

1. Details of Module and its structure

Module Detail	
Subject Name	Geography
Course Name	Geography 03 (Class XII, Semester - 1)
Module Name/Title	The world population distribution,density and growth – Part 1
Module Id	legy_10201
Pre-requisites	Basic concepts about World population distribution, density and growth
Objectives	<p>After going through this lesson, the learners will be able to understand the following:</p> <ul style="list-style-type: none">• General patterns of population distribution in the world• Density of population• Factors influencing the distribution of population• Population growth• Trends in population growth• Doubling time of world population
Keywords	Most populous countries of the world, Density of population

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1. Definition of population



Fig No ; 1 People of World

<http://maxpixel.freegreatpicture.com/static/photo/1x/Mass-Group-Of-People-Crowds-People-Supporters-1355493.jpg>

A population is a summation of all the organisms of the same group or species, which live in a particular geographical area, and have the capability of interbreeding. The people of a country are its real wealth. It is they who make use of the country's resources and decide its policies. Ultimately a country is known by its people. It is important to know how many women and men a country has, how many children are born each year, how many people die and how? Whether they live in cities or villages, can they read or write and what work do they do?

The world at the beginning of 21st century recorded the presence of over 6 billion population. The population of the world is unevenly distributed.

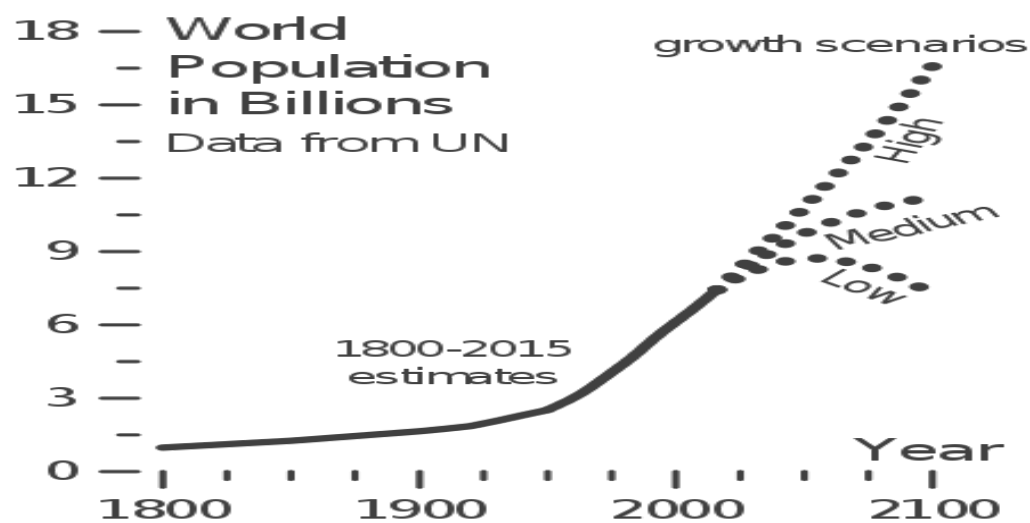


Fig. No. 02 World population estimates from 1800 to 2100, based on "high", "medium" and "low" United Nations projections in 2015 and UN historical estimates for pre-1950 data https://en.wikipedia.org/wiki/World_population#/media/File:World_population_v3.svg

The remark of George B. Cressey about the population of Asia that “Asia has many places where people are few and few place where people are very many” is true about the pattern of population distribution of the world also.

2. Patterns Of Population Distribution In The World

Patterns of population distribution and density help us to understand the demographic characteristics of any area. The term population distribution refers to the way people are spaced over the earth’s surface. In simple words Population distribution means the pattern of where people live. World population distribution is uneven:-

- * Places which are sparsely populated contain few people.
- * Places which are densely populated contain many people.
- * Sparsely populated places tend to be difficult places to live. These are usually places with hostile environments e.g. Antarctica.
- * Places which are densely populated are habitable environments e.g. Europe.
- * Broadly, 90 per cent of the world population lives in about 10 per cent of its land area.

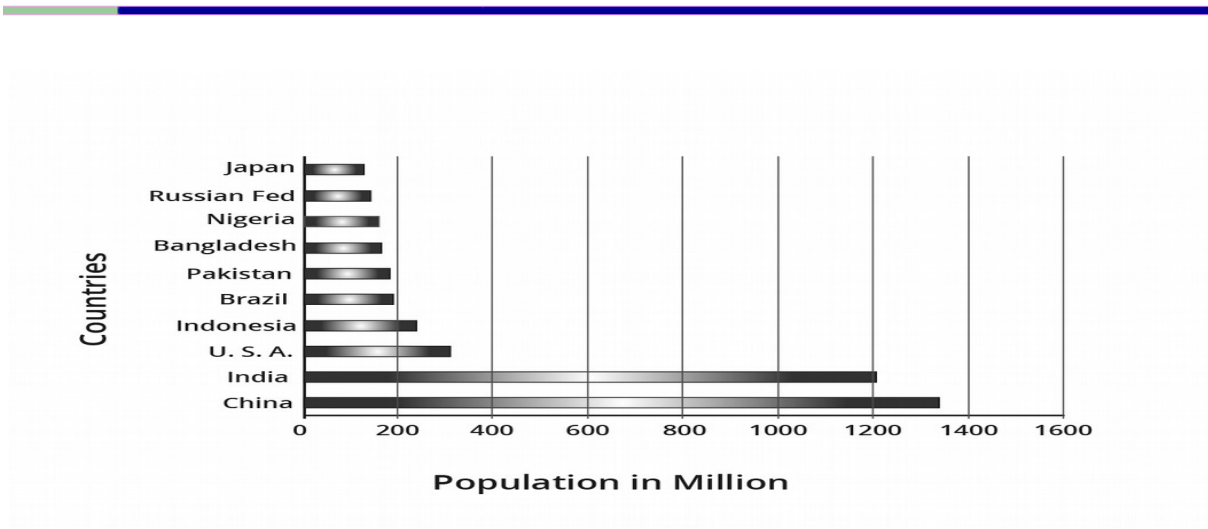


Fig. No. 03 Most Populous Countries

The 10 most populous countries of the world contribute about 60 per cent of the world's population. Of these 10 countries, 6 are located in Asia. India, Japan, Russian Fed. Nigeria Bangladesh Pakistan Brazil Indonesia U.S.A. six most populous countries of Asia are China, India, Indonesia, Pakistan, Bangladesh, and Japan.

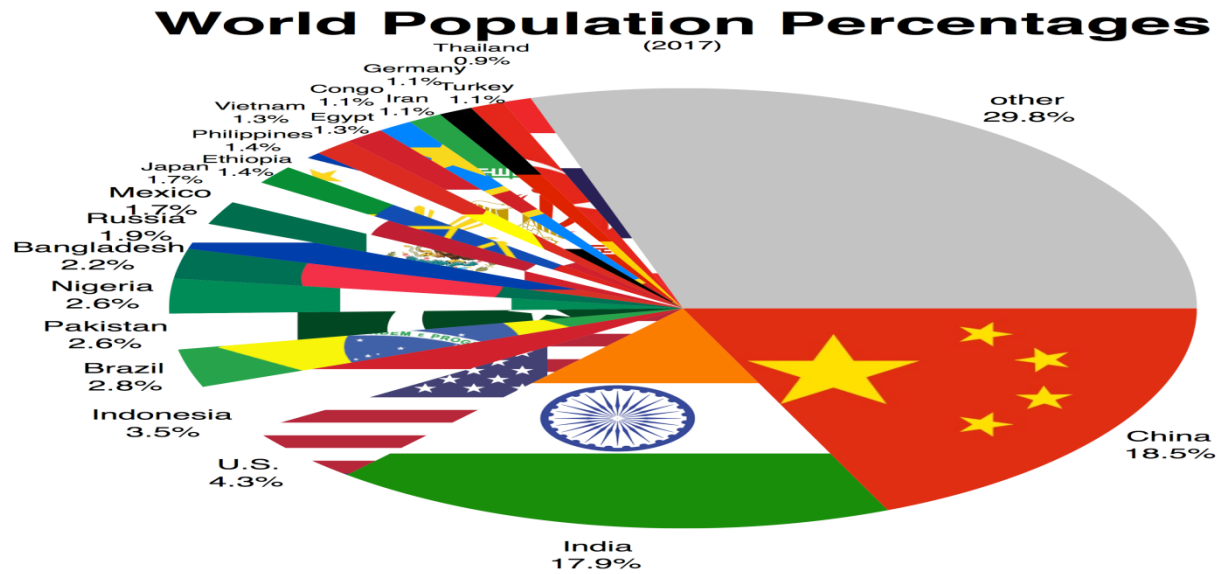


Fig. No. 04 World Population Percentage

https://upload.wikimedia.org/wikipedia/commons/3/35/World_population_percentage.png

According to Ralph Waldo Emerson - Most Populous Countries Not gold but only (Women can make a people great and strong. Women who for truth and honour's sake, stand fast and suffer long Women who toil while others sleep – who dare while others flee – they build a nation's pillars deep and lift it to the sky.

3. Density of population

Each unit of land has limited capacity to support people living on it. Hence, it is necessary to understand the ratio between the numbers of people to the size of land. Number of people per square unit area is termed as density of population.

This ratio is the density of population. It is usually measured in persons per sq. km.

Population Density of Population = Population/Area

For example, area of Region X is 100 sq. km and the population is 1, 50,000 persons.

The density of population is calculated as

Density: $1, 50,000 / 100 = 1,500$ person/sq. km

(i) Areas of high density of population - Fertile plains with favourable climate and highly industrialised and urbanised areas are densely populated. There are four major areas of high population density with more than 200 persons on every sq. km. These are as follows:

- East Asia (China, Japan, Korea and Taiwan)
- South and Southeast Asia;
- Northwest Europe (UK, France, Germany, Netherlands, Belgium, Luxemburg,
- Ireland, Denmark, Spain, Italy)
- The Eastern Coast of North America.

In reality, nearly half of the world population is clustered on just 5 percent of the land, while about 33 percent of the total land area is virtually uninhabited. Concentration of population is very high in a few urban areas. Industrialisation and modern technologies have modified settlement and density patterns over the past two centuries. Nearly three – quarters of the population, (more than 75 percent) in the developed countries now live in urban environments, with many more living in and around major metropolitan areas. Northern and Western Europe are among the most urbanised regions with more than 80 percent of their population living in urban areas. In North America about 75 percent people are city dwellers. City states such as Hong Kong and Singapore, which have virtually no rural or agricultural hinterland, have practically all urban population. While industrialisation and commercialisation processes caused a population shift from rural to urban areas, technologies created artificial environments in many modern cities. Rising from the deserts of southern California and Arizona, Los Angeles, San Diego, Phoenix and Tucson are sprawling, rapidly growing metropolitan areas that are sustained only by importing water via complex systems of canals and aqueducts.

(ii) Medium populated areas : Agricultural, Mining or Industrial development and latest technology attract people in few remote and difficult environments areas of medium population density with 11 to 50 persons per sq. km. These are as follows:

- Western China,
- Southern India in Asia,
- Norway, and Sweden in Europe

(iii) Very low populated area : Current population patterns in most of the countries of the world reflect the traditional ties to areas where food can be produced. Hence, areas that are unsuited to agriculture support relatively few people. These thinly populated or uninhabited non-arable areas which are identified as frontier environments, occupy more than 60 percent of the earth's land. These are the sparsely populated regions of the world with less than 01 person per sq. km. These include the following:

- Dry Lands, where lack of precipitation is the limiting factor and where irrigation has not been feasible.
- Cold Lands at the high latitudes where frigid temperature precludes agriculture.
- Major mountain ranges and other mountainous areas where climate is harsh and terrain is too rugged to be cultivated.
- Wet tropics, where heavy precipitation and high temperature combine to produce relatively infertile soils that do not support intensive permanent cultivation, as well as high incidence of debilitating diseases such as malaria.
- Other areas like those near the North and South Poles, the hot and the cold deserts and high rainfall zones near the Equator have very low density of population.

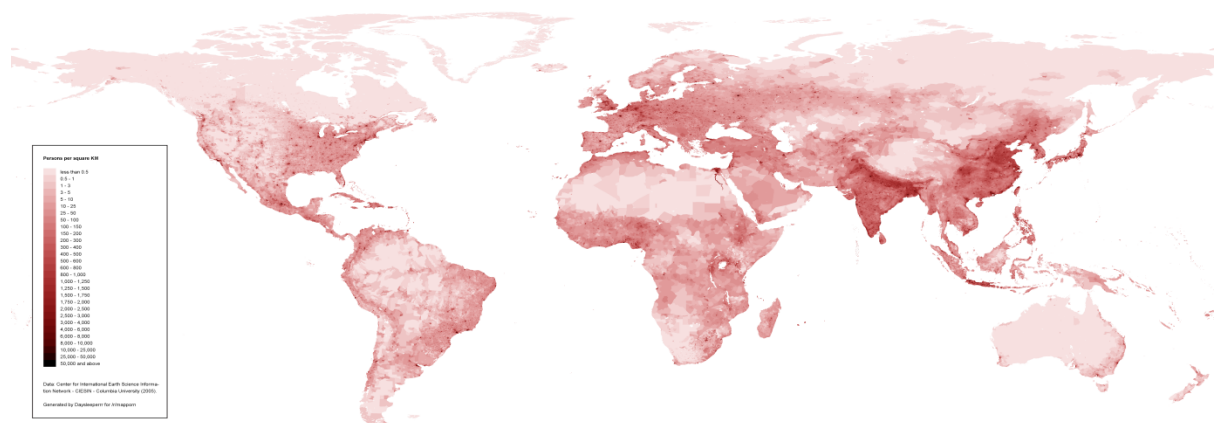


Fig. No. 05 World Population density

https://upload.wikimedia.org/wikipedia/commons/c/c8/World_human_population_density_map.png

4. Factors influencing the distribution of population

I. Geographical Factors

(i) Availability of water: It is the most important factor for life. So, people prefer to live in areas where fresh water is easily available. Water is used for drinking, bathing and cooking – and also for cattle, crops, industries and navigation. It is because of this that river valleys are among the most densely populated areas of the world. The role of the Nile in Egypt and the Ganges in India is worth noting.

(ii) Landforms: People prefer living on flat plains and gentle slopes. This is because such areas are favourable for the production of crops and to build roads and industries. The mountainous and hilly areas hinder the development of transport network and hence initially do not favour agricultural and industrial development. So, these areas tend to be less populated. The Ganga plains are among the most densely populated areas of the world while the mountains zones in the Himalayas are scarcely populated.

(iii) Climate: An extreme climate such as very hot or cold deserts is uncomfortable for human habitation e.g. the Sahara desert, Thar Desert. Areas with a comfortable climate, where there is not much seasonal variation attract more people. Areas with very heavy rainfall or extreme and harsh climates have low population. Mediterranean regions were inhabited from early periods in history due to their pleasant climate. Areas with temperate climates tend to be densely populated as there is good amount of rain and heat to grow crops e.g. UK

(iv) Soils: Fertile soils are important for agricultural and allied activities. Therefore, areas which have fertile loamy soils have more people living on them as these can support intensive agriculture. The deltas in India and Indo-China and the Nile Valley provide examples of this type of rich soil.

II. Economic Factors

(i) Minerals: Areas with mineral deposits attract industries. Areas rich in mineral resources (e.g. coal, oil, wood, fishing etc.) are to densely populate e.g. Western Europe. Areas with few resources tend to be sparsely populated e.g. Mining and industrial activities generate employment. So, skilled and semi-skilled workers move to these areas and make them densely populated. Katanga Zambia copper belt in Africa is one such good example.

(ii) Urbanisation: Cities offer better employment opportunities, educational and medical facilities, better means of transport and communication. Good civic amenities and the attraction of city life draw people to the cities. It leads to rural to urban migration and cities grow in size. Mega cities of the world continue to attract large number of migrants every year.

(iii) Industrialisation: Industrial belts provide job opportunities and attract large numbers of people. These include not just factory workers but also transport operators, shopkeepers, bank employees, doctors, teachers and other service providers. The Kobe-Osaka region of Japan is thickly populated because of the presence of a number of industries.

(iv) Job opportunities: Good job opportunities encourage high population densities, e.g. Mumbai, Delhi and MEDCs (more economic developed countries) and LEDCs (less economic developed countries) around the world. Limited job opportunities cause some areas to be sparsely populated e.g. Amazon Rainforest.

III. Social and Cultural Factors

Some places attract more people because they have religious or cultural significance. In the same way – people tend to move away from places where there is social and political unrest. Many a time's governments offer incentives to people to live in sparsely populated areas or move away from overcrowded places.

IV. Demographic Factors

Though the three demographic variables birth rate, death rate and migration are themselves determined by social, economic and geographic factors, it is possible to consider them in the light of their influence on population distribution.

(i) Differential fertility and mortality rates lead to differential growth rates which, in turn, lead to changes in the population of a country over a long period of time

(ii) Migration, on the other hand, is the most important demographic variable influencing population distribution.

Migration influences population distribution within a country, for people migrate to large industrial centres in search of employment opportunities, thus bringing about population redistribution.

International labour movements take place when there is shortage of labour in one country and a surplus in other countries. Africa provides an example of how international labour

movements took place because of the demand for labour which could not be met within the continent itself.

V. Political factors

Countries with stable governments tend to have a high population density e.g. Singapore. Countries with unstable government tend to have lower population densities as people migrate e.g. Afghanistan.

5. Population growth

The population growth or population change refers to the change in number of inhabitants of a territory during a specific period of time. This change may be positive as well as negative. It can be expressed either in terms of absolute numbers or in terms of percentage.

Population change in an area is an important indicator of economic development, social upliftment and historical and cultural background of the region.

Some Basic Concepts of Population Geography

- **Growth of Population:** Change of population in particular area between two points of time is known as growth of population. For example, if we deduct the population of India 2001 (102.70 crore) from population of 2011 (121.02 crore) then we shall get the growth of population (18.32 crores) in actual numbers.
- **Growth Rate of Population:** This is the change of population expressed in percentage.
- **Natural Growth of Population:** This is the population increased by difference between births and deaths in a particular region between two points of time.
- **Natural Growth = Births – Deaths**
- **Actual Growth of Population:** This is (Births – Deaths) + (In Migration – Out Migration)
- **Positive Growth of Population:** This happens when the birth rate is more than the death rate between two points of time or when people from other countries migrate permanently to a region.
- **Negative Growth of Population:** If the population decreases between two points of time it is known as negative growth of population. It occurs when the birth rate falls below the death rate or people migrate to other countries.

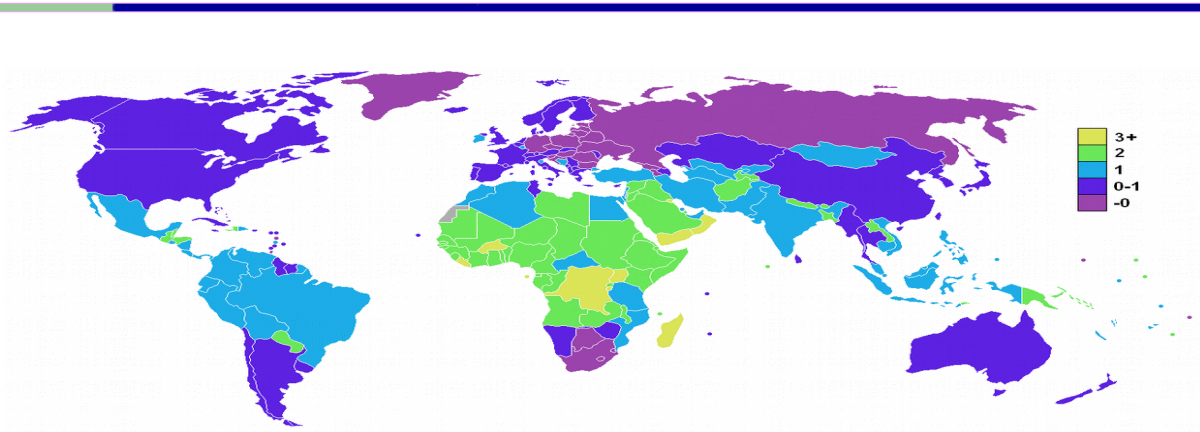


Fig. No. : 06 Population growth Rate

https://upload.wikimedia.org/wikipedia/en/0/0a/Population_growth_rate_world.png

6. Components of Population Change

There are *three components of population change – births, deaths and migration.*

(i) The crude birth rate (CBR) is expressed as number of live births in a year per thousand of population. It is calculated as:

$$CBR = \frac{Bi}{1000}$$

Here, CBR = Crude Birth Rate; Bi = live births during the year; P= Midyear population of the area.

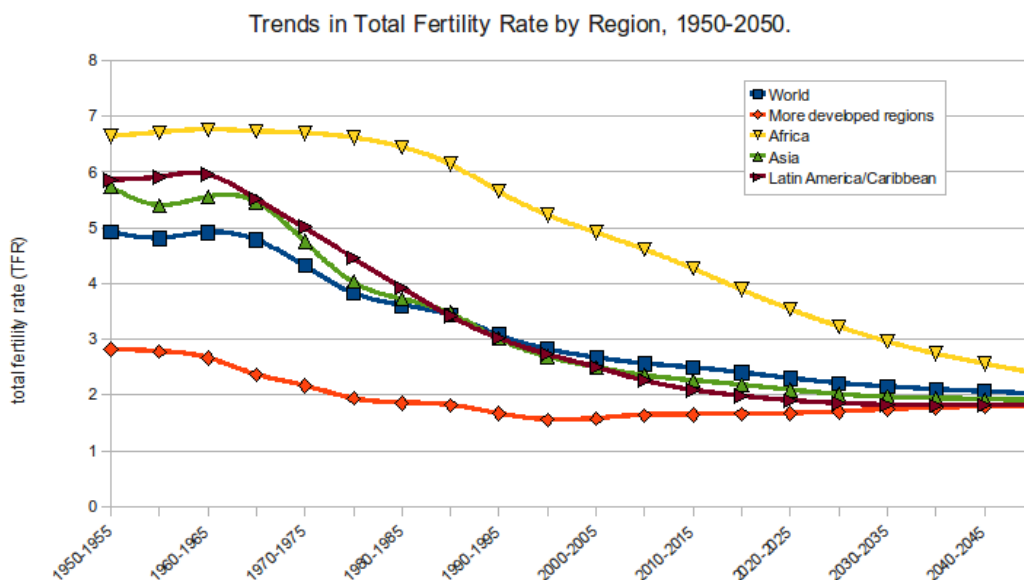


Fig No, 07 trends in total Fertility Rate by Region, 1950-2050

https://upload.wikimedia.org/wikipedia/commons/b/b2/Trends_in_TFR_1950-2050.png

(ii) Death rate plays an active role in population change. Population growth occurs not only by increasing births rate but also due to decreasing death rate. Crude Death Rate (CDR) is a simple method of measuring mortality of any area. CDR is expressed in terms of number of deaths in a particular year per thousand of population in a particular region.

CDR is calculated as: $CDR = \frac{D}{P} \times 1000$

Here, CDR=Crude Death Rate; D= Number of deaths; P=Estimated mid-year population of that year. Death rate plays an active role in population change. Population growth occurs not only by increasing births rate but also due to decreasing death rate.

By and large mortality rates are affected by the region's demographic structure, social advancement and levels of its economic development.

Migration

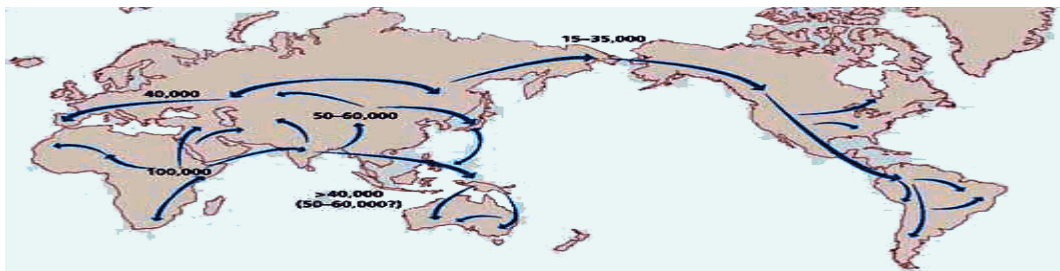


Fig No, 08 Human Migration

https://upload.wikimedia.org/wikipedia/en/c/c8/Human_migration.png

Apart from birth and death there is another way by which the population size changes. When people move from one place to another, the place they move from is called the Place of Origin and the place they move to is called the Place of Destination. The place of origin shows a decrease in population while the population increases in the place of destination. Migration may be interpreted as a spontaneous effort to achieve a better balance between population and resources. Migration may be permanent, temporary or seasonal. It may take place from rural to rural areas, rural to urban areas, urban to urban areas and urban to rural areas.

Immigration: Migrants who move into a new place are called Immigrants.

Emigration: Migrants who move out of a place are called Emigrants.

22% of migrants to Mumbai are kids
Bulk Of Influx From Villages; Main Pull Factors To City Are Employment, Marriage and Family

Migrant outflow: India No. 4

Country	Net Inward Migration	Net Outward Migration
USA	1150	533
AFGHANISTAN	420	313
SPAIN	415	313
GERMANY	250	313
CANADA	210	313
UK	187	313
ITALY	120	313
AUSTRALIA	120	313
RUSSIA	80	313
PAKISTAN	213	313
INDIA	213	313
IRAN	213	313
INDONESIA	200	313
PHILIPPINES	150	313
UKRAINE	120	313
KAZHAKHSTAN	120	313
RUSSIA	104	313
EUROPE	104	313

HEADED FOR MAXIMUM CITY

Year	No of migrants	From UP	From rest of Maharashtra
2001	5.2m (24%)	1.2m (24%)	1.9m (37%)
1991	3.7m (19%)	0.7m (19%)	1.2m (41%)

Annual rate of increase of migration: 3%

Ages

Below 25 years	68%
Above 35 years	11%
Child migrants	22%

One immigrant family in UK per min

Reasons for migration:

People migrate for a better economic and social life. There are two sets of factors that influence migration. Push and pull factors are those factors which either forcefully push people into migration or attract them. A push factor is forceful, and a factor which relates to the country from which a person migrates. It is generally some problem which results in people wanting to migrate.

The Push factors

A push factor is a flaw or distress that drives a person away from a certain place. Few factors make the place of origin seem less attractive for reasons like unemployment, not enough jobs, few opportunities, "Primitive" conditions, poor living conditions, political turmoil, death threats, poor medical care, Loss of wealth, unpleasant climate, natural disasters, Desertification, Famine/drought, epidemics and socio-economic backwardness, Pollution, Poor housing, Landlords, Bullying, Land scarce in home country, Political and/or religious persecution, Revolutions, Poverty etc. make Push factors of Migration.

The Pull factors

A pull factor is something concerning the country to which a person migrates. It is generally a benefit that attracts people to a certain place. The place of destination seems more attractive than the place of origin for reasons like better job opportunities and living conditions, Political freedom, peace and stability, security of life and property and pleasant climate, Promise of freedom (religious and political), Hope for a new life, Industry, Religious freedom. Urban centers provide vast scope for employment in industries, transport, trade and other services hence act as magnets for the migrant population.

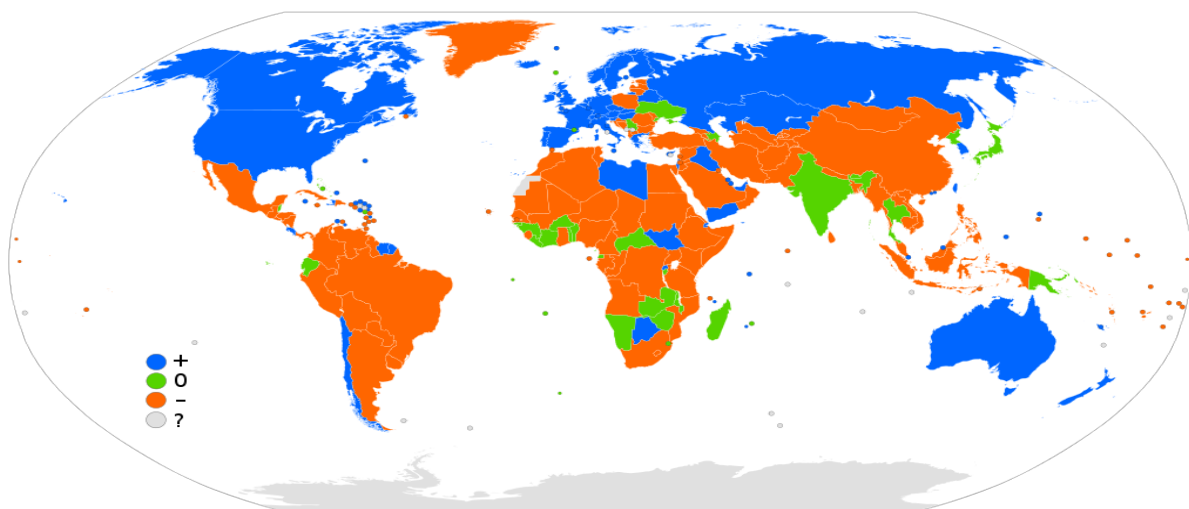


Fig No; 9 Net migration rates

(2016: positive (blue), negative (orange), stable (green), and no data (gray))

https://en.wikipedia.org/wiki/Human_migration#/media/File:Net_Migration_Rate.svg

7. Trends in population growth

The population on the earth is more than six billion. It has grown to this size over centuries. In the early periods population of the world grew very slowly. It is only during the last few hundred years that population has increased at an alarming rate.

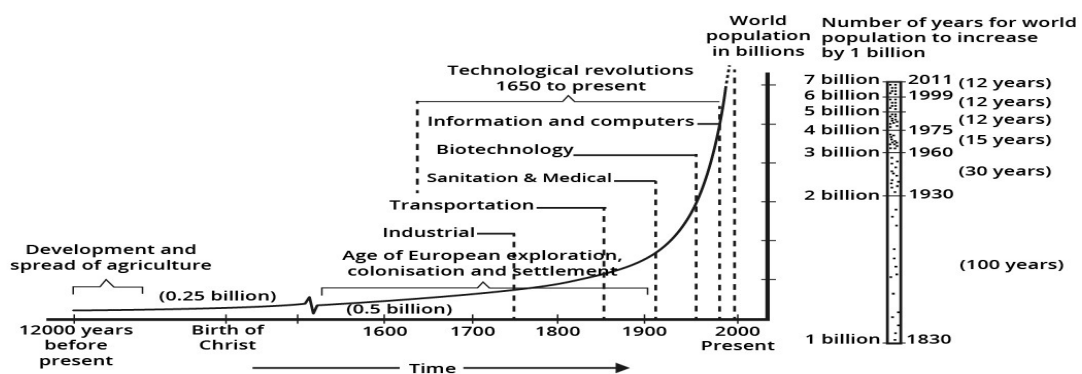


Fig No; 10 Resource, technology and Population Growth

Figure 08 tells the story of population growth. After the evolution and introduction of agriculture about 8,000 to 12,000 years ago, the size of population was small – roughly 8 million. In the first century A.D it was below 300 million. The expanding world trade during the sixteenth and seventeenth century set the stage for rapid population growth. Around 1750, at the dawn of the Industrial Revolution, the world population was 550 million. World population exploded in the eighteenth century after the Industrial Revolution. Technological advancement achieved so far helped in the reduction of birth rate and provided a stage for accelerated population growth.

How Science and Technology helped Population Growth?

The steam engine replaced human and animal energy and also provided mechanised energy of water and wind. This increased agricultural and industrial production. Inoculation against epidemics and other communicable diseases, improvement in medical facilities and sanitation contributed to a rapid decline in death rates throughout the world

8. Doubling time of world population

It took hundreds of thousands of years for the world population to grow to 1 billion – then in just another 200 years or so, it grew sevenfold. In 2011, the global population reached the 7 billion mark, and today, it stands at about 7.3 billion.

<i>Period</i>	<i>Population</i>	<i>Time in which Population Doubles</i>
10,000 B.C.	5 million	
1650 A.D.	500 million	1,500 years
1804 A.D.	1,000 million	154 years
1927 A.D.	2,000 million	123 years
1974 A.D.	4,000 million	47 years
2025 A.D.	8,000 million projected figure	51 years

Source: *Demographic Year Book, 2009–10*

Fig No; 11 Doubling Time of World Population

This dramatic growth has been driven largely by increasing numbers of people surviving to reproductive age, and has been accompanied by major changes in fertility rates, increasing urbanization and accelerating migration. These trends will have far-reaching implications for generations to come.

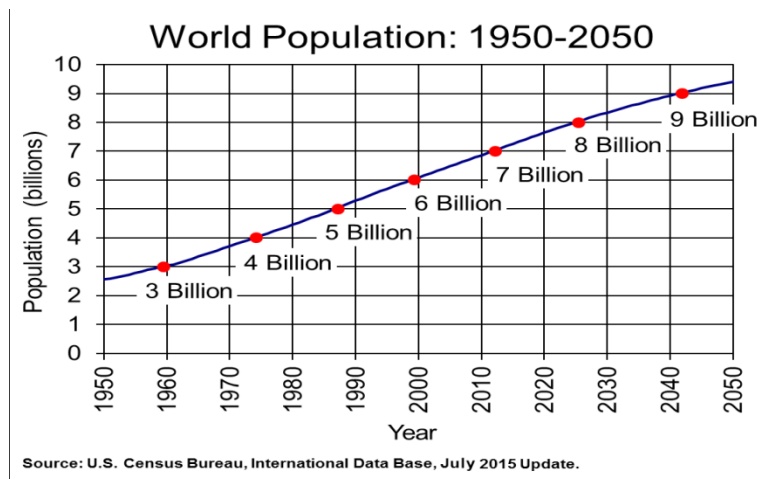


Fig No; 12 World Population: 1950-2050

<https://www.census.gov/population/international/data/worldpop/images/worldpop.png>

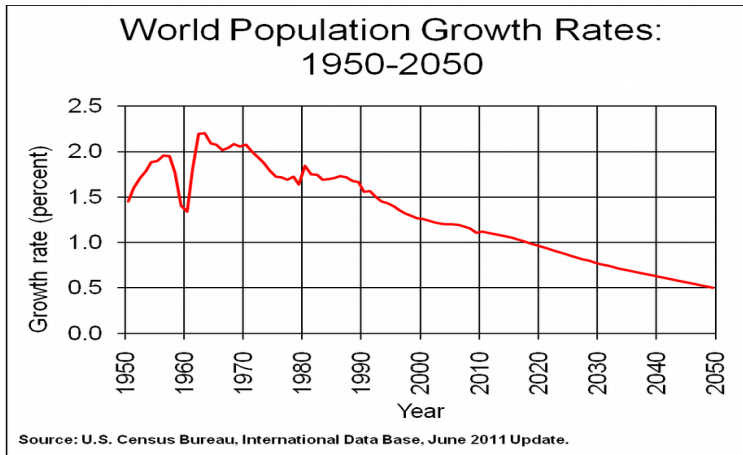


Fig No; 13 World Population Growth Rates 1950-2050

<https://upload.wikimedia.org/wikipedia/commons/thumb/7/75/WorldPopGrowth.png/623px-WorldPopGrowth.png>

Human population increased more than ten times in the past 500 hundred years. In the twentieth century itself the population has increased four times. Nearly 80 million people are added each year. Six of the Earth's seven continents are permanently inhabited on a large scale. Asia is the most populous continent, with its 4.3 billion inhabitants accounting for 60% of the world population. The world's two most populated countries alone, China and India, together constitute about 37% of the world's population. Africa is the second most populated continent, with around 1 billion people, or 15% of the world's population. Europe's 733 million people make up 12% of the world's population as of 2012, while the Latin American and Caribbean regions are home to around 600 million (9%). Northern America, primarily consisting of the United States and Canada, has a population of around 352 million (5%), and Oceania, the least-populated region, has about 35 million inhabitants (0.5%). Though it is not permanently inhabited by any fixed population, Antarctica has a small, fluctuating international population, based mainly in polar science stations. This population tends to rise in the summer months and decrease significantly in winter, as visiting researchers return to their home countries.

The doubling time is the period of time required for the world population to double in size. It is applied to population growth, inflation, and resource extraction, consumption of goods, compound interest, the volume of malignant tumours, and many other things that tend to grow over time. When the relative growth rate (not the absolute growth rate) is constant, the quantity undergoes exponential growth and has a constant doubling time or period, which can be calculated directly from the growth rate.