PREDICTIVE INJURY PREVENTION: USING DATA TO STOP WORKPLACE INJURIES BEFORE THEY START

Executive Summary

Workplace injuries are rarely random. Decades of occupational health research show that injuries often stem from identifiable—and in many cases preventable—risk factors. This paper combines Axiom Medical's evidence-based model for predicting injury with insights from industry-wide predictive analytics research to show how employers can proactively identify, assess, and reduce risk before an incident occurs.

To support this shift from reactive to proactive safety, we've included Axiom's field-ready **Injury Risk Calculator**—a practical tool that allows safety professionals to assess exposure levels immediately, without extra steps or downloads.

AXIOM MEDICAL

Why Prediction Matters

Organizations are moving beyond traditional safety models. Instead of waiting for incidents, forward-thinking safety leaders are focusing on leading indicators—those measurable conditions that point to increased injury risk.

Predictive safety models allow companies to:

- Identify high-risk conditions early
- Intervene before an injury happens
- Improve outcomes while reducing costs and liability

Predictive vs. Reactive Safety Models

Figure 1 – Correlation of Predicted Versus Actual Incidents at a Worksite
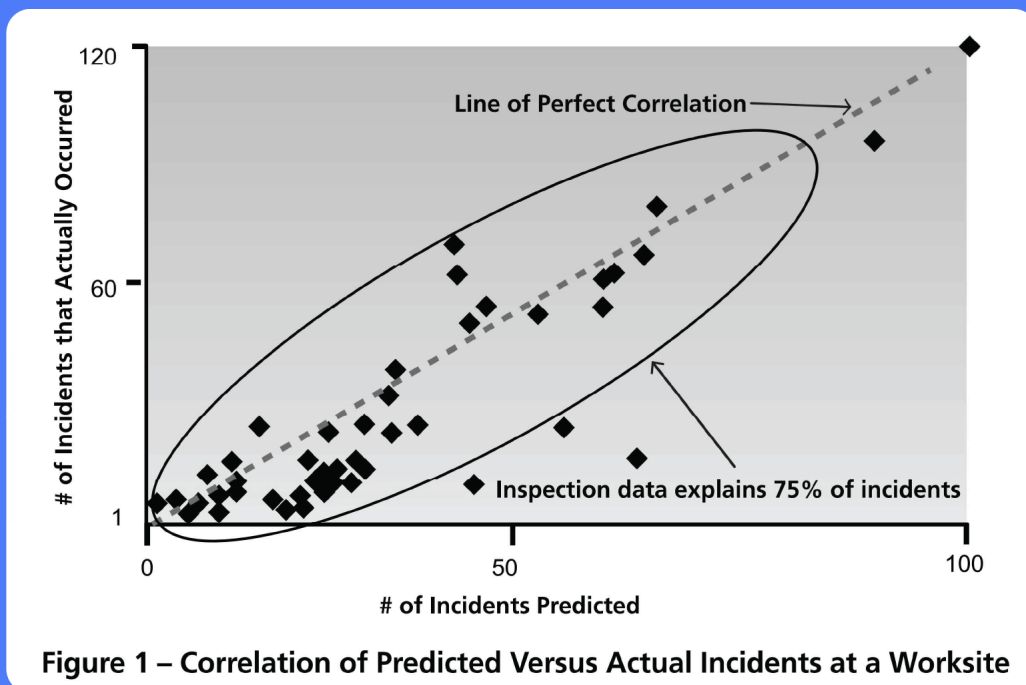
Key Predictors of Workplace Injuries

Predictor	Correlation Strength	Impact
New Hires (<1 Year Tenure)	Very High (r ≈ 0.7–0.8)	Up to 5× injury risk
Long Shifts (>10 hrs)	High (r ≈ 0.6)	37% higher risk
Heat Index >90°F	High (r ≈ 0.5–0.7)	6–15% more injuries
Night Shifts	High (r ≈ 0.5–0.6)	25–30% increased risk
Fatigue/Stress	Moderate-High (r ≈ 0.5–0.6)	Elevated incidents due to reduced focus
High Hazard Job Role	Moderate-High (r ≈ 0.5)	2x baseline injury risk
Infrequent Breaks	Moderate (r ≈ 0.4–0.5)	Increased risk later in shift
PPE Noncompliance	Moderate (r ≈ 0.3–0.5)	Triples odds of injury
Mental Health Issues	Moderate (r ≈ 0.3–0.4)	40–60% higher injury likelihood
Rain/Ice/Snow	Moderate (r ≈ 0.4)	More slips, falls, and vehicle accidents

Top 5 Predictors by Risk Strength
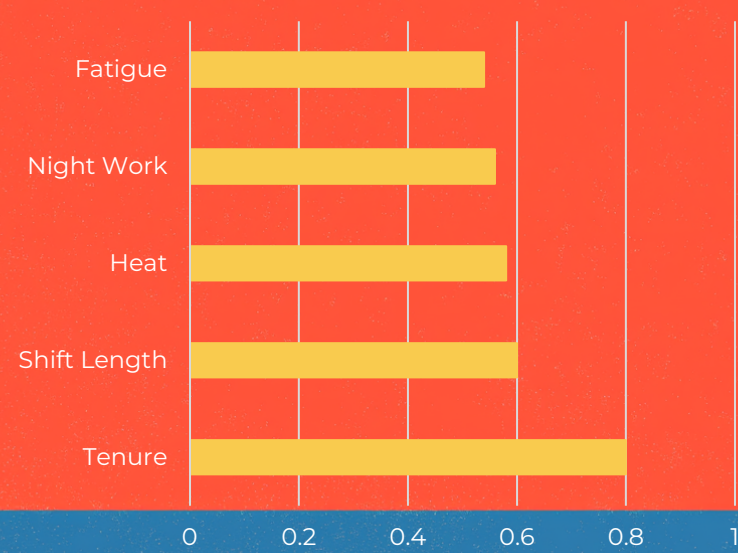
Workplace Injury Risk Scorecard
Based on Axiom Medical's Injury Predictor Model

Axiom's Injury Risk Calculator is a predictive tool that helps identify workplace safety risks before they lead to incidents. By analyzing safety data and patterns, it provides insights into where accidents are most likely to occur within your team.

Here's the process:

- Start by collecting relevant daily data, such as temperature, sleep duration, and shift length.
- Input this data into the risk calculator.
- Use the results to determine each worker's risk level for the day.

Consistent use of this calculator will reduce accidents in the near-term and provide valuable incidents over time. By regularly reviewing aggregated results, you can spot high-risk areas or recurring patterns in certain teams or during specific time periods, helping you target resources to fix unsafe conditions.

Ready to get started?

AXIOMMEDICAL   **Workplace Injury Risk Calculator**

Sleep Duration (Hours)

Shift Length (Hours)

Night Shift?   Yes   No

Stress Level (1-10)

New Employee?   Yes   No

Temperature (°F)

Risk Score: **Risk Level:**

Real-World Example:
Two Drivers. One Decision. $37,100 Saved.

Axiom recently managed two nearly identical heat-related cases—but with dramatically different outcomes:

	Driver A	**Driver B**
Symptoms	Nausea, headache, cramps	Nausea, headache, cramps
Response	Sent to ER	Contacted Axiom
Treatment	Full ER workup (labs, neuro, cardio)	Fluids, rest, OTC meds

Driver A
Cost: **$38,000**
Outcome: **Recordable**

Driver B
Cost: **$900**
Outcome: **First Aid Only**

Same company. Same symptoms. But a $37,100 difference—made possible by early intervention and predictive guidance.

From Insight to Action

When used consistently, tools like this scorecard and Axiom's full Injury Risk Calculator can help you:

· Spot high-risk workers and environments early

· Prioritize interventions like hydration, rest breaks, shift changes, or behavioral health support

· Reduce OSHA recordables, workers' comp claims, and lost time

· Align safety practices with ISO 45001 and internal compliance goals

New Hire + **Heat** + **Fatigue** + **Night Shift**
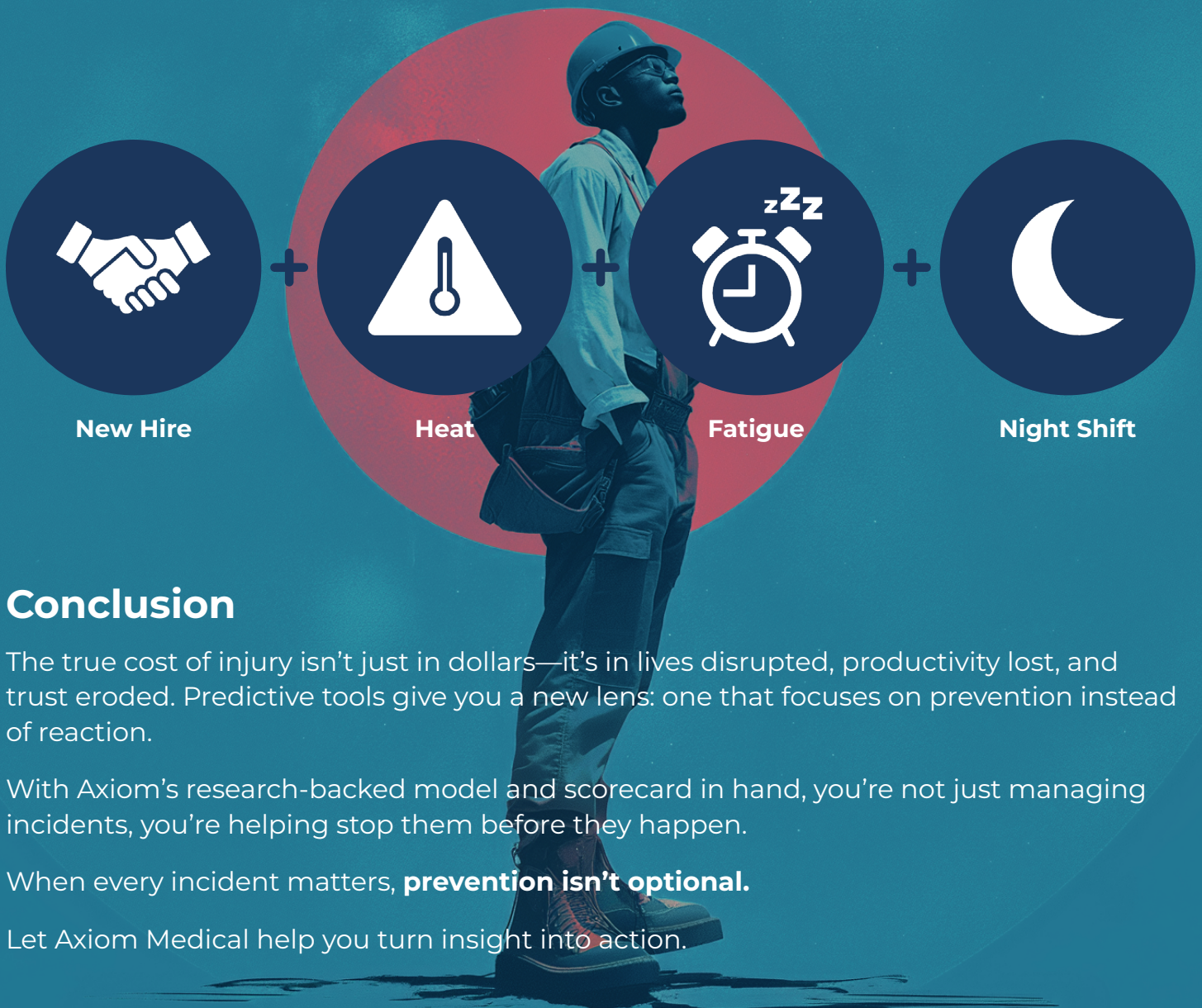
Conclusion

The true cost of injury isn't just in dollars—it's in lives disrupted, productivity lost, and trust eroded. Predictive tools give you a new lens: one that focuses on prevention instead of reaction.

With Axiom's research-backed model and scorecard in hand, you're not just managing incidents, you're helping stop them before they happen.

When every incident matters, **prevention isn't optional.**

Let Axiom Medical help you turn insight into action.

AXIOMMEDICAL