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# Transport as a Tool for Urban Design

## Problems, Better Processes, Best Practices

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Urban Transportation Planning  
MIT Course 1.252j/11.380j  
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# MIT Transport as a Tool for Urban Design

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- Transport and Land Uses
- Problems
- Solutions
- Best Practices

# Transport and Land Uses

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- Let us design a new freeway...
  - Present traffic on existing roads?
  - Design speed? Desired LOS? Budget?
  - But...
    - How many new dwellings will be built nearby?
    - How many office bldgs? Technology parks?
    - How many parking places are needed?
    - What size for the new shopping center?
    - .....??
- From road builders to urban planners!

# Transport and Land Uses

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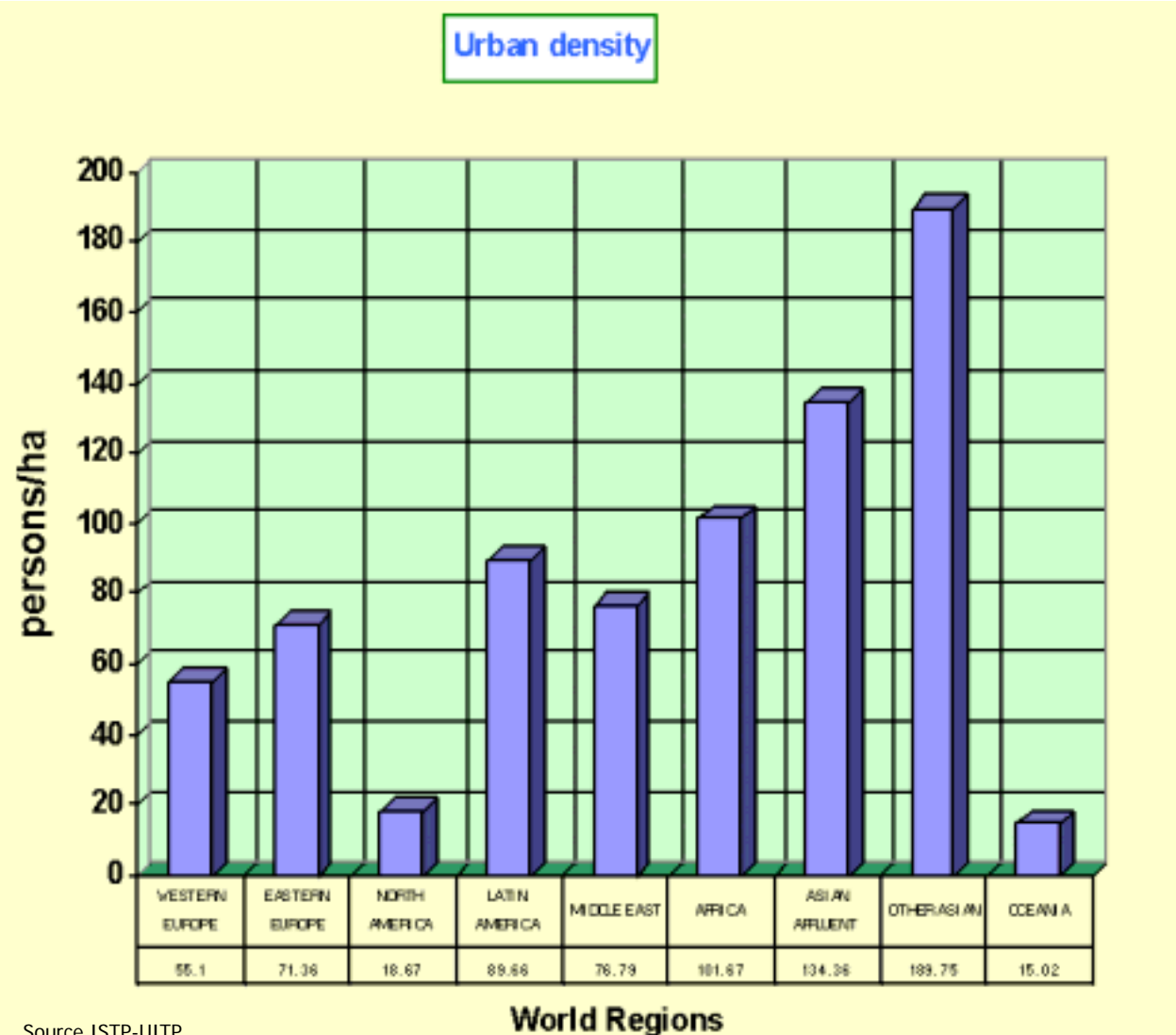
- Thanks to J. Kenworthy and F. Laube – “The Millennium Cities. Data base for Sustainable Transport” sponsored by the UITP, we know that some parameters are very critical





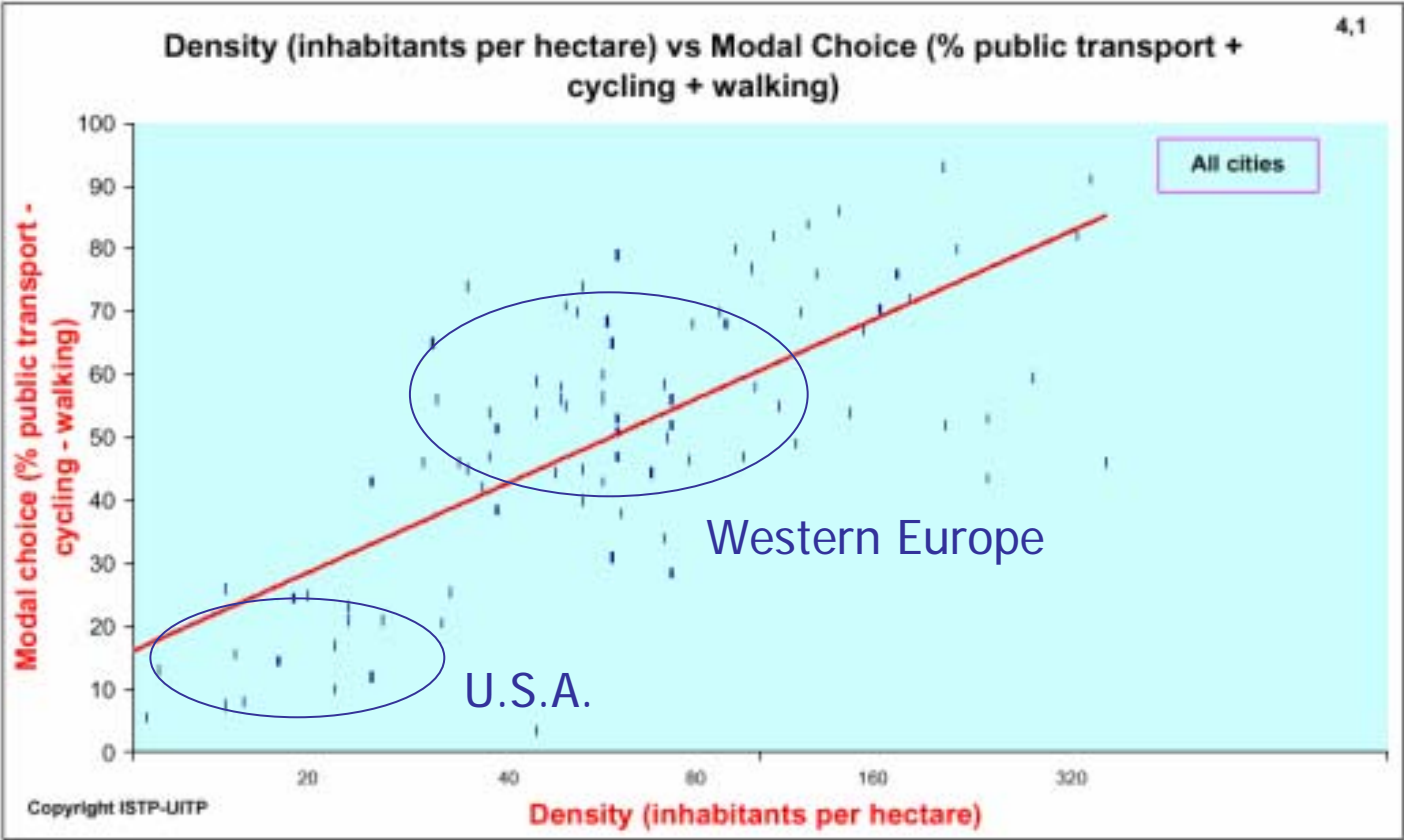
# Urban Density is critical...

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# The higher the density, the higher...

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... the percentage of sustainable modes

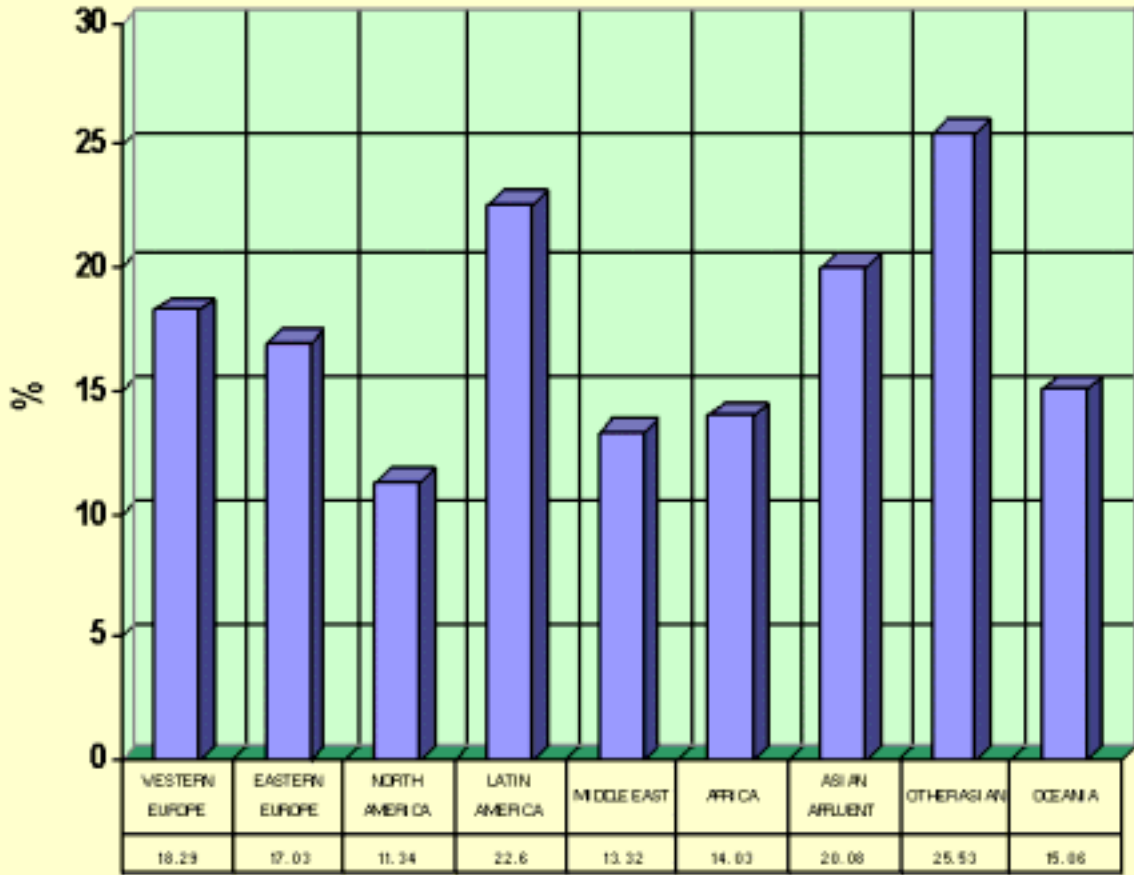


# Job density is also a critical parameter

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As Joel Garreau says (The Edge Cities), when the president moves to the suburbs, he takes the office along

Proportion of jobs in CBD



World Regions

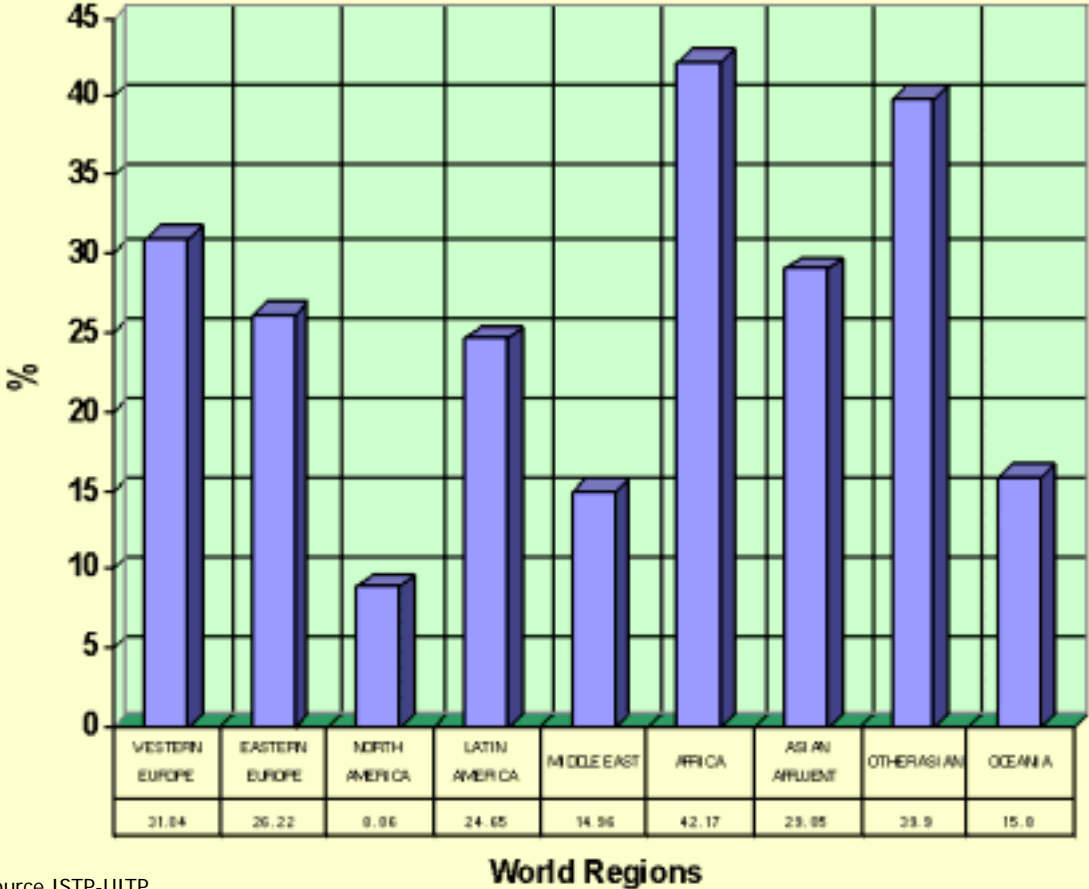
Source ISTP-UITP

# Percentage of non-motorized trips

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... correlated with density and mixed uses

\* Percentage of non motorised modes over all trips

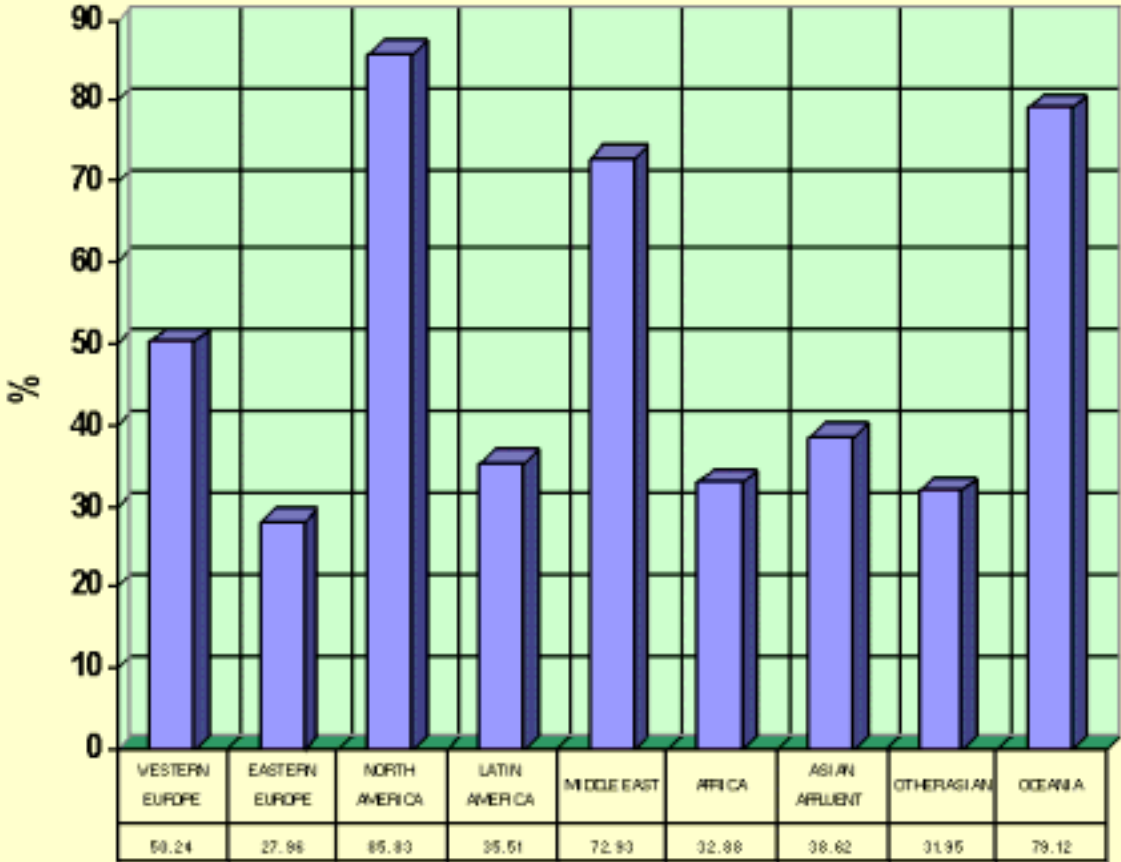




# MIT The automobile will govern if...

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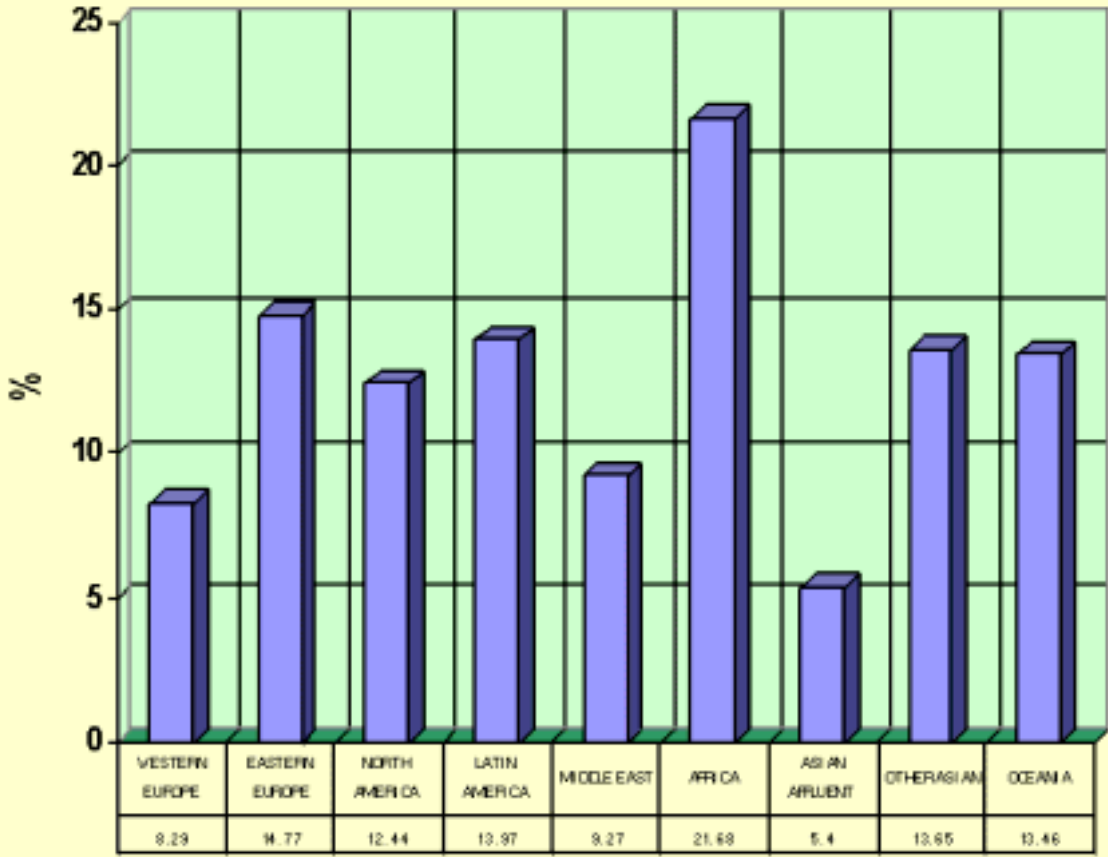
\* Percentage of motorised private modes over all trips



# Economic efficiency

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Total passenger transport cost as percentage of metropolitan GDP

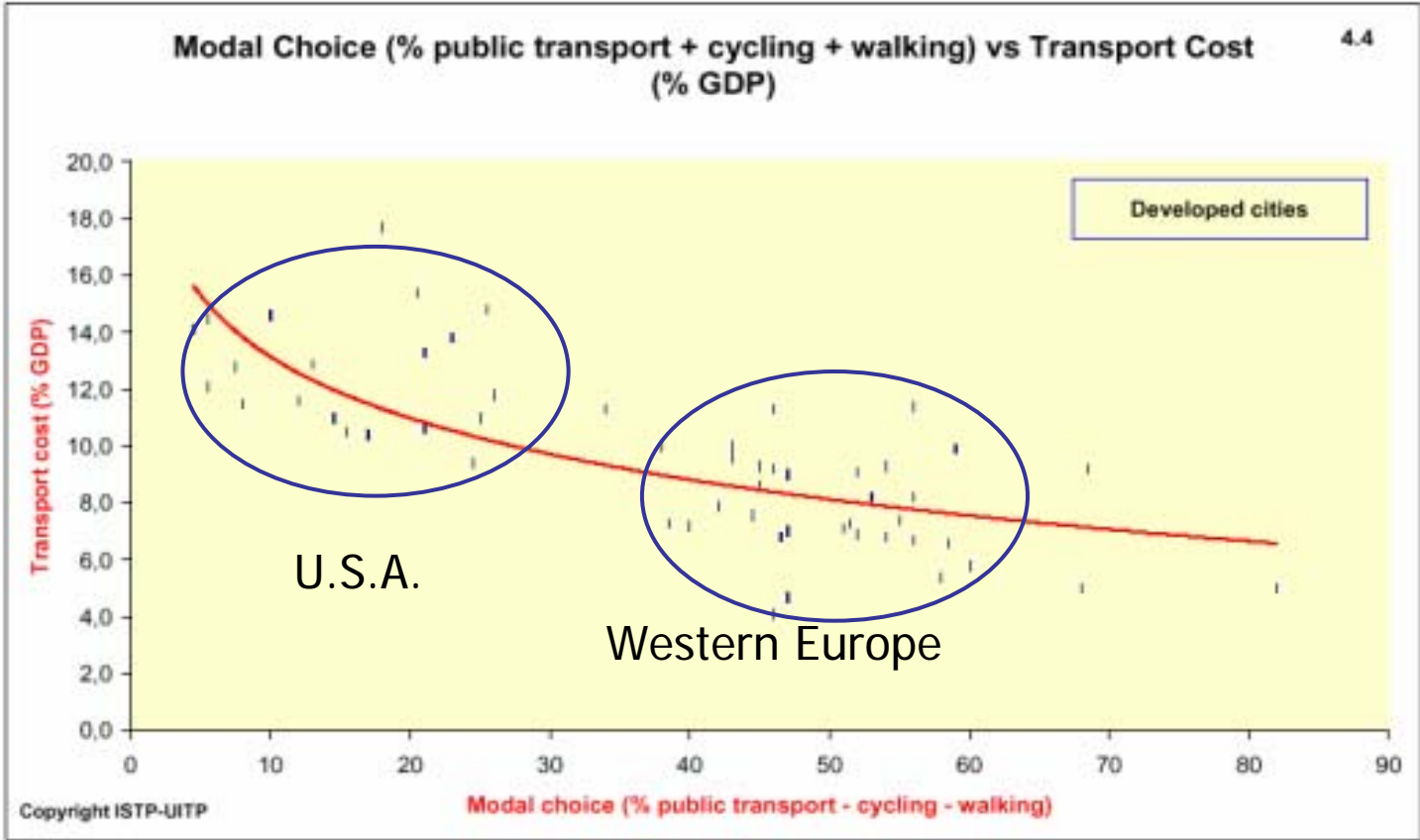


Source ISTP-UITP

World Regions

# MIT The cost of a balanced system

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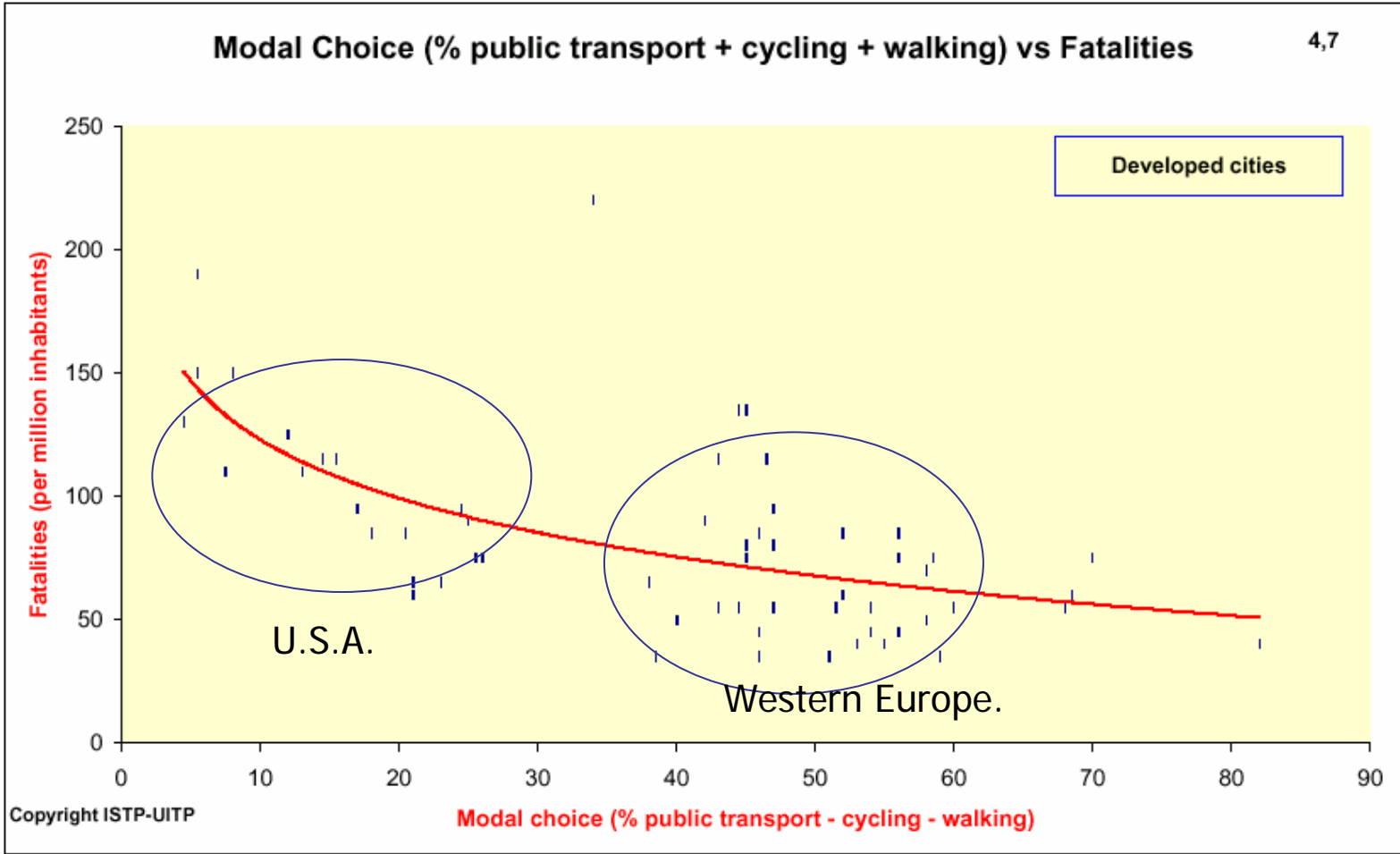


## Economic sustainability



# The high price of road fatalities

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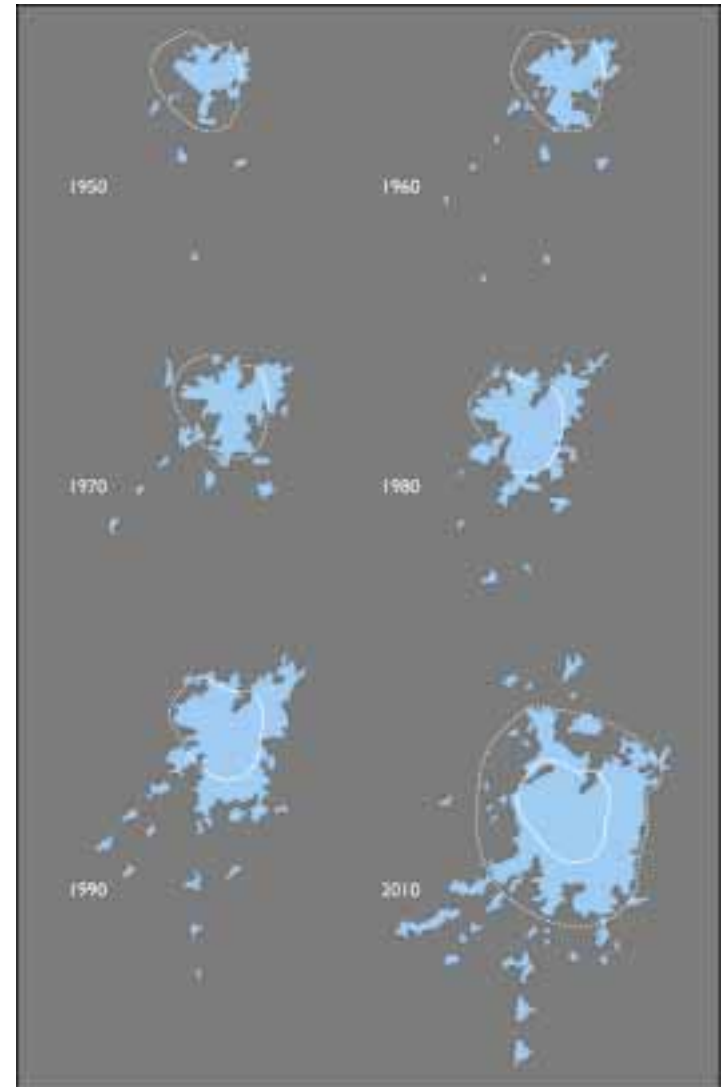
- Triggers:
  - Housing density
  - Suburban job centers
  - Segregation of land uses
  - Parking availability and cost
- Results:
  - Unbalanced modal split
  - Increased economic, environmental and social costs

- Transport projects opportunities:
  - Development (macro):
    - Strategic and long-term
    - Examples like Curitiba, Toronto, Stockholm...
    - Self-containment vs dispersal
    - Urban growth along axes through zoning and land-use incentives
  - Rehabilitation (micro):
    - Tactical, short term but also effective
    - In-fill development vs new demand management

# Better Processes

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- Development (macro):
  - Curitiba as an example



# Better Processes

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- Rehabilitation (micro):
  - It can be implemented rather quickly
  - Local actions spilling over the metropolitan scale
  - Zürich's per capita transit trips above Curitiba's
- Any transport project – however minor – can be approached as an improvement opportunity, for instance:
  - Improving a traffic intersection and...
  - The excuse of a new Light Rail



# A traffic intersection

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Town of Amorebieta, Basque Country, Spain

# Again, nothing like simulation

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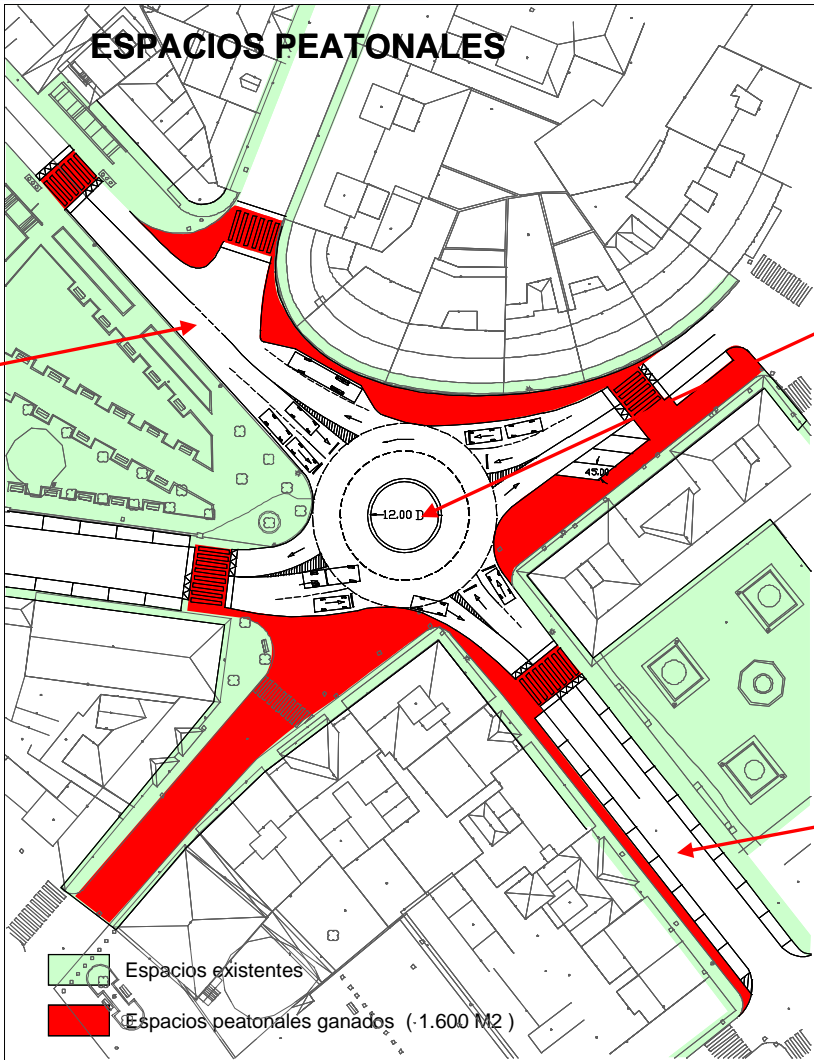
- Although traffic analyses per se will not stop traffic growth





# A traffic intersection

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Opportunity for  
urban  
rehabilitation

# The power of a LRT project

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## New public spaces around the LRT



A true success story, thanks to full priority, strict parking policies and pedestrian schemes

# The power of a LRT project

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# The power of a LRT project

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# The power of a LRT project

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# Or simply just closing off a street...

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Courtesy of Jan Gehl



# ... or removing some parking spots

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# MIT The benefits of a few extra turns for the cars

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## City Hall in Copenhagen



- Car Parking:
  - Critical for modal split
  - To be seen in a wider context than just on-site provision
  - Complementary measures (pedestrian improvements, transit...) a must
  - On-site parking to distinguish between shoppers and commuters

- Park-Ride facilities:
  - Visible, well signed and secure
  - Again to be seen in a larger context
  - It should not preclude high-density development near rail stations
  - Price should be lower than downtown
  - Shuttle service of prime quality: frequent service, priority to reach downtown faster than by car (similar to an airport car rental shuttle)

- Traffic Management:
  - Traffic Calming a first step:
    - It fosters more convivial public spaces
    - It triggers a new relationship between pedestrians and cars
    - It facilitates biking
  - Other steps:
    - To divert through traffic
    - Priority for bus or LRT service



# Transport Solutions

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- Pedestrians and Cyclists:
  - O-D pathing
  - Road crossings
  - Street furniture
  - Traffic calming
  - Balanced activities throughout the day
  - Public activities



- The Netherlands ABC location policy:
  - Locations:
    - A: main transit hub – few parking - downtown
    - B: district center or small town bus junction
    - C: Not served by transit
  - Activities:
    - A: People intensive land uses
    - B: Commercial and service activities with low turnout (e.g.: car sales, furniture dealers...)
    - C: Goods intensive uses

- West Midlands Regional Planning Guidance:
  - Development within existing urban fabric
  - Maximize re-use of vacant and derelict sites
  - Maximize use of existing infrastructure
  - Strong support for public transport
  - Measures to control car congestion in town centers
  - Coordination of strategic parking requirements
  - Strong support for pedestrian and cyclists facilities

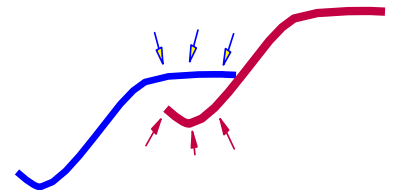
- The priorities of the City of York Council:
  - Pedestrians
  - People with disabilities
  - Cyclists
  - Public Transport passengers
  - Commercial and business vehicles
  - Car-borne shoppers
  - Coach-borne visitors
  - Car-borne long-stay commuters

# Best practices

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- The resulting measures in the City of York:
  - Strict parking policy
  - 5 park-and-ride sites
  - Reallocation of road space among buses, cyclists and pedestrians
  - Traffic calming measures: 30 mph on major radials and 20 mph, elsewhere
  - Safe and continuous cycle network
  - Implementation of a **pedestrian route network throughout** the city

- Global Vision, Local Action...
  - Don't let the global vision rob you from opportunities for local change
  - Local change, however limited, is important:
    - We need early winners to jumpstart a new process
    - Small changes may become showcases
    - Don't forget we need a new model...
  - To start a process... more effective than relying only on end-state planning



# Upon starting a process, remember Jane Jacob's "Systems of Survival"

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## ■ Commercial Syndrome

- Shun force
- Come to voluntary agreements
- Be honest
- Collaborate easily with strangers and aliens
- Compete
- Respect contracts
- Use initiative and enterprise
- Be open to inventiveness and novelty
- Be efficient
- Promote comfort and convenience
- Dissent for the sake of the task
- Invest for productive purposes
- Be industrious
- Be thrifty
- Be optimistic

## ■ Guardian Syndrome

- Shun trading
- Exert prowess
- Be obedient and disciplined
- Adhere to tradition
- Respect hierarchy
- Be loyal
- Take vengeance
- Deceive for the sake of the task
- Make rich use of leisure
- Be ostentatious
- Dispense largesse
- Be exclusive
- Show fortitude
- Be fatalistic
- Treasure honor

# A Closing Thought

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Do we have to resign ourselves to the role of the frog<sup>1</sup>? Or, can we act now?

<sup>1</sup> See MIT's Peter Senge "The Fifth Discipline"