ABS DATA QUALITY MANUAL

Part C – Quality Incident Management and Reporting

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INTRODUCTION

About the ABS Data Quality Manual

The ABS Data Quality Manual has been developed to provide guidance and support for all statistical staff in managing quality for their statistical collections. It is divided into three parts and this document covers Part C.:

- *Part A – Understanding and applying the ABS Data Quality Framework*
- *Part B – Quality Gates in the Statistical Process, and*
- *Part C – Quality Incident Management and Reporting*.

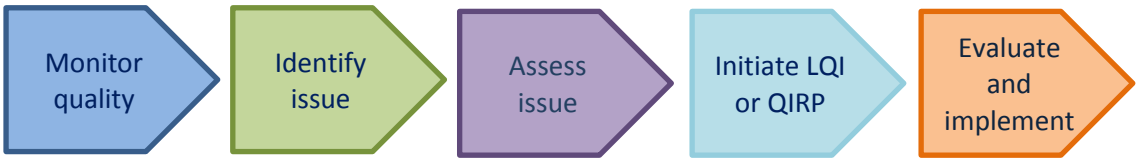
Part C – Quality incident management and reporting

Part C provides advice on how to identify, manage and report on statistical quality incidents. The information provided here is also available through the *Ready for Risk and Quality: Recognise and Manage Statistical Quality Issues* e-learning module, available on CapabilityPlus.

QUALITY INCIDENTS AND THE ABS

Statistical quality incidents occur when the quality of the data is called into question. This can occur at any stage in the statistical process and should be managed and reported appropriately. While all steps can be taken throughout the process to ensure the quality of the statistics, there is still a risk that the data may have errors.

The quality incident management process is as follows, and will be further explained throughout this manual:



Monitoring quality of data should be a continuous effort throughout the statistical cycle. Staff should apply critical thinking and refer to their quality management tools such as quality measures, quality gates, and quality indicators to identify issues.

If a quality incident occurs, a Quality Incident Response Plan (QIRP) or Local Quality Investigation (LQI), should be initiated. These are processes that identify the severity and reporting requirements

of any incident. This manual will provide staff with tools to identify a quality incident, assess an incident, and initiate the QIRP/LQI process if required.

MONITORING QUALITY AND IDENTIFYING A QUALITY INCIDENT

Many factors can alert staff to the occurrence of a quality incident. These are generally referred to as a 'trigger', for example:

- there are problems with the coherence of current estimates with previous data or related series
- given everything else we know of the events of the real world, the data does not seem correct
- there are coherence problems with the expectations of ABS or non-ABS sources
- an external party seriously questions the credibility of our statistics

It is important to note that each factor alone may not indicate a quality incident, but the combined occurrence of multiple triggers could mean the need to initiate a QIRP or LQI. Certain data sets or areas of the ABS should be critically monitored for any quality incidents. Some areas are more likely to be affected by an incident, for example:

- Major Economic Indicators (MEIs) or Other Leading Indicators (OLIs)
- Collections involved in major change events (systems, processes or personnel)
- Major areas or issues of external sensitivity (eg. Labour Force data)
- The nature and strength of external criticisms previously provided regarding the data
- New collections

There are a number of tools that can be monitored to assess whether or not a quality incident has occurred. Some of these are outlined below:

1. Quality Gates
2. Clearance documentation
3. Quality Measures
4. Change processes

1. Quality Gates

The data collected from quality gates can be used to monitor the quality of a statistical cycle, and are designed to assist in identifying any issues with the data. For further information on quality gates, please refer to *Part B – Quality Gates in the Statistical Process* or see the *Ready for Risk and Quality* suite of e-learning modules available on CapabilityPlus.

2. Clearance processes

Clearance processes generally include a clearance meeting, and then summary documentation from the meeting for review prior to the release of a data set. The information reviewed outlines the clearance process and explains the coherence of the current estimates with the same estimates from previous time periods. The meeting and subsequent documentation can be important tools in identifying any quality incidents which may have occurred. For best practice on preparing clearance documentation, staff should consult their survey manager.

3. Quality Measures

Quality measures are used to assure statistical quality in real time and at the end of cycle. By using quality measures, you can quickly identify any issues as they arise. Survey managers should be experienced and show clear judgement when monitoring quality measures and should be able to discern if the data is showing a reasonable fluctuation or signalling a quality incident.
Examples of quality measures can be found at Appendix 1.

4. Change processes

A common element of a quality incident is significant change to any part of the statistical process. As the ABS undergoes the Statistical Business Transformation Program (SBTP) process, it is more likely that incidents could occur.

Statistical risks should be well managed throughout the change process and staff can refer to the ABS Risk Management Framework on ABS best practice in risk management. Any changes in the statistical process may result in a quality incident, for example:

- Methodology: Has there been a change to the methodology underlying the collection? How was this managed and tested?
- Systems: What systems changes have taken place? Was sufficient testing under real world conditions undertaken? Are there new conditions under which the systems are operating? Has there been testing fatigue?
- Staffing: Were there key personnel that left the team throughout the survey cycle which could lead to capability gaps? Were there any new personnel introduced to the team who may not have sufficient experience to manage or identify a quality incident?
- Processes: Have process changes been implemented and are there any problems with the process flow? Have any time or resourcing pressures led to any steps in the process being missed or inaccurately incorporated?

ASSESSING A QUALITY INCIDENT

When a quality incident has occurred, it is necessary to assess the level of the incident and decide on whether a QIRP or LQI is to be initiated. This can be done by referring to the data from your quality management tools, using critical thinking and drawing on the skills and experience of other staff members.

A quality issue, being any issue with the quality of the data which causes it not to meet user requirements, does not immediately become an incident. Major statistical quality issues become incidents when the potential consequences to the ABS are severe (see next page for details).

The information will be assessed at Director level and then presented to the Program Manager who will make the final decision on whether the incident should be considered an LQI, or is severe enough to initiate the QIRP process.

Types of quality incidents

LQIs are minor incidents that do not require immediate senior management attention, but do warrant an investigation into the cause. Quality incidents that require a formal QIRP are considered more severe and should follow the formal process for identifying any errors in the statistical cycle. Pre and post embargo quality incidents will need to be managed differently as a result of the internal or external response to the incident.

Local Quality Investigation (LQI)
An LQI may occur when investigations take place that are beyond the usual checks and balances that occur throughout the statistical cycle. The quality concerns however are not considered severe enough to initiate the QIRP process formally. Investigations may outline an issue that can be resolved quickly and internally.

Pre-embargo (Amber) quality incidents:
Pre-embargo quality incidents are picked up prior to the data being released to the public. These are generally identified during the clearance process or when systems or processes are questioned by senior management. These incidents are considered an 'amber alert'. A QIRP may involve informing the Executive; however the survey manager should be mainly responsible for resolving the issue.

Post-embargo (Red) quality incidents:
Post embargo quality incidents are more severe, as the data have been released to the public. This means that the credibility of ABS data is called in to question by external stakeholders. This warrants a 'red alert', and will require the management of media and user expectations as well as the ABS informing the public of how the incident occurred, and what is being done to resolve it. A QIRP would be required immediately, and would include Program and General Manager consultation.

Categorising an incident

The ABS Risk Management Framework outlines the ABS approach to managing risk. The Framework analyses the risk in the context of likelihood and consequence, then provides a rating based on the outcome.

By assessing a quality incident through the same framework, staff can ensure the rating will be indicative of an organisational approach. For assessing an incident, we use likelihood for pre-embargo incidents only, as post-embargo incidents will have already occurred.

The consequence is rated by the impact it will have for the organisation and the collection. The main consequences the ABS wants to avoid are:

- loss of reputation
- loss of credibility
- loss of provider or user confidence.

For the complete likelihood and consequence ratings outline, please see Part B – The Risk Guidelines from the ABS Risk Management Framework. The 4x4 risk assessment matrix from this document is provided below:

Consequence / Likelihood	Insignificant	Minor	Major	Catastrophic
Almost Certain	Medium	High	High	High
Likely	Medium	Medium	High	High
Unlikely	Low	Low	Medium	High
Rare	Low	Low	Medium	Medium

Based on the category of your incident, you will have an indication on whether or not to initiate a QIRP:

High Risk: Needs Senior Management attention – call a QIRP immediately
Medium Risk: Specify management responsibility; instigate monitoring and commence development of contingency plans; prepare to call a QIRP if situation becomes more severe
Low Risk: Manage through routine procedures and monitoring; ensure any actions or mitigation strategies are kept in mind for future cycles

MANAGING A QUALITY INCIDENT – INITIATING A QIRP

A QIRP should only be initiated when the consequence level of the incident warrants it. You can however use the same assessment tools to help manage smaller issues, such as LQIs, without escalating to management.

QIRPs and LQIs are reported quarterly as a Performance Measure to Senior Management and so the appropriate and designated process for managing a QIRP should be followed to ensure effective reporting. Further information on the KPI reporting process can be found on page 15 of this manual.

1. Initiating a QIRP

When you initiate the QIRP process, you will have identified a major issue that requires immediate high level input and support. You will need to:

- Identify key people involved in the incident, and those responsible for the survey. It is important that all those expected to be involved in resolving the incident are included, so no information needs to be repeated.
- Consider including an independent facilitator to ensure correct and non-biased recording of any meeting outcomes.
- Nominate a discussion and action leader, who will be responsible for ensuring progress on the resolution, and has capacity to reprioritise other work and focus on the QIRP.
- Arrange a meeting with all staff. This should be within two days from when the incident was realised, and should utilise the video and teleconferencing facilities if necessary to include interstate staff.
- The meeting invitation should include all information pertaining to the incident so that attendees are prepared.

2. The QIRP Meeting

In the QIRP meeting, there are a number of steps you will need to take for it to be fully effective. The meeting should not be about assigning blame, but resolving the issue. The process for running an effective QIRP meeting is below, for both Amber (pre-embargo) and Red (post-embargo) alerts:

- Establish the facts: You will need to ensure that all relevant factors surrounding the incident are disclosed in the meeting. It is important to ensure that everyone has the opportunity to review

the information leading up to the incident, and not just comment on the conclusions or resolutions.

- Establish the mindset: At this stage, given the identification and assessment phase, it will be certain that a problem has arisen. Ensure that all staff accept an incident has occurred and move on to finding a solution.

- Find the source of the problem: Review all the information provided such as quality measures and quality gates, allow all staff to have input, and find the source of the data issue. Below is a list of questions to consider in the meeting:

  - What measures are available to assist in pin-pointing the cause? A checklist of possible sources can be found at Appendix 2.
  - Were there any changes in methodology, process, persons, or systems?
  - Are any issues apparent that are unlikely to be the cause and are distracting from identifying the major issue?
  - Have all 'distractions' been noted with a rationale for this decision?
  - Are all roles and responsibilities of each person clearly defined?
  - Are the skills and experience of those involved adequate to accurately describe and evaluate the incident? Does anyone else need to be involved?

This process will likely outline a number of possible sources of the issue, and will need to be well documented. An example table is provided below:

Table 1: Example – Quality Incident Sources

Possible source of the problem	Priority, note here if the possible cause is not to be investigated, if it is considered 'fog' or is considered unlikely and why	Who to investigate	Information needed	When
Duplicate random numbers	*High priority*	*Jane Doe – Assistant Director*	*Investigate how the random numbers are generated and ensure uniqueness*	*In 3 days' time, on November 10.*
Treatment of outliers	*Low priority - assessed as most likely being a distractor*	*N/A*	*N/A*	*N/A*

- Contingency planning and actions: Now that the possible sources have been realised, it is crucial to outline what could be done to resolve the problem. This is where you plan what will be done, by whom, and when. Below is a list of some of the actions generally undertaken:

  For a pre-embargo quality incident (amber alert):

  - contact publishing and inform them there are issues and the publication may be delayed
  - or arrange for special treatment for publishing when the incident is resolved
  - make arrangements to update the publication, either the data or by adding in explanatory notes, release notes etc
  - withdraw the publication
  - brief the media section
  - brief the Statistician and relevant senior management
  - update RAS / RMS entries
  - contact key users, discuss problem and inform them of the delay
  - issue a media statement or arrange to brief key journalists so they don't misinterpret the data when it does come out
  - notify National Accounts or other SMAs who may use or be waiting on the data.

  For a post-embargo quality incident (red alert):

  - brief the Statistician who may need to inform relevant Ministers
  - brief the media section
  - issue a media statement from the Statistician or relevant Deputy Australian Statistician
  - arrange to brief key journalists and users so they don't misinterpret the data
  - contact any key clients who may have received consultancy data
  - brief NIRS and client services areas
  - arrange for capital city offices to brief key clients
  - amend the publication or data cube
  - change explanatory notes
  - issue corrigenda
  - notify key users of a potential problem where this is appropriate
  - notify National Accounts or other SMAs who may use the data
  - ensure transparency in the response, liaise with the media section regarding how often to release updates on the investigation.

3. Taking action

Following on from the meeting, staff should now be aware of possible sources of the quality incident, and be working towards finding solutions.

- Investigations: Staff should now move to investigating the causes that were raised in the initial QIRP meeting. It should be understood that this is high priority work so appropriate resources should be allocated to addressing the QIRP, and low priority work should be ceased.

- Follow up: Follow up meetings should be arranged now to ensure progress on the actions and resolutions. If Senior Management were not present in the initial meeting, they should be briefed on any issues within seven days of the QIRP being initiated.

- Implement changes: Once Senior Management and survey managers have decided on the treatment of the issue, staff should commence work on implementing changes to ensure that the issue does not arise again. For a pre-embargo incident, changes should be implemented prior to the release of the data to ensure that the correct information is being released to the public. For a post-embargo incident, media should be briefed on any changes that will be made to the survey.

IMPLEMENTATION AND EVALUATION

After the incident has occurred and the source has been identified, changes need to be implemented to ensure that the incident does not occur again. Additionally, an evaluation of the success of the changes will need to take place to ensure they are sufficient.

Implementation

For pre-embargo incidents, it is important to implement any changes quickly and aim to correct the data prior to release.

For post-embargo incidents, any changes that are implemented should be tested and well communicated to the public, to ensure that the credibility of ABS statistics can be maintained.

It is important to carefully document any changes that are implemented to any part of the statistical process, clearly defining roles and responsibilities and timeframes for implementation.

Evaluation

By evaluating the success of any implemented changes, staff will be able to assess whether or not the measures undertaken were sufficient, and ensure that a quality incident is less likely to occur in the future. The evaluation process can also assist when demonstrating key lessons learnt to other statistical cycles which may be at risk of experiencing the same or similar incidents.

All possible causes of the incident that were discovered when managing the QIRP should be addressed when evaluating the risk of a quality incident. A possible cause could still lead to a quality incident in the future if not appropriately managed.

Major quality incidents can sometimes trigger an external review of the statistical cycle, such as the McCarthy Review of Labour Force Statistics. This required heavy consultation from a variety of sources, and resulted in a formal paper being provided to Senior Management with a list of suggested changes to the survey collection and dissemination methods.

Ensure that any actions are clearly documented so that staff can easily identify what issues need to be managed and how. By being able to see where the incident occurred, how it is being managed, and whether or not it was successful, staff can decide on whether additional treatment is needed. This also allows for ease of access to any relevant documentation should a review be conducted following on from an incident.

The table below is an example of how to record and follow up actions and evaluations:

Table: Example – Quality Incident Evaluation

Cause/Contributing factor	Solution/Remedial action	Action needed to prevent future incidents	Person responsible	Preventative actions taken
Duplicate random numbers	*Estimates to be corrected using post-stratification to rectify the bias resulting from duplicate random numbers on the frame*	*After selections are made, a SAS program is run to check the selected sample is representative to a desired accuracy (related to the expected RSEs for the survey). The results of the evaluation are formally signed off allowing the next stage to proceed.*	*Immediate solution – Jane Doe from MD, and Jack Jones from SSG*	*SSG to incorporate new quality gate as detailed in column 3 in to standard procedures. This will be driven by Joe Bloggs and instated by the next collection.*

As always, it is important to prevent any quality incidents from occurring in the first place. For tips and tools on how to best manage quality in your statistical collection, refer to Parts A and B of this manual or contact Statistical Risk and Quality Assurance (SRQA) for more information.

QUALITY INCIDENTS AND PERFORMANCE MEASUREMENT

Staff are required to report quarterly to the Planning, Governance and Ministerial Liaison team on any QIRPS or LQIs that were initiated for the previous quarter. An email will be sent through to GSGUs and distributed to Senior Management for comment, for example:

> *Hi All,*
>
> *The next SMG Performance Measures report will be discussed at the SMG meeting on Tuesday 17 February 2015.*
>
> *Could you please complete the questionnaire attached below for any Quality Incident Response Plans (QIRPs) or Local Quality Investigations into quality issues that occurred in the December quarter 2014.*
>
> *Please submit the questionnaire to the Corporate Planning WDB, by COB* ***Wednesday 21 January.***

A template questionnaire will be provided in the email which will need to be accurately completed by the due date. This information is then collated across the ABS and used to report on Senior Management Group Performance Measures. The template questionnaire can be found at Appendix 3.

To ensure accurate reporting, it is important to adhere to the guidelines provided in the template for completing the questionnaire. Staff should be referring to the documentation produced through the QIRP process to ensure no vital information is missed. For more information on reporting, please contact the Planning, Governance and Ministerial Liaison team on 02 6252 6475.

APPENDICES

Appendix 1:

Quality Aspect	Suggested Core Measures for Business Surveys
Frame quality	I. Original frame size II. Benchmark total III. Number of supplementary selection units added to frame IV. Number of selection units V. Number of provider units VI. Sample deaths (counts and rate) VII. Rotations in (counts and rate) VIII. Live sample (counts and rate) IX. Known deaths (counts and rate) X. Presumed deaths (counts and rate) XI. Other sample loss (counts and rate) XII. Proxies in the sample (counts and rate)
Response rates	Monitoring quality during the collection process is: I. Number of forms outstanding. Monitoring quality during the collection process: I. Form receival rate II. Provider contact clearance rate III. Provider contact resolution rate. End of cycle declaration of data quality: I. % of live units responding II. Proportion of level estimate imputed. Other Measures I. number of partial responses
Data Capture	***Note:*** *Data capture measures are still under development* General Process Information: I. Number of forms (e.g. forms scanned, repaired) II. Number of units with additional information (e.g. attached comments, additional data pages) III. Actual vs Intended mode collection (rate) Process Performance Indicators: I. Pre-Imaging (e.g. monitoring SFMP events) II. Imaging (e.g. systemic form problems that impact on imaging, such as poor colours, offset fields/printing) III. Recognition (e.g. monitoring fields that fail tolerance checks) IV. Transformations (e.g. monitoring Nils, N/As, use of brackets to represent negative numbers)
Adjustments to data	In terms of point in time/movement and level/rate: I. Total contribution from proxies to the estimate II. Total contribution from outliers to the estimate III. Total contribution from imputed values to the estimate IV. Total contribution from Business Provisions to the estimate For key estimates (in terms of point in time/movement, level/rate and achieved expected): I. standard error

	II. variance III. relative standard error Editing: I. % of units requiring editing (any data item) II. % of units requiring editing (specific data item)
Revisions	For key estimates (level and %): I. difference between preliminary and final (within cycle revision) II. difference between final and post-final (within cycle revision) III. difference between final and revised (between cycle revision)
Estimates	For key estimates: II. Level (Original, trend and residual) III. Movement (Original, trend and residual)
Respondent load	IV. Time taken to complete form

Appendix 2:

To examine the methodological soundness, accuracy and reliability of the data collected, some or all of the following information should be available.

Time series of:

- ✓ frame changes;
- ✓ BP counts;
- ✓ estimated number of live units on the frame;
- ✓ rotation counts;
- ✓ response rates;
- ✓ number of live responding units;
- ✓ number of imputes;
- ✓ number of newon imputes;
- ✓ number of proxies;
- ✓ number of winsorised outliers;
- ✓ number of surprise outliers;
- ✓ movement estimates at Australia level;
- ✓ movement estimates at sector level;
- ✓ common sample movement estimate;
- ✓ direct movement estimates;
- ✓ composite movement estimates;
- ✓ RSEs on level and movement estimates (including RSEs on direct movement and composite movement estimates);
- ✓ impact of outliering (winsorising or surprise);
- ✓ contribution of imputation to estimates;
- ✓ contribution of proxies to estimates;
- ✓ BP contribution to estimates;
- ✓ trend and seasonally adjusted series for level and movement; and
- ✓ SI charts.

Appendix 3:

Questionnaire for the Quality Incident Response Plan Reporting

Quarterly SMG KPI

XX Quarter 2016

(XX-XX 2016)

The following questionnaire collects data for the quarterly SMG KPI report. Recently, data has also been used to evaluate aspects of the ABS quality framework and for other key business needs.

For further information on QIRPs, including how to assess and manage a QIRP, please see the revised QIRP Manual *Part C – Quality Incident Management and Reporting* (as at April 2016).

Please provide details of contact person for this form:

Name: _____ Phone: _____

Area: _____

Question 1. Please fill in the following table for your division

	Quality Incident Response Plan (QIRP): **no of significant QIRP responses**	**Other Local Quality Investigations:** **no. of local investigations conducted**
Category 1 Main Economic Indicators*		
Category 2 Main Economic Indicators		
Category 3 Other Leading Indicators		
Other Key Publications		
Total		
No. of QIRPs or Other Local Quality Investigations that resulted in a problem being discovered		

*For descriptions of publications by Tier, please see 1006.0 Forward Work Program.

Question 2. For each of the QIRPs and other Local Quality Investigations reported in question 1 above, please complete the following table.

Catalogue Number, Product Title, reference period or Collection name
e.g. 6202.0 Labour Force Australia (April 2009)
QIRP or Local Quality Investigations • Pre embargo (amber) QIRP • Post-embargo (red) QIRP • Local Quality Investigation Refer to Part C – Quality Incident Management and Reporting for more on QIRP definitions
e.g. Amber QIRP
Date of incident, investigation or when ongoing quality issues commenced
e.g. Tuesday before release on the Thursday, May 2009
Detail of quality issue
e.g. The March seasonally adjusted unemployment rate was 5.7%; the April seasonally adjusted unemployment rate was 5.4%; a drop of 0.3 percentage points in the midst of a Global Financial Crisis when all expectations were for a rise in Unemployment.
What stage in the process was the Quality Incident identified? - Refer to the generic statistical business process model here: GSBPM Guide
e.g. Disseminate
Does the product/collection have Quality Gates? - For more information on Quality Gates, please see the Quality Gates Manual
e.g. Quality Gates were developed for the product in 2010
Did the Quality Gates play a role in identifying the incident?
e.g. Yes, the incident would not have been detected without Quality Gates
After the investigations, was everything ok or was a problem identified requiring remediation? - Skip to Lessons learnt if everything was ok
e.g. Everything was okay.
What stage in the process did they have to go back to in order to fix the quality issue? - Refer to the generic statistical business process model
e.g. Not applicable
Remedial action taken - include the time taken to remediate the issue
e.g. Not applicable
Lessons learnt
e.g. That it was useful to conduct a QIRP to ensure that everything was okay in case there were any queries of this unusual estimate. It provided internal confidence in the estimates.
Who identified the problem (internal/external)?
e.g. Management / Senior Management