

Meaningful Metrics for Your Organization

Jane Martel

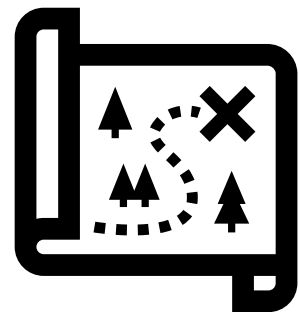
Recorded Session to Follow March 2, 2021 Live Session

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We have explored...

Purpose, examples, categories, sources, hierarchies, attributes of good metrics, what could go wrong, hitting your mark, and resources

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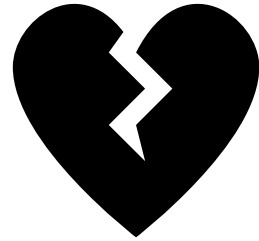


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We love metrics
but they can
break our hearts

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Today we'll
explore the dark
side of metrics

The havoc they can wreak; who to tell what
about your metrics; the care and feeding of
metrics to keep them alive; when it's time
to dump them; and how to minimize
unintended consequences

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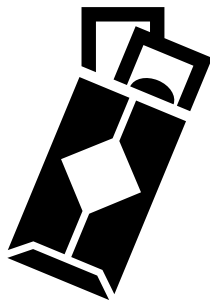




The Psychology of Metrics

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Isn't behavior what we're trying to influence?

And how do metrics factor in?

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Data that is loved tends to survive.

—Kurt Bollacker, computer scientist

*If we have data, let's look at data; if all we have are opinions,
let's go with mine!*

—Jim Barksdale, former CEO of Netscape

Data Quality: Dimensions, Measurement, Strategy, Management, and Governance, Dr. Rupa Mahanti, ASQ Quality Press, Milwaukee, WI, 2018, p xxiv

Do we want to know the truth?
Do we want to be held accountable to metrics?

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Kindergarten
learning



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Yikes!

- A. Too many metrics → **Overwhelmed**
- B. Employees not empowered to take action on them → **Frustrated**
- C. Because metrics convey what is important, if they are focused on the wrong things → Employees' efforts not aligned to strategy; **wasted efforts**
- D. Too much attention on one metric → **Other work areas suffer** from lack of attention
- E. Incorrect interpretation of metrics → **Confusion**; believing untruths or taking wrong actions
- F. Relationship to pay → **Hiding or manipulating data**

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Trust is required

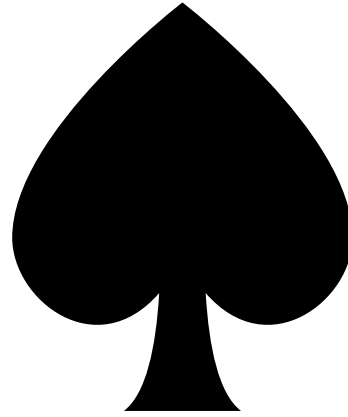
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Consider the card game of Spades

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A bit about scoring and the self

- If a player takes the *exact* number of tricks they bid, they win 10 points/trick.
- If a player takes *more* tricks than they bid, they get 10 points/trick they took but only 1 additional point for each trick beyond their bid.
- If a player takes *fewer* tricks than they bid, they lose 10 times the number of tricks they bid. A huge penalty for not making your bid!

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What about – in “real life” – when unrealistically high targets are handed down from above and there are high stakes if not met?



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Let's take a trip back in time. What happened?



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The letter of the law,
not the spirit. Achieving
target by gaming the
numbers.



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Takeaways



Consider the impact of your expectations/targets on others



Involve the “doers” in the conversation of setting targets



Work on building trust with others



Empower employees to engage and continuously improve; train them in the tools

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Displaying metrics

A simple dashboard
Reporting frequencies

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Does anyone
care about a
game with no
score ...
including the
players?

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The aim of metrics displays



- Permit quick understanding of performance
- Tell interested parties what they don't know
- Raise alerts when there's a problem

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Where to display metrics

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- At process control points to support appropriate action
- At decision-making points for longer-term action planning
- Where stakeholders can see them to determine if their interests are well-served

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What is measured?	Frequency
Strategic outcomes	Monthly or quarterly
Operational outcomes	Weekly or monthly
Process outcomes	Daily or weekly
Process controls	Hourly or daily

How often to report and analyze metrics?

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A Sample Dashboard

Metric	January	February	March	Year to Date
Items checked out	62,409	65,009	66,211	193,629
% items overdue	12%	10.2%	10.1%	10.8%
Program cost/attendee	\$34.02	\$35.00	\$56.87	\$40.06

LEGEND

Green: meeting or exceeding target

Yellow: danger zone

Red: way below target

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What would make this dashboard better?

Metric	January	February	March	Year to Date
Items checked out	62,409	65,009	66,211	193,629
% items overdue	12%	10.2%	10.1%	10.8%
Program cost/attendee	\$34.02	\$35.00	\$56.87	\$40.06

Ability to drill down for details: how many items that are overdue; how many programs did we offer and how many attendees did we have? What was the range of cost/attendee for all programs?

Identifying the target for each metric

Define what constitutes yellow and red (e.g., 1-3% below target is yellow; >\$x is red)

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Takeaways

- Make displays simple to interpret, to quickly answer, "How are we doing?"
- Put them in the right place
- Share different data with different audiences

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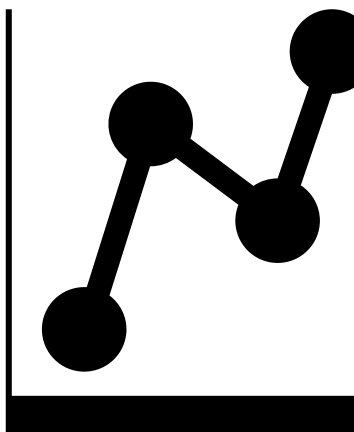
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What to look for when analyzing your metrics

Trends, outliers, correlation, variation

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Trends: Patterns in the data (especially unexplained)

Outliers: Data point way outside the rest of the data (look into this)

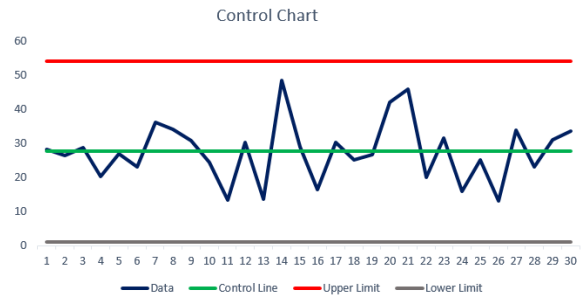
Correlation: How one metric changes when another does (relationship)

Understanding Variation

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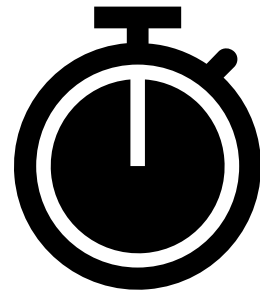
Control Charts in Excel



If every week, you tracked how long it takes you to do your grocery shopping and plotted it, you would find normal variation in the times you track and maybe some “not normal” variation in those times.

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About Variation

- There are different control charts for variable and attribute data; for data that contains subgroups and not; for subgroups of less than 9 or 9 and more; for number of defects or for percent defective; for sample areas that are constant or not.
- There are different statistical “tests” applied to different control charts.
- This is all to say, there is a lot to it.

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Examples of Statistical Tests

- If 9 consecutive points are on the same side of the mean
- If 6 consecutive points increase (or decrease)
- If a point is beyond a control limit

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The point is
to avoid...

Assigning meaning where there is none; that is, to act on “noise” (normal variation) as if it were a “signal”

Ignoring non-normal statistical variation; that is, you should investigate what is not normal variation

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My Purpose

Is not to equip you to use control charts or to understand Statistical Process Control (SPC) but to raise your level of awareness and pique your interest

To learn more, visit asq.org. Check it out; it's fun! 😊

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Takeaways

When examining your data, look for trends, outliers, correlations and variation

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Minimizing unintended consequences

Mistake-proofing

Detailing

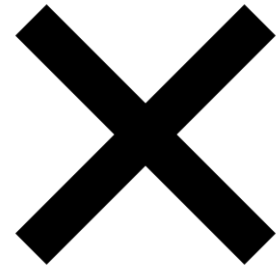
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Mistake-proofing

Aim to prevent and detect errors

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Mistake-proofing principles

Principle	Purpose	Example
Elimination	Eliminate possibility of error	Cannot start car if not in Park
Replacement	Substitute more reliable process	RFID and sorters instead of manual check-in and routing
Facilitation	Make work easier to perform	Color-coding (e.g., red for alerts and warnings)
Detection	Detect error before further processing	Computer beeps when wrong input is made
Mitigation	Minimize effect of error	Hand sanitizer at workstations

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Excellent
mistake-
proofing
resource →

<https://leanmethods.com/wp-content/uploads/2017/12/mistake-proofing-techniques.pdf>

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It looks like
this →

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MISTAKE PROOFING TECHNIQUES



MISTAKE

01 LAYOUT & ARRANGEMENT

Layout refers to the relative position of an item, and arrangement refers to putting an item in a designated place. A good example of a mistake-proofing device for layout and arrangement comes from a delivery company. The company was having trouble with employees attaching labels at a specified distance from two sides of a container. The company introduced a simple template employees can place over the corner of the box, leaving a window where the label is to be attached. Also, the company sequences the arrangement of deliveries so that the last deliveries are loaded first.



MISTAKE

02 PARCEL OUT

There are many simple dispensers that ensure only the correct amount is provided. A personal favorite is the french fry scooper, a funnel-shaped aluminum scoop. Fast-food restaurant employees can make two mistakes when filling a bag of fries: if they provide too little, the customer is unhappy, but if they provide too much, the company loses money. With the french-fry scooper, the employee first inserts the narrow end into the fry bag, and then digs into a pile of fries with the wide end of the scoop. Once the scoop is full of fries, the employee lifts it back and funnels the fries into the bag. Varying the width and length of the end adjusts the amount of fries gathered. This tool ensures the bags of fries are slightly overflowing without being too generous.



MISTAKE

03 POSITIVE STOP

For safety reasons, you can't type in the GPS if the car is in movement. Another excellent example of a positive stop is on machinery that requires operators to perform a safety task before starting the machinery. For example, on the machine used to balance tires, a safety hood covers the tire while it spins at high speeds to determine the correct balance. To activate the power to the machine, the operator must first close the hood. Other examples include dishwashers, washers, dryers and microwaves that stop when their door is opened to prevent operator injury or damage to the equipment.



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Metrics maintenance

See detailing handout



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Detailing Metrics Template

Metric	
Owner	
Stakeholders	
Operational definition	
Type of Measure (input, output, outcome, customer satisfaction)	
Purpose of collecting	
Formula	
Normalization (adjustments to permit equal comparisons of data over time)	
Precision	
Baseline	
Target	
Benchmarks	
Data source	
Frequency of data collection	
Data security	
Responsibilities and frequencies for analyzing and reporting	
Quality check (verified and validated by)	
Next date for review	
Overview of plan to achieve target metric	

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Example:

Metric	Hours of Wi-Fi Use
Owner	John Doe, IT manager
Stakeholders	Directors, board of trustees
Operational definition	Hours of Wi-Fi used by patrons in libraries and in parking lots; hours used by staff not included
Type of Measure (input, output, outcome, customer satisfaction)	Output
Purpose of collecting	Determine demand for outside use of Wi-Fi and if additional resources are needed
Formula	$[(\text{minutes of Wi-Fi use in libraries} + \text{minutes of Wi-Fi use in parking lots}) - \text{minutes of Wi-Fi use from IPs beginning with (insert number)}] / 60 = x.xx \text{ hours}$
Normalization (adjustments to permit equal comparisons of data over time)	Source provides data in minutes per month; convert minutes into hours by dividing total by 60 (60 minutes per hour)
Precision	x.xx (two decimal places)
Baseline	6,401.39 hours in August 2020
Target	9,000 hours/month
Benchmarks	Comparable organization A: 8,243.26 hours/month Comparable organization B: 9,567.43 hours/month
Data source	Xfinity monthly report emailed to manager of IT
Frequency of data collection	Monthly
Data security	File stored in SharePoint in folder named 'Xfinity Monthly Reports'; accessible to managers and directors only

Responsibilities and frequencies for analyzing and reporting including who to receive report, when and where provided, how (email, hard copy, Excel)	IT manager emails electronic version of report monthly to finance director, who is responsible for reviewing it and responding to IT manager with suggestions for change, if any
Quality check (verified and validated by)	Jane Smith, Data Manager
Next date for metric review	January 3, 2021
Overview of plan to achieve target metric	[work plan linked here]

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When should you change metrics?

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Consider changing when:

- A. Your strategic plan changes
- B. The link between lead and lag measures is well-established, then you can focus more on drivers
- C. There's no energy around it
- D. The market changes (e.g., pandemic)
- E. It's the regularly scheduled time for metrics review
- F. They're not providing the information you need

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Parting Tips

Manage your metrics

Build trust with your employees

Share different data at different times with different audiences

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Thank You

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