

SEX RATIO at BIRTH

1. Definition:

SEX RATIO at BIRTH is the number of resident male live births (for a specific geography such as country, state or county for a specified time period, usually a calendar year) divided by the number of resident female live births (for the same geography and time period) and multiplied by 100 or 1,000.

2. Calculation:

$$\frac{\text{Number of Resident Male Live Births}}{\text{Number of Resident Female Live Births}} \times 100 \text{ (or 1,000)}$$

3. Example:

58,000 = male live births in 2008 to state residents

55,000 = female live births in 2008 to state residents

$(58,000/55,000) \times 100 = 105.5$ male births per 100 female live births in 2008 among state residents

(NOTE: If 1,000 is used as the multiplier instead of 100, the result would = 1,055 male births per 1,000 female births.)

4. Technical Notes:

- The sex ratio at birth is an important demographic indicator used for determining the sex composition of a population. It also affects some critical demographic measures such as the number of years required for a population to double in size given a rate of population growth (referred to as “doubling-time”) which rises as the ratio of males to females at birth increases.
- The multiplier generally used for a sex ratio at birth is 100. However, the National Center for Health Statistics (NCHS) uses 1,000 as the standard multiplier for calculating and disseminating sex ratios at birth. See [Trend Analysis of the Sex Ratio at Birth in the United States](#). National Vital Statistics Reports, Volume 53, Number 20; June 14, 2005.
- Although more males than females are born alive, females exceed males in virtually every age group after about age 40 and this difference increases with age.
- The chance that a birth will be male is slightly better than even in the U.S. population (approximately 51 percent based on a sex ratio at birth of 1,050 per 1,000 female births). The U.S. sex ratio at birth is considered remarkably stable.
- The sex ratio at birth can be used to better understand trends in low birth weight and infant mortality since males have higher infant mortality rates overall and for major causes such as Sudden Infant Death Syndrome.¹⁻³ The sex ratio at birth has also been used to assess impact of environmental factors on the endocrine and reproductive health systems.⁴
- Sex ratios at birth by maternal age, race, ethnicity, and birth order are generally calculated and evaluated. Some limited associations with these demographics have been found.⁵

- The sex ratio at birth is a baseline measure for evaluating and studying “sex control” patterns among different cultures and geographic areas.⁶

References:

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3. Getahun D, Amre D, Rhoads GG, Demissie K. Maternal and obstetric risk factors for sudden infant death syndrome in the United States. *Obstet Gynecol* 103(4):646–52. 2004.
4. Yoshimura T, Kaneko S, Hayabuchi H. Sex ratio in offspring of those affected by dioxin and dioxin-like compounds: the Yusho, Seveso, and Yucheng incidents. *Occup Environ Med* 58:540–1. 2001.
5. Teitelbaum M. Factors associated with the sex ratio in human populations. In: Harrison GA and Boyce AJ, eds. *The structure of human populations*. Oxford, England: Clarendon Press. 1972.
6. President’s Council on Bioethics. *Beyond therapy: Controlling the sex of children*.
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