

NISRA

Quality Assurance and Quality Review

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1. Introduction

NISRA is committed to instilling an ethos of continual improvement in the quality of the statistics it produces.

Sound methods and assured quality is a key principle of the Code of Practice for Official Statistics.



Principle 4: Sound methods and assured quality

Statistical methods should be consistent with scientific principles and internationally recognised best practices, and be fully documented. Quality should be monitored and assured taking account of internationally agreed practices.

The quality of a statistical product is defined as its *'fitness for purpose'*¹. The definition has one main consequence: that the quality of a statistic is seen as subjectively dependent on the purpose of the statistic, at the core of which is the user.

Quality underpins every stage of producing statistics; this ranges from initial design through to analysis, dissemination and evaluation. All official statistics producers must be open and transparent about the quality of their statistics, with users kept informed about the quality of the statistics they use. This is underpinned by the requirement under the Code that official statistics are produced to a quality that meets user needs, also known as their *'fitness for purpose'*, by:

- Documenting, implementing and monitoring quality assurance procedures
- Informing users about the quality of official statistics using the European Statistical Systems (ESS) measures of quality
- Publishing quality guidelines
- Regularly reviewing statistical processes and outputs
- Carrying out detailed quality reviews
- Peer reviewing within and across departments.

This document considers each of these requirements in turn and provides the supporting toolkit for implementation. It also outlines a programme of quality reviews for outputs and surveys as well as detailing initiatives that can be accessed centrally.

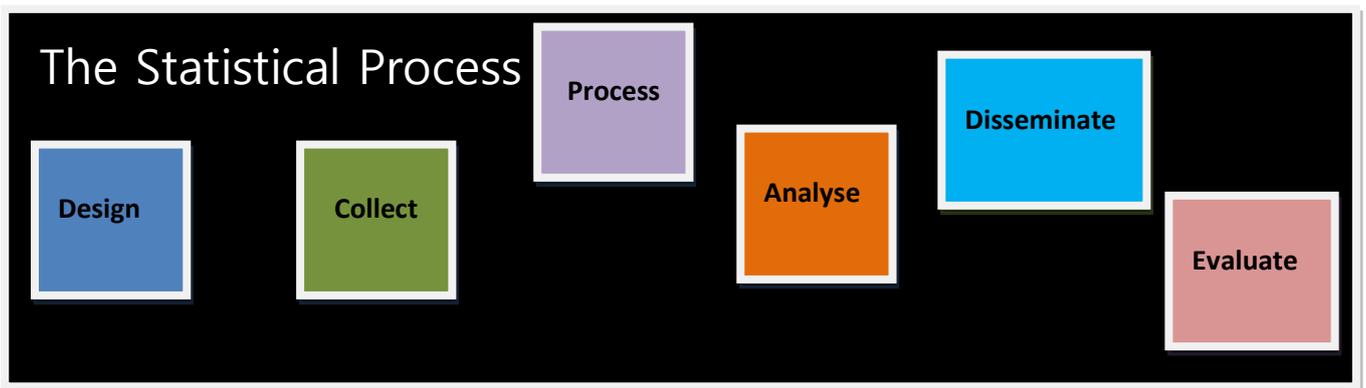
¹ Guidelines for Measuring Statistical Output Quality – ONS Version 4.1 September 2013

<http://www.ons.gov.uk/ons/guide-method/method-quality/quality/guidelines-for-measuring-statistical-quality/index.html>

2. Quality Assurance

“anticipating and avoiding problems”

Quality assurance procedures are a way of preventing mistakes and should cover all parts of the statistical process with the aim of ensuring we meet the quality requirements for our statistical outputs, and that any problems are anticipated and addressed.



Quality assurance:

- is anticipating and avoiding problems or error prevention;
- covers all procedures focused on providing confidence that quality requirements will be fulfilled;
- requires processes and systems in place that are planned and tested, and which should self-correct or flag problems under exceptions;
- aims **to prevent reduce or limit** the occurrence of errors in a statistical product and, therefore, to get it right first time. Getting it right first time” is more about getting the **process** right error free from the beginning to lessen the chance of errors, and not a limit to the revisions made (should the output be subject to a revisions policy);
- it is about being confident that methods and processes are capable of delivering ‘*fit for purpose*’ products and services;
- should specify the requirements that a quality system should meet, documenting these, but also allowing the person responsible for carrying out the processes to be

innovative – should any additional checks (not documented) be carried out because of another reason (i.e. someone new has completed the previous process; change to the sample etc)

- is also about creating evidence that errors have not slipped through. For example, testing survey questions to show that interviewers and respondents understand the questions, providing 'other' boxes so that exceptional answers will not be forced into miscoding, and providing clear guidance so that all relevant questions are asked.

Quality assurance (QA) procedures should be **DOCUMENTED, IMPLEMENTED AND MONITORED**. Quality assurance documents are working documents and should be made available to **all** staff and should be introduced to new staff members as part of their induction. Ownership of the QA documents by the branch staff should be encouraged. QA procedures and documents should be regularly reviewed and updated.

Documented

All quality assurance procedures should be documented. Encourage staff to produce a list of data checks that they carry out. QA documents should be 'visible' within working sections and introduced to all new staff. QA documents should be reviewed after each statistical cycle and updated when necessary to establish a system of continual improvement.

Example: Scottish Health Survey includes quality assurance procedures as part of the data quality document².

Implemented

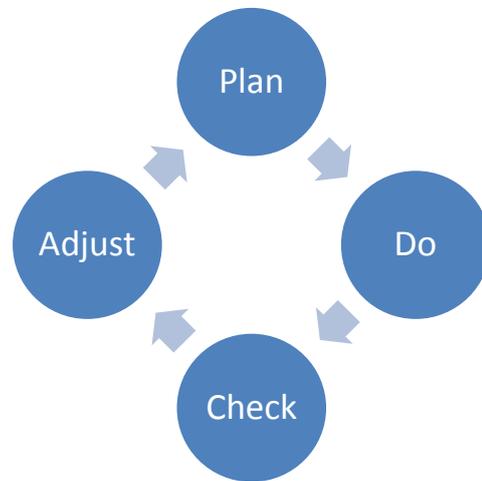
Each statistical output and survey should have an accompanying audit trail documenting that the relevant checks have been conducted and reviewed. Staff should date and initial check lists once they have been carried out.

Monitored

Quality management involves quality assurance and quality control. Once a mistake or problem has been identified through quality assurance staff should be aware of how to 'fix' the problem – this is quality control. Quality control should feed directly back and result in an update of the quality assurance documents hence a **PDCA (plan–do–check–adjust)** iterative



process (known as a Deming cycle) for the control and continuous improvement of processes and output is established.



3. Background Quality Report

We are required by the Code to inform users of the quality of statistical outputs.



Principle 4

“Ensure that official statistics are produced to a level of quality that meets users’ needs, and that users are informed about the quality of statistical outputs...report against of the definition of quality.” Practice 2

“Publish quality guidelines...” Practice 4

Principle 8

“Provide information on the quality and reliability of statistics..”

Practice 1

As previously stated, quality is defined as ‘fitness for purpose’ at the core of which is the user of the statistics. In order to enable users to determine whether outputs meet their needs, it is recommended that output producers report quality in terms of the six quality dimensions of the European Statistical System (ESS)¹, which are:

- Relevance;
- Accuracy;
- Timeliness and Punctuality;
- Accessibility and Clarity;
- Comparability; and
- Coherence.

The definitions for each of these six dimensions, is given in Annex A and a full listing of quality measure indicators can be found on the ONS website³. The most recent quality guidance from Eurostat also includes the following: Trade Offs; User needs and perceptions; Confidentiality, Transparency and Security; and Performance Cost and Respondent Burden.

Statistical quality is embedded both in the statistical products themselves and in the process used to produce them. These two aspects of statistical quality are often referred to as output quality and process quality.

³ <http://www.ons.gov.uk/ons/guide-method/method-quality/quality/guidelines-for-measuring-statistical-quality/index.html>

The six European attributes to process quality are Efficiency, Effectiveness, Transparency, Robustness, Flexibility and Integration⁴

Heads of branches and lead officers must ensure that users are informed about the quality of statistical outputs, including estimates of the main sources of bias and other errors, and other aspects of the ESS definition of quality. In addition, producers are expected to publish details of the methods adopted, including explanations of why particular choices were made.

This can be achieved in the following ways:

1. A background quality report (BQR) – this contains quality and methodology information which does not change from one release to another, for example where the data are collected from, the uses of the data. It is based around the ESS quality dimensions and should be reviewed regularly. For one-off surveys a single quality report will need to be produced.
2. Background notes - this would be the notes in the publication itself, containing quality and methodology information that is specific to that publication, for example response rate, standard errors and imputation rates.

BQR's form the backbone of reporting on the quality of official statistics. These not only allow official statistics producers to provide background information on a statistical output, they also allow users to understand the quality of a statistical output. This includes strengths, limitations and other key contextual information.

Reviewing and assuring quality is also a key factor in meeting the needs of users and building and maintaining trust in official statistics. All official statistics producers must be open and transparent about the quality of their statistics, with users kept informed about the quality of the statistics they use.

A Background Quality Report template⁵ is available as a starting point or as an aid for updating background quality information. To complement this there is a Summary of Quality Measures and Guidance on Completing a BQR, together with guidance from Eurostat in the form of the ESS Standard for Quality Reports:

- [GSS Summary Quality Measures](#): a summary of more specific measures to help in completing the template.

⁴National Statisticians Guidance: Quality, Methods and Harmonisation
<https://gss.civilservice.gov.uk/wp-content/uploads/2012/12/Quality-Methods-and-Harmonisation-National-Statisticians-Guidance.pdf>



GSS Background
5 Quality Report template

- [GSS Guidelines on Measuring Statistical Quality](#)³ – Provides a checklist of quality measures and indicators for use when measuring and reporting on the quality of statistical outputs; and
- [ESS Handbook for Quality Reports](#) – Provides comprehensive guidance on measuring the quality of statistical processes.

The guidance provides worked examples of measuring statistical quality against the ESS dimensions of quality, with quality measures and indicators used in for a wide range of statistical outputs. They are therefore relevant for statistical data sources including survey, administrative and census data.

Examples

1. [NISRA - Equality Statistics for the NI Civil Service.](#)
2. [ONS – Family Resource Survey \(and others under the theme of People and Places\)](#)

Comparing official statistics across the UK

One of the six dimensions of quality is comparability.

Some statistics are produced for the UK as a whole, while others are produced separately by each nation of the UK. To maximise the value to users of statistics for the nations of the UK, the National Statistician commissioned a Task and Finish group to consider how best to maintain comparability and coherence between official statistics published by the four nations. The TFG recommended that all high profile statistics, for which users say cross nation comparability is important, should be assessed for comparability by the relevant producers. The TFG developed a framework and criteria, grounded in user needs and priorities, for assessing the extent to which statistical output is comparable with its equivalent published elsewhere. A comparability scale has been developed to assess and report on statistics from across the UK. The scale comprises a range of 10 categories broken down into three markings – fully, partially and not comparable. A full explanation of the categories and how they can be used is given in the report: [Comparing official statistics across the UK](#).

4. Risk Assessment

All existing official statistics should undergo an annual risk assessment.

A Risk Assessment Tool⁶ has been developed in order to identify areas of immediate attention and hence to prioritise quality reviews.

Risk assessments should be carried out by the head of branch (HoB). The tool/template should be completed openly and honestly with views taken from the staff responsible at each stage of the statistical process.

The tool is an excel spreadsheet that requires the HoB to score each of the following areas for each publication: Sources, Methods, Processes, Systems, Quality, Users and Reputation and People. There are 3 scores: 0 – no issues, 3 – some improvements possible and 9 – in need of attention. A completed risk assessment is available for reference.⁷

The HoB should:

- Complete the survey details tab first, including details of output and lead statistician
- Work through each of the tabs starting with “Sources” and finishing with “People”
- Enter a 0, 3 or 9 which equates to green, amber and red.

Once this has been completed the HoP should review the completed scores to ensure consistency and challenge ratings where required.

Irrespective of risk assessment results, all official statistics should undergo a basic quality review on a timetabled basis (see Section 6). This will ensure that the quality of all official statistics (not just those identified through risk assessment tool) are taken into consideration on a semi-regular basis. This enables a process of continuous quality improvement.

Where an individual statistical product is identified to have quality issues it should undergo a quality review immediately.

Should an in-depth methodological review be required, resources should be allocated to conduct a quality review which is more in-depth. This may take the form of a National Statistician’s Quality Review (NSQR) (see Section 8).



GSS-Risk-Assessment-Tool.xlsx.XLSX

⁶ GSS Risk Assessment Tool



Example-of-Completed-GSS-Risk-Assessment

⁷ An example of completed risk assessment

5. Quality Review Tools

The GSS Quality Task Force have developed two quality review tools in order to support the code requirements outlined in Principle 4, Practice 5.



Principle 4

“Seek to achieve continuous improvement in statistical processes by, for example, undertaking regular reviews...”

Practice 5

1. Quality, Methods and Harmonisation Tool (QMHT)

The QMHT has been developed by the Quality Centre in the Office for National Statistics and the GSS Quality Task Force. QMHT has received endorsement from the National Statistician, has been signed by the GSS Statistical Policy and Standards Committee, and has been ratified by the Heads of Profession.

A 2013/14 NISRA Chief Executive target required each grade 6 command to review one statistical output using the QMHT and provide feedback to NISRA’s Agency Board. The Board endorsed the use of the QMHT as a quality reviewing tool within NISRA in May 2014.

The QMHT is a self-assessment questionnaire (in an Excel spreadsheet) designed to help producers of statistics review their surveys and outputs.

The QMHT can be accessed via the link⁸ and in order to use the tool **macros on the spreadsheet** must be enabled and the **screen resolution set to at least 1280 x 1024**.

2. Short-form QMHT

A short form quality review tool has been developed to complement rather than replace the use of the QMHT. It is also an Excel spreadsheet⁹ containing 7 sections:

⁸ <https://gss.civilservice.gov.uk/statistics/methodology-and-quality/quality-methods-and-harmonisation-tool/>



GSS Quality Review
Tool -short form QMH

⁹ Short-form QMHT

1. Details of Publication
2. Planning and Resources
3. Production and Methodology
4. Data Quality
5. Commentary and Dissemination
6. User Engagement and Evidence of use
7. Risks and Issues

Details of when these quality review tools should be employed are given in Section 6.

6. Review of Statistical Outputs

A **complete** review of statistical output should occur for outputs published annually or less frequently, every 5 years and for outputs released more frequently than annually, every 3 years.

A complete review of statistical output should take place in 3 stages:

Stage 1

A quality review should begin with the collation of the BQR and metadata information or QMI (quality and metadata information). The QMI should be reviewed and updated.

Stage 2

The QMHT should be completed for the parts of the statistical process that the branch is responsible for. The relevant sections of the QMHT that are to be completed for administrative sourced output and survey sourced output are detailed in Annex C.

Stage 3

The HoB 'walks' the Senior Principal Statistician through the processes used to create an output. The Senior Principal Statistician signs off the quality of the processes assigning a RAG (Red, Amber or Green) status and outlining an action plan where necessary. Further details of this QA walk-through are given in Annex B.

It is advised that a **short** review is conducted each year between **complete** reviews. A short review requires the completion of the short-form QMHT and the completion of the risk-assessment template. If the risk assessment indicates that there are quality issues a complete review is recommended.

7. Review of Statistical Surveys

Statistical surveys in NISRA should be reviewed every 5 years if they are conducted annually or less frequently and should be reviewed every 3 years if they are conducted more frequently than annually, e.g. quarterly. These triennial and quinquennial reviews should be conducted using Section 19 of the QMHT. This section contains the following sub-sections:

- Keyfacts
- Background
- Progress since last review
- Users and uses
- Sample design
- Data collection
- Burden & respondents
- Recommendations

Survey managers may consider publishing all or part of the completed reviews.

8. National Statistics Quality Reviews

A programme of National Statistics Quality Reviews (NSQRs) was put on hold in 2008 following the creation of the UK Statistics Authority and the launch of the new assessment process for Official Statistics. The National Statistician has since launched a new series of rolling, in-depth methodological reviews. The Labour Force Survey is the first in this second series of NSQRs to be conducted followed by the review of National Accounts and Balance of Payments.¹⁰

In-depth quality reviews¹¹ should be used where significant risks or issues have been identified to an official statistics product. These risks can represent a number of issues (both statistical and process related) but they will be high profile, high impact risks where the need for intervention outweighs any associated costs (both in terms of time and resource). These risks can be real or perceived but are likely to have a significant impact on reputation if not addressed.

It is recommended that all official statistics undergo an in-depth quality review when they are first established. High profile statistics are likely to benefit from an in-depth quality review on a semi-regular basis.

The Value of Independent Advice – one of the key considerations when carrying out an in-depth quality review is the use of external independent advice, particularly where high profile statistics are being reviewed. The involvement of an independent advisor is often seen as key to success, especially where there is a reputational risk. This is due to the additional assurances that the independent perspective provides.

National Statistician's Quality Reviews (NSQRs) have been designed for when there is significant identified risk to an official statistics product and when the need for investment outweighs the associated costs. It is recommended that NSQRs are carried out on a single output or set of outputs which either use similar methodologies or are viewed collectively. Although official statistics producers are not required to follow the process set out for NSQRs, the normal risks where an NSQR might be considered can relate to:

¹⁰ NSQR reports can be found at:
<http://www.ons.gov.uk/ons/guide-method/method-quality/quality/nsqr/full-list-of-completed-quality-reviews/index.html>

¹¹ <https://gss.civilservice.gov.uk/statistics/methodology-quality/quality-2/quality-resources/reviewing-statistical-quality-stage-3-depth-quality-reviews/>

- **Statistical methods:** Whether they are consistent with scientific principles and internationally recognised good practice or whether they are prepared for emerging methodological and data developments.
- **Conceptual issues** - Broader conceptual issues such as whether the statistics are measuring the right thing, and whether they are prepared for emerging methodological and data developments.
- **Assurance** - Assurance to users and key stakeholders is essential. If there is significant reputational risk then it is often important to involve an independent external expert in the process.

9. Auditing of Administrative Data

The de-designation in GB of crime statistics (based on police administrative data) focused attention on the role that statisticians play when using administrative data. This prompted the Head of Assessment at the UK Statistics Authority, Ed Humpherson to issue a number of principles to guide the quality assurance practices^{12, 13, 14} for statistics produced from administrative data sources.

Most recently, the UK Statistics Authority published: Quality Assurance of Administrative Data, Setting the Standard, January 2015¹⁵. This report presents the Authority's regulatory standard that it will use to assess statistics derived from administrative sources against the Code of Practice for Official Statistics. It is published alongside the Administrative Data Quality Assurance Toolkit¹⁵ which is the mechanism that the Authority will use to determine compliance.

In an assessment of official statistics based on administrative data, the Authority will consider the quality assurance of the data across the four practice areas outlined in the Quality Assurance Toolkit:

- Operational context and administrative data collection;
- Communication with data supply partners;
- Quality assurance principles, standards and checks by data suppliers; and
- Producers' quality assurance investigations and documentation.

A key element of practice emphasised in the QA Toolkit is that if flaws are found in administrative data, statistical producers should: evaluate the likely impact on the statistics; establish whether the issue can be resolved, or whether there is any other action they can take to mitigate the risks; and determine whether the level of impact is such that users should be notified.

The National Statistician's Office guidance document: Using Administrative Data: Good Practice Guidance for Statisticians¹³, is a very useful tool for taking stock of the use of

¹² <https://gss.civilservice.gov.uk/wp-content/uploads/2012/12/Admin-data-QA-principles.pdf>

¹³ <https://gss.civilservice.gov.uk/wp-content/uploads/2012/12/Interim-Admin-Data-guidance.pdf>



Audit of
¹⁴ administrative data -

¹⁵ <http://www.statisticsauthority.gov.uk/assessment/monitoring/administrative-data-and-official-statistics/index.html>

administrative data. The guidance is based on good practice from across the GSS, with a focus on the statistician's role assuring and communicating the quality of the data.

This guidance builds on the National Statistician's Guidance: Use of Administrative or Management Information¹⁶ and is entirely consistent with the Code of Practice, in particular, Protocol 3: The use of administrative sources for statistical purposes, whilst also drawing on other Principles and Practices from the Code, particularly in relation to understanding user's needs, assuring quality and frankness and accessibility.

¹⁶ <http://www.statisticsauthority.gov.uk/national-statistician/ns-reports--reviews-and-guidance/national-statistician-s-guidance/index.html>

Using Administrative Data: Good Practice Summary Checklist

There is more detail on each of these issues in the relevant section of the guidance.

1. Before using administrative data

- Investigate the source, asking a set of “challenge” questions (page 4) and analyse a sample of data to ensure that you understand the data supply chain and the scope for misreporting.
- Establish the extent of audit and other quality assurance procedures.
- Only use the administrative data if they are judged to be a good fit to the user requirements.

2. Working with data suppliers

- Ensure that those supplying the data understand what the data are used for, the importance of supplying good quality data and how to raise questions and issues if any arise.
- Provide relevant guidance and training to enable data suppliers to submit data accurately.
- Visit (one or more of) the data suppliers to see the data collection ‘in real life’.
- Where there is more than one version of the administrative data (for example, unit level and aggregate) use the version for which the supplier has greatest incentive for it to be accurate.
- Establish clear agreements with data suppliers describing the format, content and timing of the data required and setting out roles and expectations about the quality of the data.
- Agree any checks that you will use to ensure that the data quality standards have been applied.

3. Validation

- Understand the possible causes of error in the data from the supplier and establish mitigation strategies, including validation routines. Compare data with external sources where possible.
- Ensure that any questions raised are followed up with the data supplier.
- Keep a copy of the original data. Maintain an audit trail of the changes and data processing.

4. What information to publish

- In the published statistics, supply open, clear, messages about quality, including how you have assured yourself about the quality of the underlying data, any limitations (including missing data and known or assumed ‘gaming’) and the extent of appropriate use of the statistics. Address any significant concerns about quality at the start of the publication. See complete list on page 7.
- Produce and publish an end-to-end process map illustrating the data supply chain and the checks and responsibilities along the chain.
- Maintain and consider publishing other documentation that demonstrates you have properly considered and addressed data quality concerns.

5. Managing the ongoing use of administrative sources

- Monitor the administrative source and the data collection environment, to ensure no changes are introduced that impact on the use of the data in the statistics without statisticians being aware.
- Wherever possible, statisticians should sit on relevant governance boards or change control groups.

- Develop strong links with other organisations that use the same administrative data, to share concerns and work together to ensure quality.
- Know about the audit arrangements for the data that you use and ensure that statistical teams are aware of the outcomes of relevant audits.
- Take a strong role raising and addressing any concerns about the underlying data – with the supplier team / organisation, HOP, National Statistician’s Office or audit organisations.

10. Peer Review College

Peer review is ‘the evaluation of scientific, academic, or professional work by others working in the same field’ (Oxford Dictionary). NISRA’s Peer Review College (PRC) was established to improve, in a consistent way, the quality of NISRA’s statistical output in terms of the commentary (narrative) and data visualisation. Peer review encourages collaborative working across the Agency and has led to real improvements.

NISRA’s Peer Review College (PRC) was established in 2014 following a pilot exercise in 2013. Full details of how the PRC came into being can be found on the GSSnet¹⁷.

Is it worthwhile?

“

Having quickly glanced through the feedback there appears to be some comments that will be relevant to not only road safety publications but all publications which we release from the branch. I plan to take this back to our next branch meeting and we will take things forward.

--

If you would like to submit a publication for peer review please contact arlene.connolly@dfpni.gov.uk

“

The group had obviously taken time to review our publication in detail and provided thorough and considered feedback covering content, format, typos, graphics, consistency with ons guidance where relevant, fonts, user friendliness etc. Many suggestions for improvement were put forward for consideration, some of which I will definitely take forward.

Their approach was that of constructive criticism highlighting pros and cons, and i was impressed with their attention to detail. We are up for assessment next year and we will try to use this as part of our evidence for helping improve user experience of our product. I would definitely submit another pub for review.

”

¹⁷ The establishment of NISRA’s Peer Review College

<https://gss.civilservice.gov.uk/statistics/presentation-and-dissemination/establishment-nisras-peer-review-college/>

11. Quality Improvement Fund

The UK Statistics Authority offer the Quality Improvement Fund (QIF) each year. It supports work to improve quality and trust in official statistics across the Government Statistical Service (GSS).

The National Statistician has said that the QIF should mainly be used for projects that:

- are focused on the UK Statistics Authority strategic priorities. These are Quality, Impact, Efficiency, Coverage and Trustworthiness;
- address Code of Practice compliance issues highlighted in the UK Statistics Authority assessment process; and
- are widely relevant across the GSS.

The fund can also be used to buy in expertise from an external source.

Since 2008, NISRA has obtained just over a quarter of a million pounds from the QIF.

Annex A: Dimensions of Quality

Definition	Key components
1. RELEVANCE	
The degree to which the statistical product meets user needs for both coverage and content.	Any assessment of relevance needs to consider: <ul style="list-style-type: none"> • who are the users of the statistics; • what are their needs; and • how well does the output meet these needs?
2. ACCURACY	
The closeness between an estimated result and the (unknown) true value.	Accuracy can be split into sampling error and non-sampling error, where non-sampling error includes: <ul style="list-style-type: none"> • coverage error; • non-response error; • measurement error; • processing error; and • model assumption error.
3. TIMELINESS AND PUNCTUALITY	
Timeliness refers to lapse of time between publication and the period to which the data refer. Punctuality refers to the time lag between the actual and planned dates of publication.	An assessment of timeliness and punctuality should consider to following: <ul style="list-style-type: none"> • production time; • frequency of release; and • punctuality of release.
4. ACCESSIBILITY AND CLARITY	
Accessibility is the ease with which users are able to access the data. It also relates to the format(s) in which the data are available and the availability of supporting information. Clarity refers to the quality and sufficiency of the metadata, illustrations and accompanying advice.	Specific areas where accessibility and clarity may be addressed include: <ul style="list-style-type: none"> • needs of analysts; • assistance to locate information; • clarity; and • dissemination.
5. COMPARABILITY	
The degree to which data can be compared over time and domain.	Comparability should be addressed in terms of comparability over: <ul style="list-style-type: none"> • time; • spatial domains (e.g. sub-national, national, international); and • domain or sub-population (e.g. industrial sector, household type).
6. COHERENCE	
The degree to which data that are derived from different sources or methods, but which refer to the same phenomenon, are similar.	Coherence should be addressed in terms of coherence between: <ul style="list-style-type: none"> • data produced at different frequencies; • other statistics in the same socio-economic domain; and • sources and outputs.

Consideration should also be given to the following:

Trade Offs – The extent to which different aspects of quality are balanced against each other. Often you see **Accuracy** and **Timeliness** traded off against each other

User needs and perceptions - The processes for finding out about users and uses, and their views on the statistical products. documented and updated regularly in User Engagement Strategy

Confidentiality, Transparency & Security – The procedures and policy used to ensure sound confidentiality, security and transparent practices.

Performance Cost & Respondent Burden - The effectiveness, efficiency and economy of the statistical output

Annex B: Quality Assurance Walk-Through

Quality Assurance Walk-Through

The ONS currently implements a quality initiative called a 'DD walk-through' where the DD refers to a grade of staff equivalent to a Senior Principal Statistician. The recommendation for a QA walk-through was made as a result of a review on construction output processing conducted by the Executive Leadership Team (ELT) and the ONS Board. The recommendations in relation to QA walk-throughs for ONS outputs were:

1. For every statistical output, both survey and analytical, the DD responsible provides written certification (sign off) that a robust quality assurance set of procedures is in place throughout the Generic Statistical Business Process Model (GSBPM - previously known as SVC). The DD certifies that appropriate checks have been put in place, ensuring that the output conforms to the Code of Practice as well as the DD sign-off good practice.
2. For each key statistical output, both survey and analytical, the DD and Output Manager must conduct a walk-through of the detailed process used for the output, referring to desk instructions. At each stage of the GSBPM, the objective is to ensure that there are robust checks and investigations of anomalies. For all other outputs, the DD will discuss the QA system with the Output Manager, satisfying himself/herself that the Output Manager has conducted a walk-through and has ensured that robust QA is in place. This will form the basis of a written certification (Annex 1).

The first round of QA walk-throughs was completed by March 2012 with an agreement that re-certification is required every three years or if there are any **major** changes to the output, processes or staff involved.

Purpose of QA Walk-through

All QA walk-throughs are required to provide written assurance "that you have reviewed and are content with arrangements for quality assurance of each of your outputs." The aim of the walk-through is to provide the senior statistician with confidence that proper checks and procedures are in place and to provide assurance to the CE that this is the case.

The purpose of the walk-through is not to assess the quality of the last set of figures produced but to assess whether the processes at each step of the GSBPM ensure that any errors are identified and corrected prior to publication. Walk-throughs do not have to be conducted each time a set of results are produced - they are periodic reviews.

When walk-throughs are required

Walk-throughs for a given statistical output should be conducted every three years or if there are any **major** changes to the output, processes or staff involved - e.g. changes to methodology, the processes for producing the output or significant changes to the key staff involved (the senior manager or output manager particularly).

It is recognised that it is not feasible for senior statisticians to lead walk-throughs for all of their outputs personally. For key outputs, the senior statistician should be directly involved. For other outputs, the walk-through may be led by the output manager or other senior staff within the branch (e.g. Grade 7) and reviewed by the senior statistician.

The definitions are:

- Key outputs - those that are market or reputationally sensitive.
- Other outputs - those that do not fall into the category above.

Summary of roles

Senior Statisticians are required to:

- ensure all walk-throughs are completed at least every three years; or sooner should there be key changes in the methodological processes or significant changes to staff working on the outputs;
- personally walk-through the processes for their key outputs;
- review the walk-throughs of other outputs in their areas;
- following the walk-through - decide on the RAG status of the output and complete the QA certification template;
- if a **RED** or **AMBER** RAG status is given, then any appropriate risk(s) for these issues should be raised on the corporate risk register; and

Output Managers are required to:

- work with the senior statistician to walk-through key outputs using the best practice outlined below; and
- walk-through their other outputs, again using the good practice outlined below, and then review the results with their senior statistician.

Best practice for walk-throughs

1. Key outputs

Who should be involved?

- the responsible senior statistician;
- the relevant output manager;
- the output manager's staff (as appropriate); and

What to do:

- review each and every step in the process that leads to the production of the output - this should cover all stages of the GSBPM that take place within the division (note that similar procedures should be conducted on intermediate outputs; see below); and
- prioritise attention on highest risk areas, e.g. new procedures or changes to methodology, use of spreadsheets, non-standard processes.

What to look for at each step:

- query how the output manager / team know that each process step provides the correct outcome - what checks are in place to ensure that it does?
- what can possibly, conceivably go wrong at each step? (Assume the worst). How do we prevent that?
- establish how the team know that the input data provided to them is fit for purpose - establish what assurances the supplier provide
- investigate what internal consistency checks are made
- are all possible/practical automated checks built in?
- do staff conduct supplemental "eyeballing" of results at appropriate stages - and should that be mandatory?
- how are anomalies that have been discovered, reviewed and addressed?
- investigate what checks the output manager makes on the final results before DD sign-off
- investigate what contextual checks are made - e.g. whether other data sources (particularly other ONS outputs) or 'external expectations' are compared
- investigate whether revision checks are conducted
- investigate whether large changes between time periods are identified and investigated
- ensure that desk instructions exist for all stages of the process and are stored in the Standards and Guidance (STaG) database

- conduct spot checks on processes or desk instructions
- query extent of staff training, particularly for new staff
- pay careful attention to spreadsheets - best practice spreadsheet guidance here: <http://intranetpreview/managingyourwork/howtoguides/how-to-use-spreadsheets-for-ons-statistical-outputs.asp#0>

2. Other outputs

These walk-throughs should cover all of the elements outlined above for key outputs.

The main difference from a key output walk-through is that DDs do not necessarily need to be directly involved in the walk-through itself. The walk-throughs should involve:

- the relevant output manager;
- the output manager's staff (as appropriate); and

The senior statistician should **review** the walk-through conducted by the output manager and assure him/herself that the appropriate checks are in place. This should involve meeting with the output manager and covering the most relevant points listed above. In particular, senior managers may wish to focus on:

- questioning the output manager about the checks in place, particularly in 'high risk' areas;
- reviewing the checks that the output manager makes;
- deciding on the RAG status of the output, discussing the actions required for Red or Amber - see template in Annex 1;
- reviewing the 'lessons learned' from the walk-through; and
- ensuring desk instructions exist for all stages of the process.

3. Intermediate (unpublished) outputs

These need to be handled in a similar way to the guidance above. For example, some primary (survey) outputs are not published, but are passed to Analysis Branches for incorporation/processing into a published output. These intermediate outputs should be certified by the senior statistician responsible for the intermediate output in exactly the same way. Analysis branch senior statisticians or their teams may wish to be involved in the walk-throughs for intermediate outputs.

4. Ad hoc outputs

For ad hoc outputs, senior statisticians should be convinced that the processes in place for the standard outputs are sufficient to cover the ad hoc work. If this is not the case, then the senior statistician should ensure that sufficient additional checks and processes are in place to assure the quality of the ad hoc output.

Once the walk-through is complete

The following steps should be followed:

- i. A decision on the RAG status of the output (details on RAG status for outputs is included in Annex 1).
- ii. QA certification should be completed (template provided in Annex 1).
- iii. If risks have been identified in the process (particularly for Red and Amber outputs) these should be raised on the risk register.

Following the QA walk-through, senior statisticians are required to provide written certification that they are content with the QA procedures in place for each of their outputs. This document forms a means of providing that certification.

Reporting and subsequent action

The template (below) should be completed for each output. Reporting will then vary depending on the RAG status of the output:

RAG status	Description of status	Required action
Green	Appropriate automatic and manual systems/checks are in place - everything fine	Completed template bookmarked to ONS Quality Centre; no further reporting is required.
Amber	Some best practice automated checks are not in place but these can be done manually until an appropriate system can be established (within 3 months)	Completed template bookmarked to ONS Quality Centre with an outline of how the issue will be resolved. Raise a risk on the corporate risk register (if required).
Red	Quality assurance of the output is deficient and is being addressed	Completed template bookmarked to ONS Quality Centre with a brief action plan of how the issue(s) will be addressed. Ensure risk(s) raised on the corporate risk register.

Template for sign-off certification

Output name	
SS responsible	
Date of review	
Names of those involved	SS: Output Manager: Other:
If you use spreadsheets, do they comply with the spreadsheet best practice guidance?	Yes / No (please delete) If 'No', please explain.
RAG status (delete as appropriate)	Green: Appropriate automatic and manual systems/checks are in place - everything fine Amber: Some best practice automated checks are not in place but these can be done manually until an appropriate system can be established (within 3 months) Red: Quality assurance of the output is deficient and is being addressed
For Amber or Red outputs: Issues identified and deadline to address	<ul style="list-style-type: none"> • • • Note: For Amber and Red outputs a risk(s) should be raised on the corporate risk register to ensure that this issue is prioritised appropriately.
Date of next review	When there is a major change (to methodology, process or staff) or after three years

Annex C: QMHT relevant sections

The following details the sections of the QMHT that must be completed and those that are to be completed only if applicable for administrative and survey based output.

QMHT Section	Administrative	Survey
1. Section selection	✓	✓
2. General information	✓	✓
3. Establishing user requirements	✓	✓
4. Use of administrative data or data sourced from other organisations	✓	✗
5. Classifications and harmonised concepts	✓ (if applicable)	✓
6. Design of survey data collection	✗	✓
7. Sample design and implementation	✗	✓
8. Editing and imputation	✓ (if applicable)	✓
9. Weighting and estimation	✗	✓
10. Regular analysis in the production of statistical outputs	✓	✓
11. Further analysis	✓ (if applicable)	✓ (if applicable)
12. Regular or repeated statistics (time series)	✓ (if applicable)	✓ (if applicable)
13. Index number construction	✓ (if applicable)	✓ (if applicable)
14. Confidentiality	✓	✓
15. Dissemination	✓	✓
16. Data archiving	✓	✓
17. Summary of areas for investigation	✓	✓
18. SCU New Surveys	✗	✗
19. Survey Reviews	✗	✗

Annex D: Quality Checklist

I have considered	Tick ✓
Desktop Instructions	
Quality Assurance Checklists	
Staff awareness of QA procedures for their work area	
Staff trained in Quality Assurance and Quality Management	
Background quality report up-to-date and online	
Annual Risk Assessment conducted and risk register updated if applicable	
Complete review of output conducted [#]	
Short-form QMHT completed [#]	
Output peer reviewed	

[#]As specified in Section 6