

RURAL TRANSIT PERFORMANCE MEASUREMENT

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Rural transit systems have long sought ways to see how their services stack up—to measure performance. The typical method for this has been comparing ourselves to other systems or to ourselves over certain time periods. In the years ahead, as passengers expect more and funding continues to tighten and diversify, these measures will become increasingly important.

Traditionally, rural transit systems have based their performance measures on readily available data such as cost per mile or cost per trip. Such assessment of daily operation efficiency, however, ignores transit's contributions to local, regional, state and national goals.

For instance, at a time when transit has been called upon to respond to national air quality goals, typical measurements such as passengers per vehicle mile do not explicitly tell how many people are taking the bus who would otherwise be driving and contributing to air pollution problems. It also does not portray the impact on business: without transit's part in cleaning up the air, a larger regulatory and tax burden would be placed on private industry.

Similarly, how does a transit system work into its performance the value of a person being able to receive dialysis treatment and hold a job? To demonstrate their value to the communities they serve, rural transit systems, especially those that provide coordinated service, often must use nontraditional transit measures that incorporate such social values. Quality of life measurements, while difficult to calculate, can more accurately and persuasively track the level of care and benefit transit provides to many who have no alternative.

Some nontraditional transit measures, for example, calculate the number of people transported to meal sites to receive nutritious food, local residents who move from welfare to employment because of access to transit or transit users with improved health because of affordable, accessible transportation.

While there are myriad performance measures from which to choose, this brief provides a general overview of their use to help rural transit systems develop effective measures to improve productivity and quality of service. By helping systems pinpoint and use the most effective performance measures, system officials can demonstrate that transit is vital to the community.

The brief is an update to the original RTAP TA Brief 5 entitled [Performance Evaluation for Rural Transit Systems](#) published in 1990. For a comprehensive review of performance measures, the details of obtaining them and pros and cons of different measures, we strongly recommend you obtain the [Transit Cooperative Research Program](#) (TCRP) Report 6, *Users' Manual for Assessing Service-Delivery for Rural Passenger Transportation* (see Annotated Resource List).

Why Measure Performance?

There are as many reasons to measure performance as there are aspects of your organization. For instance, you may need to:

- evaluate a contract provider to ensure competitive performance;
- decide what service mode is better for a new area;
- reduce service but have many options as to where;
- evaluate various expense categories as part of a budget- review process;
- evaluate results from a previous service or operational change;
- document the impact of service or its improvement as part of a funding arrangement; or
- convince decision makers that transit service is a vital part of the community.

While the term "performance measurement" sounds as if it were plucked from a management textbook, chances are that you already use performance measurement — at least as part of your personnel practices. When you give a skills test to competing job applicants, you are engaging in performance measurement. The same applies when you review your drivers' on-time, accident, complaint or maintenance records.

In an organization as complex as a transit system, there is an enormous variety of statistics from which to choose. It is crucial to pick the measurements based on your audience and what you are trying to say.

For instance, if you receive urban transit funding (Section 5307) from the [Federal Transit Administration](#), you must fill out a series of reports known as the [National Transit Database](#) (Section 5335). The performance measures used for these forms can be quite different than those used to convince your local City Council and state representatives to fund operating costs for your system. And if you're undertaking a marketing campaign to convince the public of your timeliness and efficiency you might choose yet another set of measures.

What to Measure?

What you measure depends on what you want to find out. There are generally four ways to measure your performance. While you are not limited to these ways, they outline a useful way of thinking about how your system performs and the different ways to capture its unique attributes. (Get more details about these in [TA Brief 5](#) and in TCRP Report 6.)

- **Effectiveness** measures are those that weigh how much a service is used against how much service is provided. Example: number of trips per vehicle hour.
- **Efficiency** measures are those that focus on how much service is provided versus the resources that service requires. Example: cost per trip, passengers per vehicle hour.
- **Quality** measures focus on things such as speed, safety, reliability and comfort.

- **Impact** measures are results-oriented: How is the service affecting the community and region? How much of the population is being served? What share of needs is being met? How does the service increase income or reduce other costs? Nontraditional measures, such as the economic impact of keeping 20 people off welfare and working because they have sufficient transportation service, are most likely to be impact measures.

How Can Performance Measures Help?

Performance measures serve as a guide to answer the question, "What next?" Four areas where performance measurements can strengthen your decisions are: (1) creating and adhering to organizational goals and objectives, (2) budgeting, (3) analyzing operations and (4) publicizing your accomplishments.

Establishing Goals/Objectives

Defining your system's mission as well as goals and objectives for specific departments is central to planning for your organization's success.

The basis of the mission is firmly rooted in performance measures. Should a transit system concentrate on commuters? On mid-day trips? On paratransit and other contract services? Some community characteristics to consider when developing the system's mission include residential patterns, employment and service patterns and demand density.

Performance measures are also essential to a system's goals and objectives. It's tough to imagine sitting at a meeting with representatives from your system's departments and inspiring them with the simple directive: "Do better!"

Instead of generalities, they need to know how to do better and in what ways. So, based on earlier measures your mechanics could set goals to diminish the turnaround time on repairs, reduce the number of repairs through preventive maintenance and stay under the budget for replacement parts. You'd emphasize to your drivers the importance of timeliness and set a goal for next year—or next month, or next quarter.

Budgeting

Performance measures are central to budgeting, which is often intertwined with publicizing your service and ensuring that policy makers and the public understand how funding was used and what the community received in return.

For instance, you may spend \$10,000 on a media campaign to inform the public about your system and the opportunities it provides. Without any sort of context, that figure can seem frivolous in a time of forced austerity. However, if you can show that overall ridership is up 10 percent compared to the same time last year, resulting in \$40,000 increased revenue, you've made your case. Furthermore, you have laid the foundation for more such efforts in the future.

Labor is another budget area in which performance measures can help. Since it is usually the largest operating cost to a transit system, there is a great incentive to trim it as much as possible. For example: use of part-time personnel who provide services throughout the day minimizes overtime salary expenses and limits the necessary level of benefits. Another option is to distribute administrative expenses among several agencies, obtain donated office space, initiate competitive bids for maintenance services and participate in statewide vehicle procurement programs (see RTAP Technical Assistance Brief #17, [Belt Tightening: How to Survive in Lean Times](#) for other cost-saving measures)

However, without proper data you can't be certain what kind of effect these changes will have. Perhaps you're already getting tremendous productivity out of your employees. Performance measures can pinpoint the share of your budget taken up by labor, which you can then compare to other systems in your peer group (see [Compare with Confidence](#) below on peer groups). If your share is similar and your productivity statistics are the same or higher, you might want to focus on other parts of the budget to cut costs.

Budget performance measures can also help a rural transit system that serves as the transportation provider or mobility manager for a number of agencies. A broker is committed to moving people in the most efficient manner possible; to do so, it must carefully track, analyze and allocate operating costs while at the same time ensure that customers are receiving adequate service.

To track service, the broker might tally the number of late arrivals and express it as a percentage of total trips provided. The broker can use this figure to compare its member agencies. Further, if the broker wishes to bring cost figures into the picture it could determine the cost per trip charged by each member agency and determine the value of each late trip.

System Analysis and Change

System analysis is the primary, and sometimes only, task most people assign to performance measures. The important fact to remember is that data, while we have many different ways of collecting, measuring and analyzing it, does not mean anything by itself. It's how it is used that counts. So while you might collect nine different measures of ridership based on boarding time, day of week, time of month, season and so forth, they do you no good unless you use them to analyze your service.

Based on an analysis of the data, a system may wish to modify policies, procedures and processes. Or, it may decide to change current operations altogether, including eliminating service.

An analysis of routes and ridership by time and location can indicate whether decentralized operations or vehicle storage can reduce non-revenue miles and service hours. Another option

may be to store vans at the homes of drivers to reduce deadhead mileage.

Performance measures also can help a system tailor its service based on its current or potential customers. For instance, transit systems that serve unusually high proportions of the elderly may benefit from providing Medicaid and other health and social service agency transportation service. This not only indicates sources of funding but may also influence the type of service that might be appropriate.

While demand-response service may work well in many rural situations, fixed-route lines may work better when connecting workers in outlying rural areas to major urban centers. Performance measures outlining your ridership demographics will prove invaluable in your decision-making process. Furthermore, demographic analysis of the entire community, not just current riders, can help you offer service to people who, for whatever reason, don't use your system.

Persuasion/Publicizing

One of the least discussed areas where performance measures can drastically change your system is persuasion. Most transit systems must constantly be in tune with not only the local political environment, but also with that at the state and federal level. And while many managers know instinctively the benefit their system is to the community, it is sometimes difficult to convince bottom-line conscious public officials.

A fundamental rule of persuasion: Tailor the message to your audience. Transferring this to performance measures, this simply means that you need to choose your performance measures depending on your audience. Discussing the intricacies of schedule adherence by geography may not go over as well with the Chamber of Commerce as it does with your operations working group.

When dealing with non-transit professionals, it is usually best to relate every community impact your system has to money. While you're proud of the fact that without your system 500 people wouldn't be able to get to work, that figure alone might not have enough weight with your city council.

Instead, ask yourself what would happen if these people weren't working: the state and federal government would pay unemployment and perhaps welfare benefits, neither the state nor local government would receive taxes from them (income taxes, sales taxes and so on) and area businesses would lose part of their market. Every person with a job has an impact on the community well beyond his/her own paycheck, and the economic well-being of small communities is particularly sensitive to even a small number of people losing their jobs. While they are more difficult to measure, performance measures like these can go a long way toward convincing decision makers that transit is a vital community asset.

Another part of a system's ability to market itself is customer service. Though labor-intensive,

maintaining good customer relations is critical to any transit system's success. Some systems with successful customer relations focus their services on the general public rather than paying attention to particular client groups, while others do the opposite. Some specific methods include running special promotional campaigns and announcing schedules in the communities where trips originate. Performance measures are instrumental in knowing where to focus efforts as well as publicizing a system's successes.

Rural Transit Performance Measurement Issues

Major Differences Between Urban and Rural Transit Systems

Rural transportation providers face unique challenges, including:

- Operating in large geographic areas with low population densities;
- Providing service to rural residents with lower incomes, generally, than those of urban residents;
- Operating demand-response or subscription services; and
- Providing transportation service largely to transit- dependent groups (elderly, youth, low-income, people with disabilities).

Despite these facts, performance measurements used by rural transit systems are in many places the same as those used by urban systems.

As part of the persuasion efforts described above, community leaders and decision makers must be made aware of the profound differences between rural and urban transit. This can be difficult because many non-transit professionals expect only the easy-to-understand numbers that apply to urban systems like farebox recovery ratio, passengers per hour and so on.

Once the differences between rural and urban transit are made clear, operators must have some performance measures to fill the gap between what is expected and what gives a more accurate picture of the system. These can be a combination of typical measures outlined later in this brief (see [Table 2](#).) and covered more substantially in [TA Brief 5](#).

Nontraditional Measures

Comparing community transit systems with traditional urban fixed-route operators is like comparing apples and oranges. Further, because rural systems operate in a variety of different modes, it is sometimes difficult even to compare them to one another using traditional figures. Therefore, translating the impact a transit system has into nontraditional measures can be more meaningful.

Nontraditional measures generally describe the system's impact on the community. However, a community is formed of many interconnecting organizations, businesses, citizen groups, etc., and

isolating transit's impact can be elusive.

As discussed above, the best method for gauging impact is to determine what would happen if transit suddenly disappeared. Earlier, an example of air quality performance measures was used. Your first step is to establish the immediate impact: in this case, the air would be more polluted because people would be driving instead of using transit.

Second, figure out the resulting consequences: since the EPA would hold an area in nonconformity for air pollution and ultimately withhold federal transportation funding, the air cleaning measures would need to come from another area of the community. In this case, industry.

Third, calculate the cost of the consequences. This is the most difficult part, but you don't need to do an entire environmental impact study, just some back-of-the-napkin figures. It's often helpful to use ranges: Enhanced environmental control measures at Johnson's Paper Factory could cost them between \$5 and \$10 million per year. Just be sure you're forthright about where you got the figures and about their preliminary nature.

Other nontraditional areas include:

- **Economic impact** : What would happen to the transit- dependent passengers if you suddenly stopped operation? What would happen to area businesses when they have difficulty finding employees? What would happen to regional economic development when businesses interested in moving to the area find out they'll not only have trouble getting their employees to work but also that part of the market won't even be able to reach their businesses?
- **Jobs** : A readily accessible figure is how many jobs the transit agency directly provides. Remember to include not only those employees working for the agency, but also for industries dependent on transit: garages that fix the vehicles, consultants that operate the scheduling and dispatching areas, and so on.
- **Testimonials** : At times it can be extremely effective to use testimonials from your riders or from area businesses that realize your system's value. Many systems have used letter writing campaigns with great success when faced with slashed funds from the state. When organizing such a campaign, encourage riders to write original letters telling how the service affects their lives. If you must, provide a set of talking points complete with particularly useful facts and figures.

Information: Where to Get It

The data you use as a basis for your performance measures must be consistent. Data should cover a full year of operations, since performance can vary greatly from season- to-season or even month-to-month. Data that vary widely can inspire suspicion in decision makers: if you're claiming service improvement by comparing two different periods (e.g., comparing January - March of the current year and July - September of the previous year) your advocacy efforts can be seriously undermined. Remember, often, you only get one chance.

Gathering data can be a problem for many small systems. For transit agencies where staff often perform many functions simultaneously, a systematic approach to data collection is important. Accurate record keeping and an organized, integrated database may be one of the transit system's most important analytical tools. Poor data collection techniques can lead to unreliable statistics, misleading performance measures and poor decisions. Table 1 shows samples of the types of data that already exist within a transit system and lists probable sources for collection.

Table 1
Sources of Data Within Your Organization

Data and Statistics	Probable Sources
Dollars, labor hours	Accounting, payroll, financial management
Vehicle hours, vehicle service hours	Drivers, dispatchers, supervisors
Vehicle miles, vehicle service miles	Drivers, schedulers, dispatchers, service maintenance shop
Passenger boardings, passenger trips	Drivers, schedule checkers, surveys
Accidents, passenger injuries	Drivers, supervisors, safety, training
Complaints	Telephone information center, public relations supervisors, managers

Source: TCRP Report 6

By basing the assessment on readily available data, staff, time and money can be held to a minimum. The key is to use existing data effectively.

A computer is vital to any data collection effort. Even a second-hand computer that is several years out of date and not useful for many businesses typically can run spreadsheet software that can immeasurably help data collection and organization. More current software can integrate many aspects of data gathering, and networking computers together allows people in your organization to easily share information.

Finally, the Internet, for all its hype, is an invaluable aid to data collection. For instance, anyone from around the world can hook up to the [US Census World Wide Web site](#) and retrieve detailed demographic data on a county-wide basis. And the [Federal Transit Administration](#) has on-line a detailed database of information from agencies across the country. See the RTAP Info Brief 4, [Making New Technologies Work for Rural Transportation](#), for more information on using the Internet for community transportation purposes.

Compare with Confidence

Before a transit system can evaluate its performance, it needs a benchmark against which it can compare its performance. One type of benchmark is the performance of similar systems in the state or region. That said, keep in mind that better performance doesn't necessarily equal more state dollars. An analysis of the development and application of performance measures for rural transit (see Carter and Lomax, p. 31 [ref](#)) found that only four states — Texas, Louisiana, Montana and Indiana — used performance- based funding mechanisms.

A benchmark is more likely to be based on a system's goals and objectives that have in turn been developed based on past performance. For instance, if over previous years a system has been lowering the time necessary for an advance reservation to schedule a trip from 72 to 60 to 48 hours, it might set a goal for the current year of 36 or even 24 hours. This goal would become the benchmark for the current year. Similar goals might be a certain cost per passenger carried, cost per vehicle revenue hour and so forth.

Comparing your system to others can be difficult. If two systems are very different from each other, comparisons are not valid. This has led to the concept of *peer groups* , groups of systems that are considered sufficiently similar in circumstances so they can be compared. For two systems to reflect similar operating characteristics, they must be alike in a number of different ways.

The mode of service involved is clearly one of these. ([Table 2](#) reviews figures for several different modes of service.) Data from a national sample of agencies funded under Section 5311 show that average costs per vehicle are substantially higher for agencies providing primarily fixed-route service than for agencies providing principally demand-response service. This is to be expected since, among other things, vehicles in fixed-route service often tend to be larger. By the same token, the average number of trips per vehicle operated is a good deal higher for fixed-route service than for demand-response.

A measure that combines these two is the average cost per passenger trip. For agencies operating more than five vehicles, this average trip cost is substantially less for fixed-route service than for demand-response service. But, for smaller Section 5311 agencies, this is not necessarily true. Where the service area is limited to a town or city (and thus relatively densely populated), fixed-route service is less costly on average. But where the service area is county-wide or multi-county and more sparsely settled, demand response appears to be cheaper on average.

Thus, in addition to the mode of service involved, peer group comparability can also involve the size of the agency and the nature of its service area. Transit system workforce characteristics can also be very important (union vs. non- union labor, use of volunteers, etc.). Whether or not certain areas of operation, such as administration or vehicle maintenance, are shared with another

agency can also have a big impact on comparable costs. If you decide to compare your system with others, be sure to take these factors into consideration.

[Table 2](#), reprinted from information in TCRP Report 6, gives you an idea of the different ranges of performance produced by different types of Section 5311 agencies.

While [Table 2](#) includes a great deal of information for transit systems to compare themselves to, the Rural Transit Services Computer Program included with TCRP Report 6 provides information more closely tailored to individual communities.

Conclusion

As every transit manager knows, performance measures are integral to a system's continued success. It's important, however, to go beyond the figures and use performance measures as a vibrant series of indicators not only for your system's health but also of your system's impact on the surrounding community. Transit is a vital part of the economic and social quality of communities. But it's up to transit systems to make this point.

Annotated Resource List

American Public Transit Association. *Managing Mobility: A New Generation of National Policies for the 21st Century*. Report of the American Public Transit Association Transit 2000 Task Force. November 1989.

Chapter 7 of this report explains why a two-tiered system of performance measures that incorporates both national and local goals, circumstances and priorities is needed

Carter, Dave N. and Lomax, Timothy J. *Development and Application of Performance Measures for Rural Public Transportation Operators*. *Transportation Research Record* 1338, pp. 28-36.

A review of the issues surrounding rural vs. urban transit performance measures as well as how different states use them and a comparative overview of rural Texas systems.

[CTAA](#), [Belt Tightening: How to Survive Lean Times](#). Technical Assistance Brief Number 17. Washington, D.C. 1996

This brief reviews cost-cutting measures such as service re-design, drug and alcohol testing consortia, risk management pools and the use of volunteers and preventive maintenance tips.

[CTAA](#), [Making New Technologies Work for Rural Transportation](#). Information Brief Number 4. Washington, D.C. 1996.

In this Info Brief, we describe how some of the more popular new technologies work and how they might help you improve your service. Many of the technological advances highlighted hold the key to better planning tools and more efficient methods for service delivery.

[CTAA , Performance Evaluation for Rural Transit Systems](#) . Technical Assistance Brief Number 5. Washington, D.C. 1990.

This brief explains the steps a transit system should follow when undertaking a systematic performance evaluation.

[Transit Cooperative Research Program](#) (TCRP) Report 6. Users' Manual for Assessing Service-Delivery for Rural Passenger Transportation. Transportation Research Board. National Research Council. 1995.

This report, [complete with an easy-to-use computer program](#) , is for rural transit agencies involved in planning, operating, or funding passenger transportation service. The purpose of the report is to aid in the design of public transit services in communities without current service or aid in the restructuring and improving existing service.

[Transit Cooperative Research Program](#) (TCRP) Synthesis 6. The Role of Performance-Based Measures in Allocating Funding for Transit Operations: A Synthesis of Transit Practice. Transportation Research Board. National Research Council. 1994.

The synthesis explores if and how performance assessment is being used as a way to distribute financial assistance to local transit systems by state and regional bodies. It explores current practices, as well as the issues and concerns of those on either end of the funding pipeline.

[U.S. Department of Transportation](#) . Developing a Performance Management System for Transit Services. January 1989.

The Maricopa County, Ariz., Regional Public Transportation Authority, as an integral part of its corporate planning process, developed a performance evaluation system for the existing and proposed transit system. The report's purpose is to provide management ready access to the information necessary to track and promote the efficient and effective operation of the regional transit network.

[U.S. Department of Transportation](#) . Handbook for a Transportation Management Review. October 1986.

This management review examines whether or not the transit system has adequate management systems in place to manage the service and if the trends of the transit system's performance data are positive.

[U.S. Department of Transportation](#) . Rural Public Transportation Performance Evaluation Guide. November 1982.

The manual, a guide for monitoring and evaluating the performance of rural and small urban transit systems, involves periodic analysis of a variety of operating and financial performance measures. These "general" and "supplemental" indicators do not require any new or unusual data collection, and should be readily available by any transit system.