

Tools of the Trade:

DEFINITIONS of RATES USED in PUBLIC HEALTH ASSESSMENT

As you may be aware, absolute counts of events do not readily lend themselves to analysis and comparison between years and between various geographic areas because of population differences. These demographic differences include total number, age and sex distribution, and ethnic or racial differentials. In order to assess the health status of a particular population at a specified time, the absolute number of events is converted to a relative number such as a probability of living or dying, i.e., a rate, a ratio, or an index. This conversion is made by relating the number of events to the population at risk in a particular area at a specified time.

Below are definitions for the rates commonly found in publications and reports prepared by the Bureau of Health Statistics and Research and regularly used for community assessment purposes.

CRUDE BIRTH RATE - Number of live births per 1,000 population.

$$(\text{Total Live Births} / \text{Total Population}) \times 1000$$

AGE-SPECIFIC BIRTH RATE - Number of live births to mothers in a specified age group per 1,000 females in the same age group.

$$(\text{Live Births to Mothers of Specified Ages} / \text{Female Population of Same Specified Population}) \times 1000$$

GENERAL FERTILITY RATE - Number of live births per 1,000 females of childbearing age (between the ages of 15 and 44 years).

$$(\text{Total Live Births} / \text{Female Population Aged 15-44 Years}) \times 1000$$

FETAL MORTALITY RATE - Fetal deaths of 16 or more weeks gestation per 1,000 deliveries. The number of deliveries consists of live births plus fetal deaths.

$$(\text{Total Fetal Deaths} / (\text{Total Live Births} + \text{Total Fetal Deaths})) \times 1000$$

INFANT MORTALITY RATE - Deaths among infants under one year of age per 1,000 live births.

$$(\text{Total Deaths Among Infants Under One Year of Age} / \text{Total Live Births}) \times 1000$$

NEONATAL MORTALITY RATE - Deaths among infants under 28 days of age per 1,000 live births.

$$(\text{Total Deaths Among Infants <28 Days of Age} / \text{Total Live Births}) \times 1000$$

POSTNEONATAL MORTALITY RATE - Deaths among infants aged one month (28 days) to 364 days per 1,000 live births.

(Total Deaths Among Infants 28-364 Days of Age / Total Live Births) x 1000

CRUDE DEATH RATE - Number of deaths per 1,000 population.

(Total Deaths / Total Population) x 1000

AGE-SPECIFIC DEATH RATE - Number of deaths for a specified age group per 1,000 population in the same age group.

(Deaths for Specified Age Group / Population for Same Specified Age Group) x 1000

CAUSE-SPECIFIC DEATH RATE - Number of deaths due to a specific cause per 100,000 population.

(Deaths Due to a Specified Cause / Total Population) x 100000

RACE or ETHNICITY-SPECIFIC DEATH RATE - Number of deaths among specified racial or ethnic group per 1,000 population in same racial or ethnic group.

(Total Deaths for Specified Racial or Ethnic Group / Population for Same Racial or Ethnic Group) x 1000

AGE-ADJUSTED DEATH RATE (Direct Method) - Age-specific death rates (per 100,000) for a selected population are applied to a standard population of the same age groups. The sum of these calculations is then divided by the total of the standard population and yields the age-adjusted death rate per 100,000. (See "Adjusted Rates" for more detailed information on computation and appropriate use of age-adjusted death rates.)

Sum of (age-specific death rates per 100,000 for selected population x standard population in corresponding age groups) / Sum of standard population

MATERNAL MORTALITY RATE - Number of deaths from complications of pregnancy, childbirth, and the puerperium per 10,000 live births.

(Total Maternal Deaths / Total Live Births) x 10,000

TOTAL FERTILITY RATE - The sum of the age-specific birth rates of women in five-year age groups multiplied by five. This rate estimates the number of children a cohort of 1,000 women would bear if they all went through their childbearing years exposed to the same age-specific birth rates in effect for a particular time. (See "General Fertility Rate and Total Fertility Rate" for more detailed information on the calculation and appropriate use of the total fertility rate.)

(Sum of Age-Specific Birth Rates Among Women for 5-Year Age Groups Between 10 and 49) x 5

REPORTED PREGNANCY RATE - Number of live births, non-induced fetal deaths (16+ weeks gestation), and induced abortions performed in-state per 1,000 females aged 15-44. (See "Reported Pregnancy Statistics" for more information.)

$$((\text{Total Live Births} + \text{Non-Induced Fetal Deaths} + \text{Induced Abortions}) / (\text{Female Population Ages 15-44})) \times 1000$$

AGE-SPECIFIC REPORTED PREGNANCY RATE - Number of live births, non-induced fetal deaths (16+ weeks gestation), and induced abortions performed in-state among females of a specified age group per 1,000 females of the same specified age group.

$$((\text{Live Births} + \text{Non-Induced Fetal Deaths} + \text{Induced Abortions for Females of Specified Ages}) / (\text{Female Population of Same Specified Ages})) \times 1000$$

AVERAGE ANNUAL RATE - Number of events for a specified multiple-year period per 1,000 population for same multiple-year period.

$$(\text{Total Number of Events for a Specified Multiple-Year Period} / \text{Total Population for Same Specified Multiple-Year Period}) \times 1000$$