"Metropolitan Structures Around the World" What is common? What is different? What relevance to Marikina in the context of Metro Manila? Marikina, May 2003 By Alain Bertaud HTTP://alainbertaud.com

Metropolitan Structure, density and livability

There are three aspects to the quality of life or "urban livability" of a large city:

- 1. The efficiency of its spatial structure
- 2. The consistency between its infrastructure, its regulations and its spatial structure

summary

• A. Metropolis seen as labor markets

• B. Densities, Land use regulations, Poverty and Metropolitan Structure

A. Metropolis as labor markets

• Cities urban structures have been shaped by economic forces, they have been very seldom the result of design.

• The raison d'être of large cities is the size of their labor and consumer markets

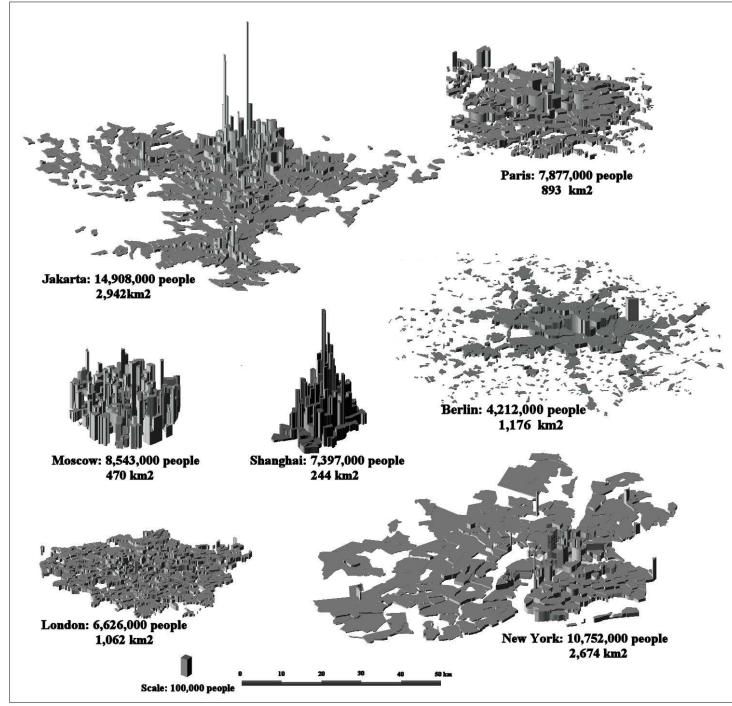
Cities spatial structure

• The spatial structure of cities matters

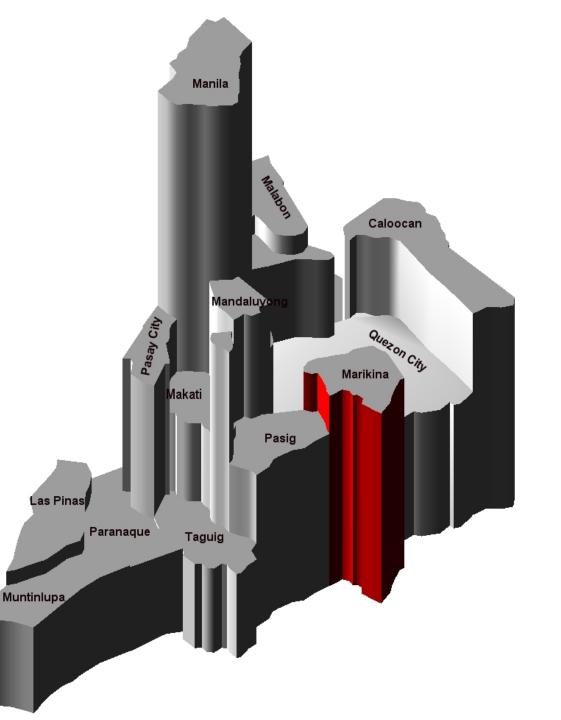
- The spatial structure of a city can be defined by :
 - The spatial distribution of population
 - The pattern of daily trips

Distribution of population in Hong Kong HONG KONG - 3D representation of population densities

Spatial distribution of population in 7 major metropolis represented at the same scale



Metro Manila spatial distribution of population shown in 3 dimension



Schematic representation of trip patterns

THE MOST COMMON URBAN SPATIAL STRUCTURES

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D

. The Classical Monocentric Model, - strong high density center with

- high concentration of jobs and amenities
- radial movements of people from periphery toward center

The "Urban Village" Model

- people live next to their place of employment
- people can walk or bicycle to work
- this model exists only in the mind of planners, it is never encountered in real life

The Polycentric Model

- No dominant center, some subcenters
- Jobs and amenities distributed in a near uniform manner across the buil-up area
- Random movement of people across the urban area

The Composite Model

- A dominant center, some subcenters
- Simulateneous radial and random movement of people across the urban area



"Order Whithout Design" Bertaud 2006 (unpublished)

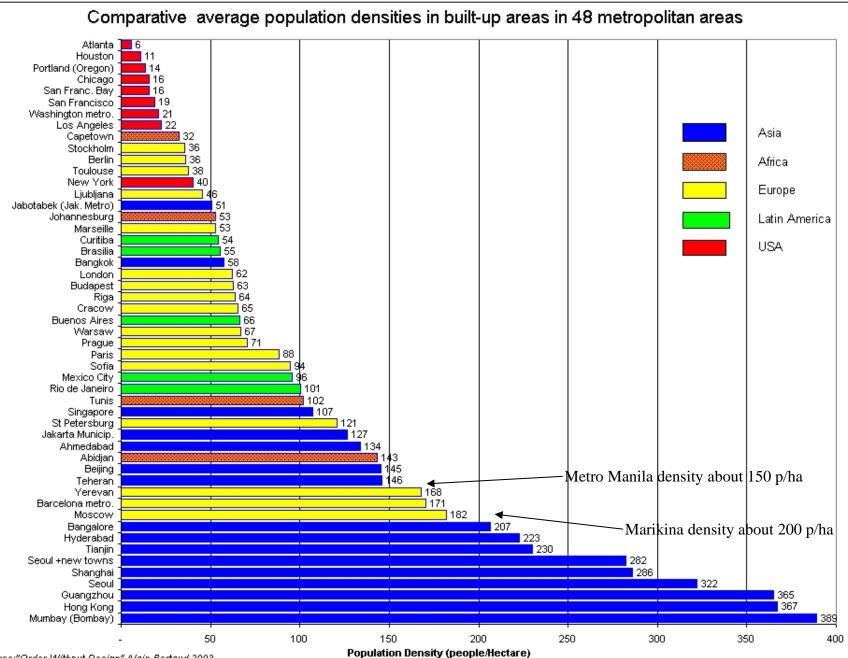
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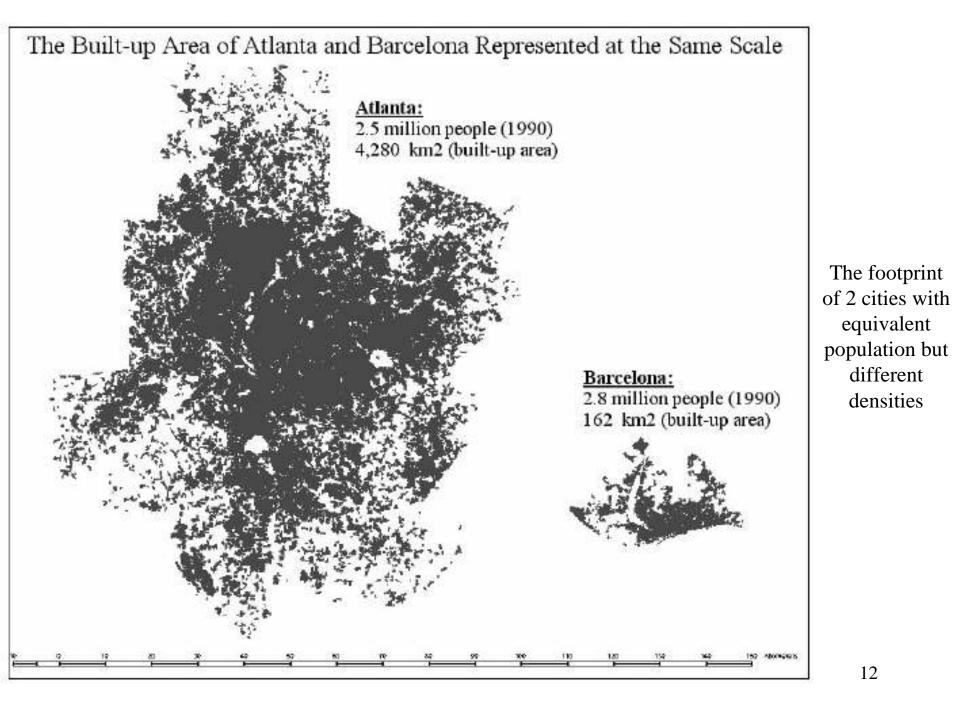
City spatial structures and densities

- Urban densities are key factors in determining cities' livability
- Urban Densities are not created by idiosyncratic urban design considerations but are linked with
- 1. the spatial structure of the city and,
- 2. the interaction between Government action (regulations, infrastructure investments and taxation) and the real estate market.
- Average built-up densities vary widely across the main cities of the world, they are the product of government action and markets, which reflect cultural preferences and resources

Comparative Average built-up densities



source:"Order Without Design" Alain Bertaud,2003



Density profiles

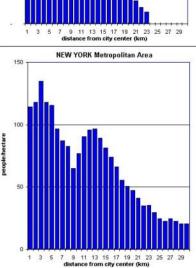
- The profile of densities is key to understanding a city's structure and its livability.
- Cities where the land market works reasonably well have a common structure

COMPARATIVE POPULATION DENSITIES IN THE BUILT-UP AREAS OF SELECTED METROPOLITAN AREAS JAKARTA (Jabotabek) SHANGHAI 1,100 400 300 1,000 900 300 800 200 000 people/pectare people/hectare 2 400 100 300 10 200 100 1 3 5 7 9 11 13 15 17 19 21 23 25 27 29 7 9 11 13 15 17 19 21 23 25 27 29 1 3 5 3 distance from city center (km) distance from city center (km) WARSAW PARIS - 1990 400 350 200 300 300 150 250 people/hectare 200 beoble/hectare people/hectare 200 100 50 100 50 7 9 11 13 15 17 19 21 23 25 27 29 distance from city center (km) 7 9 11 13 15 17 19 21 23 25 27 29 1 3 5 5 1 distance from city center (km) ATLANTA LOS ANGELES 150 30 55 50 25 45 40 20 100 tare people/hectare people E. 10 50 15 10 1 3 5 7 9 11 13 15 17 19 21 23 25 27 29 1 3 5 7 9 11 13 15 17 19 21 23 25 27 29 distance from city center (km)

distance from city center (km)

from "Order Without Design", Alain Bertaud, 2001

Density Profile of 9 cities



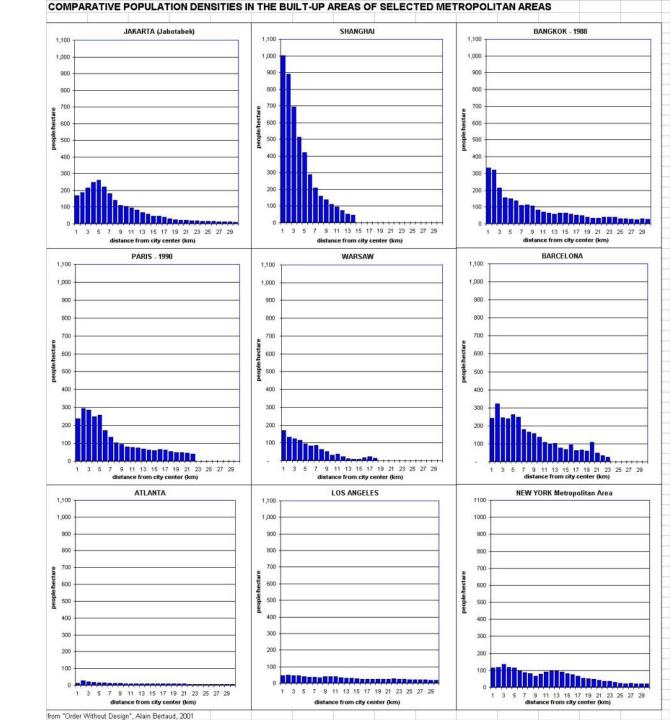
BANGKOK - 1988

9

11 13 15 17 19 21 23 25 27

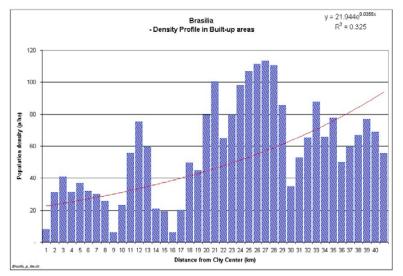
distance from city center (km) BARCELONA

Density profile of 9 cities (same vertical scale)



Density profile of 3 cities without land markets

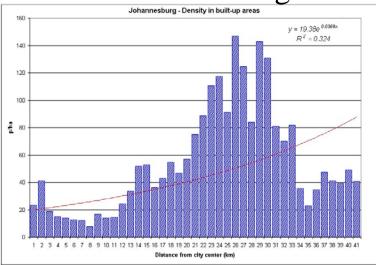
Brasilia



MOSCOW - POPULATION DENSITY 1990 350.00 y = 96.81e 0.0468x R2 -04430 300.00 g 250.00 a 200.00 ŝ on Dei 150.00 Populati 100.00 50.00 0.00 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 Distance from City Center (Km2)

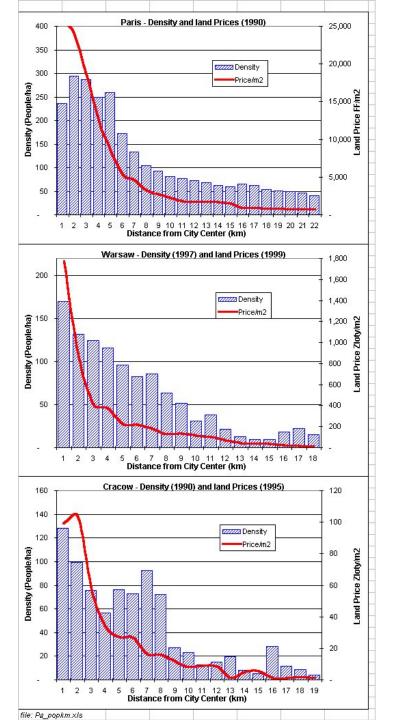
Moscow

Johannesburg



B. Densities, Land use regulations, Poverty and Metropolitan Structure

- Land use regulations have 2 contradictory effects on densities and land price:
- 1. Direct effect is to decrease densities and land price: minimum plot size, maximum floor area ratio, minimum road width; all contribute to a decrease of densities and price.
- But an indirect effect of regulations could increase densities: some regulations might decrease the supply of land, therefore pushing land price up and as a consequence densities.



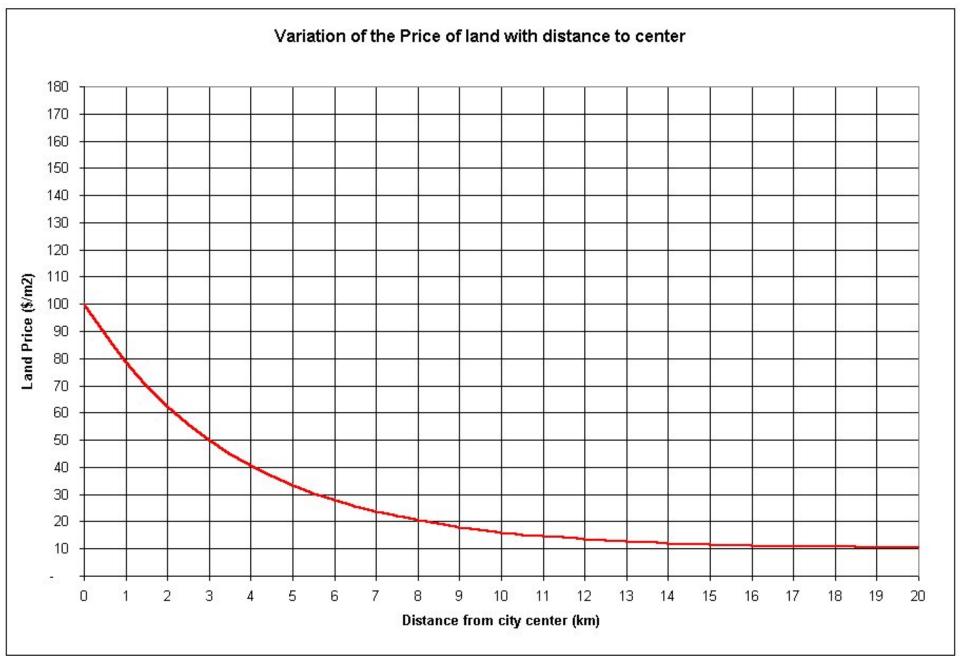
Density and land price

Effect of Land use regulations on the location of the

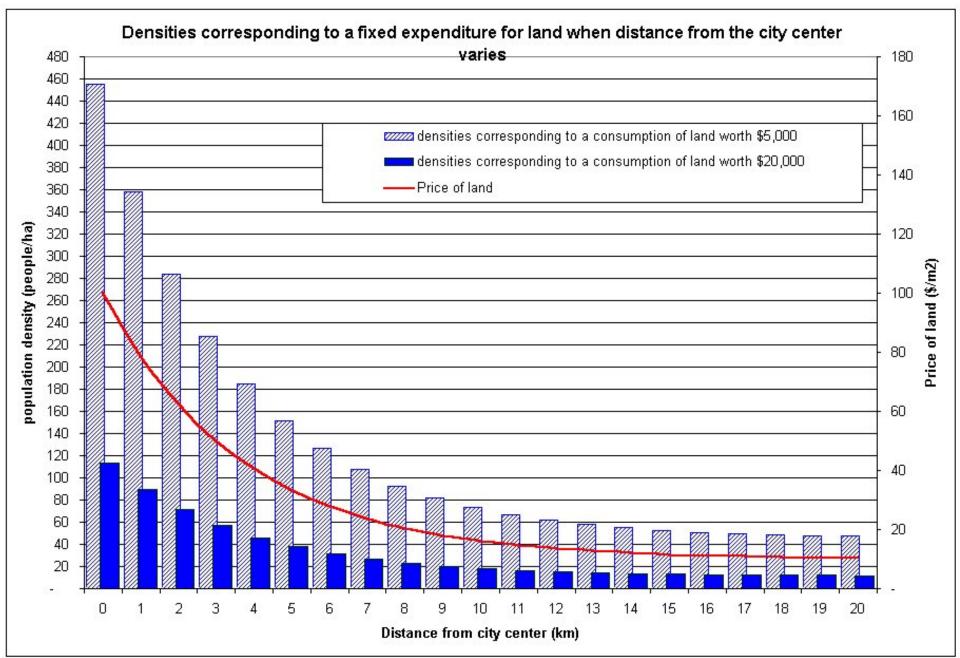
poor:

- Land is always affordable to all income groups. For a given price of 1. land, different income group will adjust their consumption of land (and therefore density).
- Land use regulations always implies establishing maximum density 2. thresholds in specific locations, these thresholds are typically lower than the one reached by an unregulated market.
- Land use regulations, when enforced, reduce the locational choice 3. of the poor to the areas where the affordable density is lower than the permitted density.
- Land use regulations, when not enforced, fragment land markets 4. into two sectors: the formal and the informal market. Poor households pushed by regulations into the informal market loose the normal contractual guarantees given by the State to its citizens. As a consequence, they have to pay more for land and infrastructure for a lower level of service, and they do not have access to the formal financial markets.

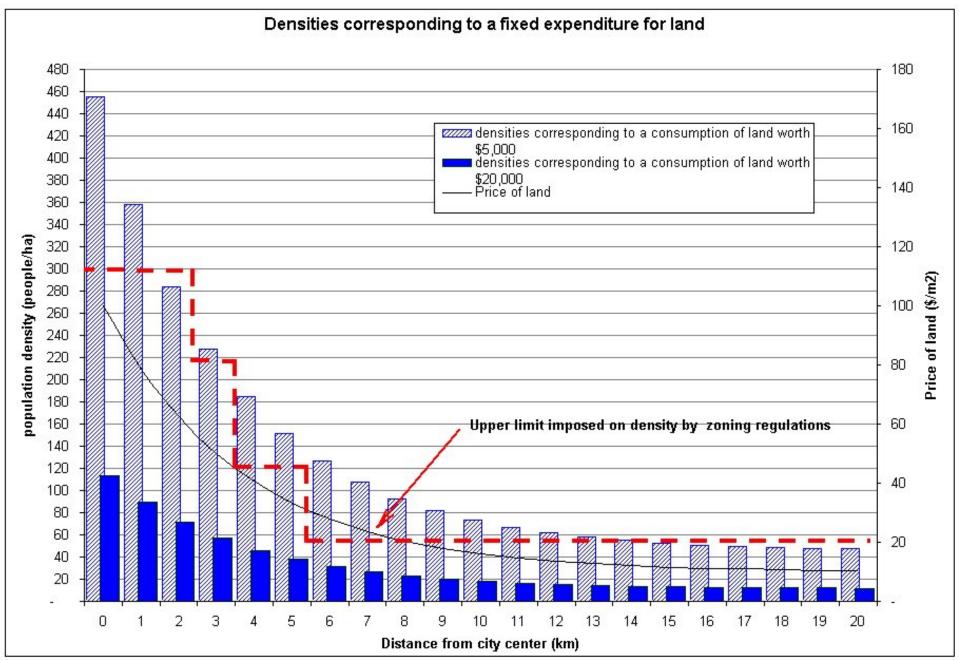
Typical Land price profile

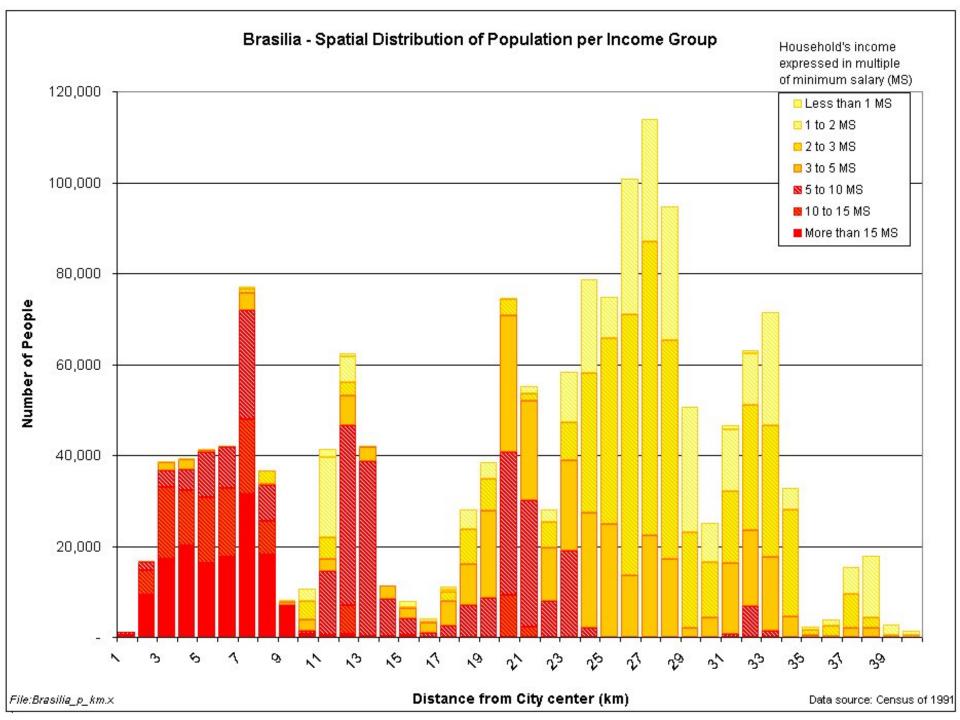


Affordable densities for 2 income groups



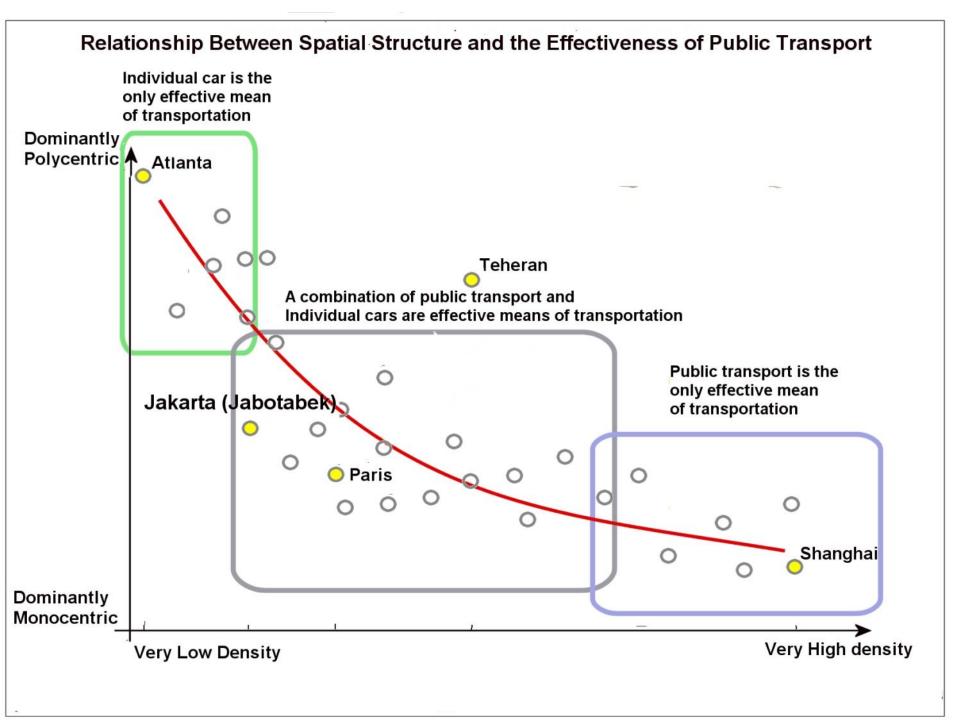
Zoning density profile





The case of Metro Manila

- Metro Manila is a high density polycentric city
- Public transport will be always difficult to operate in the metropolitan area because of the dispersion of origins and destinations of trips
- On the other hand, the high density make it difficult to provide enough road space and parking for private cars;
- The system of jitneys seems to be the most efficient compromise between mass transit and private cars



The role of urban planners is to make use of Planning tools to meet development objectives set up by Municipality

