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Retail's Tech Transformation: Upskilling Frontline Employees for Next-Gen Careers

A Guide to Getting Started

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ABOUT FSG

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Executive Summary

Retail is one of the largest employment sectors in the U.S., but it faces persistent challenges with turnover, talent shortages, and limited internal mobility. Frontline roles—such as cashiers, stockers, and sales associates—are often viewed as low-wage, short-term positions with few advancement opportunities. At the same time, the industry is rapidly evolving through digital transformation, increasing demand for workers with technical skills in areas like software development, cybersecurity, and robotics.

This report offers a roadmap for building technology career pathways that connect frontline associates to higher-paying, tech-enabled roles. Drawing from labor market data, employer interviews, and frontline worker transitions, it identifies two key opportunity areas: Computer Tech roles (e.g., software developers, network architects) and Physical Tech roles (e.g., welders, logisticians, mechatronics technicians). These positions offer significantly higher wages and long-term career potential, and over 110,000 workers have already made the leap—often without formal pathways or support.

The report outlines how retailers can design and implement scalable pathways by addressing barriers at the individual, company, and system levels. It emphasizes the importance of adopting a skills-based mindset, aligning training with business needs, and piloting place-based strategies that account for local labor market dynamics. Success depends on leveraging internal corporate assets—such as workforce data, training infrastructure, and local leadership—and building a compelling business case tied to outcomes like increased retention and productivity.

This is both a workforce strategy and a business imperative. By investing in career advancement for frontline workers, retailers can reduce turnover costs, strengthen their talent pipelines, and support more inclusive economic mobility.

The retail industry supports more than 55 million jobs in the U.S.[1] It experiences turnover exceeding 60% for frontline workers, significantly higher than the rates in most other industries. This churn results in billions of dollars in annual losses for retailers. But these losses go beyond operational inefficiency—they reflect a deeper structural issue. Too many frontline retail roles—cashiers, sales associates, stockers—are seen as low-wage, short-term positions with limited potential for advancement. As a result, many workers with expertise in the industry leave retail altogether in pursuit of more sustainable careers.

Meanwhile, technology is reshaping every part of the retail experience. Consumers notice it through the ubiquity of QR-code ordering and self-checkout stations; workers experience it as they rely on increasingly advanced tools and machinery to move and track products. But amid this upheaval lies an immediate opportunity—employers can build more stable, capable teams, and frontline workers can access higher paying roles with greater potential for advancement.

Across the industry, retailers are already responding to real-time talent shortages by hiring external tech workers and competing with other industries for the same talent. But meeting today's needs is not enough. To stay competitive, companies must plan for tomorrow, beginning with the people who will bring that future to life. This starts with building resilient, adaptable pipelines of talent prepared to support a tech-enabled retail experience for years to come.

Rapid shifts in technology and skill demands make workforce planning more difficult than ever. This report offers strategies for retailers and workforce organizations working together to navigate this fast-changing and high-stakes transformation. Throughout, we provide insights and actionable next steps for addressing key questions:

- What are the **fastest-growing technology roles** in the retail sector?
- What are the **most valuable skills** needed for these roles, and how can workers develop them?
- How can **employers get started** in creating effective pathways from the frontline to these emerging tech roles?
- And how can **corporate leaders build a compelling business case** for investing in building these robust talent pipelines?

Technology Roles and Pathways in Retail

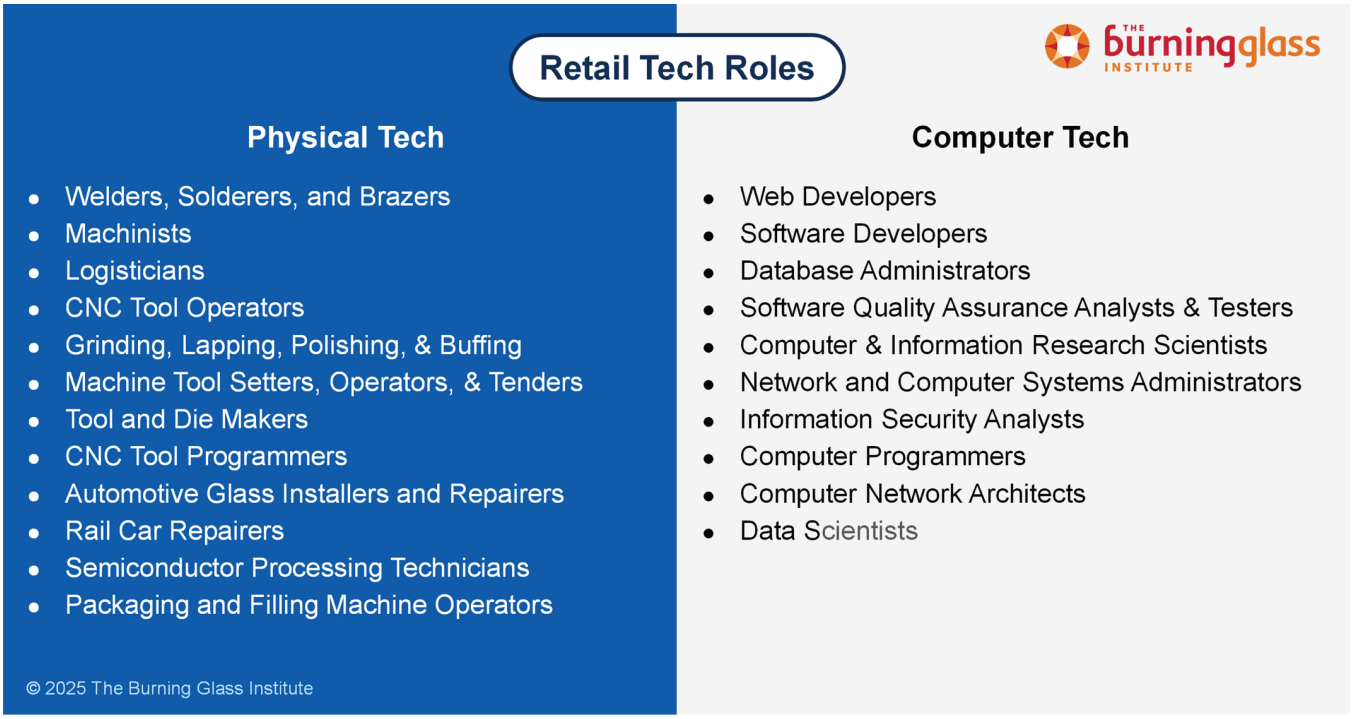
The range of technical skills required to help support the retail ecosystem, which includes retailers, distributors, and wholesalers, is extensive. As with many other sectors, retail companies are also increasingly becoming information technology companies. They communicate, transact, and operate online, requiring robust capabilities in software development, cybersecurity, IT infrastructure, and telecommunications.

Within these operations are roles commonly recognized as IT jobs. In this context, we refer to these professionals as **Computer Tech workers**. Although they may not work in or near physical stores, they play a vital role in the backbone of retail. They build and maintain e-commerce websites, monitor the movement of goods, secure transactions, manage payment systems, and analyze vast data streams tied to retail, wholesale, and distribution activities. This group includes programmers, network architects, and information security analysts, among others.

Nationwide, more than 165,000 workers hold these roles across the broader retail ecosystem. In retail and adjacent industries, Software Developers are the most common occupation in this category, accounting for half of all Computer Tech job postings in retail.

At the same time, retail operations rely on physical technologies—vehicles, conveyor systems, robotics, packaging, and labeling machinery—to move, sort, and prepare products. The individuals who operate, maintain, and repair this equipment are referred to here as **Physical Tech workers**. This group includes drivers, welders, and logisticians, many of whom use machine-specific digital tools to ensure systems run safely and efficiently. Physical Tech workers work with a range of mechanical and electrical technologies, many of which are software-enabled. Together, they comprise a critical, hands-on segment of the retail workforce. Across the retail and adjacent sectors, more than 175,000 people are employed in these roles.

Figure 1. Technology Roles in the Retail Industry



The Mysterious "Mechatronics"

Despite growing importance across industries, "mechatronics" remains a mystery to many frontline workers. The term itself—unfamiliar and technical—can make these roles seem out of reach, even as they become more central to how retail works. For workers who spend their days in stores or warehouses, "mechatronics" sounds like something from another field entirely—more science fiction than career step.

In reality, mechatronics is the integration of mechanical systems with electronics, control systems, and computing. It's not a new concept: for decades, it has powered innovations like robotic manufacturing, anti-lock brakes, and automated packaging. What's new is how quickly retail is now adopting mechatronics to transform warehouses, delivery networks, and stores.

While current job postings don't yet reflect a surge in mechatronics roles, major retailers are forecasting rapid growth as automation and smart systems reshape retail operations. This demand spans two main categories:

- **Operators**, who manage systems and perform routine maintenance
- **Technicians**, who handle more complex repairs and require advanced skills, including software expertise.

Retailers increasingly need workers who can operate and maintain inventory robots, self-checkout systems, automated warehouse solutions, and electric vehicle fleets used in in-house logistics.

Yet the language barrier remains. The term mechatronics alone can be enough to discourage interest— making the work seem overly technical, inaccessible, or simply irrelevant to frontline employees. To overcome this, leading retailers are rebranding these roles with clearer, more approachable terms like "Reliability and Maintenance Engineering"[3] or "Reliable Operations." These titles help demystify the work, making pathways easier to understand and opening the door for training and advancement within the existing workforce.

> **"No one understands what 'mechatronics' means, so we just moved away from this language."**

Cultivating Retail Tech Workers Within the Broader Omnichannel Retail Environment

With rising demand for both Computer Tech and Physical Tech talent, and strong competition across industries, retail employers face increasing pressure to develop talent internally rather than compete with all industries that need workers with technical skills. Analysis from the Burning Glass Institute shows that many frontline workers already advance within the retail sector, moving from entry-level roles such as sales, cashiering, and stocking into management or corporate positions. Advancement from frontline retail roles into technical roles can offer retail workers even more opportunity. However, far more leave the industry entirely in search of long-term career opportunities elsewhere. As technical skills become increasingly critical to retail operations, employers have a significant opportunity: to cultivate the talent already on their payroll to meet the demand for skilled roles in technology.

One potential pathway into retail tech runs through higher education. Many professionals in retail tech began on a traditional high school-to-college-to-career track, often working frontline retail jobs along the way to support themselves. For instance, 70% of information security analysts in retail have a bachelor's degree. Yet most frontline workers do not have the opportunity to pursue formal education due to barriers such as cost and time. As a result, many do not see themselves in high-wage, high-skill technical roles.

What's more, without clear communication from their employers about career pathways, they may be unaware of what those roles entail, how well they pay, or how to access them. At the same time, many tech teams in the retail sector remain unaware of the transferable skills already present within their workforce. This mutual disconnect leads to missed opportunities for workers seeking advancement and for employers facing talent shortages.

Roles such as Welder and Logistician offer growing opportunities and substantially higher earnings than frontline positions like Retail Sales Associate. Although these occupations differ in function and technical requirements, many workers have successfully transitioned from frontline retail into these fields.

Table 1: Worker Gains in Physical Tech

Occupation	Number of Workers in Retail	Median Wage	Expected Growth (2023-2033)
Retail Sales Associate	3.5M	$33,680	0%
Welders	28,880	$48,940	2%
Logisticians	56,550	$79,400	19%

Nearly 14% of Logisticians have advanced from frontline retail jobs—either directly or through intermediary roles—and an additional 8% have held equivalent roles outside the retail sector. For Welders, the pattern is even more pronounced: around 20% have frontline experience, most of it gained within the retail sector.

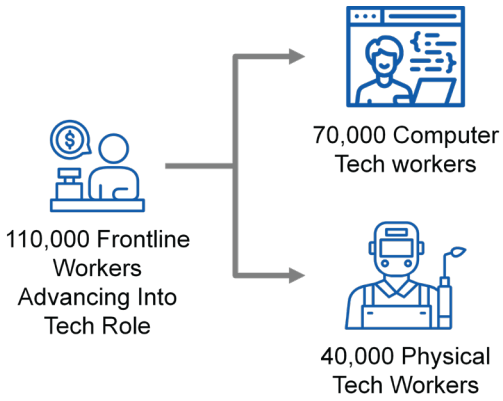
Even with limited employer intervention, the pathway from frontline retail into physical retail tech has already proven viable, with more than 40,000 workers making the shift over a five-year period.

Table 2: Worker Gains in Computer Tech

Occupation	Number of Workers in Retail	Median Wage	Expected Growth (2023-2033)
Retail Sales Associate	3.5M	$38,596	0%
Computer Support Specialist	66,280	$59,240	13%
Computer Network Architect	9,130	$129,840	33%

The transition from frontline retail into computer-focused roles is also achievable, with nearly 70,000 workers making this move over a five-year period. Nearly 12% of Computer Network Architects began their careers in frontline retail roles, indicating real potential for upward mobility. Fewer Information Security Analysts follow this route—only 4% start in retail—but the pathway remains viable. While 72% of job postings for Information Security Analysts specify a four-year degree as a requirement, only 58% of current workers in the role actually hold one. This discrepancy points to an opportunity for employers to tap into existing talent within their organizations and expand access to advancement for workers without degrees but with valuable skills and relevant experience.

Figure 2: Pathways Into Tech for Frontline Workers



These examples make one thing clear: frontline retail workers can—and do—advance into Retail Tech roles that offer meaningful upward mobility. Their achievements are worth celebrating, both for the individuals and families who gain access to higher wages and greater stability, and for the retail firms that urgently need skilled talent. The challenge now is to move from isolated progress to broader, scalable impact. These cases should serve as a blueprint for expanding internal mobility strategies. By investing in pathway programs, employers can turn a handful of success stories into a systemic approach to talent development.

A clearer understanding of occupations—both the frontline roles accessible without a four-year college degree and the promising tech roles—can help employers see how skills developed on the retail floor translate into value in technical environments. By layering on targeted technical training, workers can meet the remaining requirements and transition into high-demand roles in areas such as Network Architecture and Information Security. This insight can provide a practical framework for building bridges from frontline work into tech roles—offering workers a path from economic insecurity to stability and long-term growth.

Figure 3: From Retail Sales to Data Systems or Welding

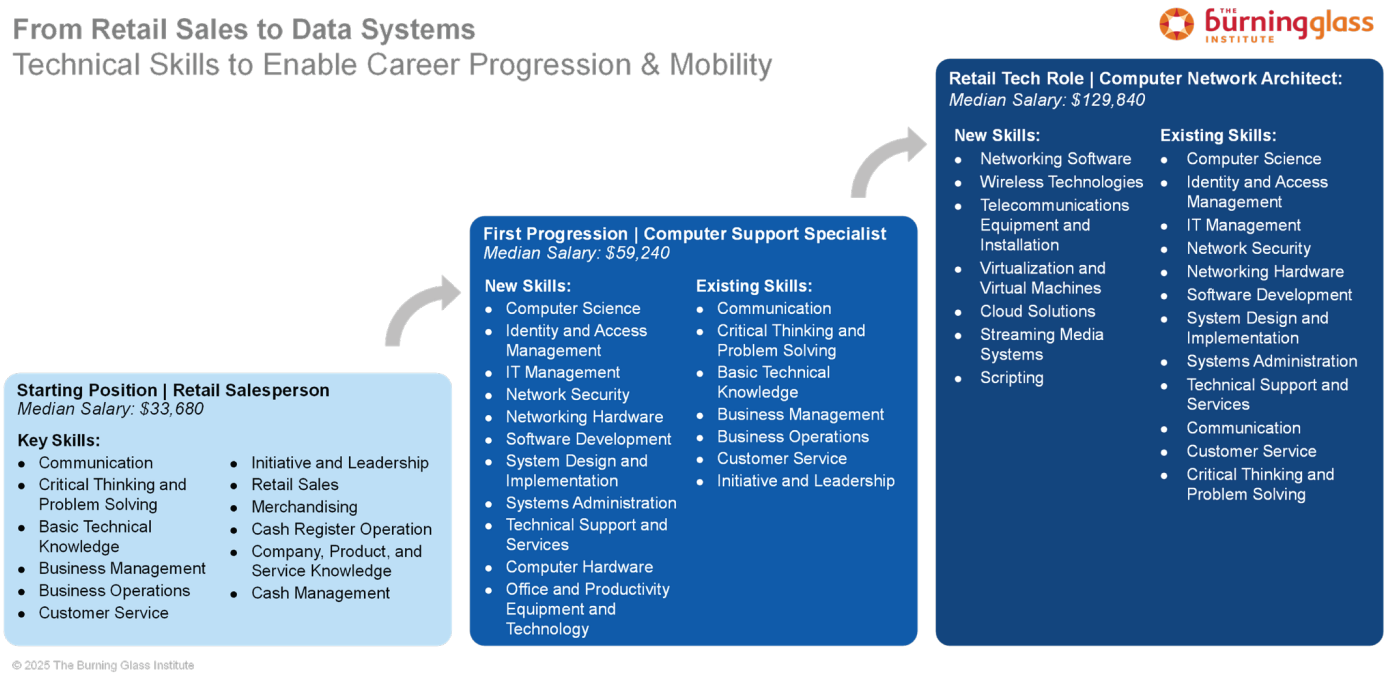
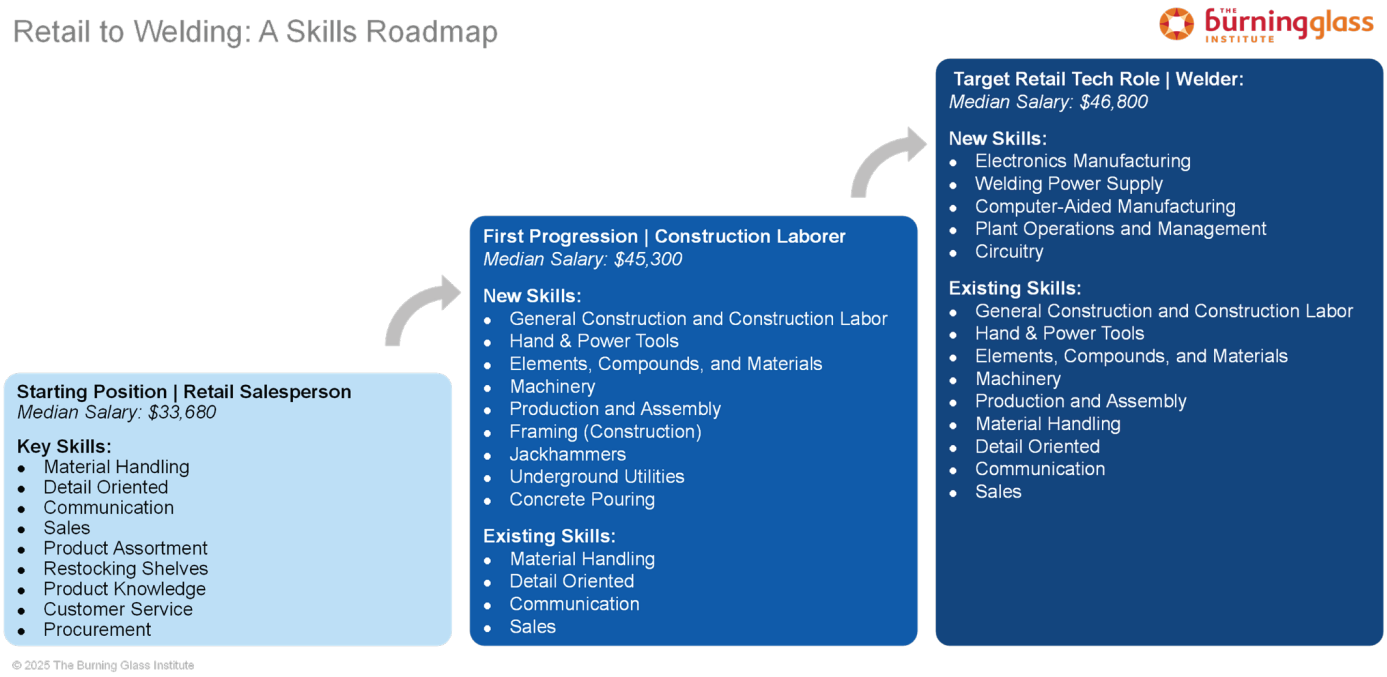


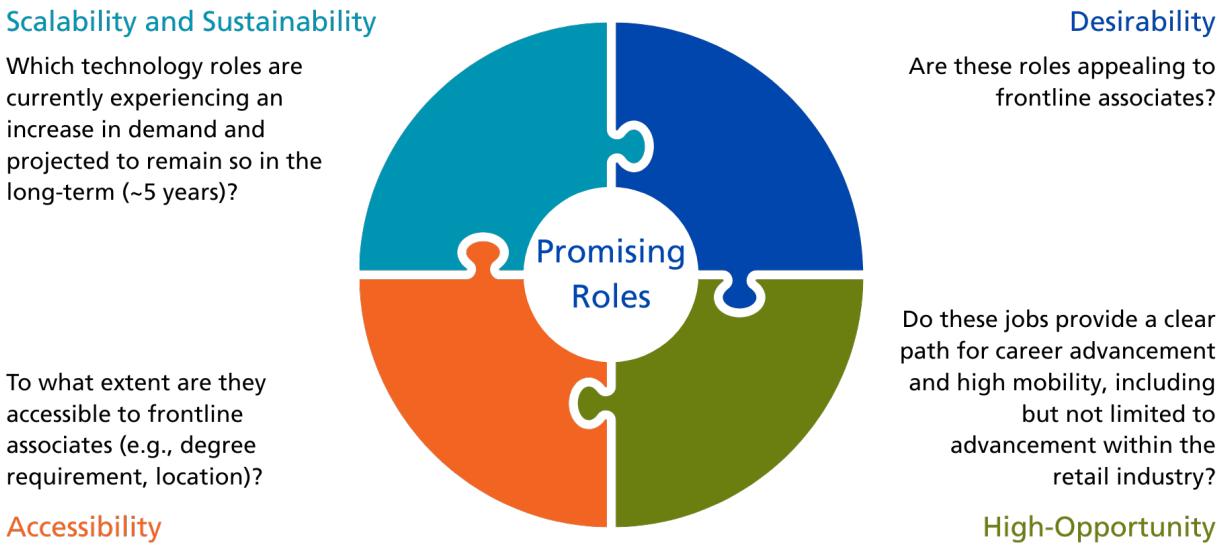
Figure 4: From Retail Sales to Welding



While moving from frontline retail roles to retail tech positions requires advanced skill development, many frontline retail workers already bring foundational skills that can give them a head start. Recognizing the relevance of these existing skills allows employers to tap into often-overlooked talent pools. By clearly mapping out advancement pathways, employers can help their current frontline workforce see that they may be closer to qualifying for technology roles than they realize.

Figure 5: Determining If a Role Merits a Tech Pathway

Before designing career pathways, employers must identify roles that are strong candidates for pathway development. This means looking beyond short-term hiring needs and considering long-term sustainability, accessibility to frontline workers, appeal, and potential for upward mobility.



Considerations for Designing Pathways to Technology Roles in Retail

Identifying career pathways is a critical first step. However,it doesn't guarantee that associates can access or succeed in these opportunities. Reskilling involves more than simply offering training; it requires intentional support structures that help workers see themselves in, access to, navigate transitions into, and succeed in these unfamiliar tech roles.

To expand access to opportunity, employers must confront the barriers that prevent associates from moving into promising roles. These barriers operate on three interrelated levels: individual, organizational, and systemic. Addressing them requires a broad, integrated perspective—one that accounts for factors ranging from mindsets and cultural narratives to incentives, organizational practices, or policies (rules and regulations that guide government and organizations' activities).[2] For instance, adopting a skills-based hiring model involves more than removing degree requirements from job postings. It demands a deeper shift in mindset, challenging long-held assumptions about qualifications and potential. Without this cultural transformation, even well-intentioned policy changes are likely to fall short or revert under pressure, limiting the potential for lasting, structural change.

Table 3: Barriers at the Individual, Employer and Ecosystem Levels

	Individual	Employer	Ecosystem
Mindset and Awareness	• Have digital native skills, yet don't identify as "tech person" • Advancement seen mainly leading to operations (sales, management) • Limited awareness of tech in non-traditional roles , (e.g., welders, logisticians)	• Perception of frontline workers as cyclical and easily replaceable • Credential-based mindsets (vs. skill-based) and undervalue reskilling and learning and development; • Perception that frontline retail skills are not transferable to tech.	• Perception that physical tech roles are low quality • Lack of understanding of emerging roles and pathways • Lack of responsiveness to emerging needs • Geographic mismatch: Tech roles concentrated in different areas from frontline workers
Incentives	• Unclear cost/ benefit of investing time and money in tech training[3]	• Unclear business motivations and ROI for pathway creation and upskilling • Limited involvement of business leaders and hiring managers in workforce decision and pilots	• Misaligned incentives and beliefs across stakeholders, (e.g., Employers prioritize bottom line and perceived "good" jobs, while providers focus on their current offerings and lack the nimbleness to respond to evolving field needs)
Policy, Practices, Resources	• Lack of technology skills • Lack of time to learn	• Lack of long-term planning • Training benefits rarely targeted for internal advancement • Focus on external hiring (vs. internal upskilling)	• Inadequate training due to lack of coordination between employers and workforce providers/ education institutions • Limited sector-wide skill recognition

Barriers at the Individual Level

Mindset & Awareness: Advancement Limited to Operations Roles

Despite growing interest and fluency in technology, frontline associates often view advancement as a path to store management or sales, not tech roles. This perception limits the pipeline of internal candidates for tech-enabled positions, even when workers have the potential to succeed in them.

> **"Our associates are typically very tech savvy. But they don't consider advancing to [tech] roles; they just think it's not for them."**

Incentives: Unclear Return on Training Investment

The cost-benefit equation for tech training is often murky. Employees face immediate, tangible costs such as tuition, transportation, or childcare, while the benefits, like higher pay or career mobility, are frequently vague or delayed. Without a clear and credible return on investment, many workers hesitate to commit time and resources, leading to lower enrollment and completion rates.

Barriers at the Company Level

Mindset & Narrative: Credential Bias:

A persistent focus on degrees over demonstrated skills excludes a large segment of the workforce, including many current associates who lack formal credentials but possess relevant experience and potential. This credential-based mindset not only narrows the talent pool but also impedes the development of effective career pathways by overlooking the viability of upskilling and reskilling existing employees.

Incentives: Unclear Business Case and ROI

While many retailers support upskilling efforts out of a sense of corporate responsibility, the lack of a clearly defined business rationale often limits sustained investment. Without quantifiable returns, such as increased retention, productivity, or internal mobility, these initiatives struggle to gain traction at scale, restricting access to advancement opportunities across the workforce.

Policy, Practices & Resources: Lack of Long-Term Workforce Planning

The absence of long-term workforce planning makes it difficult for employers to anticipate future skill needs or align training efforts with strategic goals. As one large retailer noted, workforce planning is often tied to short-term business cycles—typically one to two quarters—and relies heavily on historical hiring data rather than forward-looking projections. This reactive approach limits the ability to identify priority roles for pathway development or to adopt alternative sourcing strategies.

> **"Now we've done long-term planning, but I wish we'd done it earlier.... We'd be a lot further along,and some of our facilities may not be struggling as much to get talent because we'd have a process for it in place already."**

Barriers at the Ecosystem Level

Mindset and Awareness: Geographic Mismatch

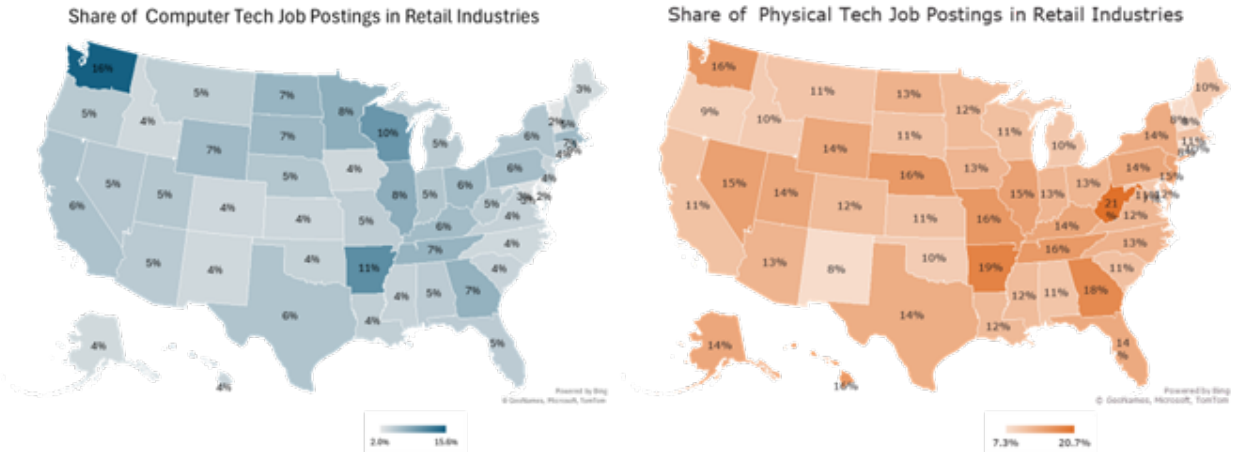
> **"The vast majority of our associates don't want to relocate for a job—they want to grow and advance in the place they are attached to."**

Tech jobs are often concentrated in locations far removed from where frontline associates work, making it difficult for them to access these opportunities. Computer Tech roles are typically housed at corporate headquarters or in IT hubs, making them largely inaccessible to associates working in stores and fulfillment centers across the country.

Physical Tech roles, such as those in mechatronics, tend to be more geographically dispersed but still have a limited regional footprint. While some states have a strong presence in Physical Tech due to existing industry infrastructure or workforce capabilities, these opportunities remain unevenly distributed.

In total, there were approximately 210,000 job postings in Computer Tech and 82,600 Physical Tech in 2023. States where retail drove Computer Tech employment accounted for about 75% of the retail computer tech workforce. For Physical Tech, leading states accounted for roughly 60% of jobs, on par with the share of the national population (~63%).

Figure 6: Share of Computer Tech and Physical Tech Job Postings



Policy, Practices, Resources: Training Misses the Mark Without Employer Input

Many workforce or education providers offer general tech skills training, but rarely tailor these programs to the specific needs of retail associates looking to transition into tech roles. This gap exists despite the proximity of both potential talent and open roles. In addition, general technology training is typically designed for the general public, not for retail workers who already possess some of the skills needed for the Tech roles. The root issue is a lack of coordination between employers, training providers, and education organizations. Even when quantitative data is publicly available on skill needs, limited dialogue between employers, educational institutions, and training providers makes it difficult to translate insights into practical, targeted training curricula.

Policy, Practices,Resources: No Common Language for Skills

Recognizing and validating skills across the sector remains a major hurdle. For tech roles in retail technology roles—many of which are newly emerging—the absence of sector-wide standards makes it difficult for employers to identify and trust skills acquired outside their own organizations. Creating alignment requires intentional, collaborative efforts among employers to define core competencies, establish shared frameworks, and adapt to evolving role requirements.

> **"We anchor on the Smart Automation Certification Alliance standards,to ensure our employees' skills are recognized, but this is not easy."**

> **"In Virginia,we have developed a list of high-demand occupations to understand the skill gap. But we still need someone to be the translator between employers, education, and workforce providers, and even individuals. We need to understand qualitative aspects to be able to close the skill gap effectively."**
> **Virginia Works Representative**

Larger Retailers with Diversified Activities are Better Positioned to Build Career Pathways and Address Limiting Factors

Scale and business models of retailers significantly influence their capacity to develop effective career pathways and address limiting factors. Retailers with diverse verticals possess a distinct advantage, as they can identify roles with adjacent skills across their operations and offer more diversified opportunities to associates. For instance, a large retailer identified similar skill concentration in technician roles across business verticals such as transportation and logistics. This enabled them to showcase a variety of technician roles for associates and increase the curiosity and interest of associates to pursue the skill training that can lead to those tech roles. Smaller retailers who outsource tech functions to other firms do not have the tech roles to expose traditional retail associates to. Furthermore, larger retailers benefit from a vast pool of associates, facilitating extensive upskilling initiatives. They also possess greater financial resources and a higher tolerance for long-term return on investment, enabling bolder investments in workforce development to create a strong local ecosystem.

> **"We have the resources to develop partnerships and train associates. We know other companies, even in adjacent industries, such as automotive, will benefit from this ecosystem and ultimately, that will provide more opportunity to individuals and increase [mechatronics workforce] supply."**

Where to Start?

Preparing a workforce that can meet both current and future demands requires thoughtful planning across multiple levels. It involves identifying promising roles, defining pathways, designing training, and addressing barriers at the individual, company, and ecosystem levels. To begin this work and set it up for long-term success, employers can take three foundational steps:

Pilot place-based pathways that align training with local labor market needs and available roles.

Leverage internal assets—including workforce data, managers, and communication channels—to support and promote the pathway internally.

Articulate a clear business case that connects talent development to measurable outcomes like increased retention, internal mobility, or productivity.

Piloting Pathway Creation with a Place-Based Approach

Piloting the work in a specific geographic location offers a practical starting point for employers seeking to advance associates into high-opportunity technology roles. A place-based approach allows for the consideration of barriers like geographic mismatch and focuses interventions on the most pressing challenges based on local workforce and ecosystem dynamics. It also enables valuable learning and refinement before scaling and provides early evidence of impact to strengthen the business case.

Employers and workforce stakeholders can consider a range of factors when selecting a pilot location and shaping program design. These may include the concentration of frontline workers, proximity to relevant training providers, projected demand for tech roles, and existing partnerships or infrastructure that can support implementation.

Table 4: Considerations for Adopting a Place-Based Approach

	Workforce	Employer	Ecosystem
Factors for Consideration	• Talent pool size and readiness • Awareness and appetite for tech-enabled roles • Cost and benefits of trainings	• Skills needs at the location level • Reputation in the community • Tolerance for ROI horizon • Business assets to leverage • Cross-functional talent management	• Presence of influential champion • Coordination of multi-firm initiatives • Opportunity to partner with training providers and schools • Local government priorities and incentives(e.g., investing in apprenticeships)

To address anticipated skill gaps, retailers can proactively identify locations facing a short- to medium-term need for specialized tech roles and adjust their talent strategy accordingly. A recent example involves a large retailer launching a sophisticated fulfillment center in a rapidly growing market. Foreseeing an immediate requirement for 200 mechatronics technicians—and lacking internal talent—they prioritized this site for pathway development.

Providing Holistic Career Counselors in Locations with High-Tech Skill Gaps

A large retailer, using facility-level headcount projections, identified an acute need for robotics technicians in several locations. In response, they proactively deployed career counselors to these sites. These counselors helped streamline access to in-demand roles by offering comprehensive guidance. The initiative not only raised awareness of available opportunities but also improved alignment between individual preferences and job characteristics through personalized support. As a result, associates who opted for the robotics pathway are expected to show higher retention, as the counseling process helped ensure the roles matched their specific preferences, such as travel requirements, working conditions, and skill types.

A place-based approach also enables interventions to adapt to the unique characteristics of the local workforce. Each community has its own characteristics that retailers must consider to design an effective talent strategy. One large retailer, for example, observed a prevalence of personal mechanical skills among residents near several rural facilities. This insight revealed an existing talent pool suitable for mechatronics technician roles, prompting a shift in recruitment and training efforts. Viewing the workforce challenges through a geographical lens led to a recalibrated approach from their typical upskilling strategy.

This method also supports the growth of a stronger local workforce ecosystem. Place-based pilots make it easier for employers to form partnerships with community colleges, workforce boards, and partnerships with community colleges, workforce boards, and training providers to align curriculum with real-time demand. In one case, a retailer partnered with a local community college in a region with high demand for technicians. Together, they reviewed the college's curriculum and collaboratively adjusted it to better reflect the employer's skill requirements. These types of partnerships lay the groundwork for scalable, sustainable talent pipelines.

Leveraging All Corporate Assets

Efforts to create pathways for associate advancement can originate from various parts of the company, including human resources, social impact responsibility, and core business units such as operations, supply chain, and infrastructure. Regardless of who initiates the work, success depends on strategically engaging the expertise, resources, and capabilities across teams to address key barriers at the individual, organizational, and market levels.

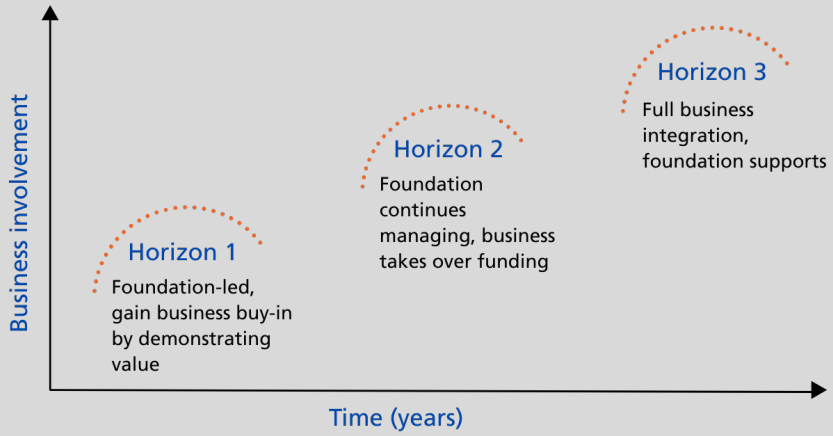
Figure 7: Capabilities and Resources Each Team Can Bring to the Table

Case Study: How Teams' Roles Can Evolve as Workforce Initiatives Mature

A large retailer, recognizing the imperative to diversify its talent pipeline and foster greater inclusivity, launched a targeted 10-week program providing youth of color aged 16-24 with essential retail skill development within their store network.

How did teams' roles evolve? Initially, the philanthropy team, in partnership with HR, piloted the program in five cities to de-risk investment in the absence of documented ROI. Following the successful demonstration of business value, HR and local sites progressively assumed ownership, enabling enterprise-wide scaling and expansion (see visual below).

Business Involvement Grows as Initiative Demonstrates Business Value Created



Making The Business Case

Progress often begins with individual champions—typically HR, corporate social responsibility, or local managers—who are motivated to create change. While passion is essential, champions must also articulate a strong business case, strategically deploy company assets, and collaborate with senior leaders to secure investments and scale efforts.

Anchor the Business Case in Cost-Benefit Analysis

> **"We had a strong cost-benefit analysis—this is how we made the case for investments.... When you factor in hiring costs,training cost, speed to proficiency—all of those things—it's a good business case."**

Securing support for tech pathways requires more than appealing to corporate values. Effective leaders clearly define the business problem, connect the initiative to strategic goals, and demonstrate return on investment using data. This includes a cost-benefit analysis and the use of key performance indicators (KPIs) to measure and communicate impact. While such a rigorous approach is often standard for customer-facing decisions, it is frequently overlooked by retail leaders when addressing workforce development. While business benefits differ based on context, model, and cost structure, they typically include both financial and non-financial gains. One of the most immediate benefits is the reduction in turnover and hiring, given that the loss of each frontline employee averages almost $10,000 in associated costs.[4] Beyond cost savings, corporate leaders must also identify how these initiatives advance broader priorities, such as enhancing employer brand and increasing organizational adaptability.

Table 5: Types of Business Benefits for Consideration

Financial Benefits	Non-Financial Benefits
• Decrease turnover costs • Reduce external hiring costs	• Improve agility and adaptability • Preserve institutional knowledge • Strengthen employee loyalty • Enhance employer brand

Championing the Work

Camila*, an HR leader focused on technician roles for a major retailer, championed an internal program that provided life-changing opportunities for associates and local youth. She shares her experiences and the ongoing challenges.

Motivation

"I was one of the first to proactively seek to provide opportunities in my team [through dedicated programs]. I am very excited about supporting associates and [creating] opportunities for youth to advance—this is what motivates me."

Unlocking Opportunities

"It is a life-changing opportunity for them.... We have candidates with zero knowledge [of] trade skills who used to make the minimum wage—and now they make more than $20 an hour as technicians and they're on the path to advance and get even more."

Challenges

"It took a lot to get central HR approval because they don't want to take any risk [while also wanting to make sure the learning environment is good for the intern. .... I [also] had to convince local business leaders to dedicate resources to this because they have so much on their plate. In the end, it worked well because I partnered with a local business manager who was already focusing on training in their team."

Scaling

"The first year, we [had] two interns and [taught] them hard skills and functional skills. This year we might get around five.... I want to scale...I wonder what it would actually take."

*Name changed to protect anonymity

Conclusion

Over 110,000 frontline workers have already transitioned into technology roles over the past five years in retail. Yet this represents only a fraction of the sector's potential. While retail tech roles require often require targeted upskilling, frontline associates already possess valuable foundational skills—such as problem solving, customer orientation, and adaptability—that make them strong candidates for

This shift presents a dual opportunity: for workers, it offers a path to more stable, higher-paying roles; for employers, it provides a strategy to close skill gaps and lower talent acquisition costs. Capitalizing on this opportunity, however, requires more than offering training. It demands strategic investment in reskilling, long-term workforce planning, and a deliberate focus on removing the structural barriers that limit associate advancement. Employers can begin by piloting place-based initiatives, aligning with local labor market needs. Success will also depend upon building a compelling business case and drawing on internal resources—such as data, frontline leadership, and communication infrastructure—to embed these efforts into broader talent strategies. With thoughtful design and cross-functional commitment, retailers can turn frontline potential into a sustainable technology talent pipeline.

Research Objective, Methodology, and Acknowledgments

In 2024, FSG and Talent Rewire conducted a robust landscape analysis for retailers to better understand the current and emerging career challenges and opportunities for opportunity youth, given the emergence of new technologies in the retail ecosystem.[5]

Building on this landscape analysis and drawn from analyses of job postings, career histories, and labor market data—as well as interviews with retailers—this report examines strategies and opportunities to build pathways into promising, technology roles in the retail industry, address barriers to advancement, and make the business case for these investments. Specifically, it aims to help retailers identify internal talent pools, opportunities to invest in skills development, determine where to start with these key investments, and where to pilot upskilling and reskilling initiatives.

While the findings and recommendations presented in this report are primarily focused on the retail sector, the underlying insights and approaches may be applicable to other industries undergoing similar technological transformations.

We also recognize that frontline workers' perspectives should play a central role in identifying and shaping career pathways. Although this research has not centered their voices, the Education Design Lab, is currently working with Opportunity Youth[6]—young people, typically between the ages of 16 and 24, who are neither enrolled in school nor participating in the labor market—to explore how young workers perceive technology roles and identify specific barriers that must be addressed

FSG interviewed eight corporate leaders from retail companies, representing functions such as human resources, social impact, and regional management.

Burning Glass Institute used a combination of public and proprietary data, including sources such as the Bureau of Labor Statistics, online job postings, and professional social media profiles, to identify technology roles critical to retail and adjacent industries, along with the skills and potential pathways from frontline roles into those positions.

We would like to thank the corporate leaders who shared their experience and the following organizations for making this research possible: Walmart, JFF, and Education Design Lab.

Endnotes

1 National Retail Federation, "The Economic Contribution of the U.S. Retail Industry," March 2024.

2 FSG, "The Water of Systems Change," May 2018.

3 FSG, "Unreached Employees: Unlocking Opportunities for Your Business and Employees," February 2025.

4 McKinsey & Company, "How Retailers Can Build and Retain a Strong Frontline Workforce in 2024," July 2024.

5 FSG, "How AI Is Transforming Retail and Opportunity Youth Employment," October 2024.

6 Aspen Institute Forum for Community Solutions, "Who Are Opportunity Youth?"