1. Details of Module and its structure

Module Detail	
Subject Name	Sociology
Course Name	Sociology 03 (Class XII, Semester - 1)
Module Name/Title	Demographic Structure – Part 3
Module Id	lesy_10203
Pre-requisites	Application of Demographic Data
Objectives	After going through this lesson, the learners will be able to understand the following: • The importance of demographic data • Application of Demographic Data - Age Structure, Literacy, Sex Ratio, Migration
Keywords	Sociology, Society, Demography, Formal demography, Social demography, Birth rate, Death rate, Immigration, Emigration, Demographic data, Literacy, Age structure, Sex Ratio, Migration, Nation-States, Statistics, Development, Aggregate statistics

2. Development Team

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What is the importance of studying demographic data ?

Demography was important because nation-states which were welfare states wanted to look after its people for which data was needed. It had an important role to play in the emergence of sociology and its successful establishment as an academic discipline. Now, demography, as a very general science, can analyze any kind of dynamic living population, one that changes over time or space. Modern science of statistics made this possible.

Hence, demography or population studies became significant in not just data collection but also in proving the existence of certain social phenomena It (Demography) is a field that is of special importance to sociology that happened to take place at roughly the same time in Europe during the latter half of the eighteenth century. That is because of two processes-

a) formation of nation-states as the principal form of political organisation

b) beginning of modern science of statistics.

The modern state began to expand its role and functions such as taking active interest in development of early forms of health care, policing and maintenance of law and order; economic policies related to agriculture.

This constantly expanding sphere of activity of the state required systematic and regular collection of social statistics which is the quantitative data on various aspects of population and economy.

The practice of the **collection of social statistics** by the state is 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 this was soon followed and taken up by Europe as well, in the early 1800s.

What is Aggregate statistics? – They are numerical characteristics that refer to a large collectivity consisting of millions of people – who offer a concrete and convincing 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 while studying the variation in suicide rates across different countries 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 instance of suicide may have reasons specific to that individual or her/his circumstances.

This data is gathered through census.

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 six 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).

What is Census?

It is an official count or survey, especially of a population.

A census is the procedure of systematically acquiring and recording information about the members of a given population. It is a regularly occurring and official count of a particular population.The term is used mostly in connection with national population and housing censuses; other common censuses include agriculture, business, and traffic censuses.

Why do we need a census?

Development is about improving the lives of people, and policy and fiscal decisions should rely on data that answer who these people are, where and how they live, and how their lives are changing. The census provides the necessary information that any government may need to develop policies, plan and run public services, and allocate funding. The demographic and related data that answer these questions are essential to policymakers and development planners across nearly every sector of society. It is essential to have quality data for, the lack of high-quality data and access to existing data may become fundamental challenges to effective development planning and evaluation of development interventions.

Population	1,266,883,598 (July 2016 est.)
Age structure	0-14 years: 27.71% (male 186,420,229/female 164,611,755) 15-24 years: 17.99% (male 121,009,850/female 106,916,692) 25-54 years: 40.91% (male 267,203,029/female 251,070,105) 55-64 years: 7.3% (male 46,398,574/female 46,105,489) 65 years and over: 6.09% (male 36,549,003/female 40,598,872) (2016 est.)
Dependency ratios	total dependency ratio: 52.4% youth dependency ratio: 43.9% elderly dependency ratio: 8.6% potential support ratio: 11.7% (2015 est.)
Median age	total: 27.6 years male: 26.9 years female: 28.3 years (2016 est.)

Population growth rate	1.19% (2016 est.)
Birth rate	19.3 births/1,000 population (2016 est.)
Death rate	7.3 deaths/1,000 population (2016 est.)
Net migration rate	0 migrant(s)/1,000 population (2016 est.)
Urbanization	urban population: 32.7% of total population (2015) rate of urbanization: 2.38% annual rate of change (2010-15 est.)
Major cities - population	NEW DELHI (capital) 25.703 million; Mumbai 21.043 million; Kolkata 11.766 million; Bangalore 10.087 million; Chennai 9.62 million; Hyderabad 8.944 million (2015)
Sex ratio	at birth: 1.12 male(s)/female 0-14 years: 1.13 male(s)/female 15-24 years: 1.13 male(s)/female 25-54 years: 1.06 male(s)/female 55-64 years: 1.01 male(s)/female 65 years and over: 0.9 male(s)/female total population: 0.9 male(s)/female (2016 est.)
Infant mortality rate	19.9 total: 40.5 deaths/1,000 live births male: 39.2 deaths/1,000 live births female: 41.8 deaths/1,000 live births (2016 est.)
Life expectancy at birth	total population: 68.5 years male: 67.3 years female: 69.8 years (2016 est.)
Total fertility rate	2.45 children born/woman (2016 est.)
Literacy	definition: age 15 and over can read and write total population: 71.2% male: 81.3% female: 60.6% (2015 est.)
School life expectancy (primary to tertiary education)	total: 12 years male: 11 years female: 12 years (2013)
Child labour - children ages 5-14	total number: 26,965,074 percentage: 12% (2006 est.)
Education expenditures	3.8% of GDP (2012)
Maternal mortality rate	174 deaths/100,000 live births (2015 est.)
Children under the age of 5 years underweight	43.5% (2006)
Health expenditures	4.7% of GDP (2014)

Demography, as a scientific study of human population thus focuses on three core aspects which you have already studied :

1. **Changes** in population size
2. **Composition** of population
3. **Distribution** of Population

To reiterate the core aspects :

When we look at the core aspects, factors such as , birth rate, death rate, immigration and emigration , Sex Ratio, Literacy rate, Age structure and Migration all bring about changes in the population. Let us take a quick look at India's demographic profile 2016 and understand the data collected-----

India's demographic Profile 2016

Let us first understand and define some of the demographic indicators given above all of the data which is gathered through census and by use of other statistical tools :

Birth Rate- Number of live births per 1000 population for a given period of time and for a particular place.

Death Rate- Number of deaths per 1000 population for a given time period and for a particular place.

Rate of Natural Increase or Growth Rate of population- This refers to the difference between the birth rate and death rate.

Replacement Level- When the difference is zero 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.

Negative Growth Rate- This happens when fertility levels are below replacement level such as Japan, Russia, Italy.

Fertility Rate- This refers to the number of live births per 1000 women in the child-bearing age-group. i.e. 15-49.

Total Fertility Rate- This 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 which may be determined by age-specific fertility rates for that area.

Infant Mortality Rate- This is the number of deaths of babies before the age of one year per 1000 live births.

Maternal Mortality Rate- This is the number of women who die in childbirth per 1000 live births.

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.

What is Sex-Ratio? Why is it in favour of females- This refers to the number of females per 1000 males in a given area at a specified time period.

Child sex-ratio or juvenile sex- ratio- Sex ratio for the 0-6 age group.

Nature produces more boys than girls, roughly 943 to 952 female babies for every 1000 males, and if despite this the sex ratio is in favor of girls then it is because of the following two reasons:

a) Girl babies appear to be more resistant to diseases in infancy.
b) 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 cases. But, China and India, has witnessed a decline in sex ratio because of the social norms that tend to value males much more than females, which leads to preference for sons and the relative neglect of girl babies.

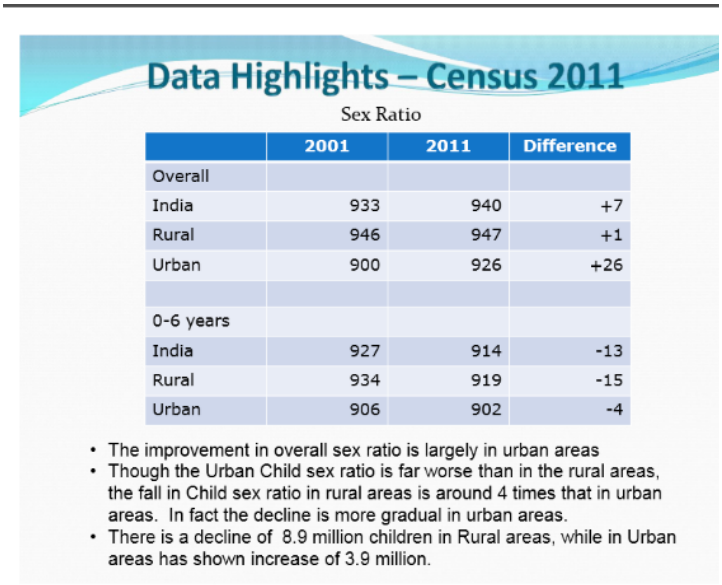
Looking at State wise sex composition in India it varies from state to state. Kerala is the only state in India in which female population is more than male population. For every 1000men there are 1084 women and in Haryana the ratio is lowest -only 877 women for every 1000men.

The **regional pattern of low child sex ratios** is striking in that the lowest child sex ratios are found in the most prosperous regions of India. Punjab, Haryana, Chandigarh, Delhi, Gujarat and Maharashtra are among the richest states of India in terms of per capita incomes, and they are also the states with the lowest child sex ratios. So, the problem of selective abortions is not due to poverty or ignorance or lack of resources.

For example, if practices like dowry mean that parents have to make large dowry payments to marry off their daughters, then prosperous parents would be the ones most able to afford this. However, we find the sex ratio is lowest in the most prosperous regions. Reason being that as economically prosperous families decide to have fewer children – often only one or two now – they may also wish to choose the sex of their child. This becomes possible with

the availability of ultra-sound technology. But, the Pre-Natal Diagnostic Techniques (Regulation and Prevention of Misuse) Act was passed, to prevent misuse of it and this law has been in force since 1996. However, laws and rules are only secondary, in the long run critically the solution to problems like the bias against girl children depends more on how social attitudes evolve.

Look at the chart below which gives major highlights on 'sex ratio' according to the latest Population Census 2011



Data Highlights – Census 2011

Sex Ratio

	2001	2011	Difference
Overall			
India	933	940	+7
Rural	946	947	+1
Urban	900	926	+26
0-6 years			
India	927	914	-13
Rural	934	919	-15
Urban	906	902	-4

- The improvement in overall sex ratio is largely in urban areas
- Though the Urban Child sex ratio is far worse than in the rural areas, the fall in Child sex ratio in rural areas is around 4 times that in urban areas. In fact the decline is more gradual in urban areas.
- There is a decline of 8.9 million children in Rural areas, while in Urban areas has shown increase of 3.9 million.

What is Age Structure of the Population that determines these demographic trends?
This refers to the proportion of persons in different age groups relative to the total population. The age of population changes with changes in levels of development and the average life-expectancy. In the beginning, poor medical facilities, prevalent of diseases and other factors reduced Life expectancy. High infant mortality rate and maternal mortality rate had an adverse impact on the age structure of the population.

But, with development, quality of life improves and with it the life expectancy also improves. This changes the age structure wherein relatively smaller populations are found in the younger age groups and larger proportions in the older age groups. Leading to **Ageing of Population**- This is referred to as **the ageing of population.**

When we measure, comparing the proportion of a population which is composed of dependents (elderly people who are too old to work and very young children who are too

young to work) with the proportion of the population in the working age group, generally defined as 15 to 64 years. It is referred to **Dependency Ratio**.

This Dependency Ratio, can also be expressed in another way:

The dependency ratio = $\frac{\text{to the population below 15 or above 64}}{\text{the 15-64 age group}}$ x the ratio is usually expressed as a percentage.

Now let us understand why is rising dependency ratio a cause for concern for countries with ageing population?

This is because it becomes difficult for the relatively smaller proportion of working age people to carry the burden of providing for a relatively larger proportion of dependents.

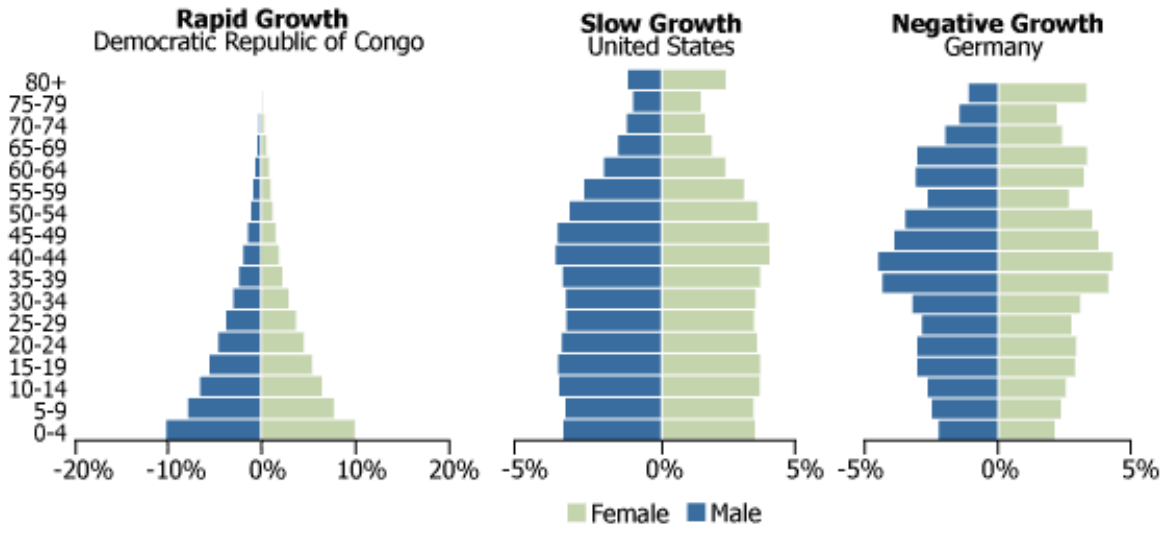
Why is falling dependency ratio an advantage?

It can be a source of economic growth and prosperity due to larger population of workers relative to non-workers. This is referred to as the **demographic dividend**.

Again, looking at India, it is in the second phase of demographic transition wherein its birth rate is high but the death rate is going down or to state, birth rate is falling only slightly but it still remains high whereas death rate is falling rapidly. There was an exception in the decade 1911-21 where growth rate declined because of influenza epidemic in 1918-19.

The worst such flu was the ‘Spanish Flu’ of 1918-19 which affected large parts of the world population. World War 1 did not cause this flu but the cause was due to the closed quarters of the soldiers and the movement of troops which quickened its spread.

Now, look at the bottom figure the population change is visible from the **shape of the three patterns of population change.** The age-sex structure of a country can be studied through population pyramids. The overall shape of the pyramid indicates the potential for future growth. The four representations of population age-sex structure provide an overall example of what a pyramid for distinct levels of population growth would look like — rapid growth, slow growth, zero growth, and negative growth. The horizontal bars show the percentage (or in some cases the actual numbers) of males and females in each age group. Apart from the total size it is the demographic characteristic of age and sex that determines the specific growth of specific age group and the total population.



Specifically, now let us look at the size and growth of India's population :

India is the second most populous country in the world after China, with a total population of 103 crores (or 1.03 billion) according to the Census of 2011. 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. Also known as 'Spanish Flu', the influenza pandemic was a global phenomenon.

What is epidemic? How different is it from Pandemic?

Epidemics and pandemics are infectious diseases that spread over a large number of people and could at times curb human life. Epidemic is an outbreak of a contagious disease that spreads rapidly and extensively and affecting many individuals simultaneously in an area or a population. (e.g: cholera). Pandemic is an epidemic over a wide geographic area and affecting a sizeable proportion of the population. (e.g., AIDS or Swine flu).

In layman terms, epidemic diseases can be termed as an infection that is found in a number of people at the same time (number of people infected will be comparatively less). Disease could be anything related to illness, body pain, fever, etc. An example for epidemic disease is cholera.

Improvements in medical cures for these diseases, programmes for mass vaccination, and efforts to improve sanitation helped to control epidemics. However, diseases like malaria, tuberculosis and diarrhoea and dysentery continue to kill people even today, although the numbers are nowhere as high as they used to be in the epidemics of the past. Surat witnessed a small epidemic of plague in September 1994, while dengue and chikungunya epidemics have been reported in various parts of the country in 2006.

Before 1931, both death rates and birth rates were high, whereas, after this transitional moment the death rates fell sharply but the birth rate only fell slightly. The principal reasons for the decline in the death rate after 1921 were increased levels of control over famines and epidemic diseases. The major epidemic diseases in the past were fevers of various sorts, plague, smallpox and cholera. But the single biggest epidemic was the influenza epidemic of 1918-19, which killed as many as 125 lakh people, or about 5% of the total population of India at that time

Famines were also a major and recurring source of increased mortality. Famines were caused by high levels of continuing poverty and malnutrition in an agro climatic environment that was very vulnerable to variations in rainfall. Lack of adequate means of transportation and communication as well as inadequate efforts on the part of the state were some of the factors responsible for famines. Nevertheless, starvation deaths are still reported from some backward regions of the country. The National Rural Employment Guarantee Act is the latest state initiative to tackle the problem of hunger and starvation in rural areas.

Looking at the **Literacy Rate:** Literacy as a prerequisite to education is an instrument of empowerment. The more literate the population :---

- the greater the consciousness of career options,
- greater participation in the knowledge economy.
- leads to health awareness and
- fuller participation in the cultural and economic wellbeing of the community.

Literacy levels have improved considerably after independence, and almost two-thirds of our population is now literate. But improvements in the literacy rate has to keep pace with the rate of growth of the Indian population, which is still quite high. Enormous effort is needed to ensure the literacy of the new generations – which are only just beginning to be smaller in numbers than in the past (remember the discussion on age structure and the population pyramids earlier).

Literacy varies considerably across gender, across regions, and across social groups --- **In the early years** the literacy rate for women was almost 22% less than the literacy rate for men. Soon, female literacy rose by almost 15% between 1991 and 2001 compared to the rise in male literacy of a little less than 12% in the same period.

Literacy rates also vary by social group – historically disadvantaged communities like the Scheduled Castes and Scheduled Tribes have lower rates of literacy, and rates of female literacy within these groups are even lower.

Regional variations are still very wide, with states like Kerala approaching universal literacy, while states like Bihar are lagging far behind.

The inequalities in the literacy rate are especially important because they tend to reproduce inequality across generations. Illiterate parents are at a severe disadvantage in ensuring that their children are well educated, thus perpetuating existing inequalities. Most recent Population Census data shows there is a wide gender disparity in the **literacy rate** in **India**: effective **literacy rates** (age 7 and above) in 2011 were 82.14% for men and 65.46% for women.

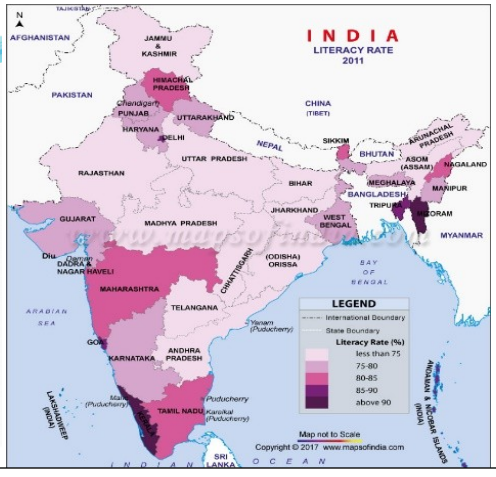
Literacy in India is a key for socio-economic progress, and the Indian literacy rate has grown to 74.04% from 12% at the end of British rule in 1947. Although this is a six fold improvement, the level is below the world average literacy rate of 84%, and of all nations, India currently has the largest illiterate population. Study the map and data given below

Data Highlights – Census 2011

Literacy Rates (in %)

	2001	2011	Difference
Overall			
India	64.8	74.0	+9.2
Rural	58.7	68.9	+10.2
Urban	79.9	85.0	+5.1

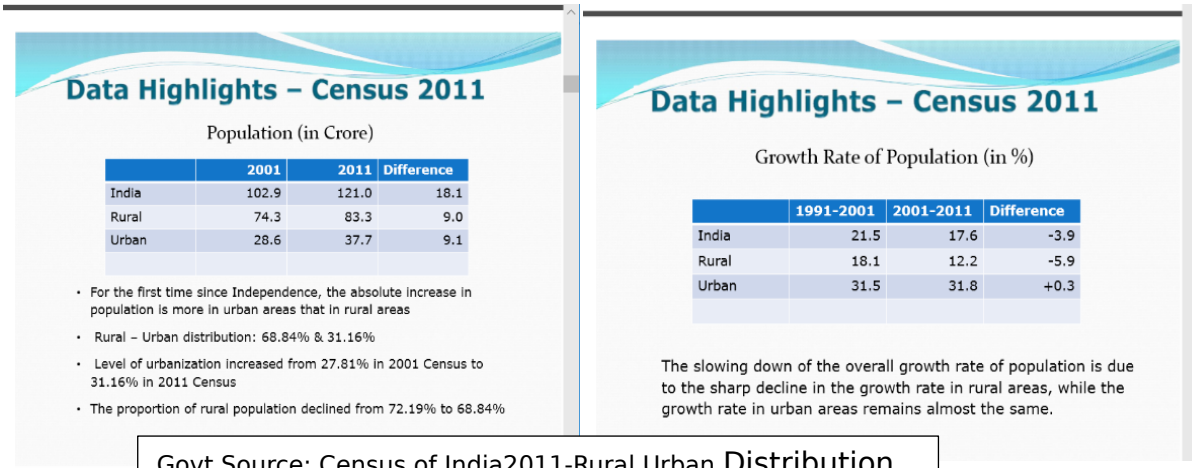
- The improvement in literacy rate in rural area is two times that in urban areas
- The rural urban literacy gap which was 21.2 percentage points in 2001, has come down to 16.1 percentage points in 2011



http://www.mapsofindia.com/census2011/literacy-rate.html

Demographic data also shows the Rural-Urban Differences

Let us look at the data give in the figure below :



Govt.Source: Census of India2011-Rural Urban Distribution

What is this due to:

- Because of processes of modern development, the economic and social significance of the agrarian-rural way of life has declined relative to the significance of the industrial-urban way of life.
- Agriculture used to be the largest contributor to the country's total economic production, but today it only contributes about one-fourth of the gross domestic product. Thus, although, agriculture remains the dominant way of livelihood but the economic value of the agricultural produce has declined.
- More and more people are no longer engaged in agriculture or may not work in a village. They are increasingly getting engaged in non-farm rural occupations like transport services, business enterprises or craft manufacturing. They might even move up and down regularly in between rural and urban centres.
- Mass media and communication channels bring up images of urban lifestyles and patterns of consumption into the rural areas. Thus, urban norms and standards become well known in rural areas creating new aspirations for consumption.
- Thus, urbanisation shows that town or city has been acting as a magnet for the rural population. Thus, those who do not find work in rural areas move to the cities.
- Reduction in common property resources such as forests, ponds, grazing lands has also forced rural people to migrate because they don't have any resources for survival.
- City is, also, preferred for social reasons. The fact that urban life involves interaction with strangers can be advantageous for various reasons-

1. For socially oppressed groups like SCs and STs, this may provide some partial protection from the daily humiliation that they thy suffered in the village as a result of their caste identity.
2. The anonymity of the city allows the poorer sections of socially dominant rural groups to engage in low status work that they would not be able to do in the village.

Let us understand what is a metropolis?

- Big cities are also termed as metropolis.
- With mass media's primary focus on these metropolises, the public face of India is becoming more and more urban rather than rural.

Thus to conclude let us look at the significance of the Demographic Data collected:

Once **demographic data is collected**, it **becomes important** for the planning and implementation of state policies, especially those for economic development and public welfare. And, since, the scope of demography is increasing, its importance also widens, such as, for health planning, planning food supplies, house planning, employment planning, educational planning etc.

Let us look at an example to know how:

For instance, **Unemployment** is a social and international problem. From developed countries to developing and undeveloped countries, the unemployment problem is growing rapidly. A **demographic factor, is the high dependency ratio in less developed countries**. So, **for employment planning population study and dependency ratio becomes essential to be studied**.