

Prepared by Dr. Rana Maya

REA617

Real Estate & Urban Economics

Lecture 2



The background features a series of vertical panels with rounded ends. The first panel shows hands typing on a laptop. The second panel shows a laptop screen with a play button icon. The third panel shows a target icon. The fourth panel shows an open book and a magnifying glass icon. The fifth panel is a solid light blue color.

Land Use Regulations, Urban Spatial Structure, and Location Theory

Lecture 2

REA617

Real Estate & Urban Economics

Prepared by
Dr. Rana Maya

lecture

02

Abstract



This lecture explores foundational theories it moves to classical urban models ,and explains how land use policies — zoning, form-based codes, growth boundaries, and development controls — shape real cities





1. Introduction
2. Foundations of location theory
3. Classical models of urban spatial structure
4. Land use regulations: tools and objectives
5. How regulations interact with spatial structure and location decisions
6. **Case Studies**



By the end of the lecture you will be able to:

1. Explain key location theories and how they predict land-use patterns.
2. Describe common urban spatial structure models and identify their features in real cities.
3. Analyze how land use regulations influence urban form, density, transport, and land values.
4. Evaluate policy instruments (zoning, form-based codes, urban growth boundaries) with examples and propose alternatives.
5. Use simple models and graphs to forecast land rent, commuting costs, and land-use outcomes

1. Introduction: why rules matter for where things are

Cities are not natural phenomena alone; they are shaped by decisions — private and public — that determine where housing, industry, parks, and commerce locate.

While markets coordinate economic activities through prices and rents, governments shape the feasible set of outcomes through land use regulations.



Why?

Understanding the interaction between regulation and spatial structure requires both theoretical grounding and empirical observation. This lecture builds that bridge

1. Introduction: Why zoning ?

Why Urban real estate must comply with an area's zoning codes?

Such codes are intended to reduce negative externalities associated with land use.

For example, if a dirty factory opened in town some people's homes would be exposed to extreme pollution.



Who benefits and who loses under zoning laws?

The land use regulations that are adopted have significant implications on real estate prices wealth distribution and efficiency.

1. Introduction: Zoning polices?

Many communities of homeowners do not accept the impoverished because they believe that their quality of life will deteriorate and that this will lead to a drop in their property values.

Potential strategies for encouraging some participating towns to permit more impoverished individuals to relocate to the area include inclusionary zoning and other recent legislative changes.

The land use rules make the incumbent homes even more valuable.



1. Introduction: Minimum Lot Sizes and Zoning

There is an opportunity cost to every piece of land.

A four-story apartment building might have been constructed on a 10,000 square foot lot that is designated for single-family homes Structure with eight units.

More people could reside here if capital were used in instead of land.

This would be prohibited under minimum lot zoning, which stipulates that every house must be situated on a minimum 10,000 square foot lot.

Private backyards are an example of small “parks” ,So are our current rules efficient?

Do they exhaust the gains to trade?

Who loses from having so much land not being “used”?



1.CASE STUDY : Consider an economy without zoning

A developer may decide to purchase the backyard of a single-family home on a 10,000 square foot lot in order to construct an apartment complex there. If the developer values that backyard, this swap would take place.

by greater than what the owner of the property loses with the new building standing close by. For instance, the developer may make a profit of \$1 million after offering \$500,000 for the site. Gains can be traded here if the homeowner only values her lot at \$300,000.

This trade would be prohibited if minimum lot zoning existed. I did not account for spillover negative externalities for adjacent neighbours when I drew up this example.

For the banning of such transactions to be justified, spillovers would have to be extremely large.

1. Introduction :example of "unused land" is public parks

New York City's Central Park: The total area is 840 acres.

What impact would it have on the city if a portion of the park—perhaps 15%—was set aside for the construction of new homes?

A little algebra could be utilized to determine the number of additional residents that this land reallocation could bring to the area. This would not be a good public policy, mind you.

Think more creatively and outside the box:

We're accustomed to Central Park having a specific size, but why is it ideal?



1. Introduction :supply and demand concepts

The equilibrium pricing of things are largely determined by the rules we decide to live by.

Given the significance of housing, it is critical that knowledgeable citizens use the supply and demand concepts from basic microeconomics to reason logically.

The present Zoning for The incumbents use democracy to maintain their power after the "rules of the game" produce winners.



1. Introduction, Zoning and Urban Structures

In a more fluid economy, there would be a more active process for shifting land use zoning codes so that an asset can be more quickly repositioned to its highest and best use.

People who live a new urbanist life of relying on public transit if the land close to the station stop is up zoned.

By limiting the supply of new housing, this leads to higher prices of homes.

This increases the count of homeless people



1. Introduction ,The Benefits of Zoning – local character

Communities frequently assert that zoning is necessary to maintain the local character.

Take Paris, France, for example.

Paris has been made beautiful by urban planning in terms of building heights and public parks, but would it remain such in the future?

Would limitations on land usage be loosened?



1. Introduction ,the Benefits of Zoning - pollution

In order to physically separate activities that society does not wish to be in close physical proximity to one another, zoning does play a useful role.

A rubbish incinerator near to a children's school is not something we want because the kids would be exposed to the wind. to the smoke from the incinerator.



1. Introduction ,the Benefits of Zoning - pollution

The close physical proximity that comes with city living is frequently praised in urban economics as a factor that boosts trade and education.

We don't want such closeness when it comes to pollution.

According to an ancient joke, "dilution is the solution to pollution." This physical area that restricts "victims'" exposure to pollutants is created in part by zoning.



1. Introduction , The Benefits of Zoning

Another argument in favour of zoning is that if growth is permitted, a region will eventually run out of natural resources like parking or water.

This assertion would make an economist scoff.

Here, the obvious counter-reaction is to let growth

continuing, but let parking and water costs fluctuate in accordance with availability and demand in the market.



1. Introduction , The Benefits of Zoning - Buildings

Another justification for zoning is in cities such as San Francisco that face earthquake risk.

Zoning codes set how the buildings must be built and how tall they can be.

In the absence of zoning, some buildings could be built that are not able to withstand an earthquake.



2. Foundations of location theory

2.1 Johann Heinrich von Thünen (Agricultural land use)

Von Thünen (1826) developed a ring model to explain agricultural land use around a single market:

land-intensive but low-value commodities (e.g., grain) locate farther away, while high-value perishable goods (e.g., dairy) locate closer due to transportation costs.

The model predicts concentric rings determined by transportation cost and output value.

Key equation (conceptual):

$$\text{Rent} = \text{OutputPrice} - \text{TransportCost} - \text{ProductionCost}$$

The land user that can pay the highest rent locates closest to the market

2. Foundations of location theory - Alonso

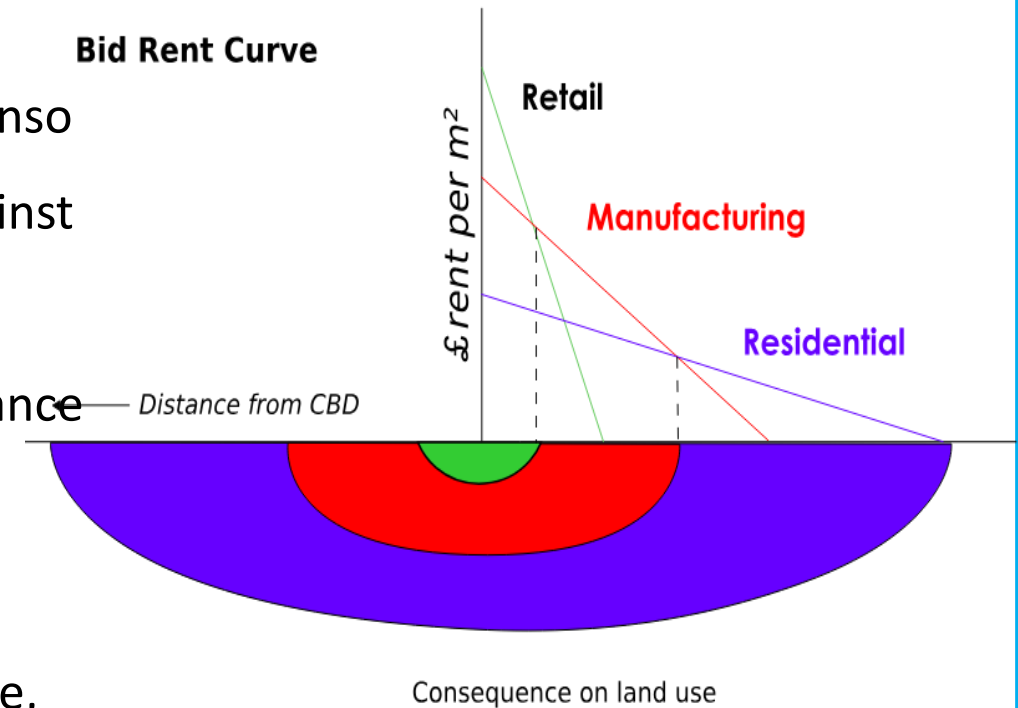
2.2 Alonso (Urban land rent and bid-rent curves)

Alonso adapted von Thünen to urban land markets (Alonso 1964). Households trade off land (and housing size) against commuting costs to the Central Business District (CBD).

The bid-rent function for households declines with distance from CBD. Household bid-rent function (intuitive form):

$$R(x) = Y - C_{\text{commute}}(x) - U(H, x)$$

Where $R(x)$ is rent they can pay at distance x , Y is income, and $C_{\text{commute}}(x)$ are commuting costs.



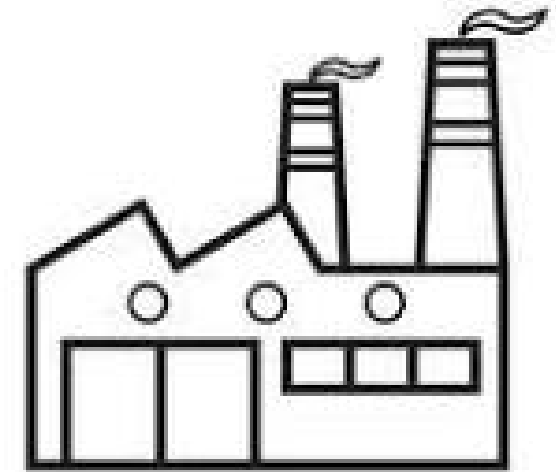
2. Foundations of location theory - Weber

2.3 Weber and industrial location

Alfred Weber's industrial location theory emphasizes minimizing total costs:

Transportation of raw materials, transport of finished goods, and labor costs.

Firms select a location that minimizes the sum of these costs; in practice, this explains clustering and the location of heavy industries

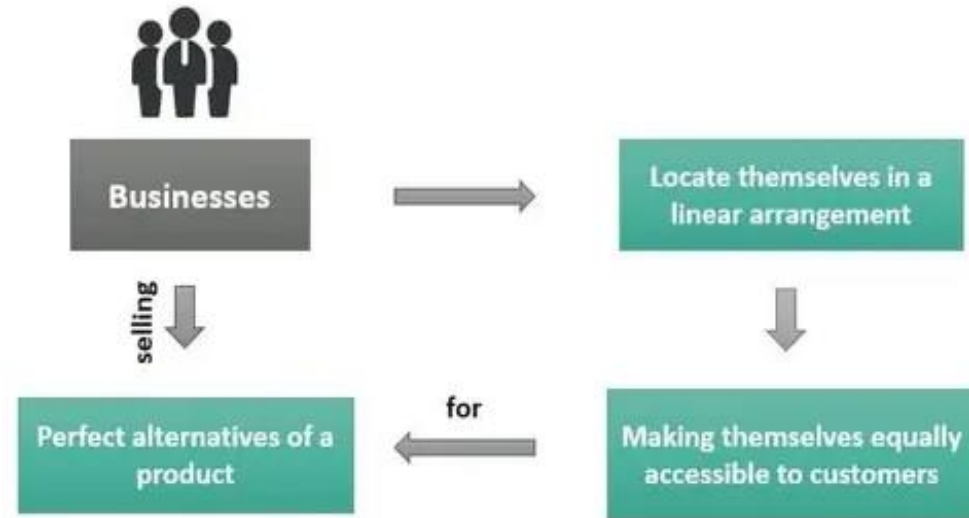


2. Foundations of location theory - Hotelling

2.4 Hotelling and spatial competition

Harold Hotelling (1929) introduced spatial competition: firms choose locations strategically to maximize market share — leading to outcomes like the Hotelling line where competing vendors cluster in the middle of linear demand to capture customers.

What Is A Hotelling's Model?



2. Foundations of location theory - modern extensions

2.5 Limitations and modern extensions

Classic models assume a single center, flat space, and homogeneous consumers/firms.

Modern cities exhibit polycentricity, multiple markets, and heterogeneity.

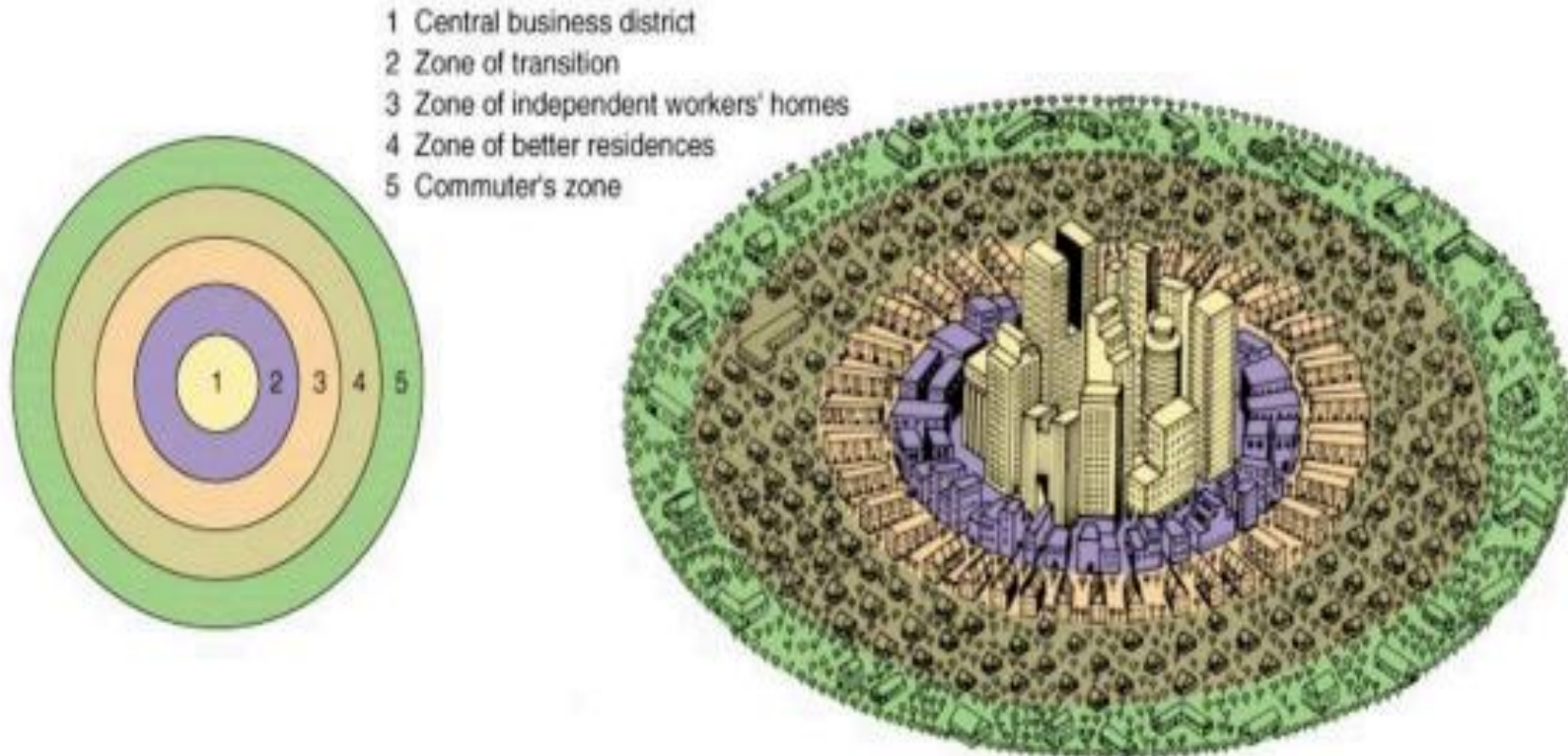
Yet these models provide intuition for rent gradients, density decline with distance, and why firms cluster.



3. Classical models of urban spatial structure - Burgess

3.1 Concentric zone model (Burgess)

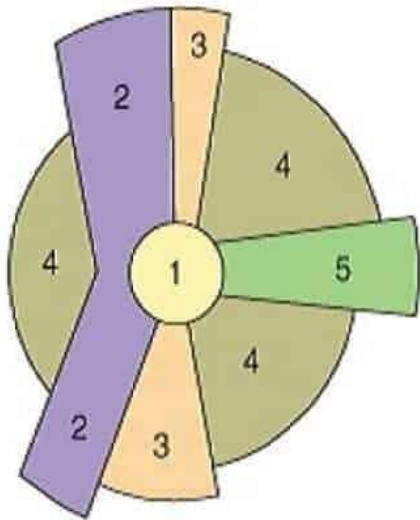
Describes a city growing outward from a CBD in rings: CBD, transition zone, working-class housing, better residences, commuter zone.



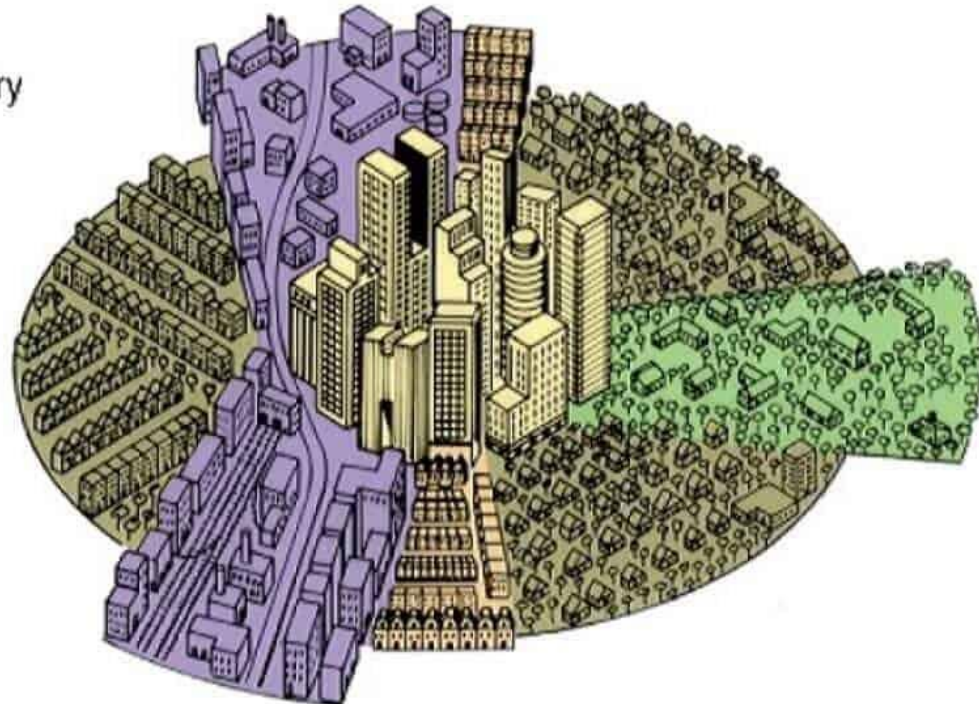
3. Classical models of urban spatial structure – (Hoyt)

3.2 Sector model (Hoyt)

Residential growth extends in sectors radiating from the CBD along transportation corridors.



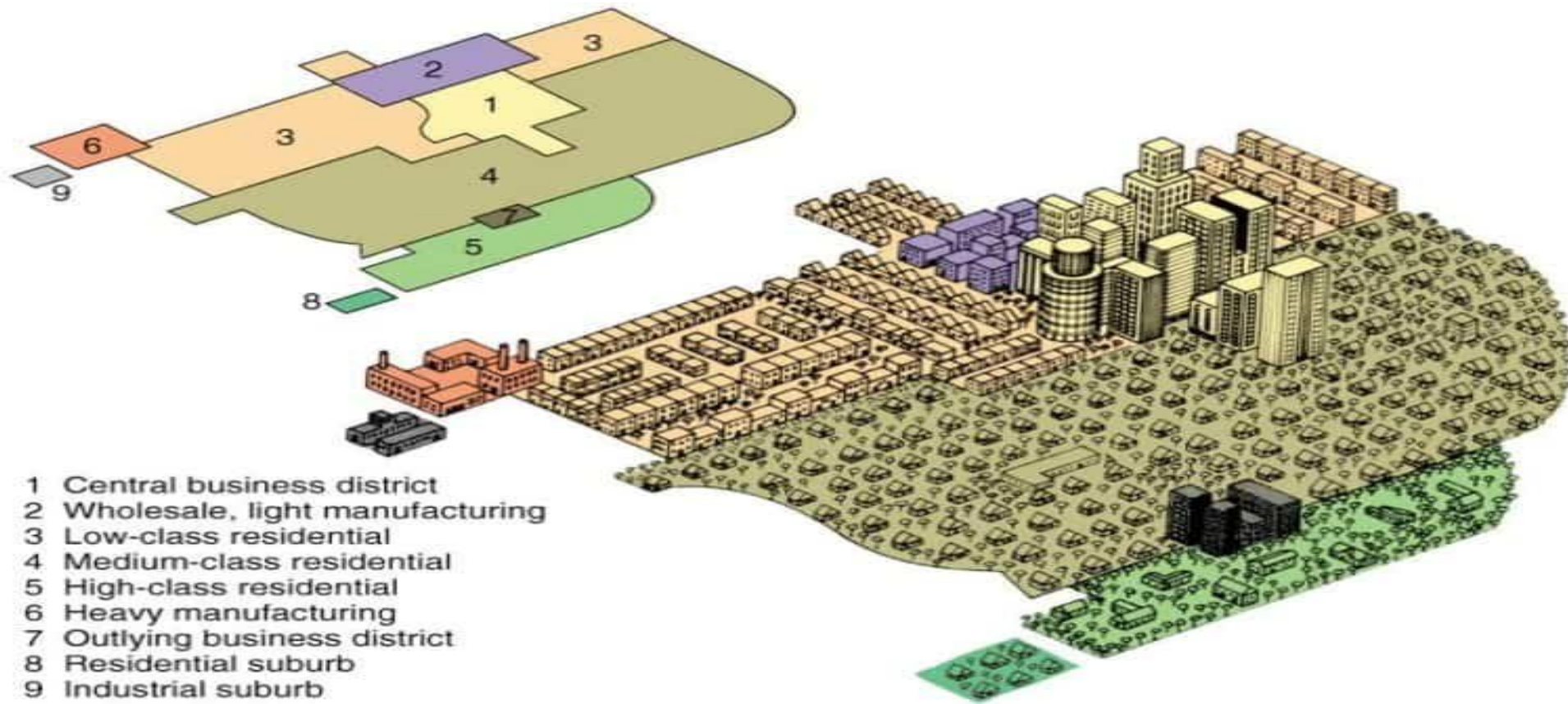
1. Central business district
2. Transportation and industry
3. Low-class residential
4. Middle-class residential
5. High-class residential



3. Classical models of urban spatial structure- Harris & Ullman

3.3 Multiple nuclei model (Harris & Ullman)

Cities can have multiple centers (nuclei), each serving specialized functions — airports, industrial parks, universities — resulting in a polycentric structure.

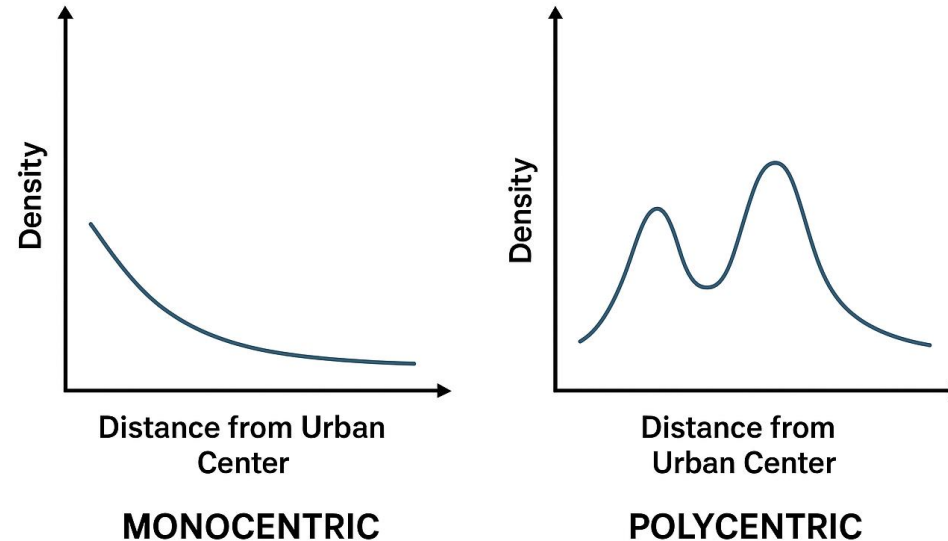


3. Classical models of urban spatial structure- Harris & Ullman

3.4 Monocentric vs polycentric cities

Monocentric cities have one dominant center; polycentric cities show multiple employment centers that reduce average commuting distances and change land rent patterns.

Conceptual Density Profile



4. Land use regulations: tools and objectives

Land use regulations emerge from goals:

- public health and safety
- mitigation of negative externalities
- protecting property values
- shaping urban form
- steering economic development.

Common instruments:



4. Land use regulations: tools and objectives - Euclidean zoning

4.1 Euclidean zoning (use-based zoning)

Separates uses: residential, commercial, industrial.

Typical components: permitted uses, density limits, lot coverage, setbacks.

Pros: reduces incompatible uses, protects residents from nuisances.

Cons: can cause sprawl, single-use areas, long commutes, housing shortages.



4. Land use regulations: tools and objectives - codes

4.2 Form-based codes

Regulate the physical form — building frontage, height, relationship to street — rather than only use.

Aim to create predictable public realm and walkable neighborhoods.

Dubai Law No. 7 of 2025 Regulating Contracting Activities

Number of floors and height: Streets are allowed to have a height of 13 meters on streets 6 meters or wider. Wider streets: On streets 8 meters or wider, the building height is twice the street width, allowing more room for vertical construction.

<https://www.dm.gov.ae/?lang=ar>



4. Land use regulations: tools and objectives

4.3 Performance zoning and impact fees

Performance zoning sets objective-based standards (noise, traffic) rather than prescriptive rules.

Impact fees charge developers for public infrastructure needed due to development.



4. Land use regulations: tools and objectives -green belts

4.4 Urban Growth Boundaries (UGBs) and green belts

Geographic limits to urban expansion to protect farmland, preserve open space, and encourage infill development.



4. Land use regulations: tools and objectives-affordable housing

4.5 Transferable Development Rights

(TDR), inclusionary zoning, density bonuses.

Market-like instruments to move development potential between parcels, require affordable housing, or provide incentives for public amenities.



4. Land use regulations: tools and objectives -construction safety

4.6 Subdivision control and building codes

Regulate street standards, lot sizes, and construction safety.



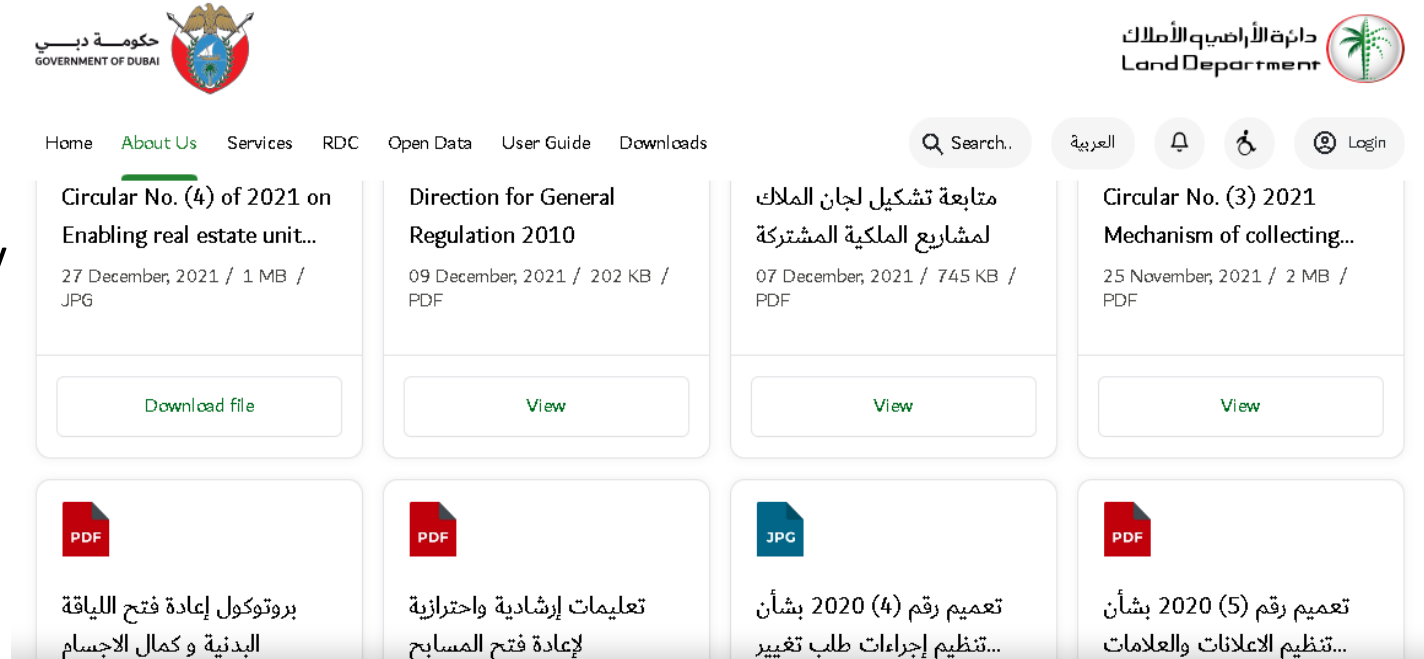
4. Land use regulations: tools and objectives -construction safety

Example

<https://dubailand.gov.ae/en/about-dubai-land-department/rules-regulations/#/>

What is RERA in Dubai?

The Real Estate Regulatory Agency (RERA) is a government agency to regulate the real estate sector in Dubai. RERA is a government agency that regulates the real estate sector in Dubai. It was founded in 2007 by H.H. Sheikh Mohammed Bin Rashid Al Maktoum, Ruler of Dubai and UAE Vice President, and operates under the Dubai Land Department (DLD).



4. Land use regulations: tools and objectives -construction safety

Example

Law No. (26) of 2007
Regulating the Relationship
between Landlords and
Tenants in the Emirate of
Dubai1

What is RERA in Dubai?
The Real Estate Regulatory Agency (RERA) is a government agency to regulate the real estate sector in Dubai. RERA is a government agency that regulates the real estate sector in Dubai. It was founded in 2007 by H.H. Sheikh Mohammed Bin Rashid Al Maktoum, Ruler of Dubai and UAE Vice President, and operates under the Dubai Land Department (DLD).

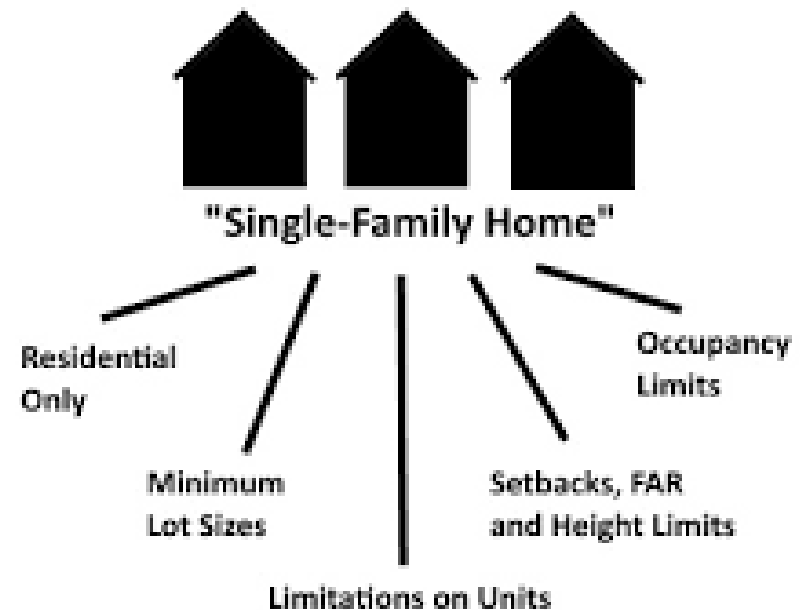


5. How regulations interact with spatial structure and location decisions

5.1 Zoning and the bid-rent function

By restricting densities and permitted uses, zoning shifts the set of bidders for a parcel and can flatten or kink the bid-rent curve.

For example, single-family zoning prevents higher bids from multi-family developers, lowering built density and increasing sprawl.



5.2 Transport infrastructure, commuting costs, and spatial patterns

Transport improvements reduce commuting costs, effectively flatten bid-rent gradients and can lead to decentralization (suburbanization) unless regulated..



5.3 Land value capitalization of regulations

Regulatory changes (e.g., rezoning to allow higher density) can produce substantial capital gains for landowners — the ‘unearned increment’ often motivating political conflict.

Factors Affecting Land Value



5.4 Externalities, agglomeration, and clustering

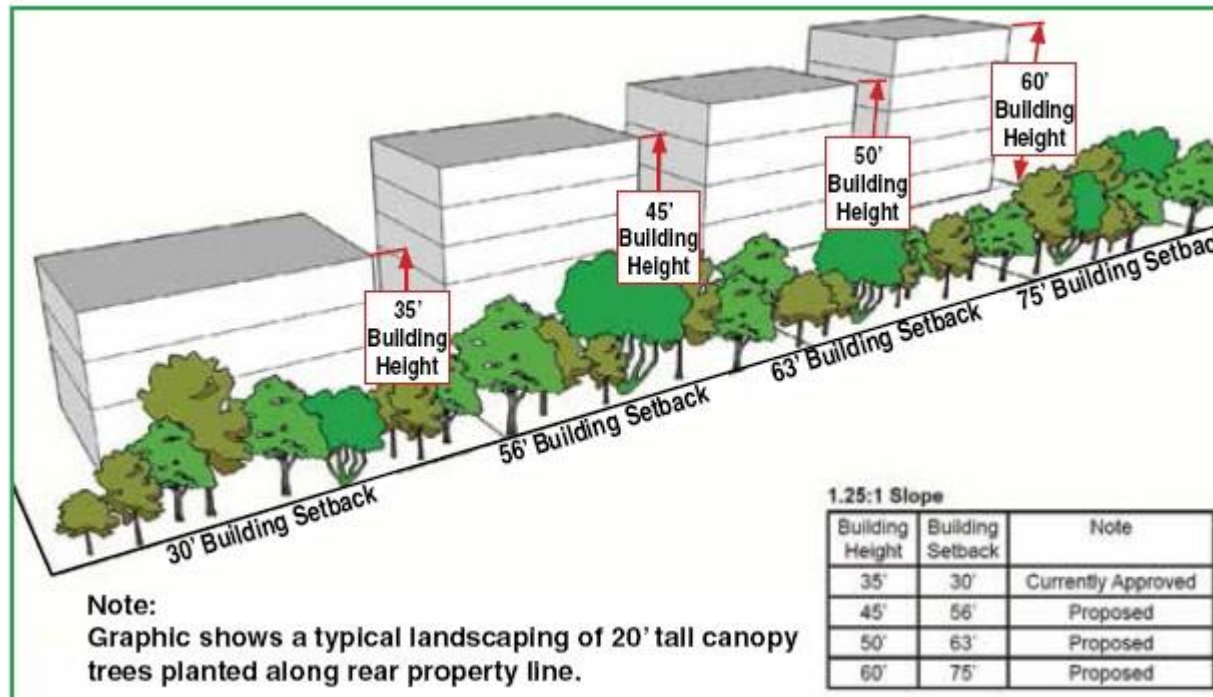
Regulations that enable mixed-use and higher density support agglomeration economies (knowledge spillovers, labor pool pooling) — important for innovation clusters.

CHECK : <https://citypopulation.de/en/world/agglomerations/>



5.5 Restrictive regulations and housing affordability

Restrictive supply-side regulations (tight zoning, height limits) reduce housing supply elasticity, increasing prices.



6. Case Study 1: Portland, Oregon — Urban Growth Boundary (UGB)

1. Background

Portland instituted an Urban Growth Boundary in the 1970s to contain sprawl, protect farmland, and encourage compact growth.

2. Mechanisms and outcomes

UGB limited land available for urban development inside the boundary, encouraging higher densities, redevelopment, and transit-oriented development. Critics argue that without sufficient infill and zoning reform, UGBs can raise land prices within the boundary.

3. Lessons

The UGB shows how spatially explicit regulation can shape urban form — but must be paired with pro-urban housing policies to avoid affordability trade-offs.



6. Case Study 2: Barcelona — Superblocks and reclaiming streets

1. Background

Barcelona's Superblock (Superilla) program reorganizes street networks into 5x5 block units where through-traffic is limited and internal streets prioritize pedestrians and cyclists.

2. Spatial implications

By changing micro-regulation of street usage and parking, the program alters accessibility, reduces local traffic speeds, and increases local amenity values — affecting bid-rent in positive ways for residential uses.

3. Lessons

Urban design and micro-regulation can produce large welfare gains without large top-down rezoning — but require local participation and careful phasing.



6. Case Study 3: Shenzhen Special Economic Zone (SEZ)

1, Background

Shenzhen transformed from a small town to a megacity in four decades through policy-driven investment, relaxed regulations in the SEZ, and incentives for manufacturers and firms.

2. Spatial outcomes

Rapid densification, industrial clustering initially, followed by service-sector



Conclusion

The land use rules that are adopted have key efficiency and wealth distribution effects.



lecture

02

EXERCISE



Write a list of the laws and regulations you will need to license a good housing project in Dubai?



Thank You