



● WHITE PAPER

Responsible AI Is Here for Retail

From Asset Protection to Workplace Safety to Operational Excellence

Executive Summary

Retail has entered a new phase.

As the largest private-sector employer in the United States, supporting more than 52 million jobs, it operates in some of the most complex physical environments in the economy [1]. What happens on the store floor or in a distribution center is immediate, physical, and often unpredictable.

Looking ahead to 2026 and beyond, three forces are no longer emerging -they are established realities. Safety risk remains elevated. Operational complexity continues to increase as omnichannel becomes the default. And AI has moved from experimentation into the core operating layer of the business.

For years, these pressures were managed separately. Safety, asset protection, and operations each had their own systems and their own view of the business.

That separation is starting to collapse.

What is replacing it is a different kind of infrastructure. Responsible AI, particularly computer vision, is giving retailers the ability to understand what is actually happening in their physical environments in real time. Not after the fact, but as work is happening.

The shift that accelerated through 2024 and 2025 is now becoming baseline. AI is no longer a pilot initiative. It is becoming part of how retail operates day to day [2][3][11][19].

The implication is straightforward. The retailers that lead in the next phase will not be those with more data. They will be the ones that can see and act on reality faster than everyone else.

1

A More Connected Risk Environment

Retail risk is becoming more interconnected.

Frontline environments today are shaped by the same pressures across the industry. Organized retail crime continues to evolve in scale and coordination [4]. Injury rates remain elevated across stores and warehouses [5]. Labor constraints persist, requiring fewer people to manage increasingly complex operations [6].

These forces do not operate independently.

An injury reduces staffing. Reduced staffing affects execution. Execution breakdowns create both operational inefficiencies and new safety risks. The system feeds itself.

What becomes clear is that these are not separate issues. They are different outcomes of the same underlying conditions -limited real-time visibility, predictability, inconsistent processes, and constrained labor.

This is why frameworks like Total Retail Loss have gained traction. They reflect a more accurate way of looking at the business. Shrink, safety incidents, and operational inefficiencies are connected [8]. So is the upside: a safer, better-run store environment doesn't just reduce loss - it improves the customer experience and drives revenue.

The control point for all of them is the same: the physical environment where work is happening.

If that environment is not visible in real time, it is not manageable.



2

AI Is Becoming an Integral Part of the Operating System

For most of the last decade, AI in retail sat outside the workflow. It generated reports, surfaced trends, and helped explain what had already happened.

That is no longer where the value is.

Across 2025, the industry shifted from experimentation to deployment. AI systems are now embedded directly into day-to-day operations, producing measurable impact in real environments ^{[2][11][19]}.

This transition is continuing into 2026.

The progression is consistent. First, retailers build insight. Then they add real-time detection. Finally, they begin acting on those signals as work is happening.

It is this last stage that changes performance.

Asset protection and workplace safety have moved first because the conditions are already in place. Retailers have camera infrastructure. These environments generate continuous activity. And the outcomes are visible and measurable.

Computer vision fits directly into that reality.

As adoption continues, AI will become less visible as a “system” and more embedded as part of how work gets done—quietly present, continuously observing, and enabling faster predictions.

In one example, a large retailer rapidly integrated computer vision AI into existing workflows at their ecommerce fulfillment center, with multiple stakeholders championing and using the technology to understand and mitigate risk, from changing work processes to one on one coaching. Because the technology was deployed across teams, remarkable results were achieved despite significant turnover in key positions, including the Safety Manager, Assistant General Manager, Operations Manager, and Supervisor. Rather than turnover leading to increased injury frequency and severity as it typically does, the opposite occurred.

Despite turnover, the year one results reflected that stability:

- **47% reduction in workers comp claim frequency**
- **37% reduction in TRIR**
- **55% reduction in injury cost severity**
- **93% increase in hazard and near miss reporting**

3

One System, Expanding Impact

Once these systems are in place, their value expands beyond the original use case.

The same infrastructure supports multiple outcomes because it is grounded in a single capability: understanding the physical environment in real time. It is worth distinguishing between the camera systems retailers already own and the AI layer built to interpret what those cameras see. One records. The other understands.

Asset Protection



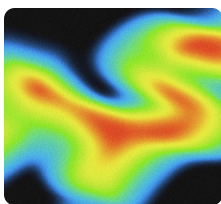
Cameras have traditionally been used to review incidents after they occur.

That model is shifting.

With AI, events can be surfaced in real time, allowing teams to respond faster and more consistently. Over time, this moves from response toward prevention.

Retailers deploying these systems are already seeing measurable reductions in shrink and improved incident response ^[4].

Worker Safety



Safety is moving upstream.

Instead of relying primarily on reporting and compliance, systems can now identify risk before it becomes an incident. Unsafe behaviors, environmental hazards, and congestion can be detected and mitigated as they occur.

Early deployments continue to show sustained reductions in injury rates across environments ^[13].

The most effective safety intervention is the one that happens before the incident.

Working At Heights Incidents

171 INCIDENTS OCCURRED
DURING BENCHMARK

15 INCIDENTS OCCURRED
POST BENCHMARK

One such example occurred within a retail pharmaceutical supply chain. Using computer vision AI to augment manual safety observations and tools like heatmapping and real-time insights, a previously unrecognized working at heights risk was identified. Within the first 60 days of monitoring, over 150 instances of workers operating unprotected at heights of 20 feet were documented. Through a combination of baseline training, in the moment coaching, and engineering controls, working at height incidents dropped by 75%, almost immediately, avoiding thousands of potential near misses and significantly reducing a serious injury or fatality risk that had gone largely undetected.

Operations

What emerges is a continuous improvement system that operates alongside the business.

The operational impact is still underappreciated.

Real-time visibility into workflows allows retailers to identify inefficiencies that were previously invisible. Bottlenecks can be addressed as they form. Small inefficiencies can be corrected immediately.

These improvements compound over time. AI-driven operational changes continue to show measurable gains in efficiency and throughput, particularly in distribution environments [14].

What emerges is a continuous improvement system that operates alongside the business.

In retail, operations and the business are ever changing and dynamic, driven by seasonal shifts and other factors that workers and the supply chain must constantly react to. Through continuous monitoring of the work environment, a large retailer identified an unprecedented spike in ergonomic risk on one of its depalletizing lines. Root cause analysis revealed more than a coaching opportunity, it uncovered an issue with the warehouse management system that was overfeeding the line, increasing worker risk while also hurting operational efficiency as work was not spread evenly, leaving some workers scrambling while others were underutilized.

By adjusting management systems, augmenting processes, and providing on the spot training, risky ergonomic events were reduced by 51% across the distribution center. The end result was an 85% reduction in ergonomic injuries, a direct year one injury avoidance savings of \$414K, and an 85% reduction in first aid cases, giving back five plus weeks of productive time to the operation from reducing first aid cases alone.



4

Trust Will Determine How Far This Scales

As capability increases, trust becomes the limiting factor.

Retail is a human environment. Systems that are not understood or that feel intrusive will not be adopted, regardless of performance.

Responsible AI is what makes deployment sustainable.

In practice, that means clarity around how systems operate, how data is used, and what remains under human control. It also means being deliberate about how these systems are introduced to the workforce.

There is a consistent pattern. When workers understand that the system is improving safety and helping them do their jobs more effectively, adoption follows.

When that understanding is missing, adoption slows.

Global frameworks from organizations such as OECD and NIST reinforce this point. The barrier to scaling AI is not technical. It is organizational and human ^{[15][16]}.

5

The Business Case Is Becoming Structural

The way these systems are evaluated is changing.

Safety and asset protection have historically been treated as cost centers. Necessary, but separate from performance.

That distinction is becoming less useful.

Leading retailers are evaluating these investments through Total Cost of Risk, which captures both direct and indirect impacts ^[9]. That calculus is expanding. Environmental factors (i.e. organization, cleanliness, physical order) are increasingly understood as productivity and profitability variables, not just housekeeping.

Fewer injuries lead to more consistent staffing. Faster response reduces loss. Better execution improves throughput. These outcomes reinforce each other.

Over time, this reframes the investment.

What begins as risk reduction becomes a performance system.

Looking ahead, this capability will not be optional. It will become part of the baseline infrastructure required to operate effectively.

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6

What This Looks Like Going Forward

In practice, deployment is becoming more consistent.

Retailers layer AI onto existing infrastructure. They focus on improving visibility across safety and operations at the same time. They introduce systems in a way that supports frontline teams.

From there, the impact compounds.

Incidents decrease. Response becomes faster. Execution becomes more consistent. Teams gain a clearer understanding of what is happening in their environment.

Looking ahead to 2026 and beyond, the gap between leading retailers and the rest of the market will not be access to technology.

It will be how well that technology is integrated into daily operations.

Retailers that treat AI as a tool will see incremental improvement.

Retailers that treat it as infrastructure will operate differently.



Appendix— Selected References

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