Urban Patterns

Suppose as a geography class assignment you were dropped off on a street corner in a very large city and told to meet your instructor and classmates in one hour at city hall. How would you find it? In a small town you could simply ask for directions, but in an unfamiliar neighborhood of a large city would you hesitate to ask strangers?

Your destination is probably downtown, because that's where public services such as city hall cluster. Which direction is downtown? The skyscrapers far in the distance are probably a clue, and house numbers on major streets get lower as you head toward downtown.

In a small town everything is within easy walking distance, but in a large city your destination is too far to walk. How would you get there without a car? Hitchhiking is too dangerous, and you don't have enough money to hire a taxi. What about the bus? Where does the bus stop? What route does it follow? How much is the fare? Do you have the exact change, as required on most big-city buses?

Once on the bus, you sit down next to another passenger. Is your neighbor of the same ethnicity as you? In fact, are you the only person on the bus of your ethnicity? Have you been in other large groups where you were the only person of your ethnicity? Do the other passengers smile at you and chat, or do they mind their own business?

A large city is stimulating and agitating, entertaining and frightening, welcoming and cold. A city has something for everyone, but a lot of those things are for people who are different from you. Urban geography helps to sort out the complexities of familiar and unfamiliar patterns in urban areas.

KEY ISSUES

1 Where have urban areas grown?

2 Where are people distributed within urban areas?

3 Why do inner cities have distinctive problems?

4 Why do suburbs have distinctive problems?

Two Families in New Jersey

Ruth Merritt lives in the city of Camden, New Jersey. She is 24, a single parent with three children (ages 7, 2, and 1). Her income, derived from the community's program of aid to families with dependent children, is $235 per month. That works out to $2,820 a year.

The Merritt family lives in a four-room apartment in a row house that was divided some years ago into six dwelling units. The apartment has generally adequate plumbing and kitchen facilities, but the residents sometimes see rats in the building. The rent is $75 per month, plus an average of $50 per month for electricity and other utilities. Ruth Merritt receives food stamps, but her monthly expenses for food, clothing, and shelter exceed her income. In cold weather she must sometimes reduce the food budget to pay for heat.

Just 10 kilometers away, east of Camden, the Johnson family lives in Cherry Hill, New Jersey. William Johnson is a lawyer. He commutes to downtown Philadelphia, across the Delaware River from Camden. Diane Johnson works for a nonprofit organization with offices in the suburban community where they live. Their two children attend a recently built school in the community.

The Johnson family's dwelling is a detached house with three bedrooms, a living room, dining room, family room, and kitchen. The attached garage contains two cars, one for each parent to get to work. The half-acre lawn surrounding the house provides ample space for the children to play. The Johnsons bought their house five years ago for $250,000. The monthly payments for mortgage and utilities are $3,000, but the family's combined annual income of $200,000 is more than adequate to pay the housing costs.

The Merritt and Johnson households illustrate the contrasts that exist today in U.S. urban areas. As you have seen throughout this book, dramatic differences in material standards exist around the world. However, the picture drawn here is based on families living in the same urban area, only a few kilometers apart.

Were these examples taken from an urban area elsewhere in the world, the spatial patterns might be reversed. In most of the world the higher-status Johnsons would live near the center of the city, whereas the lower-status Merritts would live in the suburbs.

When you stand at the corner of Fifth Avenue and 34th Street in New York City, staring up at the Empire State Building, you know that you are in a city. When you are standing in an Iowa cornfield, you have no doubt that you are in the country. Geographers help explain what makes city and countryside different *places*.

Urban geographers are interested in the *where* question at two *scales*. First, geographers examine the global distribution of urban settlements. Having a high percentage of people living in urban areas is a distinctive feature of life in MDCs, a consequence of the shift from agricultural to manufacturing and, later, services economy.

Geographers are also interested in where people and activities are distributed within urban *spaces*. Models have been developed to explain *why* differences occur within urban areas. The major physical, social, and economic contrasts are between inner-city and suburban areas.

We all experience the interplay between *globalization* and *local diversity* of urban settlements. If you were transported to the downtown of another city, you might be able to recognize the city from its skyline. Many downtowns have a collection of high-rise buildings, towers, and landmarks that are identifiable even to people who have never visited them.

On the other hand, if you were transported to a suburban residential neighborhood, you would have difficulty identifying the urban area. Suburban houses, streets, schools, and shopping centers look very much alike from one American city to another.

In more developed *regions*, people are increasingly likely to live in suburbs. This changing structure of cities is a response to conflicting desires. People wish to spread across the landscape to avoid urban problems, but at the same time, they want convenient *connections* to the city's jobs, shops, culture, and recreation.

This chapter examines the causes and consequences of today's evolving urban patterns. Although different internal structures characterize urban areas in the United States and elsewhere, the problems arising from current spatial trends are quite similar. Geographers describe where different types of people live and try to explain the reasons for the observed patterns.

KEY ISSUE I

Where Have Urban Areas Grown?

- Urbanization
- Defining urban settlements

As recently as 1800, only 3 percent of Earth's population lived in cities, and only one city in the world—Beijing—had more than 1 million inhabitants. Two centuries later nearly half of the world's people live in cities, and more than 400 of them have at least 1 million inhabitants. This rapid growth has made it difficult to define the extent of cities.

Urbanization

The process by which the population of cities grows, known as **urbanization**, has two dimensions: an increase in the *number* of people living in cities and an increase in the *percentage* of people living in cities. The distinction between the two factors is important, because they occur for different reasons and have different global distributions.

Increasing Percentage of People in Cities

The percentage of people living in cities increased from 3 percent in 1800 to 6 percent in 1850, 14 percent in 1900, 30 percent in 1950, and 47 percent in 2000. Within a few years the population of urban settlements will exceed that of rural settlements for the first time in human history.

A large percentage of people living in urban areas is a measure of a country's level of development. In MDCs, about three-fourths of the people live in urban areas, compared to about two-fifths in LDCs (Figure 13–1). The major exception to the global pattern is Latin America, where the urban percentage is closer to the level of MDCs.

The higher percentage of urban residents in MDCs is a consequence of changes in economic structure during the past two centuries—first the Industrial Revolution in the nineteenth century and then the growth of services in the twentieth. The world map of percent urban looks very much like the world map of percent of workers in services (refer to Figure 12–1).

The percentage of urban dwellers is high in MDCs because over the past 200 years rural residents have migrated from the countryside to work in the factories and services that are concentrated in cities. The need for fewer farmworkers has pushed people out of rural areas, and rising employment opportunities in manufacturing and services have lured them into urban areas. Because everyone resides either in an urban settlement or a rural settlement, an increase in the percentage living in urban areas has produced a corresponding decrease in the percentage living in rural areas.

In MDCs the process of urbanization that began around 1800 has largely ended, because the percentage living in urban areas simply cannot increase much more. Nearly everyone interested in migrating from farms to cities has already done so, leaving those who choose to live in rural areas. We can now speak of MDCs as being fully urbanized, because the percentage of urban residents is so high.

The percentage living in cities has risen rapidly in recent years in LDCs because of migration of rural residents to the cities in search of jobs in manufacturing or services. As in MDCs, people in LDCs are pushed off the farms by declining opportunities. However, urban jobs are by no means assured in LDCs experiencing rapid overall population growth.

Increasing Number of People in Cities

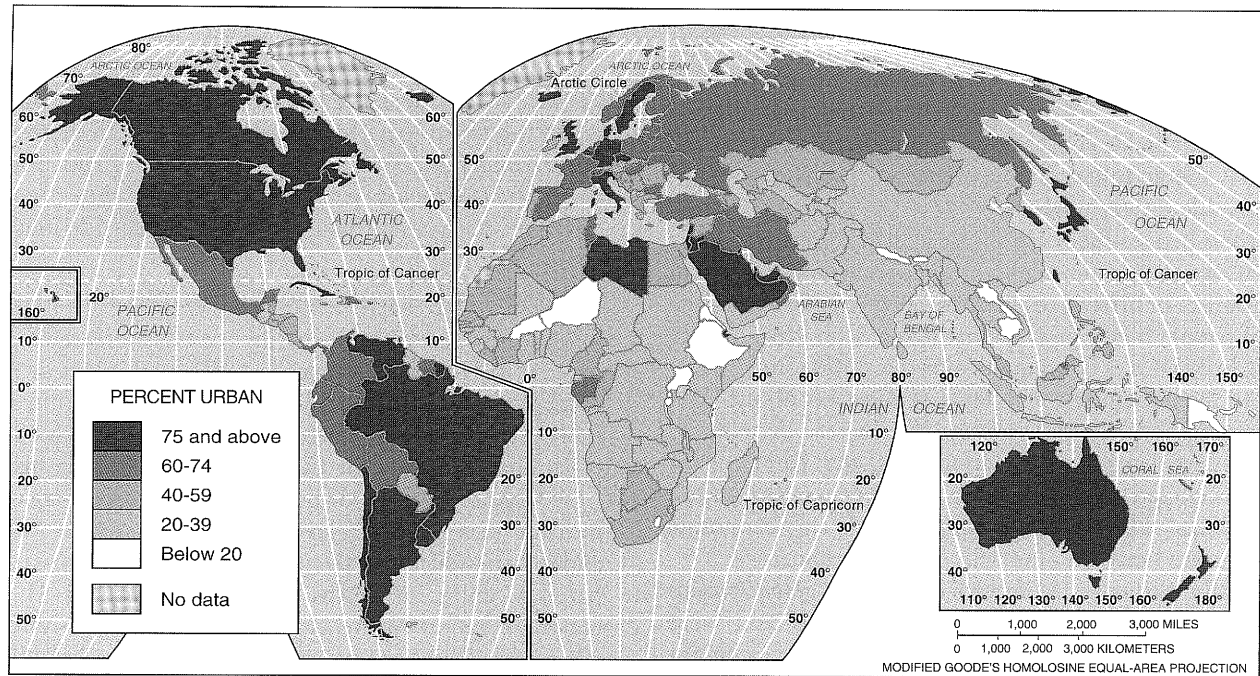MDCs have a higher percentage of urban residents, but LDCs have more of the very large urban settlements

FIGURE 13-1 *Percent living in urban areas. MDCs have a higher percentage of people living in urban areas.*

(Figure 13–2). Six of the ten most populous cities are currently in LDCs: Delhi, Jakarta, Mexico City, Mumbai (Bombay), São Paulo, and Seoul. Los Angeles, New York, Osaka, and Tokyo are the four in MDCs. Some lists show Beijing, Buenos Aires, Cairo, Calcutta, Lagos, and Shanghai among the top ten, all in LDCs.

That urban areas in LDCs dominate both lists of largest urban areas is remarkable, because urban growth historically has resulted from diffusion of the Industrial Revolution. As the Industrial Revolution began to diffuse from Great Britain to Western Europe in 1800 only three of the world's ten most populous cities were in Europe—London, Paris, and Naples—and the remainder were in

São Paulo, Brazil, is one of the world's 10 largest cities. High-rise offices and apartment buildings extend for several kilometers around the central business district.

Asia. But in 1900, nine of the world's ten most populous cities were in countries that had rapidly industrialized during the nineteenth century.

London, capital of the world's first industrial state, was by far the world's largest city in 1900. The world's ten largest cities in 1900 included five others in Europe (Paris, Berlin, Vienna, St. Petersburg, Manchester) and three in the United States (New York, Chicago, Philadelphia). Tokyo was the only top-ten city then in a preindustrial country. As recently as 1950, seven of the ten largest cities in the world remained clustered in MDCs that had industrialized.

The rapid growth of cities in the LDCs is a reversal of the historical trend in Western Europe and North America created by the Industrial Revolution and is not a measure of an improved level of development. Migration from the countryside is fueling half of the increase in population in urban areas of LDCs, even though job opportunities may not be available.

However, half of the growth in the population of urban areas in LDCs results from high natural increase rates. In Africa, the natural increase rate accounts for three-fourths of urban growth.

Defining Urban Settlements

Defining where urban areas end and rural areas begin is difficult. Lack of agreement among authoritative sources on the world's ten most populous cities reflects how difficult it is to delineate the boundary between urban and rural. Geographers and other social scientists have formulated definitions that distinguish between urban and rural areas according to social and physical factors.

Social Differences Between Urban and Rural Settlements

A century ago, social scientists observed striking differences between urban and rural residents. Louis Wirth argued during the 1930s that an urban dweller follows a different way of life from a rural dweller. Thus Wirth defined a city as a permanent settlement that has three characteristics: large size, high population density, and socially heterogeneous people. These characteristics produced differences in the social behavior of urban and rural residents.

Large Size. If you live in a rural settlement, you know most of the other inhabitants and may even be related to many of them. The people with whom you relax are probably the same ones you see in local shops and at church.

In contrast, if you live in an urban settlement, you can know only a small percentage of the other residents. You meet most of them in specific roles: your supervisor, your lawyer, your supermarket cashier, your electrician. Most of these relationships are contractual: you are paid wages according to a contract, and you pay others for goods and services. Consequently, the large size of an urban settlement influences different social relationships from those found in rural settlements.

High Density. High density also produces social consequences for urban residents, according to Wirth. The only way that a large number of people can be supported in a small area is through specialization. Each person in an urban settlement plays a special role or performs a specific task to allow the complex urban system to function smoothly.

At the same time, high density also encourages people to compete for survival in limited space. Social groups compete to occupy the same territory, and the stronger group dominates. This behavior distinguishes an urban settlement from a rural one.

Social Heterogeneity. The larger the settlement, the greater the variety of people. A person has greater freedom in an urban settlement than in a rural settlement to pursue an unusual profession, sexual orientation, or cultural interest. In a rural settlement, unusual actions might be noticed and scorned, but urban residents are more tolerant of diverse social behavior. Regardless of values and preferences, in a large urban settlement individuals can find people with similar interests.

Yet despite the freedom and independence of an urban settlement, people may also feel lonely and isolated. Residents of a crowded urban settlement often feel that they are surrounded by people who are indifferent and reserved.

Wirth's three-part distinction between urban and rural settlements may still apply in LDCs. But in more developed societies, social distinctions between urban and rural residents have blurred. According to Wirth's definition, nearly everyone in a developed society now is urban. More than 95 percent of workers in developed societies hold "urban" types of jobs. Nearly universal ownership of automobiles, telephones, televisions, and other modern communications and transportation also has reduced the differences between urban and rural lifestyles in more developed societies. Almost regardless of where you live in the United States, you have access to urban jobs, services, culture, and recreation. So geographers look for physical definitions to distinguish between urban and rural areas.

Physical Definitions of Urban Settlements

Historically, physical differences between urban and rural settlements were easy to define, because cities were surrounded by walls. The removal of walls and the rapid territorial expansion of cities have blurred the traditional physical differences. Urban settlements today can be physically defined in three ways: by legal boundary, as continuously built-up area, and as a functional area.
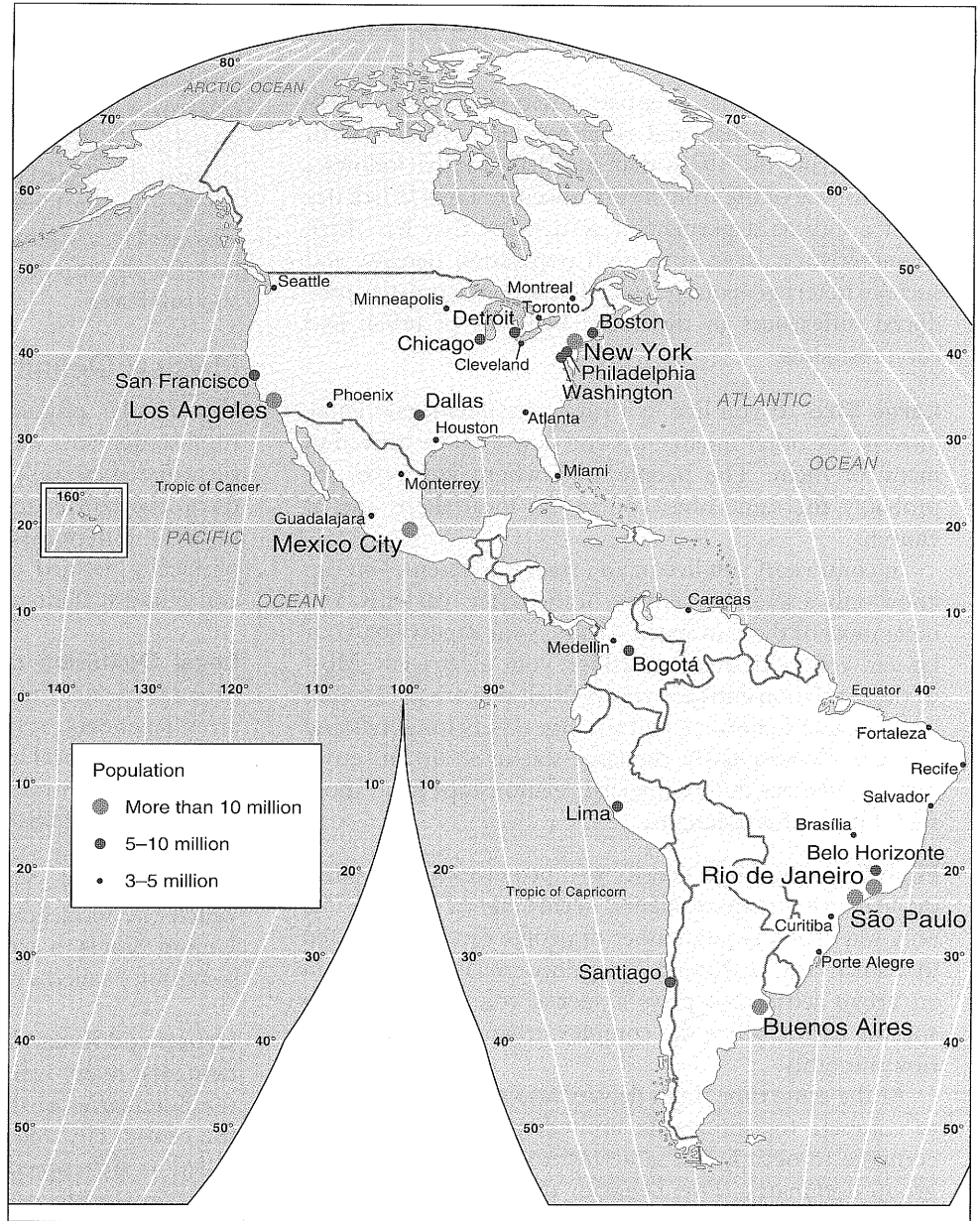
Legal Definition of a City. The term *city* defines an urban settlement that has been legally incorporated into an independent, self-governing unit. Virtually all countries have a local government system that recognizes cities as legal entities with fixed boundaries. A city has locally elected officials, the ability to raise taxes, and responsibility for providing essential services. The boundaries of the city define the geographic area within which the local government has legal authority. In the United States, a city that is surrounded by suburbs is sometimes called a *central city*.

Urbanized Area. With the rapid growth of urban settlements, many urban residents live in suburbs, beyond the boundaries of the central city. In the United States, the central city and the surrounding built-up suburbs is called an **urbanized area**. More precisely, an urbanized area consists of a central city plus its contiguous built-up suburbs where population density exceeds 1,000 persons per square mile (400 persons per square kilometer). Approximately 70 percent of the U.S. population live in urbanized areas, including about 30 percent in central cities and 40 percent in surrounding jurisdictions.

Working with urbanized areas is difficult because few statistics are available about them. Most data in the United States and other countries are collected for cities, counties, and other local government units, but urbanized areas do not correspond to government boundaries.

Metropolitan Statistical Area. The urbanized area also has limited applicability because it does not accurately reflect the full influence that an urban settlement has in contemporary society. The area of influence of a city extends beyond legal boundaries and adjacent built-up jurisdictions. For example, commuters may travel a long distance to work and shop in the city or built-up suburbs. People in a wide area watch the city's television stations, read the city's newspapers, and support the city's

FIGURE 13-2 *Cities having a population of 2 million or more. The proportion of urban dwellers is greater in MDCs. However, the largest urban areas now are mostly in LDCs. Rapid city growth in LDCs reflects increasing overall population, plus migration from rural areas.*


Population
- More than 10 million
- 5–10 million
- 3–5 million

PERCENT URBAN

Less developed
More developed
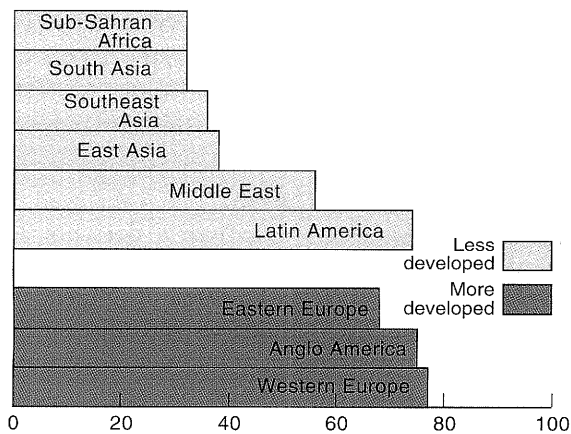
sports teams. Therefore, we need another definition of urban settlement to account for its more extensive zone of influence (Figure 13–3).

The U.S. Bureau of the Census has created a method of measuring the functional area of a city, known as the **metropolitan statistical area (MSA)**. An MSA includes the following:

1. An urbanized area with a population of at least 50,000.
2. The county within which the city is located.
3. Adjacent counties with a high population density and a large percentage of residents working in the central city's county (e.g., a county with a density of 25 persons per square mile and at least 50 percent working in the central city's county).
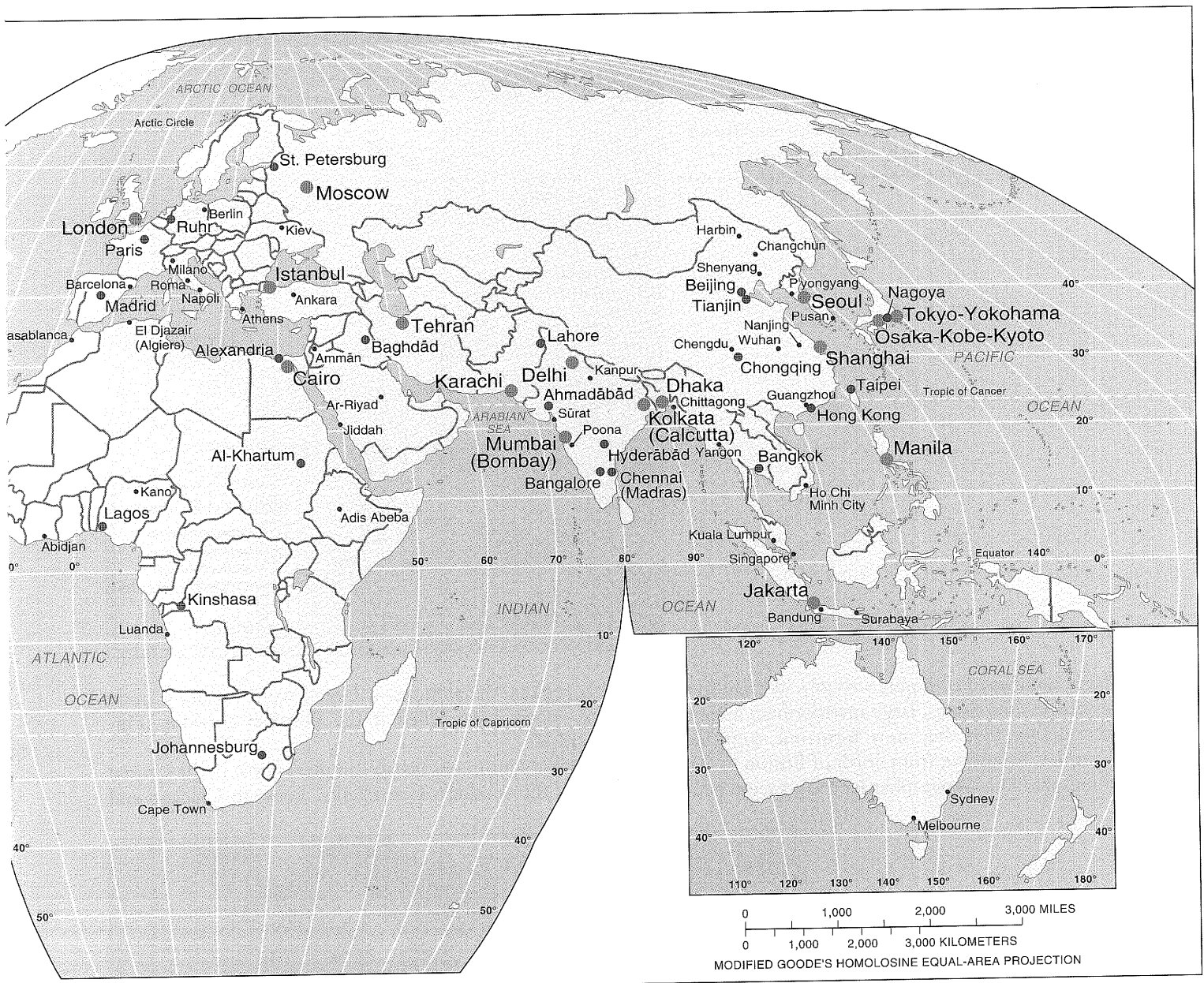
Studies of metropolitan areas in the United States are usually based on information about MSAs. The MSAs are widely used because many statistics are published for counties, the basic MSA building block (Figure 13–3). The census designated 362 MSAs in 2003, encompassing 80 percent of the U.S. population. Older studies may refer to SMSAs, or standard metropolitan statistical areas, which the census used before 1983 to designate metropolitan areas in a manner similar to MSAs.

An MSA is not the perfect tool for measuring the functional area of a city. One problem is that some MSAs include extensive land area that is not urban. For example, Great Smokies National Park is partly in the Knoxville, Tennessee, MSA; Sequoia National Park is in the Visalia–Porterville, California, MSA. The MSAs comprise some 20 percent of total U.S. land area, compared to only 2 percent for urbanized areas. The urbanized area typically occupies only 10 percent of an MSA land area but contains nearly 90 percent of its population.

The census has also designated smaller urban areas as **micropolitan statistical areas**. These include an urbanized area of between 10,000 and 50,000 inhabitants, the county in which it is found, and adjacent counties tied to the city. The United States had 560 micropolitan statistical areas in 2003, for the most part centered around southern and western communities previously considered rural in character. About 10 percent of Americans live in a micropolitan statistical area.

Overlapping Metropolitan Areas. Some adjacent MSAs overlap. A county between two central cities may

FIGURE 13-3 *St. Louis city, urbanized area, and metropolitan statistical area. Surrounding the city of St. Louis is an urbanized area that spreads westward into St. Louis County and eastward across the Mississippi River into Illinois. The St. Louis metropolitan statistical area includes seven Missouri counties and eight in Illinois, as well as the city of St. Louis. The situation of St. Louis makes it a diversified trade center, for it is at the confluence of the Missouri and Mississippi rivers and several federal highways.*
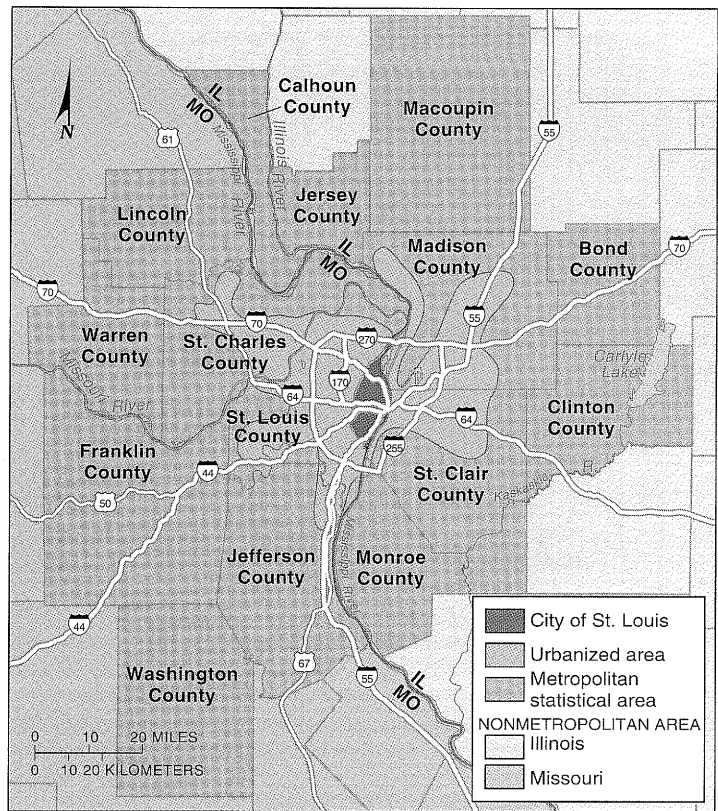
send a large number of commuters to jobs in each. In the northeastern United States, large metropolitan areas are so close together that they now form one continuous urban complex, extending from north of Boston to south of Washington, D.C. Geographer Jean Gottmann named this region Megalopolis, a Greek word meaning great city; others have called it the Boswash corridor (Figure 13–4).

Other continuous urban complexes exist in the United States: the southern Great Lakes between Chicago and
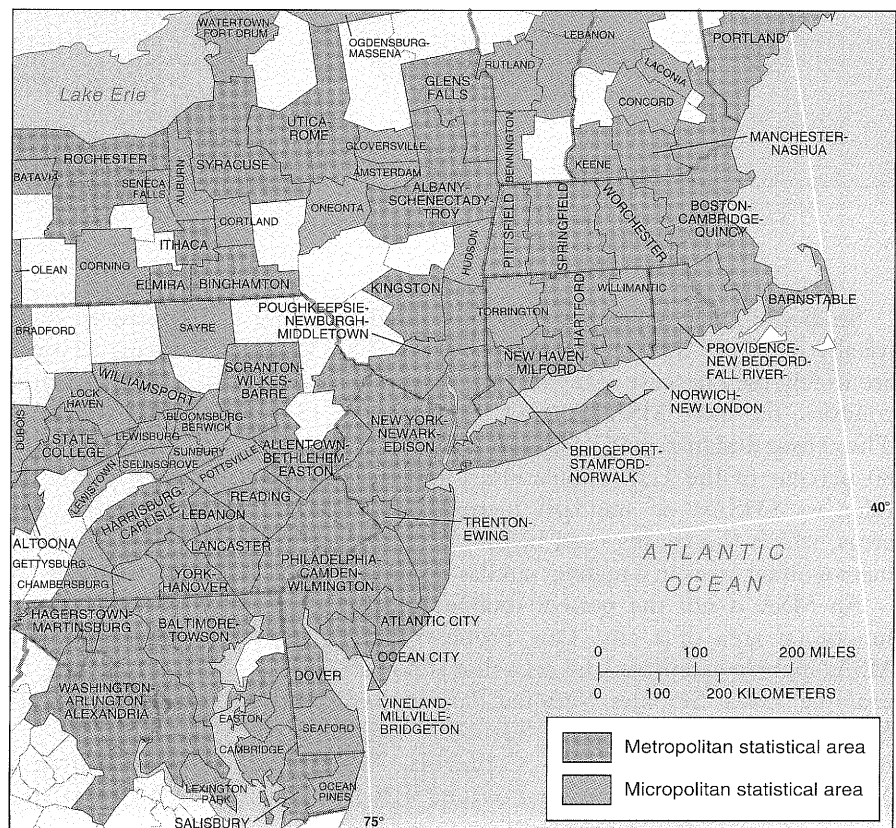

FIGURE 13-4 *Megalopolis. Also known as the Boswash corridor, Megalopolis extends more than 700 kilometers (440 miles) from Boston on the northeast to Washington, D.C., on the southwest. Megalopolis contains one-fourth of the U.S. population on 2 percent of the country's total land area.*

Milwaukee on the west and Pittsburgh on the east, and southern California from Los Angeles to Tijuana. Among important examples in other MDCs are the German Ruhr (including the cities of Dortmund, Düsseldorf, and Essen), Randstad in the Netherlands (including the cities of Amsterdam, the Hague, and Rotterdam), and Japan's Tokaido (including the cities of Tokyo and Yokohama).

Within Megalopolis, the downtown areas of individual cities such as Baltimore, New York, and Philadelphia retain distinctive identities, and the urban areas are visibly separated from each other by open space used as parks, military bases, and dairy or truck farms. But at the periphery of the urban areas, the boundaries overlap. Washingtonians attend major-league baseball games in downtown Baltimore, and Baltimoreans attend major-league hockey and basketball games in downtown Washington.

Once considered two separate areas, Washington and Baltimore were combined into a single metropolitan statistical area after the 1990 census. However, that combination did not do justice to the distinctive character of the two cities, so the census again divided them into two separate MSAs after the 2000 census. At the same time, the Census Bureau has divided other MSAs into two or more metropolitan divisions. For example, Dallas and Fort Worth—long combined into one MSA—are now split into two metropolitan divisions.

KEY ISSUE 2

Where Are People Distributed Within Urban Areas?

- Three models of urban structure
- Use of the models outside North America
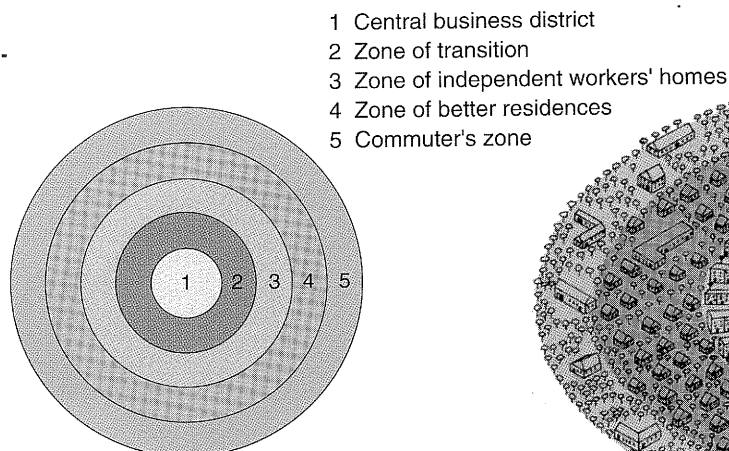
People are not distributed randomly within an urban area. They concentrate in particular neighborhoods, depending on their social characteristics. Geographers describe where people with particular characteristics are likely to live within an urban area, and they offer explanations for why these patterns occur.

Three Models of Urban Structure

Sociologists, economists, and geographers have developed three models to help explain where different types of people tend to live in an urban area: the concentric zone, sector, and multiple nuclei models. The three models describing the internal social structure of cities were all developed in Chicago, a city on a prairie.

Except for Lake Michigan to the east, few physical features have interrupted the region's growth. Chicago includes a central business district (CBD) known as the Loop, because elevated railway lines loop around it. Surrounding the Loop are residential suburbs to the south, west, and north. The three models were later applied to cities elsewhere in the United States and in other countries.

Concentric Zone Model

The concentric zone model was the first to explain the distribution of different social groups within urban areas. It was created in 1923 by sociologist E. W. Burgess. According to the **concentric zone model**, a city grows outward from a central area in a series of concentric rings, like the growth rings of a tree. The precise size and width of the rings vary from one city to another, but the same basic types of rings appear in all cities in the same order (Figure 13–5).

1 Central business district
2 Zone of transition
3 Zone of independent workers' homes
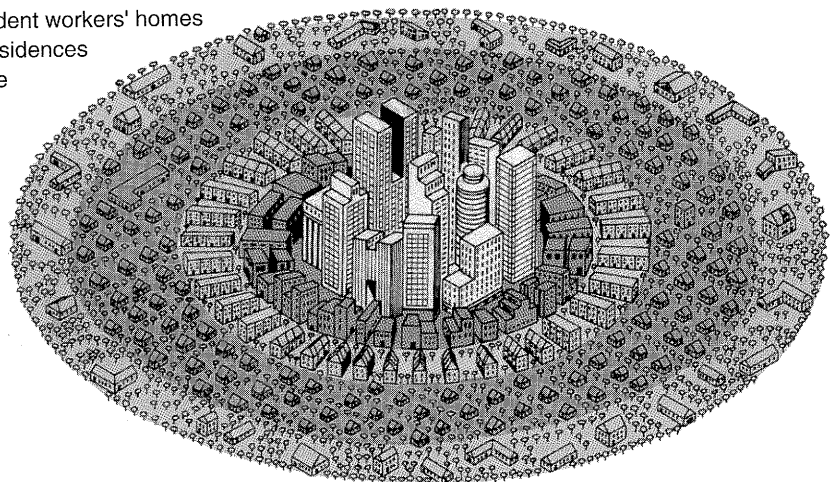4 Zone of better residences
5 Commuter's zone

FIGURE 13–5 *Concentric zone model. According to the model, a city grows in a series of rings that surround the CBD.*

The innermost of the five zones is the CBD, where nonresidential activities are concentrated. The CBD is surrounded by the second ring, the zone in transition, which contains industry and poorer-quality housing. Immigrants to the city first live in this zone in small dwelling units, frequently created by subdividing larger houses into apartments. The zone also contains rooming houses for single individuals.

The third ring, the zone of working-class homes, contains modest older houses occupied by stable, working-class families. The fourth zone has newer and more spacious houses for middle-class families. Finally, Burgess identified a commuters' zone, beyond the continuous built-up area of the city. Some people who work in the center nonetheless choose to live in small villages that have become dormitory towns for commuters.

Sector Model

A second theory of urban structure, the **sector model**, was developed in 1939 by land economist Homer Hoyt (Figure 13–6). According to Hoyt, the city develops in a series of sectors, not rings. Certain areas of the city are more attractive for various activities, originally because of an environmental factor or even by mere chance. As a city grows, activities expand outward in a wedge, or sector, from the center. Once a district with high-class housing is established, the most expensive new housing is built on the outer edge of that district, farther out from the center. The best housing is therefore found in a corridor extending from downtown to the outer edge of the city. Industrial and retailing activities develop in other sectors, usually along good transportation lines.

To some extent the sector model is a refinement of the concentric zone model rather than a radical restatement. Hoyt mapped the highest-rent areas for a number of U.S. cities at different times and showed that the highest social-class district usually remained in the same sector, although it moved farther out along that sector over time.
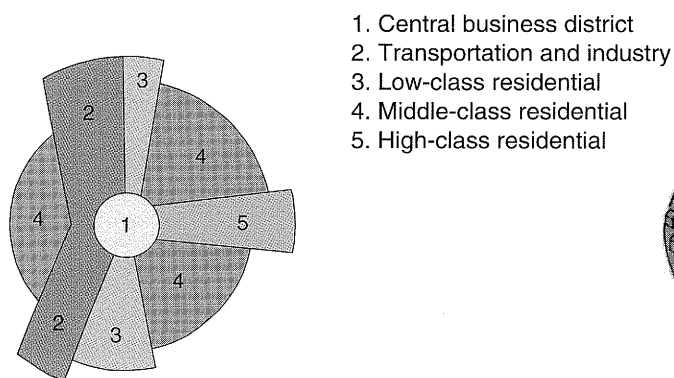
Hoyt and Burgess both claimed that social patterns in Chicago supported their model. According to Burgess, Chicago's CBD was surrounded by a series of rings, broken only by Lake Michigan on the east. Hoyt argued that the best housing in Chicago developed north from the CBD along Lake Michigan, whereas industry located along major rail lines and roads to the south, southwest, and northwest.

Multiple Nuclei Model

Geographers C. D. Harris and E. L. Ullman developed the multiple nuclei model in 1945. According to the **multiple nuclei model**, a city is a complex structure that includes more than one center around which activities revolve. Examples of these nodes include a port, neighborhood business center, university, airport, and park (Figure 13–7).

The multiple nuclei theory states that some activities are attracted to particular nodes, whereas others try to avoid them. For example, a university node may attract well-educated residents, pizzerias, and bookstores, whereas an airport may attract hotels and warehouses. On the other hand, incompatible land-use activities will avoid clustering in the same locations. Heavy industry and high-class housing, for example, rarely exist in the same neighborhood.

Geographic Applications of the Models

The three models help us understand where people with different social characteristics tend to live within an urban area. They can also help to explain why certain types of people tend to live in particular places.

Effective use of the models depends on the availability of data at the scale of individual neighborhoods. In the United States and many other countries, that information comes from a national census. Urban areas in the United States are divided into **census tracts**, which

1. Central business district
2. Transportation and industry
3. Low-class residential
4. Middle-class residential
5. High-class residential

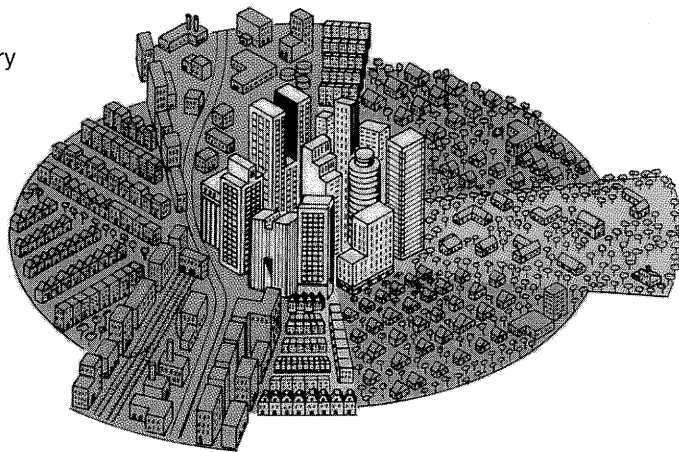**FIGURE 13–6** *Sector model. According to the model, a city grows in a series of wedges or corridors, which extend out from the CBD.*
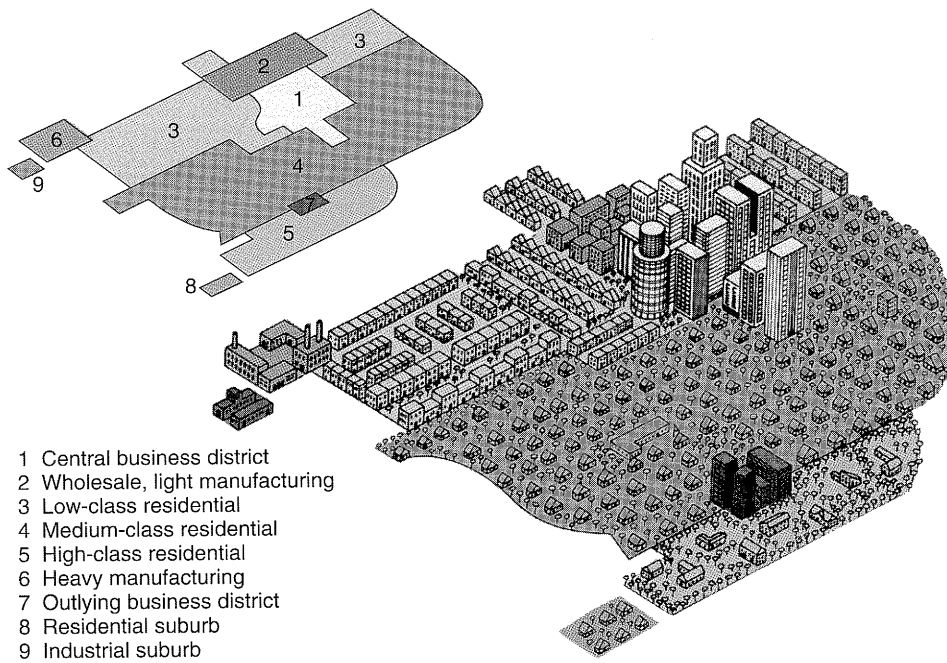
1 Central business district
2 Wholesale, light manufacturing
3 Low-class residential
4 Medium-class residential
5 High-class residential
6 Heavy manufacturing
7 Outlying business district
8 Residential suburb
9 Industrial suburb

contain approximately 5,000 residents and correspond where possible to neighborhood boundaries. Every decade the U.S. Bureau of the Census publishes data summarizing the characteristics of the residents living in each tract. Examples of information the bureau publishes include the number of nonwhites, the median income of all families, and the percentage of adults who finished high school.

Social Area Analysis. The spatial distribution of any of these social characteristics can be plotted on a map of the community's census tracts. Computers have become invaluable in this task, because they permit rapid creation of maps and storage of voluminous data about each census tract. Social scientists can compare the distributions of characteristics and create an overall picture of where various types of people tend to live. This kind of study is known as *social area analysis*.

None of the three models by itself completely explains why different types of people live in distinctive parts of the city. Critics point out that the models are too simple and fail to consider the variety of reasons that lead people to select particular residential locations. Because the three models are all based on conditions that existed in U.S. cities between the two world wars, critics also question their relevance to contemporary urban patterns in the United States or in other countries.

But if the models are combined rather than considered independently, they do help geographers explain where different types of people live in a city. People tend to reside in certain locations depending on their particular personal characteristics. This does not mean that everyone with the same characteristics must live in the same neighborhood, but the models say that most people prefer to live near others having similar characteristics:

- Consider two families with the same income and ethnic background. One family owns their home, whereas the other rents. The concentric zone model suggests that the owner-occupant is much more likely to live in an outer ring and the renter in an inner ring (Figure 13–8).

PERCENT RENTERS, 2000

	55 and above
	17—54
	Less than 17

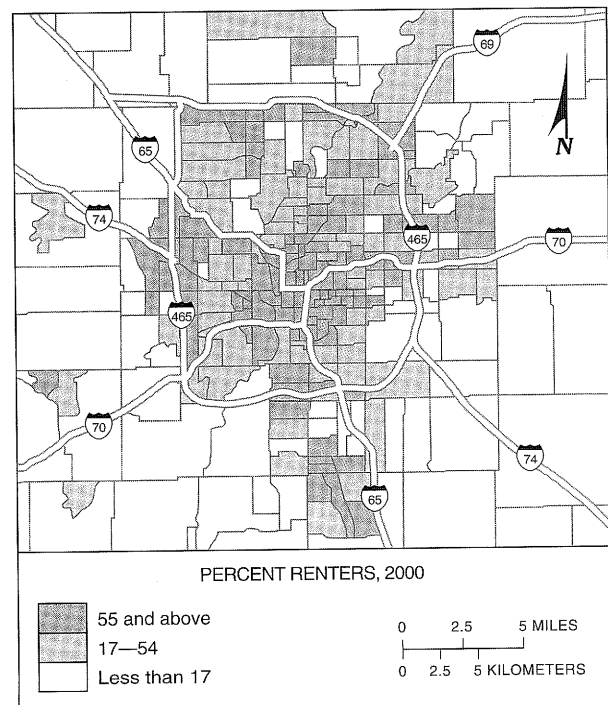0   2.5   5 MILES
0   2.5   5 KILOMETERS

FIGURE 13-8 Example of concentric zone model in Indianapolis, the distribution of renters. The percentage of households that rent their home is greater near the CBD and less in the outer rings of the city.
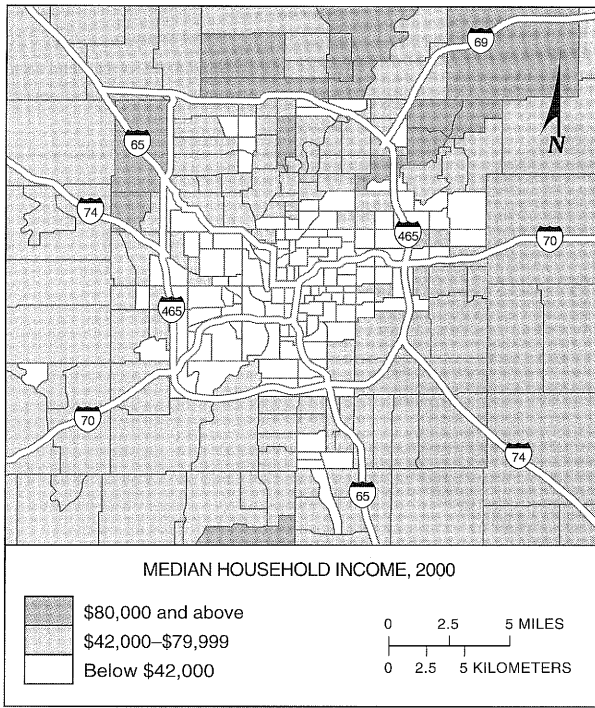
MEDIAN HOUSEHOLD INCOME, 2000

- $80,000 and above
- $42,000–$79,999
- Below $42,000

0   2.5   5 MILES

0   2.5   5 KILOMETERS

FIGURE 13–9 *Example of sector model in Indianapolis, the distribution of high-income households. The median household income is the highest in a sector to the north, which extends beyond the city limits to the adjacent county.*

ETHNIC CONCENTRATIONS, 2000

- Hispanic
- American Indian
- Asian
- African-American

0   2.5   5 MILES

0   2.5   5 KILOMETERS

FIGURE 13–10 *Example of multiple nuclei model in Indianapolis, the distribution of minorities. The black concentration consists of census tracts that are 90 percent or more African American. The other groups are clustered in tracts that contain at least 5 percent of the total Indianapolis population of that ethnic group.*

- The sector theory suggests that given two families who own their homes, the family with the higher income will not live in the same sector of the city as the poorer one (Figure 13–9).
- The multiple nuclei theory suggests that people with the same ethnic or racial background are likely to live near each other (Figure 13–10).

Putting the three models together, we can identify, for example, the neighborhood in which a high-income, Asian-American owner-occupant is most likely to live.

Use of the Models Outside North America

The three models may describe the spatial distribution of social classes in the United States, but American urban areas differ from those elsewhere in the world. These differences do not invalidate the models, but they do point out that social groups in other countries may not have the same reasons for selecting particular neighborhoods within their cities.

European Cities

As in the United States, wealthier people in European cities cluster along a sector extending out from the CBD. In Paris, for example, the rich moved to the southwestern hills to be near the royal palace (the Louvre beginning in the twelfth century, and the Palace of Versailles from the sixteenth century until the French Revolution in 1789). The preference of the wealthy to cluster in the southwest was reinforced in the nineteenth century during the Industrial Revolution. Factories were built to the south, east, and north along the Seine and Marne River valleys, but relatively few were built on the southwestern hills. Similar high-class sectors developed in other European cities, typically on higher elevation and near royal palaces.

However, in contrast to most U.S. cities, wealthy Europeans still live in the inner rings of the high-class sector, not just in the suburbs. A central location provides proximity to the region's best shops, restaurants, cafes, and cultural facilities. Wealthy people are also attracted by the opportunity to occupy elegant residences in carefully restored, beautiful old buildings.

By living in high-density, centrally located townhouses and apartments, wealthy people in Europe do not have large private yards and must go to public parks for open space. To meet the desire for large tracts of privately owned land, some wealthy Europeans purchase abandoned farm buildings in clustered rural settlements for use as second homes on weekends and holidays. Some of the worst traffic jams in Paris occur on summer Sunday nights, when families return from their weekend homes. A trip from the weekend home to the city that normally takes an hour can consume four hours on Sunday night.
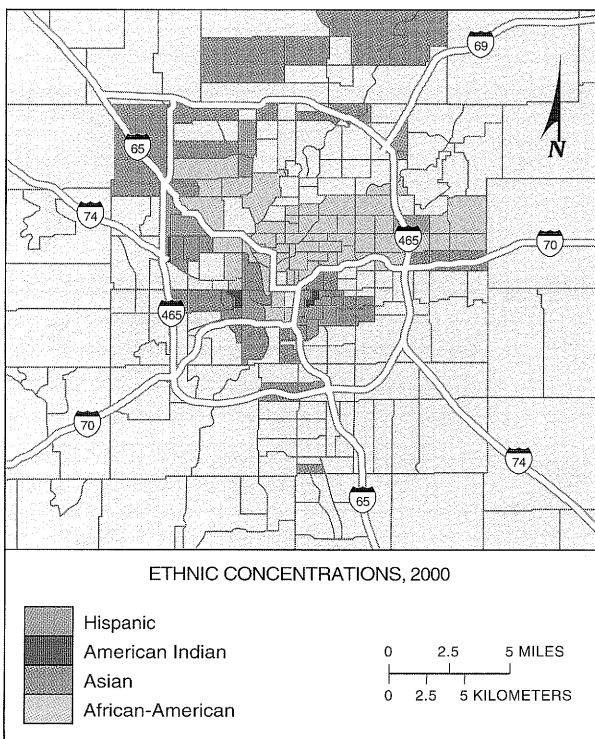
In the past, poorer people also lived in the center of European cities. Before the invention of electricity in the nineteenth century, social segregation was vertical: richer people lived on the first or second floors, whereas poorer people occupied the dark, dank basements, or they climbed many flights of stairs to reach the attics. As the city expanded during the Industrial Revolution, housing for poorer people was constructed in sectors near the factories and away from the rich.

Today, poorer people are less likely to live in European inner-city neighborhoods. Poor-quality housing has been renovated for wealthy people, or demolished and replaced by offices or luxury apartment buildings. Building and zoning codes prohibit anyone from living in basements, and upper floors are attractive to wealthy individuals once elevators are installed.

Poorer people have been relegated to the outskirts of European cities (Figure 13–11). Vast suburbs containing dozens of high-rise apartment buildings house the poorer people displaced from the inner city. European suburban residents face the prospect of long commutes by public transportation to reach jobs and other downtown amenities. Shops, schools, and other services are worse than in inner neighborhoods, and the suburbs are centers for crime, violence, and drug dealing. Because the housing is mostly in high-rise buildings, people lack large private yards. Many residents of these dreary suburbs are persons of color or recent immigrants from Africa or Asia who face discrimination and prejudice by "native" Europeans.

European officials encouraged the construction of high-density suburbs to help preserve the countryside from development and to avoid the inefficient sprawl that characterizes American suburbs, as discussed in the last section of this chapter. And tourists are attracted to the historic, lively centers of European cities. But these policies have resulted in the clustering of people with social and economic problems in remote suburbs rarely seen by wealthier individuals.

Less Developed Countries

In LDCs, as in Europe, the poor are accommodated in the suburbs, whereas the rich live near the center of cities, as well as in a sector extending from the center. The similarity between European and LDC cities is not a coincidence: past European Colonial policies have left a heavy mark on the development of cities in many LDCs. In fact, most cities in LDCs have passed through three stages of development—before European colonization, during the European Colonial period, and since independence.

Precolonial Cities. Before the Europeans established colonies, few cities existed in Africa, Asia, and Latin America, and most people lived in rural settlements. The
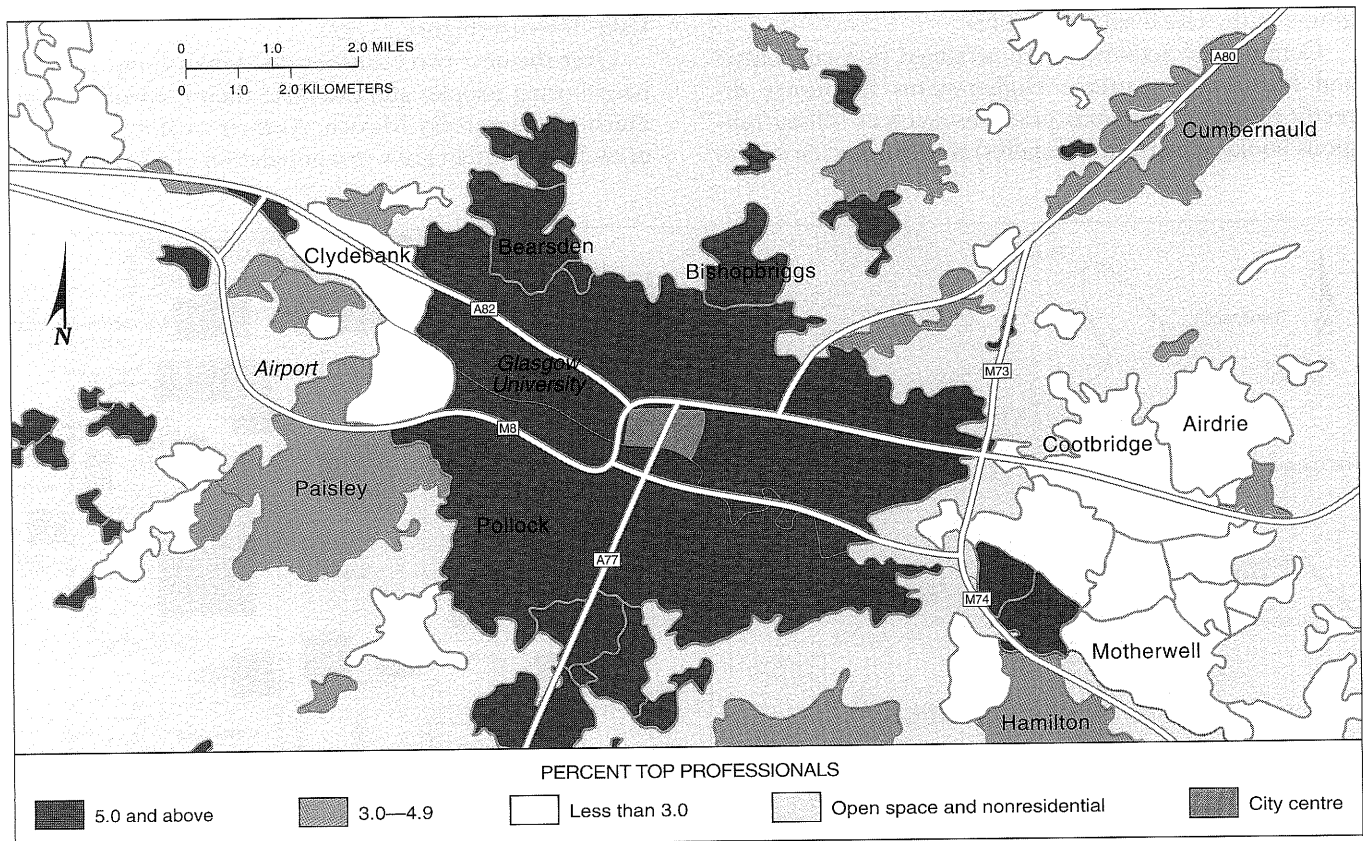

PERCENT TOP PROFESSIONALS

■ 5.0 and above   ▨ 3.0—4.9   □ Less than 3.0   □ Open space and nonresidential   ▨ City centre

FIGURE 13–11 *Distribution of top professionals, Glasgow, Scotland. In contrast to U.S. cities, top professionals are more likely to live near the center of the city, whereas many of the outer areas are inhabited by lower income households. Many of the peripheral areas consist of massive public housing projects built to accommodate low income people whose dilapidated inner-city row houses were demolished during the 1940s and 1950s.*

In contrast to North America, lower-income people are more likely to live in the suburbs of Western European cities, such as the London suburb of Kilburn. Housing options include older housing built close together or newer apartments in high-rise towers.

principal cities in Latin America were located in Mexico and the Andean highlands of northwestern South America. In Africa, cities could be found along the western coast, Egypt's Nile River valley, and Islamic empires in the north and east (as well as in Southwest Asia). Cities were also built in South and East Asia, especially India, China, and Japan.

Cities were often laid out surrounding a religious core, such as a mosque in Muslim regions. The center of Islamic cities also had a bazaar or marketplace, which served as the commercial core. Government buildings and the homes of wealthy families surrounded the mosque and bazaar. Narrow, winding streets led from the core to other quarters. Families with less wealth and lower status located farther from the core, and recent migrants to the city lived on the edge.

Commercial activities were arranged in a concentric and hierarchical pattern: Higher-status businesses directly related to religious practices (such as selling religious books, incense, and candles) were located closest to

the mosque. In the next ring were secular businesses, such as leather works, tailors, rug shops, and jewelers. Food products were sold in the next ring, then came blacksmiths, basket makers, and potters. A quarter would be reserved for Jews, a second for Christians, and a third for foreigners.

When the Aztecs founded Mexico City—which they called Tenochtitlán—the settlement consisted of a small temple and a few huts of thatch and mud. The Aztecs first settled west of present-day downtown Mexico City on a hill known as Chapultepec ("the hill of the grasshopper") but were forced by other people to leave the hill. They migrated a few kilometers south, near the present-day site of the University of Mexico, and then in 1325 to a marshy 10-square-kilometer (4-square-mile) island in Lake Texcoco (Figure 13–12).

Over the next two centuries the Aztecs conquered the neighboring peoples and extended their control through much of present-day Mexico. As their wealth and power grew, Tenochtitlán grew to a population of a half-million.
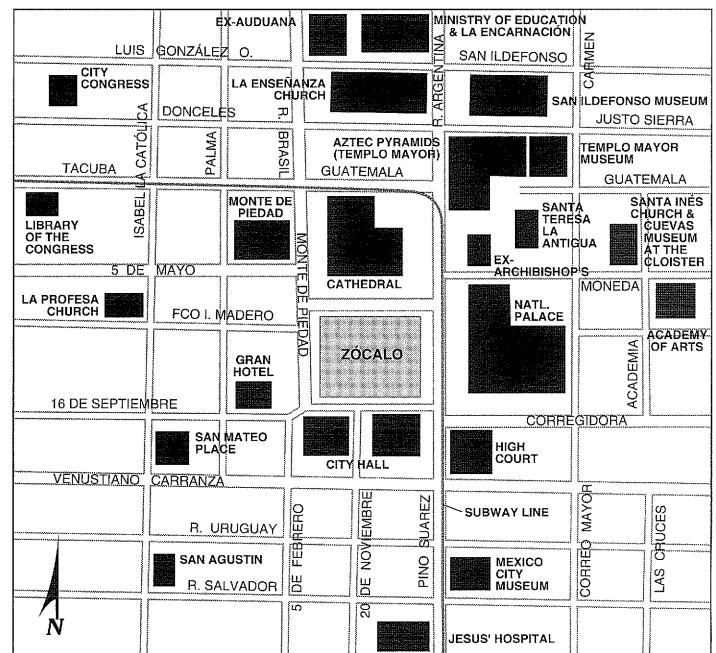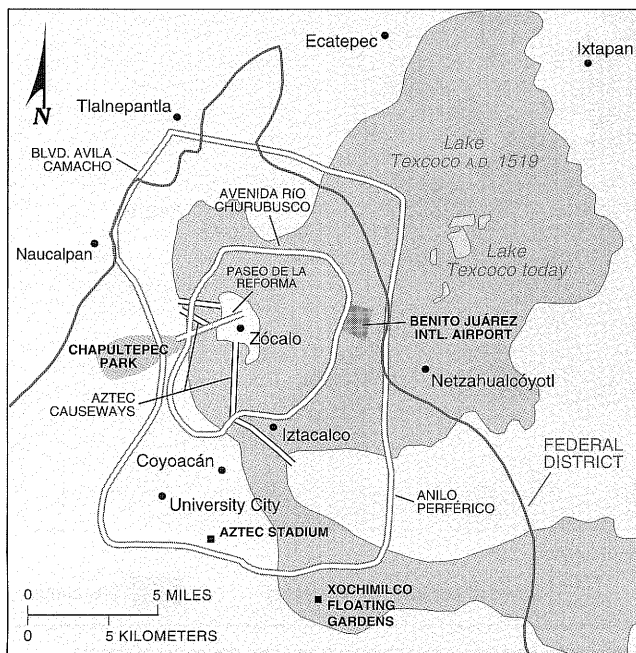

FIGURE 13–12 *Mexico City. The Aztec city of Tenochtitlán was built on an island in Lake Texcoco. The elite live in a sector to the west, whereas poorer people live on landfill in the former lakebed.*

Mexico City. The main square in downtown Mexico City, Zócalo, laid out by the Spanish, includes the cathedral (foreground), national palace (right), and city hall (rear).

The Aztecs built elaborate stone houses and temples in Tenochtitlán. The node of religious life was the Great Temple, a massive multicolor structure containing two shrines—one for the rain god (painted blue) and one for the god of war (painted blood red). The main market center, Tlatelolco, was located at the north end of the island.

Most food, merchandise, and building materials crossed from the mainland to the island by canoe, barge, or other boat. The island itself was laced with canals to facilitate pickup and delivery of people and goods. Three causeways with drawbridges linked Tenochtitlán to the mainland and also helped to control flooding. An aqueduct brought fresh water from Chapultepec.

Colonial Cities. When Europeans gained control of Africa, Asia, and Latin America, they expanded existing cities to provide colonial services, such as administration, military command, and international trade, as well as housing for Europeans who settled in the colony. Existing native towns were either left to one side or demolished because they were totally at variance with European ideas.

Fès (Fez), Morocco, consists of two separate and distinct towns—one that existed before the French gained control and one built by the French colonialists (Figure 13–13). Similarly, the British built New Delhi near

FIGURE 13–13 Fès (Fez), Morocco. The French laid out an entirely new district in the west (background in the photograph), separate and distinct from the existing city to the east, characterized by narrow, winding streets and high density (foreground).
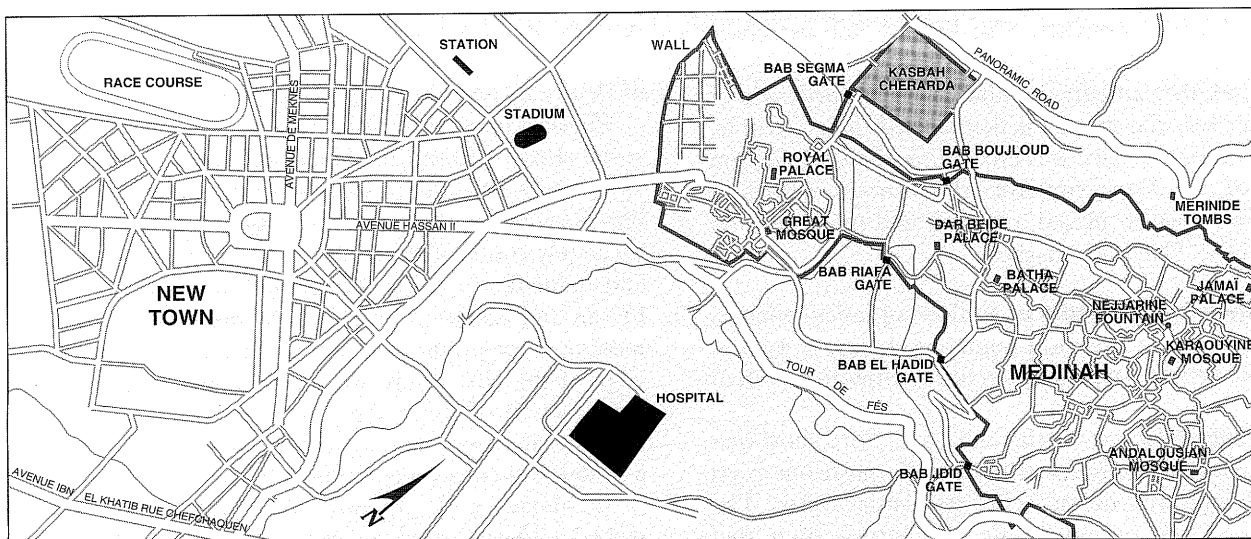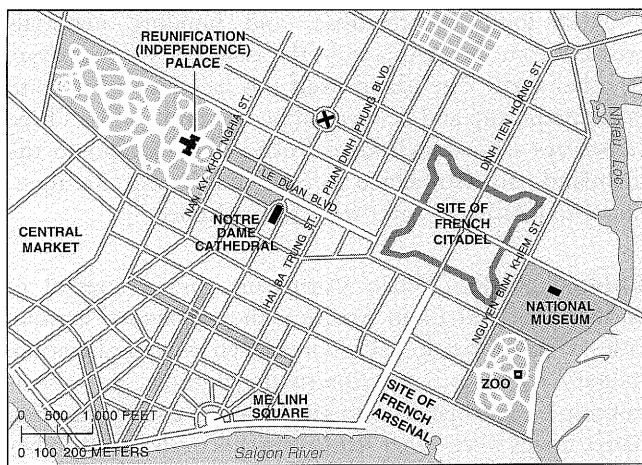
FIGURE 13-14 *Layout of Ho Chi Minh City (formerly Saigon), Vietnam. The French demolished the existing city and replaced it with one built according to colonial principles, with wide boulevards and public squares.*

FIGURE 13-15 *Model of a Latin American city. Wealthy people live in the inner city and a sector extending along a commercial spine. (Adapted from Larry R. Ford, "A New and Improved Model of Latin American City Structure," Geographical Review 86 (1996): 438. Used by permission of the publisher.)*

the existing city of Delhi, India. On the other hand, the French Colonial city of Saigon, Vietnam (now Ho Minh City), was built by completely demolishing the existing city without leaving a trace (Figure 13–14).

Compared to the existing cities, the European districts typically contain wider streets and public squares, larger houses surrounded by gardens, and much lower density. In contrast, the old quarters have narrow, winding streets, little open space, and cramped residences.

Colonial cities followed standardized plans. All Spanish cities in Latin America, for example, were built according to the Laws of the Indies, drafted in 1573. The laws explicitly outlined how colonial cities were to be constructed: a gridiron street plan centered on a church and central plaza, walls around individual houses, and neighborhoods centered around smaller plazas with parish churches or monasteries.

For example, after the Spanish conquered Tenochtitlán in 1521 after a two year siege, they destroyed the city, and dispersed or killed most of the inhabitants. The city, renamed Mexico City, was rebuilt around a main square, called the Zócalo, in the center of the island, on the site of the Aztecs' sacred precinct. The Spanish reconstructed the streets in a grid pattern extending from the Zócalo. A Roman Catholic cathedral was built on the north side of the square, near the site of the demolished Great Temple, and the National Palace was erected on the east side, on the site of the Aztec emperor Moctezuma's destroyed palace. The Spanish placed a church and monastery on the site of the Tlatelolco market.

Cities Since Independence. Following independence, cities have become the focal points of change in LDCs. Millions of people have migrated to the cities in search of work.

Geographers Ernest Griffin and Larry Ford show that in Latin American cities wealthy people push out from the center in a well-defined elite residential sector. The elite sector forms on either side of a narrow spine that
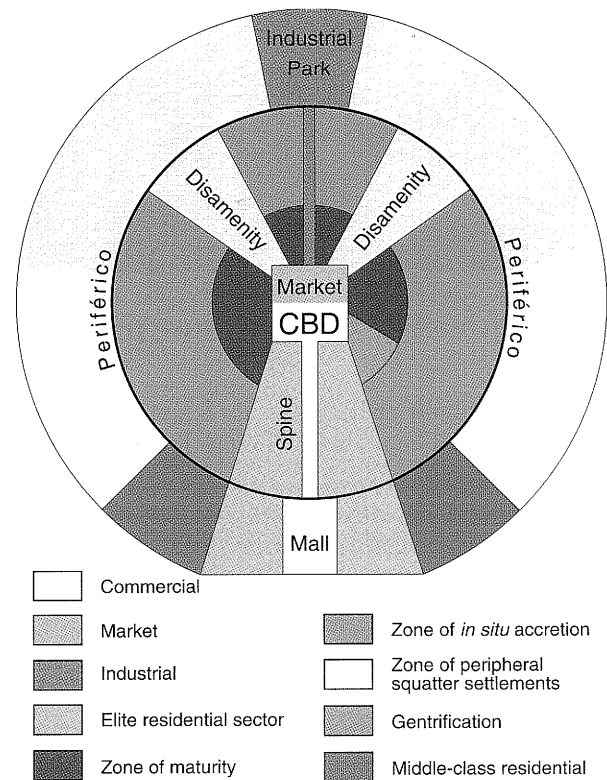
contains offices, shops, and amenities attractive to wealthy people, such as restaurants, theaters, parks, and zoos (Figure 13–15). The rich are also attracted to the center and spine, because services such as water and electricity are more readily available and reliable.

For example, in Brazil, Rio de Janeiro's high-income people are clustered in the center of the city and to the south, whereas low-income residents are in the northern suburbs (Figure 13–16, left). The distribution of income groups coincides with other social characteristics, such as the percent of households with a telephone, automobile, or television. High-income groups are clustered near the center in part because of greater access to services, such as electricity and city sewers (Figure 13–16, right).

Physical geography also influences the distribution of social classes within Rio. The original site of the city was along the west shore of Guanabara Bay, a protected harbor. Residents were attracted to the neighborhoods immediately south of the central area, such as Copacabana and Ipanema, to enjoy spectacular views of the Atlantic Ocean and access to beaches. On the other hand, low-income households have clustered along the northern edge of the city, where steep mountains have restricted construction of other types of buildings. Development on the eastern side of Guanabara Bay was restricted until a bridge was constructed in the 1970s.

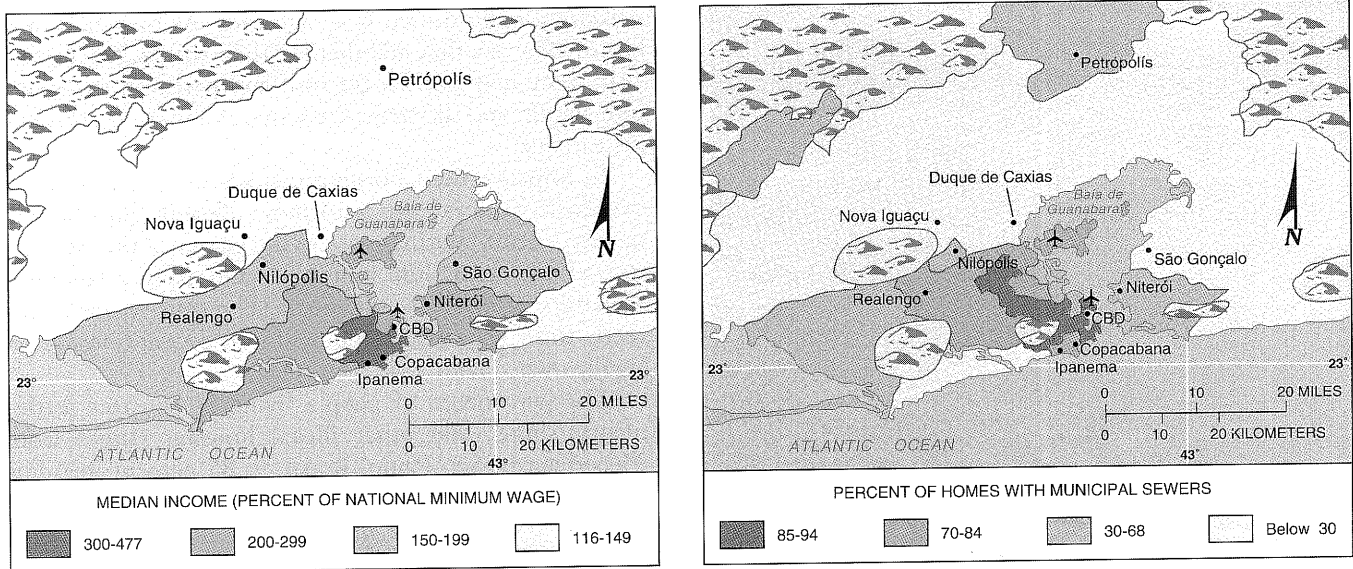In Mexico City, emperor Maximilian (1864–67) designed a 14-lane treelined boulevard patterned after the

FIGURE 13-16 *Rio de Janeiro, Brazil. (left) High- and low-income households. The highest income areas are near the CBD and in a spine along the ocean, whereas low-income people are more likely to live in peripheral areas. (right) Sewers. In LDC cities such as Rio de Janeiro, high-income individuals are attracted to central areas because services, such as municipal sewers, are more widely available than in peripheral areas.*

Champs-Elysées in Paris. The boulevard (now known as the Paseo de la Reforma) extended 3 kilometers southwest from the center to Chapultepec.

The Reforma between downtown and Chapultepec became the spine of an elite sector. The wealthy built pretentious *palacios* (palaces) along the Reforma during the late nineteenth century. Physical factors influenced the movement of wealthy people toward the west along the Reforma. Because elevation was higher than elsewhere in the city, sewage flowed eastward and northward away from Chapultepec.

Most of Lake Texcoco was drained by a gigantic canal and tunnel project in 1903, allowing the city to expand to the north and east. However, the lakebed was a less desirable residential location than the west side, because prevailing winds from the northeast stirred up dust storms from the dried-up lakebed. As Mexico City's population grew rapidly during the twentieth century, the social patterns inherited from the nineteenth century were reinforced.

Squatter Settlements. The LDCs are unable to house the rapidly growing number of poor. Their cities are growing because of overall population increase and migration from rural areas for job opportunities. Because of the housing shortage, a large percentage of poor

Global Forces, Local Impacts

Urbanization in the Middle East

Urbanization has been especially rapid in the Middle East. The region's largest urban area, Cairo, has an estimated 16 million inhabitants.

Already a large city, Cairo doubled in size during the last two decades of the twentieth century. Immigrants from the countryside were attracted to Cairo by service jobs created from investments by oil-rich neighboring countries.

One-half of Cairo's late twentieth-century immigrants went to squatter settlements. Squatter settlements have been initiated by groups of people who move together onto land outside the city that is owned either by a private individual or (more frequently) by the government. People move literally overnight with all their possessions, which usually are so few that they can be easily carried. The leaders of the invasion allocate small parcels of the seized land to each participating family.

A distinctive feature of Cairo's squatters has been the large number living in cemetery tombs. One of the largest, in the desert on the eastern edge of the urban area is called the City of the Dead. Some of the City of the Dead's tombs date from the fourteenth century, although most were built in the nineteenth and twentieth centuries.

The government in Egypt as in other LDCs faces a difficult choice regarding squatter settlements. If the government sends in the police or army to raze the settlement, it risks sparking a violent confrontation with the displaced people. On the other hand, if the government decides that improving and legalizing squatter settlements is cheaper than building the necessary new apartment buildings, it may encourage other poor rural people to migrate to the city to live as squatters.

Immigrants to New York and London have lived in squalid conditions, but an expanding economy has at least provided them with jobs, even if rather menial and poorly paid. An adequate supply of jobs is simply not available in Cairo and the other large urban settlements of today's LDCs.
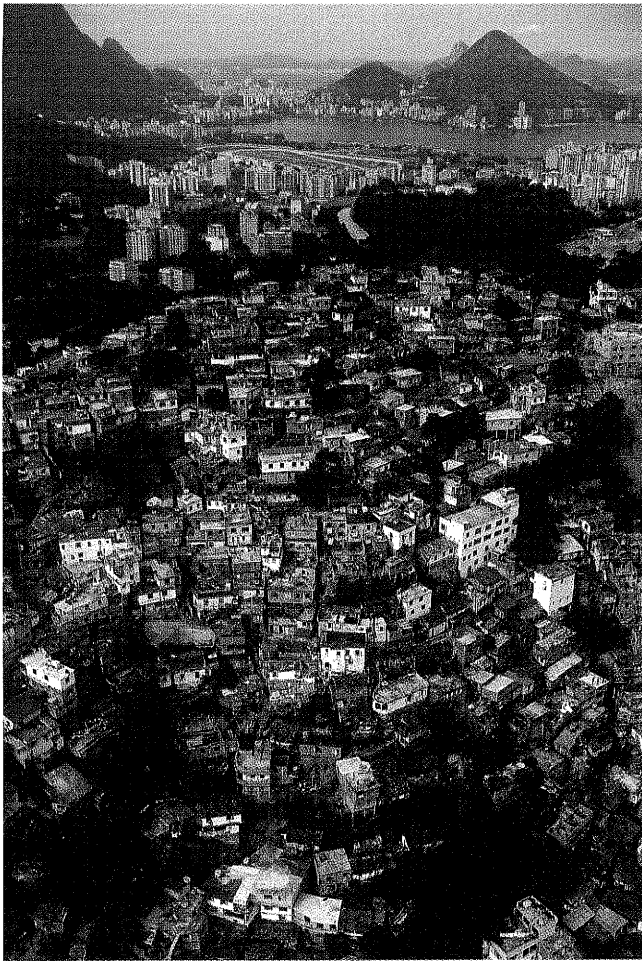
La Rocinha favela, Rio de Janeiro. A large percentage of people in the rapidly growing cities of less developed countries live in squatter settlements, such as the La Rocinha hillside favela of Rio de Janeiro. Wealthier people live in high-rise apartment buildings near the ocean. From a distance, the hillside location of the favelas may look attractive, but conditions are poor and services are difficult to provide, as seen in the close-up.

immigrants to urban areas in LDCs live in squatter settlements. **Squatter settlements** are known by a variety of names, including *barrios, barriadas,* and *favelas* in Latin America, *bidonvilles* in North Africa, *bustees* in India, *gecekondu* in Turkey, *kampongs* in Malaysia, and *barung-barong* in the Philippines.

Squatter settlements have few services, because neither the city nor the residents can afford them. Latrines are usually designated by the settlement's leaders, and water is carried from a central well or dispensed from a truck. The settlements generally lack schools, paved roads, telephones, or sewers. Electricity service may be stolen by running a wire from the nearest power line. In the absence of bus service or available private cars, a resident may have to walk two hours to reach a place of employment.

At first, squatters do little more than camp on the land or sleep in the street. In severe weather, they may take shelter in markets and warehouses. Families then erect primitive shelters with scavenged cardboard, wood boxes,

sackcloth, and crushed beverage cans. As they find new bits of material, they add them to their shacks. After a few years they may build a tin roof and partition the space into rooms, and the structure acquires a more permanent appearance.

To improve their housing conditions, squatters have two basic choices: one is to move illegally into better-quality, vacant housing close to the center of the city; the second is to rent slum housing legally from a landlord. Squatters rarely have the financial means to move directly from a squatter settlement into decent housing on legally owned land.

The percentage of people living in squatter settlements, slums, and other illegal housing ranges from 33 percent in São Paulo, Brazil, to 85 percent in Addis Ababa, Ethiopia, according to a UN study. The United Nations estimates that more than half of the residents live in some form of illegal housing in Lusaka, Zambia; Ankara, Turkey; Bogotá, Colombia; Dar es Salaam, Tanzania; and Luanda, Angola.

KEY ISSUE 3

Why Do Inner Cities Have Distinctive Problems?

- Inner-city physical problems
- Inner-city social problems
- Inner-city economic problems

Most of the land in urban areas is devoted to residences, where people live. Within U.S. urban areas the most fundamental spatial distinction is between inner-city residential neighborhoods that surround the CBD and suburban residential neighborhoods on the periphery. Inner cities in the United States contain concentrations of low-income people with a variety of physical, social, and economic problems very different from those faced by suburban residents.

Inner-City Physical Problems

The major physical problem faced by inner-city neighborhoods is the poor condition of the housing, most of which was built before 1940. Deteriorated housing can either be demolished and replaced with new housing, or it can be rehabilitated.

Process of Deterioration

As the number of low-income residents increase in the city, the territory they occupy expands. Neighborhoods can shift from predominantly middle-class to low-income occupants within a few years. Middle-class families move out of a neighborhood to newer housing farther from the center and sell or rent their houses to lower-income families.

Filtering. Large houses built by wealthy families in the nineteenth century are subdivided by absentee landlords into smaller dwellings for low-income families. This process of subdivision of houses and occupancy by successive waves of lower-income people is known as **filtering**. The ultimate result of filtering may be abandonment of the dwelling.

Like a car, tape player, or any other object, the better a house is maintained, the longer it will last. Landlords stop maintaining houses when the rent they collect becomes less than the maintenance cost. In such a case, the building soon deteriorates and grows unfit for occupancy. Not even the poorest families will rent the dwelling. At this point in the filtering process the owner may abandon the property, because the rents that can be collected are less than the cost of taxes and upkeep.

Cities have codes that require owners to maintain houses in good condition. But governments that aggressively go after landlords to repair deteriorated properties may in fact hasten abandonment, because landlords will not spend money on repairs that they are unable to recoup in rents. Thousands of vacant houses stand in the inner areas of American cities because the landlords have abandoned them.

One hundred years ago low-income inner-city neighborhoods in the United States teemed with throngs of recent immigrants from Europe. These inner-city neighborhoods that housed perhaps 100,000 a century ago contain less than 10,000 inhabitants today. Schools and shops close because they are no longer needed in inner-city neighborhoods with rapidly declining populations. Through the filtering process, many poor families have moved to less deteriorated houses farther from the center.

Redlining. Some banks engage in **redlining**—drawing lines on a map to identify areas in which they will refuse to loan money. As a result of redlining, families who try to fix up houses in the area have difficulty borrowing money. Although redlining is illegal, enforcement of laws against it is frequently difficult.

The Community Reinvestment Act requires banks to document by census tract where they make loans. A bank must demonstrate that inner-city neighborhoods within its service area receive a fair share of its loans.

Urban Renewal

North American and European cities have demolished much of their substandard inner-city housing through urban renewal programs. Under **urban renewal**, cities identify blighted inner-city neighborhoods, acquire the properties from private owners, relocate the residents and businesses, clear the site, and build new roads and utilities. The land is then turned over to private developers or to public agencies, such as the board of education or the parks department, to construct new buildings or services. National government grants help cities pay for urban renewal.

Public housing. High-rise public housing projects for low-income families, such as the Robert Taylor Homes in Chicago, are considered unsatisfactory living environments. Many of these high-rise projects have been demolished in recent years.

Public Housing. Many substandard inner-city houses have been demolished and replaced with public housing. In the United States, **public housing** is reserved for low-income households, who must pay 30 percent of their income for rent. A housing authority, established by the local government, manages the buildings, while the federal government pays the cost of construction and the maintenance, repair, and management that is not covered by rent.

In the United States, public housing accounts for less than 2 percent of all dwellings, although it may account for a high percentage of housing in inner-city neighborhoods. In the United Kingdom more than one-third of all housing is publicly owned, and the percentage is even higher in northern cities such as Liverpool, Manchester, and Glasgow. Private landlords control only a small percentage of housing in the United Kingdom, for the most part confined to central London and resort communities.

Elsewhere in Western Europe, governments typically do not own the housing. Instead, they subsidize construction cost and rent for a large percentage of the privately built housing. Developers of low-cost housing may be either nonprofit organizations, such as church groups and labor unions, or profit-making corporations that agree to build some low-cost housing in exchange for permission

to build higher-cost housing elsewhere. The U.S. government has also provided subsidies to private developers, but on a much smaller scale than in Europe.

Most of the high-rise public-housing projects built in the United States and Europe during the 1950s and early 1960s are now considered unsatisfactory environments for families with children. The elevators are frequently broken, juveniles terrorize other people in the hallways, and drug use and crime rates are high. Some observers claim that the high-rise buildings caused the problem, because too many low-income families are concentrated into a high-density environment. Because of poor conditions, public-housing authorities have demolished high-rise public-housing projects in recent years in Dallas, Newark, St. Louis, Liverpool in England, Glasgow in Scotland, and other U.S. and European cities.

More recent public-housing projects have consisted primarily of two- or three-story apartment buildings and row houses, with high-rise apartments reserved for elderly people. Cities have also experimented with "scattered-site" public housing, in which dwellings are dispersed throughout the city rather than clustered in a large project.

The U.S. government has stopped funding construction of new public housing, although some federal support is available to renovate older buildings and to help low-income households pay their rent. With the overall level of funding much lower, the supply of public housing and other government-subsidized housing diminished by approximately 1 million units between 1980 and 2000. But during the same period, the number of households needing low-rent dwellings increased by more than 2 million.

In Britain the supply of public housing, known as council estates, has also declined because the government has forced local authorities to sell some of the dwellings to the residents. But at the same time, the British have expanded subsidies to nonprofit housing associations that build housing for groups with special needs, including single mothers, immigrants, the disabled, and the elderly as well as the poor.

Urban renewal has been criticized for destroying the social cohesion of older neighborhoods and reducing the supply of low-cost housing. Because African Americans comprised a large percentage of the displaced population in U.S. cities, urban renewal was often called "Negro Removal" during the 1960s. Most North American and European cities have turned away from urban renewal since the 1970s, and national governments, including that of the United States, have stopped funding it.

Renovated Housing. An alternative to demolishing deteriorated inner-city houses is to renovate them. In some cases, nonprofit organizations renovate housing and sell or rent them to low-income people. But more often, the renovated housing attracts middle-class people.

Most cities have at least one substantially renovated inner-city neighborhood where middle-class people live. In a few cases, inner-city neighborhoods never deteriorated, because the community's social elite maintained them as enclaves of expensive property. In most cases, inner-city neighborhoods have only recently been renovated by the city and by private investors.

The process by which middle-class people move into deteriorated inner-city neighborhoods and renovate the housing is known as **gentrification**. Middle-class families are attracted to deteriorated inner-city housing for a number of reasons. First, houses may be larger, more substantially constructed, yet cheaper in the inner city than in the suburbs. Inner-city houses may also possess attractive architectural details such as ornate fireplaces, cornices, high ceilings, and wood trim.

Gentrified inner-city neighborhoods also attract middle-class individuals who work downtown. Inner-city living eliminates the strain of commuting on crowded freeways or public transit. Others seek proximity to theaters, bars, restaurants, and other cultural and recreational facilities located downtown. Renovated inner-city housing appeals to single people and couples without children, who are not concerned with the quality of inner-city schools.

Because renovating an old inner-city house can be nearly as expensive as buying a new one in the suburbs, cities encourage the process by providing low-cost loans and tax breaks. Public expenditures for renovation have been criticized as subsidies for the middle class at the expense of poor people, who are forced to move out of the gentrified neighborhoods because the rents in the area are suddenly too high for them.

Cities try to reduce the hardship on poor families forced to move. First, U.S. law requires that they be reimbursed both for moving expenses and for rent increases over a four-year period. Western European countries have similar laws. Second, cities renovate old houses specifically for lower-income families through public housing or other programs. By renting renovated houses, the city also helps to disperse low-income families throughout the city instead of concentrating them in large inner-city public-housing projects.

Inner-City Social Problems

Beyond the pockets of gentrified neighborhoods, inner cities contain primarily low-income people who face a variety of social problems. Inner-city residents constitute a permanent underclass who live in a culture of poverty.

Underclass

Inner-city residents frequently are referred to as a permanent **underclass** because they are trapped in an unending cycle of economic and social problems. The underclass suffers from relatively high rates of unemployment, alcoholism, drug addiction, illiteracy, juvenile delinquency, and crime. Their schools are deteriorated, and affordable housing is increasingly difficult to find. Their neighborhoods lack adequate police and fire protection, shops, hospitals, clinics, or other health-care facilities.

Lack of Job Skills. The future is especially bleak for the underclass because they are increasingly unable to compete for jobs. Inner-city residents lack the technical skills needed for most jobs because fewer than half complete high school. Despite the importance of education in obtaining employment, many in the underclass live in an atmosphere that ignores good learning habits, such as regular school attendance and completion of homework.

The gap between skills demanded by employers and the training possessed by inner-city residents is widening. In the past, people with limited education could become factory workers or filing clerks, but today these jobs require skills in computing and handling of electronics. Meanwhile, inner-city residents do not even have access to the remaining low-skilled jobs, such as custodians and fast-food servers, because they are increasingly in the distant suburbs.

Homeless. Some of the underclass are homeless. Accurate counts are impossible to obtain, but the National Coalition for the Homeless and Urban Institute estimated that on a given night nearly 1 million Americans sleep in doorways, on heated street grates, and in bus and subway stations. Over the course of a year, the number of Americans who are homeless is estimated at more than 3 million.

Most people are homeless because they cannot afford housing and have no regular income. Homelessness may have been sparked by family problems or job loss. Roughly one-third of U.S. homeless are individuals who are unable to cope in society after being released from hospitals or other institutions. Another one-fourth are children.

Homelessness is also a serious problem in LDCs. An estimated 300,000 people in Calcutta, India, sleep, bathe, and eat on sidewalks and traffic islands.

Several homeless people live under a bridge across the Ohio River in Cincinnati, Ohio.

Culture of Poverty

Inner-city residents are trapped as permanent underclass because they live in a culture of poverty. Unwed mothers give birth to two-thirds of the babies in U.S. inner-city neighborhoods, and 90 percent of children in the inner city live with only one parent. Because of inadequate child-care services, single mothers may be forced to choose between working to generate income and staying at home to take care of the children.

In principle, government officials would like to see more fathers living with their wives and children, but they provide little incentive for them to do so. Only a small percentage of "deadbeat dads" are tracked down for failing to provide required child-care support. If the husband moves back home, his wife may lose welfare benefits, leaving the couple financially worse off together than apart.

Crime. Trapped in a hopeless environment, some inner-city residents turn to drugs. Although drug use is a problem in both the suburbs and rural areas, rates of use in recent years have increased most rapidly in the inner cities. Some drug users obtain money through criminal activities. Gangs form in inner-city neighborhoods to control lucrative drug distribution. Violence erupts when two gangs fight over the boundaries between their drug distribution areas.

For example, the locations in the Dayton urban area with the highest number of arrests on felony charges for drug violations are clustered just west of the CBD, where the percentage of low-income African American households is very high (Figure 13–17, left). The higher incidence of arrests in low-income African American areas does not necessarily mean that drug usage is higher or that African Americans are more involved in drug trafficking than whites. Some studies have shown that among male high school students, rates of drug use may actually be higher among whites.

In high-density inner-city areas, people are more likely to sell drugs while standing on street corners under the clear view of neighborhood residents, who may call police. In contrast, drug sales in low-density automobile-oriented suburbs may occur discreetly behind closed doors, and arrests may require elaborate undercover operations.

Ethnic and Racial Segregation. Many neighborhoods in the United States are segregated by ethnicity, as discussed in Chapter 7. African Americans and Hispanics concentrate in one or two large continuous areas of the inner city, whereas whites live in the suburbs.

Even small cities display strong social distinctions among neighborhoods. A frequently noticed division is between the east and west sides of a city, or between the north and south sides, with one side attracting the higher-income residents and the other left to lower-status and minority families.

A family seeking a new residence usually considers only a handful of districts, where the residents' social and
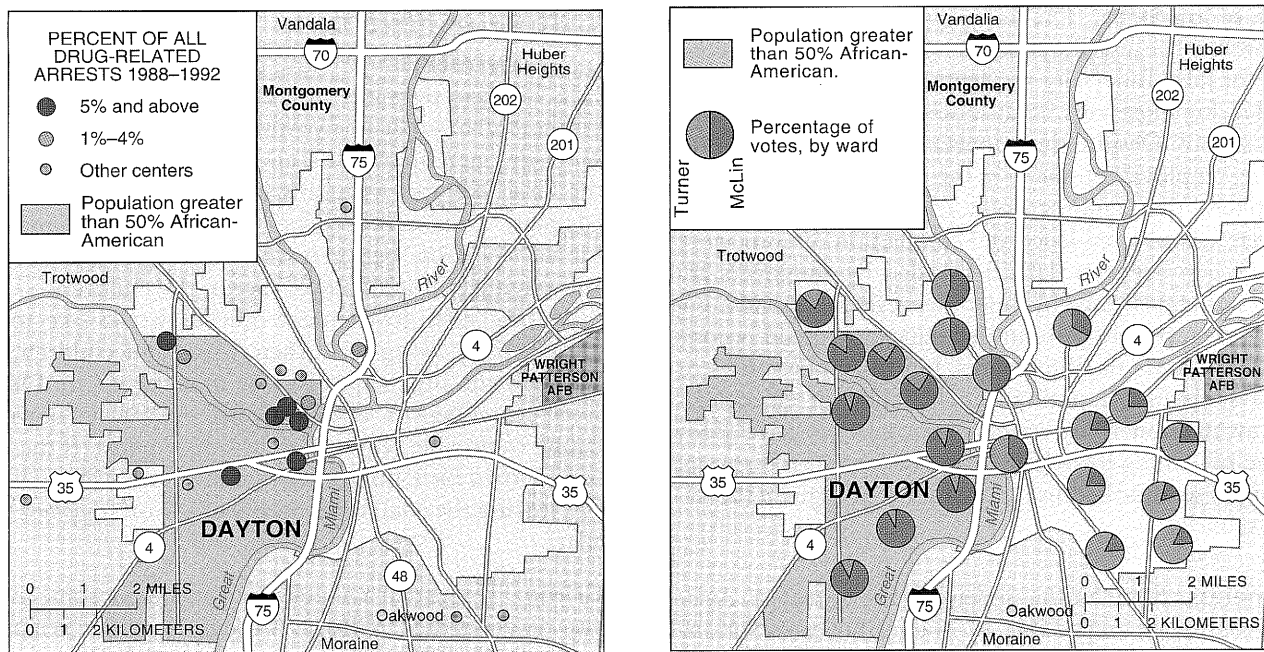
FIGURE 13-17 *Dayton, Ohio. (left) Locations that have the highest numbers of drug-related felony arrests. Arrests are clustered in the predominantly low-income, African American, inner-west side of the city. (right) Race and voting. In the 2001 mayoral election, Rhine McLin defeated Mike Turner by 51 to 49 percent. McLin, an African American, carried the predominantly African American wards on the west side, with 85 percent of the vote. Turner, who was white, carried every ward on the predominently white east side but with "only" 80 percent of the vote.*

financial characteristics match their own. Residential areas designed for wealthy families are developed in scenic, attractive areas, possibly a hillside or near a water body, whereas flat, dull land closer to industry becomes built up with cheaper housing.

Segregation by ethnicity explains voting patterns in many American urban areas. The winning candidate for mayor of Dayton in 2001 gained a majority of the votes in every ward on the predominantly African American west side and lost every ward on the predominantly white east side. She was black, and her opponent was white (Figure 13–17, right).

Inner-City Economic Problems

The concentration of low-income residents in inner-city neighborhoods of central cities has produced financial problems. These people require public services, but they can pay very little of the taxes to support the services. Central cities face a growing gap between the cost of needed services in inner-city neighborhoods and the availability of funds to pay for them.

A city has two choices to close the gap between the cost of services and the funding available from taxes. One alternative is to reduce services by closing libraries, eliminating some public-transit routes, collecting trash less frequently, and delaying replacement of outdated school equipment. Aside from the hardship imposed on individuals laid off from work, cutbacks in public services also encourage middle-class residents and industries to move from the city.

The other alternative is to raise tax revenues. Because higher tax rates can drive out industries and wealthier people, cities prefer instead to expand their tax base, especially through construction of new CBD projects. Even with generous subsidies and tax breaks, a new downtown high-rise pays far more taxes than the buildings demolished to make way for it. Luxury hotels, restaurants, shops, and offices in the new downtown buildings provide minimum-wage personal service jobs for low-income inner-city residents. Still, spending public money to increase the downtown tax base can take scarce funds away from projects in inner-city neighborhoods, such as subsidized housing and playgrounds.

Inner-city fiscal problems were alleviated by increasing contributions from the federal government during the 1950s and 1960s. The percentage of the budgets of the 50 largest U.S. cities supplied by the federal government increased from 1 percent in 1950 to 18 percent in 1980. But the percentage shrank substantially during the 1980s, to 6 percent in 1990 and 2000. Federal aid to U.S. cities declined by two-thirds during the 1980s when adjusted for inflation. To offset a portion of these lost federal funds, some state governments increased financial assistance to cities.

Annexation

For many cities, economic problems are exacerbated by their inability to annex peripheral land. **Annexation** is the process of legally adding land area to a city. Until recently in the United States, as cities grew, they expanded by annexing peripheral land. Rules concerning

annexation vary among states. Normally, land can be annexed into a city only if a majority of residents in the affected area vote in favor of doing so.

Peripheral residents generally desired annexation in the nineteenth century, because the city offered better services, such as water supply, sewage disposal, trash pickup, paved streets, public transportation, and police and fire protection. Thus, although U.S. cities grew rapidly in the nineteenth century, the problem of defining a city seldom arose, because the legal boundaries frequently changed to accommodate newly developed areas. For example, the city of Chicago expanded from 26 square kilometers (10 square miles) in 1837 to 492 square kilometers (190 square miles) in 1900 (Figure 13–18).

Today, however, cities are less likely to annex peripheral land because the residents prefer to organize their own services rather than pay city taxes for them. As a result, today's cities are surrounded by a collection of suburban jurisdictions, whose residents prefer to remain legally independent of the large city. Originally, some of these peripheral jurisdictions were small, isolated towns that had a tradition of independent local government
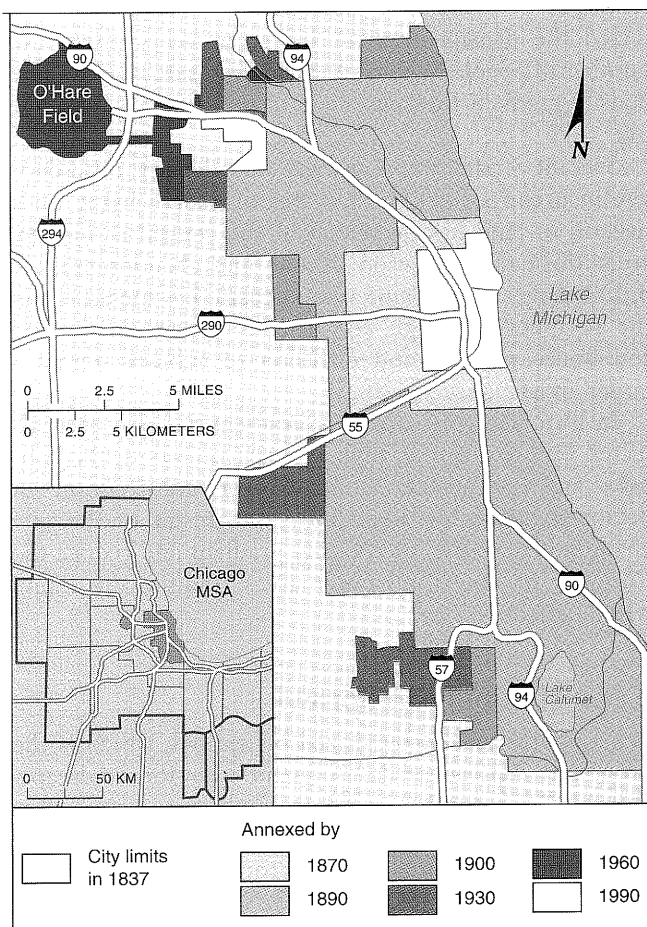

FIGURE 13–18 *Growth of Chicago. During the nineteenth century, the city of Chicago grew rapidly through annexation of peripheral land. Relatively little land was annexed during the twentieth century; the major annexation was on the northwest side for O'Hare Airport. The inset shows that the city of Chicago covers only a small portion of the Chicago MSA.*

before being swallowed up by urban growth. Others are newly created communities whose residents wish to live close to the large city but not be legally part of it.

KEY ISSUE 4

Why Do Suburbs Have Distinctive Problems?

- The peripheral model
- Contribution of transportation to suburbanization
- Local government fragmentation

Population has declined since 1950 by about one-half in the central cities of Baltimore, Buffalo, Cleveland, Detroit, Pittsburgh, and St. Louis, and by about one-third in Birmingham, Boston, Cincinnati, Dayton, Newark, Rochester, and Syracuse. The number of tax-paying middle-class families and industries has invariably declined by much higher percentages in these cities.

The suburban population has grown much faster than the overall population in the United States. Only 20 percent of Americans lived in suburbs in 1950, compared to 40 percent in central cities and 40 percent in small towns and rural areas. In 2000, after a half-century of rapid suburb growth, 50 percent of Americans lived in suburbs compared to only 30 percent in central cities and 20 percent in small towns and rural areas.

Public opinion polls in the United States and Western Europe show people's strong desire for suburban living. In most polls, more than 90 percent of respondents prefer the suburbs to the inner city. As in the United States, an increasing percentage of Europeans live in suburbs.

Suburbs offer varied attractions: a detached single-family dwelling rather than a row house or apartment, private land surrounding the house, space to park cars, and a greater opportunity for home ownership. The suburban house provides space and privacy, a daily retreat from the stress of urban living.

Families with children are especially attracted to suburbs, which offer more space for play and protection from the high crime rates and heavy traffic that characterize inner-city life. As incomes rose in the twentieth century, first in the United States and more recently in Western Europe, more families were able to afford to buy suburban homes.

The Peripheral Model

North American urban areas follow what Chauncey Harris (creator of the multiple nuclei model) calls the peripheral model. According to the **peripheral model**, an urban area consists of an inner city surrounded by large suburban residential and business areas tied together by a
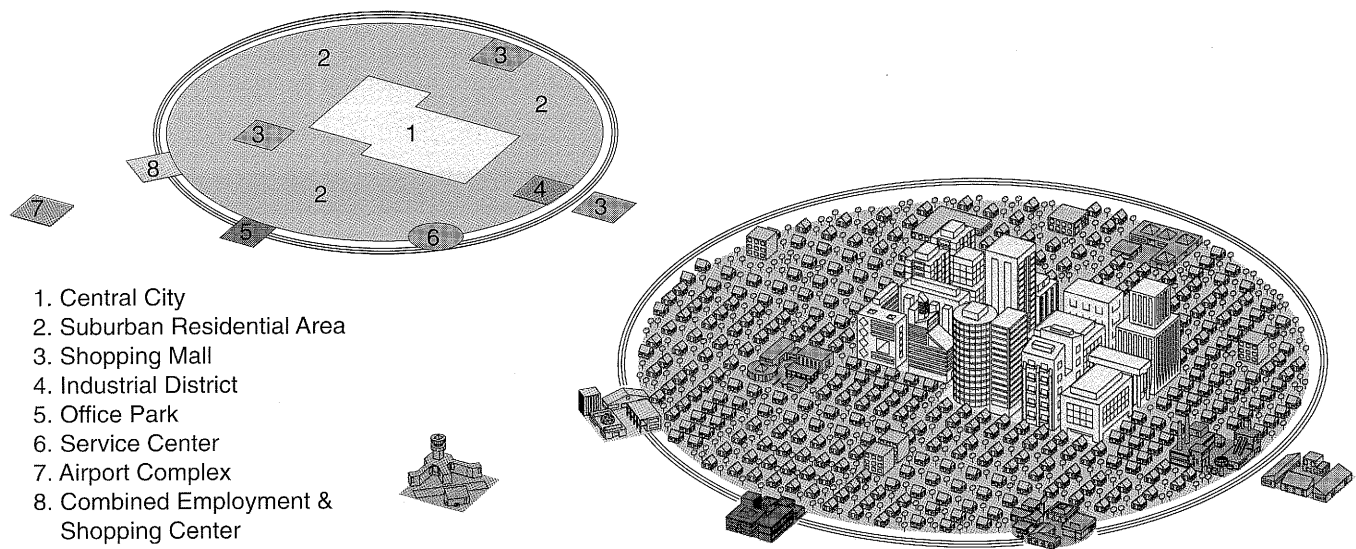
1. Central City
2. Suburban Residential Area
3. Shopping Mall
4. Industrial District
5. Office Park
6. Service Center
7. Airport Complex
8. Combined Employment &
   Shopping Center

FIGURE 13-19 *Peripheral model of urban areas. The central city is surrounded by a beltway or ring road. Around the beltway are suburban residential areas and nodes, or edge cities, where consumer and business services and manufacturing cluster. (Adapted from Chauncy D. Harris, "The Nature of Cities and Urban Geography in the Last Half Century." Reprinted with permission from* Urban Geography, *vol. 18, No. 1, p. 17. © V. H. Winston & Son, Inc., 360 South Ocean Blvd., Palm Beach, FL 33480. All rights reserved.)*

beltway or ring road (Figure 13–19). Peripheral areas lack the severe physical, social, and economic problems of inner-city neighborhoods. But the peripheral model points to problems of sprawl and segregation that characterize many suburbs.

Around the beltway are nodes of consumer and business services, called **edge cities**. Edge cities originated as suburban residences for people who worked in the central city, and then shopping malls were built to be near the residents. Now edge cities contain manufacturing centers spread out over a single story for more efficient operations and office parks where producer services cluster. Specialized nodes emerge in the edge cities: a collection of hotels and warehouses around an airport, a large theme park, a distribution center near the junction of the beltway, and a major long-distance interstate highway.

Density Gradient

As you travel outward from the center of a city, you can watch the decline in the density at which people live. Inner-city apartments or row houses may pack as many as 250 dwellings on a hectare of land (100 dwellings per acre). Older suburbs have larger row houses, semi-detached houses, and individual houses on small lots, at a density of about 10 houses per hectare (four houses per acre). A detached house typically sits on a lot of one-fourth to one-half hectare (0.6 to 1.2 acres) in new suburbs, and a lot of one hectare or greater (2.5 acres) on the fringe of the built-up area.

This density change in an urban area is called the **density gradient**. According to the density gradient, the number of houses per unit of land diminishes as distance from the center city increases.

Changes in Density Gradient. Two changes have affected the density gradient in recent years. First, the number of people living in the center has decreased. The density gradient thus has a gap in the center, where few live.

Second is the trend toward less density difference within urban areas. The number of people living on a hectare of land has decreased in the central residential areas through population decline and abandonment of old housing. At the same time, density has increased on the periphery through construction of apartment and row-house projects and diffusion of suburbs across a larger area (Figure 13–20).

In European cities, density gradient has also been affected by low-income, high-rise apartments in the suburbs and by stricter control over construction of detached houses on large lots. The result of the two changes is to flatten the density gradient and reduce the extremes of inner and outer areas traditionally found within cities.

Cost of Suburban Sprawl

U.S. suburbs are characterized by **sprawl**, which is the progressive spread of development over the landscape. When private developers select new housing sites, they seek cheap land that can easily be prepared for construction—land often not contiguous to the existing built-up area. Sprawl is also fostered by the desire of many families to own large tracts of land.

Suburban Development Process. As long as demand for single-family detached houses remains high, land on the fringe of urbanized areas must be converted from open space to residential land use. The current system
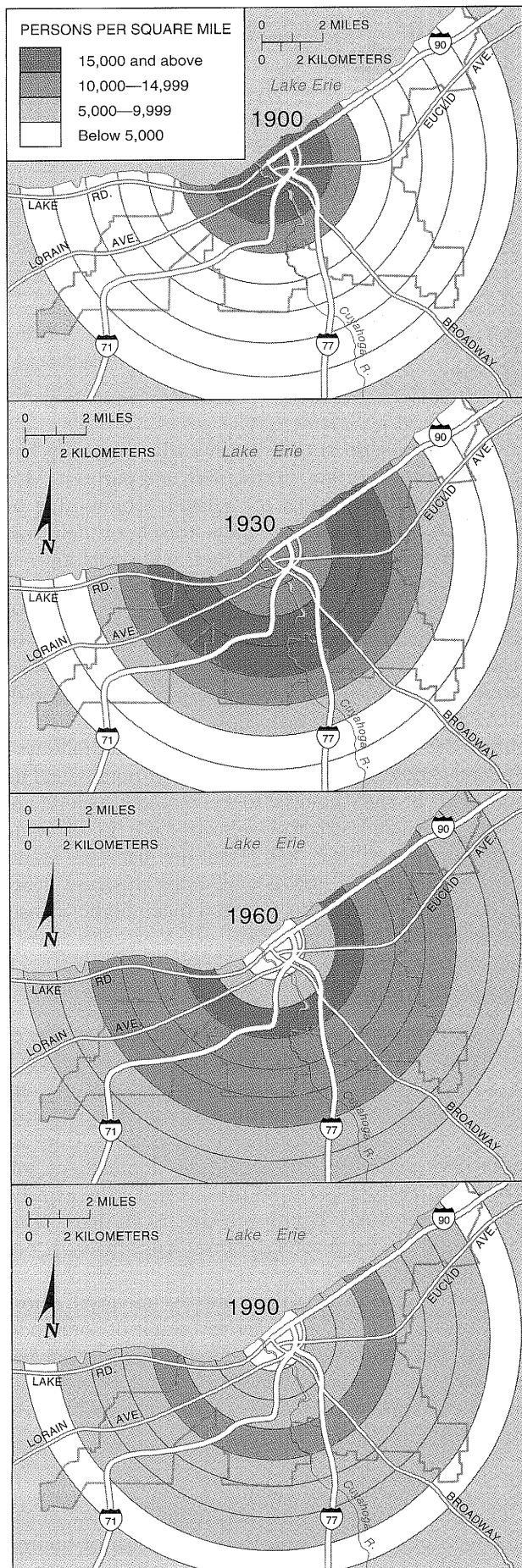
for developing land on urban fringes is inefficient, especially in the United States.

Land is not transformed immediately from farms to housing developments. Instead, developers buy farms for future construction of houses by individual builders. Developers frequently reject land adjacent to built-up areas in favor of detached isolated sites, depending on the price and physical attributes of the alternatives. The periphery of U.S. cities therefore looks like Swiss cheese, with pockets of development and gaps of open space.

Urban sprawl has some undesirable traits. Roads and utilities must be extended to connect isolated new developments to nearby built-up areas. The cost of these new roads and utilities is either funded by taxes, or the services are installed by the developer, who passes on the cost to new residents through higher home prices.

Sprawl also wastes land. Some prime agricultural land may be lost through construction of isolated housing developments; in the interim, other sites lie fallow while speculators await the most profitable time to build homes on them. In reality, sprawl has little impact on the total farmland in the United States, but it does reduce the ability of city dwellers to get to the country for recreation, and it can affect the supply of local dairy products and vegetables. The low-density suburb also wastes more energy, especially because the automobile is required for most trips.

The supply of land for construction of new housing is more severely restricted in European urban areas. Officials attack sprawl by designating areas of mandatory open space. London, Birmingham, and several other British cities are surrounded by **greenbelts**, or rings of open space. New housing is built either in older suburbs inside the greenbelts or in planned extensions to small towns and new towns beyond the greenbelts (Figure 13–21). However, restriction of the supply of land on the urban periphery has driven up house prices in Europe.

Suburban Segregation

The modern residential suburb is segregated in two ways. First, residents are separated from commercial and manufacturing activities, which are confined to compact, distinct areas. Second, housing in a given suburban community is usually built for people of a single social class, with others excluded by virtue of the cost, size, or location of the housing.

FIGURE 13–20 Density gradient in Cleveland. In 1900 the population was highly clustered in and near the CBD. By 1930 and 1960 the population was spreading, leaving the original core less dense. By 1990 population was distributed over a much larger area, the variation in the density among different rings was much less, and the area's lowest densities existed in the rings near the CBD. The current boundary of the city of Cleveland is shown. (First three maps adapted from Avery M. Guest. "Population Suburbanization in American Metropolitan Areas, 1940–1970." Geographical Analysis 7 (1975): 267–83, table 4. Used by permission of the publisher.)

FIGURE 13-21 *Suburban development patterns in the United Kingdom and the United States. The United States has much more sprawl than the United Kingdom. In the United Kingdom, new housing is more likely to be concentrated in new towns or planned extensions of existing small towns, whereas in the United States growth occurs in discontinuous developments.*
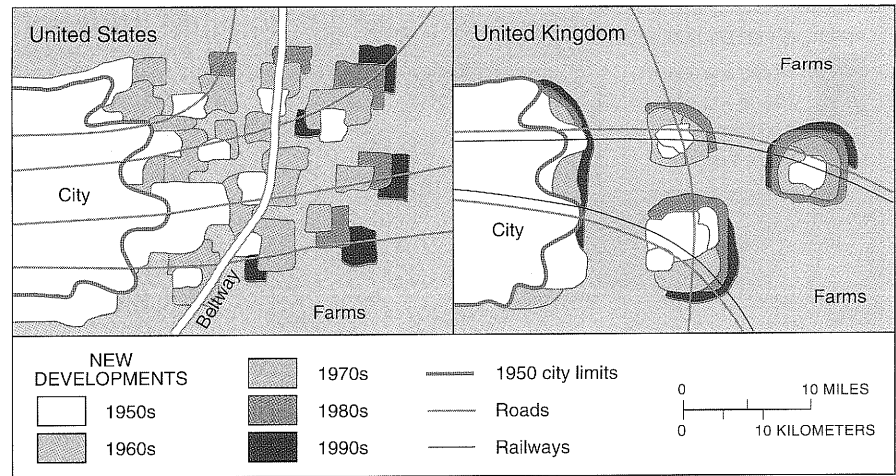
The homogeneous suburb is a twentieth-century phenomenon. In older cities, activities and classes were more likely to be separated vertically rather than horizontally. In a typical urban building, shops were on the street level, with the shopowner or another well-to-do family living on one or two floors above the shop.

Poorer people lived on the higher levels or in the basement, the least attractive parts of the building. The basement was dark and damp, and before the elevator was invented, the higher levels could be reached only by climbing many flights of stairs. Rich families lived in houses with space available in the basement or attic to accommodate servants.

Once cities spread out over much larger areas, the old pattern of vertical separation was replaced by territorial segregation. Large sections of the city were developed with houses of similar interior dimension, lot size, and cost, appealing to people with similar incomes and lifestyles.

Zoning ordinances, developed in Europe and North America in the early decades of the twentieth century, encouraged spatial separation. They prevented mixing of land uses within the same district. In particular, single-family houses, apartments, industry, and commerce were kept apart, because the location of one activity near another was considered unhealthy and inefficient.

The strongest criticism of U.S. residential suburbs is that low-income and minority people are unable to live in them because of the high cost of the housing and the unfriendliness of established residents. Suburban communities discourage the entry of lower-income and minority individuals because of fear that property values will decline if the high-status composition of the neighborhood is altered. Legal devices, such as requiring each house to sit on a large lot and the prohibition of apartments, prevent low-income families from living in many suburbs.

Contribution of Transportation to Suburbanization

Urban sprawl makes people more dependent on transportation for access to work, shopping, and leisure activities. People do not travel aimlessly; their trips have a precise point of origin, destination, and purpose. More than half of all trips are work related—commuting between work and home, business travel, or deliveries. Shopping or other personal business and social journeys each account for approximately one-fourth of all trips.

Historically, the growth of suburbs was constrained by transportation problems. People lived in crowded cities because they had to be within walking distance of shops and places of employment. The invention of the railroad in the nineteenth century enabled people to live in suburbs and work in the central city. Cities then built street railways—frequently known as trolleys, streetcars, or trams—and underground railways (subways) to accommodate commuters.

Many so-called streetcar suburbs built in the nineteenth century still exist and retain unique visual identities. They consist of houses and shops clustered near a station or former streetcar stop at a much higher density than is found in newer suburbs.

Motor Vehicles

The suburban explosion in the twentieth century has relied on motor vehicles rather than railroads, especially in the United States. In the nineteenth century, rail and trolley lines restricted suburban development to narrow ribbons within walking distance of the stations. Cars and trucks have permitted large-scale development of suburbs at greater distances from the center, in the gaps between the rail lines. Motor vehicle drivers have much greater flexibility in the choice of residence than was ever before possible.

Motor vehicle ownership is nearly universal among American households, with the exception of some poor families, older individuals, and people living in the center of large cities such as New York. More than 95 percent of all trips within U.S. cities are made by car, compared to fewer than 5 percent by bus or rail. Outside the big cities, public transportation service is extremely rare or nonexistent.

The U.S. government has encouraged the use of cars and trucks by paying 90 percent of the cost of limited-access high-speed interstate highways, which stretch for

In the United Kingdom, the boundary is sharp between an urban area, such as East London (top) and the surrounding rural area. Compare to sprawl south of Los Angeles (bottom) at the junction of the Harbor Freeway (I-110) and Century Freeway (I-105).

74,000 kilometers (46,000 miles) across the country. The use of motor vehicles is also supported by policies that limit the price of fuel to less than one-half the level found in Western Europe (see Chapter 14).

The motor vehicle is an important user of land in the city. An average city allocates about one-fourth of its land to roads and parking lots. Valuable land in the central city is devoted to parking cars and trucks, although expensive underground and multistory parking structures can reduce the amount of ground-level space needed. Modern six-lane freeways cut a 23-meter (75-foot) path through the heart of cities, and elaborate interchanges consume even more space. European and Japanese cities have been especially disrupted by attempts to insert new roads and parking areas in or near to the medieval central areas.

Technological improvements may help traffic flow. Computers mounted on the dashboards alert drivers to traffic jams and suggest alternate routes. On freeways, vehicle speed and separation from other vehicles can be controlled automatically rather than by the driver. Motorists can be charged for using congested roads or pay high tolls to drive on uncongested roads. The inevitable diffusion of such technology in the twenty-first century will reflect the continuing preference of most people in MDCs to use private motor vehicles rather than switch to public transportation.

Public Transportation

Because few people in the United States live within walking distance of their place of employment, urban areas are characterized by extensive commuting. The heaviest flow of commuters is into the CBD in the morning and out of it in the evening.

Rush-Hour Commuting. The intense concentration of people in the center during working hours strains transportation systems, because a large number of people must reach a small area of land at the same time in the morning and disperse at the same time in the afternoon. As much as 40 percent of all trips made into or out of a CBD occur during four hours of the day—two in the morning and two in the afternoon. **Rush hour**, or peak hour, is the four consecutive 15-minute periods that have the heaviest traffic.

In larger cities, public transportation is better suited than motor vehicles to moving large numbers of people, because each traveler takes up far less space. But most Americans still prefer to commute by car. One-third of the high-priced central land is devoted to streets and parking lots, although multistory and underground garages also are constructed.

Public transportation is cheaper, less polluting, and more energy-efficient than the automobile. It also is particularly suited to rapidly bringing a large number of people into a small area. Consequently, its use is increasingly confined in the United States to rush-hour commuting by workers in the CBD. A bus can accommodate 30 people in the amount of space occupied by one automobile, whereas a double-track rapid transit line can transport the same number of people as 16 lanes of urban freeway.

CONTEMPORARY GEOGRAPHIC TOOLS

Intelligent Transportation Systems

The future health of urban areas depends on relieving traffic congestion. Geographic tools, including global positioning systems (GPS) and electronic mapping, are playing central roles in the design of intelligent transportation systems to ease congestion.

The current generation of innovative techniques is aimed at providing drivers with information so that they can make intelligent decisions about avoiding congestion. Radio stations in urban areas have long broadcast reports from helicopters to advise motorists of accidents or especially congested highways.

Information about traffic congestion is now being transmitted through a computer, which could be a desktop in the office, a notebook on the kitchen table or front passenger seat, or a monitor mounted in the vehicle's dashboard. Information is also being sent through cell phones, pagers, and other palm-held devices.

The traffic information being disseminated through computers and palm devices can be general or tailored to the individual. Traffic hot spots are displayed on electronic maps and images for every motorist to see on the Internet, using information collected through sensors in the roadbeds and cameras placed at strategic locations.

An individual wishing to know whether a particular route is congested can program a computer to send an e-mail, a mobile phone to send a call, or a pager to send an alert. The electronic source of the message can be programmed to suggest alternative routes for the individual. To make these systems usable, vehicles purchased after 2000 either are equipped with GPS or can have GPS capability added as systems become more widely available and less expensive to purchase and operate.

The other current application of geographic tools to reduce congestion is through "smart" highways. Toronto and several California cities charge motorists higher tolls to drive on freeways during congested times. Attached to a vehicle is a transponder recording the time of day it is on the highway. A monthly bill sent to the vehicle's owner reflects the differential tolls.

Outside North America, Singapore makes the most elaborate use of "smart" highway technology to minimize congestion. Every vehicle has a transponder that records tolls. To drive downtown during rush hour, a motorist must buy a license and demonstrate ownership of a parking space. The government limits the number of licenses and charges high tolls to drive downtown.

Future intelligent transportation systems are likely to remove decisions from the drivers through hands-free driving. A motorist will drive to a freeway entrance, where the vehicle will be subjected to a thorough diagnostic (taking a half-second) to ensure that it has enough fuel and is in good operating condition. A menu offers a choice of predetermined destinations, such as "home" or "office," or a destination can be programmed by hand. A release will send the vehicle accelerating automatically on the entrance ramp into the freeway. Sensors in the bumpers and fenders, attached to radar or GPS, alert vehicle systems to accelerate, brake, or steer as needed. Spacing between vehicles can be as little as six feet.

While the vehicle is automatically controlled, the "driver" swivels the seat to a workstation to make phone calls, check e-mail, surf the Internet, or write letters. Or the driver can read, watch television, or nap. When the vehicle nears the programmed freeway exit, a tone warns that the driver will have to take back control. The vehicle is halted on the exit ramp until the driver firmly presses the brake to release the "autodrive" system, much as cruise control is currently disengaged.

Automobiles have costs beyond their purchase and operation: delays imposed on others, increased need for highway maintenance, construction of new highways, and pollution. The average American loses 36 hours per year sitting in traffic jams and wastes 55 gallons of gasoline. The total cost of congestion is valued at more than $1 billion per year in the United States. Most people overlook these costs because they place higher value on the car's privacy and flexibility of schedule.

Despite the obvious advantages of public transportation for commuting, only 5 percent of work trips are by public transit. Public transit ridership in the United States has declined from 23 billion per year in the 1940s to 8 billion in 2002.

U.S. cities had 50,000 kilometers (30,000 miles) of street railways and trolleys that carried 14 billion passengers a year early in the twentieth century, but only a few hundred kilometers of track remain. The number of U.S. and Canadian cities with trolley service declined from approximately fifty in 1950 to eight in the 1960s. General Motors acquired many of the privately owned streetcar companies and replaced the trolleys with buses that the company made.

Buses offer a more flexible service than do trolleys because they are not restricted to fixed tracks. However, bus ridership declined from a peak of 11 billion riders annually in the late 1940s to 6 billion in 2001. Commuter railroad service, like trolleys and buses, has also been drastically reduced in most U.S. cities.

New Rapid Transit Lines. The one exception to the downward trend in public transportation is rapid transit. It is known to transportation planners as either fixed heavy rail (such as subways) or fixed light rail (such as streetcars).

The Tokyo subway system employs "subway pushers" to jam as many people as possible into an already crowded subway car.

Cities such as Boston and Chicago have attracted new passengers through construction of new subway lines and modernization of existing service. Chicago has been a pioneer in the construction of heavy-rail rapid transit lines in the median strips of expressways. Entirely new subway systems have been built in recent years in U.S. cities, including Atlanta, Baltimore, Miami, San Francisco, and Washington, D.C.

The federal government has permitted Boston, New York, and other cities to use funds originally allocated for interstate highways to modernize rapid transit service instead. New York's subway cars, once covered with graffiti spray-painted by gang members, have been cleaned so that passengers can ride in a more hospitable environment. As a result of these improvements, subway ridership in the United States has increased 2 percent annually since 1980.

The trolley—now known by the more elegant term of fixed light-rail transit—is making a modest comeback in North America. Once relegated almost exclusively as a tourist attraction in New Orleans and San Francisco, new trolley lines have been built or are under construction in Baltimore, Buffalo, Calgary, Edmonton, Los Angeles, Portland (Oregon), Sacramento, St. Louis, San Diego, and San Jose. However, new construction in all ten cities amounted only to about 200 kilometers (130 miles) since 1980, and ridership in all cities combined is 1 million a day.

California, the state that most symbolizes the automobile-oriented American culture, leads in construction of new fixed light-rail transit lines. San Diego has added more kilometers than any other city. One line that runs from the center south to the Mexican border has been irreverently dubbed the "Tijuana trolley" because it is heavily used by residents of nearby Tijuana, Mexico.

Los Angeles—the city perhaps most associated with the motor vehicle—has planned the most extensive new light-rail system. The city had a rail network exceeding 1,600 kilometers (1,000 miles) as recently as the late 1940s, but the lines were abandoned when freeways were built to accommodate rising automobile usage. Now Los Angeles wants to entice motorists out of their cars and trucks with new light-rail lines, but construction is very expensive, and the lines serve only a tiny percentage of the region.

Service Versus Cost. People who are too poor to own an automobile may still not be able to reach places of employment by public transportation. Low-income people tend to live in inner-city neighborhoods, but the job opportunities, especially those requiring minimal training and skill in personal services, are in suburban areas not well served by public transportation. Inner-city neighborhoods have high unemployment rates at the same time that suburban firms have difficulty attracting workers. In some cities, governments and employers subsidize vans to carry low-income inner-city residents to suburban jobs.

Despite modest recent successes, most public transportation systems are caught in a vicious circle, because fares do not cover operating costs. As patronage declines and expenses rise, the fares are increased, which drives away passengers and leads to service reduction and still higher fares. Public expenditures to subsidize construction and operating costs have increased, but the United States does not fully recognize that public transportation is a vital utility deserving of subsidy to the degree long assumed by European governments.

Public Transit in Other Countries. In contrast, even in more developed Western European countries and Japan, where automobile ownership rates are high, extensive networks of bus, tram, and subway lines have been maintained, and funds for new construction have been provided in recent years (Figure 13–22). Since the late 1960s, London has opened 50 kilometers (35 miles) of subways, including two new lines, plus 25 kilometers (15 miles) in light-rail transit lines to serve the docklands area, which has been transformed from industrial to residential and office use. During the same period, Paris has
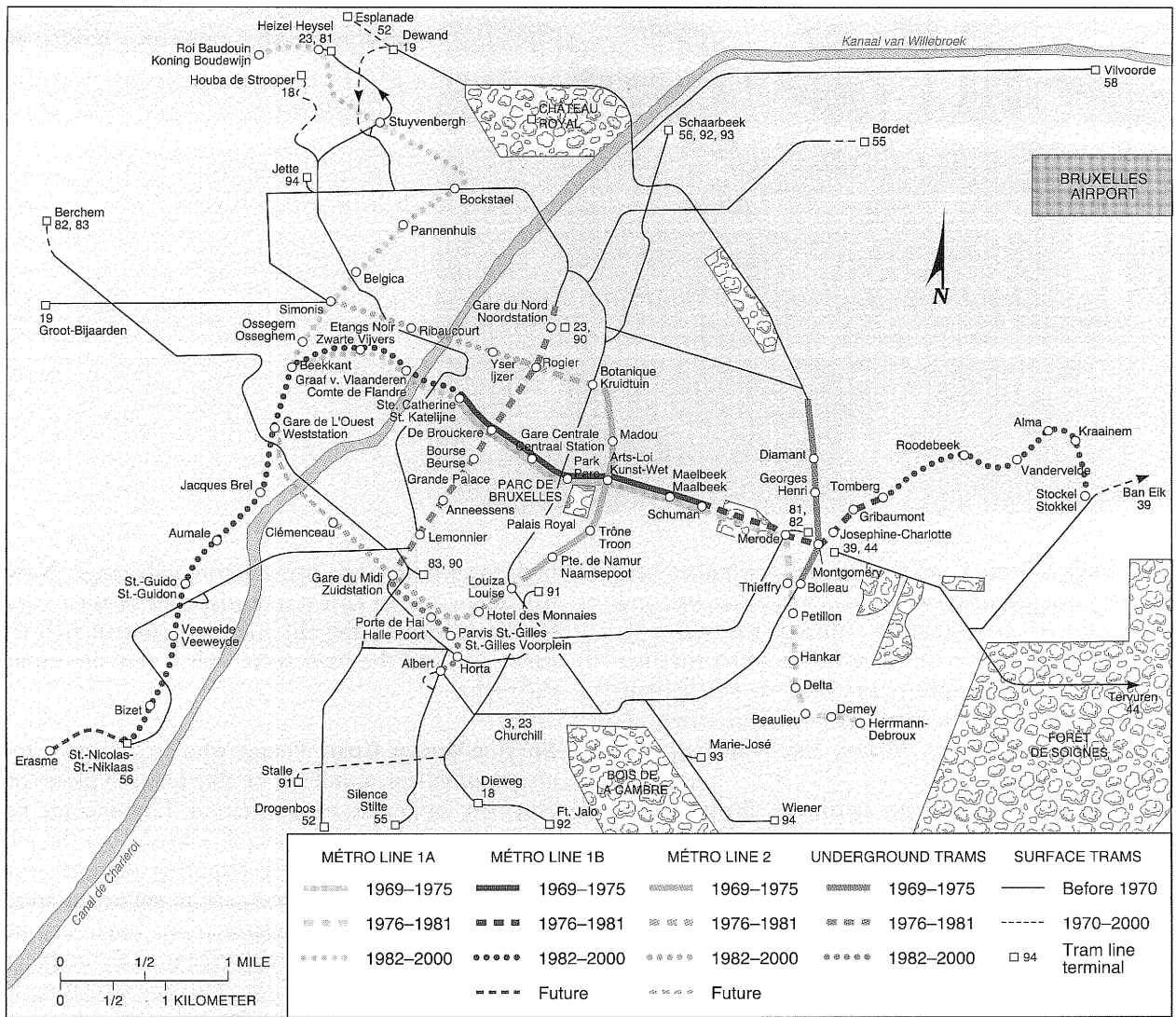
FIGURE 13-22 *Brussels, Belgium, subway and tram lines. European cities such as Brussels have invested substantially to improve public transportation in recent years. Brussels provides a good example of a public transport system that integrates heavy rail (Métro Lines 1 and 2) with light rail (trams). Trams initially used Métro tunnels, but the tunnels were large enough to convert to heavy-rail lines as funds became available. The photograph shows a line 92 tram on the Rue Royale.*

added 400 kilometers (250 miles) of new subway lines, primarily in a new system known as the Réseau Express Régional (R.E.R.) to serve outer suburbs.

Smaller cities have shared the construction boom. In France alone, new subway lines have been built since the 1970s in Lille, Lyon, and Marseille, and hundreds of kilometers of entirely new tracks have been laid between the country's major cities to operate a high-speed train known as the TGV (*Train à Grande Vitesse*). Growth in the suburbs has stimulated nonresidential construction, including suburban shops, industry, and offices.

Local Government Fragmentation

The fragmentation of local government in the United States makes it difficult to solve regional problems of

traffic, solid-waste disposal, and building affordable housing. The number of local governments exceeds 1,400 in the New York area, 1,100 in the Chicago area, and 20,000 throughout the United States. Approximately 40 percent of these 20,000 local governments are general units, such as cities and counties, and the remainder serve special purposes, such as schools, sanitation, transportation, water, and fire districts.

Long Island, which extends for 150 kilometers (90 miles) east of New York City and is approximately 25 kilometers (15 miles) wide, contains nearly 800 local governments. The island includes two counties, two cities, 13 towns, 95 villages, 127 school districts, and more than 500 special districts, such as for garbage collection.

The multiplicity of local governments on Long Island leads to problems. When police or firefighters are summoned to the State University of New York at Old Westbury, two or three departments sometimes respond, because the campus is in five districts. The boundary between the communities of Mineola and Garden City runs down the center of Old Country Road, a busy four-lane route. Mineola set a 40-mile-per-hour speed limit for the eastbound lanes, whereas Garden City set a 30-mile-per-hour speed limit for the westbound lanes.

In some metropolitan areas, the inner-city social and economic problems described earlier in this chapter are found in older suburbs immediately adjacent to the central city. As the central city is transformed into a vibrant community for higher income people, inner suburbs become home to lower income people displaced from gentrifying urban neighborhoods. Meanwhile, middle-class residents move from inner suburbs to newer homes on the periphery. Inner suburbs are unable to generate revenue to provide for the needs of a poorer population.

Metropolitan Government

The large number of local government units has led to calls for a metropolitan government that could coordinate—if not replace—the numerous local governments in an urban area.

Most U.S. metropolitan areas have a **council of government**, which is a cooperative agency consisting of representatives of the various local governments in the region. The council of government may be empowered to do some overall planning for the area that local governments cannot logically do.

Strong metropolitan-wide governments have been established in a few places in North America. Two kinds exist: federations and consolidations.

Federations. Toronto, Ontario, has a federation system. Toronto's local government has two tiers. The region's six local governments, which range in size from 100,000 to 600,000 inhabitants, are responsible for police, fire, and tax-collection services. A regional government, known as the Metropolitan Council, or Metro, sets the tax rate for the region as a whole, assesses the value of property, and borrows money for new projects. Metro shares responsibility with local governments for public services, such as transportation, planning, parks, water, sewage, and welfare.

Consolidations. Several U.S. urban areas have consolidated metropolitan governments; Indianapolis and Miami are examples. Both have consolidated city and county governments. The boundaries of Indianapolis were changed to match those of Marion County, Indiana. Government functions that were handled separately by city and county now are combined into a joint operation in the same office building. In Florida, the city of Miami and surrounding Dade County have combined some services, but the city boundaries have not been changed to match the county's.

Growing Smart

Several U.S. states have taken strong steps in the past few years to curb sprawl, reduce traffic congestion, and reverse inner-city decline. The goal is to produce a pattern of compact and contiguous development, while protecting rural land for agriculture, recreation, and wildlife protection. Legislation and regulations to limit suburban sprawl and preserve farmland has been called **smart growth**.

Maryland enacted especially strong smart growth legislation in 1998. The Maryland smart-growth law prohibits the state from funding new highways and other projects that would extend suburban sprawl and destroy farmland. State money must be spent to "fill in" already urbanized areas.

Oregon and Tennessee have defined growth boundaries within which new development must occur. Cities can annex only lands that have been included in the urban growth areas. New Jersey, Rhode Island, and Washington were also early leaders in enacting strong state-level smart-growth initiatives.

SUMMARY

Many people live in urban areas and never venture into inner-city neighborhoods or downtown. They live in suburbs, attend school in suburbs, work in suburbs, shop in suburbs, visit friends and family in suburbs, and attend movies and sports events in suburbs. Motor vehicles allow movement across urban areas without entering the center.

Conversely, inner-city residents may rarely venture out to suburbs. Lacking a motor vehicle, they have no access to most suburban locations. Lacking money, they do not shop in suburban malls or attend sports events at suburban arenas. The spatial segregation of inner-city residents and suburbanites lies at the heart of the stark contrasts so immediately observed in any urban area.

Here is a review of the key issues raised at the beginning of the chapter:

1. **Where have urban areas grown?** Urbanization involves increases in the percentage and in the number of people living in urban areas. MDCs have higher percentages of urban residents, but LDCs now have most of the largest urban areas.

2. **Where are people distributed within urban areas?** Three models explain where various groups of people live in urban areas: the concentric zone, sector, and multiple nuclei models. Combined, the three models present a useful framework for understanding the distribution of social and economic groups within urban areas. With modifications, the models also apply to cities in Europe and LDCs.

3. **Why do inner cities have distinctive problems?** Inner-city residential areas have physical problems stemming from the high percentage of older deteriorated housing, social problems stemming from the high percentage of low-income households, and economic problems stemming from a gap between demand for services and supply of local tax revenue.

4. **Why do suburbs have distinctive problems?** The suburban lifestyle as exemplified by the detached single-family house with surrounding yard attracts most people. Transportation improvements, most notably the railroad in the nineteenth century and the automobile in the twentieth century, have facilitated the sprawl of urban areas. Among the negative consequences of large-scale sprawl are segregation and inefficiency.

CASE STUDY REVISITED

Contrasts in the City

What is the future for cities? As this chapter has shown, contradictory trends are at work simultaneously. Why does one inner-city neighborhood become a slum and another a high-class district? Why does one city attract new shoppers and visitors while another languishes?

The Camden, New Jersey, urban area displays the strong contrasts that characterize American urban areas. The central city of Camden houses an isolated underclass while suburban Camden County prospers. The population of the city of Camden has declined from 117,000 in 1960 to 80,000 in 2000. African Americans comprise about 42,000 of the city's population, Hispanics about 31,000. The white, non–Hispanic population has declined from 90,000 in 1960 to 7,000 today.

Median annual household income in Camden is $23,000, compared to $42,000 for the United States as a whole. More than half the population receive government assistance. Infant mortality rate for the city's African American population is 27 per 1,000, about the level of Mexico, and four times higher than the rest of the United States.

More than half of Camden's residents are under age 30, closer to the level found in LDCs than to the rest of the United States. Job prospects are not promising for these young people, because more than half have left school without obtaining a high school diploma. Camden's unemployment rate is 20 percent, four times the national average.

In the past, Camden's youths could find jobs in factories that produced Campbell's soups, Esterbrook pens, and RCA Victor records, radios, and televisions, but the city has lost 90 percent of its industrial jobs. The Esterbrook and Campbell factories in Camden are closed, although Campbell's corporate offices remain; General Electric operates the former RCA factory but with a labor force at only 15 percent of the level during the 1960s.

As Camden's population and industries decline, few shops have enough customers to remain open. The city once had 13 movie theaters, but none are left. The murder rate soared after gangs carved up the city into districts during the mid-1980s to control cocaine trafficking. Violent crimes such as murder, rape, and robbery are increasing in Camden while dropping nationally. New Jersey state troopers help the city's understaffed police force deal with crime.

Meanwhile, Camden County (excluding the city) has grown from 275,000 in 1960 to about 510,000 in 2000. Cherry Hill has about 70,000 residents today, compared to fewer than 10,000 in 1960. The population of Cherry Hill actually declined during the 1990s, as growth pushed east, much farther away from Camden, which is on the far western edge of the county.

Cherry Hill is an example of an edge city, a large node of office and retail activities on the edge of an urban area. Despite its rapid population growth and trained labor force, an edge city like Cherry Hill has become both a residential area that commuters leave and an employment center that attracts other commuters. Cherry Hill has attracted so many new jobs that a major obstacle to further economic growth is a shortage of qualified workers.

But many inner-city Camden residents lack transport to reach the jobs or the skills to hold the jobs. Camden's mismatch among locations of people, jobs, resources, and services exemplifies the urban crisis throughout the United States, as well as in other countries. Geographers help us understand why these patterns arise and what can be done about them.

KEY TERMS

Annexation (p. 458)
Census tract (p. 446)
Concentric zone model (p. 445)
Council of government (p. 467)
Density gradient (p. 460)
Edge city (p. 460)
Filtering (p. 455)
Gentrification (p. 456)
Greenbelt (p. 461)

Metropolitan statistical area (MSA) (p. 442)
Micropolitan statistical area (p. 443)
Multiple nuclei model (p. 446)
Peripheral model (p. 459)
Public housing (p. 455)
Redlining (p. 455)
Rush (or peak) hour (p. 463)
Sector model (p. 446)

Smart growth (p. 467)
Sprawl (p. 460)
Squatter settlement (p. 454)
Underclass (p. 456)
Urbanization (p. 439)
Urbanized area (p. 441)
Urban renewal (p. 455)
Zoning ordinance (p. 462)

THINKING GEOGRAPHICALLY

1. Nearly all residents of MDCs lead urban lifestyles even if they live in rural areas. In contrast, many residents in LDCs lead rural lifestyles, even though they live in large cities. They practice subsistence agriculture, raising animals or growing crops. Lacking electricity, they gather wood for fuel. Lacking running water and sewers, they dig latrines. Why do so many urban dwellers in LDCs lead rural lifestyles?

2. Draw a sketch of your community or neighborhood. In accordance with Kevin Lynch's *The Image of the City*, place five types of information on the map: districts (homogeneous areas), edges (boundaries that separate districts), paths (lines of communication), nodes (central points of interaction), and landmarks (prominent objects on the landscape). How clear an image does your community have for you?

3. Jane Jacobs wrote in *Death and Life of Great American Cities* that an attractive urban environment is one that is animated with an intermingling of a variety of people and activities, such as found in many New York City neighborhoods.

What are the attractions and drawbacks to living in such environments?

4. Land-use activities in Communist cities were allocated by government rather than made by private market decisions. To what extent would the absence of a private-sector urban land market affect the form and structure of socialist cities? What impacts might Eastern European cities experience with the switch to market economies?

5. Officials of rapidly growing cities in LDCs discourage the building of houses that do not meet international standards for sanitation and construction methods. Also discouraged are privately owned transportation services, because the vehicles generally lack decent tires, brakes, and other safety features. Yet the residents prefer substandard housing to no housing, and they prefer unsafe transportation to no transportation. What would be the advantages and problems for a city if health and safety standards for housing, transportation, and other services were relaxed?

ON THE INTERNET

Cyberspace exercises for our urban patterns chapter (www.prenhall.com/rubenstein) are designed to help you better understand the forces of urbanization, the diversity of urban areas, and their importance in spatial organization and the evolution of societies. American cities are, perhaps to a greater extent than anywhere else in the world, the products of unrestrained capitalism, and in this light we examine the growth of Los Angeles and Atlanta. We also examine diversity, the one certain thing in urban geographies, from the chaos of everyday life in the cities to alienation and a loss of community. Our

examination of these issues is framed in the geographer's tool of maps, many of them interactive.

Maps showing the distribution of social and economic characteristics within metropolitan areas can be downloaded through the U.S. Census Bureau's web site (www.census.gov/cgi-bin/gazetteer) or through Columbia University's Center for International Earth Science Information Network (CIESIN) Socioeconomic Data and Applications Center (SEDAC) (http://plue.sedac.ciesin.org/plue/ddviewer/ddvJava30/index.html).

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