



Report on the quality of official statistics, 2024

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Preface

Section 6 of the Act relating to official statistics and Statistics Norway, the Statistics Act, (SSB 2019a) of 2019 states that Statistics Norway shall submit an annual report to the Ministry of Finance on the quality of official statistics. The Ministry's letter of allocation for 2024 to Statistics Norway states that, as a priority, Statistics Norway shall ensure cooperation, coherence and quality in the Norwegian statistical system. This is the third report on the quality of all official Norwegian statistics.

This report is based on the information and quality assurance systems that are available at the time of reporting. The assessments and recommendations take a comprehensive view of the production of official statistics whenever possible. The report has been discussed by the Committee for Official Statistics and the Council for Statistics Norway.

Statistics Norway, 12 June 2024

Geir Axelsen
Director General

Summary

The quality requirements for official statistics are described in Section 5 of the Statistics Act and the European Statistics Code of Practice (Eurostat, 2017), see Appendix D.

Findings

The quality report's main source of information is the annual quality evaluation of all producers of official statistics. The quality evaluation has now been conducted at statistical level for the first time. Self-assessments for all statistics in the national programme for official statistics 2021–2023 (the statistical programme) (SSB, 2021) and information from follow-up meetings, constitute the factual basis for this evaluation. A questionnaire on compliance with quality requirements was completed for the self-assessment.

Involving statisticians in the quality evaluation at statistical level has contributed to raise the statistics producers' awareness of the quality requirements. This is an important and positive effect of the quality evaluation.

The results from the quality evaluation show good compliance with many of the quality requirements in the Statistics Act and the European Statistics Code of Practice. It is still necessary to improve awareness of, and compliance with some of the quality requirements. This includes the quality requirement for statistical confidentiality along with measurement and communication of uncertainty in the statistics in accordance with the quality requirement for accuracy and reliability. Compliance varies considerably among statistics producers for some requirements.

For approximately two-thirds of the statistics, the producers have indicated that statistical confidentiality needs to be maintained to prevent information being revealed about individuals or companies in the published statistics. To reduce this risk, it is important to use recognised methods and software for disclosure control. The quality evaluation shows that it is uncertain whether statistical confidentiality has been adequately safeguarded in about 20 per cent of previously published statistics. This indicates a need to raise awareness of and increase competence in statistical confidentiality.

The quality evaluation examines the extent to which statistical uncertainty is calculated, assessed, documented and communicated. Uncertainty is calculated in 23 per cent of the statistics. Several also assess uncertainty without making specific calculations. For half of the statistics, the accompanying explanations include possible reasons for statistical uncertainty. The results show clear potential for improvement, and improvements in this area will be valuable for many users and in the communication of the figures.

An indicator for timeliness has been presented for all official statistics for the first time. On average, the timeliness of official statistics overall is somewhat better than the requirement set by the Ministry of Finance for Statistics Norway. There is considerable variation in the timeliness of the statistics. The statistics producers generally consider users' requirements and expectations for timeliness to be largely met.

The results from the quality evaluation show that quality indicators are seldom used in the production of official statistics to measure quality in statistical processes or output. This confirms findings from previous quality evaluations at institutional level.

Statistics Norway's reports on quality in administrative information systems are designed to provide assessments and feedback on the quality of individual administrative data sources, but they are not necessarily well suited for tracking quality developments over time.

In 2022, the producers had planned a total of 113 quality improvement measures based on recommendations in previous quality reports, and by autumn 2022, a quarter of these had been implemented. A status report of 161 measures in January 2024 showed that 42 per cent of the measures had been implemented.

Overarching recommendations

The quality evaluation at statistical level has helped improve the factual basis for making recommendations on how to enhance quality. The most important new recommendations for ensuring compliance with the quality requirements in the Statistics Act and European Statistics Code of Practice are detailed below.

There is a need to increase the use of recognised methods and software to safeguard statistical confidentiality. Competence in statistical confidentiality needs to be improved, and one suggestion is to introduce compulsory basic training in statistical confidentiality for all new employees involved in the statistical production process and in relevant support functions.

Awareness of the uncertainty in statistics needs to be raised. All producers should consider how the calculation, documentation and communication of uncertainty can be improved.

Awareness of the quality requirements in the Statistics Act and European Statistics Code of Practice should also be raised, and it is recommended that courses on quality be made compulsory for all new employees working in statistics production and relevant support functions.

The quality reports drawn up by Statistics Norway based on data deliveries from administrative information systems need to be further developed to track the development of quality over time and to more easily adapt the report template as new needs arise. As a first step, a cost-benefit analysis of this need should be performed.

Several recommendations from earlier reports are still applicable for several of the producers. The most important of these are as follows:

- Improve user contact by creating established forums for statistical domains that currently lack these
- Conduct regular user surveys with systematic follow-up of the results
- Improve and standardise statistical documentation
- Increase the use of quality indicators to measure quality in statistical processes and output

Further development of the quality system

An important recommendation from earlier reports that is still applicable is to increase the use of quality indicators. This requires further development of the quality system through standardisation of data, metadata and log data structures, and the development of a common framework of indicators that can be used across statistics and producers. This is essential for expediting the efforts to increase the use of quality indicators.

The development of the quality system in relation to quality evaluations and quality reviews largely aligns with the plans outlined in last year's report. The quality reviews have been streamlined, requiring fewer resources, and they are being performed over a shorter period of time than before. The number of reviews conducted each year has increased and will rise further in 2024. According to the plan endorsed by the Committee for Official Statistics, all producers of statistics must undergo a quality review for one of their statistics by the end of the current period in the national programme for official statistics (SSB, 2021). Achieving this objective is dependent on producers participating,

allocating the necessary resources and submitting statistics for review. The reviews should also be evenly distributed throughout the statistical programme period, which ends in 2027.

The annual quality evaluation will continue at statistical level. From 2025, it will be possible to measure the development in compliance with the quality requirements that are relevant at statistical level. The five new producers who joined the statistical programme in 2024 will be integrated into the quality system and will begin conducting quality evaluations on a par with the other producers starting in 2024.

Figure 1 Methods and tools for measuring the quality of official statistics. Previous and current statistical programme period

Methods, tools and frequency for measuring quality		Programme period 2021–2023			Programme period 2024–2027
Quality indicators, continuous measurement		Awareness and development			Development and introduction
User contact, frequent		Various forms of user contact			Advisory committees, meetings with government ministries, reference groups, user surveys, feedback function
Quality in administrative data sources		Regular meetings, annual reports			Regular meetings, annual reports
Quality evaluation based on Section 5 of the Statistics Act and the principles in the European Statistics Code of Practice, annually		2021 and 2022: Institutional level Questionnaire + interview per institution			2024–2027
Self-assessment questionnaire and follow-up interview		2023: Statistical level Questionnaire + interview per domain			<ul style="list-style-type: none"> Institutional level: new producers, the first year Statistical level: all producers, annually
Quality review of selected statistics/domains. • Systematic review – maps strengths and weaknesses	SSB, no. per year	2021 1	2022 1	2023 3	2024–2027 Up to 4 per year
	Other producers, no. per year	2021 0	2022 0	2023 1	2024–2027 Up to 4 per year
Peer review, every 7 years		Completed in 2021			From 2024: Annual reporting on implementation of measures

Source: Statistics Norway

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1. The quality system for official statistics

1.1. The Norwegian statistical system

The provision in the Statistics Act requiring Norway to have a multi-year, national programme for official statistics forms the basis for the national statistical system. The programme specifies which statistical domains are to be covered and which public authorities are responsible for the individual statistics. The statistical system encompasses the statistics under the programme, the authorities responsible for them, and other actors and forums involved in coordinating official statistics.

The Committee for Official Statistics (SSB, 2019b) assists Statistics Norway in coordinating the development, production and dissemination of official statistics and helps ensure that the national statistical system is fit for purpose and effective. At the end of 2023, the committee had 32 members. All the producers of official statistics are members. The other members are owners of administrative information systems that are sources for official statistics, or authorities involved in cooperation related to official statistics. The committee contributes in the quality assurance of the annual report on the quality of official statistics. A key issue in 2023 was the proposal for a new statistical programme (see Chapter 1.2). The committee also addressed issues that shed light on the requirements for official statistics and the role of statistics producers. Statistics Norway is working to strengthen the committee's contribution to the development of the statistical system through active participation by all members. Producers exchange experiences at technical and operational level in methodology and dissemination networks, which are discussed in more detail in Chapter 7.6.

For a further description of the Norwegian statistical system, the committee's role and the statistical programme, refer to previous publications on the quality of official statistics (SSB, 2019-2024).

1.2. The statistical programme and producers of official statistics

In December 2023, the Norwegian government approved the national programme for official statistics for the period 2024–2027, which essentially builds on the statistics and priorities from the first programme (2021–2023). The work on the proposal for a new programme and the public consultation highlighted users' needs for development in official statistics in the years ahead. The programme for 2024–2027 includes more than 80 development initiatives spread across more than 50 statistical domains. The statistics producers must follow up data access, funding and other factors that need to be in place to carry out the development work during the programme period.

In 2023, there were 11 producers of official statistics:

- Norwegian Directorate of Fisheries
- Norwegian Institute of Public Health (NIPH)
- Norwegian Agriculture Agency
- Norwegian Environment Agency
- Norwegian Labour and Welfare Administration (NAV)
- Norwegian Institute of Bioeconomy Research (NIBIO)
- Norwegian Communications Authority (Nkom)
- Norwegian Water Resources and Energy Directorate (NVE)
- Norwegian Petroleum Directorate (Norwegian Offshore Directorate as from 1 January 2024)
- Norwegian Directorate of Immigration (UDI)
- Statistics Norway (SSB)

The following authorities are also producers of official statistics as from 2024:

- Norwegian Agency for Public and Financial Management (DFØ)
- Directorate of Integration and Diversity (IMDi)
- Norwegian Food Safety Authority
- Norwegian Meteorological Institute
- Norwegian Agency for Development Cooperation (Norad)

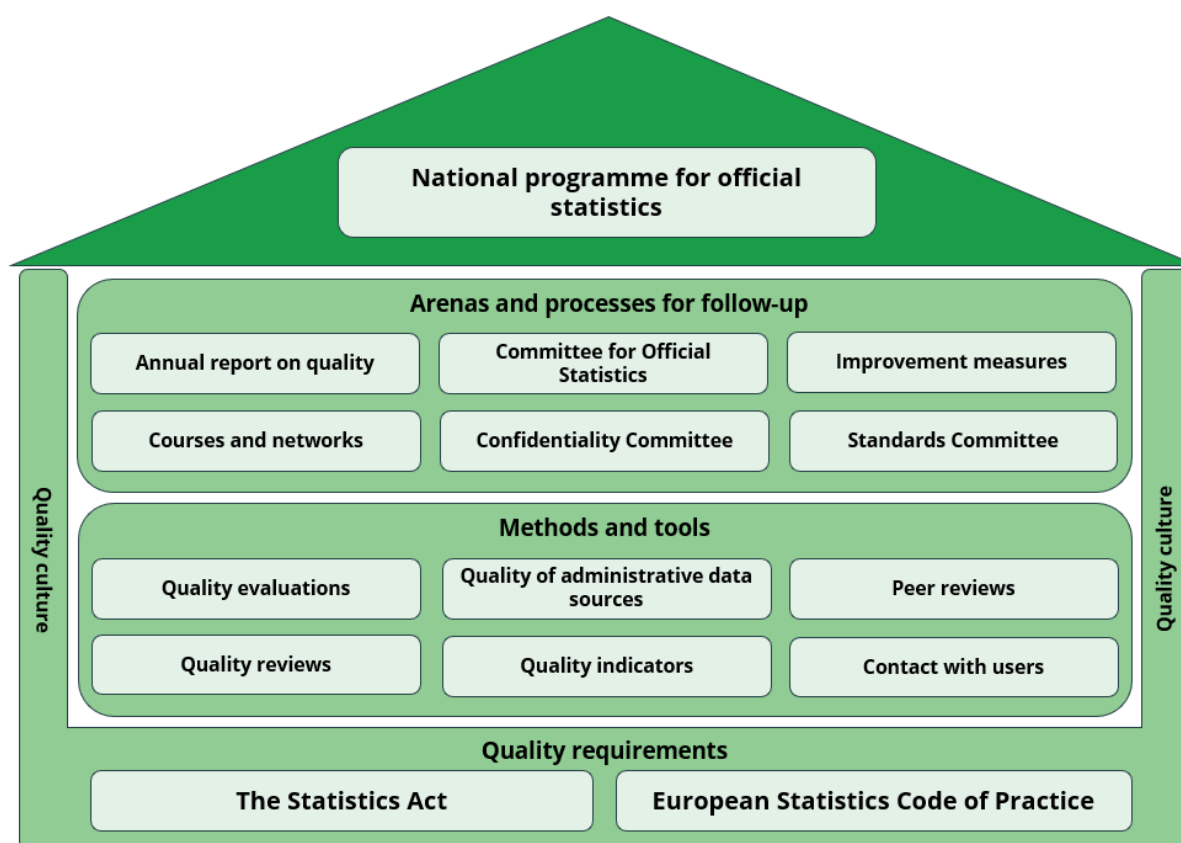
The number of statistics in the statistical programme for 2024–2027 categorised by statistical domain and statistics producer is shown in Appendix B.

1.3. About the quality system

The quality system for official statistics is intended to safeguard the quality of official statistics and consists of the following key elements:

- The quality requirements defined in the Statistics Act and European Statistics Code of Practice. These form the foundation of the quality system.
- The national programme for official statistics. The programme defines what constitutes official statistics and specifies which statistical domains are to be covered and which public authorities are responsible for the statistics.
- Methods and tools for measuring and assessing the quality of official statistics. The various methods and tools help to form a picture of the quality of official statistics and how different aspects of quality develop over time.
- Arenas and processes for monitoring quality. The various processes and arenas provide the basis for improvements and competence building and can serve as an aid when describing and producing guidelines for effective compliance with the quality requirements.
- A quality culture throughout the production of statistics and the quality system, in which all organisational levels take responsibility for ensuring good quality in the statistics.

The quality system is depicted as a house in the illustration below.

Figure 1.1 The quality house – the quality system for official statistics

Source: Statistics Norway

The above illustration is an updated version from previous years, as the quality system evolves over time. One of the new elements is quality culture, which is described in more detail in Chapter 7.4. Two internal committees at Statistics Norway are also shown in the illustration. The Confidentiality Committee's main task is to devise general and practical guidelines for how Statistics Norway interprets the provisions of the Statistics Act on statistical confidentiality in published statistics and customised tables. The Standards Committee is responsible for the centralised standardisation efforts in Statistics Norway, which means it serves as a driving force and coordinator for the harmonisation of existing coding systems and variables, as well as for the development of new, shared functionalities/services associated with these. The committee's work lays the foundation for efficient use and reuse of data that Statistics Norway collects, processes and manages. Although these are currently internal committees in Statistics Norway, the results of their work, such as guidelines and standards, will be relevant and useful for all producers of official statistics, and will be shared with them.

1.4. Report structure

This report is based on information obtained using the methods and tools on the first floor of the quality house (Figure 1.1).

The primary source for forming a picture of the quality of official statistics is the quality evaluation conducted in autumn 2023, in which a particular emphasis was placed on assessing compliance with the quality principles that can be assessed at statistical level. Chapter 2 provides a summary of the results, assessments, recommendations and improvement measures from the quality evaluation.

Quality reviews are an established and systematic method for assessing and improving the quality of individual statistics. Although few statistics are reviewed in terms of quality each year, the recommendations and improvement measures from these reviews often have a transfer value for other statistics and help to improve the quality of official statistics more broadly. The status of quality reviews is described in more detail in Chapter 3.

Information on the quality of registry data, as described in Chapter 4, has been collected through Statistics Norway's cooperation on quality with owners of administrative information systems.

For statistics to be relevant and meet users' needs, it is important that statistics producers have suitable forums and channels to gain insight into users' needs regarding the content and dissemination of statistics. The status of the work on user contact is discussed in more detail in Chapter 5.

The status of improvement measures from quality evaluations and quality reviews is discussed in Chapter 6.1.

Eurostat's peer review in Norway in November 2021 covered all quality principles in the European Statistics Code of Practice. The peer review is therefore an important source of information, but it is limited to statistics encompassed by the European Statistical System. In 2021, the peer review included Statistics Norway, the Norwegian Institute of Public Health, the Norwegian Directorate of Immigration, the Norwegian Directorate of Fisheries and the Norwegian Institute of Bioeconomy Research. The follow-up of recommendations in the peer review is presented in Chapter 6.2.

Chapter 7 provides a comprehensive overview of the prioritised areas of development for the quality system. Greater use of quality indicators to measure quality in the production of official statistics was highlighted as an area for future development in last year's report. The status of the work on quality indicators is discussed in Chapter 7.1.

2. Quality evaluation of official statistics

2.1. Background

The primary objective of the quality evaluation is to form a picture of the compliance with the quality requirements in the Statistics Act and the European Statistics Code of Practice. In previous quality evaluations, the statistical divisions in Statistics Norway and the other external producers of official statistics assessed compliance with the quality requirements that are relevant at institutional level, as well as those that are relevant at statistical level for their own statistics. Assessments of compliance at institutional level provided clear answers, but at statistical level they were vague and failed to capture the variations between different statistics. The quality evaluation initiated in autumn 2023 was therefore designed to obtain information on compliance with quality requirements for the individual statistics in the statistics programme.

The quality evaluation is described in more detail in the report *Quality evaluation of official statistics, 2024. Findings and recommendations* (SSB 2024).

2.2. Process

Information is collected in the quality evaluation in a self-assessment questionnaire with around 35 questions based on the quality principles in the European Statistics Code of Practice and Section 5 of the Statistics Act. Not all principles are covered in the questionnaire, as only themes considered relevant to the Norwegian context and that apply to all statistics were included. The questionnaires were mainly completed by the statisticians responsible for the relevant statistics or someone with in-depth knowledge of them at the statistical divisions in Statistics Norway and the other external producers of official statistics. Responses were received for all statistics encompassed by the statistical programme, giving a total of 343 completed questionnaires. The responses therefore cover all official statistics. Production processes for the statistics varied considerably in terms of focus, scope and complexity. The statistics are all given the same weighting in the results presented in this report. The survey was followed up with an interview with each statistical division in Statistics Norway and external producers of statistics.

The survey was well received by Statistics Norway's statisticians and the external producers. The self-assessment and follow-up interview help to raise awareness of the quality requirements among statistics producers, and many of them use the results to form an overview of the potential and the challenges in their statistics production.

2.3. Findings

The results from the quality evaluation show good compliance with many of the quality requirements in the Statistics Act and European Statistics Code of Practice. Awareness and compliance need to be increased for some of the quality requirements, such as statistical confidentiality and measuring and communicating uncertainty in statistics, which are related to the quality requirement of accuracy and reliability. Below is a more detailed assessment of compliance with the quality requirements covered by the quality evaluation.

Coordination and cooperation

Considerable efforts within innovation in the production of official statistics are currently underway, both nationally and internationally, and it will be beneficial for statistics producers to contribute to or stay up to date with such efforts. Most statistics producers work in cooperation with other parties in the production of at least one of their statistics.

Commitment to quality

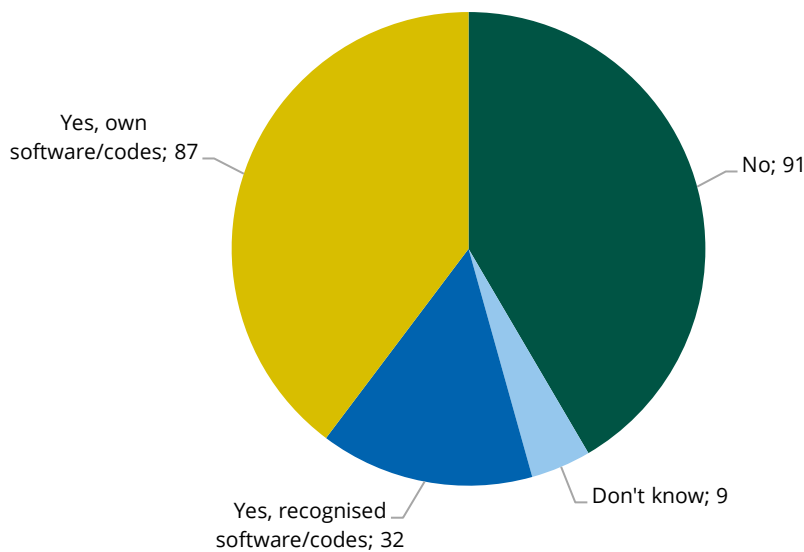
When asked whether they regularly evaluate their statistical production process to identify areas for improvement, most respondents answered 'Yes', or 'Yes, but there is room for improvement'. When asked if quality indicators are used to assess the production process and output quality, two-thirds responded 'No'. This confirms the impression from the previous quality evaluation conducted at institutional level, that the use of quality indicators is not widespread. There is reason to believe that greater use of quality indicators could lead to more systematic evaluation of the statistical production process, with a view to identifying areas for improvement. Quality indicators are discussed in more detail in Chapter 7.1.

Statistical confidentiality and data protection

For approximately two-thirds of the statistics in the survey, the producers stated that statistical confidentiality needs to be safeguarded to prevent information being disclosed about individuals or companies in published statistics.

The results from the quality evaluation suggest that overall, statistical confidentiality is not adequately safeguarded. Many producers take steps to ensure statistical confidentiality, but there is uncertainty about whether these efforts are sufficient. Some statistics are produced using software that has the capability to ensure statistical confidentiality. Of these, more than a quarter are produced in approved software, while statisticians' own codes are used in the remainder.

Figure 2.1 Do you use software/codes to ensure statistical confidentiality, and if so, do you use recognised software? Number of statistics.



Source: Statistics Norway

Of the statistics producers who need to ensure statistical confidentiality, 20 per cent responded 'Yes' or 'Don't know' to the question of whether confidentiality may not have been adequately safeguarded in all published statistics or in customised tables. For those who answered 'Don't know', this may mean that they do not want to give guarantees or that they have insufficient knowledge about statistical confidentiality. Furthermore, 94 per cent responded 'Yes' or 'Yes, but there is room for improvement' to the question about whether the institution has a clear, uniform understanding of confidentiality that is practical and usable.

Impartiality and objectivity

To ensure that all users have equal access to statistical releases at the same time, it is important to know when the statistics will be published. To address this, Statistics Norway devised a release calendar, available on ssb.no, showing when the various statistics will be published. Most external producers of statistics also set a release date well in advance, and only in one case is the date set less than one month before publication.

For most statistics, only those involved in the production process have access to the results before they are published. Where someone not involved in this process does have such access, this is often due to their cooperation with other authorities in the control of data quality and accuracy. In some of these cases, the cooperation is not disclosed when the statistics are published, or it is uncertain if it is disclosed.

With few exceptions, serious errors discovered in published statistics are corrected as quickly as possible, and corrections of published statistics are announced. Announcing planned revisions is relevant for well over half of the statistics, and this is done in advance for just under two-thirds of these statistics.

Sound methodology, appropriate statistical procedures and non-excessive burden on respondents

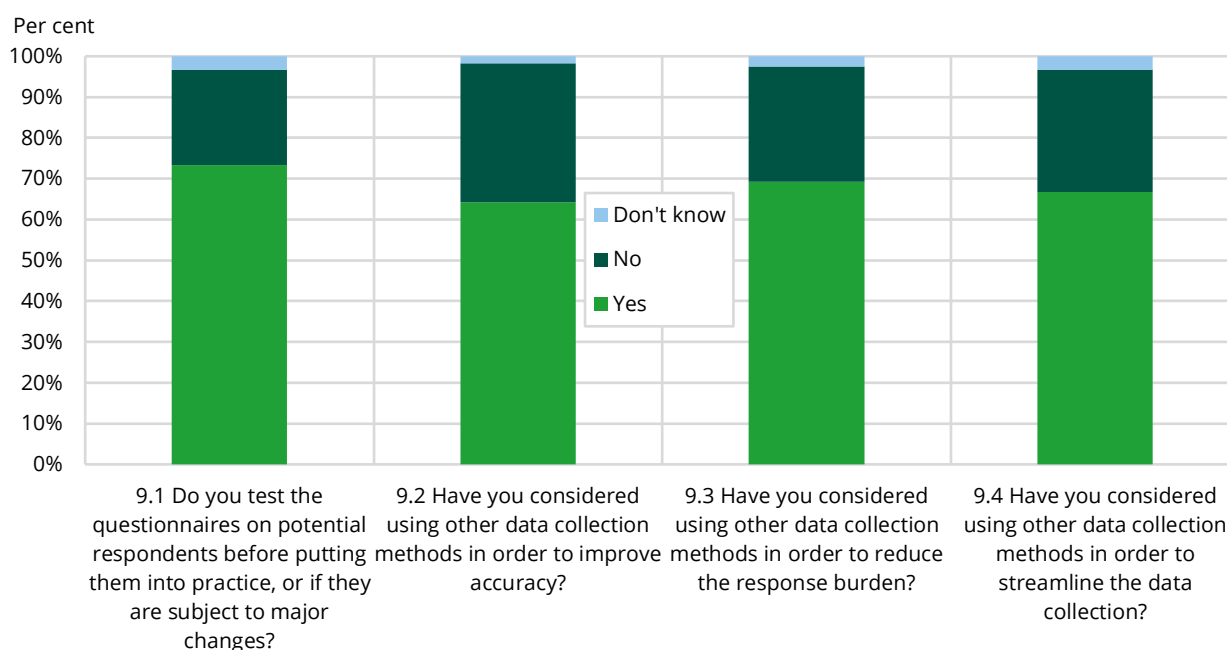
When asked whether there is written documentation describing how the statistics are produced, almost all respondents answers 'Yes', but more than half also said there was room for improvement. This question refers to documentation that explains for producers the steps in the statistical production process.

External producers of statistics were also asked whether documentation of how the statistics are produced is accessible on the statistics' home page. Two-thirds of the statistics produced outside Statistics Norway have such documentation on their home page. Statistics Norway publishes user-oriented documentation for all its statistics, under 'About the statistics' at ssb.no.

Statistics producers should periodically assess whether all the information being collected is necessary. This is important for the principle of data minimisation, which entails limiting the amount of personal information that is collected and processed. Producers of official statistics must only collect what is necessary for the intended purpose of the statistics. For 70 per cent of the statistics, occasional assessments are made of whether there is a need for all the information that is collected.

Data collected via a questionnaire is used in one-third of the statistics. Among these, the questionnaire is tested for three out of four statistics before it is put into practice or when major changes are made.

Consideration has been given to using a different data collection method in two-thirds of the statistics, with a view to either reducing the response burden, streamlining the data collection or improving the accuracy of input. The statistics producers indicate that alternative data sources have been adopted for several statistics in recent years.

Figure 2.2 Those who collect data via questionnaires, do they test the questionnaires and assess the data collection method?

Source: Statistics Norway

In some statistical domains, considerable resources are allocated to editing. To determine whether it is possible to reduce resource use and/or expedite the release of statistics, it is important to understand how the editing work impacts on the end result. It is therefore recommended that this impact is measured, for example by comparing results from input and published statistics (output). For just over two-thirds of the statistics, data are subjected to editing during the production process. Two-thirds of those who edit data do not measure the impact of editing.

Relevance

User contact forums have been established for approximately two-thirds of the statistics. Statistics Norway has appointed 19 advisory committees across various statistical domains. Direct user contact also takes place via email and telephone through a central support team as well as the statisticians responsible for the relevant statistics.

About one-third indicate that they are aware of unmet user needs. Not all needs can be met, and the value of meeting a user need must be weighed up in each case against the costs it will entail. In the follow-up interviews, several respondents mention that confidentiality concerns can also prevent statistics from being published at the level of detail that users would like.

See also Chapter 5 on user needs.

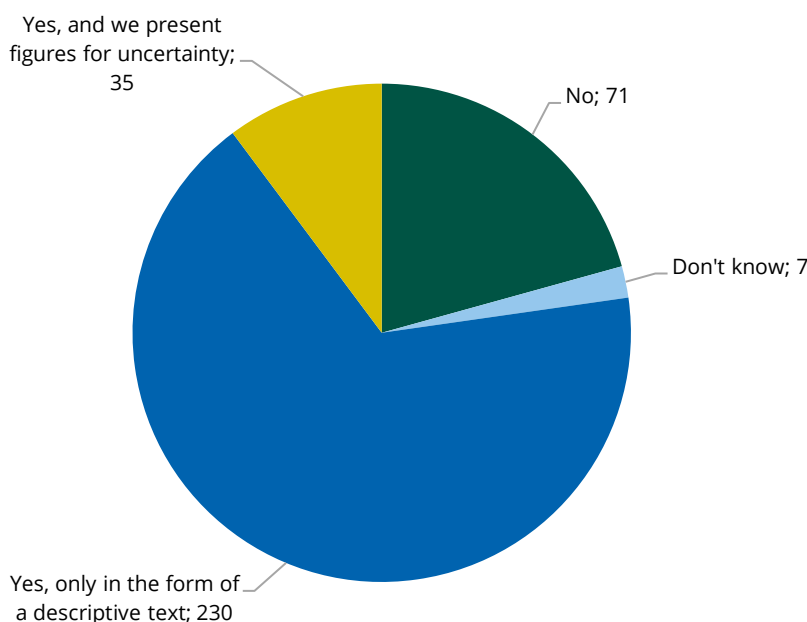
Accuracy and reliability

Statistics should reflect reality, and it is important to be aware of uncertainties in the data analysis and in the communication of findings. Results and the degree of uncertainty must be presented in a factual manner. When dealing with uncertain figures, it may be prudent to round off figures or use cautious language. If there is a high degree of uncertainty, consideration should be given to whether the statistics are of a sufficient quality to be published.

Uncertainty is calculated for 23 per cent of the statistics, and figures on uncertainty are presented for just under half of these on the relevant statistics' home pages.

Those who do not calculate uncertainty were asked whether they nevertheless assess various types of uncertainty without quantifying specific measurements. The sources of uncertainty most frequently assessed but not quantified are processing errors, measurement errors and other types of uncertainty. Sixty-seven per cent of the statistics include a description of uncertainty in explanatory text on their home pages. Twenty per cent of the statistics are published without any description of uncertainty, while 10 per cent include a calculation of uncertainty.

Figure 2.3 Do you explain uncertainty in the documentation on the statistics' home page? Number of statistics



Source: Statistics Norway

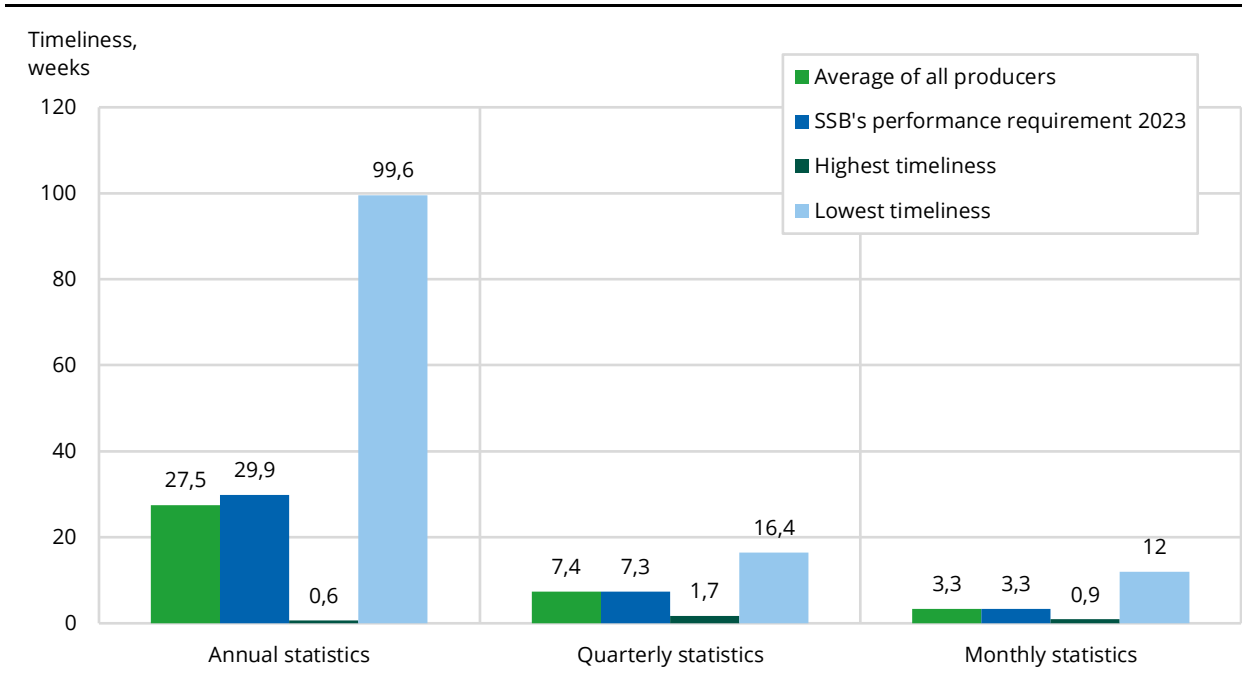
Timeliness and punctuality

For the first time, an indicator of timeliness covering all official statistics is being presented. Data on the timeliness of Statistics Norway's statistics are sourced from the organisation's dissemination platform, while for other producers of official statistics, data are obtained from questionnaire responses.

The timeliness indicator shows the average number of weeks from the end of the reference period until the statistics are published. The quality evaluation has revealed varying practices in the interpretation of the reference period, which means there can potentially be some inaccuracies and sources of error in the calculation of timeliness for Statistics Norway.

The results for monthly, quarterly and annual statistics are averages that include both preliminary and final figures. The average timeliness for all official statistics is slightly better than the requirement set by the Ministry of Finance¹ for Statistics Norway, but there is substantial variation, with some statistics being released much sooner and others much later than the average.

¹ The Ministry of Finance's requirement for Statistics Norway is that timeliness should be at least as good as the best of the last three years. This means that for annual, quarterly and monthly statistics in 2023, timeliness should be better than or equal to 29.9 weeks, 7.3 weeks and 3.3 weeks, respectively.

Figure 2.4 Timeliness in official statistics

Source: Statistics Norway

Statistics Norway and other producers of statistics are continuously working to improve the timeliness of statistics, either by reducing the production time or by gaining earlier access to data. A substantial amount of preparation is completed beforehand, ensuring that production can commence promptly once data becomes available.

When asked if the timeliness meets users' requirements, 83 per cent responded that it satisfies user needs to a very large or fairly large extent. There are plans to increase the frequency or expedite the release of 13 per cent of the statistics in order to improve timeliness.

Coherence and comparability

When asked if breaks in time series are explained and described, almost all responded 'Yes' or indicate that there have been no breaks.

Regarding whether the statistics are comparable with other countries, approximately 60 per cent respond 'Yes', while 80 per cent use national or international standard classifications. Many official statistics are mandated in the EEA Agreement and adhere to Eurostat requirements, ensuring comparability across other European countries. Some statistics are also comparable with other countries as a result of requirements or guidelines from other international organisations, such as the UN and OECD.

Accessibility and clarity

In the follow-up interviews, several statisticians said they would like more and better tools as well as clearer recommendations and guidelines for visual presentations of published statistics. Almost half of the statistics include illustrations, such as figures, graphs and maps.

Customised analyses or tables can be provided for more than half of the statistics upon request. Researchers can access data at unit level for two-thirds of official statistics, but strict rules apply.

2.4. Recommendations 2024

In addition to recommendations from previous reports, 17 new recommendations have been added based on findings from the 2023–2024 quality evaluation, for which statistics producers will be asked to develop improvement measures. The most important new recommendations are as follows:

- All statistics producers should assess how the calculation, documentation and communication of uncertainty can be improved.
- Courses on quality should be offered to everyone and made compulsory for new employees in order to raise awareness of the quality requirements in the Statistics Act and European Statistics Code of Practice.
- There is a need to increase the use of recognised methods and software to safeguard statistical confidentiality. Basic training in statistical confidentiality should be offered to everyone and made compulsory for new employees to enhance competence and raise awareness of statistical confidentiality.

Other new recommendations relate to themes such as timeliness, user contact, visual presentation of published statistics, technical solutions for collecting data and universal use of statistical standards and classifications.

The recommendations are described in more detail in Appendix C.

3. Quality reviews

Systematic quality reviews are one of the tools employed to measure and assess the quality of official statistics and are performed for selected statistics every year. In such reviews, compliance with the quality requirements in the Statistics Act and European Statistics Code of Practice is assessed by various means, such as self-assessment, reviews of sources of error and uncertainty, process reviews, user focus groups and reviews of the dissemination of statistics. The self-assessment is based on the questionnaire survey in the quality evaluation. A quality review results in a report in which the quality review team describes strengths and weaknesses and makes recommendations for improvements. The responsible statistical unit devises improvement measures based on these recommendations, and the status of the measures is reported annually. The quality review framework described in Appendix E has been significantly streamlined and developed in recent years. Refer to Chapter 7.2 for further details of the development.

The recommendations from the quality reviews typically focus on improving the actual statistics, but can also involve the systems used to produce them. Although quality reviews pertain to specific statistics, improvement measures can have an impact beyond the statistics under review:

- Improvement measures are often relevant for other statistics within the same domain, and their implementation can therefore impact several statistics.
- Improvement measures related to systems benefit all statistics that use those systems, e.g. dissemination and metadata systems.

Quality reviews help to improve the quality of individual statistics and official statistics in general.

Since 2015, a total of 20 quality reviews have been performed. In 2023, three reviews were carried out: two at Statistics Norway and one at the Norwegian Directorate of Fisheries. This is the first time that Statistics Norway has conducted a review of another statistics producer. The quality reviews in 2023 resulted in 51 new quality improvement measures that have been implemented, are in progress, or are planned. See Chapter 6.1 for more information on the status of improvement measures from quality reviews.

4. Quality in administrative information systems

4.1. Background

This chapter examines the status of Statistics Norway's cooperation with owners of administrative information systems. Statistics Norway has had a formal cooperation with data owners since 2012.

Agreements between Statistics Norway and data owners form the basis for the cooperation. These agreements regulate the ordering of annual data deliveries, the frequency of meetings at management level and the provision of structured feedback on the quality of the data that Statistics Norway receives from the data owners (quality reports).

The aim of the cooperation is to improve the quality of administrative information systems that serve as data sources for official statistics.

4.2. Status

A total of 30 agreements have now been signed, and 23 of these were renewed in connection with the new Statistics Act. Two new agreements were entered into in 2023, and five still need to be renewed or concluded.

The agreements encompass around 180 different data deliveries to Statistics Norway with varying frequencies, ranging from daily streamed data to monthly, quarterly or annual data deliveries. For most of the agreements, data deliveries should be ordered in the autumn before the year of delivery, but the consistency with which these agreements are followed up by the responsible division in Statistics Norway varies. Based on the data deliveries, Statistics Norway is contractually obliged to produce in excess of 100 quality reports annually. The actual number of quality reports produced is lower, primarily due to capacity constraints and prioritisation of other tasks. In 2023, 85 quality reports were produced. The quality reports assess aspects related to the transfer of data and quality of units and values, and can include suggestions for quality improvement measures.

In addition to the quality reports, numerical quality indicators are also developed for some data deliveries. Both the quality reports and the numerical quality indicators provide feedback on invalid, missing, suspicious or inconsistent values, or instances where there are missing units, duplicate units or units that should have been deleted. The numerical quality indicators quantify the number of observations with missing values or highlight other anomalies. Feedback is not provided in a format that could influence the data owner's processing of individual units.

The quality reports are designed to provide textual assessments and feedback on the quality of the individual administrative data source, but they are not particularly well-suited for examining the development of quality over time. The format of the quality reports is also not conducive to efficient collation and aggregation across the different data sources.

Other non-standardised documents can also be drawn up and exchanged with data owners in connection with the work on quality. Regular follow-up meetings are held between Statistics Norway and the data owners at varying levels, from senior executive to statistics manager or executive officer level. Annual 'summits' are held with the largest data owners.

The experiences from the structured cooperation on quality have been positive. One consequence of the cooperation agreements has been an increased focus on quality by the data owners. As already discussed, Statistics Norway draws up various documents, which are sent to the individual

data owners and used, inter alia, to improve quality in their data systems. The contact between Statistics Norway and data owners is more frequent and systematic than before.

4.3. Assessments

The quality of data from administrative information systems is considered to be very good, and these data sources are highly valued in the production of statistics. Using data from such systems also helps to maintain a low overall response burden to society. The cooperation agreements give Statistics Norway and the data owners a good overview of annual data deliveries, updated contact points and thus better predictability and a better basis for cooperation on improving quality.

Below follows a summary of the findings in the quality reports for 2023.

Transfer of data

Data are mainly received on time and according to the agreed specifications. In 2023, there were a few instances where data deliveries were delayed or had significant deficiencies. In a couple of cases, the agreed data deliveries were significantly delayed/deficient, resulting in statistics not being published at the scheduled time.

Assessments of quality in terms of units

In most cases, 'unit' refers to an individual or business.

The identifiability of units is generally good. This means that units can be unambiguously identified in the system from an identification number, such as individuals with a personal identification number and businesses with an organisation number. Good identifiability is essential for, inter alia, efficiently linking multiple data sources and producing statistics with pseudonymous identification numbers. However, there are some instances where the system is unable to identify units. This is often due to missing personal identification numbers for foreign nationals.

Some quality reports highlight challenges related to undercoverage, which is when units that should have been included in the data source are missing. Duplicates are also sometimes identified in the data sources.

Assessments of quality in terms of value

Values are understood as information relating to the units. These can be numerical values, attributes or data states.

In general, feedback is more often received on challenges with values than with units. Measurement errors, inconsistencies and suspicious values are reported. Most feedback relates to missing values.

Suggestions for improving quality

In many quality reports, Statistics Norway provides feedback with suggestions for cooperation activities to improve the quality of data sources, new controls to identify and correct shortcomings in data sources, and suggestions for how data sources can be further developed to provide even greater value in the statistics. In several areas, it is emphasised that a strong and close cooperation, with frequent meetings and strong lines of communication, are essential for enhancing the quality of administrative data. Non-conformity or problems in deliveries are mostly resolved in a dialogue between the data owner and Statistics Norway.

4.4. Recommendations

Despite the positive experiences with Statistics Norway's system and good feedback from the peer review in 2021, there is still room for improvement. In some cases, Statistics Norway can provide closer follow-up of agreements and data owners, and there is also room for improvement in the completion and submission of quality reports.

Statistics Norway can consider whether the quality reports should be further developed to enable assessments of the development in quality over time and easier adaptation of the report template as new needs arise.

5. How do official statistics meet user needs?

Official statistics are intended to meet users' needs, which can vary from user to user and for different types of statistics. For some statistics, it might be more important that the figures are published quickly rather than being as accurate as possible. For others, accuracy might be the most important factor. Regardless of which principles of good quality in statistics are the most important for the different users, the statistics must be of such a quality that the figures are reliable and can be used as a basis for important decision-making in society. It is also important to weigh up which user needs can be met within the given resources.

In order to understand users' needs, it is important to have sufficient contact with users. Statistics Norway has identified six target groups for the dissemination of statistics:

1. The general public: anyone without particular competence in utilising statistics but who is interested in questions that official statistics can answer.
2. The media: those working for newspapers and broadcast media. Disseminators of official statistics to wide audiences.
3. Analysts/decision-makers: disseminators of data to decision-makers in both the public and private sector; as well as being decision-makers themselves.
4. Researchers: researchers at universities and university colleges, as well as students at master's level and above.
5. School pupils: pupils in lower secondary and upper secondary schools in Norway.
6. Respondents: individuals who supply information that forms the basis for official statistics.

The statistics are also used internally by the producers of official statistics for analysis and research and when collating other statistics.

5.1. Advisory committees and established forums

Statistics Norway has established user contact forums for approximately two-thirds of its statistics, as well as 19 advisory committees in various statistical domains. Consideration is being given to creating more advisory committees for certain domains. This is a recommendation from the previous quality report.

Two-thirds of external producers of official statistics do not have established user contact forums. Those who produce only a small quantity of official statistics report that setting up an advisory committee for a small statistical domain can be resource-intensive.

Other established user contact forums include annual meetings with government ministries, reference groups, KOSTRA² working groups and other regular contact with users.

5.2. Informal user contact

Several statisticians report having significant user contact, despite there being no established forums. This contact also provides insight into user needs. User contact takes place directly via email and telephone to the statisticians responsible for the relevant statistics or through a central support team. For most statistics, the names, email addresses and phone numbers of those responsible for

² KOSTRA stands for Municipality-State-Reporting. Via KOSTRA, all local and county authorities in Norway submit figures on their activities to Statistics Norway.

them are displayed on the statistics' home page. User contact also takes place through a central support team or switchboard. It is important that the enquiries are conveyed to the relevant statisticians.

In relation to knowledge about unmet user needs, about one-third of respondents in the quality evaluation indicate that they are aware of unmet user needs. Some user needs may have technical and temporal challenges that prevent them from being met. A cost-benefit analysis must be performed to assess the value of meeting a specific user need versus the costs entailed. In the follow-up interviews, several respondents mentioned that confidentiality concerns can also prevent statistics from being published at the level of detail that users would like.

5.3. User focus groups

In 2023, three quality reviews were performed with associated user focus groups. The reviews encompassed Statistics Norway's statistics on number of jobs and earnings, and on municipal housing charges. For the former, two focus groups were held: one with external users and one with internal users. A review was also performed of the Norwegian Directorate of Fisheries' landing statistics. The external focus groups consisted of users from the six target groups listed above.

The users consider the statistics reliable and said if they find errors they can notify the relevant statisticians, who then correct and provide information about the errors.

The users in the focus groups mentioned that they like the news articles and would like the statistics producers to provide more detailed explanations of the figures. For Statistics Norway's statistics, users want some kind of summary or introduction on the statistics' home page, along with key figures highlighted. The discussions also revealed that there is a trade-off between using technical and precise language versus simplified language for broader appeal. One of the findings from the focus groups is that users, especially expert users, want more information about the uncertainty associated with the figures.

Users requested more visual presentations of the figures. This is in accord with the wishes of the statistics producers themselves, who want it to be easier to use different forms of visual presentation, as discussed under 'Accessibility and clarity' in Chapter 2.3.

5.4. User survey for ssb.no

In recent years, an annual user survey has been conducted for ssb.no. The results of the 2023 survey show a more positive development in several areas compared to 2022. Users are more satisfied and are now finding it easier to navigate the website. Satisfaction has also increased among first-time users. Eighty-six per cent are very satisfied or fairly satisfied with ssb.no, while 92 per cent report that they found what they were looking for, which is a record for Statistics Norway.

The largest user group consists of private individuals visiting ssb.no to find specific figures.

The user survey also indicates that frequent users of ssb.no are the most satisfied and find information more easily.

Three per cent of users are dissatisfied with ssb.no; a proportion that has remained stable in recent years. Those selected to participate in a survey were the least satisfied, with 12 per cent being dissatisfied. The ssb.no survey does not reveal whether these users are dissatisfied with the website or with being selected to participate in a survey or report data. Among those selected to respond to a survey, 70 per cent found what they were looking for, which is a relatively low result compared to other user groups. This may partly explain the dissatisfaction.

5.5. Recommendations

It is recommended that enquiries regarding user needs received by the central support team be summarised and communicated to the statisticians.

Improving the communication of uncertainty in statistics will add value for many users. This recommendation is also discussed in more detail in Chapter 2 on the quality evaluation.

6. Quality improvement measures

6.1. Status of measures

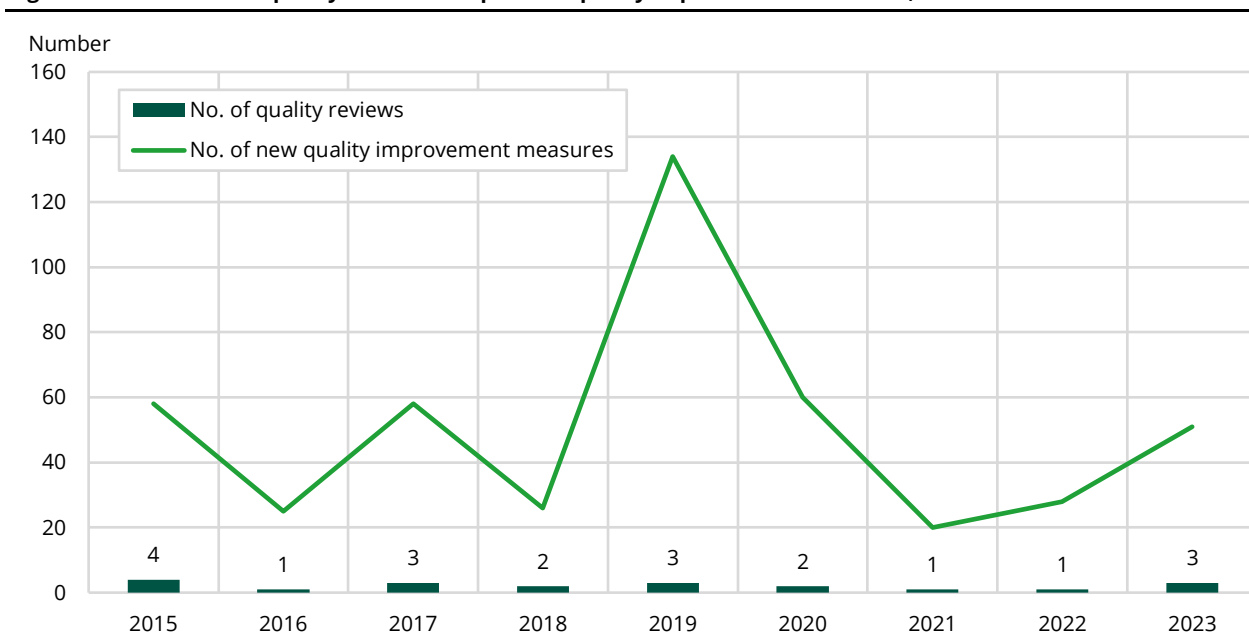
Recommendations for quality improvement measures are an important part of quality reviews and quality evaluations. Action plans are drawn up, and the measures are implemented by the statistics producers or their support functions. All action plans are followed up annually by Statistics Norway's quality review team.

Improvement measures after quality reviews

Since 2015, a total of 20 quality reviews have been carried out, resulting in the implementation of 460 measures. Of these, 382 (83 per cent) had been implemented by the end of 2023. The number of measures arising from each quality review varies considerably, and there are also differences in terms of scope, type and level of resource intensity required for implementation.

A revised and streamlined methodology for quality reviews has led to an increase in the number of reviews and quality improvement measures.

Figure 6.1 Number of quality reviews and planned quality improvement measures, 2015–2023



Source: Statistics Norway

Improvement measures after quality evaluations

In 2023, Statistics Norway published the Report on the quality of official statistics, 2023 (SSB, 2019–2024). The report includes 45 recommendations (K1–K45) for improving the quality of official statistics, and urges statistics producers to follow up on the recommendations from the quality evaluations. Statistics producers conduct independent cost-benefit analyses of the recommendations and use this as a basis to draw up plans with prioritised improvement measures. The action plans include information on the start and completion dates of the measures, as well as the status of the work. Statistics Norway obtained the status of the action plans from all producers as of January 2024.

All producers have devised an action plan, and many of the measures have already been implemented in areas such as documentation and transparency. In the period 2022–2023, a total of 161 measures were planned. In the January 2024 status report, 68 of these had been implemented. In the October 2022 status report, 27 of the 113 planned measures had been implemented.

Figure 6.2 Status of reported measures. Change from 2022 to 2024

Source: Statistics Norway

6.2. Follow-up of peer review

As members of the European Statistical System, Statistics Norway and four producers of official statistics in Norway were subject to an external peer review in the period 2021–2023. The four other producers were the Norwegian Directorate of Fisheries, the Norwegian Institute of Public Health, the Norwegian Institute of Bioeconomy Research and the Norwegian Directorate of Immigration, who also report statistics to the statistical office of the European Union, Eurostat.

The peer reviewers did not find any violations of the European Statistics Code of Practice, but gave 15 recommendations for how the Norwegian statistical system could be developed and improved. Many of these recommendations focussed on more detailed planning of ongoing initiatives, improved visibility of quality work and closer cooperation between Norwegian statistics producers.

The recommendations included further developing the national programme for official statistics and devising an action plan for quality improvements in the Norwegian statistical system. The expert team also recommended that Statistics Norway consider the possibilities for publishing more detailed statistics, strengthening user contact and further developing the services for accessing microdata. It was recommended that the other authorities clarify their role as producers of official statistics, both internally within their organisations and externally, including on their respective websites.

Statistics Norway and the four other authorities have drawn up a joint action plan to follow up on these recommendations. The action plan has been approved by Eurostat, and annual reports will be submitted on the implementation of the improvement actions from the end of 2024 to the end of 2027.

The complete action plan with detailed descriptions and deadlines has been published on the websites of Eurostat and Statistics Norway (Eurostat, 2021–2023).

A preliminary status review at the end of 2023 shows that the implementation of the improvement actions is mostly proceeding as planned.

7. Developing the quality system

Maintaining and further developing the quality of official statistics is crucial for building trust in the statistical output and the institutions producing it. In this age of increasing disinformation, the importance of trust continues to grow. The population and decision-makers must have access to official statistics that are timely, relevant and reliable.

In the 2023 report, the need for development within three areas of the quality system was particularly highlighted: quality indicators, quality reviews and quality evaluations. Below is a status update on the progress within these areas since the last report was published. Quality culture, resource use in the production of official statistics, courses and networks for building competence and the potential for creating common solutions that can be used by all producers of official statistics are also discussed. Finally, the potential impact of technological advancements on official statistics in general, and the quality system specifically, is outlined.

7.1. Quality indicators

One of the main recommendations from last year's report was to initiate work on assessing relevant quality indicators for selected statistics, and that all producers adopt a timeliness indicator.

The results from the quality evaluation at statistical level, as discussed in Chapter 2, confirm the findings from last year's report that the use of indicators to measure quality in statistical processes and output varies and is not widespread. Only one-third of the statistics employ some kind of indicator to measure one or more aspects of quality. Only six producers have reported improvement measures related to quality indicators. In connection with the latest quality evaluation, all producers have reported timeliness figures for their statistics to Statistics Norway. Based on this, a timeliness indicator for all official statistics has been developed, as presented in Chapter 2.3. Producers should use this indicator to track developments in timeliness in their statistics, both at statistical level and as an average at producer level.

In 2024, Statistics Norway published a report on recommended quality indicators in official statistics (SSB, 2019–2024), which features 26 recommended quality indicators in the statistical production process. The document serves as a tool for statistics producers in assessing relevant quality indicators in their production processes. A tool for assessing which quality indicators are relevant for the individual statistics is therefore in place.

Feedback from the follow-up meetings in the quality evaluation indicates that introducing quality indicators is challenging for statistics producers. The indicators usually need to be created using programming code, which requires producers to have coding skills. To prevent each producer from using the same indicators in different ways, standardised program code packages should be developed to create indicators. This would require standardisation of data, metadata and log data structures. Statistics Norway has initiated work in this area, but there is still a long way to go before structures and program code packages are fully standardised.

7.2. Quality reviews

The development of the quality review framework is largely in line with the plans outlined in last year's report. The framework has been streamlined, and the number of quality reviews conducted each year is increasing. In 2023, a quality review was performed with an external producer for the first time. The experiences with the new framework have been positive, and it will be continued for the quality reviews planned for 2024. Additionally, some features will be further developed, particularly those related to assessments of the dissemination of statistics.

The selection of statistics for quality reviews is twofold. In Statistics Norway, selection is based on criteria approved by management: risk, results from previous reviews, identified errors and areas with a strong focus. Each year, the Directors' Meeting determines which statistics will undergo a quality review based on proposals from the quality review team. For external statistics, producers submit statistics for quality reviews.

The plan for conducting quality reviews is anchored in Statistics Norway and the Committee for Official Statistics. As per the plan for the current statistical programme period, up to four of Statistics Norway's statistics and four from other producers will undergo a quality review each year. However, having a sufficient number of statistics from other producers volunteering has been challenging. In connection with the development of the quality system following the new Statistics Act in 2019, a clear expectation was communicated that producers must contribute to quality reviews outside their own institution. This is important not only for sharing expertise across different producers but also for distributing quality work resources effectively among the various producers of official statistics.

7.3. Quality evaluations

The last self-assessment questionnaire in the annual quality evaluation was conducted at statistical level, which has led to a significant improvement over the last year. The process now includes follow-up interviews at division level in Statistics Norway and at institutional level externally. As signalled in last year's report, a strong focus was placed on gathering information on the uncertainty in statistics in this quality evaluation. Quality evaluation at statistical level will be continued in 2024. For the five new producers in the statistical programme, quality evaluation will also be conducted at institutional level in 2024.

The self-assessment questionnaire from the quality evaluation at statistical level is also used as input for quality reviews. The quality evaluation at statistical level thus helps to improve efficiency in the quality reviews.

7.4. Quality culture

Since the summer of 2023, Statistics Norway has been involved in a UN project aimed at developing a maturity model for quality culture that will be comparable across different countries' statistical systems. The model will be presented to the United Nations Statistical Commission in 2025. The project defines quality culture in official statistics as the shared values, beliefs, behaviours and practices related to quality assurance in official statistics.

A mature quality culture is characterised by having quality as a guiding principle for production of statistics and the quality system, in which all organisational levels are committed to ensuring good quality in the statistics. This entails meeting users' needs through a focus on continuous improvement and innovation, while also ensuring that quality deviations are monitored and followed up and that effective channels are in place to address quality-related challenges. Robust procedures are also needed for managing errors to ensure transparency and learning. Statistics Norway holds courses on themes related to quality culture, which are open to all producers of official statistics.

7.5. Resources for the production and quality assurance of official statistics

In last year's report, resource use was mapped for the production of official statistics by external producers. Several producers found it difficult to provide accurate estimates of resource use in the production of official statistics, partly due to the challenges in distinguishing the production efforts from other tasks and the lack of systems for logging and extracting data on time usage. Another

issue was whether to include support functions such as IT and communication in the resource estimate. As a result, resource use was based on estimates with a high degree of uncertainty. In the follow-up interviews with the producers, there were no signs of resource use having changed significantly compared to the previous year. As from 2024, the overall use of resources will increase somewhat as the scope of official statistics expands, with more statistics and producers encompassed by the new statistical programme.

In 2024, the Committee for Official Statistics should discuss how to measure resource use in the production of official statistics and how to follow up the resource situation going forward.

The Statistics Act of 2019 expanded Statistics Norway's remit to include tasks related to the coordination of statistical development and follow-up of quality assurance for all official statistics. No additional resources were allocated to perform these mandated tasks, and Statistics Norway has so far resolved this by reprioritising funding and resources within the existing budgetary framework. Considerable resources are devoted to coordinating the development of statistics through heading the Committee for Official Statistics, following up on the statistical programme, performing quality evaluations and reviews, and offering courses and other competence-building measures to all producers of official statistics. The expansion of the statistical programme in 2024, with five new producers and more statistics, requires an increase in Statistics Norway's resources in order to carry out these tasks as described in the Statistics Act. Statistics Norway will need to perform a cost-benefit analysis for various activities and measures within the given budgetary framework, and prioritise resources on this basis. It is also important that all producers and other members of the Committee for Official Statistics actively contribute to the coordination and quality assurance efforts.

Another challenge relates to the improvement work itself. Implementing relevant measures to improve compliance with the quality requirements in line with the recommendations in the quality reports requires the statistics producers' time and resources. This work is in addition to ordinary operational tasks, and finding time for this work can be challenging when resources are constrained. The more straightforward improvement tasks are often prioritised, while more extensive ones are bumped down the list or addressed over a longer period of time.

7.6. Courses and networks

In 2023, Statistics Norway organised and contributed to a range of competence-enhancing measures aimed at producers of official statistics. This included courses on quality, guidelines and models, as well as courses on quality indicators and administrative information. A total of 31 courses on methodology were held in Statistics Norway in 2023, most of which were also available to the members of the Committee for Official Statistics. Almost 450 people took part in the courses, about a quarter of whom were external participants. Breakfast seminars and workshops were also held on various themes related to methodology and quality in the production of statistics. These were open to all producers of official statistics and had broad participation.

In addition to the already established methodology network, Statistics Norway set up a dissemination network in 2023 for producers of official statistics. The purpose of this network is to share experiences with challenges and effective dissemination of statistics. A full-day seminar was held in the autumn of 2023 to launch this network, which has so far had around 50 participants. The participants have included staff involved in the dissemination and communication of statistics and those engaged in production and analysis.

7.7. Developing common solutions

To enhance the visibility of official statistics, Statistics Norway will continue to be a driving force in the attempts to make all official statistics easily accessible to users in the most comprehensive way

possible. Statistics Norway is working with the Norwegian Labour and Welfare Administration (NAV) on creating solutions that enable other producers to make their data accessible in Statistics Norway's Statbank. In the longer term, Statistics Norway will consider the options for a universal release calendar for all official statistics, where the producers themselves enter the necessary data. The aim is to provide users with easy access to all official statistics on a common platform, without having to consider who produces the statistics. The platform will clearly indicate which producer is responsible for the statistics, and there will be links to the producers' own websites. Statistics Norway will develop solutions for comprehensive dissemination of official statistics in close cooperation with the other producers of official statistics.

In last year's report, documenting statistics in accordance with SIMS (Single Integrated Metadata Structure) (Eurostat, 2023) was highlighted as a recommendation. SIMS is Eurostat's framework for reporting reference metadata.³ In 2024, Statistics Norway is working to align its user-oriented statistical documentation 'About the statistics' with SIMS, and will devise templates and guidelines for SIMS-compliant documentation and share this with the other producers of official statistics.

In the quality evaluation, use of Statistics Norway's coding system, *Klass*, was mapped. This system is used extensively in Statistics Norway, but it is not used for all statistics for various reasons. External producers cannot input their own coding systems in *Klass*, but they can utilise those entered by Statistics Norway. Considerable potential exists in terms of standardisation and efficiency through increased use of *Klass*. It should therefore be further developed to broaden usage of the solution, both in Statistics Norway and among other producers.

Statistics Norway has an effective quality assurance system that is central to the production of statistics. However, there is a need to systematise it and make it accessible, both internally in Statistics Norway and for other producers of official statistics. Easily accessible and clear procedures, routines and process descriptions help to foster commitment to and increase the focus on quality. Statistics Norway will perform a cost-benefit analysis of methods and tools that facilitate the systematisation of the quality assurance system, which will provide a basis for prioritising different elements within the system when necessary. Everyone should have easy access to the documents they require. The tool should also have the capability to generate reports and overviews that show the degree of compliance with compulsory requirements, and include a system for deviation management.

7.8. Developments that impact on the quality assurance system

With the emergence of digital platforms and technologies, an increasing number of actors, including private companies, organisations and individuals, have the capacity to collect and analyse data and publish statistics. This can represent a challenge for official statistics because users will be able to use alternative sources of statistics that may appear to be reliable. Such sources may also be more relevant than the official statistics. It is therefore crucial that official statistics maintain a high quality and convey to users what distinguishes them from other available information. The quality system is fundamental to conveying this.

The quality system is based on the requirements set out in the Statistics Act and the European Statistics Code of Practice. This Code of Practice was initially developed in 2005 and subsequently revised in 2011 and 2017. There have been considerable technological advancements since the last revision, and there is ongoing discussion in the European Statistical System about whether, and if so how, the established principles are being challenged by new technologies. One such example is how

³ Reference metadata describe the content and quality of the statistical data and document how the quality requirements in the European Statistics Code of Practice are met for the individual statistics.

the complexity of algorithms used in machine learning and other AI is challenging some of the quality principles. Ensuring transparency and adequate documentation when employing methods that use such algorithms is a challenge. A revision of the quality assurance framework in official statistics may therefore be necessary to ensure its continued relevance and contribution to quality assurance. It will take time before such a revision is carried out and a new framework is in place. A continual assessment therefore needs to be made of whether adjustments or adaptations are needed to parts of the quality system in response to the technological changes impacting on statistics. A pertinent example is considering whether requirements should be set for algorithms and documentation of these.

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Appendix A: Overview of methods and tools

Table A1 Established methods and tools that generate information on quality in statistics. Status and need for development

Methods, tools and frequency	Statistics Norway		Other statistics producers	
	Status	Need	Status	Need
Quality evaluations, annually	Evaluation at institutional level performed twice. Evaluation at statistical level performed once. <ul style="list-style-type: none"> 3 reports with recommendations for quality improvement measures. Follow-up of recommendations and associated measures 	Assess needs and propose a system for new producers of official statistics.	As for SSB	As for SSB
Quality reviews, selected statistics/domains each year	Established as a tool in Statistics Norway. System for selecting statistics and plans for 2024 considered and adopted in Statistics Norway.	Less resource-intensive methods and several reviews conducted annually.	Plan for implementation in 2024, the Committee for Official Statistics has approved the plan.	As for SSB. Member of the team conducting quality reviews.
Courses and networks	Courses (quality, indicators) Methodology network Dissemination network			
Quality of registry data. Reports on quality in administrative information systems, annually.	System established.	Recently revised, but improvement efforts are ongoing.	Scope of collection of administrative data is not currently known to Statistics Norway.	Consider entering into agreements with data owners on the supply of data and cooperation on quality.
Quality indicators, continuous measurement.	Report with recommended indicators has been published. Work on standardisation of process data to create quality indicators is underway.	All the statistics use quality indicators in the production process.	Generally not widespread.	Adopt quality indicators. As a starting point, it is recommended that indicators for timeliness be adopted.
User contact, regularly	Statistics Norway conducts regular surveys, has contact forums such as advisory committees etc.	Must consider whether the current arrangement is sufficient and if there is a need for improvement/ change.	All producers have various forms of user contact, but only a few of them have formalised and regular contact.	Consider established forums for contact with key users. Regular user satisfaction surveys. Feedback function on the producers' websites.
Peer review, every 7 years	Completed. Improvement actions devised and sent to Eurostat.	Implement improvement actions and report status	As for SSB, but only relevant for the four producers who contribute to the European Statistical System.	As for SSB.

Source: Statistics Norway

Appendix B: Overview of the producers of official statistics

Table B1 Number of statistics in the statistical programme 2024–2027, by domain and statistics producer⁴

Domain	Responsible authority. National programme for official statistics 2024–2027. As of 1 January 2024.																
	DFØ	NIPH	Norwegian Directorate of Fisheries	IMDi	Norwegian Agriculture Agency	Norwegian Food Safety Authority	Norwegian Meteorological Institute	Norwegian Environment Agency	NAV	NIBIO	Nkom	Norad	NVE	Norwegian Offshore Directorate	UDI	SSB	Total
Labour market and earnings								5								14	19
Banking and financial markets																10	10
Population				1											9	20	30
Construction, housing and property																11	11
Energy and manufacturing												4	1			14	19
R&D, technology and innovation										1						10	11
Health and social care		7														11	18
Income and consumption																4	4
Culture and recreation																10	10
Agriculture, fisheries and aquaculture			6		5	1				2						29	43
National accounts																9	9
Nature, climate and environment							1	2								24	27
Public finance												1				11	12
Prices and price indices																12	12
Social conditions and crime									12							16	28
Transport and tourism																19	19
Education																20	20
International economic relationships																13	13
Elections and democracy	1															12	13
Wholesale and retail trade and service activities																8	8
Establishments, enterprises, and accounts																12	12
Total no. of statistics	1	7	6	1	5	1	1	2	17	2	1	1	4	1	9	289	348

Source: Statistics Norway

⁴ The full names of the producers are given in Chapter 1.2.

Appendix C: Recommendations and improvement measures

Table C1 Recommendations and associated improvement measures⁵

Recom- men- dation no.	Recom- men- dation given, year	Recommendation	No. of measures	No. of measures imple- mented as of Jan. 2024	Imple- mented Oct. 22- Jan. 24	Status
K01	2022	Producers with no manager with overall responsibility for the production of statistics ensure that such a position is established and made visible on the producer's organisation chart.	3	2	1	
K02	2022	Producers of official statistics engage in cooperation that develops and promotes innovation in statistics production.	1	0	0	
K03	2022	Carry out quality reviews among the smaller producers and invite employees from small-scale production processes to participate in quality reviews at other producers.	3	2	2	Completed 2024
K04	2022	Offer staff working with the production of official statistics training in statistical confidentiality.	10	4	4	
K05	2022	Statistics Norway develops courses on statistical confidentiality for all producers of official statistics.	2	1	1	
K06	2022	Establish a routine for external parties who carry out commissioned assignments for producers of official statistics to sign a confidentiality agreement.	1	1	0	Completed 2023
K07	2022	The results of the ongoing work at Statistics Norway to introduce guarantees in accordance with the GDPR and the provisions of the Statistics Act on information security should be documented and made available to other producers of official statistics through the Committee for Official Statistics and the methodology network.	2	0	0	
K08	2022	All producers should have written guidelines for impartiality and objectivity in the production and presentation of statistics, and publish them on their website. They can refer to or reuse guidelines available on ssb.no.	7	4	2	
K09	2022	All producers should prepare written documentation on how the statistics are produced and keep the documentation up to date.	18	7	4	
K10	2022	Documentation of the statistical production is published on the statistical authority's website.	6	2	0	
K11	2022	All producers should announce the date and time for the release of statistics at least three months in advance and adhere to the announced date and time for all users.	6	5	2	
K12	2022	All producers should announce corrections to published statistics.	1	0	0	Completed 2023
K13	2022	Statistics Norway should prioritise the development of a common release calendar for all official statistics on ssb.no. Other producers are encouraged to actively work towards announcing the publication of their statistics on ssb.no.	3	1	0	
K14	2022	We recommend that producers familiarise themselves with the principles of revision developed by Statistics Norway and make them known to their users, for example by referring to Statistics Norway's website.	2	1	0	
K15	2022	When someone outside the statistics production team has access to statistical output prior to publication, this deviation must be justified and made known to users in connection with publication.	1	1	1	
K16	2022	Producers of official statistics who use data from administrative data systems (registers) should enter into agreements with data owners regarding the supply of data and cooperation on quality, for example according to a template from Statistics Norway.	6	5	4	
K17	2022	Ensure that user testing of questionnaires is carried out systematically.	2	1	1	
K18	2022	Consider offering training courses in using plain language.	7	4	4	
K19	2022	Prepare written guidelines for how the production of statistics should be carried out.	6	2	0	
K20	2022	Guidelines for how statistics should be produced are published on the statistics authorities' websites, or links provided to guidelines on ssb.no.	6	3	1	

⁵ The five main recommendations, R1-R5, from the Report on the quality of official statistics, 2022 (SSB, 2019-2024) summarise the most important of the 36 recommendations (K1-K36) from the interim report Quality evaluation of official statistics, 2022 (SSB, 2019-2024). To simplify reporting and follow-up, the measures corresponding to the five main recommendations in this table have been incorporated into the respective recommendations from the interim report.

Recom- men- dation no.	Recom- men- dation given, year	Recommendation	No. of measures	No. of measures imple- mented as of Jan. 2024	Imple- mented Oct. 22- Jan. 24	Status
K21	2022	Where applicable, discontinue data capture by email and replace it with a secure solution, such as file transfer.	6	2	2	
K22	2022	Collect and share best practices in new technologies and new data sources among producers of official statistics.	4	3	3	
K23	2022	Producers who do not have established forums for contact with users should consider establishing user councils or something similar. Conducting a user and stakeholder analysis can be a useful tool in this work. ⁶	1	0	0	
K24	2022	Producers who collect data for official statistics voluntarily, and who have experienced non-response leading to reduced accuracy, should explore the possibility of making participation in the survey mandatory.	0	0	0	
K25	2022	Producers should review the process for publishing preliminary statistics, for all official statistics. The review should aim to establish common guidelines for all official statistics.	4	1	1	
K26	2022	Some producers should analyse the difference between preliminary and final statistics. Based on the analysis, the need for preliminary statistics can be evaluated.	5	1	1	
K27	2022	Statistics Norway should develop a quality indicator for timeliness in official statistics.	3	3	2	Completed 2024
K28	2022	Producers whose statistics include variables that are not comparable with corresponding variables in other Norwegian statistics or who are unsure whether they are comparable with similar statistics in other countries, should investigate whether they can improve comparability, or possibly explain to users why comparison is difficult.	1	1	1	
K29	2022	All producers should draw up written guidelines for publishing statistics.	1	1	0	
K30	2022	All producers must ensure that the guidelines for publishing statistics are accessible on their websites. These may be guidelines drawn up by the producers themselves or the principles in the European Statistics Code of Practice, available on ssb.no .	3	2	0	
K31	2022	Statistics Norway holds a themed meeting in the methodology network on the dissemination of official statistics and graphics as a tool.	1	1	0	Completed 2023
K32	2022	Producers who do not offer customised analyses for clients are encouraged to consider doing so.	0	0	0	
K33	2022	Customised analyses that may be relevant to the general public should be published on the producer's website.	4	2	2	
K34	2022	Statistics Norway should offer a course in quality work that covers the European Statistics Code of Practice and the Generic Statistical Business Process Model (GSBPM).	1	1	0	Completed 2023
K35	2022	Statistics Norway should devise a plan for quality reviews of official statistics which ensures that all producers can participate in a quality review during a programme period. All producers are encouraged to participate in a quality review at another producer.	3	2	0	Completed 2023
K36	2022	Statistics Norway should compile a collection of best practices with guidelines and make it available to the Committee for Official Statistics.	3	1	1	
K37	2023	All producers of official statistics are encouraged to participate in the methodology network, courses, seminars and meetings on quality in statistics held by Statistics Norway or others.	5	0	0	
K38	2023	Statistics Norway raises the topic of professional independence and responsibility for quality assurance work (see Chapter 2.2) in the Committee for Official Statistics or the methodology network.	1	0	0	
K39	2023	The issue of assigning responsibility for quality work is discussed in the Committee for Official Statistics.	1	0	0	
K40	2023	When the efforts in information security are discussed in the Committee for Official Statistics, the producers of official statistics are invited to present their experiences.	1	0	0	
K41	2023	All producers adopt Statistics Norway's timeliness indicator: the number of days between the end of the statistics' reference period and publication of the statistics.	5	1	1	
K42	2023	All the producers of official statistics initiate work on assessing relevant quality indicators for selected statistics.	6	0	0	

⁶ The recommendation K23 from 2022 has been clarified.

Recom- men- dation no.	Recom- men- dation given, year	Recommendation	No. of measures	No. of measures		Status
				imple- mented as of Jan. 2024	Imple- mented Oct. 22- Jan. 24	
K43	2023	Producers should conduct regular surveys to measure user satisfaction with the statistics.	2	0	0	
K44	2023	Producers should introduce a feedback function for the statistics on their websites.	3	0	0	
K45	2023	All producers are recommended to document statistics in line with SIMS, following Eurostat's recommendation.	4	0	0	
K46	2024	It is recommended that Statistics Norway establish a clear and universal definition of the reference period used as a basis for calculating timeliness.	-	-	-	-
K47	2024	A review of the reference period is needed for all statistics in accordance with the revised definition.	-	-	-	-
K48	2024	For the KOSTRA statistics in Statistics Norway, it is recommended that an assessment is made of whether timeliness can be improved by allowing certain statistics to be published earlier or more frequently, based on a balance between timeliness and other quality objectives.	-	-	-	-
K49	2024	It is recommended that enquiries about user needs received by the central support team be summarised and communicated to those response for the statistics.	-	-	-	-
K50	2024	Improve the tools for creating visual presentations and the dissemination platforms to make it easier to publish different types of visual presentations.	-	-	-	-
K51	2024	Use different types of visual presentations.	-	-	-	-
K52	2024	Establish guidelines and build expertise in retrieving data directly from the IT systems of respondents or other data providers. One such example is machine-to-machine (M2M) communication.	-	-	-	-
K53	2024	Statistics Norway: consider opening up the <i>Klass</i> coding system so that external producers of statistics can input their own coding systems and classifications.	-	-	-	-
K54	2024	<i>Klass</i> should be adopted where practical and appropriate.	-	-	-	-
K55	2024	Explain uncertainty and potential sources of error on the statistics' home page.	-	-	-	-
K56	2024	Where uncertainty is already calculated for statistics, consideration should be given to publishing this on the statistics' home page.	-	-	-	-
K57	2024	Raising awareness and enhancing competence in understanding, calculating and communicating statistical uncertainty.	-	-	-	-
K58	2024	Measure the effect of editing and assess whether the editing work can be reduced and/or concluded earlier, or if it is possible to improve the quality of input data. See quality indicator number 4 in the report on recommended quality indicators in official statistics (in Norwegian only) (Documents 2024/5, SSB 2019–2024).	-	-	-	-
K59	2024	Establish and improve guidelines for disclosure control and raise awareness of these with statistics producers.	-	-	-	-
K60	2024	Adopt recognised software to ensure adequate statistical confidentiality.	-	-	-	-
K61	2024	Offer training in statistical confidentiality to everyone and make it compulsory for all new employees involved in statistics production and relevant support functions.	-	-	-	-
K62	2024	Offer courses on quality to everyone and make it compulsory for all new employees in statistics production and relevant support functions.	-	-	-	-
K63	2024	Consider whether the quality reports can be further developed to better track quality over time and more easily adapt the report template as new needs arise.	-	-	-	-
K64	2024	Standardise log data structures to facilitate the establishment of quality indicators.	-	-	-	-
Total number of measures			161	68	41	7

Source: Statistics Norway

Appendix D: Quality requirements for official statistics

The quality requirements for official statistics are defined in the Statistics Act and the European Statistics Code of Practice.

Section 5 of the Statistics Act stipulates the following:

1. Official statistics shall be developed, produced and disseminated in a professionally independent, impartial, objective, reliable and cost-effective manner.
2. The development, production and dissemination of official statistics shall be based on uniform standards and harmonised methods. The statistics shall be relevant, accurate, timely, punctual, accessible and clear, comparable and coherent.

The requirements in the Statistics Act are in accordance with the European Statistics Code of Practice (Eurostat, 2017), to which the Norwegian statistical system is subject under the EEA Agreement. The Code of Practice sets requirements for institutional factors and statistical processes, and is formulated as 16 principles with a range of underlying indicators:

Institutional factors (structure quality):

1. Professional independence
- 1 bis. Coordination and cooperation
2. Mandate for data collection and access to data
3. Adequacy of resources
4. Commitment to quality
5. Statistical confidentiality and data protection
6. Impartiality and objectivity

Statistical processes (process quality):

7. Sound methodology
8. Appropriate statistical procedures
9. Non-excessive burden on respondents
10. Cost effectiveness

Statistical output (output quality):

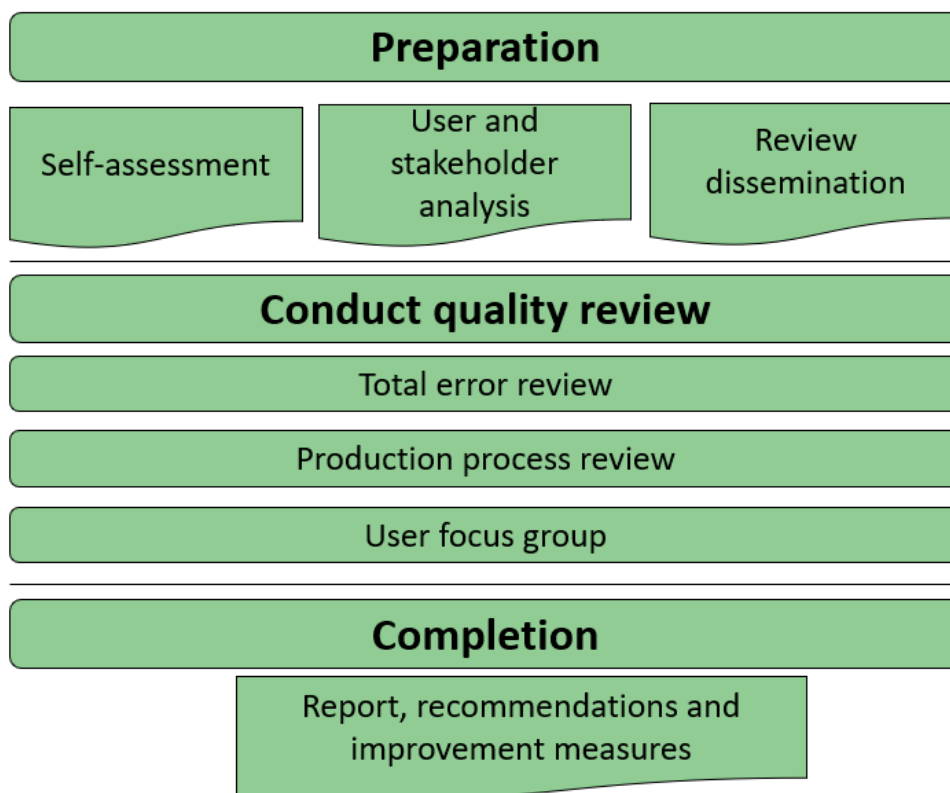
11. Relevance
12. Accuracy and reliability
13. Timeliness and punctuality
14. Coherence and comparability
15. Accessibility and clarity

Appendix E: Quality review framework

A quality review consists of the following activities:

- Statisticians perform a self-assessment based on the European Statistics Code of Practice.
- Statisticians perform a user and stakeholder analysis.
- Review of the dissemination of statistics on the website and in other media.
- Review of potential sources of error in population and data, assess data quality, based on the total error framework, the TF model, (Zhang, 2012).
- Review of the production process based on the process model GSBPM (UNECE 2019).
- Focus group (group discussion) with some users of the statistics, focussing on the quality principles for statistical output.
- Report from the quality review with recommended improvements from the quality team and an action list from the statistician.
- Annual status report on actions.

Figure E.1 The stages in a quality review



Source: Statistics Norway