Standard Quality Profiles for Longitudinal Studies

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Contents

1. Introduction

Quality standards and quality profiles should help to achieve a number of aims that are important to the National Strategy for Longitudinal Studies. These include the following:

- Documenting in an accessible manner the main aspects of data quality for each study (and, as a result, enabling users to make more appropriate uses of the data);
- Identifying priorities for methodological research, to fill gaps where critical aspects of data quality cannot be properly documented;
- Identifying priorities for remedial work on a study, where the quality profile suggests deficiencies;
- Identifying priorities for future developments of a study, where the quality profile suggests particular strengths and opportunities;
- Raising awareness of data quality issues, and hence contributing to quality improvements.

A quality profile is a document that summarises knowledge regarding the quality of a study. The idea of standardised quality profiles as a tool for data users has developed since the mid-1980s in a number of agencies, including the US Bureau of the Census (Jabine, 1990), the US National Center for Education Statistics (Kalton *et al*, 2000), Statistics Canada (Statistics Canada, 1998), Eurostat (Eurostat, 1999), Statistics Sweden (Statistics Sweden, 1994) and others. One of the main purposes of a quality profile is to ensure that analysts and others with an interest in the data have access to relevant information about data quality. The profile should contain appropriate information on all relevant components of quality and all aspects of each component. A quality profile should be an objective statement of what is known about components of quality. Once completed, a quality profile can be used to inform a subjective assessment of the appropriateness of the quality of the study, but that assessment should not form part of the profile itself.

Quality is a concept that has multiple dimensions, each of which has multiple components. In consequence, quality profiles are necessarily complex and extensive documents. However, the production of a quality profile need not be an overwhelming task. It should largely involve locating and summarising in a structured way relevant information that may be documented in a range of locations and forms. Some new analysis may be necessary, but only where standard study documentation is deficient.

This document outlines the components and structure of a generic survey quality profile for longitudinal studies. It draws upon the framework presented in the ULSC document, "A Quality Framework for Longitudinal Studies."

It should be noted that the framework document describes the components of quality of the *outputs* of a study (data sets, reports, documentation, etc). Direct measures of these components are referred to as indicators of *output quality*. For some components, it is relatively simple to measure and report output quality indicators on a routine basis (e.g. standard errors, measures of timeliness). Other output quality indicators require special analyses or special study designs (e.g. measurement errors).

In consequence, these tend to get reported infrequently if at all. For this reason, *process quality* indicators are often used as indirect proxy measures of output quality. High process quality is a necessary pre-requisite for high output quality, but is not sufficient. In this document, we list standard indicators that should be included in any quality profile. These include both output and process quality indicators. The latter are generally included where there is no simple way of making direct assessments of the aspects of output quality affected by the process in question or where we believe the process quality itself provides additional information relevant to the overall assessment of quality of a study.

It should be noted that some components of the standard quality profile will not be relevant to all studies. In the case where a component is not relevant, the profile should state this, so that the reader is clear that no information is missing.

With many of the components, the details (procedures, outcomes, etc) will change over time, and particularly over waves of the study. A profile that is intended to cover multiple waves of a study should document the details for each wave. In due course, it is anticipated that profiles will be produced for each wave of a study (or other appropriate subset; for example, two closely-linked waves might be combined into a single quality profile).

2. Standard Contents of a Quality Profile

2.1 Statement of core research purposes

This should provide a context for much of the rest of the quality information. If the core research purposes have changed over time, this development should be summarised.

2.2 Overview of the survey design

The overall design of the survey should be summarised to provide a context and introduction to the detail that will follow. Issues covered should include the locus of responsibility for study design and administration, the nature of the study design process (Who was involved? How were decisions made?), the rationale behind the design (Why were key specific decisions made?), the population(s) sampled, the general nature and timing of data collection exercises, etc.

Together, the statement of core research purposes and the overview of survey design should provide sufficient information to provide a reader unfamiliar with the study with a general idea of the key characteristics of the study.

2.3 Sample design

- Definition of target population;
- Definition of study population;
- Explanation of any difference between target and study population;
- (If there are multiple study populations, especially longitudinal populations, these should <u>each</u> be defined);
- Initial sample selection mechanism;
- Any subsequent mechanisms for adding or removing cases to/from the sample;
- Quality control procedures applied to sample selection;
- Quality control procedures applied to procedures for adding/removing cases;
- Size of selected sample;
- Size of eligible and responding samples at each wave, and for each key component of each wave (e.g. interview, self-completion questionnaire, test, measurements, etc) if relevant;
- Distribution of relative selection probabilities and explanation for the distribution;
- Description of any stratification used in sample selection, including complete definitions of the strata;
- Description of any clustering used in sample selection, including definitions of the clustering units and the distribution of sample size per cluster.

2.4 Content of Data Collection Instruments

- List of data collection instruments;
- Description of principles behind instrument design;
- Procedures (e.g. in terms of consultation, question testing methods, piloting) used to develop questionnaires;

- List of questions/ data items (or references to documents that contain such a list).

2.5 Data Collection

- Mode of data collection at each wave/stage;
- If multi-mode, distribution of number of cases per mode;
- Rules governing the use of proxy respondents;
- Fieldwork dates (for each wave/ component);
- The nature and content of interviewer briefings, if any;
- The nature and results of field work quality control procedures;
- The distribution of number of interviews completed per interviewer;
- The distribution of number of cases coded per coder, if applicable;
- Other aspects of fieldwork organisation which may have impacts on data quality;
- Distribution of field outcome codes for each wave/stage;
- Outcome rates for each wave/stage and cumulatively, to include eligibility rate, contact rate, co-operation rate, refusal rate, response rate – both weighted and unweighted;
- Summary of levels of item non-response to include, as a minimum, mean proportion of missing items (preferably broken down by item types) and proportion missing for the ten items with the highest proportions missing (proportions to be based upon cases eligible for the item). For a set of key repeated items (if any), a summary of the proportion of cases with the data missing for at least 1, 2, 3, etc waves.

2.6 Data preparation

- Description of extent and nature of coding at each wave/ stage;
- Description of extent and nature of editing at each wave/ stage, including cross-wave editing;
- Description of data capture procedures (keying, scanning, linkage, etc);
- Nature and results of quality control procedures relating to coding, editing, data capture (e.g. supervision, back-checks, double-coding, key verification, etc).

2.7 Statistical Adjustment Procedures

- Description and evaluation of weighting procedures;
- Description and evaluation of imputation procedures.

2.8 Documentation and data accessibility

- List of published/available documentation and summary of contents of each;
- List of data sets available;
- Outline of contents of each data set;
- Dates of publication of each key data set/ document;
- Description of form in which each data set/ document can be accessed (e.g. alternative formats of data, alternative access mechanisms - web, CD-rom by mail, etc);
- Costs to users of access;

- Description of any application process/ requirements put on users.

2.9 Use of the data

- Measures of volume and nature of data users (e.g. applications for access, downloads from website, sales, members of user groups, etc);
- Summary of known uses of the data (e.g. major publications, seminars, conferences, etc).

2.10 Coverage error

- Evaluation of the coverage of the sampling frame/method with respect to the target population;
- Description of the processes that lead to inclusion or exclusion from the frame;
- Estimate(s) of the approximate proportions of population units likely to be omitted from the frame, broken down by key subgroups if possible/relevant;
- Description of the likely characteristics of omitted units.

2.11 Sampling error

- Description of possible sources of sampling bias;
- Estimates of sampling variance for a broad range of estimates;
- Estimates of design effects and their components (clustering, stratification, weighting) for a broad range of estimates, in so far as this is possible;
- Description of the method used to produce the above estimates of sampling variance and design effects, including software and any standard routines used.

2.12 Non-response error

- Description of the methods used to track the contact details of sample members over the course of the study, including analyses of outcomes where appropriate (e.g. numbers notifying a change of address in response to a particular stimulus, summary of known address changes broken down by time periods, etc);
- Unit response rates broken down by relevant subgroups where possible (subgroups can be defined by frame/observation/linked data at wave 1 and by survey data for subsequent waves);
- Detailed analyses of unit non-response bias for key analysis bases (e.g. CS samples, longitudinal samples, regional or other important sub-samples);
- Analyses of effects of non-response weighting on non-response bias;
- Summary of likely nature and extent of residual unit non-response bias after application of non-response weights;
- Analysis of item non-response bias for range of key items/estimates;
- Analyses of effects of imputation on item non-response bias.

2.13 Measurement error

- Analyses of measurement error in the survey data, focusing particularly on the quality of recall data, error in repeated measures and conditioning;

- Summary of external information on patterns of measurement error, as relevant to the survey;
- Summary of likely sources of measurement error in derived variables, particularly those constructed from data collected at multiple waves;
- Report of any known deficiencies in the data collection instruments.

2.14 External Comparisons

- Comparison of survey estimates with other information sources, where appropriate;
- Summary of what can be concluded about data quality from such comparison.

References

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