

# **Estimating Adult Mortality in Africa and Asia Using INDEPTH Data from Health and Demographic Surveillance Systems**

Ayaga Bawah, Momodou Jasseh, Samuel Clark,  
Sureeporn Punpuing, Alioune Diagne, David J. Sharrow, and Osman Sankoh

For a very long time adult mortality estimates for large parts of Africa and Asia have been based on indirect estimates obtained from incomplete data (using sibling histories or orphanhood methods from DHS and Censuses) and modeled to make up for under/over counts. The need to conduct epidemiological studies motivated the creation of health and demographic surveillance systems (HDSSs) to enumerate and longitudinally monitor populations over long periods of time in order to record demographic and health changes. These HDSSs study populations in geographically-defined areas and collect detailed information on fertility, mortality and migrations within those populations. A total of 38 HDSSs in 19 countries across Africa, Asia and Oceania are members of the INDEPTH Network (a network of centres that collect longitudinal health and demographic data in low- and middle-income countries (LMICs)) and are continuously generating rich datasets describing the health and demography of their study populations. For the first time, these datasets allow empirical estimation of various population parameters including adult mortality. The availability of these large datasets from the INDEPTH member centres offers an important opportunity to dramatically improve our knowledge about levels and trends in adult mortality in countries without good vital registration. To date, attempts to measure adult mortality from questions in censuses and surveys have generally led to implausibly low levels of adult mortality, owing to biases inherent in survey data such as survival and recall bias.

We propose to utilize the INDEPTH data from 33 HDSSs across Africa and Asia to provide current estimates of adult mortality in low-and-middle income countries. We will examine trends and patterns in adult mortality using various methods, including the use of regression and clustering methods for grouping different patterns of adult mortality and compare these patterns across the developing world. In addition we will use survival techniques to generate estimates of adult mortality such as  $(45)q(15)$  - the probability of a 15-year old dying before his or her 60th birthday. Because the HDSSs are located in different geographic regions of Africa and Asia with different levels of disease profiles, we distinguish patterns of adult mortality that are influenced by HIV which is currently ravaging various parts of LMICs. Adult mortality levels in populations of Asia are generally lower than in Africa, particularly for areas of southern and eastern Africa where the impact of HIV is most apparent. Our results represent for the first time direct estimates of mortality in LMICs.