

# TRANSIT PERFORMANCE MEASUREMENT

## Outline:

1. Why measure agency performance?
2. Recent work - TCRP Report 88
3. Using NTD Data: [www.ntdprogram.gov](http://www.ntdprogram.gov)
4. Conducting periodic performance audits

# Why Measure Performance?

- **Identify major problems in agency for further analysis**
- **Generate information for policy formulation**
- **Measure goal attainment for priority initiatives**
- **Determine funding allocation**

# TCRP Report 88

- **A practical, step-by-step guide for developing a performance measurement system**
  - a review of current industry practice
  - led by Kittelson & Associates, Inc.
  - web document with extensive hyperlinks
  - menus allow systematic review and selection
- **Comprehensive treatment, yet tries not to be a prescription**
- **Cautions users about pitfalls**
- **Good source to "browse" related performance measures**

# Why Measure?/Which Objectives?

- **Why Measure?**
  - external requirement (funding, community support, etc.)
  - internal use (improve internal management, input to policy, determine customer satisfaction, etc.)
  - "what gets measured gets attention"
- **Four points of view:**
  - customer (quality of service)
  - community (impact on broad community objectives)
  - agency (management effectiveness and efficiency)
  - driver/vehicle (traffic engineering measures)

*(individual measures overlap these four points of view)*
- **Define objectives first, then select measures**

# 8-Step Program Development

- 1. Define goals and objectives**
- 2. Generate management support**
- 3. Identify internal users, stakeholders, and constraints**
- 4. Select performance measures and develop consensus**
- 5. Test and implement the program**
- 6. Monitor and report performance**
- 7. Integrate results into agency decision-making**
- 8. Review and update the program.**

# Categories of Measures

- **Eight Primary Categories**
  1. **Availability of service (customer)**
  2. **Service delivery (customer)**
  3. **Safety and security (customer)**
  4. **Maintenance and construction (customer and agency)**
  5. **Economic (agency and community)**
  6. **Community (community, agency, and driver/vehicle)**
  7. **Capacity (community and driver/vehicle)**
  8. **Travel time (driver/vehicle and customer)**
- **Secondary Categories overlap above**
  - **paratransit measures**
  - **comfort measures**

# Prototype "Core" Measures

(Summary of TCRP Report 88, p 21)

Table 1. Core Fixed-Route Availability Measures

Large	Medium	Small	Under 50,000
Service coverage		Route coverage	
Frequency			
Hours of Service			
Stop Accessibility			

Table 2. Core Fixed-Route Service Delivery Measures

Large	Medium	Small	Under 50,000
Missed trips			
Complaint rate			
Route directness			
On-time performance			
Customer response time			
Passenger load			
Reliability factor			
Transit-auto travel time			
Number of fare media sales outlets			
Customer satisfaction			
Headway regularity			
Passenger environment			
Customer loyalty			

Courtesy of the Transportation Research Board. Used with permission.

# Prototype "Core" Measures

(Summary of TCRP Report 88, p 21)

Table 3. Core Fixed-Route Safety and Security Measures

Large	Medium	Small	Under 50,000
Accident rate			
Number of incidents of vandalism			
Crime rate			
Number of vehicles with specified safety devices			
Passenger safety			
Ratio of police officers to transit vehicles			

Table 4. Core Fixed-Route Community Measures

Large	Medium	Small	Under 50,000
Personal economic impact			
Demographics			
Communications			
Mobility			
Service equity			
Community economic impact			
Environmental impact			
Visual impact			

NOTE: Shaded areas in Tables 1-7 indicate measures not included in the core set of performance measures for a particular agency size.

Courtesy of the Transportation Research Board. Used with permission.



# Prototype "Core" Measures (cont'd)

(Summary of TCRP Report 88, p 22)

Table 5. Core Fixed-Route Maintenance Measures

Large	Medium	Small	Under 50,000
Road calls			
Average spare ratio vs. scheduled spare ratio			
Fleet cleaning			
Maintenance work orders: model vs. fleet			
Average life of vehicle components			
Average age of vehicle components			
Mean vehicle age			
Maintenance program effectiveness			
Fleet maintenance performance			

Table 6. Core Fixed-Route Economic Measures

Large	Medium	Small	Under 50,000
Ridership			
Productivity			
Cost effectiveness			
Cost efficiency			
Energy consumption			
Risk management			

Table 7. Core Fixed-Route Administration Measures

Large	Medium	Small	Under 50,000
Percent positive drug/alcohol tests			
Employee productivity			
Employee relations			
Employee work days lost due to injury			
Administrative performance			

# Using NDT Data

- [www.ntdprogram.gov](http://www.ntdprogram.gov)
- **Key ways to use:**
  - access pre-defined tables
  - access agency profiles
  - download detailed tables
  - submit agency reports
- **Data inconsistency has been reduced, but not eliminated**

# Conducting Performance Audits

- **Formal effort every 2-3 years**
- **Usually facilitated by third party (state, regional agency, or consultants)**
- **Often includes peer comparisons, but better if focus is on internal issues**
- **Separate outside process provides opportunity to reflect, as opposed to react**
- **Top management support critical**
  - **provides employee feedback**
  - **outside party often spurs further research**
  - **refines agency objectives**

# Peer Review vs. Internal Focus

- **Often outside requirements mandate measures and comparisons**
- **Management must participate in peer selection (often cite density and development patterns as more important than size)**
- **Peer comparisons best used to provide special focus, if appropriate**

# Peer Review vs. Internal Focus

- **Bulk of effort on internal review**
  - departments reviewed separately
  - performance measure trends are "explained"
  - in-depth interviews encourage critical assessment of department's "position" within agency
  - important personnel concerns often emerge
  - valuable feedback provided to top management
- **Follow-up "Action Plan" most important product**

# State of California Program

- **Required of every operator every three years**
- **Usually contracted out to consultants**
- **Audit objectives**
  - **compliance with state requirements**
  - **determine actual performance vs objectives**
  - **review action taken since last audit findings**
  - **provide expert consultation on key issues**
- **Five focus areas**
  - **overall system performance**
  - **transportation operations**
  - **maintenance**
  - **planning and marketing**
  - **administration**

MIT OpenCourseWare  
<http://ocw.mit.edu>

1.258J / 11.541J / ESD.226J Public Transportation Systems  
Spring 2010

For information about citing these materials or our Terms of Use, visit: <http://ocw.mit.edu/terms>.