

◀ **FIGURE 1-13 GIS** Geographic information systems store information about a location in layers. Each layer represents a different piece of human or environmental information. GIS involves two types of data: vector and raster. Vector data consists of points (such as for cities) and lines (such as for highways). Raster data consists of areas, such as particular landforms.

(including those in this book) that are more accurate and attractive than those drawn by hand.

The position of any object on Earth can be measured and recorded with mathematical precision and then stored in a computer. A map can be created by asking the computer to retrieve a number of stored objects and combine them to form an image. In the past, when cartographers drew maps with pen and paper, a careless moment could result in an object being placed in the wrong location, and a slip of the hand could ruin hours of work. GIS is more efficient than pen and ink for making a map: Objects can be added or removed, colors brightened or toned down, and mistakes corrected (as long as humans find them!) without having to tear up the paper and start from scratch.

Each type of information can be stored in a layer. For example, separate layers could be created for boundaries of countries, bodies of water, roads, and names of places. A simple map might display only a single layer by itself, but most maps combine several layers (Figure 1-13), and GIS permits construction of much more complex maps than can be drawn by hand.

Layers can be compared to show relationships among different kinds of information. For example, to protect hillsides from development, a geographer may wish to compare a layer of recently built houses with a layer of steep slopes. GIS enables geographers to calculate whether relationships between objects on a map are significant or merely coincidental. For example, maps showing where cancer rates are relatively high and low (such as those in Figure 1-25) can be combined with layers showing the location of people with various incomes and ethnicities, the location of different types of factories, and the location of mountains and valleys.

## MIXING DATA: MASHUPS

Computer users have the ability to do their own GIS because mapping services provide access to the application

programming interface (API), which is the language that links a database such as an address list with software such as mapping. The API for mapping software, available at such sites as [www.google.com/apis/maps](http://www.google.com/apis/maps), enables a computer programmer to create a mashup that places data on a map.

The term *mashup* refers to the practice of overlaying data from one source on top of one of the mapping services; the term comes from the hip-hop practice of mixing two or more songs. A mashup map can show the locations of businesses and activities near a particular street or within a neighborhood in a city. The requested information could be all restaurants within 1 kilometer (0.6 mile) of an address or, to be even more specific, all pizza parlors. Mapping software can show the precise locations of commercial airplanes currently in the air, the gas stations with the lowest prices, and current traffic tie-ups on highways and bridges.

### Pause and Reflect 1.1.4

**State a question you have about the area where you live. Now describe a mashup that you could create using GIS that would answer your question.**

#### CHECK-IN: KEY ISSUE 1

#### How Do Geographers Describe Where Things Are?

- ✓ Maps are tools of reference and increasingly tools of communication. Reading a map requires recognizing its scale and projection.
- ✓ Contemporary mapping utilizes electronic technologies, such as remote sensing, GPS, and GIS.



## KEY ISSUE 2

# Why Is Each Point on Earth Unique?

- **Place: A Unique Location**
- **Region: A Unique Area**

### Learning Outcome 1.2.1

Identify geographic characteristics of places, including toponym, site, and situation.

A **place** is a specific point on Earth distinguished by a particular characteristic. Every place occupies a unique location, or position, on Earth's surface. Although each place on Earth is in some respects unique, in other respects it is similar to other places. The interplay between the uniqueness of each place and the similarities among places lies at the heart of geographic inquiry into why things are found where they are.

## Place: A Unique Location

Humans possess a strong sense of place—that is, a feeling for the features that contribute to the distinctiveness of a particular spot on Earth—perhaps a hometown, vacation destination, or part of a country. Describing the features of a place is an essential building block for geographers to explain similarities, differences, and changes across Earth. Geographers think about where particular places are located and the combination of features that make each place on Earth distinct.

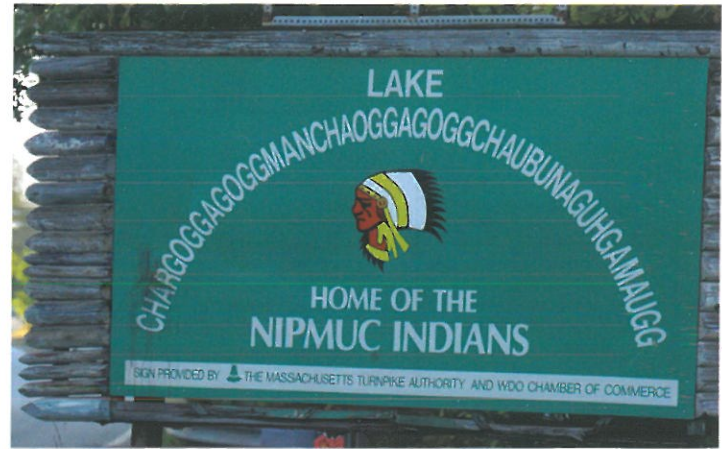
Geographers describe a feature's place on Earth by identifying its **location**, the position that something occupies on Earth's surface. In doing so, they consider three ways to identify location: place name, site, and situation.

### PLACE NAMES

Because all inhabited places on Earth's surface—and many uninhabited places—have been named, the most straightforward way to describe a particular location is often by referring to its place name. A **toponym** is the name given to a place on Earth.

A place may be named for a person, perhaps its founder or a famous person with no connection to the community, such as George Washington. Some settlers select place names associated with religion, such as St. Louis and St. Paul, whereas other names derive from ancient history, such as Athens, Attica, and Rome, or from earlier occupants of the place (Figure 1-14).

A place name may also indicate the origin of its settlers. Place names commonly have British origins in North America and Australia, Portuguese origins in Brazil, Spanish origins



▲ **FIGURE 1-14 LONGEST U.S. PLACE NAME** The longest place name in the United States may be Lake Chargoggagoggmanchauggagoggchaubunagungamaugg, Massachusetts. One hypothesis is that the name is Algonquian language for "fishing place at the boundaries—neutral meeting grounds." Others believe that the original meaning is unknown, and the current meaning and spelling are recent inventions.

elsewhere in Latin America, and Dutch origins in South Africa. Some place names derive from features of the physical environment. Trees, valleys, bodies of water, and other natural features appear in the place names of most languages.

The Board of Geographical Names, operated by the U.S. Geological Survey, was established in the late nineteenth century to be the final arbiter of names on U.S. maps. In recent years the board has been especially concerned with removing offensive place names, such as those with racial or ethnic connotations.

### SITE

The second way that geographers describe the location of a place is by **site**, which is the physical character of a place. Important site characteristics include climate, water sources, topography, soil, vegetation, latitude, and elevation. The combination of physical features gives each place a distinctive character.

Site factors have always been essential in selecting locations for settlements, although people have disagreed on the attributes of a good site, depending on cultural values. Some have preferred a hilltop site for easy defense from attack. Others have located settlements near convenient river-crossing points to facilitate communication with people in other places.

Humans have the ability to modify the characteristics of a site. Central Boston is more than twice as large today as it was during colonial times (Figure 1-15). Colonial Boston was a peninsula connected to the mainland by a very narrow neck. During the nineteenth century, a dozen major projects filled in most of the bays, coves, and marshes. A major twentieth-century landfill project created Logan Airport. Several landfill projects continue into the twenty-first century. The central areas of New York and Tokyo have also been expanded through centuries of landfilling in nearby bodies of water, substantially changing these sites.





▲ **FIGURE 1-15 CHANGING SITE OF BOSTON** The site of Boston has been altered by filling in much of Boston Harbor, primarily during the nineteenth century.

## SITUATION

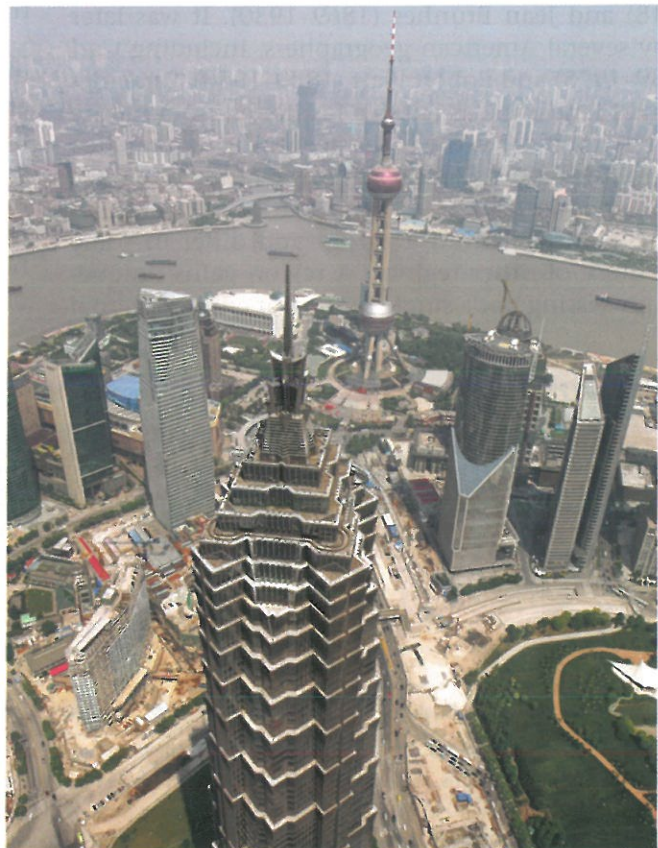
**Situation** is the location of a place relative to other places. Situation is a valuable way to indicate location, for two reasons—finding an unfamiliar place and understanding its importance.

First, situation helps us find an unfamiliar place by comparing its location with a familiar one. We give directions to people by referring to the situation of a place: “It’s down past the courthouse, on Locust Street, after the third traffic light, beside the yellow-brick bank.” We identify important buildings, streets, and other landmarks to direct people to the desired location.

Second, situation helps us understand the importance of a location. Many locations are important because they are accessible to other places. For example, because of its situation, Shanghai has become a center for the trading and distribution of goods across Asia and the Pacific Ocean (Figure 1-16). Shanghai is situated near the confluence of the Yangtze River and the East China Sea. The port of Shanghai has become the world’s largest.

### Pause and Reflect 1.2.1

**How would you describe the site and situation of the place where you live? (Use online maps or an atlas to help analyze the characteristics of your location.)**



▲ **FIGURE 1-16 SITE AND SITUATION OF SHANGHAI** The site of the city of Shanghai is along the south bank of Yangtze River. The situation of Shanghai, near the mouth of the Yangtze, where it flows into the East China Sea, is critical in making the city the world’s largest port.



## Region: A Unique Area

### Learning Outcome 1.2.2

#### Identify the three types of regions.

The “sense of place” that humans possess may apply to a larger area of Earth rather than to a specific point. An area of Earth defined by one or more distinctive characteristics is a **region**. A particular place can be included in more than one region, depending on how the region is defined.

The designation *region* can be applied to any area larger than a point and smaller than the entire planet. Geographers most often apply the concept at one of two scales:

- Several neighboring countries that share important features, such as those in Latin America.
- Many localities within a country, such as those in southern California.

A region derives its unified character through the **cultural landscape**—a combination of cultural features such as language and religion, economic features such as agriculture and industry, and physical features such as climate and vegetation. The southern California region can be distinguished from the northern California region, for example.

The contemporary **cultural landscape approach** in geography—sometimes called the **regional studies approach**—was initiated in France by Paul Vidal de la Blache (1845–1918) and Jean Brunhes (1869–1930). It was later adopted by several American geographers, including Carl Sauer (1889–1975) and Robert Platt (1880–1950). Sauer defined cultural landscape as an area fashioned from nature by a cultural group. “Culture is the agent, the natural area the medium, the cultural landscape is the result.”

People, activities, and environment display similarities and regularities within a region and differ in some way from those of other regions. A region gains uniqueness from possessing not a single human or environmental

characteristic but a combination of them. Not content to merely identify these characteristics, geographers seek relationships among them. Geographers recognize that in the real world, characteristics are integrated.

Geographers identify three types of regions—formal, functional, and vernacular.

## FORMAL REGION

A **formal region**, also called a **uniform region**, is an area within which everyone shares in common one or more distinctive characteristics. The shared feature could be a cultural value such as a common language, an economic activity such as production of a particular crop, or an environmental property such as climate. In a formal region, the selected characteristic is present throughout.

Some formal regions are easy to identify, such as countries or local government units. Montana is an example of a formal region, characterized with equal intensity throughout the state by a government that passes laws, collects taxes, and issues license plates. The formal region of Montana has clearly drawn and legally recognized boundaries, and everyone living within them shares the status of being subject to a common set of laws.

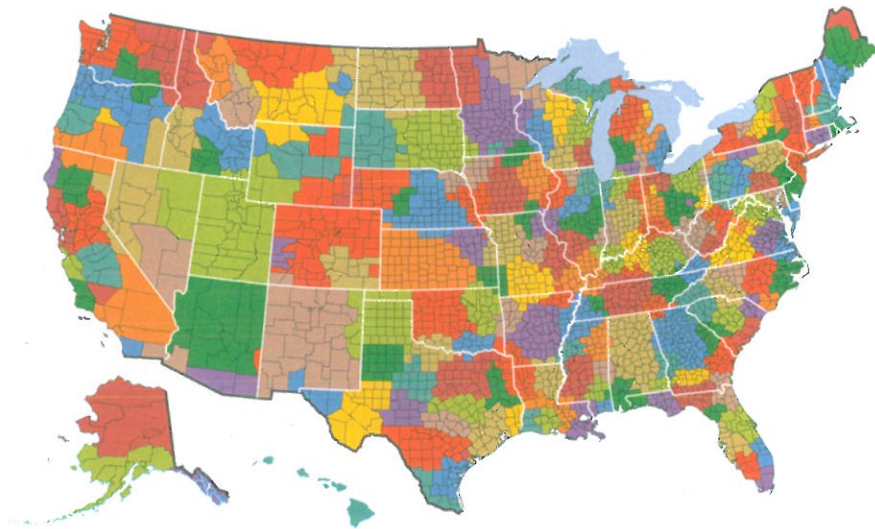
In other kinds of formal regions, a characteristic may be predominant rather than universal. For example, we can distinguish formal regions within the United States characterized by a predominant voting for Republican candidates, although Republicans do not get 100 percent of the votes in these regions—nor in fact do they always win (Figure 1-17).

A cautionary step in identifying formal regions is the need to recognize the diversity of cultural, economic, and environmental factors, even while making a generalization. Problems may arise because a minority of people in a region speak a language, practice a religion, or possess resources different from those of the majority. People in a region may play distinctive roles in the economy and hold different positions in society based on their gender or ethnicity.



▲ **FIGURE 1-17 FORMAL REGIONS** The three maps show the winner by region in the (left) 2004, (center) 2008, and (right) 2012 presidential elections. The extensive areas of support for Democrats (blue) and Republicans (red) are examples of formal regions. (left) In 2004, Democrat John Kerry won most of the states in the Northeast, Upper Midwest, and Pacific Coast regions, while Republican George W. Bush won the remaining regions. (center) In 2008, Democrat Barack Obama won the election by capturing some states in regions that had been won entirely by the Republican four years earlier. (right) In 2012, Democrat Obama won reelection because he carried nearly the same states as four years earlier.





◀ **FIGURE 1-18 FUNCTIONAL REGIONS** The United States is divided into functional regions based on television markets, which are groups of counties served by a collection of TV stations. Many of these TV market functional regions cross state lines.

## FUNCTIONAL REGION

A **functional region**, also called a **nodal region**, is an area organized around a node or focal point. The characteristic chosen to define a functional region dominates at a central focus or node and diminishes in importance outward. The region is tied to the central point by transportation or communications systems or by economic or functional associations.

Geographers often use functional regions to display information about economic areas. A region's node may be a shop or service, with the boundaries of the region marking the limits of the trading area of the activity. People and activities may be attracted to the node, and information may flow from the node to the surrounding area.

An example of a functional region is the reception area of a TV station. A TV station's signal is strongest at the center of its service area (Figure 1-18). At some distance from the center, more people are watching a station originating in another city. That place is the boundary between the nodal regions of the two TV market areas. Similarly, a department store attracts fewer customers from the edge of a trading area, and beyond that edge, customers will most likely choose to shop elsewhere.

New technology is breaking down traditional functional regions. TV stations are broadcast to distant places by cable, satellite, or Internet and through the Internet customers can shop at distant stores.

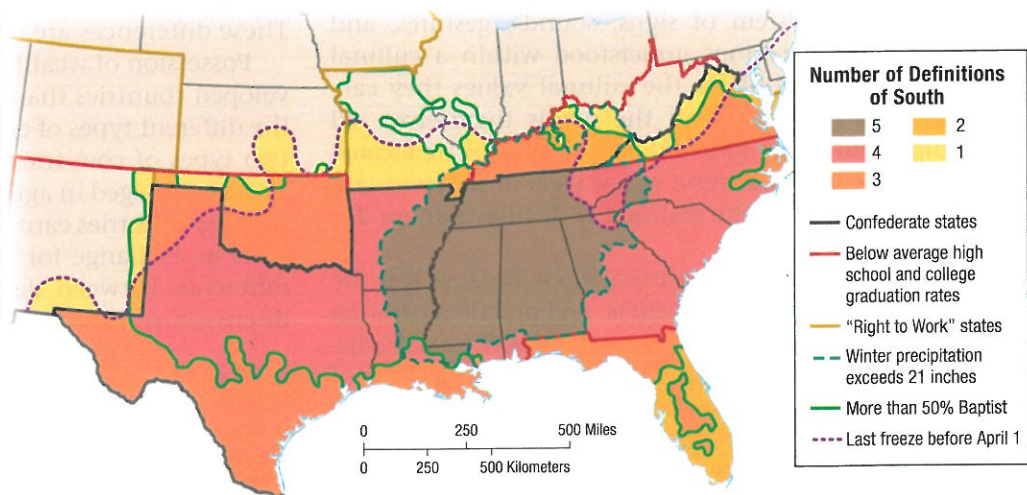
▶ **FIGURE 1-19 VERNACULAR REGIONS** The South is popularly distinguished as a distinct vernacular region within the United States, according to a number of factors, such as mild climate, propensity for growing cotton, and importance of the Baptist Church.

## VERNACULAR REGION

A **vernacular region**, or **perceptual region**, is an area that people believe exists as part of their cultural identity. Such regions emerge from people's informal sense of place rather than from scientific models developed through geographic thought.

A useful way to identify a perceptual region is to get someone to draw a **mental map**, which is an internal representation of a portion of Earth's surface. A mental map depicts what an individual knows about a place, containing personal impressions of what is in the place and where the place is located. On a college campus, a senior is likely to have a more detailed and "accurate" map than a first-year student.

As an example of a vernacular region, Americans frequently refer to the South as a place with environmental, cultural, and economic features perceived to be quite distinct from those of the rest of the United States (Figure 1-19). Many of these features can be measured. Economically, the South is a region of high cotton production and low high school graduation rates. Culturally, the South includes the states that joined the Confederacy during the Civil War and where Baptist is the most prevalent religious denomination. Environmentally, the South is a region where the last winter frost occurs in March, and rainfall is more plentiful in winter than in summer. Southerners and other Americans alike share a strong sense of the American South as a distinctive place that transcends geographic measurement. The perceptual region known as the South is a source of pride to many Americans—and for others it is a place to avoid.





## REGIONS OF CULTURE

### Learning Outcome 1.2.3

Describe two geographic definitions of culture.

In thinking about *why* each region on Earth is distinctive, geographers refer to **culture**, which is the body of customary beliefs, material traits, and social forms that together constitute the distinct tradition of a group of people. Geographers distinguish groups of people according to important cultural characteristics, describe where particular cultural groups are distributed, and offer reasons to explain the observed distribution.

In everyday language, we think of *culture* as the collection of novels, paintings, symphonies, and other works produced by talented individuals. A person with a taste for these intellectual outputs is said to be “cultured.” Intellectually challenging culture is often distinguished from *popular* culture, such as TV. *Culture* also refers to small living organisms, such as those found under a microscope or in yogurt. *Agriculture* is a term for the growing of living material at a much larger scale than in a test tube.

The origin of the word *culture* is the Latin *cultus*, which means “to care for.” Culture is a complex concept because “to care for” something has two very different meanings:

- To care *about*—to adore or worship something, as in the modern word *cult*
- To take care *of*—to nurse or look after something, as in the modern word *cultivate*

Geography looks at both of these facets of the concept of culture to see why each region in the world is unique.

**CULTURE: WHAT PEOPLE CARE ABOUT.** Geographers study why the customary ideas, beliefs, and values of a people produce a distinctive culture in a particular place. Especially important cultural values derive from a group’s language, religion, and ethnicity. These three cultural traits are both an excellent way of identifying the location of a culture and the principal means by which cultural values become distributed around the world.

Language is a system of signs, sounds, gestures, and marks that have meanings understood within a cultural group. People communicate the cultural values they care about through language, and the words themselves tell something about where different cultural groups are located (Figure 1-20). The distribution of speakers of different languages and reasons for the distinctive distribution are discussed in Chapter 5.

Religion is an important cultural value because it is the principal system of attitudes, beliefs, and practices through which people worship in a formal, organized way. As discussed in Chapter 6, geographers look at the distribution of religious groups around the world and the different ways that the various groups interact with their environment.

Ethnicity encompasses a group’s language, religion, and other cultural values, as well as its physical traits. A



▲ **FIGURE 1-20 CULTURE: WHAT PEOPLE CARE ABOUT** Language and religion are important elements of culture that people care about. These tiles in French and Vietnamese are in the Basilica of Our Lady of the Immaculate Conception (Notre-Dame Basilica) in Ho Chi Minh City, Vietnam. When the basilica was constructed in the late nineteenth century, France was the colonial ruler of Vietnam. “Ta ón Thánh Antôn” is Vietnamese for “Thanks to Saint Anthony” (the patron saint of lost and stolen items).

group possesses these cultural and physical characteristics as a product of its common traditions and heredity. As addressed in Chapter 7, geographers find that problems of conflict and inequality tend to occur in places where more than one ethnic group inhabits and seeks to organize the same territory.

**CULTURE: WHAT PEOPLE TAKE CARE OF.** The second element of culture of interest to geographers is production of material wealth—the food, clothing, and shelter that humans need in order to survive and thrive. All people consume food, wear clothing, build shelter, and create art, but different cultural groups obtain their wealth in different ways.

Geographers divide the world into regions of developed countries and regions of developing countries. Various shared characteristics—such as per capita income, literacy rates, TVs per capita, and hospital beds per capita—distinguish developed regions and developing regions. These differences are reviewed in Chapter 9.

Possession of wealth and material goods is higher in developed countries than in developing countries because of the different types of economic activities carried out in the two types of countries. Most people in developing countries are engaged in agriculture, whereas most people in developed countries earn their living through performing services in exchange for wages. This fundamental economic difference between developed and developing regions is discussed in more detail in Chapters 10 through 13.

## SPATIAL ASSOCIATION

A region can be constructed to encompass an area of widely varying scale, from a very small portion of Earth to a very large portion. Different conclusions may be reached



concerning a region's characteristics, depending on its scale. Consider the percentage of Americans who die each year from cancer. Death rates vary widely among scales within the United States (Figure 1-21):

- At the scale of the United States, the Great Lakes and South regions have higher levels of cancer than the West.
- At the scale of the state of Maryland, the eastern region has a higher level of cancer than the western region.
- At the scale of the city of Baltimore, Maryland, lower levels of cancer are found in the northern region.

To explain why regions possess distinctive features, such as a high cancer rate, geographers try to identify cultural, economic, and environmental factors that display similar spatial distributions. By integrating other spatial information about people, activities, and environments, we can begin to see factors that may be associated with regional differences in cancer:

- At the national scale, the Great Lakes region may have higher cancer rates in part because the distribution of cancer is spatially associated with the distribution of factories.
- At the state scale, Baltimore City may have higher cancer rates because of a concentration of people with lower levels of income and education. People living in

the rural Eastern Shore region may be exposed to runoff of chemicals from farms into the nearby Chesapeake Bay, as well as discharges carried by prevailing winds from factories further west.

- At the urban scale, neighborhoods on the north side of Baltimore City contain a higher percentage of people with high incomes and are further from the city's factories and port facilities.

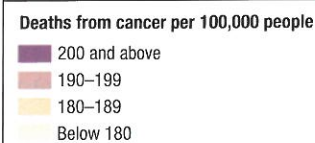
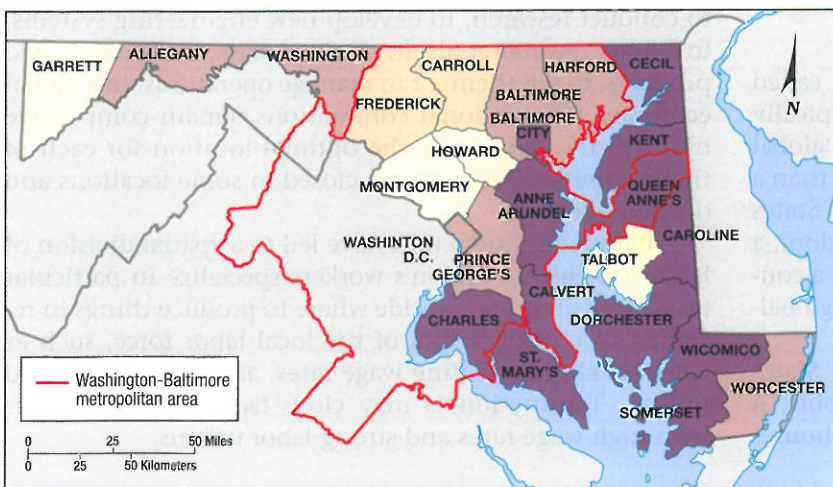
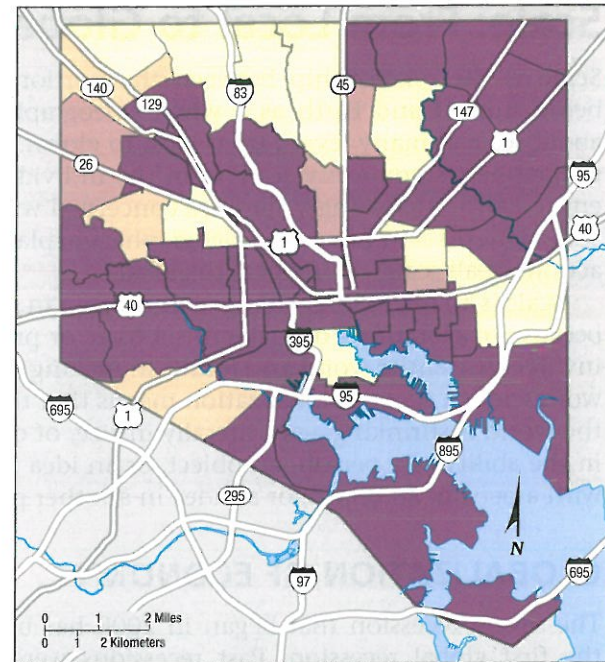
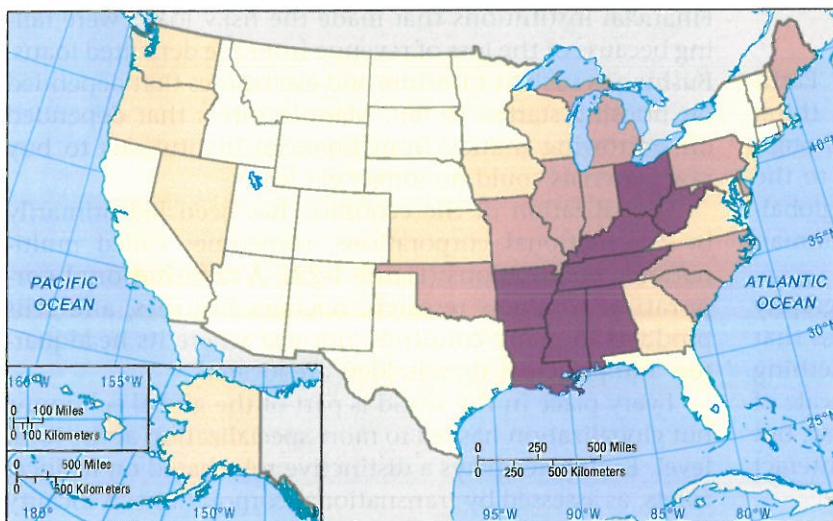
### Pause and Reflect 1.2.3

For each map in Figure 1-21, write a question that you could ask about the data on the map at that scale. How do your questions change as the map's scale changes?

### CHECK-IN: KEY ISSUE 2

#### Why Is Each Point On Earth Unique?

- ✓ Location is identified through name, site, and situation.
- ✓ Regions can be formal, functional, or vernacular.
- ✓ Culture encompasses what people care about and what people take care of.



▲ **FIGURE 1-21 SPATIAL ASSOCIATION** On the national scale, the Great Lakes and South regions have higher cancer rates than the West. On the scale of the state of Maryland, the eastern region has a higher cancer rate than the western region. On the urban scale, southern and western neighborhoods of Baltimore City have higher cancer rates than northwestern ones. Geographers try to understand the reason for such variations.



## KEY ISSUE 3

# Why Are Different Places Similar?

- **Scale: From Local to Global**
- **Space: Distribution of Features**
- **Connections between Places**

### Learning Outcome 1.3.1

**Give examples of changes in economy and culture occurring at global and local scales.**

Although accepting that each place or region on Earth may be unique, geographers recognize that human activities are rarely confined to one location. Three basic concepts—scale, space, and connections—help geographers explain why similarities among places and regions do not result from coincidence.

## Scale: From Local to Global

**Scale** is the relationship between the portion of Earth being studied and Earth as a whole. Geographers think about scale at many levels, from local to global. Although geographers study every scale from the individual to the entire Earth, increasingly they are concerned with global-scale patterns and processes. Geographers explain human actions at all scales, from local to global.

Scale is an increasingly important concept in geography because of **globalization**, which is a force or process that involves the entire world and results in making something worldwide in scope. Globalization means that the scale of the world is shrinking—not literally in size, of course, but in the ability of a person, an object, or an idea to interact with a person, an object, or an idea in another place.

## GLOBALIZATION OF ECONOMY

The severe recession that began in 2008 has been called the first global recession. Past recessions were typically confined to one country or region. In contrast, the global economy declined in 2009 for the first time in more than a half-century. The fate of a home buyer in the United States was tied to the fate of a banker in the United Kingdom, a sales clerk in Japan, a clothing maker in China, and a construction worker in Nigeria. All were caught in a global-scale web of falling demand and lack of credit.

The global financial crisis began in the United States and Europe with the bursting of the housing bubble. A **housing bubble** is a rapid increase in the value of houses

followed by a sharp decline in their value. Housing prices had risen very rapidly for a number of years, primarily because very low interest rates made it possible for more people to borrow more money to buy more houses:

- Poorer people bought houses for the first time because financial institutions were willing to lend them money even though they were at a high risk of not being able to repay the debt.
- Wealthy people bought second and third homes as investments, taking advantage of the low rates for borrowing money. They were betting that prices would continue to escalate, enabling them to resell the houses at a profit. The wealthy also invested money in funds that directly or indirectly provided the loans to high-risk people.
- The government encouraged low-income families to buy houses even though they were at risk of not repaying the loans. Less government regulation and oversight of the financial industry made it easier for abusive practices to occur.

Declining demand for housing led to falling prices. Many people owed more on their houses than the houses were now worth if they tried to sell them. Ultimately, many defaulted on their loans and walked away from the houses, leaving them vacant and derelict.

The crisis spread from housing through the economy. Financial institutions that made the risky loans were failing because of the loss of revenue from the defaulted loans. Businesses such as furniture and electronics that depended on housing started to fail. Manufacturers that depended on borrowing money from financial institutions to buy raw materials could no longer get loans.

Globalization of the economy has been led primarily by transnational corporations, sometimes called multinational corporations (Figure 1-22). A **transnational corporation** conducts research, operates factories, and sells products in many countries, not just where its headquarters and principal shareholders are located.

Every place in the world is part of the global economy, but globalization has led to more specialization at the local level. Each place plays a distinctive role, based on its local assets, as assessed by transnational corporations. A locality may be especially suitable for a transnational corporation to conduct research, to develop new engineering systems, to extract raw materials, to produce parts, to store finished products, to sell them, or to manage operations. In a global economy, transnational corporations remain competitive by correctly identifying the optimal location for each of these activities. Factories are closed in some locations and opened in others.

Changes in production have led to a spatial division of labor, in which a region's workers specialize in particular tasks. Transnationals decide where to produce things in response to characteristics of the local labor force, such as level of skills, prevailing wage rates, and attitudes toward unions. Transnationals may close factories in locations with high wage rates and strong labor unions.