Mortality estimates from sample registration & household surveys

A comparison for India

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INTRODUCTION

- In countries without complete vital registration, sample registration systems & household surveys are used to estimate mortality rates.
- In India, the Sample Registration System has estimated life expectancies and life tables since 1970, at the national and the state level.
- Household surveys, such as the DHS, are typically used to estimate child mortality rates, but have also asked questions about all deaths in the household.
- Because these household surveys have other covariates, they may be more helpful to understand the determinants of mortality.
- However, there are concerns about the ability of household surveys to estimate age-specific mortality rates (Hill 1991, Preston et al 2001).

DATA

The data I use comes from:

- The **National Family Health Surveys**, India's version of DHS. The DHS in 1992-93, 1998-99, and 2015-16 asked a household death question in addition to a full birth history.
  - In the birth history, women in reproductive ages were asked about all the children they had ever borne; their survival status; and if they died, their age at death.
  - For household deaths, the head of the household was asked "Did any usual member of this household die since January 2012." (in NFHS-4).
- Reported age-specific mortality rates from the **Sample Registration System**.
  - The SRS uses a dual-record system in enumeration areas, where demographic events are recorded semi-annually.

METHODS

To compute age-specific death rates using the DHS:

- Create life lines for those who died and those who survived for the two years preceding the survey, and estimate deaths and person years.
- Estimate mortality rates for the ages 0-5 years from the birth history, and for ages about 5 years from the household roster.

I then compare estimated age-specific mortality rates from the DHS with those reported by the from the SRS.

RESULTS

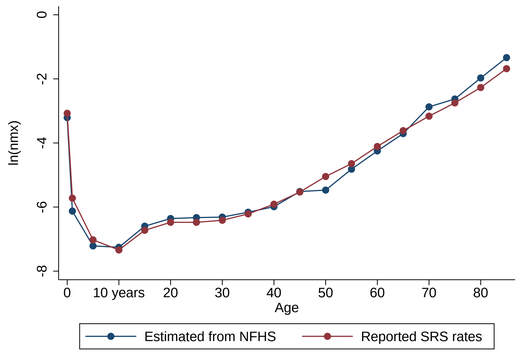

Figure 1: Age-specific death rates, female, 2013-2016

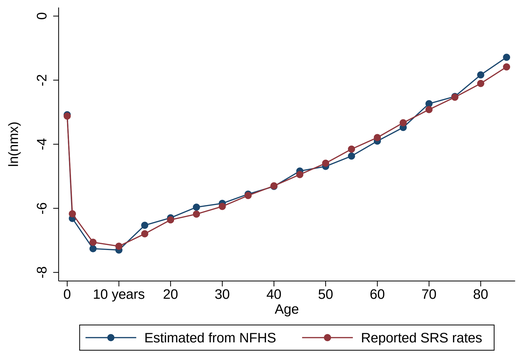

Figure 2: Age-specific death rates, male, 2013-2016

- We find very similar pattern of mortality rates from the two sources.
- Mortality rates from the NFHS are less smooth than those in the SRS.
- Similar but less smoother results from NFHS-1 and NFHS-2.

IMPLICATIONS

- Mortality rates from household death questions can be a reliable source of information on mortality in developing countries.
- There may be common sources of misreporting and bias in sample registration and household survey based mortality estimates.
- Mortality rates estimated from household surveys have the advantage that they
  - are more transparent.
  - have many covariates (wealth, social identity, education, environmental characteristics).
  - provide a basis to evaluate other sources of mortality estimates.

References

[1] Kenneth Hill. Approaches to the measurement of childhood mortality: a comparative review. *Population Index*, pages 368–382, 1991.

[2] Samuel Preston, Patrick Heuveline, and Michael Guillot. Demography: measuring and modeling population processes. 2001. *Malden, MA: Blackwell Publishers*, 2000.