

Chapter 6

The Human Population and Its Impact

Summary

1. Birth, death, fertility, and migration rates are the factors that determine population size. As birth rates have declined in developed countries, population has increased due to people's migrating into these countries. Women's fertility rates have dropped but are still above the replacement-level fertility around the world.
2. Population size is profoundly affected by age structure. If women are past their primary child-bearing ages, population increase will be limited. If, however, the population has a large percentage of young women entering their childbearing years, the potential for large population increases is present. In general, the closer a country's young women are to 15–40 years of age, the more potential for a rapidly increasing population.
3. We can influence population size by encouraging smaller families, by encouraging adoption of children already born and discouraging new births. Population size is, also, affected by health care or its lack; by epidemics (such as AIDS); by losses through war, etc. Lack of prenatal care for expectant mothers, failure to protect children from communicable diseases (like measles) or wide-spread diseases (like malaria), can contribute to a smaller population. In the past economic development, family planning, and economic opportunities for women have reduced birth rates.
4. India and China have both made efforts to control their population growth. China has been more successful because, as a dictatorship, it has imposed restrictions on family size with rewards and punishments for those who support or defy the government's direction. India, without a policy of coercion, has reduced its birth rate; but the wish for male children and several children for the care of old parents has helped to maintain a growing population.
5. Effective methods for slowing the growth of world population include investing in family planning, reducing poverty, and elevating the status of women.

Key Questions and Concepts

6-1 How many people can the earth support?

CORE CASE STUDY: Beginning in the 1960's China has taken an aggressive approach to slowing its population growth, by embracing a one child per family policy. The result has been a dramatically slowed population growth, yet China is still the world's most populous country, with 1.3 billion people. Rapid industrialization since 1980 has led to an emerging middle class, which will increase per capita resource consumption and increase China's ecological footprint.

- A. The human population has grown rapidly due to technology, improved medical techniques, emphasis on hygiene, and expansion of agriculture and industry.
- B. Population growth has slowed but is still growing exponentially.
 1. The vast majority of all growth occurs in less-developed countries.
- C. In 2050 there will be 7.8-10.8 billion people on earth
 1. Cultural carrying capacity is the maximum number of people that can live in reasonable freedom and comfort indefinitely without compromising the ability of earth to sustain future generations.

SCIENCE FOCUS: Estimates of future population growth vary widely. Demographers must rely on available data in making these predictions. However, current population estimates may not be accurate and assumptions must be made about future fertility. In addition, population predictions are made by a variety of different organizations.

SCIENCE FOCUS: Human activities have directly affected about 83% of the Earth's land surface, excluding Antarctica. Humans have altered nature in eight major ways. They have reduced biodiversity, increased primary productivity, increased genetic resistance in pests, eliminated natural predators, introduced harmful species, used renewable resources unsustainably, interfered with chemical cycling and energy flow, and relied on fossil fuels.

6-2 What factors influence the size of the human population?

- A. Population increases through births and immigration and decreases through deaths and emigration.
[Population change = (Births + Immigration) – (Deaths + Emigration)]
1. The crude birth rate is the number of live births per 1,000 people in a population in a specific year.
 2. The crude death rate is the number of deaths per 1,000 people in a population in a specific year.
 3. Population change is calculated by subtracting the number of people leaving a population (death and emigration) from the number entering it (birth and immigration).
- B. Fertility is the number of births that occur to an individual woman or in a population.
1. The changing nature of fertility rates affect population growth.
 - a. Replacement-level fertility is the number of children needed to replace their parents.
 - b. Total fertility rate (TFR) is the average number of children that a woman has during her fertile years.

CASE STUDY: The population of the United States is currently 310 million people. Although a drop in TFR has slowed the country's growth, it is still growing faster than any other developed country. Because of high per capita resource use and waste, growth in the population of the United States has an enormous environmental impact.

- C. Many factors influence birth and fertility rates.
1. More children work in developing countries; they are important to the labor force.
 2. The economic cost of raising and educating children determines their numbers.
 3. If there are available private/public pension systems, adults have fewer children because they don't need children to take care of them in old age.
 4. People in urban areas usually have better access to family planning, so have fewer children.
 5. If women have educational and economic choices, they tend to have fewer children.
 6. The older the age at which women marry, the fewer children they bear.
 7. If abortions are available and legal, women have fewer children.
 8. The availability of reliable birth control allows women to space children and determines the number of children they bear.
- D. Factors that have caused a decline in death rates are the following:
1. Better food supplies and nutrition, and safer water supplies contribute to people living longer.
 2. Advances in medicine and public health, and improved sanitation and personal hygiene also contribute to people living longer.
- E. Measures of overall health are:
1. Life expectancy is the average number of years a newborn can expect to live.
 2. Infant mortality rate is the number of babies out of every 1,000 born who die before their first birthday.
 - a. This rate reflects a country's level of nutrition and health care.
 - b. It is the single best measure of a society's quality of life.
 3. U.S. infant mortality rate is higher than 40 other countries because:
 - a. Inadequate health care for poor women and for their babies.
 - b. Drug addiction among pregnant women.
 - c. High birth rate among teenagers.

F. Migration is also a factor in population change.

CASE STUDY: Historically, the United States has admitted more immigrants than all other countries combined. Some 60% of the U.S. population supports limiting legal immigration. A recent study suggests that to maintain a viable workforce as baby boomers retire, the U.S. would have to absorb many more immigrants per year than it currently does.

6-3 How does a population's age structure affect its growth or decline?

Age structure diagrams are visual aids that show the distribution of males and females in each age group.

- A. The percentages of males and females in the total population are divided into the following age categories:
1. Pre-reproductive ages span birth to 14 years of age.
 2. Reproductive ages include age 15 through 44.
 3. Post-reproductive ages include ages 45 and up.

9. The major determining factor in a country's future population growth is the number of people under the age of 15.

1. In 2010, 27% of the planet's population was under 15.

CASE STUDY: Changes in the distribution of a country's age groups have long-lasting economic and social impacts. An example of this is the 'baby boom' generation in the U.S. Such a group can dominate the population's demands for goods and services as well as influence elections and legislation and economic demand. The graying of America may create economic problems for future generations.

C. Population decline can have long-term consequences, especially if the decline is rapid.

1. A gradual population decline, its harmful effects can usually be managed.

2. There can be a sharp rise in the proportion of older people.

a. Produces a sharp rise in public service costs, for health, etc.

b. May have many fewer working taxpayers and labor shortages.

c. It may be necessary to raise retirement age, raise taxes, cut retirement benefits, and increase legal immigration, which are generally unpopular moves.

3. If population declines because of deaths, consequences are serious.

a. Deaths from disease such as AIDS disrupt a country's social and economic structure.

b. Large numbers of people in a particular age are removed from the country's future.

1) Life expectancy drops.

2) In the case of AIDS, the deaths are mostly young adults, those who usually help run the country and everyday life for millions.

3) Two major goals are to reduce the spread of HIV through education and health care and to provide financial help for education, health care, and volunteer teachers and social workers to compensate for the lost young adults.

6-4 How can we slow human population growth?

A. A precautionary approach is adopted to slow or stop population growth. The three most important steps are to:

a. Reduce poverty

b. Elevate the status of women

c. Encourage family planning

B. The demographic transition hypothesis states that as countries become industrialized, first their death rates rise and then their birth rates decline.

a. Four stages: preindustrial, transitional, industrial, and postindustrial.

b. Some failing states may be stuck in step 2.

C. Women have fewer children when they are educated, in control of their fertility, earn an income, and live in societies that do not suppress their rights.

D. Family planning helps reduce the number of births and abortions throughout the world.

1. Information is given on birth spacing, birth control, and health care.

2. Family planning has been responsible for at least 55% of the drop in TFRs in developing countries.

3. Family planning has also reduced both legal and illegal abortions per year.

4. Services come through educational and clinical services.

a. 42% of pregnancies in developing countries are unplanned and 26% end in abortion.

b. Women want to limit their pregnancies but have no access to contraceptives.

CASE STUDY: India has tried to control its population growth for years. Poverty, malnutrition, and environmental problems abound in India. Efforts to limit population have not been especially successful because poor couples believe they need several children for work and care, and there is a strong preference for male children so many do not use birth control. India is currently undergoing tremendous economic growth that will likely continue. This may increase the ecological footprint of the nation, but may also serve to hasten the demographic transition.

Key Terms

age structure

birth rate

crude birth rate

crude death rate

cultural carrying capacity

death rate

demographic transition

family planning

fertility rate

infant mortality rate

life expectancy

migration

population change

replacement-level fertility

total fertility rate (TFR)