

UNDER-FIVE MORTALITY RATE		
Health	Mortality	Core indicator

1. INDICATOR

- (a) **Name:** Under-five Mortality Rate (U5MR).
- (b) **Brief Definition:** The under-five mortality rate refers to the probability of dying before age 5 years per 1,000 newborns.
- (c) **Unit of Measurement:** Per thousand live births.
- (d) **Placement in the CSD Indicator Set:** Health/Mortality.

2. POLICY RELEVANCE

(a) **Purpose:** This indicator measures the risk of dying in infancy and early childhood.

(b) **Relevance to Sustainable/Unsustainable Development (theme/sub-theme):** The reduction of child mortality is one of the most strongly and universally supported development goals. In high-mortality settings, a large proportion of all deaths occur before age 5. Despite considerable progress in reducing child mortality, there remains a large gap between developed and developing countries in the risks of dying before age 5: for instance, during 2000-2005, under-five mortality stood at 9 per 1000 in the more developed regions but at 153 per thousand in the least developed countries (United Nations, 2007). The gap between more developed and the less developed regions is larger in proportional terms for death rates in early childhood than for those in adult ages. Under-five mortality levels are influenced by poverty, education, particularly of mothers; by the availability, accessibility and quality of health services; by environmental risks including access to safe water and sanitation; and by nutrition.

(c) **International Conventions and Agreements:** Quantitative goals for the reduction of under-five mortality rates have been adopted by several international conferences and summits including the World Summit for Children (1990), the International Conference on Population and Development (1994) the Fourth World Conference on Women (1995), the World Summit for Social Development (1995), and the United Nations Millennium Summit. The Programme of Action of the International Conference on Population and Development (ICPD) encouraged countries with intermediate mortality levels to achieve an under-five mortality rate below 60 deaths per 1000 births by 2005, and all countries to achieve an under-five mortality rate below 45 per 1000 live births by 2015. The United Nations Millennium Declaration, adopted in 2000, established the goal of reducing under-five mortality by two-thirds between 2000 and 2015 (A/RES/55/2, para. 19). The under-five mortality rate is one of the indicators included in the Human Assets Index and is therefore one of the quantitative criteria for the identification of least developed countries within the United Nations. Many other

international agreements, including Agenda 21, also refer to the general goal of reducing mortality in childhood.

(d) International Targets/Recommended Standards: See section 2(c) above.

(e) Linkages to Other Indicators: This indicator is closely related to life expectancy at birth. It is more generally connected to many other social and economic indicators, including those listed in section 2b above.

3. METHODOLOGICAL DESCRIPTION

(a) Underlying Definitions and Concepts: Standard statistical definitions of the terms “live birth” and “death” are set forth in the United Nations *Principles and Recommendations for a Vital Statistics System* (para. 46):

LIVE BIRTH is the complete expulsion or extraction from its mother of a product of conception, irrespective of the duration of pregnancy, which after such separation breathes or shows any other evidence of life such as beating of the heart, pulsation of the umbilical cord, definite movement of voluntary muscles, whether or not the umbilical cord has been cut or the placenta is attached; each product of such a birth is considered live-born regardless of gestational age.

DEATH is the permanent disappearance of all evidence of life at any time after live birth has taken place (post-natal cessation of vital functions without capability of resuscitation).

(b) Measurement Methods: The under-five mortality rate is derived from estimates of births and deaths gathered by vital registration systems, censuses and surveys. Where vital registration data on births and deaths are complete, or adjustments for age misstatement and incompleteness can be made, the under-five mortality rate can be calculated directly from those data. Details on the procedures used can be found in demographic or actuarial references that describe the construction of life tables, for example, Pressat (1972) or Shryock and Siegel (1980). When civil registration systems do not exist, such data may be obtained from maternity history data gathered by demographic surveys or the under-five mortality rate can be calculated using indirect information on mortality in childhood obtained via special questions included in censuses or demographic surveys. For information on the methods used to estimate mortality in childhood from indirect data see United Nations (1983 and 2003).

(c) Limitations of the Indicator: There are often problems in the information required for calculating the under-five mortality rate in less developed countries where routine data collection in the health services may omit many infant and child deaths and where vital registration may be deficient. Some countries do not follow the standard definition given above of “live birth”. However, adjustments can sometimes be made for incomplete registration and age misstatement, and in many developing countries maternity-history data collected by nationally representative sample surveys provide a sound basis for estimating levels and trends of under-five mortality. Sample surveys have been more successful at obtaining estimates of under-five mortality than of adult

mortality and, for that reason, information about child mortality is currently more commonly available and is more timely than information about the mortality of adults. If the necessary data are available, the under-five mortality rate can be calculated separately for boys and girls, and for geographic and social subgroups (based on the characteristics of parents). It is also useful to disaggregate the under-five mortality rate into separate rates referring, respectively, to the probability of dying before age 1 and the probability of dying between ages 1 and 4.

(d) Status of the Methodology: Well developed and widely employed.

(e) Alternative Definitions/Indicators: The infant mortality rate is another indicator of early child mortality for which quantitative goals have been set at recent international conferences. The infant mortality rate is the number of deaths under 1 year of age during a period per 1000 live-births during the same period.

4. ASSESSMENT OF DATA

(a) Data Needed to Compile the Indicator: The under-five mortality rate is derived from data on births and deaths occurring under the age of 5 years, as described in section 3(b) above.

(b) National and International Data Availability and Sources: Data allowing the estimation of under-five mortality are currently available for most countries thanks to demographic surveys using representative samples in countries where vital registration systems are deficient or unavailable. Surveys that rely on maternity histories, in which women are asked to provide the date of birth and age at death (if applicable) of each child they have borne alive, are common but demand well trained interviewers to ensure that the data collected are of good quality. In addition, retrospective questions about the number of children ever born and the number surviving by women enumerated in censuses or surveys provide indirect information from which estimates of under-five mortality can be derived.

(c) Data References: Data sources include vital registration, sample registration systems, surveillance systems, censuses, and demographic and health surveys. Information needed to calculate this indicator from vital registration data is compiled by the Statistics Division of the Department of Economic and Social Affairs of the United Nations Secretariat on a regular basis. Data generated by vital registration systems, censuses and surveys are evaluated and, if necessary, adjusted for incompleteness by the Population Division of the Department of Economic and Social Affairs (DESA) as part of the preparation of the United Nations population estimates and projections. Past, current and projected estimates of under-five mortality are prepared for all countries by the Population Division of DESA and appear in the biennial *World Population Prospects* reports. Estimates by the United Nations Children's Fund (UNICEF) are published in the annual *State of the World's Children* reports. Monitoring by national statistical offices often entails the preparation of child mortality estimates for small geographical units within countries. Surveys, if appropriately

designed, may provide estimates for major regions within countries as well as at the national level.

5. AGENCIES INVOLVED IN THE DEVELOPMENT OF THE INDICATOR

(a) **Lead Agency:** The lead agency is the United Nations Department of Economic and Social Affairs. The contact point is the Director, Population Division, fax no. (1 212) 963 2147.

(b) **Other Contributing Organizations:** United Nations/DESA/Statistics Division; United Nations Children's Fund (UNICEF); and World Health Organization (WHO).

6. REFERENCES

(a) **Readings:**

Hill K. (1991). Approaches to the measurement of childhood mortality: A comparative review. *Population Index* 57(3):368-382, Fall.

Pressat, R. (1972). *Demographic Analysis: Methods, Results, Applications*. London, Edward Arnold; Chicago, Aldine Atherton.

Shryock, H. S, and J. S. Siegel (1980). *The Methods and Materials of Demography*. U.S. Government Printing Office, Washington, D.C.

United Nations (1973). *Principles and Recommendations for a Vital Statistics System*. United Nations publication, Sales No. E.73.XVII.9.

_____ (1983). *Manual X: Indirect Techniques for Demographic Estimation*. United Nations publication, Sales No. E. 83.XIII.2, New York.

_____ (1990). *A Step by Step Guide to the Estimation of Child Mortality*. United Nations publication, Sales No. E.89.XIII.9, New York.

_____ (2003). *MORTPAK for Windows - The United Nations Software Package for Demographic Measurement*, CD-ROM. United Nations, New York.

_____ (2004). *Demographic Yearbook 2001*. United Nations publication, Sales No. 03.XIII.1.

_____ (2007). *World Population Prospects: The 2006 Revision*, CD-ROM Edition.

United Nations Children's Fund (2005). *The State of the World's Children*. UNICEF, New York.

(b) **Internet sites:**

Statistics are available at:

<http://www.un.org/esa/population/unpop.htm>

http://millenniumindicators.un.org/unsd/mi/mi_goals.asp