

Leading Measures for Improving Safety Performance

**Earl H. Blair, Ed.D., CSP
Indiana University
Bloomington, IN**

**Barry S. Spurlock, MS
Midwestern Insurance Alliance
Louisville, KY**

Introduction

One of the biggest problems in workplace safety is the way it is measured. There are numerous problems with traditional safety measures (i.e., various forms of injury rates, worker's compensation costs, etc.). Reliance upon these types of measures keeps organizations from progressing, and they are often counterproductive to "real" safety performance. As more SH&E professionals recognize the measurement problem, many have become motivated to learn how to develop an effective safety management system that includes a mix of trailing and leading indicators (Bevington). Organizations have changed how they measure other aspects of performance with the increasing popularity of the Balanced Scorecard approach. A better approach to safety measurement versus the exclusive use of trailing indicators is to determine those indicators which actually drive performance in an organization, and ensure an appropriate focus on those measures.

Today's safety professional is being exposed to an ever increasing amount of published information and seminars about the topic of safety performance measurement. It has been the authors' experience when speaking on the subject that the increasing amount of information is being met with a hearty welcome by the profession. Furthermore, the demand for the information certainly appears to be much greater than the supply. One particular aspect of safety performance measurement that has quickly become the most prominent interest is that of strategic development of measures that impact performance; the "how to" of development and implementation. The fact that safety professionals have been aware, and even frustrated, by the limitations of traditional safety measures for quiet sometime explains why they have quickly zoomed their attention to gaining management support for, and the know how to implement leading indicator measurement systems. While there is certainly no panacea for every organization, there are sound, fundamental strategies that all organizations can follow to develop measures to continuously improve safety performance.

A Review of the Problems with Trailing Indicator Reliance

As the introduction pointed out, safety professionals are concerned with gaining management support for implementing leading indicator measures. While safety professionals are strongly

encouraged to emphasize the positives and parallels with other business measures that leading indicators provide, inevitably a great number of those professionals will have to explain the problem with traditional measures that have been used for quite some time. Therefore, this article will provide a review of the problems associated with traditional measures before focusing attention on the strategies for development of leading measures.

Why do so many organizations use trailing indicators (traditional measures) exclusively, when these were never intended to be the basis for measuring safety performance at individual companies? One possible explanation lies with the fact that leadership in organizations may feel any other method of measurement is too elusive, too subjective or even impractical. Even when decision makers in an organization recognize the value of adding a mix of leading indicators into their safety measures, there is the realization that leading measures are not mandatory and are potentially more difficult to implement. Although no one actually says this, another reason might be “because we’ve always done it this way.” If organizations have kept safety records and measures in much the same manner over the past 30, 40, or 50 years, there could be an element of inertia. In addition, there may be a lack of clear understanding about how to advance the state of safety measures at an organization. These challenges require a fundamental understanding of the problems with traditional, trailing measures.

Trailing indicators (i.e., OSHA recordable incident rates, DART rates, worker’s compensation costs, etc.) are measures of outcomes rather than efforts; “rearview mirror” data. In other words, trailing indicators tell us where we’ve been, what our failures were or even where we experienced luck (good or bad). Trailing indicators are more accurate measures of safety system failure or the outcome of negative behaviors (Peterson 4). One may think that simply considering the inverse of failure measures would provide an accurate measure of success (safety performance). However, when you consider the role that luck and other issues play in shaping trailing indicators, this is clearly not the case. The absence of injuries does not necessarily equate to good safety performance.

A detailed discussion of the many problems associated with the exclusive reliance upon trailing measures is well beyond the scope of this article. However, this article presents six key problems with a brief explanation of each.

1. Luck

There are numerous companies that can boast long periods of man hours worked without a single recordable or lost time injury; however these numbers many times have no link to any particular, sound safety management effort. Consider the fact that there are many auto drivers who routinely speed but have never been involved in an automobile accident. The fact that they’ve never been in an accident doesn’t mean they’ve performed safely behind the wheel any more than the absence of injuries (or serious injuries) in the work place equates to exceptional safety performance.

2. Susceptibility to Manipulation

Either intentionally (dare we say illegal) or unintentionally, there is an undeniable susceptibility for manipulation with traditional safety measures. Any safety professional that is also involved with management of worker’s compensation, return to work programs, etc., understands that two different physicians can prescribe two different courses of treatment for the same type of injury. These different courses of treatment can greatly affect OSHA recordability and worker’s

compensation costs. Furthermore, as companies place more and more emphasis on trailing indicators the temptation to “manage numbers” instead of safety greatly increases the likelihood that the trailing indicators will become less reliable.

3. Lack of Precision

Trailing indicators simply provide information on failures in a system; they don’t reveal information on the particular problems that caused the injuries. Data concerning performance demands a level of precision in order for it to be used to drive improved performance.

4. Limited Impact on Employees

In the vast majority of organizations, employees do not understand how trailing indicators are derived or how their personal performance impacts the measures. Furthermore, trailing indicators do not engage or motivate employees to improve safety performance.

5. Different Intended Purpose

Companies must understand that the various OSHA related trailing measures were never developed with the intention of individual companies and organizations using them as internal measure of safety performance. They were developed by OSHA so that it may direct enforcement efforts and regulation development (Newell).

6. Reactive Data

Trailing indicators only provide reactive data. Probably the most disturbing of all problems associated with traditional measures is the fact that accidents must occur in order for organizations to obtain conclusive data (Spurlock).

While there are several problems with trailing indicators, they do have a role in safety management and should not be “discarded” from the mix of measures. Their problems preclude them from being a focus for measuring safety performance, but the information they reveal about trends and needs for improvement are extremely valuable. Therefore, trailing indicators should be maintained (for reasons beyond OSHA compliance) and examined; however kept in proper perspective when it comes to what they reveal about safety performance.

Defining Leading Indicators

Leading indicators refer to measures of a company’s efforts to prevent injuries; measures of performance. True safety performance measures reveal how well the company is performing with respect to those activities that prevent injuries from occurring. These activities include safety management system activities (i.e., audits, hazard identification, training, communication, etc.), employee activities (i.e. observable safe behaviors, performing observations, etc.) supervisor activities (i.e., communicating safety, conducting inspections, conducting accident investigations, etc.) management activities (i.e. visibility, involvement in safety, employee perception of management commitment, etc.).

There exists no finite list of safety efforts that companies can measure as each company has different drivers of safety performance (Peterson 5). Nevertheless, here are some generalized categories of common safety efforts that can be used to derive leading measures of safety performance:

- Safety System Audits
- Accident Investigations
- Near Miss Responses
- Safety Communications
- Safety Committee Activities
- JSA Completions
- Safety Climate / Perception Surveys
- Observed Safe Behaviors

Defining Metrics

The terms “leading measures” and “leading metrics” appear to be used interchangeably throughout the current body of safety performance publications and seminars. While there may be certain degree of simple semantics that have little impact on the subject as a whole, there is a distinction that can be made in the terms to help improve understanding. This improvement should put safety performance measurement in a perspective that facilitates the development of a leading indicator measures system.

It appears to be helpful to take an analogous approach to differentiate leading safety measures from leading safety metrics. For example, consider that length is a “measure” and the metric of that measure can be inches, centimeters, meters, etc. This relation can be applied to the bulleted list presented in the previous section. Items in the list would considered as measures and metrics of these measures could be percentage compliant, quality of completion, timeliness of completion, percentage compliant, etc. While this analogy is certainly not an accepted fact, it does appear to offer a clear presentation that allows safety professionals to a variety of indicators of safety performance.

Eight Steps for Developing Leading Measures

While there is no concretely established recipe for developing leading measures for an organization, there are some basic recommendations for safety professionals to systematically approach the task. These recommendations have been adapted to the following eight steps:

1. Prioritize Needs

It is important that companies measure those safety initiatives that are most important to preventing injuries and provide positive impact on safety performance. Each organization should evaluate trends of injuries and hazards within their organization to determine which controls and efforts are necessary to preventing injuries. This step provides for proper use of trailing indicators by allowing them to highlight trends that may warrant attention. In addition to determining which safety efforts and controls are necessary to reduce a current injury trend or prevent relapse, companies must determine which safety efforts and controls are necessary to prevent less frequent but more serious consequence accidents / injuries. For example, accidents involving confined space entry may not be as frequent as the occurrence of foreign bodies in the eye, however the consequences of confined space accident is usually death. Those safety efforts that prevent catastrophic injuries such as confined space fatalities are also priorities for

measurement. Companies must evaluate frequency and severity of injuries to prioritize what safety indicators will be measured.

2. Verify Efficacy of Controls

Simply measuring a safety initiative from a leading perspective does not guarantee that it will yield improvement in safety performance. When hazards are detected in the workplace, either engineering controls, administrative controls, personal protective equipment or a combination of the three must be applied to the hazard. However, as many safety professionals can attest, many hazard controls are ineffective in accomplishing their intended objective. As such, measuring a hazard control (i.e., training, PPE compliance, etc.) can be a fruitless exercise if the control for a particular hazard does not work. For this reason, companies are encouraged to ensure that measuring a safety effort or hazard control is a worthwhile venture. Investing time and resources to see how well a useless safety initiative is performing is an exercise in futility that can only harm the safety professional's credibility and tarnish upper management's perspective on using leading indicators.

Verifying efficacy of controls can be a challenging, and at times, unclear task. While there are many statistical process control tools that can be applied in various areas of safety performance measurement, it is in this verification phase where they become most useful. For example, the use of control charts can help determine if a reduction in injuries after a new safety initiative was implemented resulted in the reduction of injuries that was experienced or if the reduction was simply within the control limit of random variation (Brauer 573). The presentation of all the various statistical control methods is beyond the scope of this technical paper, so safety professionals are encouraged to research those tools that would best serve their efforts to verify that their hazard controls actually accomplishing their intended objectives.

3. Start Simple

One common mistake that companies make is trying to measure too much too soon. While leading indicators themselves are less complex than most of the traditional safety measures, the efforts to collect, analyze and communicate data can be exponentially more laborious. For this reason, companies should pick a relatively small amount of key measures (usually four to five) to focus on when implementing a leading measures system. Simplified measures help the company adjust to the concept of leading measures while at the same time allowing those maintaining the measurement system to avoid "burn out". Leading indicator measurement efforts that start out with extremely high expectations and attempt to measure every aspect of their injury prevention efforts, frequently cease to function because those maintaining the system simply couldn't manage such an immense task. Furthermore, employees become less clear about which areas are critical for safety success when a large number of measures, some more important than others, are communicated. As a company becomes comfortable with its system and it consistently performs well with the starting measures, it can then modify existing measures and add on additional measures.

4 & 5. Developing Assessment Methods & Tools

Developing assessment methods and tools is a fairly involved step for which customization is imperative. In this phase of development companies are determining how data will be collected, how frequently it will be collected and reported, analysis protocol, weighting of measures, etc. As with step three, simplicity promotes success. Assessment methods and tools should be efficient and spread responsibility throughout the engaged individuals and units of the

organization. Utilizing company technology (i.e. intranet reporting) may create extra work in the development phase, however the returns on this investment of time and energy are substantial after the measurement system is in place. Documentation and instruction on collection methods must be crystal clear, as improper use of assessment and collection methods will provide data that may not be reliable. Finally, it is often beneficial if safety measures are built from similar platforms and methods of other business performance measures. For example, if a company utilizes scorecards or dash boards to gauge production and quality performance, it may be advisable for safety to utilize the same methodology (Niven).

6. Define Data Presentation Methods

Safety performance data must be properly communicated to all parties in order for it to positively impact safety performance. Again, safety professionals are highly encouraged to make data presentation of safety performance data congruent with the methods the company uses to communicate other business performance data. Whatever method is utilized, it should be appropriate for the workforce that will be using the data. If literacy or educational barriers are prominent in the workforce, the level of complexity with communication methods should be adjusted to enable all parties to clearly understand the safety performance data. Finally, the frequency of reporting should be considered. Safety professionals should communicate performance data as frequently as feasibly possible.

7. Set Performance Goals

Leading safety measures should be connected with short term and long term performance goals. Establishing goals for safety performance follows the same recommended process for establishing any goal; SMART. Safety performance goals should be **Specific, Measurable, Achievable, Realistic and Timely**.

8. Monitor Safety Improvement Progress

Finally, companies should monitor their overall safety improvement to ensure that injury reduction and performance of safety efforts correlates to the measurement data. Companies should examine reduction in injury trends and verify that reductions can be attributed to performance of a safety effort; not merely a correlation. As improvements are realized, the company should adjust the measurement systems to drive continuous improvement; one of the main advantages of using leading measures.

Use Measures to Drive Safety Performance

In the analogy of measures as drivers of performance, our traditional measures are akin to looking at the rear view mirror instead of looking ahead out the windshield. As drivers, we should stay aware of what is going on all around, including looking at the rear view mirror a small percentage of time, and looking ahead the majority of time.

The key to driving improved safety performance is to determine what measures are the most important. Measuring and rewarding the right indicators make all the difference. If the only measures used are OSHA compliance, or past injuries, the safety process itself is not being measured.

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