

5.1 POPULATION THEORIES

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Population theories are designed to explain or predict the interaction between changes in population and social, economic, psychological or other factors; they include purely conceptual treatments. The term is used with widely different meaning but in restricted sense it refers to a systematic treatment of the logical and mathematical foundations of quantitative relations among demographic phenomena in abstraction from their association with other phenomena. Population theories are concerned with the numerical study of population, its growth and its variables along with relationship between population changes and other variables like social, economic, biological, genetic, geographical, environment and health.

5.1 Demographic Transition

Anno Domini (B.C. 31)
J. W. M. 6

The world population has been estimated at 250 million in the year AD 1 and it took over 1500 years to reach 500 million. Two billion was reached around 1920s, three billion in 1960, four billion in 1975, five billion in early 1987 and six billion in 2000. 7.6 billion in 2018

Up to 17th century, population growth was slow and steady. After the middle of 17th century, the rate of world population growth accelerated largely because of falling death rates as a result of:

- **Improved agriculture** led to increased food production and better nutrition (e.g. the Agricultural Revolution in England included better fertilizers, crop rotation, and winter crops).
- **Industrialization**: The development of the factory system meant a greater variety of manufactured goods. Factory production of machinery (e.g. the iron plough, steam engine etc.) also contributed to improved agriculture and transport.
- **Improved transport** made the distribution of food and other goods easier (e.g. in Europe, railways enabled food supplies to be sent rapidly from rural to urban areas).
- **Social reforms** e.g. laws regulating child labor in factories.
- **Greater control of temperature and humidity** in the home and at work may have contributed to the decline of some diseases.
- **Public sanitation** including improved water supplies and sewage disposal, and water

purification (e.g. filters eliminate cholera and typhoid from the water).

industrialization Public sanitation

- **Improved personal hygiene** was possible because of 2 and 6 above (e.g. cheap easy to wash cotton clothing and soap became generally available).
- **Asepsis and antisepsis** (the exclusion and killing of disease-causing organisms) was developed by Joseph Lister in the later 19th century (e.g. the sterilization of surgical instruments).
- **Immunology** (the study, of the body's ^{مقاومت} resistance to disease), e.g. Jenner's paper of 1798 on inoculation against smallpox, and the discovery by Koch (1876) and Pasteur (1877) that inoculation with a mild case of the disease prevented a serious case.
- **Biological factors** People become more resistant to some diseases, and some diseases such as scarlet fever become more benign (i.e. less dangerous).

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5.2 Early Writings on Population

The idea of population theories exists in 500 B.C. by ancient Chinese. The main idea of:

- Ancient Chinese e.g. Confucius (500 B.C.) was excessive population growth depressing living standards of masses and an optimum relationship between population and the land.
- Ancient Greeks e.g. Plato, Aristotle (300 B.C.) was the optimum size of the city state, to be achieved either by restricting or encouraging births with punishments or rewards.
- India e.g. Kautilya (300 B.C.) was optimum village size with too few people seen as great evil.

Army Regulation Theory

Roman Empire e.g. Cicero (50 B.C.) was stimulating population growth, by giving privileges to those with children (more men would mean more military conquests).

Judaism e.g. the Old Testament (B.C.) was that population growth was a God's plan (Go forth, and multiply).

Early Christianity e.g. Augustine Aquinas (400 A.D.) was that celibacy morally good, but high fertility was needed to counter high mortality and moral disapproval of a abortive infanticide, and divorce.

Economic theory: Mathematical Theory

Mercantilists 17th and 18th centuries was state intervention in economic activity, maximize national wealth increased population would mean larger armies, lower household wages, and increased wealth.

Physiocrats e.g. Quesnay (18th century) was rule by nature or laissez-faire i.e. government intervention, population dependent on subsistence, and agriculture the source of wealth and benefits from social reform would be cancelled by population increase.

Malthus 1766-1834 (19th century) was of the view that unless checked, population would tend to increase faster than subsistence.

Classical economists e.g. Adam Smith and Ricardo was (19th century) diminishing returns to labor; later writers such as Marshall emphasized increasing returns.

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- Anti-Malthusians e.g. Hazlitt (19th century) was preventive checks becoming more effective.
- Socialist and Marxist writers e.g. Marx (19th century) was population or surplus labor problems were the result of the capitalist economic system, and would be solved by the reorganization of society.
- Neo-Malthusians e.g. Ehrlich and Erlich and the environmentalists (19th and 20th century) were continuing population growth is unsustainable and must be checked by the use of birth control (Malthus himself was against birth control).
- Neo-classical economists e.g. the Chicago School (20th century) was the New Household Economics and the trade-off between the quantity and quality of children.

Sources: United Nations 1973: Chapters; Brown 1978; Ehrlich and Ehrlich 1990).

It can be seen that early writers in India, China and Greece were concerned with the optimum or best population. In general the early Roman, Christian and Islamic writers were pro-natalist that is in favor of large families and rapid population, a view which is understandable given the high mortality of times. Writing on population was very speculative until John Graunt and other began the numerical study of population in 17th century.

5.3 Malthusian Theory

(1766-1835)

Father of demography

- Assumption
- ① Desire for sex is stable
 - ② Prosperity has direct relation with population growth
 - ③ Agriculture is subject to diminishing marginal output

Malthus is considered as the first professional of demography partly because of its organized use of available data. According to Malthusian theory there was a universal tendency for population to outrun the means of subsistence. Malthus thought there was a conflict between two basic human needs-for subsistence (or food) and for passion between the two sexes (). Population would increase up to the limits of subsistence unless checked. He assumed that population would increase in geometric progression (1, 2, 4, 8, 16, ...) and agricultural production in the arithmetic progression (1, 2, 3, 4, ...). Malthus described two categories of checks in population:

- * Positive checks related to causes of death including poverty, disease, epidemics, famine, and war
- * Preventive checks on the birth rate included what he termed improper acts such as abortion and contraception.

Initially Malthus regarded both positive and preventive checks as misery or vice. Later he introduced a new category of moral restraint, by which he mean delaying marriages until the means to support a family were available. Although the theories of Malthus dropped from favor during the 19th century, interest in them has revived in recent years because of rapid population growth in developing countries, wastage of natural resources and concern over food supply.

5.3.1 Some Criticisms on Malthus Theory

- * Malthus emphasized the limited supply of land, but did not anticipate the benefits from improved transport combined with the opening up of new agricultural lands.
- * Animals and plants can increase in geometric progression under favorable conditions.

Not include migration

Technology can also advance at a rapid rate. Improved agricultural methods, such as the use of fertilizers and new types of seed, have greatly increased productivity.

Malthus did not envisage the control of fertility within marriage but in 1822 Francis advocated the use of birth control by married couples.

Fertility can fall as economic development takes place and as the standard of living rises.

Socialist writers also criticized the Malthus theory. They thought that the unequal distribution of economic was a major cause of misery.

Marx and Engels denied the existence of a universal principle or law of population. On the contrary, they maintained that every stage of development has its own law of population.

The writing of Malthus implied the law of 'diminishing returns' so that if capital and land were fixed, the addition of some workers would reduce per capita output.

However Engels felt that scientific progress, combined with an increase in Labor force would overcome this.