

CRUDE BIRTH RATE

1. Definition:

CRUDE BIRTH RATE is the number of resident live births for a specified geographic area (nation, state, county, etc.) during a specified period (usually a calendar year) divided by the total population (usually mid-year) for that area and multiplied by 1,000.

2. Calculation:

(Number of resident live births / Number of total population) x 1,000

$$\frac{\text{Total Resident Live Births}}{\text{Total Population}} \quad \times \quad 1,000$$

3. Examples:

180,000 live births in calendar year 2005 among state residents

12,300,000 estimated population in calendar year 2005 for state residents

$(180,000/12,300,000) \times 1,000 = \underline{14.6}$ live births per 1,000 state residents in 2005

4. Technical Notes:

- While the Crude Birth Rate (CBR) is a basic measure of fertility, it is only occasionally used as a public health measure in the US. There are other fertility measures that are more population-at-risk specific and more comparable across time and geography, such as the [general fertility rate](#) and the [total fertility rate](#).
- The reason the CBR is “crude” is because the total population is represented in the denominator, similar to the crude death rate for example.
- Obviously, the “population at risk” of giving birth to a live neonate is poorly represented by the total population. As a result, the CBR is affected by the demographic distribution of the population in the denominator, especially by sex and age, but also by race or ethnicity category and other demographic characteristics.
- Reporting of live births may differ by birthing facility or attendant at time of birth. For example, a live birth can be interpreted and subsequently registered as a fetal death or stillbirth when the neonate very briefly shows signs of life and subsequently dies. In some countries, “live birth” may be defined differently than in the U.S. (or not applied to the same degree in practice), which follows the World Health Organization (WHO) definition.
- Sometimes live births do not become part of the official count of a state’s resident live birth total because:
 - a) The birth to a state resident occurred in an area (often another country) for which the state does not have a vital records exchange agreement
 - b) the birth to a state resident occurred in an area for which the state does have an exchange agreement but it arrived at the state’s vital registration office too late for inclusion in the state’s official count or
 - c) the live birth occurred in the state but simply was not registered in time (e.g., an at-home birth) for inclusion in the state’s official count. Also note that a

- state's official count of resident live births may vary somewhat from that determined by NCHS for that state due to variations of the above reasons.
- If the number of resident live births is small (< 10 or 20), it sometimes is advisable to combine time (additional years of births) and/or geographic areas (e.g., additional counties' numbers of live births) to increase the stability of the rate, at the expense of its temporal or spatial specificity. ([Please see issues of small event numbers in vital rates.](#))
 - Similar but conceptually different rates that provide more analytical information than the CBR are: general fertility rate, total fertility rate and pregnancy rate. (see [Statistical Notes for Health Planners. No. 12. Using Natality Data in Health Planning. Foster, J. E. November 1980. 39 pp. \(PHS\) 81-1237.](#))
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