

yards and modern schools. And they were pushed from CBDs by high rents that business and retail services were willing to pay and by the dirt, crime, congestion, and poverty that they experienced by living downtown.

In the twenty-first century, however, the population of many U.S. CBDs has increased. New apartment buildings and townhouses have been constructed, and abandoned warehouses and outdated office buildings have been converted into residential lofts. Downtown living is especially attractive to people without school-age children, either “empty nesters” whose children have left home or young professionals who have not yet had children. These two groups are attracted by the entertainment, restaurants, museums, and nightlife that are clustered downtown, and they are not worried about the quality of neighborhood schools.

## CBDs Outside North America

CBDs outside the United States are less dominated by commercial considerations. The most prominent structures may be churches and former royal palaces, situated on the most important public squares, at road junctions, or on hilltops. Parks in the center of European cities often were first laid out as private gardens for aristocratic families and later were opened to the public.

European cities display a legacy of low-rise structures and narrow streets, built as long ago as medieval times. Some European cities try to preserve their historic CBDs by limiting high-rise buildings and the number of cars. Several high-rise offices were built in Paris during the 1970s, including Europe’s tallest office building (the 210-meter, or 688-foot, Tour Montparnasse). The public outcry over this disfigurement of the city’s historic skyline was so great that officials reestablished lower height limits.

More people live downtown in cities outside North America. As a result, CBDs outside North America are more likely to contain supermarkets, bakeries, butchers, and other food stores. However, the 24-hour supermarket is rare outside North America because of shopkeeper preferences, government regulations, and longtime shopping habits. Many CBDs outside of North America ban motor vehicles from busy shopping streets, thus emulating one of the most attractive attributes of large shopping malls—pedestrian-only walkways. Shopping streets reserved for pedestrians are widespread in Northern Europe, including in the Netherlands, Germany, and Scandinavia. Rome periodically bans private vehicles from the CBD to reduce pollution and congestion and minimize damage to ancient monuments.

Although constructing large new buildings is difficult, many shops and offices still wish to be in the center of European cities. The alternative to new construction is renovation of older buildings. However, renovation is more expensive and does not always produce enough space to meet the demand. As a result, rents are much higher in the center of European cities than in U.S. cities of comparable size.

## KEY ISSUE 2

# Where Are People Distributed Within Urban Areas?

- Models of Urban Structure
- Applying 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. ■

## 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 developed in Chicago, a city on a prairie. The three models were later applied to cities elsewhere in the United States and in other countries.

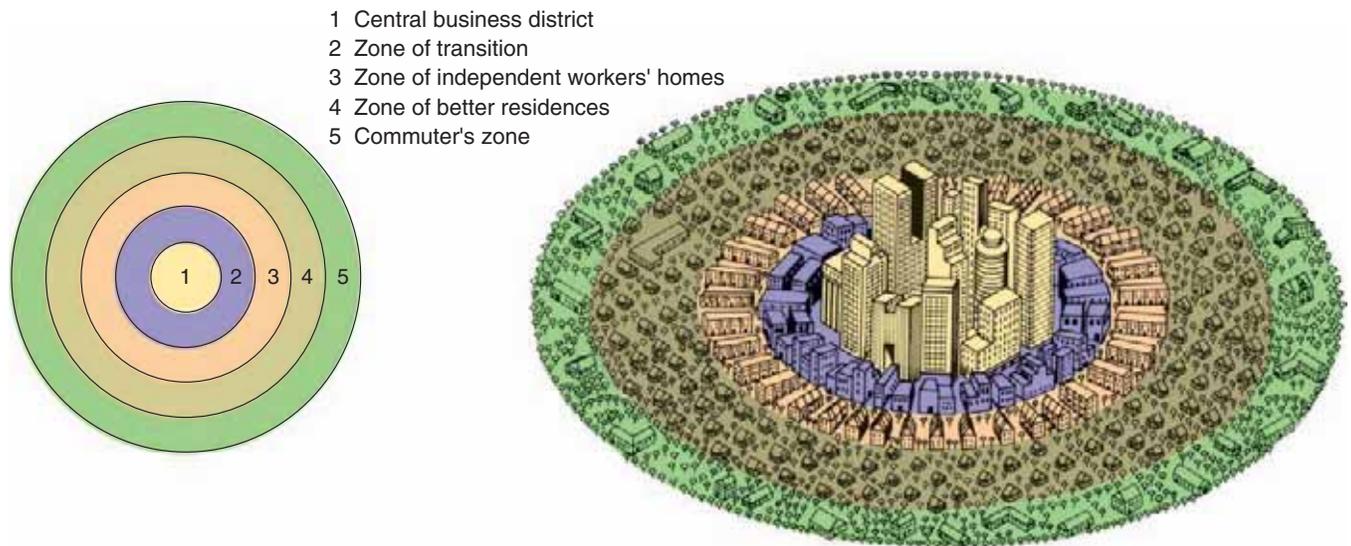
Except for Lake Michigan to the east, few physical features have interrupted the region’s growth. Chicago includes a CBD known as the Loop because transportation lines (originally cable cars, now El trains) loop around it. Surrounding the Loop are residential suburbs to the south, west, and north.

## Concentric Zone Model

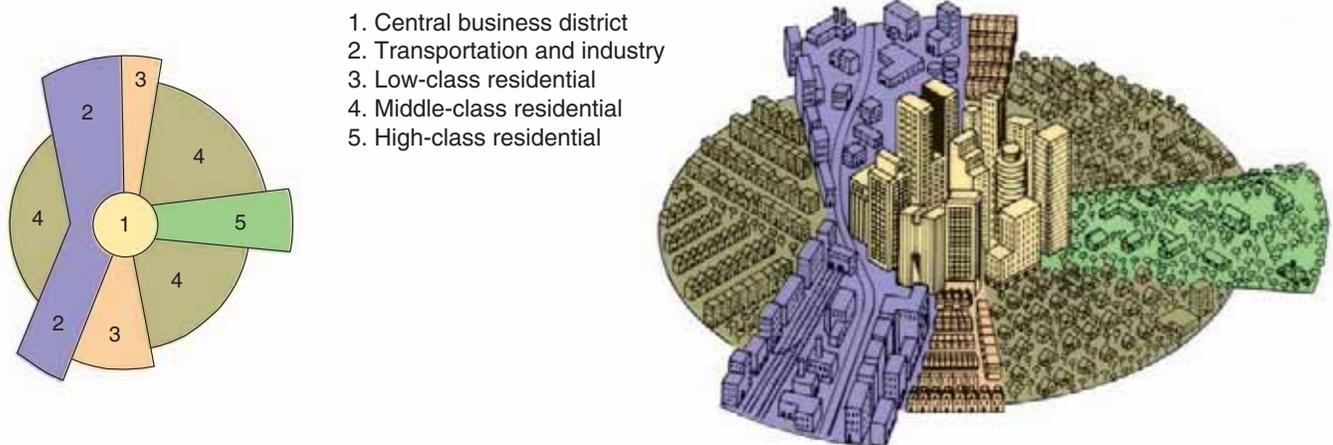
The concentric zone model was the first to explain the distribution of different social groups within urban areas (Figure 13-4). It was created in 1923 by sociologist E. W. Burgess.

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. Back in the 1920s, Burgess identified five rings:

1. CBD: The innermost ring, where nonresidential activities are concentrated.
2. A 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.
3. A zone of working-class homes, which contains modest older houses occupied by stable, working-class families.



**FIGURE 13-4** Concentric zone model. According to the model, a city grows in a series of rings that surround the central business district.



**FIGURE 13-5** Sector model. According to the model, a city grows in a series of wedges or corridors, which extend out from the central business district.

4. A zone of better residences, which contains newer and more spacious houses for middle-class families.
5. 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 13-5). 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.

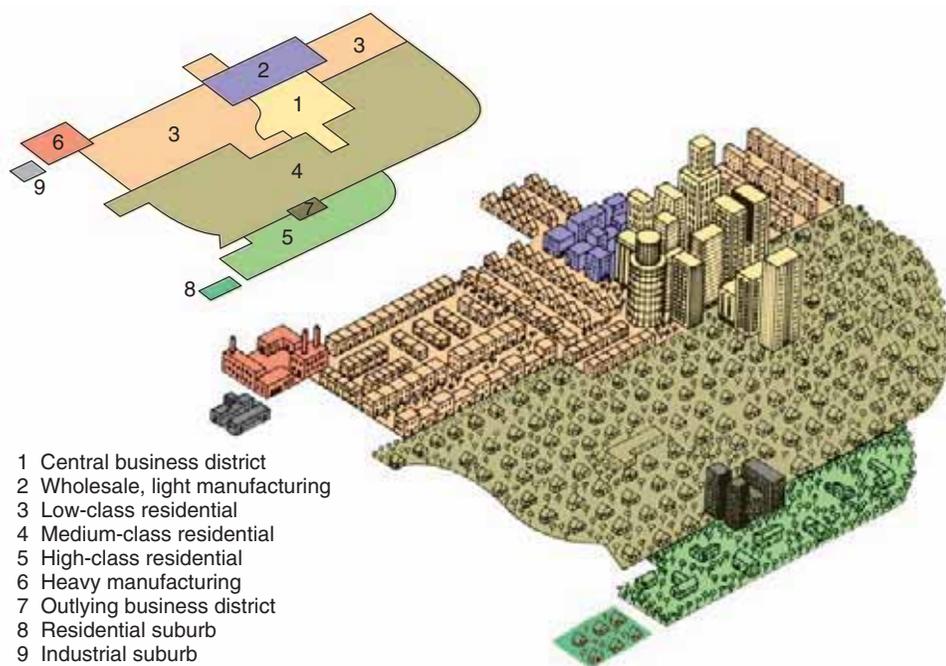
## Multiple Nuclei Model

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 (Figure 13-6). Examples of these nodes include a port, neighborhood business center, university, airport, and park.

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



**FIGURE 13-6** Multiple nuclei model. According to the model, a city consists of a collection of individual nodes, or centers, around which different types of people and activities cluster.

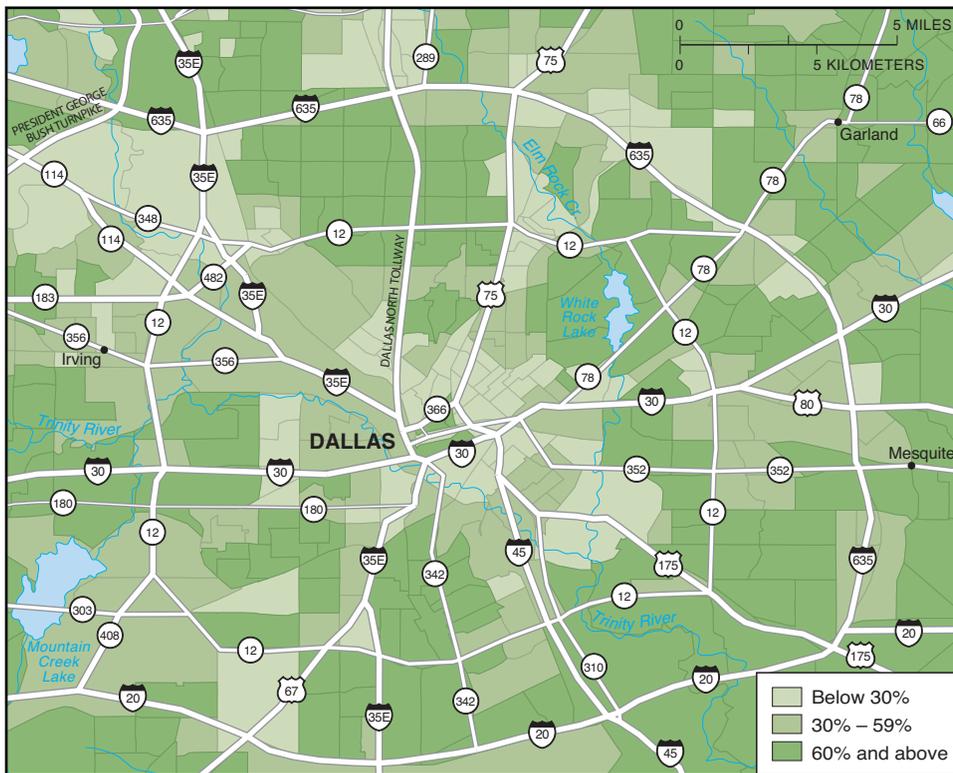
in particular places. Effective use of the models depends on the availability of data at the scale of individual neighborhoods. In the United States and many other countries, that information comes from the census.

Urban areas in the United States are divided into **census tracts** that 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. 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**.

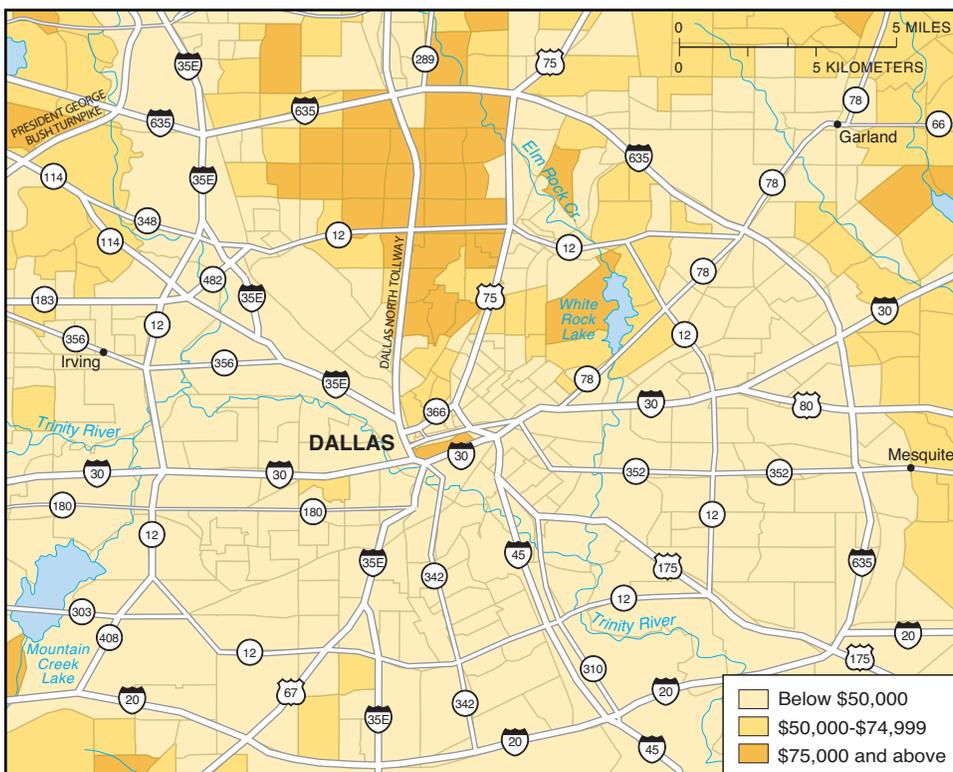
None of the three models taken individually completely explains why different types of people live in distinctive parts of the city. Critics point out that the models are too simple and fail to consider the variety of reasons that lead people to select particular residential locations. Because the three 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 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 who have similar characteristics:

- **Applying the Concentric Zone Model.** Consider two families with the same income and ethnic background. One family owns its home, whereas the other rents. The owner-occupant is much more likely to live in an outer ring and the renter in an inner ring (Figure 13-7).
- **Applying the Sector Model.** 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 family with the lower income (Figure 13-8).
- **Applying the Multiple Nuclei Model.** People with the same ethnic or racial background are likely to live near each other (Figure 13-9).



**FIGURE 13-7** Example of concentric zone model in Dallas, the distribution of home owners. The percentage of households that own their home is greater in the outer rings of the city.



**FIGURE 13-8** Example of sector model in Dallas, the distribution of high-income households. The median household income is the highest in a sector to the north.

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 (see Contemporary Geographic Tools box).

## Applying the Models Outside North America

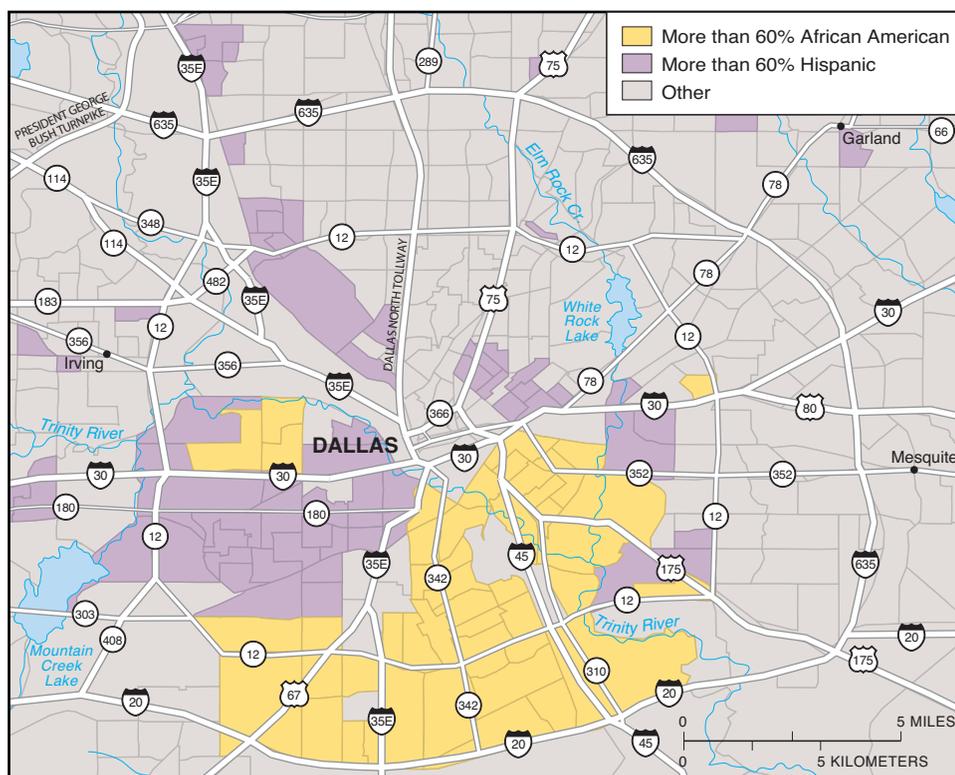
The three models may describe the spatial distribution of social classes in the United States, but American urban areas differ from those elsewhere in the world. These differences do not invalidate the models, but they do point out that social groups in other countries may not have the same reasons for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

### European Cities

In contrast to most U.S. cities, wealthy Europeans still live in the inner rings of the upper-class sector, not just in the suburbs (Figure 13-10). A central location provides proximity to the region's best shops, restaurants, cafés, and cultural facilities. Wealthy people are also attracted by the opportunity to occupy elegant residences in carefully restored, beautiful old buildings.

As in the United States, though, wealthier people also cluster in European cities along a sector extending out from the CBD. In Paris, for example, the wealthy 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 Paris's wealthy to cluster in a southwest sector 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 upper-class sectors emerged in other European cities, typically on higher elevations and near royal palaces.

In the past, low-income people also lived in the center of European cities. Before the invention of electricity in the nineteenth century, social segregation was vertical: Wealthier people lived on the first



**FIGURE 13-9** Example of multiple nuclei model in Dallas, the distribution of minorities. African Americans and Hispanics occupy nodes to the south and west of downtown, respectively.

or second floors, whereas poorer people occupied the dark, dank basements or climbed many flights of stairs to reach the attics. As the city expanded during the Industrial Revolution, housing for these people was constructed in sectors near the factories and away from the wealthy. Today, low-income 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.

People with lower incomes have been relegated to the outskirts of European cities. Vast suburbs containing dozens of high-rise apartment buildings house these people who were 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 in the suburbs than in inner neighborhoods; the suburbs are centers for crime, violence, and drug dealing; and people lack the American suburban amenity of 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 from “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

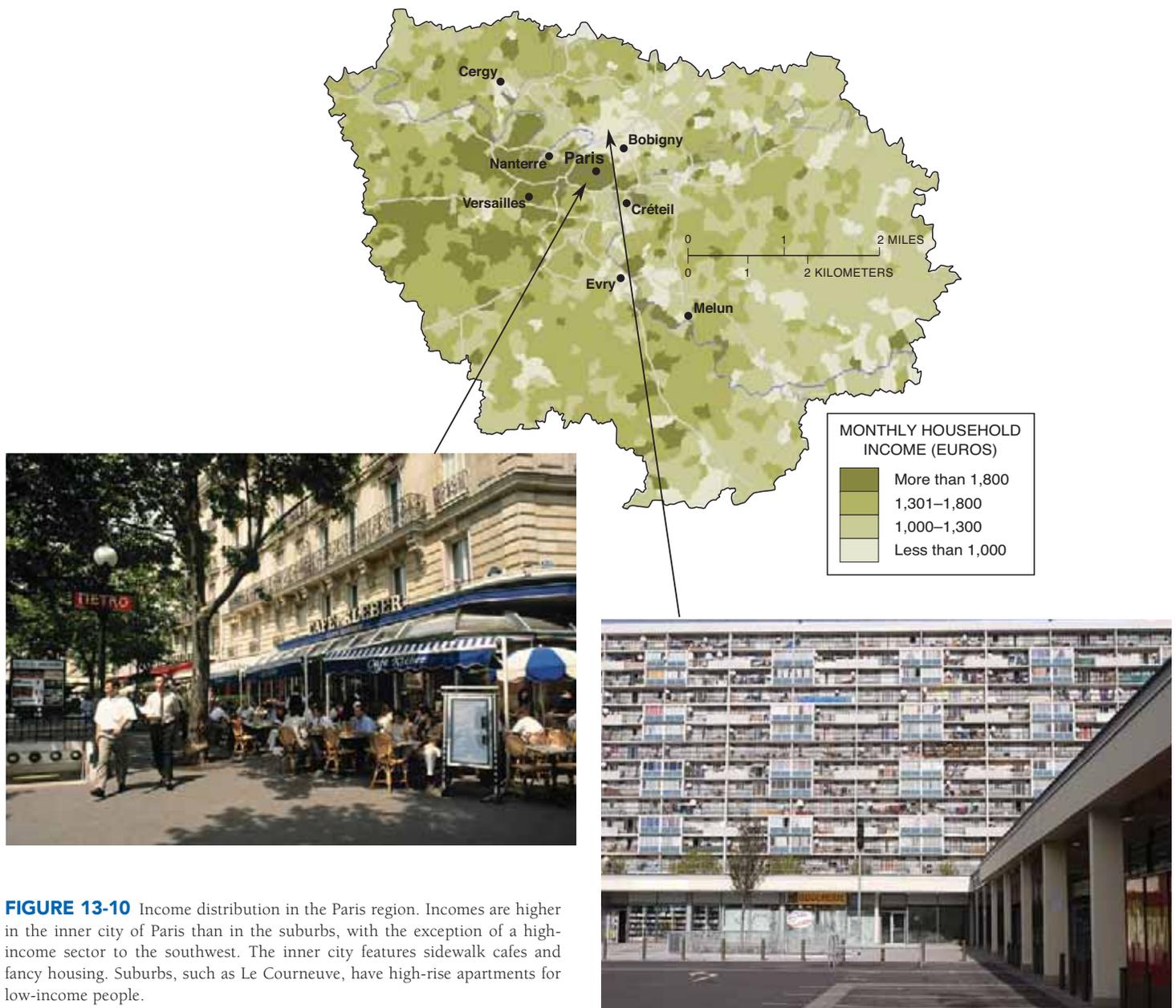
In LDCs, as in Europe, the poor are accommodated in the suburbs, whereas the wealthy live near the center of cities as well as in a sector extending from the center. The similarity between European and LDC cities is not a coincidence: European colonial policies left a heavy mark on the development of cities in LDCs, many of which have passed through three stages of development—pre-European colonization, the European colonial period, and postcolonial independence.

**PRECOLONIAL CITIES.** Few cities existed in Africa, Asia, and Latin America before the Europeans established colonies. Most people lived in rural settlements. The 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 in 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.

In Mexico, the Aztecs founded Mexico City—which they called Tenochtitlán—on a hill known as Chapultepec (“the hill of the grasshopper”). When 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



**FIGURE 13-10** Income distribution in the Paris region. Incomes are higher in the inner city of Paris than in the suburbs, with the exception of a high-income sector to the southwest. The inner city features sidewalk cafes and fancy housing. Suburbs, such as Le Courneuve, have high-rise apartments for low-income people.

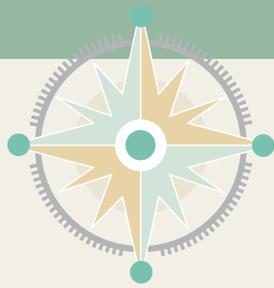
10-square-kilometer (4-square-mile) island in Lake Texcoco (Figure 13-11).

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

**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 (Figure 13-12).

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 built around central, smaller plazas with parish churches or monasteries. Compared to the existing cities, these 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.



## CONTEMPORARY GEOGRAPHIC TOOLS

### Market Segmentation: You Are Where You Live

Marketing geographers identify sectors, rings, and nodes that come closest to matching customers preferred by a retailer. Companies use this information to understand, locate, and reach their customers better and to determine where to put new stores and where advertising should appear.

Segmentation is the process of partitioning markets into groups of potential customers with similar needs and characteristics who are likely to exhibit similar purchasing behavior. A prominent example of geographic segmentation is the Potential Rating Index for ZIP Markets (Prizm) clusters created by Nielsen Claritas. As Nielsen Claritas states, “birds of a feather flock together”—in other words, a person is likely to live near people who are similar.

Nielsen Claritas combines two types of geographic information—distribution of the social and economic characteristics of people obtained from the census and the addresses of purchasers of various products obtained from service providers.

The variables are organized into 66 clusters that are given picturesque names. For each ZIP code in the United States, Nielsen Claritas determines the five clusters that are most prevalent. Nielsen Claritas calls this analysis “you are where you live.”

We can compare Prizm clusters for two ZIP codes in the Dallas area. Refer to Figures 13-7, 13-8, and Figure 13-9 to see the close relationship between the Nielsen Claritas Prizm clusters and the models of urban structure. ZIP code 75215 is south of downtown Dallas. The five most common clusters (in alphabetical order) are as follows:

- City Roots: Older low-income ethnic minorities, living in older homes and apartments.
- Low-Rise Living: The lowest income of any Prizm cluster; many are single parents who rent their homes, travel by bus, and read *Ebony*.
- Multi-Culti Ethnic: Hispanics with modest incomes, who shop at Marshall’s and read *Jet*.
- Urban Achievers: Young Hispanics, who watch BET and read *Latina*.
- Urban Elders: Elderly Hispanics who watch Spanish soaps and rarely eat out.

Compare the above to the five most common Prizm clusters in ZIP code 75230 in the northern suburbs of Dallas:

- Movers and Shakers: Wealthy, highly educated, suburban couples with two incomes.
- New Empty Nests: Older upper middle-class couples with grown children, an active lifestyle, and a preference for watching *60 Minutes*.
- Pools & Patios: High-income older couples who like to shop at Lord & Taylor and watch *Nova*.
- Upper Crust: The highest income of any Prizm cluster; many are empty nesters who shop at Saks and watch the Golf channel.
- Urban Achievers: A cluster shared with the south side of Dallas; two social areas that are seemingly very different can appear in different locations. ■

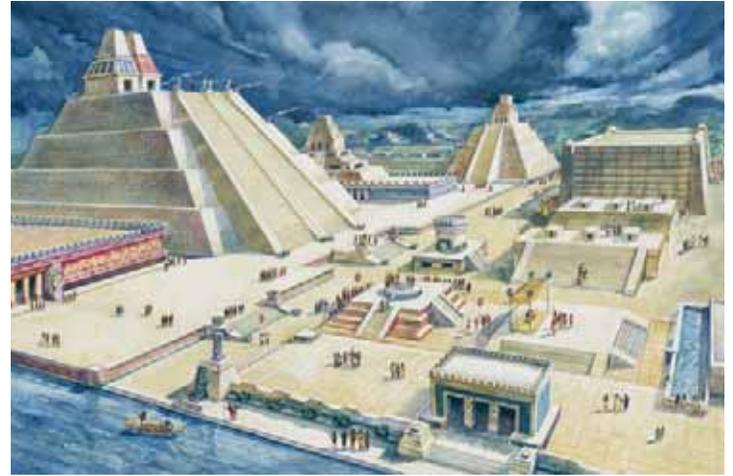
After the Spanish conquered Tenochtitlán in 1521 after a 2-year siege, they destroyed the city and dispersed or killed most of the inhabitants. The city, renamed Mexico City, was rebuilt around a main square, called the Zócalo, in the center of the island, on the site of the Aztecs’ sacred precinct. 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.

In other examples, Fès (Fez), Morocco, now 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 the existing city of Delhi, India. On the other hand, the French colonial city of Saigon, Vietnam (now Ho Chi Minh City), was built by completely demolishing the existing city without leaving a trace.

**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 13-14). The wealthy are also attracted to the center and spine because services such as water and electricity are more readily available and reliable.

In Mexico City, Emperor Maximilian (1864–1867) designed a 14-lane, tree-lined boulevard patterned after the Champs-Élysées 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. During the late nineteenth century, the wealthy built pretentious *palacios* (palaces) along it. Physical factors also influenced the movement of wealthy people toward the west along the Reforma. Because



**FIGURE 13-11** Precolonial city (left). The Aztec city of Tenochtitlán was built on an island in Lake Texcoco. (right) The center of the city was dominated by the Templo Mayor. The twin shrines on the top of the temple were dedicated to the Aztec God of rain and agriculture (in blue) and to the Aztec God of war (in red).



**FIGURE 13-12** Colonial city. The main square in downtown Mexico City, the Zócalo, was laid out by the Spanish. The Metropolitan Cathedral is in the center of this image, on the north side of the square. The National Palace on the west side, and City Hall on the south side. The site of the Templo Mayor is east of the cathedral and north of the palace.

elevation was higher than elsewhere in the city, sewage flowed eastward and northward away from Chapultepec. In 1903, most of Lake Texcoco was drained by a gigantic canal and tunnel project, allowing the city to expand to the north and east. The dried-up lakebed was a less desirable residential location than the west side because prevailing winds from the northeast

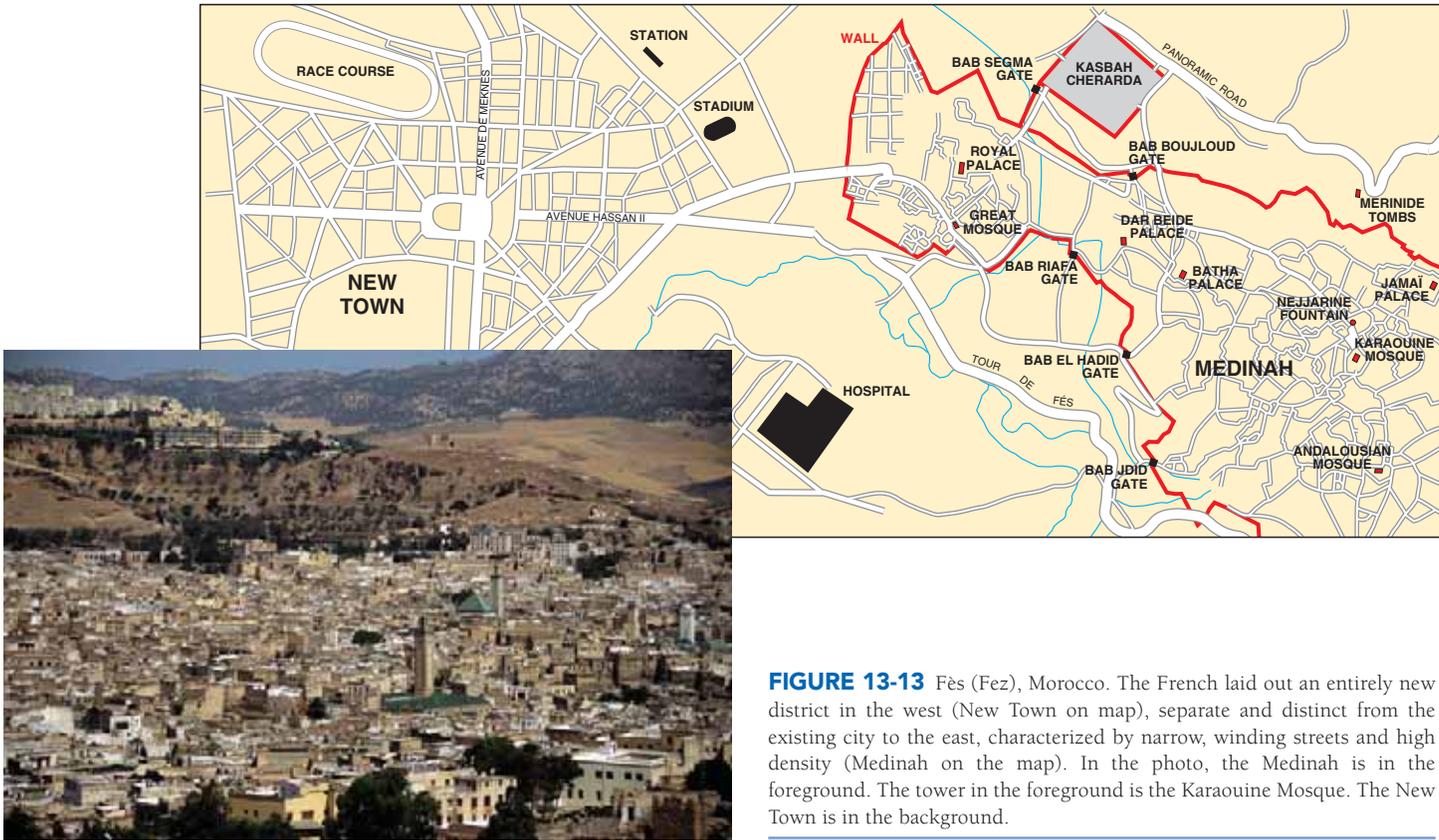
stirred up dust storms. As Mexico City's population grew rapidly during the twentieth century, the social patterns inherited from the nineteenth century were reinforced.

Similarly, in Rio de Janeiro, Brazil, wealthy people are clustered in the center of the city along the west shore of Guanabara Bay, as well as in a sector to the south, including Ipanema and Copacabana, which offers spectacular views of the Atlantic Ocean and access to beaches (Figure 13-15). The poor live in northern suburbs, where steep mountains restrict construction of other types of buildings.

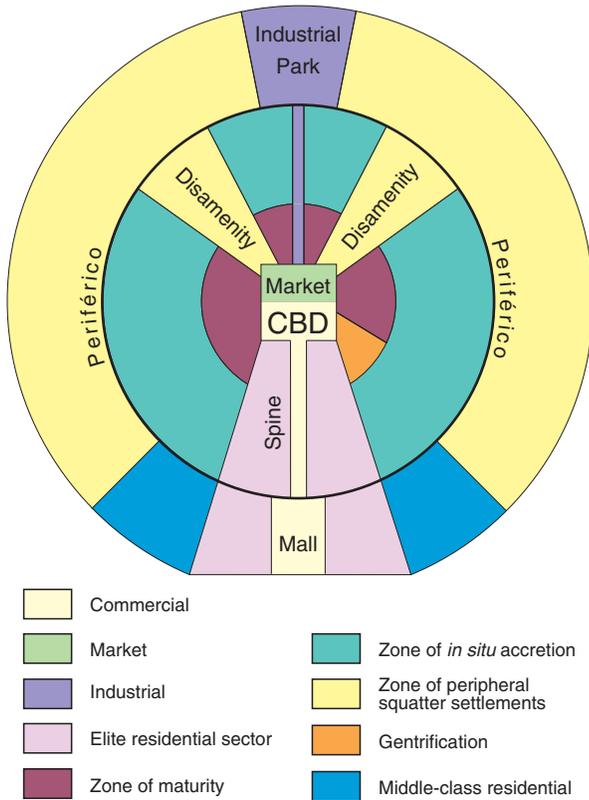
**SQUATTER SETTLEMENTS.** The LDCs are unable to house the rapidly growing number of poor people. Their cities are growing because of overall population increase and migration from rural areas for job opportunities. Because of the housing shortage, a large percentage of poor immigrants to urban areas in LDCs live in squatter settlements.

**Squatter settlements** are known by a variety of names, including *barriadas* and *favelas* in Latin America, *bidonvilles* in North Africa, *bastees* in India, *gecekondu* in Turkey, *kampongs* in Malaysia, and *barong-barong* in the Philippines. The United Nations estimated that 175 million people worldwide lived in

squatter settlements in 2003. Squatter settlements have few services, because neither the city nor the residents can afford them. The settlements generally lack schools, paved roads, telephones, or sewers. Latrines are usually designated by the settlement's leaders, and water is carried from a central well or dispensed from a truck. Electricity service may be stolen by



**FIGURE 13-13** Fès (Fez), Morocco. The French laid out an entirely new district in the west (New Town on map), separate and distinct from the existing city to the east, characterized by narrow, winding streets and high density (Medinah on the map). In the photo, the Medinah is in the foreground. The tower in the foreground is the Karaouine Mosque. The New Town is in the background.



**FIGURE 13-14** 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.)

running a wire from the nearest power line. In the absence of bus service or available private cars, a resident may have to walk 2 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.

### KEY ISSUE 3

## Why Do Inner Cities Face Distinctive Challenges?

- Inner-City Physical Issues
- Inner-City Social Issues
- Inner-City Economic Issues

Most of the land in urban settlements is devoted to housing, where people live. Within U.S. urban areas, the most fundamental spatial distinction is between inner-city