CONSTRUCTION
SAFETY RESEARCH ALLIANCE

CSRA ANNUAL 2024 SAFETY IN PRACTICE REPORT



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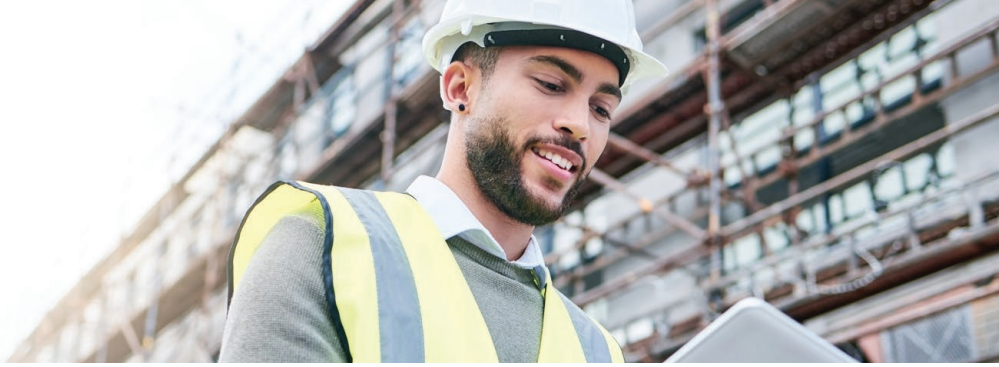
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Overview



The **2024 CSRA Annual Safety in Practice Report** presents insights from 64 companies on the implementation of 19 safety concepts. These concepts fall into two categories:

Section 1: Safety in Practice for CSRA Research:

safety practices derived from the CSRA's research (e.g., **Invalidity of TRIR Research, Incident Investigations Resources**), and

Section 2: Safety in Practice for Common Safety Activities:

widely practiced safety activities that **were not researched** by CSRA but are commonly used in the industry (e.g., **Behavior-Based Safety, Safety Climate**).

This report provides a structured summary of industry experiences, challenges, and discussion points related to each of the 19 safety concepts in practice. It is designed to help safety professionals understand how their peers are approaching safety implementations, what common factors influence decision-making, and how companies are integrating safety research and other concepts into their operations.

What This Report IS

This report is a learning resource for CSRA members to share and explore implementations of different safety concepts. It provides valuable insights to help companies make informed decisions based on peer experiences within the CSRA. Readers can use this report to:

- Read about others' experiences in applying safety practices and research findings.
- Learn about potential challenges and concerns that arise during implementation.
- Understand key discussion points if still evaluating whether to adopt a concept.
- See how to plan implementation if moving forward with a particular safety initiative.
- Find quotes and insights from industry peers to guide decision-making.
- Review emerging and retiring safety practices across the industry from our membership's point of view.

By summarizing real-world experiences, this report serves as a tool for discussion, helping safety professionals refine their strategies and anticipate potential barriers.

What This Report IS NOT

This report is not an endorsement of any specific safety activity, especially in Section 2.

- While Section 1 concepts are **rigorously researched by the CSRA**, Section 2 concepts are included **solely because they are widely practiced in the industry**.
- For concepts in Section 2, the **CSRA has not evaluated their scientific rigor nor effectiveness** towards our common vision of preventing Serious Injuries and Fatalities (SIF). The report merely reflects what companies have reported about their experiences with these safety concepts.

Readers should approach this report as a **peer-to-peer knowledge-sharing resource**, rather than as a validation or recommendation of any particular practice.

The goal is to facilitate learning and discussion rather than to endorse any specific approach.

For each concept, a detailed breakdown of the results and associated dates of implementation were reported in 2 pages. The implementation dates are reported as the average across the reporting companies.

The survey addressed key questions, including:



Key Takeaways

We assessed four levels of implementation for the 19 safety concepts: already implemented, plan to implement, still considering, and not considering. Using this data, the concepts were analyzed and compared to identify (1) most implemented concepts and (2) upcoming concepts for implementation.



More than half of the participating companies have already implemented key safety concepts, including **the Energy Wheel** (59%), **Safety Climate Surveys** (55%), and **High-Energy** ("Stuff That Kills You") – HE/STKY concepts (53%) related to Energy-based Safety. Our research on **Training** is not yet widely implemented but is expected to see increased adoption in the coming years.

In terms of leading indicators and human factors-related research, **Human and Organizational Performance (HOP)** and **Pre-Job Brief Quality** are emerging as top priorities for organizations. On the other hand, research implementation related to well-established programs like **Incident Investigations and Leadership Engagement** has been slow. This is unsurprising given that (1) many companies already have similar programs they consider effective, and (2) competing priorities often reduce the motivation to modify existing systems. As a result, despite their strong relevance to daily operations and safety priorities, adoption remains limited.

While **Behavior-Based Safety (BBS)** is widely implemented (44%), most organizations show little interest in further adoption, with less than 1.6% planning to implement it.

For the future, **High Energy Control Assessments (HECA)** stands out as a leading priority, followed by the complementary **HE/STKY** concepts and **Invalidity of TRIR** research. The Invalidity of TRIR work has either been implemented or is planned for implementation, suggesting slow but steady progress towards changing corporate safety goals.

On both the implemented and future implementation fronts, **Predictive Analytics (PA)** and machine learning applications for HECA risk predictions **(RALFIE)** rank low, indicating that the industry may not yet be ready for these advanced analytical approaches. The CSRA has discontinued access to RALFIE due to the high resource demands of software maintenance. However, the effort remains a proof of concept for potential future applications.

It is encouraging to see that the implementation of setting and communicating targets based on the concept of **"Zero"** is relatively low. However, the adoption rate is still significant.

Table 1 | Already Implemented Concepts (Key to shortened terms in Appendix A)

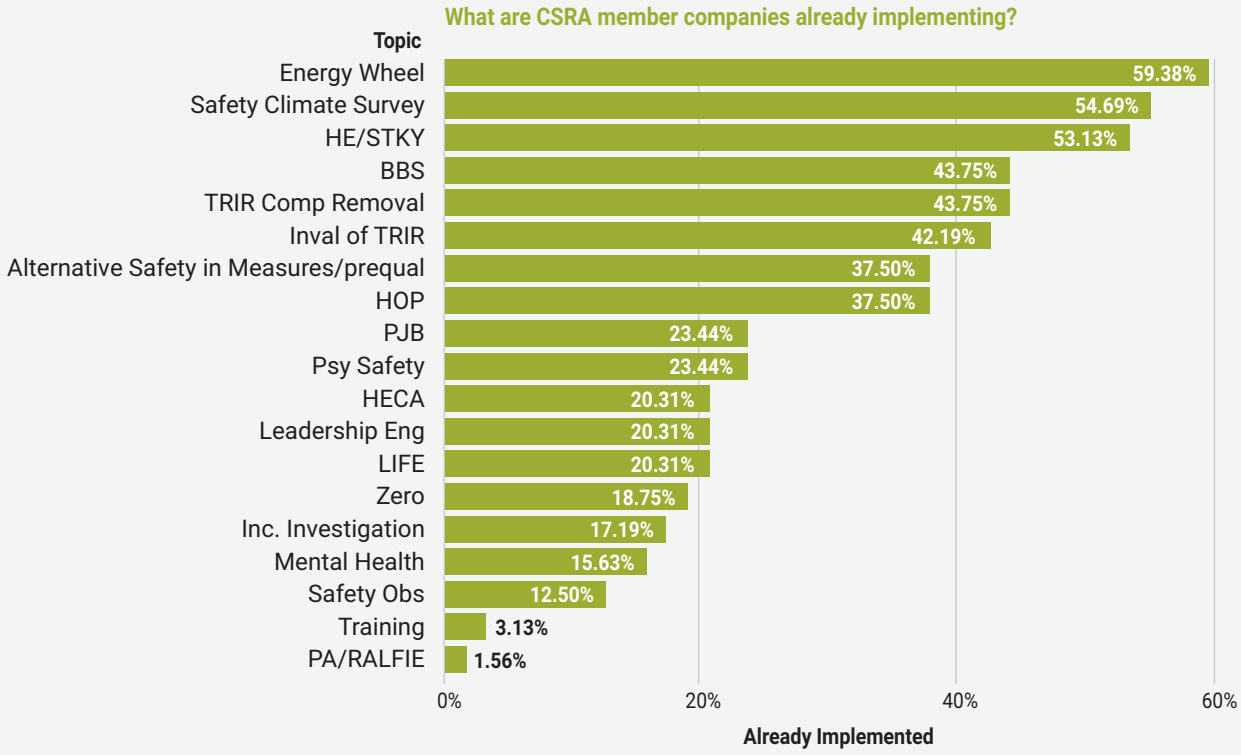
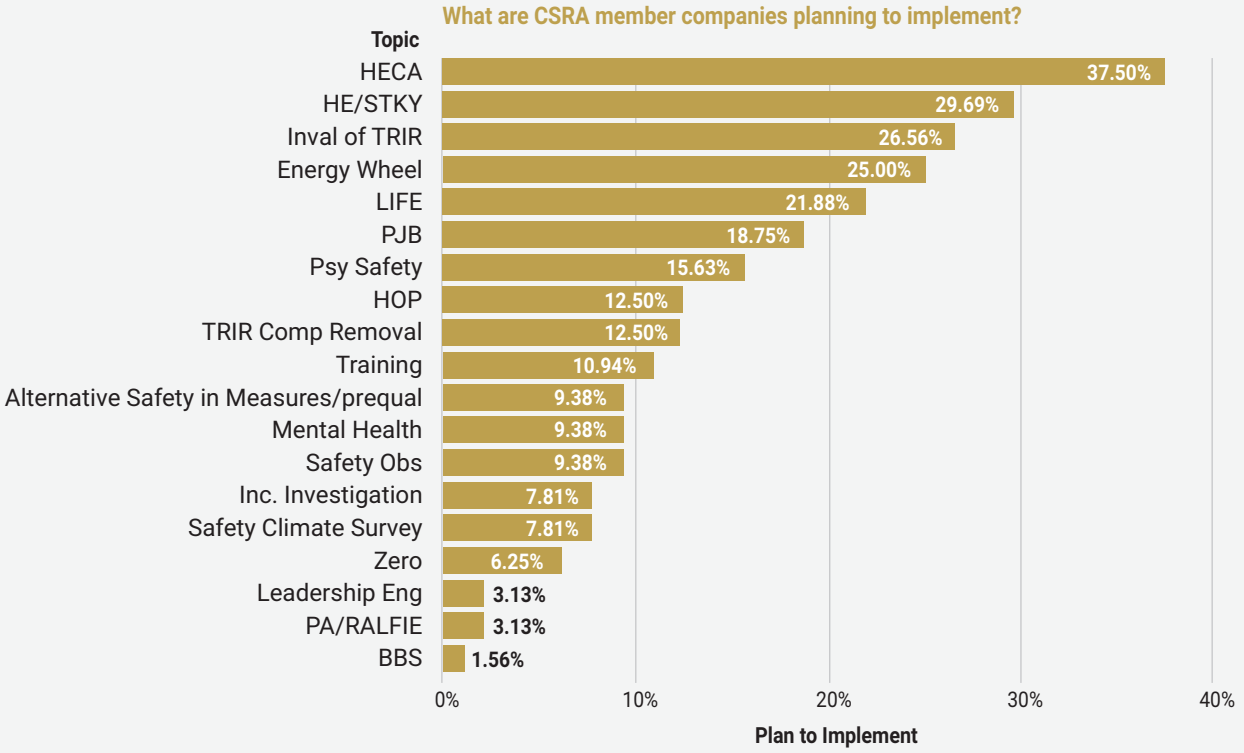


Table 2 | Upcoming Concepts for Implementation (Key to shortened terms in Appendix A)





CSRA RESEARCH 1

Consideration of alternative safety metrics motivated by the CSRA's work on the Invalidity of TRIR

Implementation:

Earliest **2018**

Latest **2025**

Already Implemented
42.19% in 2022

Plan to Implement
26.56% in 2025



If Implemented: What does it look like?

Transition Toward SIF Prevention Programs

The focus on Serious Injury and Fatality (SIF) prevention marks a significant shift in how organizations approach safety measurement and TRIR. With the growing recognition of TRIR's limitations as a meaningful metric to prevent SIFs, companies are implementing SIF-based lagging indicators and classification tools that incorporate SIF and Potential SIF (PSIF) definitions to categorize injuries and near misses. These emerging lagging metrics and classifications, alongside Safety Classification and Learning (SCL) Model and Serious Injury Incident Rate (SIIR), are gaining traction.

Editor notes that TRIR hasn't left the safety space for outward reporting but has dialed down. Traditional metrics like recordables are still measured and tracked due to their deep-rooted presence in the industry (i.e., while OSHA does not require the submission of a rate, it mandates incident log reporting). Additionally, most companies participating in voluntary reporting, particularly in ESG reports, may be required to disclose safety TRIR, Lost Time Incident Rate (LTRIR), and contractor TRIR.

Management Support

Middle management buy-in has been established in many organizations, while senior leadership is now aligning with this new direction. Collaborations with groups like the CSRA and EEI have supported utilities in implementing SIF prevention programs, moving away from TRIR towards alternative metrics, managing the change, and allowing for industry development support. At the highest levels, there is a shift from TRIR to more proactive metrics, but ESG reporting does not support this transition effectively.

Evolving Metrics Landscape

As organizations question the validity of TRIR and, increasingly, DART/LTIF, a move away from lagging indicators is apparent. In some cases, lagging metrics have been removed from compensation programs entirely, replaced with more proactive measures. Leading indicators, including safety conversations, pre-construction meetings, field-level risk assessments, critical control verifications, and attitudinal safety surveys, are emerging as key tools for tracking safety performance and shaping culture. High Energy Control Assessments (HECA) are also gaining prominence, especially as it complements the monitoring

aspect of SIF Prevention programs. Other approaches, like balanced scorecards or Severity Based Lagging Indicator (SBLI), offer additional frameworks for alternative performance measurement.

If Planning to Implement: How do you plan to implement?

SIF Prevention Program

Adopt the Safety Classification and Learning (SCL) model alongside SIF definitions to enhance the organization's focus on serious injury and fatality (SIF) prevention.

Alternative Metrics

Shift towards less lagging and more leading metrics. Key initiatives include:

1. Implementing the Energy Wheel, HECA, STKY, and Direct Controls, and incorporating pre-job briefing quality assessments.
2. Adjusting HSE Scorecards to prioritize leading indicators, with reduced emphasis on TRIR and other lagging metrics.

Some companies struggle to move away from TRIR entirely but emphasize the adoption of alternative metrics as a complement and collaborate with their Boards to introduce alternative safety metrics.

Implementation

Partner with external organizations to align data collection methods and manage the rollout within smaller business units to streamline change.

> "Combine SIF (lagging) with HECA (leading) data to build a stronger picture of the actions we are taking and our risk focus as an organization—SIF today, HECA tomorrow."

If Still Considering: What are the Key Discussion Points?

1. **Dependence on Lagging Indicators:** TRIR remains the preferred metric for executive management, clients, parent companies, and leadership due to familiarity and existing industry standards.
2. **Leadership Education:** There is a need to educate leadership on the limitations of lagging indicators and the advantages of adopting proactive, leading metrics. Leadership hesitates to shift perspectives.
3. **OSHA and Client Requirements:** OSHA regulations and client expectations reinforce the reliance on TRIR along with specific contractual and regulatory requirements.
4. **Lack of Clear Alternatives:** Uncertainty about what metrics can effectively replace TRIR, leading to hesitation in transitioning. Editor notes that a clear alternative is needed to support the transition away from TRIR, as companies require a consistent reportable metric for industry benchmarking.
5. **Preparation and Competing Priorities:** Some organizations are still preparing to implement alternative metrics, needing more information, education, training and resolution of competing initiatives.

If Not Considering: Why not?

The organizations do not prioritize moving away from TRIR and SIF as these metrics align with current benchmarking. Efforts are primarily directed at following mainstream content, developing internal measures, and tracking best practices among peer utility organizations.



CSRA RESEARCH 2

The Energy Wheel

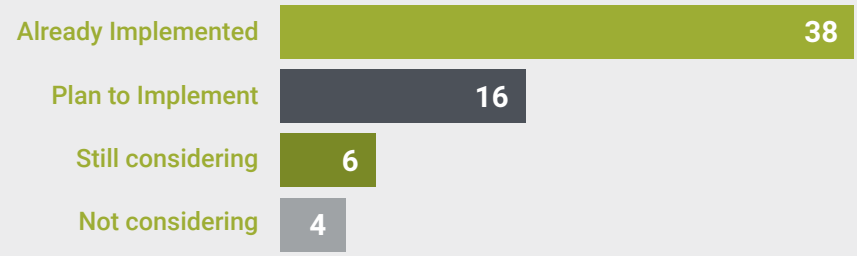
Implementation:

Earliest **2017**

Latest **2025**

Already Implemented
59.38% in 2022

Plan to Implement
25.00% in 2024



If Implemented: What does it look like?

An organization stated the Energy Wheel "changed their business" by refocusing conversations on energy sources and what can actually harm people.

Integration into Day-to-Day Practices

The Energy Wheel has been widely embraced across organizations and is fully integrated into daily operations as a useful tool that enables proactive energy-based hazard recognition. Training is extensive and frequently mandatory for safety, operations, and construction employees, often extended to the whole organization.

The Energy Wheel is embedded in orientation programs for new hires and reinforced through branded materials such as stickers, posters, plastic models, coins, and swag. Consistent communication and conversations about the Energy Wheel ensure field employees remain engaged and actively focused on identifying energy sources, ultimately enhancing their hazard recognition and awareness.

Embedding into Existing Safety Systems

The Energy Wheel was embedded into various safety processes such as Job Hazard Analyses (JHAs), pre-job briefings, safety communications, safe work permits, toolbox meetings, and tailboards. It complements existing programs, such as the "Stuff That Can Kill You" (STKY) initiative or Human Organizational Performance (HOP) program, as a hazard recognition tool. Some organizations chose to revise the Energy Wheel to include just STKY energy sources to increase the focus on SIFs.

Energy-Based Reporting

Many organizations are trending lagging and leading indicators related to energy sources and incorporating this data into incident reviews and near-miss reporting. Supervisors use the Energy Wheel during HECA observations, and teams leverage the EEI's Safety Classification and Learning Model for hazard identification and mitigation. This way energy sources are analyzed in a structured and systematic way.

If Planning to Implement: How do you plan to implement?

Launching Education Campaigns: Communication and Training

Companies have initiated education campaigns to raise awareness about the Energy Wheel. The efforts often begin with field managers, equipping them with the foundational knowledge to explain and use the Energy Wheel. Training and communication materials are being created to promote the Energy Wheel consistently across the organizations.

Integration into Existing Processes

Companies are exploring opportunities to integrate the Energy Wheel program into existing tools and processes. Examples include incorporating the program into Job Hazard Analyses, daily field assessments, incident reporting systems, pre-job briefings, pre-task planning sessions, and permitting processes. Some organizations plan to embed the Energy Wheel within their broader Serious Injury and Fatality (SIF) prevention programs and align it with High Energy Control Assessment (HECA) initiatives.



Do NOT be alone and Pilot

Collaboration is key. Companies who plan to implement the Energy Wheel are actively reaching out to colleagues and seeking feedback from organizations to identify best practices. Organizations reported methods such as pilot programs within a smaller business unit, and partnering with contractors to refine and scale the initiative. It was noted that these efforts are typically initiated with leadership and safety champions (e.g., volunteer safety teams) to ensure broad socialization and support.

If Still Considering: What are the Key Discussion Points?

Organizations that are still considering Energy Wheel implementation require further education and learning. These organizations have expressed the need for additional resources, training, and examples of successful implementation to guide their next steps.

Notably, one organization reported engaging with the STKY icons before adopting the Energy Wheel, taking a reverse approach to the typical sequence.

If Not Considering: Why not?

Organizations not considering Energy Wheel implementation often cite an overload of initiatives and a lack of organizational appetite for additional programs. One organization reported attempting it but received negative feedback, while another mentioned using a different version of the framework.





CSRA RESEARCH 3

Focus on High-Energy Hazards/STKY

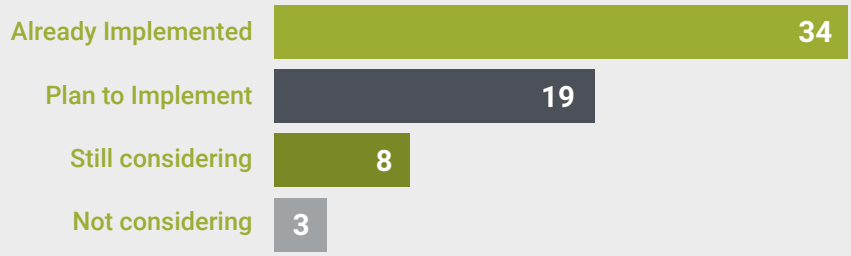
Implementation:

Earliest **2018**

Latest **2025**

Already Implemented
53.13% in 2023

Plan to Implement
29.69% in 2025



If Implemented: What does it look like?

Organizations use STKY mainly to support SIF prevention. The focus is on systematically identifying high-energy hazards and ensuring effective controls are in place to mitigate energy release risks. An organization suggested that the implementation of STKY would take a 2-year process.

Daily SIF Prevention Efforts

High-energy hazards are integrated into job observations, incident and close-call reviews, and job briefings. Job briefings play a critical role, as tools like SCL's high-energy hazard icons enhance communication and help observers quickly identify hazards. An organization reported that S**t that Kills You, as it appears in Capacity Model, resonates very well with the field employees due to its quirky yet clear tone as a practical SIF hazard recognition tool.

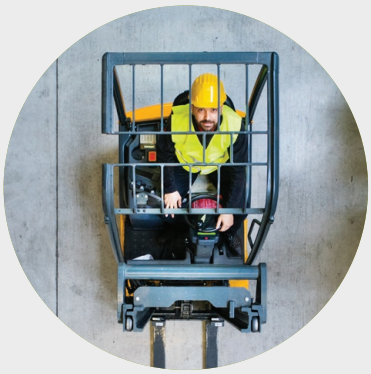
These icons were often incorporated into safety manuals and are used during inspections of high-risk activities. Organizations have developed campaigns similar to the Energy Wheel, providing extensive training and materials, which are complementary to field workers' use of the Energy Wheel and supervisors' HECA observations. Programs are often branded with names such as *Fatal 8, Critical 8, or Life-Critical Risks*. A company reported developing task-specific high energy and controls libraries using learning teams and 'blue-line' understanding.

SIF Classification

The SCL model integrates reporting and learning from High Energy SIFs, Potential SIFs, Capacity events, through consistent definitions of High Energy Hazards (STKY). Companies use this common language for internal and external incident classifications and operational learning.

If Planning to Implement: How do you plan to implement?

Organizations planning to implement STKY often align their approach with Energy Wheel implementation strategies and pointed to their responses related to the Energy Wheel. Some additional notes were:



High Energy Hazards help SIF classification that could allow for external benchmarking. However, a company reported the need for integration with their trending metrics.

Many organizations who plan to implement are preparing communications and training materials closely tied to operational needs.

Some organizations have chosen not to pursue full-scale implementation but instead aim to integrate STKY with HECA as part of their broader safety initiatives.

STKY is frequently highlighted as best suited for observation programs, pre-job briefs and job safety assessments as a way of communicating SIF risk.

If Still Considering: What are the Key Discussion Points?

Companies prioritize securing leadership support and plan to begin with leadership education to build this foundation. Most companies here reported being in the process of learning about STKY, observing how other organizations use it and analyzing associated data. These companies need additional time and careful planning to integrate STKY into their existing safety management systems and to align the timing with other initiatives.

If Not Considering: Why not?

Companies not considering STKY cite three primary reasons:

- Lack of understanding about STKY.
- Insufficient resources, such as staffing, to support implementation.
- Concerns about initiative overload and creating organizational clutter.



CSRA RESEARCH 4

High Energy Control Assessments (HECA)

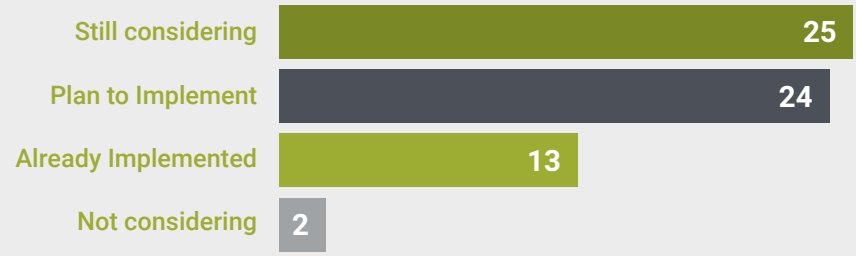
Implementation:

Earliest **2022**

Latest **2026**

Already Implemented
53.13% in 2024

Plan to Implement
29.69% in 2025



If Implemented: What does it look like?

Industry Alignment

Companies reported that HECA has the potential to drive consistency across the industry and align with EEI's development program for utilities. Continuous calibration and improving data quality remain the top priorities for companies continuously collecting data.

Gradual Rollout Approach

Companies are adopting a gradual implementation strategy by piloting HECA within a single business unit before scaling up. High-hazard business segments are typically prioritized, with field safety advisors conducting HECAs. Some companies also involve operations employees and field supervisors in the process. One company reported on a co-HECA approach, where safety representatives and field supervisors conduct HECAs together twice a year as part of training.

To support data collection, one company has implemented software tools to streamline HECA observations. Findings are reported through a Power BI dashboard, enabling data analysis and HECA calculation.

Integration with Existing Safety Practices

Companies reported several integrations of HECA into their existing observation programs, pre-job hazard assessments, and STCKY walks. Additionally, one company reported linking HECA findings to performance evaluations and bonus measurements. However, the editor notes that directly linking HECA numbers to performance and bonus structures is not recommended, as it may compromise data integrity and impact the effectiveness of HECA in the future.

If Planning to Implement: How do you plan to implement?

Integration into Existing Systems

Companies planning to implement HECA are exploring ways to integrate it into their existing safety systems, such as STKY leadership walks and observation programs. Some companies are structuring the rollout in phases—one reported aligning HECA with the Energy Wheel, while another one plans to first establish a strong foundation in STKY and Direct Controls before introducing HECA.

To enhance communication and track progress, one company has updated its Board Scorecard to include HECA metrics, incorporating them into weekly and monthly KPI reviews. However, the editor notes that HECA-related KPIs should focus solely on the quality and quantity of HECA data; score-based HECA KPIs are not recommended.

Communications, Training, and Resources

A significant portion of implementation efforts is dedicated to acquiring and developing the necessary resources for communication, training, and rollout. One company has branded its initiative as the "Measuring Safety in the Moment" campaign.

Many companies are waiting for additional materials and formal training before proceeding. While most companies have safety personnel as primary collectors for HECA data, some companies—facing resource constraints—are expanding data collection efforts to operations teams.



HECA Data Collection Infrastructure

For HECA to be effectively operationalized, companies recognize the need for a consistent and reliable data collection system. To support this, they are exploring the development of internal HECA tools and applications and evaluating external software solutions for streamlined data collection and analysis.

If Still Considering: What are the Key Discussion Points?

Resource Constraints

As with any new initiative, companies considering HECA are mindful of both tangible and intangible resource demands. Tangible constraints include the time and capacity of safety teams to implement HECA, while intangible factors—such as company culture, organizational bandwidth, and overall readiness—play a significant role. Some companies view these intangible factors as more critical, with one noting, "We wonder if we need another program to implement at the moment."

Organizational Readiness

Companies are at different stages in their SIF program development—some are just beginning, while others are further along. A common concern is ensuring that new programs, including HECA, do not add unnecessary complexity to an already saturated safety landscape. Many organizations prioritize careful planning to avoid overwhelming employees with too many initiatives.

Additionally, some key HECA concepts rely on existing frameworks, such as the Energy Wheel, STKY, and Direct Controls. Several companies prefer to fully establish these concepts before integrating HECA. One organization also noted the need for executive support before moving forward.

Preparations and Benchmarking Expectations

Most companies are in the process of reviewing HECA and developing an implementation strategy, while also gathering training and data collection resources. Some companies are waiting for a finalized and consistent list of Direct Controls before proceeding.

A primary focus is determining how HECA can be effectively integrated into their existing safety management systems. Examples and benchmarking against similar organizations remains a key factor in the decision-making process.

If Not Considering: Why not?

Companies not considering HECA cite two primary reasons:

- Unfamiliarity with HECA concept.
- Very limited exposure to high-energy making the need for HECA less justifiable.



CSRA RESEARCH 5

Pre-Job Meeting Field Guide and Scorecard

Implementation:

Earliest **2014**

Latest **2026**

Already Implemented
23.44% in 2022

Plan to Implement
18.75% in 2025



If Implemented: What does it look like?

Pre-Job Brief Reviews on Site

Companies implemented pre-job meeting reviews through training programs for field safety professionals and site supervision. These reviews are also used as coaching tools to guide site supervision on proper pre-job brief execution. Due to the resource-intensive nature of scorecards, several companies have adopted them as reference tools rather than mandatory requirements. One company developed training videos inspired by the CSRA resources to support their training.

Leading Indicator for Safety Performance

Pre-job meetings and their quality serve as leading indicators for safety performance. Some companies integrate them into safety tracking systems for pre-job meeting evaluations. One large construction project reported using them to identify trends and improve safety practices.

Modifications and Implementation Variability

Several companies have modified the scorecard for rebranding, simplifying language, and reducing its length (from 15 questions to 10). Some have integrated it into broader initiatives like The Capacity Model. Rebranding is expected, but the editor notes that modifications to the CSRA-validated scorecard impact verification and consistency.

Responses also highlighted significant variability in pre-planning processes, with companies adapting the approach to fit their operational needs. While this flexibility is beneficial, achieving consistency across organizations remains a challenge.

If Planning to Implement: How do you plan to implement?

Developing Resources

Companies planning to implement pre-job meeting field guide and scorecard are finalizing their strategies, training programs, and guidelines. For data quality, a key priority is ensuring proper calibration to maintain data accuracy and usability. Most companies made the Field Guide available to all field employees, even if not fully implemented or planned for further rollout.

As with other safety initiatives, most are starting with a pilot program. Utility companies reported aligning their rollout with EEI's 2025 targets, beginning with implementing in one business unit by the end of 2025.

Similar to HECA, effective pre-job meeting data collection requires a structured approach. Companies are evaluating either internally developed or externally acquired electronic tools to replace manual (paper-based) processes.

Defining 'What Good Looks Like'

Several companies plan to use the CSRA Scorecard to train supervisors on what establishes an effective pre-job meeting. While this does not imply full implementation, it plays a crucial role in developing competency. Some companies have created training videos inspired by the scorecard to visually demonstrate best practices.

Integration with Existing Pre-Job Meetings

One company reported already using a similar tool to the CSRA's Pre-Job Meeting Scorecard and plans to revise and align it with their broader safety programs, ensuring standardization across the organization.



If Still Considering: What are the Key Discussion Points?

1. **Resource Constraints:** Some companies are waiting for additional resources, such as electronic tailboards, to support implementation. Others face the opposite challenge, having too many similar tools already in use, leading to redundancy concerns.
2. **Competing Priorities:** Many companies are managing multiple ongoing initiatives, making program clutter a significant concern. Some organizations are simply not ready to introduce another new Scorecard. A company also noted the need for industry-specific considerations, particularly in manufacturing. Those still evaluating the program are focusing on assessing its effectiveness and gathering internal feedback before making a decision.
3. **Unfamiliarity with Resources:** Companies reported varying levels of awareness regarding this research—some were unfamiliar with it entirely, while others recognized the need for further learning and review of existing documentation before moving forward.
4. **Integration Challenges:** Uncertainty about how to integrate the program into existing systems remains a common hesitation. One company piloted the CSRA Scorecard but ultimately decided to apply a similar scoring methodology to its existing job safety briefing observation program rather than fully adopting the CSRA research products.

If Not Considering: Why not?

Companies not considering Pre-Job Meeting Field Guide and Scorecard cite the following reasons:

- Unfamiliarity with the Pre-Job Meeting Field Guide and Scorecard.
- Lengthy survey and perceived redundancy due to too many questions—may not justify the effort.
- Already implemented a similar process.
- Adopted the guide but not planning to adopt the scorecard.
- Organizational culture does not align with having scorecards.
- Competing priorities preventing implementation in the foreseeable future.
- Exploring alternative tools and technologies to assess pre-job meeting quality.



CSRA RESEARCH 6

Safety Observations Field Guide and Scorecard

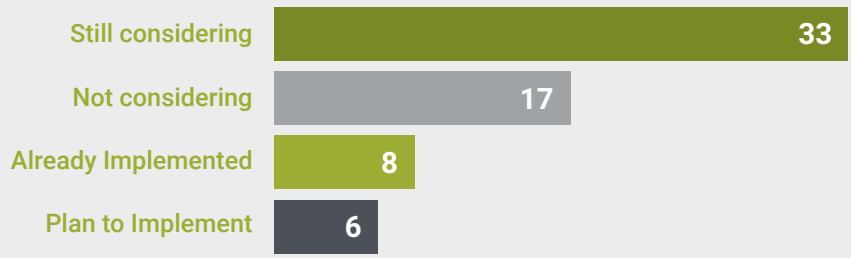
Implementation:

Earliest **2020**

Latest **2025**

Already Implemented
12.50% in 2023

Plan to Implement
9.38% in 2025



If Implemented: What does it look like?

Safety observations are widely practiced but vary significantly in frequency, quality, and methodology, making it challenging to adopt a uniform review system using the Field Guide and Scorecard. The analysis of the data collected shows that:

- None of the respondents reported full implementation of the Safety Observations resources.
- Companies that have implemented similar approaches have developed their own review methods, with some drawing inspiration from the CSRA's work and others following independent frameworks.
- A common practice is for field safety professionals to conduct these observations.
- One company integrated safety observations into their KPI framework, while another incorporated them into training and made the guide available but did not mandate their use.

If Planning to Implement: How do you plan to implement?

None of the respondent companies plan to implement the CSRA's tools exactly as they are but instead use them as inspiration. These organizations already have observation systems in place, primarily in various forms (i.e., compliance audits, STKY walks, Observation and Coaching program, etc.) Their focus is to increase engagement and revamp their existing safety observation processes to align with high-energy hazards, Direct Controls, and Human and Organizational Performance (HOP) principles.

Two companies noted that their implementation strategy follows a structured process, beginning with communication and training followed by field observations. These efforts are reinforced through ongoing practice, reminders in regular meetings, and demonstrations at safety events.

If Still Considering: What are the Key Discussion Points?



Competing Initiatives: Organizations prioritize other implementations with some noting a lack of executive support or organizational appetite for adopting this tool at this time.



Competing Observation Programs: Many companies already have established observation tools, with different business units preferring their own systems. Some are evaluating whether this program differs enough to justify adoption.



Need to Learn More: Some companies are unfamiliar with the research, while others are still in the process of reviewing documentation and assessing feasibility.



Integration Uncertainty: Companies with existing systems are unsure how to incorporate this tool. While some are considering using elements from the CSRA's resources, full implementation is not planned.

If Not Considering: Why not?

Companies not considering Safety Observations Field Guide and Scorecard cite the following reasons:

- Unfamiliarity with the Safety Observations Field Guide and Scorecard.
- Already implemented a similar process that works well (i.e., STKY walks, Observation and Coaching program, etc.).
- Competing priorities preventing implementation in the foreseeable future, especially in comparison to the HECA and Pre-job Brief initiatives underway.
- Exploring alternative tools and technologies to capture Safety Observation quality.



CSRA RESEARCH 7

Leadership Engagement Field Guide and Scorecard

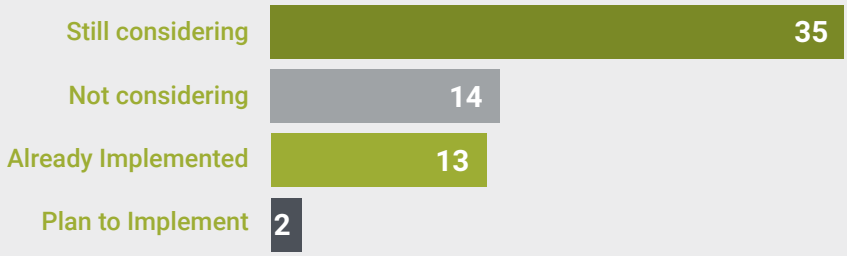
Implementation:

Earliest **2021**

Latest **2026**

Already Implemented
20.31% in 2023

Plan to Implement
3.13% in 2025



If Implemented: What does it look like?

Companies reported varying levels of implementation for leadership engagements. Most companies used the field guide to shape leadership engagement programs, and either adapted the scorecard to align with their internal focus areas, selected key questions, or did not use the scorecard at all. From the data, we conclude that implementing the scorecard itself has proven challenging.



Implementation Markers

- Most companies require corporate field safety professionals, supervisors, and executives to participate in leadership engagements.
- One company integrated leadership engagements into an executive bonus metric.
- All companies provide some form of leadership engagement training, though mandates vary.

Varying Success

- One company launched a leadership engagement program in 2023 but faced executive resistance. They plan to revamp it in the future.

If Planning to Implement: How do you plan to implement?

Two companies planning to implement reported:

1. **Preparing to launch communications and training.**
2. **Embedding parts of the research into their internal Leadership Engagement metric.**

If Still Considering: What are the Key Discussion Points?

A majority of the respondents reported they were still considering implementation and offered the following discussion points:

1. **Need to Learn More:** Some companies are unfamiliar with the research, while others are still in the process of reviewing documentation and assessing feasibility – especially to attain executive support.
2. **Competing Initiatives and Programs:** Companies with multiple ongoing initiatives are hesitant to adopt new tools, to avoid program clutter and implementation fatigue. One company questioned the added value of this research compared to existing HECA and Pre-Job Brief initiatives. Several companies have already established or are developing internally grown leadership engagement programs that they consider sufficient for their needs.
3. **Reviewing Options:** Companies are evaluating various leadership tools to determine the most effective approach. Some organizations are still reviewing Leadership Engagement resources before moving forward with a decision and an implementation plan.
4. **Preparation and Learning Period:** Several companies are considering applying this tool when engaging middle management on-site for field inspections to provide insight and learning opportunities. One company has piloted the tool within a single business unit and is now exploring organization-wide implementation. Others are discussing how to integrate elements from the field guide into their current processes without making them more cumbersome.
5. **Data Capture:** One company expressed interest in using scorecards for data collection but is currently implementing a new system to manage data. Another is working to determine who should be doing these leadership engagements and what the desired engagement frequency is.

If Not Considering: Why not?

Companies not considering Leadership Engagement Field Guide and Scorecard cite the following reasons:

- Unfamiliarity with the Leadership Engagement Field Guide and Scorecard.
- Competing priorities preventing implementation in the foreseeable future, especially in comparison to the HECA, STKY and other meeting initiatives underway.
- Lengthy survey that makes it hard to coach an executive on.
- Already implemented a similar process that works well.
- Scorecards are not being received well by the organizations.
- Exploring alternative tools and technologies to capture Leadership Engagement quality.



CSRA RESEARCH 8

Predictive analytics/ the RALFIE tool

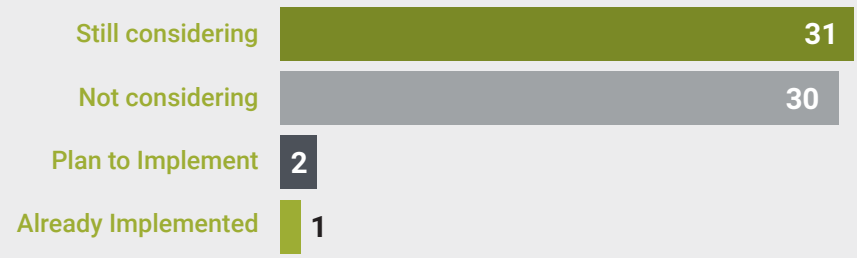
Implementation:

Earliest **2022**

Latest **2024**

Already Implemented
1.56% in 2022

Plan to Implement
3.13% in 2024



If Implemented: What does it look like?

The predictive analytics project resulted in a machine learning algorithm and proof of concept software tool (RALFIE) demonstrating that business, project, and crew factors could be used to predict scores. The tool was made available for a year after its creation but was later discontinued, as the CSRA does not maintain resource-intensive software or predictive tools. As expected, only one company reported using a similar tool, primarily for contractor management within their facilities.

If Planning to Implement: How do you plan to implement?

Two companies reported plans to implement similar predictive tools, one drawing inspiration from this work to develop safety “scores” in their reporting. However, no details were provided on how these scores will be structured or measured.

If Still Considering: What are the Key Discussion Points?

Almost half the respondents reported that they still consider implementing Predictive Analytics. The key discussion points they have escalated are as follows:

1. **Potential Future Implementation:** Many companies see Predictive Analytics as a valuable area of interest but acknowledge that their current analytical capabilities are not yet mature enough for full adoption. They are focused on improving data availability, consistency, fluency and view this as a longer-term implementation goal.
2. **Program Integration and Value Proposition:** Companies are evaluating how Predictive Analytics could fit within their existing toolsets and whether it adds value. Organizations with ongoing predictive programs want to assess the CSRA’s work, compare it to existing tools, and determine its unique contributions before considering implementation.
3. **Pending Data Infrastructure:** One company reported implementing a new system for data management, which should be completed to reach adequate data maturity before adopting Predictive Analytics.

4. **Competing Initiatives:** Companies with multiple ongoing initiatives are hesitant to adopt new tools due to concerns about program clutter and implementation fatigue. One company is already engaged in a separate predictive analytics research project.
5. **Unfamiliarity with Research:** Most companies were not involved in this research project and are unfamiliar with its findings. While they express interest in learning more, time and resource constraints limit their ability to explore it further. One company raised questions about factors predicting injuries, levels of analysis (i.e., crew), and available predictive tools. The editor notes that answers to any such specific questions could be found in Predictive Analytics/ HECA | CSRA.

If Not Considering: Why not?

Companies not considering implementing Predictive Analytics cite the following reasons:

Applicability Concerns

While Predictive Analytics is an area of interest and development, some companies question its applicability, citing concerns that current tools and research remain too academic. One company reported that its safety analytics team is exploring potential applications, but organization-wide implementation is not under consideration.



Cluttering the Safety Program

Many companies lack the capacity, resources, or expertise to implement and benefit from Predictive Analytics. There is concern that adding such an initiative without a clear value proposition could overwhelm the safety program. One company stated that Predictive Analytics is not an internal priority at this time.

Competing Initiatives

Ongoing initiatives like HECA and STKY are already driving significant changes in safety programs. The implementation of a new Predictive Analytics program causes concerns about organizational bandwidth. Companies report limiting constraints on time, budget, and resources.

Some organizations already use third-party platforms with similar Predictive Analytics functionalities, leveraging Power BI to analyze risks based on experience, work hours, leading and lagging indicators.

Not Ready

Many organizations see this as a long-term research area rather than an immediate priority. A company reported that internal data infrastructure development should be completed before implementing Predictive Analytics.

Unfamiliarity with Research

The majority of responding companies were not engaged in or familiar with the CSRA's Predictive Analytics research or the RALFIE tool. Since the CSRA no longer maintains RALFIE, findings from this research are available in related papers and presentations.



CSRA RESEARCH 9

Incident Investigation Resources (Field Guide and the Check Yourself Tool)

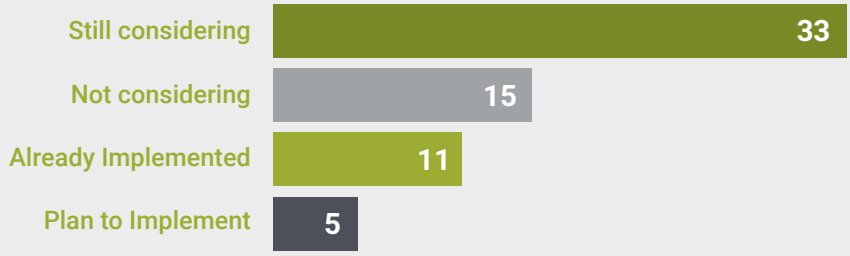
Implementation:

Earliest **2022**

Latest **2025**

Already Implemented **17.19% in 2023**

Plan to Implement **7.81% in 2025**



If Implemented: What does it look like?

While 11 companies reported using the CSRA Incident Investigation Resources, only a few have fully implemented them within their safety departments and shared them with their incident investigators. Others have integrated these resources into their existing processes in various ways, including:



- Converting the field checklist into an incident log.
- Confirming that their current programs already align with the best practices outlined in the resources.
- Enhancing already well-established and advanced investigation processes to ensure consistent causation analysis and corrective actions.
- Incorporating elements of the Field Guide into learning events and improving investigative discussions.
- Reviewing and presenting bias-related topics.

If Planning to Implement: How do you plan to implement?

Companies planning to implement are preparing communications and training as they approach implementation, aiming to improve investigations and make them more effective learning tools. One company intends to use the CSRA's resources to refine its event learning review, a high-priority organizational objective, while another is focused on articulating how these resources will integrate into its existing processes to provide value.

If Still Considering: What are the Key Discussion Points?

Integration vs. Restructuring

Incident investigations are a core function across all companies, but their methods vary significantly. Further, with many established programs already in place, organizations are hesitant to introduce changes. As a result, the implementation of the CSRA's resources is rightly seen more as an enhancement to existing systems rather than a full restructuring, as was always the intention.

While some believe their current processes are sufficient, others acknowledge the need for improvement but do not prioritize it over competing initiatives. A few companies expressed a strong need for enhancements and requested help with accessing additional resources.

Unfamiliarity with Resources

Many companies reported being unaware of the CSRA's incident investigation resources and expressed a need to learn more by reviewing the documentation before considering adoption.

Resource Constraints and Competing Initiatives

Limited bandwidth and ongoing initiatives make it difficult for companies to implement additional improvements. Organizations are cautious about making too many changes at once, fearing program clutter and implementation fatigue. One company noted that existing training is too lengthy and would require additional resources.

Many companies prefer to focus on strengthening their internal investigation processes before incorporating the CSRA's resources and are keeping a focus on data analysis rather than data collection, which was the focus of the CSRA project. Such analytical models in use include Tap Root, Learning Teams, Corrective and Preventive Action (CAPA), and 5 Why Root Cause Analysis (RCA).

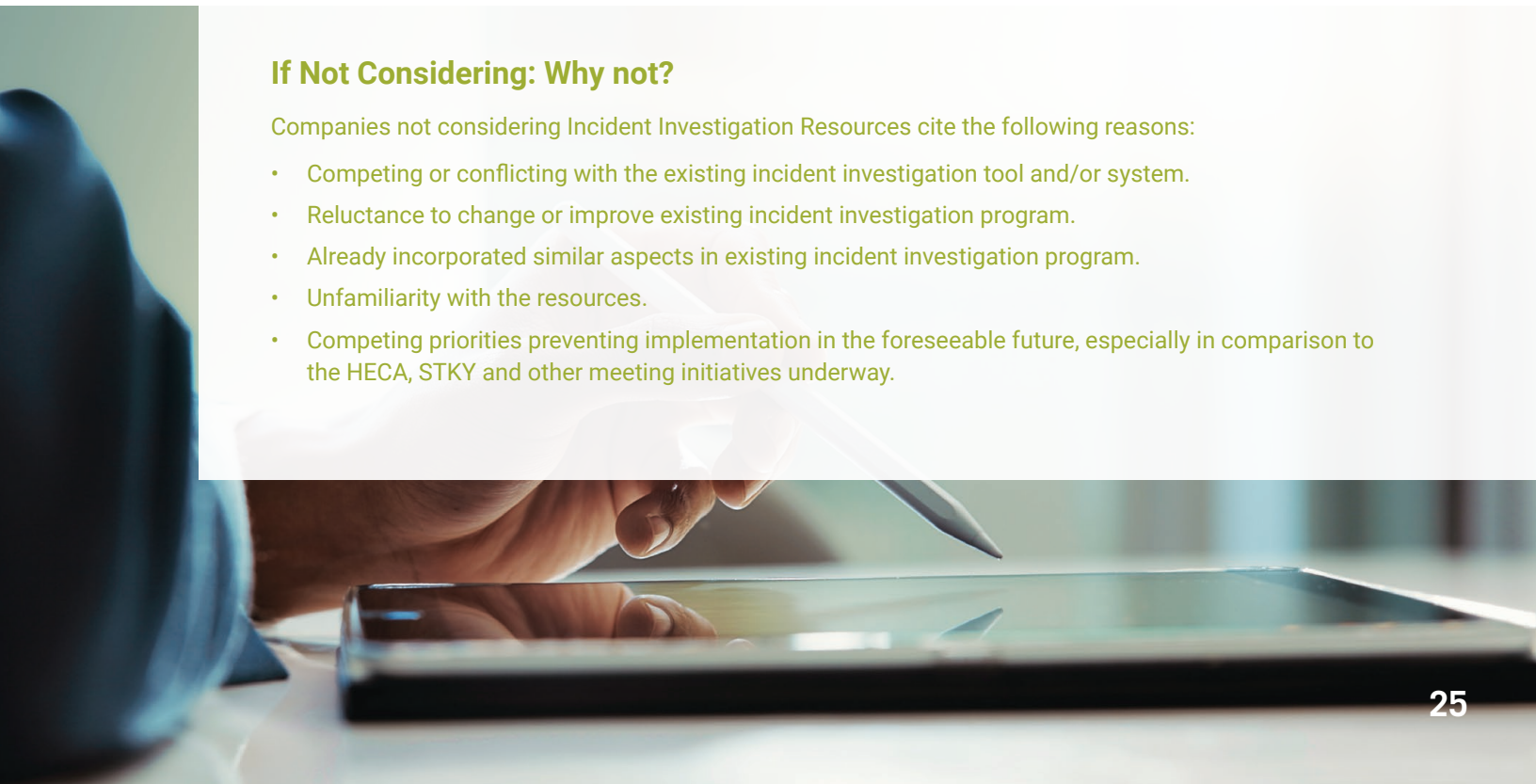
Preparation for Implementation

Companies considering adoption recognize the value of the CSRA's tools and have begun circulating materials for awareness. However, full implementation and training have not yet been prioritized. Next steps include securing leadership support, integrating improvements into existing processes, and determining the right timing for implementation.

If Not Considering: Why not?

Companies not considering Incident Investigation Resources cite the following reasons:

- Competing or conflicting with the existing incident investigation tool and/or system.
- Reluctance to change or improve existing incident investigation program.
- Already incorporated similar aspects in existing incident investigation program.
- Unfamiliarity with the resources.
- Competing priorities preventing implementation in the foreseeable future, especially in comparison to the HECA, STKY and other meeting initiatives underway.





CSRA RESEARCH 10

The LIFE Model to define SIFs

Implementation:

Earliest **2022**

Latest **2025**

Already Implemented
20.31% in 2023

Plan to Implement
21.88% in 2025



If Implemented: What does it look like?

Companies that have implemented the LIFE model started using it to define SIFs, specifically in event reviews and incident investigations within their safety organizations. One company noted that its program already incorporated the LIFE model as a best practice before the CSRA formally developed it.

One company reported using the LIFE model's SIF definitions for reporting organization-wide and incorporated them into monthly executive leadership reports. As part of their implementation, another company reviewed past incidents for alignment and began tracking injuries based on the LIFE model moving forward.

Several companies reported following EEI's updated 2024 SIF definition and Safety Classification and Learning (SCL) model instead of the LIFE model but acknowledged implementation, as there is significant overlap in how these definitions function.

If Planning to Implement: How do you plan to implement?

A consistent SIF definition is essential for companies to learn from each other and analyze incidents both internally and across the industry. Organizations planning to implement the LIFE model for SIF definition intend to:

- Follow EEI's guidance as part of their SCL and SIF definition rollout.
- Couple the LIFE model with HECA for simultaneous implementation.
- Review existing documentation and develop a strategic implementation plan.
- Analyze past incident data through the LIFE model lens and proceed with implementation once data confidence improves.
- Develop a communication and training plan before rollout.
- Integrate the LIFE model within existing standards without fully aligning with its definitions.
- Leverage partnerships with industry associations to promote adoption and ensure consistency.

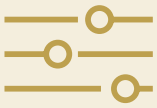
The data highlights diverse approaches to implementing the LIFE model and aligning on the SIF definition, which is expected given the varying organizational structures. Companies are adapting the model in ways that maximize impact and ensure successful adoption within their unique operational contexts.

If Still Considering: What are the Key Discussion Points?

1. **Prioritization:** With limited resources, several companies have not yet prioritized or secured leadership support for implementing the LIFE model. One company noted that they are waiting for the right time, aligning adoption with the maturity of their safety system to ensure readiness.
2. **Pending Newly Established Emphasis on SIF Reporting:** Some companies are still shifting their organizational focus toward SIF reporting. One company acknowledged that SIF implementation has been slow within their organization, delaying broader adoption of the LIFE model.
3. **Unfamiliarity with the Model:** Many companies have only recently been introduced to the LIFE model and need time to learn more. Ensuring it aligns with existing programs and tools without causing conflicts is a key concern before seamless integration.
4. **Competing Programs:** While the LIFE model is slowly gaining traction, companies report frameworks that seem to be competing such as EEI's SCL and SIF definitions or internal classifications, causing hesitation. The presence of multiple models adds complexity to decision-making.
5. **Integration into Existing Reporting:** As companies consider implementation, they recognize the need to reclassify past incidents and/or align with existing classification systems. Some examples include low/high-risk models, SCL, or in-house frameworks. Ensuring consistency with current reporting structures remains a challenge.

If Not Considering: Why not?

Most companies do not plan to implement the LIFE model for defining SIFs, citing the following reasons:



Alignment with Industry

Most companies in this category are uncertain whether the LIFE model aligns with EEI's SIF criteria and have opted to follow EEI's framework instead. As seen in previous sections, EEI's SIF definition and SCL model appear to be gaining more traction, creating a potential overlap or competition with the LIFE model. Especially since the SCL model also includes no injury events while LIFE model only considers incidents. One company observed that the industry does not seem to be moving toward widespread adoption of the LIFE model and expressed unwillingness in the organization.



Resource Constraints and Competing Initiatives

Some companies face resource limitations that prevent them from supporting a definition change. Others have already established internal models and criteria that work effectively, with some serving as benchmarks for other organizations. One company expressed a preference for its existing model over adopting the LIFE model.



Unfamiliarity with the Model

Several companies reported being unaware of the LIFE model or needing more information before considering its implementation.



CSRA RESEARCH 11

Mental Health Guidance

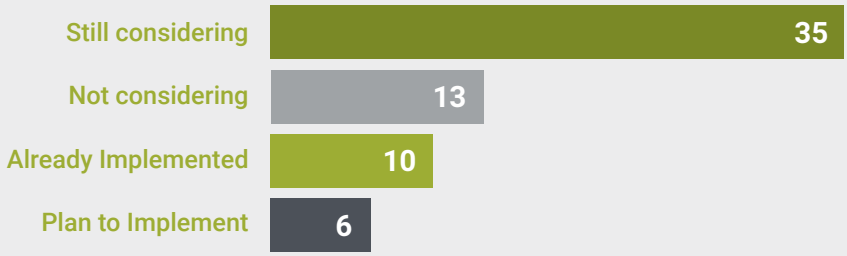
Implementation:

Earliest **2020**

Latest **2024**

Already Implemented
15.63% in 2022

Plan to Implement
9.38% in 2024



If Implemented: What does it look like?

This question asked whether companies have implemented the CSRA's Mental Health research. Three companies reported implementing mental health programs before the CSRA finalized its project, referencing other mental health initiatives instead.

When developing mental health programs, organizations primarily focus on:



Mental health awareness and intervention strategies take priority. Several respondents highlighted the use of technology and guided conversations to support better sleep, anxiety reduction, meditation, and stress management.

One company reported implementing a peer-check program to help employees recognize and respond to mental health concerns among colleagues. Cross-departmental collaboration is frequently cited as essential for successful implementation.

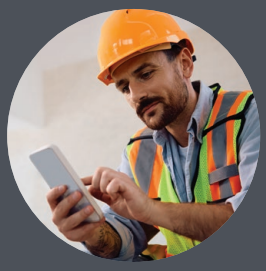
Most companies use mental health resources primarily for informational purposes, used by both internal departments (e.g., Human Resources) and external organizations such as the Canadian Construction Safety Council and INGAA Foundation.

If Planning to Implement: How do you plan to implement?

Since most safety professionals are not mental health experts, implementation differs from other safety programs. Companies planning to implement mental health initiatives focus on two main activities:



Outreach:
Engaging with industry associations and external organizations to build community support and establish benchmarks.



Education:
Learning about Mental Health to increase awareness, identify the right tools, and develop training programs for their teams.

If Still Considering: What are the Key Discussion Points?

Readiness for Mental Health Program Implementation

Organizations cited several factors when evaluating their readiness to implement mental health programs beyond distribution of research materials:

1. A mature safety program as a foundation for broader implementation.
2. Organizational culture that has yet to fully adopt mental health resources beyond periodic awareness initiatives.
3. The need for leadership education and buy-in to drive meaningful adoption.

Existing Mental Health Programs and Initiatives

Many companies already have established Employee Assistance Programs (EAPs), either developed internally or sourced externally, which they consider sufficient. Organizations that are still evaluating the CSRA's research reported plans to use it for team education, program validation, or partial integration into existing initiatives. Some also reported collaborating with other external organizations on mental health topics.

Implementation Challenges: What and How?

A majority of companies reported minimal exposure to the CSRA's Mental Health research and uncertainty about how to implement it. One respondent noted the lack of a concrete implementation tool or structured path, stating: *"There was not much guidance on 'how to'—general awareness was shared, but more research is needed, along with legal and HR guidance."*

Ownership Uncertainty

Internally, mental health programs remain in a gray area, with ongoing discussions about whether Human Resources or Safety should take ownership of these initiatives and how the collaboration should look like.

If Not Considering: Why not?

Companies not considering Mental Health guidance cite the following reasons:

- **Not in Scope for Safety Departments:** Some organizations see mental health initiatives as the responsibility of HR rather than Safety, placing implementation outside their scope.
- **Competing Mental Health Programs:** Organizations already follow established programs such as Mental Health First Aid curriculum and Johns Hopkins Myers program.
- **Unfamiliarity with the CSRA's Mental Health Guidance:** Many companies reported being unaware of or needing to learn more about the CSRA's mental health resources.



CSRA RESEARCH 12

Guidance for High Quality Safety Training

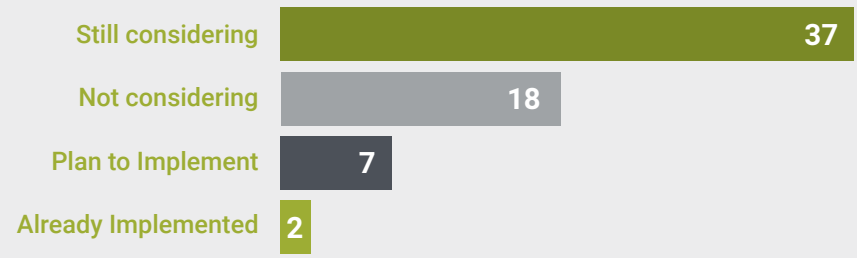
Implementation:

Earliest **2025**

Latest **2025**

Already Implemented
3.13% in 2025

Plan to Implement
10.94% in 2025



If Implemented: What does it look like?

The two companies that reported implementation described it as borrowing insights from the research rather than fully adopting it. One company used the CSRA's resources to support its planning efforts for training, while the other incorporated a two-day hands-on training and short video-based modules into its existing classroom training for field employees.

If Planning to Implement: How do you plan to implement?

The training resources are being considered by companies for the following implementation purposes:



If Still Considering: What are the Key Discussion Points?

Organizational Readiness

Two key factors influence organizational readiness: speed of change and organizational maturity. Companies undergoing change currently hesitate to introduce too many adjustments at once. Others, at different stages of safety training program maturity, reported that they would consider this research after completing their ongoing program development. While companies acknowledge the need to review their existing trainings using this guidance, it is not currently a priority.

Integration within Existing Training Programs

A major discussion point is how this research can be incorporated into existing training modules. One company reported reviewing the documentation to determine whether the guidance differs significantly from its current programs before making changes.

Organizational Priorities

Initiatives for training improvements often require executive support but competing initiatives—such as implementing new performance metrics, rolling out data management systems, or transitioning away from COVID-related training to a new focus—have taken precedence. While training remains on the priority list, it is not the immediate focus.

Training Removed from Safety

In some organizations, training exists under a different business unit or is managed by a third party, limiting the safety department's visibility and authority over changes.

Unfamiliarity with the CSRA's Training Research

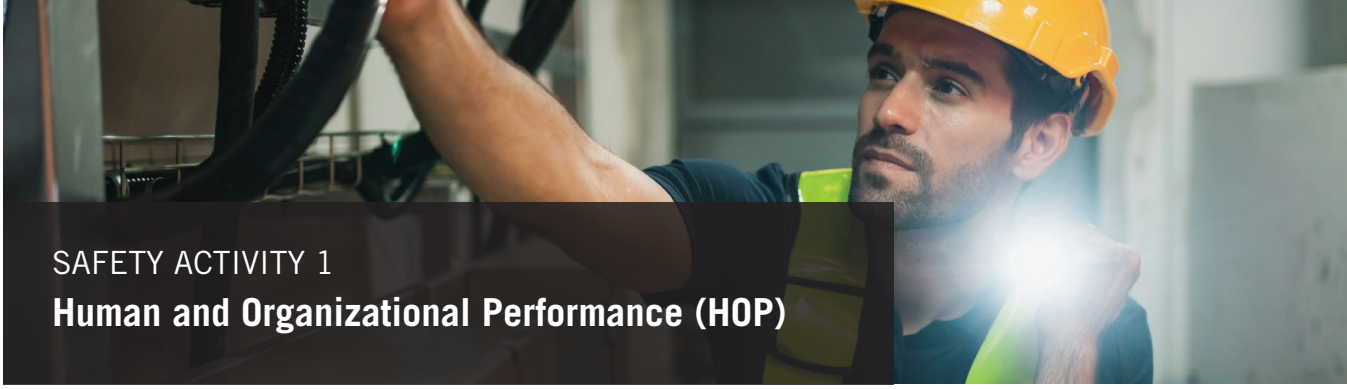
Many companies have yet to review the CSRA's research or are in the process of evaluating it. Those still reviewing have shared the materials with their training teams for further assessment.

If Not Considering: Why not?

Companies who are not considering using this guidance reported:

- Too much ongoing organizational change to support another training-related implementation.
- Already having a high-quality internal training program with in-house methods and assessments, making additional guidance unnecessary.
- Unfamiliar with the research due to time, access, or resource constraints.
- Training falls under a different department or external provider, limiting responsibility.





SAFETY ACTIVITY 1

Human and Organizational Performance (HOP)

Implementation:

Earliest **2008**

Latest **2026**

Already Implemented
37.50% in 2021

Plan to Implement
12.50% in 2025



If Implemented: What does it look like?

While varying in levels of maturity, the objectives of most HOP programs are centered on human performance improvement and better incident learning. Some companies noted just beginning their HOP journey and one implemented it as required by their client, but most have fully embedded HOP as a core belief system within their organization.

Extensive Rollout

Companies that implemented HOP did so on a large scale, integrating it across all employee levels and closely coordinating with departments such as HR to align concepts like 'discipline' versus 'learning'. Despite the complexity of implementation, most companies began by integrating HOP principles throughout their organizations, embedding them into all systems through various tools and frameworks.

Implementation Tools

Companies reported deep integration of HOP across their organizations by embedding it into policies, processes, questionnaires, surveys, videos, AI tools, meetings, and safety communications. To reinforce HOP, organizations created HOP coaching networks, periodic messaging, and structured learning/refresher sessions. Rollout strategies included formal training programs, learning teams, and learning calls for incident reviews. While some companies relied on external consultants for implementation, others employed internal subject matter experts.

Leadership and Effectiveness

A company emphasized leadership and their response to safety issues as the focus of their HOP implementation, ensuring alignment with HOP principles. A company noted that although HOP has been implemented, measuring and reporting back its impact on safety performance remains challenging.



If Planning to Implement: How do you plan to implement?

The companies who are planning to implement HOP reported performing the following activities. The editor notes that no two companies reported the same approach which may indicate varying levels of planning maturity or the need of a tailored approach in each company due to complexity, culture, etc.

- Multi-year implementation plan requiring a phased approach considering other implementations.
- Hiring an internal subject matter expert or building a team of HOP experts within the safety organization.
- Building a dedicated committee responsible for rollout.
- Creating and improving internal HOP training.
- Training on Learning Teams using HOP principles.
- Performing pilots in smaller locations before company-wide implementation.
- Starting with awareness training for field instructors and frontline supervisors before full rollout to ensure buy-in.
- Integrating within existing implementations such as the STKY program.

If Still Considering: What are the Key Discussion Points?

1. **Program Clutter:** Companies expressed concerns about adding unnecessary complexity to their programs. Given how extensively HOP is implemented in most organizations who reported success, the editor acknowledges this as a valid concern, as a misplaced, under-resourced or untimely implementation could have unintended consequences.
2. **Resource Constraints:** A company reported that understanding and implementing HOP would compete with its SIF program initiative in terms of time and resources that are both limited.
3. **Implementation Preparation:** Most companies need additional time to learn about HOP, evaluate its fit within existing programs, and develop a clear implementation strategy before moving forward.
4. **Company Culture:** Organizational culture and maturity significantly impact how HOP will be received in a company. Some companies reported not being ready for such a fundamental shift.
5. **Partial Integrations:** A respondent noted, *"This topic is extremely difficult to consider 'implemented.' The reality is that some elements/concepts that could be considered 'HOP' are part of our approach."* While not fully implementing HOP, some companies have integrated select elements to:
    a. enhance leadership engagement,
    b. drive better safety behaviors,
    c. shift incident investigations away from human error towards factual incident analysis, and
    d. incorporate capacity-to-fail-safe concepts and actively caring programs.

If Not Considering: Why not?

Companies who are not considering implementing HOP reported:

- Lack of sufficient information on HOP or being completely unaware of this safety activity.
- Finding it too complicated for organization-wide implementation.
- Having resource constraints due to competing initiatives and priorities.



SAFETY ACTIVITY 2

Behavior-Based Safety (BBS)

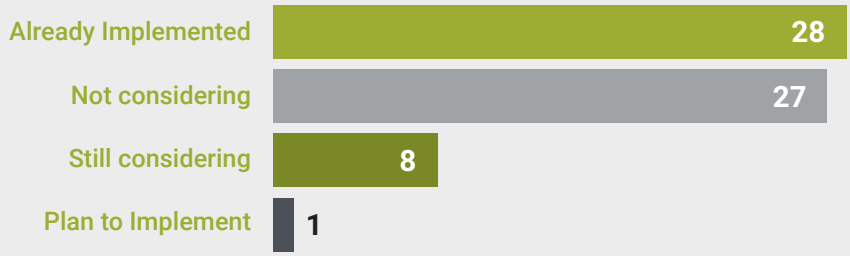
Implementation:

Earliest **2005**

Latest **2023**

Already Implemented
43.75% in 2014

Plan to Implement
1.56% in 2020



If Implemented: What does it look like?

Analysis shows that BBS has been widely implemented in the past, with most companies having adopted it previously, while the remaining organizations are not considering implementation. A company reported that BBS is being phased out as the industry shifts focus increasingly on SIF prevention.

For the companies that implemented BBS, implementation looked like:

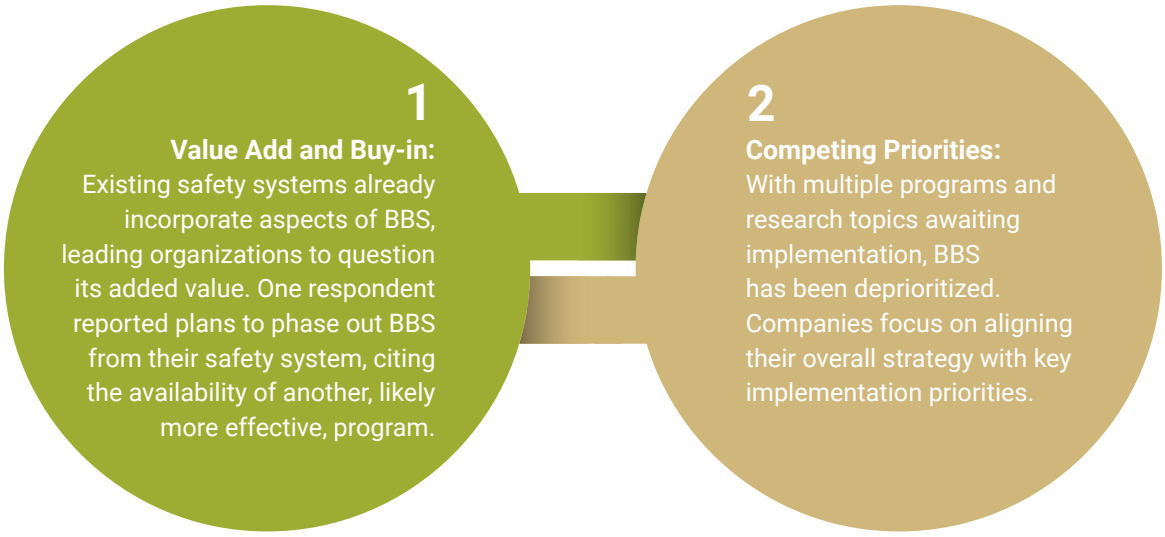
- **Rollout:** Most companies implemented BBS through a company-wide rollout involving all employees. A company implemented it as an employee-led initiative supported by the safety department, while others were led by safety departments. A few companies reported implementation based on projects.
- **Objective:** The aim of the implementation is behavioral auditing and improving hazard recognition to improve human performance. A respondent put it: "coaching through observation, recognition, engagement (CORE)."
- **Integration:** BBS is often introduced as a part of Incident and Injury-Free culture or Loss Prevention System, drawing parallels with Target Zero programs.
- **Observation Program:** BBS was presented as an improvement to the safety observation program through initiatives such as coworker-to-coworker interactions, Safe Partners, Good Catch Program, Safe Track, and near miss programs. These safety interactions are mostly required, tracked, trended, and communicated. A respondent noted that tracking unsafe behavior has seen push back from employees who indicated that an employee feedback tool would better support a reporting culture.
- **Targets:** Setting observation targets such as one per every 200 hours of exposure, reaching up to 30,000 observations per year.
- BBS could also be used for incident reviews or structuring pre-job discussions before work (i.e., SafeStart).

While describing BBS implementation, several respondents mentioned moving away from BBS and/or revising certain aspects, such as only including leading indicators or keeping the workforce recognition component.

If Planning to Implement: How do you plan to implement?

One respondent indicated plans to implement back in 2020 with the intention of merging new concepts of HOP and BBS.

If Still Considering: What are the Key Discussion Points?



If Not Considering: Why not?

Companies who are not considering implementing BBS reported:

- Already implemented and moved away from BBS due to lack of added value. *"No desire to go back to that approach."* While remnants of past BBS implementation remain, they are no longer actively managed or mandated by a corporate program.
- BBS is seen as outdated, promoting a "fix the employee" mindset rather than addressing systemic safety improvements. *"We cannot discipline our way to eliminating SIFs."* Another respondent emphasized, *"We would like to focus on the system rather than behaviors."*
- Prioritizing other safety initiatives such as SIF prevention, STKY hazards, HECA, and HOP, which focus on controls and process-based approaches rather than behavior.
- Existing observation and coaching programs are already sufficient for improving the quality of safety practices and identifying trends for continuous improvement.
- Not suitable for industries with high turnover and large territories, such as pipeline work, where transient environments and span-of-control issues make BBS impractical.
- Time and resource constraints limit the ability to implement another program.
- Too complex, with too many variables to ensure accurate data collection and meaningful change.
- Unfamiliarity with BBS and its potential integration within existing strategies and systems.



SAFETY ACTIVITY 3

Psychological safety

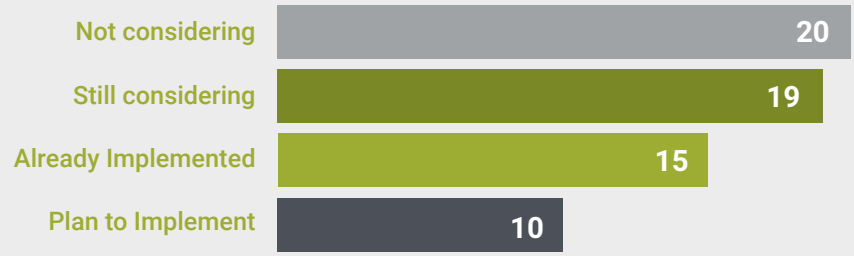
Implementation:

Earliest **2012**

Latest **2025**

Already Implemented
23.44% in 2019

Plan to Implement
15.63% in 2024



If Implemented: What does it look like?

The objective of psychological safety programs is to create *"a culture where people feel comfortable disclosing safety information freely"* and openly expressing disagreement without fear of retaliation. This effort is aimed at shifting from a *"safety cop mentality"* to a more mentorship and training-based approach, incorporating emotional intelligence into safety interactions. Most companies that reported implementation emphasized that psychological safety should be embedded into all systems as a core principle or organizational identity. One company reported improvements in reporting, particularly in mental health-related disclosures.

Implementation:

Psychological safety is integrated through the following safety activities:

- **Orientation within 60 days of employment (for employees and new managers).**
- **Executive leadership engagement and support.**
- **Various training and communication programs, including HOP training, leadership guidebooks, IIF Culture training, MI-Promise Program, Actively Caring Program, 4Life Program (4Rs: Recruit, Retain, Reskill, and Redesign).**

One company reported that its psychological safety program was required by legislation. The editor notes that while the core concepts are similar, there is significant diversity in the lexicon used for psychological safety programs across different organizations.

If Planning to Implement: How do you plan to implement?



Perform a Gap Analysis

One company identified the first step as conducting a gap analysis against the Canadian Standards Association (CSA) on psychological safety, assessing existing practices and identifying areas for improvement.

Continuous Improvement

A structured continuous improvement program is essential for slow and sustainable implementation, especially to adopt such core principles. One company reported launching a pilot program as an initial step.

HOP and Mental Health Integration

Several companies reported incorporating psychological safety concepts within HOP initiatives and collaborating with HR on mental health programs.

Tools and Resources

While psychological safety is a straightforward concept, developing the right tools and resources is critical for effective implementation. Training was identified as a key component. One company reported educating employees on the 13 psychological safety factors and their interpretation within their organization.

If Still Considering: What are the Key Discussion Points?

1. **Culture Shift:** Companies recognize that psychological safety requires a fundamental cultural transformation, shifting from a compliance-driven approach to a mindset that differentiates human error from conscious decision-making, treating them as distinct with different outcomes.
2. **Safety Clutter:** Many ongoing programs, particularly those related to mental health, already incorporate aspects of psychological safety. Companies are concerned that introducing a standalone psychological safety program may add clutter. Instead, organizations are exploring ways to integrate psychological safety concepts more effectively into existing safety programs.
3. **Leadership Support and Competing Priorities:** Successful implementation of any safety initiative requires leadership backing and organizational bandwidth. Some companies reported a lack of leadership support, while others are still working to integrate psychological safety into their overall strategy or piloting efforts before full implementation.
4. **Ambiguous Effectiveness:** Measuring the impact of psychological safety implementations remains a challenge. One company noted that the lack of clear effectiveness metrics makes it difficult to build a strong business case for implementation.
5. **Unfamiliarity with the Concept:** Many companies need further education on psychological safety and how it compares to their existing tools and programs. One respondent noted that while the concept is important and straightforward, the overlap with HOP, mental health, and other initiatives creates confusion.

If Not Considering: Why not?

Companies not considering implementing a Psychological Safety program primarily cited lack of interest, knowledge, or bandwidth. Several organizations stated they are not yet mature enough to adopt such an initiative, while others pointed to a lack of leadership support or misalignment with their long-term strategy. Only one company cited a partial overlap with HOP.



SAFETY ACTIVITY 4

Setting and communicating targets based on the concept of "Zero"

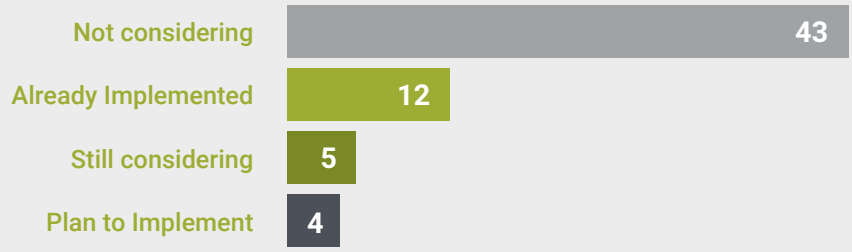
Implementation:

Earliest **2004**

Latest **2025**

Already Implemented
18.75% in 2016

Plan to Implement
6.25% in 2025



If Implemented: What does it look like?

The objective of the "zero" concept is to convey a company's commitment to eliminating all harm and preventing all incidents. While aspirational, creating "zero" targets has faced criticism for negatively impacting an open reporting culture and being perceived as an unrealistic goal, given that work environments inherently involve risk. Several companies that previously implemented "zero" initiatives reported moving away from zero targets for injuries/incidents, discontinuing programs such as "Road to Zero" and "Target Zero."

Implementation

Many companies reported that they continue to follow "Zero". Zero targets were typically introduced through catchy campaigns and reinforced in meetings, training, pre-job briefs, project planning, and vision statements. These initiatives aim to create a culture of zero incidents by continuously engaging employees in a shared goal of "zero". Performance is measured against annual targets, with most organizations tracking progress quarterly based on incidents, near misses, property damage, and other incidents.

If Planning to Implement: How do you plan to implement?

Four companies reported plans to implement "Zero" targets in the coming years by:

Benchmarking with other organizations to develop a strategic rollout plan.

Gradual rollout to allow soak time to adopt the campaign and the targets.

Developing metrics to support the "Believe in Zero" concept.

If Still Considering: What are the Key Discussion Points?

All companies still considering setting and communicating "Zero" targets are reflecting on its messaging and evaluating the effectiveness to improve safety. Several companies reported moving away from it entirely after assessing the unintended consequences of the "Zero" targets, while others have redefined "Zero" to focus on "Zero SIFs" or "Zero Fatalities", aligning with the recent industry shift toward SIF prevention.

If Not Considering: Why not?

Philosophy, Not a Target

While all companies agree that preventing harm is a core safety philosophy, many criticize zero targets as unrealistic and unfit for high-hazard industries. Zero incidents imply zero risk, which does not align with the reality in most work environments. Instead, companies focus on improving controls and mitigating SIF risks as much as possible. Rather than driving metrics toward zero, organizations emphasize learning and continuous improvement through leading indicators and monitoring metrcs to identify and mitigate SIF risks proactively.

Conflicting Programs

Programs emphasizing human performance, Fail Safe culture, and HOP often conflict with zero targets, which are seen as detrimental to safety culture. Many organizations prefer to strengthen defenses against hazards and avoid blame. Most respondents disagreed with zero targets, citing ineffectiveness and potential negative consequences, including underreporting of incidents. Additional concerns were raised about cluttering safety programs. Quotes from Respondents:

"We have no appetite for this thinking. We are humans. We make mistakes. We must focus on developing capacity for safe failure, good governance, and a culture of field ownership and operational learning."

"Our approach is when you have a caring belief about safety, you plan your work accordingly through the project life cycle embedded in your discussions and meetings, etc. The numbers will take care of themselves."

Unfamiliar, Uninterested, and Under-Resourced

Several companies reported being unfamiliar with zero programs, uninterested in setting zero targets, or lacking resources to support a "Zero" target initiative.

Respondents referenced two key resources discussing the consequences of Zero targets in safety:

- "UK Construction Safety: A Zero Paradox?" by Fred Sherratt.
- "Eight Questions to Ask Before Using Zero as a Safety Target," by Michael Burnham.



SAFETY ACTIVITY 5

Removal of TRIR from performance/pay incentives for employees

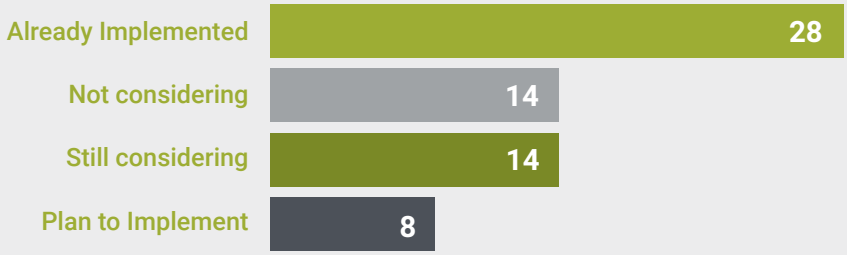
Implementation:

Earliest **2005**

Latest **2026**

Already Implemented
43.75% in 2019

Plan to Implement
12.50% in 2025



If Implemented: What does it look like?

Companies who stopped using TRIR as performance/pay incentives for employees adopted the following strategies.

- Replaced results-based incentive programs with initiative-based incentives. Two companies retained a lagging SIF/HSIF metric for incentives.
- Adopted alternative leading and monitoring indicators as key performance metrics, including:
  - Preconstruction meeting completion rates
  - Monthly safety walks with two mandatory interactions
  - Near-miss reporting
  - Completed safety inspections
  - Safety involvement and engagement
  - Value-Based Engagement
  - Adopting safety best practices
- Eliminated the link between injury rates (TRIR, DART, etc.) and incentive pay. Injury rates remain tracked but not incentivized as a performance metric.
- Several companies reported never having a TRIR-based performance metric or incentive pay for employees.

If Planning to Implement: How do you plan to implement?

Companies planning to transition away from TRIR as an incentivized metric cited the following strategies:

- **Designing proactive alternative metrics** (leading and monitoring indicators) as incentivized KPIs, which roll up to leaders, boards, and their bonus structures. A challenge remains in the lack of available and consistent benchmarking for these new metrics to replace TRIR.
- **Educating executive leaders and boards** on SIF prevention and the limitations of using TRIR as a key performance metric.

- Transitioning slowly and **keeping the company culture and maturity in mind** while strategically planning to remove TRIR from incentive structures.
- **Supporting client education and change**, as external pressure forces some organizations to keep TRIR as a KPI. These companies are exploring ways to minimize the weight of TRIR in scorecards.

If Still Considering: What are the Key Discussion Points?

"What Do You Replace It With?"

While most respondents agree that TRIR should be removed as an incentivized performance metric, a key discussion point remains: what should replace it to effectively measure and benchmark safety performance. Leading indicators and SIF events are emerging as the preferred KPIs to take its place.

Leadership Support

Removing TRIR as a performance metric requires strong leadership support, as leadership decisions—or reluctance—directly influence which metrics ultimately become KPIs. Organizations are strategizing how to approach leadership to secure buy-in while navigating client expectations, strong opinions, and industry pressures.

Are We There Yet?

A few companies reported being in the process of implementing a SIF prevention program and testing its effectiveness before fully removing TRIR from incentives. It was noted that while companies must continue tracking TRIR for OSHA compliance, they are shifting away from using it as a measure of safety performance. As one respondent stated: "We just wouldn't make that a metric to tell us how we are performing."

Industry Benchmarks

Benchmarks and industry insights to establish governance and meaningful safety metrics is crucial to support the transition away from TRIR. Safety Classification and Learning (SCL) Model by EEI and HECA were cited as alternative KPIs.



If Not Considering: Why not?

Companies who plan to keep TRIR as an incentivized performance metric cited:

- Waiting for an acceptable alternative metric for reporting ESG and other rating systems before transitioning away.
- Ongoing leadership education on alternative metrics, but difficulty in finding strong benchmark comparisons to replace TRIR. As a legacy metric, the shift away is slow.
- Various organizational factors prevent transition, including safety system maturity, internal policies, and external client expectations.
- Company size allows for statistically meaningful TRIR reporting, making it a viable performance indicator for pay incentives.
- *"What gets measured gets addressed"*—maintaining a focus on injury rates remains a priority for the organization.



SAFETY ACTIVITY 6

Addition of alternative safety measures in performance incentives and/or pre-qualifications

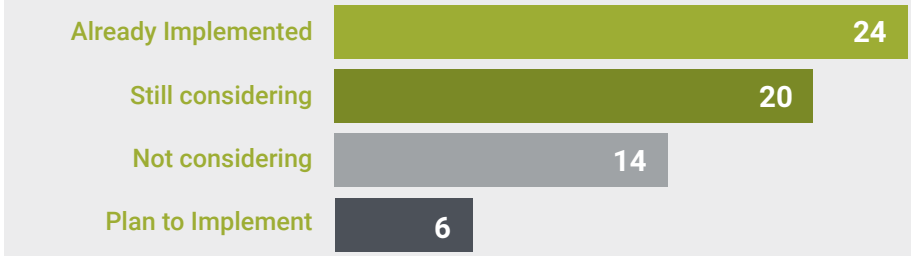
Implementation:

Earliest **2011**

Latest **2025**

Already Implemented
37.50% in 2021

Plan to Implement
9.38% in 2025



If Implemented: What does it look like?

Companies reported developing various safety incentive programs and performance metrics based on a mix of leading and lagging indicators, with a strong emphasis on leading indicators. Examples include:



- Safety observations and HECA collection counts
- Attitudinal survey results
- Balanced scorecards (INGAA Foundation White Paper)
- SIF/pSIF reviews
- Good catch and corrective action programs
- Leadership engagements, management site visits and audits
- Monthly safety engagement opportunities
- Safety shout-outs and recognition on a monthly, quarterly, and annual basis
- High Energy Identification Maturity
- Percent Timely Completion of Learning Events
- "Take One Moment" cards

One company reported modifying contractor pre-qualification requirements to lessen the impact of safety metrics and shift focus to other key evaluation factors. Another company noted that pre-bid processes include incident reviews with a focus on severity and frequency. However, a complete departure from lagging indicators in the prequalification processes was not reported.

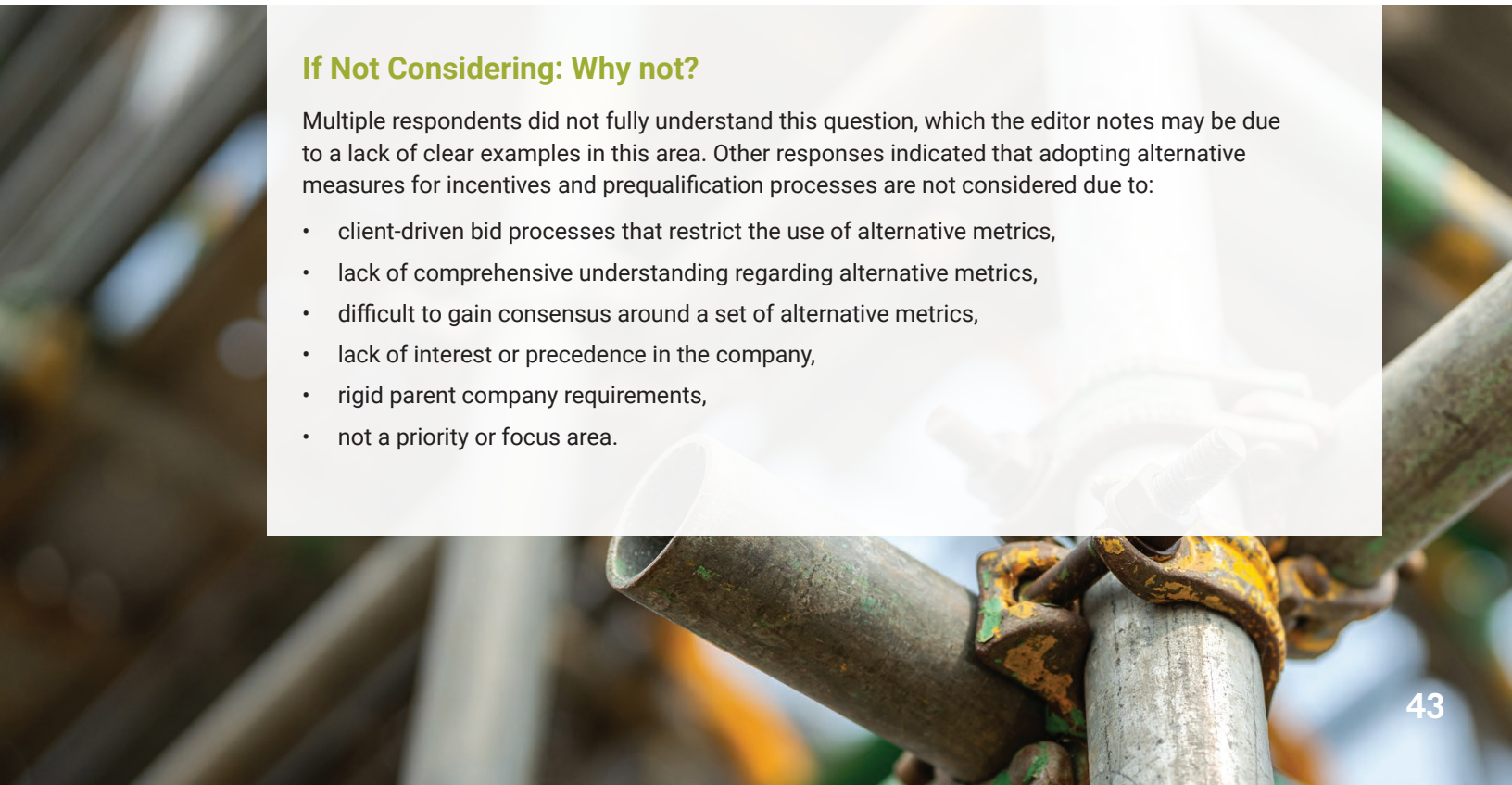
If Planning to Implement: How do you plan to implement?

Like previous findings, most companies reported developing or adopting alternative metrics for performance incentives, with a strong focus on proactive indicators. Examples shared include SCL model results and high-energy events, timely corrective action responses, and at-fault traffic accident rates. Lack of benchmarks was identified as a major barrier to implementing new alternative metrics in performance evaluations.

The editor notes that the SCL model is not appropriate for performance incentives or prequalification metrics. It is strictly a classification and learning tool and using it for comparative performance metrics could negatively impact reporting quality and reduce the effectiveness of SCL model implementation.

If Still Considering: What are the Key Discussion Points?

- **Organizational Priorities:** Companies strive to identify the most critical safety priorities before selecting incentivized metrics. Alignment across the organization about what is most important is key to success. Next step is to find the "right measures". One company stated, *"We are trying to figure out what works (i.e., can we be predictive) and explore better metrics. We have mostly pivoted to using typical lagging indicators to drive better conversations with subcontractors."* An example under consideration is incentivized JSA audits.
- **Organizational Focus:** Alternative incentive metrics may not be a priority for all organizations. Several companies reported focusing on other safety initiatives and expressed concerns about adding complexity and contributing to safety clutter.
- **Process Development:** Most companies are in various stages of designing and adopting alternative performance metrics. However, due to the significant impact of these decisions, organizations prefer to develop comprehensive processes and implement changes gradually.
- **More Research Needed:** The industry has adopted a wide range of alternative metrics, with additional proposals emerging from academia. Companies recognize the need for thorough evaluation of available alternative metrics and exploration of benchmarking opportunities before selecting the best strategy for their specific needs.



If Not Considering: Why not?

Multiple respondents did not fully understand this question, which the editor notes may be due to a lack of clear examples in this area. Other responses indicated that adopting alternative measures for incentives and prequalification processes are not considered due to:

- client-driven bid processes that restrict the use of alternative metrics,
- lack of comprehensive understanding regarding alternative metrics,
- difficult to gain consensus around a set of alternative metrics,
- lack of interest or precedence in the company,
- rigid parent company requirements,
- not a priority or focus area.



SAFETY ACTIVITY 7

A regular safety climate survey

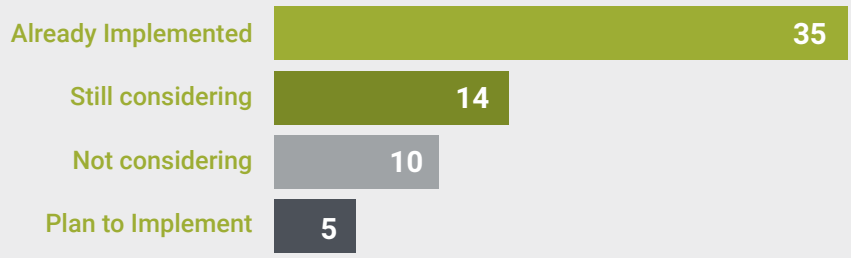
Implementation:

Earliest **2008**

Latest **2025**

Already Implemented
54.69% in 2017

Plan to Implement
7.81% in 2024



If Implemented: What does it look like?

A majority of companies reported implementing some kind of regular safety climate survey. While some conducted dedicated safety climate surveys, others included safety climate questions within broader culture or HR surveys.

Audience: Surveys are typically company-wide, though some are conducted by project or business unit.

Tool: Primarily administered through third-party or industry group surveys or developed internally, sometimes in collaboration with HR.

Content: Focuses on attitudinal assessments using a Likert scale to measure employee engagement and specific safety topics.

Format: Typically conducted via an online tool and embedded in a QR code.

Frequency: Mostly annual, though some companies conduct them bi-annually or more frequently. Surveys are always conducted on a regular basis.

Naming: Rarely referred to as a "safety climate survey." Other names include Culture Survey, Employee Engagement Survey, HOP Maturation Model, and Perception Survey.

Participation Rate: One company reported approximately 75-80%.

Reporting: Results are shared company-wide for transparency.

Response: Action items are developed based on survey results to drive safety improvements.

If Planning to Implement: How do you plan to implement?

Companies planning to implement a regular safety climate survey reported having a clear path forward with organizational support for full-scale implementation using an online survey. One company noted collaborating with HR to develop the survey internally.

If Still Considering: What are the Key Discussion Points?



Return on Investment:

Safety climate surveys are costly and resource-intensive, raising concerns about survey fatigue and whether they justify the effort. Organizations evaluate if the long-term benefits outweigh the investment. Further, consistency of the implementation is crucial to build historical benchmarks, making these surveys even a long-term commitment.



Company Culture:

Organizations face cultural barriers such as resistance to surveys, ongoing organizational change, and varying levels of maturity that influence adoption.



Evaluating Resources:

Most companies are in the process of learning about safety climate surveys and evaluating vendors/survey options to ensure effective implementation for meaningful outcomes.



Existing Surveys:

Two companies reported already using similar surveys that capture safety climate elements, reducing the need for an additional survey. Another one noted that they implement surveys as clients mandate which creates a significant workload and may cause inconsistencies leading them to consider internalizing the process for greater stability and efficiency.

If Not Considering: Why not?

Companies not considering a regular climate survey cited:

- Poor return on investment.
- Survey fatigue within the organization.
- Utilizing safety climate surveys on an as-needed basis.
- Past trials providing limited value.
- Redundancy due to existing focus on organizational culture communicated throughout the company or existing internal surveys that are already adequate.
- Lack of organizational interest in implementation.
- Insufficient information on safety climate surveys.

Conclusion



In 2024, data was gathered from 64 of the CSRA's 100 Research-eligible members. We sincerely appreciate the participation of those who submitted data, as their contributions are essential to advancing our research and industry insights.

A key finding of the analysis highlights the need for the CSRA to enhance communication of its research to members, as unfamiliarity with resources was frequently cited as the reason for non-implementation or ongoing consideration.

Safety clutter emerges as a critical consideration whenever a new safety activity or concept is introduced to the industry. While the value of research and the concept itself is recognized, successful adoption and implementation depend on several key factors. These include organizational bandwidth, alignment with existing programs, leadership support, availability of time and resources, organizational maturity, clear understanding of the concept, and simplicity of implementation. Currently, the CSRA is conducting a Decluttering Safety project, set to conclude in 2025. The project's goal is to identify and eliminate redundant safety clutter, prioritizing high-value activities that effectively prevent serious injuries and fatalities.

Data on the timing of the implementation of safety concepts will be analyzed to assess the impact of these interventions on injury rates. This study will serve as the foundation for an academic paper using interrupted time series analysis, to be published once sufficient data is collected.

Appendix A:

Key to Acronyms and Shortened Terms in Graphs

Term	Associated Section
Alternative Safety in	Safety Activity #6 - Addition of alternative safety measures in performance incentives and/or pre-qualifications
BBS	Safety Activity #2 - Behavior-Based Safety (BBS)
Energy Wheel	CSRA Research #2 - The Energy Wheel
HE/STKY	CSRA Research #3 - Focus on High-Energy Hazards/STKY
HECA	CSRA Research #4 - High Energy Control Assessments (HECA)
HOP	Safety Activity #1 - Human and Organizational Performance (HOP)
Inc. Investigation	CSRA Research #9 - Incident Investigation Resources (Field Guide and the Check Yourself Tool)
Inval of TRIR	CSRA Research #1 - Consideration of alternative safety metrics motivated by the CSRA's work on the Invalidity of TRIR.
Leadership Eng	CSRA Research #7 - Leadership Engagement Field Guide and Scorecard
LIFE	CSRA Research #10 - The LIFE Model to define SIFs
Mental Health	CSRA Research #11 - Mental Health Guidance
PA/Ralfie	CSRA Research #8 - Predictive analytics/ the RALFIE tool
PJB	CSRA Research #5 - Pre-Job Meeting Field Guide and Scorecard
Psy Safety	Safety Activity #3 - Psychological safety
Safety Climate Survey	Safety Activity #7 - A regular safety climate survey
Safety Obs	CSRA Research #6 - Safety Observations Field Guide and Scorecard
Training	CSRA Research #12 - Guidance for High Quality Safety Training
TRIR Comp Removal	Safety Activity #5 - Removal of TRIR from performance/pay incentives for employees
Zero	Safety Activity #4 - Setting and communicating targets based on the concept of "Zero"

CSRA Research



Alternatives to TRIR



High Energy Controls



Incident Investigations and Learning



Mental Health Crisis



Predictive Analytics - HECA



Quality of Safety Leading Indicators



Safety Culture



Safety Return on Investment



Science of Safety Training



Tyranny of TRIR



Unique Precursors of SIF

Notes

Notes

Notes



CONSTRUCTION
SAFETY RESEARCH ALLIANCE

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