

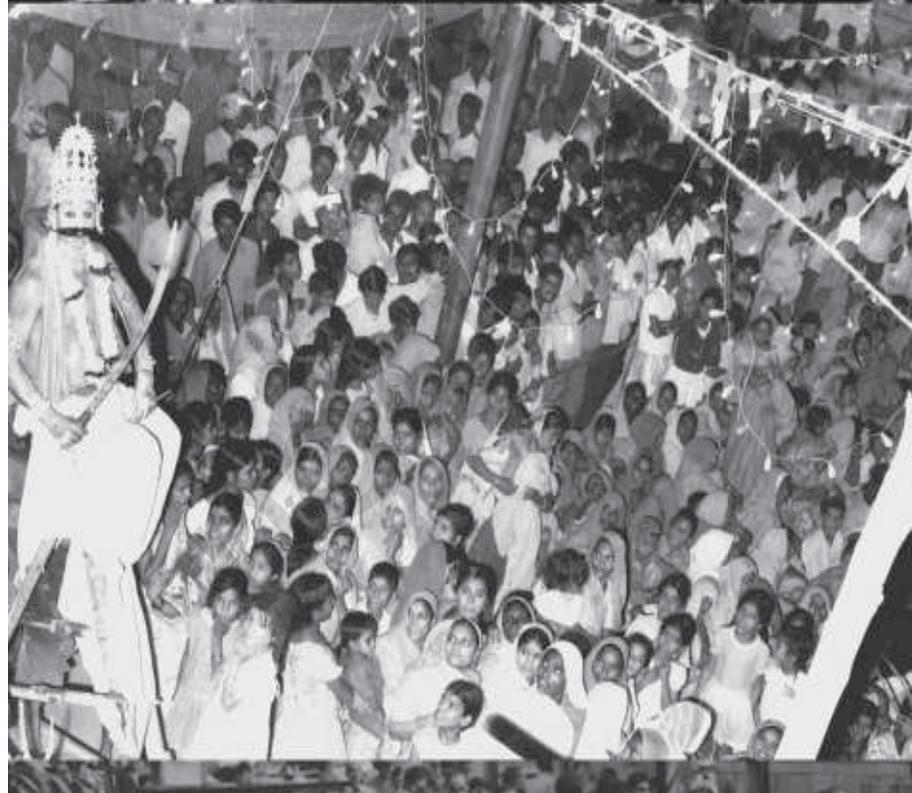


**D**emography is the systematic study of population. The term is of Greek origin and is composed of the two words, *demos* (people) and *graphein* (describe), implying the description of people. Demography studies the trends and processes associated with population including – changes in population size; patterns of births, deaths, and migration; and the structure and composition of the population, such as the relative proportions of women, men and different age groups. There are different varieties of demography, including formal demography which is a largely quantitative field, and social demography which focuses on the social, economic or political aspects of populations. All demographic studies are based on processes of counting or enumeration – such as the census or the survey – which involve the systematic collection of data on the people residing within a specified territory.

Demography is a field that is of special importance to sociology – in fact, the emergence of sociology and its successful establishment as an academic discipline owed a lot to demography. Two different processes happened to take place at roughly the same time in Europe during the latter half of the eighteenth century – the formation of nation-states as the principal form of political organisation, and the beginnings of the modern science of statistics. The modern state had begun to expand its role and functions. It had, for instance, begun to take an active interest in the development of early forms of public health management, policing and maintenance of law and order, economic policies relating to agriculture and industry, taxation and revenue generation and the governance of cities.

This new and constantly expanding sphere of state activity required the systematic and regular collection of *social statistics* – or quantitative data on various aspects of the population and economy. The practice of the collection of social statistics by the state is in itself much older, but it acquired its modern form towards the end of the eighteenth century. The American census of 1790 was probably the first modern census, and the practice was soon taken up in Europe as well in the early 1800s. In India, censuses began to be conducted by the British Indian government between 1867-72, and regular ten yearly (or decennial) censuses have been conducted since 1881. Independent India continued the practice, and seven decennial censuses have been conducted since 1951, the most recent being in 2011. The Indian census is the largest such exercise in the world (since China, which has a slightly larger population, does not conduct regular censuses).

Demographic data are important for the planning and implementation of state policies, specially those for economic development and general public welfare. But when they first emerged, social statistics also provided a strong justification for the new discipline of sociology. Aggregate statistics – or the numerical characteristics that refer to a large collectivity consisting of millions of people – offer a concrete and strong argument for the existence of *social* phenomena. Even though country-level or state-level statistics like the number



of deaths per 1,000 population – or the death rate – are made up by aggregating (or adding up) individual deaths, the death rate itself is a social phenomenon and must be explained at the social level. Emile Durkheim's famous study explaining the variation in suicide rates across different countries was a good example of this. Durkheim argued that the rate of suicide (i.e., number of suicides per 100,000 population) had to be explained by social causes even though each particular instance of suicide may have involved reasons specific to that individual or her/his circumstances.

Sometimes a distinction is made between formal demography and a broader field of population studies. Formal demography is primarily concerned with the measurement and analysis of the components of population change. Its focus is on quantitative analysis for which it has a highly developed mathematical methodology suitable for forecasting population growth and changes in the composition of population. Population studies or social demography, on the other hand, enquires into the wider causes and consequences of population structures and change. Social demographers believe that social processes and structures regulate demographic processes; like sociologists, they seek to trace the social reasons that account for population trends.

## 2.1 SOME THEORIES AND CONCEPTS IN DEMOGRAPHY

### THE MALTHUSIAN THEORY OF POPULATION GROWTH

Among the most famous theories of demography is the one associated with the English political economist Thomas Robert Malthus (1766-1834). Malthus's theory of population growth – outlined in his *Essay on Population* (1798) – was a rather pessimistic one. He argued that human populations tend to grow at a much faster rate than the rate at which the means of human subsistence (specially food, but also clothing and other agriculture-based products) can grow. Therefore humanity is condemned to live in poverty forever because the growth of agricultural production will always be overtaken by population growth. While population rises in **geometric progression** (i.e., like 2, 4, 8, 16, 32 etc.), agricultural production can only grow in **arithmetic progression** (i.e., like 2, 4, 6, 8, 10 etc.). Because population growth always outstrips growth in production of subsistence resources, the only way to increase prosperity is by controlling the growth of population. Unfortunately, humanity has only a limited ability to voluntarily reduce the growth of its population (through '**preventive checks**' such as postponing marriage or practicing sexual abstinence or celibacy). Malthus believed therefore that '**positive checks**' to population growth – in the form of famines and diseases – were inevitable because they were nature's way of dealing with the imbalance between food supply and increasing population.

Malthus's theory was influential for a long time. But it was also challenged by theorists who claimed that economic growth could outstrip population growth.

"The power of population is so superior to the power of the earth to produce subsistence for man, that premature death must in some shape or other visit the human race. The vices of mankind are active and able ministers of depopulation. They are the precursors in the great army of destruction, and often finish the dreadful work themselves. But should they fail in this war of extermination, sickly seasons, epidemics, pestilence, and plague advance in terrific array, and sweep off their thousands and tens of thousands. Should success be still incomplete, gigantic inevitable famine stalks in the rear, and with one mighty blow levels the population with the food of the world."

– Thomas Robert Malthus, *An essay on the principle of population*, 1798.

### Box 2.1

### Thomas Robert Malthus (1766-1834)



Malthus studied at Cambridge and trained to become a Christian priest. Later he was appointed Professor of History and Political Economy at the East India Company College at Haileybury near London, which was a training centre for the officers recruited to the Indian Civil Service.

However, the most effective refutation of his theory was provided by the historical experience of European countries. The pattern of population growth began to change in the latter half of nineteenth century, and by the end of the first quarter of the twentieth century these changes were quite dramatic. Birth rates had declined, and outbreaks of epidemic diseases were being controlled. Malthus's predictions were proved false because both food production and standards of living continued to rise despite the rapid growth of population.

Malthus was also criticised by liberal and Marxist scholars for asserting that poverty was caused by population growth. The critics argued that problems like poverty and starvation were caused by the unequal distribution of economic resources rather than by population growth. An unjust social system allowed a wealthy and privileged minority to live in luxury while the vast majority of the people were forced to live in poverty.

## THE THEORY OF DEMOGRAPHIC TRANSITION

Another significant theory in demography is the theory of demographic transition. This suggests that population growth is linked to overall levels of economic development and that every society follows a typical pattern of development-related population growth. There are three basic phases of population growth. The first stage is that of low population growth in a society that is underdeveloped and technologically backward. Growth rates are low because both the death rate and the birth rate are very high, so that the difference between the two (or the net growth rate) is low. The third (and last) stage is also one of low growth in a developed society where both death rate and birth rate have been reduced

## ACTIVITY 2.1

Read the section on the previous page and the quotation from Malthus in Box 2.1. One reason why Malthus was proved wrong is the substantial increases in the **productivity of agriculture**. Can you find out how these productivity increases occurred – i.e., what were the factors that made agriculture more productive? What could be some of the other reasons why Malthus was wrong? Discuss with your classmates and make a list with the help of your teacher.

considerably and the difference between them is again small. Between these two stages is a transitional stage of movement from a backward to an advanced stage, and this stage is characterised by very high rates of growth of population.

This 'population explosion' happens because death rates are brought down relatively quickly through advanced methods of disease control, public health, and better nutrition. However, it takes longer for society to adjust to change and alter its reproductive behaviour (which was evolved during the period of poverty and high death rates) to suit the new situation of relative prosperity and longer life spans. This kind of transition was effected in Western Europe during the late nineteenth and early twentieth century. More or less similar patterns are followed in the less developed countries that are struggling to reduce the birth rate in keeping with the falling mortality rate. In India too, the demographic transition is not yet complete as the mortality rate has been reduced but the birth rate has not been brought down to the same extent.

### COMMON CONCEPTS AND INDICATORS

Most demographic concepts are expressed as rates or ratios – they involve two numbers. One of these numbers is the particular statistic that has been calculated for a specific geographical-administrative unit; the other number provides a standard for comparison. For example, the *birth rate* is the total number of live births in a particular area (an entire country, a state, a district or other territorial unit) during a specified period (usually a year) divided by the total population of that area in thousands. In other words, the birth rate is the number of live births per 1000 population. The *death rate* is a similar statistic, expressed as the number of deaths in a given area during a given time per 1000 population. These statistics depend on the reporting of births and deaths by the families in which they occur. In fact, in most countries including India, people are required by law to report births and deaths to the appropriate authorities – the local police station or primary health centre in the case of villages, and the relevant municipal office in the case of towns and cities.

The *rate of natural increase* or the growth rate of population refers to the difference between the birth rate and the death rate. When this difference is zero (or, in practice, very small) then we say that the population has 'stabilised', or has reached the 'replacement level', which is the rate of growth required for new generations to replace the older ones that are dying out. Sometimes, societies can experience a negative growth rate – that is, their fertility levels are below the replacement rate. This is true of many countries and regions in the world today, such as Japan, Russia, Italy and Eastern Europe. On the other

hand, some societies experience very high growth rates, particularly when they are going through the demographic transition described on the previous page.

The *fertility rate* refers to the number of live births per 1000 women in the child-bearing age group, usually taken to be 15 to 49 years. But like the other rates discussed on the previous page (the birth and death rates) this is a 'crude' rate – it is a rough average for an entire population and does not take account of the differences across age-groups. Differences across age groups can sometimes be very significant in affecting the meaning of indicators. That is why demographers also calculate age-specific rates. The *total fertility rate* refers to the total number of live births that a hypothetical woman would have if she lived through the reproductive age group and had the average number of babies in each segment of this age group as determined by the age-specific fertility rates for that area. Another way of expressing this is that the total fertility rate is the 'the average number of births to a cohort of women up to the end of the reproductive age period (estimated on the basis of the age-specific rates observed during a given period)' (Visaria and Visaria 2003).

The *infant mortality* rate is the number of deaths of babies before the age of one year per 1000 live births. Likewise, the *maternal mortality* rate is the number of women who die in childbirth per 1000 live births. High rates of infant and maternal mortality are an unambiguous indicator of backwardness and poverty; development is accompanied by sharp falls in these rates as medical facilities and levels of education, awareness and prosperity increase. One concept which is somewhat complicated is that of *life expectancy*. This refers to the estimated number of years that an average person is expected to survive. It is calculated on the basis of data on age-specific death rates in a given area over a period of time.

The *sex ratio* refers to the number of females per 1000 males in a given area at a specified time period. Historically, all over the world it has been found that there are slightly more females than males in most countries. This is despite the fact that slightly more male babies are born than female ones; nature seems to produce roughly 943 to 952 female babies for every 1000 males. If despite this fact the sex ratio is somewhat in favour of females, this seems to be due to two reasons. First, girl babies appear to have an advantage over boy babies in terms of resistance to disease in infancy. At the other end of the life cycle, women have tended to outlive men in most societies, so that there are more older women than men. The combination of these two factors leads to a sex ratio of roughly 1050 females per 1000 males in most contexts. However, it has been found that the sex ratio has been declining in some countries like China, South Korea and specially India. This phenomenon has been linked to prevailing social norms that tend to value males much more than females, which leads to 'son preference' and the relative neglect of girl babies.

## ACTIVITY 2.2

Try to find out why the birth rate is slow to decline but the death rate can fall relatively fast. What are some of the factors that might influence a family or couple's decision about the number of children they should have? Ask older people in your family or neighbourhood about the possible reasons why people in the past tended to have more children.

The *age structure of the population* refers to the proportion of persons in different age groups relative to the total population. The age structure changes in response to changes in levels of development and the average life expectancy. Initially, poor medical facilities, prevalence of disease and other factors make for a relatively short life span. Moreover, high infant and maternal mortality rates also have an impact on the age structure. With development, quality of life improves and with it the life expectancy also improves. This changes the age structure: relatively smaller proportions of the population are found in the younger age groups and larger proportions in the older age groups. This is also referred to as the ageing of the population.

The *dependency ratio* is a measure comparing the portion of a population which is composed of dependents (i.e., elderly people who are too old to work, and children who are too young to work) with the portion that is in the working age group, generally defined as 15 to 64 years. The dependency ratio is equal to the population below 15 or above 64, divided by population in the 15-64 age group; the ratio is usually expressed as a percentage. A rising dependency ratio is a cause for worry in countries that are facing an ageing population, since it becomes difficult for a relatively smaller proportion of working-age people to carry the burden of providing for a relatively larger proportion of dependents. On the other hand, a falling dependency ratio can be a source of economic growth and prosperity due to the larger proportion of workers relative to non-workers. This is sometimes referred to as the 'demographic dividend', or benefit flowing from the changing age structure. However, this benefit is temporary because the larger pool of working age people will eventually turn into non-working old people.

## 2.2 SIZE AND GROWTH OF INDIA'S POPULATION

India is the second most populous country in the world after China, with a total population of 121 crores (or 1.21 billion) according to the Census of India 2011 (Provisional). As can be seen from Table 1, the growth rate of India's population has not always been very high. Between 1901–1951 the average annual growth rate did not exceed 1.33%, a modest rate of growth. In fact between 1911 and 1921 there was a negative rate of growth of – 0.03%. This was because of the influenza epidemic during 1918–19 which killed about 12.5 million persons or 5% of the total population of the country (Visaria and Visaria 2003: 191). The growth rate of population substantially increased after independence from British rule going up to 2.2% during 1961-1981. Since then although the annual growth rate has decreased it remains one of the highest in the developing world. Chart 1 shows the comparative movement of the crude birth and death rates. The impact of the demographic transition phase is clearly seen in the graph where they begin to diverge from each other after the decade of 1921 to 1931.

Before 1931, both death rates and birth rates are high, whereas, after this transitional moment the death rates fall sharply but the birth rate only falls slightly.

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