SESSION 11. QUALITY ASSESSMENT AND ASSURANCE IN THE CIVIL REGISTRATION AND VITAL STATISTICS SYSTEM

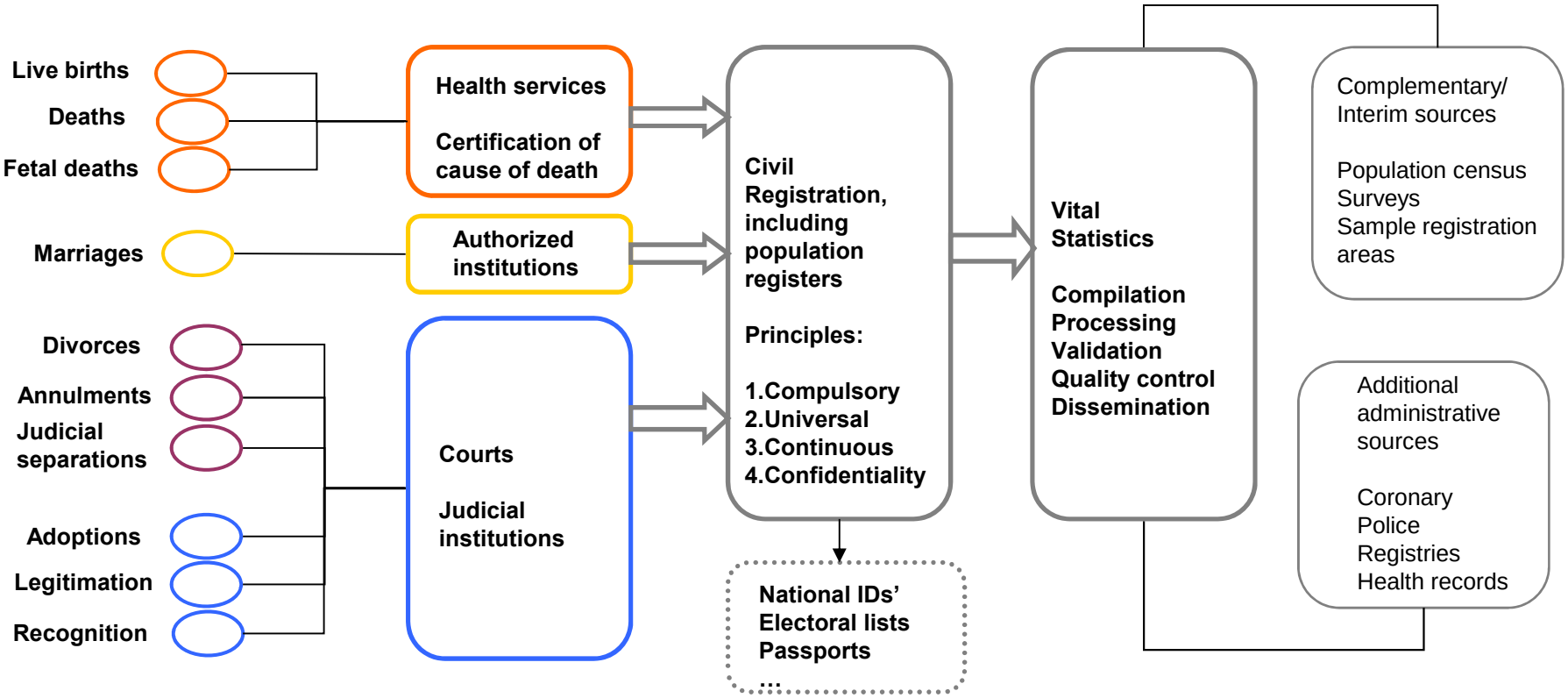
UNITED NATIONS STATISTICS DIVISION

Workshop on the Principles and Recommendations for a Vital Statistics System, Revision 3 for Arabic-speaking countries

Muscat, Oman, 14 - 17 November 2016

Evaluation is essential

Vital Statistics System



Quality basic framework

Adequately funded evaluation activities are essential

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

Strong mandate in Sustainable Development Agenda

- Indicator 16.9.1: Percentage of children under 5 whose births have been registered
- Indicator 17.19.2: Proportion of countries that… (b) have achieved 100 per cent birth registration and 80 per cent death registration
- Other 9 indicators that use CRVS data as input

Quality 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

Standards

1. Completeness

* Every vital event is registered

* Statistical report is filed for every registered event

* Coverage error

2. Accuracy

3. Availability

4. Timeliness

Standards

1. npleteness

2. Accuracy

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

3. Availability

4. Timelines

Standards

1. pleteness

2. Accurac

3. Availability

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

* Difficult to satisfy, as demands have grown

4. Timelines

Standards

1. pleteness

2. Accurac

4. Timeliness

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

3. Availability

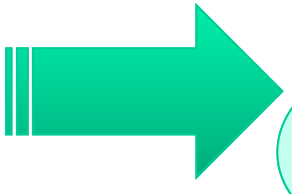
Quality assessment methods

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 basic logic:

	Civil Registration	Survey/ Census	Result
Case 1	X	X	*Matched*
Case 2	*X*		*Not in survey*
Case 3		*X*	*Not in CR*
…			*…*
…			*…*
Case n-1			
Case n			

Case 4			***Missing in both***

Result	Count
Matched	1000
Not in survey	*120*
Not in CR	*230*

Missing in both	***??***

Quality assessment.
Direct methods

Matching basic logic:

Survey /Census	Civil Registration		
	Yes	No	Total
Yes	*Matched*	*Not in CR*	*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

Matching basic logic:

Survey/ Census	Civil Registration		
	Yes	No	Total
Yes	*1000*	*230*	*1230*
No	*120*	*Missing in both*	**147**
Total	*1120*	**257**	*N* **=1377**

Missing in both	***?? = 27***

Chandrasekaran-Deming formula

$$N = \frac{(1000+230)*(1000+120)}{1000}$$

$$N = 1377.6$$

$$Undercoverage = \frac{27}{1377} = 1.96\%$$

Quality assessment.
Indirect methods

- **Comparison of trends**
- **Delayed registration**
- **Questions on birth registration in surveys or censuses**

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/**)

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 ?

Choosing the appropriate method depends on:

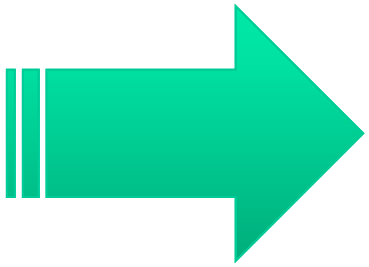
- **Objectives**
- **Degree of precision**
- **Timeliness**
- **Type of event**
- **Resources**


Gracias
Merci
شكرا
Thank You
Спасибо
谢谢

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

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**