

Transit System Cost Allocation and Pricing

SURTC TEL8 Transit Technical
Assistance Workshop

Friday, April 23, 2004
9:00 a.m. - 1:30 p.m. (CDT)



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Topics to be Covered

- Cost Allocation
- Setting Fares
- Setting Contract Rates



Cost Allocation

- Goal is to identify expenses associated with particular service, route, or trip
- Methods often directed by funding agencies and OMB Circulars



Why do we need to allocate costs?

- To divide expenses among funding sources
- To determine “fair” fares or billing rates
- To evaluate proposed service increases or reductions
- To provide cost information for performance evaluations
- To compare competitive service bids



What does cost allocation do?

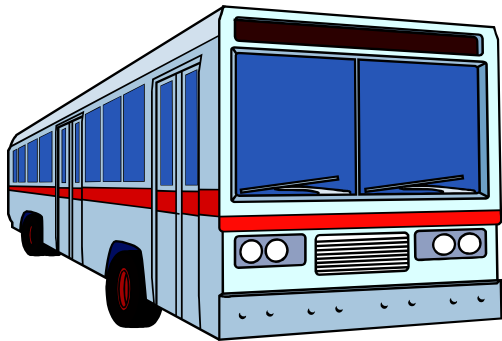
- Estimates operating expenses for various services, routes, client groups
- Does not usually include capital costs



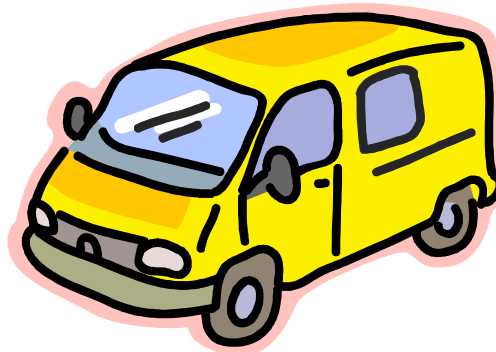
First Step: Separate Costs for Different Types of Operation

Mega Services Corp.

Fixed Route Transit



Demand Response



Other Non-Transportation Operations



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How to Allocate Costs Between Different Types of Service

- First, directly charge as many expenses as possible to specific service, e.g., fixed-route driver salaries to fixed route accounts, demand response scheduler salaries to demand response



How to Allocate Costs Between Different Types of Service

- Next, divide shared expenses based on factors related to how resources are used based on:
 - Vehicle miles, vehicle hours
 - Percentage of time spent by individuals working on specific activities
 - Percentage of space used
 - Arbitrary allocation (divide certain expenses equally among activities)



Cost Allocation Model for Similar Services

- If your organization provides only one type of service, e.g., demand response paratransit, or if you have already allocated costs among different types of services, then you are ready to proceed to cost allocation model



The Purpose of the Cost Allocation Model

- Determine the cost of providing a portion of your service – a route, or service sector, or perhaps a specific agency contract.



Example

- Your entire system has the following characteristics

Total Expenses	\$423,500
Total Vehicle Miles	190,000
Total Vehicle Hours	12,500
Total Vehicles	6



The Problem: What does it cost to operate the “in-town” van

- The “In-Town” van statistics

Total Vehicle miles	20,000
Total Vehicle Hours	2,000



Simple, but imprecise method

- Cost per mile

System cost/mile = \$2.23 so

$$20,000 \text{ miles} \times 2.23 = \$44,600$$

- Cost per hour

System cost/hour = \$33.88 so

$$2,000 \text{ hours} \times \$33.88 = \$67,760$$

- Why the difference?



The Recommended Two-Variable Cost Model

- Unit Cost Model or Fully Allocated Cost model



Annual Cost for System or Route =

$a \times \text{miles} + b \times \text{hours} + c \times \text{peak vehicles}$

- Where:

a = unit cost of mileage-related expenses

b = unit cost of hours-related expenses

c = unit cost of peak vehicle-related expenses



Steps Required to Apply the Unit Cost Model

- Determine allocation variables – decide what factors you will use to allocate costs. Most common factors are vehicle miles, vehicle hours, and peak vehicles
- In most cases, a two-variable model that includes vehicle miles and vehicle hours is best



Steps Required to Apply the Unit Cost Model

- Determine for each cost item for a transit system budget (or actual expense report) which of the allocation variables best explains the variation in the cost item. For example, fuel and maintenance costs are most closely related to distance traveled (vehicle miles), driver wages and fringe costs are most closely tied to vehicle hours driven, and overhead costs such as administrative salaries and other administrative expenses are also allocated to vehicle hours



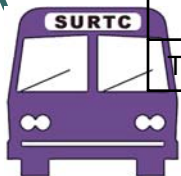
Assign Expense Items to Cost Factors

	Miles	Hours
Transportation		
Driver Wages and Fringe		X
Fuel and Oil	X	
Insurance		X
Maintenance Expense		
Mechanic Wages and Fringe	X	
Tires, Tubes, Parts	X	
Contracted Maintenance	X	
Facility rental, utilities		X
Call Taking/Dispatching		
Labor and Fringe		X
Telephone Expense		X
Computer Expense		X
Administrative Expense		
Salaries and Fringe		X
Materials and Supplies		X
Rent, Utilities		X



Calculating Miles, Hours Factors

	Actual Expense	Miles	Hours
Transportation			
Driver Wages and Fringe	\$220,000		\$220,000
Fuel and Oil	\$35,000	\$35,000	
Insurance	\$22,000		\$22,000
Maintenance Expense			
Mechanic Wages and Fringe	\$28,000	\$28,000	
Tires, Tubes, Parts	\$18,000	\$18,000	
Contracted Maintenance	\$7,000	\$7,000	
Facility rental, utilities	\$12,000		\$12,000
Call Taking/Dispatching			
Labor and Fringe	\$20,000		\$20,000
Telephone Expense	\$5,000		\$5,000
Computer Expense	\$5,000		\$5,000
Administrative Expense			
Salaries and Fringe	\$40,000		\$40,000
Materials and Supplies	\$4,000		\$4,000
Rent, Utilities	\$7,500		\$7,500
Total Expenses	\$423,500	\$88,000	\$335,500



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Calculate Unit Cost Factors

- Miles Related Expenses

$$\$88,000 / 190,000 \text{ miles} = \$.46$$

- Hours-Related Expenses

$$\$335,500 / 12,500 \text{ hours} = \$26.84$$



The Unit Cost Model for this Example

- Total expense =

\$0.46 x vehicle miles +

\$26.84 x vehicle hours



Applying the Cost Model to the “In-Town” Van Example

- Total expense for “In-Town” Van =
\$0.46 x 20,000 vehicle miles +
26.84 x 2,000 vehicle hours
= **\$62,943**



Compare the Results

- Simple, but imprecise
 - Cost/Mile method \$44,600
 - Cost/Hour method \$67,760
- Cost Model \$62,943



Setting Fares or Billing Rates

Balancing Act between
fairness (accuracy)

and

Ease of administration
and understanding



Typical Choices for Fares or Trip Charges

- Flat rate per person trip
- Distance-based rate per person
 - Zones or grids
 - Passenger miles
- Vehicle hourly rate
- Vehicle mile rate



Factors to Consider when Selecting “Best” Approach

- Major differences in trip lengths among users or sponsoring agencies
- Differences in average occupancy of vehicles
- Exclusive vs. shared use of the vehicle by clients of an agency



How to pick

- If an agency has exclusive use of a vehicle for a specific time then a per-vehicle-hour rate is the best and simplest approach.



How to pick (Continued)

- If you operate a general public service, or clients of multiple agencies can ride a vehicle at the same time then
 - The simplest method is a flat per-person-trip charge that is very easy to understand and apply, but it is also the least accurate
 - A per-passenger-mile rate is probably the fairest method, but very hard to administer



Special Considerations when Contracting for Services

- Best method depends on:
 - Who does the dispatching
 - Whether your clients have exclusive use of contractor vehicles



Dispatching

- If you arrange the rides and assign trips to specific vehicles, then best to pay by the vehicle hour
- If contractor mixes your trips with others, and controls dispatching, then better to pay by the person trip



In Conclusion

- These presentations and other supporting materials will be posted on the SURTC web site

www.surtc.org

- Additional questions

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