Data quality assessment and metadata

Workshop on Travel and Tourism Statistics for the CARICOM countries
Roseau, Dominica, 14 – 17 May 2013

United Nations Statistics Division
Statistics of International Trade in Services Section
Quality

- Relevance of statistical concepts
- Accuracy
- Timeliness
- Accessibility and clarity of information
- Comparability of statistics
- Coherence
- Completeness/coverage
- Cost and burden

Metadata
Available resources to collect, analyze and store international trade in services statistics will make an effect on the quality of the data.
Several statistical organizations and countries have developed definitions of quality, outlining the various dimensions (aspects) of quality and quality measurement and have integrated them into quality assessment frameworks.
Examples of quality assessment frameworks:

European Statistical System (ESS) focuses on the statistical outputs and defines quality with reference to six criteria.

IMF Data Quality Assessment Framework (DQAF) – holistic view of data quality, including governance of statistical system.

OECD Quality Measurement Framework – takes the user’s side to approach quality – uses seven dimensions.
No unique indicator of data quality – several criteria are used, like:

- Relevance of statistical concepts
- Accuracy
- Timeliness
- Accessibility and clarity of information
- Comparability of statistics
- Coherence
- Completeness/coverage
- Cost and burden
Relevance

Relevance in statistics is assured when statistical concepts meet current and potential users' needs. Identification of the users and their expectations is a must.
Data quality

Accuracy

Accuracy is defined as the closeness between the computations or estimates and the (unknown) true population value.

Assessing the accuracy of an estimate involves analysing the total error associated with the estimate: bias (+/-) and standard deviation (when possible).

High **accuracy** but low **precision** (large sample error?)

High **precision** but low **accuracy** (biased estimate?)
Accuracy (cont.)

- **Sampling errors**: lack of accuracy due to observing only a sample instead of the whole population (quantifiable by the *standard error*).

- **Non-sampling errors**:
  - Coverage errors (under- or over coverage)
  - Non-response errors (surveys)
  - Measurement errors
  - Processing errors
  - Model assumption errors
Users want the latest data that are published frequently and on time at pre-established dates.

*Data*
- ✔ Collection
- ✔ Editing
- ✔ Consolidation
- ✔ Dissemination
Accessibility and clarity of information

Statistical data are most valuable when they are:

- Easily accessible by users
- Available in the form users desire
- Adequately documented – accompanied by good **metadata**

Assistance in using and interpreting the statistics should also be forthcoming from the providers.
Comparability of statistics

Statistics for a given characteristic have the greatest usefulness when they enable reliable comparisons of values across geography and over time.

Providing comparable country data makes it possible for international organizations to publish regional and world totals.
Comparability of statistics (cont.)

For comparability the following are needed:

- Common definitions
- Common unit of measurement
- Unified methodology
- Timely submission of data to international organizations
Coherence

Coherence is the measure of the extent to which one set of statistical characteristics agrees with an other and can be used together (with each other) or as an alternative (to each other).
Completeness/coverage

The component of completeness reflects the extent to which the statistical system in place answers the users’ needs and priorities by comparing all user demands with the availability of statistics.
Cost and burden

Although not measures of quality, they are positively correlated with quality.

**Costs**: office space, utility bills, staff-hours involved, funding of surveys, etc.

**Response burden**: simplest way to measure is the time spent by the respondent to provide information

A compromise between quality and cost and burden must be achieved
Statistical metadata facilitate sharing, querying and understanding of statistical data over the lifetime of the data. They also refer to any methodological descriptions on how data are collected and processed.

Metadata is essential for the interpretation of statistical data.
There is a bidirectional relationship between metadata and quality:

✔ Metadata describe the quality of statistics

✔ Metadata are themselves a quality component improving the availability and accessibility of statistical data
As a minimum segmentation, the following two levels of metadata are recommended:

• Structural metadata presented as an integral part of the data tables – for example footnotes explaining the statistical output

• Reference metadata providing details on the content and quality of data – for example a description of data sources and statistical processes and estimations related to producing the statistics
• Metadata provides a mechanism for comparing national practices in the compilation of statistics. This may help and encourage countries to implement international standards and to adopt the best practices.

• Better harmonization of approaches will also improve general quality of the data.
UNSD request for metadata:

Items requested:

- Contact info
- Agencies involved in data collection and processing
- Methodological framework followed
- Data sources
- Data dissemination
- Other information
UNSD metadata on SITS

- UNSD collect external trade in services metadata on SITS from countries as part of the data collection on SITS.

## Table 7.1 Balance of Payments

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(BS Millions)

Source: The Central Bank of the Bahamas

Downloaded from: http://www.centralbankbahamas.com/download/093325700.pdf
SECTION 7  INTERNATIONAL TRADE AND PAYMENTS

Table 7.1  Balance of Payments

The table format is based on the IMF's standard format for reporting balance of payments statistics. The information on oil trade is supplied by oil companies and is desegregated into oil imported for domestic consumption and that for bunkering of foreign ships and aircraft. Oil that is imported for trans-shipment or refining and subsequently re-exported is excluded from the trade account since no change of ownership occurs.

Interest, Dividends and Profits: data for banks exclude transactions relative to offshore activities.

Import and Export: data differ from those published by the Department of Statistics owing, inter alia, to some erratic movement in the series compiled by this department. For the years 1978-1987:3, the Central Bank's estimates for imports were based on import duties to which a multiplier of 3.75 was applied.

Since 1987:4 - 1989, imports have been compiled as a percentage of tourism expenditure. Exports have been estimated from the data supplied by offshore exporting companies and applying a multiplier of 2.22.

Thereafter, the Bank has reverted to using imports and exports data from the Department of Statistics. In the absence of timely data, the Bank estimates exports from previous years' information and imports are obtained from The Bahamas Customs Department.

Travel: debit is based on Exchange Control approvals for purchases of foreign currency.


The non-oil imports data for 1985 have been revised upwards to reflect the impact of the sharp upward adjustment in tourist expenditure, as reported by the Ministry of Tourism. The revisions by the ministry reflect the new methodology employed in calculating tourist expenditure by using an average per visit measurement instead of a per diem concept. The adjustments to non-oil imports were designed to maintain the historical relationship which exits between tourism receipts and imports. Accordingly, the freight and insurance data were also revised.