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Transport as a Tool for Urban Design

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Urban Transportation Planning
MIT Course 1.252j/11.380j
Fall 2006

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Transport as a Tool for Urban Design

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

Transport and Land Uses

- 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!

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

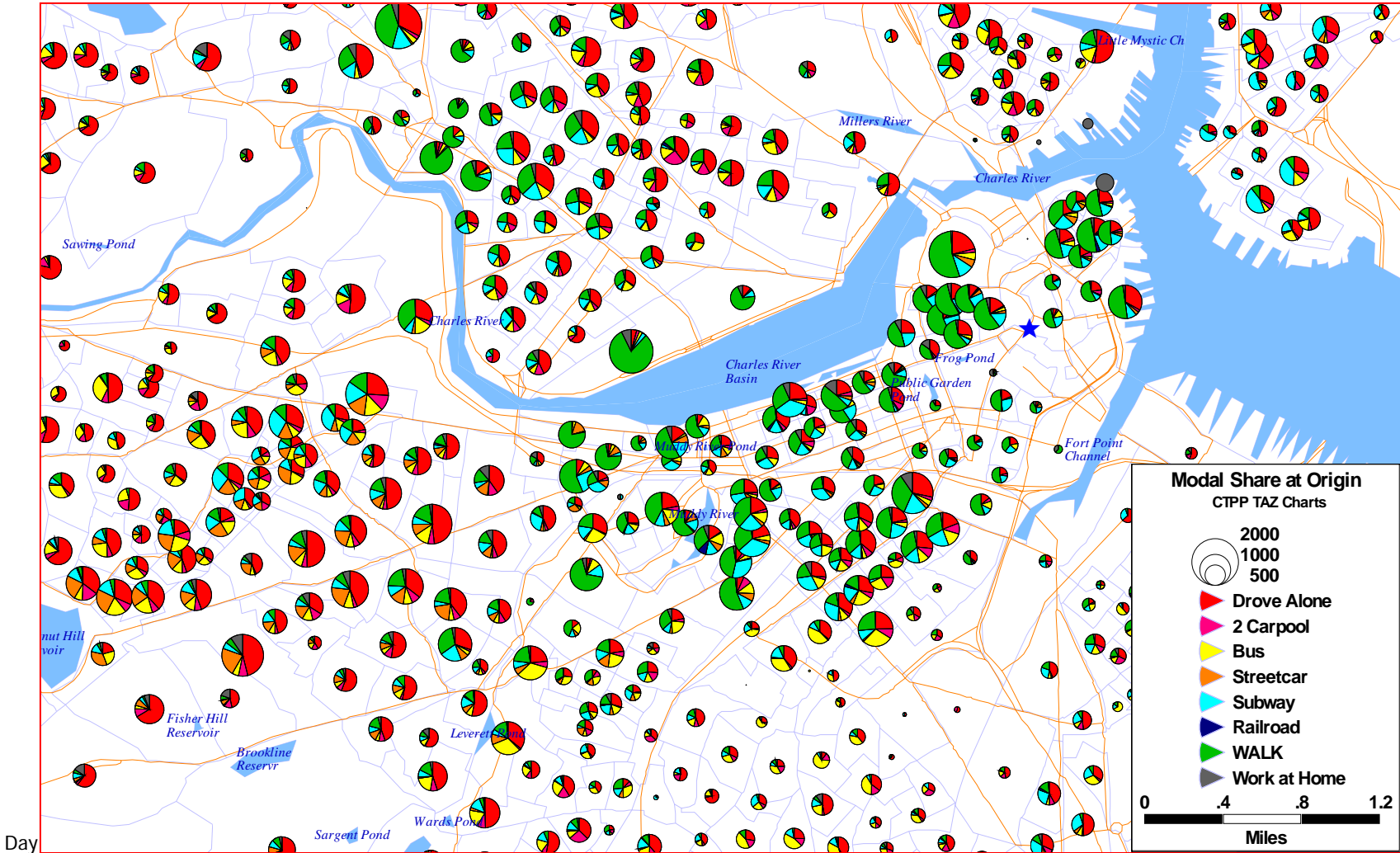
Let us use the 1990 Census Data to observe very different modal choices at different cities for the home to work trip

Is it the result of the transport system per se? Or is it due to a more complex system where many factors play a role: economic conditions, housing market, individual perceptions and choices...?



CTPP 1990 Home-to-Work Modal Split: Boston

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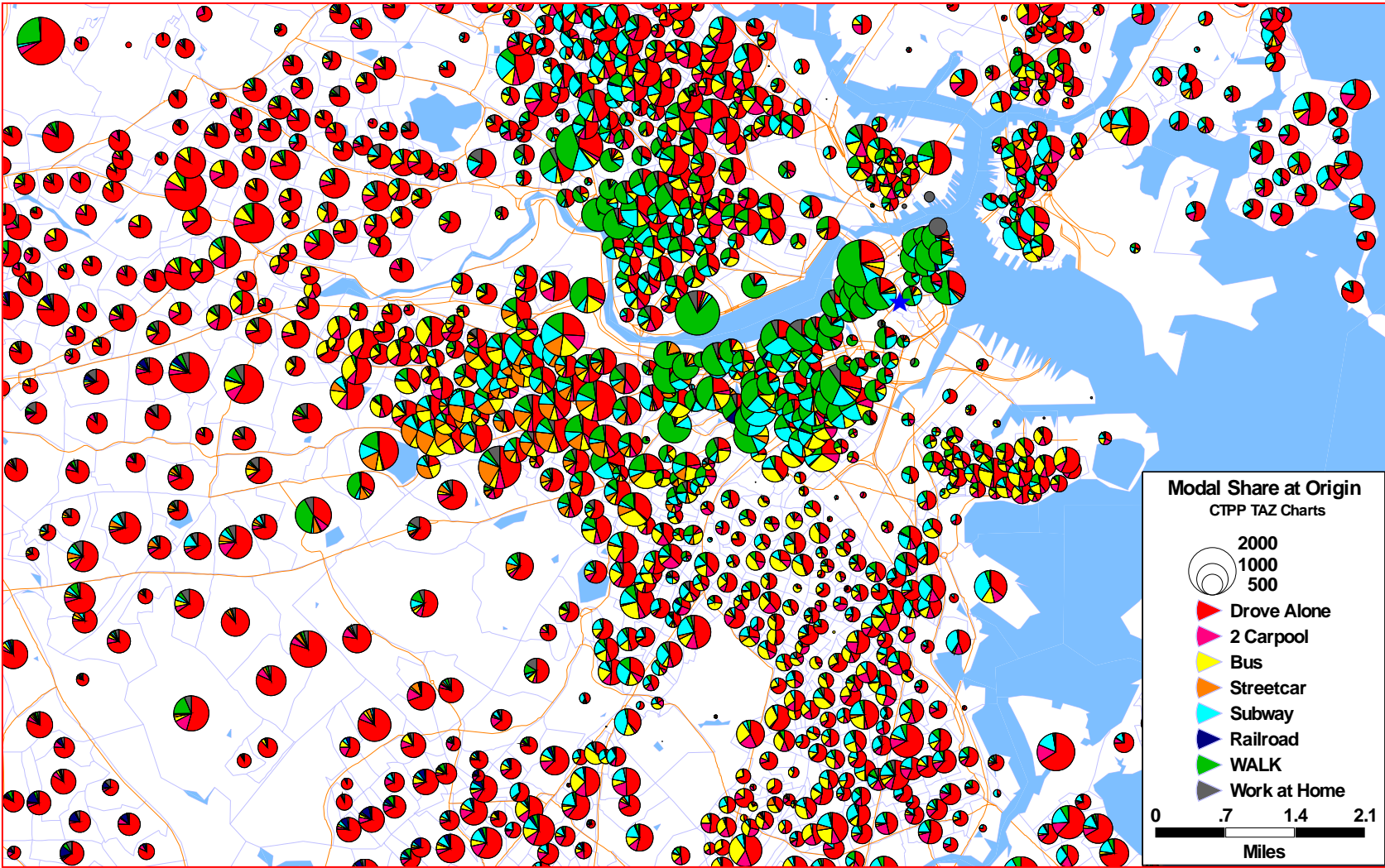
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CTPP 1990 Home-to-Work Modal Split: Boston

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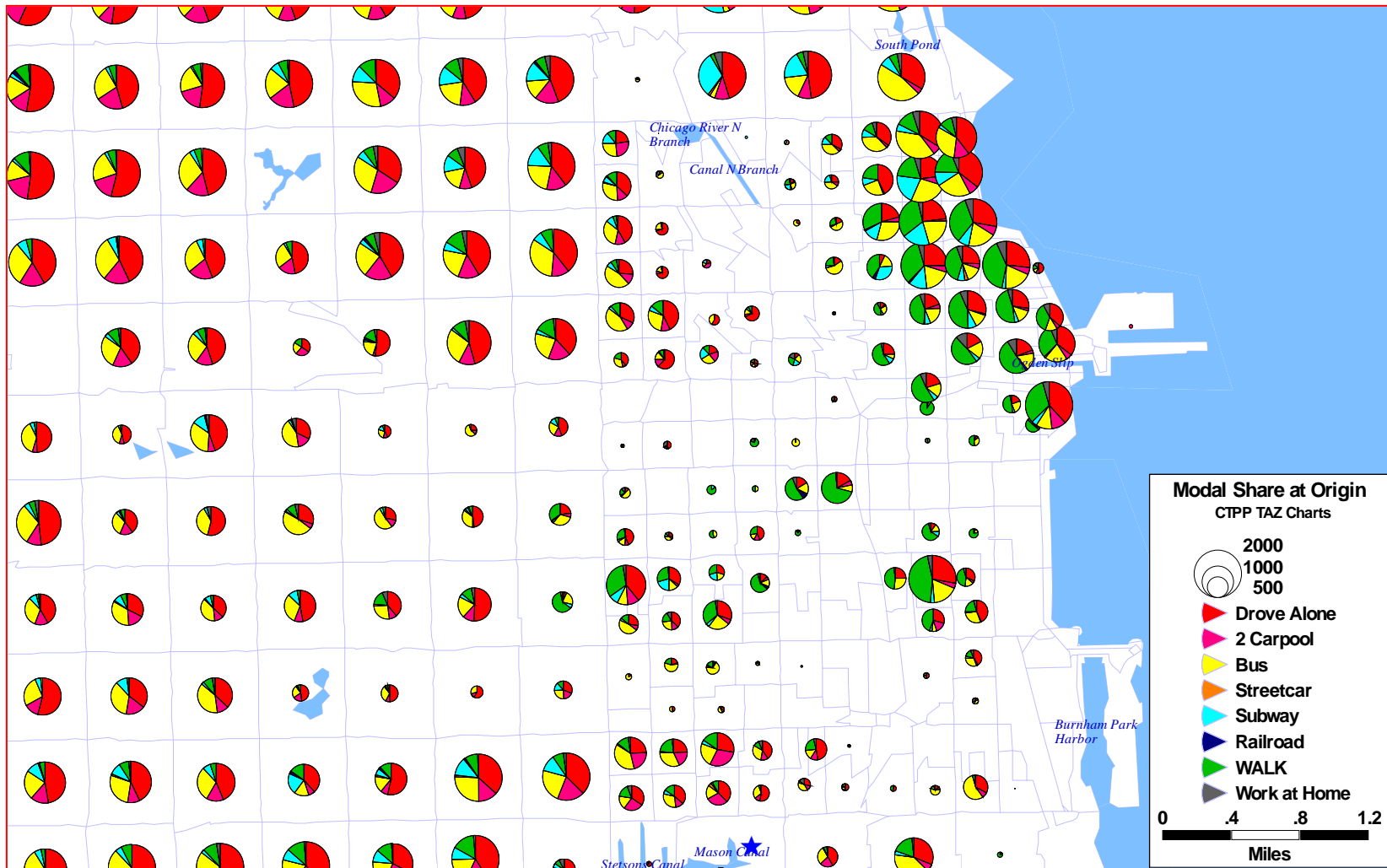
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CTPP 1990 Home-to-Work Modal Split: Chicago

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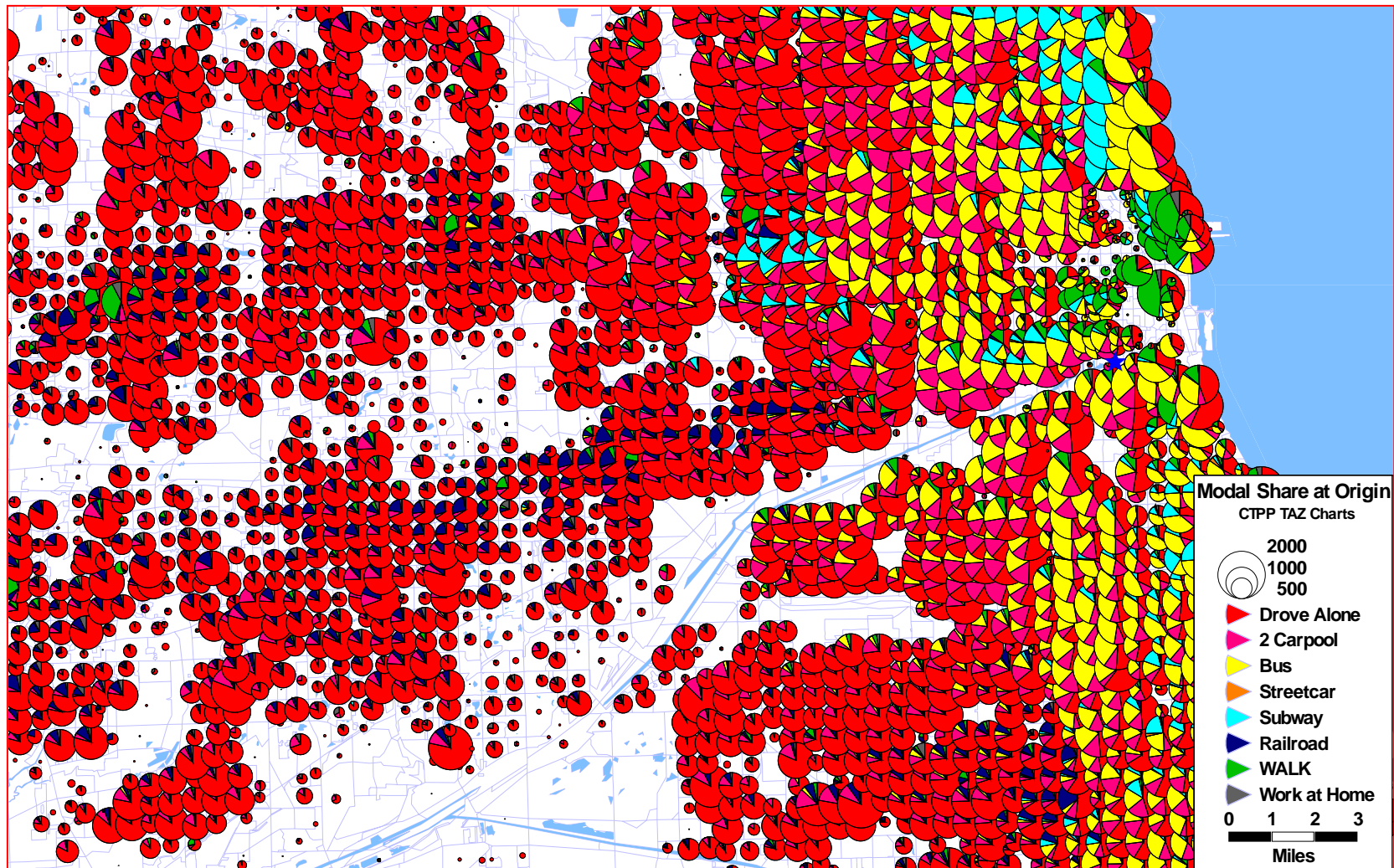


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CTPP 1990 Home-to-Work Modal Split: Chicago

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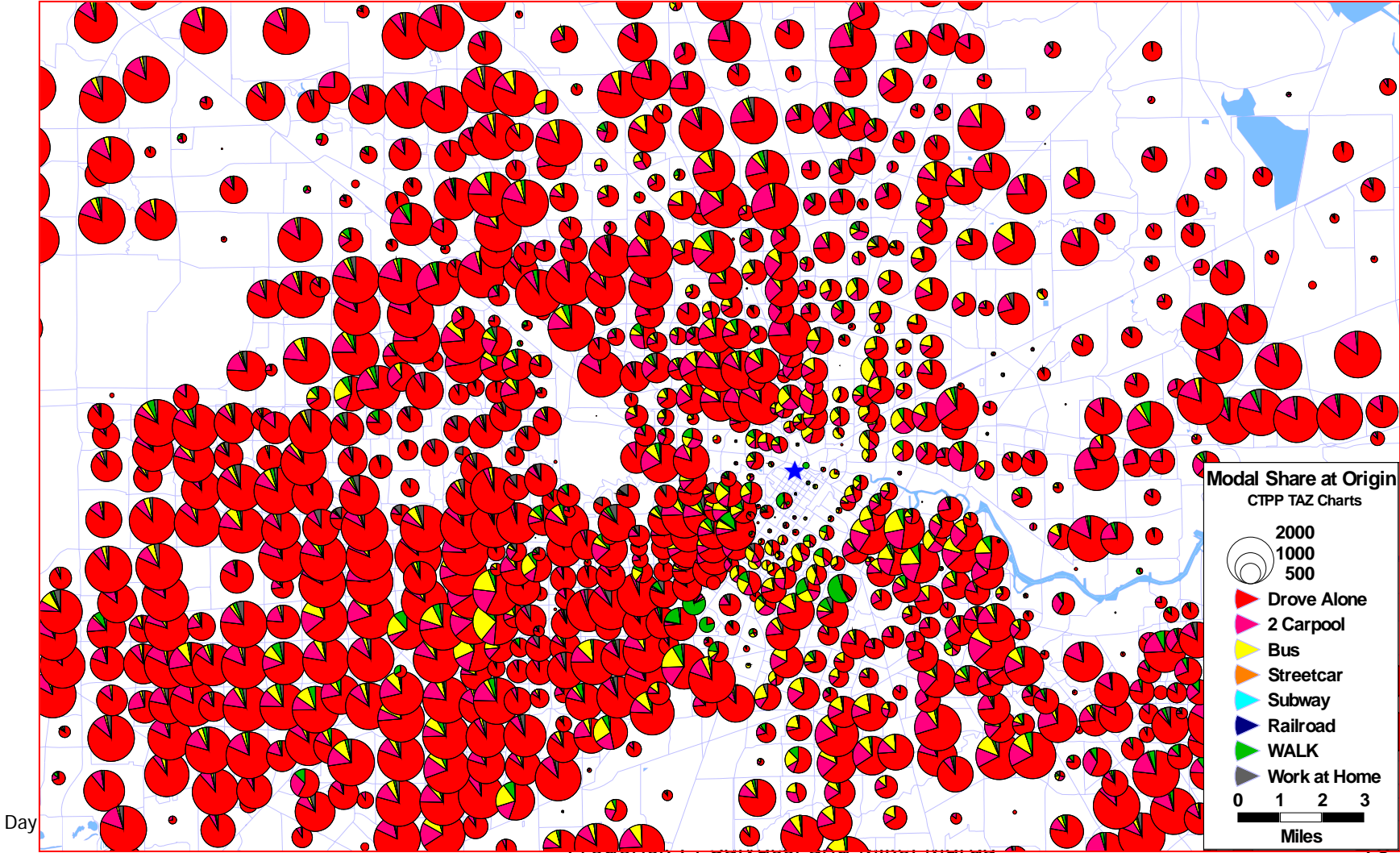
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CTPP 1990 Home-to-Work Modal Split: Houston

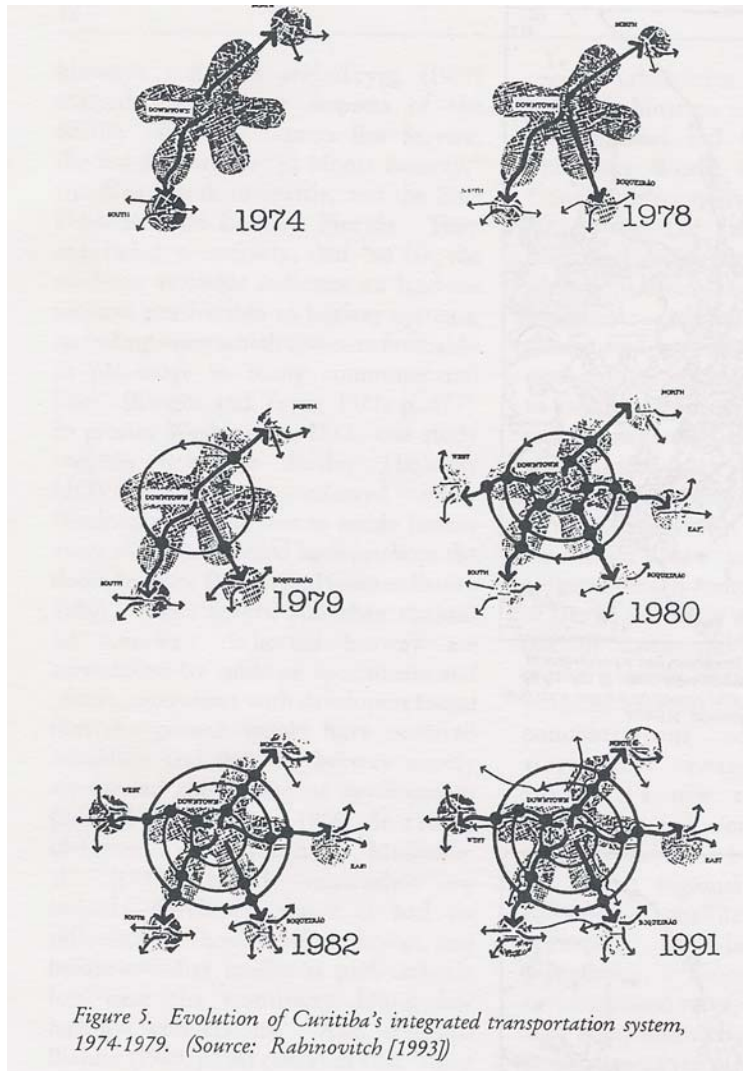
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- Transport projects opportunities:
 - Development (macro):
 - Strategic and long-term
 - Examples like Curitiba, Toronto, Stockholm...
 - Self-containment vs dispersal
 - Urban growth along axes through zoning and land-use incentives
 - Rehabilitation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

Better Processes

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- Development (macro):
 - Curitiba as an example

- 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**

- Let us look at several examples

A traffic-light regulated intersection

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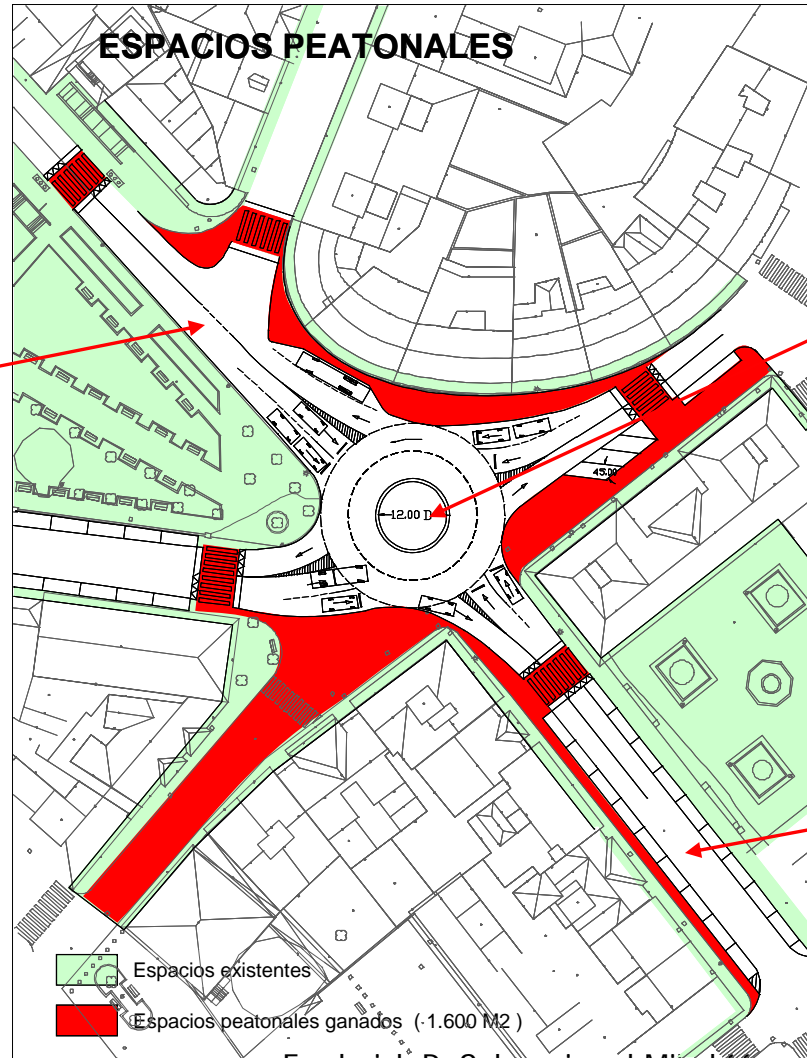


Town of Amorebieta, Basque Country, Spain



A new proposal for the traffic intersection

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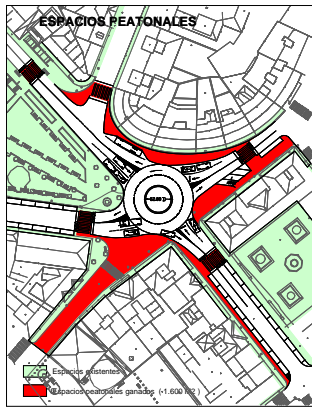


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A new proposal for the traffic intersection: Plus rerouting most of the big trucks

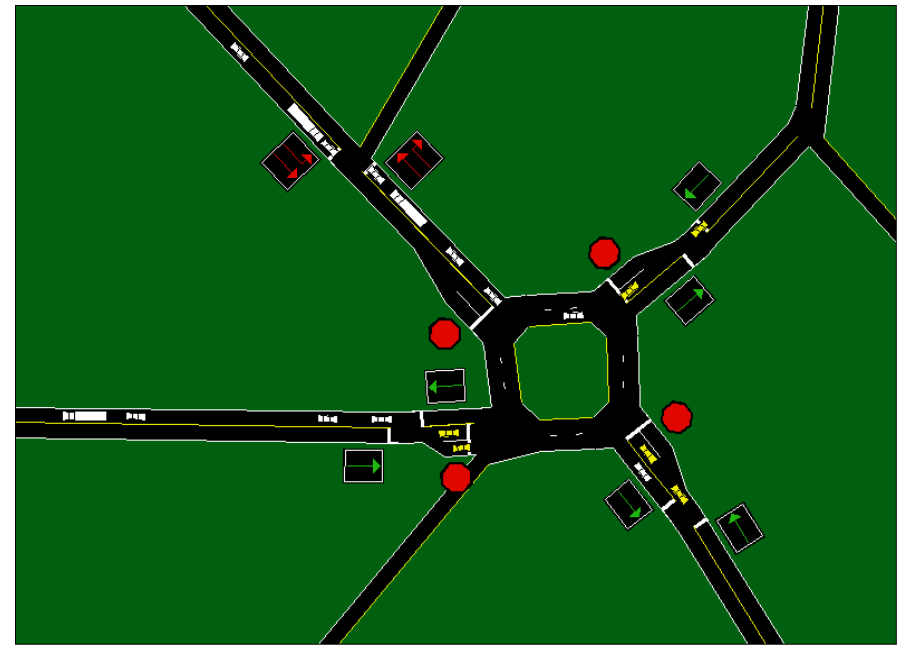
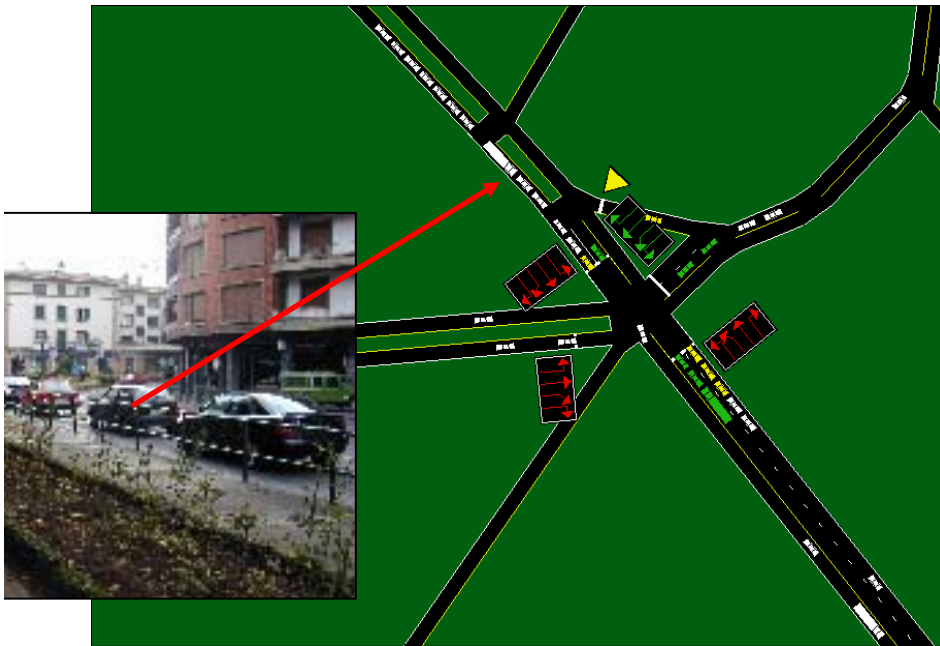
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Traffic Simulation and Visualization

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- To guarantee functional outcome
- To explore other alternatives and go beyond the obvious



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The Power of the *before* and *after*

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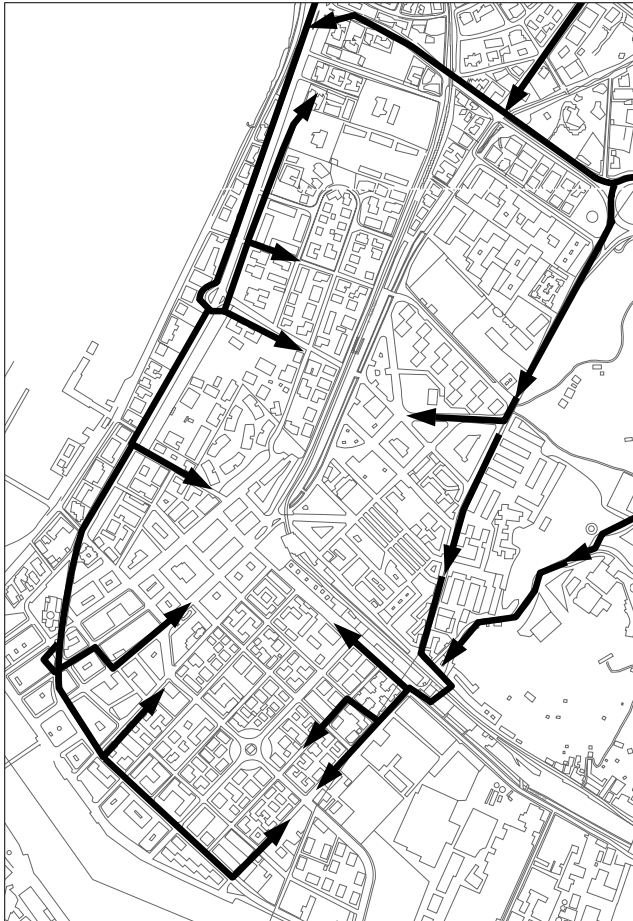
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From traffic to place making...

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...Just by avoiding through traffic





From traffic to place making...

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From traffic to place making...

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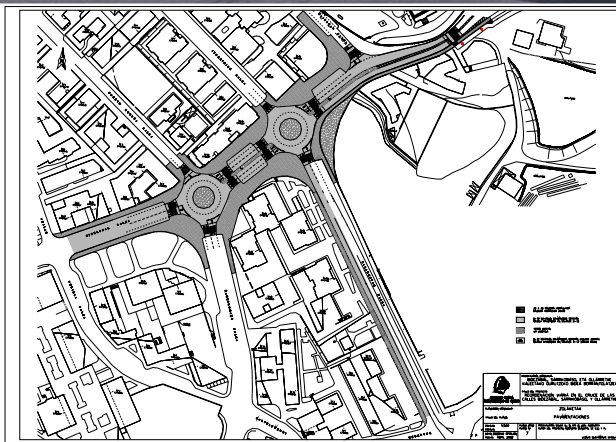


From traffic to place making.....

Humanizing a few roundabouts

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The power of a LRT project

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Zürich

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

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The power of a good transit system: Public Spaces in Milano

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- City Traffic Engineering Approach:
 - 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 Approaches

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Beyond car traffic:

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



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

Transport Approaches

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■ Public Transport:

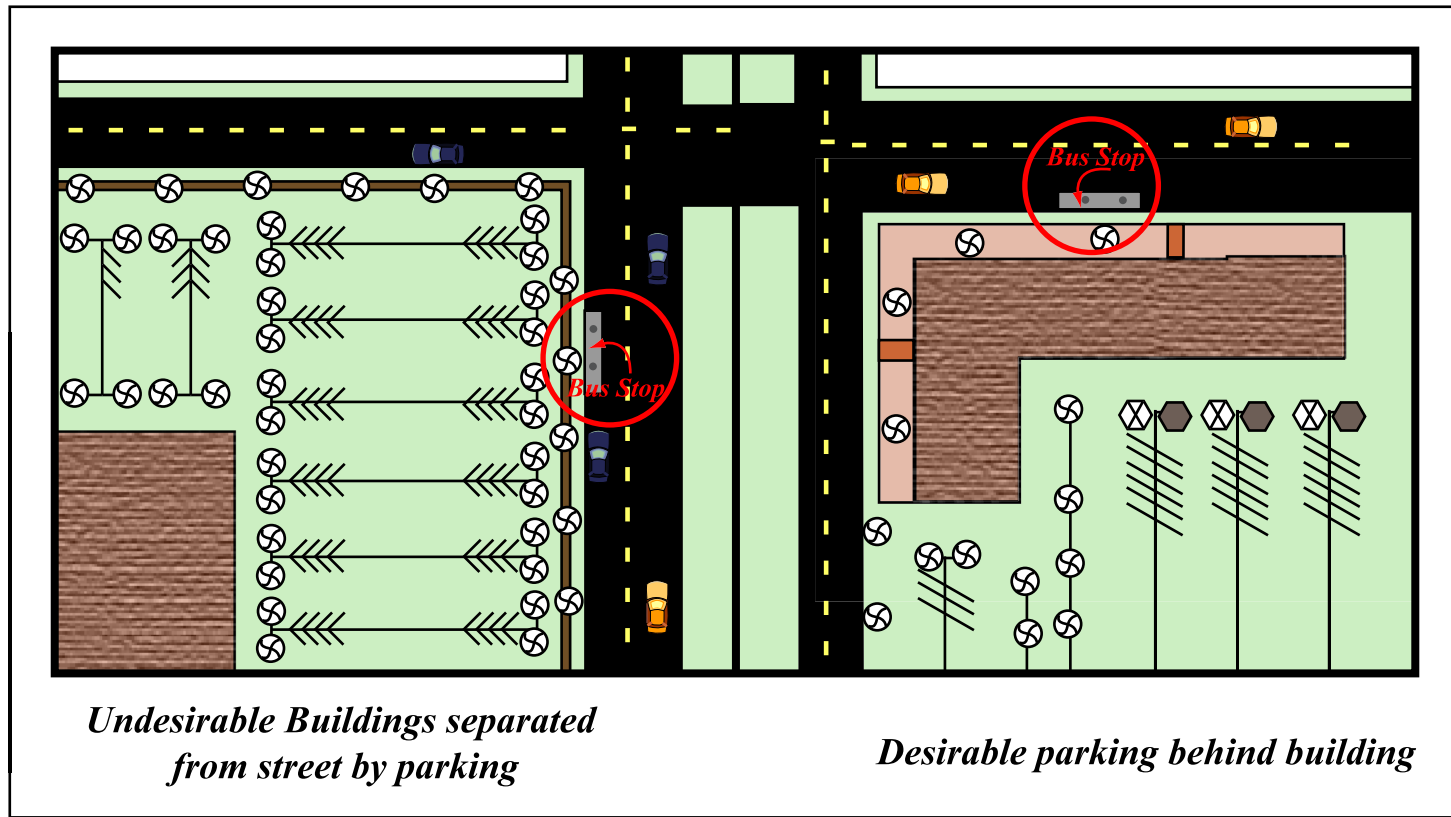


Figure by MIT OCW.

- 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)

- 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

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

- 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



Best Practices: Beyond Transport

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A recent example:
Durango a small ancient
semi-rural town of
26,000 people
experiencing growth



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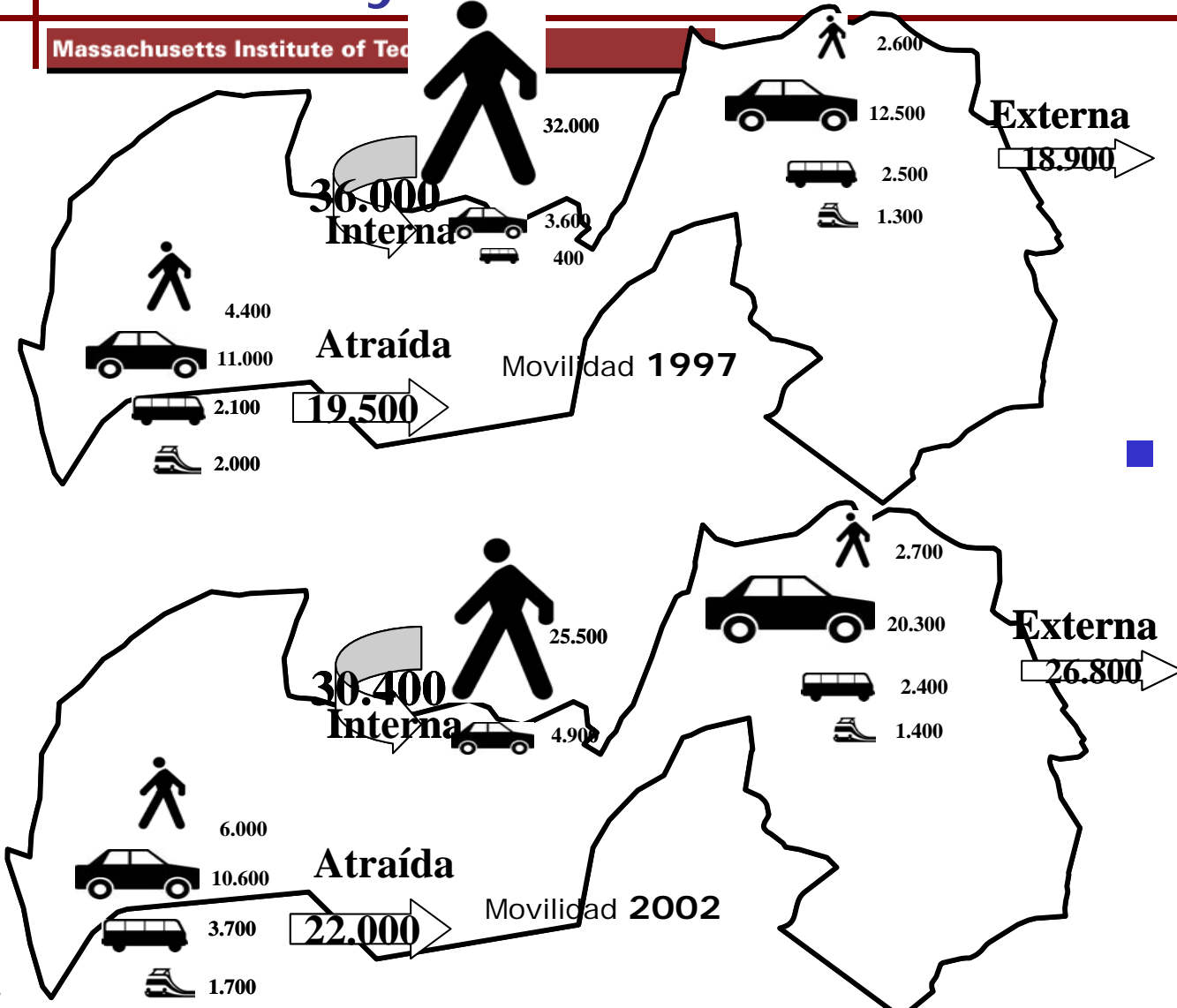


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Mobility Profile 1997 vs 2002

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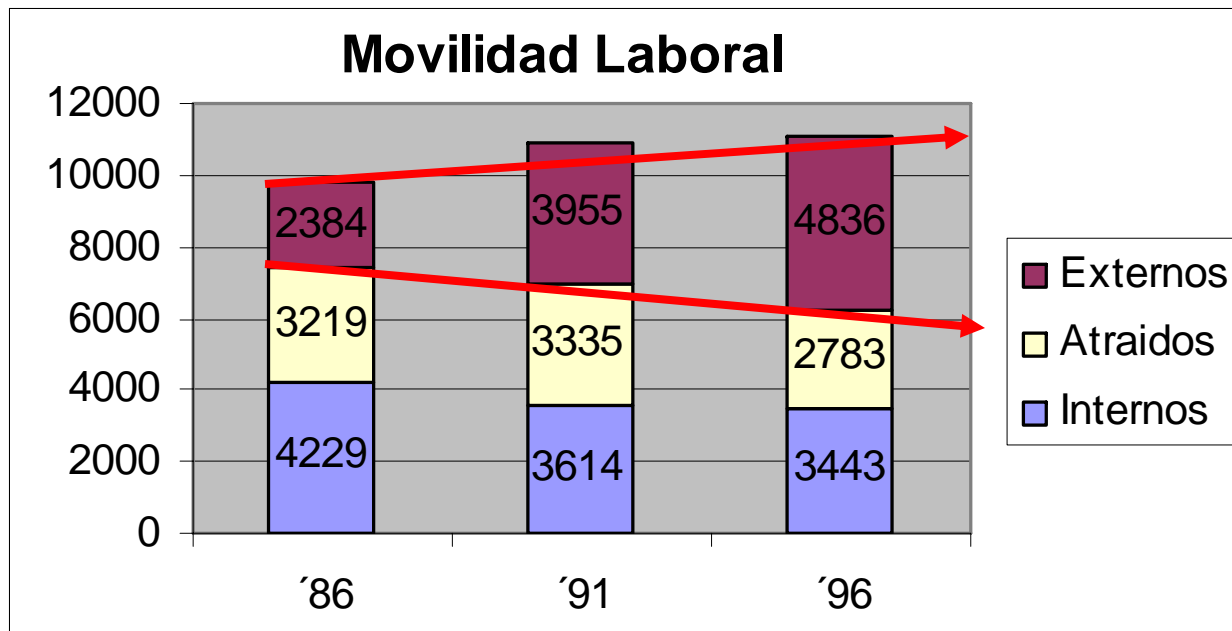


■ Problems?

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Jobs Supply versus residents with jobs

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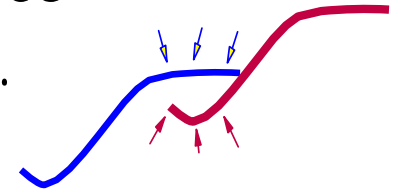
Does it explain the unsustainable mobility profile?

- “Externos”: residents working outside town
- “Internos”: residents working in town
- “Atraídos”: Non residents working in town

Best Practices: Beyond Transport

Among our many other recommendations, we had to include the need to attract service jobs to an area which in the past offered many industrial jobs

- 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



■ **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