

MIT Public Transportation: Introduction

- Current status and recent trends in the US
- Significant influences
- Critical assessment
- Arguments supporting public transport
- Future influences
- Ingredients for future success

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MIT Current Status

- Ridership increasing moderately but remains small
- Strong financial support from all levels of government
- Significant growth in number of new rail starts in past 25 years
- Major rebuilding of many older systems over past 20 years
- Slow institutional innovation, but growing recognition that fundamental change may be necessary for survival well into 21st century

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MIT US Urban Transport Today Trends in Modal Split for Daily Travel in the United States (1969-2009)

Mode	1969	1977	1983	1990	1995	2001	2009
Auto	81.8	83.7	82.0	87.1	86.5	86.4	83.4
Transit	3.2	2.6	2.2	2.0	1.8	1.6	2.0
Walk	n/a	9.3	8.5	7.2	5.4	8.6	10.4
Bicycle	n/a	0.7	0.8	0.7	0.9	0.9	1.0
Other	5.0	3.7	6.5	3.0	5.4	2.5	3.1

Source: Socioeconomics of Urban Travel: Evidence from the 2001 NHTS by John Pucher and John L. Renne. Transportation Quarterly, Vol. 57, No. 3, Summer 2003 (49-77). Eno Transportation Foundation, Inc., Washington, DC.

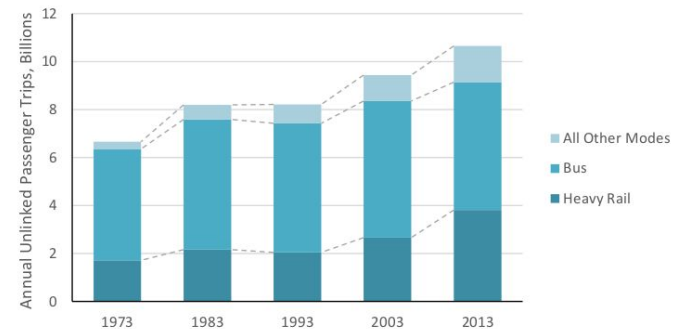
Federal Highway Administration, Nationwide Personal Transportation Surveys 1969, 1977, 1983, 1990, and 1995; and National Household Travel Survey, 2001 and 2009.

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MIT US Transit Ridership at Highest Level in Four Decades



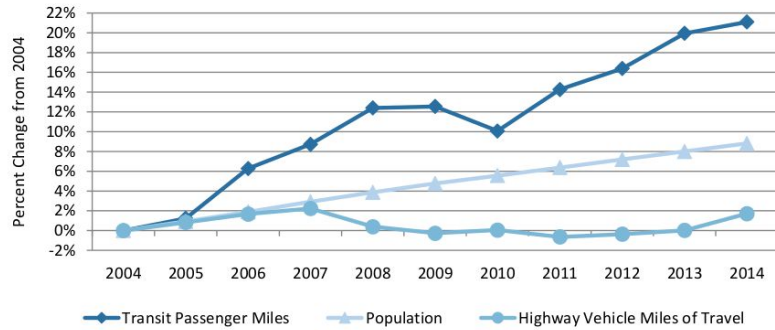
Source: American Public Transportation Association, Transit Facts 2015 (for 2013)

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Since 2004 Public Transit Use Has Grown More Than Population of Highway Travel



Source: American Public Transportation Association, Transit Facts 2015 (for 2013)

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Highest Transit Share Among 50 Largest Metropolitan Statistical Areas (2013)



Source: 2009-2013 5-Year American Community Survey Commuting Flows. Table 2. County to County Commuting Flows by Travel Mode for the United States and Puerto Rico: 2009-2013.

Source: public domain.

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Metropolitan Areas with Largest Transit Share Modal Split for Home-to-Work Journeys (2000)

	Car	Transit 2000	Transit 2013*	Non-Motorized	Work at home
NY-NJ-CT-PA	65.7	24.9	30.2	6.4 ↓	3.0 ↑
Chicago	81.5 ↑	11.5 ↓	11.3	4.2 ↓	2.9 ↑
San Francisco-Oakland	81.0	9.5	14.7	5.5	4.1 ↑
Washington DC-Baltimore	83.2 ↑	9.4 ↓	14.2	3.9 ↓	3.5 ↑
Boston	82.7	9.0	11.8	5.1 ↓	3.2 ↑

↑ ↓ indicates change of more than 0.5% from 1990-2000

Source: Journey to Work Trends in the United States and its Major Metropolitan Areas 1960-2000

* Source: 2009-2013 5-Year American Community Survey Commuting Flows. Table 2. County to County Commuting Flows by Travel Mode for the United States and Puerto Rico: 2009-2013.

Source: public domain.

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Public Transport Funding by Source (2013, in \$ billions)

	Capital	Operating
Fares	---	15.0 (32.5%)
Other directly generated	4.2 (23.7%)	4.7 (10.2%)
Local	3.2 (18.4%)	10.2 (22.2%)
State	2.9 (16.3%)	12.0 (26.1%)
Federal	7.4 (41.7%)	4.1 (8.9%)
Total	17.7 billion	46.0 billion

Source: American Public Transportation Association, Transit Facts 2015 (for 2013)

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MIT Significant Influences

- Suburbanization of homes, employment and attractors
- Low costs for car ownership and operation
- Extensive urban road infrastructure
- Government policies towards roads and public transport

MIT Suburbanization: 2000 Journey to Work

A. Total Trips (in millions of daily trips)

Homes in:	Jobs in:		
	Central City	Suburbs	Total Homes
Central City	28.2 (27%)	9.2 (9%)	37.4 (36%)
Suburbs	20.8 (20%)	44.6 (43%)	65.4 (64%)
Total Jobs	49.0 (48%)	53.8 (52%)	

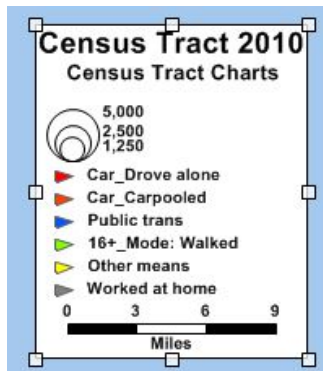
B. Share of 1990-2000 Increase

Homes in:	Jobs in:	
	Central City	Suburbs
Central City	5%	14%
Suburbs	16%	65%

C. Public Transport Mode Share

Homes in:	Jobs in:	
	Central City	Suburbs
Central City	14%	6%
Suburbs	6%	2%

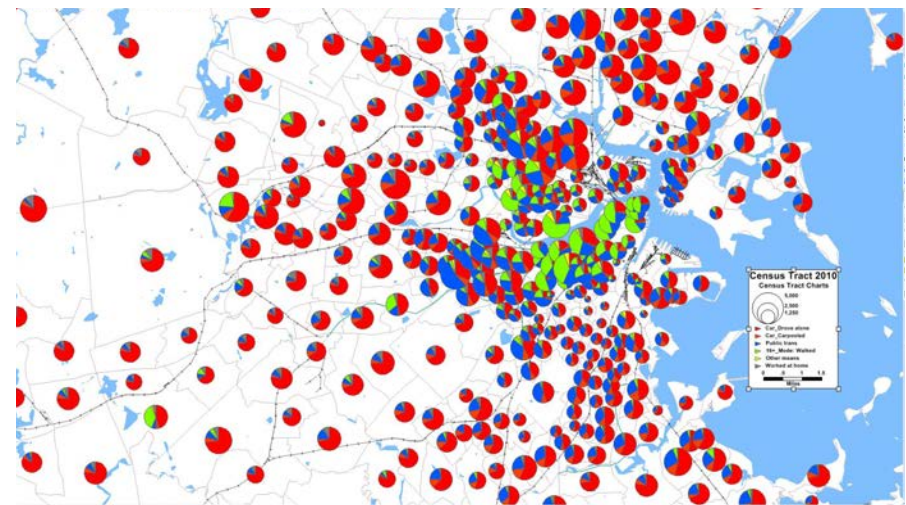
MIT Home to Work Trip Modal Split from the CTPP 2010*



* Analysis provided by Mikel Murga

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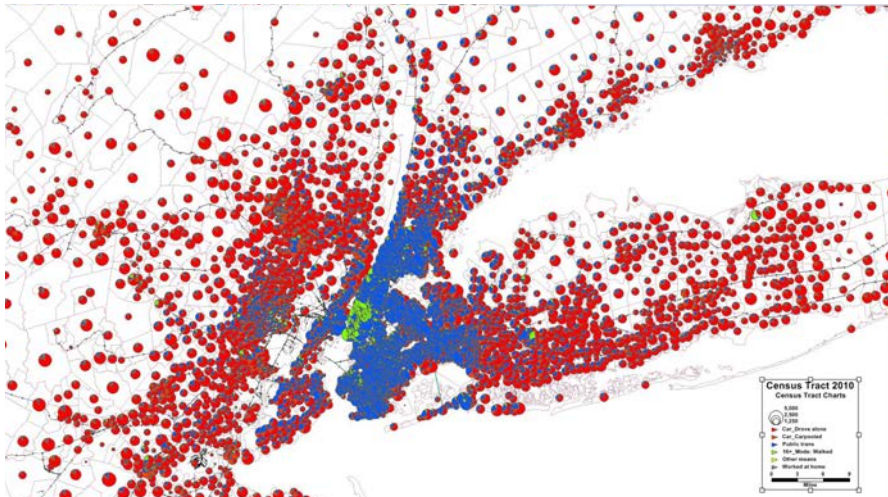
MIT Boston CTPP 2010



* Analysis provided by Mikel Murga

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MIT NYC-NJ-Long Island CTPP 2010



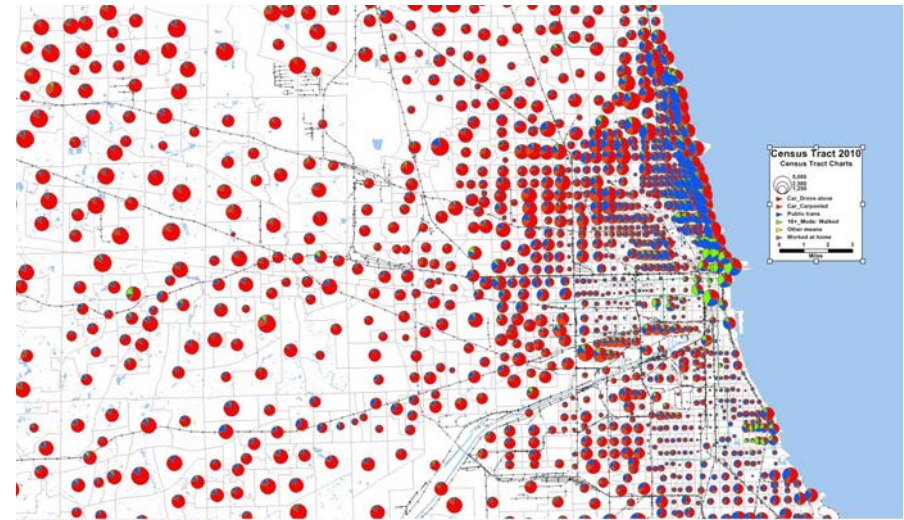
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MIT Chicago CTPP 2010



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MIT The Car-Road System

- 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
 - Fuel taxes are from 10-20% of European levels
- Urban parking supply is relatively widely available and often free
 - 380 parking spaces per 1000 central city workers in 10 largest US cities
 - 95% of car commuters enjoy free parking
- 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.

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MIT 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 land use
- **Environmental** car technology strategies are more effective
- **Energy** car technology strategies are more effective

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MIT Other Arguments Supporting Transit

- Economic expenditures for private autos may be alternatively used to improve local economies and quality of life
- Transit allows agglomeration of economic activity in cities:
 - New York, Boston, San Francisco, etc. could not have developed without transit
 - The contribution of earlier investments in heavy rail is not valued appropriately
 - New investments will have a lasting impact – thus the need for a long view (Economic analysis of CrossRail in London)

MIT Other Arguments Supporting Transit

Transit is contributing to decreasing external costs of transport in cities

- accidents
- impacts on human health
- congestion
- noise
- global warming

MIT Other Arguments Supporting Transit

- Public transport can catalyze the enhancement of the quality of the urban space



MIT A Critical Assessment

- Public transport has been stabilized
- Many new rail initiatives in operation (Phoenix, Denver, Salt Lake City)
- Some real success stories: New York City, Houston, Seattle
- Institutional change is occurring slowly
- Retention of political support

Future Influences on Public Transport

- Urban form
 - continued growth on periphery is likely
- Demographics
 - rapid increase in numbers of elderly
- Technological change
 - telecommunications advances
 - ITS impacts on car/road system performance
- Higher public expectations
 - better service quality needed to attract choice riders
 - greater return for public support
- Transportation Network Companies (TNCs)

Ingredients for Future Success

- Maintain supportive coalition
 - expand base benefiting from public transport: rural, suburban, big cities
 - demonstrate that real change is occurring in response to changing needs and expectations
- Expand the definition of public transport
 - greater variety of services with more flexibility in use of funds
- Greater private sector involvement
 - greater use of partnerships and connections with private sector (e.g., employers and activity providers)
 - more reliance on innovative financing and procurement techniques
 - competition in the provision of services
- Aggressive implementation of new technology
 - better information provision: pre-trip and en route
 - more effective real-time operations control
 - improved vehicle design
- Organizational change
 - greater operating staff responsibility and inclusion, and accountability
 - increased customer orientation

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