



The Role of LEADING & LAGGING INDICATORS in OSH Performance Management

By Pam Walaski

RECENT DISCUSSIONS IN THE OSH COMMUNITY about leading versus lagging indicators have been lively. Many OSH professionals are thoughtfully considering how they can create indicators that effectively measure their organization's performance and are learning to appreciate that it does not mean throwing out lagging indicators altogether or that all leading indicators are created equal. In addition, while many OSH professionals say they appreciate the value of leading indicators, some confess to not really knowing how to create ones that are meaningful to their organization. This article explores the role of indicators in performance measurement to better understand how to put the pieces together.

Current Status

In 2012, National Safety Council's Campbell Institute began to explore the issue of leading indicators by conducting a survey. The first part of the survey included a 3-hour panel discussion with 17 industry experts representing various industries and sectors: mining, construction, manufacturing, scientific and technical services. The second part was conducted via an email survey to the 30 Campbell Institute charter members, 18 of whom responded. Since then, five white papers have been published outlining the work of the expert panel members and the results of the survey.

KEY TAKEAWAYS

- The role of performance indicators (typically known as lagging and leading indicators) has been the focus of much discussion in the OSH community recently.
- OSH professionals should educate themselves on the historical use of these indicators as well as the pros and cons of their current use.
- This article provides a case for moving away from the typical use of these indicators and moving toward a process that is based on an organization's strategic business objectives.

In the first paper, "Transforming EHS Performance Measurement Through Leading Indicators," several interesting findings were reported (Sinelnikov et al., 2013). The first was that OSH professionals expected to see an increase in the use of leading indicators. Of those who participated in the expert panel or responded to the survey, 94% indicated that the use of leading indicators was an important factor in measuring OSH performance and 93% responded that their organizations would be increasing the use of leading indicators in the next 5 years. The second finding addressed leading indicator expertise of both OSH professionals and their senior leadership; 80% of respondents ranked their expertise level on leading indicators as "competent," "proficient" or "expert." On the other hand, they reported that the expertise level of nearly half of the senior leaders in their organizations was at the "beginner" or "advanced beginner" level and only 7% were ranked as "expert" (Table 1, p. 30; Sinelnikov et al., 2013).

The third finding of note from the expert panel and survey participants came from answers to questions on the role of leading indicators in both executive compensation and OSH professional accountability; 80% of respondents said executive compensation is, for all intents and purposes, not attached to OSH performance, as measured by leading indicators. Conversely, respondents indicated that they were held accountable for OSH performance by a margin of 73% (Table 2, p. 30; Sinelnikov et al., 2013).

Despite some of the incongruencies noted, this white paper seemed to suggest the OSH profession was on the verge of some major changes in how it considered OSH performance measurement through an increasing use of leading indicators. But 5 years later, ERM's Global Safety Survey found that lagging performance indicators remain dominant and few companies are using meaningful leading indicators: 70% of respondents use lagging indicators and only 26% are using any form of a leading

TABLE 1
LEADING INDICATOR EXPERTISE

OSH professionals self-rank		OSH professionals rank their executives	
Beginner	6.7%	Beginner	14.3%
Advanced beginner	13.3%	Advanced beginner	28.6%
Competent	26.7%	Competent	50.0%
Proficient	40.0%	Proficient	0.0%
Expert	13.3%	Expert	7.1%

Note. Data from "Transforming EHS Performance Measurement Through Leading Indicators," by S. Sinelnikov, J. Inouye and S. Kerper, 2013, Campbell Institute, National Safety Council.

TABLE 2
DO OSH INDICATORS COUNT?

Executive compensation		OSH accountability	
Not at all	40.0%	Not at all	13.3%
Very little	13.3%	Very little	13.3%
Some	26.7%	Some	20.0%
Quite a bit	13.3%	Quite a bit	40.0%
A great deal	6.7%	A great deal	13.3%

Note. Data from "Transforming EHS Performance Measurement Through Leading Indicators," by S. Sinelnikov, J. Inouye and S. Kerper, 2013, Campbell Institute, National Safety Council.

indicator (ERM, 2018). While these two sources do not provide the only measure of where the profession is regarding OSH performance measurement, they do represent this author's experience in working with various clients as well as in conversations with colleagues.

Confusion Over Terms & Definitions

In addition to the confusion and disparity, attempting to identify even a consistent name for performance indicators in published literature is challenging; even more so is the attempt to discover a common definition. While most sources consulted for this article use the term "lagging," also found in multiple sources are the terms "trailing," "retrospective," "subjective" and "passive." Leading indicators are also called "prospective," "predictive," "preventive," "upstream," "feedback," "positive" and "process."

In the literature there is general agreement regarding examples of lagging indicators; those most commonly cited include traditional incident rates that OSH professionals are familiar with [e.g., total recordable incident rate (TRIR), lost time rate, days away restricted and transferred rate] as well as workers' compensation claim costs and experience modification ratings. Less commonality is found when searching for leading indicator examples. Many focus on typical proactive activities found in most OSH programs: training, incident reporting, safety-related suggestions, and development or revision of job safety analyses/hazard assessments. However, most striking to this author is that many of the examples do not provide a method by which the quality of the outcome can be considered. For example, indicators such as the number of safety suggestions submitted, behavior-based safety observations completed, and OSH training as measured by number of hours or number of participants were given as examples of leading indicators in several publications, but they are simply tallies of completed activities (Inouye, 2015; Sinelnikov et al., 2013; Wachter, 2012). While these examples represent activities that are often considered proactive or preventive in nature, in this author's opinion

and experience, they do not provide a means to measure a preventive or proactive improvement simply due to the completion of the activities and, as such, are questionable with regard to whether they really are indicators of anything.

Leading Indicator, Lagging Indicator or Both?

Adding to the confusion and inconsistency, Manuele (2009) postulates that some indicators that are traditionally thought of as lagging, such as incident rates, are leading. Using the example of an injury or a series of injuries, which are nearly universally considered lagging indicators because they reflect something that has already happened, Manuele suggests that the changes made by an organization in processes and procedures following a review of incidents should mean that incidents are actually leading indicators because they are ultimately proactive and preventive.

Daily (2008, as cited in Manuele, 2009) says, "if we consider [injuries/lagging indicators] in terms of the probability of similar future incidents and use what we learn from them to change our processes, then we are treating them as 'leading indicators.'" Manuele (2009) concludes that the term used is not the issue at all; what is critical is the process to which the indicators are attached.

Therefore, although an analysis of the lagging indicators—trending of incidents and near misses—can be a leading indicator, the incidents and near misses are called lagging indicators. At some point, is it not appropriate to suggest that this differentiation becomes gibberish?" (Manuele, 2009)

In 2007, Hopkins was unable to identify a distinction between the use of the terms, saying:

I have examined the meaning of the terms "leading" and "lagging" in two recent influential publications and found that they are not used with any consistency. Nor do I think there is much point in trying to pin down a precise meaning since in different contexts these terms are used to draw attention to different things. . . . Whether they be described a lead or lag is ultimately of little consequence." (Hopkins, 2007)

Finally, Busch (2019) agrees, saying:

What is leading and what is lagging? Are near misses and precursor incidents leading indicators? One can argue that they are because they enable you to take proactive steps before a "real" accident with bad consequences happens. On the other hand one might argue that they are lagging, because you can only report them and act on them after they have happened. Do not bother too much about putting stickers on your indicators.

Indicators & Surrogation

As if the lack of consistency over the terms and examples of each type is not enough to cause confusion among OSH professionals, a recent *Harvard Business Review* article further elaborates on the traditional use of indicators and the often inevitable process of surrogation, which occurs when achievement of an indicator becomes the goal, subverting its ability to measure success. This often happens when indicators are selected in isolation from those who are responsible for achieving them or are misaligned from the strategy they are designed to support. It also happens when successfully meeting indicators is tied to incentives, either individually or as a group. In these

situations, the focus becomes meeting the indicator at all costs and the creativity of those who are being measured becomes unlimited (Harris & Tayler, 2019).

The case of Wells Fargo presents a recent and devastating example. To solidify its relationship with customers and provide them with high quality services and products, an indicator known as “eight is great” was developed and tracked by the financial services firm. Eight referred to the total number of Wells Fargo products and services that each customer would eventually use after the initial product that drew them to develop a relationship with the company in the first place (e.g., mortgage, home equity line of credit, credit card). Wells Fargo tied incentives to achieving the indicator to its customer service employees, which resulted in pressuring customers to accept products they either did not want or did not need and, ultimately, to sign customers up for products and accounts for which they never gave permission. The fallout was colossal: fines of more than \$185 million were levied by various authorities, a class action lawsuit settlement exceeded \$142 million, the company’s CEO was fired, and the difficulties in attracting new customers due to the negative publicity remains (Harris & Tayler, 2019). While it is hard to imagine an organization facing this level of loss due to surrogating OSH indicators, there have certainly been examples in recent memory of the problems that occur when incentives are tied to a reduction in typical lagging indicators; injuries are not reported and, if they are, creative methods of keeping them off of OSHA recordkeeping logs have occurred.

The End of Lagging Indicators?

While most of the recent literature on OSH performance measurement tends to focus on the increased use of leading indicators as a better, or sometimes only, alternative, the conclusion that lagging indicators should be eliminated is problematic. One understandable downside to lagging indicators is that business performance indicators are not typically based on the lack of something as they are for OSH lagging indicators (e.g., lack of injuries, illnesses, near-hits). Business does not normally use performance indicators to measure its failures; it would not be conventional to see an organization’s financial indicators expressed as “not losing money.” Another unfortunate outcome of the historical usage of lagging indicators is that it is traditionally seen as the most reliable performance measurement because OSH professionals have created that expectation among senior leaders over the years. The reliance on lagging indicators frequently leads to an overreaction to one failure; one injury is seen as a substantial failure of the entire OSH program, requiring substantial resources to identify causes and develop a corrective action plan to ensure that it does not happen again—until it does and the process repeats itself.

Confusion over whether an injury meets the definition of an OSHA recordable injury can also affect the quality of the data being used by benchmarking organizations such as Bureau of Labor Statistics (BLS). It is not uncommon for experienced OSH professionals to be unable to reach consensus on whether an incident is recordable, in this author’s experience in these types of conversations. Finally, there has been no shortage of discussion among OSH professionals regarding the fallacy that the absence of injuries equals a safe workplace. It can be an indicator of luck, poor reporting, the randomness of incidents and many other factors (Busch, 2019; GRI, 2018).

On the other hand, lagging indicators can be effective measurements because they are concrete numbers, understood by

many due to the longevity of their usage. Commonly used indicators such as incident rates are easily analyzed and interpreted due to the use of a standardized method of calculating them, which further allows for an organization to benchmark itself against others in its industry or make year-over-year internal comparisons. Even though the data used to calculate BLS benchmarks may not be completely accurate as noted, the large data set helps to offset those errors. Lagging indicators can also show progress toward a goal so that an organization feels a sense of accomplishment when it is achieved. In a similar vein, Busch (2019) correctly suggests that an incident rate should be considered a “litmus test” potentially signaling something wrong in the OSH program. Finally, as the end of this article shows, lagging indicators that are directly associated with an organization’s overall business strategy are an effective way to use them.

Are Leading Indicators Better?

The recent concern about the appropriateness of lagging indicators appears to have led to the elevation of leading indicators as the solution. This author sees this as unfortunate because, as noted, not all leading indicators are truly leading. When OSH professionals attempt to develop leading indicators, they often have difficulty creating ones that are more than a tally of something that is deemed to be a proactive behavior or activity. These tally indicators should not be used as leading because they have no quality component, yet many use them.

Despite this, several sources can assist. One of the best identified by the author is the last of five Campbell Institute white papers published in 2019. The document provides not only multiple pages of suggestions by type (e.g., hazard reports, use of PPE, safety suggestions), but also a rubric that can be used by an organization to develop customized indicators based on two factors: the level of organizational maturity and levels of complexity. For the former, the paper utilizes the DuPont (2018) Bradley Curve, although other models exist. For the latter, the delineation is low, medium and high based on the time and effort needed to collect the data, the overall risk profile and the size of the organization (Inouye, 2019). While this author found the process helpful in developing leading indicators, not all of the examples provided in the paper have a quality component; many are simply tallies and must be modified to demonstrate a measure of improvement (see “Leading Indicator Examples” sidebar on p. 32 for the ways that tallies can be modified to better measure improvement).

A final note on leading versus lagging indicators: a common belief has developed that the path forward is to replace lagging indicators with leading ones, a belief that this author espoused and promoted for many years. More recently, discussions about balancing the use of both indicators have begun to appear; one document that is expected to provide guidance is the soon-to-be-published revision to ANSI Z16.2-1995, Information Management for Safety and Health (*Note*: The 1995 version is not active), as well as in GRI Standard 403, Occupational Health and Safety 2018, discussed next, and in an expected new work initiative from International Standards Organization (ISO) Technical Committee (TC) 283 to ISO 45001 (Inouye, 2019; ISO/TC 283, 2019; OSHA, 2019).

International Perspective

GRI publishes standards to be used for sustainability reporting of environmental, economic and social topics. In 2018, GRI 403 was published to establish the standard for reporting on occu-

LEADING INDICATOR EXAMPLES WITH A QUALITY COMPONENT

Instead of . . .	Try . . .
Required number of machine safeguarding inspections completed for the first quarter.	90% of machine safeguarding inspections completed in the first quarter identified fewer than two corrective actions.
Required number of safety suggestions submitted per quarter.	50% of safety suggestions revealed a previously unknown or uncategorized hazard per quarter.
Number of new hires that have completed orientation training within their first week of work for the calendar year.	85% retention score of new hire training information presented when conducting follow-up meetings with new hires at 30 and 60 days for the calendar year.
Required number of hours of training completed per calendar year.	Number of incident investigations where lack of training or lack of training retention was identified is reduced by 50% from previous year.
Attendance at weekly safety meeting is above 90% for the third quarter.	More than 85% of safety meetings are led by a senior management representative in the third quarter.
90% of risk assessment annual reviews completed on time.	During risk assessment annual reviews, the total number of employees required to use a respirator was reduced by 50%.
Quarterly safety recognition awards presented.	The total number of nominees submitted for quarterly safety award is increased by 50% from previous year.

ational health and safety in external reports or other materials published on or after Jan. 1, 2021 (although earlier adoption was encouraged). In its guidance for Clause 1.2 (reporting on leading indicators), GRI 403 concurs that leading indicators are those used to measure an organization's efforts to prevent work-related injuries and ill health. Reporting on both lagging and leading indicators is important because the former do not provide a true picture because of the latency of ill health and possible underreporting of injuries. In the guidance for Disclosure 403-9 (work-related injuries), GRI 403 indicates that, while reporting of occupational injuries is an important part of its sustainability reporting, "data on work-related injuries are a measure of the extent of harm suffered by workers; they are not a measure of safety" (GRI 2018).

Seabrook (2019a) writes about a recent convergence of stakeholder interest in filling the gap on the "lack of proactive, consistent, comparable, measurable, relevant and reportable OSH metrics/disclosures" that recognize the value of an organization's human capital. Seabrook believes the most effective leading indicator is the implementation of a sustainable risk-based occupational health and safety management system due to "proactively incorporating repeatable and reliable processes and standard operating procedures into business operations to effectively measure how well a company is reducing potential worker injuries and ill health, most importantly serious injuries, disease and fatalities" (Seabrook, 2019a).

Many in the OSH community closely followed the development and publication of ISO 45001-2018. Its subsequent implementation and certification in organizations has helped to establish a foundation for robust safety and health management systems. At an October 2019 meeting of TC 283, delegates reported that users are seeking guidance to measure the OSH performance of their organizations using leading and lagging indicators and that, similar to what was reported in the ERM (2018) survey, most organizations focus solely on lagging indicators. A new work item proposal is expected to be available to TC 283 members in 2020 as a prelude to the development of a formal proposal to develop a standard on this topic (ISO/TC 283, 2019).

Along with the ISO standard, ASSP separately published a U.S.-based management system standard, ANSI/ASSP Z10.0-2019. Although its original publication in 2005 predates ISO 45001, the Z10 committee deliberately revised the standard in 2019 to parallel many of the requirements of ISO 45001. And, like its international counterpart, the Z10 committee has published a companion guidance manual that addresses OSH performance measurement (ANSI/ASSP, 2019a).

What Now?

Of critical importance is to refrain from assuming the solution is to simply stop using lagging indicators in favor of leading. As noted, this was certainly the opinion of this author before fully exploring this topic and appreciating other perspectives among fellow OSH professionals. But Busch (2019) reminds us that it is not an either-or choice; he says, "As is often in safety, there is not a binary choice of one or the other—it is very much a case of both and each in the right application and context." The idea of a balanced scorecard approach is one advocated by many in the literature. This is what is expected to be part of a soon-to-be-released revision to the aforementioned ANSI/ASSP Z16 standard. Originally published in the 1930s and last updated in 1995, the flat, less complex methods of measuring will be replaced with an approach that validates the importance of balancing every leading indicator with one that looks at outcomes as well.

It should also be noted that simply ceasing to use lagging indicators is not a choice for many organizations. Logging injuries according to the OSHA recordkeeping standard, then reporting them to BLS is mandatory in the U.S. Many organizations are also required to provide this information when they undergo the contracting process as part of their business or for an organizational review completed for various reasons by external parties.

Even more detrimental than removing one indicator at the expense of another is the idea that having any leading indicator is better than none. In other words, rather than identifying meaningful leading indicators that have the ability to measure the success of something proactive or preventive, the best path forward is to identify something associated with positive or preventive types of activities, create a tally of those activities, and promote it as a start to the transition process. Then, over time, more work would be done to incorporate a quality measure to that indicator.

For those organizations that have less mature OSH programs or are not far along in their development of indicators beyond basic incident rates, this is particularly enticing. Data that can be used to calculate a tally is not only easy to collect but is probably already being collected by the organization. However, in the author's opinion, this strategy has a high probability of back-firing for several reasons. First, it fails to correctly educate the organization, particularly senior leaders, on meaningful OSH leading indicators. More so, in organizations where true leading indicators are already being used to measure other facets of business performance, senior leaders may rightly call out the error. Second, when these indicators are used incorrectly as a measure of a proactive or preventive activity, a false sense of achievement is created if the indicator is reached or a false sense of failure if it is not, both of which are damaging to the organization. Finally, there are inevitable consequences to the reputation of the OSH professional and confusion in the organization when the switch to a leading indicator that has a quality measurement is

proposed. The OSH professional could rightfully be accused of a “bait-and-switch” or their expertise in this matter and that of others related to OSH may be questioned, or both. While it was not the only recommendation of the Campbell Institute working group, this idea was presented, in part, in two of its white papers (Inouye 2015; 2019). It is far better for OSH professionals educate themselves first and subsequently their organizations, identify one leading indicator that has a quality component and work to integrate it into the organization’s overall performance measurement.

In addition to considering the preceding, several paradigm shifts can be incorporated by OSH professionals who want to lead their organizations in elevating the use of multiple types of indicators. One starting point is to consider using different terms that more aptly describe the two primary indicator types and their integration into an overall concept of performance management. Esposito (2004), Busch (2019), Manuele (2009) and Susca (2019) advocate the concept of indicators being part of a process model or a systems view, explored further here and in the examples provided in the “Putting it Back Together” section (p. 34).

In that vein, one way the author has begun to reframe this perspective is to consider leading indicators as “inputs” to a process and lagging indicators as “outcomes” of the process (terms used for the remainder of the article). Regardless of which name is chosen, or even if a different name is to be used, integrating them into a continuous improvement process model also provides a system-based method that aligns better with occupational health and safety management systems (OHSMS).

A second shift is thinking about how indicators are viewed, tracked and reported on, which, in many organizations, is in isolation; OSH performance indicators are somehow outside of typical business operations. Examples are reporting on OSH performance using safety dashboards, intranets, or internal newsletters and other forms of communication. As detailed next, this shift also supports the indicators as part of a process or systems approach.

Organizations that have effectively implemented an OHSMS likely have a better appreciation for integrating performance measurement into the overall system. Both commonly used OHSMS (ISO 45001 and ANSI/ASSP Z10) establish requirements that must be implemented as part of the overall management system and not as a separate function of it. Clause 9 in ISO 45001 (performance evaluation) requires that the organization ensure that its measurement activities demonstrate progress toward achievement of the OSH objectives by reviewing incident trends, audit results and consultation with workers, among others. The establishment of OSH objectives is one of the primary tasks associated with the organization in establishing the context of its unique OHSMS (ISO 45001-2018). Similarly, Section 9 in ANSI/ASSP Z10 (evaluation and corrective action) requires monitoring and measuring through several indicators such as incident investigations and audits, and using those results to understand how and whether the OHSMS is functioning as intended. It further considers various types of indicators and considers what are commonly thought of as lagging to be a means to evaluate outcomes and leading to promote improvement (ANSI/ASSP Z10.0-2019).

Required by ISO 45001, supported by Busch (2019) and Harris and Tayler (2019), is ensuring that those closest to responsibility for implementing the activities associated with the indicator are engaged at the outset. Not only will this method improve the chance of selecting an indicator that more accurately represents the organization’s operations, but it also provides ownership of the indicators. And, as a reminder, tying incentives to the successful achievement of an indicator is a recipe for surrogation (Busch, 2019; Harris & Tayler, 2019).

Susca (2019) explores the concept of integrating indicators into processes and overall performance management when he talks about flipping Stephen Covey’s principle of beginning with the end in mind to ending with the beginning in mind. This method focuses the organization on performance through actions and activities tied to processes rather than results. Susca advocates making sure the measurement (the end) is connected to the strategy (the beginning) and the tactics that support both (the middle). Susca’s approach is to begin with the organizational goal related to

OSH performance and connect it to a strategy. In preparation for implementation, tactical measures are developed and tracked by a measure of its success. These tactical measures are what would also be considered input indicators. As the process develops and is implemented, various effectiveness measures are developed and tracked related to both OSH performance and to the overall organizational effectiveness: output indicators (Susca, 2019).

Susca (2019) also reminds OSH professionals that not all indicators are numeric; some measure quality, which can be just as important, although much more difficult to develop in a way that works, a concept supported by Busch (2019). Susca uses an example of a client organization that attempted to create a leading indicator around supervisor and worker engagement. The indicator was tied to the organization’s support for the value of OSH leadership. Supervisors were trained on initiating conversations regarding OSH matters with the workforce for about 10 minutes approximately twice a week. The success of the initiative led the senior leaders to incorrectly assume more was better, and so increased the number of expected conversations, required documentation of them and established an intricate tracking system to measure the results. Ultimately, the initiative became surrogated when the quantity became more important than the quality, and was stopped (Susca, 2019).

Finally, Busch (2019) explores the idea of a process model by looking at phases: inputs, throughputs, outputs and outcomes. In his framework, the inputs would be leading indicators and are measured by factors such as resource use and organizational competence. His model uses the term “throughput” rather than “process,” but it is similar in that it represents the activities being performed by the organization. One area of differentiation from the previous discussion is Busch’s distinction between outputs and outcomes. In his model, an output is something that an organization has control over and come from throughputs. Outputs can be represented by activities completed or products ready to be sold, among others. An out-



Of critical importance is to refrain from assuming the solution is to simply stop using lagging indicators in favor of leading.

come is something an organization does not have control over, typically represented by injuries, illnesses and other types of incidents. Indicators used to measure input and output can be qualitative or quantitative (Busch, 2019).

As a way of tying all of the preceding discussion together, two examples presented here approach the use of indicators from a process approach and demonstrate how effective input and output indicators can be developed that measure quality and are removed from traditional indicators related to incidents. One has a focus primarily on OSH performance measurement, while the other looks at how indicators can be connected to a business goal.

Putting It Back Together With Examples

Example 1: Indicators Tied Directly to Incident Activity & Rates

An organization that manufactures pharmaceuticals has been tracking the causes from incident investigations for many years. At the end of each year, tabulations are made to evaluate overall OSH performance and identify areas for improvement. After several years, the OSH director notices an increase in the number of investigations that identify with lack of use of management of change (MOC) or failure to use it correctly as a cause. The organization undertakes a survey of MOC users, which indicates a lack of knowledge of MOC among the primary leaders of the process. A recommendation is made to senior leaders by the OSH director to improve the use of MOC to reduce incidents and is approved.

Input Indicators

The MOC process will be improved by:

- A review and revision of the current process and associated documents will be completed by a working group that includes the OSH director, several key MOC users and one senior leader. The indicator will be measured by successful completion of the review and revision process within a specified time frame and with the participation of identified stakeholders as measured by their participation in various meetings and a review of the revisions to the process document.
- All MOC users will participate in training on the new MOC process. Verification of retention of the training as an input indicator will be measured by successfully completing a traditional quiz following the training, as well interviews by the OSH director with trainees at 1, 2 and 4 weeks post training. The interviews will not involve a specific score but will be judged by the OSH director on a qualitative basis.
- Three different communications will be used across the organization to roll out and launch the new process and documents, and will include postings on the organization's intranet, use in the weekly OSH brief and posters in breakrooms. Informal conversations with the OSH director and workers will track the success of the communications.

Output Indicators

Success of the revised MOC process in reducing incidents will be measured by:

- MOC being listed as a cause of an incident during the investigation process, because it was either not performed correctly or not performed at all, will be reduced by 75% the first year of implementation and by 90% the second year.
- The OSH director will convene a working group of stakeholders including MOC users and at least one senior leader who will review all completed MOC documents. The review will

track two outputs: 1. MOC will be used according to the process criteria at least 75% of the time the first year and 95% of the time in the second year; and 2. at least 75% of the documents will be correctly completed during the first year and 95% in the second year.

Note: This process is not tied to a reduction in the organization's incident rate as an output indicator because there are too many variables that could impact any reduction. However, the goal of increasing the correct use of an upstream process like MOC can be expected to accomplish that objective.

Example 2: Indicator Tied to Organization's Business Strategic Plan

An engineering firm provides environmental field services to clients that include wetland delineations, habitat and species surveys, pipeline surveys, Phase I and II investigations, and archeological surveys. Due to the success of this type of service in terms of client satisfaction, the senior vice president of the business unit establishes a goal of a 25% increase in gross revenues year over year as part of the next year's strategic plan. A possible hindrance to this goal is that the organization's TRIR is above the industry average and above the benchmark set by some of the current clients as well as potential new clients the sales team will be approaching. The TRIR may impact the business unit's ability to reach the goal unless actions being taken to reduce it can be demonstrated and current year rates are closer to what is required.

On any given day, more than 100 field staff may be involved in these projects, which often include working in all types of weather and challenging terrain and are physically demanding. Historically, this has led to numerous slip, trip and fall injuries, resulting in minor soft-tissue injuries (e.g., twisted ankles, bumps on the head or knees) that would not automatically require an emergency room visit but are uncomfortable enough that the field staff are concerned about whether they should be seen by a medical professional. Without knowing what to do or having anyone they can trust to give medical advice, the staff more often err on the side of caution, visit a local urgent care center and their minor injury ends up as an OSHA recordable. The OSH department believes some of these minor injuries could be treated with self-care recommendations (e.g., ice, elevation, over-the-counter pain relievers, rest). However, the OSH department also lacks medical expertise. To solve this problem and support the business unit's growth goal, the OSH department contracts with an external medical triage services vendor.

Input Indicators

- The OSH department will vet up to three medical triage services vendors based on criteria currently established by the organization for all vendors as well as additional criteria established for this specific vendor (i.e., available 24/7, phones answered by at least nurse-level medical professional, not affiliated with the workers' compensation carrier) and recommend one for use. The indicator will be measured by successful completion of the review and contracting process within a specified time frame.
- The OSH department will develop protocols with the vendor and for staff for the use of the vendor. The indicator will be measured by successful completion of the development and approval process within a specified time frame. The protocols will establish an expectation that when there is no obvious need for emergency medical care, the field staff will contact the vendor first, but will also include a statement providing that field staff will use their judgement.

Pamela Walaski, CSP, has been a dedicated OSH professional for more than 25 years. She is a senior program director for Specialty Technical Consultants Inc., a specialized management consulting firm. She also serves as an adjunct faculty member in the safety sciences program at Indiana University of Pennsylvania. Walaski is a professional member of ASSP's Western Pennsylvania Chapter, and is serving a 3-year term as ASSP Director-At-Large. She has a national reputation as a seminar leader and conference presenter on multiple OSH topics including risk management, OHSMS and serious injury prevention.

- Working with the communications department, the OSH department will develop and deliver training to all staff on the protocol as well as create other forms of communication that will include wallet cards for field staff and posters for all offices. The indicator will be measured by successful completion of the training and communication delivery within a specified time frame. Successful retention of the training will be measured with an output indicator.

Output Indicators

- As soon as the medical triage services vendor is launched, the OSH department will begin tracking staff satisfaction with the service and correctly following the protocol by contacting each user within 48 hours of initial contact with the vendor and asking a series of five preplanned questions. The results will be communicated to the business unit and to the field staff on a quarterly basis along with any recommended revisions to the protocol as a result.

- As a measure of the retention of the training and of the communication methods noted, the OSH department will also contact any staff person who does not use the vendor as directed by the protocols within 24 hours of receiving the incident report to better understand the reasons for not using the vendor as required. The results will be communicated to the business unit and to the field staff on a quarterly basis along with any recommended revisions to the protocol as a result.

- The OSH department will continue its standard report to the organization on all reported incidents—near-hits, minor injuries, injuries with medical care—on a quarterly basis. These reports will include total number of each type of incident as well as 12-month rolling incident rates (including TRIR) and will also highlight incidents where usage of the medical triage service resulted in a recommendation for self-care that was successful as reported by the staff person.

- The number of minor soft-tissue injuries that are diverted from medical care will decrease by at least 25% in the first year of vendor use and by 50% after 18 months. (As a result, the TRIR is also expected to decrease, but the organization declined to place a reduction number in place as an indicator. Not all of the organization's injuries are soft tissue and it wanted to keep the focus on injuries where intervention by a medical triage vendor could not only divert care but also recommend medical care when appropriate.)

Note: Successful achievement of the indicators noted will not only reduce the number of injuries where medical care is sought, but also the subsequent reduction in incident rates will support the business unit's achievement of its increased sales goal.

Conclusion

The genesis for this article stems from a request for assistance in transitioning from lagging to leading indicators as part of the organization's OSH measurement. Assuming, incorrectly as it turns out, that it would be a simple process, a few hours of research and reviewing published articles began the journey to a much different understanding and appreciation for the past, current and future state. Traditional methods and indicators for measuring OSH performance need to be reexamined and, in some cases, repurposed by the OSH professional community. This article draws on both historical concepts as well as newer thinking to present a view of OSH performance measurement that is better aligned with business operations and integrated with a systems approach to OSH. **PSJ**

References

- ANSI/ASSP. (2019a). Guidance and implementation manual for ANSI/ASSP Z10.0-2019 occupational health and safety management systems (ANSI/ASSP Z10.100-2019).
- ANSI/ASSP. (2019b). Occupational health and safety management systems (ANSI/ASSP Z10.0-2019).
- ANSI/ASSP/ISO. (2018). Occupational health and safety management systems—Requirements with guidance for use (ANSI/ASSP/ISO 45001-2018).
- Busch, C. (2019). *If you can't measure it, maybe you shouldn't: Reflections on measuring safety, indicators and goals*. Mind The Risk.
- DuPont Sustainable Solutions. (2018, July 6). DuPont Bradley Curve. www.consultdss.com/bradley-curve-infographic
- ERM Group Inc. (2018). *ERM 2018 global safety survey report*. www.erm.com/global/assets/documents/publications/2018/erm-2018-global-safety-survey-report.pdf
- Esposito, P. (2004, May). Leading and process metrics. Presentation at AIHce 2004 Conference, Atlanta, GA.
- GRI. (2018). *GRI 403: Occupational health and safety 2018*. Global Sustainability Standards Board.
- Harris, M. & Tayler, B. (2019). Don't let metrics undermine your business. *Harvard Business Review*, 97(5).
- Hopkins, A. (2007). *Thinking about process safety indicators* (Working paper 53). National Research Center for OHS Regulation. <https://fdocuments.in/document/hopkins-thinking-about-process-safety-indicators.html>
- Inouye, J. (2015). *Practical guide to leading indicators: Metrics, case studies and strategies*. Campbell Institute, National Safety Council. www.nsc.org/Portals/0/Documents/CampbellInstituteandAwardDocuments/WP-PracticalGuidetoLI.pdf
- Inouye, J. (2019). *An implementation guide to leading indicators*. Campbell Institute, National Safety Council. www.thecampbellinstitute.org/wp-content/uploads/2019/08/Campbell-Institute-An-Implementation-Guide-to-Leading-Indicators.pdf
- International Standards Organization (ISO) Technical Committee (TC) 283 to ISO 45001. (2019, Oct.). ISO/TC 283 Communique: 3rd plenary meeting, Kigali. <https://committee.iso.org/files/live/sites/tc283/files/Documents/Rwanda%202019%20TC283%20communique1.pdf>
- Manuele, F.A. (2009, Dec.). Leading and lagging indicators: Do they add value to the practice of safety? *Professional Safety*, 54(12), 28-33.
- OSHA. (2019). *Using leading indicators to improve safety and health outcomes* (OSHA Publication No. 3970). www.osha.gov/leadingindicators/docs/OSHA_Leading_Indicators.pdf
- Seabrook, K. (2019a, Mar. 8). Connecting the dots: Occupational safety and health and business performance. International Labor Organization. www.ilo.org/global/topics/safety-and-health-at-work/events-training/events-meetings/world-day-for-safety/33thinkpieces/WCMS_681587/lang--en/index.htm
- Seabrook, K. (2019b). *Putting people back into sustainability: A report of the 4th Human Capital Global Summit, Paris, 03 April 2019*. Center for Safety and Health Sustainability. www.centersh.org/assets/pdf/CSHS_report_April_2019.pdf
- Sinelnikov, S. Inouye, J. & Kerper, S. (2013). *Transforming EHS performance measurement through leading indicators*. Campbell Institute, National Safety Council. www.nsc.org/Portals/0/Documents/CampbellInstituteandAwardDocuments/WP-Transforming-EHS-through-Leading-Indicators.pdf
- Susca, P.T. (2019, June). Measuring up: Evaluating effectiveness rather than results. *Professional Safety*, 64(6), 22-24.
- Wachter, J.K. (2012, April). Trailing safety indicators: Enhancing their value through statistics. *Professional Safety*, 57(4), 48-60.