

## CHAPTER 17

# Urban Challenges and Sustainability

### *Topics 6.8–6.11*

#### **Topic 6.8 Urban Sustainability**

*Learning Objectives:* Identify the different urban design initiatives and practices. (IMP-6.C)

Explain the effects of different urban design initiatives and practices. (IMP-6.D)

#### **Topic 6.9 Urban Data**

*Learning Objective:* Explain how qualitative and quantitative data are used to show the causes and effects of geographic change within urban areas. (IMP-6.E)

#### **Topic 6.10 Challenges of Urban Changes**

*Learning Objective:* Explain causes and effects of geographic change within urban areas. (SPS-6.A)

#### **Topic 6.11 Challenges of Urban Sustainability**

*Learning Objective:* Describe the effectiveness of different attempts to address urban sustainability challenges. (SPS-6.B)

*Whenever. . . societies. . . prospered rather than stagnated and decayed, creative and workable cities have been at the core of the phenomenon. Decaying cities, declining economies, and mounting social troubles travel together. The combination is not coincidental.*

—Jane Jacobs, *The Death and Life of Great American Cities*, 1961



**Source:** Getty Images

The image shows the Kibera slum in Nairobi, Kenya. In the background are numerous gated residential communities. (See Topic 6.10 for more on housing in periphery countries.)

## Urban Sustainability

**Essential Question:** What are urban design initiatives and practices and what are the effects of those initiatives and practices?

Using the earth's resources while not causing permanent damage to the environment is referred to as **sustainability**. Maintaining the sustainability and long-term viability of cities has become an increasingly important discussion for city planners, developers, and citizens.

### Sustainability and the Future

Modern cities face numerous challenges from urban sprawl to access to services to environmental injustice. (See Topics 6.10 and 6.11.) New development concepts are shaping the debate about sustainability and city landscapes in both the United States and around the world.

#### *Smart-Growth Policies and Greenbelts*

Urban planners and policymakers have developed **smart-growth policies** to combat urban sprawl and create a new vision for cities that are more sustainable and equitable. Smart growth focuses on city planning and transportation systems of an urban region.

One major goal of smart-growth policies is to slow sprawl by creating concentrated growth in compact centers. These policies suggest spatial arrangements that focus on encouraging a mix of building types and uses with a variety of housing and transportation options available within communities. Smart growth also includes several other goals:

- to create attractive residential neighborhoods that are walkable, meaning they provide amenities that people can walk to easily
- to develop a strong sense of place among residents
- to increase livability by making the community easy and safe to navigate
- to involve residents and stakeholders in decisions that impact the community

In London and other European cities, smart growth policies that preserve farmland and other open, undeveloped spaces near the city have existed for over one hundred years. These **greenbelts**, areas of undeveloped land around an urban area, have been created to limit a city's growth and preserve farmland. At the same time, they provide an area for people to enjoy recreation and the environment.



This photo of Feltham, England, located in West London, shows the edge of the greenbelt that surrounds much of the city of London. What purposes does the greenbelt serve?

Many communities in the United States have adopted greenbelt policies to limit growth similar to those in Europe. Under the principles of smart growth, cities are allowed to annex (legally add) land only in areas specifically designated by laws. New Jersey, Rhode Island, Washington, Tennessee, and Oregon have all enacted smart-growth policies.

Some cities desire to slow the population growth and development that could consume and alter their communities. **Slow-growth cities** adopt policies to slow the outward spread of urban areas and place limits on building permits in order to encourage a denser, more compact city. Protecting local sense of place and natural landscapes has also motivated governments to embrace slow-growth policies. The cities of Boulder, Colorado, and Portland, Oregon, are considered slow-growth cities that have aggressively applied these policies.

## ***New Urbanism***

A group of developers in the 1990s created a set of strategies called **new urban design** to put smart growth into action within communities. Some strategies of new urbanism include creating human-scale neighborhoods (designed for optimum human use), reclaiming neglected spaces, giving access to multiple modes of transportation, increasing affordable housing, and creating **mixed-use neighborhoods**. Unlike the clear separation between residential and commercial uses created by zoning in most cities, these neighborhoods would have a mix of homes and businesses. A mixed-use neighborhood is vibrant, livable, and walkable. Homes would include a variety of sizes and price ranges to create a socially diverse community. Shared open spaces and community gathering spaces are also common.

New urbanism has succeeded in many communities that have tried the strategies in spite of two large obstacles:

- The existing system of zoning (see Topic 6.6) created segregated areas by land use, and thus contributed to sprawl.
- People accustomed to traditional land-use patterns in cities were not easily convinced that the new urbanism was an improvement.

Stakeholder involvement is an important aspect of new urbanism. For example, in Denver, a new urban neighborhood that was built on the site of a closed major airport was recently renamed. The airport was originally named after a former politician who had supported racist and discriminatory policies, but the neighborhood decided to change its name Central Park in 2021. New urban design can occur in the suburbs as a new development or within the city practicing the concept of urban infill.

## ***Urban Infill***

The opposite of leapfrog development (see Topic 6.2) and sprawl is **urban infill**, the process of building up underused lands within a city. Most cities have areas of vacant or undeveloped land of varying sizes. These may be remnants of shut down industrial areas, airports, military bases, hospitals, or malls. The space could be unused because of difficult terrain or poor planning. Because infill uses vacant or discarded land rather than expanding the edge of a city, it is considered smart growth.

The communities of Central Park, Colorado, and Civita, California, are examples of both urban infill and new urbanism. The Civita master-planned community was built on the site of a former quarry located in the Mission Valley section of San Diego. Today, Civita includes a mix of housing types, parks, community centers, and commercial zones, and is well connected by public transit. The community also promotes sustainability by using renewable building materials, solar panels, electric vehicle charging stations, and energy management tools for residents and businesses.



**Source:** David Palmer

Denver's Central Park Neighborhood is an example of both new urban design and infill. The former airport control tower is in the background and the neighbors share a common open space. Notice the single-family homes and higher density townhomes in the background. Shops are two blocks away.

## ***Transit-Oriented Development***

New urban and other smart growth developers have embraced the concept of **transit-oriented development (TOD)**, which locates mixed-use residential and business communities near mass transit stops, resulting in a series of more

compact communities which decreases the need for automobiles. Increasingly TOD includes multiple forms of transportation including train, bus, and light rail.

Getting public transit riders the last mile from a transit stop to home or work is challenging for city planners. Micro-transport options such as taxis, electric street scooters, bicycles, and shared rider apps (such as Uber or Lyft) help solve the last mile problem. These types of transportation exist in most major world cities and have varying levels of success. The cities of Singapore, London, Paris, and New York City are rated as some of the most successful cities in transit-oriented development.



Source: David Palmer

Transit-oriented development (TOD) often includes multiple forms of transportation. Union Station in Denver includes train, bus, light rail, and many micro-transport options.

## ***Livability***

A concept that has recently gained traction with sustainable urban development is livability. **Livability** refers to a set of principles that supports sustainable urban designs. Livable communities have affordable and equitable housing, access to employment and community services, multiple and accessible transportation modes, and social and civic engagement.

## ***Other Changes***

Cities adapt to their growing and evolving populations. For example, the creation of pedestrian zones where street fairs, festivals, and public events are held help make inner cities both safer and more desirable destinations. The addition of bike lanes and an increase in bike usage reduces traffic congestion and parking needs while encouraging a healthful lifestyle. In addition, increasing the number of running paths, community gardens, and dog parks further promotes the health and well-being of residents. Many cities are actively developing relationships with local farmers, which benefits both urban and rural citizens through the spread of farmers' markets and the promotion of a more sustainable local economy.



Criticisms of Smart Growth

While smart growth has proven successful in many cities, it is not without critics. Opponents make economic and social arguments against smart growth:

- It is not affordable to families because of increases in the cost of land and housing. It also contributes to congestion and noise within cities
- Smart growth limits peoples’ choices for single-family housing, a suburban lifestyle, quality schools, and the autonomy of car ownership.
- It creates high-population density areas that often have higher crime rates and provides less privacy for residents.
- Smart growth can result in unintended segregation both ethnically and economically.
- It promotes the displacement of low-income and ethnic communities, and the destruction of historical buildings and unique places.

Specific criticisms of mass transit are that it has large upfront costs and is slow to adjust. Rapid growth and change often make it difficult for city planners to predict where mass transit will be most useful. Also, mass transit often does not connect all parts of a city so people still need cars to get to work, services, or school.

REFLECT ON THE ESSENTIAL QUESTION

Essential Question: What are urban design initiatives and practices and what are the effects of those initiatives and practices?

Urban Design Initiatives and Practices	Effects of Initiatives and Practices

KEY TERMS

sustainability	mixed-use neighborhoods
smart growth policies	urban infill
greenbelts	transit-oriented development (TOD)
slow-growth cities	livability
new urban design	

## Urban Data

**Essential Question:** How are qualitative and quantitative data used to show the causes and effects of geographic change within urban areas?

Cities are large, diverse, and dynamic. People live in cities for two primary reasons: access to jobs and public services. In the late 20<sup>th</sup> century, total urban population worldwide grew larger than rural population. The most significant reasons for urban growth were ample job opportunities and a changing economy. This rapid growth led to dynamic and increasingly diverse cities. The ability to analyze the changes and needs within cities requires accurate and local scale quantitative and qualitative data.

### Quantitative Data

**Quantitative data** is information that can be counted, measured, or sequenced by numeric value. For example, geographers count the total population of a country and sequence it with the total populations of other countries. This allows for comparison based on that particular data.

In the United States, a census is required by law every ten years. Census data, as well as other data, provides **population composition**. In addition to showing where people live, population composition gives a description of people's income, age, gender, ethnicity, race, family size, and other details. That information is valuable to governments to determine what services are needed, such as public libraries, schools, and neighborhood parks, and where they should be located.

Quantitative data helps identify the need for and location of other public services such as local emergency medical help providers (EMS), police, fire, and public utilities (trash and sewer services). Each have specific site and situation factors (see Topic 6.1) that influence its ideal location.

GEOGRAPHIC CATEGORIES IN THE CENSUS			
Category	2010 Census	Increase over the 2000 Census	Average Number of People in the 2010 Census
<b>Population</b>	308,745,538	9.7%	-----
<b>Census Tracts</b>	73,057	11.8%	4,226 people/tract
<b>Block Groups</b>	217,740	4.3%	1,418 people/group
<b>Blocks</b>	11,078,297	35.0%	28 people/block

**Source:** Bureau of the Census

Notice that each subdivision gets smaller in total number of people. What are the advantages and disadvantages of data at each scale of analysis? Assuming you had income data for each category, describe how the data could be used at each scale.

Population Data in Urban Areas

U.S. census data is available at many scales. Urban areas in many countries are divided into **census tracts**, contiguous geographic regions that function as the foundation of a census. In the United States, a census tract typically consists of between 4,000 and 12,000 people. Each tract is subdivided into block groups, which are further subdivided into blocks. A **census block** in a densely populated urban area is often very small, consisting of a single block bounded by four streets. In suburban and rural areas, because of their lower population densities, a census block typically covers a larger area.

Using the proper scale of data is critical. Deciding where to build a new playground in a neighborhood requires data such as number of children per household at the block level. Country-level data would be useless in this case. Block-level information might be of some value in deciding where to build an airport but data of the metro area or a national-scale map would be critical.

Researchers and businesses use data to identify potential goods and services that people desire. Merchants and business owners, such as those who own grocery stores and car dealerships, could also use this information to determine the best locations to serve the needs of the population. Census data is usually gathered per household but can be aggregated at multiple scales.

The chart below shows a sample of some of the types of data that are gathered in the U.S. census. National and local scale data are both shown. Many statistics such as household size and income also have corresponding data (not shown) down to the block or census tract scale. Geographers compare local data with that at the national scale to analyze patterns, trends, and processes within communities.

SELECTED QUANTITATIVE DATA OF THE UNITED STATES AND THE DETROIT MSA, 2019				
	United States		Detroit MSA	
Average household size	2.61		2.51	
Household income ranges	Over \$200,000	8.5%	Over \$200,000	6.6%
	\$150,000-199,999	7.2%	\$150,000-199,999	6.8%
	\$100,000-149,999	15.7%	\$100,000-149,999	15.2%
	\$75,000-99,999	12.8%	\$75,000-99,999	12.5%
	\$50,000-74,999	17.4%	\$50,000-74,999	17.0%
	\$25,000-49,999	20.3%	\$25,000-49,999	21.6%
	Under \$25,000	18.1%	Under \$25,000	20.3%

Source: US Census Bureau, 2019.

Identify the scale of the data presented. Would this data be useful for determining the local population composition or income of a neighborhood? Explain your response.

Qualitative Data

**Qualitative data** is based primarily on surveys, field studies, photos, video, and interviews from people who provide personal perceptions and meaningful descriptions. Questions and study topics help those who gather information



learn how individuals and communities feel about urban growth, zoning changes, local government, crime rates, and other topics that affect people living in the city. Questions have to be carefully worded to be objective so responses are accurately reflected. They can also be worded in such a way to elicit value judgements:

- Would you support the city spending money to make more sidewalks?
- Would you like to have new playground equipment in your neighborhood park? Why or why not?
- Would you rather see the city pay for more street lights or a community recreation center? Why or why not?
- Would you support a 2-cent tax increase to pay for a police substation in your neighborhood? Why or why not?

Qualitative data is important to geographers and is often used to verify quantitative data. Cities are diverse and there are often many perspectives related to urban issues. For example, when a new housing development is being built in a neighborhood, researchers seek out multiple viewpoints about the project. Business and property owners may view this as positive as it will increase economic activity, while longtime apartment residents may view it as a negative because it will cause higher rent.

Geographers use qualitative and quantitative data to analyze changes in the spatial relationships of an urban setting. Recognizing patterns and locations of urban growth can help city planners meet the social, economic, and infrastructural needs of its citizens. However, researchers must always be aware that data can be flawed or inaccurate. Factors such as who gathered the information, the type of questions asked, the scale of the data, how often or when the data was gathered, and if the people who responded answered accurately, influence the quality of the data.

REFLECT ON THE ESSENTIAL QUESTION

Essential Question: How are qualitative and quantitative data used to show the causes and effects of geographic change within urban areas?

Uses of Urban Quantitative Data	Uses of Urban Qualitative Data

KEY TERMS

quantitative data

population composition

census tracts

census block

qualitative data

## Challenges of Urban Changes

**Essential Question:** What are the causes and effects of geographic change within urban areas?

Cities are nodes, complex places characterized by interconnections, and are often centers for innovation, cultural diversity, and art. They are often engines of economic growth and centers of political power. But the dense concentration of people combined with many complicated systems of cities can make solving problems difficult. Cities can be places of poverty, violence, and environmental decay.

The world is more urbanized than ever, and experts expect the percentage of people living in cities to continue growing. Consequently, understanding and solving urban challenges will continue to be important work for geographers.

### Urban Challenges

While people with great wealth concentrate in cities, so do people with little wealth. Urban poverty exists throughout the world. It is found from inner cities of core countries to squatter settlements and favelas of less-developed countries. According to a United Nations report, about one-sixth of the world's population lives in urban poverty, and mostly in developing countries.

The role of cities in more-developed countries has changed rapidly, shifting from centers of industry to centers of services. Conversely, in less-developed countries, cities have experienced problems brought on by rapid industrialization and growing numbers of new migrants.

### *Urban Housing Issues in Core Countries*

In the developed world, housing for inner-city poor residents is characterized by at least three problems—poor quality, insufficient availability, and significant unaffordability. Often the physical conditions of the buildings need updated to be safe. Proper maintenance and repairs of plumbing, electrical systems, roofing, stairwells, and heating systems are often unaffordable to inner city residents. Landlords often delay making expensive repairs, so over time, the overall quality of the housing suffers.

This process is often visible in the transitional areas of cities, as well as in ethnic enclaves, since both have a high percentage of renters. In European cities, these issues often occur near the edge of cities where mass transit lines end and rent is less expensive. Some geographers contend that in many European and North American cities, poorer residential areas are concentrated near industrial regions built on the eastern side of cities. Rents are lower in

these areas in part because the wind usually blows east, sending air pollution and industrial smells through these neighborhoods.

Women are more numerous than men in large, central cities in North America. One reason for this disparity is the high number of female-headed households. These women and their children are more likely to be poor than men. According to the U.S. Census Bureau in 2018, 56 percent of the U.S. population living in poverty were women. Hence, women concentrate in areas where housing is the least expensive, even if these areas often have higher crime rates. The lack of good schools, parks and playgrounds, and available of day care options, compound the problems faced by women and their children.

### ***Housing Discrimination and Segregation in the United States***

For the poor in the United States, housing opportunities have suffered because of decay in central cities. Neighborhoods go through cycles of change (see Topic 6.6), culturally and in land use. During much of the 20<sup>th</sup> century in the United States, housing discrimination was legal.

At the neighborhood scale, **redlining**, the process by which banks refuse loans to those who want to purchase and improve properties in certain urban areas, was common. Historically, minorities and the poor were the predominant inhabitants of neighborhoods where loans were commonly denied. Banks and federal government loan agencies considered investments in these areas too risky. The term originated as these lending institutions identified these no-loan areas by red lines on maps. Redlining reinforced the downward spiral of struggling and predominately minority neighborhoods. Minorities' inability to get loans significantly limited homeownership and often resulted in higher poverty rates. Laws now restrict redlining so that denial of a loan cannot happen for racial or cultural reasons.

Other discriminatory laws and practices existed. It was legal for landowners or real estate agents to deny selling or renting property to people based on race, ethnicity, gender, marital status, or religion. Most of the suburban neighborhoods in the United States denied minorities the right to buy homes. This practice prevented minorities from buying less-expensive homes in the suburbs, thereby forcing them to rent because they could not afford the more expensive land and houses closer to the city center.

These practices are now illegal in the United States because of the Fair Housing Act of 1968, but discriminatory policies have impacted the spatial arrangements of U.S. cities dramatically. Most economists argue that home ownership is a key factor for individual wealth. While minority homeownership has improved, the legacy of discriminatory policies still exists according to U.S. census data:

- In 1900, fewer than 20 percent of African Americans owned a home compared to over 46 percent of White people.
- In 2019, over 73 percent of White Americans owned the home they lived in compared to 42 percent of African Americans and 47 percent of Hispanics and Latino Americans.

**Racial segregation** in housing occurs when people live in separate neighborhoods based on their ethnicity or race. Segregation can occur voluntarily (see Topic 3.2) but often occurs involuntarily. In particular, throughout U.S. history, many communities had neighborhoods where African Americans could live and neighborhoods where they could not. Such segregation was enforced through real estate practices, traditions, and violence.

One of these practices was **blockbusting**. This is when people of an ethnic group sold their homes upon learning that members of another ethnic group were moving into the neighborhood. In U.S. history, often middle-class White families left when African American or Hispanic families moved into neighborhood. Investors would buy houses at low prices and either resell or rent them to minorities for a large profit.

Segregated neighborhoods can sometimes become **ghettos**, areas of poverty occupied by a minority group as a result of discrimination. Residents who live in ghettos often feel trapped because of social or political factors or a lack of economic opportunities. These neighborhoods have a high percentage of residents who rent, poorly maintained buildings, fewer businesses, and underfunded education and other government services.

## Government Support for Affordable Housing

Governments have responded to the shortage of low-income housing in various ways. The federal government provides financial subsidies to help low-income residents with the cost of housing. London, New York City, Denver, and other cities have rent control policies that keep some affordable units available when a neighborhood improves. **Inclusionary zoning** practices offer incentives for developers to set aside a percentage of housing for low-income renters or buyers. However, critics point out that these policies reduce incentives for investments in new housing.

One reason for the shortage of affordable housing in urban neighborhoods is the cost of constructing and managing a new building can be greater than the profits a business can make. Governments and charitable groups, in both the United States and other countries, often step in to provide assistance, either by building and operating housing or by providing subsidies for others to do so.

These public housing developments—sometimes called “projects”—were first built in areas of the inner city where other structures had been torn down. Many provided decent housing and a solid sense of community. However, these buildings were often high-rise apartments, which concentrated poverty in a small area within the city. These areas experienced problems common in other urban neighborhoods where the poor were clustered, such as drug use, high crime rates, and poor maintenance.

In some cities, community leaders used a **scattered site** approach to alleviate the problems of public housing. In this approach, of the city or government provided rental assistance for individuals to disperse public housing throughout the area. This allowed children access to better local schools and older residents access to amenities in wealthier neighborhoods.

The scattered-site approach has faced opposition from the “not-in-my-backyard” response. People fear that adding public housing near them will reduce property values and create problems for local communities and schools.

## ***Urban Renewal***

As residents in the United States moved to the suburbs after World War II, inner cities suffered from urban decay, high crime rates, and increased poverty. During the 1960s and 1970s, many city governments in the United States adopted the policy of **urban renewal**. The policy allowed governments to clear out the blighted inner-city slums, which usually displaced the residents to low-income government housing complexes, and built new development projects.

Governments often use the legal concept of **eminent domain** which allows the government to claim private property from individuals, pay them for the property, and then use the land for the public good. The practices of urban renewal and eminent domain happen in all countries but they most disproportionately affect minorities and the poor in periphery and semiperiphery countries.

## ***Gentrification***

During the 21<sup>st</sup> century, large numbers of people desired to leave the suburbs and move closer to the urban core. **Gentrification** is the process of converting an urban inner-city neighborhood from a mostly low-income, renter-occupied area to a predominately wealthier, owner-occupied area of a city. Often gentrifying areas are of mixed-use development and include art districts, coffee shops, commissioned street art, dog parks, and trendy bars and restaurants. Also, these neighborhoods are near the central business district and its many amenities are available by public transportation.

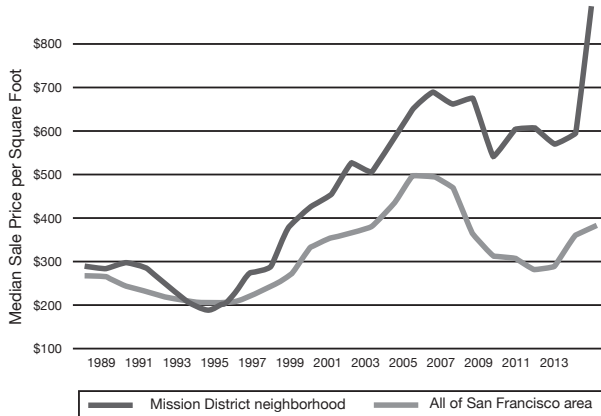
Gentrification occurs mostly in the cities of core countries but is increasingly happening in cities in the periphery. Often the households in gentrified areas are dual-income, no-kids regardless of the level of development of the city in which they are located. The newcomers to gentrified areas are often a combination of three groups:

- young urban professionals with high-paying jobs
- LGBTQ+ looking for neighborhoods that are more inclusive, accepting, and safe
- older couples whose children have moved out

While gentrification includes positive aspects, there are also negative ones. These neighborhoods experience changes in racial and cultural diversity. Gentrification can displace residents, create space that excludes minorities or the poor, and eliminate the historical cultural landscape of previous residents.

As land values rise in inner cities along the growing edge of the central business district, low-income and often minority urban residents are pushed out by rising rents or rising taxes. Older residents who own their home, but live on fixed incomes, can no longer afford to pay taxes and often have to sell their homes and move.

## GENTRIFICATION IN SAN FRANCISCO



Source: Dataquick

The graph shows how property values increased in the Mission District neighborhood in San Francisco. Describe a positive and a negative of rising property values.

## Housing in Periphery Countries

Urbanization has rapidly expanded the population of cities in periphery countries, which has highlighted a lack of quality housing, especially for poorer residents. The periphery of cities often consists of **informal settlements**, densely populated areas built without coordinated planning and without sufficient public services for electricity, water, and sewage. Residents often lack **land tenure**, or the legal protection of contracts to show ownership of the land or structures. These areas are also known as urban slums, favelas or squatter settlements in different parts of the world. (See Topic 6.5.) Residents construct housing from whatever materials are available. Bricks and concrete blocks are more durable, but sheets of tin and plastic are also used. Living in these buildings can be dangerous because of questionable building materials and rarely enforced housing codes. In 2013 in Mumbra, India, 74 people died when an apartment building collapsed.

Most *informal settlements* are in *disamenity zones* (see Topic 6.5), abandoned land, or undeveloped open spaces such as parks. **Zones of abandonment** are areas of a city that have been deserted by their owners for either economic or environmental reasons. In some extreme cases, entire cities have been abandoned usually because of disasters such as the nuclear reactor meltdowns in Chernobyl, Ukraine (1986), and Fukushima, Japan (2011).

In most cases, abandonment is the result of economics and impacts different aspects of an urban region. The area will often have empty decaying buildings, poor sanitation, high crime rates, and vandalism. Examples occur in all regions of the world including Detroit, Michigan, or Kowloon, near Hong Kong. Another specific type of abandonment is a *brownfield*, created when factories leave an area. (See Topic 6.11.)





**Source:** Wikimedia Commons

Kowloon Walled City near Hong Kong was a zone of abandonment, then a slum, and was torn down in 1993 to make room for urban renewal and a park.

A problem facing many poor communities worldwide is **environmental injustice**, sometimes referred to as **environmental racism**, the disproportionate exposure of minorities and the poor to pollution and its impacts, plus the unequal protection of their rights under the law. This process is more common in urban settings where poor communities are often located near high-polluting activities. Some governments will limit new high-polluting industries and activities to poor existing neighborhoods. Residents of these neighborhoods often lack the economic and political resources to block new high-polluting development in their neighborhoods, or to even minimize the impacts.

Geographers use GIS technology to map and study the vulnerable impacted populations and some work together with communities to create solutions. Environmental injustice often results in increased health problems, such as birth defects and cancer, as well as shorter average life expectancy.

### ***Gated or Walled Communities***

The compact nature of many cities around the world has pushed informal settlements and poorer communities to live in close proximity to the wealthy. One response to this new geographic pattern is the building of walled or fenced neighborhoods with limited access and entry points, called **gated communities**. They represent a redesign of urban living with an attempt to recapture features more commonly found outside urban areas—safety, quiet, and homogeneity.

Gated communities are growing in cities all around the world. Some have referred to them as *citadels*, after historic castles and forts built to ensure safety inside the walls amid lawlessness and crime outside. The growth of gated communities can reinforce separation in economics, social status, ethnicity, and even political views. Slums and wealthy gated communities are often close to each other because residents in both groups desire access to the economic center of the city.

## **Homelessness**

All countries of the world face the challenge of homelessness, the condition of not having a permanent place to live. While some unhoused people find temporary shelter with friends or relatives, others live on the streets. In the United States, the unhoused population was once primarily single men, but the problem expanded in the late 20<sup>th</sup> century to include more women and children. Government, religious groups, and nonprofit organizations responded by building shelters, advocating for public funding to support housing, and helping the unhoused learn new skills and gain access to health care and social services. In cities without strong public transit systems, people who are unhoused have difficulty traveling to available jobs and services.

## **Services**

Shops and services often struggle to survive in urban neighborhoods. If the patrons are poor, prices for services must be low to maintain a customer base in the area. The result is very tight margins with little money available for shop owners to spend on maintenance or improvement of their facilities. The housing decay spreads to the service sector. Public services such as parks and swimming pools might be rare in urban neighborhoods with low tax bases. Private businesses and service providers, such as doctors and dentists, are often scarce in poor neighborhoods. They are particularly scarce in poor, heavily urbanized countries. For example, in Bangladesh, the number of doctors per capita is about one-fifth the number in the United States.

## **Food Deserts**

Access to food stores in urban neighborhoods is often a problem. Grocery stores and supermarkets tend to favor suburban locations, where residents are wealthier and land costs less. Fresh, healthful food may be far less available than lower priced fast food. This results in few choices for poor families beyond fast food. These urban zones that lack food stores are known as *food deserts* (see Topic 5.11), and they contribute to health problems, such as obesity and diabetes, for poorer urban residents.

Many cities are developing programs and systems to bring food into urban food deserts, such as mobile grocery stores and community gardens, and incentives for grocery stores that locate in low-income areas. Some local food groups provide fresh fruits and vegetables at local pop-up markets.

## **Political Challenges of Urban Regions**

Governing urban regions can be challenging because *metropolitan areas* (see Topic 6.1) are often a collection of adjacent cities and counties each, with its own government but environmentally, economically, and socially connected. Many urban challenges require a regional approach to governance—examples include urban growth, mass transit, road construction, pollution, and homelessness. Regional governance typically requires voluntary coalitions of city governments to address the needs and create plans for the larger region.

Occasionally, special districts (see Topic 4.7) are established to handle long-term regional needs such as transportation, fire, and police districts.

The system of federalism has many strengths but its fragmented nature of governance between states, counties, cities, and neighborhoods often makes collaboration difficult. It is challenging to get multiple levels of government to agree on and implement plans for any major project. The benefits of such cooperation are comprehensive plans and shared costs by the various levels of governance. Additionally, with collaboration, economies of scale (reduced per unit cost) are more likely to be achieved in large-scale projects.

Cities with successful regional planning include Portland, Oregon; Minneapolis, Minnesota; and Amsterdam, Netherlands. Amsterdam has developed a regional multi-model transportation system and a large-scale smart-city initiative that limits outward growth while improving the infrastructure and livability of the existing urban regions. Urban planners argue that as networked *meta-cities* (see Topic 6.2) of over 20 million people continue to increase around the world, regional planning will be required to improve the connectivity, infrastructure, and livability of these urban giants.

REFLECT ON THE ESSENTIAL QUESTION

**Essential Question:** *What are the causes and effects of geographic change within urban areas?*

Causes of Geographic Change in Urban Areas	Effects of Geographic Changes in Urban Areas

KEY TERMS

redlining	gentrification
racial segregation	informal settlements
blockbusting	land tenure
ghettos	zones of abandonment
inclusionary zoning	environmental injustice (environmental racism)
scattered site	gated communities
urban renewal	
eminent domain	

# Challenges of Urban Sustainability

**Essential Question:** How effective are attempts to address urban sustainability challenges?

Cities are becoming the dominant landscape in the world with more than half of the world's population living in cities. The United Nations predicts that will rise to over two-thirds by 2050. Consequently, the actions of cities are key to living in a more sustainable world. Multiple levels of government will have to work together to deal with the challenges faced by urban areas.

## Environmental Problems in Cities

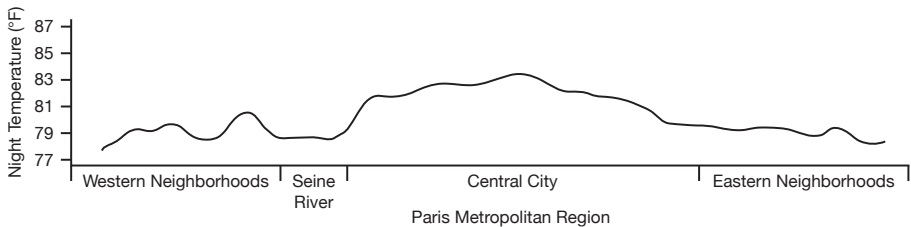
A city and its population affect the environment in many ways. Stresses are placed on nature when people modify the environment and in the way they respond to those changes.

### *Environmental Effects of Cities*

The physical landscape of an urban area affects the natural environment in many ways and often poses challenges to urban sustainability:

- **Urban canyons**, streets lined with tall buildings, can channel and intensify wind and prevent natural sunlight from reaching the ground.
- Soils are compacted and replaced with structures that are impermeable to water, such as buildings, streets, and parking lots. As a result, rainwater runs off instead of soaking into the ground, causing urban flooding.
- Water demand increases as people move to cities, which can strain existing water resources. Water is often diverted from agricultural use to urban use.
- The concentration of buildings and concrete in the center of a city creates an **urban heat island**, an area of a city warmer than surrounding areas.

### PARIS AS A HEAT ISLAND



**Source:** Data is from the Summer of 2003, nasa.gov.

The diagram of Paris shows that the central city is relatively warm. In contrast, the Seine River, which has no buildings, is cooler. In the summer what are the negatives of the urban center being hotter than the surrounding areas?

## **Cities and Wildlife**

Wildlife is also affected by urban areas. Cities destroy animal and plant habitats, redirect or replace natural hydrologic (water) systems such as rivers and lakes, and break up ecosystems. The interruption of continuous ecosystems makes it difficult, if not impossible, for animal species to survive. The animals that survive are often in conflict with humans:

- Native animals such as deer, coyotes, skunks, alligators, bears, cougars, monkeys, and leopards cause problems where cities have invaded or abutted their natural territories.
- **Urban wildlife** such as rats, raccoons, and pigeons can thrive in cities, but they can spread diseases and be a nuisance to people.
- Feral (wild) populations of cats, dogs, snakes, and other former pets that have escaped their human owners or have been abandoned can be dangerous or upset the ecological balance.

## **Pollution**

Rising urbanism also degrades the environment, particularly in less-developed countries that have fewer resources to combat pollution. Industrial and human waste, concentrated in cities will, if untreated, pollute rivers, aquifers, and coastal areas. As countries develop, air pollution increases because of more industrial activity and more emissions from a growing number of cars. Poorer inhabitants in these cities burn charcoal, wood, and kerosene as fuel sources, all of which pollute the air.

In large, urban regions, automobile pollution causes serious concerns. The huge number of commuters to central business districts and surrounding edge cities creates problems beyond congestion. During **rush hour**, the commuting periods in early morning and in late afternoon or early evening when many people travel to and from work, idling cars on roads increase and concentrate air pollutants in the city. The result is smog, a severe issue in large cities such as Los Angeles, Beijing, Delhi, and Mexico City.

Climatic conditions and the physical geography of cities and surrounding areas, such as mountains, can intensify pollution. For example, mountains surround Mexico City, and during temperature inversions (when a layer of hot air sits above cool air), smog is trapped and concentrated close to the ground for days with negative effects on the health of the inhabitants. According to the World Health Organization, air pollution results in three million deaths a year. One-third of those are in China, where coal is widely used in industry and to heat homes.

## **Urban Sprawl**

Before automobiles became popular, cities tended to grow vertically through taller buildings as population expanded. Since the mid-20<sup>th</sup> century, cities and their related environment—such as roads and commercial developments—have expanded horizontally across the landscape. This rapid spread of development outward from the inner city is called **suburban sprawl**.

In the United States, sprawl is most common in fast-growing areas in the Southeast and West. Urban areas experience sprawl for several reasons:

- the availability of automobiles
- the creation of interstate and other high-speed highways
- the presence of inexpensive land outside the urban area

As a city spreads out it has a greater impact on the environment. More land and energy per capita are needed to maintain a sprawling city as compared to a more compact city design. The physical size of a city has a direct correlation with an **ecological footprint**, or the impact of human activity on the environment. (See Topic 7.8.)

## Responses to Urban Sustainability

Urban systems continue to expand and maintain their position as the dominant location where humans live, work, and play. Therefore, geographers continue to study and propose ideas to respond to the challenges that growing cities create.

### *Regional Planning and Brownfields*

Responses to urban challenges often require a regional planning approach (see Topic 6.10) because urban areas spread across large spaces, include multiple cities, and have wide ranging impacts. Protecting farmland from expanding cities, developing large-scale water and sewage systems, or creating responses to air pollution require collaborative efforts from multiple stakeholders.

On a local scale remediating and redeveloping land is a critical issue for cities. Industry once thrived in central cities of developed countries. Yet new technologies have decreased the need for workers, which weakened the economic strength of many cities. Also, manufacturing moved to the suburbs, where land was cheaper, and to other countries, where labor was less expensive.



**Source:** Wikimedia Commons

This abandoned automobile factory in Detroit, Michigan, is both a zone of abandonment (see Topic 6.10) and a brownfield. Describe two challenges of using brownfields as sites for redevelopment.



As manufacturing moved away, cities were left with unemployed residents and abandoned factories. Brownfields are visual reminders on the landscape of how the centers of cities have changed over time. A typical **brownfield** consists of dilapidated buildings and polluted or contaminated soils. These are expensive to remove or repair and often remain in cities, devaluing neighboring properties. Brownfields exist in most core countries and in some semiperiphery countries such as China.

If remediated, their locations are increasingly used as redevelopment sites. If the building remains structurally solid, an entrepreneur might renovate it for a new use and keep enough of its exterior so that people know the building's history. People have converted old factories into apartments, restaurants, recreational facilities, and artisan boutiques.

**Redevelopment**

The process of **urban redevelopment** involves renovating a site within a city by removing the existing landscape and rebuilding from the ground up. The process of urban redevelopment usually begins when a local government declares that an area it wishes to develop is blighted, in a deteriorated condition. Eminent domain laws (see Topic 6.10) allow the government to seize land for public use after paying owners the market value for their property. Cities often use these laws to enable the building of new roads or schools, but they can also sell the land to private groups to build hotels, hospitals, or other developments.

While redevelopment initiatives sometimes replace brownfields or low-quality housing with successful enterprises, critics point out that these efforts can cause problems. They can force poor people to leave their homes and communities. Redevelopment can break up and eliminate historic neighborhoods. Private developers are also sometimes given tax-break incentives to purchase and build. By reducing tax revenues on these projects, the city shifts the tax burden to other taxpayers.

REFLECT ON THE ESSENTIAL QUESTION

Essential Question: *How effective are attempts to address urban sustainability challenges?*

Urban Challenges	Impacts

KEY TERMS

urban canyons	rush hour	brownfields
urban heat island	suburban sprawl	urban redevelopment
urban wildlife	ecological footprint	



## **GEOGRAPHIC PERSPECTIVES: IS URBAN OR RURAL LIVING MORE SUSTAINABLE?**

Humans who live in cities have an impact on the environment. Geographers have studied whether it is more sustainable to live in a city, suburb, or rural area. Many factors can influence this comparison ranging from level of development, income, consumption, or geographic location.

All three living scenarios modify the natural environment, but agricultural activities use over 50 percent of the habitable land in the world compared to less than 2 percent of the suburban and urban built-up land. In terms of resource consumption, urban areas consume the most resources in absolute value. However, if measured in per capita values, compact cities consume the least per person.

In periphery countries, air pollution is a major problem in both urban and rural areas. In urban areas, air pollution is generated by car emissions, coal, and other fossil fuels. In rural areas, the greatest threat of air pollution comes from using biomass (organic materials) as a fuel source for cooking and heating. In core countries, urban areas do have higher air-pollution rates than rural areas. However, core countries are making efforts to regulate limits on air pollution and use less-polluting sources of energy.

Water quality is usually better in urban and suburban areas of core countries because of better water treatment and purification systems than well water typically used in rural areas. However, rapidly growing urban areas have a difficult time keeping up with water demands and safe drinking water.

The question is complex and difficult to answer, but in general, compact cities in core countries are the most sustainable per capita and sprawling cities are the least sustainable. Rural areas do have a higher per capita ecological footprint, but the food production and energy resource demands placed on rural locations by cities is largely the cause. Most geographers agree that the choices made by rapidly growing cities in the periphery countries will shift the focus of sustainability and the environment in the future.

1. Explain TWO reasons why compact urban areas are more sustainable than suburbs.
2. Explain why farming is essential to maintaining cities.
3. Explain why it is difficult to answer the question: Which is more sustainable, urban or rural living?



## THINK AS A GEOGRAPHER: COMPARING CITIES

Geographers compare data describing different regions or communities as a way to highlight what makes each place distinctive. Large cities feature diverse populations, including a variety of ethnicities, religions, income levels, forms of entertainment, and health services.

Use the information in this chart to compare life in Philadelphia, Minneapolis, and Orlando and to help you answer the questions below.

COMPARING LIFE IN THREE CITIES			
Statistic	Philadelphia	Minneapolis	Orlando
<b>Population: City</b>	1,517,550	382,618	185,951
<b>Population: Metropolitan Statistical Area (MSA)</b>	6,188,463	3,615,902	1,644,561
<b>Median Household Income</b> (Entire MSA)	\$47,528	\$54,304	\$41,871
<b>Murder Rate per 100,000 Population</b> (City Only)	15.9	7.7	5.8
<b>Median Age</b> (City Only)	34.2	31.2	32.9

1. What are the advantages and disadvantages of living in a large metropolitan area?
2. Explain why the MSA population is larger than the population of each city.
3. Describe the scale of the data for Median Age.
4. In which of the major urban areas listed above would you prefer to live? Use the data from the chart to support your answer.

# CHAPTER 17 REVIEW:

## Urban Challenges and Sustainability

### *Topics 6.8–6.11*

#### MULTIPLE-CHOICE QUESTIONS

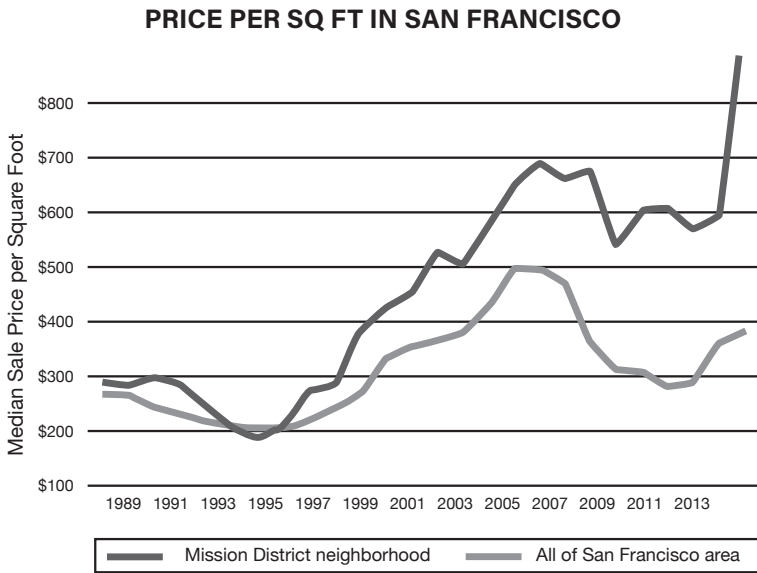
Question 1 refers to the table below.

USE OF PUBLIC TRANSPORTATION			
City	Metropolitan Area Population	Daily Bus Commuters	Daily Subway Commuters
Seoul	25,000,000	4,500,000	5,600,000
New York	20,000,000	2,500,000	3,800,000
Chicago	9,500,000	1,000,000	750,000
Berlin	5,000,000	1,000,000	1,000,000

- Which generalization comparing the use of urban transportation systems in four cities does the table support?
  - People in no country have placed much importance on urban public transportation.
  - Europeans and Asians have placed about the same importance on urban public transportation as have people in the United States.
  - People in the United States have placed more importance on urban public transportation than have Europeans and Asians.
  - European and Asian urban transportation systems serve a higher proportion of residents than do systems in the United States.
  - European and Asian urban transportation systems meet the needs of residents, but systems in the United States fail to do so.
- Based on current and historical conditions, which would be most likely to help alleviate the problem of food deserts?
  - Encouraging food trucks that are part of the informal economy to serve food deserts
  - Encouraging gentrification and building upscale housing in poor neighborhoods
  - Establishing new farmers markets in the suburban and exurban communities
  - Opening upscale food stores in neighborhoods that have already gentrified
  - Opening supermarkets in inner city neighborhoods that have poor public transportation

3. Which has been a partially effective response to the problems of public housing?
- (A) Gentrification, because it creates a safer and more diverse community
  - (B) Scattered-site housing, because it places families in safer areas with better schools
  - (C) Redlining, because it limits bad housing investments in the inner city
  - (D) Eminent domain, because it allows government to gain vast urban lands to develop
  - (E) Blockbusting, because it makes affordable housing more available
4. Which of the following scenarios is best solved using a regional planning model?
- (A) Redeveloping the buildings of a brownfield
  - (B) Deciding to build a new entrance into a mall
  - (C) Choosing a location to build a new playground
  - (D) Building a new mass transit line
  - (E) Choosing where in a CBD to erect a new ten-story office building
5. The revival of downtown nightlife and an increase in street lighting are methods used by city governments primarily to
- (A) deter criminal activity
  - (B) generate tax revenue during evening hours
  - (C) decrease traffic congestion during the day
  - (D) promote new urbanism
  - (E) reduce the effects of exurbanization
6. Which activity most directly uses racial prejudice to perpetuate segregation in housing?
- (A) Gentrification by young professionals and suburbanites moving into the inner city
  - (B) Leapfrogging over suburbs by developers to expand communities far from the inner city
  - (C) Blockbusting by realtors who want to promote movement to the suburbs
  - (D) Scattered-site housing by city governments to keep the poor in the city
  - (E) Ideas of new urbanism applied by developers who are creating mixed-use neighborhoods

Question 7 refers to the graph below.



7. Which of the following is the most likely impact of the changes in price of the Mission District neighborhood?
- (A) Increased poor populations seeking jobs
  - (B) Increased minority-owned businesses
  - (C) Decreased young urban professional residents
  - (D) Increased likelihood of a food desert
  - (E) Increased number of dog parks and specialty coffee shops



## FREE-RESPONSE QUESTION

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1. The Brookings Institution, a research organization based in Washington, D.C., issued a report that stated, “Urban areas face daunting economic challenges that have increased in scope in recent years. At the same time, cities provide exciting opportunities for growth and revitalization. The interplay of these challenges and opportunities creates important tasks for policymakers and researchers.”
  - (A) Describe ONE economic problem of urban areas today to which this quotation could refer.
  - (B) Explain the potential economic benefits when an older, run-down part of a city is redeveloped.
  - (C) Explain ONE social problem that can occur when an older, run-down part of a city is redeveloped.
  - (D) Describe the challenges for people who live in an urban food desert.
  - (E) Explain ONE potential solution to address the challenges of living in an urban food desert that does not involve relocating residents.
  - (F) Metropolitan areas such as Los Angeles and Chicago are often made up of multiple smaller cities, each with its own local government. Explain the problems this can create related to solving transportation issues within a metro area.
  - (G) Describe how cities can negatively impact the environment.

## UNIT 6 REVIEW:

# Connecting Course Skills and Content

### APPLYING GEOGRAPHIC SKILLS

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Applying geographic skills is critical for success on the AP Exam. For each skill listed write a one-paragraph response that illustrates your understanding of the question. Support your response with specific examples and evidence. Refer to the Unit 1 introduction (pages 3–7) for tips on how to apply geographic skills.

- 1C** Compare the concepts of metacity and world city.
- 2D** Explain a geographic land use similarity and difference between cities in core and periphery countries.
- 3F** Explain the possible limitations of the quantitative demographic data shown in the table in Topic 6.9 (page 423) for solving an issue about locating a playground in a neighborhood.
- 4E** Compare the images of Chicago and favelas in Brazil in Topic 6.5. Describe a pattern that is similar and one that is different between the images.
- 5B** Using Borchert’s transportation model in Topic 6.1 and urban models in Topic 6.5, explain how rail transportation influences land use of a city on the local scale and the distribution of cities across a wider regional scale.



## WRITE AS A GEOGRAPHER: GIVE FULL EXPLANATIONS

Well-written paragraphs usually begin with a topic sentence stating the paragraph's primary claim. The other sentences then provide support for this idea, such as examples, explanations, or applications of a concept.

Below are sets of points that could be used in a paragraph in response to a question about *urban sustainability*. For each set, write a topic sentence for a paragraph that includes a claim and ties the ideas together and relates to *urban sustainability*.

### 1. Set A

- a city begins a public service to help residents compost
- a state provides incentives for consumers to use less electricity
- a national organization runs public service ads about reducing pollution
- countries of the world sign an agreement to combat climate change

### 2. Set B

- Transit-oriented development (TOD) encourages businesses and residents to locate near mass transit stations.
- New urbanism encourages compact and walkable mixed-use neighborhoods.
- Walkable neighborhoods improve the health of residents.
- Car-dependent cities create a larger ecological footprint.

### 3. Set C

- United States: commuting by bike increased by 62 percent between 2000 and 2013
- Brazil: rainforest loss in 2014 was one-sixth the rate in 2004
- Germany: production of solar energy increased from 1 percent of all energy production in 2009 to nearly 7 percent in 2015
- China: efforts to reduce air pollution have begun to show success