

UNIT TWO: POPULATION

By late 2011 or early 2012, the population of the world surpassed seven billion, with more people living on the planet than in any other time in history. The 20th century saw a “population explosion,” with population increases so staggering that many scholars have warned of disastrous consequences in the near future. Although the consequences of this growth are controversial, we can be sure that the increases will continue, and that in the future the earth will be home to billions more human beings.

The study of population is called **demography**, a term derived from the ancient Greek words *demos*, meaning population or people, and *graphe*, meaning to describe. Demography is of interest to many social science disciplines including geography, with its special emphasis on spatial organization: the location of places, people, and events, and the connections among places and landscapes. **Population geography** focuses on the number, composition, and distribution of human beings on earth’s surface. Population geographers are interested in population changes – both growth and movement – especially as they relate to the earth’s environment and natural resources.

GEOGRAPHICAL ANALYSIS OF POPULATION

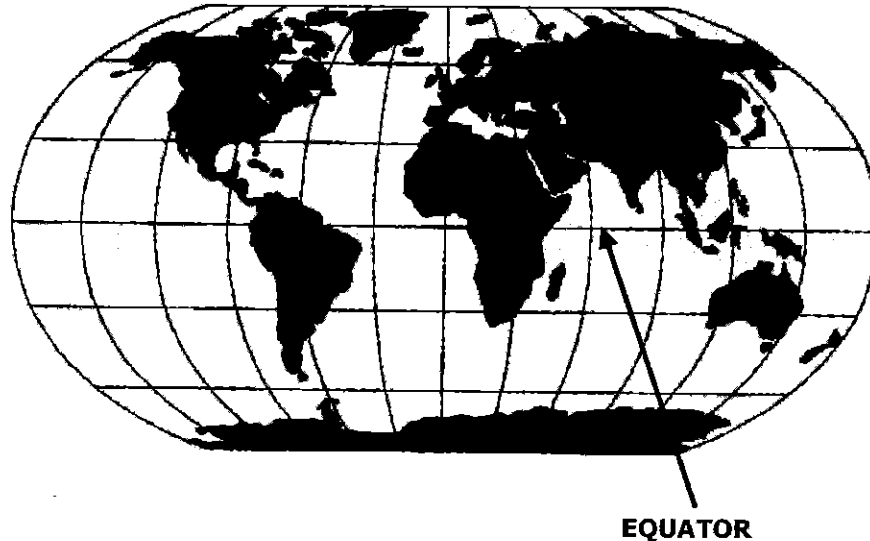
From the very beginning, people have been distributed unevenly over the planet’s surface. Population geographers study *where* people are found, including the *places* where population is growing and how rapidly population growth is occurring. Geographers also explain *why* population rates are different in different places. It is important to view population on different scales: local, regional, and global. For example, the rapid overall increase in the world’s population is much more meaningful if you analyze why some regions and localities are more threatened than others by overpopulation.

DISTRIBUTION, DENSITY, AND SCALE

The **distribution** of population refers to the arrangement of locations on the earth’s surface where people live. The billions of people on earth are distributed very unevenly, with some land areas nearly uninhabited, others sparsely settled, and still others densely populated. About half of the world’s people live in rural areas, and about half live in or near cities, although the definition of what constitutes a city varies from place to place. Population maps may be drawn at different scales, usually in the form of **dot maps**, with each dot representing a certain number of people. On the largest scale – for example, a rural county in the United States – such a map may actually show the location of every individual, with each dot representing one person. On a medium scale, such as a single country, a dot might represent 5,000 people. On the smallest scale – a map of the world – a dot often represents 100,000 people. These dots measure **population density**, or the number of people that live in a given area of land.

Looking at population distribution on a global scale, some important general conclusions include:

- Almost 90% of all people live north of the equator; only 10% live in the southern hemisphere. There are many reasons for this uneven distribution, but one important factor is that more land on the earth's surface lies north of the equator.
- More than half of all people live on about 5% of the land, and almost nine-tenths on less than 20%. Rapidly growing urban areas increasingly dominate the globe, with people leaving rural areas and clustering in cities and towns.
- Most people live in areas close to sea level. The higher the altitude, the fewer the inhabitants. Most arable land is at lower altitudes, as are areas closest to rivers and oceans, providing access to water and transportation.
- About two-thirds of world population is concentrated within 300 miles of the ocean. Many that live inland settle in river valleys. Since the beginning, humans have congregated around bodies of water, and that pattern is still evident in the world today.



Land and Population Distribution. Notice how much land mass is north of the equator, helping to explain the fact that 90% of all people live in the Northern Hemisphere.

ARITHMETIC AND PHYSIOLOGICAL POPULATION DENSITY

Population density may be computed in several ways, including the calculation of arithmetic density and physiological density. Both measures help geographers to describe the distribution of people in comparison to natural resources available.

Arithmetic (or crude) density, or the total number of people divided by total land area, is the measure most often used by geographers. For example, the United States has about 310 million people and about 9,600,000 square kilometers of land space. As a result, the U.S. has an arithmetic density of 32 people per square kilometer (310 million divided by 9,600,000). We may compare the arithmetic density of individual countries in order to get an idea about how population is distributed.

COMPARATIVE ARITHMETIC POPULATION DENSITY

Country	Arithmetic Density (per square kilometer)
Singapore	7197
South Korea	505
United Kingdom	253
Nigeria	171
Turkey	93
Nicaragua	45
United States	32
Argentina	15
Canada	3

Source: www.worldatlas.com, 2010 estimates

As useful as arithmetic density is, it does not tell us anything about population distribution within individual countries. Clearly, most countries include both urban and rural areas, with large variations in population distributions. Another limitation is that arithmetic density gives us only a broad idea about the strain the population might put on the land areas. In contrast, **physiological population density** measures the pressure that people may place on the land to produce enough food. It divides the number of people into square kilometers of **arable land**, or land that is suited for agriculture. So even though Egypt is comparatively sparsely populated, with an arithmetic density of 78, its physiological density is more than 3500! Since so much of Egypt is desert, its people put a great deal of pressure on the arable land, giving the country a very high physiological density.

CARRYING CAPACITY AND SUSTAINABILITY

It is important to consider physiological population density when thinking about **overpopulation**, or the circumstance of too many people for the land to support. **Carrying capacity** (the number of people an area can support on a sustained basis) is not a consistent figure, and it depends largely on the area's level of technology. For example, a region where farmers make use of irrigation and fertilizers can support many more people than a region whose farmers do not. An industrial society is able to import raw materials from other areas, convert them into finished products, and export them into finished products. With the income brought in by these exports, the country may buy the food that it cannot produce at home. Japan is an example of an industrial country with a very high carrying capacity, despite its relatively small land space.

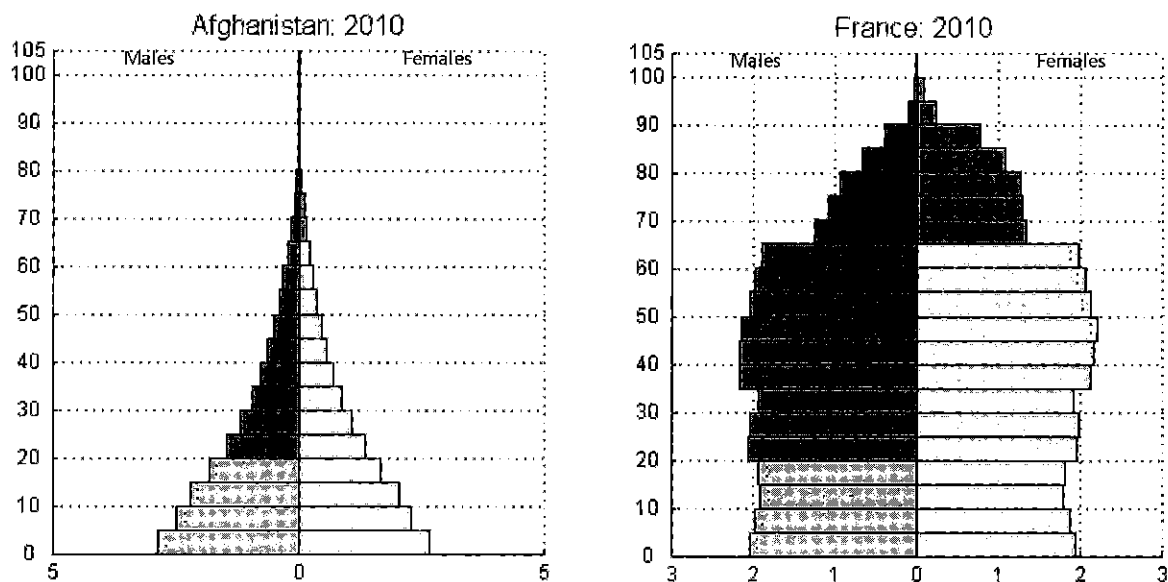
Carrying capacity is related to the larger issue of **sustainability**, which is based on the principle that everything that we need for our survival and well-being depends, either directly or indirectly, on our natural environment. Sustainability creates and maintains the conditions under which humans and nature exist in productive harmony, and when the carrying capacity of the land is not equal to its population, that harmony is disrupted and threatens the long-term sustainability of the area.

POPULATION PYRAMIDS

An important way to analyze population is to use a graphic device called a **population pyramid** that represents age and sex composition. The pyramids take different shapes, according to the distribution of males and females at each age level. For example, the first pyramid on page 34 is for Afghanistan. At the bottom of the pyramid are the statistics for 0-5 year olds: about 2.5 million males and about 2.5 million females. Notice how much the pyramid narrows as it goes up in age groups until finally there are very few males or females in the age groups 75 and up.

Contrast the population pyramid for France in the second figure on page 34. Notice that the base of the pyramid is narrower than it is in the middle. France has about 2 million males and 2 million females in the age groups from about 30 to 60. Also notice that in the older age groups, there are more women than men. Compared to the pyramid for Afghanistan, France has fewer in the lowest age group for 0-5 year olds.

The shape of a country's population pyramid is affected by many factors, including the level of health care available, the impact of war (that disproportionately kills men), availability of birth control, cultural values, and level of economic development. The population pyramid helps demographers to assess needs and issues of the present and future. For example, a country with many older people (like France) will have different health care needs than a country with younger people (like Afghanistan). Hospitals in France are more likely to specialize in treating diseases of middle and older age, such as heart disease and cancer, whereas hospitals in Afghanistan are more likely to encounter health issues among their young people, such as problems of women in childbirth.



Contrasting Population Pyramids. The pyramids above show population (in millions) by age and sex in Afghanistan and France in 2010.

POPULATION CONCENTRATIONS

Two-thirds of the world's population is concentrated in four regions: East Asia, South Asia, Southeast Asia, and Western Europe. The regions are located in the Northern Hemisphere between 10° and 55° north latitude, except for the southernmost part of Southeast Asia.

EAST ASIA – about one-fifth of all humans live in East Asia, which consists of eastern China, the islands of Japan, the Korean Peninsula, and the island of Taiwan. The Chinese population is concentrated near the Pacific Coast and in several fertile river valleys, such as the Huang and the Yangtze. China is the world's most populous country, but much of the western part, mainly deserts and mountains, is sparsely inhabited. China has more than 150 growing cities with more than one million inhabitants, but two-thirds still live in rural areas. In contrast, about three-fourths of all Japanese and Koreans live in urban areas.

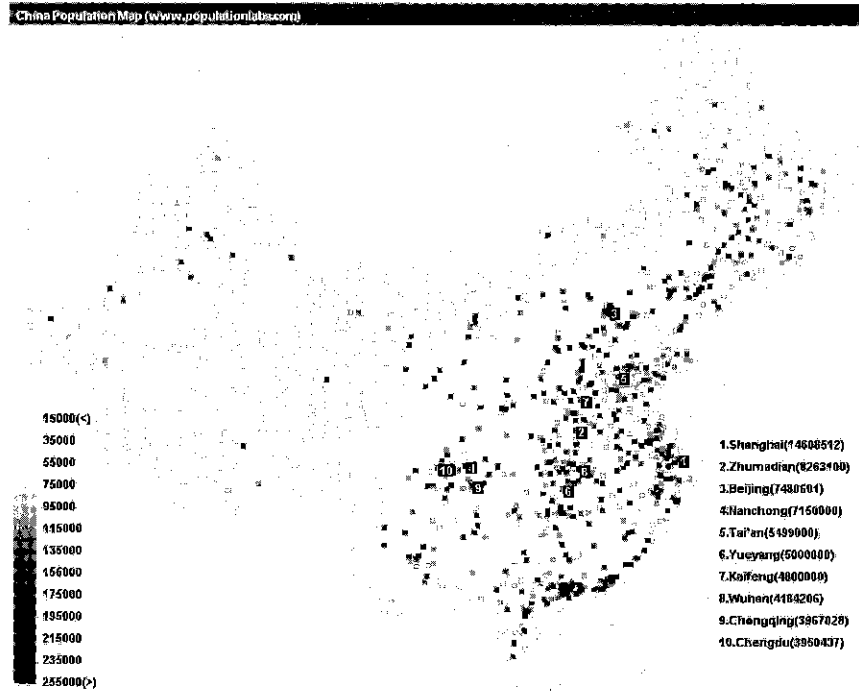
SOUTH ASIA – Another one-fifth of the world's people live in South Asia, which includes India, Pakistan, Bangladesh, and the island of Sri Lanka. Much of the population is concentrated in the Indus and Ganges River valleys and along India's two long coastlines. Like China, most regions in South Asia are rural. Although many large cities are located there, only about one-fourth of the people live in urban areas.

SOUTHEAST ASIA – About 500 million people live in Southeast Asia, mostly on a series of islands off the coast of Asia, including Java, Sumatra, Borneo, Papua New Guinea, and the Philippines. Thousands of islands make up the country of Indonesia, the world's fourth most populous country. Like the East and South Asians, most Southeast Asians live in rural areas.

EUROPE – The only non-Asian area of population concentration is Europe, a region that includes dozens of countries of varying sizes. In contrast to population in the three Asian regions, Europe's population is primarily concentrated in urban areas, and less than 20 percent of its inhabitants are farmers. European terrain and environment are not as closely related to population distribution as they are in Asia. An axis of dense population follows the location of Europe's coal-fields, reflecting the importance of industrialization to population growth.

POPULATION PATTERNS: RACE AND ETHNICITY

Distributions of population are very much affected by race and ethnicity. Both are socially constructed terms that are defined by beliefs and perceptions. **Race** is a category composed of people who share biologically transmitted traits that members of a society consider important. **Ethnicity** is less based on physical characteristics, and emphasizes a shared cultural heritage, such as language, religion, and customs. Because many people live in areas or neighborhoods with people of the same race and/or ethnicity, patterns of population distribution are often determined by these two characteristics. For example, on a national scale, Canada's two largest ethnic groups are those of British Isles origin (28%)

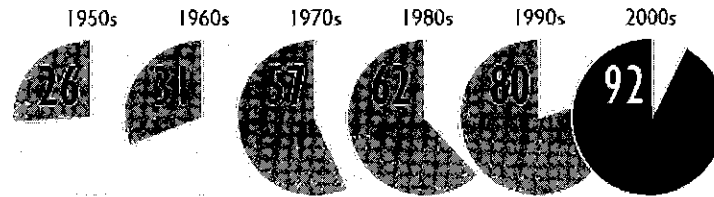


Population Concentrations in China. The vast majority of China's people live in urban areas in the east, with many cities located along rivers and in coastal areas. Large stretches of mountains and deserts make the western and northern parts of the country less habitable.



Language-based ethnicity in Canada. The population distribution of Canada is strongly affected by language-based ethnicity. Most of Canada's people speak English as a first language, but most of the inhabitants of Quebec speak French as a first language.

Minority share (%) of U.S. population growth, by decade, 1950s – 2000s



Population Change. The chart above shows the minority share (%) of U.S. population growth by decade, 1950s-2000s. Non-whites accounted for the overwhelming majority (92%) of U.S. population growth in the 2000s.

Source: “Five Things the Census Revealed about America in 2011,” Brookings Institute, <http://www.brookings.edu>

and those of French origin (23%). Although many Canadians speak both English and French, English-speakers dominate most of the country. However, Quebec is a predominantly French-speaking territory. A study of population distribution of Canada shows a significant division based on language-based ethnicity. One result has been an ongoing movement in Quebec to establish the province as a nation separate from the rest of Canada.

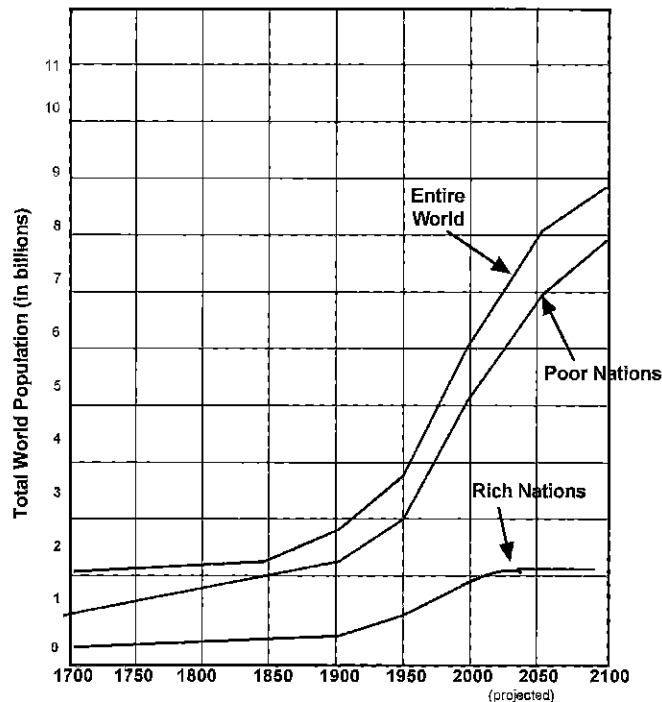
In the United States, the U.S. Census Bureau keeps elaborate population statistics based on race and ethnicity. When citizens register with the Bureau every ten years, they answer a questionnaire that asks them to self-identify as one race/ethnicity or a combination of races/ethnicities. The majority of people identify themselves as white, but significant minorities categorize themselves as black, Asian, and American Indian. Citizens are also asked to self-identify their national ancestry, with many people reporting multiple ancestries. Also, non-whites account for a large percentage of the population growth, so that the white “majority” is shrinking in proportion to minorities.

POPULATION GROWTH AND DECLINE

Until the mid-18th century, the population of the world showed very little overall growth. Populations increased or decreased according to various conditions. In times of war, disease, and famine, populations decreased; in times of peace, health, and plenty, populations increased. Until about 8,000 B.C.E., the **natural increase** (percentage by which the population grew) was close to zero. The **agricultural (or Neolithic) revolution** changed that, though, because the domestication of plants and animals meant that human beings created larger and more stable sources of food, so more people survived. For thousands of years the **doubling rate**, or the length of time needed to double the population, was very long. Until about 1750 **birth rates** (number of babies born per year per 1000 people alive) were high because there were few reliable methods of birth control. However, the **death rates** (number of deaths per year per 1000 people alive) were also high because disease and famine resulted in relatively short life spans.

A dramatic change occurred, though, about 1750, mainly as a result of the **Industrial Revolution**, which began in England in the latter half of the 18th century and spread to other parts of Europe and North America during the 19th century. The Industrial Revolution brought about major improvements in technology that created an unprecedented amount of wealth. Notice the change reflected in the chart below.

The chart illustrates the **population explosion**, the trend toward rapid population increase in place since 1750. Doubling time has dropped quickly since the mid-20th century, as world population grew to 6 ½ billion by the early 21st century. Notice that more sharp increases are predicted throughout the 21st century, with the largest boom in poor nations. In contrast, populations in rich nations are expected to level off, especially since many of them have aging populations, as is illustrated by the population pyramid for France on page 34.



The Increase in World Population, 1700-2100

THEORIES OF POPULATION GROWTH

Before the end of the 18th century, some observers began to calculate future population growth and predict dire consequences for the planet should the growth continue. During the late 20th century, the **zero population growth** movement set as its goal the leveling off of the world's population in order to insure that the earth would be able to sustain its inhabitants. Over time, a number of important theories have analyzed patterns of growth in the past, assessed conditions of the present, and projected consequences for the future.

The First Alarm: Thomas Malthus

In 1798, a British economist named **Thomas Malthus** became the first critic to note that the world's population was increasing faster than the food supplies needed to sustain it. In *An Essay on the Principle of Population as It Affects the Future Improvement of Society*, Malthus used the principles of **exponential growth** v. **linear growth** to make his point. Population increases exponentially, or at what he called a "**geometric rate**," whereas food supplies grow at an **arithmetic rate**. Exponential growth is illustrated by the series of numbers 2, 4, 8, 16, 32 (geometric rate) because once children are born,

they grow up to have children of their own. So once the population base gets so large, population will not immediately stabilize even if people begin having fewer children. Meanwhile, the linear growth of food is represented by the series 2, 3, 4, 5, 6 (arithmetic rate) because even with new agricultural technology, farmland is limited.

Malthus recognized that population growth could be stopped by birth control and/or abstinence, but he morally objected to the former and considered the latter to be highly unlikely. Therefore, the “gloomy parson” saw a future in which famine would surely prevail, accompanied by disease and wars fought for space on earth. These “negative checks” would be the forces that keep population growth contained.

In recent years, **neo-Malthusians** have continued to sound the alarm about population increase, with a best-selling book, *The Population Bomb*, written by Paul Ehrlich in 1968, popularizing the point of view. Since that time, Neo-Malthusianism has been the underpinning of international programs for population limitation by birth control and family planning. Many neo-Malthusians today are concerned that overpopulation may increase resource depletion or environmental degradation to a degree that is not sustainable with the potential of ecological collapse or other hazards. On the other hand, many critics say that Malthus was wrong on several counts. First, with increased colonization and immigration from Europe in the 19th century, much of the population pressure eased. Also, Malthus was not correct about the linear increase of food production. It too has grown exponentially through technological advancements (such as seed production and hybridization), advanced farming methods and equipment, and improved use of fertilizers. Many argue that food production is keeping up with population increase, and we will be able to maintain the balance as long as technological inventions continue.

The Vocabulary of Population Theory

All population theories rest on an understanding of these basic concepts:

- **Crude birth rate** is the number of live births in a given year for every thousand people in a population. To calculate it, divide the number of live births in a year by the society’s total population and multiply the results by 1,000. For example, the crude birth rate in the U.S. is estimated to be about 14, somewhat higher than those in most European countries, but quite a bit lower than those in Asia, Latin America, and Africa. A number of African countries have crude birth rates that exceed 40. The birth rate is “crude” because it is based on the entire population, not just women in their childbearing years. Of course, if a country has a large number of young women, its overall birth rate may be high even if individual women are not having many children.
- **Total fertility rate** is the average number of children a woman will have throughout her childbearing years (from about age 15 to 49). To compute it, the assumption is made that a woman reaching a particular age in the future will be just as likely to have a child as is a woman of that age today. That of course is not always the case. However, the fertility rate gives us a better idea than the crude birth rate does about the size of families and the consequences for young women and men. Today fertility rates are falling almost everywhere, and in some countries they are declining dramatically. After China instituted its “one child policy” that restricted couples to having one child, its fertility rate dropped from more than 6 to less than 2. Despite a falling fertility rate, a country with a large percentage of young people (typical in a less developed country) will usually experience continued population growth. Once the large base of young people grows beyond child-bearing age, the overall population will gradually decline. This phenomenon is known as **demographic momentum**.

- **Crude death rate**, also called the **mortality rate**, is the number of deaths in a given year for every thousand people in a population. It is calculated like the crude birth rate, with the number of deaths in a year divided by the total population and multiplied by 1,000. Typically, in the past the highest rates were found in Africa, Asia, and Latin America (over 20); the lowest rates occurred in Europe, North America, and Australia (less than 10). In recent years, however, death rates in developing countries have dramatically declined as antibiotics, vaccinations, and pesticides have become available in all parts of the world. Also, since birth rates have declined significantly in Europe, death rates will increase since countries with a high proportion of elderly people naturally have higher death rates than those with a high proportion of young people.
- **Infant mortality rate** is the number of deaths among infants under one year of age for each thousand live births in a given year. To compute it, divide the number of deaths of children under one year of age by the number of live births during the same year and multiply by 1,000. Infant mortality rates are significant because it is at this young age that the greatest decline in mortality has occurred, largely as a result of improved health services. The drop in infant mortality accounts for a large part of the decline in the overall death rate in the last few decades because mortality in the first year of life is usually greater than in any other year.
- **Natural increase** of a population is the difference between the number of births and the number of deaths during a specific period. It is computed by subtracting the crude death rate from the crude birth rate, after first converting them to percentages. The term *natural* means that a country's growth rate excludes migration, or movement of people in and out of its borders.
- **Life expectancy** at birth measures the average number of years that a child can expect to live if the current mortality rates hold. According to the CIA Factbook, in 2012 Monaco had the highest life expectancy (89.68), and Chad had the lowest (48.69). Chad's low life expectancy is due to a combination of factors, including poverty and health and social conditions that compare unfavorably with those elsewhere. Political unrest has also led to low life expectancy rates in Chad, where violence between ethnic groups has led to many deaths. Life expectancy rates are different for men than for women, with women outliving men in almost all countries.

Demographic Transition Theory

All countries have experienced changes in natural increase, fertility, and mortality rates, but their patterns vary considerably. However, according to **demographic transition theory**, these variations follow an overall global pattern. The theory states that population patterns vary according to different levels of technological development, but all countries go through the same four stages. They are just at different points as they move through the "transition."

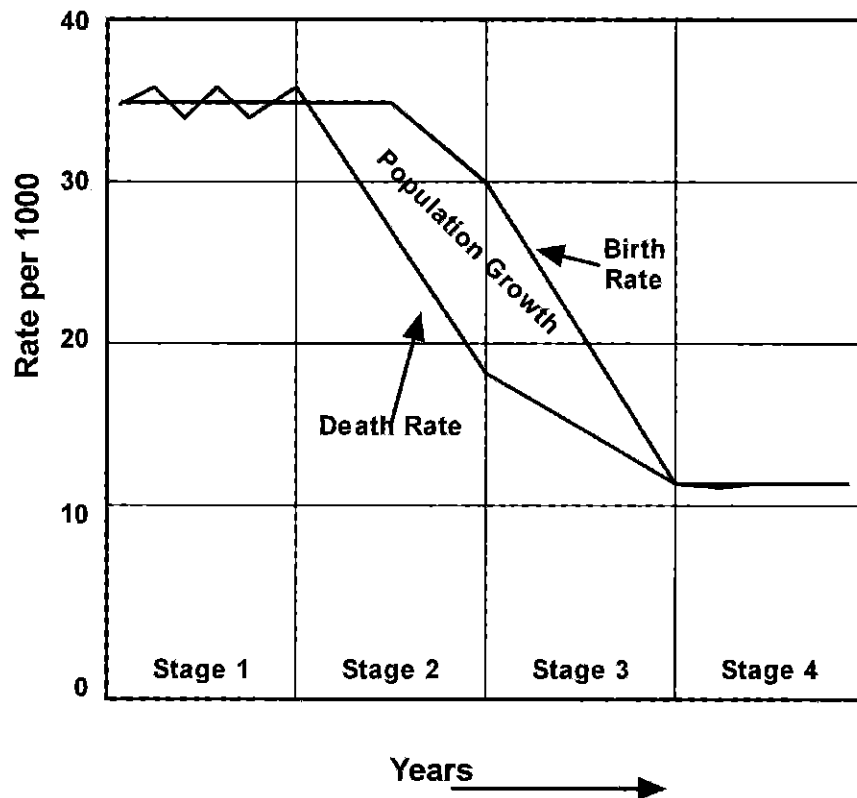
The four stages are:

- **Stage 1: Low Growth** – Preindustrial, agrarian societies have high birth rates because farm work is enhanced by larger families, so children are desirable. People in these societies also often have

little access to birth control. Death rates are high because of low standards of living and little medical technology. As a result, natural increase was close to zero, and world population did not grow. Stage 1 characterized the earth's population until the mid-18th century, and some societies today are still in this initial phase.

- **Stage 2: High Growth** – Around 1750 industrialization brought about a **demographic transition** in Europe as death rates fell because of greater food supplies and scientific medicine. Yet birth rates remained high, so the natural increase exploded. The drop in the death rate became significant by the mid-19th century, and is known as the “**mortality revolution,**” or **epidemiological transition.** Another explanation for the drop in death rates is that fatal epidemic diseases became **endemic**, with the population developing partial immunities, so that deaths declined. New machines helped farmers increase agricultural production and feed the rapidly growing population, causing life expectancy to increase. According to demographic transition theory, many of the world's poorest countries today are in this high-growth stage with falling death rates but stable, high birth rates.
- **Stage 3: Moderate Growth** – This is the stage of a mature industrial economy, when the birth rate drops, curbing population growth once again. In Europe a rapid urbanization occurred as industrialization created more jobs in cities. According to demographic transition theory, fertility rates fall because more children survive to adulthood with improved health standards and access, and because high standards of living make raising children expensive. Children become economic liabilities rather than assets (as in Stages 1 and 2) because they require more years of schooling, and the nature of work changes so that child labor is restricted. Smaller families are made possible by birth control, and as birth rates follow death rates downward, the population growth slows further.
- **Stage 4: Low Growth** – In this stage a post-industrial economy completes the demographic transition. The birth rate keeps falling, partly because more women are working outside the home and partly because children become even more expensive. Higher education levels encourage women to delay marriage and children, and children need extensive education to fill post-industrial jobs. These trends are accompanied by steady death rates, so that population grows only very slowly or even decreases.

This cycle of growth stages has occurred in the United Kingdom and much of Europe, where countries have a population growth rate of close to zero. However, critics of demographic transition theory warn that it may be unwise to assume that all countries' demographic cycles will follow the sequence that occurred in industrializing Europe. The theory rests on the prediction that all countries will eventually industrialize, which is not necessarily true. Even if and when they do industrialize, population bases are much larger than they were when the population revolution began in Europe, so the effects may be different. For example, China is quickly industrializing now, but the population stands at about 1.4 billion, despite the fact that the one-child policy has been in effect for several decades. However, many demographers are predicting that most countries will stop growing at some time during the 21st century, and will reach **stationary population level (SLP)**. However, these predictions are under constant revision, and no one knows for sure if and when the population explosion will end.



Stages in the Demographic Transition. According to demographic transition theory, all societies follow the same four demographic stages, causing population growth rates to vary considerably.

POPULATION AND NATURAL HAZARDS

Population levels have always fluctuated according to the natural environment. Historically when climate conditions have been favorable, population increases, partly because the food supply is sufficient when the climate is good. People adapt their life styles to climate conditions, so that predictable weather patterns are easily managed. However, should dramatic changes occur, the death rate would likely increase until adaptations, such as warmer housing and better methods of heating spaces, are made. For example, populations in many parts of Eurasia appear to have decreased significantly during the “Little Ice Age” of the 17th century. Likewise, population levels may be negatively impacted by natural disasters, such as drought, hurricanes, typhoons, and tsunamis. Two of Malthus’s “negative checks” – famine and disease – have often been the result of natural hazards that impact food production. In modern times in many areas, human endeavors have often lessened these negative checks through better health care and more control over food production. Many diseases have been either eradicated or controlled, and even though food distribution is still a problem that leads to famine, people in many countries now have access to nutritious foods. However, globalization has meant more contacts among peoples of the earth, and one result is the potential for rapid spread of communicable diseases. One example is **AIDS** (Acquired Immune Deficiency Syndrome), a disease that began in central Africa during the late 20th century, and spread to many countries around the world before the end of the century. Scientists warn of future outbreaks of Asian bird flu, a deadly virus that has been known to spread from birds to humans, and has the potential to become a major outbreak if not contained to localities. The fear of a **pandemic** (widespread epidemic) caused many areas in China and Southeast Asia to be strictly quarantined in 2003, with much international travel curtailed and many everyday activities highly restricted in the quarantined areas. Another threat – the swine flu – began in Mexico in 2009 and spread to other countries as international agencies kept a close eye on its progress.

EFFECTS OF POPULATION POLICIES

Over the past century many national governments have designed policies to influence the overall growth rate of their populations. Most governments today seek to reduce the rate of natural increase through various forms of **restrictive population policies**. These policies range from toleration of officially banned means of birth control to the actual prohibition of large families. Since the 1990s the United Nations and other international organizations have also taken an interest in controlling population growth.

China and India: National Population Policies

The two most populous countries of the world – China and India – have taken very different approaches to population growth. Their contrasting policies have resulted in different current population patterns and problems, as well as predictions for the future.

China

In 1965 Chinese leader Mao Zedong announced that an ever-expanding population is a “good thing,” and in 1974 he denounced population policies as “imperialist tools” designed to weaken developing countries. At the time of Mao’s death in 1976, China had about 850 million people with a birth rate of 25. His successors recognized that population growth was consuming more than half of the annual increase in the country’s gross domestic product, so China introduced a campaign advocating the “two-child family.” The government provided services – including abortions – that supported the program, resulting in a drop in China’s birth rate to 19.5 by the late 1970s. In 1979, China’s new leader, Deng Xiaoping, went even further by instituting the “one child policy.” This program included both incentives and penalties to assure that couples produced only one child. Late marriages were encouraged, and free contraceptives, abortions, and sterilizations were provided to families that followed the policy. Penalties, including steep fines, were imposed on couples that had a second child. In 1984 the policy was relaxed in rural areas, where children’s labor was still important, but it was reinstated in 2002 in reaction to reports that many rural births were not being reported to the government. In contrast, Chinese people in cities were generally more accepting of the one-child policy since it better suited urban life styles and needs. By 1986 the birth rate had fallen to 18, a figure far below those in other less developed countries.

However, the policy has had other consequences. One was a rise in female infanticide, or the killing of baby girls. Because traditional Chinese society has always valued males above females, many couples have wanted their one child to be a boy. If a girl is born instead, some choose to end the child’s life so that they can try again to have a boy. The incidence of female infanticide is almost impossible to tally, but the practice has led to a disproportionate number of male to female children. In more recent years, as technology has allowed parents to know the gender of the child before birth, female infanticide has been replaced – at least in urban areas – with selective abortions. Over the years China’s population pyramid has developed a lopsided number of young adult males to young adult females. The problem is so serious that many young men are unable to find women to marry. Some projections suggest that by the mid-21st century China’s population numbers will start falling. If that occurs, it almost certainly will change the cultural tradition of sons taking care of their aging parents. There could be too few sons to carry out the responsibility, leaving China with a problem of what to do about a growing number of elderly people with no one to take care of them.

Census figures from 2010 indicate that demographics in China have changed rapidly in recent years. Not only is the ratio of baby boys to baby girls out of proportion, but China's population is dramatically aging. People above the age of 60 now represent 13.3% of the total, up from 10.3% in 2000, and those under the age of 14 declined from 23% to 17%. An increasingly vocal group of academic demographers has called for a relaxation of the one-child policy, and in 2011, one Chinese official in Guangdong – China's most populous province – joined in the criticism by advocating a "two-child" policy. Already, many exceptions exist, such as the allowance of two children for couples in which both partners are single children. Minorities – such as Tibetans and Uyghurs – are permitted a second child, whatever the sex of the first born, and the regulations are most relaxed in rural areas, where population pressures are minimal.

India

Unlike China, India has had a problem coordinating a centralized population policy. India is a federation of 28 states and 7 "union territories," all of which are culturally and politically diverse. The national government cannot force its will on the states and territories with their various problems and policies. Population growth is the greatest in the northeast in Assam, Nagaland, and Mizoram, where the rate of natural increase exceeded 4.5% during the 1970s. As a result, famine has plagued the area, even when there is adequate food in other parts of the country.

The Indian government started population planning in the 1950s by providing limited funds for family-planning clinics and programs, but they did little to stop population growth. In the 1960s the government invested heavily in a national program that it encouraged the states to join. However, rapid population growth continued, especially in the eastern states. Some of the state programs were controversial and unpopular. For example, in Maharashtra (the southwest) rioting broke out in opposition to a plan



Population Pressures in India. Population growth characterizes the entire country, but population pressures are greater in Assam, Nagaland, and Mizoram.

that required sterilization of anyone with three children or more. Today Indian state governments use advertising and persuasion to encourage families to have fewer children. A network of clinics has been established to aid women even in small villages.

Despite these coordination problems, India's birth rate has dropped by more than half in 35 years – from 5.7 children per woman in the mid-1960s to 2.7 in 2010. Nearly a third of India's people have lowered their fertility to replacement levels. However, most demographers predict that India will overtake China as the world's most populous country as early as 2030. So far, India's governments have been unable to come up with the coordination of resources necessary to curtail the continuing population growth.

International Policy Efforts

During the 1990s international organizations, especially the United Nations, began to coordinate efforts to control population growth on a global level. For the first time, population policy was officially tied to women's empowerment, especially in terms of their control over the number of children that they have. According to a statement issued by the International Conference on Population and Development, held in Cairo in 1994:

“Improving the status of women also enhances their decision-making capacity at all levels in all spheres of life, especially in the area of sexuality and reproduction. This, in turn, is essential for the long-term success of population programmes. Experience shows that population and development programmes are most effective when steps have simultaneously been taken to improve the status of women.”*

*Reference: “United Nations Population Information Network,” www.un.org/popin/icpd/conference/offeng/poa.html

The Conference recommended that national governments pass laws that allow women to combine family roles with participation in the workforce. In 1995 the United Nations Fourth World Conference on Women was held in Beijing and attended by women from many countries, including less developed ones. The Conference affirmed the importance of women's ability to control their own fertility, especially in terms of allowing them to take advantage of educational and employment opportunities.

POPULATION MOVEMENT

People move from one place to another constantly, usually within a relatively small land space. For example, people move from home to work, shopping centers, school, or recreational and religious centers. This type of short-term, repetitive movement that occurs on a regular basis is called **circulation**. **Migration** is a different type of mobility because it involves a permanent move to a new location, either within a single country or from one country to another. **Spatial interaction** is the broad geographical term for the movement of peoples, ideas, and commodities within and between areas, whether it is circulation or migration. Geographers are generally more interested in migration than circulation because migration produces important changes for individuals and the regions that they move to and from. When relocations occur across political boundaries, they affect the population structures of both the areas of origin and destination. **The demographic equation** summarizes the population change over time in an area by combining natural change (death rate subtracted from birth rate) and **net migration**. **Emigration** is migration from a location, and **immigration** is migration to a location. Both types of migration usually occur at once; the difference is the net-migration rate for a region or country.

RAVENSTEIN'S LAWS OF MIGRATION

In 1885 British demographer Ernst Ravenstein wrote 11 migration laws, which he based on his study of **internal migration** (within the borders of a country) in England. Some of these laws still hold true today, including:

- 1) The majority of immigrants move only a short distance. **Distance decay** – the decline of an activity or function with increasing distance from its point of origin – describes this tendency for people to stay fairly close to home. Of course, since Ravenstein's time the scale of migration has increased, with modern transportation and communications systems making it possible for people to migrate to distant lands. However, **step migration**, or long-distance migration done in stages, is still the rule. For example, a person or family may move from a rural area to a small town. Later the move from small town to city may be made, resulting in long-distance migration, but only by short distances at a time. Another factor that reinforces this rule is **intervening opportunity**, or the fact that many who set out to move a long distance find good opportunities to settle before they reach their destinations. For example, migrants from a rural area bound for a big city may find employment in a town along the way, and decide to settle there instead.
- 2) Migrants who move longer distances tend to choose cities as their destinations. Most are leaving rural areas and moving to urban locations. In Ravenstein's day the city was London, but the principle may be applied to late 19th and early 20th century moves from Europe to cities on the eastern seaboard of the United States. In modern day, many internal migrations within developing nations are from rural to urban areas.
- 3) Each migration flow produces a counterflow. When one group moves into an area, another group often moves out. For example, when European immigrants moved into cities in the eastern United States, they usually settled in the most affordable areas. Once they prospered, they moved to better neighborhoods, while the newest immigrants took over their old neighborhoods. As one group moves in, the other is encouraged to move out. As a result of this back-and-forth flow, net migrations to an area are often small, disguising the large amount of movement actually going on.
- 4) Families are less likely to make international moves than young adults, and historically, most international migrants have been young males. Young adults have fewer restrictions on their movements, partly because they don't yet have family commitments of their own. Traditionally, women have been less free to travel by themselves, and since it is easier for one person to move than it is for many, until recently, single young males made most international moves. However, as women have gained more freedoms in many countries, the number of young women who immigrate to new countries has risen.

Ravenstein also noted an inverse relationship between the volume of migration and the distance between source and destination. Geographers came to call this proposal the **gravity model**, a measure of the interaction of places. This model states that spatial interaction – including migration – is directly related to the size of the populations and inversely related to the distance between them. Distance decay means that an individual's **critical distance** – the distance beyond which cost, effort, and means strongly influence willingness to travel – will eventually prevent a migration from occurring. So a large city has a greater gravitational pull than a small one, but it still tends to pull people that live closer rather than farther away.

REASONS FOR MIGRATING

Migration may be forced or voluntary. An example of involuntary migration is the forced transport of 10 million Africans to the Western Hemisphere as slaves beginning in the 16th century. In the 1990s, Serb soldiers forced ethnic Albanians to flee their homes in Kosovo. There are countless reasons why people voluntarily migrate, but most of them are economic. A **push factor** encourages people to move from the region that they live in, and a **pull factor** is one that attracts them to a new region. For any one person that migrates, usually a combination of push and pull factors explains the relocation.

Economic Push and Pull Factors

People often think about leaving places that have few job opportunities to immigrate to places where jobs are available. The opportunity is in the eye of the beholder – it may or may not exist in reality. Farmers may be pushed off their land because of drought, invasion, or landlords, and may decide to seek their fortunes in nearby cities. The pull of the cities may be enhanced by industrial growth and the jobs that accompany it. Even if there are not enough jobs to go around, the push factors may be so strong that the migrants have little incentive to return to the farms. Economic push and pull factors exist on all scales from local to global. People not only move from one continent or country to another. They also move between regions within countries, and even between neighborhoods in a city. Economic push and pull factors help to explain the overall worldwide movement of people from rural to urban areas during the 19th and 20th centuries.

Cultural Push and Pull Factors

Cultural push factors include many involuntary migrations. Millions of people have been shipped to other countries as slaves or as prisoners, as happened from Africa to the Americas during the 17th, 18th, and early 19th centuries. In more recent times **refugees** have been forced to migrate from their homes and cannot return for fear of persecution because of their religion, race, nationality, or political opinions. Examples are Palestinians and Afghans. Palestinians left Israel after the country was created in 1948, and also left areas taken over by Israel in 1967. Refugees from Afghanistan fled from the extended civil war that began when the Soviet Union invaded the country in 1979. Internal migrations have occurred on the Indian subcontinent since India gained independence in 1947. Most migration has been based on religion, with Muslims migrating to the newly created country of Pakistan and other Muslim areas of India, and Hindus migrating out of the Muslim areas. Today millions of people in Africa are refugees as a result of intense ethnic conflicts, such as those in Rwanda and Darfur. The Balkan area is another region of recent refugee migrations, as fighting among cultural groups caused many to flee their homes during conflicts of the 1990s.

Cultural push factors include changing politics and government control. In the early 19th century Germans who led a movement to democratize the government lost their bid and had to escape for fear of retribution from the authoritarian government. Many came to the United States, with its pull attraction of democratic government. During the 1990s Eastern European nations broke free from Soviet control, and even though they established democratic governments, the pull factor of better jobs in Western Europe was enough to start a migration from east to west.

Environmental Push and Pull Factors

As communications and transportation improved during the 20th and early 21st centuries, more people have moved to more pleasant environments than before. For example, people have moved to Colorado to be close to the recreational and aesthetic pull of the Rocky Mountains. Seashores also pull people to settle, as demonstrated by migrations to Florida, California, and lands along the Mediterranean Sea. For those with health problems related to damp, cold climates, moving to dry climates (such as Arizona) is appealing. People may be pushed from their homes by adverse environmental conditions, as seen in the wake of Hurricane Katrina that hit New Orleans and the Mississippi coastline in 2005. Homes and businesses were destroyed and city services disrupted to such an extent that many that thought they were only temporarily leaving their homes became permanent migrants to inland areas.

Major environmental factors include:

- **Climate** – Most of the sparsely populated areas of the world have unpleasant and uninhabitable climates for human beings, including extreme cold, heat, or drought. Although humans are remarkably adaptable in their ability to live in a wide variety of climates, they generally prefer the humid and subhumid tropics, subtropics, or midlatitudes.
- **Elevations** – Most regions of sparse populations in the middle and higher latitudes are high elevations where the climate tends to be colder. However, inhabitants of the tropics often prefer to live at higher elevations, where mountain valleys and basins provide havens from excessive heat.
- **Seacoasts** – The tendency for people to settle on or near the seacoast is most striking in Eurasia, Australia, and South America, where major cities cluster around the rim of each continent. In Australia, half the total population lives in just five port cities, and most everyone else lives in nearby coastal areas. Large parts of interior South America consist of jungle or sparsely settled dry plains, or pampas, and most of the cities are located along the coasts, partly because many were founded by the export-oriented Spanish and Portuguese during colonial days.
- **Disease** – Although modern medicine has altered this factor significantly, historically disease has affected migration choices for humans. For example, after the fall of the Ancient Roman Empire, Italy and other areas in the Mediterranean region were virtually depopulated by a malaria epidemic. Animal diseases may also affect human choices of settlement, such as sleeping sickness that attacks cows (but not humans) in East Africa. Since people there depend heavily on cattle for sustenance, entire tribes have migrated away from infested areas, leaving them unpopulated.

Environmental factors may also create **intervening obstacles**, or physical features that halt or slow migration from one place to another. For example, people moving to the West Coast of the United States in the 19th century encountered the intervening obstacles of wide plains, mountains, and deserts that discouraged many from making the trek. Intervening obstacles may also be cultural, as is the case when migrants encounter governmental regulations for when reaching their destinations. Most countries have laws that restrict overall numbers of immigrants, as well as numbers from specific countries of origin. Migrants encounter further obstacles when they face requirements for citizenship or long-term stays in their destination countries.

Major migrations impact both the region that people leave and the region that is their destination. For example, the major migration of Europeans to the Americas during the 16th, 17th, and 18th centuries relieved population growth pressures in Europe. However, European contacts in the New World exposed Native Americans to new diseases, decimating their populations in one of the most dramatic demographic shifts in world history.

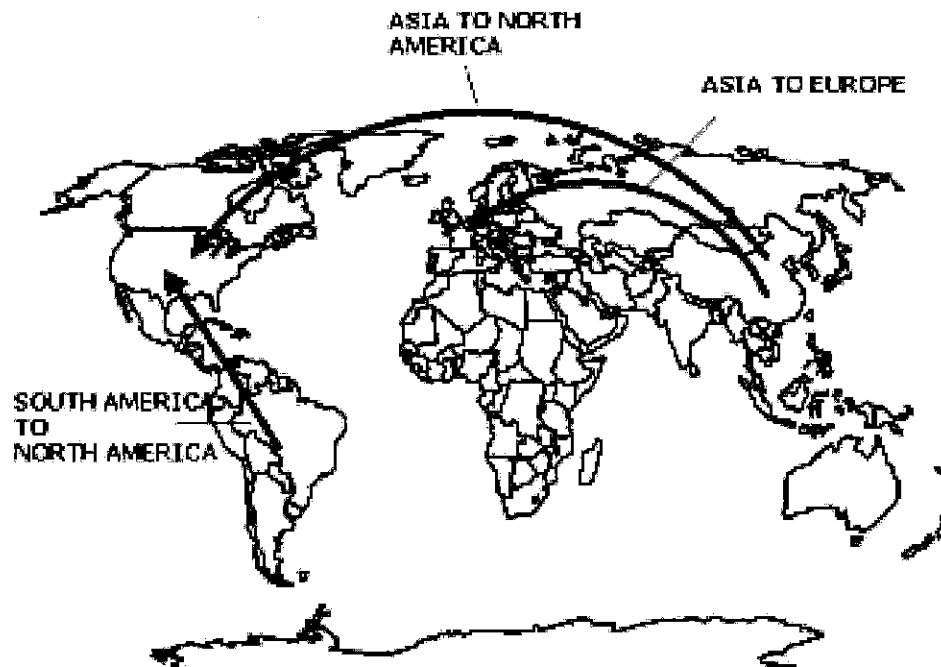
MAJOR MIGRATIONS AT DIFFERENT SCALES

Migrations occur on many scales from global to local. They may be internal (within a country) or international. Internal migrations may be **interregional** (between regions) or **intraregional** (within one region). International migrations may be **forced** (involuntary) or **voluntary** (the migrant chooses to move).

Global Migration Patterns

On a global scale, Asia, Latin America, and Africa have net **out-migration**, which means that more people emigrate from them than immigrate to them. In contrast, North America, Europe, and Oceania (Australia, New Zealand, and South Sea islands) have net **in-migration**, which means that more people immigrate to them than emigrate from them. In other words, people are migrating from less developed to more developed countries. Migrants from countries with relatively few available jobs and high natural increase rates head for wealthier countries, where job prospects are better. The largest flows include:

- From Asia to Europe
- From Asia to North America
- From South America to North America



Major Global Migrations. The largest flows of people in the modern world are from Asia to North America, Asia to Europe, and South America to North America. In many cases people are leaving areas where jobs are less plentiful and lower paying, and migrating to areas where the job market is more promising.

U.S. Immigration Patterns

The United States is an important example for studying international migration since many of its citizens are direct descendants of immigrants. About 70 million people have migrated to the United States since 1820, including 30 million who are currently alive. Other countries, such as Canada and Australia, now have larger percentages of immigrants than the U.S. has. The Middle East has the largest overall percentage of immigrants, with about one-half of the region's total population migrated from other areas. However, the U.S. is the third most populous country in the world, so its patterns of immigration are a study in itself.

The U.S. has had three main eras of immigration:

- 1) **Initial settlement of colonies** – Prior to independence in 1776, about 1 million Europeans migrated to the American colonies, and another million came during the early days of the republic (before 1840). The overwhelming majority of these immigrants came from Great Britain, but some came from the Netherlands, Sweden, France, Germany, and the Iberian Peninsula (Spain and Portugal). Another large group from Africa was forced to migrate as slaves. About 400,000 Africans were shipped to the American colonies during the 18th century, and even though the slave trade was made illegal in 1808, another quarter million came between 1808 and 1861, when the Civil War began.
- 2) **Emigration from Europe** – The emigration from Europe to the Americas in the 19th and early 20th centuries is among the most significant human migrations in recent centuries. About 75 million departed for the Americas between 1835 and 1935. The largest number went to the United States, but they had many other destinations. The British went to North America, Australia, New Zealand, and South Africa. The Spanish and Portuguese settled in Central and South America. Although millions of Europeans eventually returned home, the net outflow from Europe was huge. Three waves came to the United States:
 - **1840s and 1850s** – The two largest groups of immigrants were the Irish, who were escaping desperate economic conditions, and the Germans, who were escaping difficult political conditions.
 - **Late 1800s** – After a decline in immigration during the Civil War of the 1860s, immigration rates rose again during the 1870s and continued until the early 1890s. More than ¾ of the immigrants came from Northern and Western Europe. Germans and Irish continued to arrive, and the number of Scandinavians increased significantly. An important pull factor was the Industrial Revolution in the United States, which created a demand for factory labor that resulted in plentiful jobs for immigrants.
 - **Early 1900s** – After an economic depression during the 1890s, the continuing industrial boom in the U.S. meant that immigration resumed its rapid increase after the turn of the century, reaching peak levels around 1910. The major difference was that more immigrants during this period came from Southern and Eastern Europe. Important feeder countries were Italy, Russia, and Austria-Hungary. The Industrial Revolution had spread to these countries, and populations were increasing, so many left to seek their fortunes in the U.S. For Russian Jews, political persecution was another motivation to leave.

- 3) **Immigration since 1945** – Immigration to the U.S. again slowed during the Great Depression of the 1930s and World War II in the early 1940s. It increased steadily during the 1950s and 1960s, when major changes in immigration laws brought a new mix of migrants. Previous laws had greatly restricted Asian immigration, but the laws were lifted in the 1960s. In the late 20th century, annual immigration from China, the Philippines, India, and Vietnam increased dramatically, with many Vietnamese seeking asylum as refugees from the communist takeover of their government. Asians also migrated to Canada in large numbers. Another major source of immigration in recent years has been Latin America, with Mexico topping a total of 8 million by the end of the 20th century. Like Asian immigration, Latin American immigration was encouraged by a change in U.S. law. The 1986 Immigration Reform and Control Act allowed the government to issue visas to several hundred thousand people who had previously entered the country illegally. Economic factors have been important to immigrants from both Asia and Latin America, as they moved from areas with fewer job opportunities to the more prosperous United States.

The composition of the U. S. population has greatly changed over time as a result of immigration. Before the 20th century, most immigrants were from Northern and Western Europe, resulting in a population with largely European roots. The early 20th century brought Eastern and Southern Europeans, adding to the cultural diversity of the country. The late 20th century brought even more widespread cultural influences from Asia and Latin America, and over time, as generations grow up in the U.S., the country will continue to change in the 21st century.

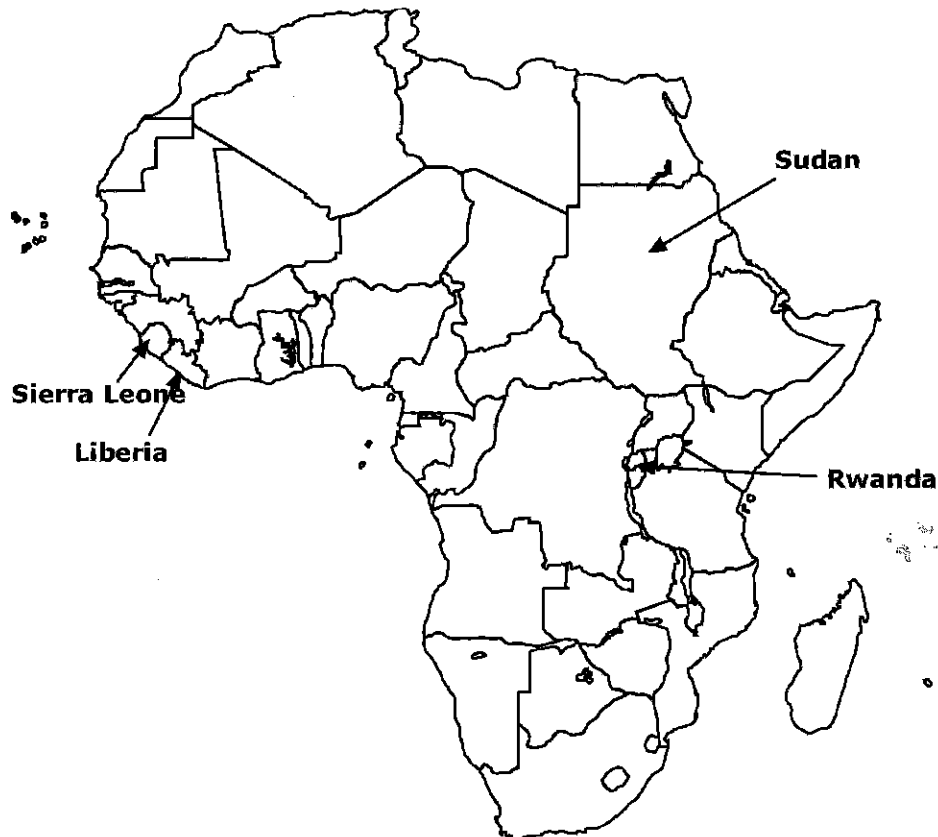
Intraregional Migrations

As Ravenstein pointed out, most migrations are to destinations that are close to home, either internal to a country or between neighboring countries. Within the United States, for example, African-Americans began migrating from the South to the North during World War I in response to growing labor demands and dwindling numbers of immigrants to fill jobs. The migration continued during the 1920s, dropped during the depression years of the 1930s, then resumed its upward climb in the 1940s. Most were moving from rural to urban areas, so the migration represented major life style changes. Starting in the 1970s, a countertrend began: some African Americans began moving back to the South. Some possible pull factors for this new movement are changing civil rights patterns and increasing job opportunities in the South. One current push factor may be deteriorating living conditions in the urban North.

Some intraregional migrations result from **dislocation** of people forced from their home due to ethnic strife, war, or natural disasters. Some examples include:

- **South Asia** – Millions of people from Afghanistan have fled the country, first when the Soviet Union invaded in 1979, and next during the 1990s when intertribal strife caused many to flee to neighboring Pakistan. The number of refugees increased after the events of September 11, 2001, when the United States retaliated against terrorist bases in Afghanistan. Another area of movement is Sri Lanka, where ethnic strife has sent refugees to different parts of the island, depending on their identity as minority Tamils or majority Sinhalese.

- **Southeast Asia** – The international emigration from Vietnam when the U.S. pulled its troops out in 1975 gave way to more regional displacement by the 1990s. Civil war in Cambodia produced such violence that refugees escaped to camps across the border to Thailand. Other refugee camps exist in Myanmar (Burma) as minorities have tried to escape from repressive military rule.
- **The Balkans** – When Yugoslavia collapsed during the early 1990s, ethnic conflicts created a huge refugee crisis in the Balkans. Serbs, Macedonians, Bosnians, and Albanians are just a few of the ethnicities that clashed for economic and religious reason. The area was broken up into many small countries in an effort to solve the problems, but many people are still dislocated from their homes today.
- **Sub-Saharan Africa** – In recent years some of the most serious refugee crises have occurred in Sub-Saharan Africa. The conflict between Hutus and Tutsis in Rwanda resulted in a million deaths in April 1994, and millions more moved to escape the violence. The refugees spilled into the Congo, Tanzania, and Uganda, creating crises in all of these neighboring areas. In Sudan, civil war has raged between the Arabs of the north and the Africans of the south, creating the worst refugee crisis of the early 21st century. Ethnic-based civil wars in Liberia and Sierra Leone have also sent refugees streaming into neighboring countries.



Out-Migration Areas of Africa. This map shows some areas of ethnic strife in Sub-Saharan Africa that have caused major movement of refugees both within each country and across the borders into neighboring countries.

Immigration Issues in Europe

Increased numbers of immigrants from eastern Europe, Turkey, the Middle East, and Africa have fed anti-foreign feelings in many countries, including Italy, Germany, Britain, and France. In Italy a new party, the Northern League, gained political support – particularly in the prosperous north – by its opposition to immigration. In Germany, immigrants from struggling eastern European countries inspired incidents in which gangs of **neo-Nazis**, who reiterated Adolf Hitler's racist doctrines, burned immigrant housing and demonstrated against foreigners. Since reunification in 1990, some 49 foreigners – almost all of them Turks, Africans, or Asians – have been killed by neo-Nazis in fire bombings, beatings, or stabbings. These movements have been denounced by many figures of authority, and when the anti-immigrant Freedom Party gained a share in the ruling coalition in Austria in 2000, the other EU nations refused to formally cooperate with the Austrian government.

In France, the division between native French and immigrants from northern and equatorial Africa is a major source of discord within the society and the political system. After Algeria received independence from the French in the 1950s, many Algerians associated with colonialism immigrated to France to escape the new Algerian government's wrath. Today, there are some 9 million foreigners living in France, about 16% of the entire population. Between 4 and 5 million are Muslims from northern and equatorial Africa, and this group's arrival in France has caused racial tensions. Many have not assimilated into French society, partly because of prejudice toward them, and partly because they don't want to abandon their customs. For example, some French people have been horrified by the polygamous practices of some Muslim families. Many French schools have required students to wear uniforms, and some Muslim girls have refused to abandon their head coverings as signs of their religion. The result has been the creation of immigrant ghettos with high crime rates and accusations that the police harass Muslim men. Politically, the National Front – a political party on the far right – has focused on a policy of deporting Muslims, and not integrating them into French society.

Although far right parties have had less success in Britain, anti-immigrant feelings have concerned the government, especially after two minority men were arrested in connection with attacks on Glasgow Airport in 2007. According to the 2001 census, only about 7.1% of the British population is of non-European origin, with most coming from countries that were formerly British colonies. However, the minority ethnic population grew by 53% between 1991 and 2001, from 3 million in 1991 to 4.6 million in 2001. The main groups were Indian (23% of all non-European population), Pakistani (16%), Afro-Caribbean (12.2%), and Black African (10.5%). Because of tight immigration restrictions in the past, most ethnic minorities in Britain today are young, with about half of the population under the age of 25. The growth in percentages of minorities has grown despite the restrictions that were placed on further immigration during the Thatcher administration of the 1980s. Immigration restrictions are currently under debate, but the current government has allowed the restrictions to remain in place.

MIGRATION SELECTIVITY

Not everyone is equally likely to migrate, even if they are influenced by the same push and pull factors. For example, job prospects may be equally bleak for people in an area, but only some of them will make the decision to move. This tendency for certain types of people to move is called **migration selectivity**, and it is influenced by these characteristics:

- 1) **Age** – As Ravenstein observed in the late 19th century, young people are most likely to migrate. People are most likely to move during their early adult years between the ages of 18 and 30. During these years, people leave their parents' homes to attend school, take a job, join the military, marry, and begin families. These life-events are usually accompanied by changes in residence. Migration rates are also high among young children, whose parents generally fall within the young adult age range.
- 2) **Education** – People with higher levels of education are more likely to make long-distance moves than are less educated people. For young adults, going to college often means traveling some distance from home, and education exposes them to new ideas and knowledge about far away places. Also, as one becomes highly qualified for professional jobs, it may be necessary to change locations in order to follow one's career. Areas with net out-migrations are usually hardest hit by the loss of young, well-educated people, who are often attracted to net in-migration areas with better jobs and more appealing life styles.
- 3) **Kinship and friendship ties** – People who have relatives and/or friends who have migrated previously to other areas are more likely to migrate as well. This phenomenon is known as **chain migration** – a stream of people out of an area as first movers communicate with people back home and stimulate others to follow later. The first movers may encourage others with their stories of job opportunities or abundant land. All migrants within the chain are comforted by the fact that they will have support from family and friends as they settle closely together to help adjust to their new homes. Such selective migration helped to create ethnic neighborhoods – such as “Little Italies” or “Chinatowns” – in U.S. cities on both coasts during the 19th and 20th centuries.

SHORT TERM CIRCULATION AND ACTIVITY SPACE

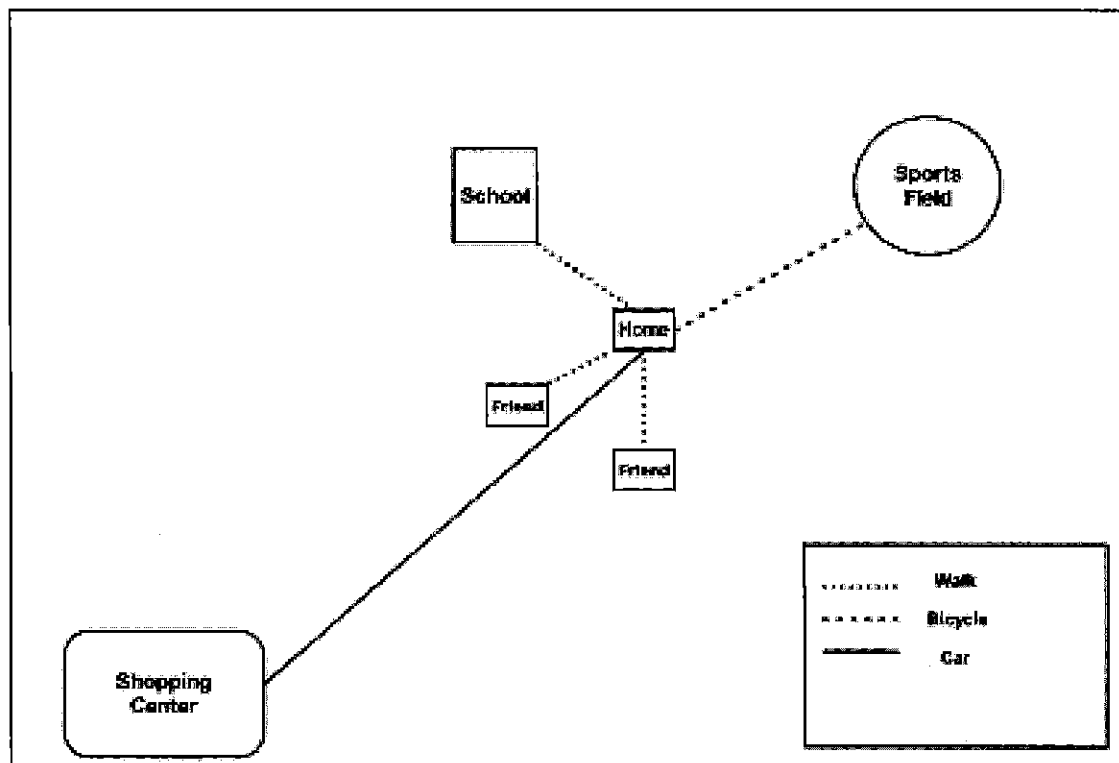
Migration is a major area of interest in population geography, but another type of mobility is also the subject of a field of study. Short term circulation of individuals – or movement that does not involve relocation of residence – is confined to **activity space**, an area in which an individual moves about as he or she pursues regular, day-to-day activities. Although people do venture out from these spaces on occasion, activity space is the area that is reachable on a typical day. The types of trips that people take within their activity spaces are determined by several factors:

- **Age group** – School-age children are usually dependent on parents to take them long distances away from home, so when they venture out alone, it is usually by foot or bicycle. Teenagers have larger activity spaces as their ability to travel further away from home increases, especially as they begin to drive. Wage-earning adults often have to travel to work and back, so their activity space is generally quite different from that of children. Once they retire from work, older people may see their activity spaces shrink in size.
- **Ability to travel** – This factor is often related to age, but activity space is clearly limited by the means of travel. In countries where individuals do not have access to cars, their

activity spaces are generally fairly small. Also, ability to travel is directly related to income levels, with poorer people in all countries generally having smaller activity spaces than wealthier people. People who live in suburbs may have larger spaces than those that live in cities, even if income levels are comparable. Suburbs are often spread out, and people have to travel further distances to take care of daily needs.

- **Opportunities to travel** – If a family is self-sufficient, taking care of their own needs, they may not have the desire to travel far away, especially if there are no schools, stores, or work places for them to visit. **Awareness space** may be limited as well so that their knowledge of opportunity locations beyond the normal activity space is minimal. Poverty and physical isolation may contribute to a lack of awareness space.

All people live within a **space-time prism** that sets the limits for their activities. They have only so much time to be mobile, and space is limited by their ability to move. For example, if people do not have cars, they cannot take jobs long distance away from home because by the time they walk to and from work, they practically do not have time for other activities. As a result, they must choose jobs that lie within their space-time prisms.



Activity space for an 8-year old boy that lives in suburban United States. For his trip to the shopping center, he would be dependent on an adult to get him there.

Population geography is a diverse field with interest in distributions, growth, and movement of human populations. In many ways, basic themes of human geography, such as scale, pattern, place, and interdependence (See Unit I) may all be illustrated with population topics. Just as importantly, population concepts and theories crosscut almost every other field of human geography, as we will see in Units III - VII.

TERMS AND CONCEPTS

activity space
agricultural revolution
AIDS
arable land
arithmetic growth
arithmetic population density
awareness space
carrying capacity
chain migration
circulation
critical distance
crude birth rate
crude death rate
demographic equation
demographic momentum
demographic transition theory
demography
density
dislocation
distance decay
dot maps
doubling rate
emigration
endemic
epidemiologic transition (mortality revolution)
ethnicity
exponential growth
female infanticide
forced migration
geometric rate
gravity model
immigration
Industrial Revolution
infant mortality rate
in-migration
internal migration
inter-regional migration
intervening obstacles
intervening opportunity
intra-regional migration
life expectancy
linear growth
Malthus, Thomas
migration
migration selectivity

natural increase
neo-Malthusians
net-migration rate
one child policy
out-migration
overpopulation
pandemic
physiological population density
population concentrations
population explosion
population geography
population pyramid
pull factors
push factors
race
Ravenstein, Ernst
refugees
restrictive population policies
space-time prism
spatial interaction
stationary population level
step migration
sustainability
total fertility rate
voluntary migration
zero population growth

