Session 12. Quality assessment and assurance in the civil registration and vital statistics system
Basic framework

Adequately funded evaluation activities are essential

- For improving systems that have deficiencies
- For maintaining systems that function satisfactorily

Quality assurance

Quality assessment
Basic framework

Quality assurance

- Encompasses each stage of CRVS operations
- All vital events are registered without duplication
- All related information is recorded
- Information is compiled, validated and processed
- Vital statistics are released in timely manner

Quality assessment

- Specific studies for specific questions
- Coverage of registration of vital events
- Accuracy of variables
- Overall functioning of sub-systems
- Can be ad hoc or regular exercises
Standards

Completeness  Correctness or Accuracy

Availability  Timeliness
Completeness
* Every vital event is registered
* Statistical report is filed for every registered event
* **Coverage error**

Correctness
* Every data item is filled
* Data items are accurately filled
* **Content error**

Availability
* Data and statistics are available to users in a friendly format

Timeliness
* **CR**: events are registered within time limit and statistical reports are filed according to schedule
* **VS**: prompt dissemination
Quality assessment methods

Direct methods ➞ Matching of records

Indirect methods ➞ Demographic analysis
Matching records

Match registration records with records from an independent source
Quality assessment. Direct methods

Matching:

• **Birth registration with death registration**
  - limited to infants' deaths
  - can be carried out routinely

• **With administrative records**
  - a variety of sources can be used
  - however, none is complete
  - useful to detect certain type of underreporting
Quality assessment: Direct methods

Matching:

• **Lists from population censuses and surveys**
  - compiled from questions on births and deaths
  - can lead to an estimate of completeness
  - national or sub-national level

• **Dual records system**
  - a particular case of the lists
  - survey specifically to collect information on vital events
  - the two sources are confronted
Quality assessment: Direct methods

Matching:

- **Dual records system**

<table>
<thead>
<tr>
<th>Civil Registration</th>
<th>Survey</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Yes</td>
<td>Matched</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Not in register</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>M+NR</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td><strong>Not in survey</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Missing in both</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td><strong>M+NS</strong></td>
<td></td>
<td><strong>N</strong></td>
</tr>
</tbody>
</table>

Chandrasekaran-Deming formula

\[
N = \frac{(M + NS) \times (M + NR)}{M}
\]
Quality assessment: Direct methods

Practical example: Health services of the state of Queensland, Australia

Primary source: Perinatal Data Collection

Secondary source: Birth registration

Linkage file:
file containing person identifiers from various admin. sources
Direct methods. Practical example: Health services of the state of Queensland, Australia

Some results

- 2.7% of Perinatal Data records could not be linked to Registration data.
- Significant differences in linkage according to ethnic groups

<table>
<thead>
<tr>
<th>Ethnic Group</th>
<th>Undercoverage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indigenous mothers</td>
<td>15-18%</td>
</tr>
<tr>
<td>Non-indigenous mothers</td>
<td>1.8%</td>
</tr>
</tbody>
</table>

- Remote and very remote geographical areas also had high rates of under-registration

Quality assessment: Indirect methods

- Comparison of trends
- Delayed registration
  - Comparison with census data
    - If at least two censuses: balancing equation, Lexis diagram
    - If only one census: compare aggregates
  - Methods for incomplete data
    - Manual X
  - Questions on birth registration in surveys or censuses
### Direct or indirect?

<table>
<thead>
<tr>
<th>Direct methods</th>
<th>Advantages</th>
<th>Limitations</th>
</tr>
</thead>
</table>
|                | • More accurate assessment of *registration* completeness  
|                | • May indicate sources of under or overregistration  
|                | • Can be applied at any geographical level | • Accuracy is affected by the choice of the second source of records  
|                |  | • True independency of the second source is unlikely  
|                |  | • Matching criteria difficult to find if there is no ID number  
|                |  | • If manual: time consuming  
|                |  | • If automated: computer algorithms can get too complex  
|                |  | • Cost |

<table>
<thead>
<tr>
<th>Indirect methods</th>
<th>Advantages</th>
<th>Limitations</th>
</tr>
</thead>
</table>
|                   | • Prompt assessment of vital statistics completeness  
|                   | • Several can be applied at various geographical levels | • Some have assumptions that may not hold  
|                   |  | • Some require reliable data from two censuses  
|                   |  | • Accuracy is affected by the degree of census completeness |
Direct or indirect?

- If vital statistics are compiled fully from civil registration, both direct and indirect measure the quality of civil registration and vital statistics.

- However, coverage and accuracy of vital statistics are also affected by the steps in the production.

- When the two systems do not correspond completely, measures of quality of one system cannot be used to represent another.
Direct or indirect?

Choosing the appropriate method depends on:

- Objectives
- Degree of precision
- Timeliness
- Type of event
- Resources
Gracias  Thank You  Merci  Спасибо  شكرا 谢谢