M&E Development Series

DATA QUALITY AND DATA MANAGEMENT SYSTEMS
Data Quality Assessment
Data Quality Assessment

The various elements of the M&E system that we have been designing are intended to address these five domains of data quality.
Data Quality Assessment

Validity

“Data clearly, directly and adequately represent the result that was intended to be measured.”

Have we actually measured what we meant to measure?
Validity

Controlled using:

- Specific Indicator Definitions
- Verification Processes
Data Quality Assessment

Validity

What are some risks to validity of our reported numbers?
Data Quality Assessment

Reliability

“Consistency of the measurement and data collection process”

Are consistent procedures for data collection, maintenance, analysis, processing and reporting followed?
Data Quality Assessment

Reliability

Addressed through:

- Consistent use of standardized data instrument
- Verification Process
- Recording corrections and adjustments
Data Quality Assessment

Reliability

What are some threats to the reliability of our data?
Data Quality Assessment

**Integrity**

“Measure of ‘truthfulness’ of the data”

‘Untruth’ can be introduced by either human or technical means, willfully or unconsciously.
Data Quality Assessment

Integrity

Managed through:

- Controlled access to data and secure storage
- Verification Process
- Spot checks and cross checks
Data Quality Assessment

Integrity

What are some risks to the integrity of our data?
Data Quality Assessment

Precision

“Measure of Bias or Error; Sufficient detail of data”

Poor precision can result in double counting or inaccuracy in stratification (by sex, by age, etc) of reported numbers.
Data Quality Assessment

Precision

Controlled by:
- Assigning individual ID numbers
- Using nested fields to track multiple services provided to the same individual
- Including disaggregation variables on standard data tools
- Using Verification Processes
Data Quality Assessment

Precision

What threats to data precision might we encounter?
Data Quality Assessment

**Timeliness**

“Performance data is collected and processed frequently enough to regularly inform program management decisions and is sufficiently current to be useful in decision-making.”
Data Quality Assessment

Timeliness

Improved by:
- Schedule of due dates for each level in the data management process
- Dissemination plan that takes into account information needs of program management
- Data trace and verification that measures timeliness
Data Quality Assessment

Timeliness

What are some risks to timeliness of our data?
Data Management Systems

1. Document Retention
2. Storage of Data
3. Data Verification Process
Data Management Systems

Document Retention

For how long will documents, ranging from source data to reports, be retained by the program?

Establish a policy that is in compliance with OJJDP guidelines (at least 3 years after completion of grant activities) and other governing bodies.
Data Management Systems

**Storage of Data**

Where are source documents and reports kept?

How and how often are data backed up?

Who has access to data and documents?

Who can manipulate data?
Data Management Systems

**Data Verification Process**

1. Self-verification of data by checking for common errors

<table>
<thead>
<tr>
<th>Transposition Errors</th>
<th>Copying Errors</th>
<th>Use of Estimates</th>
</tr>
</thead>
<tbody>
<tr>
<td>Calculation Errors</td>
<td>Range Inconsistency</td>
<td>Over-reporting</td>
</tr>
<tr>
<td>Under-reporting</td>
<td>Wrong reporting period</td>
<td>Incomplete reports</td>
</tr>
<tr>
<td>Inconsistencies</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Data Management Systems

Data Verification Process

2. Calculations and aggregation steps are verified by a second handler prior to submission

3. Periodic internal completion of:
   a. Data Verification Tool
   b. Site-level Data Audit
1. **Completeness**

What percentage of the required fields are completed?

\[
\text{Number of required fields completed} = \frac{\text{Number of required fields}}{\text{Number of required fields}}
\]
Data Management Systems

2. Timeliness
Was the report submitted on time?
3. **Accuracy**

What is the ratio of reported count to verification re-count?

\[
\text{Number submitted on report} \div \text{Number re-counted from source documents during verification}
\]
Data Management Systems

Site Level Data Audit

1. Assess Validity
   - inclusion/exclusion definitions are followed?
   - proper disaggregation of data?
2. Assess Reliability

- consistent data form/collection over time?
- training for individuals that collect data?
- consistent analysis methods?
- clearly prescribed arithmetic manipulations?
3. Assess **Timeliness**

- presence of data collection schedule?
- absence of reporting time lags?
Data Management Systems

Site Level Data Audit

4. Assess Precision
   - no source or manipulation errors?
   - no transcription errors?
Data Management Systems

5. Assess *Integrity*
   - anti-tampering controls?
   - standardized data cleaning?
   - hard copy storage?
Data Management Systems

Site Level Data Audit

6. Describe plan for addressing data quality challenges
## Data Management Systems

<table>
<thead>
<tr>
<th>Data Verification Tool</th>
<th>Site-level Data Audit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Completed by Supervisor of the individual completing the form</td>
<td>1. Completed by internal M&amp;E designee</td>
</tr>
<tr>
<td>Random Sampling of Forms</td>
<td>2. Completed by NCMI</td>
</tr>
<tr>
<td>Usually Completed Monthly</td>
<td>Entire system review &amp; Recount selected indicator from chosen reporting period</td>
</tr>
<tr>
<td></td>
<td>Usually Completed Quarterly (internal)</td>
</tr>
</tbody>
</table>
Q&A: Data Quality and Data Management System

Questions...?
To Do...

- Write a *Document Retention Policy* for the youth mentoring efforts at your organization.

- Determine for the *Data Verification Tool & Site-level Data Audit* the actual:
  - Responsible roles
  - Sample size and selection
  - Frequency of completion

- Write a *Data Storage Plan* for youth mentoring documents that describes:
  - *Where source documents and reports are kept*
  - *How and how often data are backed up*
  - *Who has access to data and documents*
  - *Who can manipulate data*