Probability of dying (per 1000) under age five years (under-five mortality rate)  
Probability of dying (per 1000) under age one year (infant mortality rate)

Rationale for use

Under-five mortality rate and infant mortality rate are leading indicators of the level of child health and overall development in countries. They are also MDG indicators.

Definition

Under-five mortality rate is the probability of a child born in a specific year or period dying before reaching the age of five, if subject to age-specific mortality rates of that period.

Infant mortality rate is the probability of a child born in a specific year or period dying before reaching the age of one, if subject to age-specific mortality rates of that period.

Associated terms

Under-five mortality rate and Infant mortality rate, are strictly speaking, not rates (i.e. the number of deaths divided by the number of population at risk during a certain period of time) but a probability of death derived from a life table and expressed as rate per 1000 live births.

Live birth refers to the complete expulsion or extraction from its mother of a product of conception, irrespective of the duration of the pregnancy, which, after such separation, breathes or shows any other evidence of life - e.g. beating of the heart, pulsation of the umbilical cord or 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.

Data sources

Age-specific mortality rates among children are calculated from birth and death data derived from civil registration, census, and/or household surveys:

Civil registration: Number of deaths by age and numbers of births and children in each age group are used to calculate age specific rates. This systems provides annual data.

Census and surveys: An indirect method is used based on questions to each woman of reproductive age as to how many children she has ever born and how many are still alive. The Brass method and model life tables are then used to obtain an estimate of under-five mortality.

Surveys: A direct method is used based on birth history - a series of detailed questions on each child a woman has given birth to during her lifetime. To reduce sampling errors, the estimates are generally presented as period rates, for five or 10 years preceding the survey.

Methods of estimation

Empirical data from different sources are consolidated to obtain estimates of the level and trend in under-five mortality by fitting a curve to the observed mortality points. However, to obtain the best possible estimates, judgement needs to be made on data quality and how representative it is.
of the population. Recent statistics based on data availability in most countries are point estimates dated by at least 3-4 years which need to be projected forward in order to obtain estimates of under-five mortality for the current year. Those are then converted to their corresponding infant mortality rates through model life table systems: the one developed by WHO for countries with adequate vital registration data; Coale-Demeny model life tables for the other countries. It should be noted that the infant mortality from surveys are exposed to recall bias, hence their estimates are derived from under-five mortality, which leads to a supplementary step to estimate infant mortality rates.

Disaggregation

By sex, location (urban/rural, major regions/provinces) and socio-economic characteristics (e.g. mother’s education, wealth quintile). Often disaggregated under-five mortality rates are presented for 10-year periods because of the rapid increase in sampling error if multiple categories are used. Censuses and surveys provide such detail; civil registration data usually does not include socio-economic variables but can provide the other disaggregations.

References


Database

- Demographic and Health Surveys (http://www.measuredhs.com)

- WHO Mortality Database: Civil registration data (http://www.who.int/healthinfo/morttables)

- UNICEF: statistics and Multiple Indicator Cluster Survey: (http://www.childinfo.org)

Comments

Even though many countries have collected information on child mortality in recent years, the high demand for very recent child mortality trend information is difficult to meet through household surveys. High quality of civil registration systems (completeness of registration) and high quality of survey or census data collection are crucial - WHO does estimate the level of underestimation of civil registration systems and there clearly is substantial variation in data quality and consistency across countries.