

Transit Fares and Pricing: *What does research tell us?*



Brian D. Taylor, PhD, FAICP

Professor of Urban Planning

Director, Institute of Transportation Studies

Director, Lewis Center for Regional Policy
Studies

UCLA Luskin School of Public Affairs

While I will make occasional references to Metro...

- For the most part I will speak about transit cost, fare, and subsidy trends nationally
- My goal
 - To contextualize our discussions to follow

Public transit?

- 75 years ago:
 - Almost exclusively private, for-profit systems
 - Today, almost entirely public
- With shift to public ownership
 - Ever expanding public agenda for transit
 - Far more discomfort with pricing services than in the private sector

We ask a lot of public transit



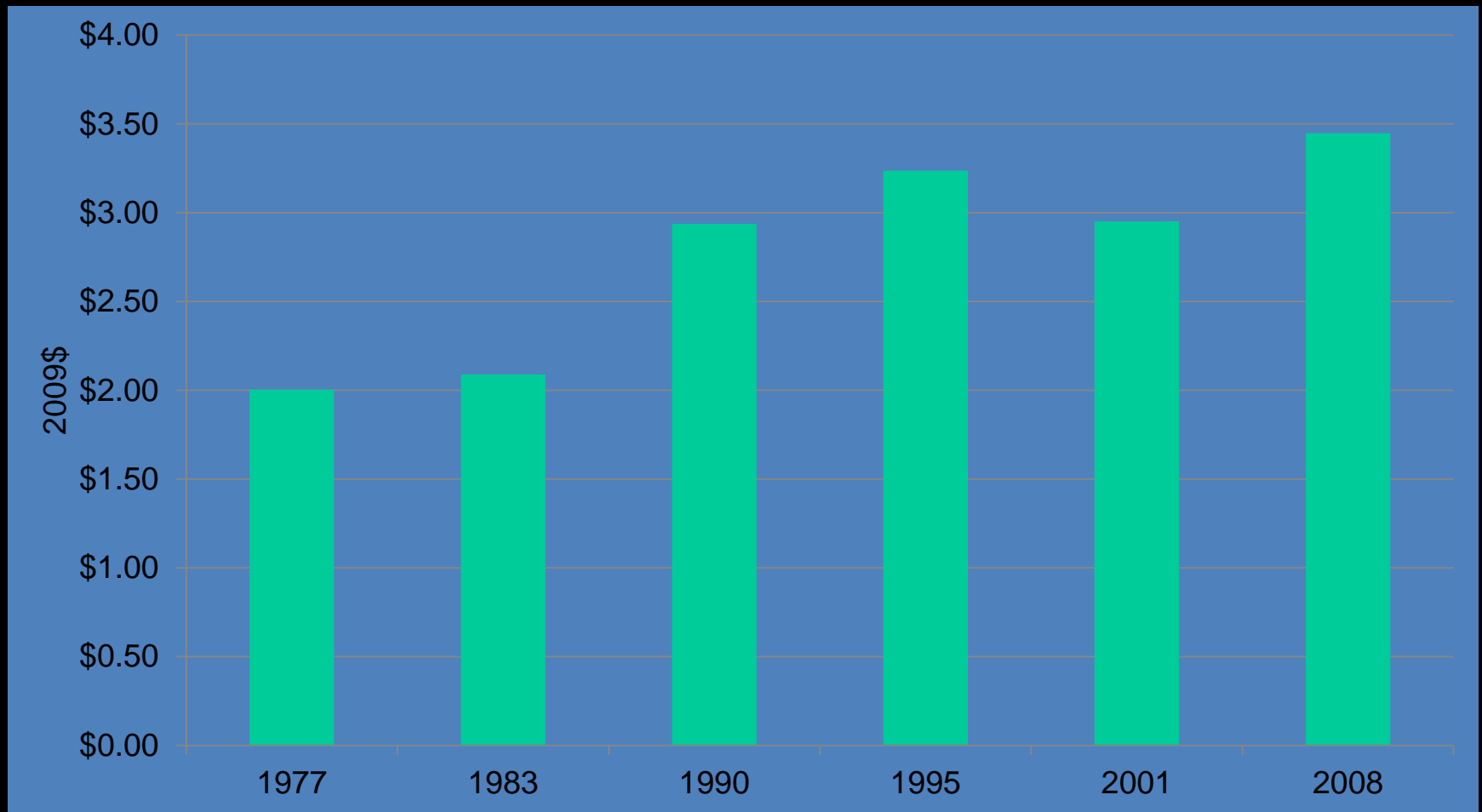
We ask a lot of public transit

- Provide mobility for those without
- Add transportation capacity in a politically acceptable way
- Reduce congestion and the need for additional road capacity
- Reduce emissions, energy consumption, and auto dependence
- Act as a anchor/magnate for transit-oriented development
- Signal our jurisdiction as attractive, progressive

An ambitious public agenda

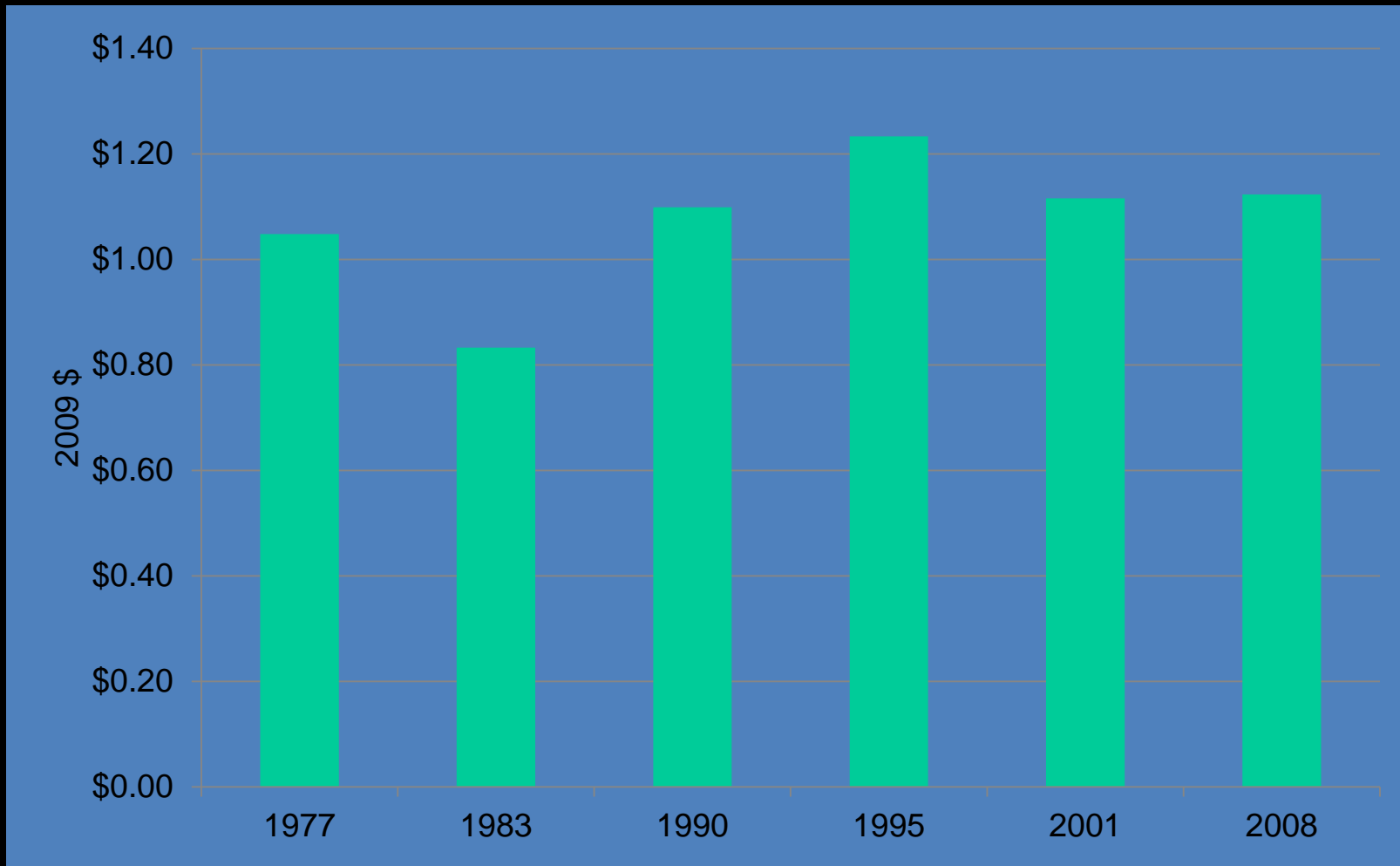
- The many, and sometimes competing goals we have for transit...
- Make it hard to settle on a single best pricing schema
- But nationwide, fares have been lagging increased public investment in transit
 - We have expanded our public commitment to transit

Inflation-adjusted operating expenditures *per passenger* were up 72%: '77-'08



Source: Author's Calculations from American Public Transit Association data

Total inflation-adjusted fares paid per passenger trip are up just 7%” ‘77-’08



Source: Author's Calculations from American Public Transit Association data

Four Dimensions of Transit Costs and Performance

- Such aggregate data, however, mask the variable nature of transit costs, which vary by:
 - **Peak versus off-peak travel**
 - **Peak direction versus backhauls**
 - **Trip length**
 - **Transit mode**
- Subsidies tend to be highest on peak period trips, in the peak direction, on long trips, and on capital-intensive modes (like rail)

Peak versus off-peak travel

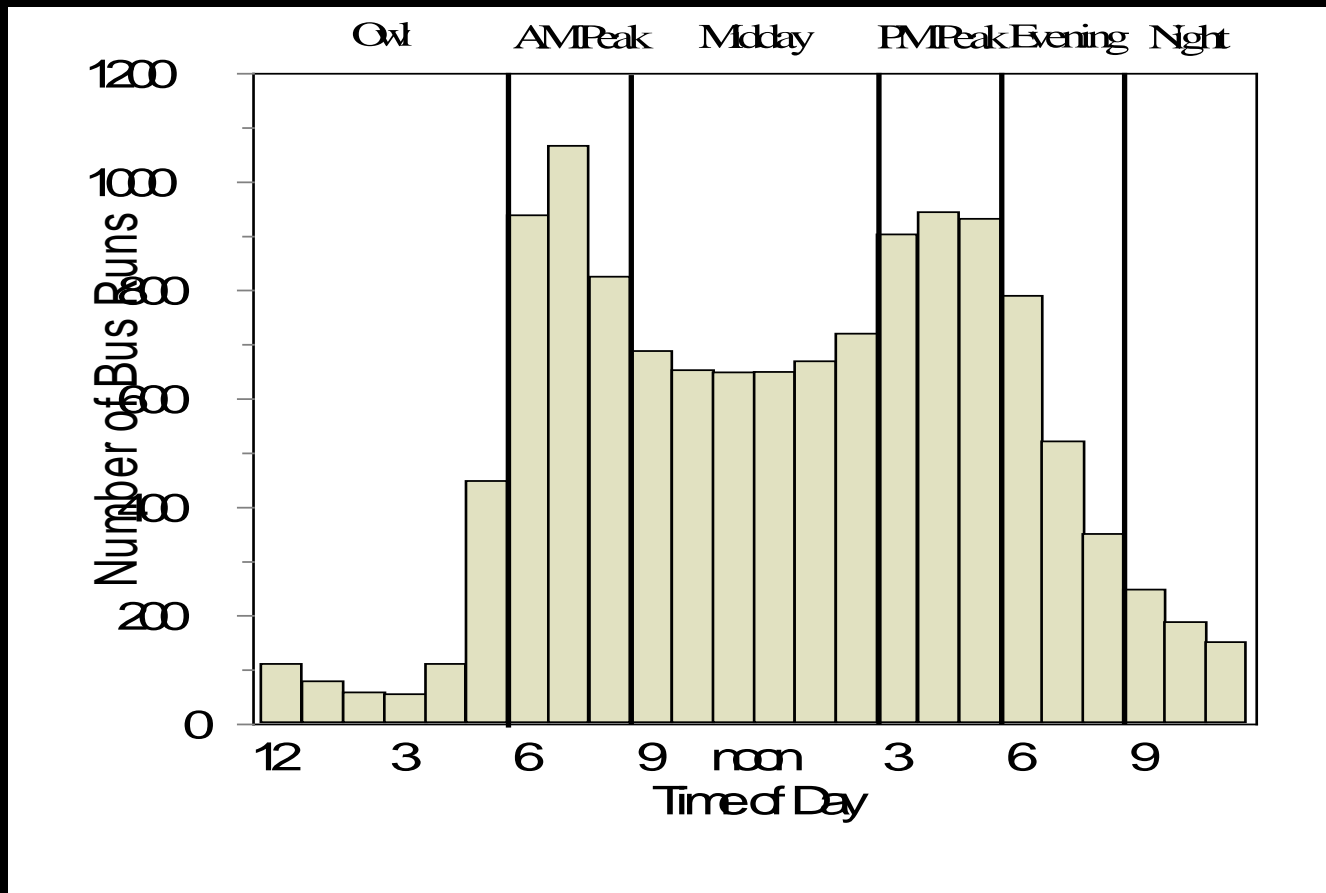
- **Counter-Intuitive:** Why are subsidies often highest when the buses and trains are full?
 - Because of the differences in marginal costs between the peak and off-peak travel
- **Off-Peak**
 - Service is well-below maximum system capacity
 - The marginal cost of adding extra service is low because extra vehicles and trained drivers are already on hand

The Problem of Peaking

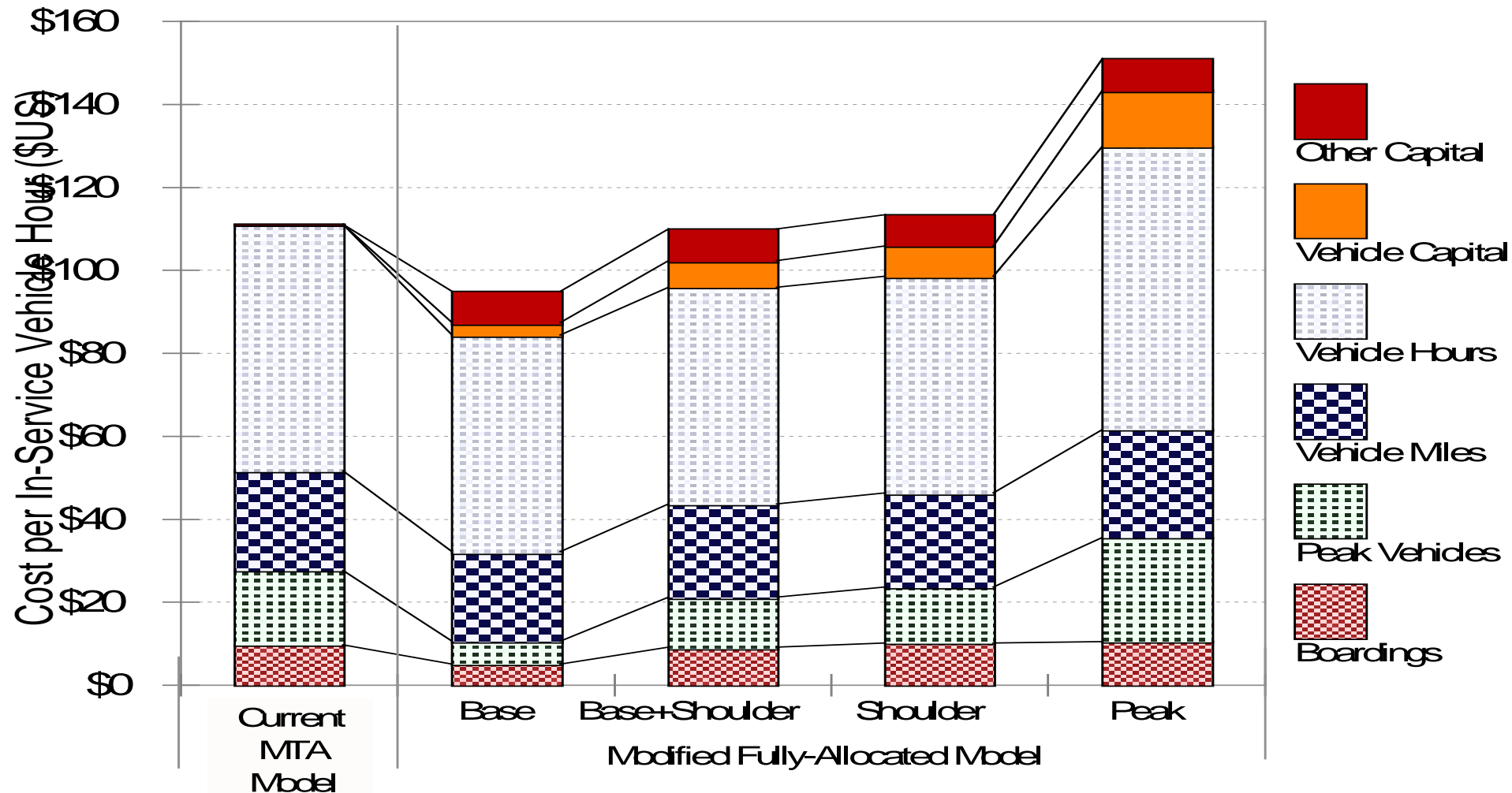
The marginal cost of transit service is typically highest in the peak period and peak direction.

- ***Lower labor efficiency:***
 - Limits on the use of part-time labor and of split- and spread-time shifts
- ***Lower equipment utilization efficiency:***
 - Extra vehicles needed to meet peak period demand,
 - A higher proportion of non-revenue service (extra deadheading and trippers),
 - Scaling facilities to accommodate peak service levels

Time-of-Day Variation in Service Levels: Los Angeles MTA in the 1990s



Estimated System wide Costs between the then-current LA MTA Model and the Fully-Allocated Model



Trip length

- Longer trips are generally more expensive to serve than shorter trips.
 - This is especially important for systems that charge bus and rail passengers a flat fare – a fee that does not vary whether the passenger rides two blocks or ten miles

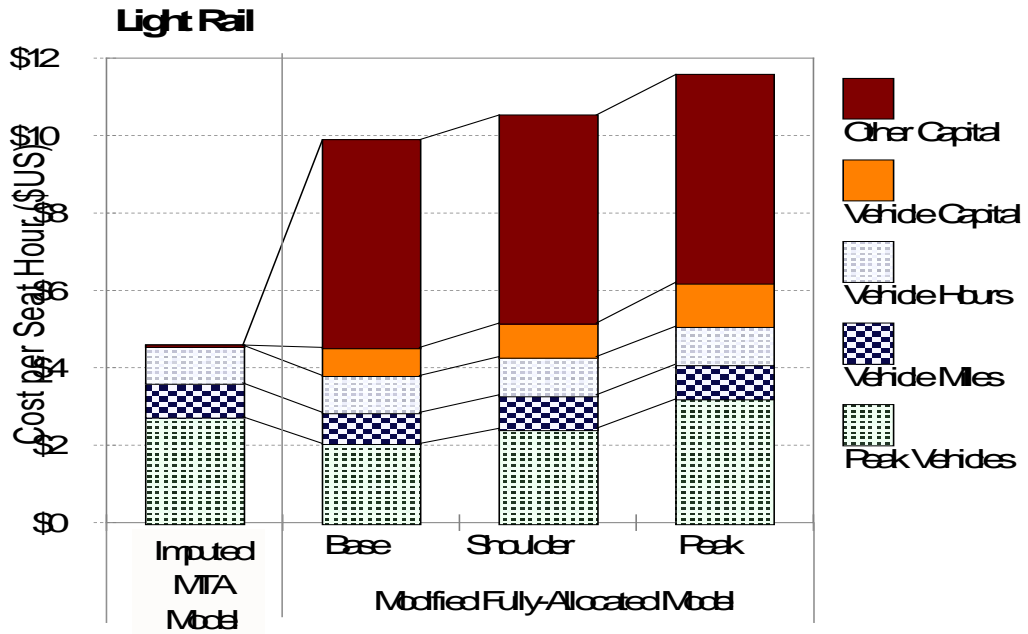
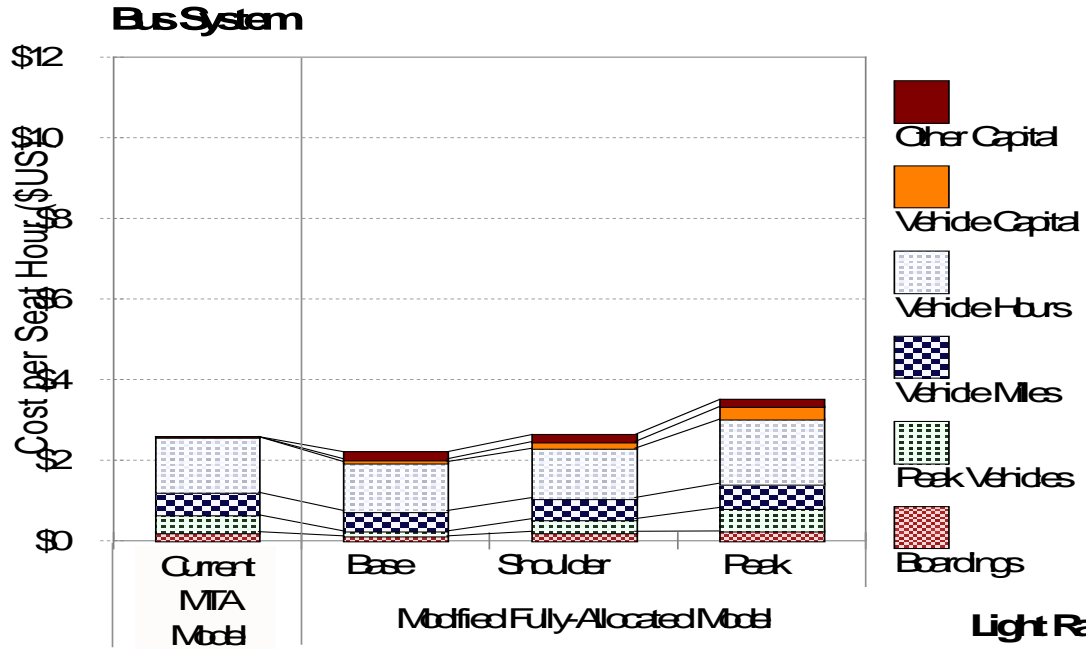
Transit Mode

- Capital-intensive modes like rail transit are a good investment when their high-capital costs can be spread over very large numbers of passengers
- Transit systems tend not to calculate amortized capital costs in performance and subsidy calculations
- Thus, capital costs don't typically figure into fare policies



Metro Purple Line - Wilshire/Western

Sample Comparison of Estimated Bus System and Light Rail Costs (Cost per Seat Hour)



In the 1990s using MTA Model and Fully-Allocated Model - Undoubtedly different today

Why price transit at all?

- Private, for-profit industry origins
- Not a classical “public good”
- One good subsidy does not deserve another
- “Co-payments” encourage judicious consumption
- Because the revenues are essential
- To reduce internal cross-subsidies by pricing services to roughly reflect highly variable costs

If we are going to price transit, what should be our goals?

- Encourage transit use;
- Encourage auto travelers to shift to transit;
- Keep things simple and understandable;
- Provide discounts for “deserving” sub-groups;
- Promote equity objectives such as helping the poor;
- Reflect quality of service to user;
- Maximize revenue; and/or
- Reflect relative costs of service provision.

Transit Pricing

- *Currently...*
 - Flat fares are the rule
 - Operators typically do not have a handle on marginal costs
 - Fares that vary by time, distance, direction, or mode were historically very difficult to set and enforce
 - Drivers, understandably, resist enforcement of variable fares
 - But fare structures are usually far from simple

Transit Pricing

- *Currently...*
 - But fare structures are typically far from simple
 - A couple of years ago I counted 43 different fare categories on the LA MTA website
 - Discounts for elderly, handicapped, students
 - Rise of unlimited ride passes – monthly, weekly, daily
 - Creates a problem of “adverse selection”
 - Tokens, punch cards, and on and on

Transit Pricing

- ***Research Findings...***
 - Riders are relatively insensitive to changes in fare levels, structures, or forms of payment
 - The “Simpson-Curtain Rule” (- 0.33) is an average measure of price elasticity, but become the dominant conventional wisdom in the industry
 - Which may get in the way of creative approaches to pricing

Transit Pricing

- ***Research Findings...***
 - Riders are, on average, more sensitive to travel time changes than they are to fare changes
 - Though fares and service levels are rarely jointly planned with these relative effects in mind
 - Cross-elasticity research shows that changes in auto costs affect transit ridership more than changes in transit fares
 - Transit systems have little control over auto pricing

Transit Pricing

- ***Research Findings...***

- Free fare programs have generally (but not always) proven a very expensive way to attract riders
- Fares on central city transit systems – which typically serve more poor, transit-dependent riders – tend to have higher average fares than suburban transit systems in higher-income areas
 - Costs tend to be higher, but riders' demand tends to be less elastic with respect to price as well
 - How can this be?

The unique price elasticities of public transit

	<i>Fare Increases</i>	<i>Fare Decreases</i>
<i>Lower-Income Riders</i>	Relatively inelastic; have relatively few alternatives	Relatively elastic; limited incomes and few alternatives creates latent demand for transit travel
<i>Higher-Income Riders</i>	Relatively elastic; typically have many alternatives	Relatively inelastic; higher incomes and plenty of alternatives means that transit remains an inferior good for most

Transit Pricing

- *Implications...*
 - Because of the demographics of transit use, transit demand is more elastic in the off-peak when the unit costs of service provision are typically lower

Transit Pricing

- ***Cross-subsidies...***
 - Flat fares lower prices relative to costs in the peak periods, when demand is less elastic...
 - And increase prices relative to costs during the off-peak when demand is more elastic
 - The result: short-distance, off-peak users cross-subsidize long-distance, peak commuters

Bottom line

- Setting prices is just plain uncomfortable at public (transit) agencies focused on public service
- Discomfort discourages (but does not prevent) innovation

A nationwide survey of transit board members, executives, and senior planners

- Agencies are risk-averse and seek to minimize public criticism of fare changes
- Agencies tend to be reactive to budgetary pressures and reluctant to change fare structures when changing fare levels
- There is some, limited, interest in distance- and time-based fares, especially among agencies that have or soon will introduce smartcards

Questions? Comments?



Thank you