KPMG

Critical skills, scarce talent:

Addressing the labor gap in US manufacturing



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Introduction

US manufacturers face a severe labor shortage that impedes their operations and global competitiveness. The sector employs nearly 13 million people, accounting for roughly 9 percent of the US nonagricultural workforce.[1] There are currently 400,000 to 500,000 open jobs in the sector,[2] and while vacancies in other sectors such as healthcare and hospitality are higher, manufacturing is particularly hard hit by a shortage of qualified workers, demographic changes, the increase in remote and hybrid work, and inadequate vocational training and apprenticeship programs.[3] An estimated 26 percent of skilled industrial workers are now eligible for retirement.[4] By 2033, the industry will need to fill about 3.8 million jobs; if current trends persist, 1.9 million could go unfilled.[5] Strategic trade policies may accelerate reshoring and manufacturing job creation, increasing demand for skilled labor and adding to the projected job shortfall.[6]

US manufacturing labor shortage



13M

Workers

Manufacturing employs nearly **13 million** people—about 9 percent of the US nonfarm workforce.



400k-500k

Openings

There are currently **400,000** to **500,000** open manufacturing jobs.



26%

Retirement eligible

About **26 percent** of skilled industrial workers are now eligible for retirement.



3.8M

Jobs by 2033

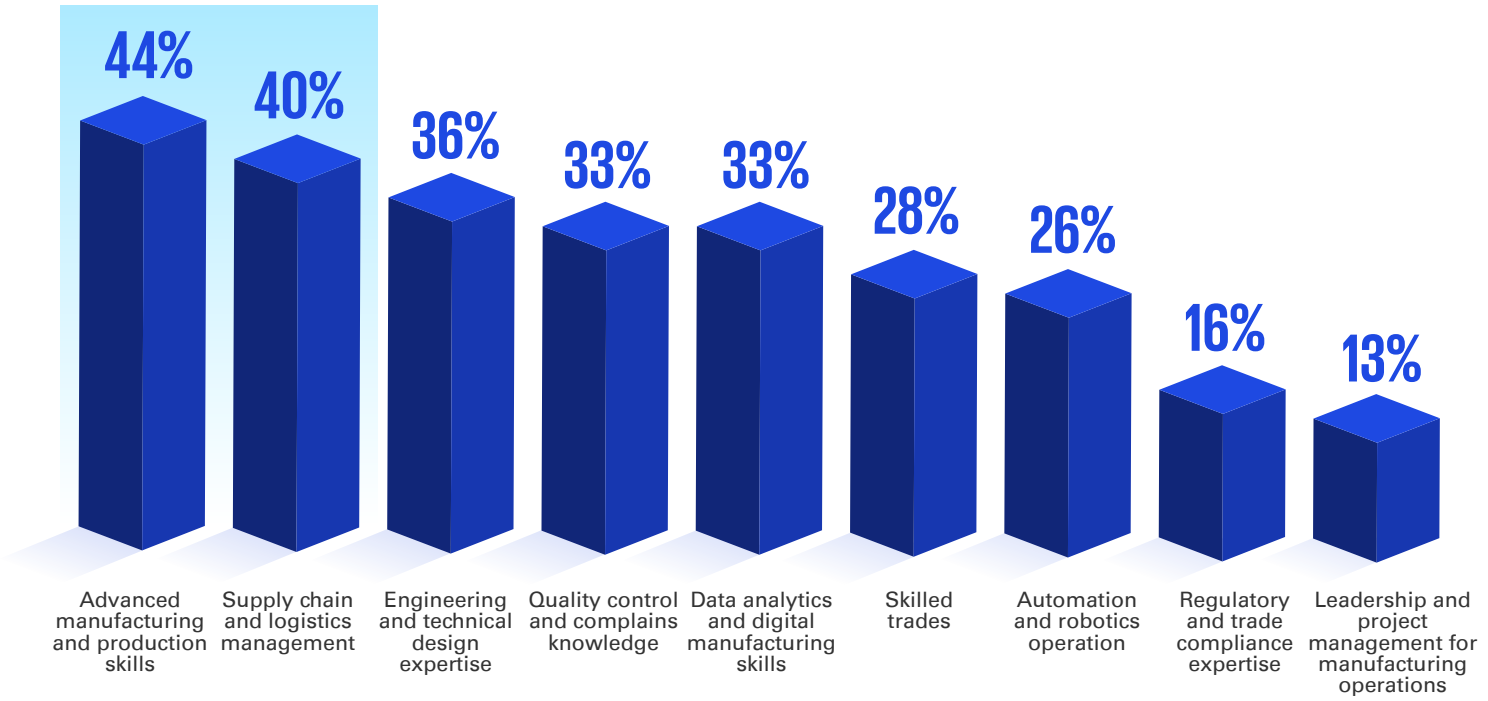
The industry will need to fill **3.8 million** jobs by 2033; **1.9 million** *could go unfilled.*

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This structural constraint has been building for decades. In June 1979, manufacturing employment reached a record high of 19.6 million. Almost 50 years later, in August 2026, employment was at 12.6 million, down 36 percent from the all-time peak, with globalization of manufacturing being an important driver.[7] From 1943 to today, the share of private sector workers employed in manufacturing has fallen from 45.3 percent to 9.3 percent.[8] Automation and process improvements lifted productivity, but they also altered front-line skill sets and increased the need for technical and digital roles—for example, maintenance technicians, controls specialists, and data-savvy managers—that keep modern assets running. Many manufacturers report difficulty hiring for these advanced skills as artificial intelligence (AI) and automation move deeper into daily plant operations. In a study of nearly 40,000 employers in 41 countries, 72 percent of respondents reported significant labor shortages in manufacturing, with manufacturing and production skills ranking alongside AI capabilities as among the hardest to find.[9] Among US manufacturers, the biggest gaps are in skilled production roles and advanced digital capabilities.[10]

Exhibit 1. Domestic talent gaps are concentrated in advanced manufacturing and supply chain capabilities

Skills that manufacturing companies consider most difficult to find (% of respondents)



Source: KPMG, "KPMG 2026 Tariff Survey," February 2026.

Note: In a KPMG survey of 300 manufacturing executives, respondents cited advanced manufacturing and production skills (44%), supply chain and logistics management (40%), and engineering and technical design (36%) as the skills that are the hardest to find.

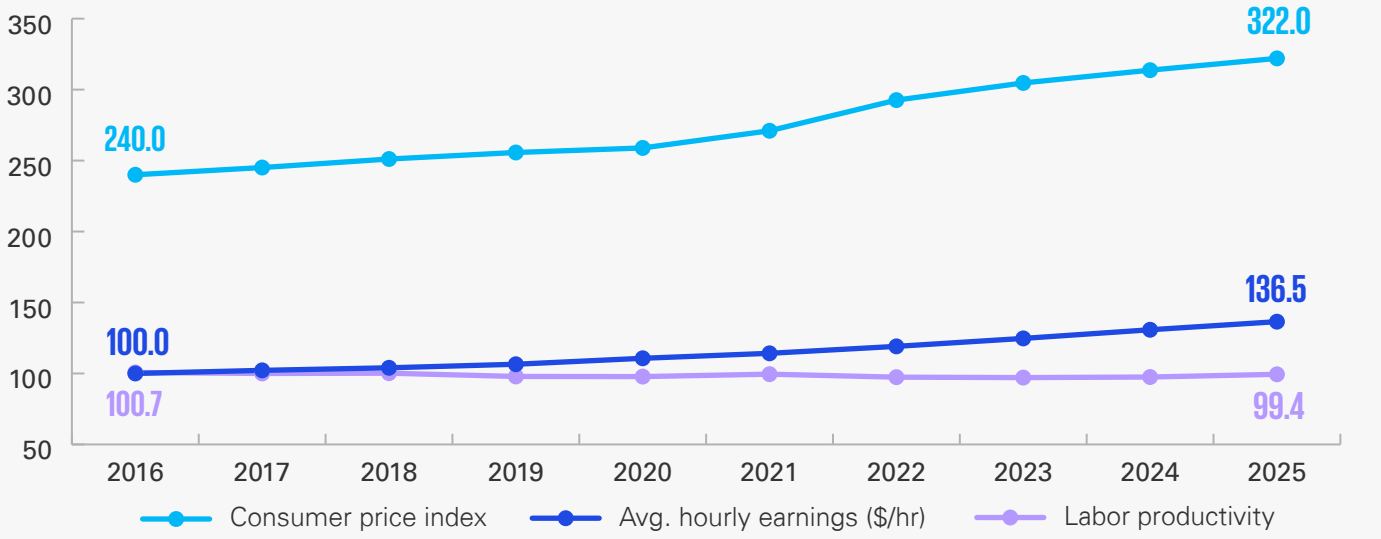
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A complex crisis with compounding challenges

The labor crisis has multiple, reinforcing drivers. The first and most obvious is cost. In recent years, hourly compensation in manufacturing has grown faster than output per hour, pushing unit labor costs higher. The US remains a high-cost market relative to many production hubs: International comparisons show US hourly compensation in manufacturing is five to ten times higher than in lower-cost economies.[11] Competition for frontline talent has intensified as wage differentials with hospitality, food service, and distribution centers have narrowed. In 2010, the average manufacturing worker earned $0.50 more per hour than the average private sector worker; in 2022, the average manufacturing worker earned $1.12 less per hour than the average private sector worker. This disparity was not because of falling wages in manufacturing, but faster wage growth in other sectors.[12] Today's real average wage (that is, the wage after accounting for inflation) has about the same purchasing power it did 40 years ago.[13]

Exhibit 2. As wages rise and productivity gains slow, cost pressures place margin stress on manufacturers

Average earnings, productivity, and CPI comparison



Sources: US Bureau of Labor Statistics (BLS), Current Employment Statistics: Average Hourly Earnings of All Employees, Manufacturing (series CES3000000003); BLS Major Sector Productivity and Costs: Manufacturing Output per Hour, All Workers; BLS Consumer Price Index for All Urban Consumers: All Items in US City Average (CPI-U, series CUUR0000SA0). Annual data, 2016-2025. All sources accessed in May 2026.

Notes: Wages are Average Hourly Earnings of All Employees, Manufacturing, Dollars per Hour Indexed to 2016, Labor Productivity (Output per Hour) for All Workers Indexed to 2017, Consumer Price Index for All Urban Consumers: All Items in US City Average, Index 1982-1984=100.

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Other factors contributing to the labor crisis include:

A demographically varied and shrinking labor pool.

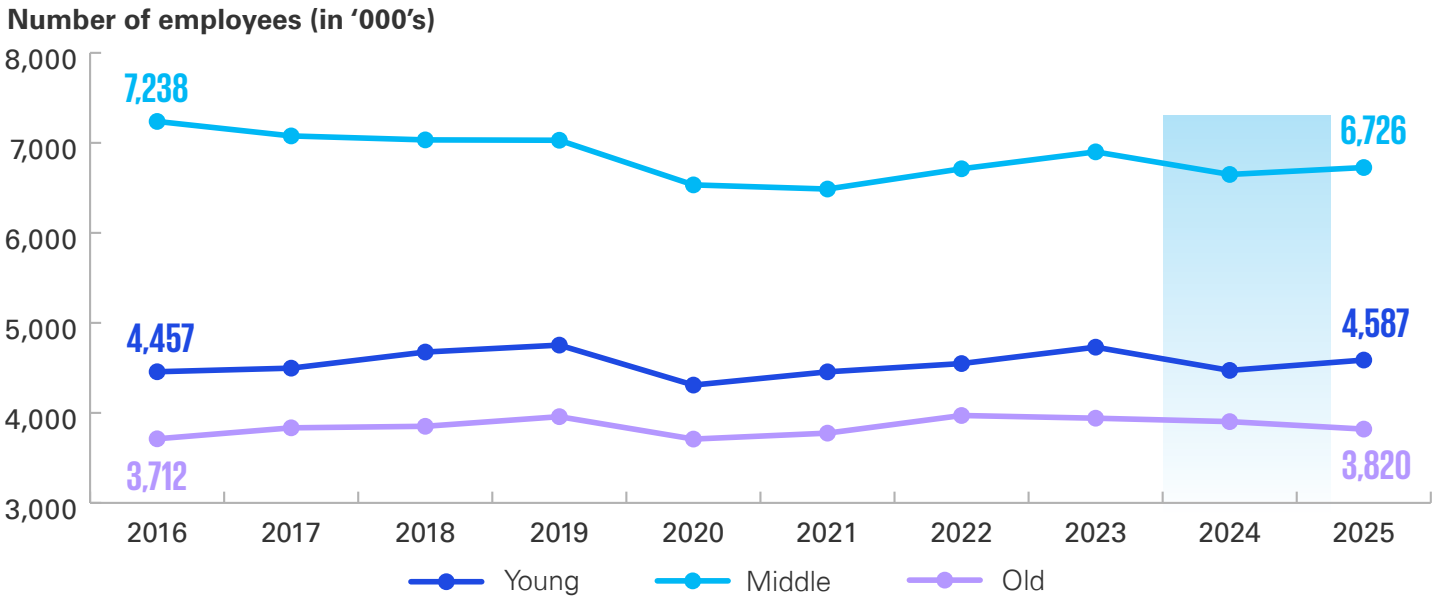
About 25 percent of manufacturing workers are 55 or older—compared with just 12 percent in 1994—with retirement eligibility concentrated in skilled trades, maintenance, and supervisory roles.[14] As experienced workers exit, employers face replacement demand that is harder to satisfy than headline job counts suggest, considering the certifications and "tribal knowledge" required for those positions.

Declining birth rates will further limit the labor pool. The birth rate, which hit an all-time low in the most recent data available (2024), peaked in 2007, which means that the number of 18-year-olds peaked in 2025.[15]

Shifts in immigration policy will worsen manufacturing labor challenges. Moving forward, demographic trends point to slower growth in the native-born labor pool, as large cohorts reach retirement age and smaller US-born cohorts enter working age.[16] Foreign-born workers are more likely to work in production environments (5.8 percent) than native-born workers (4.6 percent),[17] suggesting that they remain an important source of labor for manufacturing roles.

Exhibit 3. Manufacturing's 'silver tsunami': Increasing retirement rates and changing demographics worsen labor shortages

US manufacturing total workforce by age



Sources: U.S. Bureau of Labor Statistics, Labor Force Statistics from the Current Population Survey, Employed people by detailed industry and age, February 20, 2026; Advanced Manufacturing, "As Workers Retire, These States Face the Most Hiring Pressure," February 4, 2026.

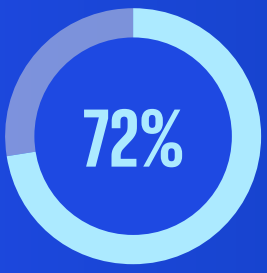
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An evolving skill mix stemming from automation.

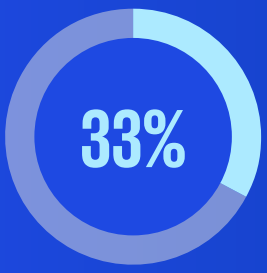
While automation boosts productivity, it changes the mix of skills in short supply. As companies add collaborative robots, machine vision, and predictive maintenance, production work shifts from manual repetition to monitoring, troubleshooting, and exception handling. That requires technicians who can work across mechanical systems, electronics, automation controls, and data, as well as digital fluency for supervisors. The payoffs are increased uptime and quality with fewer hands on a task—but only if the right skills are in place. As automation deepens, more jobs will require comfort with sensors, human-machine interfaces, and data. That shift widens the gap between job requirements and what local labor markets supply, lengthening time-to-fill and driving up overtime.

Technology is moving faster than skills, leaving modern manufacturing short of qualified labor

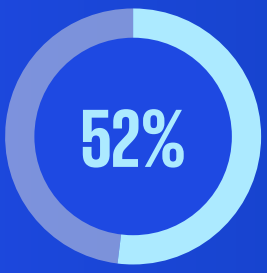
The NAM Manufacturers Outlook Survey for Q4'25 **highlights a gap between the skills required for advanced manufacturing and the available talent**, with many struggling to attract and retain qualified workers and actively seeking skilled professionals.



of respondents selected **"Skilled production workers"** such as technicians, welders, and machinists as the type of jobs their company was looking to fill



of respondents selected **"High-skilled, degreed workers"** such as scientists, researchers, and engineers as the type of jobs their company was looking to fill

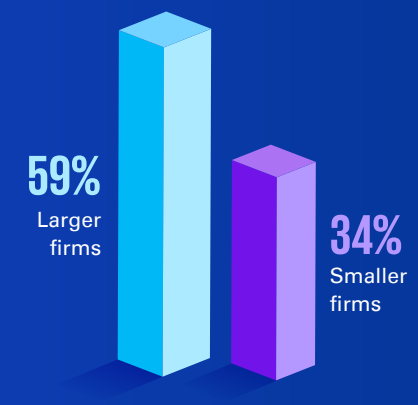


of respondents cited **attracting and retaining a quality workforce** as one of their **biggest challenges**



41%
of manufacturing firms report skill gaps on average

Larger firms are significantly more likely to report skill gaps than smaller firms (59% vs. 34%), driven by higher organizational complexity and more formal, systematic assessments of skill needs.



Sources: Victoria Bloom and Michael Green, "NAM Manufacturer s' Outlook Survey Fourth Quarter 2025," National Association of Manufacturers, December 17, 2025; OECD, "Understanding Skill Gaps in Firms: Results of the PIAAC Employer Module", OECD Skills Studies, 2024.

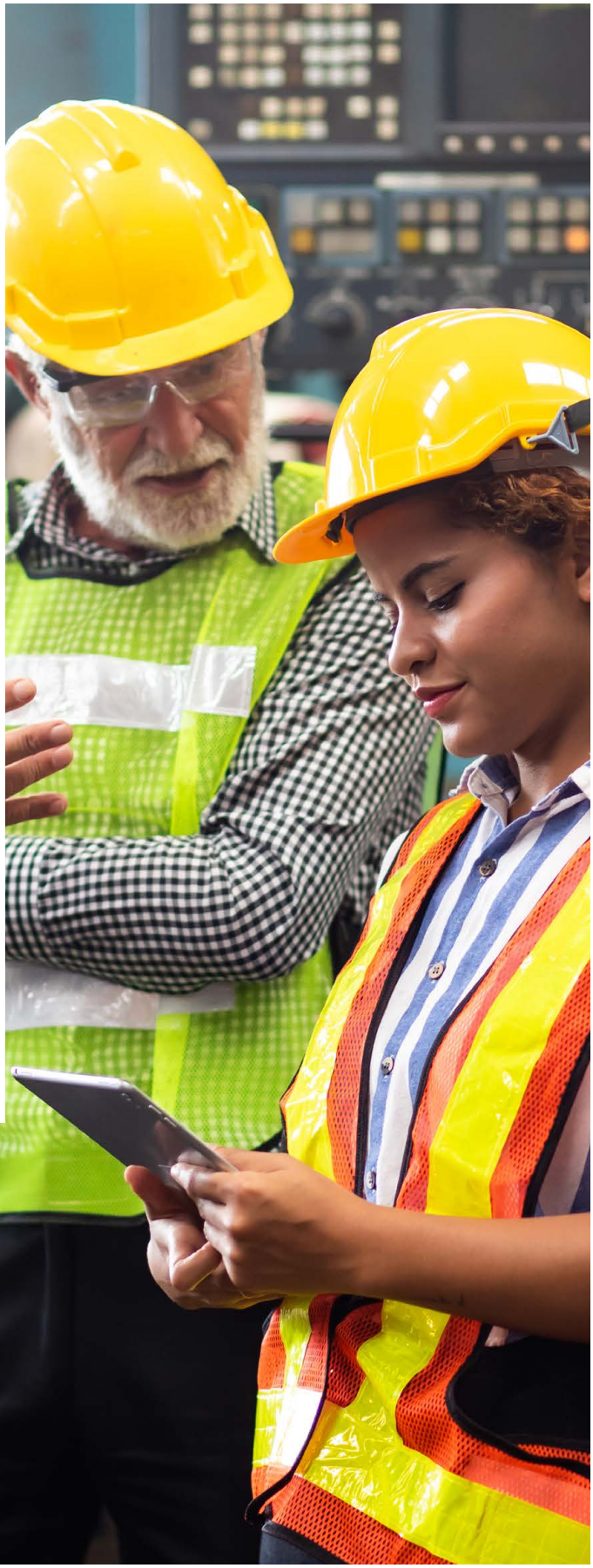
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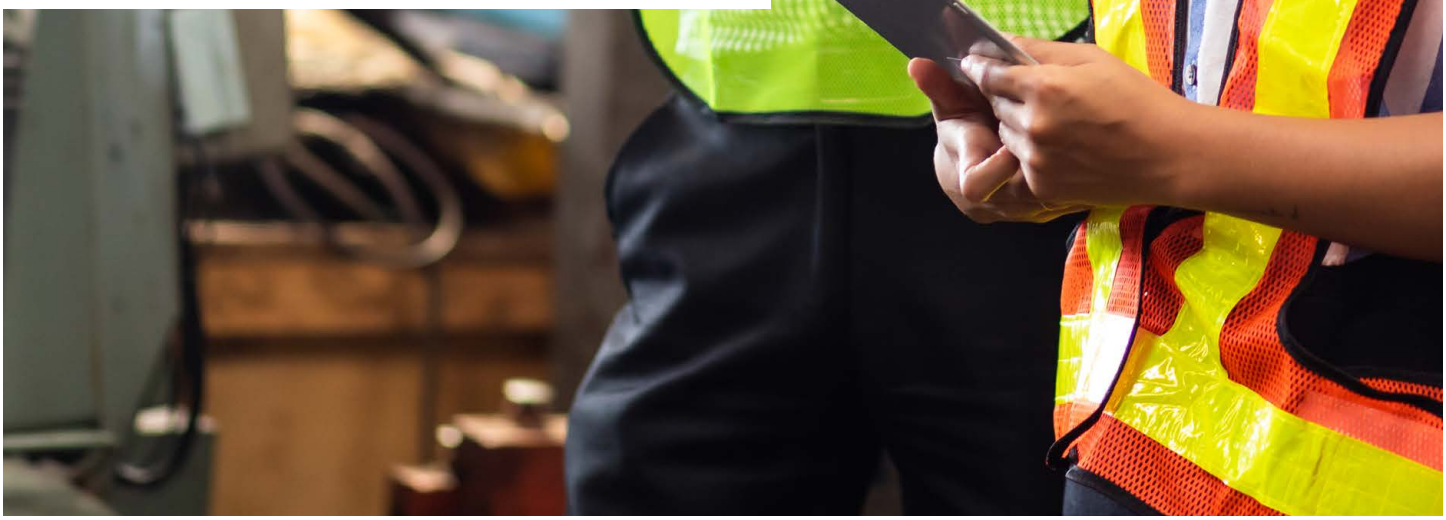
Mismatched geographic locations.

New projects and thin pipelines are colliding in sectors and regions that are scaling from a small base. Semiconductor fabrication plants illustrate the point: Without stronger training pathways and workforce development programs, the industry expects a shortfall of roughly 67,000 technicians and engineers by 2030.[18] Battery and electric vehicle supply chains, aerospace and defense,[19] and advanced electronics face similar dynamics, often in communities where instructor capacity, equipment, and housing will need to meet hiring plans. In many cases, project locations do not align with where potential workers live, creating regional mismatches that slow ramp-ups even when demand is strong.

Short tenures and management complexity.

Hiring alone will not solve the crisis if new employees are not retained. Roughly one-third of workplace injuries occur in a worker's first year on the job, and employers report elevated early-tenure turnover in hard-to-staff shifts and roles.[20] Many plants also report elevated absenteeism, complicating coverage and adherence to production schedules. At the same time, leaders are managing multigenerational global teams while integrating AI and automation alongside human roles and building new career paths—adding complexity to planning, training, and retention. The result is lost hours, quality risk, and delayed productivity that may hit precisely when plants are trying to scale.





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A near-term solution: Optimize the existing workforce

While a comprehensive response to the labor crisis requires a multipronged strategy—including long-term pipeline development and targeted automation—the most immediate opportunity for impact lies in optimizing the existing workforce. Manufacturers can unlock capacity fastest by treating their current employees as a finite resource and using data, analytics, and AI to match skills and capacity to demand. This is increasingly practical at scale: Leading companies report strong return on AI investments in targeted use cases. Where data foundations are strong and governance is disciplined, companies can maximize output with the teams they have today.



> **Manufacturers have an opportunity to optimize the cards they've been dealt. By matching skills and capacity to demand at scale and making trade-offs explicit, they can improve output and unit costs faster than hiring alone."**

Brian Higgins,
US and Americas Sector Leader,
Industrial Manufacturing, KPMG LLP

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How it works on the plant floor

The premise is simple: Plan for the right skills on every shift, not just the right number of people. A regular cross-functional labor-planning group—including representatives from human resources (HR); operations; and environment, health, and safety—looks ahead by asset, line, and shift, making finite-capacity trade-offs. Plants maintain a current skills inventory and a coverage view tied to minimum safe staffing. This allows supervisors to assign certified people to critical tasks and cross-train workers to increase flexibility.

Just as important is to match people to tasks by capabilities and preferences—shift and work environment—so new hires land in jobs they'll stay in. Run this end-to-end for every entrant and manage to day 120, when most new workers' turnover risk drops to the same level as that of employees who have stayed with the organization for five years or more. As natural attrition turns the workforce, the new system becomes the norm without disrupting current crews.

For example, at a large automotive plant, the team began a pilot in one area and ran the flow of people the same way they ran material flow. They mapped the work to be done, built a skills inventory tied to minimum staffing levels, and profiled jobs by environment and pace (for example, non-climate-controlled versus climate-controlled areas; steady-state stations versus high-tempo tasks). New hires were assigned considering their capabilities and preferences, including shift. The plant also adapted onboarding messages to be clear, supportive, and solutions-oriented—aimed at helping early-tenure employees navigate real-world hurdles and stay on the job. As a result, turnover in the first 120 days declined from 60 percent to under 10 percent.

Targeted automation fits into this system as a relief valve, not a cure-all. The challenge to automation is usually the capital investment required. Therefore, prioritize applications that relieve your tightest constraints. For example, deploy collaborative robots in high-repetition tasks, use machine vision for quality inspection, and apply predictive maintenance to reduce unplanned downtime. Focus on automating the jobs that garner the lowest interest from applicants.



> **Automation helps, but the real unlock is running workforce like a supply chain. Forecast skills, pool capacity understanding supply and demand, and then match people into roles, while also building a fungible and resilient workforce. Track simple leading indicators such as percentage of workers with at least 120 days on the job. Retention is capacity."**

Kristine Coogan,
Principal, Advisory,
Industrial Manufacturing
Strategy, KPMG LLP

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How it works for engineering

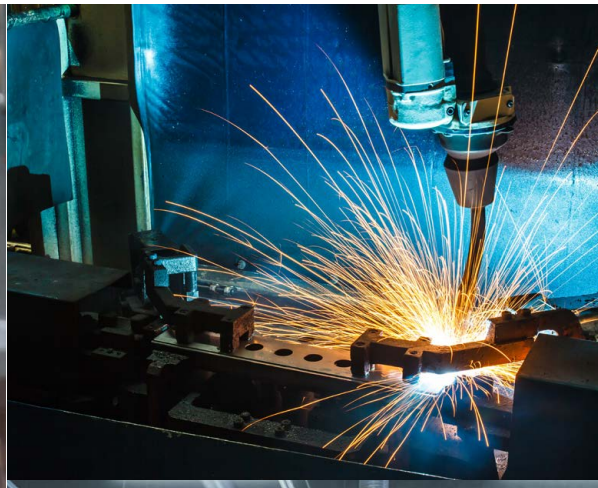
On the engineering side, the challenge is to align capabilities and availability to shifting demand across the portfolio of projects. Instead of staffing by project, product, or program, build an enterprise view of skills, workloads, and milestones. Then standardize the planning-level details so supply and demand can be compared accurately. With that foundation, analytics can identify gaps and trade-offs in one place and optimize assignments—enabling redeployment as business needs change.

Plan the workforce over two horizons: operationally, over the next 12 months to reduce time-to-assignment, and strategically, over one to five years to align capabilities to the expected level and type of work in the future.

A large engineering-intensive manufacturing company illustrates this approach. After several mergers and acquisitions, it faced rising employment costs, high churn, long time-to-assignment, and low mobility across business units. Engineers sat on the bench even as priority projects lacked talent.

The company implemented operational and strategic workforce planning to optimize assignments and shifted to dynamic redeployment, prioritizing internal mobility before external hiring and aligning near-term upskilling to project timelines. Early results included faster time-to-assignment and higher utilization, with conservative estimates pointing to $14.5 million in average annual benefits from revenue enablement, cost reduction, and cost avoidance.







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The keys to success

Successfully optimizing a workforce requires a strong foundation. Organizations should consider establishing these essential enablers:

Data readiness

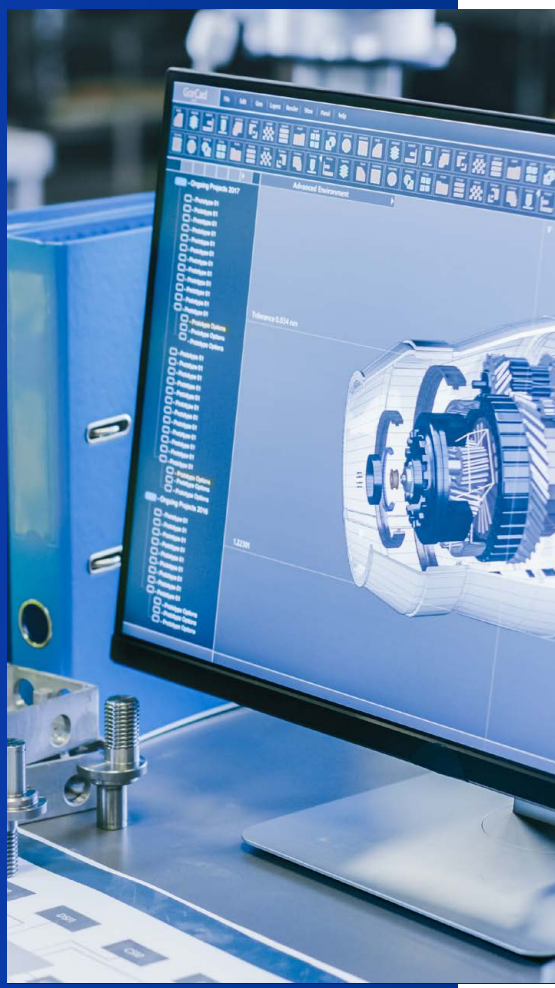
Clean, consistent, and complete workforce data is non-negotiable. Build an enterprise data model that reconciles all resources, such as those that are siloed into teams, and track skills data. Standardize the level of detail to enable supply and demand matching across roles, programs, and business units.

Executive vision and alignment

Align on a multiyear workforce planning vision tied to business outcomes (such as capacity, productivity, and cost), and codify decisions rights across HR, finance, and the business. Set up a planning rhythm using a shared set of numbers so every team works from the same assumptions. Anchor the investment case in hard measures—for example, time-to-assignment, utilization, unit labor cost, and revenue enablement—so momentum survives budgeting cycles.

Governance and key performance indicators (KPIs)

The HR and operations functions would most likely co-own this effort, with IT as an enabler. Establish a governance cadence, such as weekly plant labor sales and operations planning or monthly cross-functional KPI review. Specify clear ownership of metrics and track a unified scorecard. For talent, monitor time-to-fill for critical roles, time-to-competency, and first-year retention. On the plant floor, monitor skills coverage for critical tasks, schedule adherence, overtime or premium hours, and labor-driven downtime. For engineering, track time to assignment, utilization, internal mobility, and alignment to program milestones.





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Implementing a global delivery model

This can be a powerful tool in optimizing manufacturing workforce efficiency, distributing labor and production costs across multiple international locations. For example, an organization could tap into specialized regional engineering expertise and global manufacturing hubs. Generative AI can help identify new capabilities and augment new roles.[21]

Controlling policy drift and compliance costs

The costs of policy drift and compliance in manufacturing are high. Policy drift may occur when an organization's internal rules and operating procedures lag behind external market and regulatory environments, draining productivity. For example, as factories adopt robotics, legacy training policies that are not modernized can leave workers unequipped for digital manufacturing.[22] Policy drift can also arise at the shift-lead or supervisor level when established policies and procedures for coverage, absenteeism, and overtime are not followed, compounding inefficiencies and costs. In addition, organizations must comply with complex external regulations that require deep visibility into their products and supply chains, forcing costly upgrades to infrastructure and IT systems.[23] The upside of this, however, is the unlocking of new efficiencies and greater agility to respond to shifting policies and disruptions.



Monitoring turnover and retention

High turnover is a considerable drain on the budget because of the time and effort needed to find the right talent and hire and train employees. Manufacturing turnover rates average 26 percent to 28 percent annually; the attrition rate for production workers is the highest, at 30 percent to 38 percent, and replacing just one production worker can cost anywhere from $20,000 to $40,000.[24] Some manufacturers are trying to improve retention by offering competitive wages, streamlining the onboarding process, enhancing management training, providing educational and certification opportunities, and focusing on career progression and succession planning.[25]



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What to do first: 'Monday-morning' actions

To move quickly from strategy to execution and close workforce gaps, manufacturers should focus on these immediate, concrete moves:

Use workforce technology to close the gap between business needs and workforce availability.

Understand demand by analyzing the various "sources of truth": Create an integrated backbone for time, attendance, scheduling, and labor forecasting and cost allocation. This provides a central knowledge base, improves data accuracy and interoperability, and enables proactive alerts to catch errors and policy overrides. Critically, it supports accurate pay differentials and compliance at scale. This is essential for shift swaps and predictable rosters, aligned with collective bargaining agreements where applicable.[26]

Deploy AI to recover avoidable costs.

Agentic AI can flag anomalies, reduce cycle time, and curb leakage. Redirect recovered dollars to fund training, scheduling technology, and targeted automation.[27]

Hire, train, and reskill for specific roles.

Prioritize role-specific hiring and in-flow learning over generic courses. Employees are already adopting AI at pace and want more real-time, on-demand training—make it mandatory where safety and quality depend on it. Drive technology adoption with early demonstrations, champions, and sustained communications. Managers matter. They are central to coaching, change adoption, and turning in-person time into accelerated learning for early- career talent.[28]



"Get a single source of truth for time and scheduling. Then use leakage savings to fund upskilling and scheduling technology. With clean data, flexibility and accuracy stop being at odds."

Jay Conforti,
Managing Director,
Advisory, Human Capital,
KPMG LLP

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Design flexible, demographic-aware total rewards.

Move away from one-size-fits-all compensation. Redesign total rewards packages to offer the flexibility and specific benefits desired by a multigenerational workforce, ensuring your organization remains competitive in attracting diverse talent pools. In a recent survey, 71 percent of workers said that working remotely had helped them to better balance work and home responsibilities, and 66 percent said they could accomplish the same amount of work in a four-day work week as they could in five days.[29]

Build the pipeline.

Long-term capacity ultimately hinges on a stronger, faster talent pipeline. Form employer-led partnerships with community and technical colleges,[30] unions and joint apprenticeship committees, veterans' programs, career and technical education programs, and high schools.[31] The playbook is simple: Codesign role-specific curricula, fund equipment that mirrors the line, expand instructor capacity, offer paid apprenticeships, and recognize portable, industry-standard credentials across sites. Pair these pathways with mentor–mentee programs and knowledge capture to retain expertise as late-career workers retire.

US manufacturers face a multifaceted labor crisis that threatens their global competitiveness. It is not a single issue but a confluence of interconnected challenges that are fundamentally changing the manufacturing workforce. The response must meet the moment: Lead with urgency, protect onshore competitiveness, and elevate productivity. That starts with treating the workforce as a constrained system and aligning scarce skills to the work that matters most. Matching labor supply to demand through meticulous workforce planning is the bridge between today's limits and tomorrow's capacity, sustaining output and investment at home while longer-term pipelines and partnerships scale.



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How KPMG can help

KPMG LLP is a leader in the industrial manufacturing sector, with deep experience helping companies transform their businesses. We offer a wide array of services, including workforce diagnostics, manufacturing-focused strategic planning, and AI-driven HR strategies and solutions, and are distinctly positioned to provide the guidance, advice, and services needed to steer through industrial workforce transformation and achieve long-term success. With the right strategies and support, US manufacturing companies can navigate these challenges and emerge stronger, more efficient, and more competitive in the global market.

Authors



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US and Americas Sector Leader
Industrial Manufacturing
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Brian serves as the KPMG US and Americas Sector leader for Industrial Manufacturing. His experience extends deep into competitive strategy and operational design, enriched by over 20 years of industry and consulting experience. As a global supply chain strategist and practitioner, Brian delivers performance excellence across organizational, operational, and financial metrics. He specializes in identifying and unlocking value within complex global supply chain environments, with a special emphasis on industrial manufacturing challenges and opportunities.



Todd Dubner
US Deal Advisory and Strategy Leader
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Todd has more than 25 years of experience in strategy and corporate development. He has advised clients in the industrial manufacturing, transportation and logistics, consumer products, and media and entertainment sectors on growth strategies, business transformations, performance improvements, and organizational effectiveness. Currently, Todd primarily serves the automotive and logistics industries, focusing on passenger and commercial vehicle original equipment manufacturers, Tier 1 suppliers, and fleet operators.



Kristine Coogan
Principal, Advisory
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Kristine has over 25 years of experience working with clients to identify and address human capital considerations during transactions and transformations. She leads our Industrial Manufacturing Strategy practice. Her specific area of focus is production workforce, helping companies drive efficiency and optimization of their skilled, unskilled, and manufacturing labor capabilities.



Jay Conforti
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Jay brings over 20 years of global HR and payroll experience, with a strong track record of leading transformations while managing day-to-day operations. He helps ensure all functional teams have a voice in HR and payroll initiatives and partners closely with clients throughout the process. As a practitioner and industry leader in the KPMG Industrial Manufacturing practice, Jay helps design and implement HR and global payroll strategies, processes, roles, metrics, and technologies aligned with best practices.

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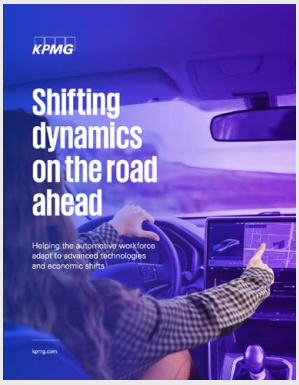
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