Laws of statistics are available on the websites of the statistical institutions.

Therefore, the report on quality has to confirm this arrangement, or report on any exceptions to this rule.

8.2 Confidentiality – Data treatment

Also, it is necessary to outline the procedures for ensuring of confidentiality during the collection, processing and dissemination - including, protocols for the protection of individual data to which access is possible, the rules for the definition of confidential cells in the output tables and procedures for the detection and prevention of subsequent disclosure. There should also be stated in cases when external users have access to microdata for research purposes wheather the confidentiality provisions are applied. The report should describe the provisions for ensuring the protection and integrity of the entire questionnaire, micro and macro database and results.

9 STATISTICAL PROCESSING

Statistical processing refers to the operations performed on the data in order to obtain new information according to a specific set of rules. This concept is further divided into:

9.1 Data source

Indicate on which source of data the set is based: on survey, on administrative data sources, on combined sources of data or data from other statistical activities. If the sample is used, there should be stated some characteristics of the sample (eg, population size, gross and net sample size, type of sampling design, etc.). If administrative registers are used, there should be descriptions of registers (source, primary purpose, etc.).

9.2 Frequency of data collection

Indicate the frequency (periodicity) of data collection (eg monthly, quarterly, annually, and continuously).

9.3 Data collection

Specify the process of data collection, for example: from administrative sources; by collector of prices via the questionnaire (on the field or by phone); through questionnaires for certain statistical survey that are created in the statistical institutions. Describe the methods used for data collection for the observation units (eg. sample, field survey, CAPI, online survey, etc.). Some additional information on design and testing of questionnaires, training of interviewers, methods used for monitoring of non-response (etc.) should be provided. Link for questionnaires used should also be provided.

9.4 Data validation

Describe the procedures for the verification and validation of sources and output data and how the results of the validation are monitored and used. Validation activities may include: checking of included population and, where appropriate, response rates; comparison of statistics with previous cycles (if applicable); comparison of statistics with other relevant data (internal and external); survey of inconsistencies in statistics; performance editing on micro and macro data; detection of outliers.

9.5 Data compilation

The compilation of data includes procedures on the data that are used to derive new information according to a given set of rules.

Describe the process of compilation of data (eg, imputation, weighting, adjusting for non-response, calibration, etc.). For imputation: information on the extent to which is imputation performed and reasons; a brief description of the method used and its impact on the assessment. Weighting: every step of weighting described separately; calculating of the weights. Setting up non-response: how is initial weight corrected, taking into account differences in response rates. Calibrations: the variables used in the setting, the methods applied. The calculation of the final weights.

9.6 Adjustments

Set of procedures for modification of the statistical data in order to ensure complience with national or international standards, or procedures to resolve differences in data quality if specific data sets are compiled. The time series that are customized and statistical procedures that are used to adjust the series (deseasonal adjustment method eg. TRAMOSEATS, ARIMA, or

other similar methods) are described. In the case of adjustment, it is necessary to specify the type of adjustment (for example, seasonal, calendar, and trend-cycle). If outlier was detected and replaced, it is necessary to specify which types of outliers (impulse, transient changes, and levels shift) were detected. It is necessary to report on the software for adjustment.

9.6.1 Seasonal adjustment

Statistical technique used for elimination of the effects of the impact of the seasonal calendar on a series of data. Provide a short description of the method used.

OVERVIEW OF THE QUALITY AND PERFORMANCE INDICATORS

Component of quality and performance	Mark	Title of indicators of quality and performance
Relevance	R1	Data completeness rate
Accuracy and Clarity	A1	The Sampling error - Coefficient of variation
	A2	Over-coverage rate
	A3	Joint units share
	A4	Units non-respons
	A5	Item non-respons
	A6	Average size of revisions
	A7	Imputation rate
Timeliness and punctuality	TP1	Time lag of first results
	TP2	Time lag of final results
	TP3	Punctuality of the release
Accessability and user-friendliness	AC1	Data set consultation
	AC2	Metadata consultation
	AC3	Metadata completeness rate
Coherence and comparability	CH1	Coherence between defferent sources *
	CC1	Asymmetry for mirror flows statistics –coefficient
	CC2	Length of comparable time series
Survey costs and burden on reporting units	-	Costs of implementing the statistical survey
	-	Respodents burden

* The calculation of these indicators is not included in the recommendations for the preparation of reports on the quality, but due to the importance they are part of the guidelines.

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