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Benchmarking Your Leading Safety Indicators to Manage Jobsite Risk

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Introduction

If certain types of subcontractors or their employees are more likely to have an injury or accident on the job, a contractor should naturally ask themselves, "What can I do about it?" In the world of advanced analytics and massive amounts of insightful data regarding management, employees, and behaviors, this question is being asked more and more. Some think prevention equates to saying "If we knew that about them, we wouldn't hire them in the first place." The easiest road to prevention is avoidance. However, what should one do about employees and contractors who are currently on the team? This article will address safety programs, training, and wellness programs that can have an impact on the frequency and severity of accidents to protect businesses, property and lives.

Implementing an Analysis

Safety analytics is a detailed modeling approach to identify groups of individuals, processes, or conditions that may create an unsafe event or accident. Safety analytics use external data (ex. area demographics, industry financial data, etc.), as well as observed data points, to provide a powerful tool to gain insights not previously available. Safety analytics gives users the tools needed to assess, measure, and direct an organization to better practices in all aspects of the operation, creating a safer environment for contractors, employees, and potentially customers. This process will help identify jobs, functions, teams, locations, and processes that may have a greater chance of injury or accident. This applies to all industries, including the construction industry. The analysis gives insight, assists in the creation of action plans to reduce or eliminate severity and/or frequency of incidents, and improves the overall work site. Exhibit 1 represents a sampling of the different types of data points that can be used in the analysis.

For construction projects, this is an important management tool as detailed history with the employee base might not be available. However, with the power of predictive analytics based on external data, the general contractor can get an understanding of the work force and its specific safety needs before the project begins. The behavioral data and lifestyle indicators, combined

with credible and timely observation data, can be a powerful combination in the efforts of prevention.

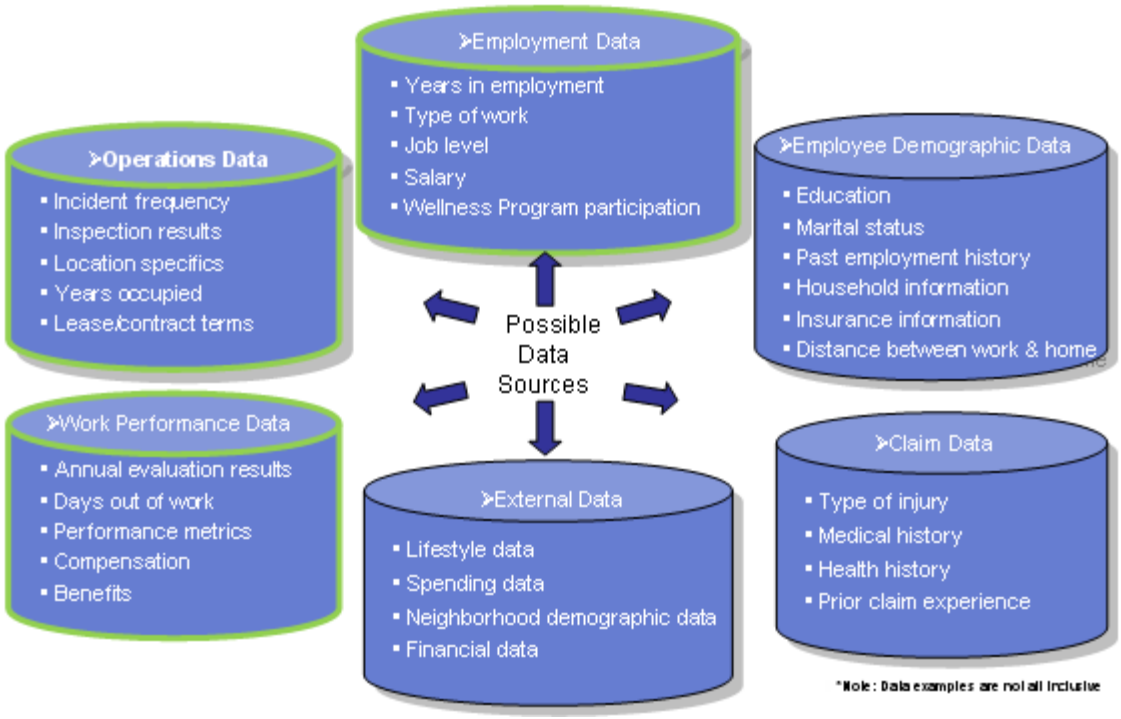

Exhibit 1. Combining the strategic nature of a company's proprietary data with external data creates a competitive advantage fueled by these raw materials and released by advanced analytics.

Safety audits have been capturing excellent observation data for many years, but external data has been limited or, in some cases, under-utilized. These data points can be excellent predictive items as managers consider where to direct the specific safety programs. As with any safety effort, the embracing of the program from the grass roots level is essential to its success. Safety analytics can assist in identifying key groups where these efforts need to be directed.

Safety Analytics at a Practical Level

We have all seen the growing use of analytics in our daily lives, from purchase scans at the grocery store to the online purchase of books. How do suppliers know the public will be interested in books other than the intended purchase? How do they know what coupons to send out to households? The use of insights based on data patterns affects most purchases. Certainly in the world of insurance underwriting, these data points are always used in calculating car and homeowner's insurance options and pricing.

It seems that the basis of most safety analytics to date has been based on historical and observed data. The very nature of a safety audit is based on the conditions of the location and the type of procedure being performed. The human element, which is key to all safety programs, does not seem to have the same degree of data applied. In the new world of safety analytics, information on lifestyle indicators and other publicly available data can be important drivers to identify groups of employees or contractors who may have a greater chance of sustaining a workplace accident or injury.

Once identified, what should a manager do about the results of the analysis? For example, in the case of drivers who drive more than 50 miles to the jobsite every day, it has been determined that in some cases, they have a greater chance of having an accident. If the drivers know this, they might try to structure a job assignment that changes their route or reduces their total miles driven, especially as they get to the end of their shift.

Distance to the jobsite from home is just one example of the hundreds of predictive data elements that can offer insights. Targeting the response in a practical implementation is key; in fact, many would say that the implementation of the insights is as critical as the findings themselves. Cultural acceptance of the change and support for the goal of a safer environment for all must be emphasized. Many labor unions have been very supportive of these efforts, as safety programs can be the best way to protect and enrich the lives of their membership.

Other corrective actions that impact the frequency of accidents can be employed but must be updated as procedures and tasks change. The operational side of construction projects is constantly changing. It is critical to update and refine analytic models to meet these changing conditions. A dashboard to monitor the programs is another helpful tool to maintain the culture of constant improvements.

Leveraging the Data and Maximizing Results

Armed with the insight from safety analytics, what's next? Once possible actions are defined, one would have to prioritize these actions, and also determine how success is going to be measured. At the end of the day, whatever changes are being made should have sustainable results. Moreover, ask if the consequences of these changes result in a safety culture that is:

- envied by peers;
- pays dividends in terms of reduced losses;
- ensures the attraction and retention of the best people; and
- allows the organization to use their success with safety to obtain jobs at a lower cost compared to their peers.

To achieve the desired result and maximize the opportunity afforded by the safety analytics, your program will have to shift to become more system and process driven and be willing to establish accountabilities at all levels.

Benchmarking Leading and Lagging Indicators

Success or failure of safety programs has typically been measured by indicators that take place after the fact and can be characterized by accidents, injury rates and costs associated with them. These are referred to as lagging or reactive indicators. The growing consensus among many safety professionals is that these lagging indicators, while important, do not truly reflect the health of the safety program. Many companies have sustained low incidence rates over a period of years; however, that in itself does not relate to exposures being effectively controlled. In fact, in the absence of loss, complacency may set in because companies are not actively addressing the issues that caused the losses to occur. That failure to actively manage exposures to loss can be small at first and magnify over time until the inevitable happens, a serious accident or worse yet, a catastrophic event.

In contrast, leading indicators relate to those steps or processes designed to prevent loss and, in some respects, have the added value of predicting that an incident or accident could happen if not addressed. Leading indicators are proactive by their very nature and provide the opportunity to monitor and assess the effectiveness of safety systems and processes, and also the overall health of a company's safety management system or its safety culture. Further, leading indicators can be used to benchmark current practices and can demonstrate continuous improvement over time when compared to the previous benchmark.

When setting up a comprehensive program to control exposures to loss we can surmise that lagging indicators tend to be reactive, could be easily manipulated to achieve a desired outcome, and may provide a false sense of security -- especially when losses are low and there are no other metrics to compare to. In contrast, focusing solely on leading indicators alone without trending or correlating to losses may result in a lot of wasted time and effort. Therefore, it is suggested that a model program show cause and effect, in other words, the leading indicators can be measured and deemed successful by the outcomes achieved. Table 1 exhibits six common program elements widely used by companies today with a sample of corresponding leading and lagging indicators that can be measured and assessed:

Program Element	**Leading Indicators**	**Lagging Indicators**
Management Support and Accountability	• % of goals/objectives incorporating safety • % of jobs preplanned • Sr. Mgmt displays support of safety	• % of projects that work without incidents • documented meetings, metrics used compared to plan (+/-) • preplan verified and onsite • participation in safety meetings, budgets for safety, safety metrics communicated
Employee Involvement	• % of employees involved in safety decision making process • # of safety committee projects, successes and suggestions	• # of work method changes • average time to implement suggestions and/or corrective action
Hiring, Orientation and Training	• % of employees trained prior to start of work • # of training classes • % of employees/mgmt trained	• # of incidents related to training • % of training on time following observation or incident
Inspections/Audits/Observations	• # of inspections and observations • % of compliant/safe conditions • % of deficiencies	• Near Misses • Incident Rate (Frequency and Severity • Loss Costs • Average time for corrective

	• % of severe/imminent of Risk Severity Index • % completion of corrective actions within timeline	actions to be completed
Incident Investigations	• Time to complete investigations • Root cause(s) for loss identified • # of near misses investigated/tracking	• Average time for corrective actions to be implemented • Repeat accident types and/or offenders
Performance Management Systems/Safety Related	• % of performance reviews measuring success in achieving results • # inspections compared to individual objective • # of safety meetings conducted compared to individual objective • # of one on one contacts • % of losses tied to projects and individual objectives	• Near Misses • Incident Rate (Frequency and Severity • Loss Costs • %-age of overall rating related to safety performance/metrics • Project profitability

Table 1. Correlating leading and lagging indicators shows cause and effect.

Performance Management and Inspection Data

While Table 1 only represents some of the Program Elements that should be included in your process, there are a couple from the above list that probably bear a little more discussion as they may end up having a more significant impact.

Performance Management Systems are becoming more widely used to establish accountabilities at all levels of the organization related to safety performance – both before and after the loss. Some of the issues that will need to be considered and resolved before implementing these measures include:

1. They must be clearly defined.
2. Their processes and outcomes are tracked and reported.
3. Their achievement commands significant reward.
4. All levels of management are held accountable in the performance management system and that it includes an element of continuous improvement.
5. Whatever elements are chosen they must be statistically reliable based on easily attainable data.

For the performance management system to be effective, establishing the appropriate rewards and incentives to send the proper message and to motivate personnel to want to achieve the desired result in the next task at hand. As the old adage says, “what gets measures gets done.” Establishing a process around leading indicators and measuring the company and individual performance through accountabilities will have a positive effect on building and establishing the desired safety culture.

Using safety inspections to gauge jobsite performance and predict future outcomes is becoming more prevalent. Whether done on paper and recorded in an excel database or utilizing a state of the art collection method, tremendous insight can be garnered by the information. It is a clear advantage that inspection data reflects current climate at the jobsite, related to implementation of safety systems and processes. Inspections can also include a larger group of participants, regardless of their skill sets or knowledge around safety. Companies have found that the engagement of a larger number of people has resulted in better safety performance. Also with more people looking at safety items, they inevitably are going to uncover ways to improve and enhance, tailored to a specific site. This activity of implementing improvements will result in varying levels of engagement with the employee affected, and possibly other levels of the organization depending on the complexity of the condition that needs to be resolved. Like the phenomena identified in the Hawthorne Studies from the 1920's and 1930's - employees are pleased to receive attention, resulting in increases in production. The same can be said for more people doing inspections, not only will more unsafe conditions be corrected, but the act of getting people engaged on safety will have resounding effects.

The inspection data can also be used to benchmark conditions at the start of a project and also measure continuous improvement over time. If you are seeing deficiencies in a particular area you can employ different processes to understand the underlying root causes that allow them to continue and put corrective actions in place. Employing focused inspections over the next 30 – 90 days for example will demonstrate whether the corrective actions put in place were effective or not. Using the inspection data in this form will help manage the exposure and help you determine if a change of course is necessary to achieve the desired result irrespective of whether or not a loss has occurred or not.

Another aspect of the inspection data that is very usable and often the most overlooked is that it can also be used to measure culture change over time. Again, you want to make sure that the systems and process changes that are being made result in the desired outcome. Any easy way to accomplish this is to create a Risk Severity Index that is applied each and every time a deficiency is identified. This index is used to calculate the magnitude of undesirable condition employs factoring in the nature of the item observed, the frequency with which you would anticipate seeing it, the nature of the injury that would occur if left uncorrected and how many people are affected. Creating a formula incorporating these factors is easy to do, and through its use you objectively assess the magnitude of the hazard leaving the human element out of it and also maximize that precious resource – time and resources to prioritize what issues you tackle first. The biggest single advantage is that by having a consistent methodology for assigning risk you can track over time whether you are seeing more or less severe and imminent hazards over time. Fewer items reflect that the site is actively manage these exposures out of the equation and driving a safer culture. More items or no changes to the risk severity index compared to inspections means that the corrective actions that were put in place are the wrong ones or not effectively implemented. At the end of the day, this is another example of using leading indicators to manage jobsite and company safety performance before a loss happens.

Conclusion

In this tough economy profit margins for companies will continue to be pressured, forcing them to do more with less. Competitors already have and will continue to get more aggressive in their pricing to keep crews working and the cash flowing. Loss costs will continue to rise related to medical and indemnity payments, offsetting the gains made in reducing the frequency of accidents. Material costs will likely remain high due to cost to get materials to market as

evidenced by gas prices in 2008, and the cost for providing benefits will likely rise higher than they already are.

In the 21st Century, safety analytics will continue to play out as a theme that will help companies maximize the utilization of both time and resources by prioritizing when and where to act. This insight will allow for the creation of safety systems and processes that, if focused on leading indicators, will help define success as a reality. And increased safety = financial gain. Survival of the safest may also be a reality in this new economy.