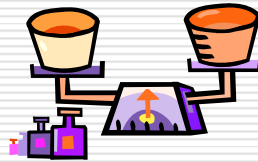


Transit Performance Measurement

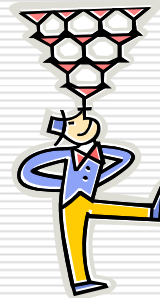
This material is adapted from a NTI course "Improving Transit System Performance: Using Information Based Strategies" developed at the University of Wisconsin-Milwaukee 1996-98. This material was written by Jack Reilly then of the Capital District Transportation Authority (Albany, N.Y.), Edward Beimborn or UWM and Robert Schmitt of RTR Associates in Pittsburg.



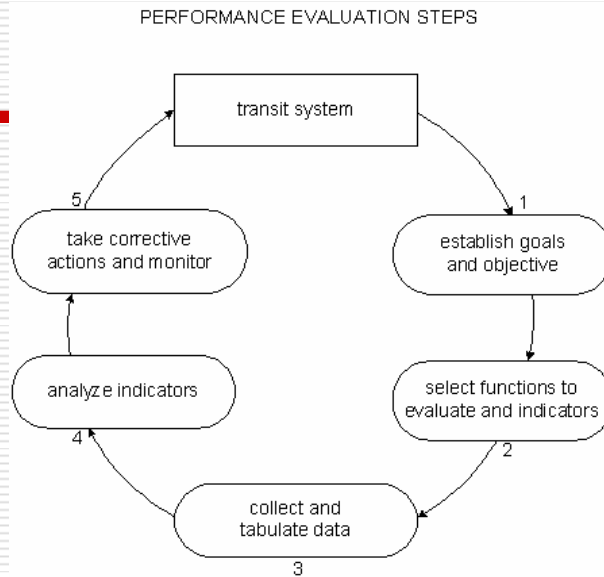
1

Performance Evaluation Process

- Establish Goals and Objectives
- Select Functions to Evaluate and Select Indicators
- Collect and Tabulate Data
- Analyze Indicators
- Present Results
- Take Corrective Actions, Monitor Results



2



3

Reasons for Monitoring and Evaluating Transit Service

- Control Costs and Ensure Integrity
- Justify Service Changes
- Maintain or Improve Service
- Monitor Subcontractors
- Guide Marketing
- Report to Policy Boards

4

Financial Indicators

Expense

- Total Operating Expense (Cost) / Total Passenger Trips:
- Total Operating Cost / Vehicle Miles (or Vehicle Hours):
- Administrative Expenses / Total Expenses:

Revenue

- Total Revenue / Total Passenger Trips:
- Total Fare Revenue / Total Revenue
- Revenue / Expense (Cost):

Subsidy

- Total Subsidy / Total Vehicle Hours:
- Total Subsidy / Total Passenger Trips:

Non-Financial Indicators

Ridership

- Total Passenger Trips / Total Vehicle Hours:
- Total Passenger Trips / Total vehicle Miles:
- Elderly Passengers / Total Passengers: .
- Passenger Trips / Population of Service Area

Service Quality

- Number of Complaints / Number of Drivers
- Stops On-Time / Total Stops
- Vehicle Miles / Road Calls

More Non-Financial Indicators

- Safety
 - Vehicle Miles / Vehicle Accidents:
 - Avoidable Accidents per Year:
- Service Quality
 - Revenue Miles / Revenue Hours:
 - Vehicle Miles / Year:
 - Vehicle Hours / Year:



7

Business Performance Measures

- Customer boardings per revenue mile or revenue hour
- Revenue to cost ratio
- Cost per customer transported
- Implications of different measurements
 - Do you manage system to get good scores on measures or to serve customers?



8

Social Performance Measures

- Proportion of households w/ .25 mile access
 - Public support per household
 - Proportion of jobs in transit service territory
 - Number of transfers necessary to arrive at main destinations
 - Peer comparison measures
 - Some systems conduct customer satisfaction surveys, say every six months to get feedback from customers
-

9

Example: Route Comparisons

CAPITAL DISTRICT TRANSPORTATION AUTHORITY

KEY INDICATOR SUMMARY

Saturday Total Period: May 1997

Route	Revenue/ Cost	Passengers/ Hour	Margin/ Passenger
2 West Albany	.26	14.2	\$1.60
4 Pine Hills	.20	12.8	\$1.98
3 Quail Street	.37	21.4	\$1.23
8 Arbor Hill	.14	10.1	\$3.15
14 Third Street	.28	16.1	\$1.74
18 Delaware Avenue	.19	10.4	\$2.24

10

Proportion of Population in Service Area

Characteristic	Total	Peak	Midday	Evening	Saturday	Sunday
Total population	100%	42%	39%	27%	37%	23%
Total households	100%	44%	42%	29%	39%	24%
Elderly population	100%	47%	45%	30%	42%	24%
Employment	100%	62%	62%	50%	60%	46%
Households (0 cars)	100%	73%	71%	58%	70%	52%
Households (0,1 car)	100%	57%	55%	41%	53%	35%
Workers	100%	44%	42%	29%	40%	24%
Area	100%	5%	4%	2%	3%	2%

11

Performance of Route 50 - Burnt Hills

Business Measures

Passengers per hour	8.5
Cost per passenger	6.55
Public support cost (annual)	\$105,633

Social Measures

Households in service area	3,191
Households without autos in service area	270
Public support cost per household	\$33
Public support cost per household without auto	\$391

12

Route Analysis - Route 50 Burnt Hills

	CDTA Service Area	Route 50 Service Area	Route Percent of Total
Key Indicators			
Population density (pop/sq.mi..)	4,105	2,116	
Percent of households without autos	13%	2%	
Percent of households with 0,1 auto	43%	12%	-
Percent of population over age 65	13%	4%	-
Households without autos per sq. mi.	415	26	-
Percentage of region's workers living in route service area using transit	6%	0.2%	

13

Route Analysis - Route 50 Burnt Hills

	CDTA Service Area	Route 50 Service Area	Route Percent of Total
Supplemental Indicators			
Total population	468,719	8,377	2%
Total area (sq. mi.)	264	7	3%
Total population over age 65	68,667	1,333	2%
Total households without autos	30,310	270	0.9%
Total workers	187,283	3,190	2%
Population over age 65 per sq. mi.	575	345	-
Workers per sq. mi.	1,675	236	-

14

Implications of Indicators

- Indicators should include issues management can control and recognize factors beyond your control
- Example: You may have little control over transit speeds and the effects of sprawl.
- Vehicle hours and revenue vehicle hours may give very different results
- Recognize that speeds and deadhead ratios can be very different between transit systems
- Combination of paratransit and fixed route transit service into one set of indicators can distort results when doing peer comparisons

15

Paratransit Performance Indicators

- Operating Efficiency
 - Operating expense per vehicle hour.
 - Administrative expense as a percentage of total operating expense
 - The percentage of live hours to total paid driver hours
- Effectiveness
 - one-way passenger trips per vehicle hour.
 - one-way passenger trips by senior citizens

16

More Paratransit Performance Indicators

- Service Quality
 - Service-related complaints per 1,000 one-way passenger trips.
 - Percent of all pickups will be made within +/- 15 minutes of the promised time.
- Financial
 - expense per one-way passenger trip
 - revenue per one-way passenger trip
- Safety
 - avoidable accident per 100,000 vehicle miles.

17

Acknowledgements

- Some of this material was developed as part of work being conducted by the Great Cities University consortium under the lead of the University of Alabama at Birmingham using funds provided by the Federal Transit Administration of the U.S. Department of Transportation.
- The opinions expressed are the product of independent university work and not necessarily those of the sponsoring agencies or of the agencies supplying data for the project.



18