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Best Practices

Finding Focus: A Transformational Pareto Analysis

By Shawn M. Galloway

Vilfredo Pareto was an important Italian economist who, in 1906, made a famous observation that 20% of the population owned 80% of the property in Italy. Joseph Juran later referred to this as the 80-20 Rule or the Pareto Principle. Others commonly refer to this as "the significant few and trivial many."

Safety professionals are held accountable for producing improvement in their safety performance and culture. Each year as goals are created, budgets set and actions decided, what data determine strategic priorities? Most organizations experience minimal sustainable improvement with new safety programs, incentives and training. Rather than searching for the new thing to do, drive improvement with data. Most leaders learn a valuable lesson in strategic planning: Trust data and hold a low (or at least cautious) opinion of opinions.

Pareto analysis should not be a new concept for safety professionals or engineers. This cause-and-effect approach has helped organizations determine how to classify safety injuries (e.g., severity, body part, injury type), prioritize systems issues and, to some degree, focus safety efforts.

With the ever-increasing need to become more effective and efficient, identifying where to focus safety efforts both reactively and proactively has become one of the most important decisions an operation can make. Most organizations commonly capture information on key variables (e.g., time of day, day of week, tenure) during injury investigations. With more thorough pre- and post-incident data, management can more easily identify injury trends or risk exposures.

Generally, clients pursuing this type of analysis first identify the holes in their data-collection process. For example, an oil and gas operator found in most variable trends an unfortunate spike in the "not specified" category within many variables analyzed. "Not specified" being the largest element in a trend category may not be desirable, but it is insightful. Certainly the goal is not to become perfect at postincident data collection before refocusing efforts on preventing them, but most successful organizations capture much more information proactively than reactively.

The author's company has reviewed and analyzed millions of injuries and incidents for thousands of organizations worldwide. Most of these organizations were seeking expert insight into the preventability of events, with the goal of determining on which areas to focus culture and risk-reduction efforts to best prevent future events, and to understand the elements that influence risk taking in the organization.

Identifying trends in commonly tracked variables should be a mandatory exercise for injury analysis on an annual basis, at minimum. However, a next step is also needed: determining prevention. All incidents have, at least, a conditional and behavioral prevention point. If a conditional focus would produce the greatest returns, what data will determine and prioritize the conditions that, if addressed, yield the greatest potential? Do you focus first on conditional hazards or those that create barriers to safe behavior? What data present the greatest insight into exposure rate of conditions and potential severity of injury?

It is easy to jump to a behavioral focus; many have. We can forget that behaviors cannot be the root cause of an injury, but we often stop there because the next question, why, cannot be answered. If behaviors are seen as an opportunity to prevent an injury or incident, are they mandatory or discretionary behaviors, and does one type have greater weight on preventing higher severity injuries?

If it is determined that most injuries can be prevented with a focus on mandatory behaviors already covered in rules, policies and procedures, a behavior-based safety type of process is not the answer. Seek out approaches to strengthen the capabilities of leaders at all levels to enforce the rules and seek insight into the reason for deviation.

Eventually, high-performing organizations realize that more rules rarely work and tend to demotivate cultures. You cannot guard everything and not all risks can be mitigated. Such organizations may evolve to seeking out which discretionary behaviors (and

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Something to talk about

their influences) would present the greatest return.

All organizations will inevitably reach a point of diminished returns with safety efforts when using the same data to drive improvement. As injury prevention efforts evolve, so do the data used to focus those efforts. Determining where and when to concentrate efforts, then moving to a focus of precise performance elements of the organization will provide the next level in safety advancement. Four client experiences highlight the power of performing a transformational Pareto analysis.

Construction Case Study

An infrastructure construction client came to realize 70% of its injuries occurred when employees climbed on or off equipment. One behavioral precaution became the primary focus of individual responsibility: maintaining three points of contact at all times when ascending and descending.

The CEO charged the organization to focus the majority of attention and effort on becoming perfect on this issue. The company experienced and sustained an 80% reduction in recordable rates within a 2-year period. This level of laser-like focus, along with an improvement in collecting data that provided insight into determining what would hinder an employee's ability to take this precaution, helped the company better prioritize its injury prevention efforts.

Manufacturing Case Study

A new executive of a manufacturing organization realized a key location lacked focus and engaged the author's company to perform an analysis on commonly tracked variables and prevention opportunities. A presentation was made to employees on all three shifts explaining the findings. Audience members came to learn that 31% of injuries occurred on Thursdays; 47% occurred between 2:00 and 6:00 a.m. and between 8:00 and 10:00 a.m.; employees ages 22 to 30 represented 34% of the injury cases; and employees with 1 to 3 years and 5 to 10 years on the job experienced 54% of the injuries.

Additionally, four precautions represented 85% of prevention opportunities. By the time the third group was to hear this message, word had spread and the audience knew this information before it was presented. This level of attention contributed to a 60% reduction on injury rates and laid the groundwork for future advanced processes to sustain the momentum.

Energy Case Study

An energy client operating throughout the U.K. and Europe participated in a workshop with its major contractors for a large pilot project. The company was already among the best in the industry in injury prevention; however, it was spending millions annually on equipment damage. Analysis revealed that 59% of equipment damage costs could be prevented if individuals on location would drive in the center of the road, pass in designated areas, and perform a pretrip inspection and discussion with the other parties involved.

The exercise and resulting focused safety efforts helped the project become the safest project in company history and a best practice on all projects. Coincidentally, the energy company is recognized by major contractors as the best and safest to work with due to its focus on safety and corresponding effectiveness in communication and cooperation.

Federal Government Case Study

An agency asked the author's company to help it develop a comprehensive strategy for safety excellence. Immediately after completing the important steps of determining vision and values of excellence, leaders set out to identify precise data to drive the strategic agenda forward. An exhaustive analysis was performed on injuries, vehicle incidents, equipment damage, and current cultural perceptions and behaviors.

Findings indicated that 65% of injuries and 53% of vehicle incidents occurred with individuals who had spent less than 2 years in their role; the Leadership Safety IQSM (a proprietary measurement of leaders' knowledge of important safety systems, information, program, etc.) was at 71%; perception scores of the most important 10 perceptions were at 74%; and behavioral observations of employees and management identified precise behaviors that provided insight into the experiences driving current perceptions.

Following this, a workshop was led to help define the gaps identified in the analysis, compared to the aforementioned vision of safety excellence. This led to the completion and successful execution of a 5-year strategy with the first 2 years' priorities and supporting initiatives focused on:

1. improving hiring, onboarding and core competency processes;
2. safety culture excellence communication plan for alignment of leadership;
3. stop work authorization;
4. a specific and focused lean behavior-based safety (BBS) process to provide efficiency and focus within existing BBS methodologies;
5. implementation of a more effective incident management tool for data reporting and analysis.

Conclusion

Before performing the sample types of analysis outlined in this article, be cautious on how widespread to use the findings to drive the creation of the corporate strategic agenda. This analysis along with several others should be performed at a higher level, not only for the necessary profound knowledge and more effective engagement with executive leadership, but also at an individual business, plant or group level for specific focus and certainty of value-add in selecting next steps.

Peter Drucker wisely pointed out, "Efficiency is doing the thing right. Effectiveness is doing the right thing." Without clear focus, it is easy to get wrapped up in executing improvement efficiently and be working on precisely the wrong things. Humorously, Drucker also believed, "There is nothing so useless as doing efficiently that which should not be done at all." In seeking an answer to the never-ending question of how to improve safety, the answer is rarely more effort, but rather better, more-focused effort.

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