

HUMAN POPULATION GROWTH

The growth of the human population is determined by the yearly average growth rate, calculated in the following manner:

$$\text{Average annual growth rate (in percent)} = \left[\frac{P_2 - P_1}{P_1 \times N} \right] \times 100$$

where, P_1 is population size in the previous census;

P_2 is population size in the present census; and

N is number of years between two census.

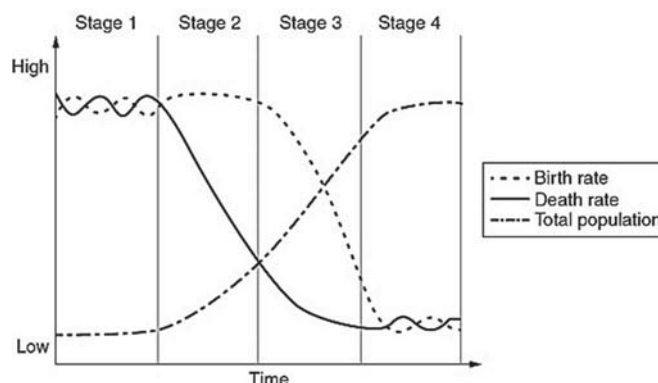


Fig.: Different stages of the demographic transition

- (1) High birth rate but fluctuating death rate, (2) Declining death rate and continuing high birth rate, (3) Declining birth rate and death rate, (4) Low death rate but fluctuating birth rate

The census provides information about the number of individuals in a specific area at a particular time. The time it takes for a population to double is known as the doubling time. As of the 2011 census, the population growth rate was below 2 percent, meaning an increase of 20 individuals per 1000 of the population each year. In comparison, the growth rate was approximately 2.1 percent per year during 1965-1970. Since gaining independence, our population, which was around 350 million, reached nearly a billion by 2000 and surpassed 1.2 billion in May 2011. Globally, the world population went from around 2 billion in 1900 to about 6 billion by 2000 and 7.2 billion in 2011. Population growth is influenced by factors like birth rate, death rate, migration, and age-sex ratio, contributing to the annual average growth rate and doubling time.

1. Fertility (Natality)

Fertility refers to the capability of individuals of reproductive age to have babies. Birth rate is the number of babies born per thousand individuals. Unlike the population growth rate, birth rate is always positive and never negative. The Total Fertility Rate (TFR) represents the average number of children a woman can have during her lifetime. This rate varies across regions, with more developed countries having lower fertility rates compared to less developed ones. Economic factors and human aspirations play a significant role in controlling fertility. Replacement Level (RL) indicates the number of children a couple must have to replace themselves and maintain a zero-growth population level. RL is slightly higher than 2.0 due to child mortality, being 2.1 in developed countries and 2.7 in developing countries, where child mortality is higher.

2. Mortality

Mortality is the death rate per thousand individuals, and it has decreased in most countries thanks to improved personal hygiene, sanitation, and modern medicines.

Demographers commonly use the crude birth rate and crude death rate. The crude birth rate is the number of live births per thousand persons in the middle of a given year (e.g., on July 07), while the crude death rate is the number of deaths per thousand persons during the same period. The difference between the number of births and deaths is known as the rate of natural increase. If birth and death rates are equal, it results in a zero population growth rate, known as demographic transition, which has occurred in most developed countries.