# 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 1 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.

KEY ISSUES

1 Why Do Services Cluster Downtown?
2 Where Are People Distributed Within Urban Areas?
3 Why Do Inner Cities Face Distinctive Challenges?
4 Why Do Suburbs Face Distinctive Challenges?
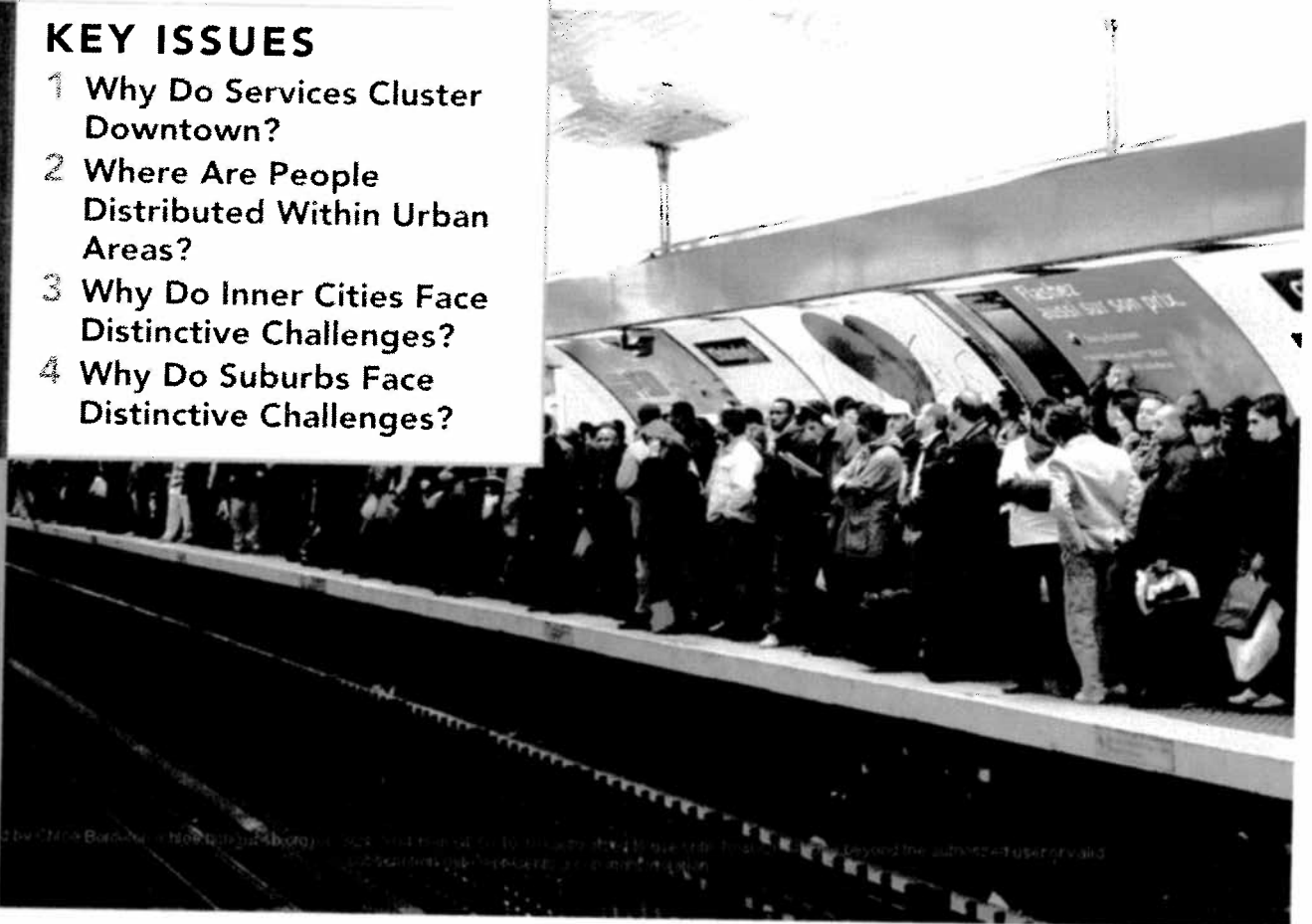
In a small town everything is within easy walking distance, but in a large city your destination is too far to walk. How would you get there without a car? Hitchhiking is dangerous, and you don't have enough money to hire a taxi. What about the bus? Where does the bus stop? What route does it follow? How much is the fare? Do you have the exact change or a prepaid fare card, 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.

Waiting for the Paris Metro

CASE STUDY / Two Families in New Jersey

Ruth Merritt lives in the city of Camden, New Jersey. She is a 24-year-old single parent with three children (ages 7, 2, and 1). Her income, derived from the community's program of child support, is $250 per month. That works out to $3,000 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 10 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 house is now worth a half-million dollars.

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*.

Chapter 12 and this chapter are both concerned with urban geography, but at different *scales*. The previous chapter examined the distribution of urban settlements at national and global scales. This chapter looks at *where* people and activities are distributed within urban *spaces*. Models have been developed to explain *why* differences occur within urban 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 *regions* of MDCs, 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.

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

KEY ISSUE 1
Why Do Services Cluster Downtown?

- CBD Land Uses
- Competition for Land in the CBD
- CBDs Outside North America

Downtown is the best-known and the most visually distinctive area of most cities. It is usually one of the oldest districts in a city, often the site of the original settlement. The downtowns of most North American cities have different features than those in the rest of the world. ∎

CBD Land Uses

Downtown is known to geographers by the more precise term **central business district (CBD)**. The CBD is compact—less than 1 percent of the urban land area—but contains a large percentage
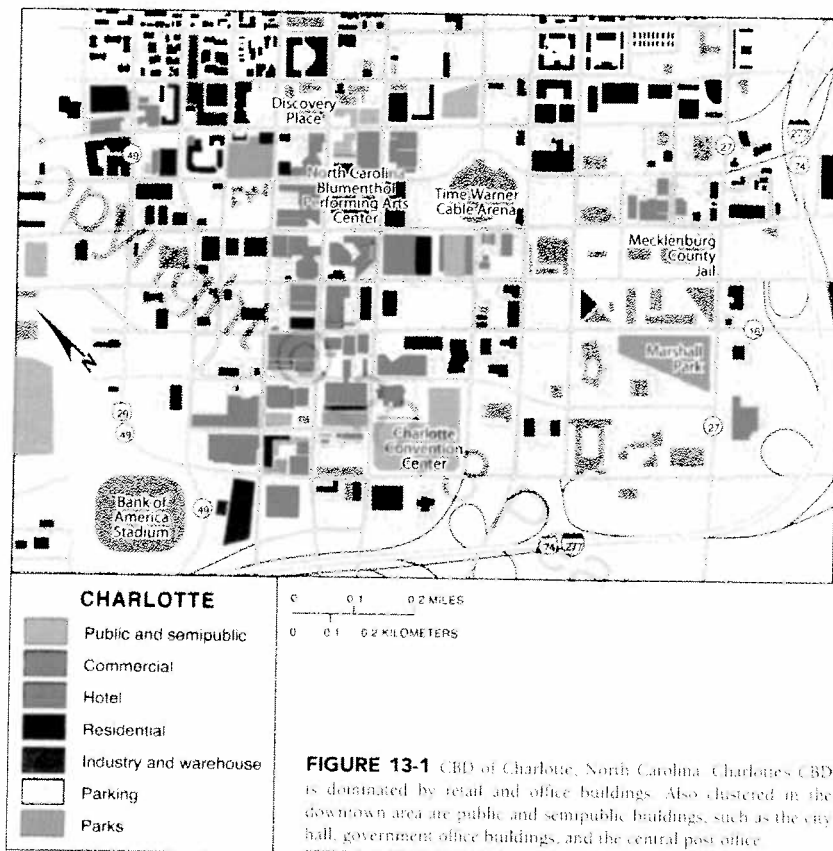
In recent years, however, many high-threshold shops such as large department stores have closed their downtown branches. CBDs that once boasted three or four stores now have none, or perhaps one struggling survivor. The customers for downtown department stores now consist of downtown office workers, inner-city residents, and tourists. Department stores with high thresholds are now more likely to be in suburban malls.

RETAILERS WITH A HIGH RANGE.
High-range retailers are often specialists, with customers who patronize them infrequently (Figure 13-3). These retailers once preferred CBD locations because their customers were scattered over a wide area. For example, a jewelry or clothing store attracted shoppers from all over the urban area, but each customer visited infrequently.

Like those with high thresholds, high-range retailers have moved with department stores to suburban locations. These retailers survive in some CBDs if they combine retailing with recreational activities. People are willing to make a special trip to a specific destination downtown for unusual shops in a dramatic setting, perhaps a central atrium with a fountain or a view of a harbor. New shopping areas that attract high-range retailers have been built in several North American CBDs:

- Boston: Faneuil Hall Marketplace, in renovated eighteenth-century buildings
- Baltimore: Harbor Place, built in the Inner Harbor, adjacent to waterfront museums, tourist attractions, hotels, and cultural facilities
- Philadelphia: Gallery at Market East, a suburban-style shopping center
- San Francisco Ferry Building: a gourmet food center where San Francisco Bay ferries dock

These downtown malls attract suburban shoppers as well as out-of-town tourists because in addition to shops they offer unique recreation and entertainment experiences.

Some CBDs have restored their food markets, with individual stalls operated by different merchants. They may have a high range because they attract customers who willingly travel far to find more exotic or higher-quality products. At the same time, inner-city residents may use these markets for their weekly grocery shopping.

RETAILERS SERVING DOWNTOWN WORKERS. A third type of retail activity in the center serves the many people

FIGURE 13-1 CBD of Charlotte, North Carolina. Charlotte's CBD is dominated by retail and office buildings. Also clustered in the downtown area are public and semipublic buildings, such as the city hall, government office buildings, and the central post office.

CHARLOTTE
- Public and semipublic
- Commercial
- Hotel
- Residential
- Industry and warehouse
- Parking
- Parks

of the shops, offices, and public institutions (Figure 13-1). Consumer and business services are attracted to the CBD because of its accessibility. The center is the easiest part of the city to reach from the rest of the region and is the focal point of the region's transportation network.

Retail Services in the CBD

In the past, three types of retail services clustered in the CBD because they required accessibility to everyone in the region—retailers with a high threshold, those with a long range, and those that served people who worked in the CBD. Changing shopping habits and residential patterns have reduced the importance of retail services in the CBD.

RETAILERS WITH A HIGH THRESHOLD. Retailers with high thresholds, such as department stores, traditionally preferred a CBD location in order to be accessible to many people (Figure 13-2). Large department stores in the CBD would cluster near one intersection, which was known as the "100 percent corner." Rents were highest there because this location had the highest accessibility for the most customers.

FIGURE 13-2 CBD retailer with high threshold. Shoppers flock to Macy's in Midtown Manhattan the day after Thanksgiving.

relationship of trust based on shared professional values.

A central location also helps businesses that employ workers from a variety of neighborhoods. Top executives may live in one neighborhood, junior executives in another, secretaries in another, and custodians in still another. Only a central location is readily accessible to all groups. Firms that need highly specialized employees are more likely to find them in the central area, perhaps currently working for another company downtown.

Competition for Land in the CBD

The center's accessibility produces extreme competition for the limited sites available. As a result, land values are very high in the CBD, and it is too expensive for some activities.

who work in the center and shop during lunch or working hours. These businesses sell office supplies, computers, and clothing, or offer shoe repair, rapid photocopying, dry cleaning, and so on. In contrast to the other two types of retailers, shops that appeal to nearby office workers are expanding in the CBD, in part because the number of downtown office workers has increased and in part because downtown offices require more services.

Patrons of downtown shops tend increasingly to be downtown employees who shop during the lunch hour. Thus, although the total volume of sales in downtown areas has been stable, the pattern of demand has changed. Large department stores have difficulty attracting their old customers, whereas smaller shops that cater to the special needs of the downtown labor force are expanding.

Business Services in the CBD

Offices cluster in the center for accessibility. People in such business services as advertising, banking, finance, journalism, and law particularly depend on proximity to professional colleagues. Lawyers, for example, choose locations near government offices and courts. Services such as temporary secretarial agencies and instant printers locate downtown to be near lawyers, forming a chain of interdependency that continues to draw offices to the center city.

Despite the diffusion of modern telecommunications, many professionals still exchange information with colleagues primarily through face-to-face contact. Financial analysts discuss attractive stocks or impending corporate takeovers. Lawyers meet to settle disputes out of court. Offices are centrally located to facilitate rapid communication of fast-breaking news through spatial proximity. Face-to-face contact also helps to establish a

High Land Costs

In a rural area a hectare of land might cost several thousand dollars. In a suburb it might run tens of thousands of dollars. In a large CBD like New York or London, if a hectare of land were even available, it would cost tens of millions of dollars. Tokyo's CBD contains some of Earth's most expensive land, around $15,000 per square meter ($60,000,000 per acre). If this page were a parcel of land in Tokyo, it would sell for $1,000. Before the 2008 recession, prices were even higher.

Tokyo's high prices result from a severe shortage of buildable land. Buildings in most areas are legally restricted to less than 10 meters in height (normally three stories) for fear of earthquakes, even though recent earthquakes have demonstrated that modern, well-built skyscrapers are safer than older three-story structures. Two distinctive characteristics of the CBD follow from the high land cost. First, land is used more intensively in the center than elsewhere in the city. Second, some activities are excluded from the center because of the high cost of space.

INTENSIVE LAND USE. The intensive demand for space has given the CBD a three-dimensional character, pushing it vertically. Compared to other parts of the city, the CBD uses more space below and above ground level.

A vast underground network exists beneath most central cities. The typical "underground city" includes multistory parking garages, loading docks for deliveries to offices and shops, and utility lines (water, sewer, phone, electric, and some heating). Typically, telephone, electric, and cable television wires run beneath the surface in central areas. Not enough space is available in the center for the large number of telephone poles that would be needed for such a dense network, and the wires are unsightly and hazardous. Subways run beneath the streets of

heating, and air-conditioning have helped solve these problems. Most North American and European cities enacted zoning ordinances early in the twentieth century in part to control the location and height of skyscrapers.

Skyscrapers are an interesting example of "vertical geography." The nature of an activity influences which floor it occupies in a typical high-rise:

- Retailers pay high rents for street-level space to entice customers.
- Professional offices, less dependent on walk-in trade, occupy the middle levels at lower rents.
- Apartments in the upper floors take advantage of lower noise levels and panoramic views.

The one large U.S. CBD without skyscrapers is Washington, D.C., where no building is allowed to be higher than the U.S. Capitol dome. Consequently, offices in downtown Washington rise no more than 13 stories. As a result, the typical Washington office building uses more horizontal space—land area—than in other cities. Thus the city's CBD spreads over a much wider area than those in comparable cities.

Activities Excluded from the CBD

High rents and land shortage discourage two principal activities in the CBD—industrial and residential.

LACK OF INDUSTRY IN THE CBD. Modern factories require large parcels of land to spread operations among one-story buildings. Suitable land is generally available in suburbs. In the past, inner-city factories and retail establishments relied on waterfront CBDs that were once lined with piers for cargo ships to load and unload and warehouses to store the goods. Today's large oceangoing vessels are unable to maneuver in the tight, shallow waters of the old CBD harbors. Consequently, port activities have moved to more modern facilities downstream.

Port cities have transformed their waterfronts from industry to commercial and recreational activities. Derelict warehouses and rotting piers have been replaced with new offices, shops, parks, and museums. As a result, CBD waterfronts have become major tourist attractions in a number of North American cities, including Boston, Toronto, Baltimore, and San Francisco, as well as in European cities such as Barcelona and London. The cities took the lead in clearing the sites and constructing new parks, docks, walkways, museums, and parking lots. They also have built large convention centers to house professional meetings and trade shows. Private developers have added hotels, restaurants, boutiques, and entertainment centers to accommodate tourists and conventioneers.

LACK OF RESIDENTS IN CBDs. Many people used to live downtown. Poorer people jammed into tiny, overcrowded apartments, and richer people built mansions downtown. In the twentieth century, most residents abandoned downtown living because of a combination of pull and push factors. They were pulled to suburbs that offered larger homes with private

FIGURE 13-3 CBD retailer with high range. Pike Place Market in downtown Seattle sells food at individually owned stalls.

larger CBDs. And cities such as Minneapolis, Montreal, and Toronto have built extensive pedestrian passages and shops beneath the center. These underground areas segregate pedestrians from motor vehicles and shield them from harsh winter weather.

SKYSCRAPERS. Demand for space in the CBD has also made high-rise structures economically feasible. Downtown skyscrapers give a city one of its most distinctive images and unifying symbols. Suburban houses, shopping malls, and factories look much the same from one city to another, but each city has a unique downtown skyline, resulting from the particular arrangement and architectural styles of its high-rise buildings.

The first skyscrapers were built in Chicago in the 1880s, made possible by two inventions—the elevator and iron-frame building construction. The first high-rises caused great inconvenience to neighboring structures because they blocked light and air movement. Artificial lighting, ventilation, central

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.

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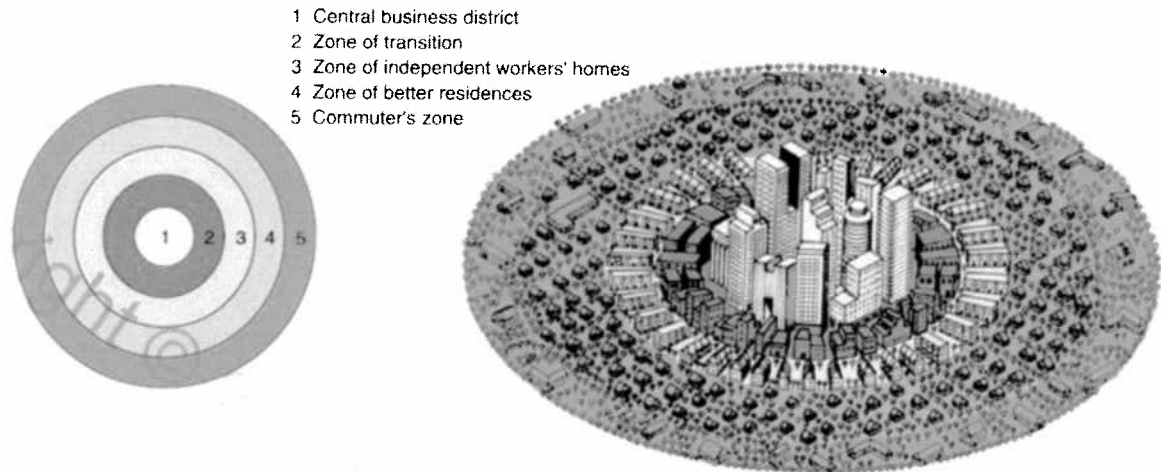
1 Central business district
2 Zone of transition
3 Zone of independent workers' homes
4 Zone of better residences
5 Commuter's zone

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

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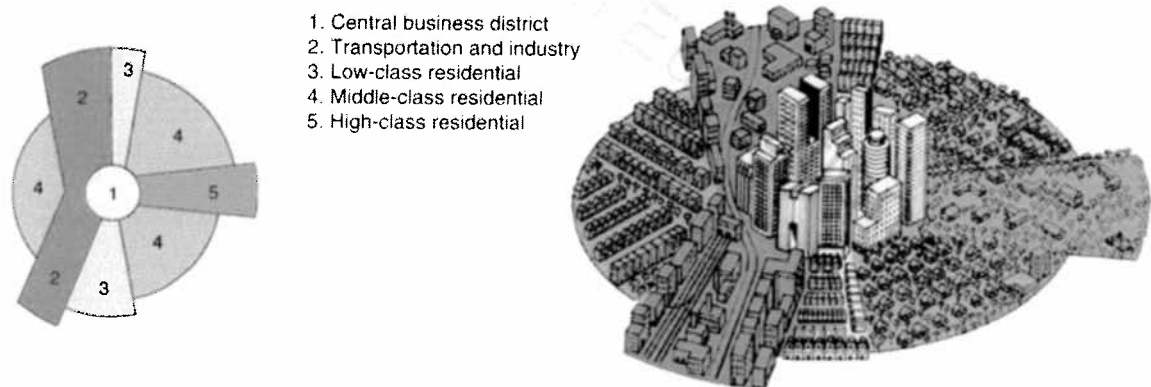5. High-class residential

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 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:

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

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.

- **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).
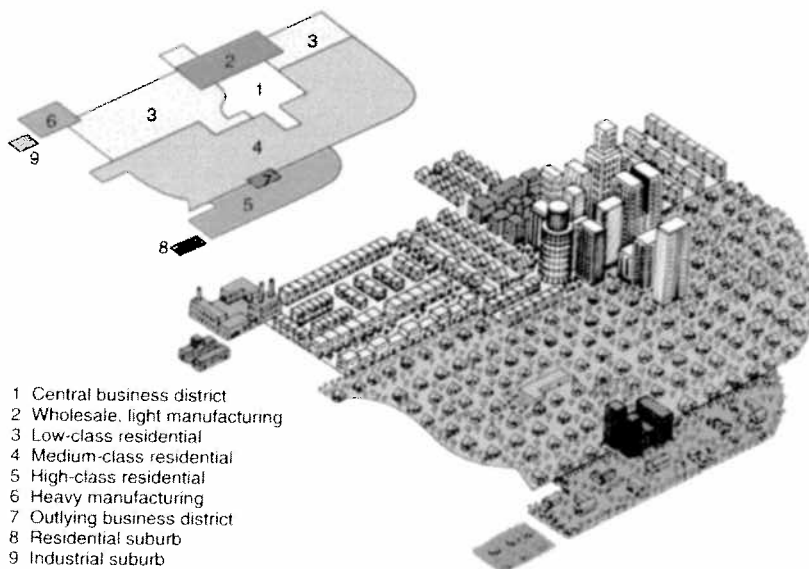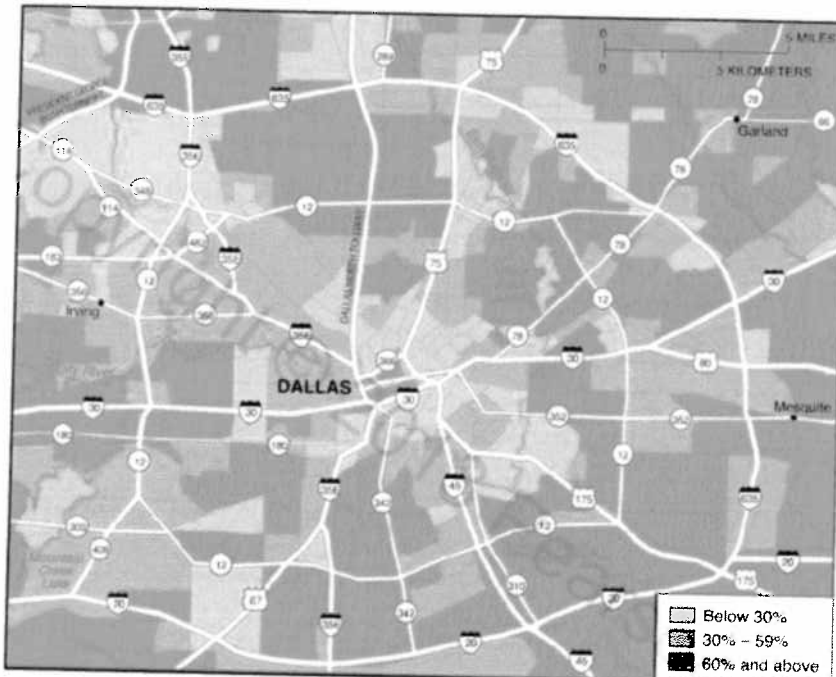
FIGURE 13-7 Example of concentric zone model in Dallas, the distribution of home owners. The percentage of households that own their home is greater in the outer rings of the city.
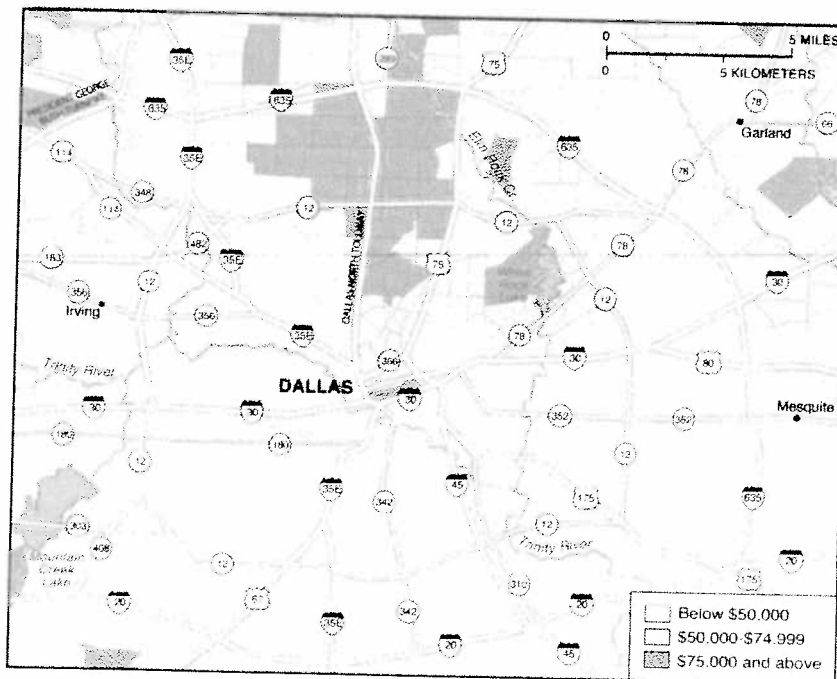
Legend:
- ☐ Below 30%
- ▨ 30% – 59%
- ■ 60% and above

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.

Legend:
- ☐ Below $50,000
- ☐ $50,000-$74,999
- ▨ $75,000 and above

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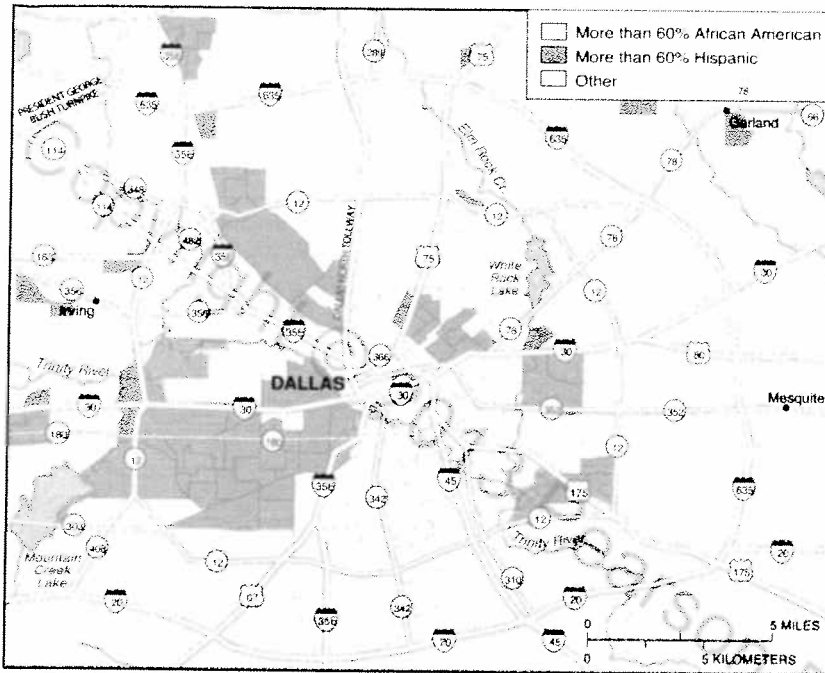
FIGURE 13-9 Example of multiple nuclei model in Dallas, the distribution of minorities. African Americans and Hispanics occupy nodes to the south and west of downtown, respectively.

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 Tenochtitlan—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
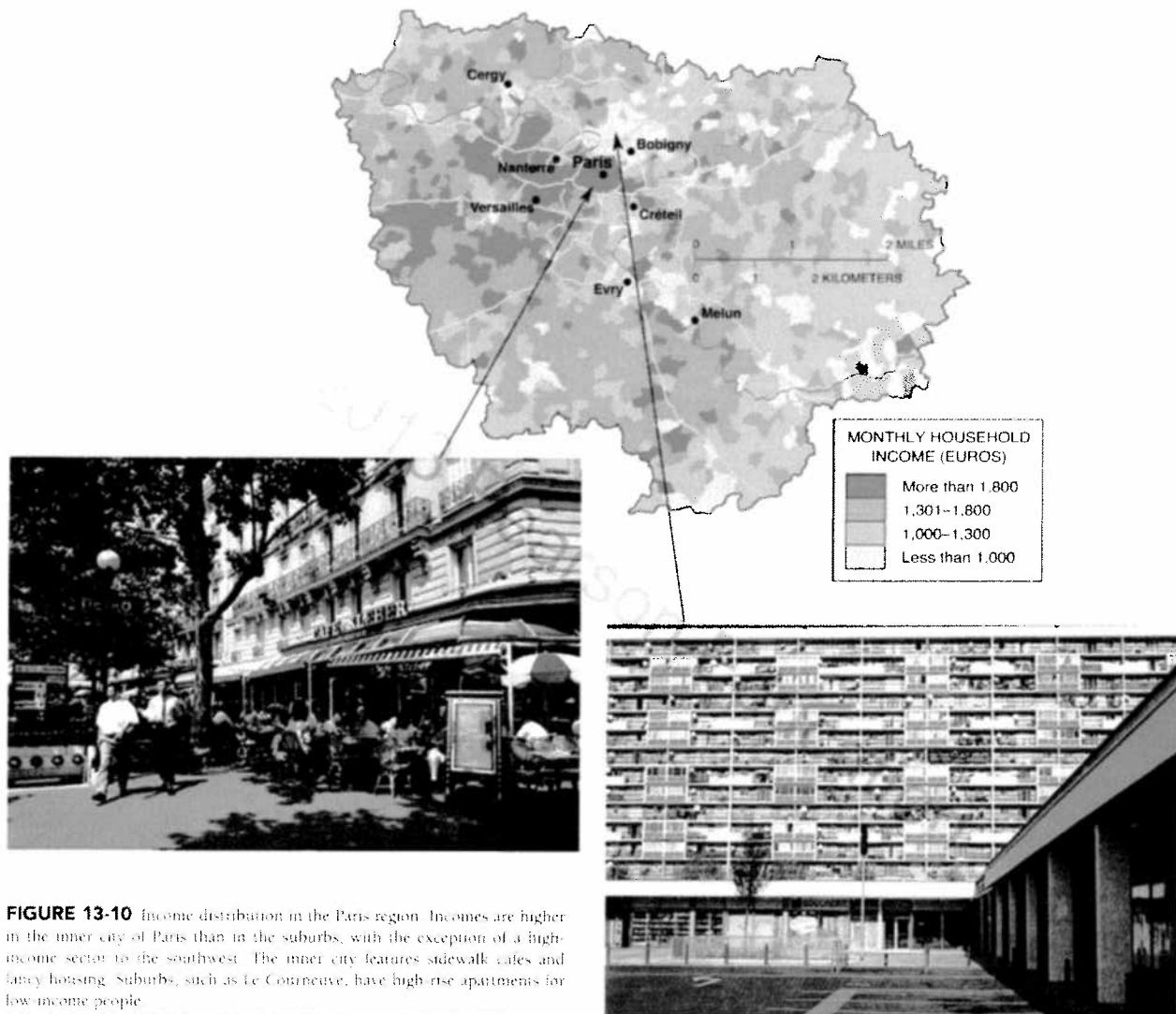
MONTHLY HOUSEHOLD
INCOME (EUROS)

More than 1,800
1,301–1,800
1,000–1,300
Less than 1,000

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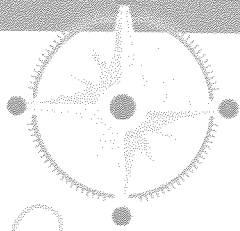
Marketing geographers identify sectors, rings, and nodes that come closest to matching customers preferred by a retailer. Companies use this information to understand, locate, and reach their customers better and to determine where to put new stores and where advertising should appear.

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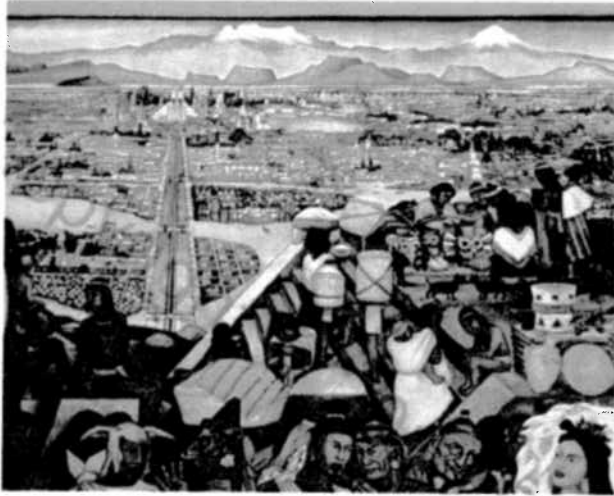
FIGURE 13-11 Precolonial city deity. The Aztec city of Tenochtitlán was built on an island in Lake Texcoco (right). The center of the city was dominated by the Templo Mayor. The twin shrines on the top of the temple were dedicated to the Aztec God of rain and agriculture (in blue) and to the Aztec God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

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

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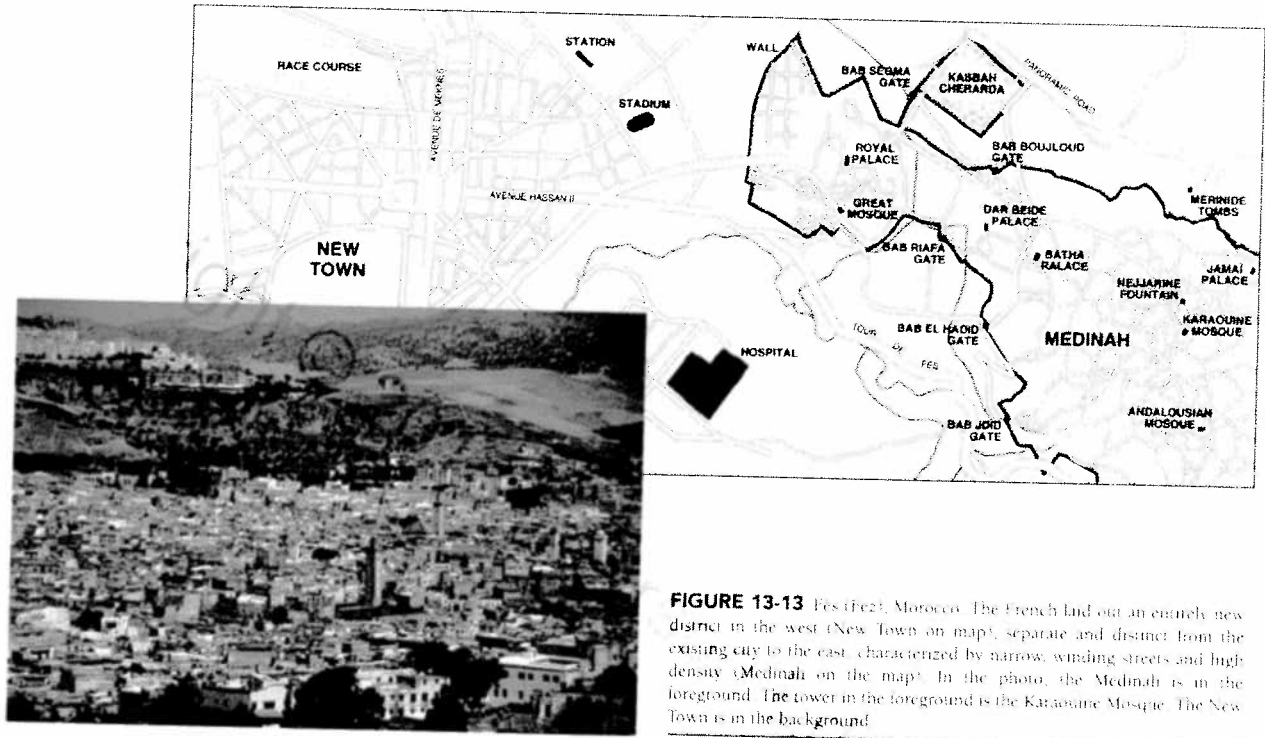
FIGURE 13-13 Fes (Fez), Morocco. The French laid out an entirely new district in the west (New Town on map), separate and distinct from the existing city to the east, characterized by narrow, winding streets and high density (Medinah on the map). In the photo, the Medinah is in the foreground. The tower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

Commercial

Market

Industrial

Elite residential sector

Zone of maturity

Zone of *in situ* accretion

Zone of peripheral squatter settlements

Gentrification

Middle-class residential
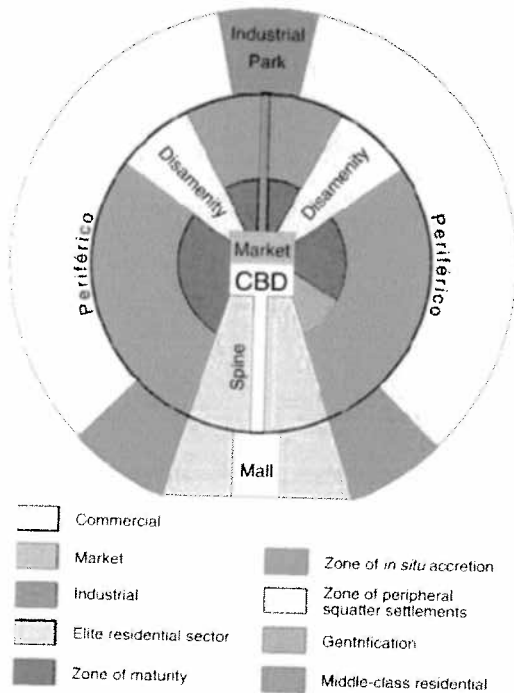
FIGURE 13-14 Model of a Latin American city. Wealthy people live in the inner city and a sector extending along a commercial spine. (Adapted from Larry R. Ford, "A New and Improved Model of Latin American City Structure," *Geographical Review* 86 (1996): 438. Used by permission of the publisher.)

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

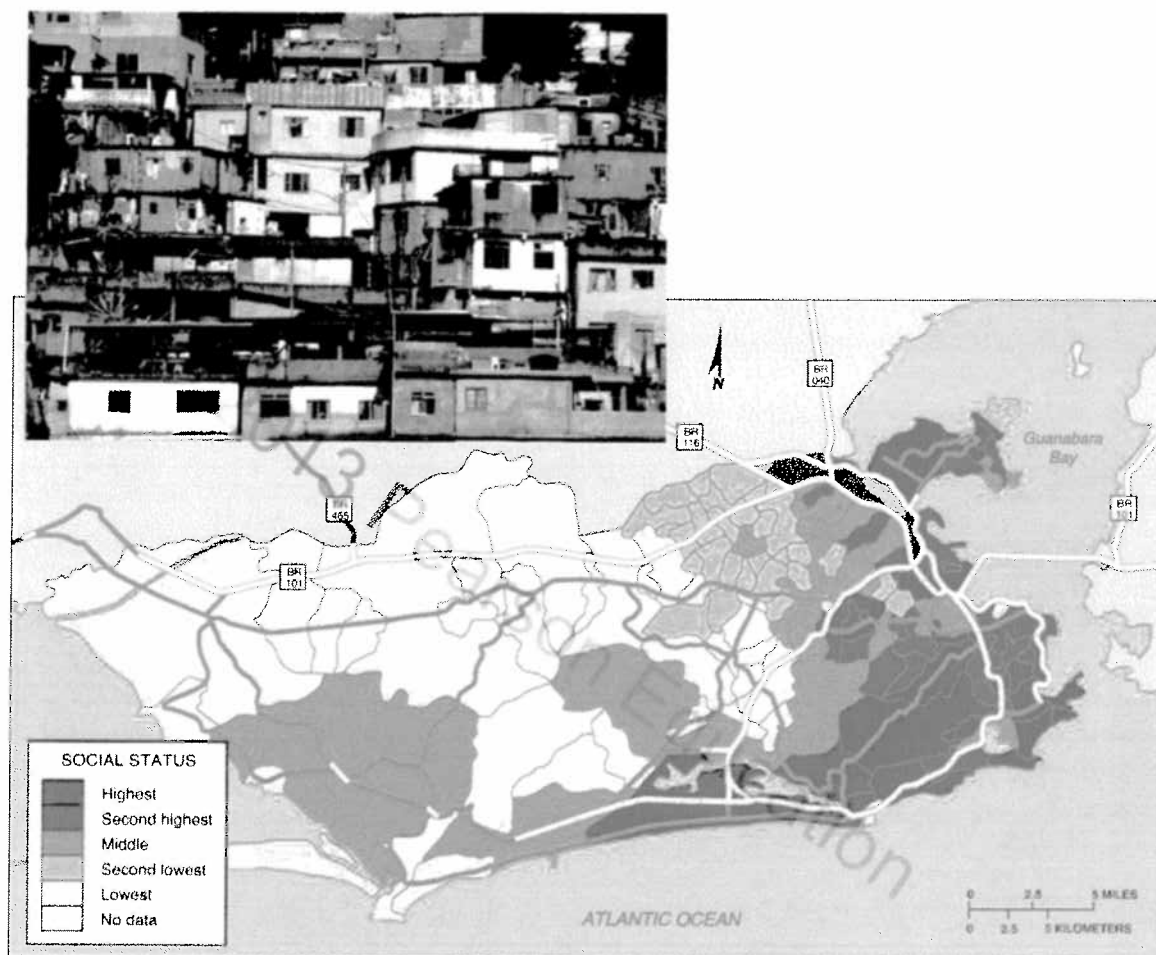**FIGURE 13-15** (top) Favela in Rio de Janeiro, Brazil. A large percentage of people in the rapidly growing cities of less developed countries live in squatter settlements. In Rio, most of the squatter settlements, known as favelas, are on hillsides on the edge of the city. (bottom) Rio's highest income areas are near the CBD and in sectors along the ocean.

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 who face a variety of physical, social, and economic problems very different from those faced by suburban residents. ■

Inner-City Physical Issues

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**.

Like a car, clothing, 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 costs 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 U.S. 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 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 low-income 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 U.S. 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.

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.

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, and the federal government pays the cost of construction and the maintenance, repair, and management that are not covered by rent. In the United States, public housing accounts for only 1 percent of all dwellings, compared to 14 percent in the United Kingdom. Elsewhere in Western Europe, governments typically subsidize construction cost and rent for a large percentage of the privately built housing.

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 were responsible for the problem because too many low-income families were concentrated into a high-density environment. Because of poor conditions, high-rise public-housing projects have been demolished in many U.S. and European cities.

The U.S. government has stopped funding construction of new public housing. A federal program known as Hope VI supports renovation of older public housing, and the Housing Choice Voucher Program helps low-income households pay their rent in private housing. With the overall level of funding much lower, the supply of public housing and other government-subsidized housing in the United States diminished by approximately 1 million units between 1980 and 2000. But during the same period, the number of households that needed low-rent dwellings increased by more than 2 million.

In Britain, the supply of public housing, known as social housing (formerly council estates), has also declined because the government has forced local authorities to sell some of the dwellings to the residents. The British also 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.

RENOVATED HOUSING. An alternative to demolishing deteriorated inner-city houses is to renovate them. In some cases, nonprofit organizations renovate houses 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 because the 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.

In cities where gentrification is especially strong, ethnic patterns are being altered. In Chicago, for example, the white population is increasing in inner-city neighborhoods and declining in the outer-city neighborhoods (Figure 13-16). Conversely, the population of African Americans and Hispanics is declining in the inner city and increasing in neighborhoods farther from the center.

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 people with lower incomes, 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. U.S. law requires that they be reimbursed both for moving expenses and for rent increases over a 4-year period. Western European countries have similar laws. Cities are also renovating 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 Issues

Beyond the pockets of gentrified neighborhoods, inner cities contain primarily people with low incomes 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 are frequently 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.

The children of the underclass attend deteriorated schools, and affordable housing is increasingly difficult to find. Their neighborhoods lack adequate police and fire protection, shops, hospitals, clinics, or other health-care facilities. 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
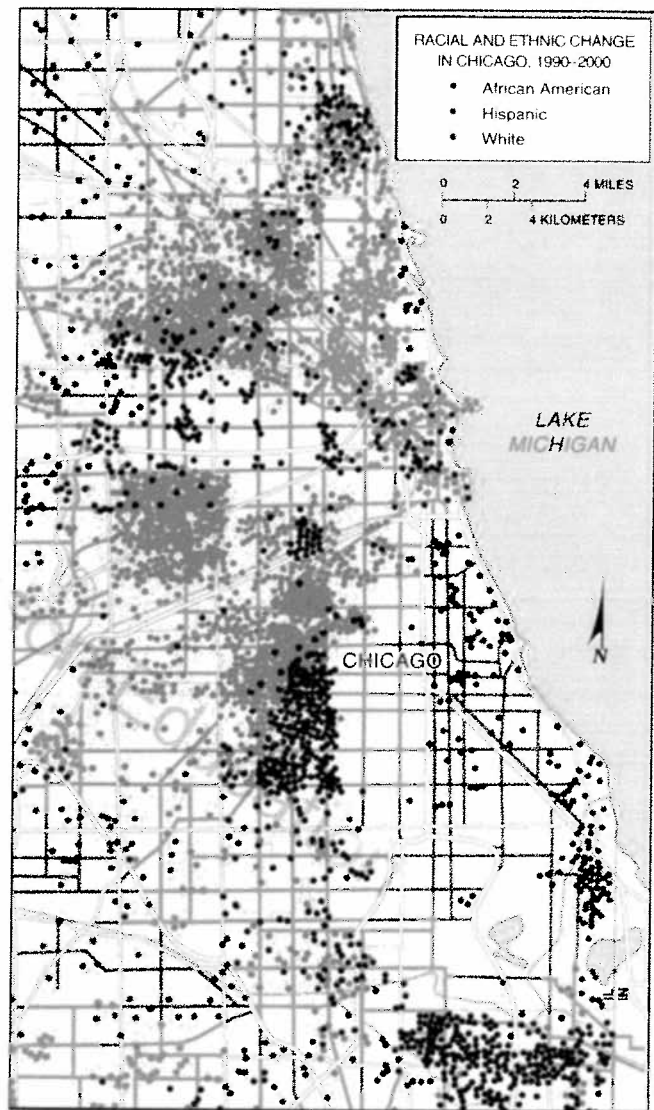
FIGURE 13-16 Racial change in Chicago. Dots represent where the population of each ethnicity increased between 1980 and 2000. Note growth of the white population in the inner city and North Side, while the African American and Hispanic populations have been increasing in the outer city and inner suburbs.

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 electronics. Meanwhile, inner-city residents do not even have access to the remaining low-skilled jobs, such as custodians and fast-food servers, because these jobs are increasingly in the distant suburbs.

Some of the underclass are homeless. Accurate counts are impossible to obtain, but several surveys estimate that on a given night nearly 1 million Americans sleep in doorways, on heated street grates, and in bus and subway stations. Over the
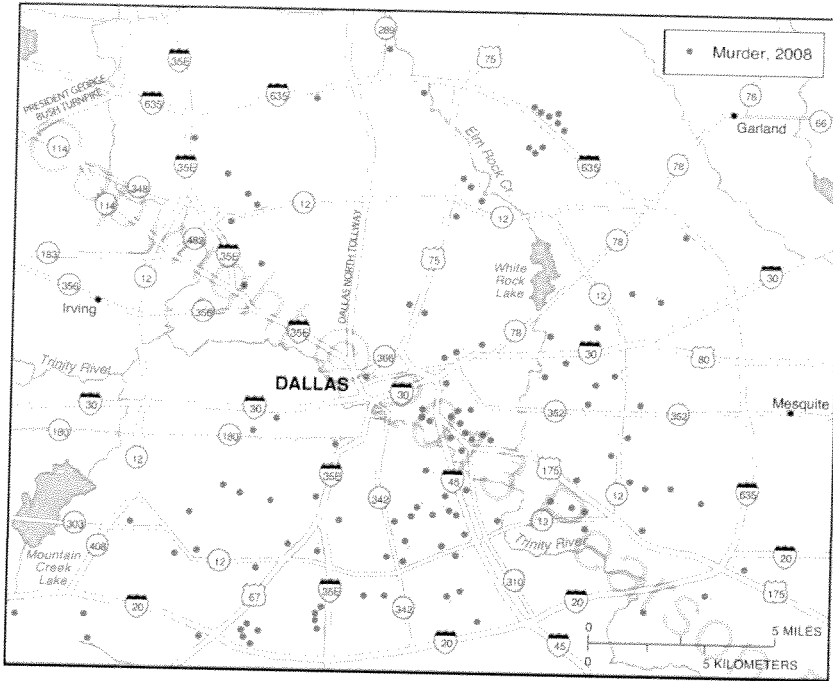
FIGURE 13-17 Inner-city social issues: Dallas murders 2008. Most murders were on the south and east sides of the city. Compare to Figures 13-7, 13-8, and 13-9.

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. Compare Figure 13-17 with Figures 13-7, 13-8, and 13-9. Most of the murders in Dallas in 2008 occurred in low-income minority areas, and most victims, as well as those arrested for murder in Dallas, were minorities.

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

course of a year, the number of Americans who are homeless at some time 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, job loss, or mental illness. Single men constitute two-fifths of the homeless, and the remainder are women and children. Homelessness is also a serious problem in LDCs. Several hundred thousand people in Kolkata (Calcutta), India, sleep, bathe, and eat on sidewalks and traffic islands.

Culture of Poverty

Inner-city residents are trapped as a permanent underclass because they live in a culture of poverty. Unwed mothers give birth to three-fourths of the babies in U.S. inner-city neighborhoods, and three-fourths 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.

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

Inner-City Economic Issues

The concentration of low-income residents in inner-city neighborhoods of central cities has produced financial problems. The severe recession in recent years has aggravated those problems.

Eroding Tax Base

Low-income inner-city residents require public services, but they can pay very little of the taxes necessary to support those 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 for closing the gap between the cost of services and the funding available from taxes:

- **Reduce Services.** For example, close libraries, eliminate bus routes, collect trash less frequently, delay 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.

• **Raise Tax Revenues.** For example, provide tax breaks for downtown offices, luxury hotels, restaurants, and shops. Even with generous subsidies, these businesses pay more taxes than the buildings demolished to make way for them, and they provide minimum-wage personal-service jobs for low-income inner-city residents. But 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.

During the mid-twentieth century, inner-city fiscal problems were alleviated by increasing contributions from the federal government. 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. When adjusted for inflation, federal aid to U.S. cities has declined by two-thirds since the 1980s. To offset a portion of these lost federal funds, some state governments increased financial assistance to cities.

Impact of the Recession

One of the principal causes of the severe recession that began in 2008 was a collapse in the housing market, primarily in the inner city (Figure 13-18). To purchase a house, most people borrow money through a mortgage, which is repaid in monthly installments over many years. In the years leading up to the recession, financial institutions sharply increased the number of loans to low-income inner-city households buying their first homes. Despite having poor credit histories, first-time home buyers were approved for mortgages without background checks. These were known as subprime mortgages.

Financial institutions around the world were eager to invest in housing in the United States. Investing in housing was viewed as providing a higher rate of return at a lower risk than other investment options. Investors reasoned that their loans were safe: House prices had increased rapidly for many years, so even if a few home owners defaulted on their mortgages, investors would still recoup their investment. Inner-city residents were especially targeted for subprime mortgages. As the concentric zone model shows (Figures 13-4 and Figure 13-7), inner-city residents are more likely to be renters and therefore represent the best opportunity for financial institutions to increase the number of home owners.

When people are unable to repay their loans, lenders can take over the property in what is called a foreclosure. In the first year of the recession, 10 percent of all Americans with mortgages were behind in their mortgage payments or already in foreclosure. Compounding the problem, house prices have fallen in the United States and other MDCs since their peak in 2006. With falling house prices, houses are worth less than in earlier years. In many cases, the amount of the mortgage exceeded the value of the house once prices had fallen.
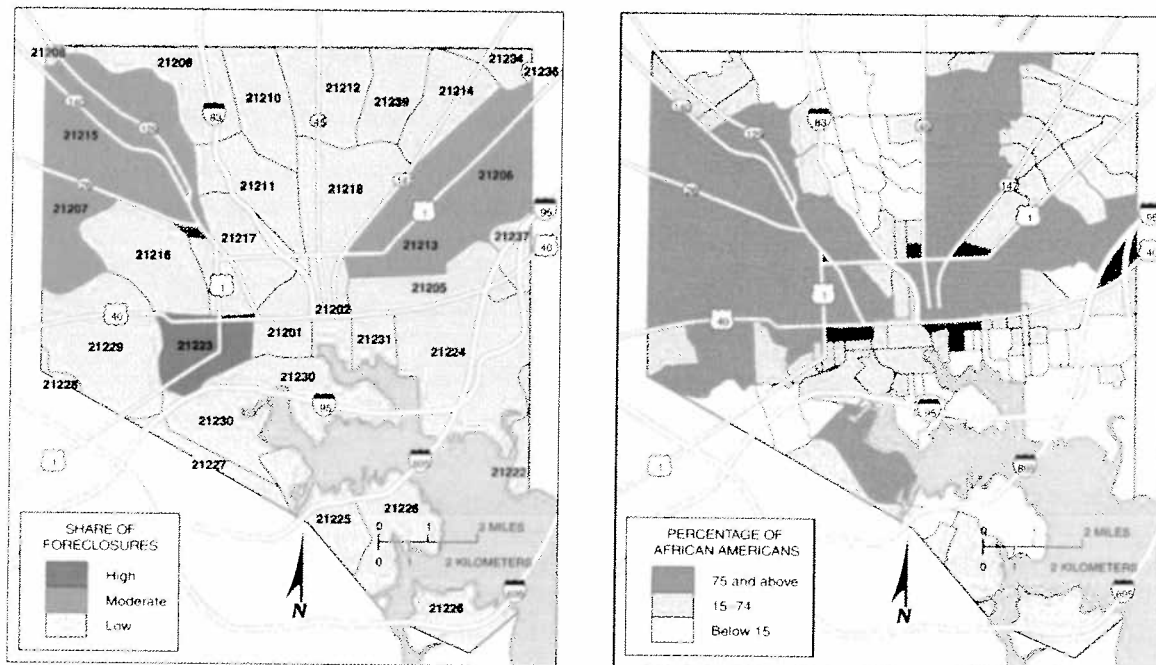

FIGURE 13-18 Foreclosures in Baltimore. Foreclosures in Baltimore are clustered in the inner city and in a sector to the northwest where the African American population has increased in recent years (see Figure 7-11).

KEY ISSUE 4

Why Do Suburbs Face Distinctive Challenges?

- Urban Expansion
- The Peripheral Model
- Suburban Segregation
- Transportation and Suburbanization

In 1950, only 20 percent of Americans lived in suburbs compared to 40 percent in cities and 40 percent in small towns and rural areas. In 2000, after a half-century of rapid suburban growth, 50 percent of Americans lived in suburbs compared to only 30 percent in cities and 20 percent in small towns and rural areas. ■

Urban Expansion

Until recently in the United States, as cities grew, they expanded by adding peripheral land. Now cities are surrounded by a collection of suburban jurisdictions whose residents prefer to remain legally independent of the large city.

Annexation

The process of legally adding land area to a city is **annexation**. Rules concerning annexation vary among states. Normally, land can be annexed to 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, as U.S. cities grew rapidly in the nineteenth century, 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 13-19).

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. Originally, some of these peripheral jurisdictions were small, isolated towns that had a tradition of independent local government 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.

Defining Urban Settlements

Instead of annexing peripheral areas, cities now are surrounded by suburbs. As a result, several definitions have been created to characterize cities and their suburbs:

- City: a legal entity
- Urbanized area: a continuously built-up area
- Metropolitan area: a functional area

FIGURE 13-19 Annexation in 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 metropolitan statistical area.

THE CITY. The term **city** defines an urban settlement that has been legally incorporated into an independent, self-governing unit (Figure 13-20). In the United States, a city surrounded by suburbs is sometimes called a **central city**.

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.

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.

URBANIZED AREA. In the United States, the central city and the surrounding built-up suburbs are called an **urbanized area**. More precisely, an urbanized area consists of a central city
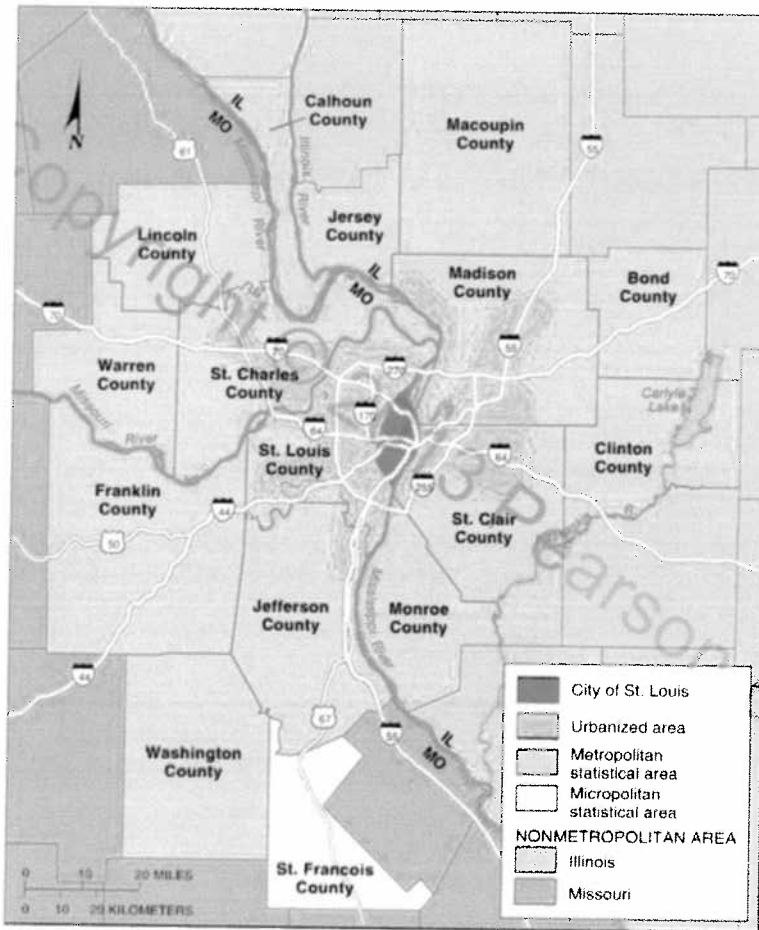
FIGURE 13-20 City, urbanized area, and metropolitan statistical area of St. Louis surrounding the city of St. Louis is an urbanized area that spreads westward into St. Louis County and eastward across the Mississippi River into Illinois. The St. Louis metropolitan statistical area includes seven Missouri counties and eight in Illinois, as well as the city of St. Louis. The St. Louis-St. Charles-Farmington combined statistical area includes the St. Louis MSA and the Farmington micropolitan statistical area (Farmington is the county seat and largest city in St. Francois County).

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 lives 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 concept of 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 sports teams. Therefore, we need another definition of urban settlement to account for its more extensive zone of influence.

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:

- An urbanized area with a population of at least 50,000
- The county within which the city is located
- 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.

The census designated 366 MSAs as of 2009, encompassing 84 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 Smoky Mountains 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 (μSAs)**. 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 574 micropolitan statistical areas as of 2008, for the most part found around southern and western communities previously considered rural in character. About 10 percent of Americans live in a micropolitan statistical area. The 366 MSAs and 574 μSAs together are known as **core based statistical areas (CBSAs)**.

Recognizing that many MSAs and μSAs have close ties, the census has combined some of them into 124 **combined statistical areas (CSAs)**. A CSA is defined as two or more contiguous CBSAs tied together by commuting patterns. The 124 CSAs plus the remaining 187 MSAs and 406 μSAs not combined into CSAs together are known as **primary census statistical areas (PCSAs)**.

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 the building of 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. 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 2 counties, 2 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.

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:

- **Consolidations of City and County Governments.** Examples include Indianapolis and Miami. 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 those of the county.

- **Federations.** Examples include Toronto and other large Canadian cities. Toronto's metropolitan government was created in 1953 through federation of 13 municipalities. A two-tier system of government existed until 1998, when the municipalities were amalgamated into a single government.

Overlapping Metropolitan Areas

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

FIGURE 13-21 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.

1. Central City
2. Suburban Residential Area
3. Shopping Mall
4. Industrial District
5. Office Park
6. Service Center
7. Airport Complex
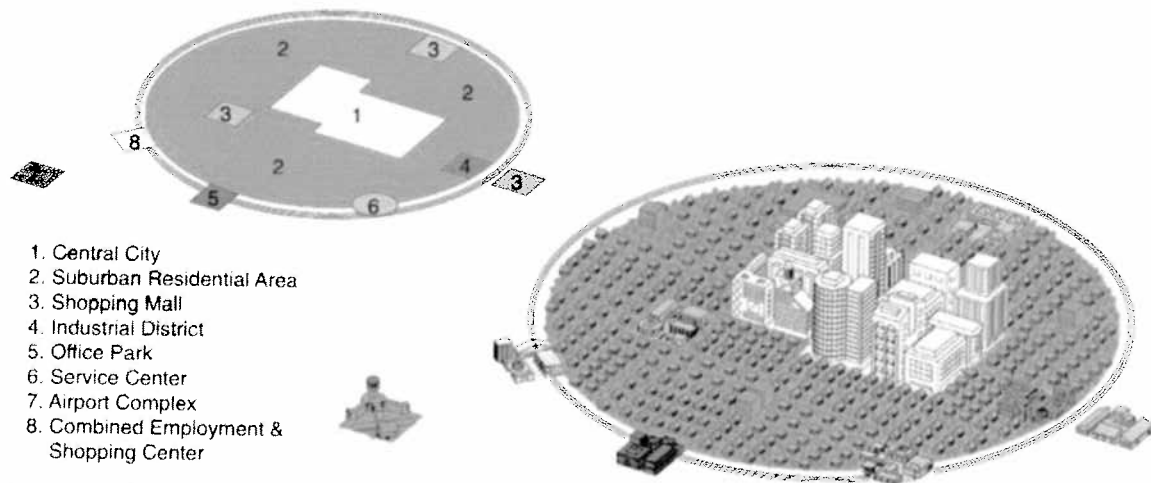8. Combined Employment & Shopping Center

FIGURE 13-22 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 (1997), p. 17. © V. H. Winston & Son, Inc., 360 South Ocean Blvd., Palm Beach, FL 33480. All rights reserved.)

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 13-21).

Other continuous urban complexes exist in the United States—the southern Great Lakes between Chicago and 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. Once considered two separate areas, Washington and Baltimore were combined into a single MSA after the 1990 census. Washingtonians visit the Inner Harbor in downtown Baltimore, and Baltimoreans attend major-league hockey and basketball games in downtown Washington. However, combining them into one MSA did not do justice to the distinctive character of the two cities, so the Census Bureau again divided them into two separate MSAs after the 2000 census but grouped them into one combined statistical area.

The Peripheral Model

North American urban areas follow what Chauncey Harris (creator of the multiple nuclei model) called 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 beltway or ring road (Figure 13-22). 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 (Figure 13-23). 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, semidetached houses, and individual houses on small lots, at a density of about 10 houses per hectare (4 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 1 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

PERSONS PER SQUARE MILE

- 15,000 and above
- 10,000-14,999
- 5,000-9,999
- Below 5,000
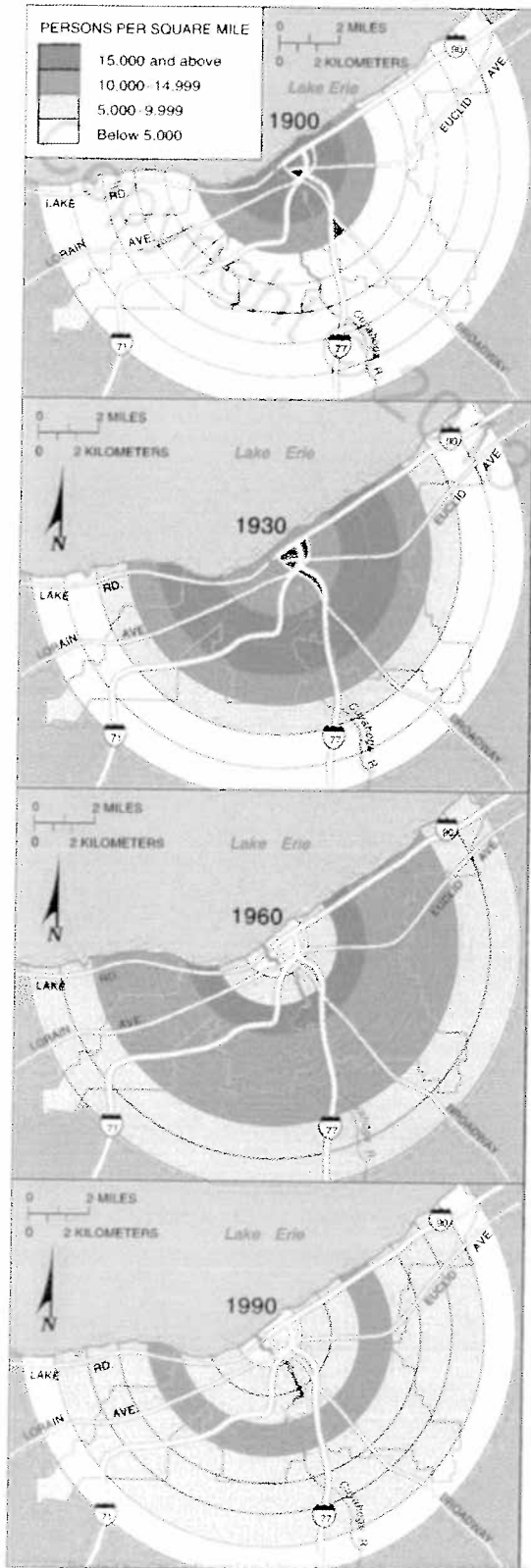
city increases. Two changes have affected the density gradient in recent years:

- **Fewer People Living in the Center.** The density gradient thus has a gap in the center, where few live.
- **Fewer Differences in Density 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 town-house projects and diffusion of suburbs across a larger area.

The result of the two changes is to flatten the density gradient and reduce the extremes of density between 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 (Figure 13-24). Sprawl is also fostered by the desire of many families to own large tracts of land.

As long as demand for single-family detached houses remains high, land on the fringe of urbanized areas will be converted from open space to residential land use. 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 peripheries of U.S. cities therefore look 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 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 motor vehicles are required for most trips.

FIGURE 13-23 Density gradient in Cleveland. In 1900 the population was highly clustered in and near the central business district (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.)
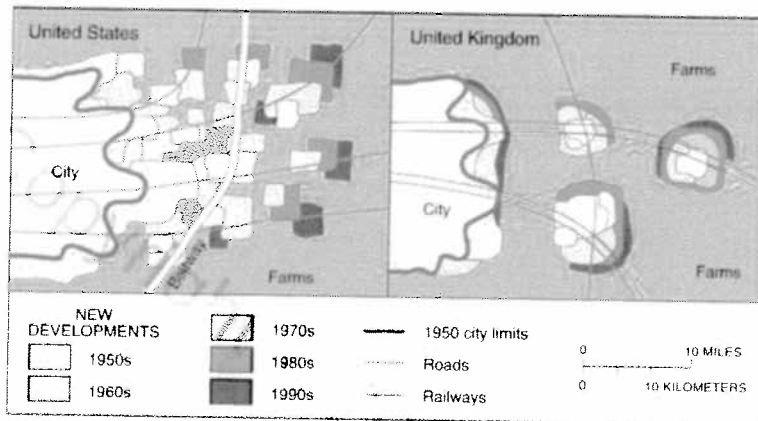
FIGURE 13-24 Suburban development patterns in the United Kingdom and the United States. The United States has much more sprawl than the United Kingdom. In the United Kingdom, new housing is more likely to be concentrated in new towns or planned extensions of existing small towns, whereas in the United States growth occurs in discontinuous developments.

The supply of land for the 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. However, restriction of the supply of land on the urban periphery has driven up house prices in Europe.

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. Legislation and regulations to limit suburban sprawl and preserve farmland has been called **smart growth**. 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. 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.

Suburban Segregation

Public opinion polls in the United States show people's strong desire for suburban living. In most polls, more than 90 percent of respondents prefer the suburbs to the inner city. It is no surprise then that the suburban population has grown much faster than the overall population in the United States.

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 other MDCs, more families were able to afford to buy suburban homes.

The modern residential suburb is segregated, and in two ways:

* **Segregated Social Classes.** 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.

* **Segregated Land Uses.** Residents are separated from commercial and manufacturing activities that are confined to compact, distinct areas.

Residential Segregation

The homogeneous suburb was a twentieth-century phenomenon. Before then, activities and classes in a city were more likely to be separated vertically rather than horizontally. In a typical urban building, shops were on the street level, with the shop owner 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. Wealthy 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 the 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 people and minorities 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 those with lower incomes and minorities 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.

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 (Figure 13-25). 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. Thus, the inner suburbs are unable to generate revenue to provide for the needs of a poorer population.

Suburbanization of Businesses

Businesses have moved to suburbs. Manufacturers have selected peripheral locations because land costs are lower. Service providers have moved to the suburbs because most of their customers are there.

SUBURBANIZATION OF RETAILING. Suburban residential growth has fostered change in traditional retailing patterns (Figure 13-26). Historically, urban residents bought food and

STRESSED SCHOOL DISTRICTS IN CINCINNATI METROPOLITAN AREA

- Low spending & high cost
- Low spending and low cost
- Moderate spending & high cost
- Moderate spending and low cost
- High spending & high cost
- High spending and low cost

FIGURE 13-25 Suburban stress. In the Cincinnati MSA, the school districts considered high stress are mostly in the suburbs. A high-cost school district has either a rapidly growing or declining enrollment, or else a large percentage of students eligible for a free lunch program because of low income.

other daily necessities at small neighborhood shops in the midst of housing areas and shopped in the CBD for other products. But since the end of World War II, downtown sales have not increased, whereas suburban sales have risen at an annual rate of 5 percent. Downtown sales have stagnated because suburban residents who live far from the CBD won't make the long journey there. At the same time, small corner shops do not exist in the midst of newer residential suburbs. The low density of residential construction discourages people from walking to stores, and restrictive zoning practices often exclude shops from residential areas.

Instead, retailing has been increasingly concentrated in planned suburban shopping malls of varying sizes. Corner shops have been replaced by supermarkets in small shopping centers. Larger malls contain department stores and specialty shops traditionally reserved for the CBD. Generous parking lots surround the stores. A shopping mall is built by a developer, who buys the land, builds the structures, and leases space to individual merchants. Typically, a merchant's rent is a percentage of sales revenue.

Shopping malls require as many as 40 hectares (100 acres) of land and are frequently near key road junctions, such as the interchange of two interstate highways. Some shopping malls are elaborate multilevel structures exceeding 100,000 square meters (1 million square feet), with more than 100 stores arranged along covered walkways. The key to a successful large shopping mall is the inclusion of one or more anchors, usually large department stores. Most consumers go to a mall to shop at an anchor and, while there, patronize the smaller shops. In smaller shopping centers, the anchor is frequently a supermarket or discount store.

Malls have become centers for activities in suburban areas that lack other types of community facilities. Retired people go to malls for safe, vigorous walking exercise, or they sit on a bench to watch the passing scene. Teenagers arrive after school to meet their friends. Concerts and exhibitions are frequently set up in malls.

SUBURBANIZATION OF FACTORIES AND OFFICES. Factories and warehouses have migrated to suburbia for more space, cheaper land, and better truck access. Modern factories and warehouses demand more land because they spread their conveyor belts, forklift trucks, loading docks, and machinery over a single level for efficient operation. Suburban locations also facilitate truck shipments by providing good access to main highways and no central city traffic congestion, important because industries increasingly receive inputs and distribute products by truck.

Offices that do not require face-to-face contact are increasingly moving to suburbs where rents are lower than in the CBD. Executives can drive on uncongested roads to their offices from their homes in nearby suburbs and park their cars without charge. For other employees, though, suburban office locations can pose a hardship. Secretaries, custodians, and other lower-status office workers may not have cars, and public transportation may not serve the site. Other office workers might miss the stimulation and animation of a central location, particularly at lunchtime.
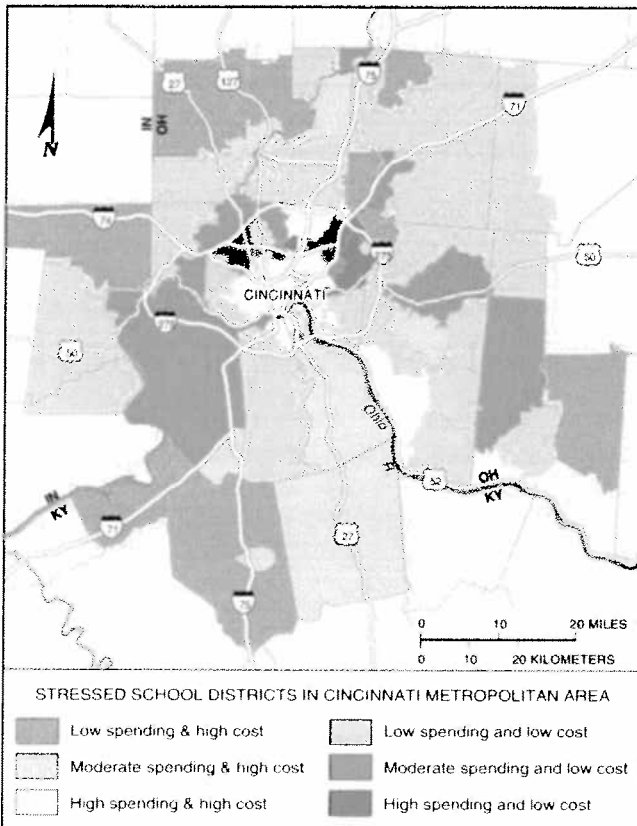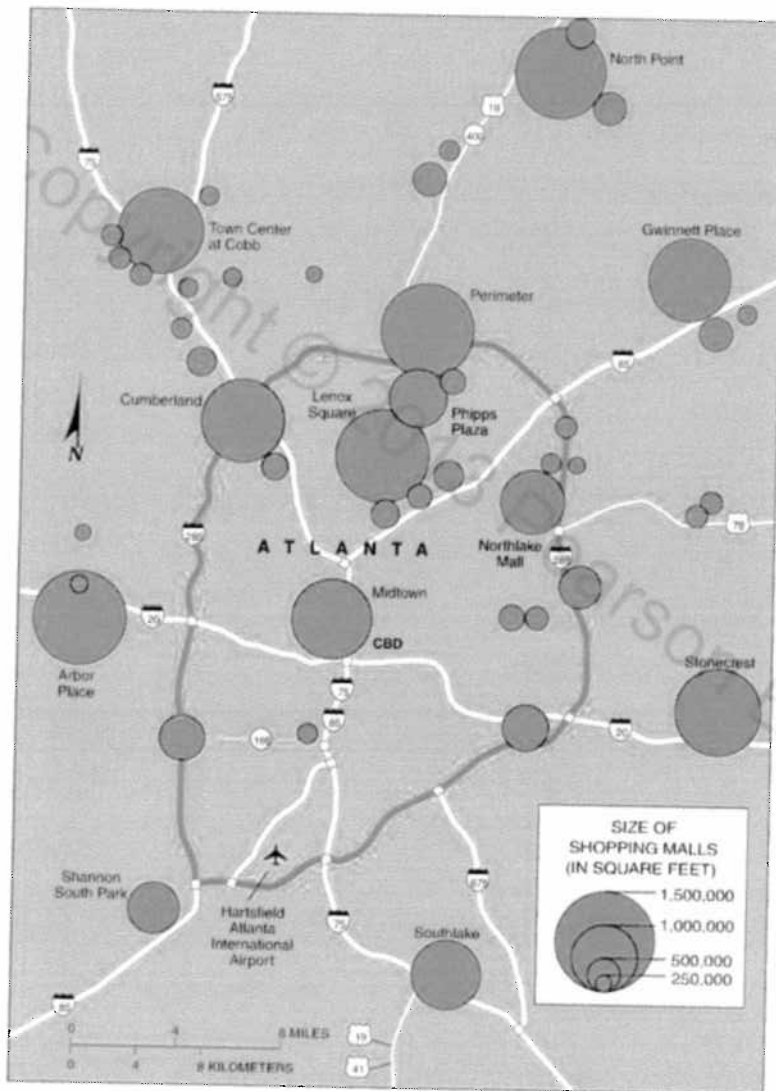
FIGURE 13-26 Major retail centers in Atlanta. Most shopping malls in the Atlanta metropolitan area, as elsewhere in North America, are in the suburbs, not the inner city. The optimal location for a large shopping mall is near an interchange on an interstate highway "beltway." These encircle many American cities, such as I-285 around Atlanta.

Transportation and Suburbanization

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. Together, all of these trips produce congestion in urban areas. Congestion imposes costs on individuals and

businesses by delaying arrival at destinations, and the high concentration of slowly moving vehicles produces increased air pollution (see Chapter 14).

Historically, the growth of suburbs was constrained by poor transportation. 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 railroads at street level (called trolleys, streetcars, or trams) and underground (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 relied on motor vehicles rather than railroads, especially in the United States. Rail lines restricted nineteenth-century suburban development to narrow ribbons within walking distance of the stations. Cars and trucks 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 their 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 centers 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 74,000 kilometers (46,000 miles) across the country. The use of motor vehicles is also supported by policies that keep the price of fuel below the level found in Europe.

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. Multilane freeways cut a 23-meter (75-foot) path through the heart of cities, and elaborate interchanges consume even more space. Valuable land in the central city is devoted to parking cars and trucks, although expensive underground and
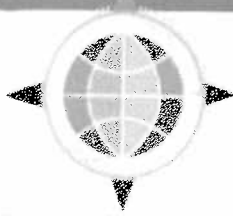
The future health of urban areas depends on relieving traffic congestion. Geographic tools, including global positioning systems (GPS) and electronic mapping, are playing central roles in the design of intelligent transportation systems, either through increasing road capacity or through reducing demand.

The current generation of innovative techniques to increase road capacity 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 to advise motorists of accidents or especially congested highways. Information about traffic congestion is now being transmitted through computers, handheld devices, and vehicle monitors. Traffic hot spots are displayed on electronic maps and images, using information collected through sensors in the roadbeds and cameras placed at strategic locations. An individual wishing to know about a particular route can program an electronic device to receive a congestion alert and to suggest alternatives.

The other current application of geographic tools is to reduce demand through "smart" highways. Toronto and several California cities charge motorists higher tolls to drive on freeways during congested times. A transponder attached to a vehicle records the time of day it is on the highway. A monthly bill sent to the vehicle's owner reflects the differential tolls. 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. Motorists must pay an £8 ($12) Congestion Charge to drive into Central London between 7 A.M. and 6.30 P.M. Monday through Friday (Figure 13-27). A similar system exists in Stockholm, where the charge varies depending on the time of day.

Future intelligent transportation systems are likely to increase capacity 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 onto 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 2 meters.

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. ■

FIGURE 13-27 London Congestion Charge. The sign warns motorists that they are approaching the Congestion Zone. A charge of £8 is levied for driving a private vehicle into central London.

multistory parking structures can reduce the amount of ground-level space needed. European and Japanese cities have been especially disrupted by attempts to insert new roads and parking areas in or near the medieval central areas.

Technological improvements may help congestion (see Global Forces, Local Impacts box). In general, traffic flow can be improved by increasing the capacity of the roads or reducing demand to drive on them.

Public Transit

Because few people 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.

The intense concentration of people in the CBD 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.

ADVANTAGES OF PUBLIC TRANSIT.   In larger cities, public transit is better suited than motor vehicles to moving large numbers of people, because each transit traveler takes up far less space. 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. 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.

Motor vehicles have costs beyond their purchase and operation: delays imposed on others, increased need for highway maintenance, construction of new highways, and pollution. One-third of the high-priced central land is devoted to streets and parking lots, although multistory and underground garages also are constructed.

In most cities around the world, extensive networks of bus, tram, and subway lines have been maintained, and funds for new construction have been provided in recent years (Figure 13-28). 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 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.

PUBLIC TRANSIT IN THE UNITED STATES.   In the United States, public transit is used primarily for rush-hour commuting by workers into and out of the CBD. One-half of trips to work are by public transit in New York, one-third in Boston, San Francisco, and Washington, and one-fourth in Chicago and Philadelphia.

But in other cities, public transit service is minimal or nonexistent. Despite the obvious advantages of public transportation for commuting, only 5 percent of work trips are by public transit in the United States. Overall, public transit ridership in the United States declined from 23 billion per year in the 1940s to 10 billion in 2006. The average American loses 36 hours per year sitting in traffic jams and wastes 55 gallons of gasoline. In the United States, the total cost of congestion is valued at more than $87 billion per year. But most Americans still prefer to commute by vehicle. Most people overlook these costs because they place higher value on the car's privacy and flexibility of schedule.

Early in the twentieth century, U.S. cities had 50,000 kilometers (30,000 miles) of street railways and trolleys that carried 14 billion passengers a year, 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 in the United States declined from a peak of 11 billion riders annually in the late 1940s to 6 billion in 2006. Commuter railroad service, like trolleys and buses, has also been drastically reduced in most U.S. cities.

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

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 increased from 2 billion in 1995 to 3 billion in 2006.

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 to 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. Ridership in all cities combined was 400 million in 2006.

California, the state that most symbolizes the automobile-oriented American culture, is the leader 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
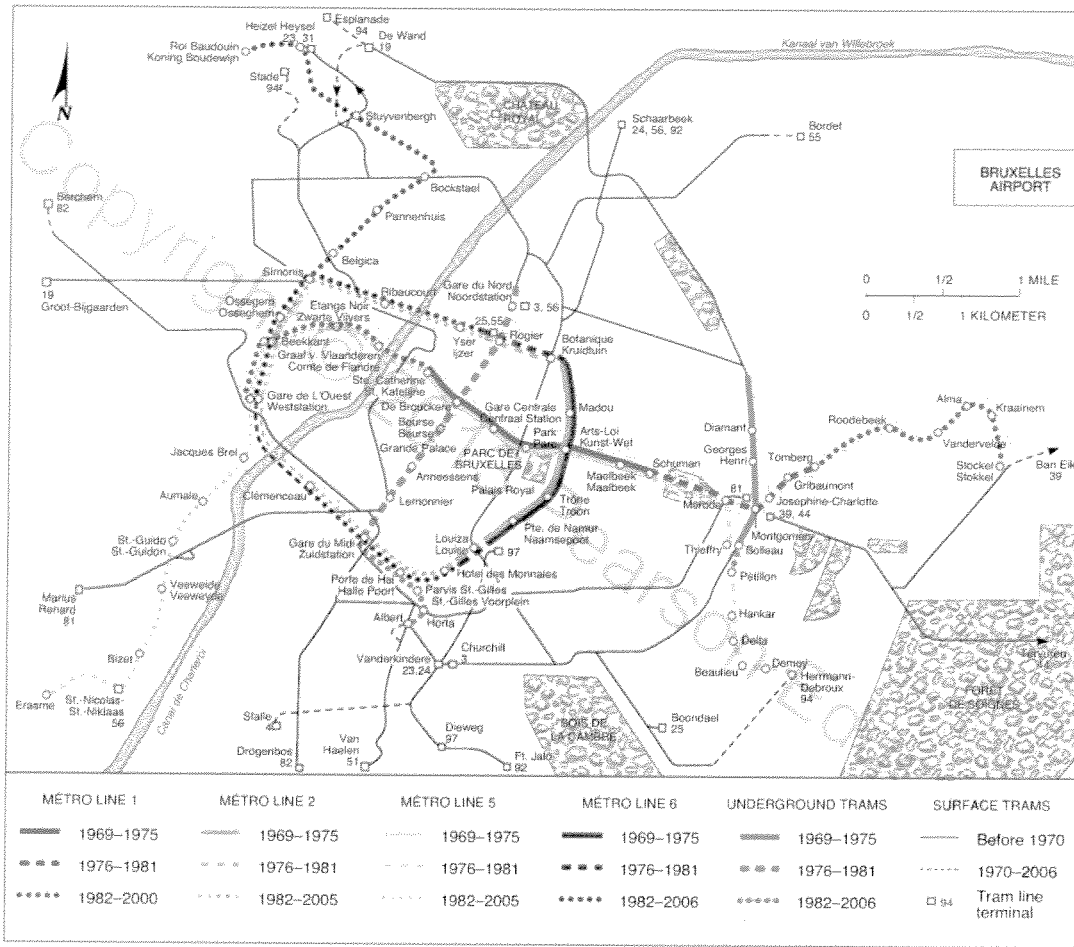
FIGURE 13-28 Brussels, Belgium, subway and tram lines. European cities such as Brussels have invested substantially to improve public transportation in recent years. Brussels provides a good example of a public transport system that integrates heavy rail (Metro) with light rail (trams). Trams initially used Metro tunnels, but the tunnels were large enough to convert to heavy-rail lines as funds became available.

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 increasing 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.

The minimal level of public transit service in most U.S. cities means that low-income people may not be able to reach places of employment. 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, public transit in the United States is 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.

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 sporting 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. Why Do Services Cluster Downtown?   The central business district (CBD) contains a large percentage of a settlement's business services. Business services cluster downtown to facilitate face-to-face contact. Retailers with large thresholds or large ranges may also locate downtown.

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 in LDCs.

3. Why Do Inner Cities Face Distinctive Challenges? 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 Face Distinctive Challenges? 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 shown in this chapter, contradictory trends are at work simultaneously. Why does one inner-city neighborhood become a slum and another an upper-class district (Figure 13-29)? 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.

• **Population Decline:**   The population of the city of Camden has declined from 117,000 in 1960 to 70,000 in 2007.

• **Racial Change:**   Camden's white, non-Hispanic population has declined from 90,000 in 1960 to 4,000 in 2007. African Americans comprise about 36,000 of the city's population; Hispanics about 30,000.

• **Demographic Stress:**   More than one-fourth of Camden's residents are under age 15, closer to the level found in LDCs than to the rest of the United States. The 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.

FIGURE 13-29 Urban contrasts. (left) Downtown Camden. (right) Suburban Camden County.

CASE STUDY REVISITED (*Continued*)

- **Low Income:** 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 receives government assistance.

Job prospects are not promising for Camden's young people. In the past, they 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. The old RCA Victor building has been converted to apartments.

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) grew from 275,000 in 1960 to about 443,000 in 2007. Cherry Hill had about 72,000 residents in 2007, compared to fewer than 10,000 in 1960. The population of Cherry Hill has increased modestly since 1990, 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. 424) Legally adding land area to a city in the United States.

Census tract (p. 412) An area delineated by the U.S. Bureau of the Census for which statistics are published; in urbanized areas, census tracts correspond roughly to neighborhoods.

Central business district (CBD) (p. 406) The area of a city where retail and office activities are clustered.

City (p. 424) An urban settlement that has been legally incorporated into an independent, self-governing unit.

Combined statistical area (CSA) (p. 425) In the United States, two or more contiguous core based statistical areas tied together by commuting patterns.

Concentric zone model (p. 410) A model of the internal structure of cities in which social groups are spatially arranged in a series of rings.

Core based statistical area (CBSA) (p. 425) In the United States, the combination of all metropolitan statistical areas and micropolitan statistical areas.

Council of government (p. 426) A cooperative agency consisting of representatives of local governments in a metropolitan area in the United States.

Density gradient (p. 427) The change in density in an urban area from the center to the periphery.

Edge city (p. 427) A large node of office and retail activities on the edge of an urban area.

Filtering (p. 419) A process of change in the use of a house, from single-family owner occupancy to abandonment.

Gentrification (p. 420) A process of converting an urban neighborhood from a predominantly low-income, renter-occupied area to a

predominantly middle-class, owner-occupied area.

Greenbelt (p. 429) A ring of land maintained as parks, agriculture, or other types of open space to limit the sprawl of an urban area.

Metropolitan statistical area (MSA) (p. 425) In the United States, a central city of at least 50,000 population, the county within which the city is located, and adjacent counties meeting one of several tests indicating a functional connection to the central city.

Micropolitan statistical area (p. 425) 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.

Multiple nuclei model (p. 412) A model of the internal structure of cities in which social groups are arranged around a collection of nodes of activities.

Peripheral model (p. 427) A model of North American urban areas consisting of an inner city surrounded by large suburban residential and business areas tied together by a beltway or ring road.

Primary census statistical area (PCSA) (p. 425) In the United States, all of the combined statistical areas plus all of the remaining metropolitan statistical areas and micropolitan statistical areas.

Public housing (p. 420) Housing owned by the government; in the United States, it is rented to residents with low incomes, and the rents are set at 30 percent of the families' incomes.

Redlining (p. 420) A process by which banks draw lines on a map and refuse to lend money to purchase or improve property within the boundaries.

Rush hour (p. 433) The four consecutive 15-minute periods in the morning and evening with the heaviest volumes of traffic.

Sector model (p. 411) A model of the internal structure of cities in which social groups are arranged around a series of sectors, or wedges, radiating out from the central business district (CBD).

Smart growth (p. 429) Legislation and regulations to limit suburban sprawl and preserve farmland.

Social area analysis (p. 412) Statistical analysis used to identify where people of similar living standards, ethnic background, and life style live within an urban area.

Sprawl (p. 428) Development of new housing sites at relatively low density and at locations that are not contiguous to the existing built-up area.

Squatter settlement (p. 417) An area within a city in a less developed country in which people illegally establish residences on land they do not own or rent and erect homemade structures.

Underclass (p. 421) A group in society prevented from participating in the material benefits of a more developed society because of a variety of social and economic characteristics.

Urban renewal (p. 420) Program in which cities identify blighted inner-city neighborhoods, acquire the properties from private owners, relocate the residents and businesses, clear the site, build new roads and utilities, and turn the land over to private developers.

Urbanized area (p. 424) In the United States, a central city plus its contiguous built-up suburbs.

Zoning ordinance (p. 429) A law that limits the permitted uses of land and maximum density of development in a community.

THINKING GEOGRAPHICALLY

1. Compare the CBDs of Toronto and Detroit. What might account for differences?

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?

RESOURCES

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Journals featuring urban geography:

Environment and Planning, Journal of Housing, Journal of the American Planning Association, Land Economics, Planning, Urban Geography, Urban Land, and *Urban Studies.*

Key Internet sites:

www.census.gov. Data concerning any urban area can be found at the U.S. Bureau of the Census web site. The American Factfinder service provides information from the most recent census as well as annual updates from the American Community Survey. Tables and maps can be generated for census tracts within urban areas as well as for entire urban areas. Access is also provided to data from earlier censuses.

www.socialexplorer.com. Social Explorer provides access to census data at all scales, including urban. An interactive map enables users to choose the area of interest and from among hundreds of census variables.

mygeoscience place

Log in to www.mygeoscienceplace.com for videos, interactive maps, RSS feeds, case studies, and self-study quizzes to enhance your study of Urban Patterns.

1) Social Problems

2) Women's Rights

   a) Dowery

   b) Feticide/ Infanticide

3) Poverty

4) Health

5) Growing Economy

   a) Outsourcing

6) Cultural Diffusion

   a) Yoga

   b) Bollywood