Using Performance Data and Efficiency Tools to Drive Program Improvement

Alan Probst
Local Government Specialist
Local Government Center
UW-Extension
Common Approaches

- Performance Measurement & Performance-Based Budgeting
- Lean Six Sigma
- Lean Government
- Value Stream Mapping
- Total Quality Management
The Idea!

- Quality and efficiency initiatives saved, first, the Japanese auto industry, then, the US auto industry.

- Deming, Crosby, Juran, Ishikawa

- Apply the same business/industry techniques to government
Performance Measurement

Performance measurement is a system of data collection used to assess the performance or quality of government services with a particular emphasis on the costs of providing those services.

Can be used in both problem-solving and strategic planning with equal effectiveness.
Based on the assumption that presenting performance information alongside budget amounts will improve budget decision-making by focusing funding choices on program results.

Performance Budgeting is essentially using a Program Budget methodology with decisions based on performance measurement data.
Lean Six Sigma

**Six Sigma** seeks to improve the quality of process outputs by identifying and removing the causes of defects (errors) and minimizing variability in manufacturing and business processes. It uses a set of quality management methods, including statistical methods, and creates a special infrastructure of people within the organization who are experts in these methods.
Lean Six Sigma

- **Six Sigma** is designed specifically for manufacturing
- Sets a goal of 3.4 defects or less per million parts produced
- Relies heavily upon Statistical Process Control
- “**Lean**” was added recently to make it sound more appealing
- Must be heavily modified to make it work for government
Six Sigma

Features that set Six Sigma apart from previous quality improvement initiatives include:

- A clear focus on achieving measurable and quantifiable financial returns from any Six Sigma project.

- An increased emphasis on strong and passionate management leadership and support.

- A special infrastructure of "Champions," "Master Black Belts," "Black Belts," etc. to lead and implement the Six Sigma approach.

- A clear commitment to making decisions on the basis of verifiable data, rather than assumptions and guesswork.
Six Sigma

Because the very basis of achieving a Six Sigma level of quality is repeatability, it is extremely difficult to apply to government; government services cannot be provided in a manner that never changes from one instance to another.
Lean Government

The Lean philosophy is fundamentally about creating value for the customer/client while using the fewest resources possible. It’s about getting the right service in the right amount to the right person at the right time, while minimizing waste and being flexible and open to change and improvement.
Lean Government

There are several key principles that are at the core of Lean philosophy:

- Know your customer/client – who they are and what they want and when.
- The customer defines value.
- Keep the process simple (and eliminate waste).
- Do “it” right the first time.
- Involve and empower employees.
- Continually improve in pursuit of perfection.
Key Lean Characteristics:

- **Pull service delivery**: Services are “pulled” by the consumer, not pushed from the service delivery end.

- **First-time quality**: Striving for excellence/perfection, for zero defects/redoing work. Identifying & solving problems at their source; achieving higher quality and performance at the same time; teamwork & worker empowerment.

- **Waste minimization**: Minimizing/eliminating activities that do not add value; maximizing use of resources (capital, people, and space), efficient use of just-in-time inventory.

- **Continuous improvement**: Continually improving quality, increasing productivity/performance, reducing costs (resources), and sharing information.

- **Flexibility**: Being open to change; providing different mixes and/or greater diversity of services quickly, without sacrificing efficiency.

- **Long-Term Relationships**: Building and maintaining effective long-term relationships with providers/contractors through collaborative risk-sharing, cost-sharing, and information-sharing arrangements.
Value Stream Mapping

- Manufacturing technique used to analyze the flow of materials and information required to bring a product or service to a customer

- Originated with Toyota
Value Stream Mapping

Value Stream Mapping (VSM) is a visual mapping tool that outlines all the steps in a process and helps to identify ineffective procedures and waste, as well as to develop implementation action plans for making continuous improvements.
Value Stream Mapping

Steps:

1. Identify the target product, process, or service

2. Draw a current situation value map which shows the current steps, delays, and information flows

3. Assess or evaluate the current state stream map for waste and bottlenecks

4. Draw an improved future state value stream map

5. Work toward the improved future condition
Value Stream Mapping

Lean Map of existing Process

Value Stream Mapping

- While the approach can be applied to government services, it requires a different perspective
- Approach might be more focused on speeding up services and eliminating roadblocks
- Example: Time and steps required to issue a building permit
Total Quality Management (TQM)

TQM is a set of management practices and principles employed throughout the organization, intended to ensure the organization consistently meets or exceeds customer requirements. TQM emphasizes process measurement and controls as a means of continuous improvement.
Total Quality Management (TQM)

- Originated with W. Edward Deming and the Japanese auto industry
- Largely credited with resurrecting the Japanese auto industry
- Closely tied to Statistical Process Control
- Concept expanded by Philip Crosby
TQM Principles

- Customer Focus
- Continuous Improvement
- Process
- Involvement of All Personnel
Total Quality Management is essentially a conceptual methodology whereas an organization constantly looks at every aspect of what it does and questions if the process can be improved, if there is a better way to do it, or if there is something we can do to improve the process even the most routine and mundane functions.
Performance Measurement

- Is based on program goals and objectives that tie to a statement of program mission or purpose
- Measures program outcomes
- Provides for resource allocation comparisons over time
- Measure efficiency and effectiveness for continuous improvement
Performance Measurement

- Performance standards are the expected levels of performance associated with a performance indicator for a particular period and funding level. They link dollars and results.

- Performance standards are one way to demonstrate RETURN ON INVESTMENT—which we can expect to receive for our money (easier to explain to stakeholders).
Performance Measurement

Track and compile performance data over time to help make management decisions. Excel spread sheets work fine for data collection.

The following matrix shows how the data can be displayed to facilitate decision-making.
Performance Budgeting

Based on the assumption that presenting performance information alongside budget amounts will improve budget decision-making by focusing funding choices on program results.
Performance Budgeting is essentially using a Program Budget methodology with decisions based on performance measurement data.
Performance Budgeting

- Performance based budgeting cannot begin until a system of performance measurement has been instituted.
- A functional performance based budgeting system cannot be expected to produce the long-term desired results in the first year of its inception.
- Must build a Performance Based Management System.
Management Tool

Performance budgets focus on missions, goals, and objectives to explain why money is being spent and provide a way to allocate resources to achieve specific results.

Performance budgeting is intended to be a management tool for program improvement, not a “carrot and stick” methodology used to “punish” departments for not meeting goals.
Why is this Important?

- Most Federal grants now require outcome evaluations (performance measurement) in their applications

- Bond sales require indicators of financial condition which is well presented by performance data

- Local government revenues are becoming insufficient making effective use of resources imperative

- Promotes the logical tie between planning and budgeting
Why is this Important?

- Both the Government Accounting Standards Board (GASB) and the Government Finance Officers Association (GFOA) are promoting performance measurement indicating it may soon become a requirement.

- Provides a way to quantify to the citizens how well their local government is doing compared to previous years and other similar communities; i.e. “how much bang they’re getting for their buck”
Performance Measurement should:

- Be based on program goals and objectives that tie to a statement of program mission or purpose
- Measure program outcomes
- Provide for resource allocation comparisons over time
- Measure efficiency and effectiveness for continuous improvement
- Be verifiable, understandable, and timely
Performance Indicators

- Input
- Output
- Efficiency
- Service Quality
- Outcome
- Explanatory Data
Performance Indicators should:

- Be quantifiable and measurable
- Be relevant, understandable, timely, consistent, comparable, and reliable
- Constitute a family of measures
  - input
  - output
  - efficiency
  - service quality
  - outcome
Types of Performance Indicators

- **Input Indicators**
  - resources used to produce an output
  - examples
    - costs (direct costs plus fringe benefits)
    - labor hours
Types of Performance Indicators

- **Output Indicators**
  
  - quantity of units produced
  
  - typically under managerial control
  
  - examples
    
    - Miles of pipe visually inspected
    
    - Clients served
Types of Performance Indicators

- Efficiency Indicators

- ratio of inputs used per unit of output (or outputs per input)

- examples
  - Cost per unit: cost per ton of refuse collected, cost per prisoner boarded, cost per transaction, etc.
  - Productivity: hours per consumer complaint, plans reviewed per reviewer, etc.
Efficiency vs. Effectiveness

Efficiency is related to cost effectiveness, i.e. lowest costs for a given output level.

Effectiveness is related to if the service level meets the demands of the citizens.
Types of Performance Indicators

- **Service Quality Indicators**
  - how satisfied customers are
  - how accurately a service is provided
  - how timely a service is provided
    - Percentage of respondents satisfied with service
    - Frequency of repeat repairs
    - Average wait time
Types of Performance Indicators

- **Outcome Indicators**
  
  - are qualitative consequences associated with a program/service
  
  - focus on the ultimate “why” of providing the service
  
  - examples include:
    
    - Reduction in fire deaths/injuries
    - Increase in job trainees who hold a job for more than six months
    - Decrease in low birth-weight babies
<table>
<thead>
<tr>
<th>Service Area</th>
<th>Objective</th>
<th>Input</th>
<th>Output</th>
<th>Efficiency</th>
<th>Service Quality</th>
<th>Outcome</th>
</tr>
</thead>
<tbody>
<tr>
<td>Street Reconstruction</td>
<td>5%</td>
<td>$1,374,500</td>
<td>4</td>
<td>4.7%</td>
<td>75%</td>
<td>7%</td>
</tr>
<tr>
<td>Capital Facilities</td>
<td>Maintain contract cost growth to no more than 5 percent</td>
<td>Budget/actual costs Staff</td>
<td>Projects completed</td>
<td>Engineering design costs as a percent of total project cost</td>
<td>Percent of projects completed on time</td>
<td>Contract cost growth (%)</td>
</tr>
</tbody>
</table>
Benchmarking

“Formal benchmarking is the continuous, systematic process of measuring and assessing products, services and practices of recognized leaders in the field to determine the extent to which they might be adapted to achieve superior performance.”

Benchmarking & Best Practices, Treasury Board of Canada
Another Definition

“Benchmarking is the practice of being humble enough to admit that someone else is better at something and wise enough to try and learn how to match and even surpass them at it.”
Types of Benchmarking

- **Internal** – commonly one year compared to a previous year’s performance
- **External** – your performance compared to another similar organization
- **Operational** – your recent annual or periodic performance
- **Strategic** – long term performance
Benchmarks

- Internal Benchmarks
  - Overall spending
  - Growth in tax base
  - Growth in income
  - New home starts
  - Miles within service area

- External Benchmarks
  - Private sector wages
  - Neighboring cities
  - Similar sized counties
  - Statewide groupings
  - Statewide averages
Performance Budgeting

Performance budgeting relies on:

1. Strategic planning
2. Operational planning
3. Performance accountability
4. A realistic performance measurement system

to build budgets.
Performance Budgeting

Performance budgets focus on “return on investment”—that is, what do we get for our investment of resources?

- Basic service level (or continuation of basic services)?
- Increased services (more services to same recipients or expansion of same services to more recipients)?
- Better (higher quality) services?
- More efficient services (cost savings in service delivery)?
- Mitigation or resolution of a problem?
A rudimentary form of Performance Budgeting can be implemented until a formal system can be produced by including the following in each department’s budget request:

- An explanation of the department’s overall goals
- An explanation of what the department has accomplished in the past year
- An explanation of what the department intends to accomplish in the coming year
- An explanation as to what is different from last year in the proposed budget and why
- A GASB compliant budget showing past year budget expenditures
Scenario:

The City Council of Dog Patch has complained to the City Administrator that the fire department’s response times are too slow, especially for motor vehicle accidents. The City Administrator wants you, the Fire Chief, to begin tracking your performance related to response times.
Training Example

(A) defend the department’s response performance to the council, and

(B) determine what can be done to improve response times.
Benchmarks

**Internal:**
- Average response time for all city public safety services
- Response time per mile traveled

**External:**
- Response times for fire departments in other comparable municipalities
  1. Bug Tussle
  2. Night Owl
  3. Black Bog
  4. Possum Hollow
Four-Step Methodology

Step 1: Review and Evaluate Existing Department Mission and Cost Center Goals:

“To provide emergency and non-emergency services to anyone requiring assistance in our service area.”
Four-Step Methodology

Step 2: Identify a Service Area.

- Fire suppression
- Fire prevention
- Fire prevention education
- Extrication
- Confined space rescue
- Disaster response
- Other rescue as needed
- Other emergency responses not applicable to other depts.
Step 3: Service Area Objectives

“Arrival of first fire/emergency apparatus on scene within seven (7) minutes of dispatch anywhere within municipal limits.”
Four-Step Methodology

Step 4: Identify indicators that measure progress on objectives.

Time from initial dispatch to report 10-23 on station.

1. During normal workday
2. Night, after dark
3. Under adverse weather conditions
4. During unusual events
5. Other calls requiring response at same time
Four-Step Methodology

Step 4: Identify indicators that measure progress on objectives. (cont.)

- Manning level/firefighter availability at time of dispatch
- Equipment status/availability at time of dispatch
- Weather conditions at time of dispatch
## Fire Suppression

**Objective:** To ensure arrival of first fire/emergency apparatus on scene within seven (7) minutes of dispatch anywhere within municipal limits.

<table>
<thead>
<tr>
<th>Service Area</th>
<th>Objective</th>
<th>Input</th>
<th>Output</th>
<th>Efficiency</th>
<th>Service Quality</th>
<th>Outcome</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fire Suppression</td>
<td>To ensure arrival of first fire/emergency apparatus on scene within seven (7) minutes of dispatch anywhere within municipal limits</td>
<td>Actual costs for equipment, staff &amp; firefighters</td>
<td>Number incidents responded to</td>
<td>avg. cost per response</td>
<td>avg. response time</td>
<td>acceptable response time for ISO and benchmarks</td>
</tr>
</tbody>
</table>

- **Response time:** 7 minutes
- **Input:**
  - 1 engine, 1 truck, 6 firefighters, fuel
- **Output:**
  - 342
- **Efficiency:** $1,055
- **Outcome:**
  - 8 minutes, 4 seconds
  - acceptable response time considering manning and weather conditions
<table>
<thead>
<tr>
<th>Date</th>
<th>Call</th>
<th>Dispatch</th>
<th>On Station</th>
<th>Response time</th>
<th>Manning</th>
<th>Weather conditions</th>
<th>Other calls</th>
<th>Conditions</th>
</tr>
</thead>
<tbody>
<tr>
<td>5/18/2009</td>
<td>Structure fire - 1404 Elm Street</td>
<td>12:45 AM</td>
<td>12:54 AM</td>
<td>9 min</td>
<td>75%</td>
<td>Light rain</td>
<td>No</td>
<td>Construction on E. Washington</td>
</tr>
<tr>
<td>5/18/2009</td>
<td>Two car collision w/injuries at Lake &amp; Jackson St.</td>
<td>7:23 AM</td>
<td>7:34 AM</td>
<td>11 min</td>
<td>75%</td>
<td>Light rain</td>
<td>Yes - Elm St. Fire</td>
<td>heavy rush hour traffic</td>
</tr>
<tr>
<td>5/18/2009</td>
<td>Alarm box malfunction - Menard's</td>
<td>9:10 AM</td>
<td>9:15 AM</td>
<td>6 minutes</td>
<td>75%</td>
<td>cloudy</td>
<td>No</td>
<td>None</td>
</tr>
</tbody>
</table>
Supporting Data

Number of total responses during data collection period: 342
Average response time: 8 min 4 sec

Number of responses during periods of reduced manning: 184
(75% manning or lower)
Average response time: 7 min 15 sec
Supporting Data

Number of responses during or within 24 hours of 3 inch snow or ice event: 127
Average response time: 9 min 32 sec

Number of responses w/full manning and no weather event: 102
Average response time: 6 min 30 sec

Average response times for all comparable benchmark municipalities: 8 min 10 sec
Explanatory Data

Data collection period was conducted during month of December, 2008 when the municipality suffered the snowiest December in recorded history and budget deficits mandated 2/3 of shifts to be manned at 75%. Some responses experienced both snow/ice event and reduced manning.
The department did not reach the goal of 7 minutes or less for each response time but met an acceptable level of an average of 8 minutes, 4 seconds from dispatch to reporting 10-23 on station because of unprecedented manning reductions and record-breaking winter weather. Under normal conditions the department actually exceeded the set goal by nearly 8 percentage points and one half minute and still exceeds the overall average response time of external benchmarks.
Management & Policy Questions

- What is the maximum acceptable FD response time?
- Since staffing levels directly relate to response times, what staffing level is optimal for an acceptable response time?
- What coordination with or actions by the streets/public works department may be necessary to improve FD response times during snow/ice events?
- Does the data suggest re-evaluating snow removal route priorities is in order?
- Was the impact of manning reductions on response time sufficient to justify a change in manning policies?
CAUTION!

“Measuring performance without simultaneously building systems and a culture to use performance data for learning is probably futile and possibly dangerous” - Babak Armajani
# Cultural Differences

<table>
<thead>
<tr>
<th>Traditional Culture</th>
<th>Performance-Based Culture</th>
</tr>
</thead>
<tbody>
<tr>
<td>The focus is on blame and credit</td>
<td>The focus is on learning</td>
</tr>
<tr>
<td>Do your job well</td>
<td>Create great results</td>
</tr>
<tr>
<td>Measure what you do</td>
<td>Measure what citizens value</td>
</tr>
<tr>
<td>Measure activity in every unit and roll these measures up</td>
<td>Choose a few key bottom line measures of the value the organization creates. Ask subordinate units to develop measures of ways they contribute to that value</td>
</tr>
<tr>
<td>Be clear about your role and turf</td>
<td>Be clear about the results you are seeking to create</td>
</tr>
<tr>
<td>The boss is the best judge of our work</td>
<td>Those whom we serve are the best judge of our work</td>
</tr>
<tr>
<td>Impose the best way of doing things from the top down</td>
<td>Workers are empowered to experiment on ways to improve performance using measures as the yardstick of success</td>
</tr>
<tr>
<td>Measurement is used to find people to reward or punish</td>
<td>Measurement is used to help everyone learn</td>
</tr>
</tbody>
</table>
Steps Toward Culture Change

- Anticipate defensiveness
- Have employees focus on results
- Measure what those you serve value, not what you value
- Keep things flexible
- Provide continual feedback
- Empower your employees
Tips to Start

- Start your measurement architecture from the top and gradually add measures at lower levels. Do not roll up measures from the bottom up.

- Keep your measures succinct and your structure simple. Too many systems will collapse under the weight of their own complexity.

- Don't start with software and IT systems. Start with pencil and paper. Build systems over time after you discover what you want to learn from performance measures.
Use sampling to reduce measurement burden and cost. You don't have to count every case or transaction.

People's subjective opinion matters big time. Ultimately, government is judged subjectively by those whom it serves. Better to know and manage what people really think rather than hide behind what we know to be true or valid. This can be measured through simple 1,2,3 question surveys.
Make sure those who do the work are the first to get the data. Performance reports are not for the boss. A good thing for the boss to do is to lead the team in regular review of performance data.
References

“Performance Based Budgeting – Putting The Pieces Together.” Carolyn S. Lane, Deputy Director, Office of Planning and Budget, Division of Administration, State of Louisiana, September 2006


“Fairfax County's Performance Measurement System” Performance Measurement Team, Dept. of Management & Budget, Fairfax County, Virginia, June 2006

“Performance Management Handbook” Eau Claire County, WI, January 2007

“Moving From Line Item to Performance Based Budgeting: Craig Maher, UW Oshkosh


“Working Smart for Environmental Protection – Improving State Agency Processes with Lean and Six Sigma” US EPA, September 2006


“Bend the Curve,” State of Maine, Department of Health and Human Services

“Adapting Total Quality Management (TQM) to Government” James E. Swiss, Public Administration Review, July-August 1992