

Newton's First Law of Migration: The Gravity Model

► INTRODUCTION

Places are connected with one another at the local, regional, and global scales through systems of **spatial interactions**. These interactions involve movements of ideas, information, money, products, and people. **Migration**, the movement of people, is defined as a permanent change in residence to outside of one's community of origin. Conceptually, someone who moves to a new home within his or her community but does not have to change his or her place of work, shop in new stores, find new doctors, and establish new friendships is considered a local mover but not a migrant. Officially, migration is defined as crossing an administrative boundary, such as between counties or states. Tourists, temporary residents, and seasonal workers may play important roles in some places, but they are not considered migrants if they don't intend to stay at least one year. There is, of course, some gray area regarding how far one has to move and how long one has to stay to be considered a migrant, but that is just one of the factors that makes the study of migration so fascinating.

Migration can occur at many spatial scales, including rural-to-urban movements from hinterlands to cities (Figure 4.1), urban-to-urban moves between regions, and global migration between countries. The size, composition, and spatial organization of migration flows tell us a great deal about the places involved. In that people tend to move from less-desirable places toward more-desirable places, the system of migration flows provides clues about how places stack up relative to one another. Place desirability can result from economic factors such as job availability, high wages, and affordable housing and from noneconomic considerations such as a favorable climate, clean air, low crime rates, nearness to friends and relatives, and the absence of war and environmental disaster.

Geographers sometimes differentiate between migration as a within-country move and **immigration** as a move across international borders. Whereas internal movements rise and fall with the ebb and flow of regional and national economies, international movements have steadily grown due to population pressure in some less-developed countries (see Chapter 7), economic globalization (see Chapter 8), and growing income differences between rich and poor countries, civil wars, and natural disasters. Both the United States and Canada are nations built on immigration. Apart from Native Americans (who most believe also migrated to North America

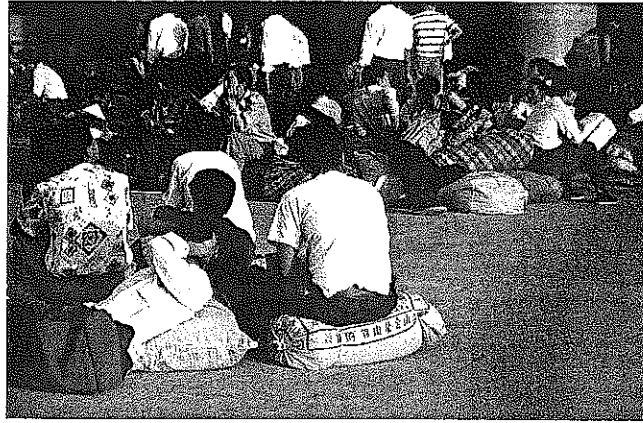


Figure 4.1 Rural-to-urban migrants at a train station in China.

from Asia several millennia ago), both countries were founded and populated by immigrants. Early colonial immigrants were European settlers and African slaves. Beginning in the 1850s, immigration increased rapidly (Figure 4.2). Immigration in the second half of the 1800s came mainly from northern and western Europe for three reasons. First, Great Britain, France, Sweden, and the Netherlands were countries with the original colonial outposts on the continent, so migration streams with those places were well developed. Second, Northwest Europe industrialized earlier than the rest of the world, and as a result, not only did their populations grow rapidly but mechanization in agriculture created excess labor (see Chapter 5). While many migrated from rural areas to cities in their home countries, many others emigrated to America for land and opportunity. Third, Northern Europeans were racially and culturally similar to nineteenth-century Americans and so were more accepted than people of different religions, race, ethnicities, and lifestyles.

From the early twentieth-century until the Great Depression of the 1930s, immigration rates remained high but the source areas shifted more toward eastern and southern Europe, because by then these places were transitioning to an industrial economy and population pressure was growing. The influx of Catholics and Orthodox Christians from southern Europe, often with darker skin complexion, led to immigration laws in 1921 and 1924 that for the first time restricted the numbers of immigrants from European countries. English and Dutch immigrants could continue to enter the United States easily, whereas Italians and Greeks were more restricted. In fact, racial and ethnic discrimination had been institutionalized in U.S. immigration law since 1882 when the United States banned immigration from China. As Figure 4.2 shows, there was hardly any immigration from Asia, Africa, and Latin America from 1850 to 1940, but in 1965, the United States finally eliminated country quotas and began to apply hemispheric quotas more fairly. Since then, immigration from Latin America has exploded, with immigration from Asia and, to a lesser extent Africa, also growing rapidly.

In 2009, an estimated 200 million people lived outside their countries of birth. International movements have profound impacts for sending and receiving countries. For sending countries, immigration tends to relieve pressure from unemployment and generate substantial **remittances**—money immigrants send home to support their families. In 2008, immigrants around the world transferred an estimated \$337 billion to their home countries. Returning migrants are often agents of modernization for their home communities. For most receiving countries, immigration provides

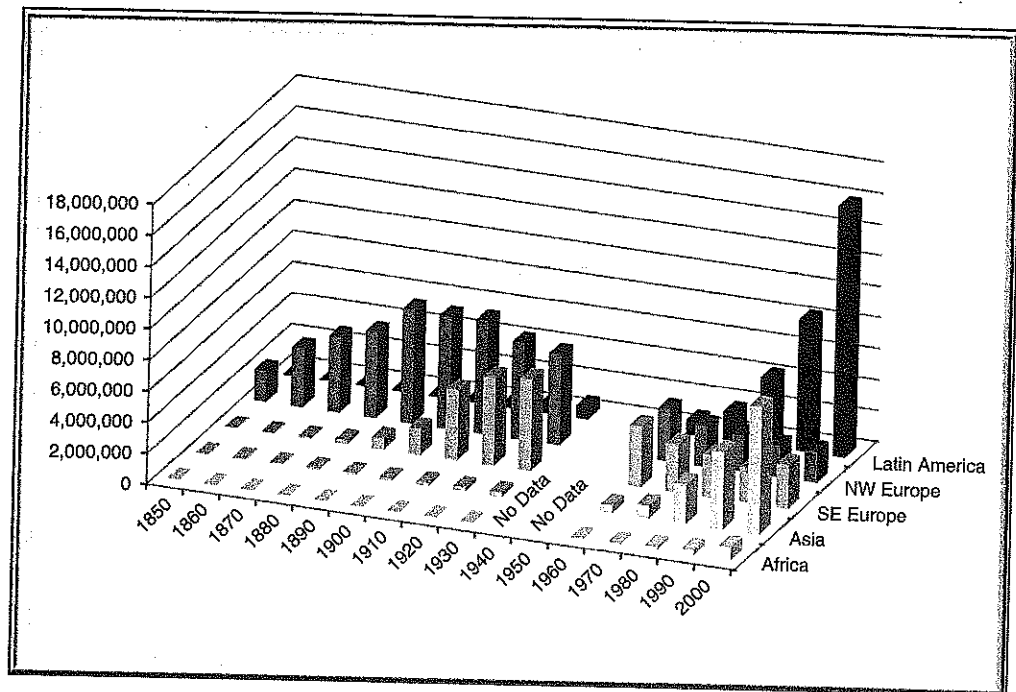


Figure 4.2 This graph shows the region of birth for the foreign-born population in the United States since 1850. The trend clearly shows that immigrants (who are recorded as foreign born in the U.S. Census) came early from northwestern Europe, but by the early 20th century, this shifted to southeastern Europe. In recent decades Latin America and Asia have grown to be major immigrant origin regions.
Source: U.S. Census Bureau

a flexible labor force to support aging populations and increases cultural diversity; but it strains social, educational, and health services in some places.

Globally, some of the largest immigration flows are from Latin America (particularly Mexico) to the United States, and from Africa and the Middle East to Western Europe. Other sizeable immigration flows are from Southeast Asia and the Philippines to oil-producing countries on the Arabian Peninsula, and from countries across southern Africa into their wealthier neighbor, the Republic of South Africa. Much of this immigration is undertaken illegally, meaning that the migrants often do not have official permission to enter the destination country and seek employment. Countries regulate this movement with different policies, from sponsored guest worker programs that have long been in effect in Germany, to increasing attempts to stop illegal immigration, as in the United States. It is estimated that 450,000 Mexicans enter the United States each year (Figure 4.3). Many more are stopped and sent back, plus many others attempt entry from countries other than Mexico. In response, the United States is constructing a steel wall along much of the U.S.-Mexican border. The wall has raised concerns among environmentalists, who worry that it will hinder flows of wildlife, and among many others who see it as an insult from the United States to a friendly neighboring country.

The increase in undocumented Mexican migration to the United States in recent years is in large part a response to a global economic system that has strongly integrated flow of capital and goods between the two countries (see Chapter 8), but continues to inhibit the flow of labor. Rural population growth and mechanization of agriculture have forced large numbers of farmers from the Mexican countryside to seek jobs elsewhere, but employment in Mexican cities has not grown rapidly enough to absorb



Figure 4.3 A Mexican immigrant jumping the fence into the United States in Nogales, Arizona. This photo was taken some 100 feet from the new U.S. Immigration border station being constructed in the early 1990s. Since then, a large steel wall has been put up to replace the chain link fence.

the displaced people. The result is immigration out of desperation. Immigrants seek some way to support themselves and their families by illegally crossing into the United States, where many employers are more than willing to hire them for wages that are considered relatively low in the United States but would be high in Mexico. Life for undocumented migrants can be very difficult—there is usually a large fee to pay for guides to cross the border, then constant fear of arrest and deportation, loneliness from the separation from loved ones, culture shock from immersion in a foreign place with a foreign language, and an often hostile reception from some American citizens who resent these newcomers and their different ways in their communities.

Refugees are a special class of immigrant. They are people who were persecuted in their homelands or have a well-founded fear of persecution there on account of race, religion, nationality, membership in a particular social group, or political opinion. The United States and Canada accept refugees from war-torn parts of the world, in part because of their early histories as places of refuge from political and economic persecution in Europe. The Displaced Persons Act of 1948 brought 400,000 Eastern Europeans to the United States, and between 1953 and 1956 another 200,000 refugees arrived from “Iron Curtain” countries. After Fidel Castro took power in Cuba in 1959, more than 400,000 Cubans fled to the United States, many of them settling in south Florida. This “first wave” of Cuban refugees was followed by a “second wave” of 125,000 during the Mariel boatlift of 1980, and a “third wave” who came in response to a 1994 decision by Castro to allow people to leave Cuba on their own crafts. Vietnamese and other Southeast Asian refugees arrived after the war in Vietnam ended in 1975, and more recently, the United States has resettled substantial numbers of refugees from regions of turmoil, including Bosnia, Iraq, Iran, Somalia, Sudan, and Ethiopia. Major refugee flows to Canada originate in Pakistan, Colombia, China, and Sri Lanka.

Migration patterns are the result of millions of individual and household decisions about where to live. For those who move, a combination of push and pull factors triggers the decision to move. **Push factors** can include exorbitant housing costs, growing gridlock, rising crime rates, skyrocketing tax rates, a poor climate, and the

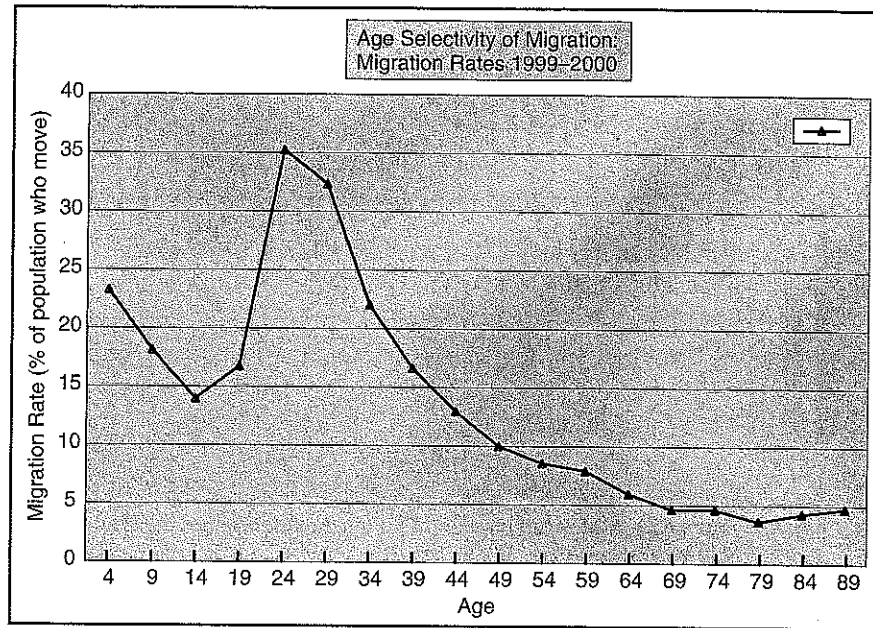


Figure 4.4 Migration rates are highest for young adults in their early 20s.

lack of a satisfying, well-paying job. **Pull factors** can include the promise of a higher-paying job, a pleasant physical setting, the availability of affordable housing, a desirable climate, or the lure of nearby family members. Sometimes a push for some people is a pull for others. Take, for example, closeness to family. Many believe that living near family members provides a valuable and comforting social support system; others see it as claustrophobic, stifling their independence. Similarly, a climate that is too hot and a push for some can be just right and a pull for others. High school taxes can be perceived as desirable for a young family with children but as onerous for a childless single person or an elderly couple. How we perceive various place characteristics and how much weight we attach to them is very much a personal matter.

The effects of migration on places of origin and destination are influenced by a process called **migration selectivity**. Certain individuals are more likely to migrate based on their personal characteristics, including age, education, and other sociodemographic characteristics. Age is the most important factor in influencing whether someone is a migrant or not (Figure 4.4). People are most prone to move during their early adult years between the ages of 18 and 30. The average individual makes approximately one-half of his or her 12 lifetime moves by age 25. During these young adult ages, people leave their parents' home to attend school, join the military, or take a job, leave college to find employment or change jobs, marry, and begin families. All these life-course events are usually associated with changes in residence. Movement rates are also high among young children, who typically have parents in their 20s.

A second migration selectivity factor is education. People with higher levels of education are more likely to make long-distance moves. Getting a college education often means moving to a new city and then returning or moving again upon graduation. In addition, education exposes us to new ideas and people from other places. It also qualifies us for, and provides information about, a wide variety of jobs in many different geographical areas. The selectivity of migration alters the population characteristics of origin and destination places. As a general rule, places

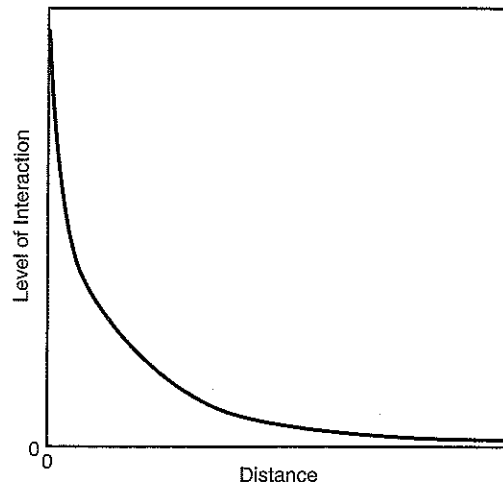


Figure 4.5 Distance decay curve showing decreasing interaction as distance increases.

experiencing net out-migration lose a disproportionate share of their young, well-educated residents while areas of net in-migration gain such individuals. There is a double whammy for places experiencing out-migration. They lose not only population numbers but also their youngest and best-educated residents. Especially troublesome is that this process can snowball, making origins less attractive to future migrants and less capable of retaining their current residents.

People do not move randomly across the landscape. The tendency for migration, or any other form of spatial interaction, to decrease with distance is called **distance decay** (Figure 4.5). Distance exerts more drag or friction on some kinds of moves than upon others and at some times more than others. Before the advent of modern transportation, it was very difficult to overcome distance. Think of the impediment of distance for the mountain men who explored the frontier and the wagon trains bringing settlers to the American West. Only the hardest and most adventuresome people moved long distances. Today, it is much easier to travel, and the friction of distance has declined significantly. Airline fares are only weakly related to the distance traveled. Similarly, there is little difference in whether an e-mail message is sent 5 meters, 5 blocks, 5 kilometers, or 5,000 kilometers. Despite the declining cost of overcoming space, distance continues to exert an influence on migration because people are far more familiar with nearby than faraway places. Of the 40 million annual changes in residence in the United States, almost 60 percent occur near to home within the county of residence; only about 20 percent involve a move across state lines. People are unlikely to move to faraway places they know little or nothing about.

Distance, however, is not the only factor affecting migration. Migrants tend to move in well-defined channels from specific origins to specific destinations called **migration streams**. Migration streams result from information flows between origins and destinations. Letters, telephone calls, and return visits from earlier migrants communicate opportunity at the potential destination. These pioneer migrants assist newcomers in finding a place to live, getting a new job, and adjusting to a new community. Information about places also comes from newspapers, television, magazines, business contacts, and personal travel. Most people, however, know surprisingly little about the range of potential places to live. Their migration decisions are based on a narrow set of options dictated by first- or secondhand information about what it is like to live there.

Wherever a migration stream develops, a **migration counterstream** of people moving in the opposite direction occurs. Not everyone who migrates—for example, college students—intends to remain permanently at the place of destination. Others are unhappy with the circumstances of their move, their personal situation changes, or they are military or corporate personnel who are reassigned. Divorce might create a return migration. An elderly couple who moved from the North to a Sunbelt retirement community while in their 60s could return home when they are in their 80s in fragile health and in need of family support. Also important to understanding migration counterstreams is the presence of information linking the two places. Once, for whatever reason, the channels of communication are opened and interpersonal relationships are built, movement will occur in both directions, although not necessarily at the same rate.

Migration streams involving faraway places get started in a variety of ways. Large streams connecting New York and New Jersey with Florida arose after World War II with the migration of retirees and snowballed as contact between the two areas grew. Historically strong ties between California and midwestern states began as labor force migration. The stream between Oklahoma and California originated with Depression-era Dust Bowl migrants. The experience of Dust Bowl migrants, eloquently portrayed in Steinbeck's *The Grapes of Wrath*, changed conventional wisdom about migrants from hardy pioneers in search of opportunity to disadvantaged families trying to survive (Figure 4.6).

The most geographically focused migration streams in the United States today are among newcomers to the country who are strongly attracted to immigrant communities or enclaves (see Chapter 12 for a fuller discussion of enclaves). Immigrant communities offer familiar language, food, music, and religious institutions. They also help newcomers to locate all-important housing and jobs. Many immigrants find work in businesses owned by their compatriots, or they establish their own small businesses, providing goods and services to immigrant niche markets.

The internal migration streams of Cuban- and Mexican-born immigrants demonstrate the different conditions under which they migrated to the United States (Figure 4.7). Mexicans are immigrants who, for the most part, moved voluntarily to the United States, largely for economic reasons. Cubans are refugees who were forced

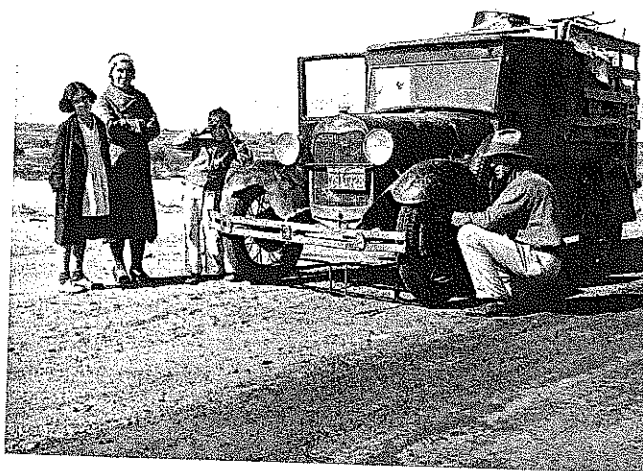
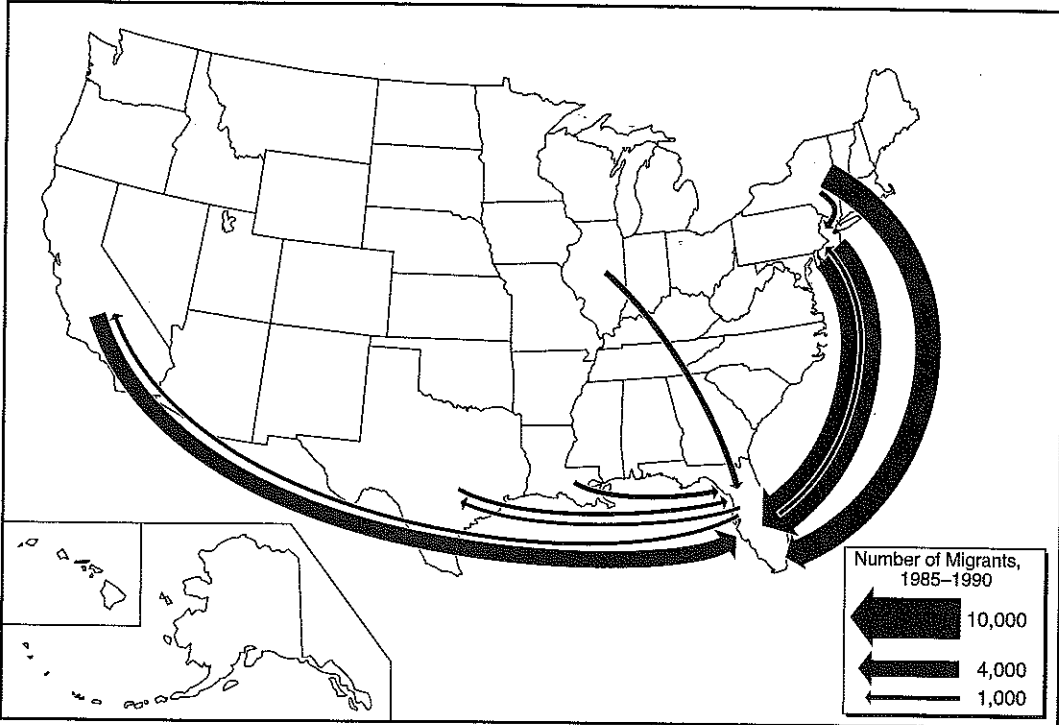


Figure 4.6 A “Dust Bowl” migrant family from Oklahoma recently arrived in California to join the harvest, November 1936.

10 Largest Domestic Migration Streams of Persons Born in Cuba



10 Largest Domestic Migration Streams of Persons Born in Mexico

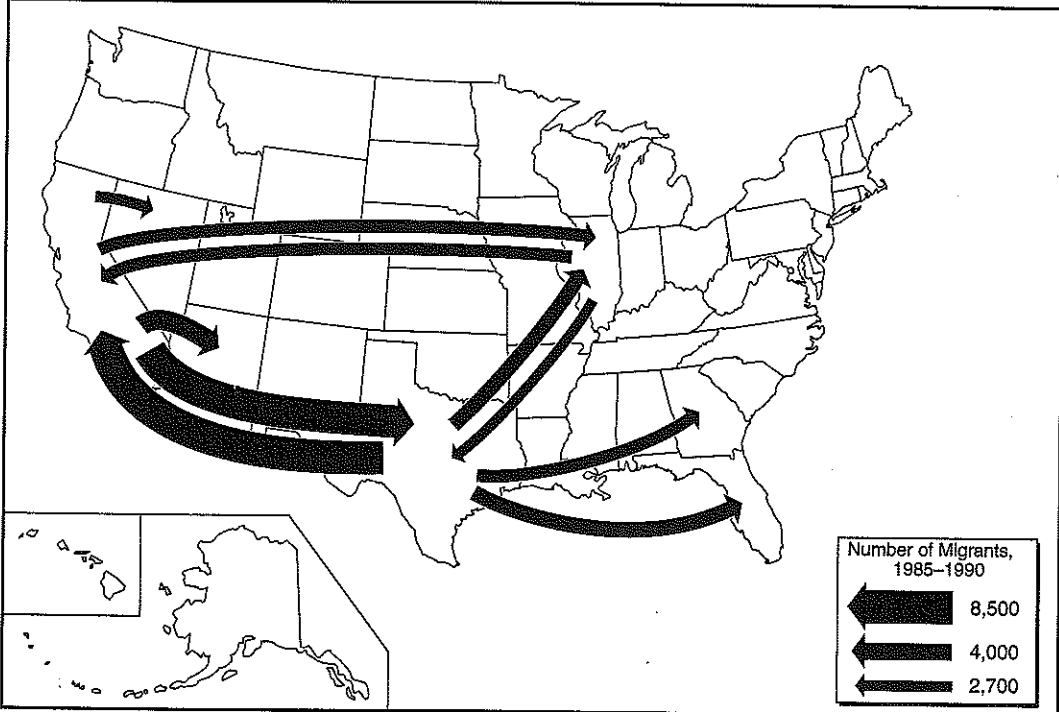


Figure 4.7 Examples of migration streams for two ethnic groups.
Source: 1990 Census of Population, Public Use Microdata Sample (PUMS), 5 Percent Sample. U.S. Census Bureau, Washington, DC.

by political crisis to flee their homeland. Even today, 20 or 30 years after their move to the United States, some Cubans continue to see themselves more as exiles hoping to return to Cuba than as immigrants seeking a permanent home and future in the United States. South Florida has emerged as the surrogate homeland for Cuban émigrés. Much political activity is organized around political change and post-communist Cuba, and high value is placed on preserving *cubanidad* or “Cubanness.” Cuban migration streams are strongly directed toward Florida; the counterstreams are extremely weak. These uneven flows are redistributing the Cuban population in favor of Florida. The Mexican migration system is quite different. Six of the 10 largest interstate flows interconnect the three largest concentrations of Mexican-born population in California, Texas, and Illinois. Unlike the Cuban flows, the Mexican flows are self-compensating. Streams and counterstreams are about equal in size; thus, very little population redistribution occurs as a result of Mexican internal migration.

Having introduced these key migration concepts, we now shift our focus to the task of predicting migration flows. Being able to predict flows is important in making accurate population projections and in monitoring the health of regional economies and their quality of life. Migration flows are a major determinant of whether a region grows and by how much. Although many population projections simply extrapolate past trends into the future, more detailed systems take account of the geography of migration. A state's economic situation may not change greatly, but if the economy or attractiveness of its major migration partner changes dramatically, the balance between in-migration and out-migration will be affected. Accurate predictions of migration and population growth allow state and regional governments to plan for new schools, roads, public facilities, and programs required to accommodate newcomers. Accurate predictions help places losing population to plan for a shrinking tax base and school-age population.

Geographers use a mathematical formula known as the **gravity model** because it resembles Isaac Newton's formula for the gravitational attraction between any two celestial masses, which you might have learned in physics class. Newton's law has been adapted to social science research for the purpose of estimating the spatial interaction or movement between any two places. Spatial interaction can take the form of trade, transportation, communication, commuting, shopping, or, in the case of this chapter, migration.

The following example will help you to understand the idea behind the gravity model. Figure 4.8 shows the populations of several states and their distance from California. Would you expect California to attract more migrants from North Carolina or from South Carolina? Their distances are about equal, but North Carolina has twice as many inhabitants. All other things being equal, you'd probably expect about two times as many migrants from North Carolina because there are two times more *potential* movers. Next, would you expect more migration to California from Arizona or from Maryland? Their populations are both around 5.3 million, but Maryland is five times farther away. Surely more people will move from Arizona; but probably not five times more, because each additional mile matters less and less. As shown in Figure 4.5, distance decay tends to be nonlinear: steep at first but gradually flattening out. The first 100 miles reduces migration substantially, the second 100 miles less so, and the twentieth 100 miles (i.e., the difference between 1,900 miles and 2,000 miles) hardly matters to people at all.

In the gravity model formula, as in the California example in Figure 4.8, population size and distance are used to explain the interaction flow, I_{ij} , between origin

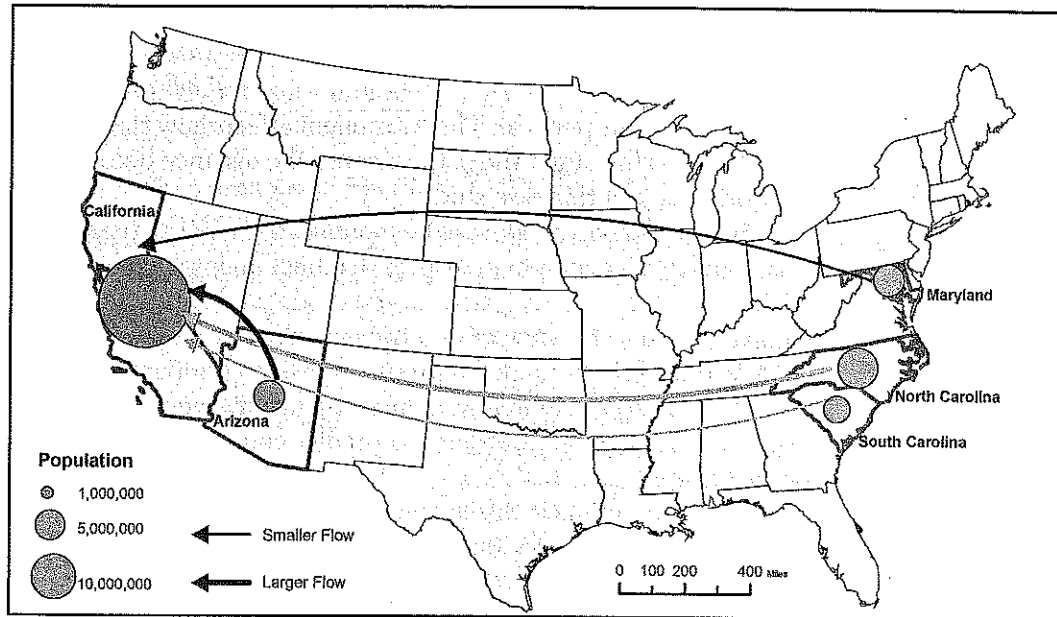


Figure 4.8 Although North Carolina and South Carolina are the same distance from California, we expect more migrants from North Carolina because it is larger. Although Arizona and Maryland have about the same population, we expect more migrants from Arizona because it is closer to California.

i and destination j . Unlike our example, however, the gravity model allows both size and distance to vary simultaneously:

$$I_{ij} = k \frac{P_i P_j}{d_{ij}^\beta}$$

where:

I_{ij} = predicted interaction between origin i and destination j

k = a scaling constant

P_i = a measure of size, usually population, for origin i

P_j = a measure of size, usually population, for destination j

d_{ij} = distance between origin i and destination j

β = an exponent that adjusts for the rate of distance decay unique to the type of *interaction* being measured

Let's look at the formula piece by piece. The mass or size variables in the numerator of the fraction will have a positive relationship with spatial interaction. This means that as the population of the state increases, both for origins and destinations, the interaction between them increases. Distance, being in the denominator, will be negatively or inversely related to interaction, meaning interaction decreases as distance increases. Dividing by distance creates a distance decay curve with the shape shown earlier in Figure 4.5.

The other two factors in the formula are constants that are calculated statistically to produce the most realistic estimates (we give them to you in this chapter).

The k factor scales the *relative* levels of interaction between places, so its value depends on the type of interaction being measured: a large value of k could exist for phone calls per year, a medium value for air travelers per year, and a low value for migrants per year. The β exponent affects how steeply interaction declines with distance: the larger the β , the steeper the distance decay effect. For simplicity, we won't use β in this case study.

The basic gravity model can be modified to model all types of spatial interaction. For instance, if geographers suspect that high unemployment rates are a significant push factor, they can add them to the model and test them statistically. A moving company such as Mayflower or a trailer and truck rental company such as U-Haul could use the gravity model to predict future migration patterns in order to choose new office locations. Similarly, airlines use gravity-type models to predict passenger flows, urban planners use them to predict commuting, and retailers use them to predict shopping.

When we designed this activity, we hoped that you would learn not only how the gravity model works but also how to think critically about models. Thinking critically about models means neither blindly accepting their outputs nor completely rejecting the model for not being perfectly true to reality. *Thinking critically* means assessing the strengths and weaknesses of a model, judging where it fits well and where it doesn't, and understanding what has been included in the model and what has been omitted. Certainly, people are different from the atoms and planets studied by physicists. Human actions are not mechanistically controlled by the size of their origins and destinations or the distances between them. In addition, the basic gravity model does not include migration selectivity factors such as age or education level, nor does it incorporate channelized migration streams and counterstreams. Nevertheless, human behavior is fairly predictable when the actions of millions of people are aggregated, and certain general tendencies emerge that are well represented by the gravity model.

After you have used the model to predict migration flows to your state or province in Activity 1, you will learn how to assess the effectiveness of the gravity model using graphs and maps. This will give you an idea of where the model fits well and where it doesn't. Moreover, you can determine which factors in addition to population size and distance could be influencing migration patterns. The failures of the model will reveal to you as much about migration as its successes do, and possibly more. You will learn that your state or province is more interconnected with some states than with others, which in turn can tell you about its economy, history, and culture.

▶ CASE STUDY

NEWTON'S FIRST LAW OF MIGRATION

GOAL

To model spatial interaction, in this case migration, using the **gravity model**. You will use the gravity model to predict the number of migrants to your state or province from all other U.S. states or Canadian provinces. The accuracy of the model will be assessed, and **residuals** will be mapped to show where actual migration differs from what the gravity model predicts.

LEARNING OUTCOMES

After completing the chapter, you will be able to:

- Apply principles of spatial interaction to patterns of movement.
- Identify the major source areas for migration to your state.
- Use functions of a spreadsheet.
- Produce and interpret a scatter diagram.
- Discriminate between positive and negative residuals.
- Identify outliers on a scatter diagram.
- Think critically about models in human geography.

SPECIAL MATERIALS NEEDED

- Computer with high-speed Internet access and a recent release of a Web browser. If using the Student Companion Site with the printed book, click on *Tech Support* for system requirements and technical support. (If using the e-book in WileyPlus, click on *Help* for details about the system requirements.)

BACKGROUND

Seeking a new life in a new place has always been a fundamental part of the American dream. High levels of mobility have been linked to settlement of the frontier, an innate restlessness, the drive for change, and an inherent dynamism in American culture. *Geographic mobility*, defined as a move from one



Figure 4.9 This scene of a family packing their belongings in a moving van is a familiar one in the highly mobile United States.

residence to another, is higher in the United States than in Western European countries, where many people have lived in the same area for many generations (Figure 4.9).

Higher-than-average levels of mobility found in the United States, Canada, Australia, and New Zealand suggest that something about the history and culture of these countries encourages movement. One explanation is that they are all high-immigration countries. Immigration from abroad brings people with weak ties to the new place. One of the strongest predictors of whether people move in the future is whether they have moved in the past. Migration begets further migration in the sense that once ties to home are broken, they are easier to break again. A second explanation is that the United States, Canada, Australia, and New Zealand share cultures that value personal freedom above loyalty to any particular group or place. A geographic move is, at its essence, an exercise of such freedom. Finally, in all four countries, land and housing costs are relatively cheap, and liberal government controls on housing codes, land use, and real estate markets make it easy for people to buy and sell homes, and thus to move.

Despite the popular conception that mobility is on the rise and Americans are continually on the move, mobility rates in the United States actually are at a post-World War II low (Figure 4.10). During most of the 1950s and 1960s, 20 percent of the population changed its residence every year. By the beginning of the 1980s, this figure was down to 16 percent. The most recent census figure was 11.9 percent in 2007–2008. The decline in mobility is attributed, in part, to the aging of the population. Older people are far less likely to move than younger ones, and an older population will have lower mobility rates than a younger one has. Even among people in their 20s, however, mobility rates are lower today than they were 50 years ago. One reason is that we have become a nation of homeowners, and people who own their own homes are far less likely to move than renters are. Also, rising labor-force participation among women and the growing number of dual-career households retard mobility because couples must consider the work and family responsibilities of both spouses in deciding to move.

An exception to the overall decline in U.S. mobility was during the mid-1980s, when an upward spike in mobility followed a sharp recession in which unemployment rates were high, inflation skyrocketed, and the housing market slumped. These conditions seriously curtailed the desire and ability to move. When the recession ended and interest rates fell, pent-up demand for movement briefly returned mobility rates to levels of the 1950s and 1960s. Since that unusual period, however, mobility rates have continued to decline. The most recent sharp drop in the 2007–2008 mobility rate reflects the most severe economic downturn since the Great Depression. Mobility rates track economic prosperity, so that in difficult times, people tend to stay put. Even though people may be experiencing economic hardships, at least the place and circumstances they are familiar with often seem better than increased uncertainties associated with migration to a new location.

CASE STUDY (continued)

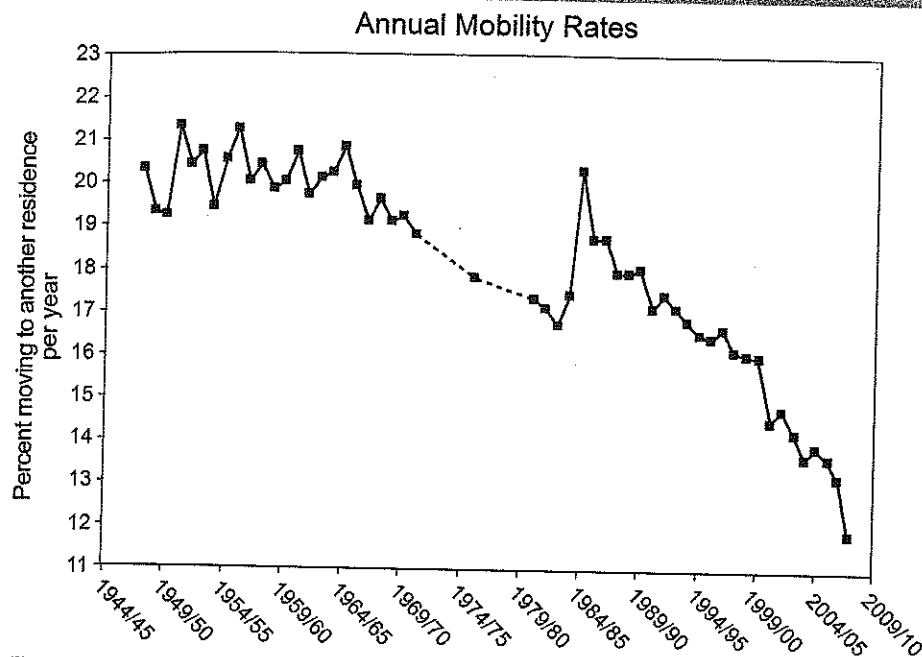


Figure 4.10 Annual mobility rate equals the number of people who moved to a new residence between March of one year and March of the next, divided by the population age 1 or older. Note the lower rates in the last few decades since the peak years of the 1950s and 1960s. Source: U.S. Census Bureau.

The likelihood of moving varies markedly across major regions of the United States. The Northeast has the lowest moving rate—11.7 percent—well below the national rate of 15.9 percent. It is followed by the Midwest at 15.1 percent, the South at 17.1 percent, and the West at 18.5 percent. The South and West have higher mobility in part because they have been destinations for recent migrants from the Northeast and Midwest, and as noted earlier, once someone moves, he or she is more likely to move again. The West, in addition, has a long tradition of transience and impermanence dating from frontier days.

The largest interstate migration streams between 1995 and 2000 demonstrate the significance of population mass in generating large flows, the principle of migration streams and counterstreams, the importance of pull factors to high-amenity states, and the emergence of California as a major source for migrants to other western states (Figure 4.11). That California, the country's most populous state, and New York, the third-largest state, accounted for 10 of the 15 largest migration streams speaks to the importance of population—the numerator in the gravity model—as a generator of large flows. Population alone, however, does not explain the entire map of migration streams, because movement evolves from the economic, social, and political relationships between particular origins and destinations. New York and Florida, for example, share a common bond that began with post-World War II retirement migration and solidified with later labor-force flows. Large streams often create large counterstreams, as is the case between California and Texas and between Florida and Georgia.

The dominant Frostbelt-to-Sunbelt patterns of the 1970s and 1980s gave way to a more complicated system of migration in the 1990s. Although Florida continued to attract large numbers of people from New York and New Jersey, and North Carolina emerged as an important migration destination, the big story of the decade was the emergence of California as a major source area for domestic migrants. Until the early 1990s, California had attracted migrants from the East and Midwest and exchanged migrants with other western states. California, for example, was always Arizona's major migration partner, but the two states simply sent people back and forth, with little overall effect on either state's population. All that changed after California's deep and persistent recession of the early 1990s. Weak job growth, in conjunction with expensive home prices and the influx of immigrants from abroad, stimulated a large exodus of domestic migrants seen in the extensive flows leaving California for Oregon, Washington, Nevada, Arizona, and Colorado. These latter states grew rapidly, not only from the force of their own economic growth and their discovery as interesting and pleasant places to live, but from California's declining attractiveness to domestic migrants.

Americans vote with their feet and tell us how they feel about places through their net migration patterns. **Net migration rate** is the difference between in-migration and out-migration during a given period, expressed as a percentage of the total population. Positive net migration indicates that more migrants entered the state than left it during that period. A negative net migration means that more migrants left than entered the state. Net migration is usually presented as a rate

▶ CASE STUDY

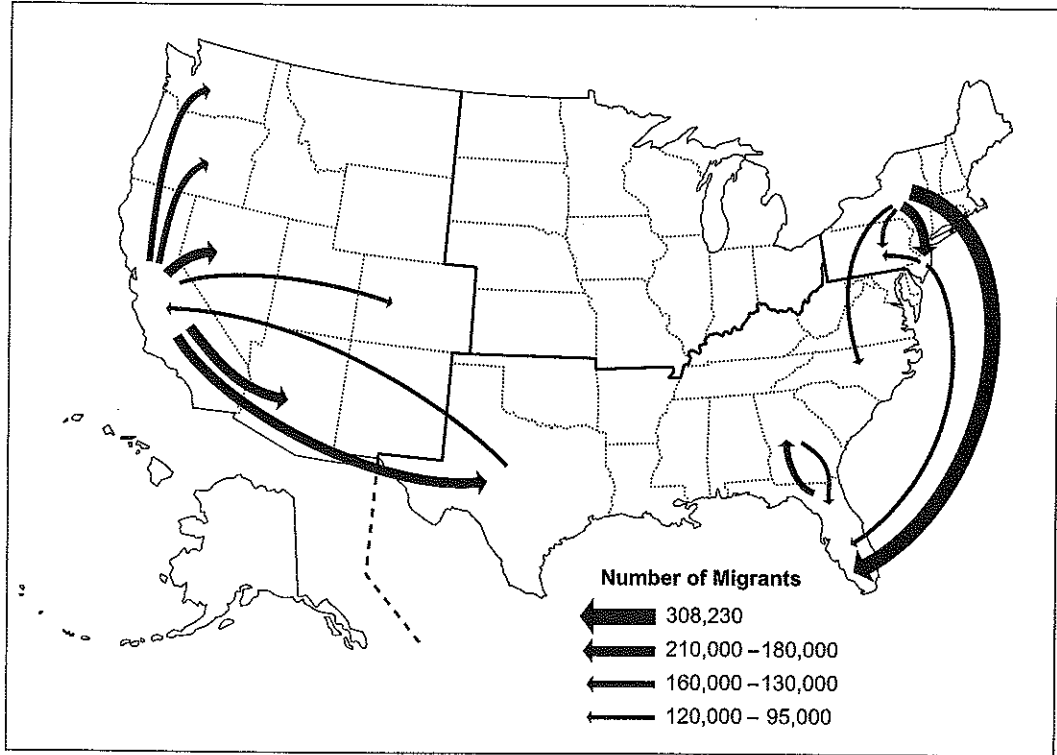


Figure 4.11 Fifteen largest interstate migration streams, 1995–2000.

Source: Raw data matrix from the Internal Revenue Service and U.S. Bureau of the Census.

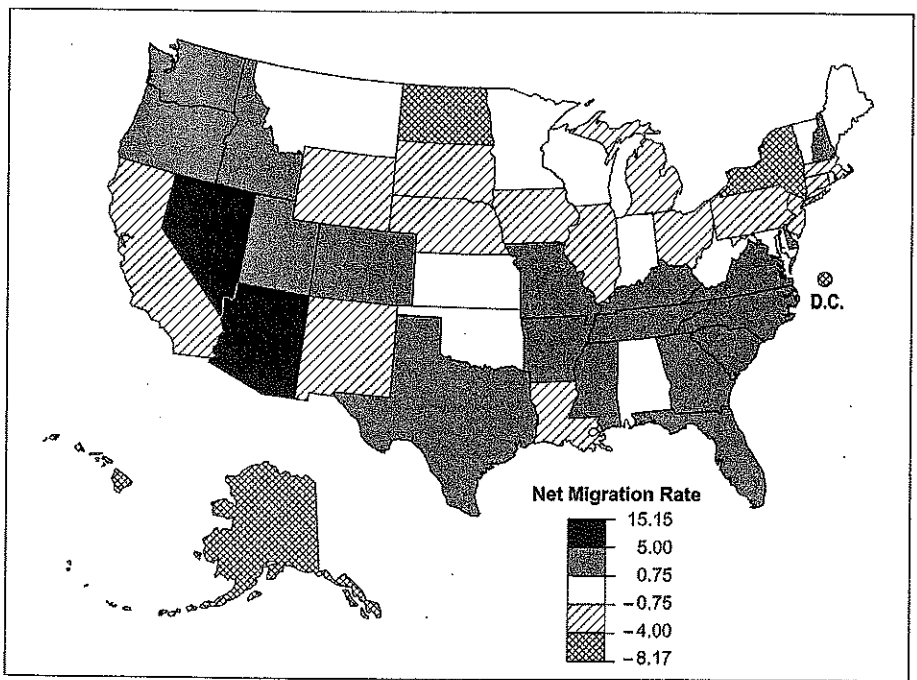


Figure 4.12 Net migration rates for the United States, 1995–2000.

▶ CASE STUDY

or percentage of the population to give an idea of the amount of migration change relative to the total population base. In New York State, for example, between 1995 and 2000 there were 726,000 in-migrants and 1,600,000 out-migrants. When divided by New York's 1995 population base of 17.8 million, these totals translate into a net migration rate of -4.9 percent. For every 100 people who lived in New York State in 1995, the state lost almost five people due to domestic migration. (*Note: Net migration rates for every country can be found in the *Area and Demographic Data* on the Web site.*)

Although Nevada and Arizona led the nation in net migration with rates of 15 and 7 percent respectively, the largest regional concentration of positive migration rates occurred in the Southeast, where Florida, Georgia, and North Carolina were among the top destination states (Figure 4.12). Positive net migration also occurred in Nevada, Arizona, Colorado, Oregon, and Idaho, where Californians and others were attracted by affordable housing, healthy job growth, and high-amenity lifestyles. The same forces created positive net migration to the upper New England states of Maine, Vermont, and New Hampshire. Alaska, Hawaii, and New York State registered the highest negative net migration rates. The urban

Northeast fared poorly in general, as did some parts of the Midwest, particularly Illinois. Great Plains states had difficulty retaining population, as did Louisiana in the South and New Mexico in the Southwest. Overall, the map of regional desirability reveals the strong preference among domestic migrants for high-amenity regions with warm climates, picturesque seashores, striking mountain views, and outdoor lifestyle.

Today's migration patterns reflect the location of states relative to one another (nearby states tend to exchange migrants), historical patterns of movement (i.e., longtime linkages between Florida and New York and between California and Texas), the changing geography of economic opportunity in the nation, and the public's perceptions about the attractiveness of places, including intangibles such as an agreeable climate, being near family and friends, and an ocean view. You are asked in this exercise to examine recent migration flows between your state (or Canadian province) and all others in the nation in 2002–2003 and to hypothesize about why your state or province is more connected to some than to others. Use your basic knowledge of migration trends in the nation and your knowledge of the circumstances of your particular state or province.