Guidelines for estimating the completeness of reporting of vital events

Capacity-building workshop: 28 March-1 April 2022
Session 1

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Introduction to the workshop

- Introductions
- Background to the Guidelines for estimating completeness of reporting of vital events
- Overview of the terrain to be covered
Background and context for the Guidelines

- The imperative for improving the completeness of civil registration
- “Leaving no-one behind” – the importance of inequality assessments in the context of civil registration
- Located within the ESCAP mid-term review, which identified capacity constraints in evaluating the completeness of CRVS data
Roadmap of the terrain to be covered (plenaries)

- **Monday 28 March**
  - 13h30-14h30 BKK
  - Getting the basics right
    - Numerators
    - Denominators

- **Tuesday 29 March**
  - 12h00-14h00 BKK
  - Handling delayed registration data
    - Birth registration completeness (part 1)

- **Thursday 31 March**
  - 12h00-14h00 BKK
  - Birth registration completeness (part 2)
    - Death registration completeness

- **Friday 1 April**
  - 13h30-14h00 BKK
  - Close-out, wrap-up, and next steps
**Practical sessions**

- **Wednesday 30 March**
  12h00-16h00 BKK

  Covering the first two instruction sessions

  Opportunity for 1-1 consultations

- **Friday 1 April**
  12h00-13h30 BKK **AND**
  14h00-16h00 BKK

  Covering the instruction session on Thursday 31 March

  Opportunity for 1-1 consultations
Resources

- Link to the Guidelines:

- Link to the Google Drive for the workshop
  - https://drive.google.com/drive/folders/1hapoq-pDO3S-vAH5f6vesnejceBC7fhK
  - Please also try to access data for your own country in advance of the practical session on Wednesday: https://drive.google.com/file/d/1-m0KsuuhPAG4y4q6fSU9eryisBhY7Jns/view?usp=sharing
The Guidelines: Contents

- General tools for the numerator:
  - adjustment in respect of anticipated incurred-but-not-reported events
  - adjustment in respect of timely registration in the year following occurrence
- Choice of an appropriate denominator
- Considering the impact of COVID-19 on estimating completeness

Guidelines for estimating completeness of civil registration of vital events

A guide for practitioners
The Guidelines: Contents

- Birth registration completeness
  - Comparison with UNWPP (2019 version) or other estimates of births
  - Comparison with reverse-survival estimates of births from a census
  - Application of fertility rates to population data
  - Using data from administrative sources
Death registration completeness

- Comparison with UNWPP (2019 version) or other estimates of deaths
- Overview of estimation of adult death registration completeness from census data
Let’s get started!

- Coverage vs. completeness
- Thinking about the numerator of measures of completeness
  - The importance of appropriate handling of late registration
- Thinking about the denominator of measures of completeness
- The impact of COVID-19
Coverage vs completeness

- Often used synonymously – but an important conceptual distinction
  - Coverage – a spatial metric to indicate the geographical ‘reach’ of CRVS systems
  - Completeness – the proportion of civil and vital events captured in the CRVS system
Coverage

- Coverage – a spatial metric to indicate the geographical ‘reach’ of CRVS systems
  - E.g. Coverage of 80% indicates that residents in 80% of the country are able to access registration facilities

Coverage (%) = \( \frac{\text{Population in administrative areas served by the CRVS}}{\text{Total population}} \) \times 100
Completeness

Completeness – the proportion of civil and vital events registered in the CRVS system

- E.g. If 900,000 births are recorded, but the best estimate of the ‘true’ number of births is 1,000,000, then estimated completeness is 90% (900,000 / 1,000,000)

Accurate estimation of completeness requires that the numerator and denominator describe the same spatio-temporal frame. In a perfect world this would require a denominator (the ‘true’ events to be only those occurring in covered areas:

Completeness (%) = \( \frac{\text{Number of events registered in covered areas}}{\text{Total number of events expected in covered areas}} \times 100 \)
Completeness (2)

But this is **OFTEN** unrealistic as data to calculate (or estimates of) that denominator may not be available ... So, a (not-entirely-accurate) simplification:

\[
\text{Completeness (\%)} = \frac{\text{Civil registration events}}{\text{Estimated 'true' number of events}} \cdot 100
\]

We need to consider the numerator and denominator of the above separately, as there are important subtleties associated with each
Completeness: the numerator

Seemingly easy! Data extracted from the CRVS system

- Although, perhaps disaggregated spatially; or by sex (births and deaths); or by age at death (deaths)
  - Important for inequality assessment – WHO gets registered?!

However, any disaggregation of the numerator requires an equivalent disaggregation of the denominator.

- Are those data available?
- Will that disaggregation result in overly fragmented data (leading to increased uncertainty regarding the level of completeness)?
- If so (guide: < 1000 in numerator or denominator), consider aggregating over 2 (3?) years. But then caution required if a step-change in completeness in the aggregated interval
Typically, completeness is estimated on a calendar-year basis. Events may be registered outside the stipulated statutory period, but nevertheless within the calendar year of occurrence. These are ‘late’ registrations, but – while of interest in understanding compliance with the regulations – do not affect the number of events registered.

However, there are two other circumstances in which the number of events registered may be affected when estimating completeness on a calendar-year basis:

- Events registered in the statutory period, but in the calendar year following the year of occurrence.
- Late registrations in the calendar years following the year of occurrence.
The first issue is readily addressed by extracting and analyzing data from the CRVS for analysis only after the statutory period has expired.

- When extracted by year of occurrence, the events will be correctly aligned.

The second is more complex. Events may be reported to the authorities many years after occurrence (e.g. if a child needs proof of registration to enroll in school). If these reported events are numerically substantial, estimating completeness based on events reported in the calendar year of occurrence, even allowing for the first issue above, will result in significant underestimation of completeness.
This leads to two, rather different, understandings of completeness:

- ‘Year Zero’ completeness – completeness within the calendar year of occurrence, allowing for timely registration in the next year
- ‘Ultimate’ completeness – completeness after taking (perhaps very) late registrations into account

Session 2 (Tuesday 12h00 BKK) addresses these two conceptualizations of completeness
Recall: the denominator is the estimated ‘true’ number of events …

\[
\text{Completeness (\%)} = \frac{\text{Civil registration events}}{\text{Estimated 'true' number of events}} \cdot 100
\]

... which raises a series of inter-related questions that require evaluation and assessment:

- The source of these estimated true events?
- Limitations attached to different possible sources?
- Spatio-temporal accuracy of different possible sources?
Census data

- Infrequent (perhaps only every decade)
- Need to be satisfied as to accuracy and fitness-for-purpose
- Might provide a historic sequence of births in the preceding 15 years using ‘reverse-survival’ methods
- A ‘household deaths’ module may provide an estimate of the deaths in the year before the census
- ‘Death distribution methods’, applied to population age-sex distributions from two censuses, can provide an estimate of the completeness of CRVS data for adults
In-house population projections
• Produce estimates of births and deaths

Demographic parameters applied to a population or administrative data, for example
• application of derived fertility rates from a MICS or DHS to population data
• school enrollment data
• childhood vaccination data
External data sources

- Importantly: population projections based on the UN World Population Prospects (UNWPP)
- Also, perhaps, projections produced by other agencies, entities, or sub-national population projections from the NSO

Data from any source should be evaluated, making use of expert local knowledge, to be assured of their appropriateness
One final issue: COVID-19

- Likely to have a material impact on completeness estimates
  - Numerator: direct impact on deaths, and – anecdotally – on births
  - Denominator: does the denominator allow for the effects of COVID-19?

- Incorporation of COVID-19 mortality into current population projections is uncommon; and many countries, especially in the developing world, simply do not know the effect the pandemic has had

- Other impacts: temporary closure of registration offices; lock-downs; over-burdening of offices with excess deaths, compromising registration of other vital events
One final issue: COVID-19

Consequences

- Estimates of completeness of death registration, unless COVID-19 allowed for, may easily rise to far above 100%
- Estimates of completeness of birth registration may fall sharply (possibly because of both fewer births combined with poorer registration)

The UTMOST care must be taken in interpreting any estimates of completeness derived for periods affected by the pandemic; and EVERY EFFORT must be taken to understand both the local implications of the pandemic on CRVS systems, as well as the likely burden of COVID-19 on vital events