Webinar on Inequalities in CRVS: Let’s really get every one in the picture!

Area 3. Indirect demographic methods for measuring completeness and coverage for low-capacity countries

Empirical completeness method

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Background and context

The empirical completeness method estimates the completeness of death registration (or any mortality data source) at the national level or for subnational populations.

The method uses a limited set of data inputs to estimate completeness. These data inputs are readily available at the national and subnational level:

- Registered crude death rate (registered deaths divided by population multiplied by 1000) (Reg. CDR)
- Under-five mortality rate (represents mortality level)
- % of the population aged 65 years and above (represents population age structure)
- Completeness of death registration at ages less than five years (one version of model does not include this)

Completeness = \[ \frac{\text{Registered deaths}}{\text{Estimated total deaths}} = \frac{\text{Reg}.\,\text{CDR}}{\text{True CDR}} = \frac{\text{RegCDR}}{\text{population age structure} \times \text{mortality level}} \]

The method was developed based on 2,451 country-years from 110 countries in the Global Burden of Disease database.
Advantages and disadvantages of empirical completeness method

- Relatively practical and straightforward to apply.
- Reliable: predicted completeness on average within 5 percentage points of observed completeness.
- Not subject to the strict assumptions of population dynamics of death distribution methods, especially at the subnational level (i.e. no/minimal migration).
  - Utility in estimating subnational completeness valuable for assessing inequalities.
- Timely estimates – not reliant on estimating completeness for the most recent intercensal period, as in death distribution methods (2000-2010 in some countries).
- Disadvantage: if the under-five mortality rate does not reflect overall mortality level (e.g. HIV/AIDS, mortality shocks).
**Assumptions and requirements of the method**

- Data required:
  - Number of registered deaths (annualized), based on year of occurrence (not year of registration), and by age (if using under-five completeness).
  - Estimate of under-five mortality rate (from Demographic and Health Survey, MICS, census etc).
  - Population by age.
  - Model coefficients and random effects (provided).
  - Excel template available for implementation.
  - Also calculated by ANACONDA data quality assessment tool.
There are models to estimate completeness for males and females.
Method has been used to estimate subnational completeness by local analysts in numerous countries (e.g. China, Myanmar, Bangladesh, Nepal, Mongolia).
  e.g., death registration completeness in 2844 Chinese counties.
Can measure inequalities in completeness based on characteristics of subnational areas (e.g. mean education, income per capita)
Estimation of individual-level inequalities in completeness requires disaggregation of data inputs (e.g. need under-five mortality rate by level of education or ethnicity).

Recommended improvements to facilitate their use for assessing inequality in civil registration in lower capacity countries

- We hope to improve the empirical completeness method by broadening the number of countries (and country-years) in the database to develop the models, including more countries at lower levels of completeness.

- Also possible inclusion of socio-economic predictors.

Further detail:


- Summary: A new method for estimating the completeness of death registration [https://crvsgateway.info/file/16954/1593](https://crvsgateway.info/file/16954/1593)

I can be contacted if you have further questions about the method: timothy.adair@unimelb.edu.au