SUMMARY of Quality Guidelines

FOREWORD

In its mission statement, the **Statistics Austria Federal Institute** (hereinafter referred to as "Statistics Austria") describes itself as the leading provider of information services in Austria and undertakes to produce statistics and analyses of high quality. In order to fully meet this objective, it is important to ensure that the products to be produced are developed in compliance with scientifically recognised methods and standards. This document should be seen as an extension and supplement to the mission statement and commitment to quality. For the producers of official statistics in Austria, the guidelines provide an essential basis in the sense that the individual production steps are carried out in line with the standards and rules laid down in this document. Users of statistical results should be made aware of the fact that products from Statistics Austria are produced using the latest statistical methods and that standards are guaranteed that ensure the statistical data is of a sufficiently high quality. Standards of this kind can be defined by international regulations and legislation, as is often the case in National Accounts. At the same time, however, implied standards are also found in the use of current best practices or are driven by the aspiration to achieve a certain level compared with other countries. Official statistics in Austria are characterised by a long-standing tradition of work and procedures, thus ensuring that results are of a sufficiently high quality as well as a high level of quality awareness.

The commitment to quality is also part of the statistical system of important legal standards. At a national level, this relates to the *Bundesstatistikgesetz* (Federal Statistics Act) 2000 as amended (BStatG 2000). Work on quality in the field of official statistics is strongly influenced by the international environment. For instance, the multidimensional definition of product quality that is valid for Statistics Austria is the definition developed by Eurostat. Furthermore, the European Statistics Code of Practice (see Annex 1) should be mentioned in this context; in Principle 4 (Commitment to Quality) it calls for statistical authorities to demonstrate a clear commitment to quality, which includes developing quality guidelines.

Ensuring that the relevant steps are based on a sound methodological framework that is at least in line with "good practices" is a decisive factor for the validity of statistical results. If possible, the adoption of best practices should be aimed for. This document, which is an important reference for employees of Statistics Austria, is designed to show data users that when producing results on a day-to-day basis, the aim is to achieve the highest level of quality while taking into account existing constraints. These include:

- Availability of sufficient resources in terms of both personnel and materials
- Reducing the burden on respondents as much as possible
- Budgetary resources available

The statistical production process is at the heart of the production of statistical products. Details of the process can be extremely complex, but it essentially consists of three parts: data acquisition, data processing and data presentation.

In this connection, it should be noted that the general framework for official statistics has changed significantly over the past decade. Possible uses of new technologies and changes to the legal environment as well as a shortage of resources coupled with increasing production rates have led to an increasing number of types of statistical products.

Section 1 addresses the legal framework and defines quality in a way that is appropriate for statistical products. Here, too, the quality framework is also explained: total quality

management (TQM) has played a central role at Statistics Austria since it was established in 2000. As mentioned above, verification of the use of sound methods is an important evaluation step – at international level too – that is intended to increase trust in published results. Section 2 contains a number of possible evaluation criteria that may be used to establish when methods can be regarded as suitable.

The actual guidelines for the production of statistics are developed in Section 3. The steps examined are those that are of importance in the production of official statistics. As mentioned above, the guidelines developed are mapped along the statistical production process. Readers will notice that the guidelines formulated have differing degrees of imperativeness. The verb “must” is used in a number of guidelines, reflecting the fact that it is not possible to fall short of the standards required in the guideline. In contrast, a number of guidelines simply call for certain procedures to be followed (“something should happen”) but do not make them compulsory. The background to this is that although some steps, processes and methods are desirable, practical constraints mean that they are not always entirely feasible. The less strict wording does not change the fact that the Statistics Austria employees responsible make every effort to ensure that these guidelines are followed.

In order to achieve compliance with the ambitious goals and high standards set out in Section 3, the steps and relevant processes must be accompanied by suitable quality assurance and verification measures. With this in view, Section 4 focuses on the processes and methods used to achieve and verify compliance with the guidelines and standards previously described.

1. Quality in official statistics

1.1 Definition

When considering the term “quality in statistics”, we should be aware that it is **not a one-dimensional term**. Instead, it has to cover a wide range of aspects and associated components. This document examines the quality of statistical products. Quality in relation to the statistical production process is equally important; it is addressed by the internal control system (IKS) institutionalised at Statistics Austria and undergoes evaluation at regular intervals. In the following text, the term “quality” always refers to product quality.

ISO standard 8402 from 1986 defines quality as follows:

“**Quality** is the totality of **features and characteristics** of a product or service that bear on its ability to satisfy **stated or implied needs**.”

This definition gives rise to two questions with respect to statistical production work:

- What are the key **features and characteristics** of a statistical product?
- Which **needs** can be stated and which are implied?

Eurostat first began to consider how quality should be defined in the context of official statistics in the mid-1990s. The definition of “quality” in official statistics was first communicated to the member states by the **Working Group on Quality** set up in 1998. The Leadership Expert Group (LEG) on Quality, which was established in 2000, finally developed the version of the definition that has been valid since 2003. According to this definition, quality in statistics relates to the following six dimensions (also known as criteria):

- Relevance
- Accuracy
- Timeliness and punctuality
- Accessibility and clarity
- Comparability
- Coherence

The individual dimensions have the following meanings:

Relevance

Relevance reflects the degree to which statistical products meet the potential needs of users. Does the product cover all possible needs?

Accuracy

Accuracy In the narrow statistical sense denotes the closeness of computations or estimates to the exact or true value.

Timeliness and punctuality

Timeliness reflects the length of time between the appearance of a statistical phenomenon and its description (reference period versus publication).

Punctuality refers to the time lag between the planned completion of the product (with reference to dates that were specified beforehand by a legal basis, e.g. agreement, contract or law and also by project plans, etc.) and its publication.

Accessibility and clarity

Accessibility refers to the ways in which users can access results and data: publication media, platforms and formats; access to microdata, etc.

Clarity describes the information environment of the product. Is the data sufficiently documented by metadata? Are the tables, text and graphics adequate and easy to understand? Is information available about the quality of the data?

Comparability

With reference to **a statistical product**, **comparability** aims to describe any impact of differences in applied concepts, measurement tools and procedures in terms of temporal and/or geographical components or according to any other comparison criteria.

Coherence

Coherence between statistics assesses the comparability of **various statistical products** that were in principle generated for different purposes but that have areas of overlap in terms of common subjects.

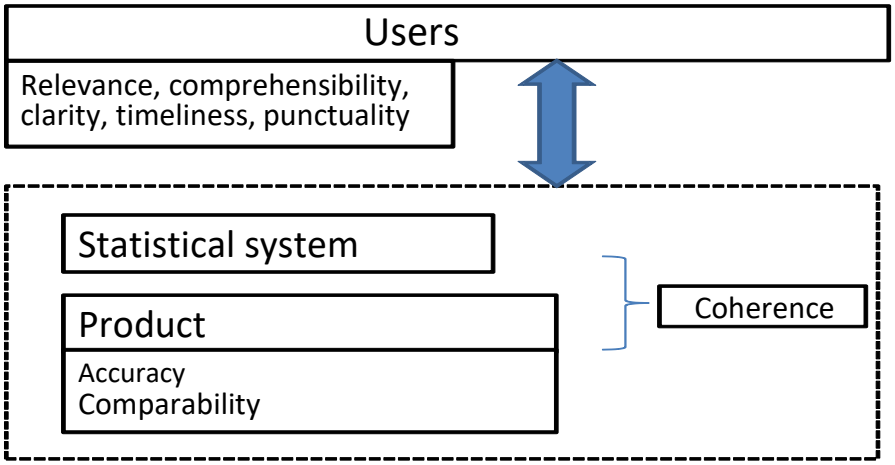

Figure 1: The quality criteria in relation to users and their embedding in a statistical system

Figure 1 shows that official statistics are not produced on a standalone basis – for their own sake, so to speak – but are embedded in a statistical system and are also strongly determined by **user needs**. The quality criteria can also be interpreted in the product/user/statistical system triangle. While accuracy and comparability are classic quality dimensions that are inherent to the product, criteria such as relevance, accessibility and clarity as well as timeliness and punctuality precisely assess the relationship between these three levels. **Systemic integration** is worth mentioning here since a product that has no substantial relationship to a family of similar statistics is hardly conceivable in official statistics. Coherence is a component that takes account of these connections in a way that conveys to data users the extent to which results of various products **can be used in combined form** for common subjects.

As mentioned above, quality in statistics covers a number of aspects. This **multidimensionality** is also reflected in the definition. When looking at the dimensions, it

becomes clear that each dimension individually has a unique and decisive impact on the overall quality. Going one step further, however, and examining the mutual interaction of the criteria, it can be seen that a competitive situation arises in order to achieve certain targets. This **trade-off** becomes clearest when accuracy versus timeliness are examined together. However, this is just an illustrative example. It could even be said that competing objectives will always occur whenever two or more dimensions are selected. This situation does not make it any easier to achieve optimal quality of results in official statistics.

The aim at all events is to optimise quality in terms of all the criteria mentioned above. In this context, the aspect of **quality measurement** obviously plays an important role. Looking at multidimensionality here, it can clearly be seen that quality in statistics cannot be depicted by an individual unique quantitative figure. Instead, a notional synthesis of all evaluated components should be consolidated in order to form an overall picture. The overall evaluation of a statistical product also depends on how the individual dimensions are **weighted**. This depends not just on the particular product but can also vary from application to application and, in extreme cases, is subject to subjective assessments that differ from user to user. In addition to the problem of **different weighting**, there is an assumption that the term “quality” is largely covered by the six dimensions described. However, it cannot be ruled out that a certain **undetected remainder** is left that also contributes to quality but is not included in the six dimensions. *Figure 2* uses two examples to illustrate this, with the size of the rectangles corresponding to the relevant weighting of the quality dimensions.

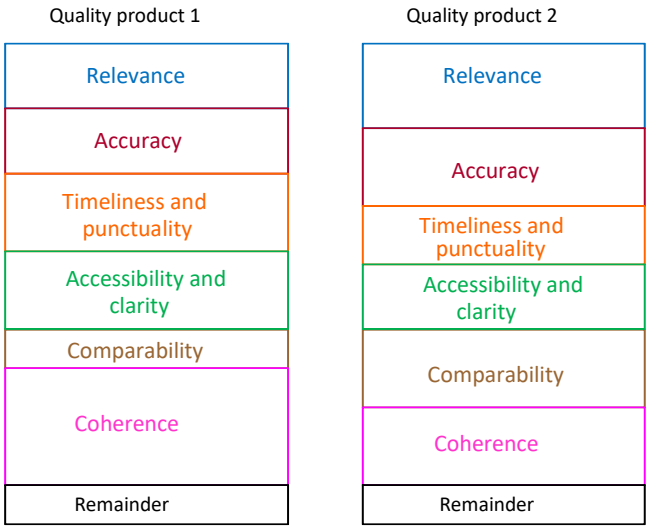

Figure 2: The weightings for the individual quality dimensions may vary.

The definition of quality is an important conceptual contribution to **product quality** in work on official statistics. Product quality is of pivotal importance to Statistics Austria’s work on quality. The quality guidelines in this document should also be seen as a contribution to product quality. It should be noted that the other pillars of quality-related work also have a decisive influence on the work and corporate culture of Statistics Austria. These cornerstones are efficiency, customer orientation, reducing the burden on respondents and a focus on staff.

Efficiency includes the implementation of tools and methods for project planning that are indispensable for achieving economic goals, in particular. Continuous development of the information environment and data access as well as the introduction of a publication calendar are **customer-oriented measures**, which also include the user satisfaction survey conducted every two years.

In times when citizens and companies are subjected to a high administrative burden, **reducing the burden on respondents** is of major concern to Statistics Austria. With this in mind, measures are constantly being developed to optimise data acquisition; the focus is primarily on making it obligatory to use existing data. In order to measure the burden on companies and businesses caused by official statistics, the respondent burden barometer has been an integral part of all compulsory surveys of economic statistics since 2001.

Ultimately, **Statistics Austria employees** are the most important asset for producing high-quality statistical products. An extensive training and further education programme has therefore been implemented and is regularly revised, giving employees the opportunity to improve or maintain their qualifications and expertise at a high level. Furthermore, an employee survey is held every two years in which staff are questioned about their satisfaction in terms of relevant determinants.

1.2 General framework

Work relating to the quality of official statistics should be seen from the perspective of specific current framework conditions, some of which are legally binding. At a national level, particular mention should be made of the Federal Statistics Act 2000.

Article 24 of the Act addresses special principles that apply when performing duties; these are as follows:

1. the compiling of statistics shall be objective and impartial;
2. statistical methods and procedures shall be applied using internationally accepted statistical principles and standards and shall be published;
3. statistics shall be subject to permanent control with the aim of improving quality;
4. statistics shall be kept as up-to-date as possible;
5. the burden on data subjects and respondents shall be minimised and they shall be provided with sufficient information;
6. there shall be compliance with the principles of publication;
7. personal data shall be strictly confidential.

The explicit inclusion of these principles in the national statistical legal basis underlines the importance of all quality aspects, which had been observed in official statistics in Austria for many years.

A quality framework in official statistics is of course also in place internationally. The fact that this occurs at a very high level in order to ensure comprehensive international coverage can be seen by the **Fundamental Principles of Official Statistics** of the United Nations (UN) (see Annex 2). A total of 10 principles cover key aspects such as compliance with scientific standards, reaction to misuse, protection of confidential data and transparency of measures for producing statistics. Quality is explicitly addressed in Principle 5, which obliges national statistical institutes (NSIs) to use the highest possible quality data sources.

As mentioned above, consistency in the European Statistical System (ESS) is also an essential condition for Statistics Austria. Not least due to this fact, the general framework at European level is of major importance. The legal backbone for producing statistics within the ESS is provided by **Regulation (EC) No. 223/2009** of the European Parliament and of the Council of 11 March 2009 on European Statistics, referred to as the Statistics Regulation for short. This regulation addresses key aspects of statistical governance. For instance, the definition provided above of **quality criteria[1] that are applicable** to statistics is embedded in

[1] The regulation defines the quality dimensions in Article 12. In the regulation, the text relating to the individual dimensions differs slightly from that used in this document.

Article 12, which obliges member states to call for the use of **best practices** in order to meet quality standards that need to be defined across all criteria.

The **Code of Practice** is embedded in Article 11 of the Statistics Regulation. This governance code is based on 15 principles and was initially published in a recommendation of the Commission of 25 May 2005. It was then revised between 2009 and 2011 and a new version was published by Eurostat following its approval by the European Statistical System Committee (ESSC) in January 2012. The principles aim to ensure that the independence, integrity and professionalism of national and Community bodies within the ESS are adhered to (see Annex 1). Quality plays a key role within the Code of Practice. This can be seen both in Principles 11 to 15, which reflect the quality dimensions, and in Principle 4, **Commitment to Quality**. Statistics Austria is fully committed to the content of the principles in the Code of Practice and underwent a peer review in 2006 based on the indicators in Principles 1 to 6 and 15. This document is in compliance with Indicator 4.1, which requires that:

"Quality policy is defined and made available to the public. An organisational structure and tools are in place to deal with quality management."

This document, which is available to the public, can therefore be regarded as a reflection of Statistics Austria's commitment to the Code of Practice and specifically to Principle 4.

2. Use of sound methods

The principles anchored in Statistics Austria's mission statement, such as the production of high-quality statistics and analyses, the highest possible product quality and optimum efficiency when producing statistics, ultimately underline its aspiration to be the leading provider of information services in Austria and require it to constantly question the way in which statistics are produced on the basis of the latest developments. With this in mind, expanding the core competences that have grown historically in the different organisational units is a priority objective for Statistics Austria employees. This is reflected by the institute's commitment to its staff, with Statistics Austria promoting continuing professional development and thus innovative thinking, individual responsibility, teamwork, project work and a cooperative management style.

The core competences mentioned above refer to all steps in the **statistical production process** (which will be enlarged upon in Section 3.1), which essentially consists of planning, data acquisition, data processing and data presentation. Procedures used to tackle and implement individual steps within the production process can be united under the general term (**statistical) methods**. The adjective "statistical" is in brackets because not all the processes and methods employed when official statistics are produced can be scientifically assigned to the statistics field. In addition to statistical methods, economic, project management and information processing methods are also used. The scientific character of the methods applied depends strongly on the particular step and the product involved. Even if procedures appear simple at first glance, closer analysis may reveal that the methods used and associated problems are more complex. In any event, research activity has intensified as a result of technological developments, even for apparently simple parts of the process (when collecting data, for example). In the context of this document, the term "methods" refers to all processes used when official statistics are produced in order to ensure optimum implementation of the **concepts** developed during the planning stage.

At first glance, this may appear trivial. However, considering that demands on official statistics have increased significantly in recent years – including those related to the development of non-survey-based data sources – it is not always possible a priori to remain true to the concept. The concepts that have to be defined and specified for the production of statistics provide the basis for the selection of suitable methods. Not least for this reason, particular importance should be accorded to **concept development** when statistical projects are being planned.

Since the methods used play a decisive role in the production of official statistics, they are of course also included in the Code of Practice. Principle 7, which calls for the use of sound methods, states that:

"Sound methodology underpins quality statistics. This requires adequate tools, procedures and expertise."

Principle 8, on the other hand, relates to the adequacy of the statistical procedures used:

"Appropriate statistical procedures, implemented from data collection to data validation, underpin quality statistics."

Here too, account is taken of the above-mentioned fact that methods extend over the entire statistical production process. Moreover, both principles emphasise the fact that the tools and procedures used should be **adequate** (i.e. sound).

Methods that can be used for a specific problem can generally be classified as follows:

Available practices: Methods that can generally be used to implement the production steps planned.

Good practices: Methods that have proven to be suitable for implementing the steps.

Current best practice(s): Methods that provide the most effective solution for implementing the steps according to current findings.

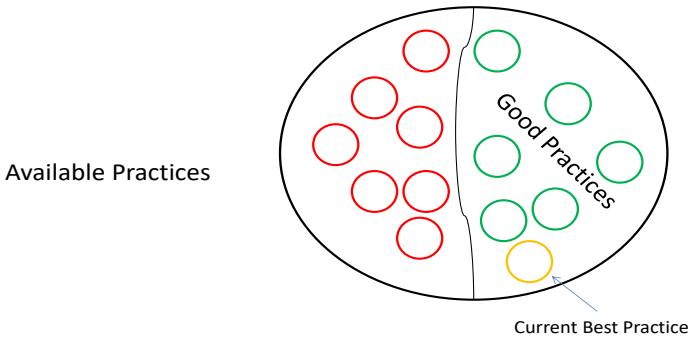

Figure 3: Good practices are a subset of available practices; one method is designated the current best practice.

Figure 3 shows that good practices are a subset of all available practices. One of the good practices is regarded as the current best practice. It is also conceivable that there is not just one but a number of best practices that are virtually equivalent and exist alongside one another.

There is no clear definition as to when something is regarded as a good or best practice. However, there are at least a few implicit indicators in the official statistics field that suggest when a method is currently regarded as sound and suitable, i.e. a good practice (the following list is not exhaustive):

Tried and tested over many years: Many procedures used in NSIs have been employed there for a long time. This ensures that expertise and experience are built up over time. Thanks to on-going evaluation of the results delivered by the methodology, as well as the associated improvements, it can be assumed that a sufficiently high quality of results is achieved.

International dissemination: Methods and procedures that are used in a large number of national statistical institutes (NSIs) have the advantage of enabling knowledge to be shared, thus optimising further development.

Adequate testing: Before being adopted, any new methods developed need to undergo adequate testing. Only when sufficient documentation of the test results proves that a method delivers reliable results can this method be adopted.

Approval: The method has been discussed among recognised national and international experts. New and developed methods are presented at international forums and research events. The discussion process taking place there is designed to reveal any weaknesses or potential for improvement that may be present. Another form of approval is when the method is included in an internationally recognised manual or inventory of methods.

Demonstrable improvement: The method is demonstrated to have improved one or more quality components. It should be noted that this involves making prudent use of resources. With this in mind, attention should also be paid to methods that increase efficiency while maintaining quality.

However, it is not clear-cut as to whether all or only a number of the aspects cited above need to be fulfilled in order for a method to be considered a good practice. If a number of methods are available, the choice of method ultimately depends on the particular problem to be solved. Considerations about the quality of results to be achieved play a role here, as do practical aspects such as the time, personnel and financial resources available.

In all cases, Statistics Austria aspires to use methods that are at least good practices. As a result, it is necessary to constantly observe and also actively take part in research activities in the relevant specialist areas. This involves maintaining contact with other NSIs and relevant international organisations as well as being present at specialist events and scientific conferences. Proactive collaboration with the scientific community also provides an important opportunity for developing or refining efficient methods. This symbiosis benefits both science and official statistics: while complying with the requirements of the Federal Statistics Act 2000 and the Data Protection Act, scientists are able to access the wealth of data provided by official statistics. At the same time, official statistics have the advantage of being able to use the research capacities of the academic world.

In addition to observing the research market, active training and regular professional development activities for employees are also required in order to ensure the use of sound methods. It is not just the core competences referred to above that need to be communicated, but also which methods and procedures are regarded as suitable (in other words, viewed as good practices) by Statistics Austria. As well as providing employees with the opportunity to participate in national training courses, the training programme also enables them to take part in international training events (e.g. as part of the European Statistical Training Programme – ESTP). Furthermore, systematically encouraging employees to move between organisational units and directorates and to collaborate with relevant institutes outside Statistics Austria is part of the institute’s modern personnel development concept. Cooperation with universities and other scientific institutes can also enhance the competences of employees.

3. Quality standards in the statistical production process

3.1 Statistical production process

Statistical products within official statistics cover a variety of topics that are relevant to social and economic policy. “Statistical products” include all data and studies that contain descriptive and analytical information about economic, demographic, social, environmental and cultural factors in society as a decision-making basis for social and/or environmental issues, scientific research or international comparisons.

The production methods, concepts and definitions used, and presentation of the results may vary according to the topic. As with any form of production, however, there are common fundamental production steps on which most official statistics are based. *Figure 4* shows a schematic diagram of the essential parts of the statistical production process.

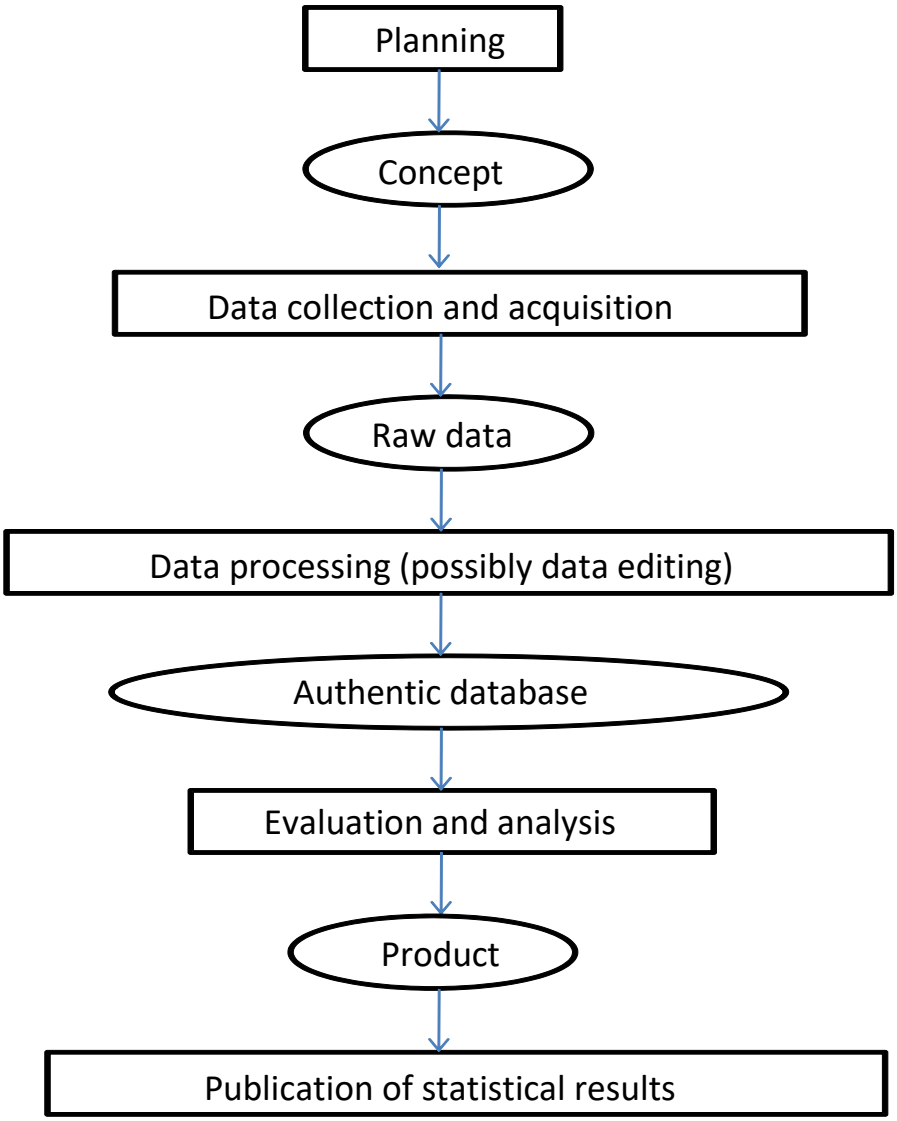

Figure 4: The statistical production process

The production chain starts with **planning,** the conceptual anticipation of future activities in order to prepare the structured flow of the statistical production process. Careful planning that focuses on results and targets is a basic prerequisite for resource-saving and cost-efficient implementation of the project and ensures that high-quality results are obtained.

Acquisition of the data required to implement the project is the step that forms the basis for further processing. Under Article 6 of the Federal Statistics Act 2000, existing data from primary statistical surveys must be used wherever possible for reasons of cost efficiency and to reduce the burden on respondents. Furthermore, priority should be given to sample surveys over full surveys. Acquiring data for primary statistical surveys is generally more time-consuming and resource-intensive than for secondary statistical surveys. This part of the process, which is also known as the fieldwork phase in primary statistical surveys, results in the **raw data**.

Depending on the type of data acquisition, the complexity of the **data editing or processing** step may vary. This transformation process enables the final dataset to be generated from the raw data. In this context, the final dataset is also referred to as the **authentic database**.

Once the authentic database has been produced, a wide range of **evaluation and analysis options** are available due to the large number of characteristics generally found in official statistics. Calculation of the results is not restricted to descriptive statistics, but also involves inferential statistical methods ranging from simple extrapolation and the use of statistical models to multivariate analysis.

The statistical production process concludes with the **publication of statistical results**, which is not just an explicit objective of Statistics Austria but also a legal obligation embedded in Article 19 of the Federal Statistics Act 2000.

This section subsequently describes in more detail the individual parts of the statistical production process, which are reflected by both the organisational structure of Statistics Austria and the various systems implemented within the institute. For instance, budgetary planning takes place using this production process, which is in turn subdivided into further sub-processes.

3.2 Preliminary work

3.2.1 Planning statistical projects

Guidelines:

Rough planning

- A project manager is responsible for all planning activities that are relevant to the project. The project manager acts as the point of contact.
- During the rough planning phase, a rough concept must be developed for each statistical project. The rough concept should specify the subject matter of the project, its aim and the expected results with key characteristics.
- For each statistical project, all possible data sources must be listed as part of a rough plan, checked for their suitability and their use must be justified.
- The availability of all material resources necessary to carry out the project appear must be checked in the course of the rough planning. This applies in particular in resources originating from other organizational units within Statistics Austria, such as IT resources, but also externally procured material resources.
- It has to be checked whether the timely availability of the necessary human resources is ensured.
- The rough concept must be used to check whether the envisaged project can be implemented in principle.

Detailed planning

- The type of data acquisition must be clarified in advance. Whenever possible, preference should be given to electronic forms of transmission. When secondary statistical data is used, the data owners must be involved in the planning process.
- The data sources that were recognized as suitable in the framework of the rough planning must be described during the detailed planning. External data owners, and in the case of secondary statistical data use, the data holders, must be included in the planning process.
- The methods to be used for data processing should be defined during the planning phase, ensuring that the methods planned correspond at least to good practices (see Section 2).
- All organizational units that are relevant to the creation of the final product must be included in the planning process.
- The budget for every project at Statistics Austria must be calculated in advance using a preliminary calculation. This must always be done in cooperation with the Controlling unit.

- In order to obtain realistic planning figures for the work to be carried out, empirical values from similar projects – ideally from previous related or comparable projects – should be used.

- A project plan must be developed that shows the course of the statistical production process using individual project phases or, when larger statistical projects are conducted, using milestones (intermediate objectives).

- To ensure traceability, all activities in the course of planning a statistical project must be precisely documented

3.2.2 Concepts, definitions and classifications

Guidelines:

- Definitions must be made available to users and it should be checked whether they are understandable for users (feedback, user survey).All concepts and definitions should be in line with international standards, with the focus being on comparability over space and time and the highest level of coherence with other products.
- All concepts and definitions should be based on international standards. Deviations must be justified. The focus should be comparability over time and regions as well as the greatest possible coherence with other products.
- All definitions, concepts and classifications of relevance to a statistical product must be explained in Section 2.1 of the standard documentation, “Statistical concepts and methodology”.
- In the standard documentation, any fuzziness, breaks in time series and problems of coherence caused by definitions must be dealt with in particular.
- Whenever possible, use should be made of the standard classifications available at Statistics Austria in the Classification Database.
- New classifications or revisions and modifications of existing classifications must be immediately entered in the Classification Database.
- Wherever ordered by a national regulation, a directory (e.g. goods classification) must also be published on the Internet in its current version.
- The “Classifications” unit must be involved in all questions relating to classifications.
- Respondents are to be informed of their classification on request. In particular, Statistics Austria is obliged by the Federal Statistics Act to inform all Austrian, economically active companies about their current ÖNACE assignment in writing and free of charge (classification notification).

3.2.3 Statistical registers

Guidelines:

- Before using statistical register data, it must be checked whether the concepts and definitions adequately correspond to the intended statistical purpose. Each required variable should be taken into account in this process.

- The internal use of register data requires the involvement of the register-keeping departments. The organizational unit that uses the register data must provide the register-keeping department with feedback on the quality of the register units used

- Registers are considered to be statistical products. The definition of the register units and the concepts of keeping and maintaining the register must be documented and clearly understandable. A Standard Documentation must be produced for every register kept by Statistics Austria.

- All administrative data sources available must be used to maintain the registers. A register should be maintained in such a way as to maximise completeness and minimise delays when showing changes.

- All steps that have led to the inclusion, deletion or updating of a register unit must be easily understandable.

- Each register unit must be provided with a unique identification characteristic (indicator) ensuring that it can be identified for internal use, but there must be no other material link to the register unit. Once it has been assigned, an identification characteristic should not be changed.

- Register maintenance includes saving and updating the relationships between register units and other registers at Statistics Austria or important external datasets via a unique identification characteristic as well as regularly updating specialist register variables.

- Register data comprises microdata records. Compliance with data protection and confidentiality principles must be ensured in this regard.

- In order to be able to observe the development of individual register units and/or the population to be covered (or parts thereof), it should be possible not only to determine the most up-to-date data for each register but also to reconstruct historical register entries for a particular reference date.

- Registers are used as the selection framework for statistical surveys. In order to be able to observe the burden on potential respondents, a record should be kept within the register of which register units were included in which surveys.

3.3 Data collection and acquisition

3.3.1 Types of data collection

Guidelines:

- The type of data collection must be defined at the planning stage. The aim should be to achieve an appropriate balance between the content/usability of the information obtained and the burden on respondents.
- When choosing the type of survey, preference should be given to those data sources that are not associated with a direct questioning of respondents. In addition to the use of administrative data, new data sources that can contribute to the creation of the relevant statistics must also be identified.
- If face-to-face or telephone interviews are conducted, interviewers must undergo training in advance. It is expedient to carry out a pre-test with a sufficient number of interviews in which the interview situation is simulated beforehand. At any event, face-to-face and telephone interviews should always be computer-assisted if possible.
- In the case of surveys that the respondents have to fill out themselves, a user-friendly electronic form of the answer option is made available to them, if possible. In addition to the PC, this electronic response option should also be available via common mobile devices (smart phones, tablets, etc.) and software-compatible apps.
- The date on which respondents are contacted should be carefully selected in relation to the reporting date. The information required to contact respondents may need to be checked or amended.
- During the acquisition of primary statistical data, the responses and incoming data should be constantly monitored. If the response rate is too low, suitable countermeasures should be taken (e.g. reminder letters; see also Section 3.3.4 “Reminders”).
- Whenever a survey is conducted, respondents should be informed of the purpose and intention of the survey in a letter of notification or cover letter. Furthermore, if there is a legal obligation to respond to the survey, respondents must be notified of the sanctions that may be imposed if they refuse to do so. In any event, respondents must be provided with the name of a contact who can assist with any problems that occur.
- Data that is collected for a primary statistical survey or used for secondary statistical purposes is generally microdata. This means that particular attention should be paid to data protection and confidentiality.
- Whenever possible, electronic reporting systems should be available for respondents to use. The advantages of using electronic reporting systems must be explained and technical support must be provided by a helpdesk.

- The data acquisition must be precisely documented. It should be noted that register, administrative or statistical data should always be transmitted electronically (including the associated metadata). Furthermore, the recording of relevant paradata (e.g. interview duration, feedback from interviewers) should serve to ensure a high qualitative standard for current and future acquistions.

3.3.2 Use of administrative data

Guidelines:

- If there is a plan to use administrative data, it must first be clarified whether the data are already available for Statistics Austria (VDK database). If this is the case, the person responsible should be contacted.

- If Statistics Austria does not have appropriate data sources, potential owners of administrative data must be included in the data acquisition analysis process as part of the planning.

- Before using an administrative data source, it must be checked whether the concepts and definitions adequately fulfil the intended statistical purpose. When doing so, each required characteristic of the administrative dataset should be examined.

- All process steps that serve to make administrative data usable for statistical purposes should be planned and tested a priori. All measures relating to the transformation of the data must be documented.

- If additional characteristics are added to administrative data, use should be made of existing data. Estimates using mass imputation (more than 20 % of the records) should only be made if there are no other options available.

- Contact must be established and regularly maintained with external data owners. If necessary, agreements should be reached that guarantee regular and timely delivery of the data.

- If data are revised by the data owner, the transmission of the corrected data must be guaranteed. In addition, in the case of periodic data deliveries, a test process should be carried out to identify any changes in the data structure be available (e.g. metadata, coding, etc.).

- Contact with data owners should be used to give regular feedback on the quality of the data supplied.

- Administrative data generally consists of microdata records relating to natural or legal persons. As a result, it is extremely important to respect data protection when processing the data.

- The use of administrative data that was not yet available for Statistics Austria must be brought to the attention of the administrative data coordinator. The aim must be to keep the VDK database as up-to-date as possible..

- In the case of particularly important external data sources (e.g. data from the Main Association of Austrian Social Security Organisations or the tax authorities), the data should be centrally available. The data delivery process and record formats should be standardised.

- The use of external administrative data sources for a statistical product must be made transparent to data users. All implications arising from the use of administrative sources must be described in the standard documentation. This relates in particular to questions of coverage, punctuality and timeliness as well as any distortions due to differences in approach.

- The transmission of administrative data to Statistics Austria should take place electronically via a secure interface.

3.3.3 Questionnaires: design and testing

Guidelines:

Questionnaire design

- The questionnaire should be clearly structured and presented in a uniform and appropriate layout. If necessary, questions should be supplemented with help texts and explanations, so that they is an equal understanding for interviewers and respondents. Routings and filtering ensure an easy and efficient flow through the questionnaire. The order of the questions must be chosen carefully.

- The design of the questionnaire is intended to express that it is a survey by Statistics Austria for the purpose of compiling official statistics (including a logo and a description of the statistics)

- The questionnaire should be accompanied by instructions that make it as easy as possible for respondents to answer the questions or fill in their responses. It should be clear to respondents which question they need to answer next depending on which answer they have given. The instructions should also specify which responses (value ranges for quantitative questions) are permitted.

- A questionnaire should be oriented towards the respective target group and guide the respondent easily through the entire survey. A questionnaire uses terminology adapted to the target group and, if possible, is available in the respondent's mother tongue.

- If survey persons are used in the data collection process, a detailed project presentation must be offered. In order to be able to evaluate the data quality, a debriefing of the survey persons is recommended

- The interview or survey situation should be standardized in such a way that undesirable influences on the results (e.g. due to the behaviour of the interviewer) are minimized.

- When designing the questionnaire, scientific quality criteria such as objectivity, reliability, validity, comparability as well as economic issues, usefulness, reasonableness and acceptance must be observed.

- Only standardized questionnaires, which usually consist of precisely specified questions and answer categories, are used. This shall ensure that the answers are comparable and that differences are not caused by the measurement method.

- Questionnaire design and testing are to be understood as part of a process that involves loops. The results of the tests, findings from the observation and evaluation of the survey process should be incorporated into the questionnaire design.

- The development of the concept that is actually to be collected to the specification of what is actually to be measured should be documented.

- The aim should be to form consistent questions that correspond on the one hand to the statistical concept and on the other hand to the everyday understanding of the

respondents. Each question should be formulated in a neutral and balanced way and offer suitable answer options.

- When translating the concepts and target variables from English into German, national specialities must be obeyed.

- In the questionnaire design, the information system (e.g. corresponding IT systems, documents, memory) of the respondents must be taken into account, e.g. by means of references to certain documents.

Questionnaire Testing

- Each questionnaire must be tested to determine to what extent its use fulfils the quality criteria of a measurement - objectivity, reliability, validity, economy, usefulness, reasonableness and acceptance. In addition, the extent of potential survey mode effects should be evaluated through testing.

- The testing of questionnaires is carried out systematically and using a mix of test methods (triangulation) that is efficient and adapted to the respective problem.

- The results of the questionnaire test are documented and made accessible.

- Findings from questionnaire tests lead to a continuous further development of the questionnaire.

3.3.4 Strategies to increase the response rates

Guidelines:

- Measures to increase the response rate are essential as instruments to avoid or minimize the number of non-responses and thus to ensure a sufficient response rate.

- The type, scope, quantity and strength of the reminders must be taken into account at the planning stage, particularly in terms of guaranteeing the budgetary resources necessary for a statistical survey. Other factors to be taken into account include the minimisation of the burden on respondents and cost minimisation.

- Before initiating a formal reminder process, attempts should be made to contact the respondent again (reminder letter, phone call etc.) in order to encourage the survey unit to supply the required data.

- When respondents use electronic response tools (e.g. Web-based questionnaires) and a database of respondents (including e-mail addresses) is available, there should be an automatic electronic first reminder, particularly in the case of mandatory surveys.

- A second written reminder (letter), which again clearly points out the legal consequences of non-response, should take the form of an Rsb letter (letter with advice of receipt) in order to prove receipt.

- The choice of the type, scope and frequency of reminders depends primarily on the desired response rate, but also on project-specific publication and data transmission deadlines. Here, too, the resources available to the survey manager/responsible department must be taken into account.

3.4 Data processing/editing

3.4.1 Data entry and coding

Guidelines:

Data entry:

- The value range or the possible set of values for each characteristic must be determined in advance. It must also be decided which designations or values are used for non-numerical situations (e.g. missing values or “does not apply”). Such values/designations must be clearly identifiable.

- In the case of manual data entry, the entry staff should be made aware of critical input fields in advance. Entries outside of value ranges should not be allowed. Incorrect entries should be reduced to a minimum by recording the data records twice and then comparing the entries.

- In the case of open-answer-questions, the use of text mining algorithms should be considered and applied after successful testing.

Coding:

- When planning a survey, open-answer-questions should be avoided as far as possible in order to limit the amount of coding to situations where it is absolutely necessary.

- Whenever possible, coding should be carried out automatically. The rate of automatic assignments should be as high as possible. The parameters for automatic signing should be selected in such a way that, on the one hand, the highest possible number of data records are signed, but on the other hand the number of incorrect signatures is minimized.

- All those data records that cannot be automatically coded should be coded by experts with the assistance of interactive applications as far as possible. Adequate training should enable them to correctly codethe remaining data records

- When using complex classifications, the staff performing the coding should be specifically trained in order to ensure correct identification and assignment in accordance with the relevant classification rules.

- After finalisation of the coding a sub-sample of all data records should be analysed to estimate the proportion of wrongly coded records.

3.4.2 Data Editing

Guidelines:

- Before statistical results can be published, plausibility checks must be carried out on both the micro and macro level.
- In the case of electronic data collection the most important edit rules should be integrated in the data collection tool and erroneous entries should as far as possible not be permitted.
- When formulating edit rules at micro level, the following erroneous situations should be identified:
  - values outside the defined value range
  - non-consistent combinations of values
  - implausible combinations of values
  - missing values
  - implausible values due to comparisons with previous period results
- The comparison references used for the macro editing should be as reliable as possible. Comparisons with previous periods should particularly be taken into account.
- Depending on the project, considerations regarding cost and quality must be incorporated into the Edit-design in a suitable form.
- The methods used in editing should be tested in advance in order to be able to gauge the influence on the resulting figures.
- It should be avoided to approximate the results to an implicitly given model by excessive iterative correction of the data, because this can lead to biases in the resulting estimators (''over-editing'')..

3.4.3 Imputation

Guidelines:

- Unless there are compelling reasons to the contrary, missing values should be replaced for each dataset. In doing so, it must be ensured that defined rules are not infringed in the course of editing.
- Imputation should only be performed in the case of missing individual items ("Item non-response"). The level at which a data record should be classed as totally missing must be defined for each project.
- The imputation of complete data records should be performed only if an adjustment of total unit non-response by means of weighting (see Section 3.5.2) does not seem feasible.
- Mass imputation of individual characteristics for large portions of the dataset (>20%) should only be performed if no other options appear feasible.
- The selection of the method of imputation must be made taking into account the actual situation. It is possible that the methods of imputation used for a particular data record may differ from characteristic to characteristic.
- The results of an imputation run need to be analysed and it must be assessed whether the effects of the imputation lie within the framework of what is actually desired. In particular, the distribution and computed aggregated values should be compared before and after the imputation run. To ensure traceability, all values that were imputed must be marked (e.g. with flag variables).
- In the case of periodic surveys, the selected imputation methods should be evaluated on a regular basis. Particular attention should be paid to changes in the structure of the missing values.
- The performance of imputations requires specific know-how. The Methods unit at Statistics Austria should be involved in each new imputation-related project. The choice of imputation methods, evaluation of the results, and decisions regarding any modification of the method should be undertaken in cooperation between the specialist department and the methods unit.
- In order to ensure that current best practice is employed, international research activity into the subject of imputation should be constantly monitored. This includes specific practical activities at other NSIs as well as theoretical considerations that can be used for the development of generally applicable solutions.

3.4.4 Linking of data from different sources

Guidelines:

- Exact information regarding the concepts and definitions used in the datasets involved must be obtained and documented prior to the linking of data records from different sources. This relates not only to the populations and units but also the individual characteristics.
- When data records are linked at an individual level, compliance with all relevant legal regulations concerning confidentiality must be ensured.
- Whenever possible, the linking of different data sources should be performed by a common identifier (key variable).
- In principle, the aim should be to ensure the complete linking of datasets. If it is not possible to link all units by means of a key identifier, an attempt should initially be made to achieve unique assignments of these units with the use of string comparisons. As a second option an attempt can be made to achieve links that are as reliable as possible using statistical matching. If a remainder of non-linkable units is left, suitable estimation procedures should be used to ensure complete coverage.
- Where assignments are not unique and multiple assignments therefore exist in the target dataset for a single basic data record, clearly verifiable rules must be defined that lay down how the final target data record should be selected.
- If the units between the data sets to be linked are on different levels, it must be clear how this is taken into account in the target data set. If disaggregation (e.g. breaking down company data to the workplace level) is necessary, the models with which this is done must be documented.
- Statistical matching is only an option if the datasets to be linked have a sufficiently large number of common characteristics. In this case the distance function used for the linking must be defined precisely.
- All aspects related to the linking of data sources must be described in the Standard Documentation. This relates both to the data sources involved as well as the methods used and quantitative information about the linking process (i.e. matching rates).

3.5 Evaluation and analysis

3.5.1 Producing working and analysis tables as basis for publications

Guidelines:

- When producing working/analysis tables, at least the planned publication program should be simulated and all table cells planned for publication should be created.
- When designing work or analysis tables, preference should be given to two-dimensional tables for the purpose of easier viewing and interpretability.
- The tables should be based on authentic databases.
- Problems associated with the creation of the tables should be discussed in the team and with the involvement of the project management.
- Activities related to the tables should at least be documented or archived in such a way that the decision-making processes can be clearly seen.

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3.5.2 Estimation based on sample surveys

Guidelines:

- Whenever possible a sample survey should be preferred to a full survey. Whenever the project objective allows, random samples should be given preference over non-random samples.
- Results from sample surveys are always to be understood as estimates that are fraught with inaccuracies. The estimation methods and procedures of sample theory are only applicable in the case of random samples.
- In order to make a sensible assessment of the results from sample surveys and to satisfy the relevant accuracy requirements, a sufficient amount of data is necessary. For this reason it must be ensured during data collection that the response rate does not fall below the expected return rate.
- Estimates from sample surveys are based on a weighting procedure. Here at least the sample design and non-response must be taken into account (free projection). Whenever possible, in a final step the results should be adjusted to an external source (tied projection/calibration).
- When using calibration, the selection of external sources must take into account the reliability of the figures from these sources. After a final adjustment the results must be checked. In all cases it must be ensured by the use of suitable methods that the variability of the weights is not excessive, i.e. scattered weights should be avoided.
- For each sample survey the sampling errors must be published at least for key variables. The method for calculating errors must be documented and the design of the sample and the calibration procedure has to be taken into account..
- For the sake of clarity and comprehensibility it must be made clear in which format the sampling error is presented (relative standard error, absolute standard error, confidence interval etc.). In all cases the presentation must also state the corresponding level of significance (normally 95%). For recurring surveys the presentation should stay constant over time.
- In line with the principle of reducing the burden on respondents representing small economic units and the concepts of model-based data addition, non-random sampling (cut-off census) represents the most significant alternative to conventional projection for presenting results for populations. The use of a cut-off census however requires the definition of new quality criteria (e.g. representation/coverage levels) since conventional methods do not allow to calculate sampling errors.
- The Methods unit should be involved in all aspects of weighting and estimation of sampling errors
- Users must be informed of the level of detail up to which the sample error does not exceed an acceptable value. This is especially true for regional breakdowns. If values are published that show a sample error that exceeds a certain level, they must be flaged accordingly. (As a possible classification of the reliability of sample results, the following

classification can be used for the relative sample error: CV <= 16.5%; 16.5% <CV <= 33.3%; CV> 33.3%)

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- The response to a sample survey must be documented. The following indicators are of particular interest: the original gross sample size, the realised net sample size, and the response rate for important key characteristics.

- When in non-random samples (cut-off samples) non-surveyed parts of the population are estimated, the method used must be documented. In all cases users must be informed to which population the results of such a survey relate.

- All aspects of sampling, especially the sample design, the methods for weighting and for calculating sampling errors, as well as all relevant quantitative indicators, must be described in the Standard Documentation.

3.5.3 Calculation of indicators – statistical measures

Guidelines:

- The use of a particular statistical measure must be appropriate in terms of the type of characteristic under consideration. Mean values and totals can only be used in the case of quantitative characteristics. When it comes to qualitative characteristics, frequencies and proportions are the most common measures in official statistics.
- The level of breakdown used when publishing statistical measures should be chosen so as to ensure sufficient accuracy. Furthermore, care should be taken that the identification of microdata is not possible (see Section 3.6.6).
- If variables of two populations are combined in order to construct an indicator, it must be ensured that the corresponding definitions and concepts are consistent.
- When calculating complex indicators, the algorithm used must be documented precisely. Where international guidelines exist for calculating an indicator, these must be complied with. The methods for calculation should remain constant over time.
- In the case of indicators from sample surveys, a sample error must always be indicated. However, even for indicators that do not result from a sample survey or whose calculation methods do not make a simple determination of the sample error possible, accuracy estimates should be provided for the calculated values.
- Where groups of indicators are calculated and published periodically, they should be accessible on the website of Statistics Austria. The background information regarding the intended purpose of the indicators as well as the underlying concepts and methods of calculation should be provided to users.
- All statistical measures and indicators of a statistical product must be described in the Standard Documentation.

3.5.4 Indices

Guidelines:

- The concept and methods of an index must be transparent. The population of the expenses or quantities to be measured must be defined. Any coverage problems must be documented.
- Deviations from recognized methods and definitions / from standard methods - both nationally and internationally - must be justified and documented transparently.
- In the case of method changes, it should be checked whether there are international requirements that must be complied with and whether the planned changes are in line with these.
- The base period of the price basket and the weighting must be transparent. Furthermore, the basis of the index values of the aggregates must be explicitly documented. These can relate to different periods.
- Any changes to the base periods should be informed in a timely manner and as completely as possible.
- The chosen calculation concept (Laspeyres, Paasche or chain index) and the aggregation process must be documented. The choice of the concept depends on the objective of the index as well as the timely availability of the data and the European requirements.
- The sources of the weighting must, as far as possible, be transparent (in compliance with confidentiality guidelines). These should be as reliable as possible.
- The weighting and the price basket should be checked regularly to ensure that they are up to date and any changes implemented as soon as possible.
- In the case of price indices, the problem of changes in the quality of individual goods / products and services must be taken into account..
- If the methods are changed frequently, the documentation must be updated at regular intervals..
- Indices are seen as types of statistical product. This means that a Standard Documentation must be created for each relevant index published by Statistics Austria. If the index under consideration belongs to a group of indicators created as part of another statistical project, it should be described in the documentation relevant to this project.

3.5.5 Statistical accounting

Guidelines:

- Statistical accounts and satellite systems should always be produced according to a clearly defined concept. Where internationally binding guidelines exist, the concepts, definitions and methodological requirements in such guidelines shall be followed.
- The publication and the delivery of results of statistical accounts are very often tied to stringent deadlines. Because of their particular relevance – especially of the indicators in the National Accounts – high priority must be given to the punctuality of completion.
- The choice of methods for calculating the aggregates for statistical accounts should always be in accordance with best practice. It is therefore essential continually to foster international contacts so as to promote knowledge exchange.
- All procedures and methods used for producing statistical accounts should be described in such a manner as to ensure transparency and comprehension and should be made accessible to the public.
- Since the availability of input data is decisive for the quality of statistical accounts, there should be continuous exploration of possible new data sources for specific problem situations. Producers of statistical accounts should also act pro-actively on internal and external data owners in order to increase the usability of existing data sources.
- In principle, the production of statistical accounts should start by estimating the most detailed breakdown levels and move from there to total aggregates. This bottom-up approach should be preferred to the apportioning of total values to individual items (top-down). The choice of which method to use should be made according to the quality and availability of the data.
- Sometimes it is necessary to estimate certain parts of statistical accounts by means of a model-based approach. In this case all guidelines and quality standards applicable for model-based estimates must be followed (see Section 3.5.6).
- Statistical accounts are seen as types of statistical products. This means that a Standard Documentation must be created for each statistical account published by Statistics Austria. A main focus of the documentation should be the assessment and description of the data sources used as well as a detailed description of the methods taken to calculate the individual aggregates. If necessary, very detailed descriptions of complex calculation methods should be given in separate methodological handbooks.

3.5.6 Model-based estimates and forecasts

Guidelines:

- When using models, they should address the problem under consideration. The problem must be formulated precisely and should be discussed with the methods unit in terms of optimal model selection.
- A model should only be used if the results cannot be achieved by means of direct data analysis.
- The choice of a particular method should always be made in consultation with experts who have methodological knowledge and practical experience of the method.
- The results of a model-based estimate must be assessed extremely carefully. Results can only be accepted if all relevant diagnostic parameters do not exceed certain tolerance thresholds. Assessment of the diagnostic values must be performed by experts with sufficient expertise in the interpretation of such values.
- Besides assessing the quality of the model using the diagnostic data, the results must be checked for correctness and plausibility.

3.5.7 Time series and their adjustment

Guidelines:

- Projects having a periodic frequency will create a time series over the long run. In order to ensure optimal comparability over time, the concepts, definitions and methods should remain consistent whenever possible.
- In the case of unavoidable breaks in time series, data users must be informed of the causes and the impacts of such breaks.
- Each time series providing intra-annual results (monthly, quarterly) should be checked for any seasonal and/or work day impact.
- Prior to any seasonal adjustment, all calendar effects must be adjusted.
- When a seasonal influence is detected, the affected time series should be adjusted. In principle, the adjusted figures as well as the original figures should be published. Data users must be made aware of the fact that the adjusted figures are revised on publication of the most recent figures.
- In order to perform a seasonal adjustment, a sufficient length of time series is necessary (approximately 60 entries, i.e. 5 years for a monthly time series).
- The results of time series adjustments must be checked and all model assumptions and parameters reviewed periodically.
- Comparisons of previous periods for data during the year should be based on seasonally adjusted values. Year-on-year comparisons are to be made with data adjusted for working days.
- The adjustment of time series should be carried out with X12-Arima or with Tramo/Seats.
- The methods unit must be involved in all aspects regarding the analysis of time series.

3.5.8 Flash estimates

Guidelines:

- Flash estimates should be calculated in situations where there is a need for very quick information. They are only suitable for figures and indicators of a statistical product whose high relevance warrants immediate publication.
- Values originating from preceding periods and estimates based on reduced data from the reference period as well as from the preceding periods should be taken into account when building the model. In doing so, data from as many preceding periods as possible should be used, but only in so far as this is permitted by any time series discontinuities.
- The model for calculating flash estimates should be checked periodically and updated if need be.
- When publishing flash estimates, users should be informed about their availability, and about the indicators on which the estimates are based, as well as the individual methods used for the individual indicators. It must be stated that the results are provisional and will be revised.
- On-going calculations of quality indicators should be performed to enable the accuracy of the flash estimates to be assessed. In all cases the mean deviation (in absolute and relative terms) of the estimates from the final values must be monitored over time. Data users should have access to this information so that they are able to evaluate the risk of using flash estimates.
- The standard documentation must contain descriptions of all aspects regarding flash estimates for a specific statistical product, the specific indicators involved, the methods used and their quality.

3.5.9. Special analyses

Guidelines:

- Special analyses can only be performed at the request of a potential client. It must be ensured that enquiries are forwarded to competent members of staff with the requisite decision-making authority.

- Special analyses should always be performed using existing or already planned standard authentic datasets.

- Before performing a special analysis, the time frame, contents and financial aspects must be clarified with the client. To this end a cost estimate and time schedule prepared by Statistics Austria should be supplied to the client.

- Staff from Statistics Austria must check whether the intended work can be performed in compliance with all relevant quality standards. This refers in particular to:

  - issues of confidentiality
  - meaningfulness of content
  - availability of necessary know-how

- Work on such special projects can only start after receipt of the definitive order from the client. The work shall be performed by staff of Statistics Austria and the results transmitted to the client as agreed. The transmission of microdata is prohibited.

- In terms of the methods and procedures used for special analyses, the same guidelines and quality standards apply as for all other work performed by Statistics Austria. Lower quality standards shall not be permitted for special analyses.

- Standard documentation only needs to be compiled for special projects if this has been agreed with the client, otherwise the type and manner of the documentation forms part of the agreement with the client. In all cases, if the project exceeds a certain size, Statistics Austria should strive proactively to ensure sufficiently extensive documentation (if possible in the form of standard documentation). Internal documentation of all relevant working steps is compulsory in all cases in order to ensure traceability.

3.6 Publication of statistical results

3.6.1 Tables, text and graphics

Guidelines:

- Prior to the publication of statistical results, especially in press releases to adhere to the four-eyes principle. This means that the correctness of the data to be published (and the comparison between text and table values) must be checked and confirmed by someone other than the respective author

Tables

- All tables should contain at least the following components:

  - Table heading
  - Header
  - Preliminary column
  - Numerical area
  - Footer area

- The heading of the table should refer to the subject presented in the numerical area as well as to the breakdown defined in the preliminary column and the reference period (or reference date) to which the data relates. The scope of the population described by the table in terms of time, geography and contents should be evident from the heading.

- The parts of the population to which the specific columns relate should be identified in the header. In addition, the statistical unit used for presentation of the figures should be stated.

- The breakdown defined in the preliminary column should be clearly structured to show the relationships of individual items. If necessary, this should be supported by using total rows.

- Figures presented within the table cells should be clearly legible. When selecting the unit, it should be ensured that not too many digits are required to present the figure. If necessary, mathematical rounding should be performed. Moreover, the following conventions should be used when presenting tables:

  - If a cell is empty, a dash should be entered (-)
  - If the surveyed value is less than half of the smallest envisaged unit, zero should be entered (0 or 0.0)
  - If the relevant information is currently not available but is expected, three dots should be entered (…)
  - Where figures are not surveyed or their publication infringes the requirements of statistical confidentiality, the letter "G" instead of the actual figure should be used.

- The footer should always contain a reference to "Statistics Austria" as the source of the data. If necessary, footnotes referring to specific cells or items within the table can also form part of the footer.

Texts

- Texts supplementing published tables should summarise briefly and concisely all aspects important for understanding the figures presented. The aim of the textual descriptions is not just to repeat the figures presented in the table. They should ideally highlight the most important results or the most noticeable changes.

- The following principles should apply in respect of all statistical publications:

  - A "scientific" writing style should normally be used, i.e. it should be precise, clear, factual with little use of linguistic variations. The style should not be fanciful and flowery.
  - The wording should be tailored to the "typical reader". There should be no specialist jargon and a minimum of foreign words. Unavoidable technical terms should be defined.
  - The simple past should be used as the preferred tense whenever the writer is commenting on the results of a periodic survey. The present tense is a possible alternative when describing very recent results.
  - A uniform method should be used for citations.
  - Frequently used abbreviations should be explained in a Glossary.

Visualized presentations

- When presenting data graphically, the type of graphic selected (bar graph, line graph, pie chart, etc.) should be suitable for the particular job.

- Graphical presentations must be valid, so there must be no perspective distortion, sizes should be presented true to area and axes should only be displayed incompletely if this cannot create a deceptive impression

- All graphics and cartograms must be labelled sufficiently. This includes axes, data series, important data points and the key. Furthermore, the content of the diagram or cartogram should be clear from the heading.

- If possible, interactive presentations should be given preference over static ones.

- Whenever possible, geo-based presentations should be provided.

- When creating a cartographic element, the Cartography and Geographical Information Systems organisational unit should be involved.

3.6.2 Open Data

Guidelines:

- Before a data record can be made available on the statistik.data.at portal, a corresponding metadata file provided by the IT department must be filled. On the one hand, this clearly defines which data is affected and, on the other hand, it also contains the meta information that users need to use the data set.
- The publication of a new open-data dataset requires the approval of the responsible head of directorate or department. In addition, the units of quality management as well as media and information policy must be informed.
- It must be ensured that only such data are offered as open data that are not available elsewhere (for example in the STATcube database) not free of cahrge. This must also be taken into account in particular with regard to the desired level of detail for the planned data record.
- It must be ensured that all open data records are regularly maintained, especially with regard to updating to the most recent data. The update is carried out by the subject matter unit in cooperation with the IT department.
- Before data is placed on the Open-Data Portal, it must be checked whether all relevant confidentiality guidelines are being adhered to.
- It should be Statistics Austria’s objective to achieve the highest possible coverage with its open data offer.

3.6.3 STATcube - statistical database

Guidelines:

- In principle, all statistical material published by Statistics Austria should be made available in STATcube.
- With material that is stored in STATcube, there should be planning in terms of which characteristics and degree of detailed breakdown are made available. In all cases, characteristics should be present that give a geographical and time framework for the material.
- Prior to storing statistical material, possible problems with respect to confidentiality need to be considered. It must be defined how cell values are treated, whose publication in their original form is impossible because of potential confidentiality infringements. This also relates to any counterbalancing deletions. All statistical confidentiality guidelines (see Section 3.6.7.) also apply to material published in STATcube. We refer the reader here to the guidelines on statistical confidentiality published on the Internet (available in German only).
- New stored material must be tested before it is released for use. In particular, it must be checked whether the values before and after the pre-storage conversion process are identical.
- Stored material must be regularly maintained. In particular, segments containing periodically recurring material should be kept as up-to-date as possible. Delays between publication of the results and storage in the database should be minimised.
- When material is stored in STATcube for the first time, key data users should be informed that the data is now available in the database.
- The usage of STATcube is monitored on an on-going basis by a Statistics Austria user administration system. The number of times each item is accessed is recorded. It must be ensured that the technical environment enables satisfactory use of STATcube in terms of accessibility, user friendliness and speed of performance. Users should be supported by appropriate online help functionalities. If necessary, users of STATcube may need to be supported by Statistics Austria staff.

3.6.4 Data transmission to Eurostat

Guidelines:

- Statistics Austria must make all possible efforts to comply with the requirements defined by Eurostat, not only in terms of the content and scope of the delivery programme, but also the time requirements and mode of data transmission. Staff who take part in working groups should seek to influence the discussion process in such a way that the requirements are realisable and compatible with national requirements. If necessary, attempts must be made to seek derogations.

- Eemployees who take part in European working groups should represent positions there that have been agreed in-house. This is the only way to ensure consistent representation of Austrian and internal interests across all hierarchical bodies of the ESS

- The delivery of data and metadata to Eurostat must be documented. In particular, all related activities must be described in the standard documentation.

- Microdata is also to be delivered to Eurostat only in anonymised form. The delivery should take place using a record format agreed in advance.

- In their work with Eurostat, Statistics Austria staff should strive to achieve stability over time in terms of the content and format of the transmitted metadata-

- Mandatory quality reporting within the European statistical system as defined in Article 12 of the EU Statistics Regulation must be submitted to Eurostat in accordance with the European metadata standards (SIMS, ESMS, ESQRS). The prerequisite for this, however, is the corresponding implementation by Eurostat. in order to ensure a high degree of comparability over time of quality information.

- Statistics Austria must ensure that the data deliveries from the other national producers are also timely and meet the quality criteria of the official Statistics should be sent to Eurostat accordingly.

3.6.5 International enquiries

Guidelines:

- Responses to international enquiries should be as complete and timely as possible.
- After receiving an international enquiry, the International Relations organisational unit should be informed immediately.
- If necessary, the enquiry should be forwarded to Statistics Austria staff with sufficient knowledge to respond to the enquiry. If required by the content of the enquiry, the relevant directors/department heads or even the General Directorate may need to become involved. The main responsibility for coordinating all responding staff or units should rest with one person.
- The response to an enquiry can only be provided once the coordination process between all organisational units involved in the enquiry has been finally completed. If only one directorate/department is involved, the relevant director/department head decides on release of the response. In the case of enquiries involving more than one directorate or Statistics Austria in general, the responsibility for coordination rests with the International Relations organisational unit. Release of the response is given by the General Directorate while the relevant directors/heads of department are responsible for the individual components of the response.
- All contacts with the submitter of the enquiry must be brought to the attention of the International Relations organisational unit, which is responsible for the central archiving and organisational measures.
- If there have been similar or even identical enquiries to the current enquiry (or to parts thereof), the response to the current enquiry must be consistent with the previous responses.
- If a special analysis is required in order to answer the enquiry, the guidelines in Section 3.5.9 apply in their entirety.

3.6.6 Revisions

Guidelines:

- Where preliminary results are published, they should be clearly flagged as such. This relates not only to announcements of release dates in the Release Calendar of Statistics Austria but also to the flagging of such results within the published figures themselves.

- In the case of on-going revisions, the relevant revision plans should be transparent and publicly available. To this end, the annex to the Revision Policy of Statistics Austria available on the Internet must be continually maintained.

- On-going revisions must be described in the standard documentation. This relates not only to the publication timeline for the individual revision steps, but also to quantitative information relating to the deviation of individual data generations from the final results.

- In the case of occasional/event-driven revisions, users must be informed immediately. The information should appear in the same publication medium in which the original results were published. All procedures regarding the obligation to provide information about occasional/event-driven revisions are regulated in detail in the Revision Policy of Statistics Austria.

3.6.7 Confidentiality

Guidelines:

- Before results – in whatever format – are published, potential confidentiality issues must be investigated. This applies both in terms of the publication and forwarding of data in aggregated form (frequency table and indices) as well as for the provision of microdata.
- Names and addresses should always be deleted from microdata at as early a stage as possible. The secure storage of microdata in compliance with all basic principles of the data security regulation is mandatory for all employees of Statistics Austria.
- If there is a need to contact respondents in the course of data collection, they should be alerted that Statistics Austria commits fully to the principles of confidentiality and data protection; the data is used solely for statistical purposes and personal data is never forwarded.
- One objective of statistical confidentiality is the avoidance of the publication of data cells that need to be protected. In the publications of Statistics Austria a cell is deemed to be in need of protection when too small a number of statistical units contribute to its creation.
- The choice of methods for preserving statistical confidentiality as well as the technical implementation are strongly dependent on the statistical material and the particular situation. In all cases the Methodology organisational unit should be involved in all procedural issues relating to confidentiality.
- In addition to the guidelines in this document, the guideline published on the Internet "Statistical confidentiality in publications and the transmission of data" (available in German only) applies in its entirety.
- Data users must be informed of the methods and procedures implemented for the sake of preserving confidentiality. If relevant, any expected restrictions or loss of information should be mentioned. In all cases, this aspect should be addressed in the standard documentation under the point "Treatment of confidential data".

3.6.8 Documentation and quality reporting

Guidelines:

- After reading the standard documentation, users should then be in a position to understand the concepts realised and the methods applied in the products of Statistics Austria such that they can interpret and use the published results of a statistical product appropriately.

- A standard documentation text should be compiled for each statistical product created by Statistics Austria. All standard documentation texts are published on the Statistics Austria website under the "Documentation" section.

- Standard documentation must generally be compiled according to a uniform pre-defined structure. A template of the structure is available to staff on the Intranet. The inclusion of all section headings at the 2-digit level of this structure is mandatory. Lower levels should only be included if relevant for the particular product. New headings at the 3-digit level and lower can also be included where appropriate.

- Each standard documentation must contain an Executive Summary, the length of which should not exceed 1½ pages. The Executive Summary should summarise the most important characteristic elements of the statistics and give useful information regarding the use of the data. Following the Executive Summary is a table containing the most important key points of the statistics. If possible, the Executive Summary should contain a graphic visualising the statistics or illustrating their embedding in an overall system.

- When creating standard documentation texts, a writing style should be used that is as clear as possible. Repetitions of previously used text passages should be avoided. Technical terms should be explained where they first occur and abbreviations should be written out in full the first time they appear in the text. In addition, technical terms and abbreviations should be explained in an accompanying glossary and/or list of abbreviations. Tables and graphical elements must be labelled and explained in sufficient detail. Where a reference is made in the text to other external documents available on the Internet, a corresponding hyperlink should be included. The hyperlinks included in standard documentation texts are checked quarterly and replaced if necessary.

- In the case of products whose periodicity exceeds one year, standard documentation must be compiled for each reporting period/reference date. With products with a periodicity of one year or less, the existing standard documentation must be revised once a year. However if there are significant changes to the basic concepts in this type of project, a new standard documentation text must be compiled.

- The relevant project manager is responsible for compiling the standard documentation. Before a standard documentation text is published on the Internet, it must be subjected to careful editing. In all cases it must be released by the responsible director/head of department. Following this step, it must be transferred to Quality Management for checking in terms of content and formal criteria. Only after release by Quality Management is it uploaded to the Internet.

- If a statistical product is the subject of a feedback meeting, the relevant standard documentation is initially discussed in an internal preliminary meeting attended by the project manager, the staff involved in creating the product, the General Directorate, the heads of the relevant directorate/department and Quality Management. Based on the results of this discussion, the documentation undergoes a first revision. All recommendations emerging from the feedback meeting must be incorporated in the standard documentation, taking particular account of the views of users and external experts.

- All reporting obligations, including those outside of the standard documentation system, must be met by the project manager. This relates particularly to the delivery of quality reports to Eurostat (see also Section 3.6.3). In the main these reports are governed by EU regulations. Statistics Austria staff who participate in working groups involved in the development of such EU regulations should strive proactively to ensure that quality reporting is meaningful, comprehensible and stable over time.

- Statistics Austria project managers must ensure that there is internal documentation of all work. The transparency and reproducibility of the key working steps must be guaranteed.