Differentiators in Safety Performance

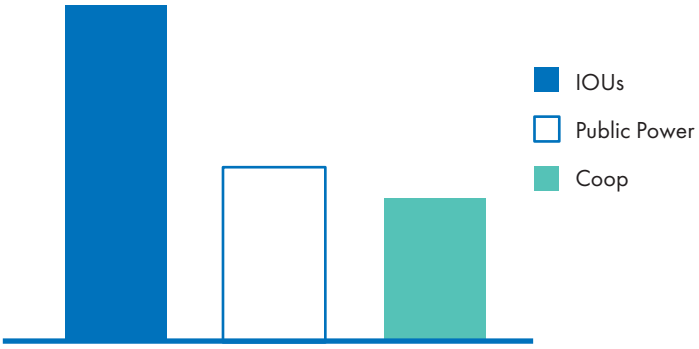
Successful Initiatives in the Electric Utility Sector to Reduce Serious Injuries and Fatalities Fact Sheet

EPRI | ELECTRIC POWER RESEARCH INSTITUTE

Key Research Question & Why This Study Was Undertaken:

In a first-of-its-kind, two year study, EPRI researchers explored the question: What measures of safety culture, safety management, and business factors most influence safety performance? If we know the answer to that question, we can help organizations to efficiently direct their limited resources to the safety activities and elements of the business that may have the greatest positive impact on safety outcomes. The study had potential to provide quantitative back-up to safety professionals in seeking to advance new safety initiatives in their organizations and with their executives. This is the first empirical study to examine which of many potential factors are most influential and should be prioritized.

13 Utilities Submitted Data



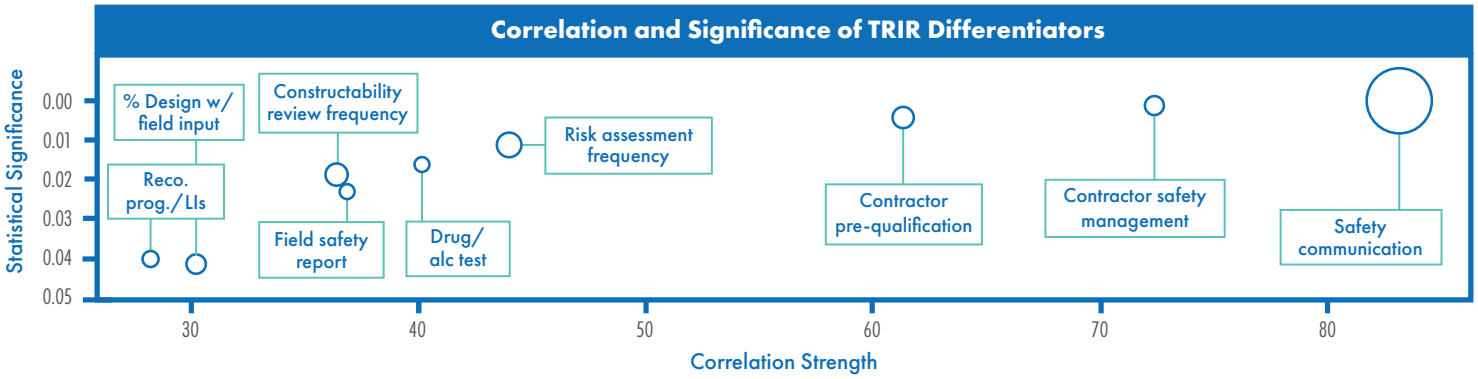
Study Approach and Key Findings

We obtained datasets from 13 electric utility organizations comprised of safety culture, safety management as measured by leading indicators, and business factors. We applied single and multivariate regression analyses. Out of 78 variables in the final dataset, 9 showed a strong, statistically significant relationship with a 5-year average of total recordable injury rate (TRIR).

Taken together, these show the superior influence of Human Factors, Safety Leading Indicators, Prevention through Design, Contractor Selection and Management, and Incentives/Disincentives. These results highlight the aspects of the safety system that should be prioritized to optimize performance and use limited resources most effectively.

9 Key Variables

- Safety communication
- Contractor safety management
- Contractor pre-qualification
- Risk assessment frequency
- Drug/alcohol testing requirements
- Field safety support
- Constructibility review frequency
- % Design with field input
- Safe behavior reco. prog./LIs



Additional Information on 9 Key Variables

Model details for the significant variables. BF, LI and SC stand for business factors, leading indicators and safety climate.

Variable	Type	Survey Item(s)	Norm. coef.	R^2_{adj}	p	Interpretation
Safety communication	SC, agreement	Management clearly communicates safety, near misses, and good catches to all levels within the organization. Management brings safety information and new initiatives to my attention.	-3.52	83.6	<0.001	Extreme
Contractor safety management	LI, Y/N	Does the organization have a formal contractor safety management program?	-0.60	72.6	<0.001	Very Strong
Contractor pre-qualification	LI, Y/N	Does the organization pre-qualify or disqualify contractors from work based upon lagging indicators (e.g., historical injury rates)?	-0.76	61.1	<0.001	Very Strong
Risk assessment frequency	BF, freq	How often do you conduct formal risk assessments of assets, construction, operations, and maintenance?	-0.94	43.3	<0.01	Very Strong
Drug/alcohol testing requirements	LI, Y/N	Are all workers in the company required to participate in randomized drug and alcohol testing program?	-0.34	39.5	<0.05	Strong
Field safety support	LI, perc.	What percentage of workers are directly supported by a full-time safety professional?	-0.4	36.1	<0.05	Strong
Constructibility review frequency	BF, freq.	On what percentage of projects do you conduct formal constructability reviews as part of project design planning?	-0.84	35.7	<0.05	Strong
% Design with field input	LI, perc.	For what percentage of project design elements do field employees provide input?	-0.6	29.3	<0.05	Strong
Safe behavior recognition program/LIs	LI, Y/N	Do you have a recognition program for observing safe behavior? Does the organization track and act upon safety leading indicators?	-0.4	27.3	<0.05	Strong

NOTE: As can be seen in the table above, all variable coefficients are negative, meaning that an increase in any variable causes a decrease in TRIR. In other words, an improvement in any variable can be said to be associated with an improvement in safety performance.

How to Apply Results

Organizations may use the data and analyses in this report to determine their strengths and weaknesses with respect to the 9 most influential safety factors. By benchmarking against the study participants, organizations may identify areas for improvement and direct resources to the activities and management practices that were shown to yield the most advantageous outcomes.

Source

Program on Technology Innovation: Comparing Company Characteristics and Injury Rates- Differentiators of Safety Performance, Phase 2 – Data Analysis and Results. EPRI, Palo Alto, CA. 3002021082.

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