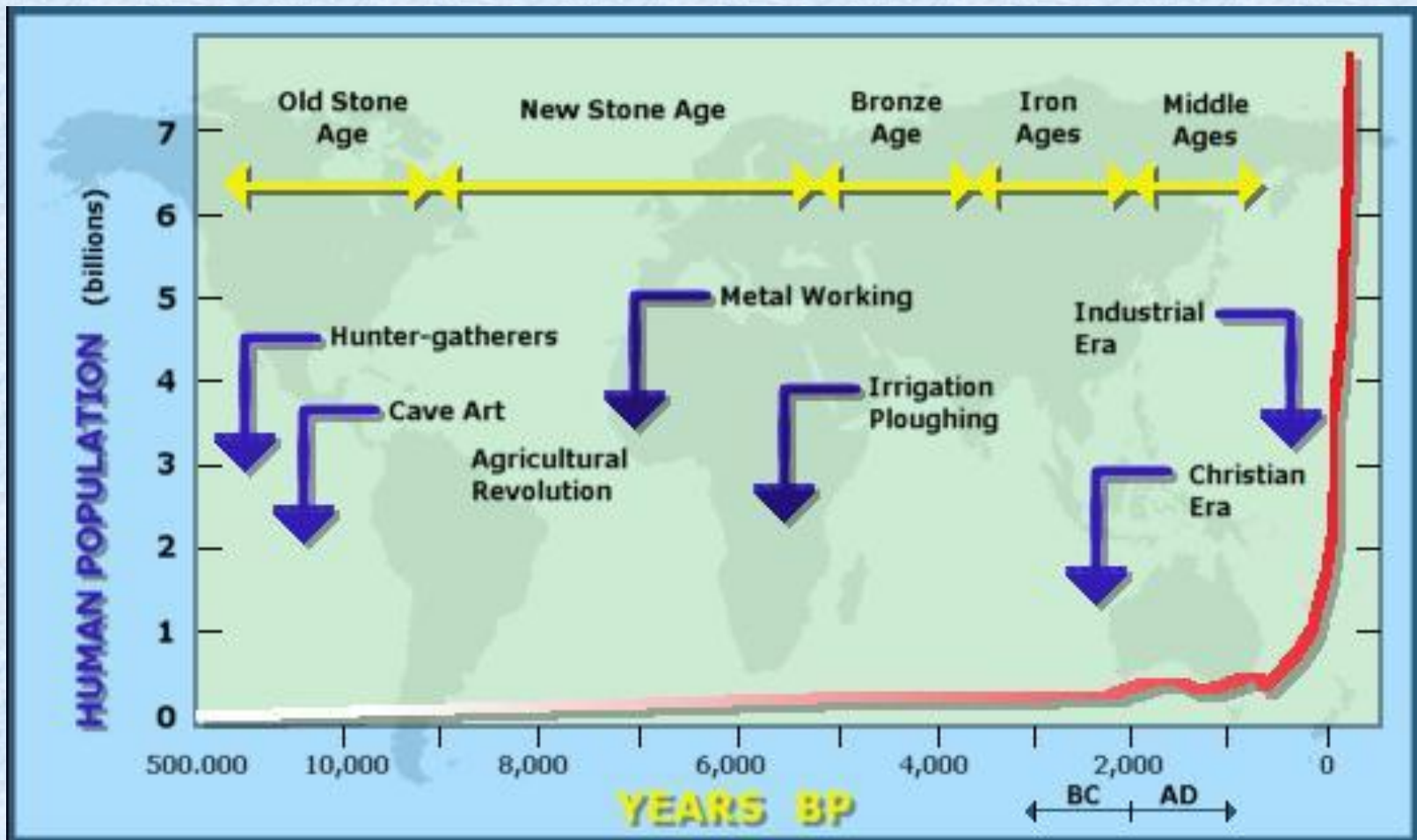


Chapter 5: Populations

5.3 Human Population Growth

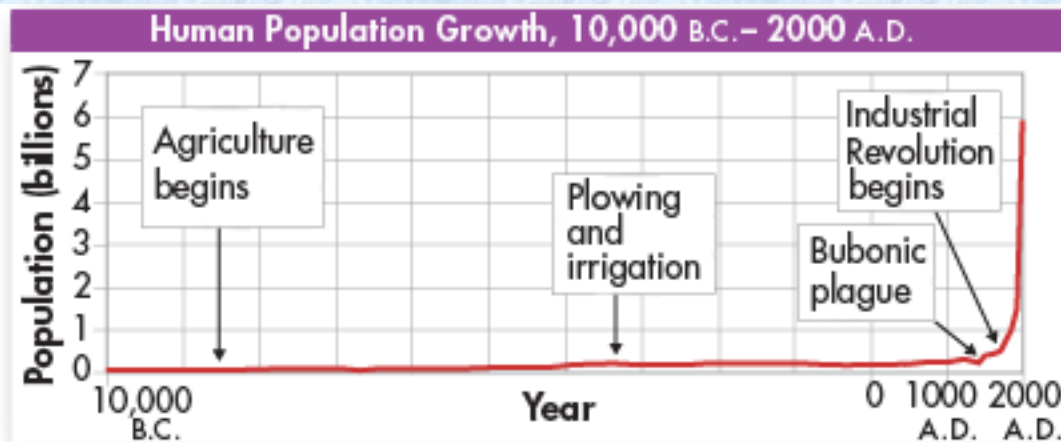


Historical Overview

For most of human existence, the population grew slowly because life was harsh. Food was hard to find. Predators and diseases were common and life-threatening.

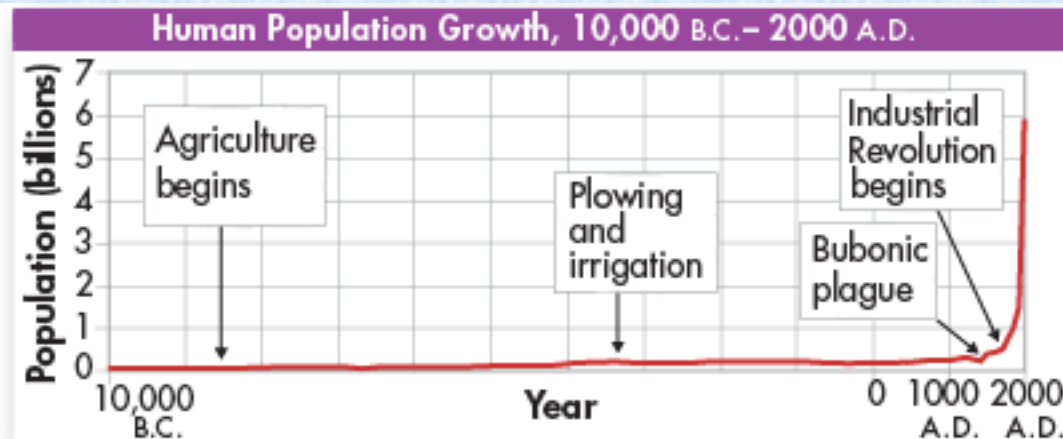
These limiting factors kept human death rates very high. Until fairly recently, only half the children in the world survived to adulthood.

Because death rates were so high, families had many children, just to make sure that some would survive.



Exponential Human Population Growth

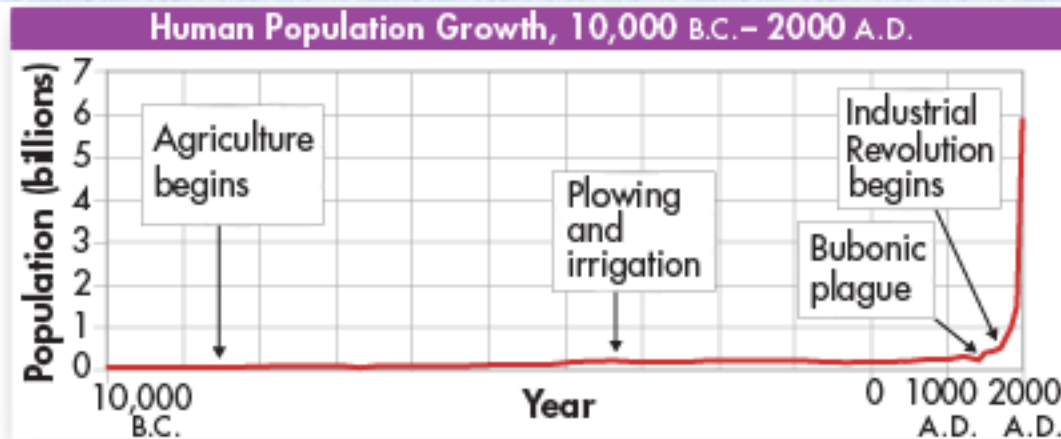
As civilization advanced, life became easier, and the human population began to grow more rapidly. That trend continued through the Industrial Revolution in the 1800s.



Exponential Human Population Growth

Several factors, including improved nutrition, sanitation, medicine, and healthcare, dramatically reduced death rates. Yet, birthrates in most parts of the world remained high.

The combination of lower death rates and high birthrates led to exponential growth.



The Predictions of Malthus

Two centuries ago, English economist Thomas Malthus suggested that only war, famine, and disease could limit human population growth.

Malthus thought that human populations would be regulated by competition (war), limiting resources (famine), parasitism (disease), and other density-dependent factors.

Malthus's work was vitally important to the thinking of Charles Darwin.

World Population Growth Slows

Exponential growth continued up to the second half of the twentieth century, reaching a peak around 1962–1963, and then it began to drop.

The size of the global human population is still growing rapidly, but the rate of growth is slowing down.

Patterns of Human Population Growth

Scientists have identified several social and economic factors that affect human population growth.

Birthrates, death rates, and the age structure of a population help predict why some countries have high growth rates while other countries grow more slowly.

The scientific study of human populations is called **demography**. Demography examines characteristics of human populations and attempts to explain how those populations will change over time.

The Demographic Transition

Human societies had equally high death rates and birthrates during most of history. But over the past century, population growth in the United States, Japan, and much of Europe slowed dramatically.

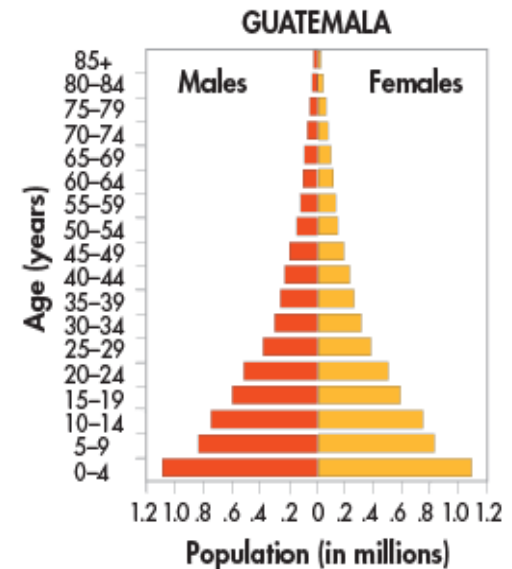
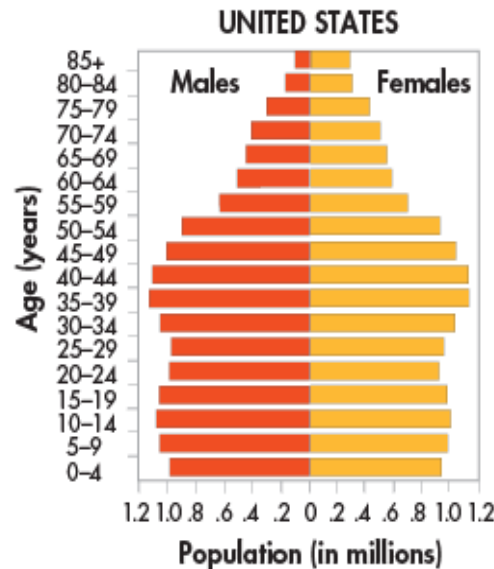
To explain this shift, demographers hypothesize that these countries have completed the **demographic transition**, a dramatic change from high birthrates and death rates to low birthrates and death rates.

Age Structure and Population Growth

To understand population growth in different countries, we turn to age-structure diagrams.

These diagrams compare the age structure of the U.S. population with that of Guatemala.

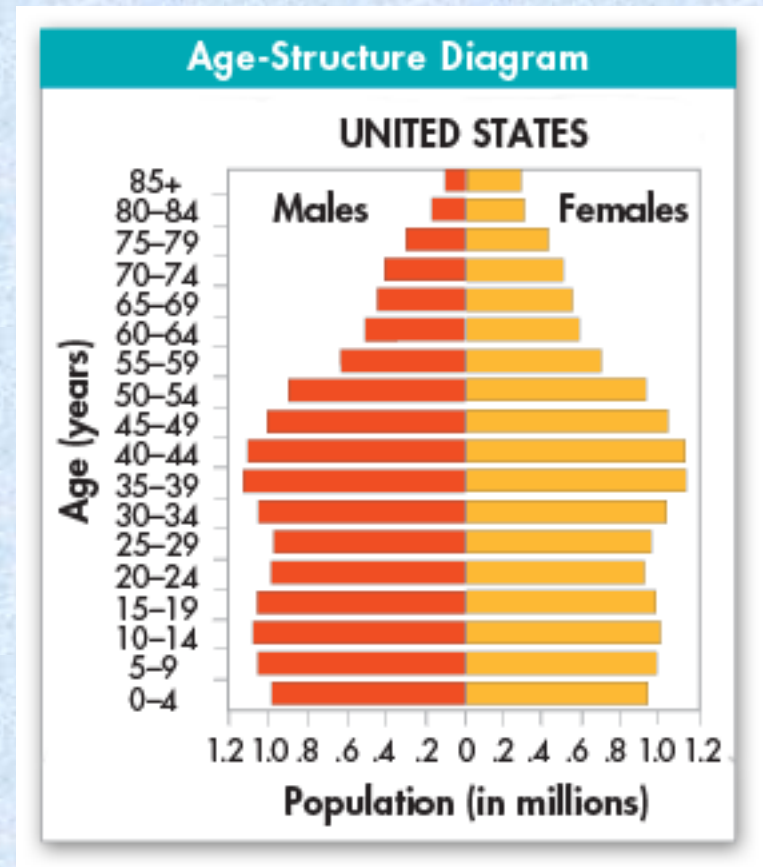
Age-Structure Diagrams



Age Structure and Population Growth

In the United States, there are nearly equal numbers of people in each age group.

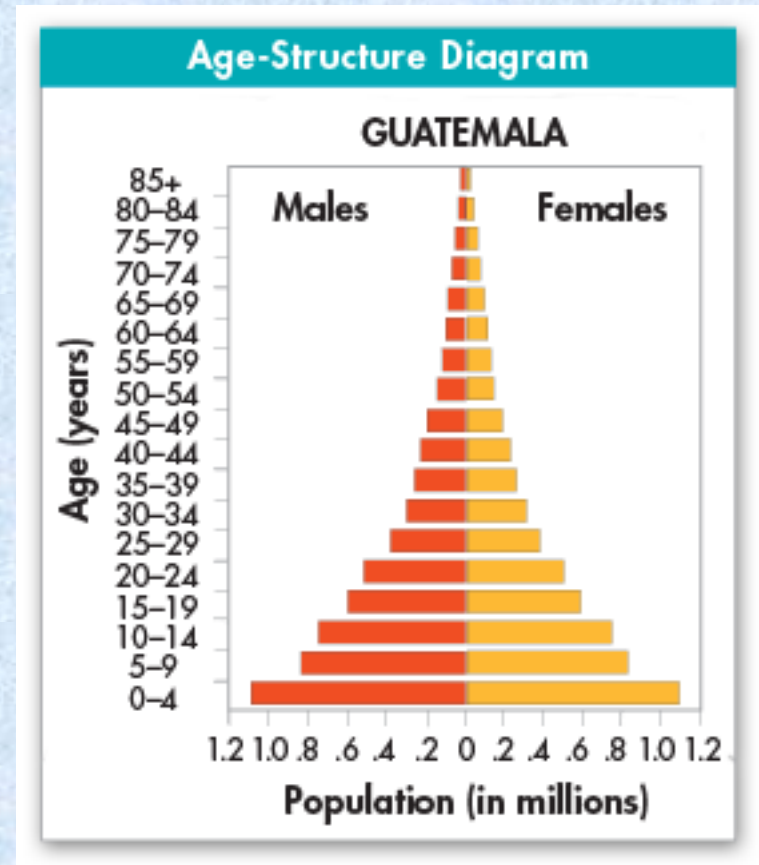
This age structure predicts a slow but steady growth rate for the near future.



Age Structure and Population Growth

In Guatemala, on the other hand, there are many more young children than teenagers, and many more teenagers than adults.

This age structure predicts a population that will double in about 30 years.

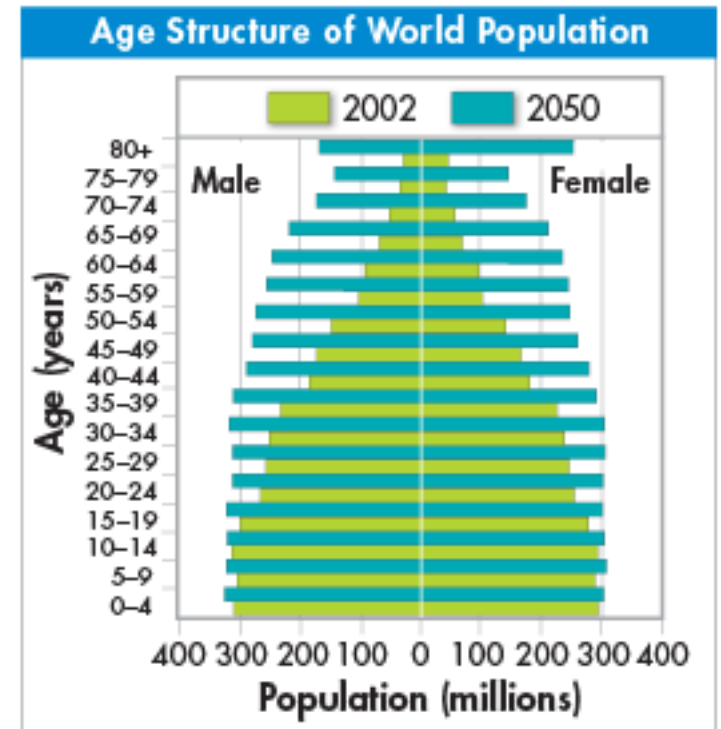


Future Population Growth

To predict how the world's human population will grow, demographers consider many factors, including the age structure of each country and the effects of diseases on death rates—especially AIDS in Africa and parts of Asia.

Current projections suggest that by 2050 the world population will reach 9 billion people.

The human population may level out to a logistic growth curve and become stable if countries that are currently growing rapidly complete the demographic transition.



Future Population Growth

Current data suggest that global human population will grow more slowly over the next 50 years than it grew over the last 50 years.

Because the growth rate will still be higher than zero in 2050, our population will continue to grow.

