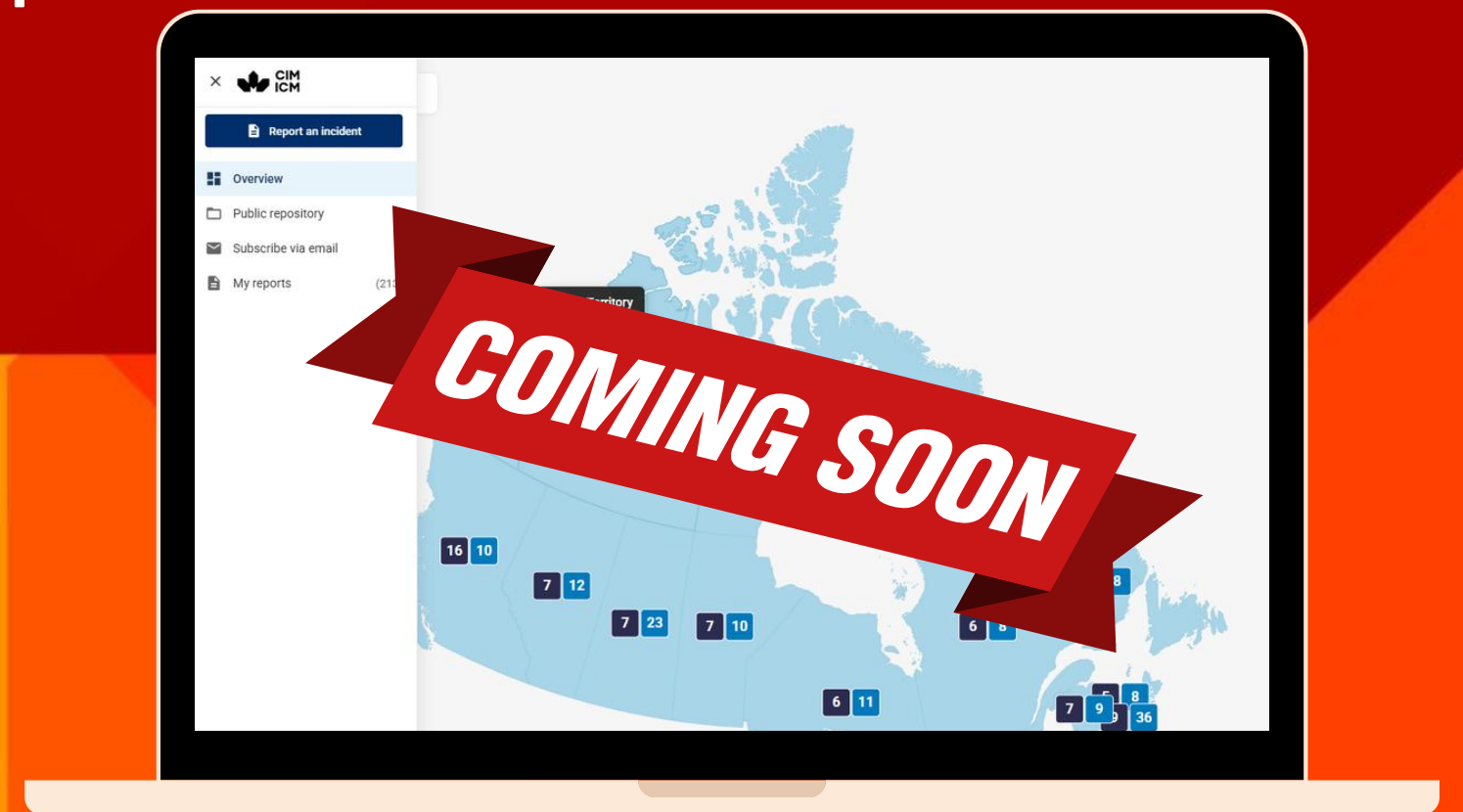


TOWARD A NATIONAL SERIOUS INJURY & FATALITY (SIF) PREVENTION SYSTEM

Building Canada's First Cross-Jurisdictional Mining Fatality Database Through Industry Collaboration



Presented by
Dr. Emily Fetzlaff & Mr. Glenn Lyle



Canadian Institute of Mining,
Metallurgy and Petroleum
Institut canadien des mines,
de la métallurgie et du pétrole

PRESENTATION OVERVIEW

Meet Your Presenters



Dr. Emily Tetzlaff
PhD, R.Kin, MHK, BPHE, CERT-GERO

Principal Scientist, EHS
Wenco International Mining Systems Ltd.



Mr. Glenn Lyle
P.Eng

Director of Health Safety and Risk Management
MIRARCO



The Challenge

- SIF events
- Fragmented data across jurisdictions

The Initiative

- CIM Health & Safety Society SIF Prevention Initiative
- Canada's 1st cross-jurisdictional SIF database

The Research Study

- Summary of the national survey
- Key Findings

What This Means for Industry

- How these findings are being applied
- Prevention Database "SNEAK PREVIEW"

What's Next

- Next steps in development
- Continued industry engagement
- Opportunities to get involved

Canadian Institute of Mining (CIM) Health & Safety Society (HSS) Serious Injury & Fatality Initiative



Mr. Glenn Lyle
Director of Quality Assurance



Canadian Institute of Mining,
Metallurgy and Petroleum
Institut canadien des mines,
de la métallurgie et du pétrole

Canada's Complex OHS Landscape:

Unlike countries with a single national mining safety authority, Canada's occupational health and safety framework is decentralized, with 10 provinces and 3 territories each governing their own OHS legislation, mining regulations, and reporting requirements.



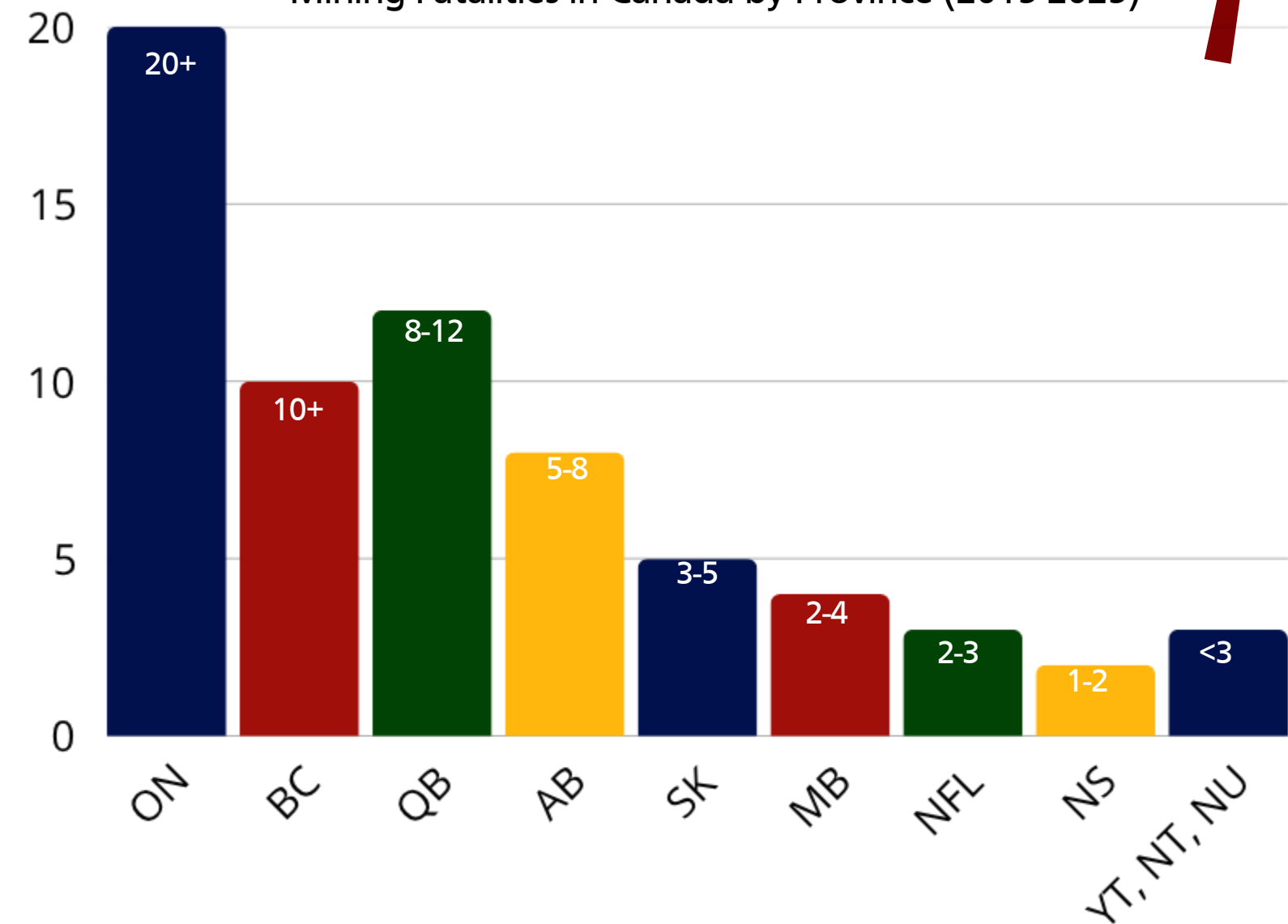
A Barrier to Consistent Fatality Prevention

- Data fragmentation prevents the creation of a unified national view of SIF incidents.
- Inconsistent terminology and formats make cross-jurisdictional analysis difficult.
- Missed opportunities for shared learning, as critical findings often remain within provincial boundaries.

The Cost of Inaction

- Every preventable incident represents a life changed or lost, a family impacted, and a community affected.
- Loss of trust in industry safety commitments and regulatory systems.

Mining Fatalities in Canada by Province (2015-2025)



Turning Tragedy into Prevention

Without a national database and portal, lessons learned remain siloed - robbing the industry of opportunities to prevent the next tragedy. A unified system can turn today's losses into tomorrow's safeguards, bringing us closer to our shared goal: Zero Harm.

Our Solution

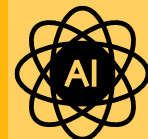
A centralized, standardized database and portal that transcends provincial silos, aligning definitions, consolidating data, and enabling all Canadian mining operations to learn from each other's most serious incidents.



Reactive

Learning from what has happened

- Collect and share standardized SIF reports.
- Capture critical risks, failed controls, and root causes.
- Enable immediate dissemination of lessons learned across all mining operations.



Predictive

Anticipating what could happen

- Apply analytics and machine learning to identify trends and emerging risks.
- Classify incidents anonymously to protect confidentiality while enabling industry-wide insight.
- Flag high-risk scenarios before they repeat.



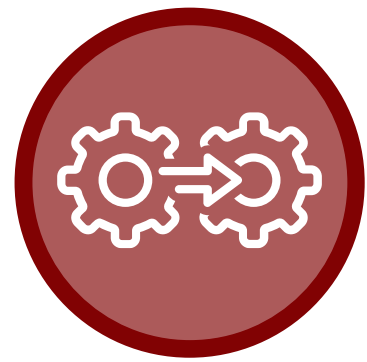
Proactive

Preventing what should never happen

- Provide timely, actionable dashboards for industry-level risk monitoring.
- Support verification of critical controls and targeted prevention programs.
- Foster a continuous improvement culture focused on life-saving actions.

Seeking Alignment with International Best Practices

To ensure Canada's SIF Prevention Database is both effective and globally credible, our initiative is benchmarking against proven models from leading jurisdictions. By aligning our data standards, reporting formats, and dissemination methods with these established frameworks, we can:



Enhance compatibility with international safety datasets and research.



Adopt proven reporting templates that capture critical controls, verification practices, and root causes.



Accelerate learning by integrating global lessons into Canadian prevention strategies.



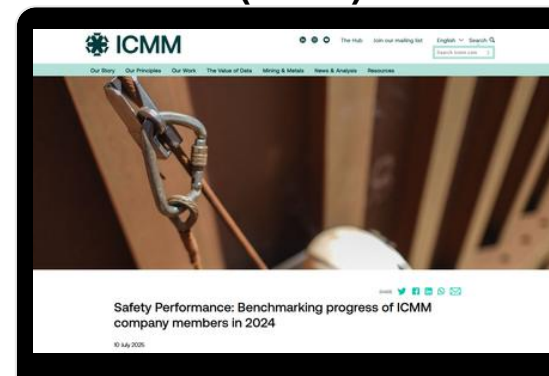
Increase transparency and credibility, encouraging participation across all provinces and territories.



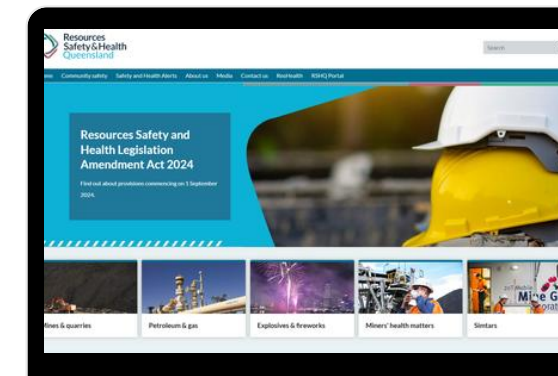
Ensure the industry benefits from collective knowledge of global peers.

Around the world, mining regulators and safety bodies maintain centralized, standardized repositories that capture detailed incident data, identify critical risks, and publish actionable prevention guidance.

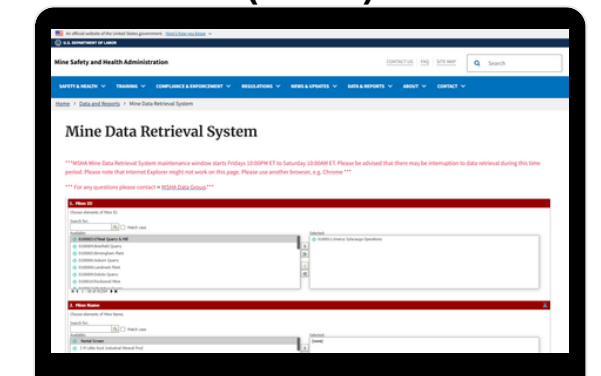
International Council on Mining & Metals (ICMM)



Queensland Resources Safety & Health Division



U.S. Mine Safety & Health Administration (MSHA)



Learning from the Past, Leading the Future: Developing Canada's SIF Prevention Database for the Canadian Mining Industry Through Collaboration with Health and Safety Experts



Dr. Emily Tetzlaff
Director of Standards



The Research Study

Learning from the Past, Leading the Future: Developing Canada's SIF Prevention Database for the Canadian Mining Industry Through Collaboration with Health and Safety Experts

The following research objectives guided this study:

1. Identify current practices in accessing, reporting, and learning from SIF in the mining industry.
2. Evaluate industry perceptions on the usefulness, design preferences, and potential barriers to a national SIF Prevention Database.
3. Assess learning and engagement preferences for using such a tool, including training delivery and support needs.

The results reflect responses from **150 participants** representing a diverse cross-section of the Canadian mining industry, spanning multiple commodities, site types, and jurisdictions.

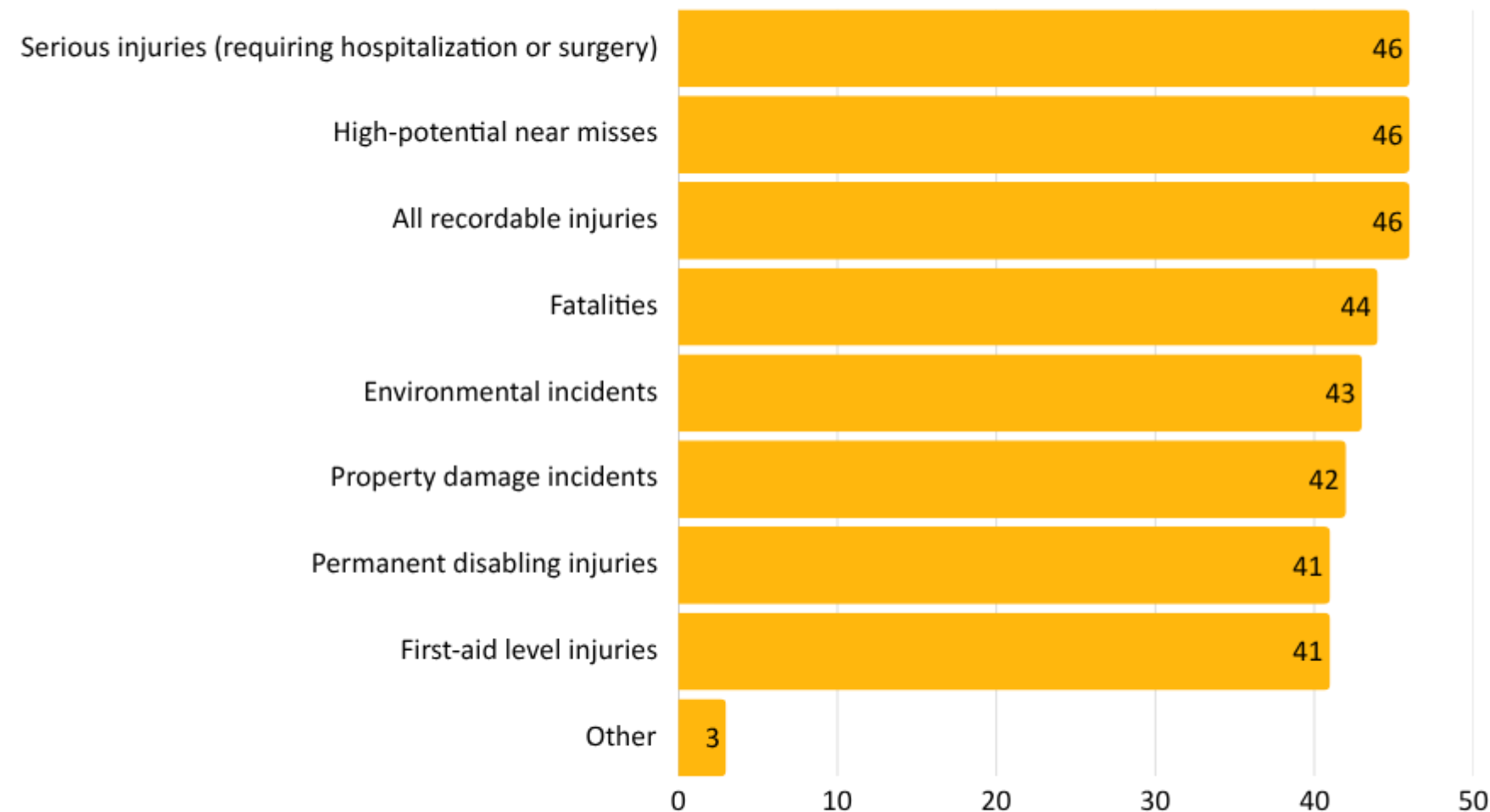
- Primarily environmental and occupational health and hygiene professionals
- Average of **23.29±12.22** years of industry experience [Range: 4-50]
- Mostly underground (37%) and surface/open pit (17%) operations
- Primary commodities represented gold and silver (39%) and copper, nickel, lead, and zinc (34%).



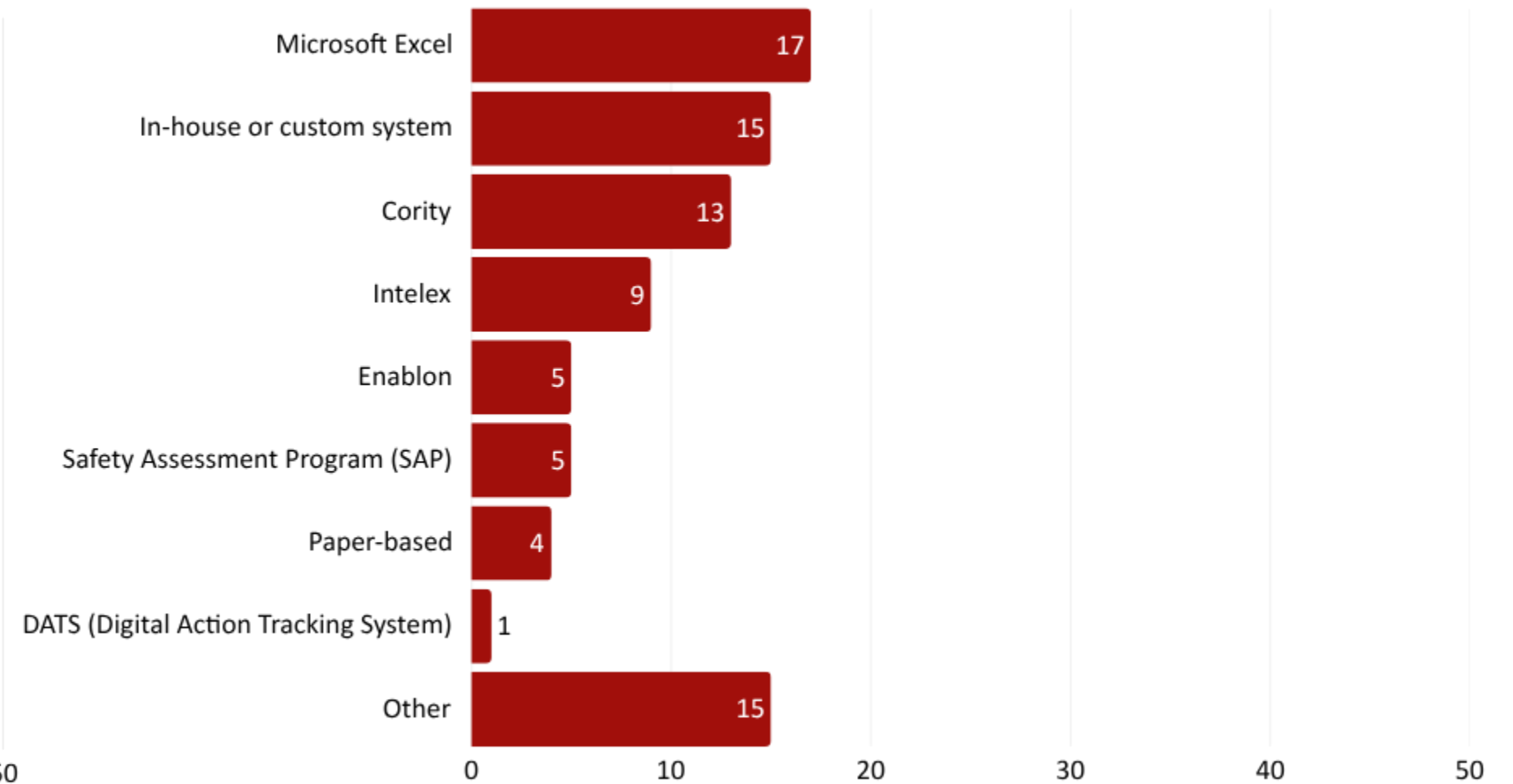
The Reality: Data Exists, But It's Fragmented

One of the clearest findings from our national survey is that the mining industry is not lacking data; it's lacking connection and consistency. Nearly all organizations are already collecting detailed internal data that is actively being used. However, there is no consistent mechanism to share, compare, or learn across sites, companies, or jurisdictions.

Internal Company Database



Systems and Software Tools



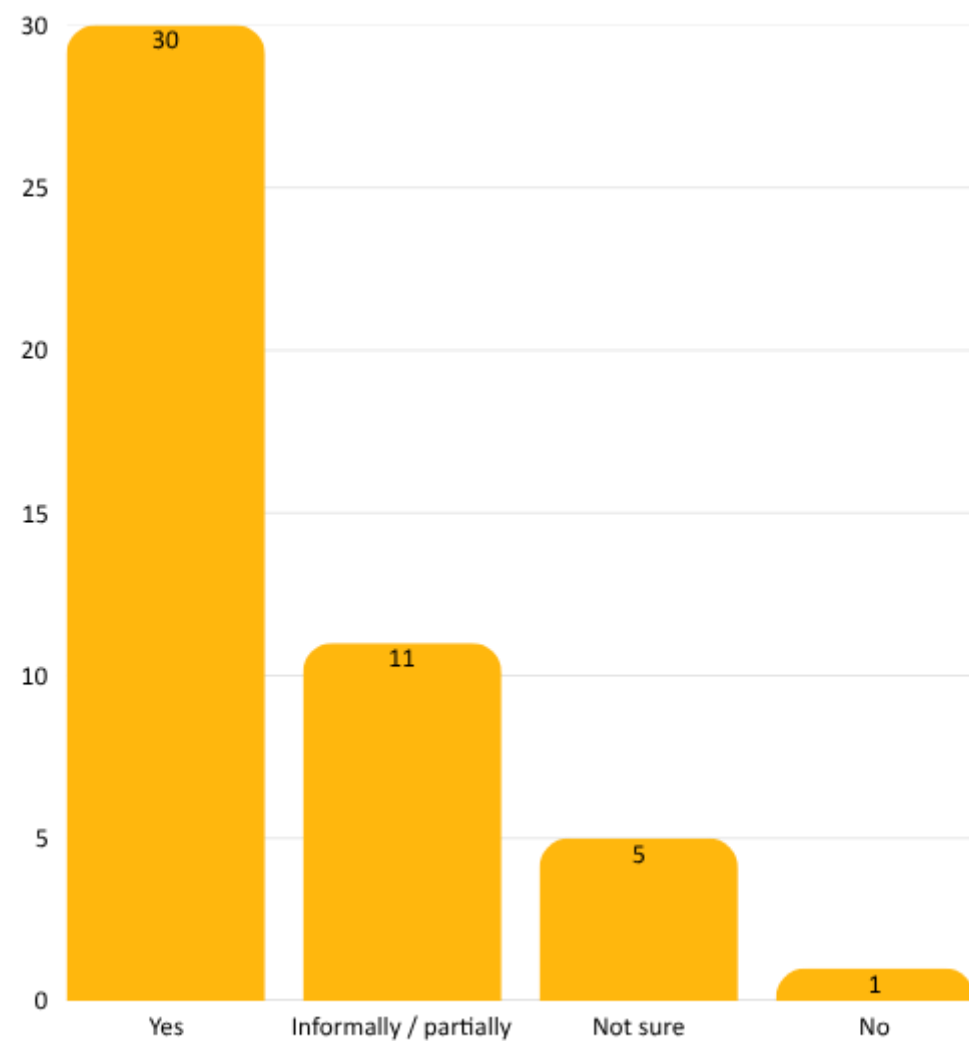
Standardized Critical Control Management

Most organizations report using formal or partial Critical Control Management approaches; however, practices remain inconsistent, and there is strong demand for a standardized, cross-industry library linking incidents to verified critical controls.

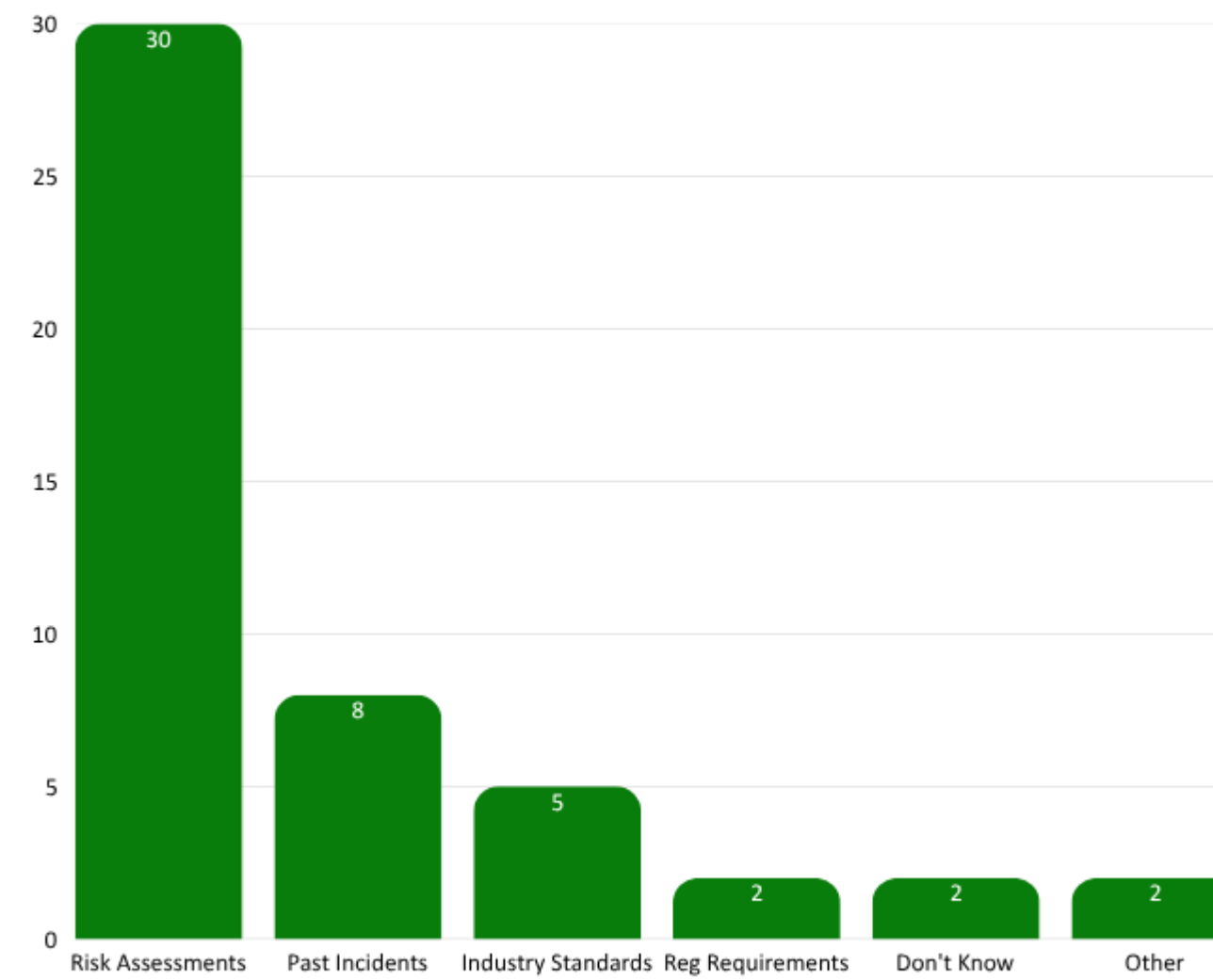
ICMM – Health and Safety Critical Control Management



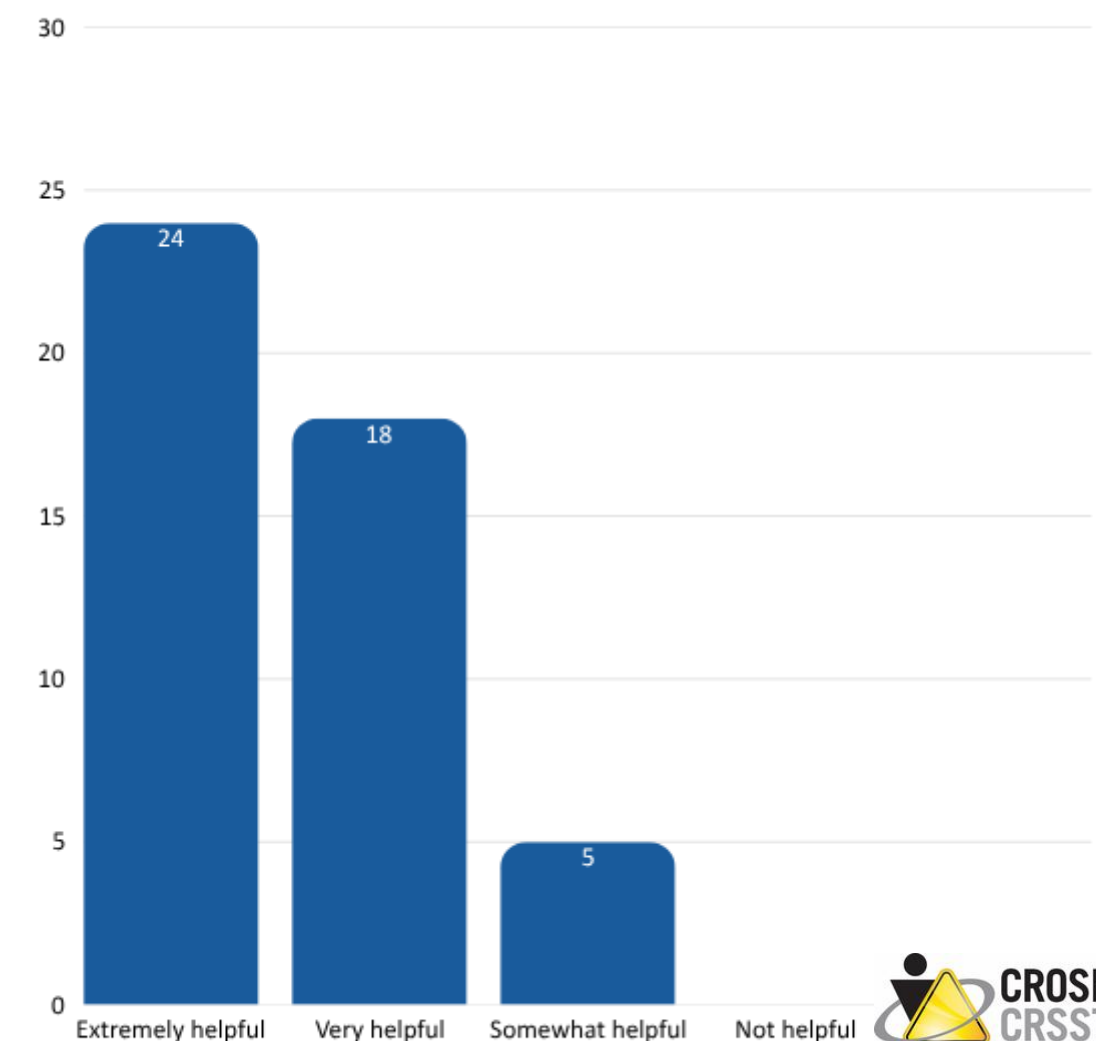
Critical Control Management Approach



Critical Control Identification



Verified Controls Library



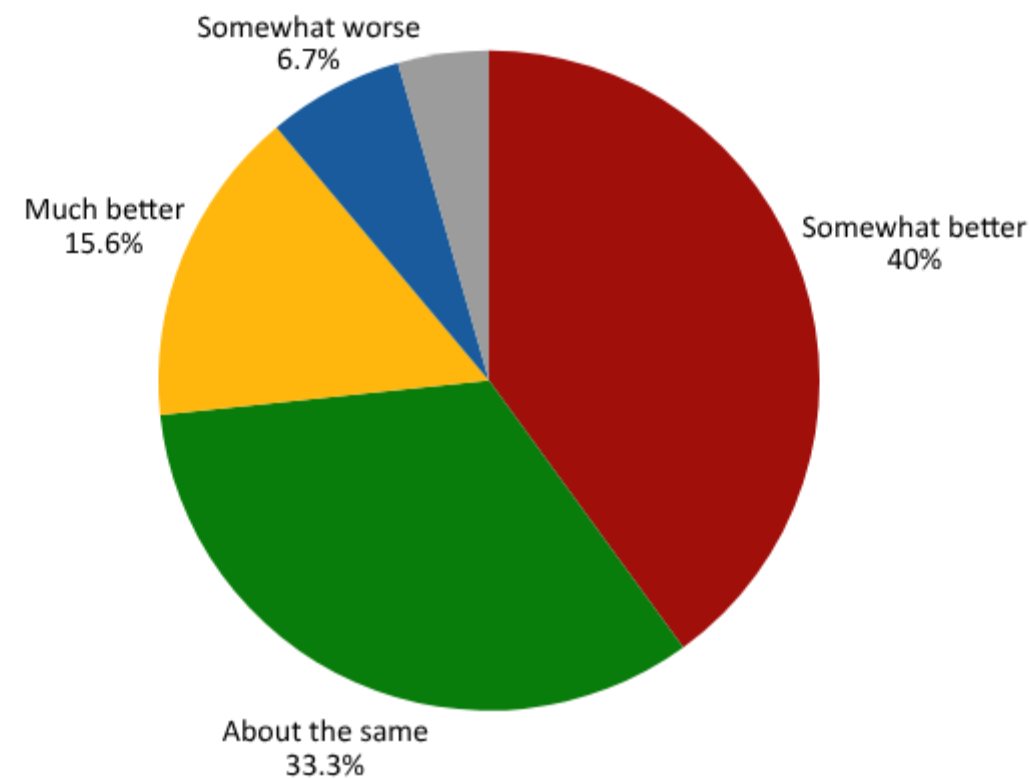
The Gap: Limited Access, Incomplete Learning

When we asked participants about external data, the feedback was consistent: it's difficult to access, it's often incomplete, and it often lacks context and linkage to controls. IN FACT, no respondents reported having access to fully complete and detailed external datasets.

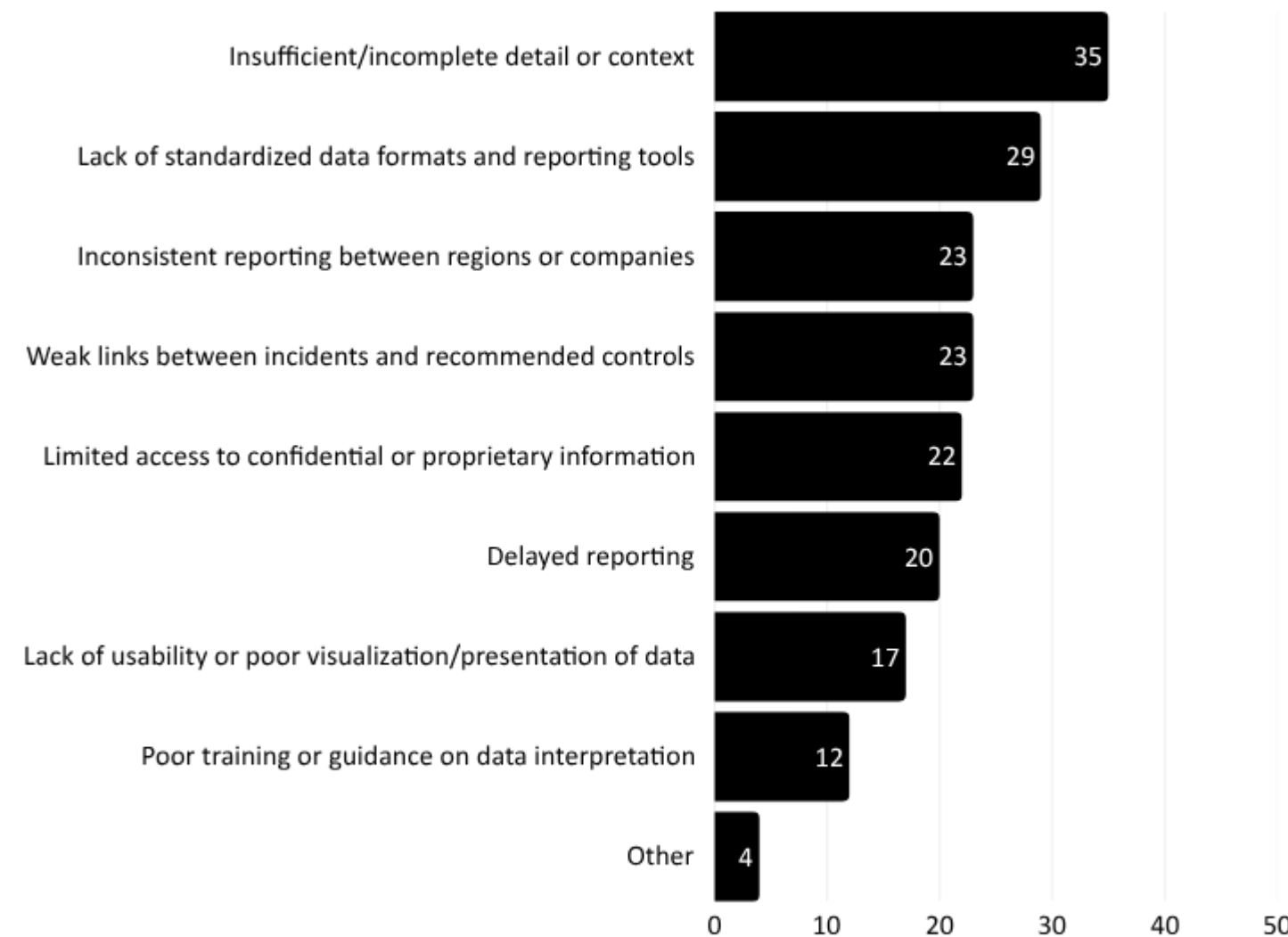
National Database Need



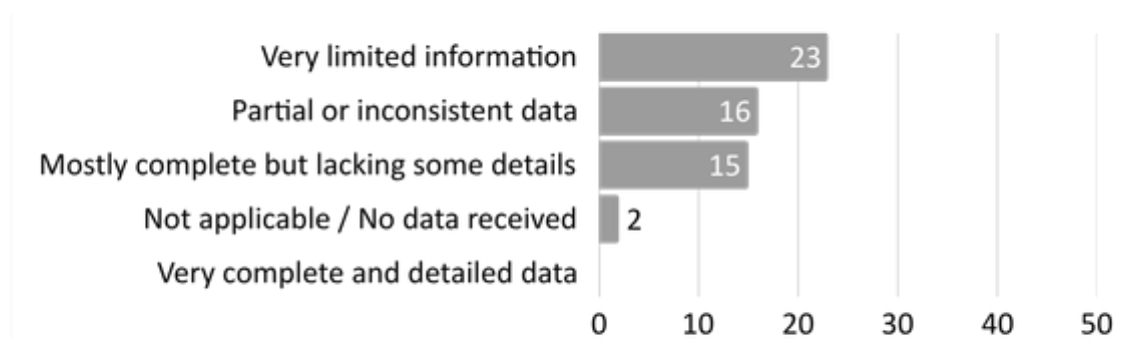
International System Comparison



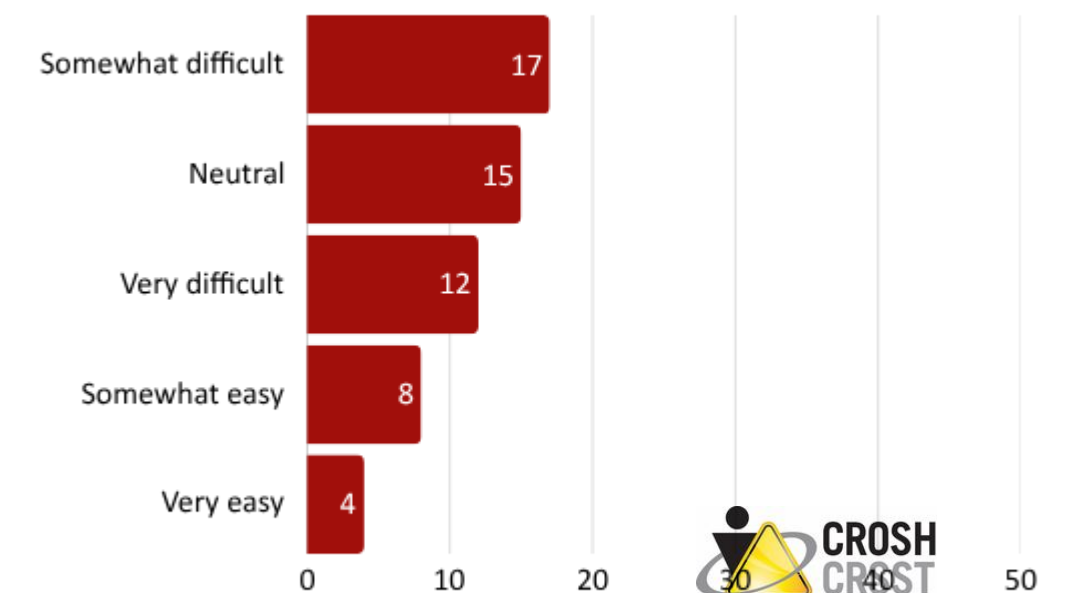
Key Gaps in Current SIF Data



Data Completeness



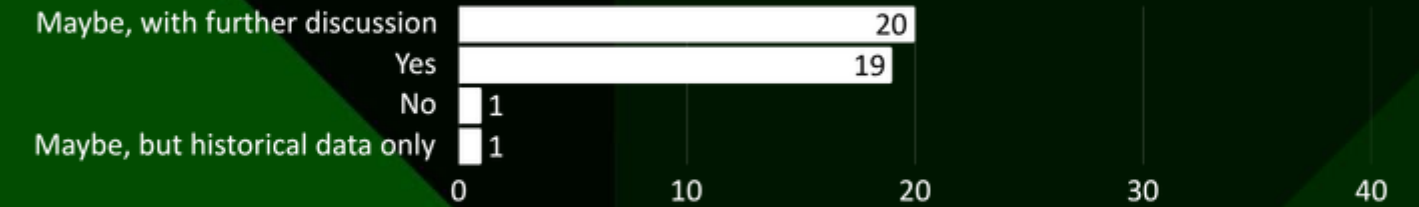
Ease of External SIF Data Access



Barriers to Participation: Trust, Legal, and Privacy

The success of this system won't just depend on what data we collect, it will depend on how we govern it. The industry is clearly telling us: it needs anonymization, clear legal frameworks, and a trusted, industry-led model.

Willingness to Share SIF Data



Barriers to Sharing SIF Data

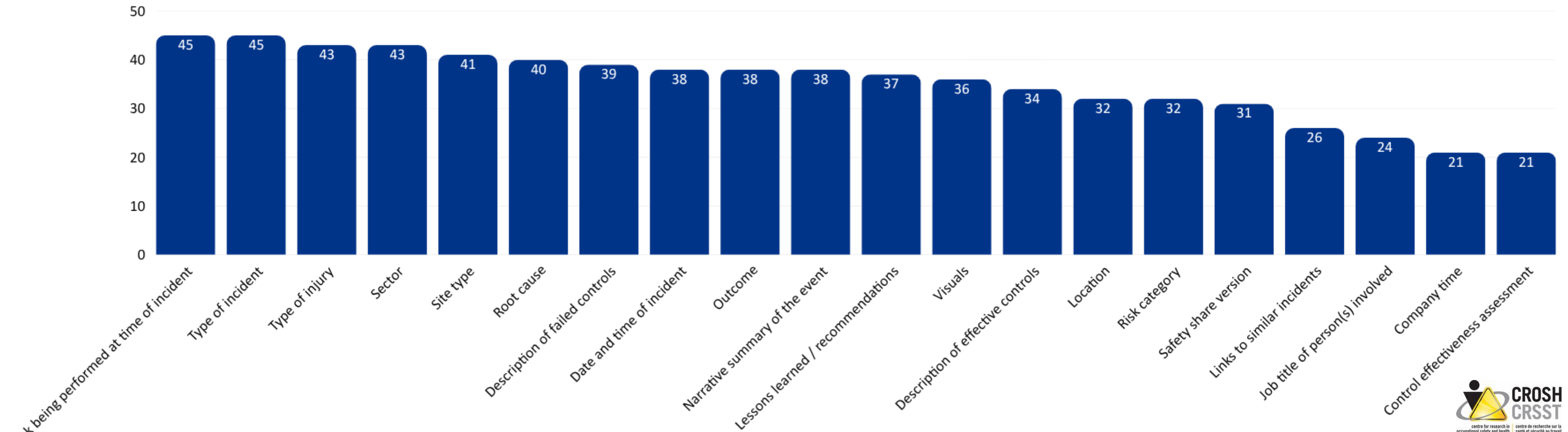
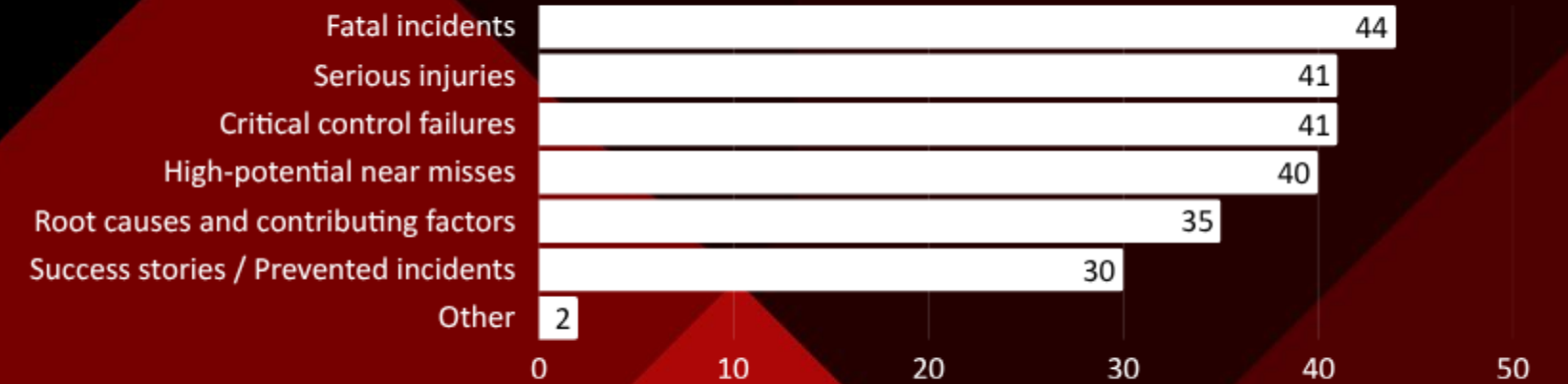
Operational Challenges to Using Portal



What the Industry Needs from a National System

When we asked what a national system should include, there was strong alignment. The industry is asking for a system that captures:

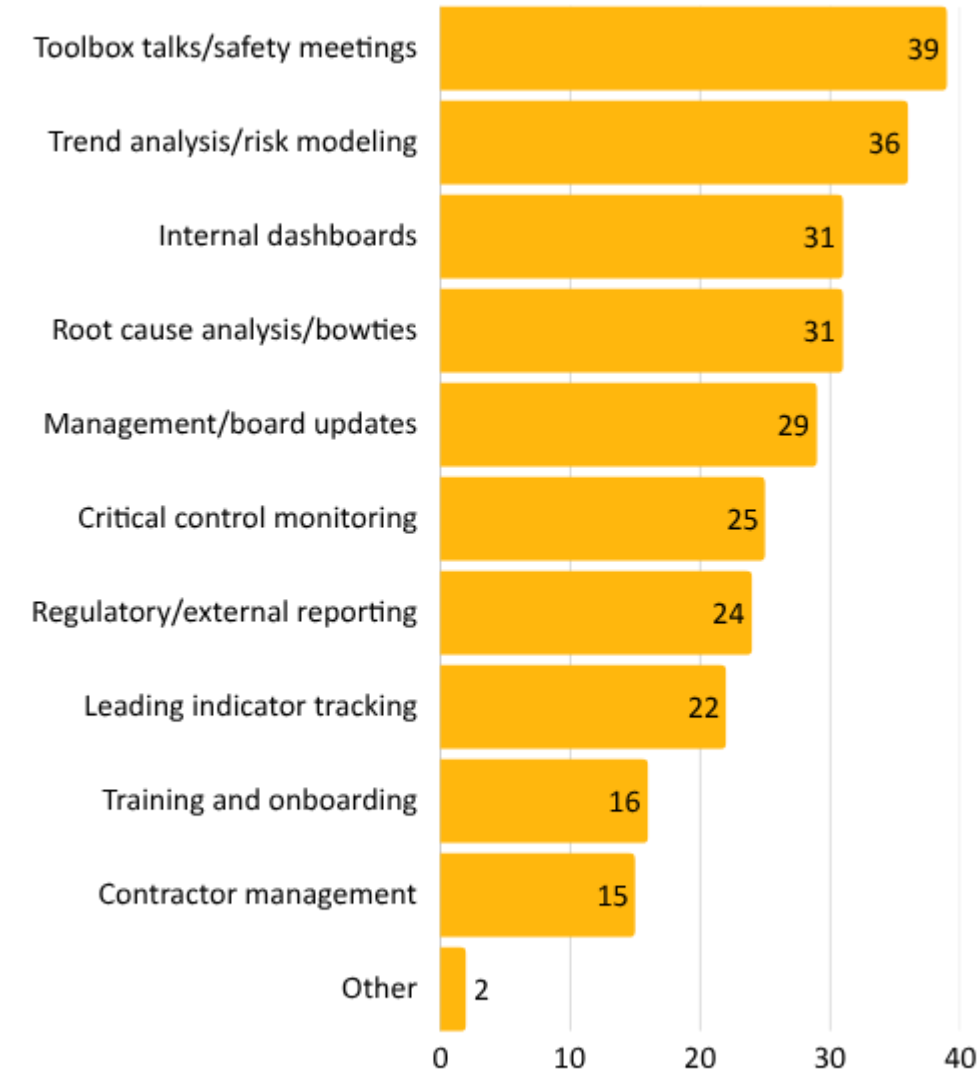
- ✓ Fatalities, serious injuries, and high-potential near misses
- ✓ Clear descriptions of the task and context
- ✓ Root causes and contributing factors
- ✓ Critical control failures and verified controls



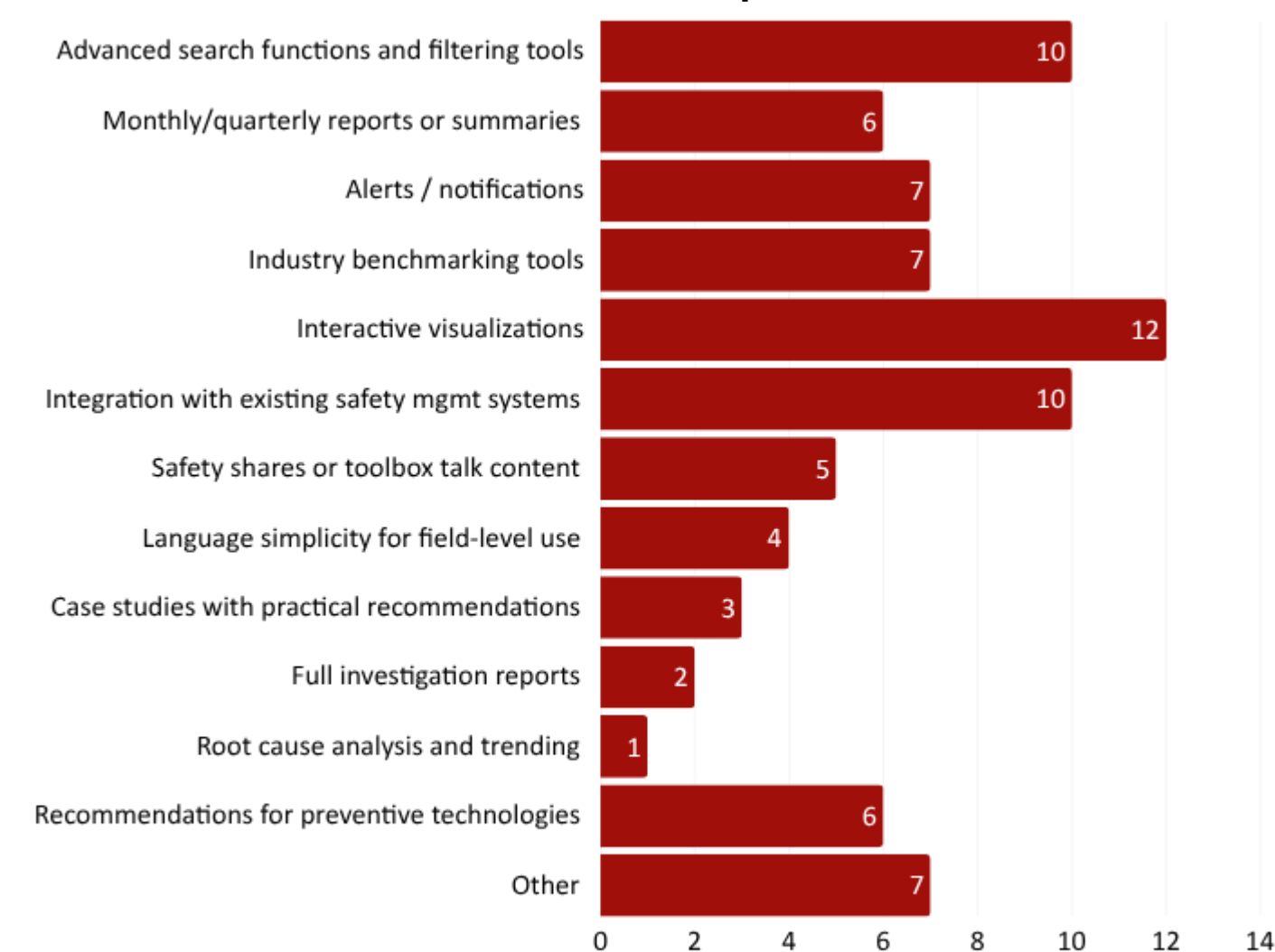
What Will Enable Participation?

Survey findings highlight that participation in a national SIF database will depend on strong governance, trust, and clarity. Respondents identified legal transparency (95%), secure data handling (88%), and clearly defined data use policies (80%) as critical enablers for building confidence and supporting sustained industry engagement.

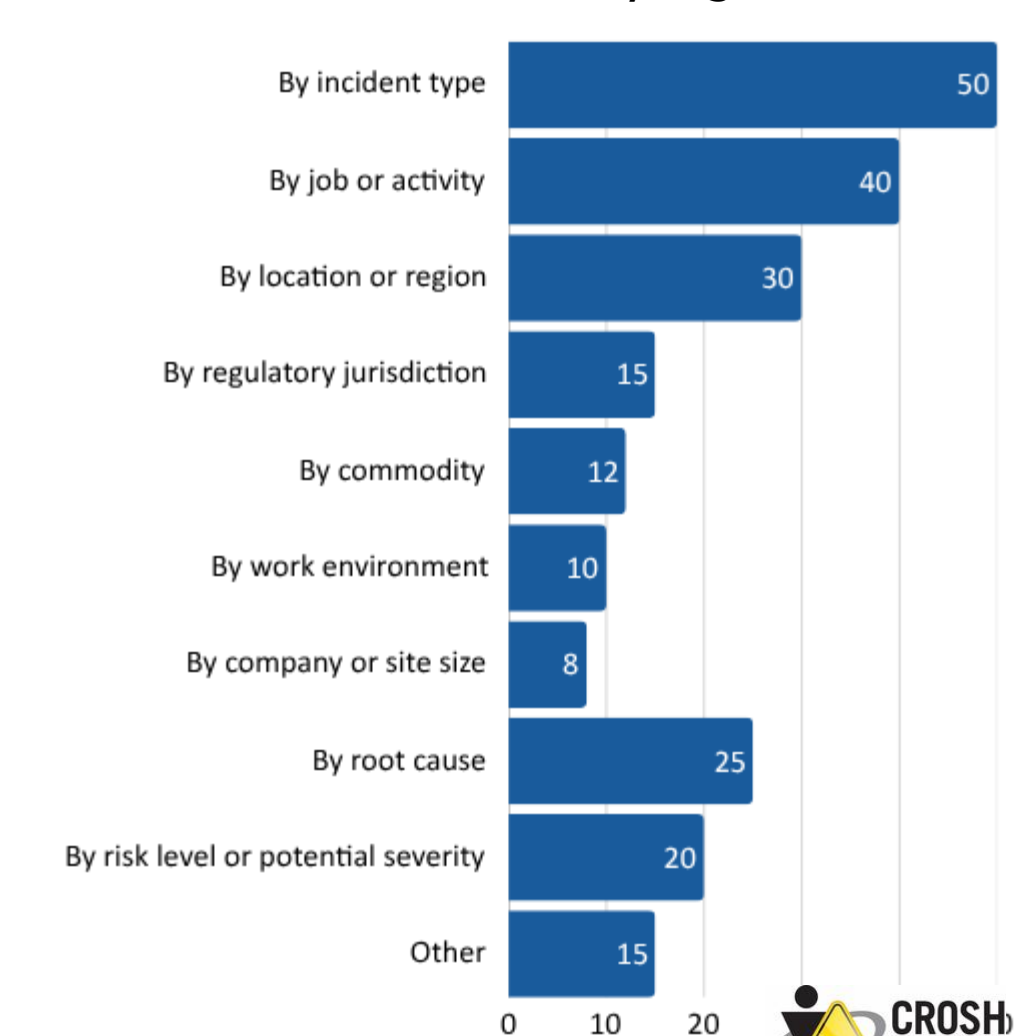
SIF Data Uses



SIF Database Features and Format Options



SIF Database Classifications/Organization



The CIM HSS Serious Injury & Fatality Portal (Preview)

interKnowlogy

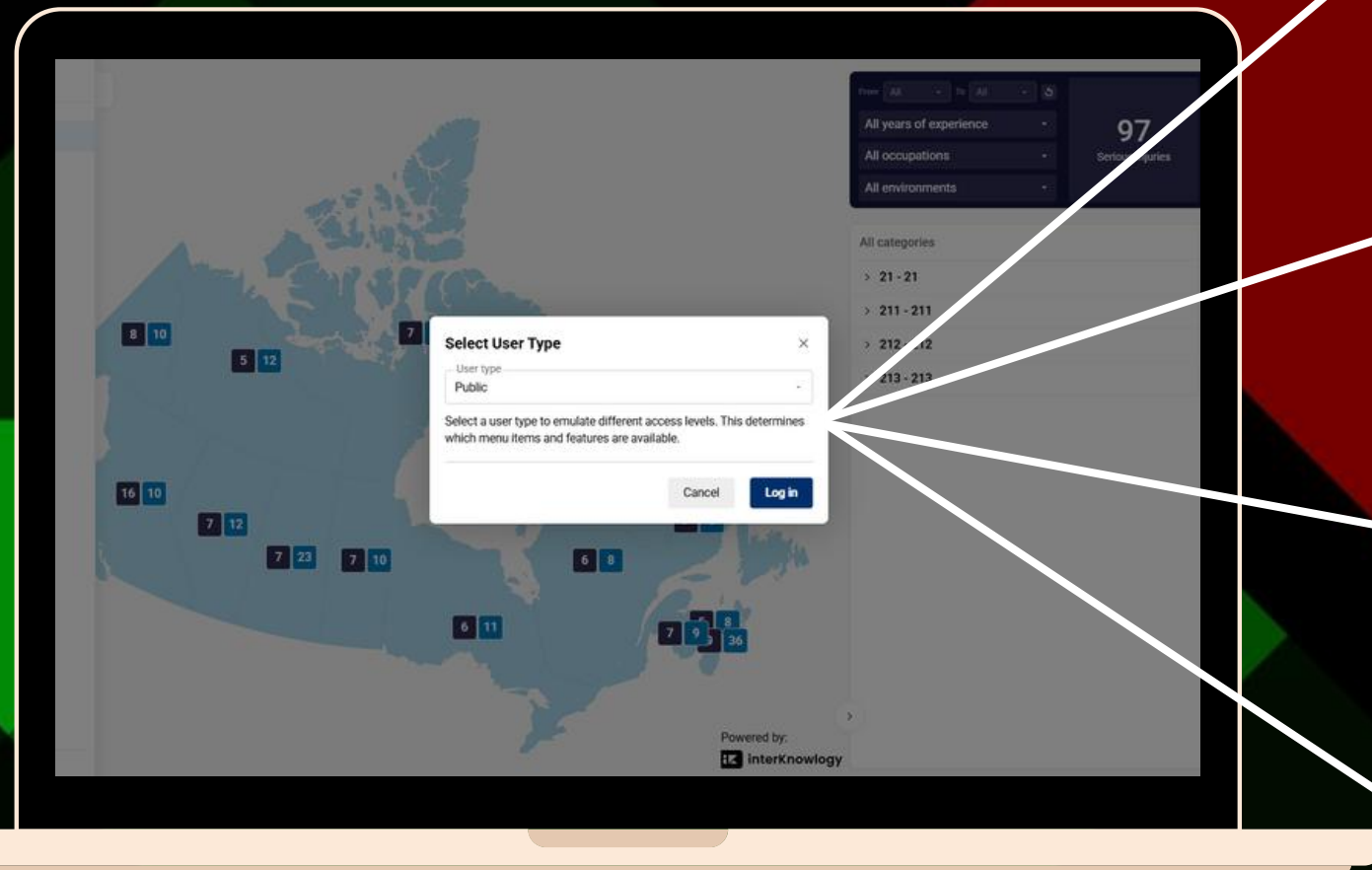


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de la métallurgie et du pétrole

The Opportunity: From Data to Prevention

Database User Types

COMING SOON



Public

- Overview
- Public Repository
- Subscribe via email

Company Reporter

- Overview
- Public Repository
- **My Reports***
- Subscribe via email

CIM Approver

- Overview
- Public Repository
- **Submissions***
- Subscribe via email

CIM Admin

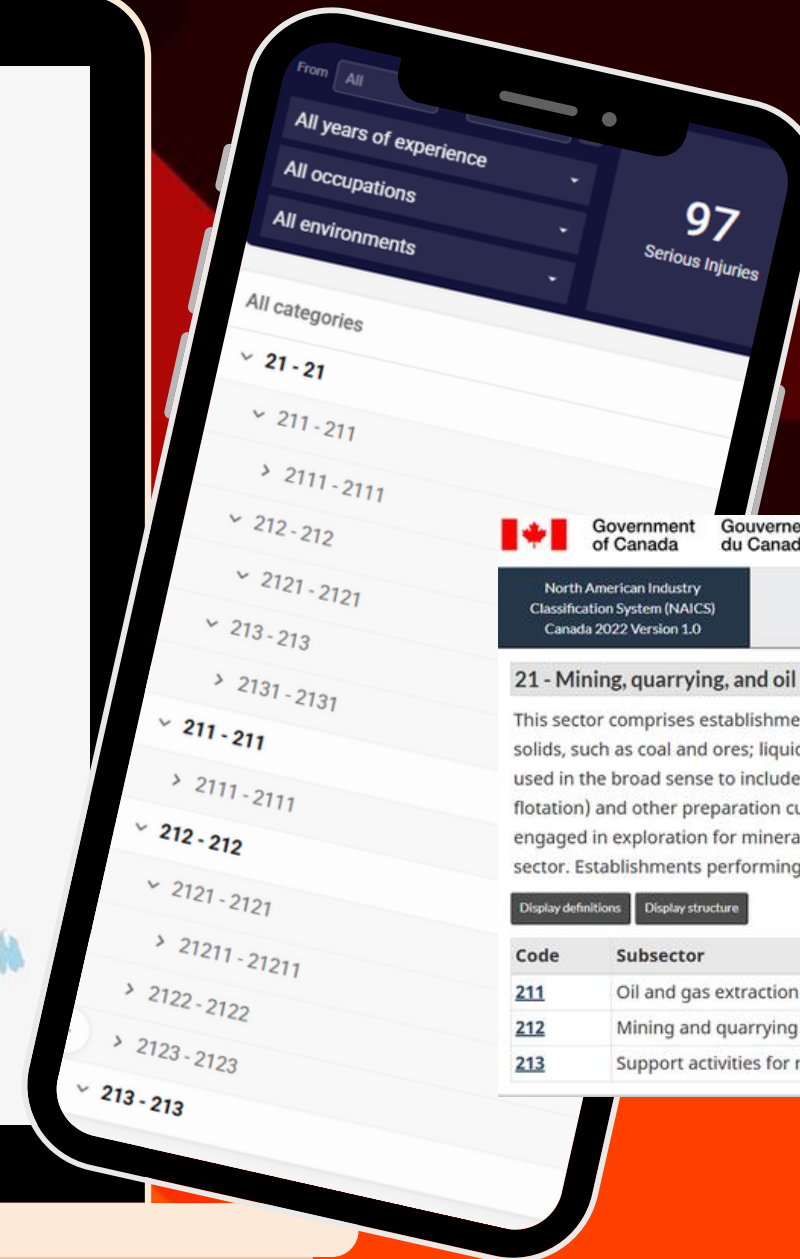
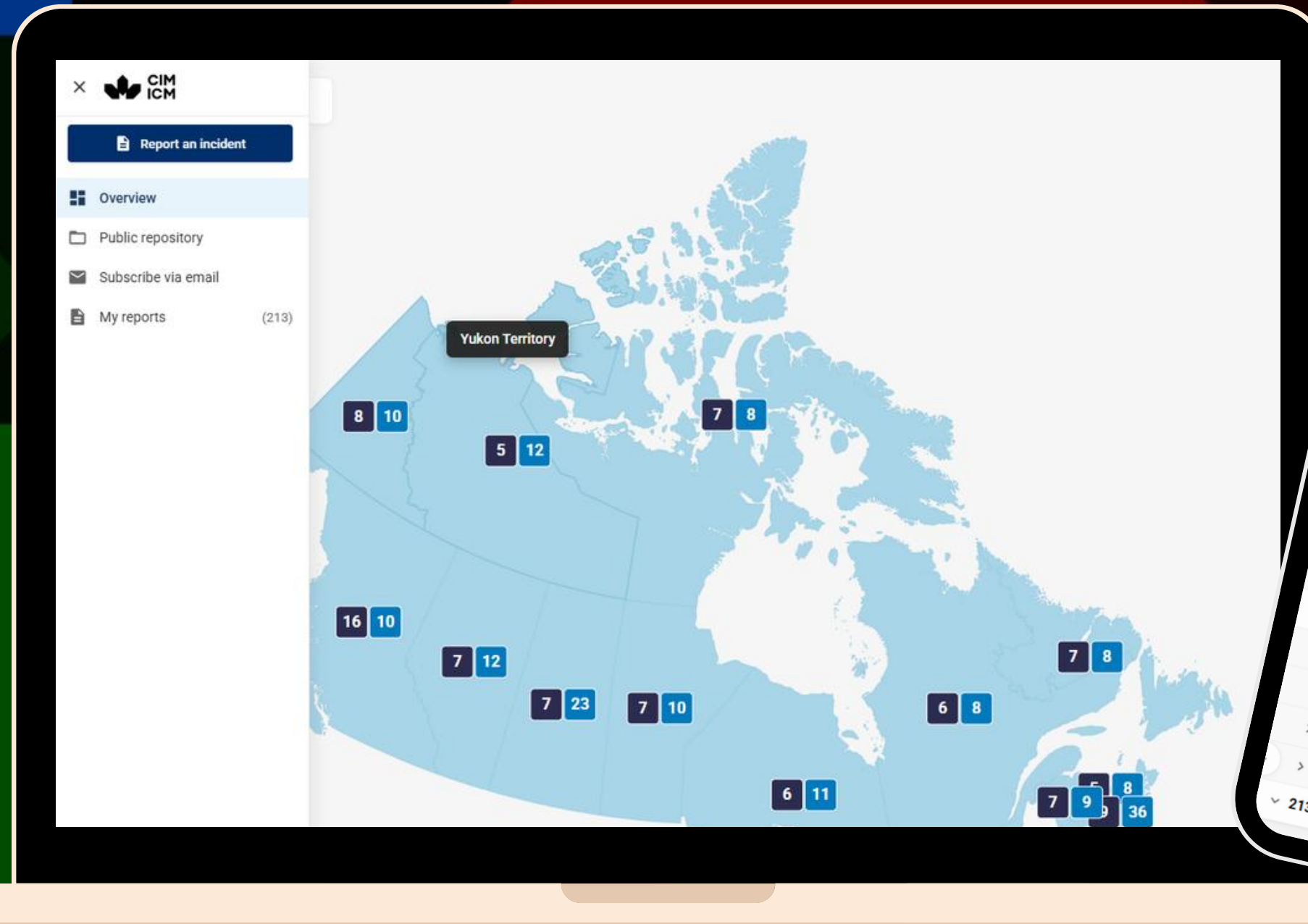
- Overview
- Public Repository
- **My Reports***
- **Submissions***
- Subscribe via email

Target Audiences



The Opportunity: From Data to Prevention Overview

COMING SOON



Government of Canada / Gouvernement du Canada | Search Statistics Canada

North American Industry Classification System (NAICS) Canada 2022 Version 1.0

Introduction | Hierarchical structure | Definition of superscripts

21 - Mining, quarrying, and oil and gas extraction

This sector comprises establishments primarily engaged in extracting naturally occurring minerals. These can be solids, such as coal and ores; liquids, such as crude petroleum; and gases, such as natural gas. The term mining is used in the broad sense to include quarrying, well operations, milling (for example, crushing, screening, washing, or flotation) and other preparation customarily done at the mine site, or as a part of mining activity. Establishments engaged in exploration for minerals, development of mineral properties and mining operations are included in this sector. Establishments performing similar activities, on a contract or fee basis, are also included.

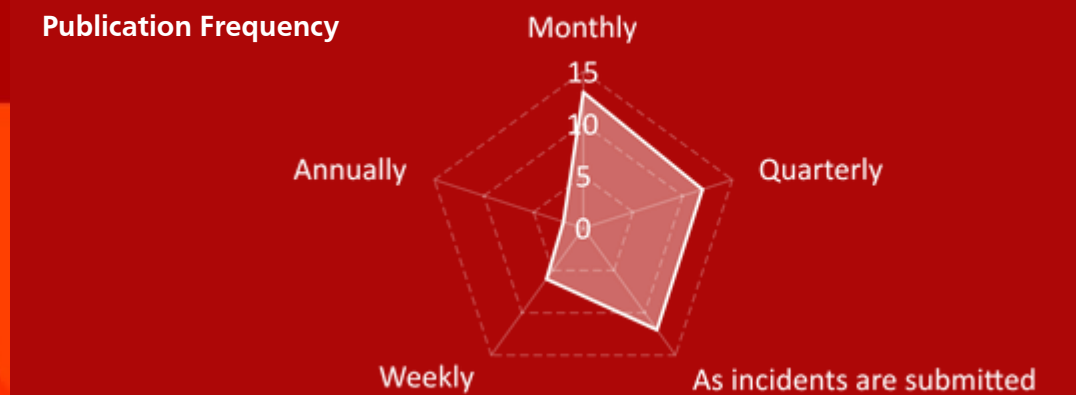
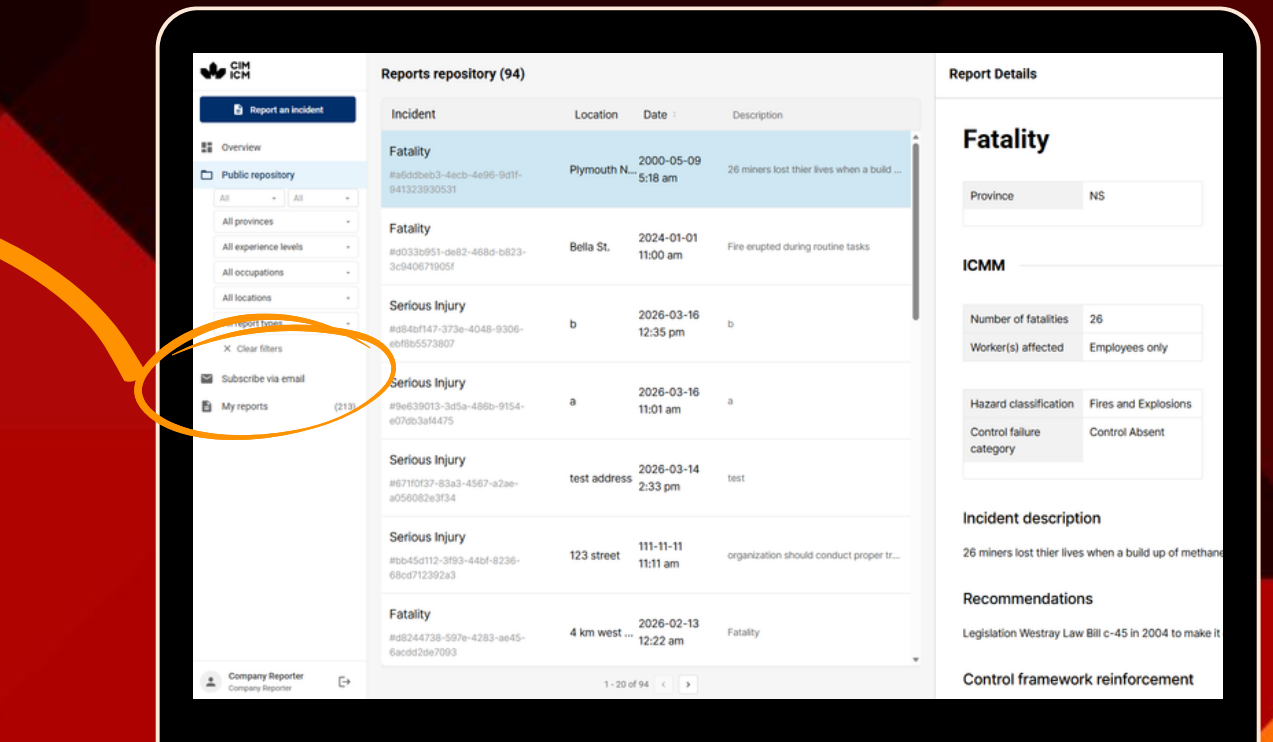
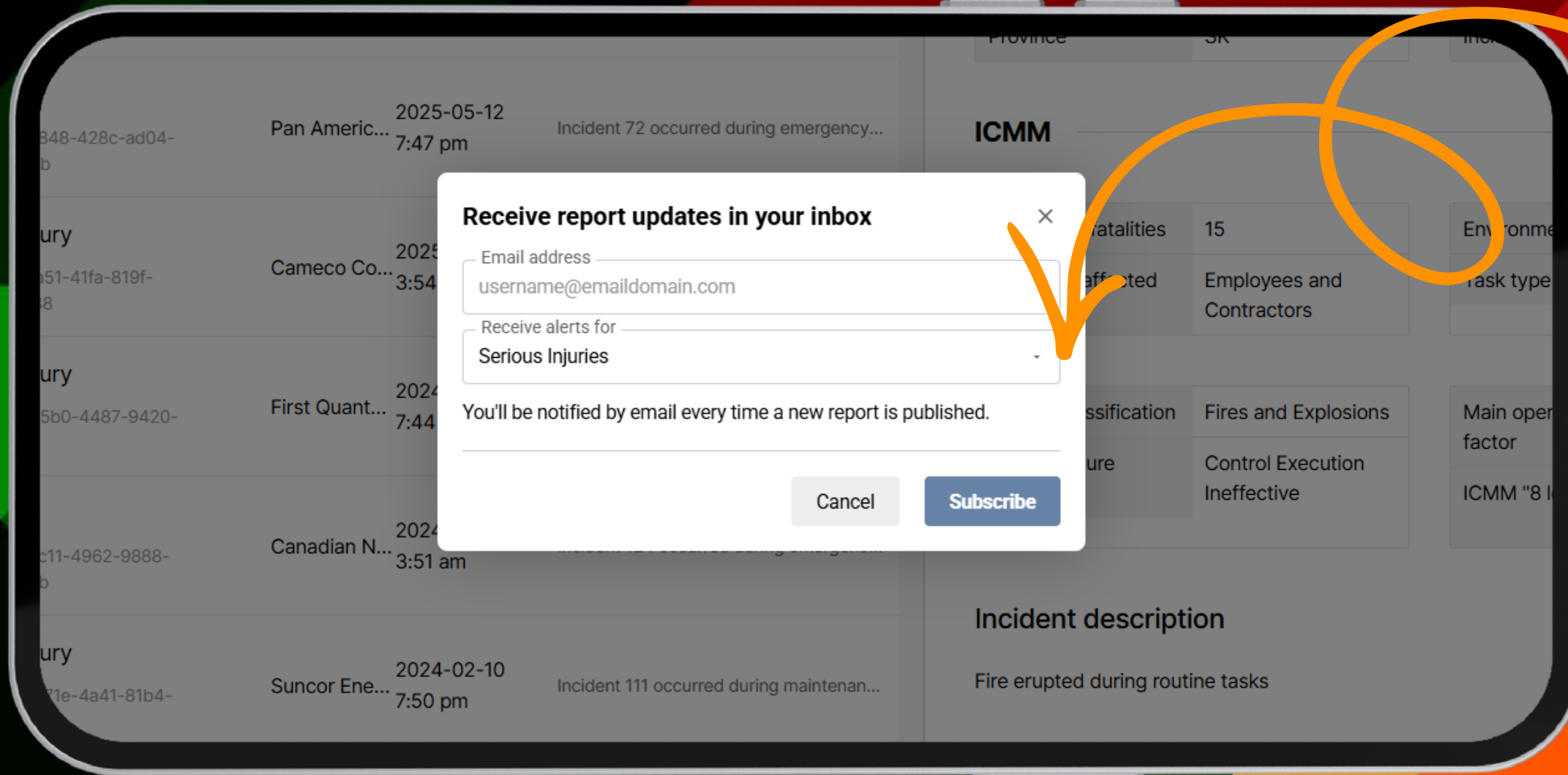
Display definitions | Display structure

Code	Subsector
211	Oil and gas extraction
212	Mining and quarrying (except oil and gas)
213	Support activities for mining, and oil and gas extraction

The Opportunity: From Data to Prevention

Subscribe via Email

COMING SOON



 interKnowlogy



The Opportunity: From Data to Prevention

My Reports

COMING SOON

My reports

Incident	Location	Date	Injured	Status
Fatality #a6ddbeb3-4ecb-4e96-9d1f-941323930531	Plymouth N...	Apr 7, 2026 2:12 pm	26	Approved
Serious Injury #588b85b9-0185-48c3-a0a2-81efc7ccf864	546 St	Mar 26, 2026 4:03 pm	0	Submitted
Fatality #d033b951-de82-468d-b823-3c940671905f	Bella St.	Mar 26, 2026 2:49 pm	15	Approved
Fatality #98256818-d4ab-4a42-8e86-71d17ec12f4a	123 street	Mar 26, 2026 2:31 pm	0	Rejected
Serious Injury #d84bf147-373e-4048-9306-ebf8b5573807	b	Mar 16, 2026 3:36 pm	0	Approved
Serious Injury #9e639013-3d5a-486b-9154-e07db3af4475	a	Mar 16, 2026 2:27 pm	1	Approved
Serious Injury #671f0f37-83a3-4567-a2ae-a056082e3f34	test address	Mar 14, 2026 5:33 pm	2	Approved
Serious Injury		Mar 12, 2026		

Report details

Fatality Approved

Province: NS | Incident address: Plymouth N... Scotia

ICMM

Number of fatalities	26	Environment	Underground
Worker(s) affected	Employees only	Task type	Routine task
Hazard classification	Fires and Explosions	Main operational factor	Safety Culture
Control failure category	Control Absent	ICMM "8 lessons"	2. Safety leadership at all levels

Incident description
26 miners lost their lives when a build up of methane gas ignited and caused coal dust to...

Recommendations
Legislation Westray Law Bill c-45 in 2004 to make it easier to convict corporations

Control framework reinforcement

Report details | Activity log

- Wed Apr 08, 2026 - 5:19 pm
Report viewed by Company Reporter
- Tue Apr 07, 2026 - 2:18 pm
Approved by CIM Approver
- Tue Apr 07, 2026 - 2:17 pm
Report viewed by CIM Approver
- Tue Apr 07, 2026 - 2:17 pm
Report updated by Company Reporter
- Tue Apr 07, 2026 - 2:17 pm
Resubmitted by Company Reporter
- Tue Apr 07, 2026 - 2:16 pm
Report viewed by CIM Approver
- Tue Apr 07, 2026 - 2:16 pm
Revision requested by CIM Approver
- Tue Apr 07, 2026 - 2:15 pm
Report viewed by CIM Approver
- Tue Apr 07, 2026 - 2:15 pm

add fatalities



The Opportunity: From Data to Prevention Submissions

COMING SOON

Submissions (96)

Incident	Reporter	Date	Status
Serious Injury #588b85b9-0185-48c3-a0a2-81efc7ccf864	reporter@cim-icm.org	Mar 26, 2026 4:03 pm	Submitted
Fatality #5b2eef36-88ed-40a5-a22e-3da8ba16bff4	reporter@cim-icm.org	Mar 9, 2026 2:39 pm	Submitted
Serious Injury #b16dff9c-7748-42c5-9d60-16fba337f728	reporter@cim-icm.org	Oct 18, 2025 5:00 am	Resubmitted
Fatality #3a3afc93-20f6-415a-b08a-06d11c48df18	reporter@cim-icm.org	Oct 11, 2025 5:00 am	Resubmitted
Serious Injury #b653029e-e0ab-4c8f-bd4e-a5843c21820c	reporter@cim-icm.org	Oct 4, 2025 5:00 am	Under Review
Fatality #8a7bd3e8-6227-4fba-a6a2-ee8bbf92f0e	reporter@cim-icm.org	Sep 27, 2025 5:00 am	Under Review
Serious Injury #2409b0a5-b7e8-4d07-8542-75bcb0c487bd	reporter@cim-icm.org	Sep 20, 2025 5:00 am	Submitted
Serious Injury #b1ceabdd-072f-44eb-9fff-8caffef3878	reporter@cim-icm.org	Sep 8, 2025 5:00 am	Resubmitted
Fatality #60a9b2c2-c62f-40fc-b097-b5da5b43a8ef	reporter@cim-icm.org	Sep 1, 2025 5:00 am	Revision Requested
Serious Injury #79929aee-c08c-4d5e-87c9-5b6594f847fa	reporter@cim-icm.org	Aug 25, 2025 5:00 am	Under Review
Fatality #18db2b3f-f4e9-4e47-8d6d-a670b89623c4	reporter@cim-icm.org	Aug 18, 2025 5:00 am	Under Review
Serious Injury #525f893b-4094-45d2-b0fe-820653d11c66	reporter@cim-icm.org	Aug 11, 2025 5:00 am	Submitted
Serious Injury #277c7f02-c047-4aab-9ed7-a09627d19b3e	reporter@cim-icm.org	Aug 9, 2025 5:00 am	Resubmitted
Fatality #9813049c-9dd6-473e-a888-3f5e6774f6ae	reporter@cim-icm.org	Aug 2, 2025 5:00 am	Revision Requested

Report details Activity log

Serious Injury

Submitted

Province: NL Incident address: 5

ICMM

Number of fatalities: 0 Environment: O
Worker(s) affected: Employees only Task type: N

Hazard classification: Abnormal Weather Main operational factor: M
Control failure category: Control Absent ICMM "8 lessons":

Incident description
test

Recommendations
test

Change status

Report details

- Wed Apr 08, 2026 - 5:28 pm Report viewed by CIM Admin
- Wed Apr 08, 2026 - 5:26 pm Report viewed by CIM Admin
- Wed Apr 08, 2026 - 10:43 am Report viewed by CIM Admin
- Wed Apr 08, 2026 - 10:43 am Report viewed by CIM Admin
- Wed Apr 08, 2026 - 10:41 am Report viewed by CIM Approver
- Wed Apr 08, 2026 - 10:40 am Report viewed by CIM Approver
- Wed Apr 08, 2026 - 10:26 am Report viewed by Company Reporter
- Wed Apr 08, 2026 - 10:26 am Report viewed by Company Reporter
- Tue Apr 07, 2026 - 3:14 pm Report viewed by CIM Admin
- Tue Apr 07, 2026 - 3:14 pm Report viewed by CIM Admin
- Tue Apr 07, 2026 - 3:13 pm Report viewed by CIM Admin
- Tue Apr 07, 2026 - 3:13 pm Report viewed by CIM Admin

Change status

Under Review
Revision Requested
Approved
Rejected

The Opportunity: From Data to Prevention

Report an incident

COMING SOON

Step 1

Step 3

Step 2

This screenshot shows the 'Report an incident' form at the 'Private data' step. It includes a 'Commitment to Confidentiality' section, a 'Private incident details' section with fields for Company, Incident address, Employment type, and Years of experience, and a 'Private contact information' section for email address. A 'Cancel' button is at the bottom right.

This screenshot shows the 'Report an incident' form at the 'Incident details (ICMM, NAICS)' step. It includes fields for Date of incident, Time incident occurred, Location, Fataality or Serious Injury, Number of fatalities, Hazard classification, What was the energy released, Task type, Control failure category, Type of worker(s) affected, and an Incident description text area. Below this is an 'ICMM' section with dropdowns for Main operational factor, Which of the ICMM '8 lessons', What recommendations have arisen, and How have you reinforced your control framework.

This screenshot shows the 'Report an incident' form at the 'Attachments' step. It features a large dashed box for file uploads with a 'Browse computer' button and a 'Save and Submit Report' button at the bottom right.

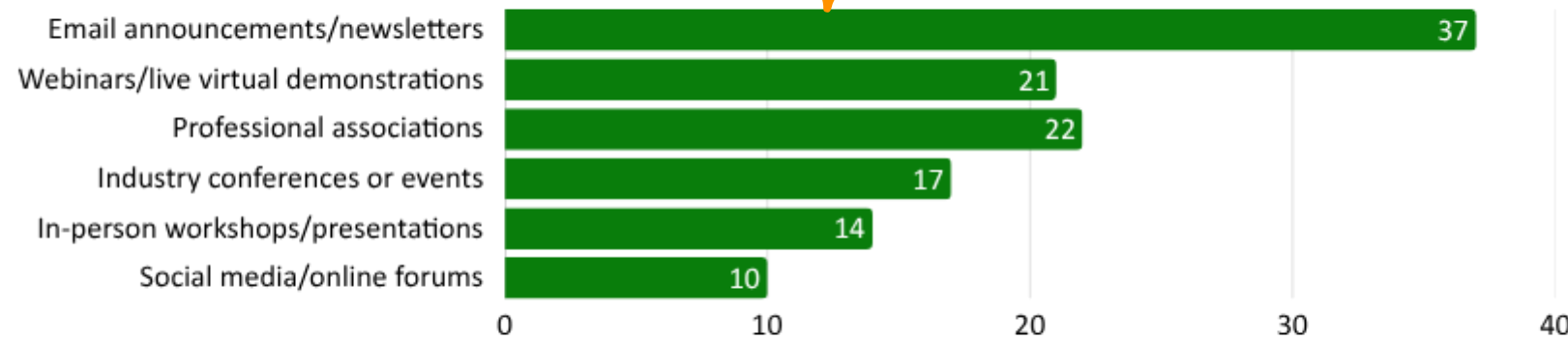


Milestones & Next Steps

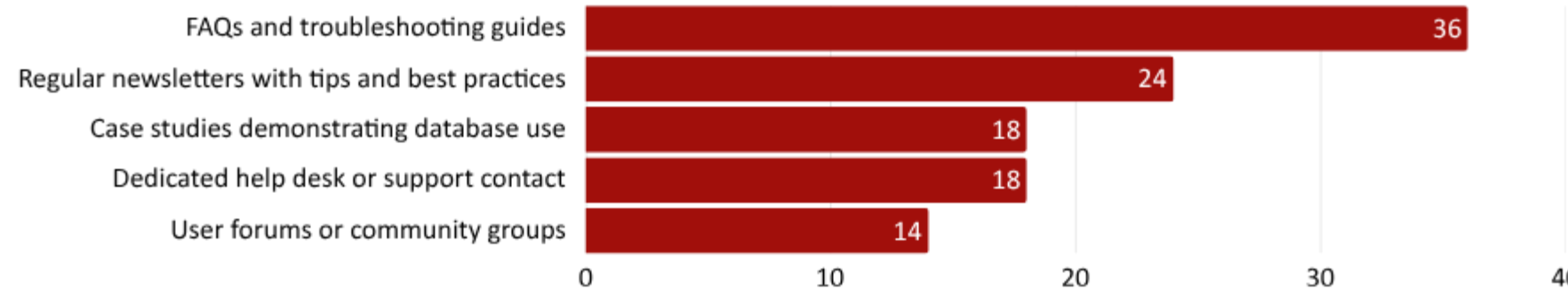
- Q3'25: Budget Raised, RFP Issued
- Q4'25: Vendor Selection
- Q1'26: SIF Research Project Conducted
- Q2'26: SIF Project Launch at CIM Connect, Incorporate data
- Q3'26: SIF Portal Stand Alone
- Q4'26 & Beyond:
 - Expand the database beyond fatalities to serious injuries and near misses
 - Develop a database for completed Bow Tie analysis for major hazards
 - Combine incident information with the Bow Tie analyses to develop a "Heat Map" of common control issues
 - Training sessions



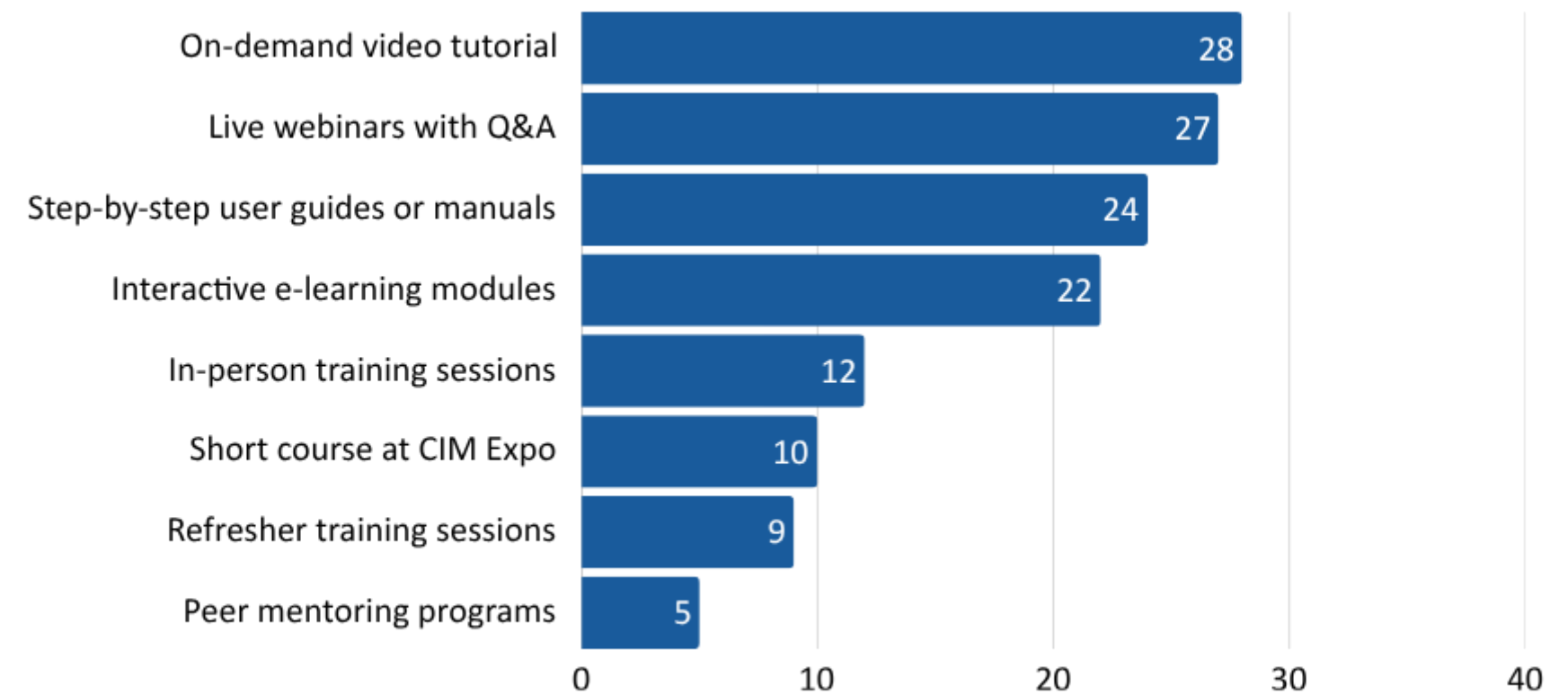
Communication Channels



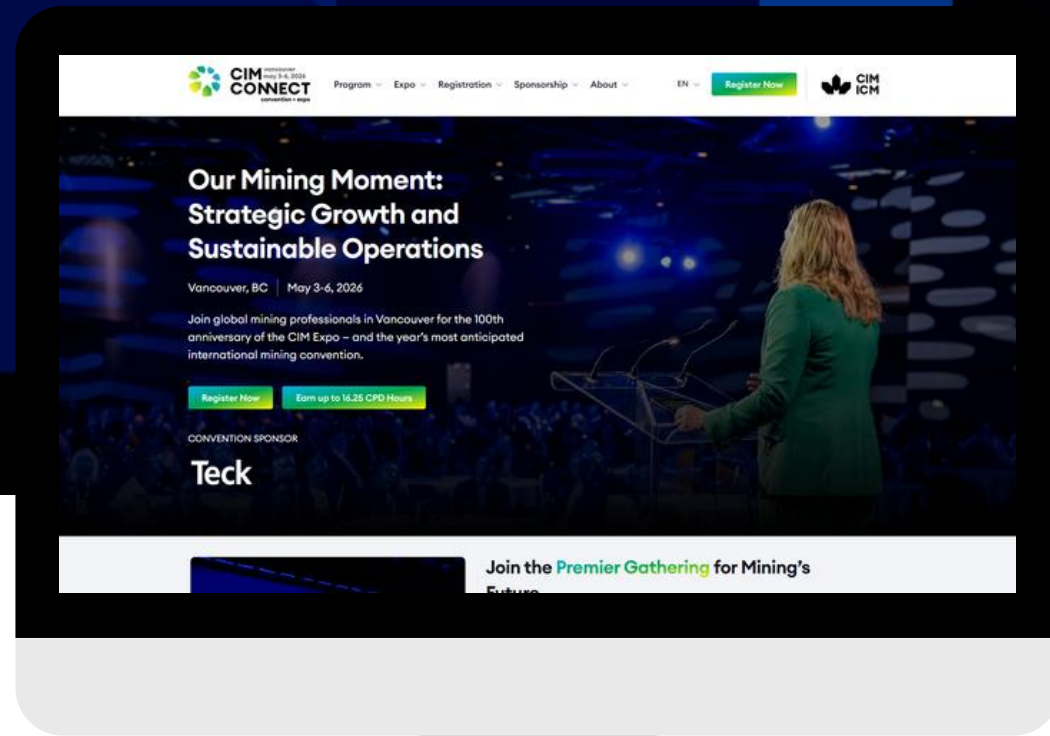
Additional Support



Training Preferences



Learn More

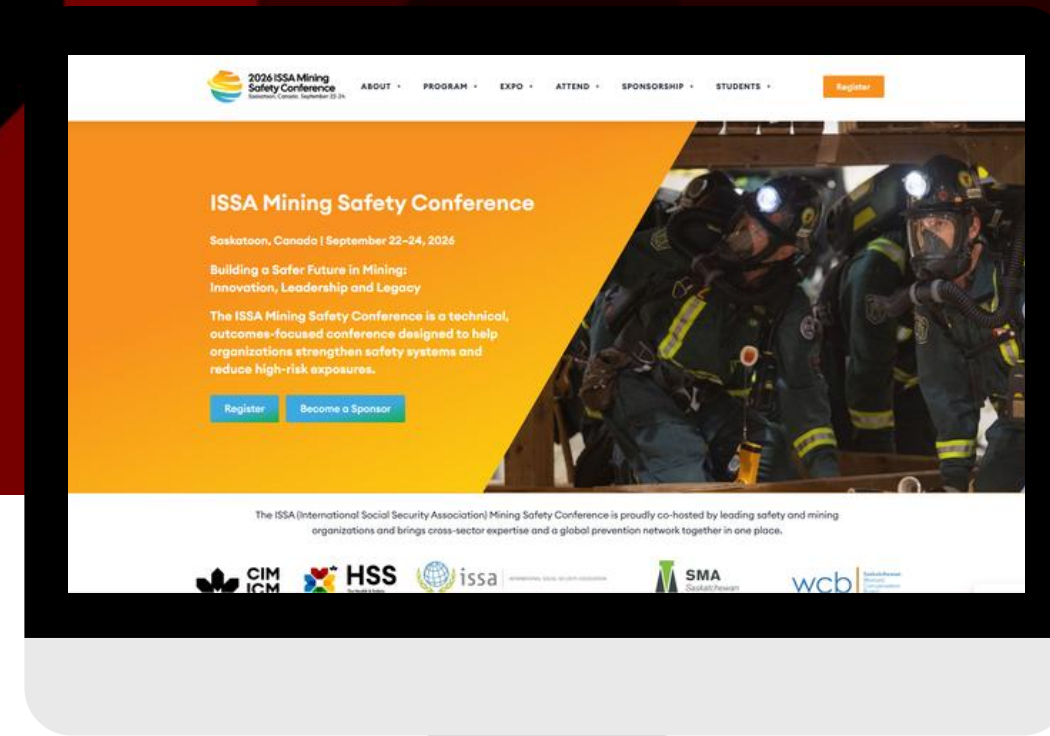


CIM Connect

From Silos to Solutions: Building Canada's First National Serious Injury and Fatality (SIF) Prevention Database
Vancouver, British Columbia, Canada
May 3 to 6, 2026

CIM Connect

PANEL: Reporting for a Safer Tomorrow - Building a SIF Prevention System that Improves Mine Safety Outcomes
Vancouver, British Columbia, Canada
May 3 to 6, 2026



ISSA Mining Conference

Building a National Learning System for Fatality Prevention: Insights from a Cross-Sector Study of SIF Data Needs in Canadian Mining
Saskatoon, Saskatchewan, Canada
September 22 to 24, 2026



Thank you

Discussion & Questions

