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 streets. In severe weather, they may take shelter in markets and warehouses. Families then erect primitive shelters with scavenged cardboard, wood boxes, sackcloth, and crushed beverage cans. As they find new bits of material, they add them to their shacks. After a few years they may build a tin roof and partition the space into rooms, and the structure acquires a more permanent appearance.

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

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

**KEY ISSUE 3**

**Why Do Inner Cities Have Distinctive Problems?**

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

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

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**Inner-City Physical Problems**

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

**Process of Deterioration**

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

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

Like a car, 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 inner-city neighborhoods that housed perhaps 100,000 a century ago contain less than 10,000 inhabitants today. Schools and shops close because they are no longer needed in inner-city neighborhoods with rapidly declining populations. Through the filtering process, many 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.

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**Urban Renewal**

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

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

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

Elsewhere in Western Europe, governments typically do not own the housing. Instead, they subsidize construction cost and rent for a large percentage of the privately built housing. Developers of low-cost housing may be either nonprofit organizations, such as church groups and labor unions, or profit-making corporations that agree to build some low-cost housing in exchange for permission to build higher-cost housing elsewhere. The U.S. government has also provided subsidies to private developers, but on a much smaller scale than in Europe.

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

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

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

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

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

**RENOVATED HOUSING.** An alternative to demolishing deteriorated inner-city houses is to renovate them. In some cases, nonprofit organizations renovate 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 for a number of reasons. First, houses may be larger, more substantially constructed, yet cheaper in the inner city than in the suburbs. Inner-city houses may also possess attractive architectural details such as ornate fireplaces, cornices, high ceilings, and wood trim.

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

In cities where gentrification is especially strong, ethnic patterns are being altered. In Chicago, for example, the white population is
Cities try to reduce the hardship on poor families forced to move. First, U.S. law requires that they be reimbursed both for moving expenses and for rent increases over a 4-year period. Western European countries have similar laws. Second, cities renovate old houses specifically for lower-income families through public housing or other programs. By renting renovated houses, the city also helps to disperse low-income families throughout the city instead of concentrating them in large inner-city public-housing projects.

**Inner-City Social Problems**

Beyond the pockets of gentrified neighborhoods, inner cities contain primarily 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. Their schools are deteriorated, and affordable housing is increasingly difficult to find. Their neighborhoods lack adequate police and fire protection, shops, hospitals, clinics, or other health-care facilities.

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

The gap between skills demanded by employers and the training possessed by inner-city residents is widening. In the

![Image of a homeless man and woman leaving their usual sidewalk location in Philadelphia to spend the night in a homeless shelter because bitter cold temperatures were forecast.](image-url)

increasing in inner-city neighborhoods and declining in the outer-city neighborhoods (Figure 13–17). 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.
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 they are increasingly in the distant suburbs.

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

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

Homelessness is also a serious problem in LDCs. 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 permanent underclass because they live in a culture of poverty. Unwed mothers give birth to two-thirds of the babies in U.S. inner-city neighborhoods, and 80 percent of children in the inner city live with only one parent. Because of inadequate child-care services, single mothers may be forced to choose between working to generate income and staying at home to take care of the children.

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

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

For example, the locations in the Dayton urban area with the highest number of assaults on felony cases for drug violations are clustered just west of the CBD, where the percentage of low-income African American households is very high (Figure 13-18, left). The higher incidence of arrests in low-income African American areas does not necessarily mean that drug usage is higher or that African Americans are more involved in drug trafficking than whites. Some studies have shown that among male high school students, rates of drug use may actually be higher among whites.

In high-density inner-city areas, people are more likely to sell drugs while standing on street corners under the clear view of neighborhood residents, who may call police. In contrast, drug sales in low-density automobile-oriented suburbs may

![Figure 13-18 Dayton, Ohio. (Left) Locations that have the highest numbers of drug-related felony arrests. Arrests are clustered in the predominantly low-income, African American, inner-west side of the city. (Right) Race and voting. In the 2005 mayoral election, incumbent Rhine McLin defeated David Bohardt by 55 to 45 percent. McLin, an African American, carried every ward on the predominantly African American west side, with 90 percent of the vote. Turner, who was white, carried the predominantly white east side but with “only” 66 percent of the vote.](image-url)
occur discreetly behind closed doors, and arrests may require elaborate undercover operations.

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

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

A family seeking a new residence usually considers only a handful of districts, where the residents' social and 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.

Segregation by ethnicity explains voting patterns in many American urban areas. The winning candidate for mayor of Dayton in 2005 gained a majority of the votes in every ward on the predominantly African American west side and lost every ward on the predominantly white east side. She was black, and her opponent was white (Figure 13–18, right).

Inner-City Economic Problems

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

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

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

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

Annexation

For many cities, economic problems are exacerbated by their inability to annex peripheral land. Annexation is the process of legally adding land area to a city. Until recently in the United States, as cities grew, they expanded by annexing peripheral land. Rules concerning annexation vary among states. Normally, land can be annexed into a city only if a majority of residents in the affected area vote in favor of doing so.

Peripheral residents generally desired annexation in the nineteenth century, because the city offered better services, such as water supply, sewage disposal, trash pickup, paved streets, public transportation, and police and fire protection. Thus, although U.S. cities grew rapidly in the nineteenth century, the problem of defining a city seldom arose, because the legal boundaries frequently changed to accommodate newly developed areas. For example, the city of Chicago expanded from 26 square kilometers (10 square miles) in 1837 to 492 square kilometers (190 square miles) in 1900 (Figure 13–19).

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. As a result, today's cities are surrounded by a collection of suburban jurisdictions, whose residents prefer to remain legally independent of the large city. Originally, some of these peripheral jurisdictions were small, isolated towns that had a tradition of independent local government before being swallowed up by urban growth. Others are newly created communities whose residents wish to live close to the large city but not legally be part of it.

KEY ISSUE 4

Why Do Suburbs Have Distinctive Problems?

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

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

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

The Peripheral Model

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

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

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

North American urban areas follow what Chauncey Harris
(creator of the multiple nuclei model) calls the peripheral
model. According to the peripheral model, an urban area con
sists of an inner city surrounded by large suburban residential
and business areas tied together by a beltway or ring road
(Figure 13–20). 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

FIGURE 13–19 Growth of Chicago. During the nineteenth century, the city of
Chicago grew rapidly through annexation of peripheral land. Relatively little land
was annexed during the twentieth century; the major annexation was on the
northwest side for O'Hare Airport. The inset shows that the city of Chicago
covers only a small portion of the Chicago metropolitan statistical area.

FIGURE 13–20 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 Chauncey D. Harris, "The Nature of Cities and Urban Geography in the Last Half Century."
Ocean Blvd., Palm Beach, FL 33480. All rights reserved.)
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 pro-
ducer services cluster. Specialized nodes emerge in the edge
cities—a collection of hotels and warehouses around an airport,
a large theme park, a distribution center near the junction of the
beltway, and a major long-distance interstate highway.

Density Gradient
As you travel outward from the center of a city, you can watch the
decline in the density at which people live. Inner-city apartments
or row houses may pack as many as 250 dwellings on a hectare of
land (100 dwellings per acre). Older suburbs have larger row
houses, semidetached houses, and individual houses on small lots,
at a density of about ten houses per hectare (four houses per
acre). A detached house typically sits on a lot of one-fourth to
one-half hectare (0.6 to 1.2 acres) in new suburbs, and a lot of one
hectare or greater (2.5 acres) on the fringe of the built-up area.
This density change in an urban area is called the density
gradient. According to the density gradient, the number of
houses per unit of land diminishes as distance from the center
city increases.

CHANGES IN DENSITY GRADIENT. Two changes have
affected the density gradient in recent years. First, the number
of people living in the center has decreased. The density gradi-
ent thus has a gap in the center, where few live.
Second is the trend toward less density difference within
urban areas. The number of people living on a hectare of land
has decreased in the central residential areas through popula-
tion decline and abandonment of old housing. At the same time,
density has increased on the periphery through construction of
apartment and row-house projects and diffusion of suburbs
across a larger area (Figure 13–21).
In European cities, density gradient has also been affected by
low-income, high-rise apartments in the suburbs and by stricter
control over the construction of detached houses on large lots.
The result of the two changes is to flatten the density gradient
and reduce the extremes of inner and outer areas traditionally
found within cities.

Cost of Suburban Sprawl
U.S. suburbs are characterized by sprawl, which is the progres-
sive 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 con-
tiguous to the existing built-up area. Sprawl is also fostered by
the desire of many families to own large tracts of land.

FIGURE 13–21 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
permission of the publisher.)
SUBURBAN DEVELOPMENT PROCESS. As long as demand for single-family detached houses remains high, land on the fringe of urbanized areas must be converted from open space to residential land use. The current system for developing land on urban fringes is inefficient, especially in the United States.

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

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

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

The supply of land for the construction of new housing is more severely restricted in European urban areas. Officers attack sprawl by designating areas of mandatory open space. London, Birmingham, and several other British cities are surrounded by greenbelts, or rings of open space. New housing is built either in older suburbs inside the greenbelts or in planned extensions to small towns and new towns beyond the greenbelts (Figure 13-22). However, restriction of the supply of land on the urban periphery has driven up house prices in Europe.

Suburban Segregation

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

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 shopowner or another well-to-do family living on one or two floors above the shop.

Poorer people lived on the higher levels or in the basement, the least attractive parts of the building. The basement was dark and damp, and before the elevator was invented, the higher levels could be reached only by climbing many flights of stairs. 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.

Contribution of Transportation to Suburbanization

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

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

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

Motor Vehicles

The suburban explosion in the twentieth century has relied on motor vehicles rather than railroads, especially in the United States. In the nineteenth century, rail and trolley lines restricted suburban development to narrow ribbons within walking distance of the stations. Cars and trucks have permitted large-scale development of suburbs at greater distances from the center, in the gaps between the rail lines. Motor vehicle drivers have much greater flexibility in 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 Western Europe (see Chapter 14).

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

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

**Public Transportation**

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

**RUSH-HOUR COMMUTING.** The intense concentration of people in the 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.

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

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

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

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

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

Buses offer a more flexible service than do trolleys because they are not restricted to fixed tracks. However, bus ridership declined from a peak of 11 billion riders annually in the late 1940s to 6 billion in 2003. Commuter railroad service, like trolleys and buses, has also been drastically reduced in most U.S. cities.

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

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

The federal government has permitted Boston, New York, and other cities to use funds originally allocated for interstate highways to modernize rapid transit service instead. New York's subway cars, once covered with graffiti spray-painted by gang members, have been cleaned so that passengers can ride in a more hospitable environment. As a result of these improvements, subway ridership in the United States reached 2.7 billion in 2003, an increase of 4 percent annually since 1993.

The trolley—now known by the more elegant term of fixed light-rail transit—is making a modest comeback in North America. Once relegated almost exclusively as a tourist attraction in New Orleans and San Francisco, new trolley lines have been built or are under construction in Baltimore, Buffalo, Calgary, Edmonton, Los Angeles, Portland (Oregon), Sacramento, St. Louis, San Diego, and San Jose. However, new construction in all ten cities amounted only to about 200 kilometers (130 miles) since 1980, and ridership in all cities combined was 338 million in 2003.

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 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.

**SERVICE VERSUS COST.** People who cannot afford to own an automobile may still not be able to reach places of employment by public transportation. Low-income people tend to live in inner-city neighborhoods, but the job opportunities, especially those requiring minimal training and skill in personal services, are in suburban areas not well served by public transportation. Inner-city neighborhoods have high unemployment rates at the
GLOBAL FORCES, LOCAL IMPACTS

Intelligent Transportation Systems

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

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

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

The traffic information being disseminated through computers and palm devices can be general or tailored to the individual. Traffic hot spots are displayed on electronic maps and images for every motorist to see on the Internet, using information collected through sensors in the roadbeds and cameras placed at strategic locations. An individual wishing to know whether a particular route is congested can program a computer to send an e-mail, a mobile phone to send a call, or a pager to send an alert. The electronic source of the message can be programmed to suggest alternative routes for the individual. To make these systems usable, vehicles manufactured since 2000 either are equipped with GPS or can have GPS capability added as systems become more widely available and less expensive to purchase and operate.

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

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

Future intelligent transportation systems are likely to remove decisions from the drivers through hands-free driving. A motorist will drive to a freeway entrance, where the vehicle will be subjected to a thorough diagnostic (taking a half-second) to ensure that it has enough fuel and is in good operating condition. A menu offers a choice of predetermined destinations, such as “home” or “office,” or a destination can be programmed by hand. A release will send the vehicle accelerating automatically on the entrance ramp into the freeway. Sensors in the bumpers and fenders, attached to radar or GPS, alert vehicle systems to accelerate, brake, or steer as needed. Spacing between vehicles can be as little as 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.
same time that suburban firms have difficulty attracting workers. In some cities, governments and employers subsidize vans to carry low-income inner-city residents to suburban jobs.

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

PUBLIC TRANSIT IN OTHER COUNTRIES. In contrast, even in more developed Western European countries and Japan, where automobile ownership rates are high, extensive networks of bus, tram, and subway lines have been maintained, and funds for new construction have been provided in recent years (Figure 13–23). 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.

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, and the remainder serve special purposes, such as schools, sanitation, transportation, water, and fire districts.

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

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

In some metropolitan areas, the inner-city social and economic problems described earlier in this chapter are found in older suburbs immediately adjacent to the central city (Figure 13-24). As the central city is transformed into a vibrant community for higher-income people, inner suburbs become home to lower-income people displaced from gentrifying urban neighborhoods. Meanwhile, middle-class residents move from inner suburbs to newer homes on the periphery. Inner suburbs are unable to generate revenue to provide for the needs of a poorer population.

Metropolitan Government

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

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

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

FEDERATIONS. Toronto, Ontario, has a federation system. A 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. Canada's other largest cities also have varying forms of regional government federations.

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

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

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

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

### SUMMARY

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

Conversely, inner-city residents may rarely venture out to suburbs. Lacking a motor vehicle, they have no access to most suburban locations. Lacking money, they do not shop in suburban malls or attend 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. **Where have urban areas grown?** Urbanization involves increases in the percentage of and in the number of people living in urban areas. MDCs have higher percentages of urban residents, but LDCs now have most of the largest urban areas.

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

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

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

### CASE STUDY REVISITED

**Contrasts in the City**

What is the future for cities? As 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? Why does one city attract new shoppers and visitors while another languishes?

The Camden, New Jersey, urban area displays the strong contrasts that characterize American urban areas. The central city of Camden houses an isolated underclass while suburban Camden County prospers. The population of the city of Camden has declined from 117,000 in 1960 to 80,000 in 2005. African Americans comprise about 43,000 of the city's population, Hispanics about 31,000. The white, non-Hispanic population has declined from 90,000 in 1960 to 70,000 in 2005.

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. 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.

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

In the past, Camden's youth 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

(Continued)
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 440,000 in 2005. Cherry Hill had about 72,000 residents in 2005, 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. 451)  
Census tract (p. 440)  
Concentric zone model (p. 438)  
Council of government (p. 459)  
Density gradient (p. 453)  
Edge city (p. 452)  
Filtering (p. 447)  
Gentrification (p. 448)  
Greenbelt (p. 454)  
Metropolitan statistical area (MSA) (p. 436)  
Micropolitan statistical area (p. 437)  
Multiple nuclei model (p. 439)  
Peripheral model (p. 452)  
Public housing (p. 448)  
Redlining (p. 447)  
Rush (or peak) hour (p. 456)  
Sector model (p. 439)  
Smart growth (p. 460)  
Sprawl (p. 453)  
Squatter settlement (p. 446)  
Underclass (p. 449)  
Urbanization (p. 433)  
Urbanized area (p. 436)  
Urban renewal (p. 447)  
Zoning ordinance (p. 454)

**THINKING GEOGRAPHICALLY**

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

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

3. Jane Jacobs wrote in _Death and Life of Great American Cities_ that an attractive urban environment is one that is animated with an intermingling of a variety of people and activities, such as found in many New York City neighborhoods. What are the attractions and drawbacks to living in such environments?

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

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

**FURTHER READINGS**


