5-STAR Safety
Best Practices in Metrics: Safety Scorecard

Metrics: "what you measure, happens". For over 50 years now, Deming and others have extolled the value of upstream metrics and process metrics as a means of driving bottom line results. "If you measure the process, results will come" is a famous Deming quote. Therefore, leading companies recognize that a balance of leading and lagging metrics, sometimes knows as a "Balanced Scorecard[1]", where **Financial**, **Process**, **Growth and Learning** and **Customer** metrics are combined to better measure both the progress of a company or program, as well as the status. In addition, Dan Peterson, considered by many to be the guru of safety management, published[2] a list of 6 essential and suggested metrics, which are included below.

Key **Financial** Metrics:

- Worker's Compensation: While not consistent from state to state, country to country, it is one measure to keep track.
- Project Budget: this is a leading metric that will influence all of the other metrics. If at the beginning of the year there is a budget for safety improvements, each month will record 1) what is being spent and 2) if the entire budget lasts throughout the year. Obviously, if the budget gets cut part way through the year, there should be an expectation that this may impact (negatively) many of these remaining metrics.
- Manpower: most often used to measure the year to year level of effort for the health and safety staff, as well as employee engagement, safety committee activities, etc. Typically measured monthly.

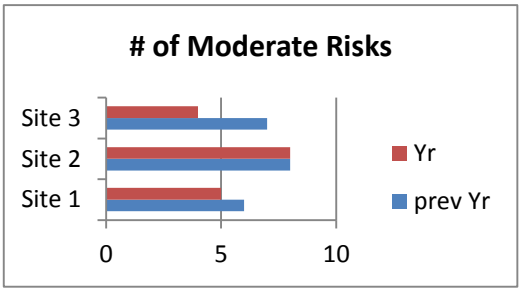
Key **Process** Metrics:

- Safety Management Systems (SMS) Assessment Scores
  Leading companies like GE, Honeywell, Standard, Aero, Eaton, etc. use the Key Element Audit (Management Systems) process as a means of measuring process. We see this with ISO 14000, OHSAS 18000, ISO 9000, etc. If the audit process is sound and substantial in its verification of process (not just documentation) it is valuable not only as a means of reporting accountability and process improvements, but as a tool to help operational organizations know where to improve next.

SMS	Site 1	Site 2	Site 3	Site 4
Score	45	65	75	86
% Closure	10	30	45	80

Score based on 100%. >80 = green. <50 = red
% Closure: >50% yellow, 100% = green

- Management systems improvement initiatives
  Assessments typically generate improvement initiatives. The timely closure of these initiatives are tracked as part of a global scorecard.
- Risk Reductions.
  Moving the metrics from an accident based to a risk based approach is also more in line with what the current trend is towards "World Class". Risk reductions are measured by a number of different means. Depending on the data available, some just measure the number of residual risks, and the trends, based on initiation of safety improvements. Others measure the upstream data, i.e., the number of corrective actions implemented that had elimination, substitution or engineering controls. Another retrospective metric is the reduction in people "required" to wear PPE.



[1] Kaplan and Norton, Harvard, 1995
[2] Occupational Hazards Magazine, March 2001

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Learning and Growth

- Training completion and retention
  Training completion by itself is a lagging metric. It does not factor in quality of the instructor or learning that occurred. Often, as part of an inspection or observation program, knowledge based quizzes are incorporated to generate a "retention" metric.
- Conformance Rate to significant controls (based on inspection and observation data)
  Significant risks are identified as are their controls. The conformance of these specific controls are calculated as a "Conformance Rate" as a result of site inspection and observation programs. Typically targets of 95 – 100 % are expected.
- (Compliance): this is an optional leading metric typically generated from some type of facility audit, typically performed by the site itself with 3rd party audit verification. Most often, compliance will be "verified" for significant high risk exposures.

Customer

- TIR: Total Incidence Rate: This is a lagging metric of injury "frequency".
- DART: Days away and restricted case rate: This is a lagging metric of "severity".
  These are the two significant metrics of OSHA's VPP (Voluntary Protection Program), along with the SMS audit and closure rate of SMS action plans.
  Employee Engagement: This can be measured a number of ways, often times by quality and quantity of suggestions, participation on safety analysis events, etc.

While many of these metrics take time to develop (generate and verify data) an audit program is the typical starting point, as then there is a mechanism in place to begin to verify some of the other metrics. The audit also tends to be done by an independent 3rd party, at least as part of the audit team, leading some objectivity the generation of metrics. The audit also generates some of the other metrics (Closure rate of Management systems improvement initiatives).

Site / Organizational Level

At the site or organizational level, typically and additional level of detail is need to better monitor, review and react to the various safety programs and initiatives. Specifically, the amount of change and closure are the key data points, along with some measure of quality. In terms of risk assessment, this is one of the programs which yields a full breadth of metrics. Initially the number of assessments can be a target, but to be worth the investment of time, changes needs to be identified. Otherwise it was just a paper exercise. These changes need to be closed and stay closed, so some organizations add a 30 day ticker to the closure as an additional metric.

Finally effectiveness is based on the type of control that gets implemented. More effective controls include substitution, elimination or engineering controls, rather than just training or personal protective equipment. Whether the target is a number or a percentage, defined or just compared to the previous reporting period, comparison against a target is essential.

ESH Monthly Report Topics	# of Events		# of Changes Identified/Needed		Closure Rate (From Date Closed)		Effectiveness (Control Type or conformance)	
	Actual	Target	Actual	Target	Actual	Target	Actual	Target
Current Program Risk Assessment Changes to Controls	0	20	0	5	5%	30%	23%	20%
Monthly Safety Review - Incidents	0	10	10	5	5%	10%	10%	30%
Monthly Inspections/Discrepancies high risk control conformance	20	10	5	20			93%	95%
Monthly Observations (Optional) conformance or % safe operations	50	10	20	0			93%	95%
Communication by Supervisors (ESH ToolBox)	10	20	5	10	5%	30%		
ESH Action Plan Status			5	20	5%	0%		
EHS Rewards and Recognition	50	30						

Building up to this level of scorecard may take time. Thus, the circled metrics are the typically starting points. In reality, the starting points may actually be the data you have, rather than what you want, until such time as the data you want is available for collection.

By no means is this the universe of potential data. Additional data can include:

- Training completion
- Training retention
- Suggestions
- Perception or Satisfaction Surveys, etc.

Leading organizations understand that there is no ONE metric for either the entire program or the individual component parts. A balance, or complimentary set of leading and lagging, or better, input and output metrics are used in addition to the standard lagging metrics like workers compensation and incidence rates to better drive continuous improvement.

Lastly, these metrics are then used as the measure of safety performance; line management is held accountable to these metrics as part of the performance appraisal process. At the worker level, these metrics become the basis for recognition programs.

Respectfully Submitted By:

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