Indirect Orphanhood (Parental Survivorship) Module:
Adult mortality

Rationale

- Indirect methods of mortality estimation are used to fill information gaps, for example, in the absence of mortality data from a functioning civil registration system. Furthermore, given that adult deaths are a rare event relative to the size of the population, indirect methods are generally efficient, cost-effective approaches to obtain an approximate level of adult mortality.

- The indirect orphanhood method:
  - is a method conceived in the 1960-1970s to produce plausible estimates of adult mortality based on reported proportions of respondents whose mother or father is still alive.[1,2] Estimates of adult mortality represent averages of mortality experienced over the period that the parents of respondents were exposed to the risk of dying.
  - produces measures further back in time than direct measures and infer a broad trend of mortality over approximately 10-15 years preceding the survey or census. It cannot capture short-term or recent mortality trends.
  - is based on reliable information that is simple to collect from two questions asked in the household roster regarding the survivorship of individual members' biological mother and father. Information from the orphanhood data is converted into standard life table probabilities of survival and adult mortality (e.g., Hill and Trussell, Timaeus, Blacker).[3,4,5]

Experience and evidence

- Experience
  - Sample surveys are the usual source of data, and the necessary questions have also been included in censuses. For example, the 1975 Bolivia National Demographic Survey and the 1992 Zimbabwe census derived estimates from the orphanhood questions and the analysis of these data are presented, respectively, as examples in the United Nations

[1] Henri L. (1960) Mesure indirect de la mortalité des adultes. Population, vol.15, no.3 (451-466).Brass W. and Hill K. 1973. Estimating adult mortality from orphanhood, Proceedings of the International Population Conference. Liege, International Union for the Scientific Study of Population. Vol.2, pp 111-123.
[2] Brass W. and Hill K. 1973. Estimating adult mortality from orphanhood, Proceedings of the International Population Conference. Liege, International Union for the Scientific Study of Population. Vol.2, pp 111-123.
[3] Hill K. and Trussell J. 1977. Further developments in indirect mortality estimation. Population Studies, vol. XXXI, No.2, pp 313-333.
[4] Timaeus, I.M. 1992. Estimation of adult mortality from paternal orphanhood: A reassessment and a new approach. Population Bulletin of the United Nations 33:47-63.
[5] Blacker J. 1977. The Estimation of Adult Mortality in Africa from Data on Orphanhood. Population Studies, 1977; 31:107-128.

Methods for Estimating Adult Mortality[6] and the Manual X Indirect Techniques for Demographic Estimation.[7]

- The orphanhood method was used in the 2010 Afghan Mortality Survey[8] to ascertain mortality in previous decades for which there was no alternative data source, and also to use as a comparison with results from other approaches used in the same survey to derive adult mortality (i.e., sibling history and deaths in the household module). The orphanhood questions, however, are not used routinely in large-scale national surveys such as DHS.

- Evidence
  - *Caveats*. Estimated probabilities of survivorship reflect parents with surviving children, not the whole population; Information for parents with several surviving children risks being over-represented in the target population; Survivorship estimates for young adults (<20) tend to bias upward the estimated survivorship because they may have been adopted by a relative who reports themselves as the (live) biological parent ('adoption effect').
  - The indirect method requires knowledge of fertility patterns in the past, in particular the mean age at birth for each sex of parent. If there has been a change in fertility, the estimates will be biased.
  - Mortality levels that have changed over time, and especially if the change is not linear, result in biased estimates of mortality in more recent periods.
  - Errors in age reporting that distort the five-year age distributions of household members also distort the resulting survival curves and estimates of mortality.
  - As with other indirect methods, the level of mortality is made with reference to a model life table. To the extent that the age pattern of mortality in the country does not follow that of the selected life table, the estimates of mortality may err.
  - Estimates based on the maternal orphanhood method are more robust than those based on paternal orphanhood, mainly due to greater dispersion of male ages at childrearing.
  - The estimates produced are ambiguous as to time since each age group gives a separate section of the survival curve for separate central ages.
  - Orphanhood data needs to be analysed carefully in light of potential biases, and a decision taken regarding how serious they are and whether and how adjustments should be made.

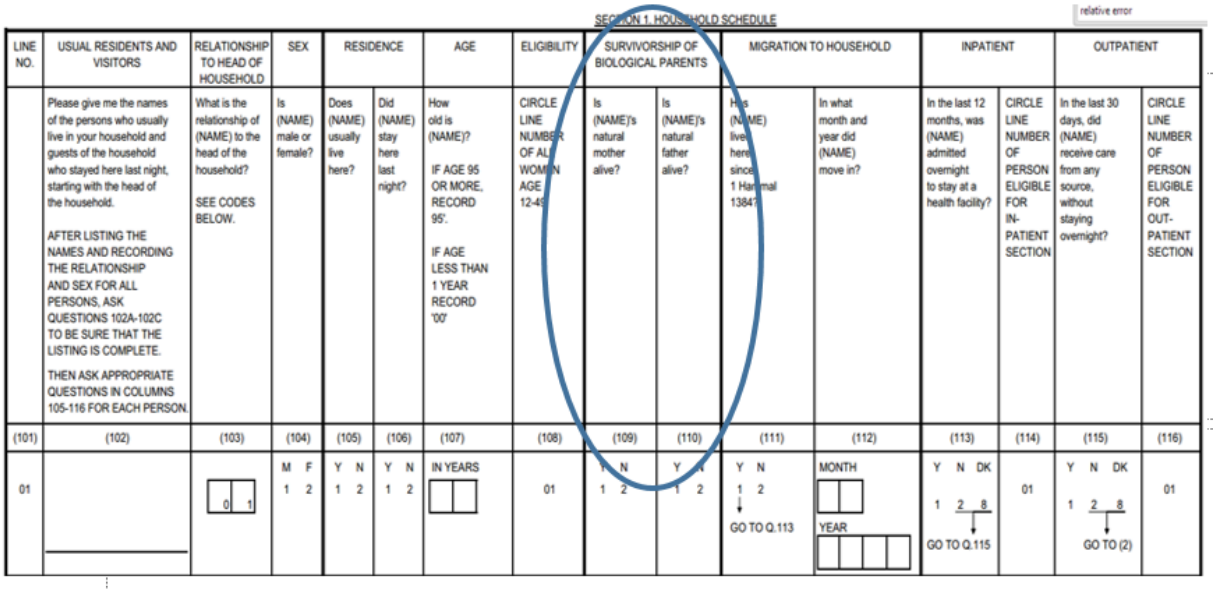
[6] United Nations. 2002. Methods for estimating adult mortality. Working Paper No. ESA/P/WP.175. http://www.un.org/esa/population/techcoop/DemEst/methods_adultmort/methods_adultmort.html

[7] United Nations. 1983. Manual X: Indirect techniques for demographic estimation. New York: United Nations Department of International Economic and Social Affairs.

[8] Afghan Public Health Institute, Ministry of Public Health (APHI/MoPH) [Afghanistan], Central Statistics Organization (CSO) [Afghanistan], ICF Macro, Indian Institute of Health Management Research (IIHMR) [India] and World Health Organization Regional Office for the Eastern Mediterranean (WHO/EMRO) [Egypt]. 2011. Afghanistan Mortality Survey 2010. Calverton, Maryland, USA: APHI/MoPH, CSO, ICF Macro, IIHMR and WHO/EMRO.

Core module

- During data collection, information in the household roster is recorded from two simple questions: “Is your (biological) mother still alive?” and “Is your (biological) father still alive?” The proportion of mothers (or fathers) surviving among respondents of a given age then represents an average of survival probabilities from the mother’s age at the birth (or father’s age at the conception) to the age of the respondents.
- Household roster with orphanhood questions (2010 Afghanistan Mortality Survey) (see column header, ‘survivorship of biological parents’)



SECTION 1. HOUSEHOLD SCHEDULE

LINE NO.	USUAL RESIDENTS AND VISITORS	RELATIONSHIP TO HEAD OF HOUSEHOLD	SEX	RESIDENCE		AGE	ELIGIBILITY	SURVIVORSHIP OF BIOLOGICAL PARENTS		MIGRATION TO HOUSEHOLD		INPATIENT		OUTPATIENT	
	Please give me the names of the persons who usually live in your household and guests of the household who stayed here last night, starting with the head of the household. AFTER LISTING THE NAMES AND RECORDING THE RELATIONSHIP AND SEX FOR ALL PERSONS, ASK QUESTIONS 102A-102C TO BE SURE THAT THE LISTING IS COMPLETE. THEN ASK APPROPRIATE QUESTIONS IN COLUMNS 105-116 FOR EACH PERSON.	What is the relationship of (NAME) to the head of the household? SEE CODES BELOW.	Is (NAME) male or female?	Does (NAME) usually live here?	Did (NAME) stay here last night?	How old is (NAME)? IF AGE 95 OR MORE, RECORD '95'. IF AGE LESS THAN 1 YEAR RECORD '00'	CIRCLE LINE NUMBER OF ALL WOMEN AGE 12-49	Is (NAME)'s natural mother alive?	Is (NAME)'s natural father alive?	Has (NAME) lived here since 1 Hamal 1384?	In what month and year did (NAME) move in?	In the last 12 months, was (NAME) admitted overnight to stay at a health facility?	CIRCLE LINE NUMBER OF PERSON ELIGIBLE FOR IN-PATIENT SECTION	In the last 30 days, did (NAME) receive care from any source, without staying overnight?	CIRCLE LINE NUMBER OF PERSON ELIGIBLE FOR OUT-PATIENT SECTION
(101)	(102)	(103)	(104)	(105)	(106)	(107)	(108)	(109)	(110)	(111)	(112)	(113)	(114)	(115)	(116)
01		0 1	M 1 F 2	Y 1 N 2	Y 1 N 2	IN YEARS	01	Y 1 N 2	Y 1 N 2	Y 1 N 2 GO TO Q.113	MONTH YEAR	Y 1 N 2 DK 8 GO TO Q.115	01	Y 1 N 2 DK 8 GO TO (2)	01

Indicator definitions

Adult mortality (45q15). The international definition of the adult mortality rate is the probability of dying between the ages of 15 and 60--that is, the probability of a 15-year-old dying before reaching age 60, if subject to current age-specific mortality rates between those ages.[9]

Another useful measure is 35q15, used by the DHS Program, which is the conditional probability of dying by age 49 given survival to age 15. Likewise, 35q30, the conditional probability of dying by age 65 given survival to age 30, corresponds with measures of indirect estimates from maternal and paternal survivorship methods used by the UN.

Specific computational procedures and examples for deriving male and female life tables and adult mortality estimates are presented in the UN manuals and the UNFPA Tools for Demographic Estimation.[6,7,10]

[9] United Nations Population Division. World Population Prospects. New York, United Nations, Department of Economic and Social Affairs

[10] Ian Timaeus. Updated July 1, 2013. UNFPA Tools for Demographic Estimation: Indirect estimation of adult mortality from orphanhood. http://demographicestimation.iussp.org/content/orphanhood