Chapter 13

Urban Patterns

Urban Patterns: Key Issues

1. Why Are Downtowns Distinctive?
2. Where Are People Distributed in Urban Areas?
3. Why Do Urban Areas Expand?
4. Why Do Cities Face Sustainability Challenges?

Key Issue 1: Why Are Downtowns Distinctive?

1.1 Introducing Urban Patterns

1.2 The Central Business District

1.3 Competition for Space in CBDs

Introducing Urban Patterns

Different ways to define an urban area:

- **Central city**: municipal city limits
- **Urbanized area**: central city and surrounding suburbs 50,000+ residents
- **Urban cluster**: 2,500–50,000 residents

Introducing Urban Patterns

- **Metropolitan Statistical Area (MSA)**:
  - urbanized area 50,000+ population
  - county of that urbanized area
  - adjacent counties with high density and interaction with central county
- **Micropolitan Statistical Area (µSA)**: like MSA but central city has 10,000–50,000
- Combinations of MSAs and µSAs

Census Definitions of Urban Settlements

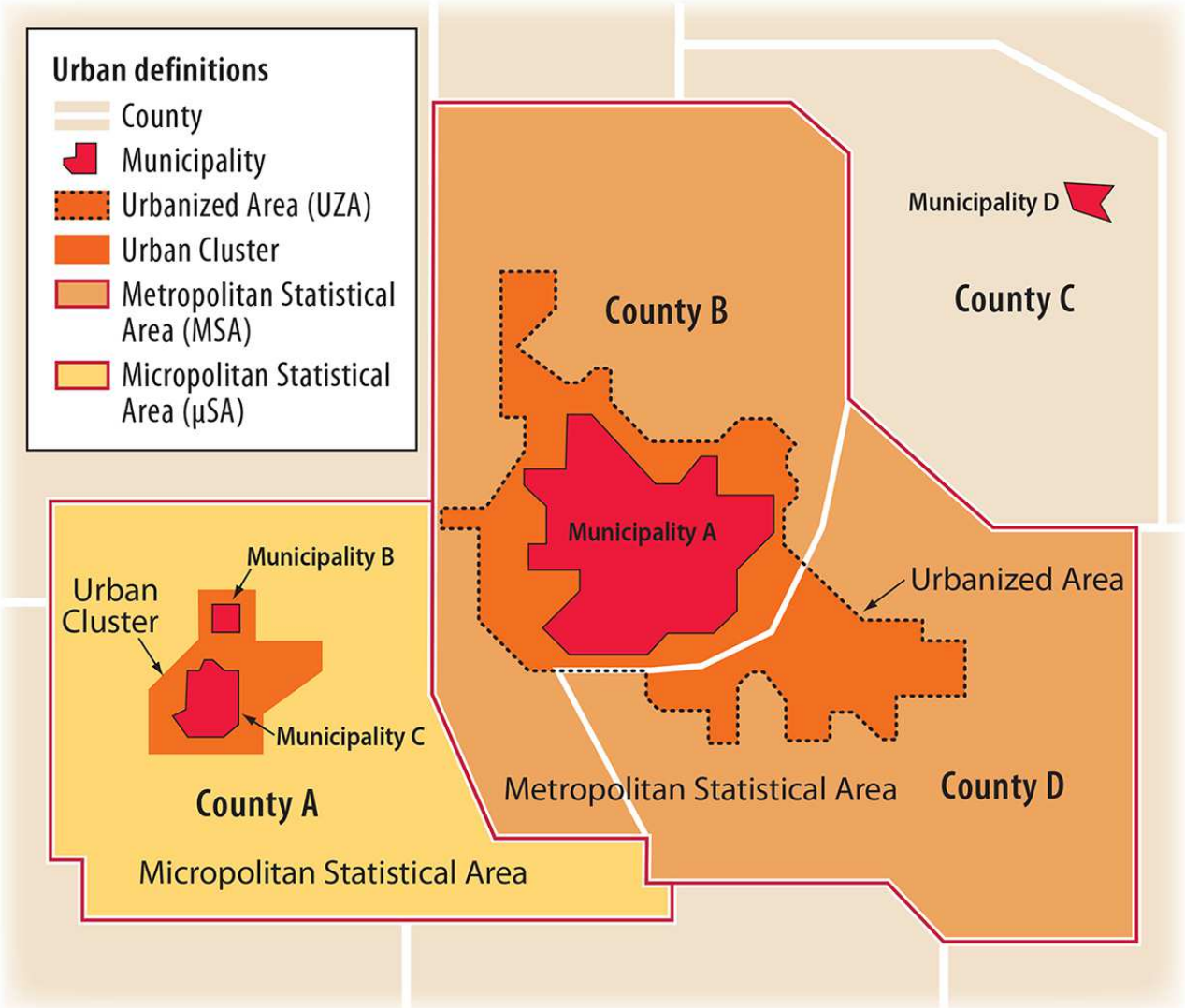


Figure 13-2: The U.S. Census defines urban areas depending on the size and number of municipalities and their interaction.

Census Definitions of Urban Settlements

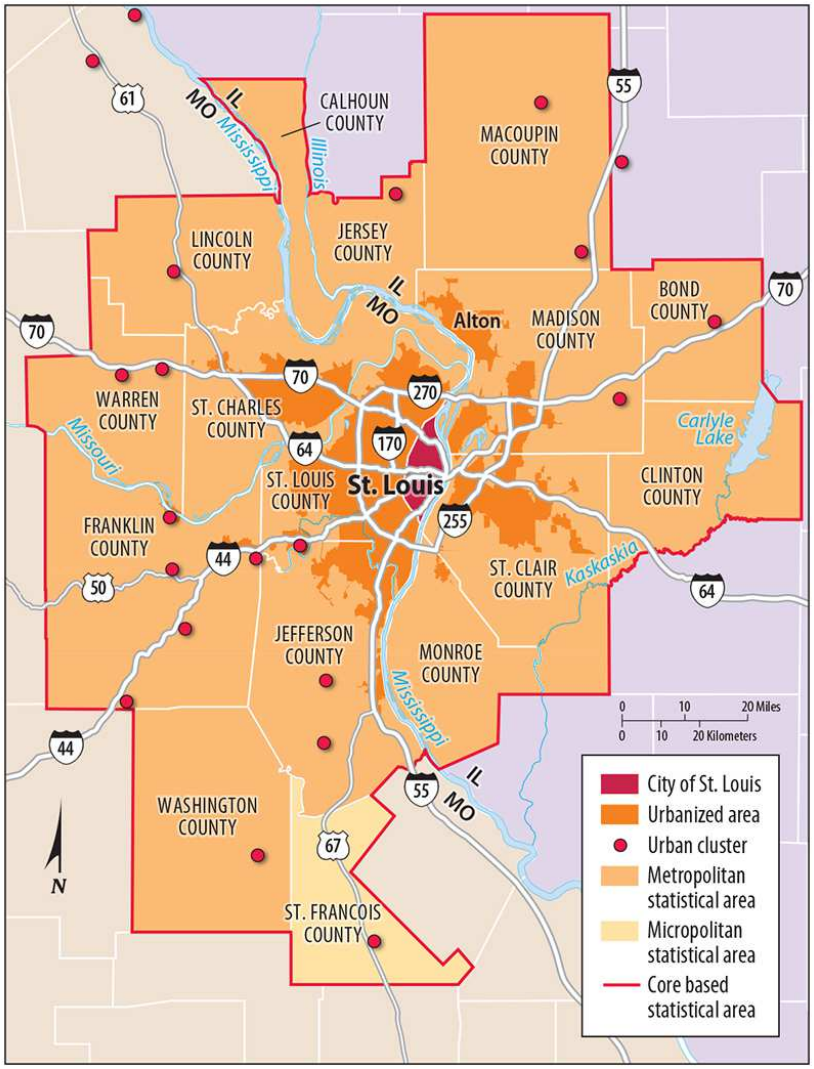


Figure 13-3: statistical area of St. Louis

The Central Business District (CBD)

CBD, or downtown, is most central place in a city, with a high concentration of:

- Public services
- Business services
- Consumer services
  - high threshold and range retail
  - retail serving CBD workers

The Central Business District

- CBD Land Uses
  - Less than 1% of the urban land area
  - Large percentage of the services offered

    1. Public Services
    - City hall, courts, county and state agencies, and libraries.
      - Centrally located for ease of accessibility
      - Sports centers and conventions centers are often downtown to stimulate commerce in the CBD.

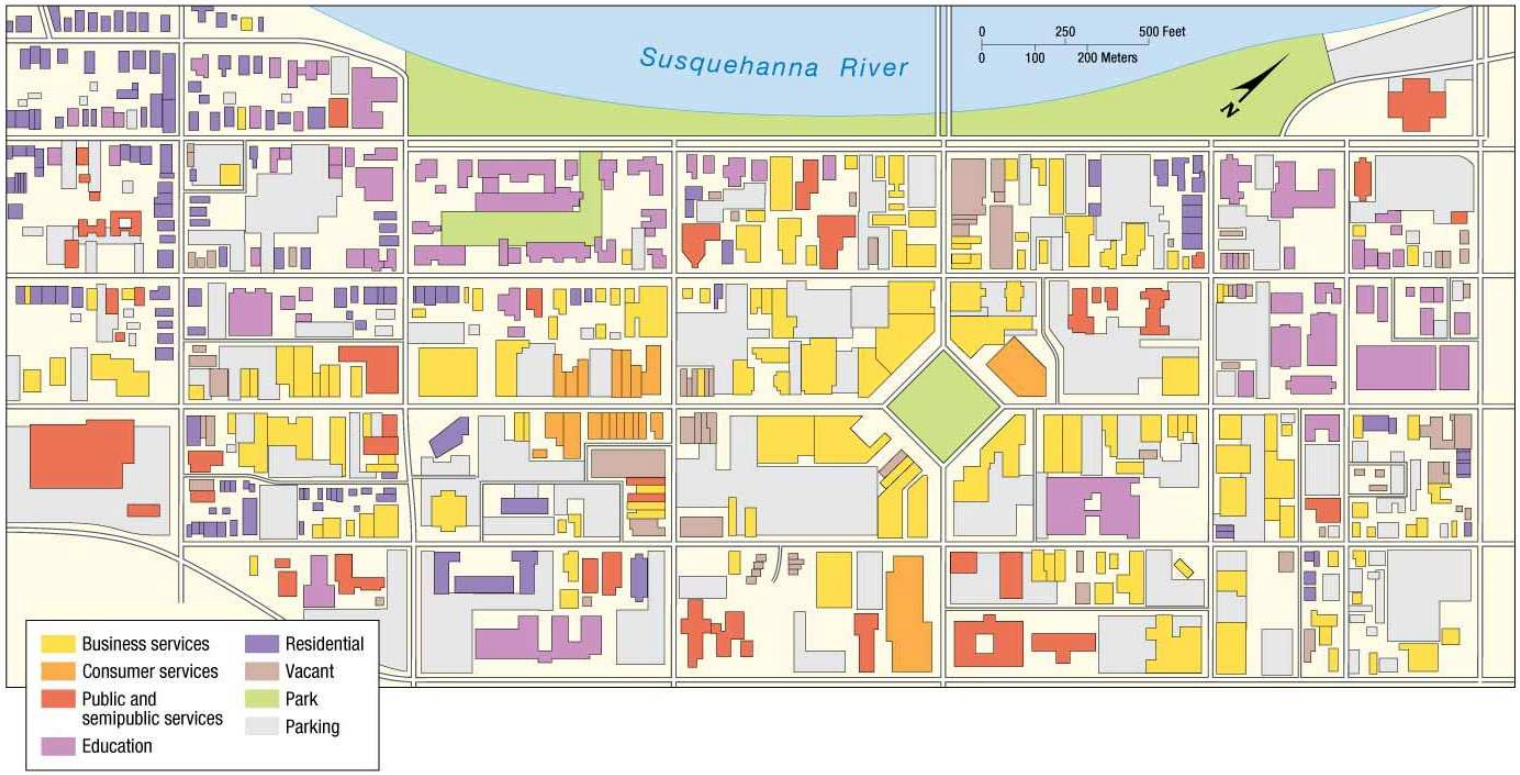
    2. Business Services
    - Advertising agencies, banks, financial institutions, and law
      - Proximity to other service providers for businesses promotes collaboration and face-to-face meetings.

The Central Business District

- CBD Land Uses

3. Consumer Services

- Retail services in a CBD
  - Retailers with a high threshold and range
  - Retailers that served people who worked in the CBD

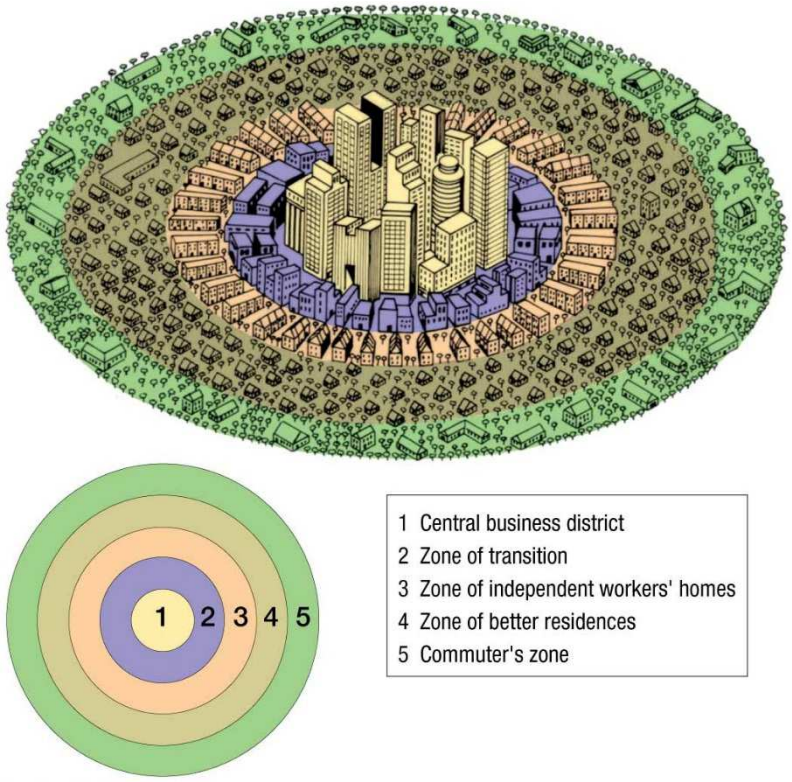


The Central Business District

- Competition for Land in the CBD
  - High demand for the limited space in the CBD has encouraged vertical development.
    - Underground CBD
      - Infrastructure like telephone, electric, and broadband cables, thus they are placed underground and out of sight
      - Pedestrian walkways to shield them from harsh winter weather and cars
    - Skyscrapers
      - Demand for space in CBDs has made high-rise structures economically feasible.

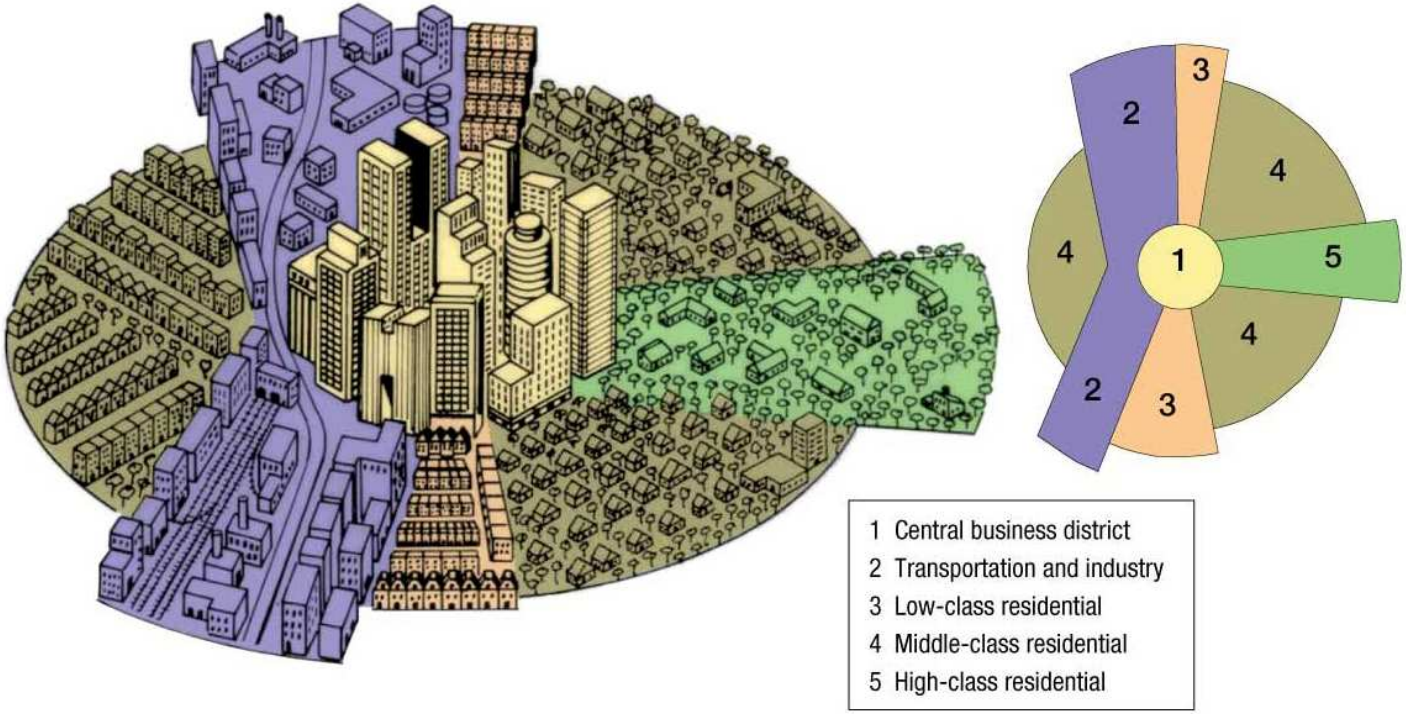
Models of Urban Structure

- Concentric Zone Model- 1923 by sociologist Burgess
  - 1st explanation of distribution of social groups within urban areas
  - City grows outward from central in a series of rings
    - CBD- Innermost ring where nonresidential activities occur
    - A Zone in Transition- Area eventually consumed by CBD
    - Zone of Working-Class Homes- Modest, older houses
    - Zone of Better Residence- Newer, larger houses, middle-class families
    - Commuter Zone- Beyond the continuous built-up



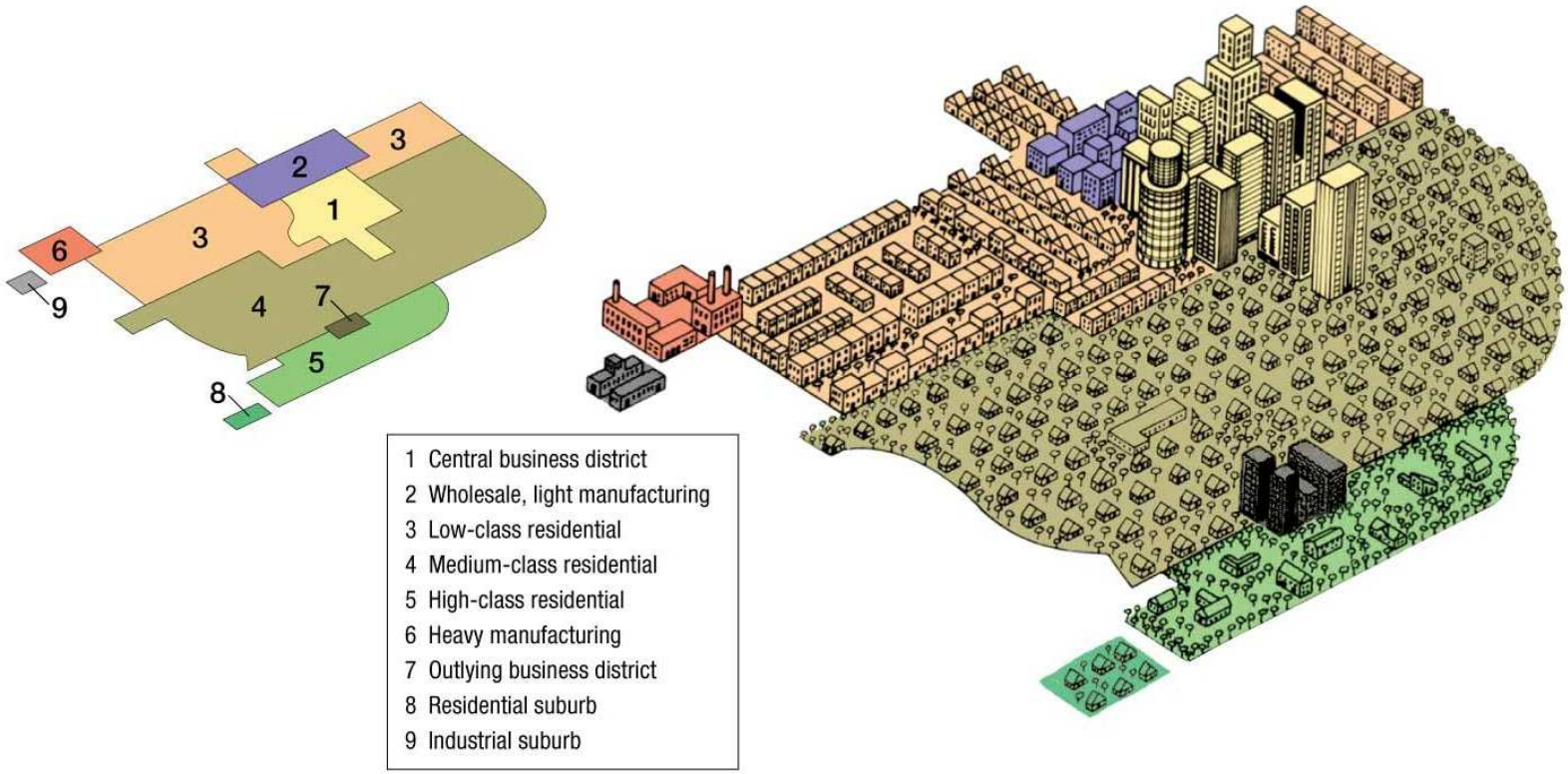
Models of Urban Structure

- Sector Model
  - Created by land economist Homer Hoyt in 1939
  - Model that suggests a city develops in a series of sectors
  - As a city grows, activities expand outward in a wedge from the center



Models of Urban Structure

- Multiple Nuclei Model- Harris Ullman in 1945
  - Model suggests a city is a complex structure that includes more than one center around which activities revolve
    - Ports, Universities, Airports, Parks



Applications of the Models

- Help us understand where people with different social characteristics tend to live and why.
- Critics say models are too simple and may be too dated to explain contemporary urban patterns
- Combining the models does explain where different types of people live in a city
  - People prefer to live near others who have similar characteristics
  - **Concentric Zone Model**
    - Families in newer houses tend to live in an outer ring
  - **Sector Model**
    - Families with the higher income will not live in the same sector as the family with a lower income
  - **Nuclei Model**
    - People with same ethnic background are likely to live near each other

Louisville, Kentucky CBD

Figure 13-5: The Louisville CBD contains a high concentration of public, business, and consumer services. Tall buildings demonstrate the value of locating near the center.

Louisville, Kentucky CBD

Figures 13-7 and 13-8: The CBD features office buildings for business services as well as consumer services with high thresholds and ranges.

Competition for Space in CBDs

High demand for limited land in CBD:

- Vertical development to maximize space:
  - underground spaces
  - skyscrapers
- Some activities excluded:
  - manufacturing
  - residences
    - though changing

Underground Montréal

(a) (b)

Figure 13-10: Montréal, Canada's Underground City (a) maximizes the use of land in the city center and allows shoppers to avoid winter weather (b).

John Hancock Center, Chicago

Figure 13-11: The John Hancock Center and neighboring buildings have commercial services on the lowest floors, offices on middle floors, and apartments and commercial activities again on the topmost floors.

Key Issue 2: Where Are People Distributed in Urban Areas?

2.1 Models of Urban Structure

2.2 Applying the Models in North America

2.3 Applying the Models in Europe

2.4 Pre-modern Cities in Developing Countries

2.5 Applying the Models in Developing Countries

2.6 Changing Urban Structure of
Mexico City

Models of Urban Structure

Three models developed to explain patterns in cities:

- **Concentric zone model**
- **Sector model**
- **Multiple nuclei model**

Concentric Zone Model

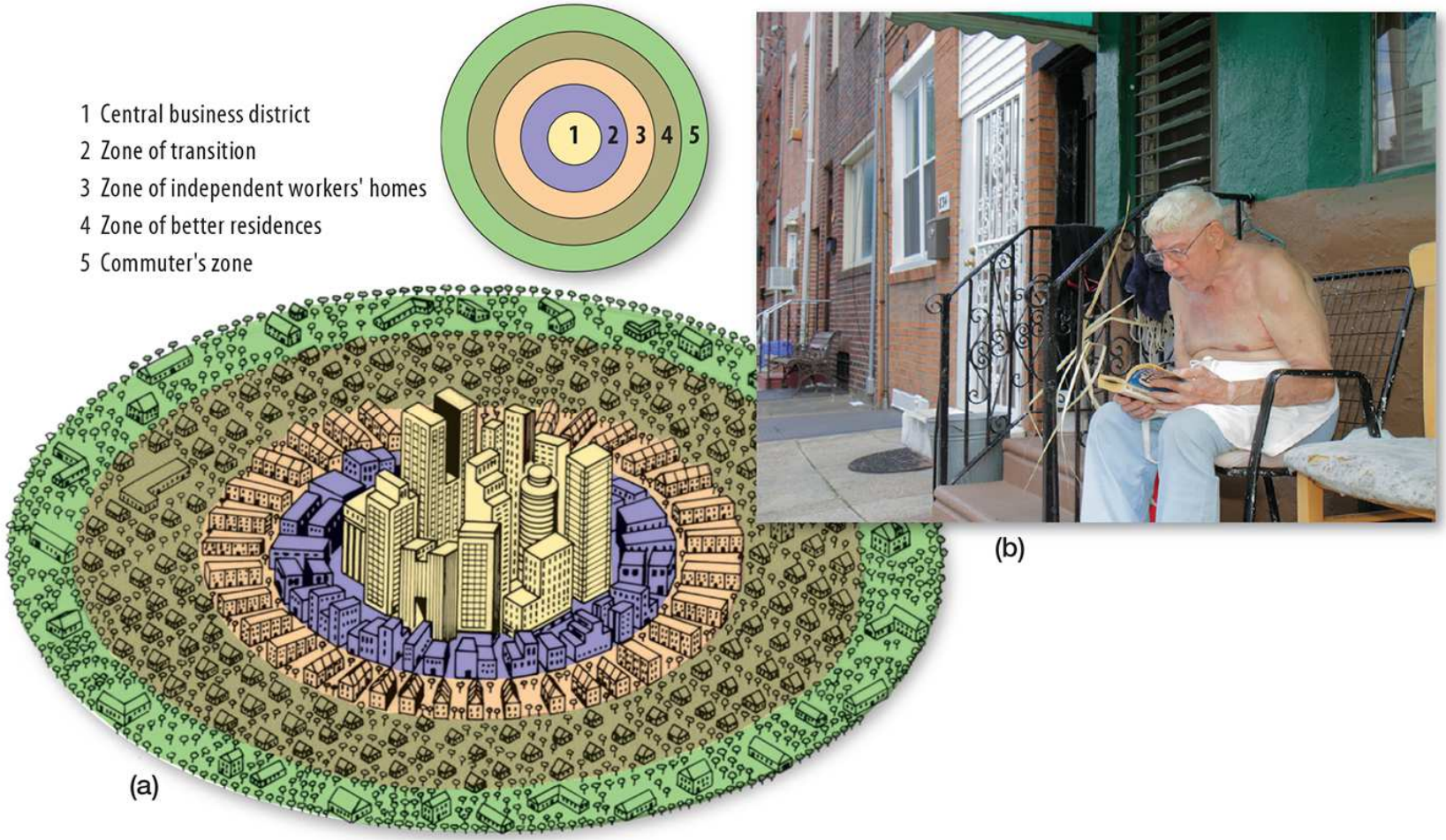


Figure 13-12: This model shows the city as a series of concentric rings of different activities like working-class homes in Philadelphia (b), zone number 3 in diagram (a).

Sector Model

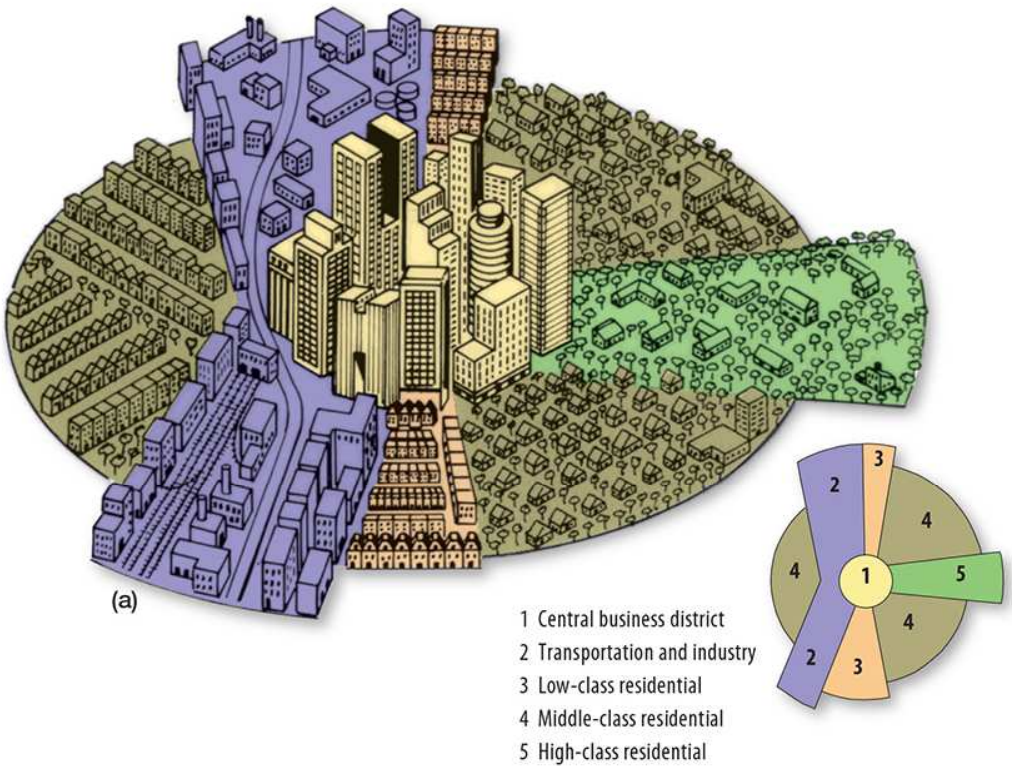


Figure 13-13: This model shows the city developing with wedges or corridors radiating from the CBD, as seen in Chicago's strip of high-class residential housing (b).

Multiple Nuclei Model

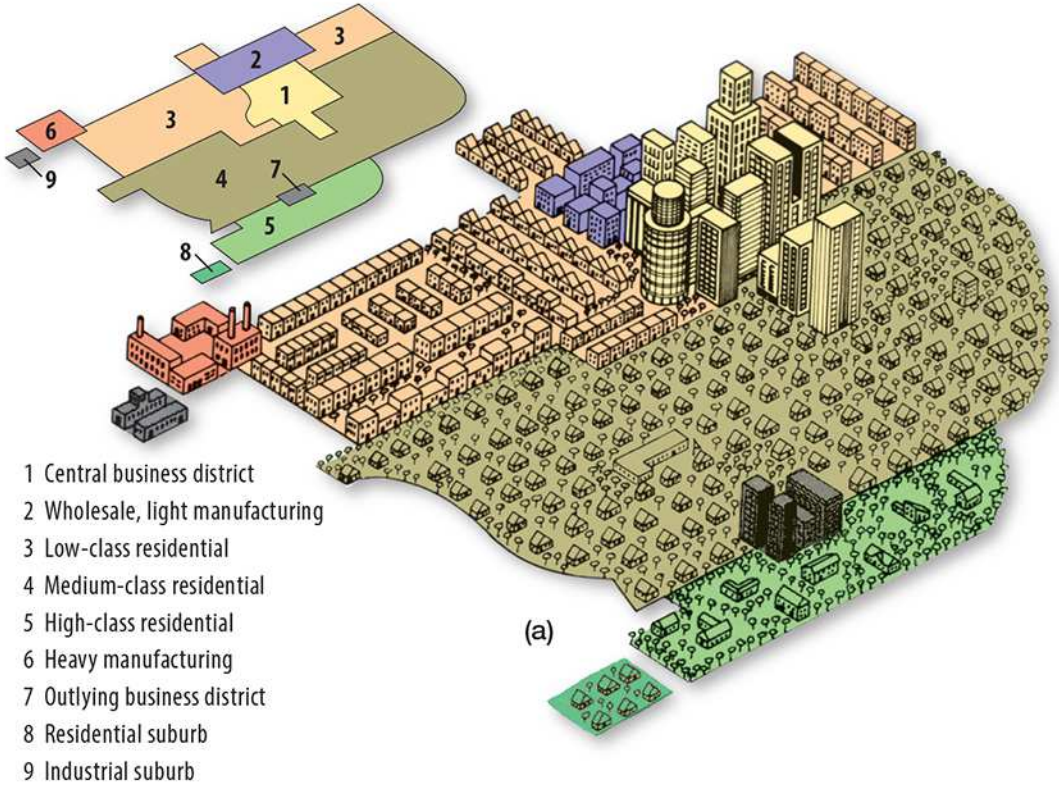


Figure 13-14: This model displays different activities in different nodes, like Harvard Square serving as a center of services for students in Cambridge, near Boston (b).

Applying the Models in North America

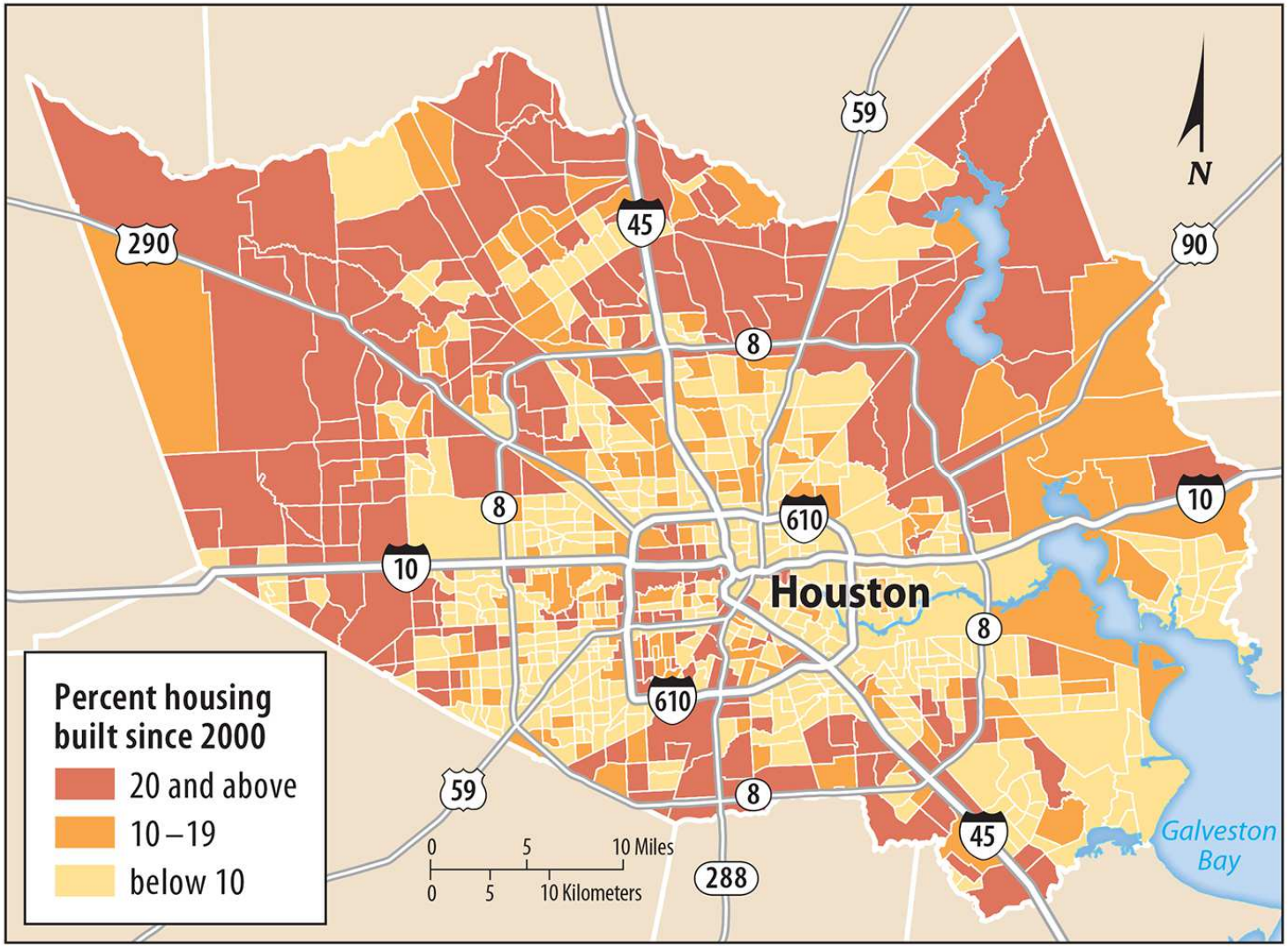


Figure 13-15: Examining the age of housing in Houston, Texas, reveals a concentric pattern.

Applying the Models in North America

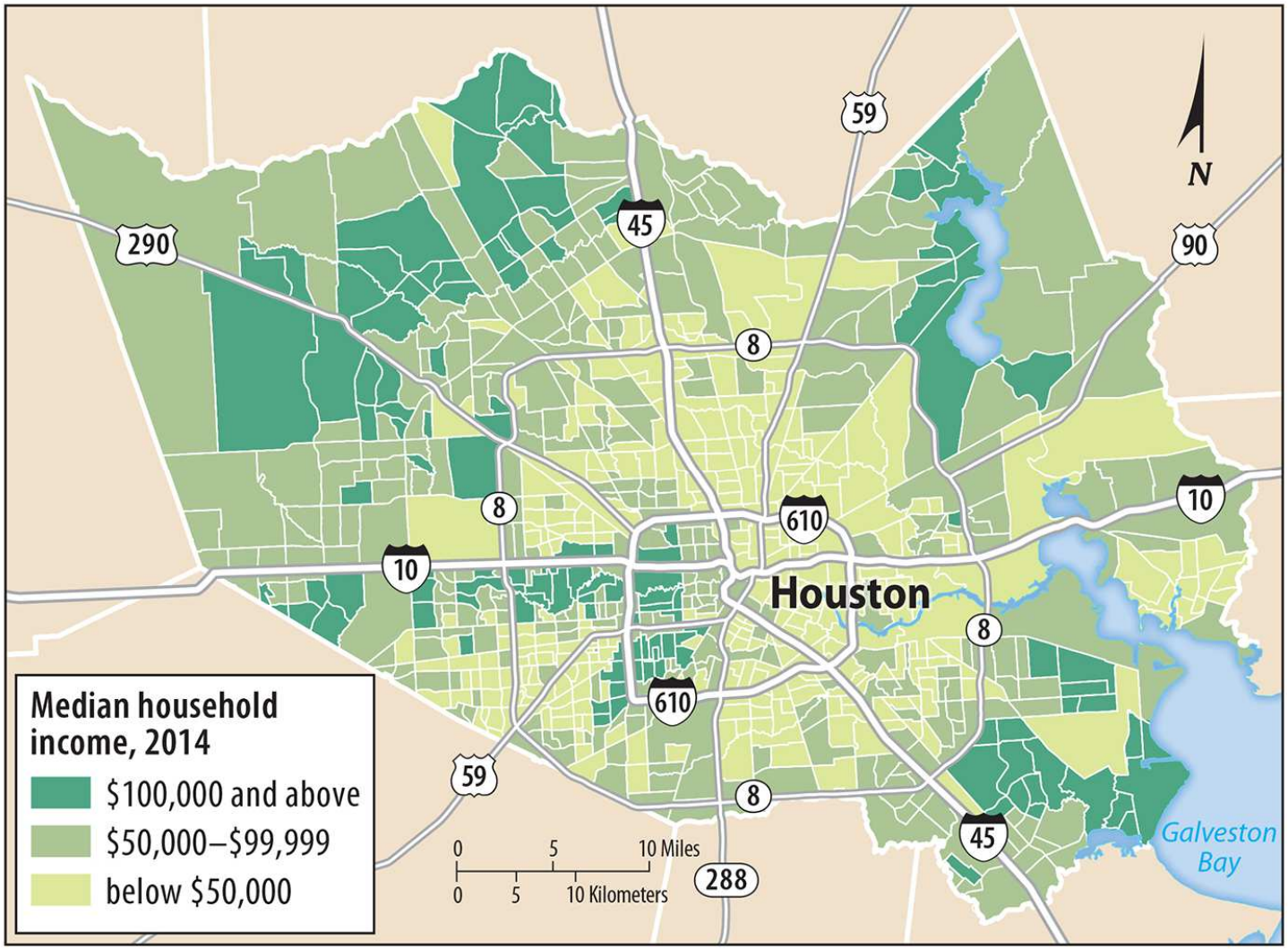


Figure 13-16: Examining the median income in Houston, Texas, reveals a sector pattern.

Applying the Models in North America

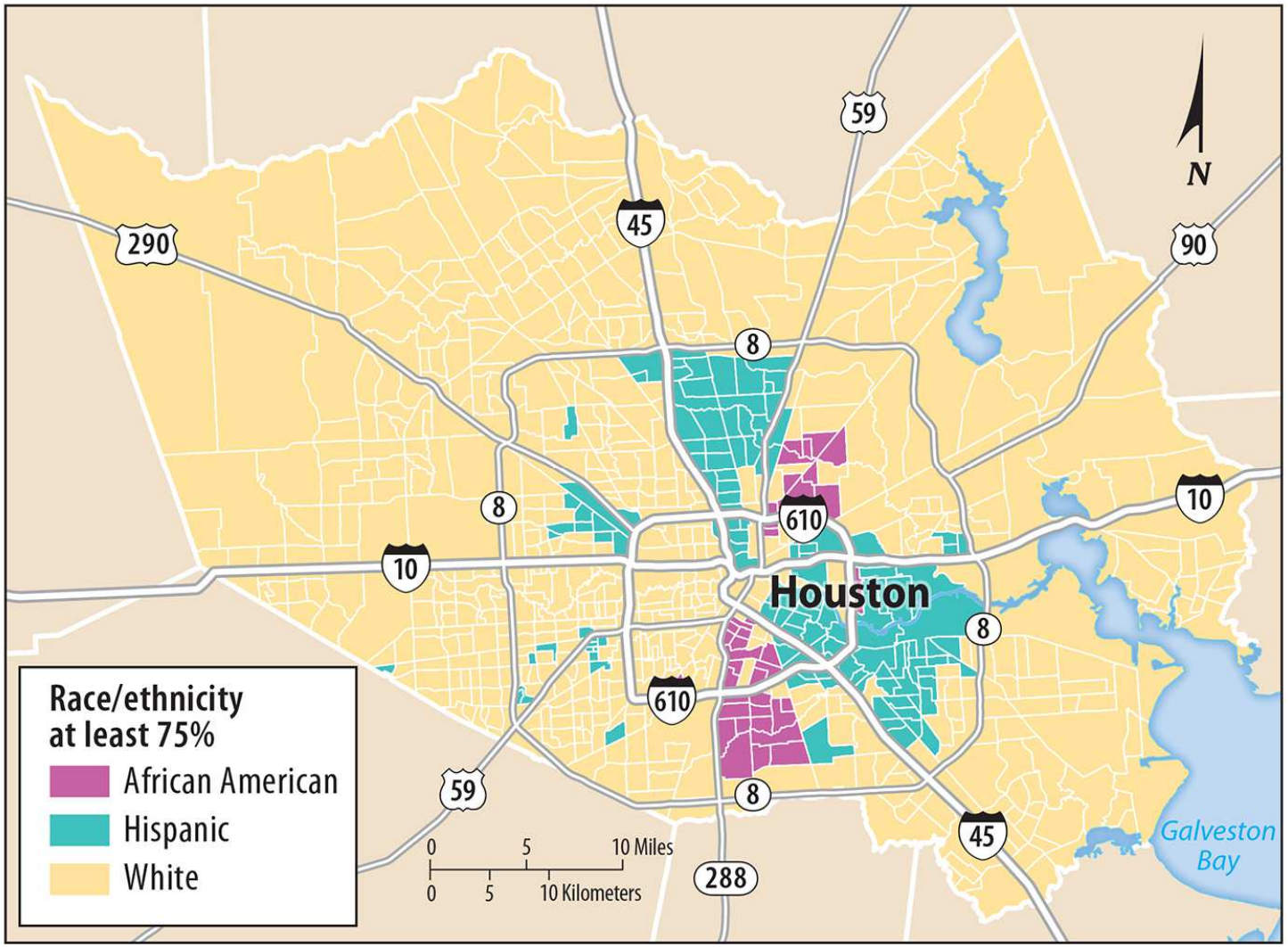


Figure 13-17: Examining the distribution of ethnicities in Houston, Texas, reveals multiple nuclei.

Considering Multiple Models

(a)

(b)

(c)

Figure 13-18: (a) represents a newly built ring in a high-income sector; (b) is a house in the same ring but lower income, and (c) is in the same high-income sector as (a) but nearer to the CBD.

Models Outside of America

- Europe does not work like America
  - Sector Model
    - Wealthy still live in the inner portions of the upper-class sector, not just in the suburbs like most of the affluent in the U.S.
  - Concentric Zones
    - Most of the newer housing built in the suburbs is high-rise apartment buildings for low-income people and recent immigrants

- Applying the Models in Developing Countries
  - Latin America and Africa
    - The poor live in suburbs and fringes of city
    - Wealthy live near the center of the city

Applying the Models in Europe

Figure 13-19: A street market in Paris reflects the higher number of wealthy residents in and near the CBD when compared to North America.

Applying the Models in Europe

Figure 13-20: Like many other European cities, Paris does not have many skyscrapers; the one in this photo was so unpopular when built that no others were allowed.

Applying the Models in Europe

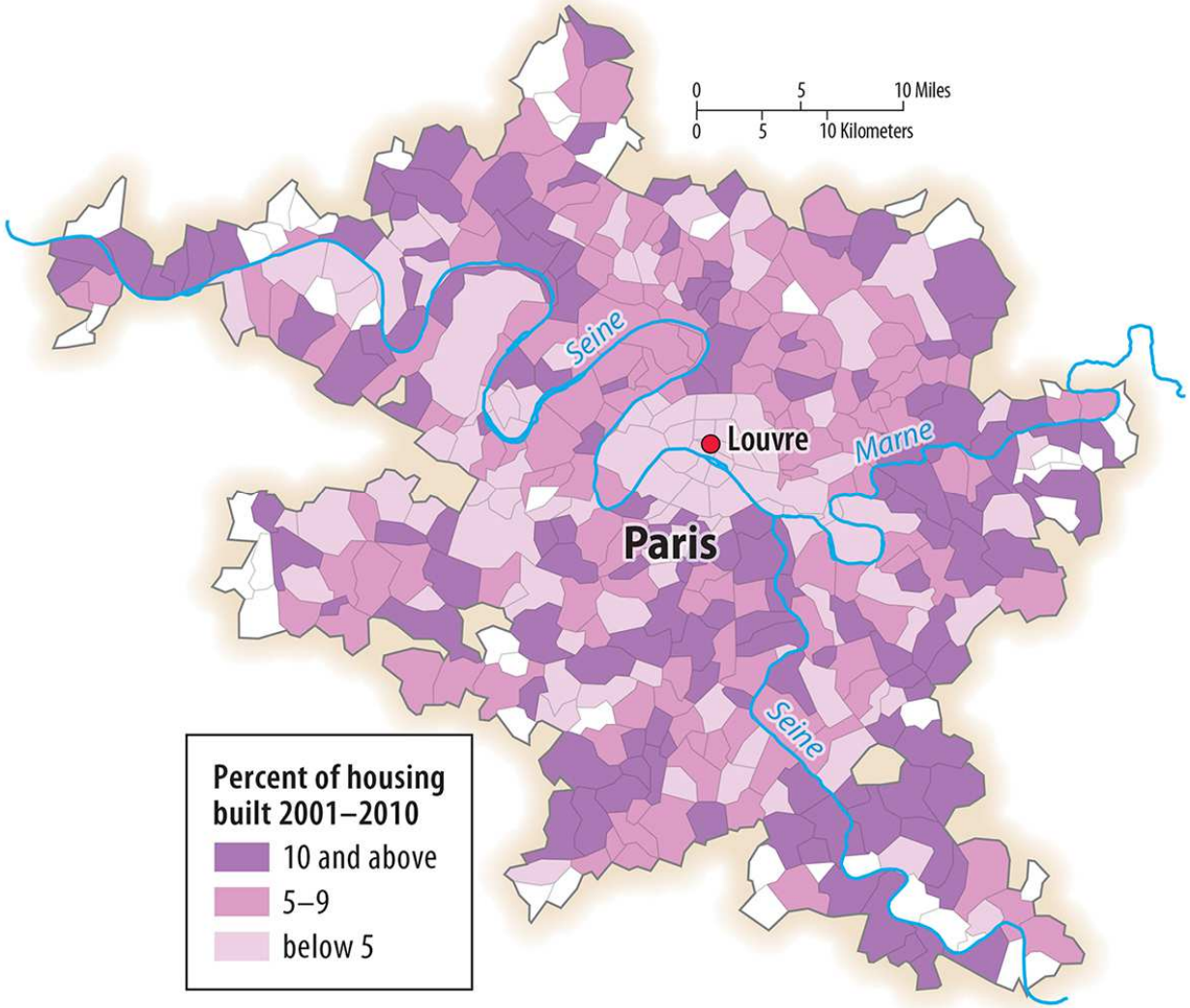


Figure 13-21: Age of housing in Paris follows a concentric zone model.

Applying the Models in Europe

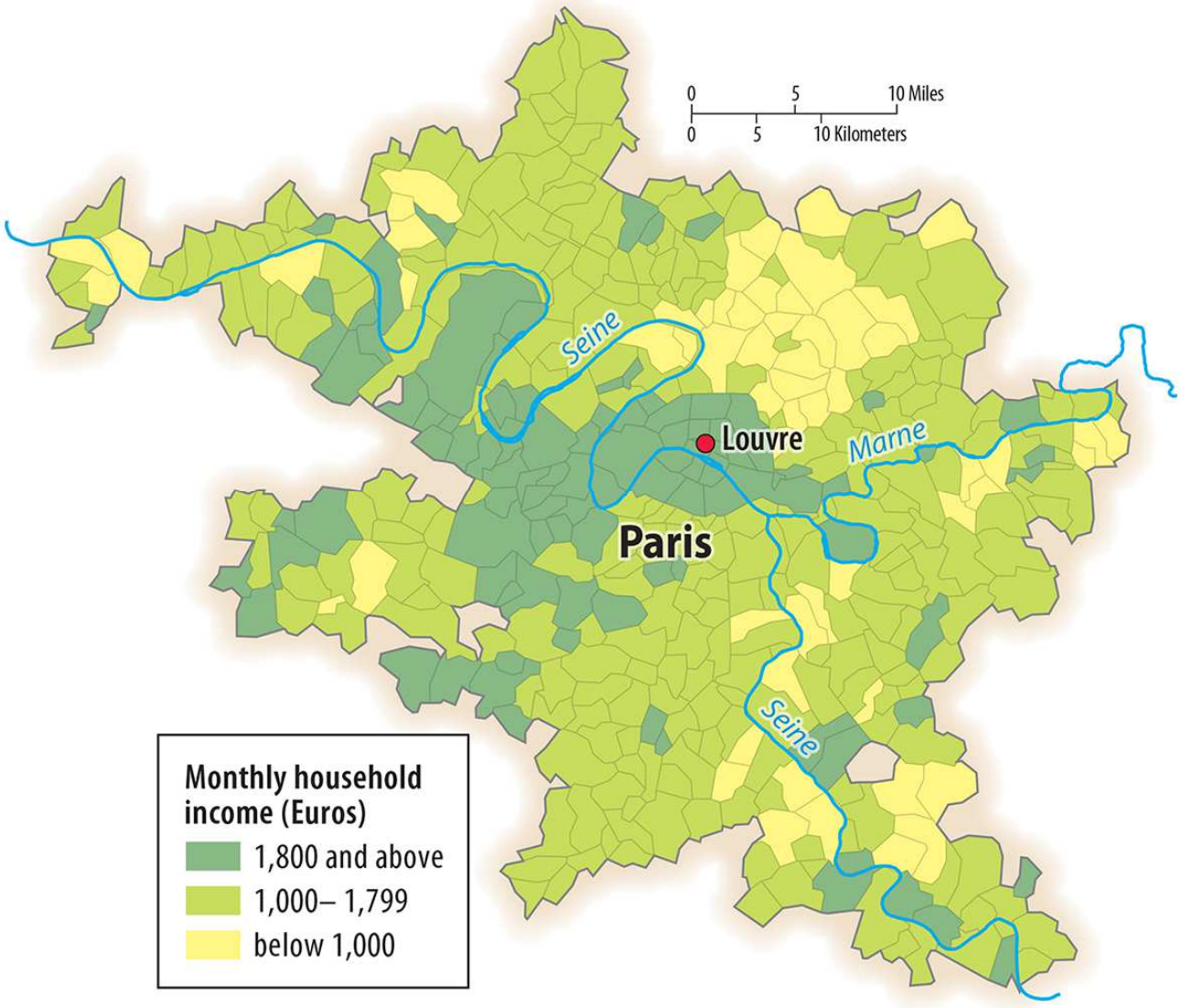
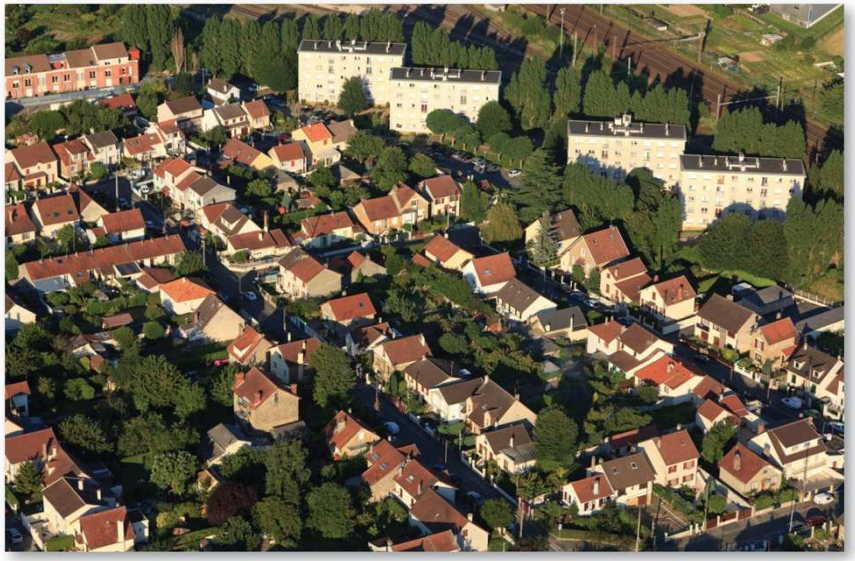


Figure 13-22: Household income in Paris follows a sector model.

Applying the Models in Europe



(a)

(b)

(c)

Figure 13-23: (a) housing in the outer (newer) ring in a high-income sector; (b) apartments in the same ring as (a) but lower income sector; and (c) housing in the same high-income sector as (a) but inner (older) ring

Applying the Models in Europe

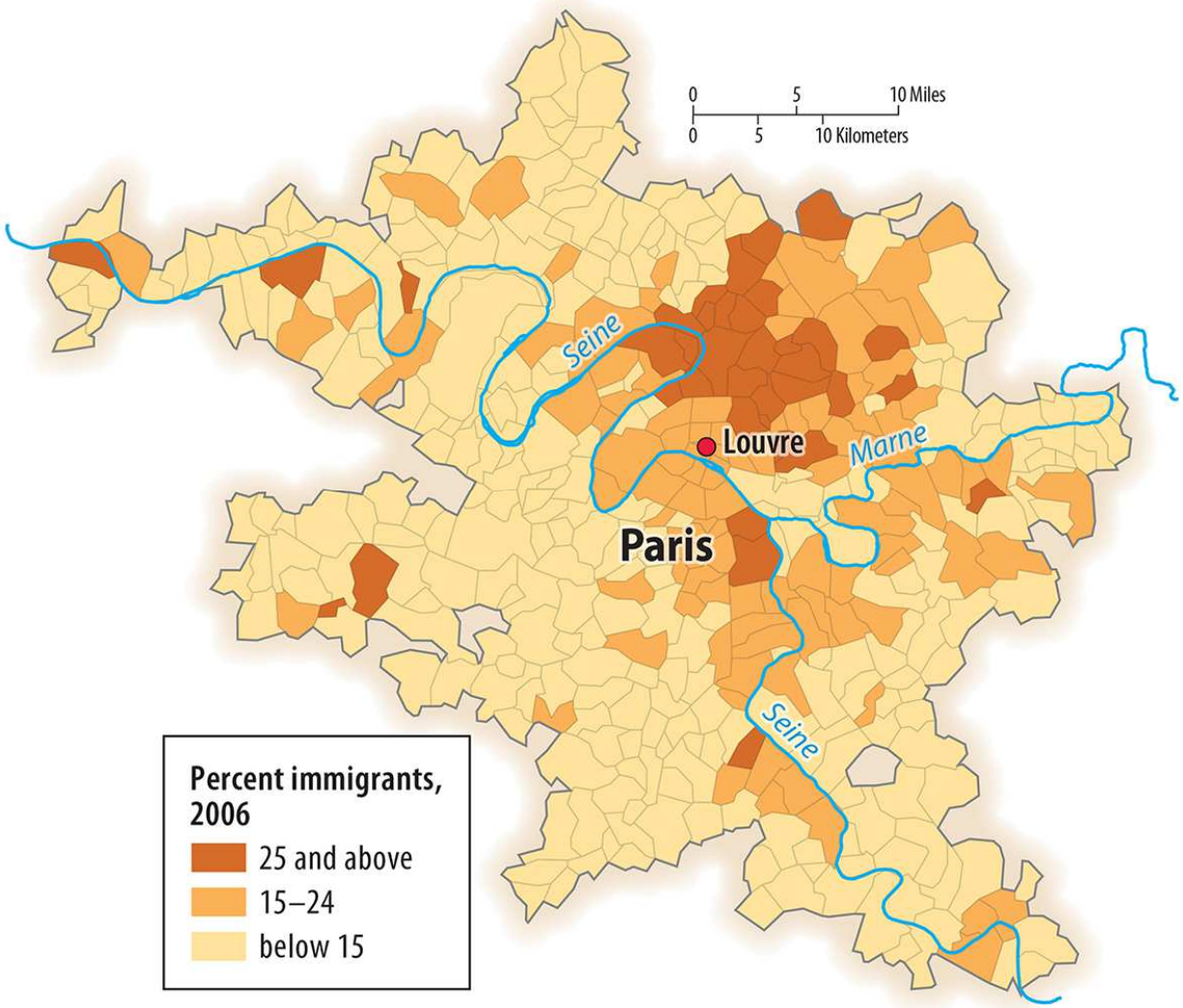


Figure 13-24: Immigrant neighborhoods in Paris follow a multiple nuclei model.

Pre-modern Cities in Developing Countries: Beijing

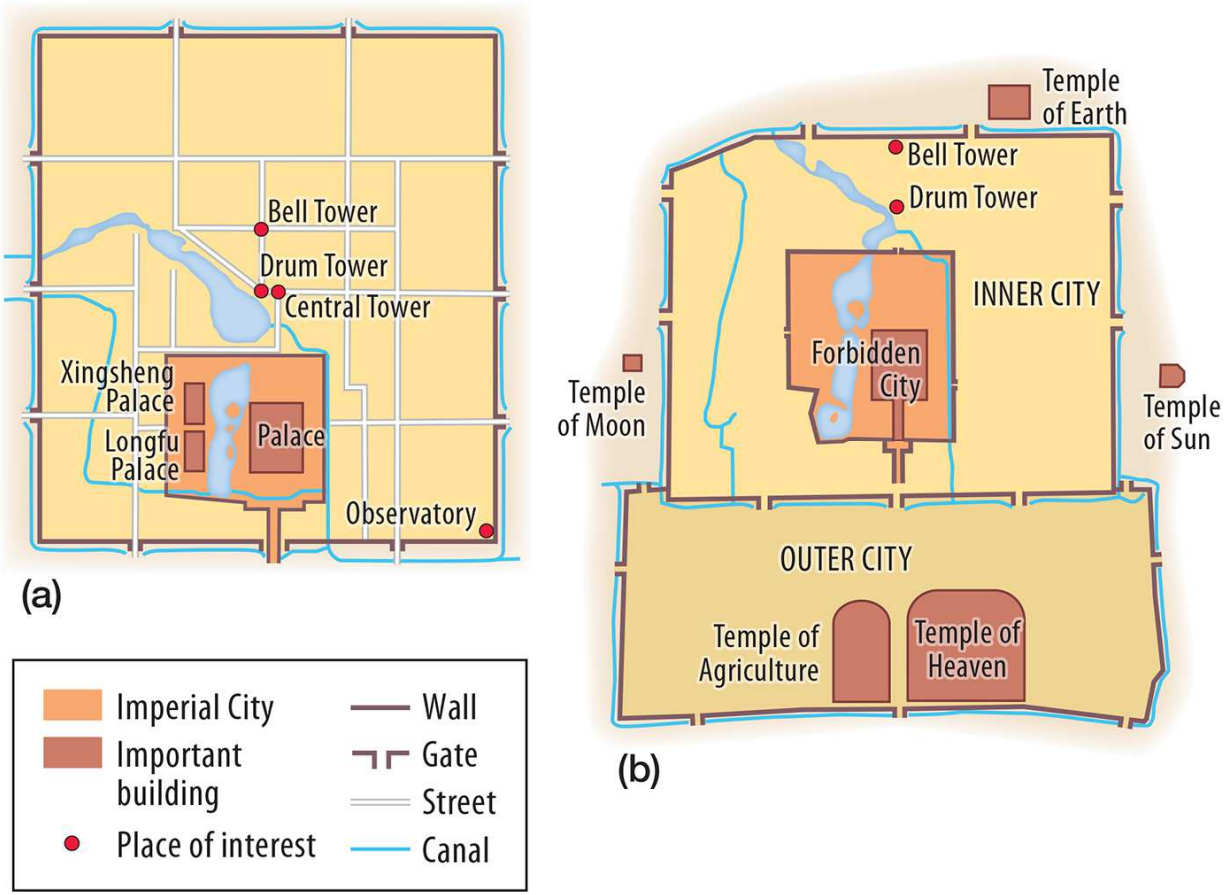


Figure 13-25: (a) Dadu in the Yuan dynasty, A.D. 1267–1368, (b) renamed Beijing in the Ming Dynasty, 1368–1644, featured palaces in the center and double walls

Yuan Dynasty Beijing

Figure 13-26: The Drum Tower was the center of Dadu, the city that became Beijing.

Ming Dynasty Beijing

Figure 13-27: The Temple of Heaven was built in the outer city of Beijing in the 1400s.

Colonial Legacies: Fez, Morocco

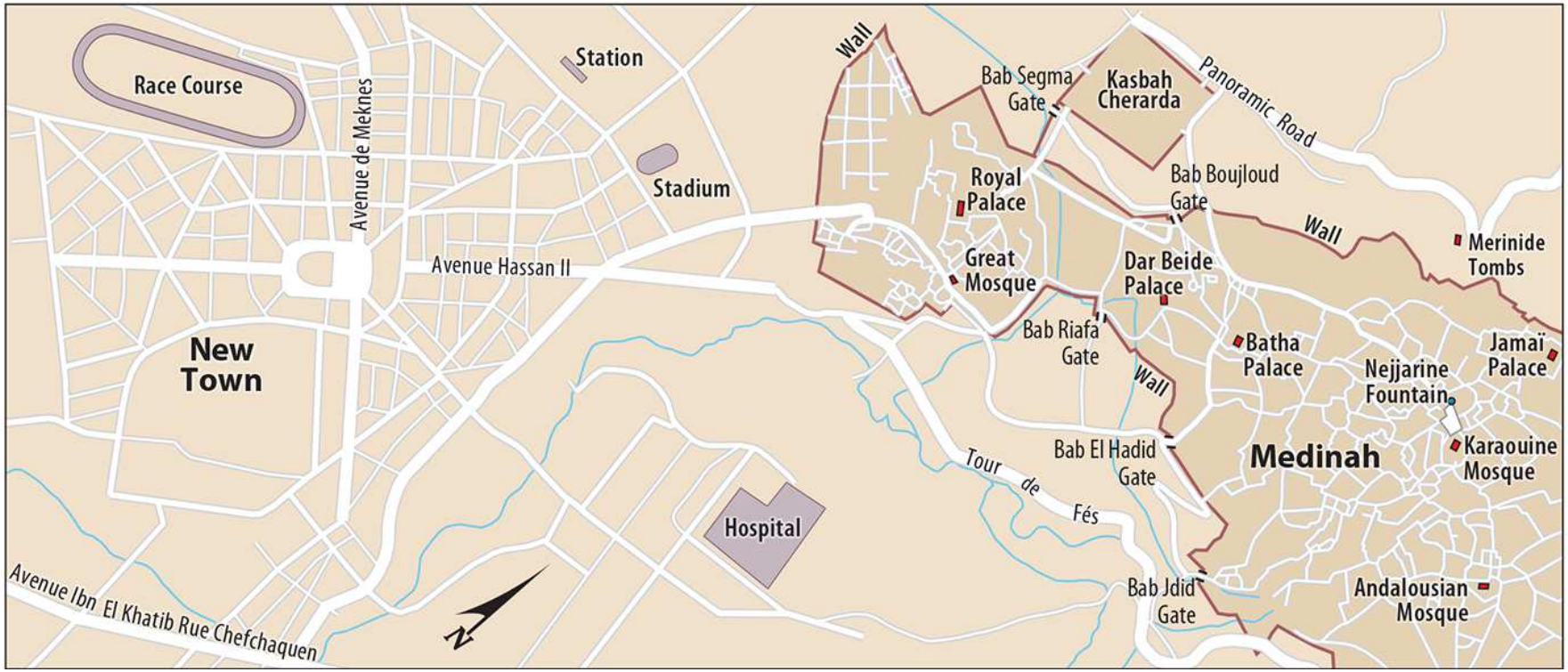
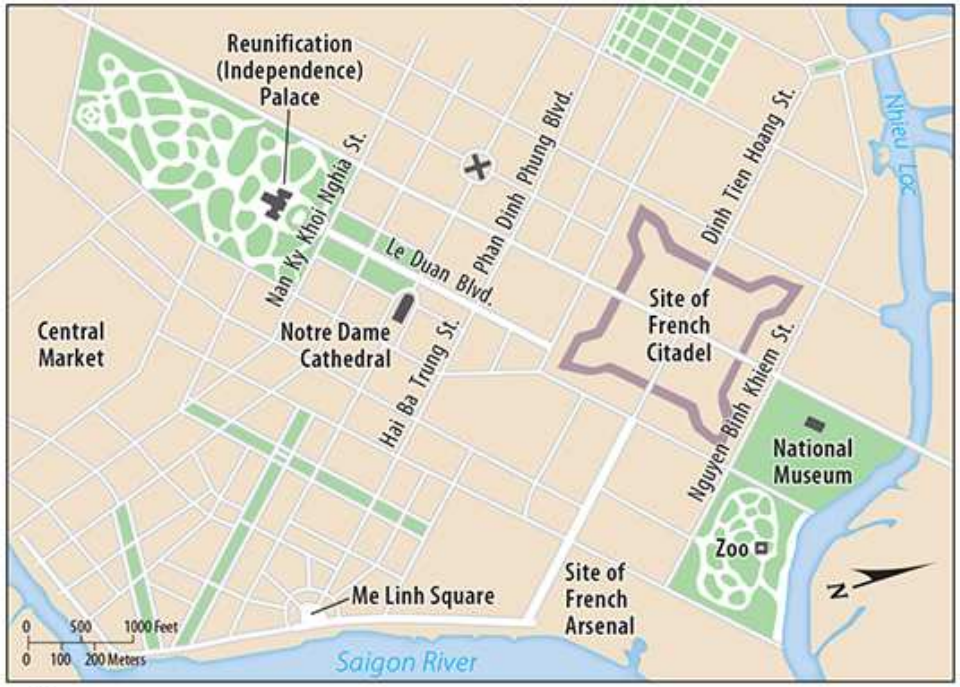


Figure 13-28: French colonial authorities built a new town to the southwest of the precolonial city of Fez, Morocco. Compare the street density and pattern between sections.

Colonial Legacies: Ho Chi Minh City



(a)

(b)

Figure 13-30: In Vietnam, French colonial authorities demolished the old city and imposed their own ideals of urban form (a), including buildings like the Cathedral of Notre Dame (b).

Applying the Models in Developing Countries

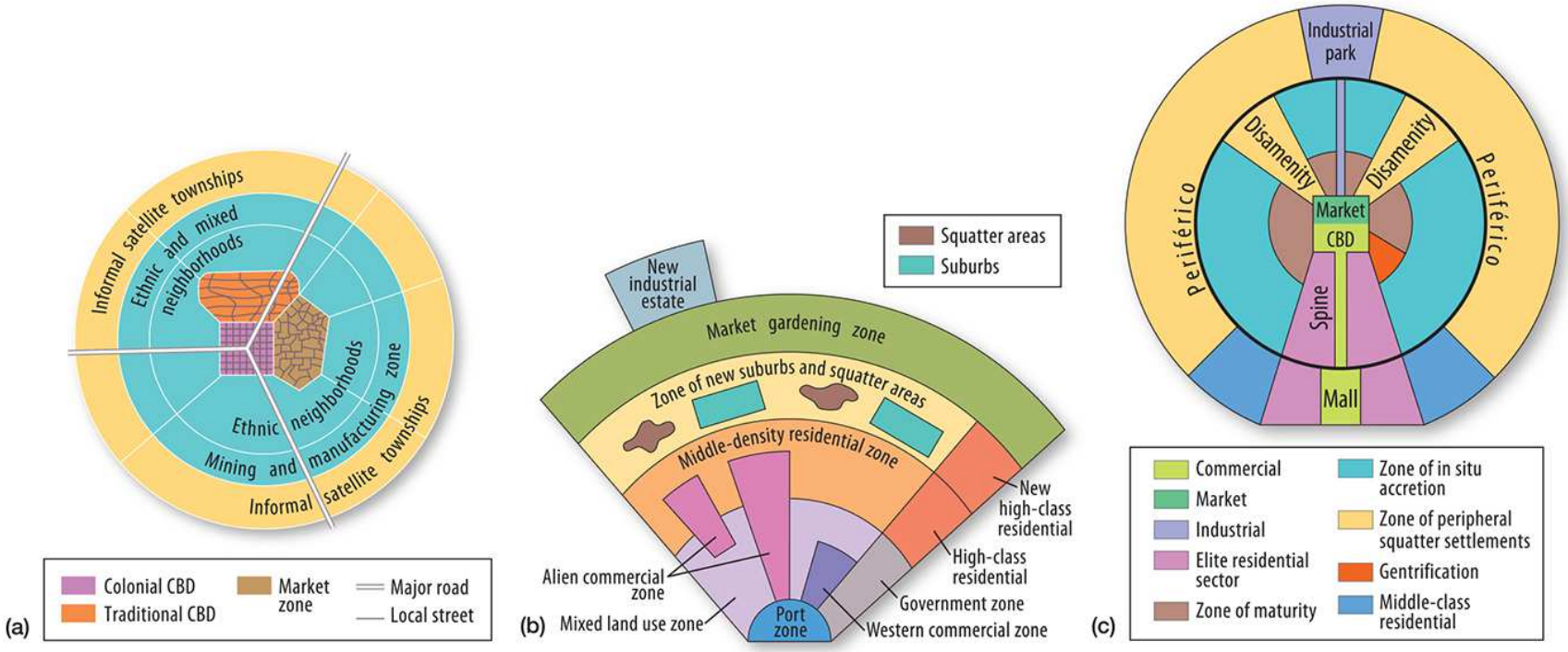


Figure 13-31: Models of urban structure have been adapted to fit different developing countries. In (a), the concentric zone model was modified by de Blij to model cities in sub-Saharan Africa; in (b), McGee modeled a Southeast Asian city with multiple nuclei, and in (c) Griffin-Ford applied a sector model to Latin American cities.

Concentric Zones in Curitiba, Brazil

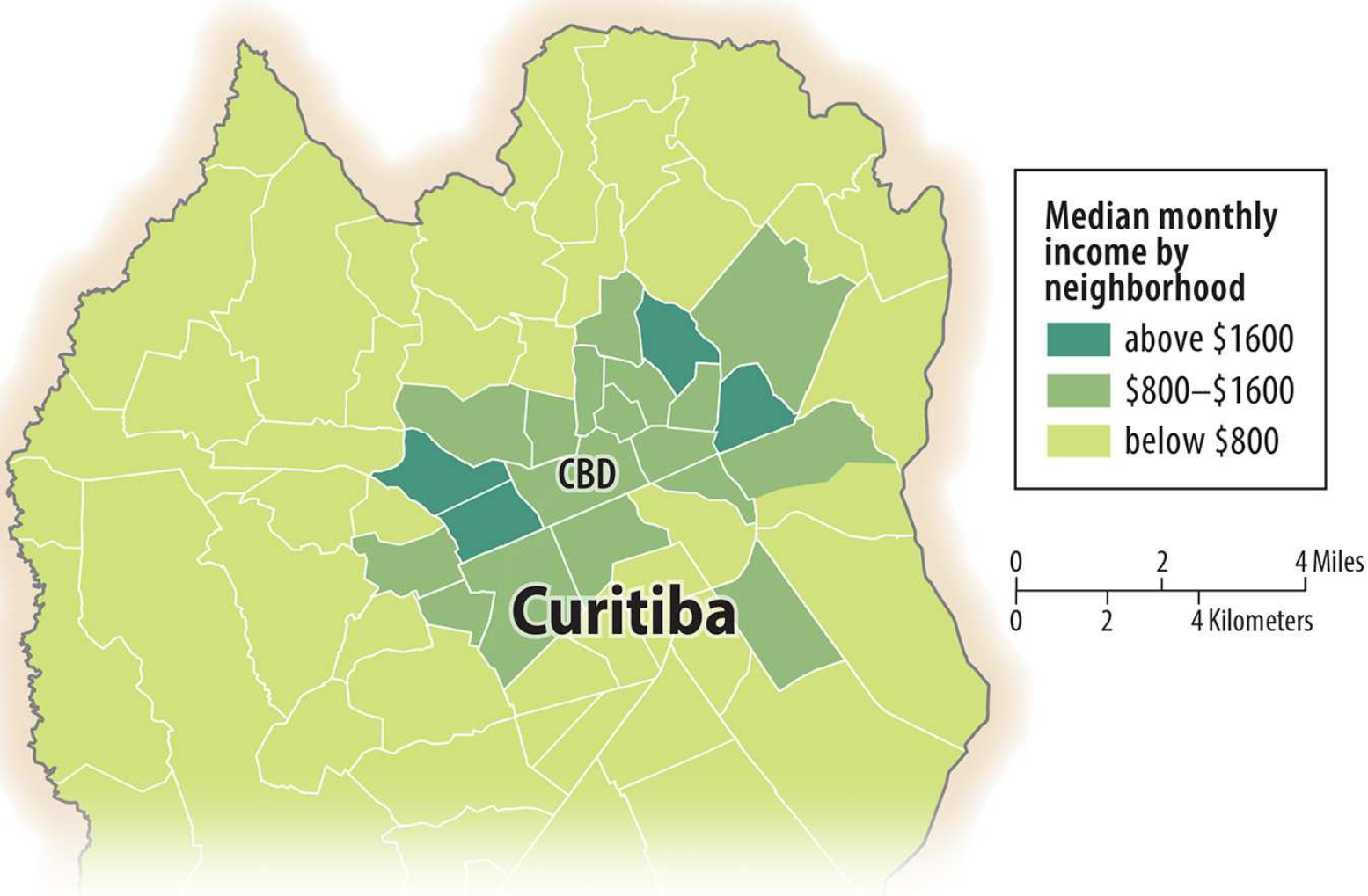


Figure 13-32: Curitiba's income follows a concentric zone model.

Informal Settlements

Figure 13-33: Informal settlements are frequently found in large urban settlements in developing countries.

Multiple Nuclei in South Africa

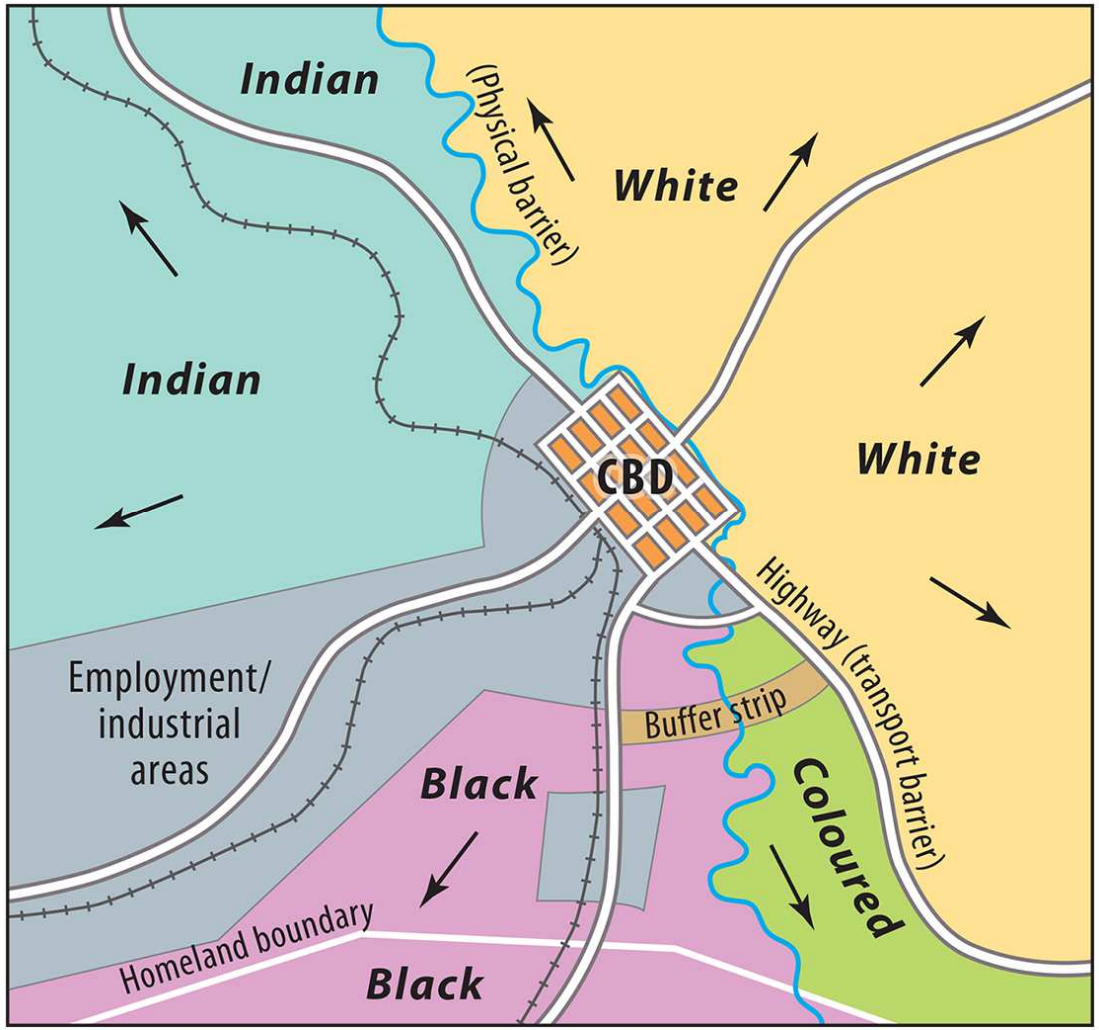


Figure 13-34: The division of races in Pietermaritzburg under apartheid followed a multiple nuclei model.

Sectors and Concentric Zones in Brazil

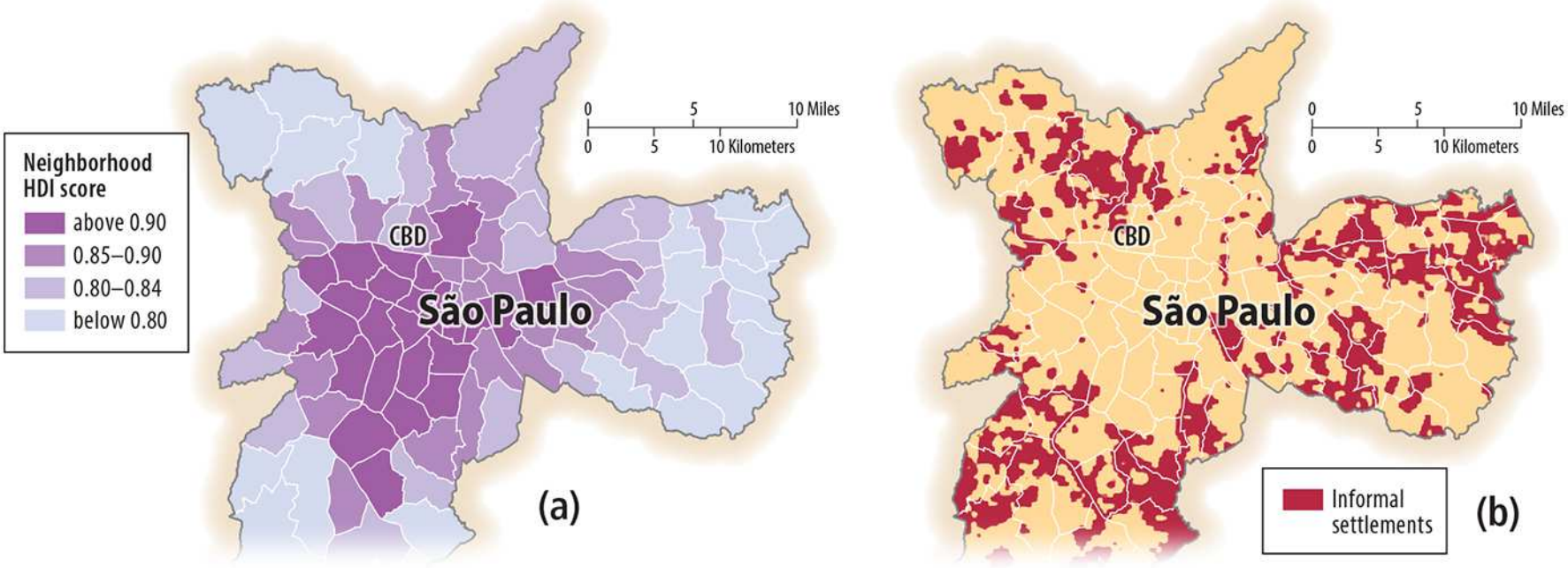


Figure 13-35: São Paulo's development (a) follows a sector model, while informal settlements (b) occur in a concentric zone away from the center.

Pre-colonial Mexico City

Figure 13-36: The site of Tenochtitlán was an island in a lake and marsh.

Pre-colonial Mexico City

Figure 13-37: The center of Tenochtitlán held the Templo Mayor and shrines.

Colonial Mexico City

Figure 13-38: The center of colonial Mexico City was the main square, located near the site of the demolished Templo Mayor.

Modern Mexico City

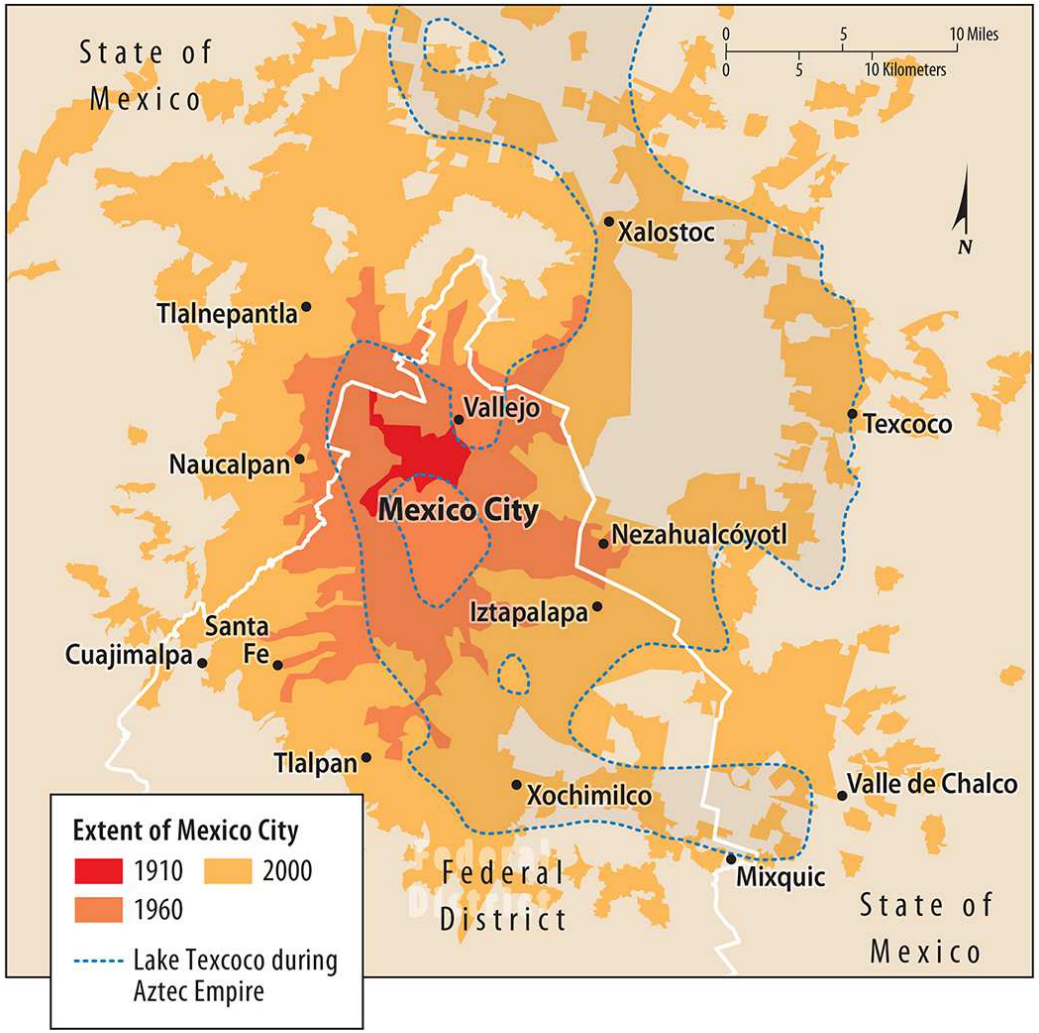
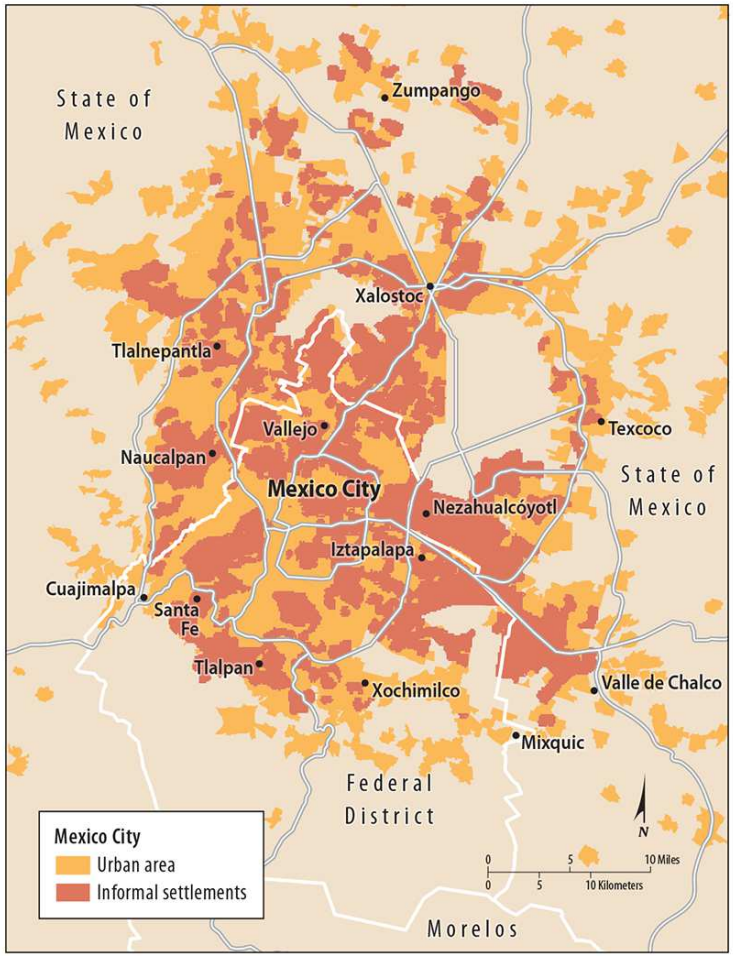


Figure 13-39: Mexico City has grown rapidly in the last century.

Modern Mexico City



Figures 13-40 and 13-41: Mexico City's informal settlements are in an outer ring (left). The Paseo de la Reforma represents a wealthy sector extending out from the city center (right).

Key Issue 3: Why Do Urban Areas Expand?

3.1 Origin and Growth of Suburbs

3.2 Suburban Sprawl

3.3 Suburban Segregation

3.4 Legacy of Public Transport

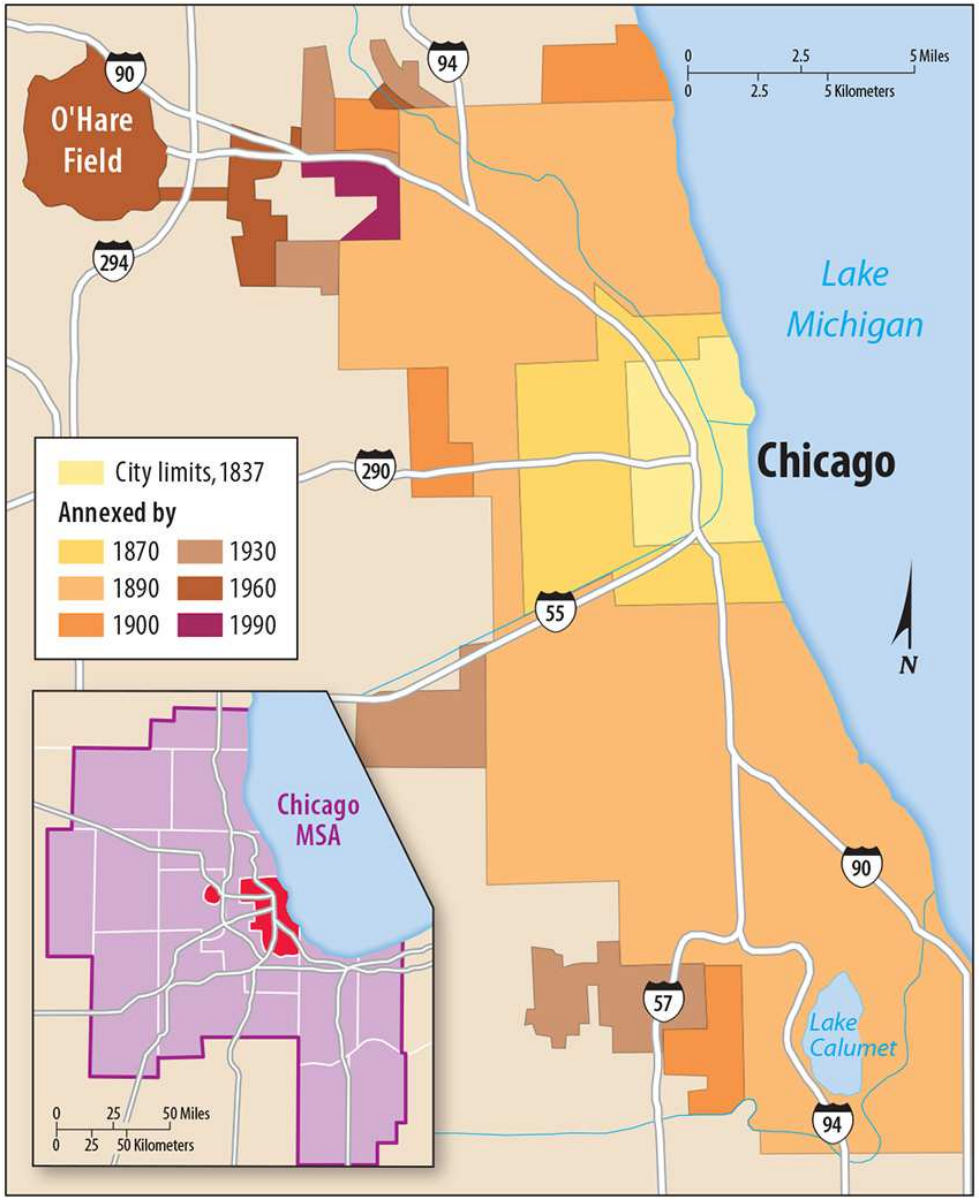
3.5 Reliance on Motor Vehicles

Origin and Growth of Suburbs

- **Suburb**: urban residential area outside central city
- **Annexation**: legally adding land to a city
  - once popular
  - now common for peripheral areas to organize own municipalities
- **Issues**:
  - local government fragmentation
  - smart growth

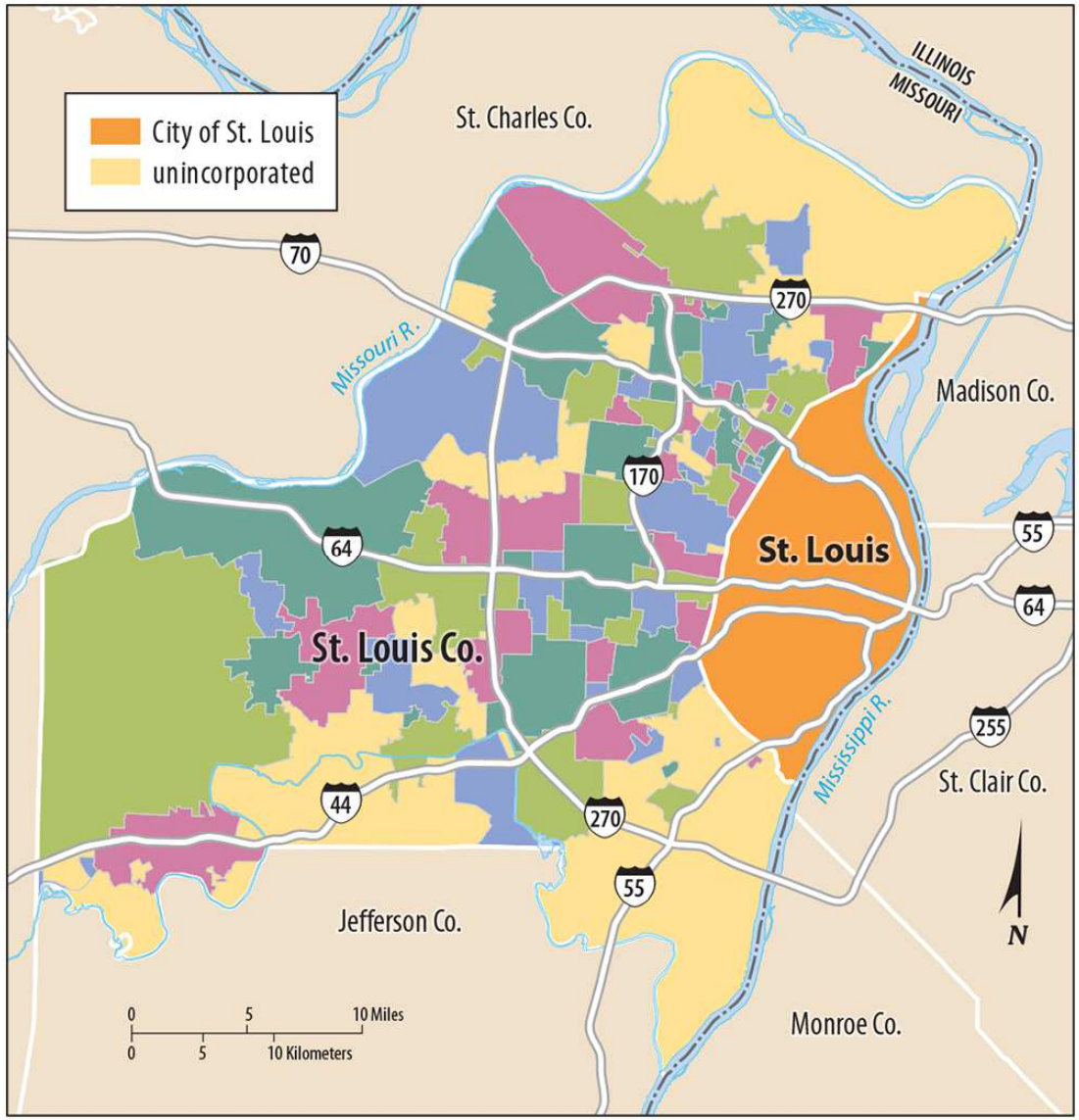
Annexation in Chicago

Figure 13-42: Chicago's annexation of surrounding areas was rapid in the 1800s, but slowed in the 1900s.



Municipalities in St. Louis County

Figure 13-43: Instead of the possibility of being annexed by St. Louis, many residents of St. Louis County have incorporated their own municipalities.



Portland Urban Growth Boundary

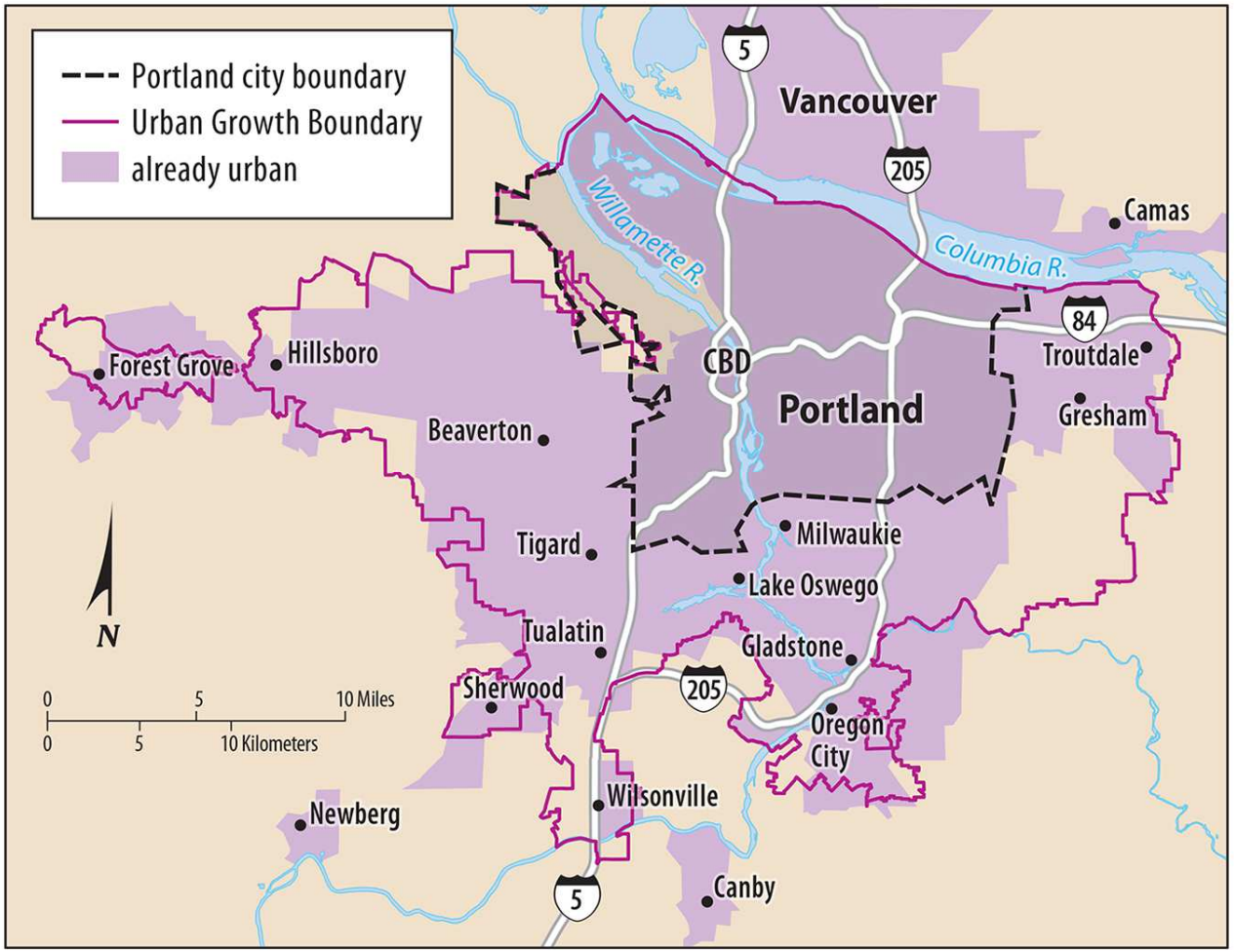


Figure 13-44: New development must take place inside Portland, Oregon's urban growth boundary.

Suburban Sprawl

- **Sprawl**: relatively low-density suburbs, not contiguous with city
- **Peripheral model**: variation on multiple nuclei model
- **Density gradient**: changing from urban core to periphery
- **Megalopolis**: continuous area of urbanization in Northeast United States

Peripheral Model

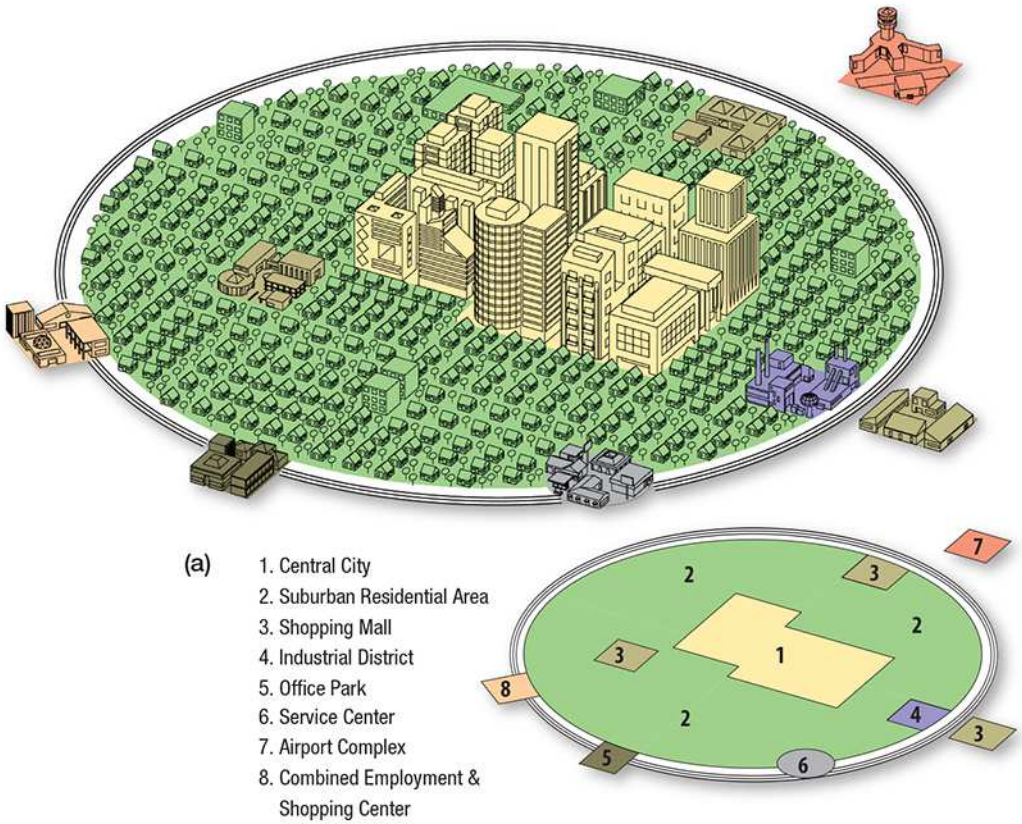
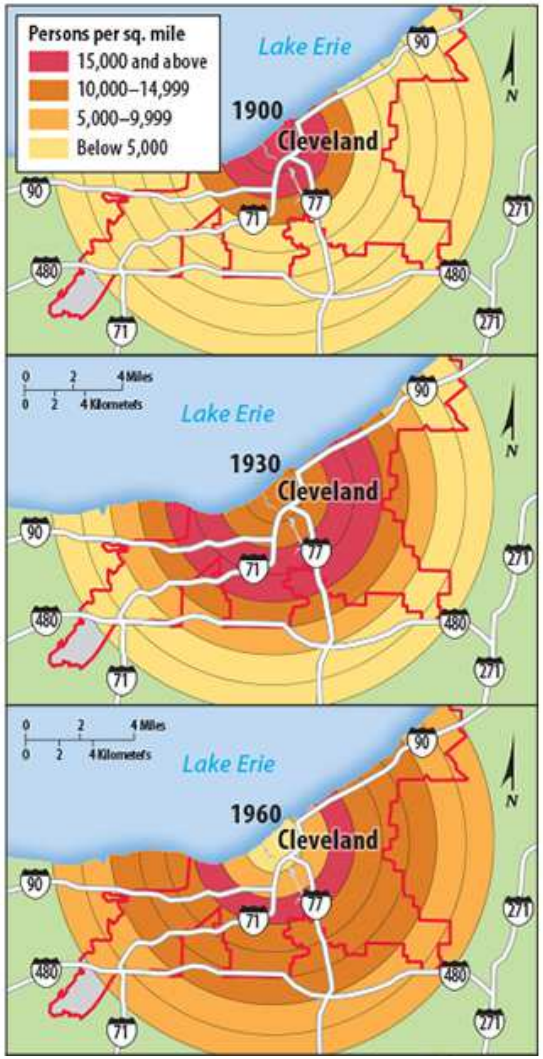


Figure 13-45: The peripheral model is similar to the multiple nuclei model, with more area devoted to suburbs and nuclei including edge cities linked by a ring road.

Density Gradient in Cleveland



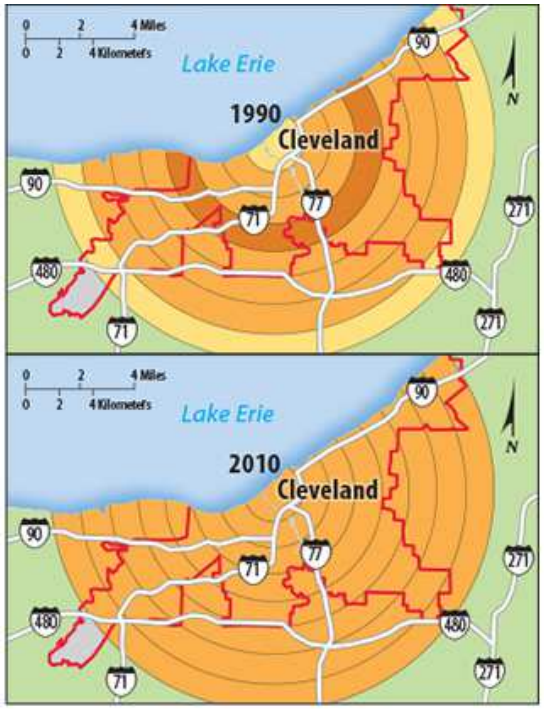


Figure 13-46: In 1900, Cleveland had a strong density gradient, with high densities at the center and low densities farther out. Suburbanization flattened that density gradient.

Megalopolis

Figure 13-47: A long stretch of contiguous urbanization stretches from Boston to Washington.

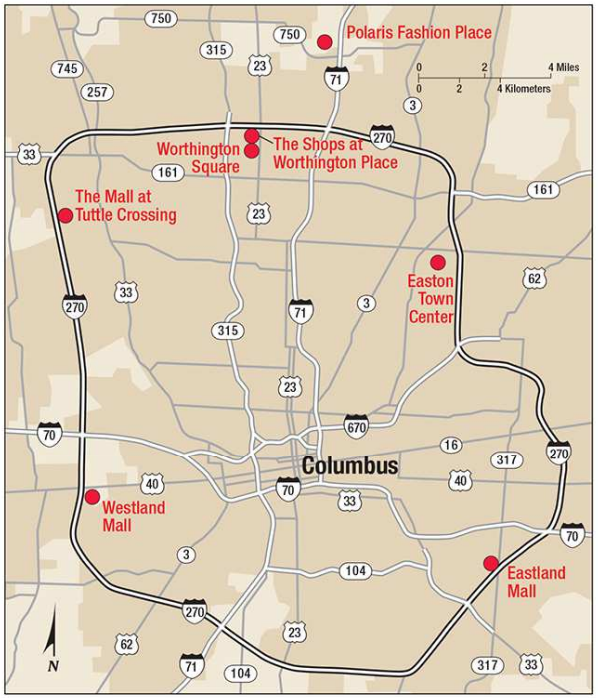
U.S. vs. U.K. Suburbs

Figure 13-48: Land use planning in the U.K. directs new development to be contiguous with existing urbanization (b, c), whereas the U.S. model allows greater sprawl (a).

Suburban Segregation

Figure 13-49: A gated community in Orlando, Florida, represents one form of residential segregation: low-income people cannot purchase homes or travel without invitation here.

Suburbanization of Consumer Services



(a)

(b)

Figure 13-50: Retail services once located in or near the CBD have followed wealthy residents to the suburbs, like these in Columbus, Ohio. Some business services have also relocated.

Suburbanization and Public Transport in the United States

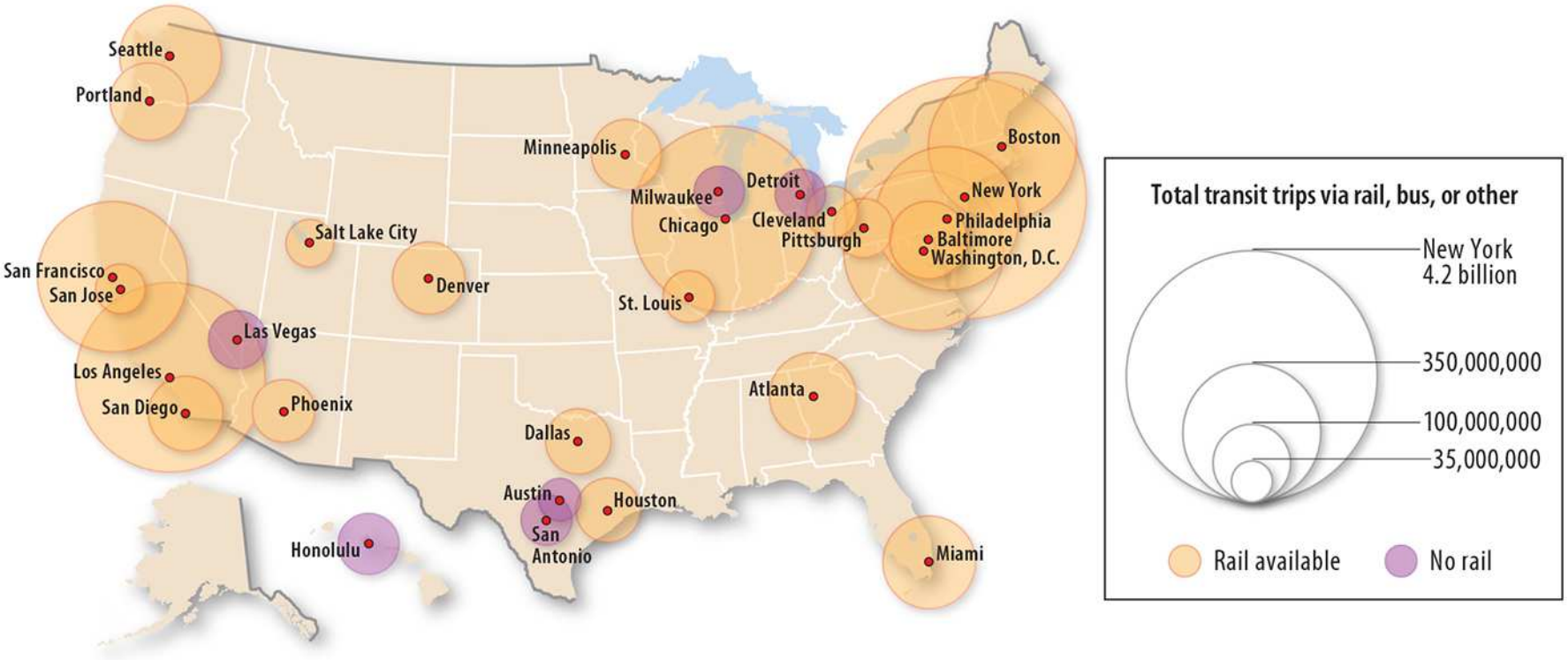


Figure 13-51: Suburbanization in the United States has relied on motor vehicles. Public transport peaked in the 1940s; today ridership pales in comparison to many other developed countries.

Public Transport in Other Countries

Figure 13-53: Munich, Germany, is typical of many public transport-oriented cities in developed countries. Shown here are its underground rail (a), elevated rail (b), and street car (c) systems.

Transportation Epochs

Five eras of U.S. urban areas from dominant transportation:

- Sail-Wagon
- Iron Horse
- Steel Rail
- Auto-Air-Amenity
- Satellite-Electronic-Jet Propulsion

Benefits and Costs of Motor Vehicle

Benefits:

- Comfort, choice, flexibility
- Low perceived cost

Costs:

- Consumption of land
- Traffic congestion

Figure 13-54: an urban freeway in Atlanta

Key Issue 4: Why Do Cities Face Sustainability Challenges?

4.1 The City Challenged

4.2 The City Renewed

4.3 The City Contrasted

4.4 The City Cleaned

4.5 The City Controlled

Social and Physical Challenges

Social challenges associated with **underclass** residents of inner cities:

- Inadequate job skills
- Culture of poverty
- Homelessness
- Drugs
- Crime
- Inadequate services
- Municipal finance shortage

Physical challenges: **filtering**, **redlining**

Social Challenges: Crime

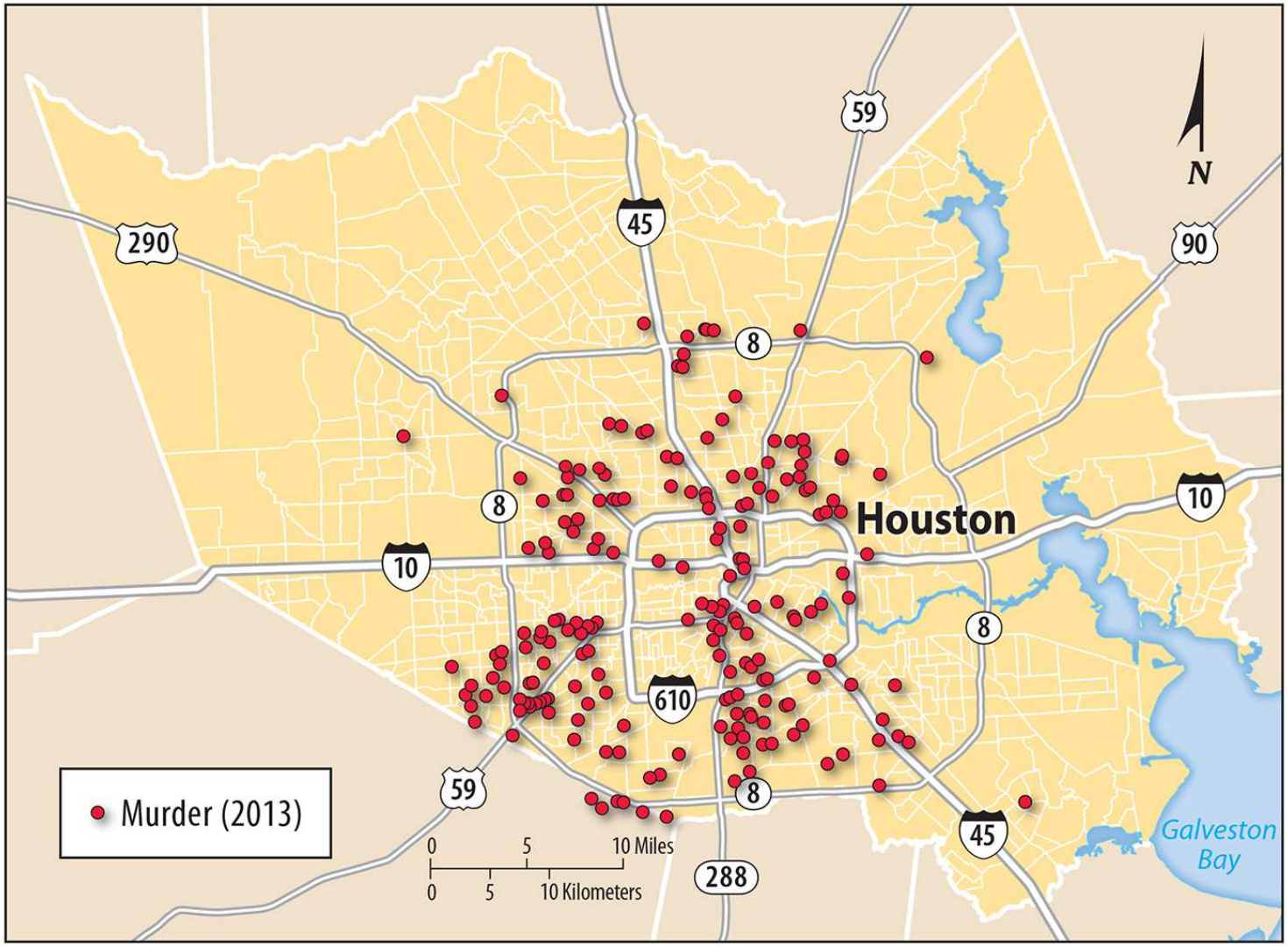


Figure 13-57: Murders in Houston: Compare with Figures 13-15, 13-16, and 13-17.

Urban Renewal: Gentrification

(a) (b)

Figure 13-58: Gentrification in Cincinnati: Critics of gentrification argue that the community becomes too expensive and pushes out poor residents.

Urban Renewal: Public Housing

Figure 13-60: Large, high-rise subsidized housing projects (background) in the United States, now considered unsatisfactory, are being leveled and replaced with middle-class housing (foreground).

Urban Renewal: Consumer Services

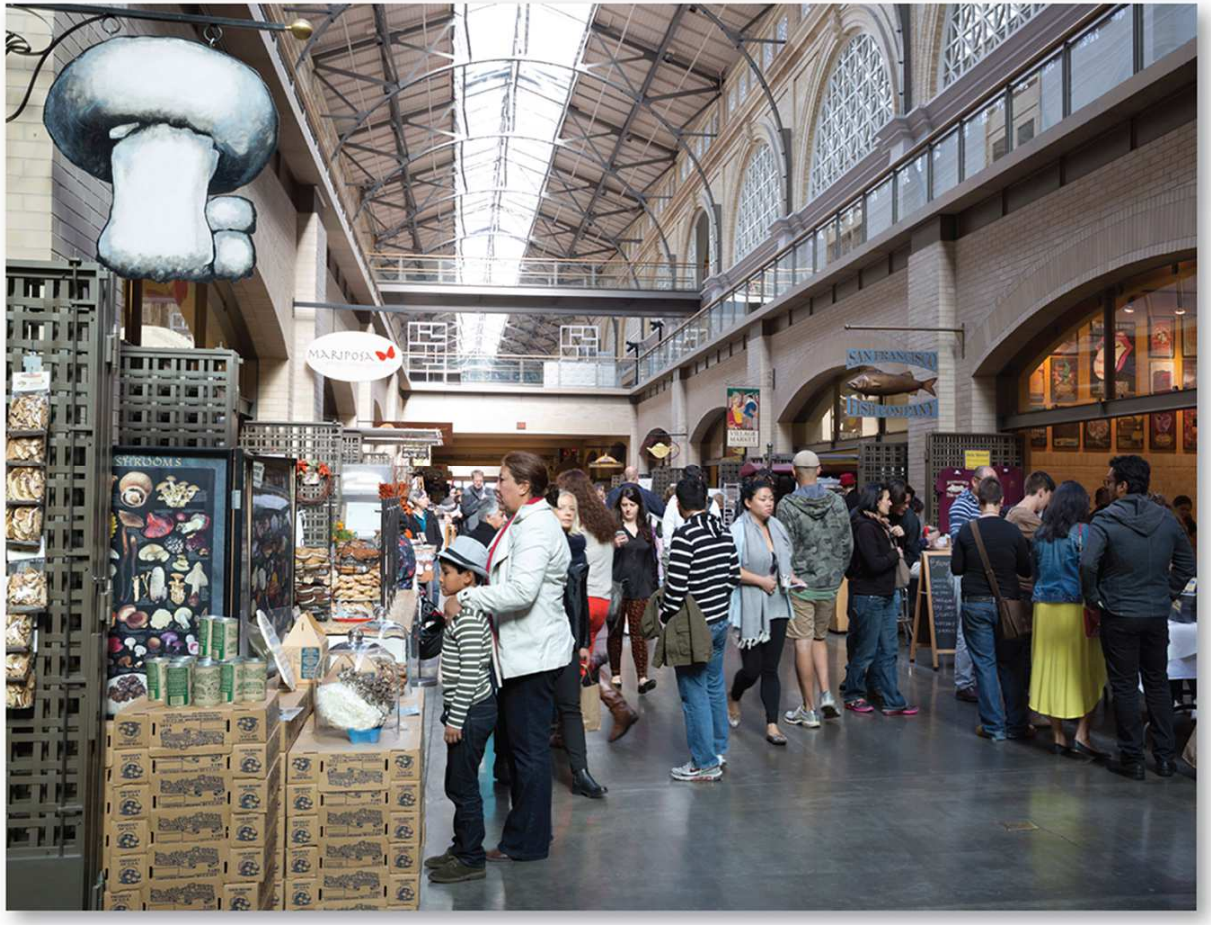
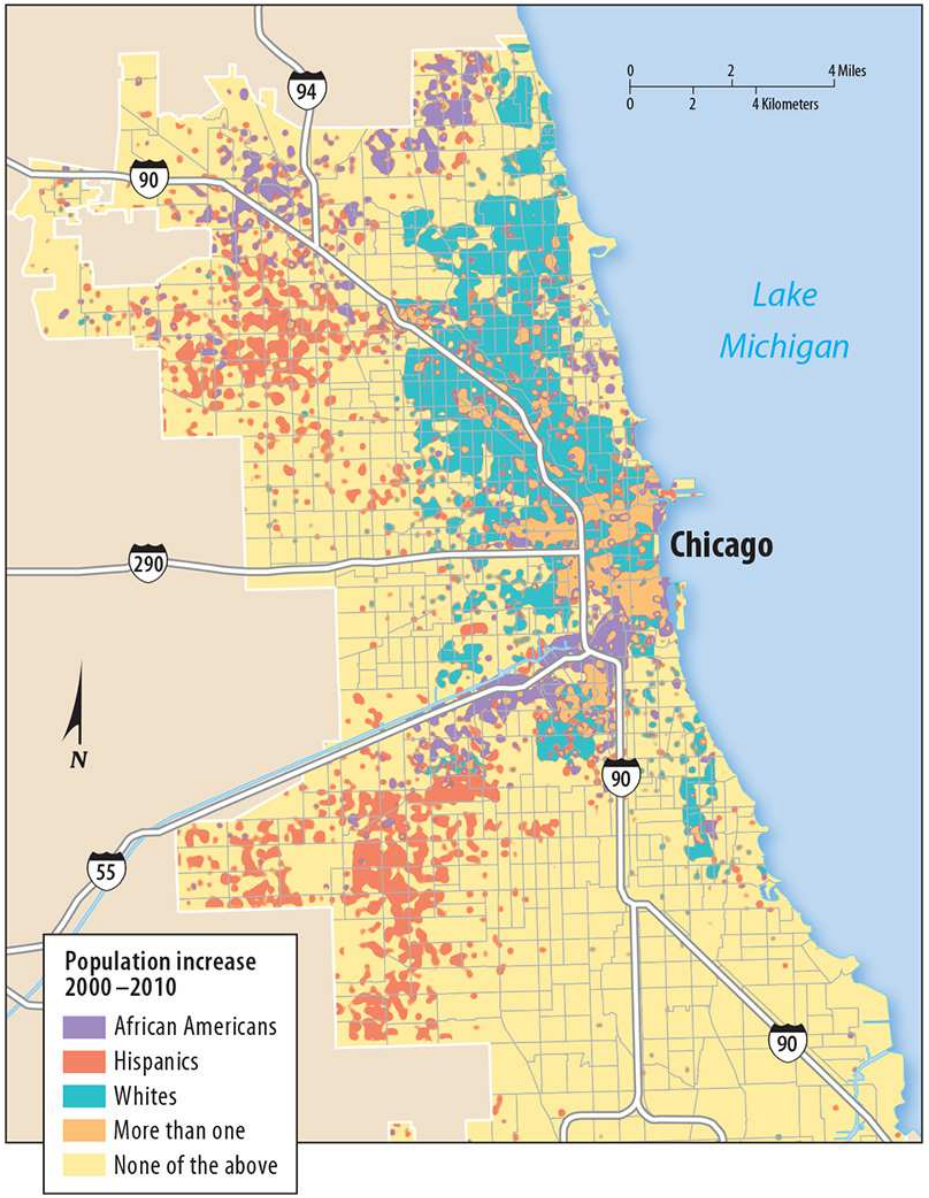


Figure 13-61: Many U.S. cities have redeveloped consumer services like retail and leisure services in their CBDs, like the ferry terminal building in San Francisco.

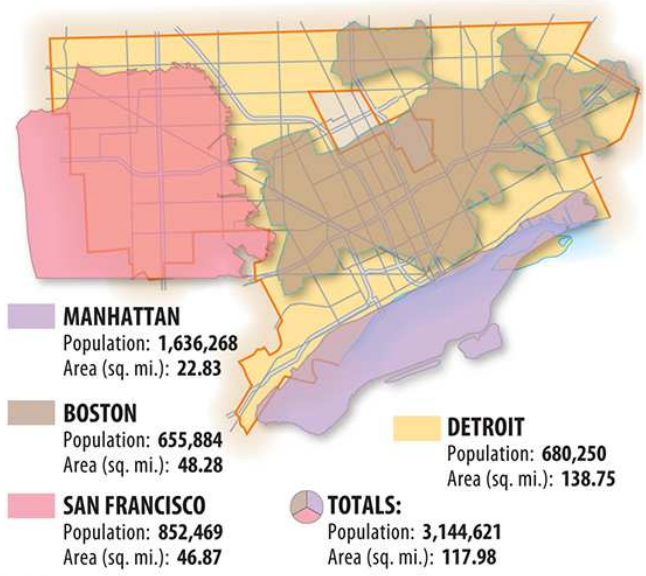
Urban Demographic Change: Chicago

Figure 13-63: Chicago's African American and Hispanic populations are increasing in more suburban locations, while whites are moving back toward the city center.



Urban Demographic Change: Detroit

Figure 13-64: Detroit covers a large area compared to several other cities of similar size or larger in population (a); this difference in density is reflected in the large number of vacant houses in Detroit (b).



(a)

(b)

Sustainable Development

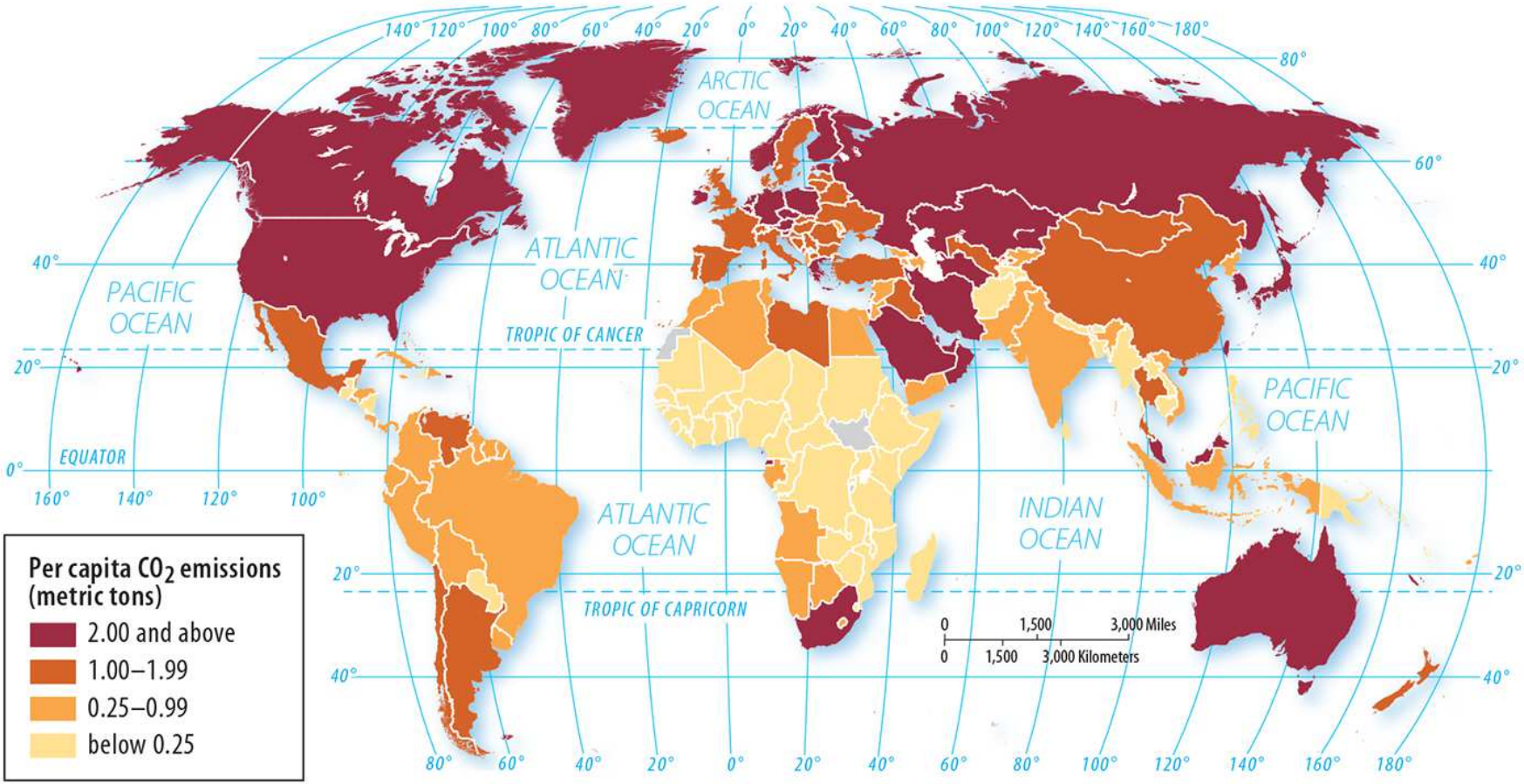


Figure 13-65: Developed countries produce more carbon dioxide per capita.

Sustainable Development

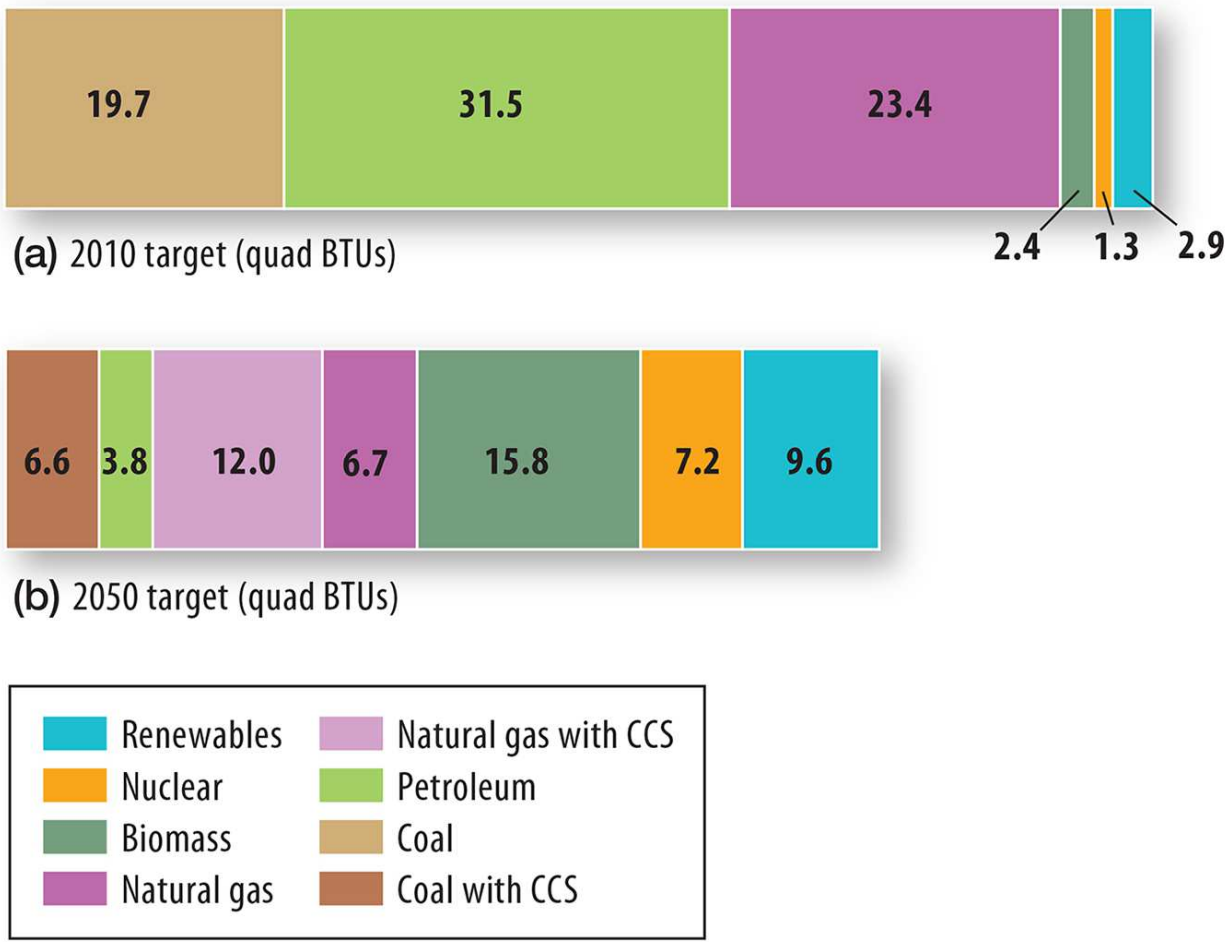


Figure 13-67: The United Nations target for the U.S. carbon dioxide emissions, by source: Most reductions are forecast through reducing the use of fossil fuels.

Sustainable Development

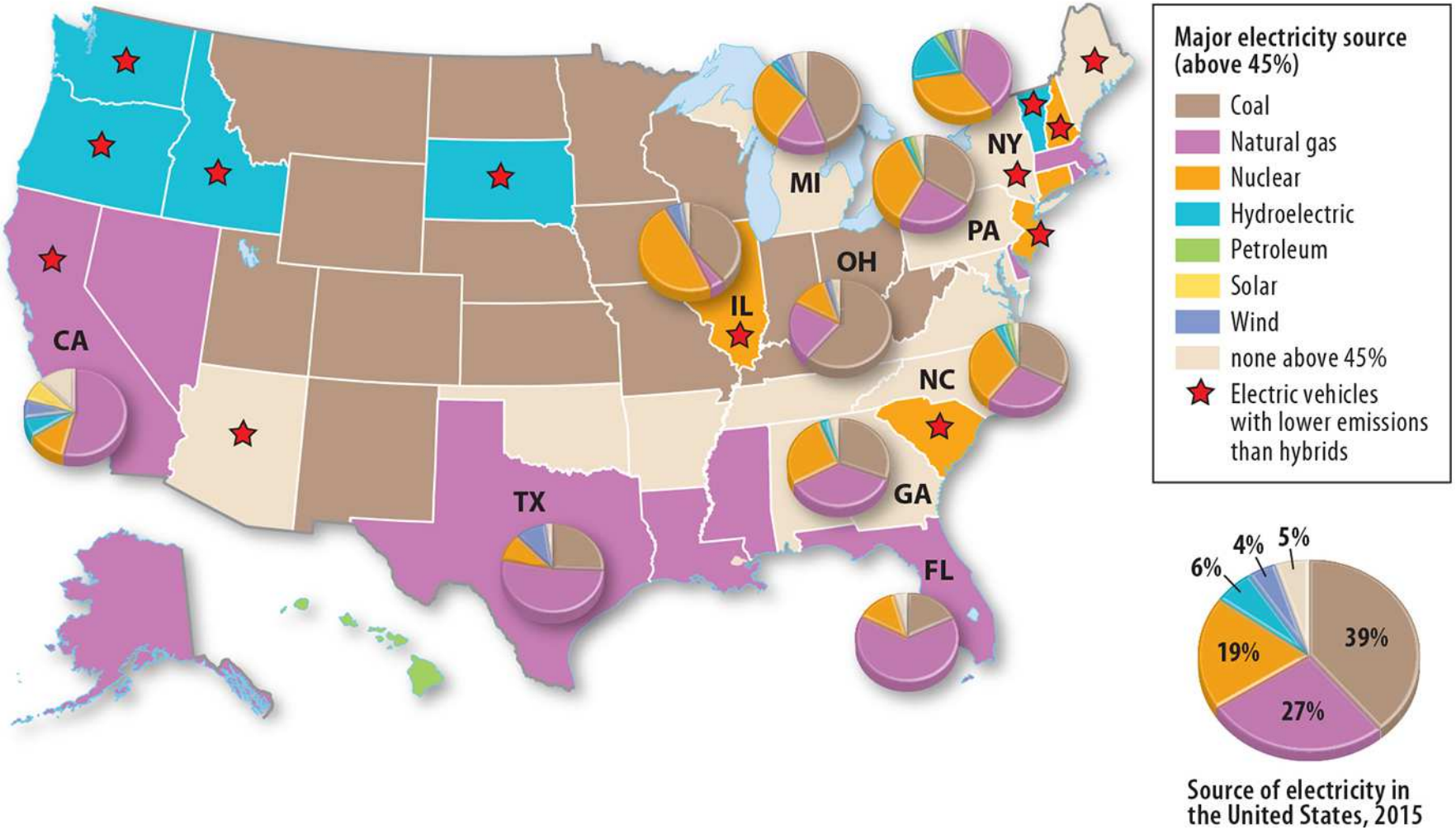


Figure 13-68: Electricity generation source by U.S. state: Electric cars are less polluting when powered by energy generated from lower carbon-emitting sources.

Controlling Congestion and Air Pollution

Road congestion controlled through:

- Congestion charges
- Tolls
- Permits
- Bans

Air pollution controlled through technology:

- Diesel
- Hybrid
- Ethanol
- Electric
- Plug-in hybrid
- Hydrogen fuel cell

Congestion Pricing

Figure 13-69: Drivers in London's central zone face a special congestion charge during peak driving hours.

No-car Zone

Figure 13-70: A main street in Copenhagen is closed to vehicles so pedestrians can walk freely.