

# A Growing Population

## BEFORE YOU READ

### Reach Into Your Background

If you called a hospital in your community, you could find out how many babies were born

last week. Multiply that number by all the hospitals in the world. Then, add the number of babies who were not born in hospitals. Subtract from this figure the number of people who died both in and out of hospitals. That's one way to find out how much the world's population increased in seven days.

### Questions to Explore

1. How fast is the world's population growing?
2. What challenges are created by the world's growing population?

### Key Terms

birthrate  
death rate  
life expectancy  
Green Revolution

Imagine that all the years from A.D. 1 to A.D. 2000 took place in just 24 hours. Now you have an imaginary clock to measure how fast the world's population is growing. The list below shows that the Earth's population doubled several times in those 24 hours.

|          |                                       |
|----------|---------------------------------------|
| 12:00 AM | 200 million people in the world       |
| 7:48 PM  | Population doubles to 400 million     |
| 10:12 PM | Population doubles to 800 million     |
| 11:00 PM | Population doubles to 1.6 billion     |
| 11:36 PM | Population doubles to 3.2 billion     |
| 11:59 PM | Population will double to 6.4 billion |

How large was the world population at 12:00 AM (A.D. 1)? At 10:12 PM? During those 24 hours, how many times did the world's population double? How long did it take for the world population to double the first time? The last time?

## Population Growth Is Worldwide

The example above makes it easy to see that world population has grown rapidly. Even more important, the rate of growth has increased greatly in modern times. For example, in 1960 the world population was 3 billion. By 2000—only 40 years later—it had climbed to more than 6 billion people.

## Population Birthrate and Death Rate

During different historical periods, populations grew at different rates. Demographers want to understand why. They know that population growth depends on the birthrate and the death rate. The **birthrate** is the number of live births each year per 1,000 people. The **death rate** is the number of deaths each year per 1,000 people. By comparing birthrates and death rates, demographers can figure out population growth.

For centuries, the world population grew slowly. In those years, farmers worked without modern machinery. Food supplies often were scarce. Many thousands died of diseases. As a result, although the birthrate was high, so was the death rate. The **life expectancy**, or the average number of years that people live, was short. A hundred years ago in the United States, men and women usually lived less than 50 years.

### Reasons for Population Growth Today

Today, things have changed. The birthrate has increased dramatically. The death rate has slowed. As a result, populations in most countries have grown very fast. In some countries, the population doubles in less than 20 years. People live longer than ever. In the United States, for example, the average life expectancy for women is about 80 years and for men about 73 years.

Two scientific developments have made this possible. First, new farming methods have greatly increased the world's food supply. Starting in the 1950s, scientists developed new varieties of important food crops and new ways to protect crops against insects. Scientists developed new fertilizers to enrich the soil so farmers can grow more crops. Scientists also discovered ways to raise crops with less water. These changes in agriculture are called the **Green Revolution**.

The second set of scientific advancements came in medicine and health. Today, new medicines and types of surgery treat health problems that used to kill people, such as heart disease and serious injuries. Researchers also have created vaccines to fight diseases such as smallpox, polio, and measles, and antibiotics to fight infections. As a result, many more babies are born and stay healthy, and people live many more years.

## Better Health Care for the Young



A mother and baby await medical help at the Kenyatta National Hospital in the East African country of Kenya.

**Critical Thinking** How has modern medical care helped to increase the world's population growth?

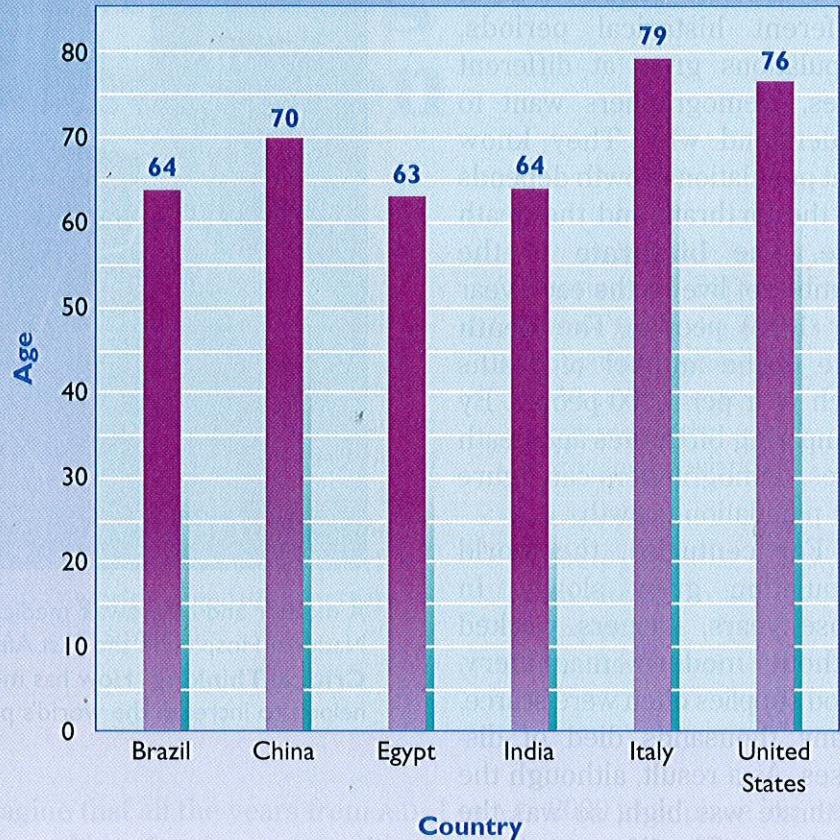


## LINKS TO SCIENCE

**Hydroponics** How can you grow a plant without soil? People called hydroponics farmers grow plants in water and necessary nutrients. The techniques are used where there is no soil, such as on ships. Today some groceries sell hydroponic vegetables. Some scientists say hydroponics may help feed the world's rapidly growing population.

## Life Expectancy in Selected Countries, 2000

**Graph Study** Life expectancy, or the number of years a newborn baby can expect to live, has soared in many countries since 1900. In some countries, however, life expectancy remains low. Which countries on this chart have the highest life expectancies? Which have the lowest? **Critical Thinking** What has contributed to the rise in life expectancy over the last century?



**Ask Questions** What would you like to learn about the problems of population growth?

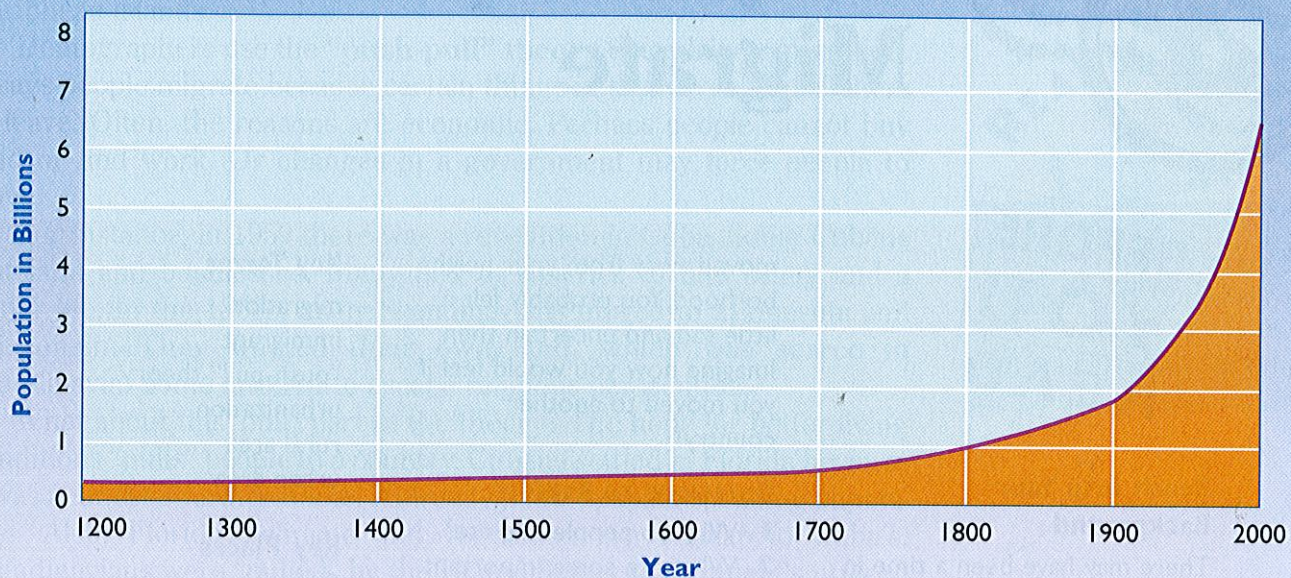
## The Challenges of Population Growth

Today, food supplies have increased and people live longer. Even so, the people in many countries still face very serious problems. Growing populations use resources much faster than stable populations. Some nations, like those in Southwest Asia, face shortages of fresh water and energy. In Asia and Africa, food supplies cannot keep up with the growing population. Often, these countries do not have enough money to purchase imported food.

Population growth puts pressure on all aspects of life. The population of many countries is increasing so fast that many people cannot find jobs. There are not enough schools to educate the growing number of children. Decent housing is scarce and expensive. Public services like transportation and sanitation are inadequate.

The problems created by rapid population growth are most visible in South Asia. The region is home to about a quarter of the world's population. According to a World Bank study, South Asia is also home to about a quarter of the world's poor. Out of every 14 children born, one will die before reaching the age of one.

## World Population Growth, A.D. 1200–2000



**Graph Study** For hundreds of years, the world's population rose very slowly. Recently, however, the rate of growth has skyrocketed.

**Critical Thinking** How does the graph show the change in the growth of the world's population?

Rapid population growth also affects the environment. For instance, forests in areas of India and Pakistan are disappearing. People cut the trees to use the wood for building and for fuel. Cutting forests affects the supply of clean air. Before, tree roots held soil in place. Now heavy rainfall may wash away the soil.

Look at the population changes indicated in the graph on this page. It shows how rapidly change has occurred in the last 300 years. The Earth's resources must now be shared by six times as many people than in earlier times. All the Earth's people must work to meet this challenge.

### SECTION 2 REVIEW

- 1. Define** (a) birthrate, (b) death rate, (c) life expectancy, (d) Green Revolution.
- 2.** Why has the world's population increased so dramatically in the last four or five decades?

- 3.** How have science and technology contributed to the growing population?

#### Critical Thinking

#### 4. Drawing Conclusions

The world's population has been growing at a fast rate. What are some of the dangers of a rapidly increasing population?

#### Activity

- 5. Writing to Learn** World hunger is one of the major concerns caused by rapid population growth. Write one or two suggestions to help solve this problem.