POPULATION GROWTH

An increase in the number of people that reside in a country, state, county, or city. To determine whether there has been population growth, the following formula is used: **(birth rate + immigration) - (death rate + emigration).**

- **Three Demographic Variables**

The basics of demographic population growth depend on the rate of natural increase (births versus deaths) and net migration.

To compute population growth demographers use three variables:

1. Fertility
2. Mortality
3. Migration

Human population growth depends on the rate of natural increase, or the fertility rate minus the mortality rate, and net migration. The basics of demography can be reduced to this formula:

(Births – Deaths) +/- ((In-Migration) – (Out Migration)) = Population Change.

As this equation shows, population change depends on three variables: (1) the natural increase changes seen in birth rates, (2) the natural decrease changes seen in death rates, and (3) the changes seen in migration. Changes in population size can be predicted based on changes in fertility, mortality, and migration rates.

Natural increase refers to the increase in population *not* due to migration, and it can be calculated with the fertility rate and the mortality rate. Net migration is the mathematical difference between those migrating into a country and those migrating out of a country.

This basic equation can be applied to populations and subpopulations. For example, the population size of ethnic groups or nationalities within a given society or country is subject to the same sources of change as the national population. However, when dealing with ethnic groups, “net migration” might have to be subdivided into physical migration and ethnic re-identification (assimilation). Individuals who change their ethnic self-labels or whose ethnic classification in government statistics changes over time may be thought of as migrating or moving from one population subcategory to another. More generally, while the basic demographic equation holds true by definition, the recording and counting of events (births, deaths, immigration, and emigration) and the enumeration of the total population size are subject to error. Allowance needs to be made for error in the underlying statistics when any accounting of population size or change is made.

- **Determinants of population growth:**

The determinants are: 1. Fertility 2. Mortality 3. Migration.

1. Fertility:
Fertility — occurrence of birth per year — is one of the most important indicators of population growth. Fertility is a general term with many varieties. But two most important measures of fertility are Crude Birth Rate (C.B.R.) per year and General Fertility Rate (G.F.R.) per year.

Crude birth rate is the number of birth per year per thousand, expressed by the formula

$CBR = B/P \times 1,000$

where B is number of birth/year and P is the total population. This measure gives us the idea of net increase of population per year in a region but fails to give us the potential increase in future course of time as every person (male and female, both) is taken into consideration.

The General Fertility Rate or G.F.R. is, however, considered only for reproductive females. It is expressed by the formula

$GFR = B/P \times 1,000$

where B is the no. of birth per year while P refers to the number of productive women.

Fertility decline has been given priority in underdeveloped and developing countries to check the population growth. Improvement of mass education system, reduction of child death and expansion of family control programme are the keys to check disproportionate fertility rate in developing countries. Besides these social transformations, rapid economic growth along with enhancement of employment opportunities also curb fertility rates.

Compared to developed countries, where fertility rate —or fecundity—per woman is only 1.6, it is still 3.1 in developing countries! Despite all sorts of social, political and economic problems, however, some developing countries are able to reduce fertility rate per woman.

Thailand is a classic example-here it is reduced to only 1.94 in 1997 from 6.6 in 1953. At present, global fertility rate is 3.9 while respective rates in continents are Africa 6.5, Europe 2.0, N. America 1.8, S. America 4.3, Asia 4.2, Oceania 2.

2. Mortality:
Mortality is the passing a way of living being, expressed by crude death rate (C.D.R.) per thousand per year, i.e.,

$CDR = D/P \times 1,000$

Where D is the number of deaths per year and P is the number of population.

Mortality is a vital determinant of population growth and indicates general health, living standard, economic condition, nutrition and degree of development of the respective society.

Low mortality rate reflects improved health facility, low child mortality, and effective preventive measures against epidemics.

3. Migration:
Migration is shifting of people from one place to another for residential and occupational reasons. It influences the fundamentals of population structure within a region. It also reflects economic scenario of regions. Migration may be of two types — in migration or immigration and out-migration or emigration. Migration, therefore, is reallocation of human resources that eventually disrupts normal population growth.

In developing countries, migration is generally rural to urban, in developed countries it is urban to urban. In underdeveloped countries, rural to rural migration is often discernible. Most of these migrations occur for better financial opportunities.

Push factors are liable for out-migration which includes war, famines, political unrest, economic disorder, ethnic conflict etc. Pull factors invite in-migration when more financial opportunities and political stability exist at a region.

Due to migration, quantitative population changes occur. Migration is a universal trend and age-old practice, occurs every-where in this world. From Exodus of Egyptian Jews under Moses (3,500 years ago) to Kosovo Albanian refugee exodus in 1999 —the tradition continues on. These, however, are persecution-migration. The opposite is attraction migration—millions of Europeans colonizing America and Indians colonizing South-East Asia.

- **Three Situation of Population:**

1. **Over Population:**

The term 'overpopulation' means too great a population for a given region to support. There may be two causes: (i) population growth exceeds the existing resource base; (ii) existing resources have been depleted.

Some authors distinguish absolute overpopulation (where the absolute limit of production has been attained but standards of living remain low) from relative overpopulation (where present production does not support the population but the production can be augmented).

The situation of overpopulation displays the following socio-economic characteristics: high unemployment, low incomes, low standards of living, high population density, malnutrition and famine.

2. **Under population:**

Under population exists when a population is too small, therefore unable to fully utilize the available resource endowments. Under population is also characterized by a situation where the available resources are capable of supporting a much larger population with no reduction in living standards. The situation is found in regions of low technical development such as equatorial Congo, Amazon River basin or the rich Prairie region of North America.

Relative under population is more common than absolute under population. Indeed, absolute under population is rarely seen and may be found in completely secluded societies where, the degree of replacement of population is less than unity. Relative under population occurs due to insufficient resource development. In developed economies, rural under population is more visible, whereas in backward countries, under population is linked to high mortality rate.

3. Optimum Population:

Optimum population has been defined as that size of population enabling per capita output of the maximum orders accompanied by the highest possible standards of living under a given set of economic and technological conditions. Therefore, optimum population lies between two extremes, i.e., overpopulation and under-population, although the size of optimum population is not sacrosanct.

It is a theoretically perfect situation difficult to estimate or define. optimum population as a situation when the number of individuals can be accommodated in an area to the maximum advantage of each individual.

Thus optimum population yields highest quality of life, which means each person has access to adequate food, water, energy and air of highest quality, adequate medical care, recreational facilities and cultural outlets. In other words, optimum population permits the highest per capita output; therefore the marginal productivity exceeds the average productivity whereby the rates of growth of total production are the highest.

The size of a population for any species is not a static parameter. It keeps changing in time, depending on various factors including food availability, predation pressure and reduced weather. In fact, it is these changes in population density that give us some idea of what is happening to the population, whether it is flourishing or declining.

Whatever might be the ultimate reasons, the density of a population in a given habitat during a given period, fluctuates due to changes in four basic processes, two of which (natality and immigration) contribute an increase in population density and two (mortality and emigration) to a decrease.

(i) Natality refers to the number of births during a given period in the population that are added to the initial density.

(ii) Mortality is the number of deaths in the population during a given period.

(iii) Immigration is the number of individuals of the same species that have come into the habitat from elsewhere during the time period under consideration.

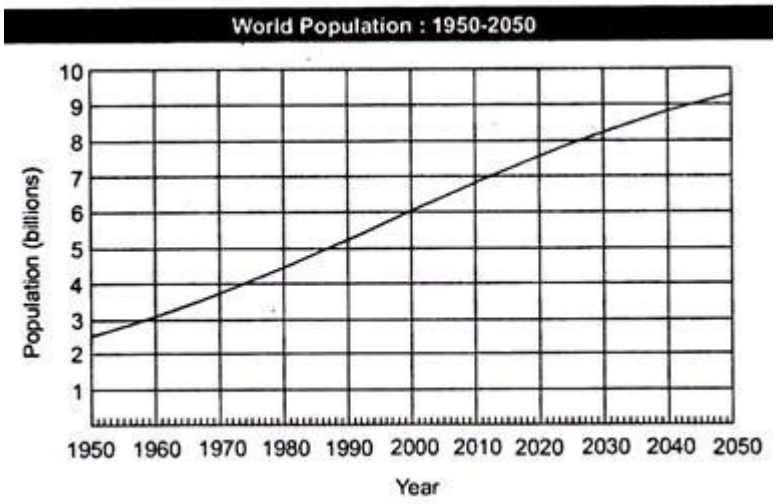
(iv) Emigration is the number of individuals of the population who left the habitat and gone elsewhere during the time period under consideration.

Under normal conditions, births and deaths are the most important factors influencing population density, the other two factors assuming importance only under special conditions. For instance, if a new habitat is just being colonized, immigration may contribute more significantly to population growth than birth rates.

- **History and Evolution of Global Population Growth:**

It is very difficult to ascertain the population volume in the distant past, as modern census system is a very recent phenomena. Most of the early population figures are mere guesstimate (guess + estimate), not authentic. Different archeological and anthropogenic collections give only some hints about the composition and volume of past population.

The origin of Homo sapiens and Paleolithic man dates back to 1 million years. Since then, growth of world population had gone through several transformations. The entire history of human population growth can be sub-divided into 4 major phases.



These are:

1. Pre-historic phase — up to 6,000 B.C.

2. Neolithic phase – 6,000 B.C. to 0 B.C.

3. Historical phase — 1 A.D. to 1650

4. Modern phase — 1650 onwards.

1. **Pre-historic Phase — up to 6,000 B.C.:**

2. It has been estimated that human race— in its present form — originated some 1, 00,000 years ago. But the growth of population was restricted by constant fierce battle with hostile environment, epidemics, hunger etc. After the end of glacial age, at 10,000 B.C., human population possibly reached 100,000 to 1 million mark.

3. Since then, human race started to migrate to different corners of the globe. Very few authentic data of those periods has been discovered. The Paleolithic man in this period was mainly engaged in food-gathering and hunting for livelihood.

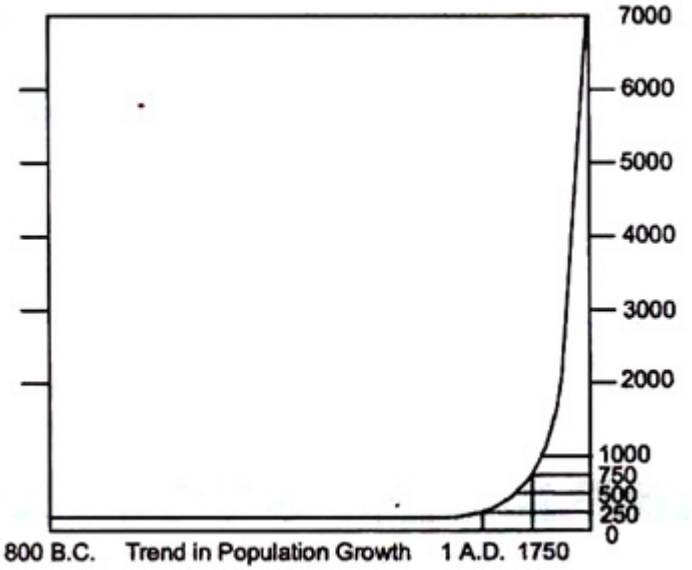
2. Neolithic Phase — 6,000 B.C. to 1 A.D.:

Prof. Walter. F. Wilcox and Prof. A. M. Carr Sanders considered the period between 6,000 B.C. to 1 A.D. as Neolithic period (New Stone Age). According to them, this period had experienced initiation of agriculture. This period witnessed comparatively larger population growth and population increased to 5 million in 6,000 B.C., and to 256 million in 1 A.D.

Even with absence of market and exchange economy, only the introduction of agriculture enabled the steady growth of population. In this period, the development of agriculture and livestock ranching encouraged spread of population from Mediterranean and South-West Asia to Central Asia, China, India and even in Far East Asia. To combat famines and epidemics, population growth rate was very high, along with high mortality rate from 6,000 B.C. to 0 A.D. The average annual growth rate of human population was roughly around 6%.

3. Historical Phase— 1 A.D. to 1650 A.D.:

At the beginning of Christian era, agricultural practices were well-entrenched in large parts of the world. Entire Eurasia, Africa, South American regions had started practicing exchange economy. Even within large empires, cities started to grow with sizable population.



The estimated population of 256 million in 1 A.D. increased to 400 million in 1300 A.D. It finally rose to 500 million in 1650 — at the start of Industrial Revolution. Of course, Controversy exists regarding these estimates. Prof. Wilcox estimated 470 million population in 1650 —this is denied by Prof. Carr Sanders. He estimated 545 million population in 1650.

The entire period (1 A.D. to 1650 A.D.) had experienced population growth rate of 0.1% per annum. The stagnant economic growth and social status quo resulted in only 10% population growth in each century between 1 A.D. to 1650 A.D.

4. Modern Phase—1650 Onwards:

Since the beginning of Industrial Revolution, global population growth rate experienced a sudden dramatic and spectacular growth. Only in 50 years (1650-1700) 100 million people were added and world population grew from 500 million to 600 million. Compared to previous 350 years (1300-1650), when population increase was only 400 million to 500 million. This growth was massive.

The period after 1650 may again be sub-divided into 3 sub-phases: 1650-1900, 1900-1945, and 1945-2000 on the basis of trend of population growth.

In between 1700 A.D. and 1800 A.D. population was doubled (from 600 million to 1.2 billion), registering a growth rate of 0.5% per annum, five times more than the previous century. Possibly remarkable economic expansion and reduction of mortality rate and rise of life expectancy due to improved medical facilities were liable.

In between 1800 and 1900 A.D. net addition of population was another 400 million and world population increased to 1.6 billion from 1.2 billion. The average annual increment was .6% per annum.

1900 to 1930 —only 30 years — experienced another addition of 400 million people, with average annual growth of 1.07% per year.

Industrialization, massive economic growth, rapidly falling death rate, increase of birth rate and higher life expectancy (over 65 years) and lowering of child mortality in

developed and developing countries resulted in a 'populoplosion' (population + explosion).

Between 1930 to 1950, net addition was 500 million and population reached 2.5 billion. Introduction of antibiotics, preventive medical facilities against epidemics, eradication of deadly diseases resulted in low mortality rate in this period.

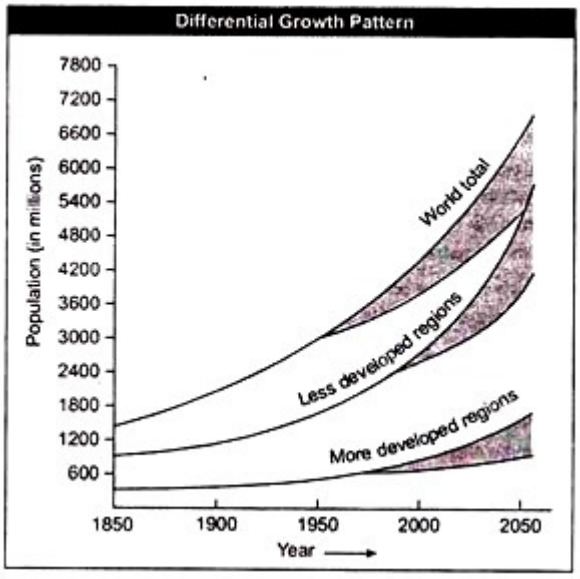
Between 1950 to 1970, growth rate was a staggering 2.06% per year. Global population touched 3.7 billion marks. However, since then, average annual growth rate has dropped slightly. In 2000, population touched a whopping 6 billion mark with a yearly growth rate of 1.4% per annum!

5. Present Trend:
The global population is still increasing at an alarming rate with an annual addition of over 8 cores (81 million) people per year. The gradual lowering of fertility rate and increase of life expectancy has enabled developed countries to stabilize population growth.

Developing countries are yet to achieve this goal. The high percentage of youthful population in developing countries suggests that absolute population in those countries will increase substantially in the coming years.

6. **Future Projections:**
The U.N. Projections — based on assumptions like declining fertility rates, increasing life expectancy and execution of demographic transition in developing countries — predicted that human population will touch 8 billion in 2025 A.D. and 9.4 billion in 2050 A.D. The fertility rate will come down to 1.2% per annum by 2010 A.D. This will further go down in subsequent years.

Regarding future projection of human population, U.N. Population Project has devised the concept of "replacement level", i.e., how many children each woman has in her lifetime. This is also known as fecundity or reproductive capacity of a woman during her entire reproductive period. If each couple has only two children, there will be replacement level or fecundity of 2 and future population will be static.



At present (1999) this replacement level or fertility rate is around 3. The developed nations have achieved the rate 1.7 while it is double (3.4) in the developing world. In the underdeveloped nations this rate is much higher — about 5.6!

The present growth rate (1.5% per year) will decline but percentage of 'senior citizens' (over 65 years) would continue to rise. In developed nations this rise will be alarming.

According to projections, Central European countries — like Bulgaria, Romania and C.I.S. — may experience dramatic decline of population. Developed countries like Japan, Italy,

Spain, Germany, and Denmark will also experience a considerable decline with the sole exception of U.S.A.

Most of the developing African nations will have high increase of population, followed by Asian developing countries. The maximum growth will occur in sub-Saharan and Western Africa.

China, S.E. Asian countries and few Latin American countries, however, will be able to check their population growth with the decline of fertility rate. India — where replacement level or fertility rate is around 3.4-will witness, hopefully, a modest increase of population in the coming years

- **Types of population growth:**

(i) Exponential growth

(ii) Doubling time

(iii) Infant mortality rate

(iv) Total fertility rate

(v) Replacement level

(vi) Male / female ratio

(vii) Demographic transition

i. Exponential growth:
When a quantity increases by a constant amount per unit time e.g. 1, 3, 5,7 etc. it is called linear growth. But, when it increases by a fixed percentage it is known as exponential growth e.g. 10, 102, 103, 104, or 2, 4, 8, 16, 32 etc. Population growth takes place exponentially and that explains the dramatic increase in global population in the past 150 years

ii. Doubling time:
The time needed for a population to double its size at a constant annual rate is known as doubling time. It is calculated as follows:

$Td = 70/r$

where Td = Doubling time in years

r = annual growth rate

If a nation has 2% annual growth rate, its population will double in 35 years.

iii. Total Fertility Rates (TFR):
It is one of the key measures of a nation's population growth. TFR is defined as the average number of children that would be born to a woman in her lifetime if the age specific birth rates remain constant. The value of TFR varies from 1.9 in developed nations to 4.7 in

developing nations. In 1950's the TFR has been 6.1. However, due to changes in cultural and technological set up of societies and government policies the TFR has come down which is a welcome change.

iv. Infant mortality rate:
It is an important parameter affecting future growth of a population. It is the percentage of infants died out of those born in a year. Although this rate has declined in the last 50 years, but the pattern differs widely in developed and developing countries.

v. Zero population growth (ZPG):
When birth plus immigration in a population are just equal to deaths plus emigration, it is said to be zero population growth.

vi. Male-female ratio:
The ratio of boys and girls should be fairly balanced in a society to flourish. However, due to female infanticides and gender-based abortions, the ratio has been upset in many countries including India. In China, the ratio of boys to girls became 140 : 100 in many regions which led to scarcity of brides.

vii. Life expectancy:
It is the average age that a new-born infant is expected to attain in a given country. The average life expectancy, over the globe, has risen from 40 to 65.5 years over the past century.

In India, life expectancy of males and females was only 22.6 years and 23.3 years, respectively in 1900. In the last 100 years improved medical facilities and technological advancement has increased the life expectancy to 60.3 years and 60.5 years, respectively for the Indian males and females. In Japan and Sweden, life expectancy is quite higher, being 82.1-84.2 for females and 77-77.4 for males, respectively.

viii. Demographic transition:
Population growth is usually related to economic development. There occurs a typical fall in death rates and birth rates due to improved living conditions leading to low population growth, a phenomenon called demographic transition. It is associated with urbanisation and growth and occurs in four phases:

(a) Pre-industrial phase characterized by high growth and death rates and net population growth is low.

(b) Transitional phase that occurs with the advent of industrialization providing better hygiene and medical facilities and adequate food, thereby reducing deaths. Birth rates, however, remain high and the population shows 2.5-3% growth rate.

(c) Industrial phase while there is a fall in birth rates thereby lowering growth rate.

(d) Post industrial phase during which zero population growth is achieved.

- **Population Explosion:**

There has been a dramatic reduction in the doubling time (the time needed for a population to double its size at a constant annual rate) of the global human population. In the 20th century, human population has grown much faster than ever before.

In the year 2000, the world population was 6.3 billion and it is predicted to grow four times in the next 100 years. This unprecedented growth of human population at an alarming rate is referred to as population explosion.

Population explosion is causing severe resource depletion and environmental degradation. Our resource like land, water, fossil fuels, minerals etc. are limited and due to overexploitation these resources are getting exhausted.

Even many of these renewable resources like forest, grassland etc. are under tremendous pressure. Industrial and economic growth are raising our quality of life but adding toxic pollutants into the air, water and soil. As a result, the ecological life support systems are getting jeopardized.

There is a fierce debate on this issue as to whether we should immediately reduce fertility rates through worldwide birth control programs in order to stabilize or even shrink the population or whether human beings will devise new technologies for alternate resources, so that the problem of crossing the carrying capacity of the earth will never actually come. The only remedy for the population explosion is birth control programmes.

- **Causes of Overpopulation:**

i. Decline in the Death Rate:

The fall in death rates that is decline in mortality rate is one fundamental causes of overpopulation. Owing to the advancements in medicine, man has found cures to the previously fatal diseases. The new inventions in medicine have brought in treatments for most of the dreadful diseases. This has resulted in an increase in the life expectancy of individuals. Mortality rate has declined leading to an increase in population.

Owing to modern medications and improved treatments to various illnesses, the overall death rate has gone down. The brighter side of it is that we have been able to fight many diseases and prevent deaths. On the other hand, the medical boon has brought with it, the curse of overpopulation.

ii. Rise in the Birth Rate:

Thanks to the new discoveries in nutritional science, we have been able to bring in increase in the fertility rates of human beings. Medicines of today can boost the reproductive rate in human beings. There are medicines and treatments, which can help in conception. Thus, science has led to an increase in birth rate. This is certainly a reason to be proud and happy but advances in medicine have also become a cause of overpopulation.

iii. Migration:

Immigration is a problem in some parts of the world. If the inhabitants of various countries migrate to a particular part of the world and settle over there, the area is bound to suffer from the ill effects of overpopulation. If the rates of emigration from a certain nation do not match

the rates of immigration to that country, overpopulation makes its way. The country becomes overly populated. Crowding of immigrants in certain parts of the world, results in an imbalance in the density of population.

iv. Lack of Education:

Illiteracy is another important cause of overpopulation. Those lacking education fail to understand the need to prevent excessive growth of population. They are unable to understand the harmful effects that overpopulation has.

They are unaware of the ways to control population. Lack of family planning is commonly seen in the illiterate lot of the world. This is one of the major factors leading to overpopulation. Due to ignorance, they do not take to family planning measures, thus contributing to a rise in population.

Viewing the issue of increasing population optimistically, one may say that overpopulation means the increase in human resources. The increase in the number of people is the increase in the number of productive hands and creative minds. But we cannot ignore the fact that the increase in the number producers implies an increase in the number of consumers. Greater number of people requires a greater number of resources.

Not every nation is capable of providing its people with the adequate amount of resources. The ever-increasing population will eventually leave no nation capable of providing its people with the resources they need to thrive. When the environment fails to accommodate the living beings that inhabit it, overpopulation becomes a disaster.

v.Poverty

Due to poverty, population is increased of the poor families of our country. People lives in slum, uses their children as a tool, to earn money, hence they always try to increase the number of children in their families.

vi. Arrival of Refugees

Population is very much increased due to continuous arrivals of refugees in India. At the time of division of India and. Pakistan in 1947, more than 1 core refugees came to India. In 1962 at the time of attack of China, a huge number of Tibetan refugees came to India. Similarly, in 1971, more than 1 core Bangladeshi refugees came to India and even today this problem is still continued. Apart from this, continuous arrival of Nepalis, is also still continued. More than 5 lakhs Tamil refugees had come to India due to Sri Lankan Tamil problem. All these are responsible for population explosion.

Vii.Other Causes

Apart from the above, following are other causes of population explosion

1- Social compulsion of Marriage
2- Ambition of big family
3- Betterment in economic position
4- Joint family system,

- **Effects of population explosion:**

1. Problem of Investment Requirement:
Indian population is growing at a rate of 1.8 percent per annum. In order to achieve a given rate of increase in per capita income, larger investment is needed. This adversely affects the growth rate of the economy. In India, annual growth rate of population is 1.8 percent and capital output ratio is 4:1. It means that in order to stabilize the existing economic growth rate (4 X 1.8) = 7.2 percent of national income must be invested.

2. Problem of Capital Formation:
Composition of population in developing countries hampers the increase in capital formation. High birth rate and low expectancy of life means large number of dependents in the total population. In India 35 percent of population is composed of persons less than 14 years of age. Most of these people depend on others for subsistence. They are unproductive consumers. The burden of dependents reduces the capacity of the people to save. So the rate of capital formation falls.

3. Effect on per Capita Income:
Large size of population in developing countries like India and its rapid rate of growth results into low per capita availability of capital. From 1950-51 to 1980-81. India's national income grew at an average annual rate of 3.6 percent per annum. But per capita income had risen around one percent. It is due the fact that population growth has increased by 2.5 percent.

4. Effect on Food Problem:
Rapid rate of growth of population has been the root cause of food problem.

Shortage of food grains hampers economic development in two ways:
(a) People do not get sufficient quantity of food due low availability of food which affects their health and productivity. Low productivity causes low per capita income and thus poverty.

(b) Shortage of food-grains obliges the under-developed countries to import food grains from abroad. So a large part of foreign exchange is spent on it. So development work suffers. So rise in population causes food problem.

5. Problem of Unemployment:
Large size of population results in large army of labour force. But due to shortage of capital resources it becomes difficult to provide gainful employment to the entire working population. Disguised unemployment in rural areas and open unemployment in urban areas are the normal features of an under developed country like India.

6. Low Standard of Living:
Rapid growth of population accounts for low standard of living. Even the bare necessities of life are not available adequately.

7. Poverty:
Rising population increases poverty in developing countries. People have to spend a large portion of their resources for bringing up of their wards. It results into less saving and low rate of capital formation. Hence improvement in production technique becomes impossible. It means low productivity of labour.

8. Burden of Unproductive Consumers:
In developing countries, a large number of children are dependent. Old persons above the age of 60 and many more in the age group of 15-59 do not find employment. In 2001, working population was 39.2 percent while 60.8 percent are unproductive workers. This high degree of dependency is due to high rate of dependent children. This dependency adversely affects effective saving.

9. Population and Social Problems:
Population explosion gives rise to a number of social problems. It leads to migration of people from rural areas to the urban areas causing the growth of slum areas. People live in most unhygienic and insanitary conditions.

Unemployment and poverty lead to frustration and anger among the educated youth. This leads to robbery, beggary, prostitution and murder etc. The terrorist activities that we find today in various parts of the country are the reflection of frustration among educated unemployed youth. Overcrowding, traffic congestions, frequent accidents and pollution in big cities are the direct result of over-population.

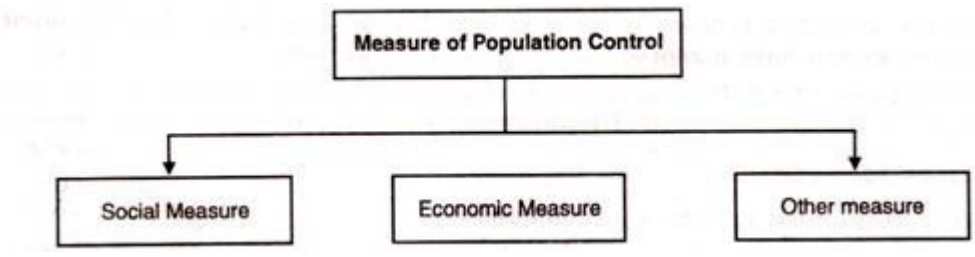
10. More Pressure on Land:
Rising rate of population growth exerts pressure on land. On the one hand, per capita availability of land goes on diminishing and on the other, the problem of sub-division and fragmentation of holdings goes on increasing. It adversely affects the economic development of the country.

11. Impact on Maternity Welfare:
In developing countries, population explosion is the result of high birth rate. High birth rate reduces health and welfare of women. Frequent pregnancy without having a gap is hazardous to the health of the mother and the child. This leads to high death rate among women in the reproductive age due to early marriage. Hence to improve the welfare and status of women in our society, we have to reduce the birth rate.

12. Pressure on Environment:
Population explosion leads to environmental degradation. Higher birth rate brings more pollution, more toxic wastes and damage to biosphere. Briefly speaking, population explosion hinders the economic development. It should be controlled effectively.

- **Measures to Control Population**

Measures which can reduce the birth rate should be adopted. These measures can be classified into 3 heads.



A. Social Measure:
Population explosion is a social problem and it is deeply rooted in the society. So efforts must be done to remove the social evils in the country.

1. Minimum age of Marriage:
As fertility depends on the age of marriage. So the minimum age of marriage should be raised. In India minimum age for marriage is 21 years for men and 18 years for women has be fixed by law. This law should be firmly implemented and people should also be made aware of this through publicity.

2. Raising the Status of Women:
There is still discrimination to the women. They are confined to four walls of house. They are still confined to rearing and bearing of children. So women should be given opportunities to develop socially and economically. Free education should be given to them.

3. Spread of Education:
The spread of education changes the outlook of people. The educated men prefer to delay marriage and adopt small family norms. Educated women are health conscious and avoid frequent pregnancies and thus help in lowering birth rate.

4. Adoption:
Some parents do not have any child, despite costly medical treatment. It is advisable that they should adopt orphan children. It will be beneficial to orphan children and children couples.

5. Change in Social Outlook:
Social outlook of the people should undergo a change. Marriage should no longer be considered a social binding. Issueless women should not be looked down upon.

6. Social Security:
More and more people should be covered under-social security schemes. So that they do not depend upon others in the event of old age, sickness, unemployment etc. with these facilities they will have no desire for more children.

B. Economic Measures:

1. More employment opportunities:
The first and foremost measure is to raise, the employment avenues in rural as well as urban areas. Generally in rural areas there is disguised unemployment. So efforts should be made to migrate unemployed persons from rural side to urban side. This step can check the population growth.

2. Development of Agriculture and Industry:
If agriculture and industry are properly developed, large number of people will get employment. When their income is increased they would improve their standard of living and adopt small family norms.

3. Standard of Living:
Improved standard of living acts as a deterrent to large family norm. In order to maintain their higher standard of living people prefer to have a small family. According to A.K. Das Gupta those who earn less than Rs. 100 per month have on the average a reproduction rate of 3.4 children and those who earn more than Rs. 300 per month have a reproduction rate of 2.8 children.

4. Urbanization:
It is on record that people in urban areas have low birth rate than those living in rural areas. Urbanization should therefore be encouraged.

C. Other Measures:

1. Late Marriage:
As far as possible, marriage should be solemnized at the age of 30 years. This will reduce the period of reproduction among the females bringing down the birth rate. The govt. has fixed the minimum marriage age at 21 yrs. for males and 18 yrs. for females.

2. Self Control:
According to some experts, self control is one of the powerful methods to control the population. It is an ideal and healthy approach and people should be provided to follow. It helps in reducing birth rate.

3. Family Planning:
This method implies family by choice and not by chance. By applying preventive measures, people can regulate birth rate. This method is being used extensively; success of this method depends on the availability of cheap contraceptive devices for birth control.

4. Recreational Facilities:
Birth rate will likely to fall if there are different recreational facilities like cinema; theatre, sports and dance etc. are available to the people.

5. Publicity:
The communication media like T.V., radio and newspaper are the good means to propagate the benefits of the planned family to the uneducated and illiterate persons especially in the rural and backward areas of country.

6. Incentives:
The govt. can give various types of incentives to the people to adopt birth control measures. Monetary incentives and other facilities like leave and promotion can be extended to the working class which adopts small family norms.

7. Employment to Woman:
Another method to check the population is to provide employment to women. Women should be given incentive to give services in different fields. Women are taking active part in competitive examinations. As a result their number in teaching, medical and banking etc. is increasing rapidly. In brief by taking, all there measures we can control the growth of population.