

Indicator 3.2.1

Indicator Name, Target and Goal

Indicator 3.2.1 Under-five mortality rate

Target 3.2 By 2030, end preventable deaths of newborns and children under 5 years of age, with all countries aiming to reduce neonatal mortality to at least as low as 12 per 1,000 live births and under-5 mortality to at least as low as 25 per 1,000 live births.

Goal 3 Ensure healthy lives and promote well-being for all at all ages

Definition and Rationale

Definition

The under-five mortality rate (U5MR) is the likelihood that a child born in a given year will die before they reach five years of age, based on the current rate of death by age.

Concepts

N/A

Rationale and Interpretation:

Life tables predict the course of probabilities of dying for a fixed group of births as the cohort ages based on the current probability of dying, assuming that the probability of dying for each age over a given period stays constant in future. The under-five mortality rate is the ratio of people expected to die before reaching the age of five per 100,000 live births as indicated in life tables.

Data Sources and Collection Method

Abridged life tables

Method of Computation and Other Methodological Considerations

○ Computation Method

The annual period death rate of persons aged x divided by mid-year population is the mid-year death rate at age x , which is indicated by M_x . If the mid-year population at age x in a given year is indicated as P_x and the number of deaths in that year is indicated as D_x , the mid-year death rate (M_x) is calculated as follows:

$$M_x = \frac{D_x}{P_x} \quad (x = 1, 2, \dots)$$

The equivalent of the period death rate in life tables is expressed by dividing the number of deaths (d_x) by the stationary population (L_x):

$$\frac{d_x}{L_x} = m_x \doteq M_x$$

In this case, the probability of dying is $\frac{d_x}{l_x}$. If this is approximated by

$$L_x \doteq \frac{l_x + l_{x+1}}{2} = l_x - \frac{1}{2}d_x$$

the probability of dying can be calculated with the following transformation:

$$q_x'' = \frac{M_x}{1 + \frac{1}{2}M_x} \quad (x = 1, 2, \dots)$$

q_x'' here indicates a figure called the crude probability of dying, which is then adjusted with a Greville adjustment to find the probability of dying that is used in life tables (q_x').

$$q_x' = -0.040724q_{x-4}'' - 0.009873q_{x-3}'' + 0.118470q_{x-2}'' + 0.266557q_{x-1}'' \\ + 0.331140q_x'' + 0.266557q_{x+1}'' + 0.118470q_{x+2}'' - 0.009873q_{x+3}'' - 0.040724q_{x+4}'' \\ (x = 1, 2, \dots)$$

Here, q_x'' ($x = 0, -1, -2, -3$) is systematically extrapolated using the equation below.

$$q_x'' = 1.352613q_{x+1}'' + 0.114696q_{x+2}'' - 0.287231q_{x+3}'' - 0.180078q_{x+4}'' \\ (x = 0, -1, -2, -3)$$

○ Comments and limitations

While the under-five mortality rate is per 1,000 live births, here it is expressed as a percentage.

Data Disaggregation

By gender (male or female)

References

Custodian Ministries of Data

Ministry of Health, Labour and Welfare

Custodian Ministries of Related Policies

Children and Families Agency

International Organizations

United Nations Children's Fund (UNICEF)