

CONCEPTUAL BASES OF OPTIMUM, UNDER & OVER POPULATION

All the problems concerned with population are generally associated either with overpopulation or with under population. The deviations from the equilibrium state called optimum population give rise to overpopulation and under population. To know about the problems of overpopulation or under population the clear conception of optimum population is quite necessary.

1. Optimum Population:

Optimum population is basically an economic concept which denotes balanced population resource relationship in an area. But there come innumerable practical difficulties in its measurement. Actually optimum is relative term which has to be measured in terms of quality of life. Robinson (1964) considers the concept of optimum population most interesting and ingenious but almost sterile. To him this concept is like feminine beauty, which is fascinating but defies any precise definition.

The optimum level shows that size of population which yields the highest quality of life. According to Preston Cloud (1970), optimum population is the one that lies within limits, large enough to realise the potentialities of human creativity to achieve a life of high quality for all the inhabitants indefinitely, but not so large as to threaten dilution of quality or the potential to achieve it or the wise management of the ecosystem. Some definitions of optimum population are given:-

1. According to Boulding, “The population at which the standard of life is at maximum is called the optimum population.”

2. According to Dalton, “Optimum population is that which gives the maximum income per head.”

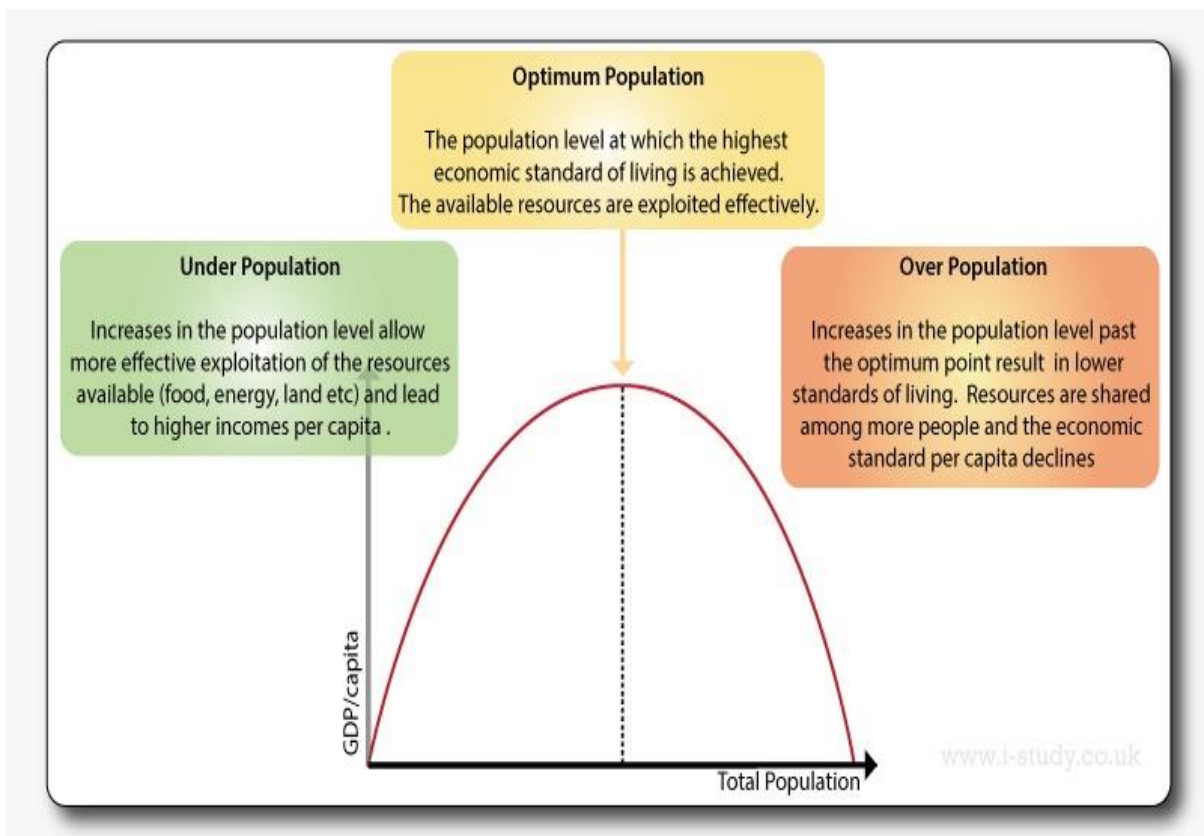
3. According to Peterson, “Optimum population is the number of people that in a given natural, cultural and social environment produces the maximum economic return.”

4. According to Car Saunders, “The optimum population is that population which produces maximum social welfare.”

5. According to S. D. Maurya, “The optimum population is the population size (the number of people) that in relation to given economic, social or military goals, produces the maximum return.”

The concept of optimum population has long been discussed especially in relation to the over population. The term optimum population may be defined as a density of population which with the given resources and skills, produces the maximum (greatest) economic welfare (usually the maximum income per capita) or allows the highest standard of living. The concept of optimum population is concerned with the high quality of life. “The quality of life means that each inhabitant received adequate amount of food, energy, water and air of high quality, adequate raw material to permit him to make all the things and devices he needs; adequate medical care, recreational facilities and cultural outlets etc.” (Chandna, 2009).

According to Veyret-Verner (1959,163), “ Optimum population is the one that enjoys full employment, a satisfactory level of life, daily per capita in-take of over 2500 calories of food, per capita expenditure on food not exceeding 50 percent of total income, rational utilization of resources , dependency ratio not over burdening the adults and the division of labour permitting purely intellectual functions.”



The **optimum population** is a concept where the human population is able to balance maintaining a maximum population size with optimal standards of living for all people. It is quite evident that the measurement of optimum population size for an area is extremely difficult. But however, following criteria for assessing optimum population size may be used: (1) per capita product or per capita income , (2) full employment, (3) longevity of life (life expectancy) , (4) dependency ratio , (5) availability of pure drinking water and air, (6) highest average standard of living, (7) per capita consumption of food and energy , (8) proportion of expenditure on food, (9) balanced population-resource ratio, (10) balanced demographic structure, (11) rational development of resources etc.

2. Over Population:

An excess of population in an area in relation to the available resources and technology denotes over population (Maurya, S.D., 2011). This situation occurs when the number of people exceeds that of the optimum population and the standard of living tends to decline. The results of overpopulation may be under employment, unemployment , low per capita income , low standard of living etc. “When the carrying capacity of an area is exceeded by its population the area is said to be over populated because the area has more population than what it can comfortably support “ (Chandna, 2009).

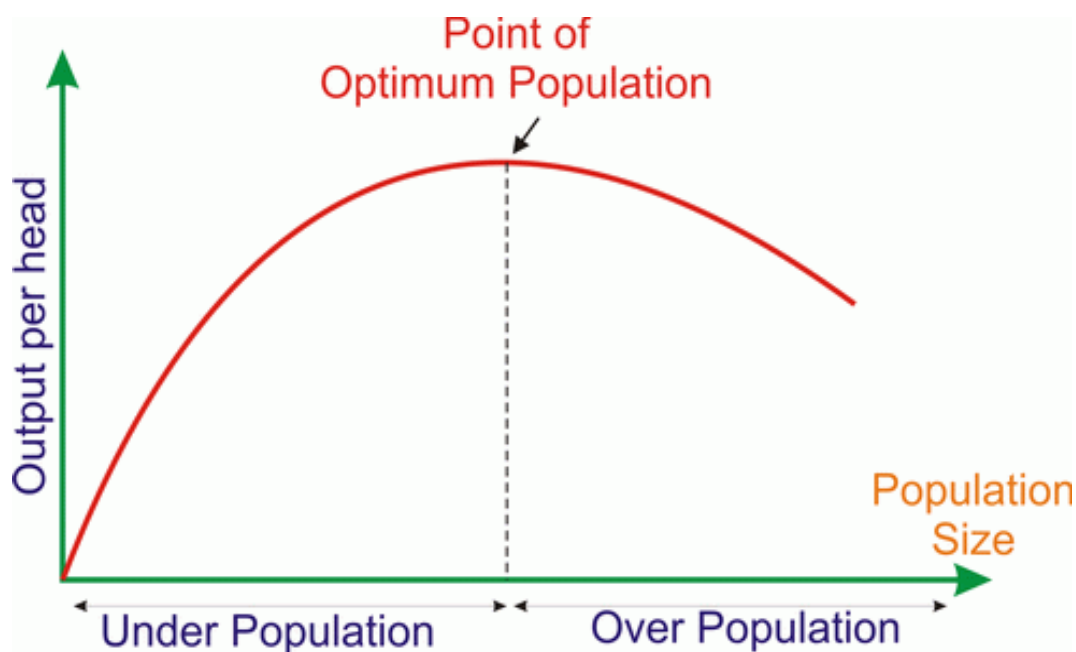
The term ‘overpopulation’ means too great a population for a given region to support. There may be two causes: (i) population growth exceeds the existing resource base; (ii) existing resources have been depleted. Over population takes place generally when the rate of population growth is much higher than that of the development of resources in an area. The situation of overpopulation displays the following socio-economic characteristics: high unemployment, low incomes, low standards of living, high population density, malnutrition and famine.

Malthus, for the first time, identified the problems related to overpopulation. Later on, the Neo-Malthusians also viewed overpopulation as a major problem. Marxists argue that overpopulation is the result of the mal-distribution of resources. Nowadays, some western geographers view overpopulation as the cause of pollution and the increasing migration from the countryside in the western countries of Europe and North America. Overpopulation strikes the lower strata of the society the hardest particularly in developing countries such as India, Nepal, Myanmar etc.

Over population may be of two types: (i) absolute over population and (ii) relative over population. 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).

Where the living standards remain low even after the attainment of absolute resource development, this state is called the absolute over population. Relative over population occurs where the existing level of production is inadequate for the population but greater production is possible. According to Clarke (1972), relative over population is more common than the absolute overpopulation. Limitations of technology may cause the relative overpopulation. With increasing technology, the population resource ratio in relative overpopulated areas proceeds towards equilibrium or optimum population.

Perpillou (1986, 427) observed, “of two equally populated countries one may be overpopulated, if it has a high standard of living with great demands for commodities and comfort, whilst the other may be over populated, if its inhabitants have a lower standard of living. So we reach a flexible definition of the idea of over population in which the number of people is not alone to be considered for their quality must also be taken into account.

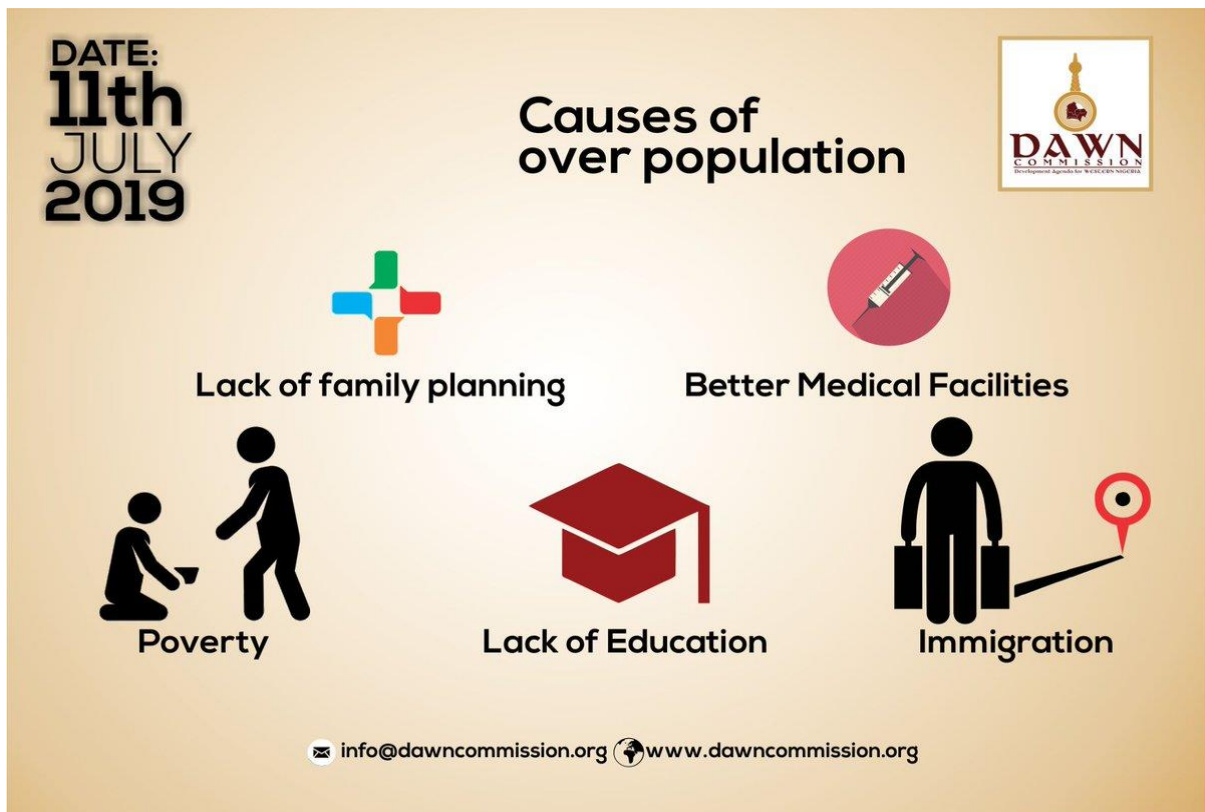


The over population may occur not only at national level but also at local or regional level. For example many developed countries of the world like U.S.A, Canada, France, Germany, and New Zealand etc. as a whole are not overpopulated but there also may be

found islands of overpopulation. Java Island in Indonesia and parts of Uttar Pradesh and Bihar in India are the classic example of regional over population. China, Japan, India, Bangladesh, Pakistan, Egypt etc. are treated as overpopulated countries.

Overpopulation may occur either at national level or at regional level. **Regional overpopulation when found in rural areas is attributed to:**

- (i) Rapid increase of rural population,
- (ii) Skewed distribution of agricultural land,
- (iii) Agricultural mechanisation,
- (iv) Lack of development of non- agricultural sector,
- (v) Low agricultural yield,
- (vi) Lack of social development, and
- (vii) Non-resilience of the agricultural sector.



Regional or local overpopulation may be classified into two categories: (1) Agricultural or rural overpopulation and (2) Industrial or urban overpopulation. Agricultural overpopulation is associated with rural areas which have (1) rapid increase of population, (2)

uneven distribution of agricultural land, (3) backwardness of non-agricultural sectors, (4) mechanisation of agriculture, (5) low agricultural productivity, (6) mass unemployment and general poverty etc. Industrial overpopulation is associated with industrial regions where employment is available mostly for skilled persons and many unskilled or low skilled persons remain unemployed or low waged. Rural over population is very common in the developing countries like India, China, Japan, India, Pakistan, Bangladesh, Egypt etc. are treated as over populated countries. Most of the developing countries of the world are in the second stage of demographic transition where death rates have recorded a sharp decline but the decrease in birth rate is yet to begin. The resources of the developing countries are limited and rapid population growth particularly in their rural areas.

Industrial over population is the characteristics of industrial urban agglomerations. It occurs mainly due to the technological development for low skilled or unskilled labour or renders its products and a decline of entire industry or its products. Industrial over population is less obvious because industrial labour is much more mobile than those of agricultural labour.

3. Under Population:

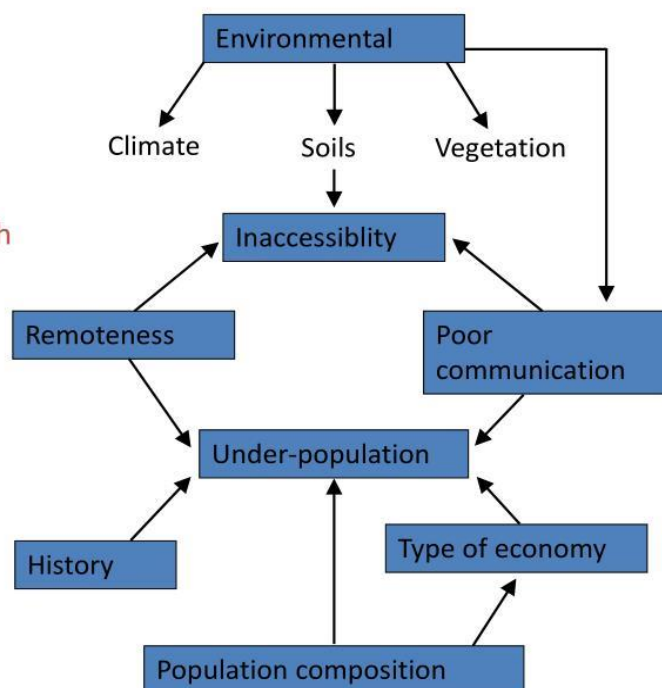
Under-population

What is under-population?

Under-population is usually defined as when a country's population has declined too much to support its current economic system.

What causes under-population?

It is not exclusively concerned with areas of low population density.



Concept of under population is just opposite of over population. Under population occurs when the population of an area is too small for full utilization of its resources. The condition of under population may also appear when the resources of an area are able to support a larger than existing population without lowering the standard of living or without creating any type of unemployment. Under population is also characterised by a situation where the available resources are capable of supporting a much larger population with no reduction in living standards.

Like over population, under population too may be of two types: **absolute under population and relative under population**. The absolute under population is less obvious than relative 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. Absolute under population is not common but rare and may be found only in completely isolated populations where the degree of replacement of people is extremely low. On the contrary, the relative under population is common in large countries due to insufficiency of resource development. For example parts of Brazil, Canada, Russian Federation, Argentina, Amazon River basin or the rich Prairie region of North America, Congo Democratic Republic (Zaire) etc. are under populated due to low technical level and very sparse distribution of population. Relative under population is more common than absolute under population. 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.

The condition of under population may also be caused by high rate of mortality due to repeating epidemics, famines, wars etc. Such under population may be controlled and restricted by improving medical facilities and thus reducing the mortality rate including infant mortality.

4. Population Explosion

Population explosion refers to the rapid increase in the population of an area among human beings. Furthermore, it is a situation where the economy is not capable of coping with the increasing demand of its population. Population explosion is the dramatic rise in world population that has occurred over the last few hundred years. Between 1959 and 2000, the world's population increased from 2.5 billion to 6.1 billion people. According to United Nations projections, the world population will be between 7.9 billion and 10.9 billion by

2050. Most of the growth is currently taking place in the developing world, where rates of natural increase are much higher than in industrialized countries. Concern that this might lead to over population has led some countries to adopt population control policies.

However, since people in developing countries consume far less, especially of non-renewable resources, per head of population than people in industrialized countries, it has been argued that the West should set an example in population control instead of giving, for example, universal child benefit.

The combination of a continuing high birth rate and a low death rate is creating a rapid population increase in many countries in Asia, Latin America and Africa and people generally lived longer. Over-population is defined as the condition of having more people than can live on the earth in comfort, happiness and health and still leave the world a fit place for future generations. But some people now believe that the greatest threat to the future comes from over-population. It took the entire history of humankind for the population to reach 1 billion around 1810 Just 120 years later, this doubled to 2 billion people (1930); then 4 billion in 1975 (45 years). The number of people in the world has risen from 4.4 billion people in 1980 to 6.3 billion in 2005. And it is estimated that the population could double again to nearly 11 billion in less than 40 years. This means that more people are now being added each day than at any other time in human history. According to a report by the United Nation Population fund, total population is likely to reach 10 billion by 2025 and grow to 14 billion by the end of the next century unless birth control use increases dramatically around the world within the next two decades.

Both death rates and birth rates have fallen, but death rates have fallen faster than birth rates. There are about 3 births for each death with 1.6 births for each death in more developed countries (MDCs) and 3.3 births for each death in less developed countries (LDCs). The world's population continues to grow by 1 billion people every dozen years. Until recently, birth rates and death rates were about the same, keeping the population stable. People had many children, but a large number of them died before age of five.

During the Industrial Revolution, a period of history in Europe and North America where there were great advances in science and technology, the success in reducing death rates was attributable to several factors:

(1) increases in food production and distribution,

(2) Improvement in public health (water and sanitation), and

(3) Medical technology (vaccines and antibiotics), along with gains in education and standards of living within many developing nations.

Without these attributes present in many children's lives, they could not have survived common diseases like measles or the flu. People were able to fight and cure deadly germs that once killed them. In addition, because of the technology, people could produce more and different kinds of food. Gradually, over a period of time, these discoveries and inventions spread throughout the world, lowering death rates and improving the quality of life for most people.

Causes of Population Explosion:

Increase in the birth rate- Due to lack of control on delivery and unawareness of people the birth rate is increasing rapidly. In addition, the gap between death and birth has gone way wider. Furthermore, the birth rate has increased many folds in comparison to the death rate.

A decrease in infant mortality rate- Mortality rate refers to the number of death of infants below the age of 6 months. Due to science and technology, countries are able to minimize this rate and now only a few cases of death are known per thousand deaths.

The life expectancy growth- Earlier the life expectancy of people was around 55-60 years. But due to better and improved medical facilities, we are now able to increase the life expectancy of people. Now the average age of a person increased to 70-75 years. Besides, these better living conditions, good quality food, better nutrition, and better sanitation facilities also helped in increasing life expectancy.

High level of illiteracy- The literacy level of women is one of the biggest problems of family planning. In India, people pay very little importance to women's education and marry them at an early age. That's why they do not have knowledge about birth control methods and the use of contraceptives.

Effects of Population Explosion:

The concerns about the consequences of population explosion started in the sixties. Milestone publications were the 1968 book *The Population Bomb* by biologist Paul Ehrlich, the report of the Club of Rome from 1972 (*The Limits to Growth*) and the first World Population Plan of Action of the UN in 1974 among others. In the world population debate, the general concerns involve mainly three interconnected consequences of the population explosion: 1) the growing poverty in the world and famine; 2) the exhaustion and pollution of natural resources essential to human survival; and 3) the migration pressure from the poor South to the rich North (Van Bavel, 2004).

The population explosion affects natural resources and many sectors of the economy in many ways:

Unemployment - Due to the increase in the population the demand for jobs and employment also increases. But, due to a lack of resources and employment opportunities, there are millions of jobless people in India. In addition, the condition of unemployment is growing day by day. To face this problem most the people is either migrating to other countries for better job opportunities.

Poverty - Due to the large population there a large number of people who belong to below the poverty line and they do not have adequate knowledge of the overpopulation of the country. Also, they are the major contributor to a high birth rate.

Pressure on Natural Resources - The cultivable land and almost all other things depend on irrigation. Supply of both cultivable land and the water for agriculture became stagnant in all parts of world. But the population growth remained to be consistently high. So this increased the pressure on other factors too. Population pressures are alarming for arable land, forests and water resources. The size of arable land has decreased due to population pressure, inadequate arable land reforms and inheritance patterns.

Impact on Environment - Rapid population growth leads to environmental damage. Scarcity of land due to rapidly increasing population pushes large number of people to ecologically sensitive areas such as hillsides and tropical forests. It leads to over grazing and cutting of forests for cultivation leading to severe environmental damage. Moreover, the pressure of rapid growth of population forces people to obtain more food for themselves and their livestock. As a result, they over-cultivate the semi-arid areas. This leads to desertification

over the long run when land stops yielding anything. Besides, rapid population growth leads to migration of large numbers to urban areas with industrialization. This results in severe air, water and noise pollution in cities and town.

Social Infrastructure - Rapidly growing population necessitates large investments in social infrastructure and diverts resources from directly productive assets. Due to scarcity of resources, it is not possible to provide educational, health, medical, transport and housing facilities to the entire population. There is over-crowding everywhere. As a result, the quality of these services goes down. To provide these social infrastructures requires huge investment.

There are various methods by which we can prevent a population explosion. The government can take measures to aware of the population about the various methods that can help in controlling the population. Also, it should implement some strong campaign for family planning and birth control. Population explosion has caused huge pressure on the surface of the earth. Also, we can control many issues of the earth by controlling population growth. Besides, many problems like food insecurity, illiteracy, poverty, and unemployment can be minimized by controlling the population.