

NEONATAL MORTALITY RATE

1. Definition:

NEONATAL MORTALITY RATE is the number of resident newborns in a specified geographic area (country, state, county, etc.) dying at less than 28 days of age divided by the number of resident live births for the same geographic area (for a specified time period, usually a calendar year) and multiplied by 1,000.

2. Calculation:

(Number of resident neonatal deaths/Number of resident live births) x 1,000

$$\frac{\text{Number of Resident Neonatal Deaths}}{\text{Number of Resident Live Births}} \times 1,000$$

[Additional links to State/National/International websites with calculation and/or definition - National Center for Health Statistics: Mortality Technical Appendix](#)
[World Health Organization](#)
[Statistical Notes for Health Planners](#)

3. Examples:

700 = neonatal deaths in 2008 among state residents

150,000 = live births in 2008 to state residents

$(700/150,000) \times 1,000 = \underline{4.7}$ neonatal deaths per 1,000 live births in 2008 among state residents

4. Technical Notes:

- There are some concerns about the quality of reporting of neonatal mortality internationally and within states, especially in terms of defining a live birth and/or complete reporting of both birth and death certificates for very low birth weight infants.
- The neonatal mortality rate is usually calculated using the annual number of resident infants who died under 28 days of age in the numerator and the total annual number of resident live births during the same year in the denominator.
- By matching neonatal death certificates to the corresponding birth certificates, much more additional and valuable data are obtained (birth weight, smoking status of mother, when prenatal care began, etc.) for neonatal mortality risk analysis.
- In less densely populated areas, annual numbers of neonatal deaths may be small (<10 or 20) which would result in a neonatal mortality rate considered to be too unstable or unreliable for analysis. Adding additional years (three or five-year average annual rates) and/or expanding the area to be studied should result in a larger number of deaths and more reliable rates for analysis. (see [North Carolina Statistical Primer, Problems with Rates Based on Small Numbers](#); [Pennsylvania: Technical Assistance – Small Area Analysis](#); [New York State: Rates Based on Small Numbers](#), [Washington State: Guidelines for Working with Small Numbers](#))
- The Division of Vital Statistics (DVS) at NCHS follows standards for use of the terms “death rate” and “mortality rate” in naming and reporting common vital statistics rates for deaths. The NAPHSIS standard measures shown here follow the DVS standards, primarily to maintain consistency with DVS for naming conventions. Please note that states/registration areas and other federal government organizations within and outside

NCHS/CDC may not follow the DVS standards when naming and reporting death/mortality rates.

- According to DVS standards, the following naming conventions are used for the common vital statistics rates for deaths:

Mortality Rates

Infant Mortality Rate
Neonatal Mortality Rate
Postneonatal Mortality rate
Perinatal Mortality Rate
Fetal Mortality Rate
Maternal Mortality Rate

Death Rates

Crude Death Rate
Age-Specific Death Rate
Cause-Specific Death Rate
Age-Adjusted Death Rate