



Office for Statistics Regulation

Quality Assurance of Administrative Data

A post-launch review

15 November 2016

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Foreword

In the United Kingdom, and in many other parts of the world, people who provide official statistics to society are increasingly talking about being in a multi-source, administrative data world – where instead of just collecting bespoke statistics via surveys and then disseminating them, statistics are sourced from a range of operational and business systems. This use of administrative data is seen by statisticians as increasingly important.

In the light of this importance, and well publicised problems with some administrative datasets, the UK Statistics Authority's regulatory office created a regulatory standard for the Quality Assurance of Administrative Data (QAAD). This was published in final form in February 2015, and it aimed to support the highest standards for quality in statistics.

As the Office for Statistics Regulation we are committed both to making continuous improvements in our work, and to having an open-minded approach to our own work. So we undertook a review over the summer of 2016 to listen to and learn from the experience of using QAAD for producers of statistics (and for our regulatory team). We also wanted to assess what that experience tells us about the way we've implemented QAAD.

This report summarises the review. And while it shows that the QAAD concept is powerful and helpful, it also reveals ways in which we can enhance its usefulness to providers and users of statistics. We will commit to implementing the findings of this review in 2017. And we will continue to place the need for the highest quality statistics at the heart of all of the Office for Statistics Regulation's work.

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**Director General for Regulation
Office for Statistics Regulation**

Quality Assurance of Administrative Data

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Summary

1. The Office for Statistics Regulation's¹ *Quality Assurance of Administrative Data* guidance helps statistical producers think about the range of issues to consider and challenge when assuring administrative data. We recognise that resource is required to deliver these improved ways of working. Many of its benefits are not immediate, but gained over the longer term as teams and organisations evolve, embed and share their statistical practices.
2. This review considers the views and experiences of statistical producers and the regulatory team after applying the QAAD guidance in the follow-up of Assessments conducted during 2014 and 2015. We outline the ways that this feedback is informing further guidance, to support the continued use, as well as extending the application, of QAAD across the Government Statistical Service.

High-level findings

3. Our review revealed some main lessons from successfully implementing the standard:
 - I. Time: it can take considerable time and effort for statistical producers (as well as the regulatory team) to fully understand and apply the standard into statistical production processes (see paragraphs 17, 21, 22, 23 and 25)
 - II. Communication: clear guidance material can go only so far; conversations are a powerful tool for achieving common understanding and commitment (see paragraphs 17 and 25)
 - III. Iteration: we learnt from statistical producers throughout the introduction of the regulatory standard in workshops and conversations, and compiled additional guidance to address the questions raised (see paragraphs 19, 25 and 26)
 - IV. Benefits: the heart of the QAAD regulatory standard is sound statistical practice – we found that the producers that applied the standard experienced the benefits of improved supplier relationships and better understanding of the data (see paragraph 24)

¹ The Office for Statistics Regulation, formerly called the Monitoring and Assessment Team, independently regulates statistics on behalf of the UK Statistics Authority.

Commitments

4. The Office for Statistics Regulation will:
 - a. Time: continue to provide advice and tailored training opportunities to support statistical producers in applying the QAAD guidance and ensure a full appreciation is gained on the likely time to address the regulatory standard in responding to an Assessment
 - b. Communication: promote the benefits realised by producers by publishing examples of how they have built closer relationships with supply partners
 - c. Iteration: support producers through the Assessment follow-up to enhance their understanding of the QAAD principles as they develop new ways of working; we will also continue to review and refresh our published guidance and training material as we receive producer feedback
 - d. Benefits: share lessons we have learned in developing and applying QAAD with producers and users of other numerical information, to encourage the wider improvements in the quality assurance of data and enhance their public value

Introduction

5. The Office for Statistics Regulation champions the highest standards in statistics, to ensure that they are trustworthy, of high quality and valuable, on behalf of the UK Statistics Authority. As we move towards a world which bases its statistics on multi-sources, ever-reliant on linked administrative data, the quality of the source data is critical. The development of the regulatory standard on the *Quality Assurance of Administrative Data* is an example of the Office for Statistics Regulation engaging with a systemic issue across the Government Statistical Service to improve statistical practices.
6. A stark illustration of the loss of confidence in official statistics that can accompany data quality problems occurred in 2014, when the mishandling of crime records within police services in England became clear. The UK Statistics Authority² removed the National Statistics designation of the police recorded crime statistics and required significant improvements to the statistics, including the assurance of the data.
7. The problem with police recorded crime raised a broader concern about how well official statisticians understand the administrative data sources they use and whether they are sufficiently aware of quality issues that affect their

² <https://www.statisticsauthority.gov.uk/publication/statistics-on-crime-in-england-and-wales/>

statistics. As a result, we reviewed statistical producers' approaches to quality assurance. It published a guidance document, *Quality Assurance of Administrative Data (QAAD)*³. Central to this guidance is the QA Matrix, based on four pillars of statistical practice. We recognise the need for assurance that is pragmatic and proportionate. As a result, the QA Matrix has three levels of assurance: basic, enhanced and comprehensive (see Annex 1 for a fuller description of QAAD).

8. We expect statistical producers in the UK to apply this guidance in quality assuring the administrative data they use to produce official statistics. We apply the regulatory standard in judging how well producers understand and explain the strengths and limitations of their statistics, including the assurance of the administrative data, when assessing compliance with the *Code of Practice of Official Statistics*⁴.
9. QAAD is a tool to support thinking, designed to help create a mindset that provides sufficient challenge when assuring the quality of administrative data. Its benefits should accrue over the longer term as teams and organisations develop and embed their quality assurance practices. We outline the feedback we received and the further steps we have taken to support the continued use of QAAD across the Government Statistical Service.

Outline of review approach

10. This review considers the nature of implementation by statistical producers following the publication of the QA Toolkit. We contacted statistical producers through their Quality Champions⁵ to invite views about QAAD. We collated feedback through a series of discussions with statisticians in eight producer bodies across the UK. The meetings were group sessions and some one-to-one meetings. Members of the GSS Good Practice Team⁶ and Quality Centre⁷ also provided their views about the implementation of QAAD by producers. We also met with the regulatory team across the three sites in Edinburgh, London, and Newport, to capture their experiences of applying QAAD in Assessment.
11. As a backdrop to these conversations, we reviewed each of the assessments conducted in 2014 and 2015 that had a requirement relating to administrative data. We identified examples of effective strategic approaches and assurance

³ <https://www.statisticsauthority.gov.uk/monitoring-and-assessment/monitoring/administrative-data-and-official-statistics/>

⁴ <https://www.statisticsauthority.gov.uk/monitoring-and-assessment/code-of-practice/>

⁵ Quality Champions promote quality management tools within departments, as well as coordinating best practice across the GSS

⁶ The Good Practice Team identifies, promotes and shares good practice across the GSS and provides training, support and advice about the production, dissemination and use of official statistics

⁷ The Quality Centre is a centre of methodological expertise on statistical quality and respondent burden in ONS and plays a role in promoting best practice across the GSS

practices, to provide further guidance to statistical producers. We also identified some barriers to the successful implementation of the guidance.

12. The section below describes the main findings from the review of assessments and conversations with producers and the regulatory team.

Key findings

Lessons from Assessment

13. We reviewed the 41 assessments conducted during 2014 and 2015 with a QAAD-related requirement: 19 and 22, respectively. The Authority has confirmed the designation as National Statistics for 22 of these assessments (12 and 10 for assessments in 2014 and 2015, respectively). The follow-up of requirements is continuing for seven assessments in 2014 and 12 assessments in 2015 (including six assessments which led to the de-designation of the statistics).
14. We identified some examples of good practice (see Table 1 below) and difficulties encountered (see Table 2 below) from reviewing the producers' responses to meeting requirements and the advice given by assessment teams. We explored these issues further in the conversations with both the regulatory team and producers.

Table 1: Examples of good practice in applying QAAD in Assessment

Assessment	Comment
AR283 Energy and climate change Department for the Environment and Climate Change Designated February 2015	<i>Good example of using triangulation/corroboration to check data; good explanation of QA approach:</i> Independent audit of industry data; provided clear diagram on the compilation of the data set and process map of data flows and processing
AR 285 Children's and young people's social care Ofsted Designated December 2015	<i>Good example of working with data supply partners</i> Developed new quality reports for each output with clear explanation of own QA, good linkage to information provided by DfE; describes joint development work by Ofsted, DfE and LAs to make improvements; clear explanation of limitations of the data and ways of mitigating them; description of operational/inspection audits of the data.
AR293 Driver and vehicle statistics in Northern Ireland	<i>Systematic and detailed review of a wide range of admin data sources</i> Clearly described the operational context and the strengths and

Department of the Environment, Northern Ireland Designated March 2015	limitations of the data sources in relation to the statistics – providing clear guidance to users. Also highlights the areas of further development the statistics team is seeking to cover in monitoring quality
AR301 Police recorded crime in Northern Ireland Police Service for Northern Ireland Designated February 2016	<i>Good example of clear guidance and comprehensive assurance based in body that is both data collector and statistics producer</i> PSNI established robust assurance arrangements prior to the emergence of issues with police recorded crime (PRC) in England. Extended its detailed guidance material about quality to include operational checks of call handling and identification of crimes; process maps clearly showing the crime recording process and potential risks and mitigations at each; regular monitoring of system established. Provided clear and transparent explanation to users about its response to the inspectorate’s audit of the handling of PRC by police forces.
AR302 Mandatory surveillance of health-care associated infections Public Health England Designated September 2015	<i>Good example of conducting comprehensive assurance</i> Quality document detailed: the new data collection protocol and process; reporting system; legal nature of the data supply; criteria for eligible cases; definitions of data items. Provides operational context, user roles and permissions guidance. Describes the nature of the verification of the mandatory data including automated validation checks and follow-up investigations of some individual records. Explains the QA checks performed by PHE, with quality metrics, and outlines investigations to look at performance distortion in relation to one infection. Team corroborates the admin data by examining trends in death certificate figures.

Table 2: Summary of difficulties encountered in implementing QAAD during Assessment

Difficulties in applying the theory to every day practice
Not understanding what the different levels of assurance look like
Reluctance to contact data suppliers and other partners in the supply process – not wanting to risk losing access to the data
Difficulties addressing developments needed while maintaining business as usual
Difficulties in obtaining information about quality assurance approach from other statistical and processing teams within same organisation, since they had not implemented QAAD
Difficulties in obtaining assurance from other statistical producer bodies in a timely way

The regulatory team

15. The regulatory team described some of the difficulties they observed that producers showed when responding to the regulatory standard during the meeting requirements phase of Assessment. They also reflected on their personal experiences in gaining an understanding of QAAD and developing confidence in applying the regulatory standard (see Table 3).

Table 3: Regulatory team observations about implementing QAAD

Ensuring consistent judgments are made by the regulatory team
Some reluctance was initially shown by producers in responding to the QAAD requirements, requiring the regulatory team to press the teams to engage with the issues, to provide workshops to explain the guidance and to liaise with department leads for quality assurance to promote action
Amount of work raised by implementing QAAD both for producers and the regulatory team
Allowing sufficient time for producers to respond to QAAD in the follow-up to Assessment – it is hard to deliver within the usual three month deadline
Concerns raised by producers about the amount of documentation required by the Authority
Whether producers recognise the need to consider statistics from the perspective of users or about writing for users (often producers write for the Authority)
Clarifying the respective roles when multiple producer bodies are involved
Clarifying responsibilities when different teams in the same organisation are responsible for data collection as opposed to the production of statistical outputs
When there are many data sources in a set of statistics being assessed and whether every individual source has to be reviewed by the Assessment team
Uncertainty about the process for Assessment and confirmation of designation when statistics draw on other producers' administrative data which have yet to meet the regulatory standard
Problems in Assessment when a set of statistics is being assessed that draws on administrative data used in other National Statistics that are not being assessed and have not implemented QAAD

16. The regulatory team lacked confidence in their understanding of QAAD in the early months but this grew as they conducted QAAD workshops for, and reviewed quality material provided by, statistical teams. The QAAD development team provided advice to the regulatory team on these documents, reinforcing their knowledge and judgment.

17. Some in the regulatory team said that applying the QAAD standard was intensive and required them to provide a lot of support to statistical producers (Finding I: time). A benefit, however, was the strengthened relationship and reputation of the regulatory team among producers, who gave positive feedback about the guidance they received, as well as highlighting improvements in their own practices and knowledge (Finding II: communication).
18. Some of the difficulties reflected the particular circumstances of applying QAAD to population statistics in a group of Assessments involving producer bodies from each of the UK's four nations. These statistics draw on a wide range of individual administrative data sources which were not directly the subject of Assessment.
19. The regulatory team recommended developing questions that producers could use in carrying out their investigations, since they were concerned that producers were making assumptions about data quality and relying on the assurances of other teams in quality assuring the data (Finding III: iteration). Producers were also looking to use a checklist and template approach which would inherently limit the degree of challenge applied.

Producers

20. No producers expressed doubt about the need for considering the messages of QAAD. Some producers who had not yet implemented QAAD, however, were concerned about their ability to do so in the context of resource and time pressures. Assessment was the trigger for those producers who had implemented QAAD. We found few examples of producers implementing QAAD who had either not just been through an assessment or were about to.
21. The use of QAAD tended to be limited within the producer bodies too, focusing on building an understanding of quality issues by teams involved in an assessment initially. For some, however, the early experience was leading to a consideration of the strategic approach required (Finding I: time). They recognised the need to develop shared insight by both output and data processing teams.
22. Several producers commented that they doubted users would use the additional quality documentation that the Office for Statistics Regulation is seeking statistical producers to release. There was a strong feeling from some producers that we were placing an excessive demand given the likelihood of problems and the amount of resources available (Finding I: time). Statistical teams who had not made progress gave these comments; in contrast, those that had applied QAAD were positive about the experience. They did note, though, that they had put substantial effort into their data quality investigations. They also recognised that applying QAAD reflected their ongoing statistical practice rather than being a one-off exercise.

23. While some producers had found the guidance relatively straightforward to apply, others reported being confused in some areas. These issues largely reflected complex scenarios for data collection and production of statistics, with multiple agencies or teams involved. They highlighted the need for further guidance clarifying roles and expectations. There was also concern about the duplication of effort (Finding I: time). One Head of Profession for Statistics expressed doubt about capacity to meet the regulatory standard, saying that Assessment is too demanding, not proportionate and too bureaucratic.
24. A lead statistician in one team implementing QAAD said they found the guidance clear and well structured and that it helped them approach the issue in a logical way. Those producers that had implemented QAAD reported positive experiences in gaining greater insight into their data or associated quality issues (Finding IV: benefits). These particularly included developing stronger relationships with data suppliers. Another lead statistician noted that they had some concern initially about approaching the suppliers to ask about assurance approaches: they took a gradual approach, getting to know the suppliers better first, before explaining the basis of QAAD and their need to understand the assurance arrangements. This approach led to: membership of a supplier group, regular conversations about data issues, and a fuller understanding about issues affecting data collection.
25. A large statistical producer body responded in a thoughtful, strategic way to the QAAD guidance. It appointed a team with the responsibility to liaise across the organisation on the QA of administrative data (Finding I: time). The producer team identified the statistical output staff involved in current assessments and worked with both those colleagues and the regulatory team to support the efforts to respond to QAAD requirements. The producer team took part in our QAAD training and then organised its own, additional training for the statistical output teams. It developed its own guidance material and shared it, as well as our published guidance, across the organisation (Finding III: iteration). It recognised the need for a strategic approach to the investigation of quality issues and their documentation, to ensure shared insight between the central data collection team and statistical output teams. It is developing an approach that requires the handing-over of a quality assurance report and its continued completion as responsibility moves between teams but it is in its early stages of development. The producer team remained in close contact with us, sharing template documents for advice (Finding II: communication). Many of the statistical output teams in the producer body have yet to implement the QAAD guidance. The producer body conducted a review of its progress and identified barriers to implementation. It is raising awareness of the need for compliance across its senior management.

26. The producers all reported areas where they would like further clarification of the QAAD guidance (Finding III: iteration). They were uncertain about:
- the amount of information needed for the different levels of assurance
 - what it looks like to deliver each level of assurance
 - role responsibilities in situations when a supplier is an official statistics producer
 - levels of disaggregation of data
 - situations with multiple suppliers
 - how to handle statistics based on multiple administrative data sources
 - the definition of administrative data (thinking that if something is not an administrative data source then QAAD does not apply)

Response to feedback

27. This review project has intentionally set out to listen to the experiences of statistical producers, recognising the effort and resource that they have committed in implementing QAAD. In reflecting on the feedback, we have responded by developing supplementary supporting information. We now describe the additional guidance material, beginning with the impetus for their design.

QAAD Questions

28. The regulatory team found that some producers were uncertain about how to gain a fuller understanding of the data and that they wanted to apply a checklist approach. QAAD instead is a thinking tool – it promotes a probing approach to developing a fuller understanding of quality issues and enhances the public value of the statistics. A key output after review discussions with the regulatory team was the *QAAD Questions* document⁸ (released on our website). It uses questions generated by a group of the regulatory team during a feedback session in which they listed a wide range of questions that they would like producers to ask when assuring administrative data.

Catalogue

29. Producers were unclear what it looked like to produce quality guidance material for users in line with the QAAD levels of assurance. They told us during our workshops that they were particularly keen to be able to see how other producers had responded to QAAD. To meet this interest, we have produced a catalogue listing the statistics designated as National Statistics following Assessment during 2014 and 2015 with links to the quality documents for the respective sets of statistics (see Annex 2). The Quality

⁸ <https://www.statisticsauthority.gov.uk/wp-content/uploads/2016/06/QAAD-Questions.pdf>

Centre will release this document on its quality web pages on the GSS website.

FAQs and case examples

30. While producers said that they found the original QA Toolkit helpful, it did not address all the circumstances they experienced. We released additional case examples through our website explaining specific aspects of the QAAD model. We also collated the frequently asked questions raised by producers in an FAQ document and released it both as web content and as a downloadable PDF on our website⁹. These include guidance in relation to concerns about the timescale and burdens imposed for addressing Assessment requirements and communicating with Assessment teams.

Next steps – our commitment

31. We continue to offer and provide training to statistical producers in understanding QAAD. The regulatory team provide specific guidance to producers responding to QAAD through Assessment. We will extend the case examples featuring particular examples of good practice on our website.
32. We are reviewing QAAD and adapting it to reflect the issues encountered when producing and releasing numerical information – we have begun this by developing a guidance document¹⁰ on quality assurance for producers of management information. We will also consider any broad messages about quality assurance for suppliers of administrative data.
33. We are addressing concerns about the burden on statistics producers as we review the Assessment process. We will continue to listen to feedback from producers about their experiences of implementing QAAD and about participating in Assessment.
34. We are building on our experiences of developing QAAD as we refresh the *Code of Practice for Official Statistics*¹¹, so that it has a clearer emphasis on delivering trustworthy, high quality and valuable statistics, and prepare responsive, updateable guidance that supports producers to achieve the high standards of the *Code*.

⁹ <https://www.statisticsauthority.gov.uk/monitoring-and-assessment/monitoring/administrative-data-and-official-statistics/qaad-faqs-for-statistical-producers/>

¹⁰ <https://www.statisticsauthority.gov.uk/monitoring-and-assessment/monitoring/administrative-data-and-official-statistics/>

¹¹ <https://www.statisticsauthority.gov.uk/monitoring-and-assessment/code-of-practice/code-of-practice-stock-take-latest-news/>

Annex 1

Background to the Regulatory Standard

In January 2015, the UK Statistics Authority published a regulatory standard on the quality assurance of administrative data (QAAD) in its paper, *Setting the Standard*¹². It also released a toolkit to guide statistical producers on how the Office for Statistics Regulation will implement the standard and how producers can apply the thinking in their own practices.

The regulatory standard followed our development of the QAAD framework, introduced in its exposure draft report in July 2014. Conversations with over 100 statisticians and analysts informed the design of the framework. We also reviewed the best international practices for assuring administrative data, in drawing from the tools developed for, and by, national statistical institutes, including those from Statistics Netherlands and the US Census Bureau. The conceptual approach to assuring administrative data was summarised in Exposure Draft¹³ report.

QAAD outlines four areas of statistical practice to review when quality assuring administrative data: operational context and administrative data collection; communication with data supply partners; QA principles, standards and checks applied by data supply partners; and, the producers' QA investigations and documentation. Quality assurance is more than simply checking that the figures add up. It is an ongoing, iterative process to assess the data's fitness to serve their purpose. It covers the entire statistical production process and involves monitoring data quality over time and reporting on variations in that quality. Post-collection quality assurance methods, such as data validation, are an important part of the quality assurance process, but can be of limited value if the data are of poor quality. It is not enough for statistical producers to quality assure the data received from data suppliers but a critical judgment should be made of the quality of data from administrative systems *before* extraction and supply into the statistical production process. To do this, information is required on the data collection and entry, processing, validation and assurance by data suppliers.

Inherent to the model is a pragmatic and proportionate approach, with the three levels of assurance: basic, enhanced, and comprehensive. The need for investigation and documentation increases at each level. Judgments about the quality of the data for use in official statistics can be pragmatic and proportionate, made in the light of an evaluation of the degree of concern about the quality of the data and the public interest profile of the statistics. The higher the degree of quality concern and public interest, the higher the level of assurance that is required.

¹² https://www.statisticsauthority.gov.uk/wp-content/uploads/2015/12/images-settingthestandar_tcm97-44370.pdf

¹³ <https://www.statisticsauthority.gov.uk/monitoring-and-assessment/monitoring/administrative-data-and-official-statistics/quality-assurance-and-audit-arrangements-for-administrative-data/>

Applying the QAAD guidance provides statistical producers with a holistic view of quality assurance associated with administrative data. The findings from the producer's own quality assurance checks should be supplemented by knowledge gained through reviewing the other practice areas, to inform a published statement that sets out for users the producer's judgment about the quality of the administrative data. It is essential that the statistical producer identifies and explains the implications of substantive quality issues of the statistics to support their appropriate use.

Often issues discovered through quality assurance are complex and will require time and staffing and financial resources to address. This review of administrative data is not a one-off event, but is rather a process that requires repeated evaluation to understand the implications of changes and allow for the ongoing monitoring of the data quality. We encourage statistical producers to use the QAAD guidance routinely as part of their analysis and monitoring of administrative data systems, and to share their findings with users.

Annex 2

Catalogue of QA of administrative data documents published by official statistics producers following Assessment

(As at May 2016)

The table below lists Assessments during 2014 and 2015 which contained a requirement relating to the quality assurance of administrative data and which the UK Statistics Authority has designated as National Statistics.

The Authority has provided a series of [case examples](#) of good practice on its website, illustrating the different levels of assurance and aspects of the [QAAD guidance](#).

AR No	Statistical Producer Body	Statistical topic	Documentation
276	Scottish Social Services Council	Annual Mental Health Officer (MHO) statistics	Quality report
278	Office for National Statistics	Index of Services	Example industry review (from p27)
281	Ofqual	Vocational Quarterly and Higher Level Quarterly statistics	Quality report
283	Department of Energy and Climate Change	Green Deal and Energy Company Obligation statistics	Quality report
285	Ofsted	Children and Young People's Social Care statistics	Quality report
286	Department for Work and Pensions	Work Programme Statistics	Quality report
287	Home Office	Statistics on the Operation of Police Powers under the Terrorism Act 2000	User guide
289	Department for Education	16-19 attainment: A level and other level 3 results	Quality report

289	Department for Education	Key stage 2: Attainment in primary schools	Quality report
291	NHS England	Ambulance Quality Indicators	Quality report
292	Marine Management Organisation	Fisheries landings statistics	Quality report
293	Department of the Environment Northern Ireland	Driver and vehicle statistics	Quality report
295	Health and Social Care Information Centre	Guardianship under the Mental Health Act statistics	Quality report
301	Police Service of Northern Ireland	Police Recorded Crime Statistics	User guide
302	Public Health England	Mandatory Surveillance of Health-Care Associated Infections Statistics	Quality report
303	Department for Communities and Local Government	Indices of Deprivation	Technical report (see chapter 5)
304	HM Revenue and Customs	Trade Statistics	Quality web pages
306	Care Quality Commission	Patient Experience Surveys	Quality report – admin data used for sampling frame
314	Health and Social Care Information Centre	NHS Outcomes Framework, individual indicators	Quality report (example for Indicator 1a.i)
315	Department for International Development	Statistics on International Development	Quality report (see annex 4)
