

# Studying determinants of population growth

[Sociology](#), [Population](#)



Population growth is the change in a population over time, and can be quantified as the change in the number of individuals of any species in a population using "per unit time" for measurement. In biology, the term population growth is likely to refer to any known organism, but this article deals mostly with the application of the term to human populations in demography. In demography, population growth is used informally for the more specific term population growth rate (see below), and is often used to refer specifically to the growth of the human population of the world. Simple models of population growth include the Malthusian Growth Model and the logistic model.

Determinants of population growth

Population growth is determined by four factors, births(B), deaths(D), immigrants(I), and emigrants(E). Using a formula expressed as  $\hat{P} = (B-D) + (I-E)$  In other words, the population growth of a period can be calculated in two parts, natural growth of population (B-D) and mechanical growth of population (I-E), in which Mechanical growth of population is mainly affected by social factors, e. g. the advanced economies are growing faster while the backward economies are growing slowly even with negative growth. [edit]

Population growth rate

In demographics and ecology, population growth rate (PGR) is the rate at which the number of individuals in a population increases in a given time period as a fraction of the initial population. Specifically, PGR ordinarily refers to the change in population over a unit time period, often expressed as a percentage of the number of individuals in the population at the beginning of that period. This can be written as the formula:[2] The most common way to express population growth is as a percentage, not as a rate. The change in population over a unit time period is expressed as a

percentage of the population at the beginning of the time period. That is: For small time periods and growth rates, the added population is the growth rate multiplied by the time period. A positive growth ratio (or rate) indicates that the population is increasing, while a negative growth ratio indicates the population is decreasing. A growth ratio of zero indicates that there were the same number of people at the two times -- net difference between births, deaths a growth rate may be zero even when there are significant changes in the birth rates, death rates, immigration rates, and age distribution between the two times. [3] Equivalently, percent death rate = the average number of deaths in a year for every 100 people in the total population. If the length of the time is taken smaller and smaller, the PGR approaches the logarithmic derivative of the population function  $P$ . If the population as a function of time is exponential, say  $P(t) = Ce^{at}$ , the logarithmic derivative is  $a$ . Thus, the PGR approximates the exponent  $a$  for populations with exponential growth. A related measure is the net reproduction rate. In the absence of migration, a net reproduction rate of more than one indicates that the population of women is increasing, while a net reproduction rate less than one (sub-replacement fertility) indicates that the population of women is decreasing