

DEMOGRAPHY

Introduction to Demography

- Demography is the systematic study of population. 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.
- Demographic data are important for the planning and implementation of state policies, especially those for economic development and general public welfare.
- 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.
- Social Demography or Population studies, on the other hand, enquire 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.

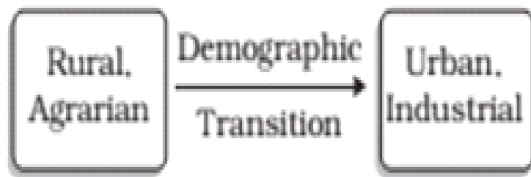
Demography theories

A. The Malthusian Theory of Population Growth

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

B. Demographic Transition Theory

Meaning



Demographic transition theory can be used to describe and predict the future population of any area. The theory tells us that population of any region changes from high births and high deaths to low births and low deaths as society progresses from rural agrarian and illiterate to urban industrial and literate society. These changes occur in stages which are collectively known as the demographic cycle.

Stages of Demographic Transition

- The first stage has high fertility and high mortality because people reproduce more to compensate
- Fertility remains high in the beginning of second stage but it declines with time. This is accompanied by reduced mortality rate. Improvements in sanitation and health conditions lead to decline in mortality. Because of this gap the net addition to population is high.
- In the last stage, both fertility and mortality decline considerably. The population is either stable or grows slowly. The population becomes urbanized, literate and has high technical knowhow and deliberately controls the family size.
- This shows that human beings are extremely flexible and are able to adjust their fertility.

CENSUS 2011

- The Indian Census is the most credible source of information on Demography (Population characteristics), Economic Activity, Literacy & Education, Housing & Household Amenities, Urbanization, Fertility and Mortality, Scheduled Castes and Scheduled Tribes, Language, Religion, Migration, Disability and many other socio-cultural and demographic data since 1872.
- The Census is a statutory exercise conducted under the provisions of the Census Act 1948 and Rules made thereunder.
- Census 2011 is the 15th National Census of the country. This is the only source of primary data at village, town and ward level. It provides valuable information for planning and formulation of policies for Central & State Governments and is widely used by National & International agencies, scholars, business people, industrialists, and many more.
- The Census process involves visiting each and every household and gathering particulars by asking questions and filling up Census Forms. The information collected about individuals is kept absolutely confidential. In fact this information is not accessible even to Courts of law.
- The delimitation/reservation of Constituencies - Parliamentary/Assembly/Panchayats and other Local Bodies is also done on the basis of the demographic data thrown up by the Census. This technology was pioneered by India in Census 2001 and has become the benchmark for Censuses all around the globe. This involves the scanning of the Census Forms at high speed and extracting the data automatically using computer software. This revolutionary technology has enabled the processing of the voluminous data in a very short time and saving a huge amount of manual labour and cost.
- Census is the basis for reviewing the country's progress in the past decade, monitoring the ongoing schemes of the Government and most importantly, plan for the future. That is why the slogan of Census 2011 is "Our Census, Our Future".
- After the field work is over, the forms are transported to data processing centres located at 15 cities across the country. The data processing is done using sophisticated software called Intelligent Character Recognition Software (ICR). This technology was pioneered by India in Census 2001 and has become the benchmark for Censuses all around the globe. This involves the scanning of the Census Forms at high speed and extracting the data automatically using computer software. This revolutionary technology has enabled the processing of the voluminous data in a very short time and saving a huge amount of manual labour and cost.
- The 15th Indian National census was conducted in two phases, house-listing and population enumeration. House-listing phase began on April

1, 2010 and involved collection of information about all buildings.

- Information for National Population Register was also collected in the first phase which included data about the person that will be converted to digital form along with fingerprinting and photograph of the person, which will be used to issue a 12-digit unique identification number to all registered Indians by Unique Identification Authority of India.
- Census Commissioner of India is C. Chandramouli.

Common Concepts and Indicators

A. Birth Rate

- 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.

B. Death Rate

- The death rate is a similar statistic, expressed as the number of deaths in a given area during a given time per 1000 population.

C. Growth Rate

- 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 'stabilized', 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.

D. Fertility Rate

- 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 above (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).

E. Mortality Rates

- 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 child birth 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.

F. 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.

G. Sex ratio

- The sex ratio refers to the number of females per 1000 males in a given area at a specified time period.

H. Age structure

- The age structure of the population refers to the proportion of persons indifferent 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 aging of the population.

I. Dependency ratio

- 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. Or in other words, Dependency Ratio = $\frac{\text{Population in the age group 0-14} + \text{Population in the age group 60+ or 65+}}{\text{Population in the age group 15-59 or 15-64}}$.
- A rising dependency ratio is a cause for worry in countries that are facing an aging 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.

CENSUS 2011 Quick facts

Total population	1.21 billion
Decadal growth rate	17.4%
Density	382
Sex ratio	940
Child sex ratio	914
Literacy	74.04 %

Highlights of 2011 Census

A. Population size

- According to the provisional population count released within four weeks of completing the Census, India's total population in 2011 was 1.21 billion, up from 1.03 billion in 2001, thus adding 181 million people in one decade.
- However, the 2001-2011 decadal growth rate of 17.6 %, compared to 21.5 recorded during 1991-2001, suggests slowing down of growth. Interestingly, the enumerated population size was larger than most projections, including that of the Registrar General's office that projected the 2011 population to be 1.19 billion. India is now expected to become the most populous country of the world by 2030 overtaking China sooner than earlier expected.
- India's population size is expected to stabilize at 1.8 billion around 2041.

B. Geographic Distribution

- The state of Uttar Pradesh with 199.6 million people is India's most populous state accounting for 16.5% of country's population. Bihar (103.8) and Maharashtra (112.4) are other two states with more than 100 million people. Other large states are West Bengal with 91, Andhra Pradesh with 85, Madhya Pradesh with 73, and Tamil Nadu with 72 million people.
- Nearly 42.4% of Indians now live in formerly undivided Bihar, Uttar Pradesh, Madhya Pradesh and Rajasthan; a proportion that has increased from 40% in 1991.
- Conversely, the proportion of Indians living in the four southern states of Kerala, Tamil Nadu, Karnataka and Andhra Pradesh has decreased from 22.5% in 1991 to 20.8% in 2011, causing concerns about their representation in parliamentary democracy.

C. Rate of Population Growth

- Among the major states, Bihar with 25.1% growth rate during 2001-2011 is the fastest growing state. Decadal Growth rates have exceeded 20% in all the core north India states - Bihar, Uttar Pradesh, Rajasthan, Madhya Pradesh (including Jharkhand And Chattisgarh).
- Kerala's growth rate during 2001-2011 of 4.9% is indicative of the state reaching stationary population in the next 10-20 years.

- Growth rate around 11-13% is reported by Punjab, Andhra Pradesh, and West Bengal and around 15-16 % by Karnataka, Maharashtra and Tamil Nadu. Southern states are the harbinger of population stabilization.

D. Literacy

- India has witnessed remarkable progress in spread of literacy. Compared to barely 18 percent of India's population recorded as literate in the first Census after Independence, according to the 2011 Census, that proportion has gone up to 74 percent.
- The achievement among males has been from 27 to 82 percent in the 60 years. From less than one in 10 women counted as literate in 1951, today two out of three women are enumerated as literate.
- Nationally, the gender gap in spread of literacy began to narrow first in 1991 and the pace has accelerated. However, there are large state variations in the gender gap with Rajasthan reporting nearly 28 percentage point gap and other core North Indian states like Bihar, Uttar Pradesh, Madhya Pradesh, Chattisgarh and Jharkhand reporting a gap between male and female literacy rate of more than 20 percentage points.
- Compared to 2001, in 2011 male literacy rate increased by 6 percentage points but female literacy increased by nearly 12 percentage points, which is viewed as a remarkable achievement.
- Some have attributed it to the success of Sarva Siksha Abhiyan, India's flagship programme launched in 2001-02 to universalise elementary education.
- Male literacy exceeds 75% throughout the country and exceeds 90% in Kerala and some of the smaller states. The achievement in female literacy in Bihar is noteworthy; from 33% in 2001, it has gone up to 53% or by 20 percentage points. The states causing concern as far as female literacy is concerned are Rajasthan and Andhra Pradesh - both have reported 8 percentage point increase during 2001-2011 and both have less than 60% female literacy.

E. Sex Ratio of Population

- The 'good news' is that female to male sex ratio of population has begun to improve - from 927 in 1991 to 933 in 2001 to 940 in 2011. Yet, compared to what is observed elsewhere in most countries in the world, India's sex ratio is anomalous.

- The British Census commissioners also noted it and were quite puzzled. Quite systematically, they examined a number of factors to understand why there were fewer women in India compared to men in the total population.

- The possible reasons dwelt upon by them and by other noted population scientists were: under enumeration of women, more masculine sex ratio at birth compared to observed in other populations, higher mortality experienced by women compared to men due to epidemics (such as plague, malaria and influenza) or deficiency diseases, or due to neglect, premature cohabitation and unskillful midwifery.

- Except for the persistent survival disadvantage that women experienced from early infancy well into the reproductive period, evidence did not support any of the other factors.

- The female to male sex ratio of population historically noted in the contiguous area of Punjab, Haryana, Chandigarh and Delhi, has improved between 2001 and 2011, but it is still below 900 women per 1000 men.

- On the other hand, sex ratio close to unity is recorded in the southern states of Kerala, Tamil Nadu and Andhra Pradesh. This phenomenon observed since the beginning of the 20th Century has persisted even now.

F. Child Sex Ratio

- Since 1981 Indian Censuses have made available data on population in the age group 0-6 by sex, as a byproduct of information on literacy rates which are calculated for 7+ population, enabling calculation of sex ratio of children in the age group 0-6. (Typically, age data are generated in five year age groups and thus most populations would provide data on children in the age group 0-4 and not 0-6.)

- The Census Commissioner's office has calculated sex ratio of children aged 0-6 from the previous Censuses of 1961 and 1971 also showing the trend over 50 years (See Table 2).

- The child sex ratio has steadily declined from 976 in 1961 to 927 in 2001 and further to 914 in 2011.

- This phenomenon has drawn worldwide attention and is largely attributed to the increasing practice of sex detection and selectively aborting female fetuses. Between 2001 and 2011, child sex ratio fell in practically the whole country, giving

credence to a belief that the practice of female selective abortion is spreading to parts of the country, where it was not noted earlier. Child sex ratio improved in 2011 from the level in 2001 in Himachal Pradesh, Haryana, Punjab and marginally in Gujarat; the states where it was below 850. In 2011 in these states, there are still less than 900 girls for 1000 boys.

- In a patriarchal Indian society son preference is known to have existed for centuries and persists even today.
- According to the most recent National Family Health Survey (NFHS) conducted during 2005-06, nearly a quarter of women would prefer more sons than daughters but hardly any would desire more daughters than sons.
- Further, in depth analysis of the NFHS data have shown that when the couple wants to limit the family size to two or three children only, if the first child is a daughter, the probability of determining the sex of the second child and aborting the foetus if it is of a girl, is quite high. Thus, while the small family norm has become quite acceptable, son preference persists.

- Widespread availability and use of prenatal diagnostic techniques for sex determination led to PNDT (Pre-Natal diagnostic Techniques (Regulation and Prevention of misuse) Act) in 1994 banning their use for determining the sex of foetus or revealing it to the parents.
- The Act was amended and made more stringent in 2003 by allowing appropriate authorities even at the district level to take legal action against the use of sex selection technique by any person at any place. Despite the Act and the widespread campaign promoting 'save the girl child' messages, decline in child sex ratio has continued leading to a concern that neither the implementation of the Act nor the campaign messages have been very effective.
- However, it is important to recognize that besides female selective abortion, girls in Indian have for many decades continued to experience higher mortality compared to boys.
- When higher female child mortality is coupled with sex selection and female selective abortion, the deficit of girls would indeed increase at a faster pace.