What does fertility rate measure?

Total fertility rate (TFR) summarizes childbearing in a population. Read the units carefully: it is not the number of births per year and not a percentage growth rate.

1. TFR: CHILDREN PER WOMAN

TFR is the average number of children a hypothetical woman would have if she experienced the age-specific fertility rates of a particular year throughout her childbearing years. It is a snapshot-based lifetime measure, not a prediction for every woman and not the observed final family size of one generation.

2. KEEP THE MEASURES SEPARATE

Total fertility rate	Children per woman

Summarizes childbearing across reproductive ages.

Crude birth rate	Births per 1,000 people per year

Uses the whole population, not just women.

Infant mortality rate	Deaths before age 1 per 1,000 live births

Measures infant survival, not births per woman.

3. INTERPRET A VALUE, NOT AN INDIVIDUAL

A TFR of 2.5 means 2.5 children per woman under the stated fertility schedule. It does not mean every woman has two or three children, or that the population grows by 2.5% each year. Individuals can have different family sizes.

Further detail: TFR is built by adding age-specific fertility rates across childbearing ages, accounting for the width of each age interval. Dividing all births in one year by all women is not a TFR calculation.

TFR definition and construction: World Bank, WDI metadata.
Population-rate units: World Bank, WDI People.

Scope: College Board AP Environmental Science CED, Topic 3.7, p. 71.

Explain the factors behind fertility

Name a factor and explain how it can influence the timing or number of births. These are population-level tendencies, not rules about every person or family.

1. FOUR FACTORS IN THE COURSE FRAMEWORK

Age at first birth

Later first childbirth can shorten the remaining childbearing period and increase spacing between generations. Delaying births does not always reduce completed family size.

Education and opportunity

Education can expand employment options, health knowledge and decision-making power. These changes can support later childbirth or a preference for fewer children.

Voluntary family planning

Reliable contraception and information help people decide whether and when to have children, avoid unintended pregnancies and space births.

Government policies

Support for education and contraceptive access can lower fertility. Childcare or financial support may encourage births. Effects vary; a policy does not guarantee a target TFR.

2. INFANT SURVIVAL: HEALTH CARE AND NUTRITION

Access to good maternal nutrition, care during pregnancy, skilled care at birth and postnatal services can reduce risks to infants. Infant mortality covers the first year; neonatal mortality covers the first 28 days. Improved survival can influence desired family size, but the response is not automatic.

Other influences include living costs, employment, cultural expectations and the economic role of children. Avoid a one-cause explanation: several influences often change together. A statistical association alone does not establish causation.

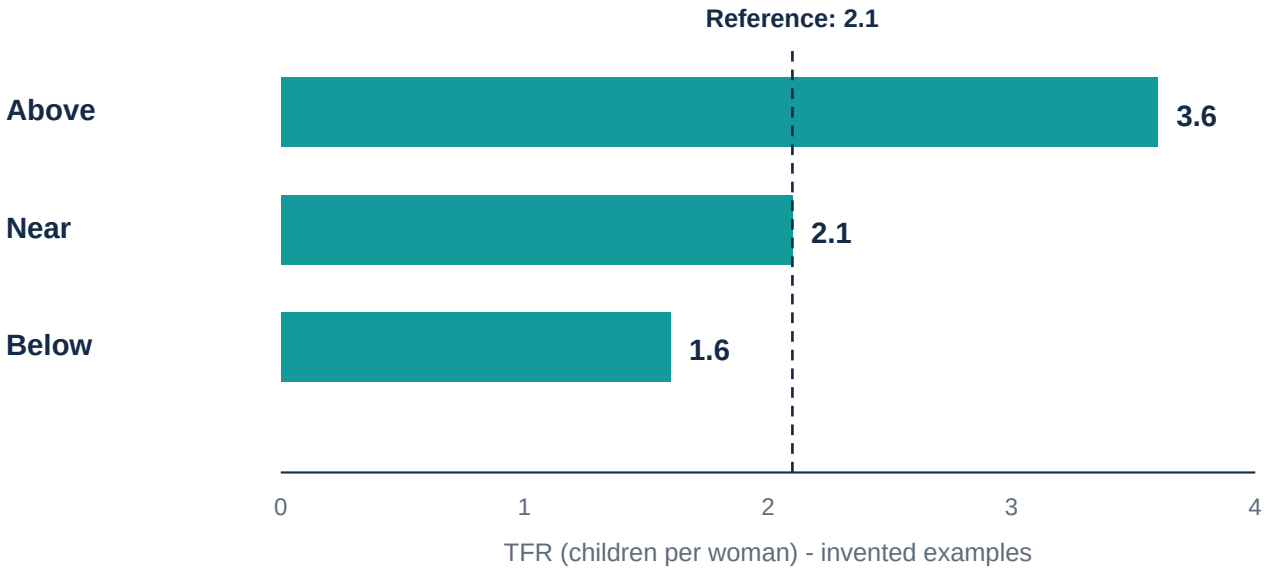
Fertility factors and infant mortality: College Board, EIN-1.B.1 and B.3.
Care, nutrition and newborn survival: WHO, Newborn health.

Scope: College Board AP Environmental Science CED, Topic 3.7, p. 71.

Replacement is a long-term idea

Replacement-level fertility allows a generation to replace itself without migration. About 2.1 children per woman is a useful benchmark in low-mortality populations, not a universal constant.

1. COMPARE TFR WITH A REFERENCE LEVEL



2. WHY SLIGHTLY ABOVE TWO?

Slightly more boys than girls are born, and not all girls survive through reproductive ages. Replacement fertility therefore exceeds two and is higher where mortality is higher. Persistently below-replacement fertility can contribute to aging and eventual decline.

3. WHY CAN GROWTH CONTINUE AT REPLACEMENT?

A large young generation can produce many births as it enters reproductive ages: population momentum. Migration also changes population size. Reaching replacement fertility does not instantly make births equal deaths or guarantee zero growth.

Worked trend: a fall from 5.0 to 2.5 is a decrease of 2.5 children per woman. Percentage decrease = (5.0 - 2.5) / 5.0 x 100 = 50%. This is a 50% fall in TFR, not a 50% fall in population size.

Replacement fertility, survival and sex ratio: World Bank, population glossary.
Age structure and momentum: UN DESA, World Population Prospects 2024.

Scope: College Board AP Environmental Science CED, Topic 3.7, p. 71.