



Population and Ecology



ENVIRONMENT

Environmental pollution has been a prominent public issue for more than two decades. While the major threats to the environment are now commonplace knowledge—our natural resources are being depleted while our air, land, and water are becoming polluted—people in the United States and many other countries have a history of taking natural resources and the environment for granted. As a result, the environmental damage can be catastrophic. In Romania, decades of industrial pollution have made it nearly impossible for children to play outside without becoming covered with soot, which should serve as a warning to the rest of the world the type of damage that can occur when there is a lack of concern for the environment.

In the prosperous decades following World War II—the 1950s and 1960s—cultural values in the United States did not include high regard for the environment or concern for energy conservation. For example, Elliott Currie and Jerome Skolnick (1997) cite evidence that U.S. energy consumption doubled between 1950 and 1972, increasing as much during that time as it had in the entire 175 previous years of American history. The table on the following page shows the top 10 oil-consuming countries in the world, which together account for nearly three-fifths of global oil usage.

The early 1970s, however, marked the end of this “state of environmental unconsciousness.” In 1970, President Richard Nixon created the Environmental Protection Agency (EPA), thus demonstrating the federal government’s concern about the environment and bringing environmental issues to the fore of national attention, where they have remained since (Melville, 1989). Although there has been some success in environmental protection since the 1970s—for example, the phasing out of leaded gasoline has curtailed *some* forms of air pollution, regulations about dumping of toxic wastes and raw sewage have improved the water quality in some lakes and streams—the pressures of a growing population and an expanding economy have led to increased environmental pollution and, in the words of EPA head William K. Reilly,

to “an array of environmental problems even more daunting than the pollution crises of the past generation” (Melville, 1988, p. 4).

Keith Melville identifies three reasons why environmental issues are more difficult to address today than they were when they first came to the fore of public attention. First, many of today’s pressing environmental hazards are less visible, and thus more difficult to call to the public’s attention. It is much easier to mobilize public support for problems that are readily apparent, such as polluted water, air, and land. However, it is difficult to reach consensus about problems that cannot be seen easily, such as acid rain, contaminated groundwater, carbon-dioxide emissions and their resultant greenhouse effect, or ozone-layer depletion.

Second, responsibility for environmental pollution is widespread. When attention was first called to environmental pollution, individual sources were identified and forced to take remedial action. However, today’s knowledge about pollution makes it clear that we are all partially responsible for environmental protection. Melville states, “Virtually everyone who owns a car, operates a power lawn-mower, or uses electricity generated by burning fossil fuels contributes to the build-up of ozone near ground level and carbon dioxide and other greenhouse gases in the atmosphere. While major toxic air emissions from industrial sources are fairly well controlled, many of the current emissions come from relatively small sources, such as dry cleaners and wood stoves.”

Third, environmental problems are global in scope. Most of our environmental problems are not truly local, but result from worldwide industrial and consumer behavior. For example, air pollution is not only the result of fossil fuel use in the United States, but because of its use worldwide as well. Because the source of the problem is global rather than local—that is, the result of the habits of 6.4 billion inhabitants of the planet—many people feel that it makes little difference what they do, as individuals or perhaps even as a nation. However, this belief took a turn in 2006/2007 when the phrase “Going Green” was introduced to the public. The concept of going green, which was started in order to gain the public’s interest in cutting back on the usage of oil, electricity, and those machines

If you are like most people, you worry about the population a great deal, even though you may not realize it. By “population,” we mean the number of people in a society. The population affects your chances of finding a job and a spouse. If you do marry, it is likely to influence the age of your spouse, whether you have children, and how many you will have. It may also affect your chances

of being promoted, your taxes, the age at which you will retire, and your income after retirement.

Sometimes, we also worry about population problems in the larger world. Poverty, disease, accident and death rates, world hunger, the problems of crowded cities, vanishing farmlands—all are population problems. To avoid sounding all too gloomy, we should point out that some of the most practical things we can

Major Oil Consumers (Oil Consumption in Millions of Tons)						
Rank	Country	1997	2000	2003	2007	2007 Share of Total
1.	United States	848.0	897.6	912.3	943.1	23.9%
2.	China	196.0	223.6	271.7	368.0	9.3%
3.	Japan	265.0	255.5	248.9	228.9	5.8%
4.	India	86.5	106.1	113.1	128.5	3.3%
5.	Russian Federation	129.1	123.5	123.4	125.9	3.2%
6.	Germany	136.5	129.8	125.1	112.5	2.8%
7.	South Korea	111.4	103.2	105.6	107.6	2.7%
8.	Canada	85.2	88.1	95.9	102.3	2.6%
9.	Saudi Arabia	64.0	71.6	77.7	99.3	2.5%
10.	Brazil	86.8	91.6	87.8	96.5	2.4%

Source: "Statistical Review of World Energy 2007."

that require these types of energy to operate has seen a tremendous boost over the last year. From Hollywood to Washington, DC, the public is becoming more aware of the need for the United States to take the lead in this ecological battle. It has been the platform for many presidential candidates for the 2008 election and in the early part of 2007, past Vice-President and perhaps future Presidential candidate Al Gore won an Academy Award for his documentary film on Global Warming. This cemented the gap between the film industry and politics and created a platform for the majority of society to be able to not only relate to but also to weigh in on. Although the environment seems to be a topic more suited to engineers, chemists, biologists, and geologists, it is important to sociologists as well because of the interrelationships that exist between population and the environment. The rapid population growth and increased social needs that have occurred during the twentieth century have led to increased industrialization. From the structural

functional perspective, the social well-being and high standard of living that industry functions to provide are accompanied by the latent dysfunction of environmental pollution. At first glance, this gives the impression that industry itself is to blame for environmental problems. However, as James Coleman and Donald Cressey suggest, "The origins of the environmental crisis are not to be found in a few polluting industries but in the basic social organization and cultural outlook of the modern world" (1990, p. 538). In other words, industry in and of itself is not to blame for environmental pollution. Rather, the key to understanding environmental pollution lies in understanding our cultural ideals and the ways in which our social life is organized. Natural scientists study and explain the physical ways in which the balance of nature is disturbed; sociologists and social scientists study and explain the intricacies of society and culture that often lead to practices that disturb the balance of nature.

do to resolve these problems involve studying the population in hopes of influencing it. We may be able to better understand our own lives, plan sensible social policies to shape the world's future, and develop sound business, investment, and economic strategies by understanding the size, age, sex ratios, and movements of the population. The study of these various characteristics of society is called "demography."

DEMOGRAPHY AND THE STUDY OF POPULATION

Demography is the study of the size and makeup of the human population and how it changes. Demographers want to know how many babies are being born, what diseases are in the population, how long people live, whether they stay in the same place or move

The population—the number of people in a society—affects a number of aspects in life, including your job, your spouse, and your children. Population problems in the larger world can include poverty, disease, and world hunger.



about, and whether they live in remote regions or crowded urban areas.

Collecting the Data

Demographers use many statistics in their work. After all, their main concern is counting people. In fact, the word *demography* is often used to refer to the study of population statistics. Societies have always realized how important it is to know about their members, and since early times have kept some form of **census**—a count of the population—usually with a record of the age and sex of its members. From such records, estimates of early populations can be made and studied. For hundreds and sometimes thousands of years, family lineages have been recorded and passed on orally, to keep track of who was born to whom. Written records of deaths can be found in early Greek and Egyptian accounts. The Bible says that Mary and Joseph were on their way to be counted in a Roman census when Jesus was born.

Modern nations keep much more reliable records of their populations. The first census in the United States was carried out in 1790, and censuses are still carried out once every ten years, with questionnaires mailed to all known households. In addition, interviewers search door to door for those who are not contacted or do not respond by mail. These large attempts to gather data are very difficult to accomplish.

The 2000 census has been seriously criticized for underreporting people, especially the poor and home-

less. Some people do not receive the questionnaires or do not bother to return them. Interviewers do not find some people, sometimes because the job is not organized or done properly, sometimes because people avoid being found. State and local governments are quick to complain that their populations have been undercounted because these governments receive federal funds based on their population counts.

A smaller census is made every year and is more accurate than the ten-year census because it is based on a carefully chosen random sample of the population rather than trying to count everyone in the population. A random sample has the advantage of assuring that everyone in the population is represented in the sample without the necessity of finding everyone in the population. The smaller yearly census also has the advantage of being done by more highly experienced interviewers, and there is less need to hire many temporary, inexperienced people, as is required for the ten-year census.

In addition to population counts, **vital statistics**—records of all births, deaths and their causes, marriages, divorces, some diseases, and similar data—are recorded in each state and reported to the National Center for Health Statistics. Most modern nations keep records as accurate as those of the United States. Underdeveloped nations also attempt to record their populations, and although data from these countries may be relatively inaccurate, they provide enough information to assess world population trends.

Three variables can cause the size of the population in a given region to change: (1) births, (2) deaths, and (3) migrations. Demographers measure these factors in terms of their rates. **Fertility** is a measure of the rate at which people are born. **Mortality** is a measure of the rate at which people die. **Migration** is the movement of people into or out of a geographical area. To understand how populations change, it is necessary to understand how demographers measure these factors.

Fertility

Fertility data indicate the rate at which babies are born. The crude birth rate is simply the number of births per 1,000 population, but if we want to predict how many babies will actually be born, more information is needed. We must know the **age-sex composition** of the society, and the number of males and females in the population, along with their ages. A population with few women will have few children. The ages of the females are especially important because children and older women do not have babies.

In most societies, the number of men and women is about equal. About 105 males are born for each 100 females, but women live longer than men. Thus, there may be more men at younger ages, but there are more women in older groups. During the childbearing years,

the number of men and women is usually about equal, except in societies suffering from wars in which large numbers of men are killed, or in societies experiencing a great deal of migration. Areas that men move out of have a surplus of women, whereas the areas they move into have a surplus of men; and a society with unequal numbers of men and women will have a low birth rate. There was an imbalance of this sort in the Soviet Union because so many men were killed during World War I, the Civil War of 1917–1921, World War II, and the repressive era following World War II. As a result, many women were left without husbands and did not have children, and the birth rate dropped dramatically. For years, the Soviets kept secret their great loss of population and low birth rates, but the latest available information indicates that they are now comparable to the United States in birth rates and population size.

Demographers generally assume that women are fertile from age 15 to age 49. They also know that more children are born to women in the middle of their childbearing years, but some women in their childbearing years choose not to have children, and few have as many as they potentially could. An individual woman's potential for bearing children is called her **fecundity**. Although women can potentially have 20–25 children, very few have this many. Developed countries have experienced some unprecedented declines in fertility rates during the last half of the twentieth century



Birth rates in societies are affected by the age-sex composition of the society—the number of males and females in the population, and their ages. In most societies, the number of men and women is about equal, and more children are born to women in the middle of their childbearing years.

where the mean fecundity rate has been falling since the 1920s (*Human Reproduction*, 2001).

Fertility varies greatly among societies and among subcultures within societies. The number of children born in a society is affected by three major factors: wealth, environment, and societal norms about marriage and children. Generally, richer nations have lower birth rates, and poorer nations have higher birth rates. The same relationship between wealth and birth rates holds within nations: the upper classes usually have lower birth rates than the poor classes.

Fertility rates are also different in rural and urban areas. Women in rural areas usually have more children than those in cities. In rural areas, children are needed to help with farm labor, but in modern urban areas, children are not productive. Rather, they are an expense to house, feed, clothe, and educate. They may also decrease a family's income when a parent must either pay for child care or stay home to care for them. Many demographers believe that the birth rate of the world will decline and perhaps drop sharply as underdeveloped nations become more industrialized and urban.

A society's norms regarding the value of children and the age at which marriage is considered acceptable have a strong effect on fertility rates. In countries in which women marry young, the birth rates are higher than those in which they marry later, because of differences in the number of childbearing years. Norms about the number of children a family should have and about the acceptability of birth control and abortion also affect the birth rate. Separation by war, working away from home, and conflicts between spouses also reduce the birth rate, whereas a cultural practice of abstaining from intercourse during menstruation may make intercourse more likely during fertile periods and may result in an increased birth rate.

A low or high fertility rate will of course affect the number of people born into the population, but this is only one of several factors that influence population size. Mortality and migration rates are also influential.

Mortality

Mortality, the rate of death in a population, can be measured very simply. The crude death rate is the number of deaths in a given year per 1,000 population. Like the

TABLE 19-1 2008 CRUDE BIRTH RATES AND DEATH RATES FOR SELECTED COUNTRIES

Country	Birth Rates	Death Rates
Australia	12.6	6.6
Austria	8.6	9.9
Denmark	10.7	10.3
Finland	10.4	10.0
France	12.7	8.5
Greece	9.5	10.4
Italy	8.4	10.6
Japan	7.9	9.3
Netherlands	10.5	8.7
Panama	20.7	4.7
Romania	10.6	11.8
Sweden	10.2	10.2
United States	14.2	8.3

Source: CIA World Factbook, 2009.

crude birth rate, however, the crude death rate does not provide enough information to predict how many people will die or to compare death rates among populations. For a more accurate estimate of the death rate, demographers consider age and gender. A population with many old people will have a higher death rate than a comparatively young population, and because women live longer than men, a population with many women will have a lower death rate. Demographers often use an **age-adjusted death rate**, a measure of the number of deaths at each age for each sex, usually per 100,000 living at that age. Demographers can also compute life expectancy by predicting how many of each age cohort, or age group, will die at each age.

Mortality, like fertility, varies with wealth. When people, especially infants, have adequate food, housing, and medical care, they are less likely to die of disease. The rate of *infant mortality*, death in the first year of life, was very high in the Middle Ages, but now it is lower, and the average life expectancy has been greatly increased.

Infant mortality is low and life expectancy high in more developed nations, such as the United States, Canada, and European countries.

Researchers have uncovered what they hope to be a one-time blip in infant mortality rates in the United States. Infant mortality rates rose in 2002 for the first time in decades. Our nation's infant mortality rate edged upward from 6.8 deaths per 1,000 live births in 2001 to 7.0 deaths per 1,000 in 2002 (Stein, 2004; CDC, 2004). In explaining the higher infant mortality rate, researchers point to the surge in older women having babies; the popularity of fertility treatments; and, paradoxically, advancements in identifying and saving fetuses in distress. Because we have the ability to identify fetuses in distress and deliver them early, they are dying at higher rates in early infancy (Stein, 2004; CDC, 2004).

An increase in infant mortality is cause for attention, because the infant mortality rate usually reflects the general well-being of the larger society. However, life expectancy in the United States continues to rise because of our ability to prevent, detect, and treat cancer, accidents, stroke, and heart disease.

People in China (Macau), Andorra, and Japan have the longest life expectancies in the world. An infant born in these countries can expect to live, on average, more than 80 years. The death rate is higher and the life expectancy shorter in India, Africa, South America, and Southeast Asia, where poverty is widespread (CIA World Factbook, 2009).

Death rates also vary by class within nations. In the United States, for example, poor people have a higher rate of infant mortality and a shorter life expectancy than the rich; blacks have a larger proportion of poor people, higher rates of infant mortality, and shorter life expectancies than whites (CDC, 2004). The more important factor in infant mortality, however, is poverty, not race. Black infants born to parents living in predominantly white neighborhoods, indicating higher income, have lower infant mortality rates than white infants living in predominantly black neighborhoods, where poverty is greater (Yankauer, 1990).

Migration

Migration includes both **immigration**, movement into an area, and **emigration**, movement out of an area. Migration is harder to define and measure than birth or death rates. To be considered a migrant, how far must a person move, and how long should the person remain in the new place? In the United States, moving within a county is not considered migration, but moving from one county to another is. *Migrant workers*, who travel about the country doing farm labor, are not technically considered migrants because rather than remaining in a new location after the work season is over, they return to their original starting point and take up jobs in that area.

Why do people move? Demographers speak in terms of push factors and pull factors. **Push factors** are



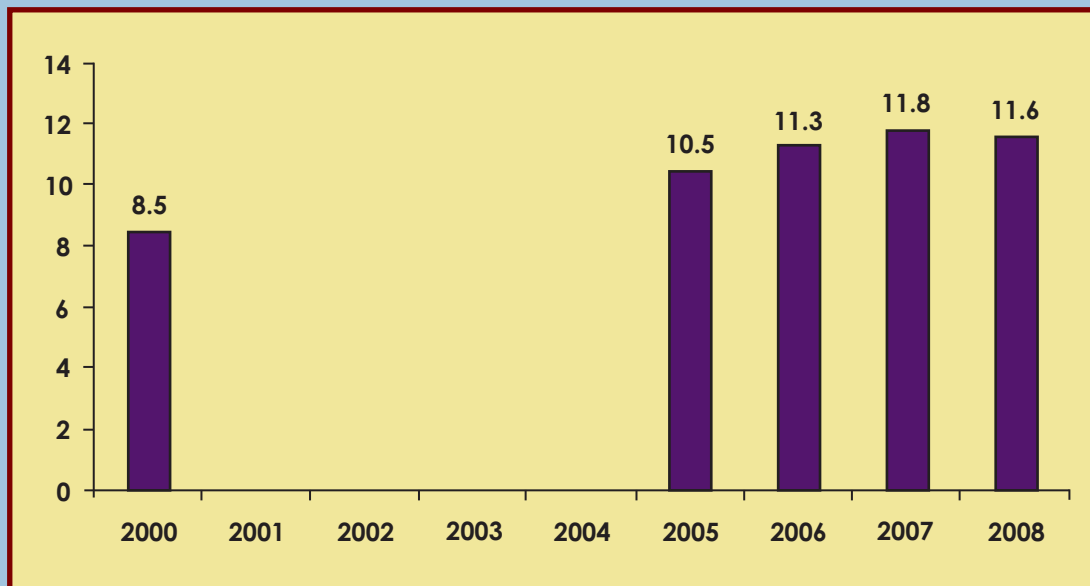
Migration is difficult to define. Migrant workers travel around the country doing farm labor but are not technically considered migrants because they return to their original starting point after the work season is over, rather than remaining in the new locations to which they travel.

FIGURE 19-1A PERSONS NATURALIZED BY COUNTRY OF ORIGIN (TOP FIVE), 2008

Mexico	231,815
India	65,971
Philippines	58,792
China	40,017
Cuba	39,871
Total	436,466

Source: U.S. Department of Homeland Security.

FIGURE 19-1B UNAUTHORIZED IMMIGRANT POPULATION: 2000–2008* (IN MILLIONS)



*Estimates not produced for 2001–2004

Source: U.S. Department of Homeland Security.

those that push people away from their homes: famines, wars, political oppression, loss of jobs, or bad climate. Some eastern Europeans, for example, have migrated to the west where jobs are more plentiful. **Pull factors** are those that make a new place seem more inviting: the chance to acquire land or jobs, the discovery of riches such as gold or oil, or the chance to live in a more desirable climate. Discoveries of gold in California, for example, drew fortune seekers from all over the world.

In prehistoric times, waves of migrants moved out of Africa and Asia into the Middle East and eastern Europe. Later, tribes moved further into Europe, spread-

ing their culture as they moved. It is assumed that these waves of migration were caused by push factors, such as changes in climate, changes in food supply, or pressure from increasing populations in Asia, as well as pull factors, such as Europe's more favorable climate.

The population of Europe increased slowly throughout the Middle Ages. When Columbus first came to America, a new wave of migration began. It started slowly, but it is estimated that more than 60 million Europeans eventually left Europe. Many later returned, so the net migration—the actual population change—was much lower (Heer, 1975).



The United States is home to one of the largest populations of illegal immigrants. Although the flow of these immigrants was curtailed somewhat after 9/11, hundreds of thousands of illegal immigrants continue to enter the country for the opportunities it offers.

Between 1820 and 1970, 46 million migrants entered the United States (Thomlinson, 1976). In a single peak year, 1854, a total of 428,000 immigrants came to this country. This group consisted mainly of Irish leaving their country because of the potato famine and Germans leaving because of political turmoil in their country. A second peak was reached around the turn of the century, when immigrants averaged a million per year. Most of the Europeans who entered the United States at that time were from Italy or other southern and eastern European countries.

A more long-term great migration occurred between 1619 and 1808, when 400,000 Africans were forced to migrate to the United States as slaves. Considering all the Americas, between 10 and 20 million Africans were brought to the Western Hemisphere (Thomlinson, 1976).

Immigration restrictions were first imposed in the United States in 1921 and again in 1924 in order to slow the rate of immigration. During this period, most immigrants were from Canada, Mexico, Germany, the United Kingdom, or Italy. After 1965, immigration quotas were relaxed, and a new wave of immigrants entered the country, changing dramatically the origins of American immigrants. About 2.4 million Asians entered the United States in the decade of the 1980s, or about 46 percent of all immigrants. Another 2 million, or 38 percent of all immigrants, came from Mexico and other parts of Latin America (*Information Please Almanac*, 1991). What's more, as of 2008, this new pattern of immigration shows no sign of abatement. Certainly, in 2008, a record number of immigrants (1,046,539) naturalized, two-fifths of whom came from Latin America and Asia. The top countries of birth of new citizens in 2008 were Mexico, India, the Philippines, China, and Cuba.

Besides legal immigration, the United States is also home to one of the largest diasporas of undocumented immigrants in the world. Most illegal immigrants in the United States come from Latin America and enter the country via the U.S.–Mexico border. The lure of the American dream drives these immigrants into the United States by the millions. Indeed, for 2008, the U.S. Department of Homeland Security conservatively estimated that the United States was home to over eleven million undocumented immigrants. Since the terrorist attacks on 9/11/2001, the flow of undocumented immigration into the United States has been curtailed somewhat by stronger border security. However, hundreds of thousands still enter the United States illegally every year. For most Americans, it's a source of pride that so many people from around the world would risk their very lives just to live in the United States. Still, the after-shocks of the 9/11 attacks regularly remind Americans that not every immigrant has the best interests of the United States in mind. As a result, in the decades to come, the issue of undocumented immigration will continue to be a major source of political debate.

Immigrants work at very low-paying jobs when they arrive in the United States, such as in clothing factories or as doormen. Some are able to begin small businesses of their own. Many immigrants are better off than they were in their country of origin, but others who are more highly educated and trained for

professions are unable to find work to match their qualifications, and they too must work at the very low-paying jobs available to them. There is some research evidence that the influx of low-wage immigrant workers into the Los Angeles area has kept wages there from rising for the population as a whole (Vernez and Ronfeldt, 1991). Because of recent restrictions however, admissions for categories such as temporary agricultural workers and holders of NAFTA visas for professionals declined to 650,000 in 2003, a continued decline from 2002 levels of 688,000 (UNFPA, 2004).

Migration within the United States has also been extensive. Throughout this country's history, people have moved predominantly from east to west and from rural to urban areas. After World War I, when immigration was restricted and the supply of laborers entering the country was limited, northern cities recruited southern blacks to fill labor jobs. Many blacks moved to northern cities, far exceeding the number of jobs or the housing available. The migrants could not return to the South because they had neither money to make the return trip nor a home waiting for their return. Even today, we can see the pattern of inadequate jobs and housing for blacks living in northern cities.

The rate of population change is determined by all the foregoing factors. If the birth rate is high and the mortality rate is low, the population increases. If the mortality rate is high compared with the birth rate, the population will decline. Where migration enters the picture, the population can grow or decrease very rapidly. Even relatively small changes in demographic patterns can make long-term, sweeping changes in the lives of people in the population. For example, people born when birth rates are high in the United States have many different experiences from people born when birth rates are low.

POPULATION TRENDS AND LIFE EXPERIENCES

Figure 19-2 is a **population pyramid**, a graph that shows how many males and females from each age category there are in the United States today. Find in the middle column the category containing your age group, noting that the bars extending to the left and right represent the

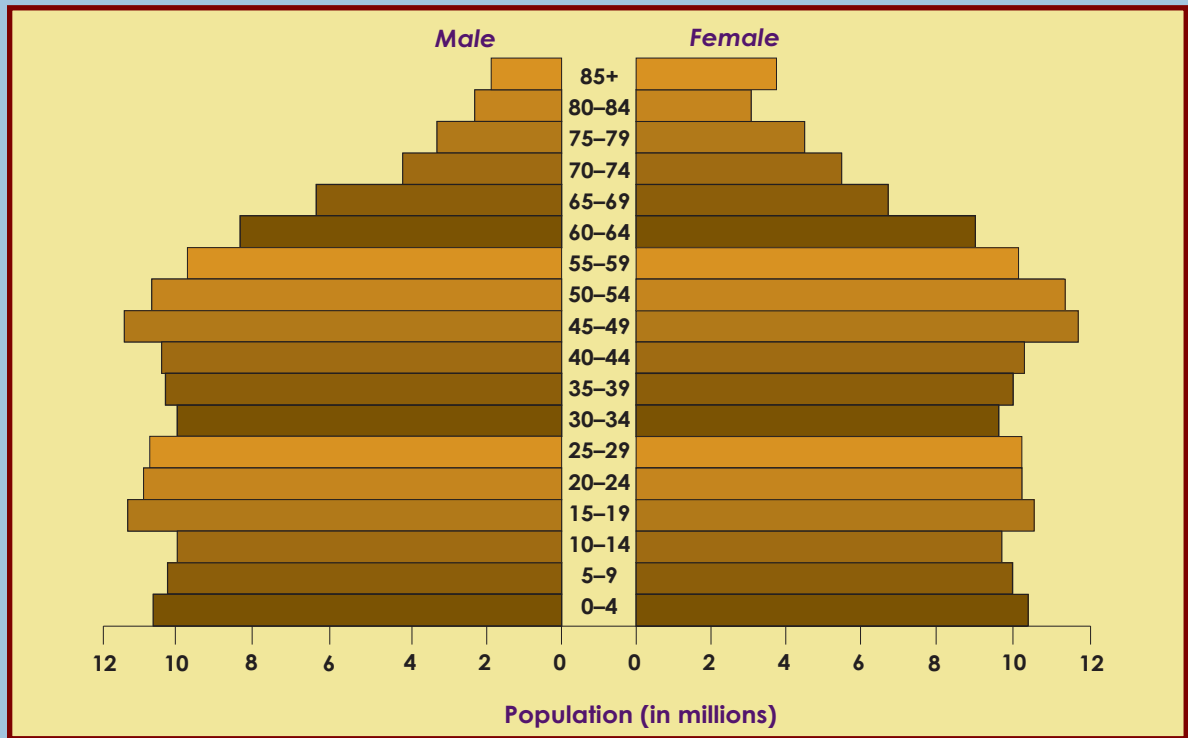
males and females born in those years. By looking at the bottom of the graph, you can determine the number of people of your age and sex in the population. If you are between 15 and 19 years old as of 2009, the left line tells us how many females in your age group live in the United States while the right line tells us how many males of your age group reside in the United States. Notice also how the pyramid bulges out for the ages between 45 and 64. The bulge represents the people born during what is called the “baby boom.”

Why were so many people born during those baby boom years? During the depression of the 1930s and World War II in the 1940s, many people postponed having children. After the war, the country was both peaceful and affluent. Those who had postponed having children began families, and those who were just entering their 20s began having children, too. The result was a disproportionate number of babies born in the 1950s and 1960s, compared to other decades.

How has the baby boom affected the lives of people born during those years? First, it may have affected their education. Children might not have gone to nursery school because the schools were full. Schools were crowded because there were not enough schools to take care of so many children, and many children attended schools in temporary classroom buildings. When students reached college age, they faced strong competition to gain entrance to colleges, which were overcrowded trying to deal with the surge in population. At the end of the baby boom, schools closed because there were fewer students to fill all the space that had been created. Some students, especially those in suburban areas, watched their elementary schools close when they left them, went to a junior high school that was closed while they were there, moved to a second junior high, and saw that one close before they had finished senior high school.

Students born between 1975 and 1979 have had a very different educational experience. Their experience is similar to those who were born in the 1930s and followed the baby boom of the 1920s. Harter (1987) describes the generation of the 1930s as the “good-time” cohort. When they went to school, there was plenty of space in school, plus a full complement of athletic teams, glee clubs, debating societies, and other extracurricular activities. The cohort of the 1930s could participate without facing much competition. So

FIGURE 19-2 AGE-SEX POPULATION PYRAMID, UNITED STATES, FOR THE YEAR 2009



Source: U.S. Census Bureau, International Data Base.

it has been with those born between 1975 and 1979. There has been plenty of room in school for them throughout their educational years, and there has not been the extreme competition for a place in college. In fact, colleges have been competing for students to attend their schools and have made every effort to recruit students and provide them with scholarships and loans so that they are able to attend. The lack of competition may also have reduced the amount of studying and learning that has taken place in school.

When baby boom children completed their education, unemployment rates were high. Many people were competing for jobs, and only a small part of the work force was retiring to create more job openings. About a generation later, the drop in the unemployment rate in 1984 was largely a result of a drop in the number of young people entering the job market.

When the people born between 1975 and 1979 enter the job market, there will be fewer of them, and un-

less the economy is weak, they should have an easier time finding jobs. Furthermore, the bulge of people born between 1920 and 1929 will have retired, and there should be some room for upward mobility in corporations.

Population trends also affect marriage rates. Women born during the baby boom were more likely to marry at an older age or to stay single than was true in earlier generations. Why? Because of what is referred to as the **marriage squeeze**. Women traditionally marry older men, and a look at the population pyramid shows that there was a shortage of older men for these women to marry (a marriage squeeze). Women born after the baby boom have many older men to marry, so they may marry at a younger age. Men born late in the baby boom who want to follow the normative practice of marrying younger women face a shortage (also a marriage squeeze), and so far they have not shown an inclination to start a new trend and avoid the squeeze by marrying slightly older women.

Population trends also affect clothing styles and fashions. After World War II, the mark of beauty was to have a more well-developed figure, like Marilyn Monroe or Betty Grable, because the market for clothes was found among women in their 20s and 30s, who had been unable to buy clothes during the war. Youngsters born during the baby boom, however, represented a big, new market, and manufacturers catered to them beginning in the 1960s. It became stylish to be thin because adolescents tend to be thin during their period of rapid growth, and a whole nation dieted to look like adolescents. When the baby boom generation grew older, clothing manufacturers changed styles to meet the market for clothes for more mature figures, and low-cut jeans were replaced by stretch blue jeans with a fuller-cut thigh and an elastic waist. Also, the health club business began to boom because this age group wanted to stay thin and look young. Ski resorts suffered

a slump, however, because as members of the baby boom got older, they began staying home, having children, and watching their budgets, and there were not enough younger people to replace them on the slopes. Golf, a gentler sport, began to increase in popularity.

Housing costs are also affected by population trends. Housing prices increased dramatically when baby boom young adults bought houses, but then dropped as demand eased. Retirement homes also saw a boom when those born in the 1920s retired, but prices fell when those born in the 1930s retired. Through studying population trends, we can see that consumer interests become very predictable.

Population trends may also determine government policies that affect you in your old age. In the year 2020, most of the baby boom will have reached age 60, and many will be collecting Social Security, while others will still hold powerful positions in business and



Population trends affect aspects of society including marriage rates and fashion. For example, the mark of beauty after World War II was to have a fuller figure like Marilyn Monroe. In contrast, today's view of beauty is to be thin to mirror the body of an adolescent.



SOCIOLOGY AT WORK

Monitoring Population Trends

Mathew Greenwald received his Ph.D. in sociology from Rutgers University. Prior to opening up his own consulting firm—Mathew Greenwald and Associates, Inc.—he was the director of the social research services department of the American Council of Life Insurance (ACLI). While with the ACLI, he supervised a ten-person staff, designated to monitor past social changes and to predict future social change. The results of this type of work are used by insurance companies to construct policies and to prepare for the future.

Greenwald explains that because whole-life insurance policies can run for 50 or 60 years, insurance companies have an interest in the long view. “Of course, some aspects of the social world are so volatile that it’s difficult to say what will be happening fifteen years from now,” Greenwald says. However, it is still possible to make predictions. “For example, we know that Social Security will be in trouble in 2011. That’s when the first year of the baby-boom generation, those born in 1946, will be retiring. We also expect important medical breakthroughs in such areas as cancer research. Certain trends in computerization and global economics will probably also continue. Thus, while there’s a lot we can’t know, some trends can be accurately predicted, and the more we know the easier it is to make decisions.”

Here is where his sociological training comes in. “The sociological perspective is of crucial importance,” Greenwald says. “It’s really a certain type of logic, a guide for analysis. It provides a structure for assessing situations. I might approach a family-related problem by looking at it in terms of statuses and roles, for example. More concretely, my training is useful in developing questionnaires and doing survey research. Besides my coursework in methods and statistics being useful, my work in theory, health, population, and the family also has been very valuable.”

Greenwald provides an example of how sociological knowledge is useful in making predictions for insurance companies. “The primary purpose of life insurance is to replace income if a family breadwinner dies or is disabled, so the insurance business is bound up with many basic social institutions. We use survey research to keep track of a number of trends on an ongoing basis, including attitudes toward death, retirement, and family responsibility. We also use demographic data about factors such as health, birth rates, death rates, divorce rates, and the number of women working.” As you might expect, major social developments influence the sales of life-insurance policies. “Now that families are more dependent on wives’ income, women are buying much more insurance than they did previously. We’re also finding that sales among Afro-Americans and Hispanics are increasing as these groups become more affluent.”

In addition to following demographic trends, Greenwald and his department often undertook special projects. For example, one study concerned the public’s sense of control over key aspects of their lives. Their findings? “Sadly, we found that people feel they have less control than they did a few decades ago, especially over the long term.” This is probably the result of a number of factors, such as a volatile economic system, political turmoil at home and abroad, terrorism, and wars. “It’s unfortunate,” he says. “People who don’t feel that they have much control are less likely to take a stand and try to change the situation—they don’t take advantage of the control they do have. As concerns the insurance business, there’s evidence that feelings of lack of control are associated with ill health.”

Although Greenwald is no longer with ACLI, he still maintains his ties to the life-insurance industry; his own company mostly does surveys that focus on market research for life-insurance companies. These surveys are used to develop new products, assess the effectiveness of advertising, enhance client relationships, and anticipate how to respond to changes in the social environment.

government. Moreover, because they will be a large voting bloc, they may be able to control decisions about continuing the support of Social Security benefits. Because the smaller population just younger than the baby boom may have a large tax burden to help support all the people in retirement, it is to be hoped that the younger population will be fully employed.

Knowledge of this population trend can help us do more than merely hope for the best, however. Because policymakers today know with certainty that there will be massive numbers of people in need of Social Security through 2025, they can take the necessary steps now to avert a future break-down in the Social Security

system. By studying population and predicting how it will affect our lives, we can tailor public policy planning to accommodate these shifts in population trends.

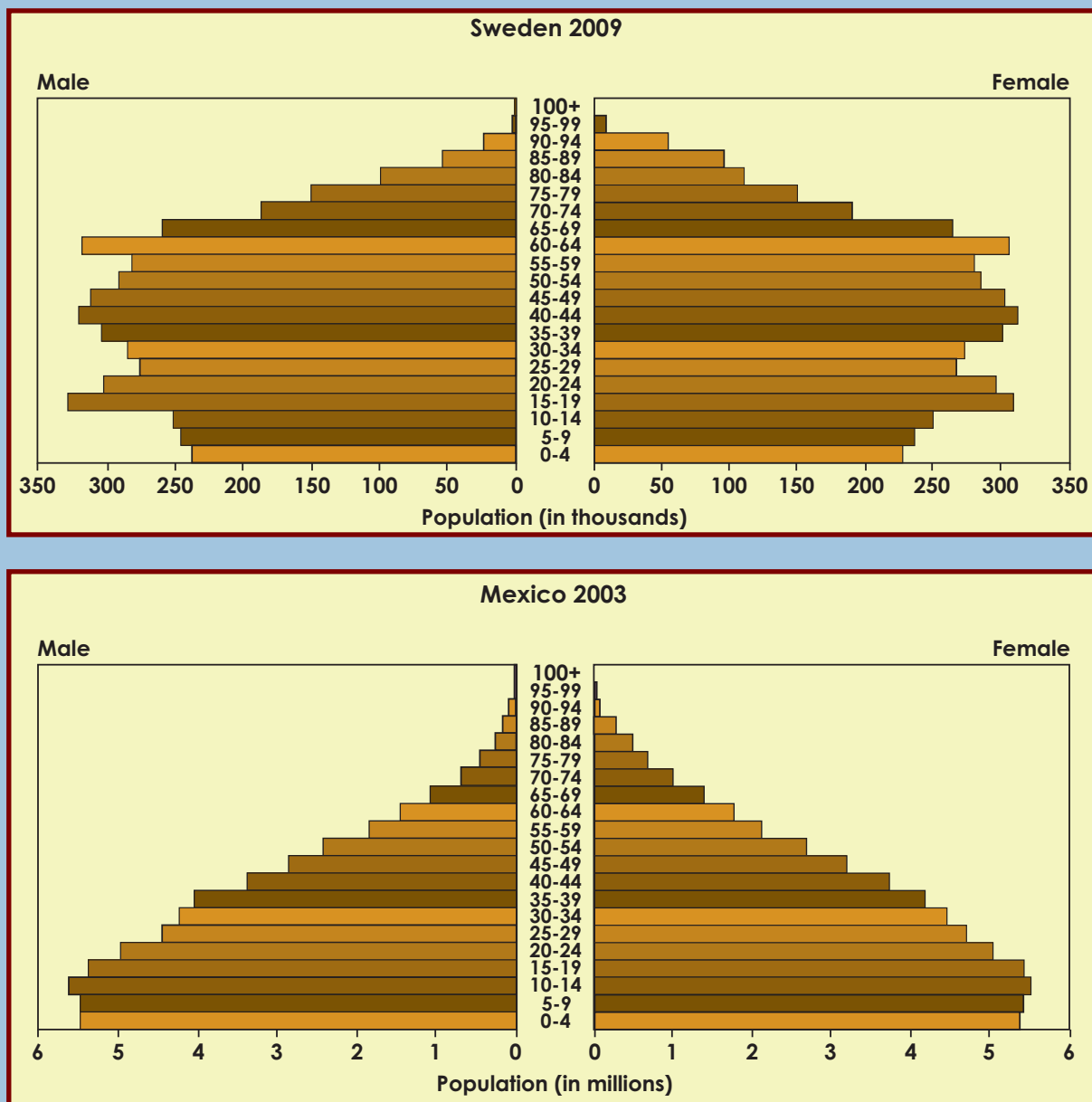
Population trends may affect business and investment decisions, both on the personal and corporate levels. Consider, for example, how corporations that provide services for the elderly will prosper when the baby boom reaches retirement age. Nursing homes, retirement villages, and pharmaceutical products for the aged are likely to experience explosive growth as a result of this population trend. Other services, such as automated car washes, house cleaning and yard services, and restaurants may also develop due to the

increased numbers of the elderly. Think of how this knowledge can help businesses plan for those needs. New businesses in new fields may open up and may offer opportunities to those shrewd enough to anticipate the future needs of the population.

Different nations have different population pyramids and therefore must plan for very different future needs of the population. As shown in the hypothetical pyramid in Figure 19-3, countries in

which a large proportion of the population is very young, such as Mexico, can be expected to grow rapidly as children mature and have children of their own. Here the care and education of the young will be of primary importance. In Sweden, where the proportion of young people is smaller, the population cannot be expected to grow. However, they have a larger proportion of elderly and will need to plan for their care.

FIGURE 19-3 POPULATION PYRAMIDS OF A YOUNG POPULATION (MEXICO) AND AN OLDER POPULATION (SWEDEN)



Source: U.S. Census Bureau, International Data Base.

Thinking Sociologically

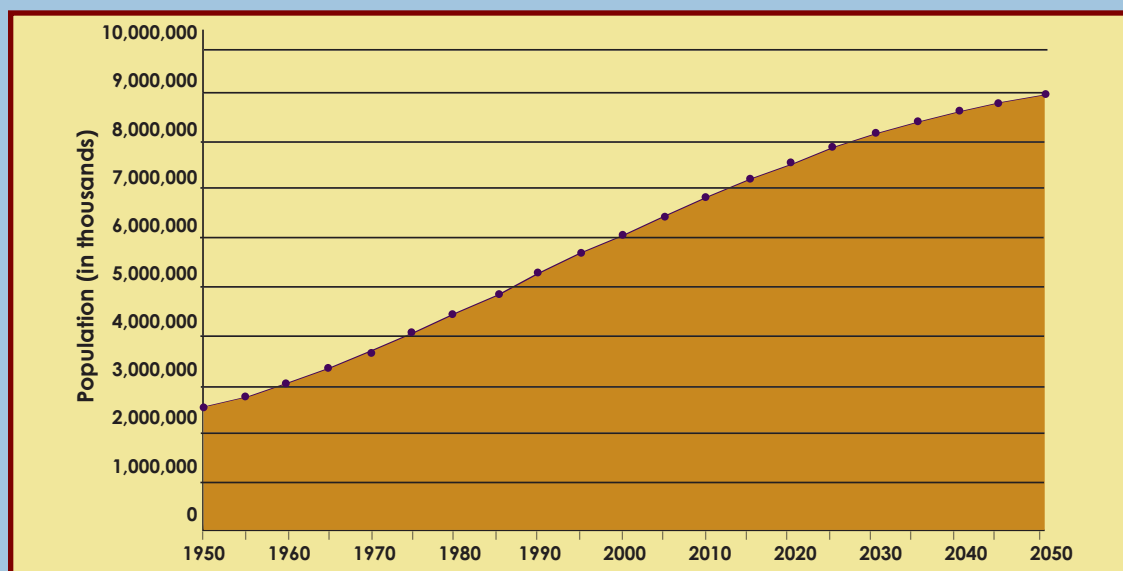
1. If the United States were a very young population, such as Mexico, what social problems would probably be more prevalent than they are today? What social problems would probably be less prevalent?
2. If the United States were an older population, such as Sweden, what social problems would probably be more prevalent than they are today? What social problems would be less prevalent?

THE WORLD POPULATION EXPLOSION AND THE DEMOGRAPHIC TRANSITION

Until about 200 years ago, both birth and death rates were very high. As a result, the size of the world population remained stable. For every person who was born, someone died. Then a dramatic change took place. First, in industrial nations in the early part of the nineteenth century, the death rate dropped because of

improvements in nutrition and sanitation. For several generations, however, the birth rate remained high. (This is the period when what we now refer to as the “population explosion” began.) Then, in about 1850, the birth rate began to decrease also and the rate of population increase slowed. This change from high birth and death rates to low birth and death rates with a period of rapid population growth in between is known as the **demographic transition**. It occurs as a society evolves from a traditional premodern stage to a modern industrial stage; most European nations and other industrial countries have already passed through it. Other countries, particularly those in the Third World, still have very high birth rates in rural areas because children are highly valued for the tasks they do and for the security they provide when their parents reach old age. It is in these countries that population growth continues at very high rates. It took the human race from the beginning of history until 1850 to reach a population of 1 billion people, it took only an additional 100 years to reach 2 billion, and only 35 more years to reach 4.8 billion. Currently, the world is populated with more than 6 billion people (see Figure 19-4).

FIGURE 19-4 WORLD POPULATION GROWTH



Source: Population Division of the Department of Economic and Social Affairs of the United Nations Secretariat, *World Population Prospects: The 2008 Revision*, <http://esa.un.org/unpp>



POLICY DEBATE

Should Stricter Environmental Protection Measures Be Enacted?

As noted in the introduction to this chapter, measures to protect the environment through the regulation of consumer and industrial behavior have accomplished a great deal over the past few decades, but many feel that a great deal more is needed. A variety of environmental protection groups, scientists, and politicians have suggested that further regulatory steps be taken, such as

- Ban chlorofluorocarbons (CFCs) and other ozone-depleting chemicals.

- Enforce air-quality standards established by the Clean Air Act.

- Insist upon stringent vehicle emission standards, and require auto manufacturers to produce cars that can yield at least 40 miles per gallon of gasoline.

- Reduce the number of miles people drive by requiring car-pooling.

- Ban, highly restrict, or reformulate products that are environmentally unsound, such as gasoline-powered lawn mowers, charcoal lighter fluid, some kinds of deodorants, polystyrene foam (Styrofoam™), varnishes, adhesives, and hundreds of other products.

- Require rapid reductions in sulfur emissions.

There are many other regulatory measures like these that many consider to be necessary to prevent further environmental destruction (Melville, 1988). Yet, despite Americans' heightened environmental consciousness, there still is considerable debate as to whether the government should impose stricter environmental regulations on consumer and industrial behavior. Perhaps this is because many of the proposed environmental

regulations would significantly affect both consumer and industrial behavior.

Opponents of strict environmental regulation believe that the aforementioned types of measures would seriously damage the economy and, thus, lead to a decline in our standard of living. It would be very costly in terms of money, time, and reorganization for industries to meet some of the stricter environmental regulations. Opponents therefore contend that the cost and complexity of complying with stricter environmental regulations would discourage investment, hinder the construction of new plants, cut into profits, create unemployment, lead to a loss of production, and generally curtail economic growth (Currie and Skolnick, 1997).

Advocates of strict environmental regulation argue that putting short-term corporate profits ahead of a cleaner environment is dangerously shortsighted. For example, in 1974, scientists warned of the dangers to the ozone layer that result from the chemicals—such as CFCs—used in aerosol sprays and other products. For many years, manufacturers of CFCs dismissed the warnings as speculative and fought proposed government legislation to restrict their usage on the grounds that eliminating them would lead to serious economic losses. In 1985, however, when a hole in the ozone layer was discovered over Antarctica, the public took notice. CFCs began being phased out of production, nearly two decades after scientists' warnings. The result of acting nearly two decades too late, according to advocates of stricter environmental regulations, is that humans are exposed to higher levels of dangerous ultraviolet rays (Melville, 1988).

While most opponents of environmental regulation would probably agree that we would all be better off with a cleaner environment, they contend that a certain amount of pollution and environmental destruction is an unavoidable by-product of in-

Population Density

The population explosion has dramatically increased the number of people in the world, but migrations have not distributed people evenly over the face of the earth. Whereas the population is sparse in many areas of the world, in some regions it is extremely dense. Such areas cannot provide the natural resources needed to maintain their population.

The United States, although it has absorbed millions of immigrants, has a relatively low population density. In some remote areas, the density is only 5 peo-

ple per square mile. In major cities during the business day, on the other hand, the population density is as high as 100,000 people per square mile. For the entire United States, the density is 76 people per square mile (*World Almanac and Book of Facts*, 2002).

The other highly industrialized nations of the world have a higher population density than the United States. In Europe, it is very high. The developing nations are less densely populated than European countries, but they are not highly industrialized and therefore have less wealth to support themselves. China, the largest nation in the world, now has a popu-

dustrial society. This is part of the price that must be paid for a high standard of living. Opponents feel that the economic dislocation that would be caused by strict environmental regulation would have negative consequences not just for industry, but for all of society. For example, the taxes that large corporations pay help to support public schools, public hospitals, fire departments, police departments, and many other services. In many communities, most of the tax base to support these services is provided by large corporations. Decreased profits for industry mean that less tax money would be paid by them and, thus, less money would be available for public services. In order to maintain the same level of service, the tax burden would have to be passed on to the citizens. Opponents of stricter regulation contend that the problem would be even worse for poor people in underdeveloped nations that now can benefit from the economic and technological growth associated with industrialization.

Advocates maintain that while environmental regulation may involve short-range costs to the economy, the long-range economic impact actually is positive. A study conducted by the Council on Environmental Quality found that environmental controls would lower industrial productivity by only a minuscule amount and would entail one-time expenses (Currie and Skolnick, 1997). While the cost of stricter environmental regula-



tion could be significant, advocates say that there is no evidence that there would be substantial negative effects on investment. On the contrary, they suggest that environmental regulations carry the potential for increased economic growth.

For example, an EPA study projected that unemployment would decrease slightly as a result of newly created jobs in antipollution-equipment industries and services. Another study, conducted by the Conservation Foundation, found no evidence that environmental regulations had caused industries to avoid locating in states with stricter regulations. As Currie and Skolnick note, "California, for example, which has very stringent environmental regulations, also had the largest gain in manufacturing jobs of any state during the 1970s"

(1988, p. 345).

Finally, some opponents of stricter environmental regulation feel that this type of control is an unwarranted intrusion of the government into our lives and contradicts our free-market economy. They feel that government should not control individual behavior or private producers unless it is absolutely necessary (Melville, 1988). Advocates of environmental regulation, however, say that it is absolutely necessary for the government to step in because it is unrealistic to trust the free market and consumers to make prudent decisions about environmental effects.

lation of more than 1 billion people, but its area is so great that its population density is only 306 people per square mile. There are places in the Third World where the population density is so very high that the land cannot begin to support the human life in the area, and the poverty is devastating.

Population and Ecology

How large a population can survive on the earth's resources? The study of the interrelationships between living organisms and the environment is called **ecology**.

In the case of human beings, the concern is that the environment will not be able to support human life with the necessary food, water, and other basic necessities if the population should get too large.

Interestingly, theories about the relationship between population and the environment were initially developed during a period when it was feared that there were too few people to produce what society needed. Between 1450 and 1750, European traders were exporting Europe's products in exchange for gold and silver. In some areas, however, one-third to one-half of the population had been killed by the plague.

Although the world's population has dramatically increased over the last 200 years, people are not distributed evenly over the face of the earth. For example, in China, where there are more than 1 billion people, the population density is only 306 people per square mile due to the country's large size; in many smaller countries, on the other hand, the population density is so great, the land cannot support the people.



Many writers argued that if the population were larger, there would be a better ecological balance. More products could be produced and exported, which would bring more gold and silver to the merchants. If the population were large enough, labor would be cheap, wages could be kept low, the people would have little to spend, and increases in imports would not be needed. Thus, all increased production could be traded for gold, silver, or merchandise valuable to the traders.

The political activity of this period was designed to encourage a high birth rate. The birth rate did increase, and by 1750, writers had begun to worry about overpopulation. The most famous of this second group of writers was Thomas Malthus.

Malthus's Theory of Population

Thomas Robert Malthus (1766–1834) argued in his *Essay on the Principle of Population* that because of the strong attraction between the two sexes, the population could increase by multiples, doubling every 25 years. According to **Malthusian theory**, the population would increase much more rapidly than the food supply. That is, the population would increase in a geometric progression, as illustrated by the numbers 2, 4, 8, 16, 32, and so on, while the food supply would increase in an arithmetical progression as illustrated by the numbers 1, 2, 3, 4, 5, and so on. The predicted result was a runaway population growth with insufficient food to feed the exploding numbers of people. Malthus believed that the more

intensively land was farmed, the less the land would produce, and that even by expanding farmlands, food production would not keep up with population growth. Malthus contended that the population would eventually grow so large that food production would be insufficient, and famine and crowding would cause widespread suffering and would increase the death rate—acting as nature's check on overpopulation. Malthus suggested as an alternative that the birth rate be decreased, especially through postponing marriage until a later age.

Malthusian theory created much debate. Writers such as John Stuart Mill and the economist John Maynard Keynes supported his theory. Others have argued against it. Karl Marx, for example, contended that starvation was caused by the unequal distribution of the wealth and its accumulation by capitalists.

During the depression of the 1930s, the debate changed because the birth rate fell sharply in industrial nations. Some predicted that the human species would die out—first the Caucasians, then other races. Schemes were proposed to encourage families to have more children by giving them allowances for each child born. Many economists, however, believed that even in societies with smaller populations, people could prosper and industry could grow if the wealth were redistributed to increase consumption by poor families. Government spending on programs for the poor and unemployed could be increased, and low interest rates could be used to encourage spending on houses, cars, and other consumer goods.

The birth rate rose sharply after World War II, especially in the underdeveloped nations; people starved in Bangladesh, Africa, and India. Birth control programs were instituted, and it was argued that the only way to eliminate starvation was to reduce the birth rate. Malthusian theory became popular once again. Malthus's contention that food production could not increase rapidly was much debated when new technology began to give farmers much greater yields. Malthus's contentions were revised, and **neo-Malthusian theory** developed, revising his theory to include more information—such as taking into account the effects of technology—but still predicting the fact that population cannot grow indefinitely without dire consequences.

The debate nevertheless continues, and some social thinkers continue to believe that population explosion is not necessarily a threat. The French sociologist Dupreel (1977) argued that an increasing population would spur rapid innovation and development to solve problems, whereas a stable population would be complacent and less likely to progress.

World Food Distribution Today

Before World War II, Africa, India, and Asia exported grain to other nations, primarily to the industrial nations of Europe (George, 1977). Why, then, are people in these underdeveloped nations starving today?

Some analysts argue that the land in overpopulated areas has been farmed too intensively to provide food

for large populations and thus has been ruined. Even the United States, with its comparatively low population density, has lost 10–15 percent of its farmland through soil erosion since the time of the European immigration (Humphrey and Buttell, 1982). In parts of Asia, Latin America, and Africa, the problem is much worse because overuse of the land is causing it to deteriorate very rapidly. In Africa, the size of the Sahara Desert is estimated to be decreasing by 30 miles a year because the land cannot sustain the population using it.

Other observers of the world food situation have criticized American corporations for creating the world food shortage. They contend that because we had a surplus of grain, we encouraged underdeveloped nations to grow nonfood cash crops, such as cotton and rubber, or nonnutritious foods, such as coffee, tea, and sugar. The United States would lend money and supply fertilizer and farm equipment only to nations that agreed to grow products needed in the United States. In Brazil, for example, the United States encouraged soybean production, while American corporations own all the soybean processing plants and receive most of the profit from soybean production.

In the past few decades, many underdeveloped nations have become increasingly dependent on American grain imports because they use their own land for nonfood products. In the 1970s, the price of grains rose dramatically, and critics argue that the United States, having acquired a monopoly of the food supply, increased prices to make enormous profits. Today, the



Overuse of land in areas including the U.S., Africa, India, and Asia has led to deterioration and starving populations. The Sahara Desert in northern Africa is estimated to be decreasing by 30 miles each year because the land cannot sustain the population using it.

cash crops grown by other nations cannot be sold at prices high enough to buy all the grain needed from the United States. Thus, poor people everywhere starve because they do not have land on which to grow food or the money to buy food, even when enough food is produced in the world to feed all its people. U.S. grain exports are projected to rise by 34 percent between 1995 and 2020 (Study: 1999).

Population and Other Natural Resources

Food production and distribution is only one of the problems that occurs as the world population increases. As was noted in the introduction to this chapter, environmental problems are serious in nature and global in scope. Humans need water just as we need food, and the earth's large human population is rapidly polluting the available water. Waste from modern life, including the many chemicals that are now produced each year, find their way into small streams and large seas, making the water unfit for human consumption. It also makes water unfit for fish, thereby reducing the hope of turning to the sea for a source of additional food.

The increased population also affects the air we breathe. As the population increases, more and more rural areas become densely settled, and atmospheric

pollution is exacerbated by the toxic elements emanating from cars, planes, industrial smoke, and other sources. Almost every human activity generates dust; when these particles become airborne, they seed the clouds and increase the rainfall. On the east coast, especially in Canada and New England in recent years, pollution from midwestern industries has caused acid rain to fall, killing fish and changing the composition of the land on which it falls. Another pollution-related problem is that as the cloud cover increases with airborne pollutants it has a *greenhouse effect*, holding warmth from the sun close to the earth rather than letting it escape into the upper atmosphere. As a result, some scientists suggest that the climate of the earth will become warmer and icebergs may even begin to melt, which could raise the sea level and flood coastal areas.

Our forests are also being rapidly depleted. Trees are cut down to make room for people, to provide fuel, and to provide wood for houses, furniture, and other products. The loss of forests not only means the loss of these wood products, but also affects the ecological balance between the earth and the atmosphere. In particular, plants consume an excess of carbon dioxide and give off an excess of oxygen; this crucially affects the ratio of oxygen to carbon dioxide in the air we breathe.

As these natural resources are lost—and the loss will be rapid if we do not use resources wisely—con-

The increase in the world population is affecting natural resources such as forests, which are rapidly being cut down to provide fuel, houses, furniture, and other products, as well as to make room for people. Such loss of natural resources negatively affects the ecological balance between the earth and the atmosphere, which in turn will cause conflict as people fight to survive the negative effects.



lict will occur. People who lack the necessary resources to survive will fight those who do have resources. Although conflict in the world is usually expressed in political terms, these conflicts are not based on political ideology. They are conflicts over scarce resources. The United States involvement in the Middle East is motivated largely by our desire to safeguard our supplies of oil. Latin American countries such as El Salvador and Nicaragua cannot provide for the peasants who have been driven off their land by the larger agriculturalists—a dilemma that induces revolution. As suggested by conflict theory, if revolutions and inequalities are to be eliminated, increasing population must be accompanied by an end to the unregulated freedom to pursue wealth and a more equitable rationing of the world's scarce resources.

Note the discussion of environmental protection measures in the policy debate.

Thinking Sociologically

Suppose that you were hired by an environmental protection group to help lobby for stricter environmental regulation. How could you use knowledge of demography and population to help in gathering public support for environmental protection?

Political Policies Regarding Population

Although a more even distribution of resources would solve some of the world's hunger problems, and careful planning would help us to preserve what resources we still have, ultimately, our population must be controlled. The current policies of most governments are now aimed at reducing the birth rate to improve the standard of living. After World War II, Japan initiated a program legalizing abortion and encouraging contraception. Soon afterward, India and most other Asian nations began such programs. In spite of programs to discourage births, however, many nations still experienced a population explosion. China toughened its policies most severely, limiting Chinese families to having only one child.

In the 1960s, the United States began to offer millions of dollars worth of contraceptive aids, especially intrauterine devices and birth control pills, to underdeveloped countries, requesting help in controlling their populations. The federal government also provided funds to states to open family-planning clinics and disseminate information about contraceptives in this country. These programs have succeeded in reducing birth rates in many nations, but they have also been severely criticized, for several reasons.

First, some of the contraceptive methods used in underdeveloped nations are those considered unsafe and banned in the United States. Users in other countries, not warned of the dangers, unknowingly risk infection, heart attacks, strokes, and death when they use these contraceptives. Second, lowering the birth rate in underdeveloped nations deprives parents of children, who are an asset in rural areas. They can help carry water and grow food on family plots and care for their parents in illness and old age. Thus, the policies implemented to reduce poverty in industrial nations could well increase poverty for families living in some rural areas. When planning policy, it is crucial to consider all the factors at work in the countries that will be affected.

Zero Population Growth

The goal of current world population policy is zero **population growth**, which is achieved when parents have only two children, just enough to replace themselves. If this practice were followed, the population would remain the same generation after generation. In reality, of course, some people do not have children, and some children die before reaching adulthood, so zero population growth could be attained if couples averaged slightly more than two children each. Given current rates of infant mortality and the number of women who actually have children, the population would remain stable if couples averaged 2.1 children. In the United States, the rate has been steady at 1.9, below the zero growth rate. Many underdeveloped nations have much higher birth rates, however, so the world population

explosion is continuing. Increasing population and associated ecological problems will continue to be crucial issues in the future. A more equal and careful distribution of resources is essential to preventing starvation and pollution. This relationship between population and ecology illustrates the need for a sociological understanding of the interrelationships between population size and social institutions.

Thinking Sociologically

1. Predict what the future would be like, both the good and the bad, if all birth control and abortion were eliminated from the world.
2. Predict what the future would be like, both the good and the bad, if the entire world achieved zero population growth.

SUMMARY

1. *Demography* is the study of population statistics. Demographers study census data on the number of people in the population and records of births and deaths to compute the birth and death rates.
2. The crude birth and death rates are computed by determining the number of births and deaths per 1,000 people. Neither of these measures takes age or sex into account, but these factors also influence the number of births and deaths.
3. Populations remain stable when people are born at the same rate at which they die. Population increases when the birth rate exceeds the death rate and decreases when the death rate exceeds the birth rate.
4. Populations may also change through migration. Push factors are conditions that encourage people to move out of an area; pull factors encourage people to move into an area.
5. The size of the population affects each of us quite personally. Whether we are born into a growing or a shrinking population has a bearing on our education, the age at which we marry, our ability to get a job, the taxes we pay, and many other aspects of our lives.
6. The population explosion of the past 200 years occurred because of improvements in nutrition and sanitation, which lowered the death rate. In industrial nations, the birth rate has also dropped, but rapid population growth continues in many Third World countries.
7. Population densities vary greatly in different parts of the world. Generally, the most densely populated countries are industrialized nations of Europe and Japan.
8. *Ecology* is the interrelationship between organisms and their environment.
9. Malthusian theory states that because the population grows faster than the food supply, starvation is inevitable if population growth is not controlled. Although his arguments have received much support through the years, critics contend that the world produces enough food to feed everyone but the problem arises because food is distributed unequally.
10. Some underdeveloped nations raise cash crops that neither feed the people nor bring in enough money to buy food. Some observers believe that the United States, which is the world's largest food exporter, encouraged other countries to grow non-food cash crops and then, having cornered the grain market, raised prices to increase profits.
11. Other problems affecting food production vis-à-vis population stem from pollution of the air and water and the destruction of forests.
12. Most nations are now attempting to reduce their birth rates, and contraceptives have been distributed throughout the world for this purpose.

13. The goal of world population policy is zero population growth, calculated to be an average of 2.1 children per family.

KEY TERMS

age-adjusted death rate The number of deaths occurring at each age for each sex, per 100,000 people of that age who are living.

age-sex composition The number of men and women in the population, along with their ages.

census An official count of the number of people in a given area.

demographic transition The change from high birth and death rates to low birth and death rates with a period of rapid population growth in between; this transition occurs as a society evolves from a traditional premodern stage to a modern industrial stage.

demography The statistical study of population, especially data on birth rates, death rates, marriage rates, health, and migration.

ecology The study of the interrelationships between living organisms and the environment.

emigration Movement of people out of an area.

fecundity A woman's potential for bearing children.

fertility A measure of the rate at which people are being born.

Going green The phrase that defines people who are mindful of what they consume, mindful of others, and who are working towards protecting the ecology both nationally and internationally.

immigration Movement of people into an area.

Malthusian theory The theory proposed by Thomas Malthus stating that population expands much faster than the food supply, resulting in starvation for much of the population when it grows too large.

marriage squeeze The effects of an imbalance between the number of males and females in the prime

marriage ages due to rising or falling birth rates and the median age differences at marriage.

migration Movement of people into or out of an area.

mortality A measure of the rate at which people die.

neo-Malthusian theory Revisions of Malthusian theory about food production and population growth that include more information, such as taking into account the effects of technology.

pull factors Natural or social factors that cause people to move into an area.

push factors Natural or social factors that cause people to move out of an area.

vital statistics Records of all births, deaths and their causes, marriages, divorces, and certain diseases in a society.

zero population growth A population policy that encourages parents to have no more than two children to limit the growth of the population.

DISCUSSION QUESTIONS

1. Discuss how the age and sex of a population can affect its fertility and mortality rates.
2. Based on the conflict perspective, discuss how migration can maintain the position of elites in a society.
3. Based on a functionalist viewpoint, describe when a high fertility rate would be functional and when it would not be.
4. What are some factors that could lead to rapid changes in the rate of population change? Using this information, what kinds of changes do you predict in the rate of population change in your lifetime?
5. Assume that because of increasing rates of cancer and AIDS, the life expectancy of the United States declines dramatically. How would that change society when you reach age 60?

6. If the world were purely capitalist, what would happen to the rates of starvation in the world? Why? What if it were purely socialist?
7. Discuss all of the ways in which your life has been shaped by the year of your birth and the number of people your age.
8. Discuss how the relationship between population and ecology is evident today.