PUBLIC TRANSPORT INTRODUCTION AND ORGANIZATIONAL MODELS:

THE ROLES OF THE PUBLIC and PRIVATE SECTORS

Outline

- **Current U.S. Status and Recent Trends**
- **Significant Influences**
- **A Critical Assessment**
- **Arguments Supporting Public Transport**
- **Organizational Models**
- **US Transit Industry**
- **UK Bus Industry Experience**

Current Status

- **Ridership increasing modestly 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 15 years**
- **Little institutional or technological innovation, but growing recognition that fundamental change may be necessary for survival well into 21st century**

US Urban Transport Today

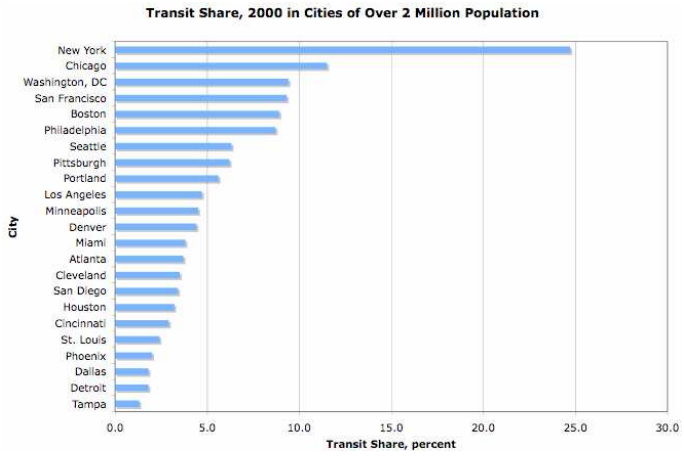
Trends in Modal Split for Daily Travel in the United States (1969-2001)

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

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.

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



Sources: U.S. 2000 Census *Journey to Work* (http://www.census.gov/prod/2004pubs/c2kbr-33.pdf) and
U.S. Department of Transportation Census Transportation Planning Package http://www.fhwa.dot.gov/ctpp/jtw/

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

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

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

Suburbanization: 2000 Journey to Work

A. Total Trips (in millions of daily trips)

	Jobs in:		
Homes 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

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

C. Public Transport Mode Share

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

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**
- **Petrol 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.***

Public Transport Funding by Source (2005, in $ billions)

	Capital	Operating
Fares	---	10.3 (32%)
Other directly generated	3.3 (27%)	5.0 (16%)
Local	2.7 (22%)	6.7 (21%)
State	1.6 (13%)	7.5 (24%)
Federal	4.8 (39%)	2.3 (7%)
Total	12.4 billion	31.7 billion

Source: American Public Transportation Association, Transit Facts 2007 (for 2005)

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

Arguments Supporting Public Transport

- 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 more effective
- Energy: car technology strategies are more effective

Other Arguments Supporting Transit

- Economic: private expenditures for 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

Other Arguments Supporting Transit

- **Transit is contributing to decreasing external costs of transport in cities:**
  - **accidents**
  - **impacts on human health**
  - **congestion**
  - **noise**
  - **global warming**

Other Arguments Supporting Transit

- **The key is the enhancement of the quality of the urban space**
- **Public Transport can be a catalyst for this process**

US vs Europe

- US has been the leader in deregulation outside transit
- UK, and now Europe, the leader in restructuring transit organizations

Six Organizational Models

		MODELS					
		Unregulated	Regulated Competition	Threatened Competition	Private Monopoly	Public Monopoly	Contracting Out
FUNCTIONS	Regulation	Minimum	Yes	Yes*	Yes	Yes	Yes*
	Financing	PR	PR	PR	PR	PU	PR & PU
	Planning	PR	PU & PR	PU & PR	PR & PU	PU	PU
	Ownership	PR	PR	PR	PR	PU	PR (or PU)
	Operation	PR	PR	PR	PR	PU	PR
	Maintenance	PR	PR	PR	PR	PU	PR

* The model is regulated in the form of contracts.

PU: Public Sector; PR: Private Sector

U.S. Transit Industry Structure

- **Remarkably little change since the early 1970s:**
  - **regional transit authorities regulating, planning and directly operating most services in larger urban areas (> 100 buses + rail)**
  - **municipalities operate transit in many small cities (< 100 buses)**
  - **principal use of private sector is in providing limited types of purchased services to transit authorities**

Purchased Transit Service in US Transit Industry: Operating Expense (2005, $ millions)

Mode	Directly Operated	Purchased	Total	% Purchased
Bus	14,758.6	2,028.2	16,768.8	12.1%
Heavy Rail	5,102.0	42.8	5,144.8	0.8%
Commuter Rail	3,439.7	223.5	3,663.2	6.1%
Light Rail	922.6	45.5	978.0	4.7%
Demand Response	1,059.0	1,769.4	2,828.4	62.6%
Total	25,281.9	4,109.4	29,383.2	14.0%

Source: American Public Transit Administration Fact Book 2007 (for 2005, preliminary)

Use of Purchased Transit Services

- **Dominant for demand-responsive service**
- **Very little for urban rail services**
- **Modest for fixed route bus services**

Percent of Transit Systems that Contract for Bus Services

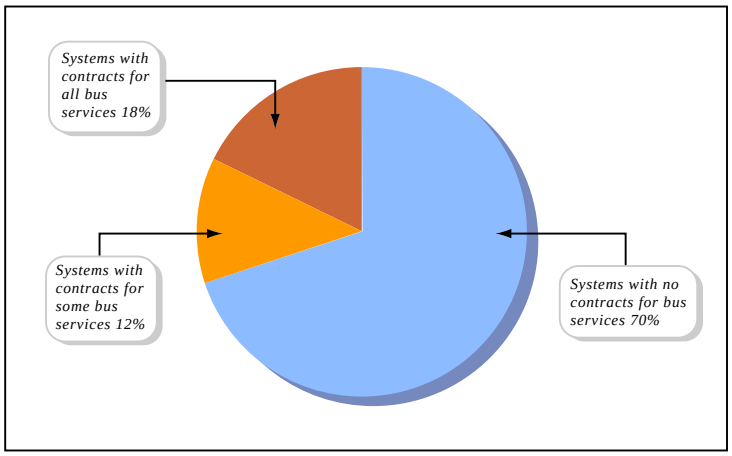


Figure by MIT OpenCourseWare.

Source: ***Transportation Research Board Special Report 258 (2001) Contracting for Bus and Demand-Responsive Transit Services: A Survey of US Practice and Experience.***

Percent of Transit Systems that Contract for Demand-Responsive Transit Services

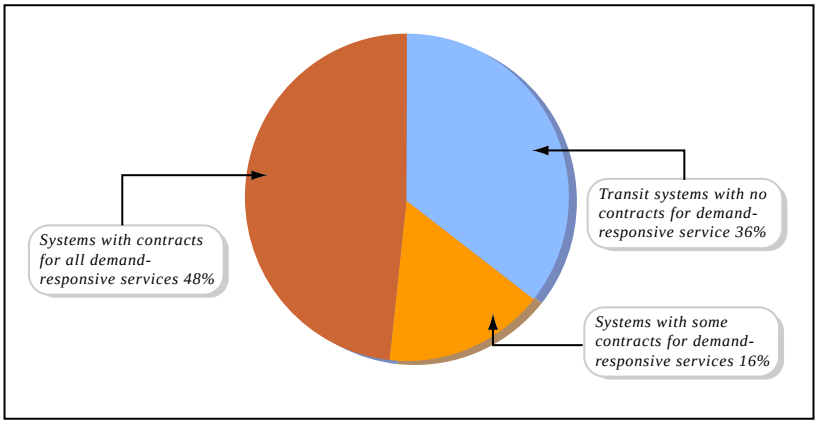


Figure by MIT OpenCourseWare.

Source: ***Transportation Research Board Special Report 258 (2001)***
Contracting for Bus and Demand-Responsive Transit Services: A Survey of US Practice and Experience.

Percent of Transit Systems that Contract for All, Some, and No Bus and Demand-Responsive Transit Services

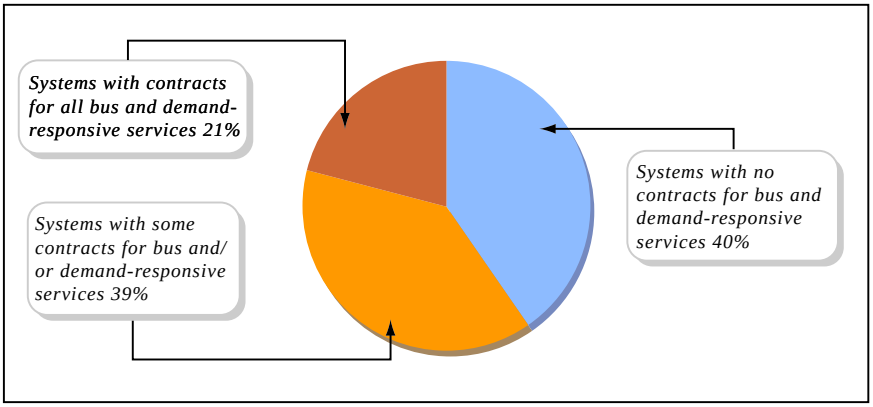


Figure by MIT OpenCourseWare.

Source: ***Transportation Research Board Special Report 258 (2001)***
Contracting for Bus and Demand-Responsive Transit Services: A Survey of US Practice and Experience.

Fixed Route Bus Services

- Represents more than 50% of all transit services in the US
- Could clearly be operated efficiently and effectively by the private sector under contract
- The real potential for significant expansion for the private sector in transit

BUSES OPERATING EXPENSE (2005: $ million)
All agencies with Annual Operating Cost > $100 million

Agency	Total Bus Expense	Purchased Service	% Purchased
New York City Transit	1,798.3	0.0	0.0%
Los Angeles MTA	775.9	26.7	3.4%
Chicago (CTA)	724.1	0.0	0.0%
New Jersey Transit	626.3	32.9	5.3%
Philadelphia (SEPTA)	432.3	0.3	0.1%
Washington DC	420.2	0.0	0.0%
Seattle	321.7	27.9	8.7%
New York City (DOT)	313.1	311.5	99.5%
Boston (MBTA)	270.1	5.6	2.1%
Houston	263.4	38.6	14.7%
Miami (MDTA)	260.8	0.0	0.0%
Denver (RTD)	239.3	73.2	30.6%
Pittsburgh	234.0	0.0	0.0%
Oakland (AC Transit)	230.1	1.1	0.5%
Baltimore (MTA)	228 5	29 8	13 0%

Source: National Transit Database Transit Profiles, 2005 http://www.ntdprogram.gov/ntdprogram

BUSES OPERATING EXPENSE (2005: $ million)
All agencies with Annual Operating Cost > $100 million

Agency	Total Bus Expense	Purchased Service	% Purchased
Dallas (DART)	202.8	0.0	0.0%
Portland (Tri-Met)	201.0	0.0	0.0%
Minneapolis/St Paul	200.8	0.0	0.0%
Santa Clara	187.0	1.8	1.0%
San Francisco (MUNI)	185.3	0.0	0.0%
Detroit (DDOT)	180.9	0.0	0.0%
Orange County (OCTA)	180.6	4.6	2.5%
Atlanta (MARTA)	165.3	0.0	0.0%
Cleveland	162.3	0.0	0.0%
Honolulu	127.1	0.0	0.0%
Chicago (PACE)	123.2	12.0	9.7%
Milwaukee	123.0	2.0	1.6%
Phoenix	113.4	89.3	78.7%
St Louis	106.9	0.0	0.0%
MTA Long Island Bus	102.9	0.0	0.0%
TOTAL	9,500.6	657.3	6.9%

Source: National Transit Database Transit Profiles, 2005 http://www.ntdprogram.gov/ntdprogram

Largest 31 Bus Operators

- Less than 7%* of bus service is currently provided under purchase of service arrangements
- 15 of 30 agencies do not provide any purchased bus service
- Only 4 agencies provide more than 10% of bus services under contract: Houston, Denver, Baltimore (MTA), and Phoenix

** Actually only 4% when NYC is excluded*

Agencies Using Purchased Services Extensively Fall Into Three Groups

- **Agencies which took over financial responsibility for franchise operators: New York City Department of Transportation**
- **Agencies taking over franchised services and/or expanding services through purchase of service agreements: Houston, Baltimore (MTA), and Phoenix**
- **Agencies required to transfer core services to purchased service arrangements: Denver**

Prospects for the Future

Key ingredients for private sector participation:

- **service is new and different**
- **external intervention**
- **incomplete assimilation of private operators**

Direct transit authority operation is highly stable in North America:

- **small leverage for central government**
- **at state/local levels of government organized labor is a powerful force**
  likely to resist change
- **confrontational/ideological nature of the debate**

Possible Strategies

- Development of non-confrontational, incremental change proposals
- Contingency plans
- Replacement of marginally performing routes by contracted van or minibus service
- Develop a database on results of initiatives by credible agency
- Split policy board from operating functions
- Corporatization and privatization of bus depots in large metropolitan areas

UK Experience with Bus Industry Restructuring

- Background
- Bus Deregulation outside London
- London strategy
- Results to date

Background

- **Prior to mid-1980s, UK local bus industry broadly comparable to US transit industry:**
  - **public ownership at local level**
  - **heavily subsidized**
  - **slowly declining ridership**
  - **little innovation in technology, service, or management**
  - **little responsiveness to public needs or concerns**
- **Buses played a larger role than in US because of lower car ownership levels and higher car operating costs**

Bus Deregulation Outside London (1986)

Basic premises behind bus deregulation:

- **deregulation would produce a competitive market**
- **competition would substantially reduce costs**
- **a competitive market would improve resource allocation**
- **there would be no significant negative side effects**

Basic Elements of UK Bus Deregulation

- **Bus markets were divided between commercial and non-commercial, with the following definitions and rules for each:**

Commercial

- **Defined as any service that an operator is prepared to offer with the only government support being:**
  - **-- concessionary fares reimbursement**
  - **-- fuel tax rebate**
- **Services are registered including the route and timetable, and changes become effective after 6 weeks notice**
- **Fares can be changed with no prior notice**
- **Unrestricted entry and exit from the market**
- **Known as "Competition In the Market"**

Basic Elements of UK Bus Deregulation

Non-Commercial

- **Services which are not registered as commercial, but needed for social reasons as identified by local authorities**
- **Awarded to a private sector operator after a competitive bidding process for a period of (typically) three years**

Public Transport Authority Reorganization

- As a transitional strategy, public transport authorities were to be "corporatized," i.e., held at arm's length from government
- Could receive subsidy only as a result of success in a competitive bidding process
- Eventually they were to be privatized
- These large operations were not broken up into smaller competitive units

London Strategy

- Deregulation not introduced in London because of concerns about:
  - the effects of free entry on congestion in Central London
  - rail system interaction effects
- London Transport (now Transport for London) opted to retain control over all planning functions but to move to privatization through competition for incremental pieces of the London bus network
- TfL controls routes, frequencies, quality standards, and fares
- Known as "Competition For the Market"

London Buses Reorganization

- **Decentralization of London Buses Limited (LBL) operations, giving progressively more independence to LBL depots**
- **Put out to competitive bid about 10% of the bus network annually**
- **Awarding approximately 50% of competitive tenders to LBL subsidiaries with the remainder to independent private bus operators**
- **Used competitive pressure to induce LBL subsidiaries to restructure labor contracts and management strategy**
- **In 1994 all LBL subsidiaries were privatized**

Table 1: Key bus operating statistics, GB and London, 1985/86 to 2004/2005

	Bus km (mil)	Pax trips (mil)		Subsidy		Operating costs per bus-km
			Total £m	Per bus km	Per pax trip	(in 2000 dollars)
London						
1985/1986	273	1152	£335	£1.23	£0.29	£2.71
1989/1990	292	1188	£238	£0.82	£0.20	£2.23
1994/1995	356	1167	£177	£0.50	£0.15	£1.59
1999/2000	365	1307	£134	£0.37	£0.10	£1.49
2004/2005	450	1793	£601	£1.34	£0.34	£1.95
GB Outside London						
1985/1986	1804	4489	£904	£0.50	£0.20	£1.51
1989/1990	2150	3886	£682	£0.32	£0.18	£1.02
1994/1995	2293	3253	£620	£0.27	£0.19	£0.86
1999/2000	2234	2972	£613	£0.27	£0.21	£0.76
2004/2005	2146	2944	£730	£0 34	£0 25	£0 87

***Source:** Transport Statistics GB 2007 and earlier editions*

***Note:** Subsidy includes concessionary fares payments; Operating Costs and Subsidies are in constant 1999/2000 prices*

Table 2: Percentage change in key bus operating statistics with 1985/86 as base

	Bus km	Pax trips		Subsidy		Operating costs per bus-km
			Total £m	Per bus km	Per pax trip	(in 2000 dollars)
London						
1989/1990	+7%	-3%	-29%	-33%	-31%	-18%
1994/1995	+30%	-1%	-47%	-59%	-48%	-41%
1999/2000	+34%	+13%	-63%	-72%	-69%	-45%
2004/2005	+65%	+56%	+80%	+9%	+16%	-24%
GB Outside London						
1989/1990	+19%	-13%	-25%	-36%	-10%	-32%
1994/1995	+27%	-28%	-31%	-46%	-5%	-43%
1999/2000	+24%	-34%	-32%	-46%	+5%	-50%
2004/2005	+19%	-34%	-19%	-32%	+24%	-47%

Source: Transport Statistics GB 2007 and earlier editions

Results of Bus Deregulation (1)

- **Operating costs dropped significantly -- by about 50%, most of impact immediately after deregulation**
- **Bus kilometers of service increased substantially immediately after deregulation, but now again is in modest decline**
- **Fares rose significantly, particularly in major metropolitan areas**
- **Relatively little sustained on-the-street competition**

Results of Bus Deregulation (2)

- Great majority of services (80-85%) are operated in commercial regime
- Subsidies have declined by about 30% since deregulation
- Ridership has declined significantly since deregulation
- Subsidy per passenger has remained approximately constant despite major decline in subsidy per vehicle kilometer
- Perceptions of service instability

Typical Trajectory Following Deregulation

- Incumbent operator registered most of pre-existing network as commercial
- Reduced costs and raised entry cost by converting to minibuses
- Establishing a foothold for a new entrant via competitive bidding proved difficult
- Price competition proved to be ineffective relative to frequency competition
- Large bus holding companies emerged through mergers and acquisitions
- The urban bus market as it developed in the UK proved not to be truly contestable
- Local bus planning staff were largely eliminated

London Results

- **Similarities:**
  - **Unit cost reductions in London are close to those attained outside London**
  - **Service provided increased by a similar amount to outside London**
- **Differences:**
  - **Ridership in London has experienced modest growth**
  - **Subsidy initially declined much more substantially in London than elsewhere -- prior to Congestion Charging effects**

European Strategy

- **Several major European cities adopted London-like schemes, e.g., Copenhagen, Stockholm**
- **Separation of public sector from direct operation is an accepted principal**
- **Contractual agreements developed between the planning and oversight agency (in the public sector) and the operators (in the private sector)**

1.201J / 11.545J / ESD.210J Transportation Systems Analysis: Demand and Economics
Fall 2008