United Nations Statistics Division

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

Workshop on the *Principles and Recommendations for a Vital Statistics System, Revision 3* for Caribbean countries
Port of Spain, Trinidad and Tobago, 1- 4 December 2015

Basic framework

Adequately funded evaluation activities are essential

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

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

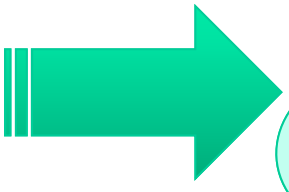
Quality assessment methods

Direct methods → **Matching of records**

Indirect methods → **Demographic analysis**

Quality assessment. Direct methods

Matching of 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**

Civil Registration	Survey		
	Yes	No	Total
Yes	*Matched*	*Not in register*	*M+NR*
No	*Not in survey*	*Missing in both*	
Total	*M+NS*		*N*

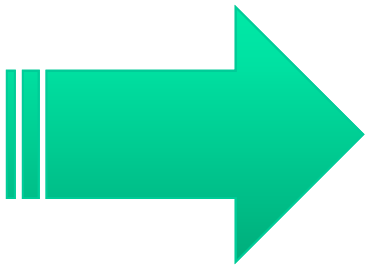
Chandrasekaran-Deming formula

$$N = \frac{(M + NS) * (M + NR)}{M}$$

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

Indigenous mothers	15-18% undercoverage
Non-indigenous mothers	1.8% undercoverage

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

https://www.health.qld.gov.au/hsu/peri/underreg.pdf

Quality assessment. Indirect methods

- **Comparison of trends**
- **Delayed registration**

Demographic analysis

  - **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*
    - *Tools for Demographic Estimation* (online and print update of *Manual X*, **http://demographicestimation.iussp.org/**)
  - **Questions on birth registration in surveys or censuses**

Direct or indirect ?

	Advantages	Limitations
Direct methods	• 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
Indirect methods	• 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
Merci
شكرا

Thank You
Спасибо
谢谢