Urban Transport: Introduction
Outline

• Urban Transport Today

• Urban Transport Policy
  • The Land Use-Transport link
  • Road congestion as a Policy Driver
  • Transit as a Critical Element

• Arguments in support of Transit

Thanks to Mikel Murga for providing many of the figures throughout this presentation
## US Urban Transport Today


<table>
<thead>
<tr>
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</thead>
<tbody>
<tr>
<td>Auto</td>
<td>81.8</td>
<td>83.7</td>
<td>82.0</td>
<td>87.1</td>
<td>86.5</td>
<td>86.4</td>
</tr>
<tr>
<td>Transit</td>
<td>3.2</td>
<td>2.6</td>
<td>2.2</td>
<td>2.0</td>
<td>1.8</td>
<td>1.6</td>
</tr>
<tr>
<td>Walk</td>
<td>n/a</td>
<td>9.3</td>
<td>8.5</td>
<td>7.2</td>
<td>5.4</td>
<td>8.6</td>
</tr>
<tr>
<td>Bicycle</td>
<td>n/a</td>
<td>0.7</td>
<td>0.8</td>
<td>0.7</td>
<td>0.9</td>
<td>0.9</td>
</tr>
<tr>
<td>Other</td>
<td>5.0</td>
<td>3.7</td>
<td>6.5</td>
<td>3.0</td>
<td>5.4</td>
<td>2.5</td>
</tr>
</tbody>
</table>


Transit Share of Commute for Metropolitan Areas Over 2 Million in Population (2000)

US Urban Transport Today: Metropolitan Areas

<table>
<thead>
<tr>
<th>Modal Split % 1990-2000</th>
<th>Car</th>
<th>Transit</th>
<th>Non-Motorized</th>
<th>Work at home</th>
</tr>
</thead>
<tbody>
<tr>
<td>Greater Boston</td>
<td>82.7-82.7</td>
<td>8.6-9.0</td>
<td>6.2-5.1</td>
<td>2.5-3.2</td>
</tr>
<tr>
<td>Chicago Counties</td>
<td>79.5-81.5</td>
<td>13.4-11.5</td>
<td>4.9-4.2</td>
<td>2.1-2.9</td>
</tr>
<tr>
<td>NY-NJ-CT-PA</td>
<td>65.8-65.7</td>
<td>24.8-24.9</td>
<td>7.0-6.4</td>
<td>2.4-3.0</td>
</tr>
<tr>
<td>San Francisco - Oakland</td>
<td>81.3-81.0</td>
<td>9.3-9.5</td>
<td>5.9-5.5</td>
<td>3.5-4.1</td>
</tr>
<tr>
<td>Washington DC-Baltimore</td>
<td>81.5-83.2</td>
<td>11.0-9.4</td>
<td>4.8-3.9</td>
<td>2.7-3.5</td>
</tr>
</tbody>
</table>

US Urban Transport Today:
Significant Influences

- Suburbanization of homes, employment and attractors
- High car ownership and low operation costs
- Extensive urban road infrastructure
- Government policies towards roads and public transport
## Suburbanization: 2000 Journey to Work

### A. Total Trips (in millions of daily trips)

<table>
<thead>
<tr>
<th></th>
<th>Jobs in:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Central City</td>
</tr>
<tr>
<td>Homes in:</td>
<td></td>
</tr>
<tr>
<td>Central City</td>
<td>28.2 (27%)</td>
</tr>
<tr>
<td>Suburbs</td>
<td>20.8 (20%)</td>
</tr>
<tr>
<td>Total Jobs</td>
<td>49.0 (48%)</td>
</tr>
</tbody>
</table>

### B. Share of 1990-2000 Increase

<table>
<thead>
<tr>
<th></th>
<th>Jobs in:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Central City</td>
</tr>
<tr>
<td>Homes in:</td>
<td></td>
</tr>
<tr>
<td>Central City</td>
<td>5%</td>
</tr>
<tr>
<td>Suburbs</td>
<td>16%</td>
</tr>
</tbody>
</table>

### C. Public Transport Mode Share

<table>
<thead>
<tr>
<th></th>
<th>Jobs in:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Central City</td>
</tr>
<tr>
<td>Homes in:</td>
<td></td>
</tr>
<tr>
<td>Central City</td>
<td>14%</td>
</tr>
<tr>
<td>Suburbs</td>
<td>6%</td>
</tr>
</tbody>
</table>
US Urban Transport Today

- High car ownership levels
  - 600 cars per 1000 population

- High car usage
  - 10,000 veh-km per capita annually

- Low taxes, fees and user charges for car ownership and use
  - Sales taxes range from 5-8%
  - Users pay only 60% of road infrastructure costs in US
  - Petrol taxes are from 10-20% of European levels
US Urban Transport Today

- Urban parking supply is relatively widely available and often free
  - 95% of car commuters enjoy free parking
  - 380 parking spaces per 1000 central city workers in 10 largest US cities

- Highly developed urban road system
  - 6.6 metres of road per capita in 10 largest US cities; 3 times European levels

Source: The Urban Transportation Crisis in Europe and North America, by John Pucher and Christian LeFevre, 1996.
US Urban Transport Today:  
A Critical Assessment

• Public transport has been stabilized
• Many new rail initiatives in operation or under construction
• Some real success stories: New York City, Houston, Seattle
• Institutional change is occurring slowly
• Retention of political support
The Land Use-Transport Link

- Transit makes high density central city possible
- Even in the US with transit serving only 2% of all person trips, it is critically important in shaping the big cities
- The home to work commute in Boston (and in other American cities like Chicago, New York, San Francisco..) shows the critical role of transit in its downtown
- The downtown job density makes it impossible to rely solely on the automobile
The Land Use-Transport Link

• As a chicken and egg problem, job density and parking restrictions go hand in hand

• But parking restrictions do not impede economic development

• In fact, Boston development since its EPA led parking freeze in 1973 has been very impressive
The Land Use-Transport Link:
Boston’s 1973 Parking Freeze and ...

Photographs of the Charles River and the Boston skyline. Images removed due to copyright restrictions.
The Land Use-Transport Link

• Transit as a critical component of cities:
  • Economic Competitiveness
  • Quality of the Urban space

• In parallel, it requires:
  • Adequate parking policies
  • Substantial priority that can be easily implemented
Road Congestion as the Policy Driver

Front cover images from the following books:


Images removed due to copyright restrictions.
Road Congestion as the Policy Driver

Estimated Costs and Benefits, Ignoring Generated Traffic

Estimated Costs and Benefits, Considering Generated Traffic

Highway Investments: Business as Usual

Figure by MIT OCW.
Road Congestion as a Policy Driver in spite of the system complexity

Figure by MIT OCW.
Transit as a critical element

- The high density of jobs and residences needed for a livable environment is only possible with an efficient transit system.
- Transit can provide not only high economic efficiency, but an attractive and safe environment.
- All high quality urban cores have a high percentage of non motorized and transit trips.
The higher the density, the higher…

… the percentage of sustainable modes

Source: UITP Millenium Database
The cost of a balanced system

Modal Choice (% Public Transport + Cycling + Walking) vs Transport Cost (% GDP)

Economic sustainability

Source: UITP Millenium Database

Nigel H.M. Wilson

1.201, Fall 2006
Lecture 10
The high price of road fatalities

Source: UITP Millenium Database

Figure by MIT OCW.
Traditional Arguments Supporting Transit

- **Equity:**
  - *Access for those who cannot or do not choose to drive*

- **Congestion:**
  - *The need for a high-quality alternative*

- **Land use influence:**
  - *Public transport is necessary, but not sufficient to change trends*

- **Environmental:**
  - *Car technology strategies are effective*

- **Energy:**
  - *Car technology strategies are effective*
Other Arguments Supporting Transit

- Transit allows agglomeration of economic activity in cities:
  - New York, Boston, San Francisco, etc. could not have developed without transit
  - The current contribution of earlier investments in heavy rail is not valued today appropriately
  - New investments bound to have a lasting impact – thus the need for a long view
Other Arguments Supporting Transit

• Transit is a most effective tool to decrease external costs in cities:
  • These costs may exceed $1,000 per person per year (Ref: External Costs Study for the Basque Country, 2006)
  • They correspond in order of importance to accident-related costs, impacts on human health, congestion, noise impacts and the current market value of global warming
Other Arguments Supporting Transit

- Business as usual translates into annual congestion cost today of more than $60 billion/year (AASHTO)
- Implications of the number of automobiles in USA exceeding the number of licensed drivers