

The Role of Leading & Lagging Indicators in EVALUATING OSH PROFESSIONALS' PERFORMANCE

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CONSIDERING THE MULTITASKING, boundary-spanning and cross-functional nature of the safety profession, OSH professionals' roles are often complicated and blurred, and can leave one wondering, on what basis is individual performance measured? One could immediately jump to the perhaps unfair conclusion that if incident rates (lagging indicators) climb, the overall perception of the safety professional's performance dips. However, with the growing popularity of using leading indicators to measure organizational performance, some safety professionals are using them as personal markers of success when discussing their individual performance with their managers. Although many organizations are using a balanced scorecard approach to assessing safety performance (e.g., using both leading and lagging indicators), it is not certain that individual safety professional performance is being similarly measured. A broader question

to answer may be, what do safety professionals currently believe they are being assessed on in this potentially changing evaluation environment?

Thus, the aim of this study is to examine trends in safety professionals' perceptions on how their workplace performance is measured. There is little or no literature on the topic of performance measures currently used to evaluate the individual safety professional. It is important to consider whether safety professionals repeatedly list certain traits, skills or other assets as impacting their individual performance assessment.

This study is limited in that the researchers asked ASSP member safety professionals to comment on what they believe,

as opposed to what they know, regarding how their performance is being assessed. It is often difficult to know with certainty on what criteria our performance/worth is being measured (especially if clear and precise performance criteria are not present in performance evaluation documents) without overtly asking our many stakeholders their opinions, which may or may not be forthright. However, we can be informed by the perception trends existing among other like safety professionals.

This study surveyed ASSP members from manufacturing, construction, and oil and gas industries, representing a subset of OSH professionals both in sector and association membership. The survey also had a limited response rate, resulting in a sample size of about 300. Thus, results of this study should be interpreted with caution. Nonetheless, based on respondents' demographics, it appears that responses reflect almost equal representation from the three targeted sectors, and it is reasonable to imagine that their responses could mirror those of safety professionals working in similar industrial environments or associated with similar safety organizations.

The research results can be used as a basis for safety professionals to promote to their stakeholders and formal evaluators additional considerations for evaluation, especially when establishing/negotiating written performance evaluation criteria based on leading indicators (if these had not been traditionally included in the mix of criteria). At the least, the results will show the perceived areas that safety professionals in general are being evaluated on so that individual safety professionals can gauge their own perceptions against the general responses and reflect on whether their perceptions are in line. If not in line, perhaps this will act as food for thought for the individual safety professional to ponder, "Why is my situation or perceptions different?" and "Should I be proactive in educating or helping my stakeholders understand the range of evaluation options that could or should be considered in evaluating me?"

Leading & Lagging Indicators

Leading and lagging indicators are often used to assess organizational safety performance. Lagging or trailing safety indicators are

KEY TAKEAWAYS

- OSH professionals perceive their performance is measured by five overarching categories: job expectations, lagging indicators, soft skills, leading indicators and values.
- The perception of how safety professionals' performance is measured is consistent across industry sectors.
- Evidence suggests that OSH professionals' performance is primarily measured on job expectations, not lagging indicators.
- Lagging indicators, soft skills and leading indicators are equally perceived as the second most important factor in which safety professionals' performance is measured.



after-the-fact indicators, measuring events or consequences that have already happened. These events or consequences are often associated with unwanted events, such as injuries, illnesses, workers' compensation costs, hospital visits, notices of violation, regulatory fines and litigation costs. These types of indicators are also reactive, since these indicators measure performance over past periods and are essentially reacting to previous conditions and circumstances. Organizational responses often occur in reaction to these measurements. Similarly, these indicators are also termed incident-based indicators, since organizations tend to react to the occurrence of these specific unwanted incidents, such as fatalities or lost workday cases.

Many OSHA-based measures are trailing indicators. OSHA-based measures still appear among the most common types of safety and health performance metrics being collected and used by organizations. In particular, the OSHA total recordable case rate (TRC rate) is the most prevalent OSHA-based measure (Coffey, 2009). Another OSHA-based trailing indicator commonly used is the days away, restricted or transfer (DART) case rate, which describes the number of recordable injuries and illnesses per 200,000 hours worked (i.e., 100 full-time employees) that results in days away from work, restricted work activity or job transfer that a company has experienced in a given period.

In recent years, organizations have been increasingly using proactive leading indicators to measure organizational safety performance. The intent of leading indicators is to actively drive safety and health performance, not to simply react to it. Leading indicators typically measure actions, behaviors and processes (things that people and safety professionals actually do to eliminate, reduce or counteract risk) that will make injuries and illnesses less likely to occur in the future (Blair & O'Toole, 2010). Success in implementing these activities, initiatives and programs should theoretically improve and drive safety performance (Wachter & Bird, 2011).

A key question this study addresses is whether the use of organizational leading safety indicators to assess performance is influencing or being adapted for use at the individual safety professional evaluation level.

Using Trailing Indicators to Measure Organizational Safety Performance

Organizations that use trailing indicators to measure organizational safety performance are essentially measuring the consequences of not having effective safety and health programs in place (Coffey, 2009). In addition, trailing indicators provide little or no information on the effectiveness of proactive and preventive activities being implemented now, since trailing indicators may be insensitive or take time to reflect the impact of current activities. Thus, trailing indicators have little predictive power

in terms of showing where organizations' safety and health performance may be headed. Moreover, when organizations review trailing indicators infrequently (e.g., annually), opportunities for nearer term corrective and preventive actions and interventions may be unnecessarily delayed (Wachter & Bird, 2011).

The problem with these trailing indicators is that they do not necessarily act as forcing functions for implementing appropriate preventive actions that could improve OSH performance in the future. In addition, individual workers may not be as empowered to take control of their safety and health responsibilities and to contribute to improving the organization's safety and health culture if trailing indicators are exclusively used to assess OSH performance at the corporate level. This is because these measures tend to be high-level organizational measures that are beyond the control of employees and safety professionals to achieve individually (Wachter, 2012).

There is also a problem of rewarding or recognizing organizational, group and individual (e.g., safety professional) performance based on trailing indicator results. Fear and pressure could be placed on employees and safety professionals to not report injuries, near-hits or other incidents so as to keep their records intact and receive rewards and recognition or avoid punishment. Failure to report incidents and near-hits defeats the purpose of implementing performance indicator programs, the goal of which is to generate as much information as possible on trends so that steps can be taken to control future problems through preventive actions. In short, if incident feedback is not forthcoming from workers or safety professionals due to the underreporting or inaccurate reporting of trailing indicator information, managers have little information on what is wrong to base future safety and health directives and initiatives (Wachter, 2012).

Using Trailing Indicators to Measure Safety Professionals' Performance

If trailing indicators are commonly used for measuring organizational safety performance, they are also being used for measuring safety professionals' individual performance. This reality poses some issues.

First, OSH professionals rarely control organizational and worker performance. Thus, they should not be held responsible for lagging indicator performance, especially if unsafe acts of employees are implicated. In addition, the need for OSH professionals to continually justify their profession, their worth and value, their programs and their expenditures in some organizations can lead to less-than-ethical approaches and behavior (Wachter, 2011) when managing these lagging performance indicators.

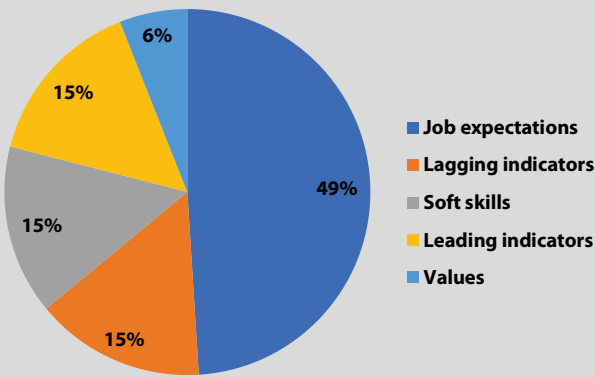
TABLE 1
DESCRIPTIVE STATISTICS
FOR RESPONSES

Descriptive statistics for responses to the statement: "List the top five ways your direct manager judges or measures your performance. List the ones on which you feel most emphasis is placed."

Category	Frequency (N)	Percent (%)
Job expectations	475	48
Lagging indicators	149	15
Soft skills	147	15
Leading indicators	146	15
Values	57	6
Total	974	100

FIGURE 1
PERCENTAGE OF RESPONSES IN
EACH OF THE FIVE CATEGORIES

Percentage of responses in five overarching categories on which safety professionals perceive their performance is being measured.



In the OSH profession, recordkeeping of lagging indicators is a major area that colleagues identify as particularly susceptible to unethical behavior, since organizations often use incident statistics (recordkeeping) to judge safety professionals' performance. For some OSH professionals, their organizational and professional worth is determined by their organization's or department's low incident rates and the achievement of the common organizational desire to have ever-increasingly lower rates over time to reach the mythical goal of zero incidents. There is pressure also to make safety professionals' organizations, managers and themselves look good through the unethical analysis and reporting of incident data, especially since many managers do not want to look bad to upper management due to poor safety statistics. Further, organizations also tend to tie management or employee bonuses and celebrations to performance of lagging safety measures.

As a result, OSH professionals may have ethical lapses and fail to record or properly classify incident events to show lower-than-actual incident rates, thereby increasing their perceived organizational worth as well as making their managers more content. In a book on ethics for the OSH profession, approximately 30% of the presented case studies deal with the ethical pressures placed on OSH professionals due to their performance/worth being judged using lagging indicators, leading to possible ethical lapses in recording or classifying incident events (Wachter, 2014).

Study Purpose & Design

The major purpose of this study is to determine what measures or factors safety professionals believe are used to assess their performance in organizations. In particular, the researchers

TABLE 2
DESCRIPTIVE STATISTICS BY INDUSTRY

Category	Frequency (N)	Percent (%)
Construction		
Job expectations	199	47
Lagging indicators	65	15
Soft skills	58	14
Leading indicators	74	17
Values	28	7
Total	424	100
Manufacturing		
Job expectations	116	49
Lagging indicators	40	17
Soft skills	34	14
Leading indicators	34	15
Values	11	5
Total	235	100
Oil, gas and power generation		
Job expectations	160	51
Lagging indicators	44	14
Soft skills	55	17
Leading indicators	38	12
Values	18	6
Total	315	100

seek to understand the relative importance of lagging versus leading indicators in these performance assessments.

More specifically, the intent of this study is to identify specific categories and subcategories of primary performance measures on which practicing safety professionals perceive they are assessed. Secondly, the information collected is to be the basis for eventually developing a valid survey tool that requires participants to rank the perceived importance of each performance category.

ASSP members across the construction, manufacturing, and oil and gas industries completed a Qualtrics survey to help determine answers to several questions:

- Is safety professionals' performance (still) primarily judged on lagging indicators?
- Is safety professionals' performance primarily judged on leading indicators and, if so, what type?
- Is safety professionals' performance primarily judged on something other than leading or lagging indicators?

Other variables requested of participants included industry type, gender and who they report to in the organization.

In this qualitative survey consisting of answering an open-ended statement, participants were specifically asked to write their responses to the following:

List the top five ways your direct manager judges or measures your performance. List the ones on which you feel most emphasis is placed.

The goal is to collect information on what OSH professionals perceive are their personal performance measurement factors and present it in a descriptive format that highlights most common frequencies in each measurement category. Also, analysis of these data helps inform both current and future OSH professionals, designers of college curricula and those who manage safety professionals as to how safety professionals are currently being measured, whether rightly or wrongly.

Approximately 302 safety professionals from construction, manufacturing, and oil and gas industries participated in the survey. Those included in the survey included full-time safety professionals not employed as consultants or trainers. Due to the voluntary nature of the survey, it is assumed that those who randomly responded to the survey were representative of professionals in their sector. Participants generated 1,292 entries on how their performance was being measured and 974 responses were deemed usable.

The responses to the open-ended statement were copied from Qualtrics into an Excel spreadsheet. Responses were sorted into the best, focused categories as determined by the investigators. Five overarching categories of performance measures emerged.

Results

The five overarching categories of perceived performance measurement areas among active OSH professionals are job expectations; lagging indicators; soft skills; leading indicators; and values. The descriptive statistics for each category are described in the following sections with the overall percentage explained first (Table 1, Figure 1) followed by the corresponding percentage within each industry group (Table 2).

Job Expectations

Nearly half of the participants among all industries ($N = 475$, 48%) listed performance measures that would be categorized as “job expectations.” Responses were relatively consistent across sectors, with oil and power generation ($N = 160$, 51%) listing this aspect most, followed by manufacturing ($N = 116$, 49%) and construction ($N = 199$, 47%). The prominent subcategories among all industries under “job expectations” included: 1) feedback from others, specifically internal customers and peers ($N = 91$, 19%); 2) the ability to manage staff, projects and change ($N = 42$, 9%); 3) the ability to reach goals and complete objectives ($N = 38$, 8%); 4) technical proficiency/knowledge ($N = 37$, 8%); and 5) the ability to lead (e.g., demonstration of leadership skills) ($N = 28$, 6%).

Lagging Indicators

Participants among all industries provided performance measurement responses that could be categorized as “lagging indicators” ($N = 149$, 15%). Within each industry group, manufacturing ($N = 40$, 17%) listed this aspect most, followed by construction ($N = 65$, 15%) and oil, gas and power generation ($N = 44$, 14%). Subcategories among all industries included: 1) incident rates ($N = 91$, 57%); 2) workers’ compensation costs or experience modification ratings ($N = 28$, 18%); 3) citations or compliance status ($N = 24$, 15%); and 4) lagging indicators ($N = 6$, 4%) as a descriptor itself.

Soft Skills

Participants’ responses were categorized as “soft skills” ($N = 147$, 15%) about as often as lagging indicators were cited. Responses varied slightly within each industry group with oil, gas and power generation ($N = 55$, 17%) listing this aspect higher than manufacturing ($N = 34$, 14%) and construction ($N = 58$, 14%). The prominent subcategories among all industries included: 1) the ability to interact with and work well with others ($N = 53$, 33%); 2) communication skills ($N = 52$, 32%); 3) teamwork skills ($N = 14$, 9%); 4) creativity and innovation ($N = 9$, 6%); and 5) participation ($N = 6$, 4%).

Leading Indicators

Similar in percentages to the subcategories of “lagging indicators” and “soft skills,” participants among all industries listed “leading indicators” ($N = 146$, 15%) as an aspect in which they perceive personal performance is measured. Some slight differences among industrial sectors seemed to exist. Construction listed this aspect most often ($N = 74$, 17%), followed by manufacturing ($N = 34$, 14%) and lastly oil, gas and power generation ($N = 38$, 12%). Prominent subcategories among all industries included: 1) training delivered ($N = 65$, 45%); 2) audits completed ($N = 37$, 26%); 3) safety culture implementation or progress ($N = 18$, 13%); and 4) leading indicators ($N = 4$, 5%) as a descriptor itself.

Values

A lower number of participants from all industries listed responses that would be considered “values” ($N = 57$, 6%). Within this category,

results were relatively consistent among industrial sectors, with construction listing this aspect more often ($N = 28$, 7%), followed by oil, gas and power generation ($N = 18$, 6%), and manufacturing ($N = 11$, 5%). Prominent subcategories included: 1) professionalism including timeliness (e.g., completing projects on time; being on time for meetings) being listed most often ($N = 33$, 58%); 2) attitude ($N = 5$, 9%); 3) display of corporate values ($N = 5$, 9%); 4) integrity ($N = 3$, 5%); and 5) ethics ($N = 2$, 4%).

Discussion

This study generated several interesting findings. First, the researchers found it relatively easy to distribute all of the participants’ responses related to their perceptions as to how they were being evaluated among five major categories (job expectations, lagging indicators, leading indicators, soft skills and values). Second, the percent distribution of responses among these five major categories was relatively stable across the three industrial sectors (construction, manufacturing, oil, gas and power generation) for all five categories. Overall this indicates that how safety professionals perceive they are being evaluated is not sector-specific.

By far the most common category of safety professionals’ performance evaluation responses was in the area of job expectations, which includes subcategories such as feedback from others; the ability to manage staff, projects and change; the ability to reach goals and complete objectives; being technically proficient and having knowledge; and the ability to lead and demonstrate leadership skills. It is somewhat comforting that the top performance evaluation category is directly related to activities that safety professionals have under their direct control or reflect a customer/peer feedback relationship. This finding supports the need for OSH professionals to have clarity concerning their organizational role, their goals and objectives, and knowing the specific tangible expectations that will be measured by their customers, peers and managers.

Refreshingly and perhaps surprisingly (and to a lesser extent than the perceived importance of job expectations), safety professionals perceive that their performance is measured based on soft skills and leading indicators as much as they are measured based on lagging indicators. The lagging indicators cited by participants in this study were the expected ones: incident rates, workers’ compensation costs, experience modification rates and citations. Incident rates were the most cited lagging indicator being utilized, which was not an unexpected result due to the ubiquitous use of OSHA-based lagging indicators in industry.

The finding that lagging indicators are not the most important measure to evaluate safety professionals’ performance is important since lagging indicators are rarely under the control of safety professionals and, thus, should not be used as the primary performance measure for safety professionals. This finding somewhat allays the fears from other investigations that indicated that ethical lapses on the part of safety professionals were being fueled by the use of lagging indicators for evaluations of safety professionals (Wachter, 2014).

It is encouraging that the use of leading indicators is now as common as the use of lagging indicators for assessing safety performance. This is significant progress from the 1970s, when, for example, “OSHA evaluated its inspectors on the basis of the number of citations issued” (Shapiro & Rabinowitz, 1997, p. 738). However, of the leading indicators being utilized, training was cited most often. Training tends to be a rather weak leading indicator since it is somewhat difficult to link the offering of training with risk reduction. On the other hand, conducting audits, which is a more powerful leading indicator since it can be more intimately connected with a reduction in risk, was cited as the second most common leading indicator being utilized.

The finding that soft skills are equally as important as leading and lagging indicators for evaluating safety professionals should not be surprising since most safety science curricula now recognize and stress the importance of communications, teamwork and the ability to interact with others as predictors of OSH professional success. This finding reinforces the need to teach soft skills as well as technical skills in educational systems.

Demonstrating values was the fifth major performance evaluation category. Values reflected professionalism, attitude, integrity and ethics. Thus, safety professionals seem to be evaluated on a set of value-based tenets. Beyond technical and managerial competency and communication skills, a demonstration of critical societal or organizational values seems to be an aspect of a safety professional's evaluation. It would be interesting to discover whether these or other similar values are being used to evaluate performance as frequently in other professions.

Practical Implications

OSH professionals can take an active role in educating their stakeholders and direct managers as to what is important to evaluate in assessing their performance and, indirectly, their organizational importance. Leading indicators are now acknowledged by safety professionals and theorists as one of the better forcing functions to "push" an organization into a more proactive stance that would lead to decreased safety risks. What is interesting about leading indicators is that they can be easily morphed into goals, and goals can often be linked with actionable plans to achieve those goals. The achievement of such goals should then be used to evaluate safety professionals' performance, but only if these action plans are under the direct implementation control of safety professionals. Safety professionals must be their own advocate to decouple organizational safety performance via corporate-wide lagging indicators (which they cannot control) to individual safety performance addressing specific risk and risk factors (which they can control).

For example, if an organization or OSH professional believes that safety can be improved by providing more inspections related to identifying and controlling electrical hazards (due perhaps to some electrical-related injuries in the past), then the leading indicator would be to measure the number of inspection events (followed by corrective actions) related to electrical safety, which would then be provided by the OSH professional in the workplace in the next 6 months. The goal could be for the safety professional to conduct four electrical safety inspections in the next 6 months covering the entire facility. An action plan could be developed to implement this goal. The evaluation of a safety professional's performance would be based on successful implementation of the action plan and the achievement of the goal.

The key point here is that specific leading indicators within the scope of a safety professional's role, responsibility and authority can be used as catalysts for developing goals and actions that could be used for evaluation purposes, and at the same time be used as mechanisms to reduce organizational risk. These goals and action plans could be a major contributor toward a safety professional's job expectations, which nearly 50% of respondents in the survey state they are being evaluated on. Let these job expectations be based on goals derived from leading indicators and the primary basis for which safety professionals are being evaluated.

How do safety professionals realistically promote for their own performance measurement criteria? Safety professionals should:

- Meet with their direct managers and outline major safety risks in the organization, department or other relevant unit, as well as the potential root causes for the existence of these risks.
- Generate goals and action plans (based on leading indicators) that they have control over in terms of design/implementation; explain

how achieving these goals and implementing these action plans can reduce risks and address the root causes for their existence.

- Agree that achievement of goals and implementation of action plans will contribute to a significant portion of their accountable job expectations; agree on which leading indicators they must measure and track for the given evaluation period.
- Ask their direct managers what soft skills they may need to improve during the evaluation period. Action plans would be generated for their improvement (e.g., taking a public speaking or negotiation course) and achievement of the action plan would be part of the performance evaluation.
- Lastly, petition their direct managers to provide concrete opportunities for safety professionals to demonstrate some of the key values that stakeholders find desirable for them to possess; successful demonstration and documentation of these values would also be part of the performance evaluation.

The more information that safety practitioners, academics and safety associations present and publish on appropriate performance measures for safety professionals, the easier it will be for OSH professionals to advocate for themselves as to how they need to be assessed, by understanding the options they have before them and by providing these examples as a foundation for discussions with their managers.

Next Steps

Now that a baseline of perceived specific performance measures has been established, the next steps include generating and applying a survey tool developed from the results of this study to reassess perceptions of safety professionals from a broader working population/sector base using a more structured approach with predefined categories. Instead of using frequency as a measure of strength of a performance evaluation measure (as this study did), a more robust ranking study of performance measures can be performed by safety professionals. **PSJ**

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