An International Perspective on Implementing Integrated Public Transport

Nigel H.M. Wilson

June 11th,2008

OUTLINE

- **Public transport in the US**
- **Elements of an effective system**
- **Framework for improving integration**

Public Transport in the US Today

- Ridership increasing but market share is small
  - public transport accounts for only 2% of all urban trips
- Strong financial support from the public and government
- Significant number of new rail starts in past 30 years
  - rail cities increased from 9 to 30
- Major rebuilding of many older systems
- Limited institutional or technological innovation

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

Support for Public Transport

The strategy of aligning public transport with road interests has been effective in raising funds to build and operate public transport systems:

- **Federal funding for public transport increased by 46% to $52.6 billion over next six years**
- **Federal Government currently pays for 40% of public transport capital cost**
- **70% of state and local referenda for measures funding public transport have passed in past 4 years**
- **Fare revenue covers only 33% of public transport operating cost**

Ridership Trends by Mode

Mode		2004 Ridership (Millions)	Change 1975-2004 (%)
Metro	- 5 old systems - 6 new systems	2,272 476	648 (+39%)
Light Rail	- 8 old systems - 14 new systems	170 179	44 (+37%)
Regional Rail	- 4 old systems - 12 new systems	379 35	128 (+50%)
Bus		5,731	37 (+1%)
Total - all modes		9,575	~ +40%

"Old" systems began pre-1975; "New" systems began post-1975

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

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%)	102.8 (100%)

- 64% of home commute trip ends are in suburbs
- 52% of work commute trip ends are in suburbs
- suburb-suburb commute is most common

Suburbanization:
2000 Journey to Work

Share of 1990-2000 Increase

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

- 25% increase in commute trips, 1990-2000
- 65% of new trips are suburb-suburb
- 5% of new trips are central city-central city

Suburbanization:
2000 Journey to Work

Public Transport Mode Share

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

- **public transport is non-competitive in suburb-suburb commute market**
- **growth is occurring in markets dominated by the car**

Other Significant Influences

- **Low taxes, fees, and user charges for car ownership and use**
  - **High car ownership**
  - **High car use**
- **Urban parking supply plentiful and often free**
- **Large investment in urban road system**

US Public Transport Today: A Critical Assessment

- Public transport has been stabilized
- Many new rail initiatives in operation or underway
- Some real success stories: New York City, Houston, Seattle, Washington DC
- Institutional change is occurring slowly
- Retention of public and 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 to the car***
- **Land use influence:**
  - ***Public transport is necessary, but not sufficient to change trends***
- **Environmental:**
  - ***Car technology strategies are more effective in short run***
- **Energy:**
  - ***Car technology strategies are more effective in short run***

Elements of an Effective Public Transport System

- High quality access to public transport system
  - low density access by car
  - medium density access by bus
  - pedestrian friendly design throughout
- Higher speeds than car on trunk routes
  - different modes: trams, light rail, high quality bus
  - priority in use of road space
  - priority at signals
- Easy connections throughout
- Integration between transport and land use decisions

Elements of an Effective Public Transport System

Observations:

- Building new technology lines may be important, but system will fail without the support of the other elements:
  - High quality bus
  - Effective integration
  - Pedestrian friendly design

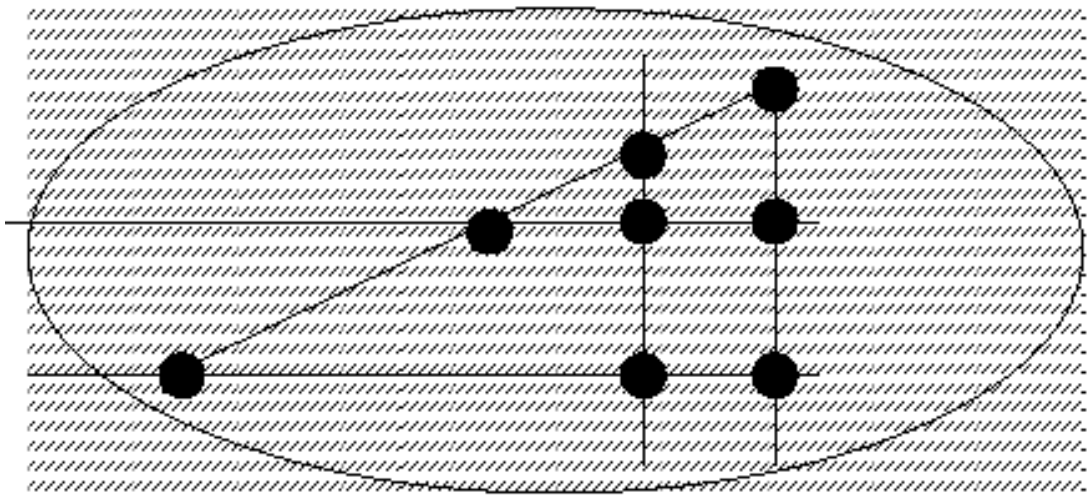
Importance of Interchanges

- Interchanges are fundamental in public transport
- They are necessary to serve many origin-destination pairs
  - typically 30-60% of urban public transport trips involve two (or more) public transport vehicles
- A major source of customer dis-satisfaction contributing:
  - uncertainty
  - discomfort
  - waiting time
  - cost
- Often ignored in service evaluation and planning practice

Framework for Improving Connectivity

Service connectivity is affected by:

- System elements
- Transfer facility elements
- Service elements



System Elements

BEST

Transfer Price	Pre-Trip Information	Fare Media	In-Vehicle Information	Fare Control
free	System information with trip planner	Same	Real-time and connecting route information, transfer announcements	No validation needed; can leave public transport space
Discounted	System information		Connecting route information, transfer announcements	No validation needed if remaining in public transport space
	Route information		Connecting route information	Validation needed, but no delay added to trip
Full additional fare	No information	Different	No information	Validation adds delay to trip

WORST

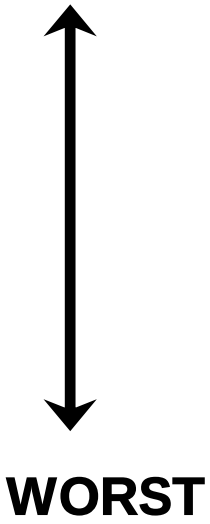
Transfer Facility Elements

BEST

WORST

Weather Protection	En-Route Information	Changing Levels	Road Crossings	Walking Distance	Concessions
Fully protected connection	Real-time; system, facility, and schedule information	No vertical separation	No road crossing required	No walking required	Large selection
Covered connection	System, facility, and schedule information				
Covered waiting area	Facility and schedule information	Vertical separation with assistance	Road crossing required, but assisted	Short walk required	Small selection
	Schedule information				
Open waiting area	No information	Vertical separation without assistance	Unassisted road crossing	Long walk required	None

Service Elements



Waiting Time
High Frequency
Matched Headways and Coordinated Arrivals and Departures
Coordinated Arrivals and Departures
No Coordination