

- ***Incorporation of new evidence***

A substantial amount of newly available data and data missing from the past have been incorporated into this year's estimates. The incorporation of new evidence into the time series in the estimation process has resulted in substantial changes in child mortality levels and trends for some countries (for example, Ghana, Sierra Leone), compared to the values estimated last year.

- ***Adjusting child mortality estimates in countries with High HIV prevalence***

Estimates of child mortality for populations lacking accurate registration of births and deaths are almost entirely derived from reports of mothers about the survival of their children. In populations severely affected by HIV/AIDS, HIV+ children will be more likely to die than other children, and will also be less likely to be reported since their mothers will have been more likely to die also. Child mortality estimates will thus be biased downwards. The magnitude of the bias will depend on the extent to which the elevated under-5 mortality of HIV+ children is not reported because of the deaths of their mothers.

The Technical Advisory Group (TAG) of the IGME developed a method to adjust HIV/AIDS related mortality for each survey data observation during HIV/AIDS epidemic, by adopting a set of simplified but reasonable assumptions about the distribution of births to HIV+ women by the duration of their infection, vertical transmission rates, survival times of both mothers and children from the time of the birth, and much else besides. After adjusting the survey data for HIV/AIDS related mortality for the epidemic period, a regression curve is then fitted to all available data points (observations before the HIV/AIDS epidemic period and HIV/AIDS adjusted data points during the epidemic) to produce the final estimates. For the most recent period lacking empirical data, extrapolating from non-HIV/AIDS curve (which is obtained by subtracting the UNAIDS estimates of HIV/AIDS deaths from the fitted curve), and then adding back the UNAIDS estimates of HIV/AIDS deaths, have been applied to generate the final estimates.

The HIV/AIDS adjustment was done for 17 countries with an adult HIV prevalence rate exceeding 5% at any point in the epidemic period, including Botswana, Cameroon, Central Africa Republic, Côte d'Ivoire, Gabon, Kenya, Lesotho, Malawi, Mozambique, Namibia, Rwanda, South Africa, Swaziland, Uganda, United Republic of Tanzania, Zambia, Zimbabwe.

Note that birth transference is also a serious issue in many DHS surveys conducted in the countries with high HIV prevalence. Birth transference basically refers to the date of birth being incorrectly reported or recorded as occurring earlier than is actually the case. Birth transference is partly caused by the design of the questionnaire of a survey. DHS questionnaires include a lengthy series of questions which are asked to mothers concerning maternal and child health. This series of questions must be asked for all births for which the date of birth is subsequent to a specified date—usually set as January of the fifth or sixth calendar year proceeding the year of the survey. It appears that interviewers learn that they can reduce their workload by incorrectly recording some births that actually occurred after the cutoff date as occurring prior to that date. In DHS surveys, interviewers appear to be particularly anxious to avoid asking the health questions about deceased children. In DHS surveys, this birth transference is more pronounced for deceased than for surviving children. When this occurs it results in the under-five mortality rate being under-estimated for the most

recent period (0 – 4 years before the survey). Adjustment for birth transference was done before the adjustment of HIV/AIDS related deaths for data from the surveys with serious birth transference issues.

- ***Revised methodology to compute number of deaths***

A change in methodology has also been made in the way the number of infant and under-five deaths are calculated. Previously the number of infant or under-five deaths in a given period was calculated by simply multiplying infant mortality rate (i.e., the probability of dying below age 1, expressed as a rate per 1000 live births) or under-five mortality rate (i.e., the probability of dying below age 5, expressed as a rate per 1000 live births) by the live births. This year a new method has been applied. The two probabilities of dying (infant mortality rate and under-five mortality rate) are converted to central death rates of age groups 0 and 1-4, which are the rates of occurrence equal to the number of deaths of age groups 0 and 1-4 in a given period divided by the number of the person-years lived in the corresponding age range and period. The central death rates are then multiplied by population estimates from the UN Population Division in the corresponding age groups to obtain the total number of deaths.

Because the regression curve involves retrofitting the entire time series, estimates might differ from and might not be comparable with previous years' estimates for the same reference year if there is any change in the available observations (eg, addition of newly available data or addition of missing data for the past, and revised data points adjusted for HIV/AIDS).