Macomb Community College

ARTIFICIAL INTELLIGENCE (AI) IMPACT ASSESSMENT

FINAL REPORT

January 2026

Presented by the Workforce Intelligence Network (WIN)

EXECUTIVE SUMMARY

Artificial intelligence (AI) is increasingly integrated across industries, reshaping how work is performed and how employers define skill requirements. While recent attention has focused on generative AI tools, AI adoption in the labor market extends more broadly to technologies such as machine learning, data analytics, automation, predictive modeling, and AI-enabled decision support systems. As a result, AI-related skills are becoming a common component of work across many occupations rather than a specialized or isolated capability.

Labor market data show that demand for AI-related skills has grown steadily across industries and is now evident in a wide range of roles beyond traditional technology occupations, including production, healthcare, finance, logistics, and professional services. This shift highlights the need for workforce and education systems to prepare workers for AI-enabled tasks across multiple sectors and education levels.

The analysis confirms these trends within the regional economy, noting that industry adoption is most heavily concentrated in sectors such as Professional, Scientific, and Technical Services as well as Manufacturing. On a granular level, sub-sectors like Motor Vehicle Parts Manufacturing and Employment Placement Agencies are leading the way with the highest volume of unique AI-related job postings. While the most intense demand for these skills is currently found in roles requiring a bachelor's degree, the associate degree remains an essential pathway for technical implementation and support roles.

A significant skills gap has emerged locally, with AI competencies appearing in approximately 34% of relevant job postings, yet these skills are listed on significantly fewer worker profiles. Current data suggest that AI is primarily acting to augment work by reallocating routine tasks, rather than causing widespread structural unemployment. However, this shift has also notably raised the skill threshold for entry-level positions across nearly every sector.

To address the broadening definition of AI in the workforce, the report identifies two distinct tiers of skills. First, specialized technical skills such as Robotic Systems, Automation, Machine Learning, and Python are seeing high growth for associate-level roles. Second, foundational human competencies that remain not automatable—such as effective communication, complex troubleshooting, critical thinking, and ethical reasoning—have become increasingly critical as AI-enabled decision support systems become common in the workplace.

Given that AI is no longer an isolated capability, AI literacy should be treated as a foundational learning outcome rather than as a specialized elective. Curriculum design must emphasize human-AI collaboration, teaching students to use AI tools while applying professional judgment to validate and improve the resulting outputs. Instructional models should prioritize applied capability by utilizing project-based learning and real-world scenarios that mirror workplace practices. Responsible AI use, including data security, privacy, and bias mitigation, must be embedded into coursework to ensure graduates are prepared for the ethical complexities of an AI-integrated workforce.

While some uncertainty is to be expected, AI adoption presents a significant opportunity for the college to normalize AI skills as a component of professional life. Success in this new landscape requires a balanced approach that pairs innovative technical training with a reinforced focus on the essential human judgment that AI cannot replicate.

Artificial Intelligence (AI) Impact Assessment

PHASE 1: Research and Data Analysis
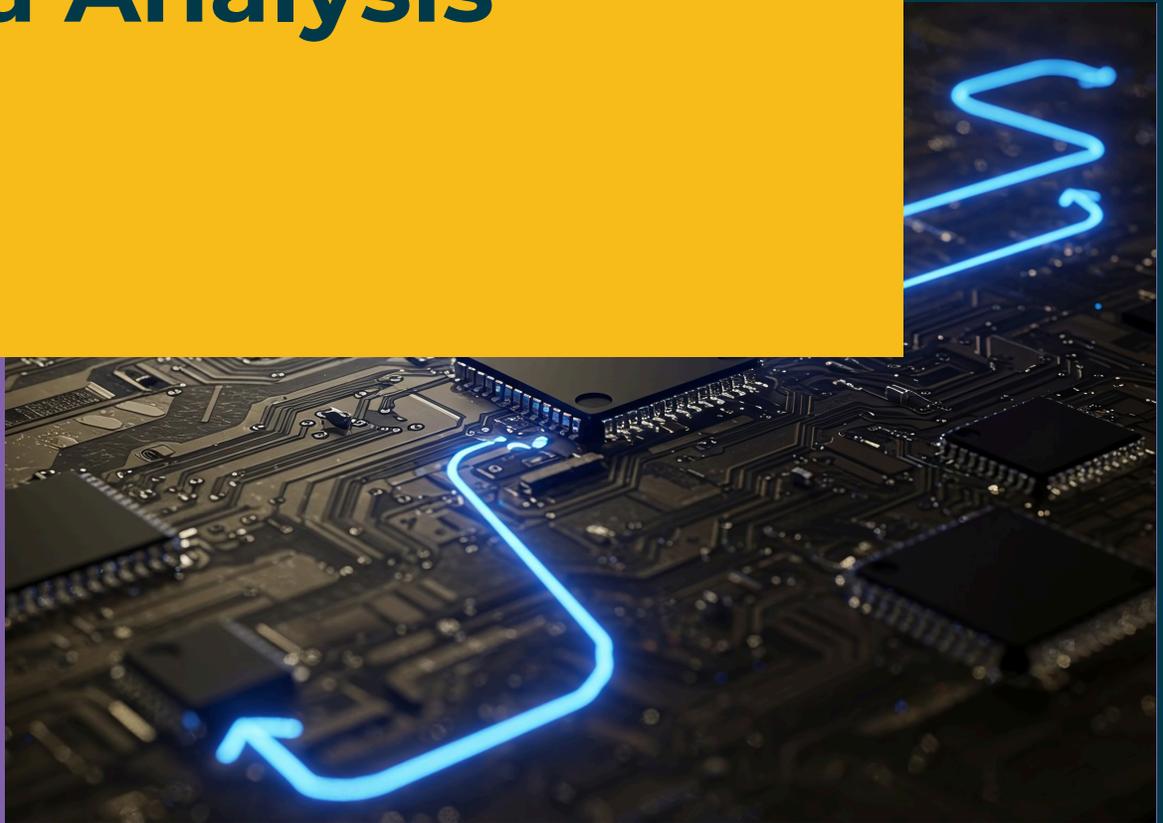
PHASE 1: RESEARCH AND DATA ANALYSIS

INTRODUCTION

Since November 2022, Generative Artificial Intelligence (GAI) has rapidly entered public awareness and organizational practice, reshaping conversations about work, education, and skill development (Wong, 2024). Advances in large language models have accelerated this shift, with later versions of tools such as ChatGPT demonstrating capabilities that rival or exceed human performance on complex tasks.

One notable example of this performance is scoring within the top 10 percent of candidates on the U.S. Uniform Bar Exam, an outcome that contrasts sharply with earlier GPT models that barely met passing thresholds (Wong, 2024). These advances underscore both the promise and uncertainty of AI's expanding role across society.

As AI technologies become more embedded in economic and educational systems, they function as a form of large-scale social experimentation, introducing profound changes whose long-term impacts are not yet fully understood (Hosseini et al, 2023). Existing research suggests that AI adoption is already reshaping workforce dynamics by shifting demand toward more educated and technically skilled workers (Babina & Fedyk, 2025).

However, historical patterns indicate that technological change tends to create new forms of employment over time rather than produce sustained structural unemployment (Briggs & Kodnani, 2023). This duality suggests the possibility of disparate impact among workers and highlights the need for deliberate, evidence-based responses, particularly within education. Given the double-edged nature of GAI in learning environments, educators and workforce institutions face the challenge of integrating AI thoughtfully, balancing innovation with ethical considerations, and avoiding resistance that could inadvertently hinder necessary skill development (Wong, 2024).

In response to these shifts, Phase 1 examines emerging AI-related skill demands across industries and education levels. Industries are categorized using the North American Industry Classification System (NAICS), a standard framework employed by U.S. federal statistical agencies to ensure consistency and comparability in economic and workforce analysis. By integrating industry classifications with job posting data, education-level requirements, and regional, state, and national comparisons, this assessment provides actionable insights for community colleges seeking to align programs with employer needs. The findings support curriculum alignment, program planning, and talent development strategies to prepare learners for an economy in which AI skills are increasingly normalized and essential across industries.
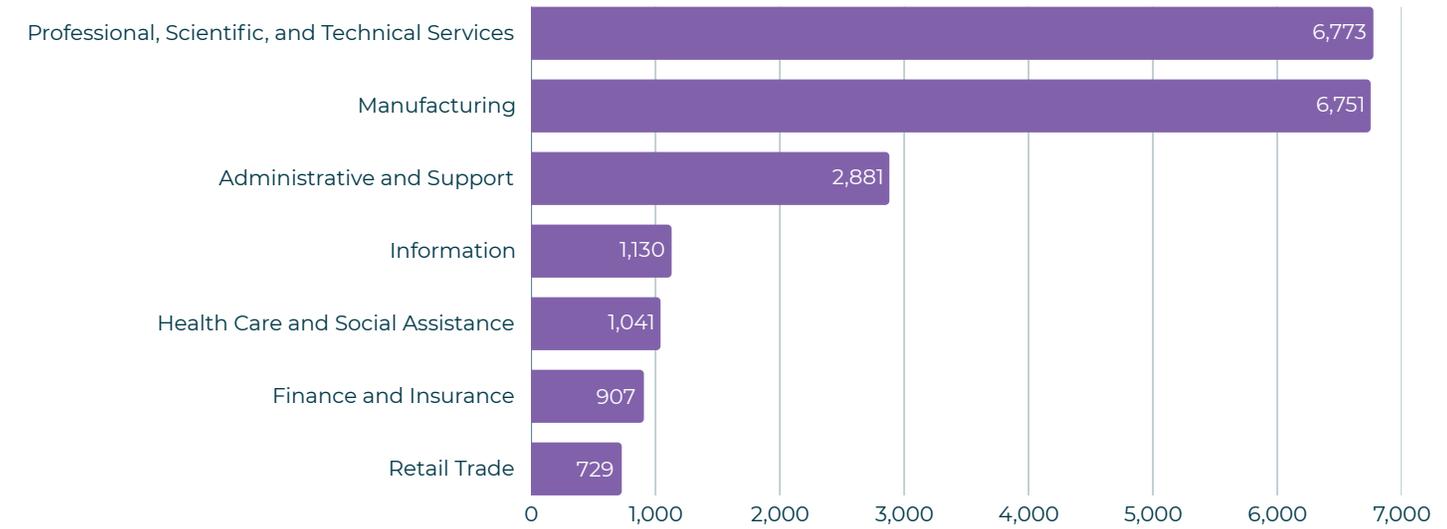
Industry Definitions and Classification Levels

In this analysis, an industry is defined as a group of establishments engaged in similar economic activities. This classification framework supports consistent analysis of employment trends, output and skill needs.

- The two-digit NAICS level offers a high-level view of AI-related demand across broad sectors.

- The six-digit NAICS level provides a detailed insight into specific industries where AI competencies are most concentrated or emerging.

Together, these levels connect macro-level industry patterns with skill needs that provide for workforce planning, program development, and curriculum alignment.

AI DEPLOYMENT BY INDUSTRY

Figure 1.1. Top 2-Digit Industries with AI by Unique Postings

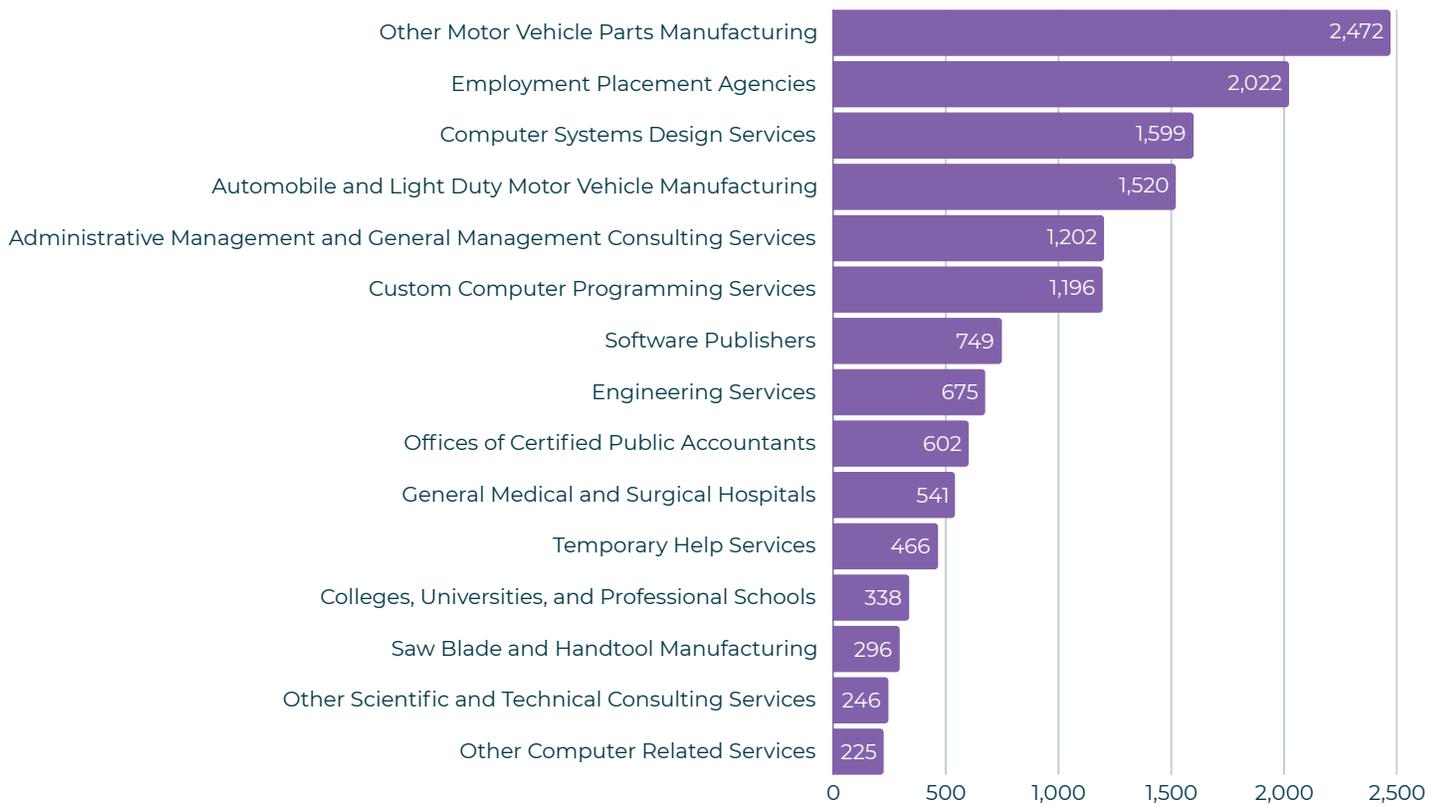| Industry	Unique Postings
Professional, Scientific, and Technical Services	6,773
Manufacturing	6,751
Administrative and Support	2,881
Information	1,130
Health Care and Social Assistance	1,041
Finance and Insurance	907
Retail Trade	729

2-Digit Industry Definitions

1. Professional, Scientific, and Technical Services: Includes establishments that specialize in performing professional, scientific, and technical activities for others. Examples include legal services, accounting, architecture, engineering, computer system design, and R&D.

2. Manufacturing: Industries engaged in the mechanical, physical, or chemical transformation of materials, substances, or components into new products. This sector includes factories and production facilities that produce goods from raw materials or parts.

3. Administrative and Support and Waste Management and Remediation Services: Includes establishments that perform routine support activities for the day-to-day operations of other organizations. Activities include office administration, facilities support, employment services, and waste management/remediation.

4. Information: Consists of establishments engaged in producing and distributing information and cultural products, providing the means to transmit or distribute these products, or processing data. This sector Includes publishing, motion picture and sound recording, broadcasting, telecommunications, and data processing.

5. Health Care and Social Assistance: Includes establishments that provide health care and social assistance for individuals. Covered activities include hospitals, nursing care, outpatient services, social services, and childcare.

6. Finance and Insurance: Comprises establishments primarily engaged in financial transactions including creation, liquidation, or transfer of financial assets, as well as activities that facilitate financial intermediation. This sector covers banks, credit institutions, investment firms, and insurance companies.

7. Retail Trade: Industries that sell merchandise in small quantities to the general public for personal or household consumption. Establishments typically operate through physical storefronts or online platforms and include businesses such as clothing and electronics retailers, grocery stores, vehicle dealers, and e-commerce providers.

AI DEPLOYMENT BY INDUSTRY

The six-digit NAICS level is used to examine detailed industry-level AI skill requirements, enabling identification of specific industries with concentrated or emerging demand for AI-related competencies. This granular classification supports actionable insights for workforce development strategies, curriculum alignment, and program planning at the community college level.

Together, the two- and six-digit NAICS classifications connect broad industry trends with specific AI skill needs, ensuring that study findings remain directly applicable to educational planning, workforce training, and regional talent development.

Figure 1.2. Top 6-Digit Industries with AI by Unique Postings

| Industry	Unique Postings
Other Motor Vehicle Parts Manufacturing	2,472
Employment Placement Agencies	2,022
Computer Systems Design Services	1,599
Automobile and Light Duty Motor Vehicle Manufacturing	1,520
Administrative Management and General Management Consulting Services	1,202
Custom Computer Programming Services	1,196
Software Publishers	749
Engineering Services	675
Offices of Certified Public Accountants	602
General Medical and Surgical Hospitals	541
Temporary Help Services	466
Colleges, Universities, and Professional Schools	338
Saw Blade and Handtool Manufacturing	296
Other Scientific and Technical Consulting Services	246
Other Computer Related Services	225

AI SKILLS BY EDUCATIONAL ATTAINMENT

Figure 1.3 compares trends in job postings requiring AI-related skills by education level. Across all education categories, the data display a consistent pattern: job postings peak in 2018, decline in 2020, rebound in 2022, and decrease thereafter. This trajectory closely mirrors overall job posting trends, indicating that fluctuations in AI-related hiring largely reflect broader labor market dynamics, while also suggesting that the two may not yet be closely correlated.

When disaggregated by education requirement, job postings requiring a bachelor's degree account for the largest share of AI-related demand, reaching a high of 30,109 postings. Positions requiring a master's degree follow, with 15,628 postings in 2022. In contrast, postings requiring a high school diploma or GED and those requiring an associate degree represent the smallest share of AI-related demand, with peak values of 1,958 and 1,613 postings, respectively. These patterns may reflect the lower volume of jobs that require an advanced degree in the broader labor market.

Overall, the distribution highlights that AI-related job demand is concentrated in roles requiring higher levels of formal education, while positions with lower educational requirements comprise a relatively small portion of AI-skilled labor demand. This pattern stresses the importance of postsecondary education pathways in preparing workers for AI-related roles.

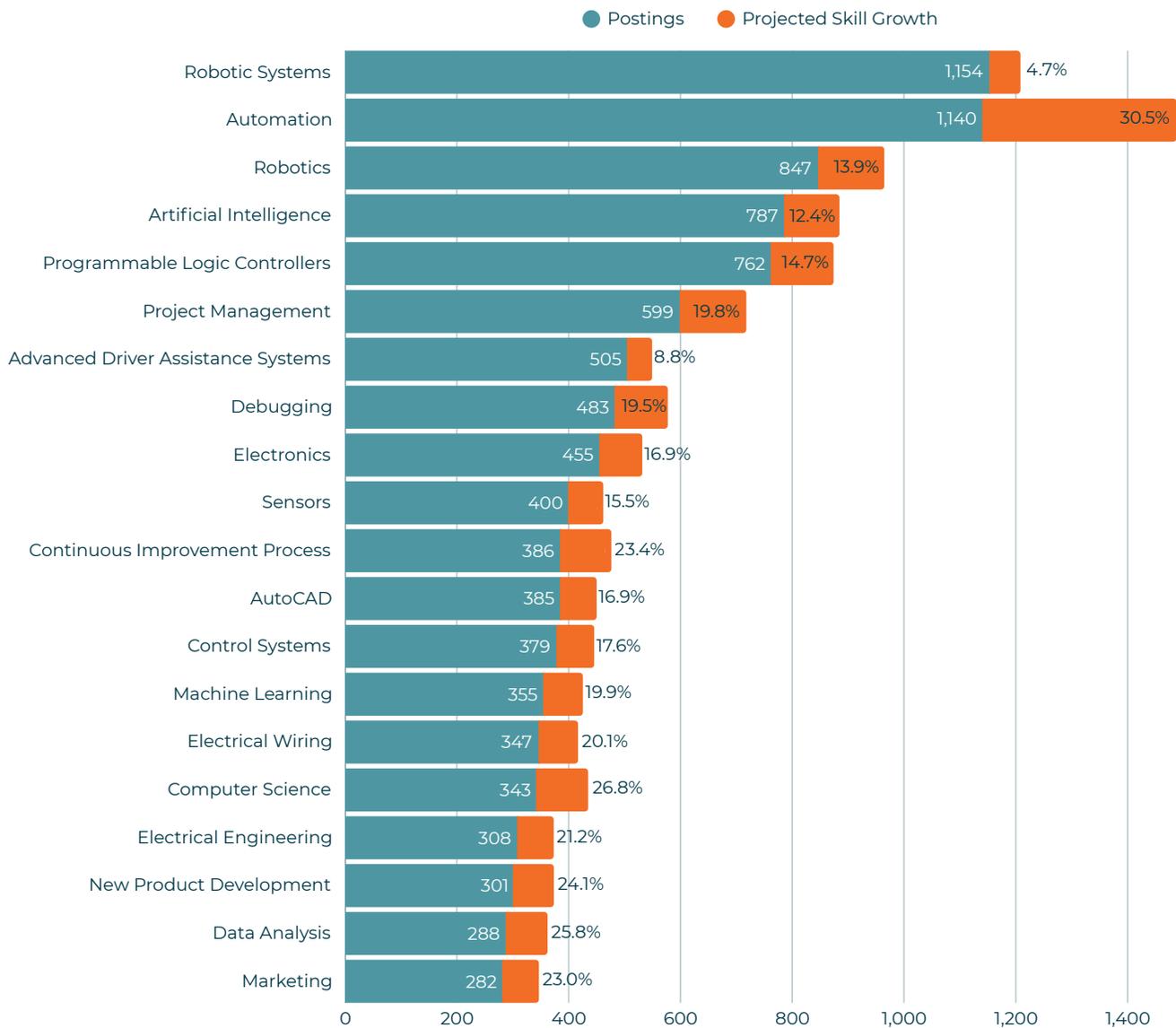## Figure 1.3. Job Postings Requiring AI By Education Level
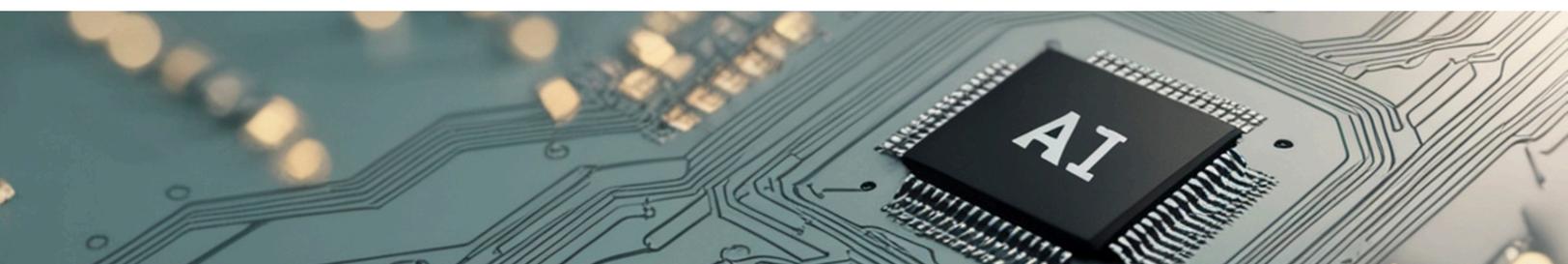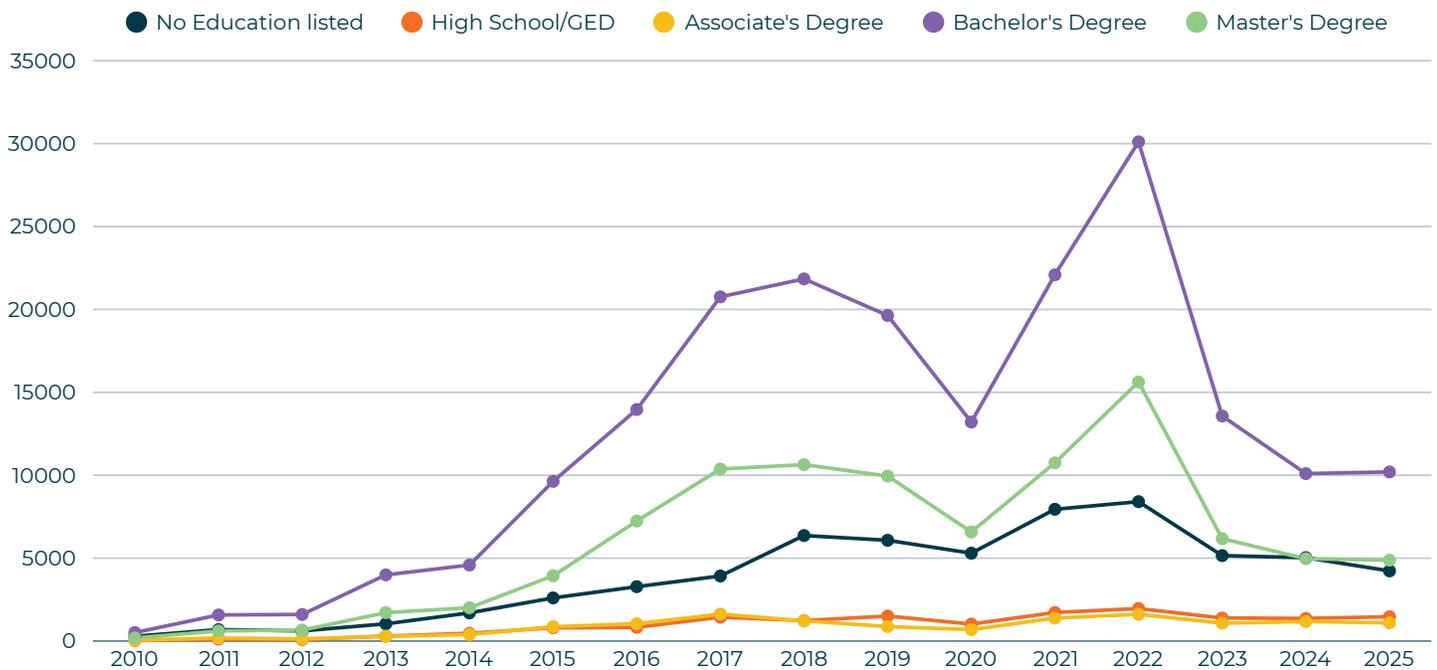
AI SKILLS BY EDUCATIONAL ATTAINMENT

Figure 1.4 provides a more detailed examination of job postings filtered by educational requirement, focusing on AI-related positions that specify an associate degree as the required level of education. This analysis highlights the most frequently requested specialized skills within these postings. Each skill is analyzed according to the number of job postings in which it appears, along with its projected growth rate, offering insight into both current employer demand and anticipated future relevance.

By examining these skills in tandem, the findings identify competencies that are most commonly sought in associate-level AI roles as well as projected to experience the strongest growth over time.

Figure 1.4. Top Specialized Skills for the AI Industry in Associate's Degree Postings

Legend: ● Postings ● Projected Skill Growth

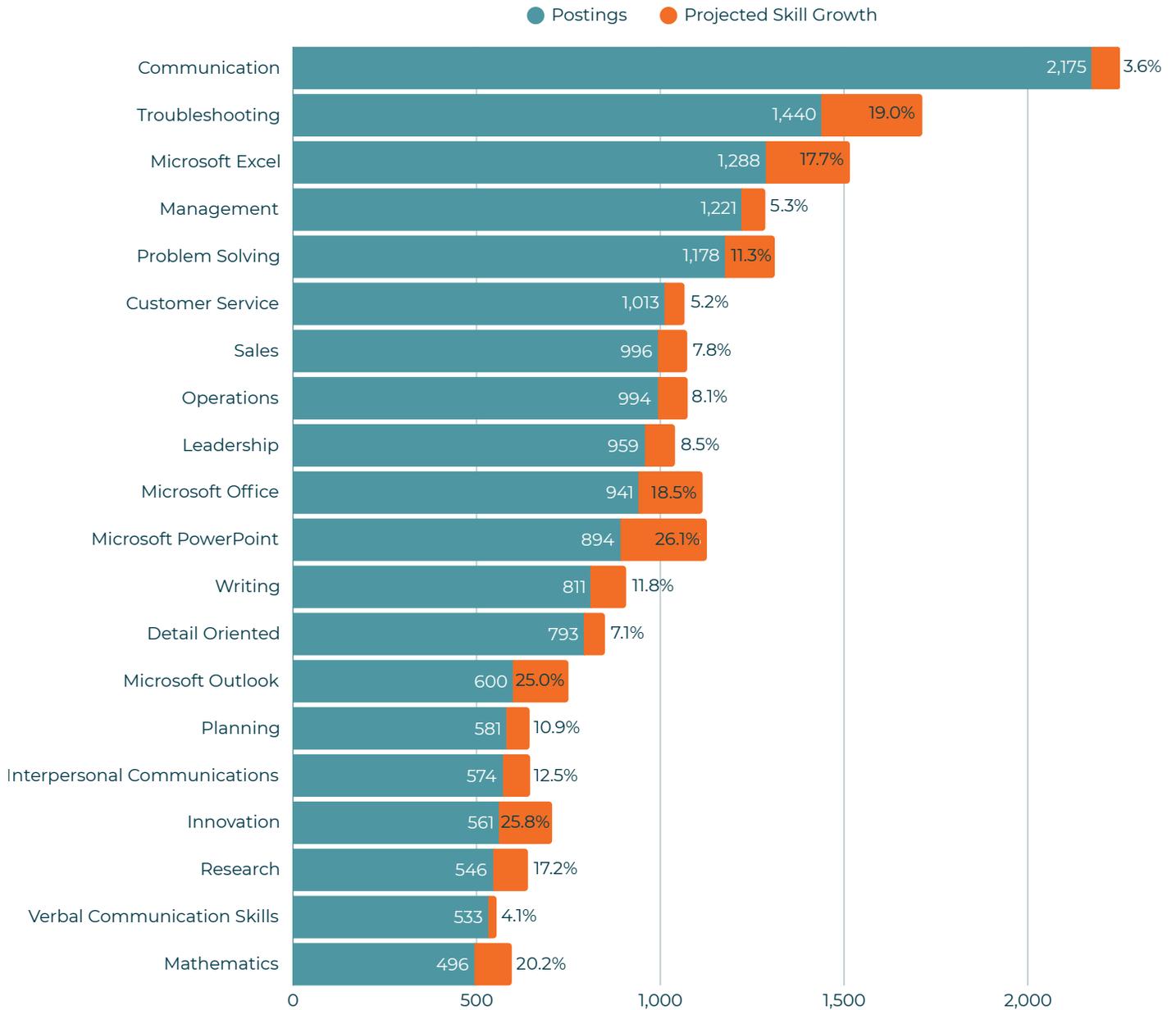| Skill	Postings	Projected Skill Growth
Robotic Systems	1,154	4.7%
Automation	1,140	30.5%
Robotics	847	13.9%
Artificial Intelligence	787	12.4%
Programmable Logic Controllers	762	14.7%
Project Management	599	19.8%
Advanced Driver Assistance Systems	505	8.8%
Debugging	483	19.5%
Electronics	455	16.9%
Sensors	400	15.5%
Continuous Improvement Process	386	23.4%
AutoCAD	385	16.9%
Control Systems	379	17.6%
Machine Learning	355	19.9%
Electrical Wiring	347	20.1%
Computer Science	343	26.8%
Electrical Engineering	308	21.2%
New Product Development	301	24.1%
Data Analysis	288	25.8%
Marketing	282	23.0%

This dual perspective distinguishes skills that are already well established in the labor market from those emerging as increasingly important for entry- and mid-level AI-related positions.

Overall, the results illustrate the specific technical and applied skills that define AI career pathways at the associate degree level, offering valuable guidance for workforce development programs, community colleges, and training providers seeking to align curricula with employer needs.

Data Source: Lightcast (2025)| Analysis: Workforce Intelligence Network

AI SKILLS BY EDUCATIONAL ATTAINMENT

Figure 1.5. Top Common Skills for the AI Industry in Associate's Degree Postings

Legend: ● Postings ● Projected Skill Growth

Skill	Postings	Projected Skill Growth
Communication	2,175	3.6%
Troubleshooting	1,440	19.0%
Microsoft Excel	1,288	17.7%
Management	1,221	5.3%
Problem Solving	1,178	11.3%
Customer Service	1,013	5.2%
Sales	996	7.8%
Operations	994	8.1%
Leadership	959	8.5%
Microsoft Office	941	18.5%
Microsoft PowerPoint	894	26.1%
Writing	811	11.8%
Detail Oriented	793	7.1%
Microsoft Outlook	600	25.0%
Planning	581	10.9%
Interpersonal Communications	574	12.5%
Innovation	561	25.8%
Research	546	17.2%
Verbal Communication Skills	533	4.1%
Mathematics	496	20.2%

Next, we examine the most frequently cited common skills in AI-related job postings that specify an associate's degree as the required level of education. Each skill is presented alongside the number of postings in which it appears and its projected growth rate, offering insight into both current demand and anticipated future importance.

By focusing on common skills, the next section highlights foundational and transferable competencies that are widely required across AI-related roles at the associate degree level. Comparing posting frequency with projected growth helps identify skills that represent core labor market expectations from those becoming increasingly critical as AI technologies continue to evolve.

AI SKILLS BY EDUCATIONAL ATTAINMENT

Figure 1.6. Top Specialized Skills for the AI Industry in Bachelor's Degree Postings
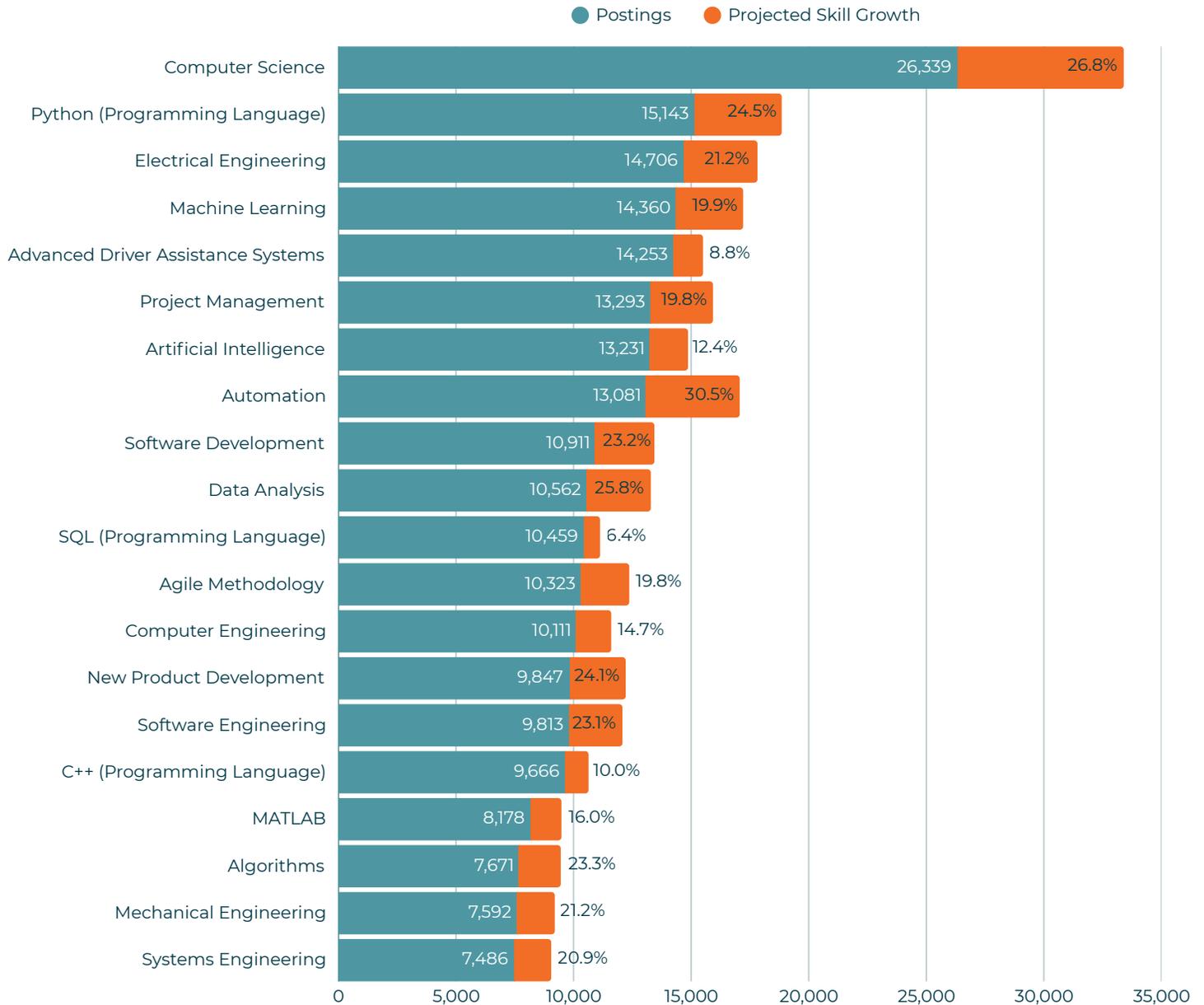
● Postings   ● Projected Skill Growth

Skill	Postings	Projected Skill Growth
Computer Science	26,339	26.8%
Python (Programming Language)	15,143	24.5%
Electrical Engineering	14,706	21.2%
Machine Learning	14,360	19.9%
Advanced Driver Assistance Systems	14,253	8.8%
Project Management	13,293	19.8%
Artificial Intelligence	13,231	12.4%
Automation	13,081	30.5%
Software Development	10,911	23.2%
Data Analysis	10,562	25.8%
SQL (Programming Language)	10,459	6.4%
Agile Methodology	10,323	19.8%
Computer Engineering	10,111	14.7%
New Product Development	9,847	24.1%
Software Engineering	9,813	23.1%
C++ (Programming Language)	9,666	10.0%
MATLAB	8,178	16.0%
Algorithms	7,671	23.3%
Mechanical Engineering	7,592	21.2%
Systems Engineering	7,486	20.9%

Figure 1.6 analyzes the most frequently requested specialized skills in AI-related job postings that list a bachelor's degree as the required level of education. Each skill is presented with the number of job postings in which it appears and its projected growth rate, offering insight into both current employer demand and anticipated future skill needs.

The results highlight advanced technical and analytical competencies that define AI-related roles at the bachelor's degree level. By examining both posting frequency and projected growth, this analysis distinguishes between skills that are already well established in the labor market and those expected to become increasingly important as AI adoption expands across industries.

AI SKILLS BY EDUCATIONAL ATTAINMENT

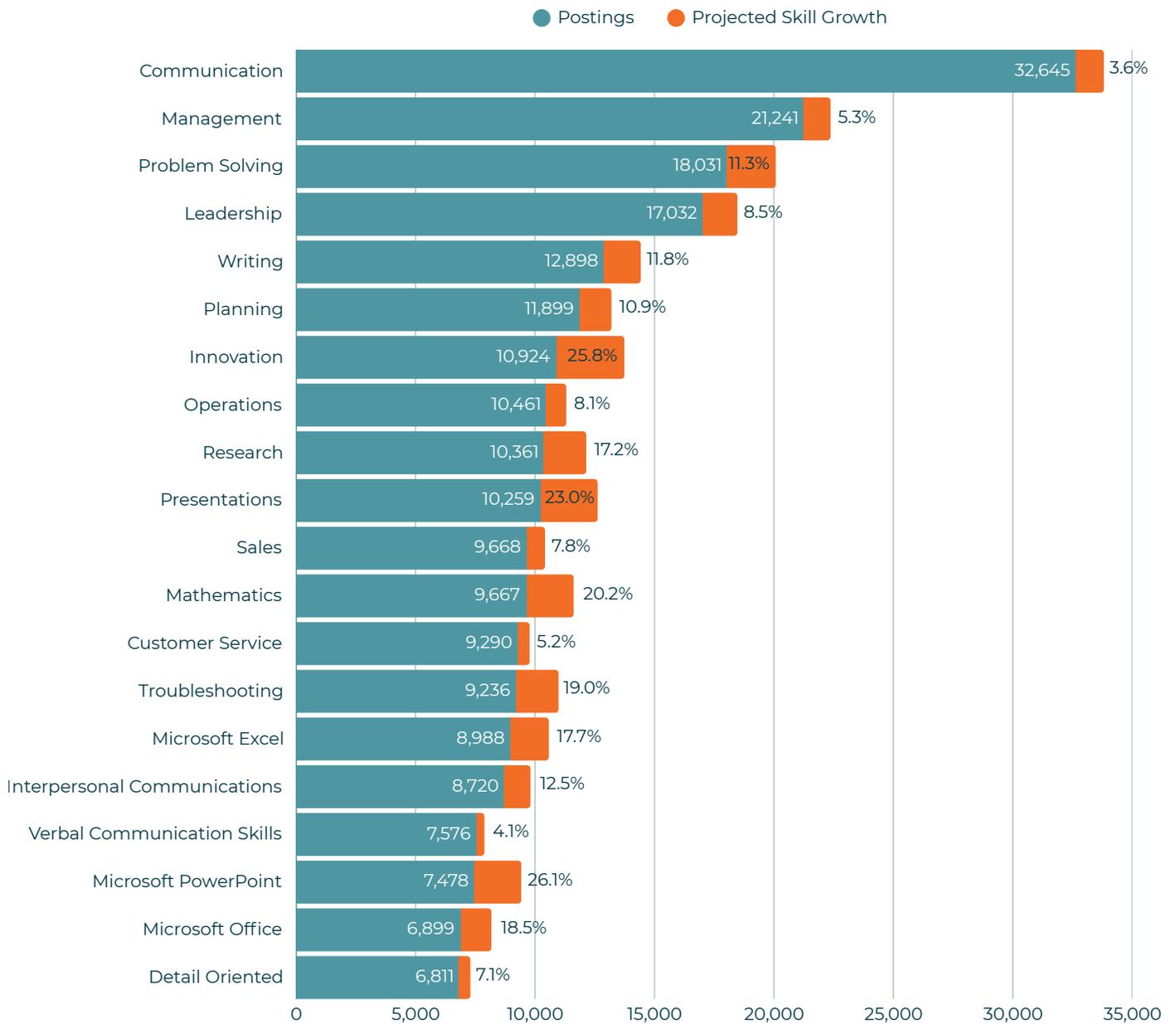## Figure 1.7. Top Common Skills for the AI Industry in Bachelor's Degree Postings

● Postings ● Projected Skill Growth

Skill	Postings	Projected Skill Growth
Communication	32,645	3.6%
Management	21,241	5.3%
Problem Solving	18,031	11.3%
Leadership	17,032	8.5%
Writing	12,898	11.8%
Planning	11,899	10.9%
Innovation	10,924	25.8%
Operations	10,461	8.1%
Research	10,361	17.2%
Presentations	10,259	23.0%
Sales	9,668	7.8%
Mathematics	9,667	20.2%
Customer Service	9,290	5.2%
Troubleshooting	9,236	19.0%
Microsoft Excel	8,988	17.7%
Interpersonal Communications	8,720	12.5%
Verbal Communication Skills	7,576	4.1%
Microsoft PowerPoint	7,478	26.1%
Microsoft Office	6,899	18.5%
Detail Oriented	6,811	7.1%

Figure 1.7 illustrates the most frequently cited common skills in AI-related job postings that require a bachelor's degree. Each skill is presented alongside the number of job postings in which it appears and its projected growth rate, providing a comprehensive view of both current demand and anticipated future relevance.

AI SKILLS GROWTH TIMELINE

Figure 1.8 illustrates changes in the number of job postings requiring AI-related skills in the MCC region from 2010 to 2025. Job postings increased steadily throughout the early and mid-2010s, reaching a peak of 32,152 postings in 2018. This growth reflects the expanding adoption of AI technologies across industries during that period.

Following this peak, postings declined sharply to 21,592 in 2020, coinciding with widespread labor market disruptions during the COVID-19 pandemic. In 2022, the number of AI-related job postings rebounded

significantly to 43,349, surpassing pre-pandemic levels. This surge mirrors a broader labor market pattern in which employers increased hiring activity to offset job losses experienced in 2020.

After 2022, AI-related job postings declined again, falling to 16,947 by 2025. This downward trend may indicate market stabilization, increased efficiency through automation, or consolidation in AI hiring as organizations shift from rapid expansion to optimization.

Figure 1.8. Trends in Job Postings Requiring AI Skills in the MCC Region (2010–2025)

Figure 1.9 presents the percentage of total job postings in the MCC region that require AI-related skills from 2010 to 2025. While the overall pattern closely mirrors trends observed in the absolute number of AI-related job postings, the share of postings requiring AI skills demonstrates a more sustained upward trajectory over time.

Although temporary fluctuations are visible, particularly around 2020, the percentage of job postings with AI requirements continues to increase across the period. By 2025, the proportion of postings requiring AI skills remains nearly equivalent to 2022 levels, despite a decline in the absolute number of postings. This indicates that AI skills have become more deeply embedded across the labor market rather than concentrated in periods of high hiring volume.

Figure 1.9. Share of Job Postings Requiring AI Skills in the MCC Region (2010–2025)

Overall, the findings suggest that over time, AI competencies are required in an increasing share of jobs, even during periods of overall contraction in hiring. This trend highlights the normalization of AI as a baseline skill requirement across industries in the MCC region and reinforces the growing importance of AI literacy and related capabilities within the workforce.

AI SKILLS GROWTH TIMELINE

State-Level Comparison: Michigan

The State of Michigan exhibits trends in AI-related job postings that closely parallel those observed in the MCC region. The total number of job postings requiring AI skills peaked in 2022 at 72,608 postings, followed by a decline to 34,573 postings by 2025. This pattern reflects broader fluctuations in overall labor demand rather than a reversal in AI adoption.

When examined as a share of total job postings, however, AI requirements continue to demonstrate an upward trend. The percentage of postings

Figure 1.10. Trends in Job Postings Requiring AI Skills in the State of Michigan (2010–2025)

requiring AI skills reached a high of 1.7% in 2022, with 2025 nearly matching this level at 1.6%, despite the decrease in absolute posting volume. This indicates that AI skills remain consistently embedded in employer demand across the state.

Figure 1.11. Share of Job Postings Requiring AI Skills in the State of Michigan (2010–2025)

Taken together, the findings suggest that while hiring volumes fluctuate over time, the relative importance of AI competencies within Michigan's labor market continues to grow. Similar to the MCC region, AI skills are increasingly incorporated into a broad range of roles, marking their role as a persistent and structural component of workforce demand rather than a temporary hiring trend.

National-Level Comparison

At the national level, job postings requiring AI-related skills follow patterns similar to those observed at the local and state levels, while exhibiting a more pronounced long-term upward trend. The number of AI-related job postings increased substantially through 2022, reaching 2,298,394 postings, before declining in 2023, consistent with broader labor market adjustments seen at the regional and state levels. Following this dip, AI-related postings rose again through 2025, totaling 1,851,969 postings.

When evaluated as a percentage of total job postings, the national data show an even stronger and more consistent upward trajectory than observed locally or statewide. Over time, AI skills account for an increasing share of employer demand, reflecting their expanding integration across sectors and

AI SKILLS GROWTH TIMELINE

occupations. By 2025, 2.3% of all job postings nationwide require AI-related skills, highlighting the growing normalization of AI competencies within the U.S. labor market.

Overall, the national trends reinforce findings at the MCC and Michigan levels: while absolute posting volumes fluctuate in response to economic conditions, the relative importance of AI skills continues to increase, signaling a structural shift in workforce requirements rather than a temporary hiring phenomenon.

Figure 1.12. Trends in Job Postings Requiring AI Skills in the US (2010–2025)

Figure 1.13. Share of Job Postings Requiring AI Skills in the US (2010–2025)

DEMAND: JOB POSTINGS VERSUS PROFILES

Table 1. Top Specialized AI Skills: Job Postings Vs Worker Profiles

Skills	Postings	% of Total Postings	% of Total Profiles
Artificial Intelligence	8,598	34%	1%
Computer Science	7,042	28%	0%
Machine Learning	6,567	26%	1%
Python (Programming Language)	6,007	24%	2%
Automation	4,505	18%	2%
Project Management	4,173	17%	9%
Advanced Driver Assistance Systems	4,127	16%	0%
Data Analysis	3,866	15%	4%
Agile Methodology	3,755	15%	1%
SQL (Programming Language)	3,731	15%	2%
Electrical Engineering	3,270	13%	1%
Software Engineering	2,895	12%	1%
Software Development	2,715	11%	1%
Data Science	2,555	10%	0%
Workflow Management	2,478	10%	1%
Marketing	2,472	10%	8%
New Product Development	2,469	10%	4%
C++ (Programming Language)	2,456	10%	1%
Computer Engineering	2,342	9%	0%
Scalability	2,314	9%	0%

This section compares the most in-demand specialized skills in AI-related job postings with the percentage of workforce profiles that list the same skills, highlighting gaps between employer demand and available talent. By examining these two measures side by side, the analysis identifies areas where the workforce may be underprepared relative to labor market needs.

The results reveal substantial disparities between job requirements and skill representation among career seekers. For example, artificial intelligence appears in 34% of AI-related job postings yet is listed in only 1% of career-seeker profiles. The gap indicates a significant shortfall in AI-specific competencies within the current workforce.

Overall, the findings underscore critical skill mismatches that may constrain AI adoption and workforce readiness. Identifying these gaps provides actionable insights for education providers, training programs, employers, and policymakers seeking to strengthen talent pipelines and align workforce skills with employer demand.


● % of Total Postings ● % of Total Profiles

Data Source: Lightcast (2025) | Analysis: Workforce Intelligence Network
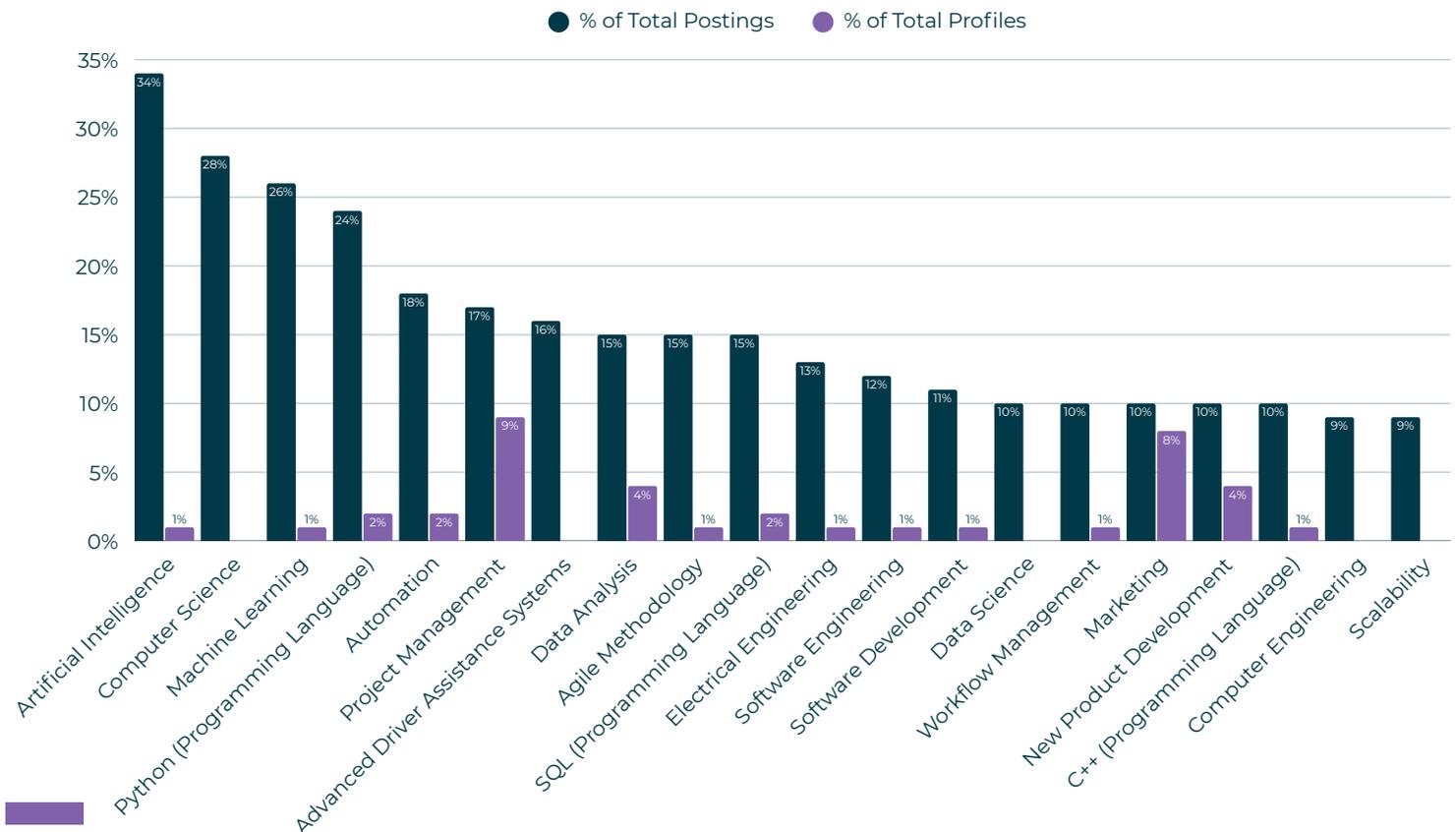
DEMAND: JOB POSTINGS VERSUS PROFILES

Table 2. Top Common Skills: Job Postings Vs Worker Profiles

Skills	Postings	% of Total Postings	% of Total Profiles
Communication	11,544	46%	10%
Management	6,754	27%	14%
Problem Solving	6,182	25%	5%
Leadership	6,176	25%	13%
Operations	4,546	18%	8%
Innovation	4,363	17%	2%
Troubleshooting	4,183	17%	3%
Planning	3,773	15%	4%
Research	3,554	14%	8%
Sales	3,497	14%	15%
Customer Service	3,284	13%	18%
Writing	3,268	13%	3%
Presentations	3,265	13%	3%
Detail Oriented	2,904	12%	1%
Microsoft Excel	2,645	11%	10%
Decision Making	2,400	10%	1%
Interpersonal Communications	2,366	9%	2%
Microsoft Office	2,183	9%	12%
Coordinating	2,073	8%	3%
Mathematics	2,069	8%	1%

This section applies the same demand-versus-supply analysis to common skills in AI-related job postings, comparing employer requirements with the percentage of career-seeker profiles that list these competencies. While gaps persist, they are generally less pronounced than those observed for specialized skills, reflecting the broader and more transferable nature of common skills.

The findings indicate that communication skills are required in 46% of AI-related job postings, yet appear in only 10% of worker profiles, highlighting a notable but narrower gap. Similarly, management skills are listed in 27% of postings compared to 14% of profiles, suggesting a moderate shortfall in leadership-related competencies.

Overall, this analysis demonstrates that although common skills are more widely represented in the workforce than specialized AI skills, meaningful mismatches remain. Addressing these gaps through targeted training and professional development may help strengthen workforce readiness and improve alignment between employer expectations and available talent in AI-related roles.

Legend: ● % of Total Postings ● % of Total Profiles
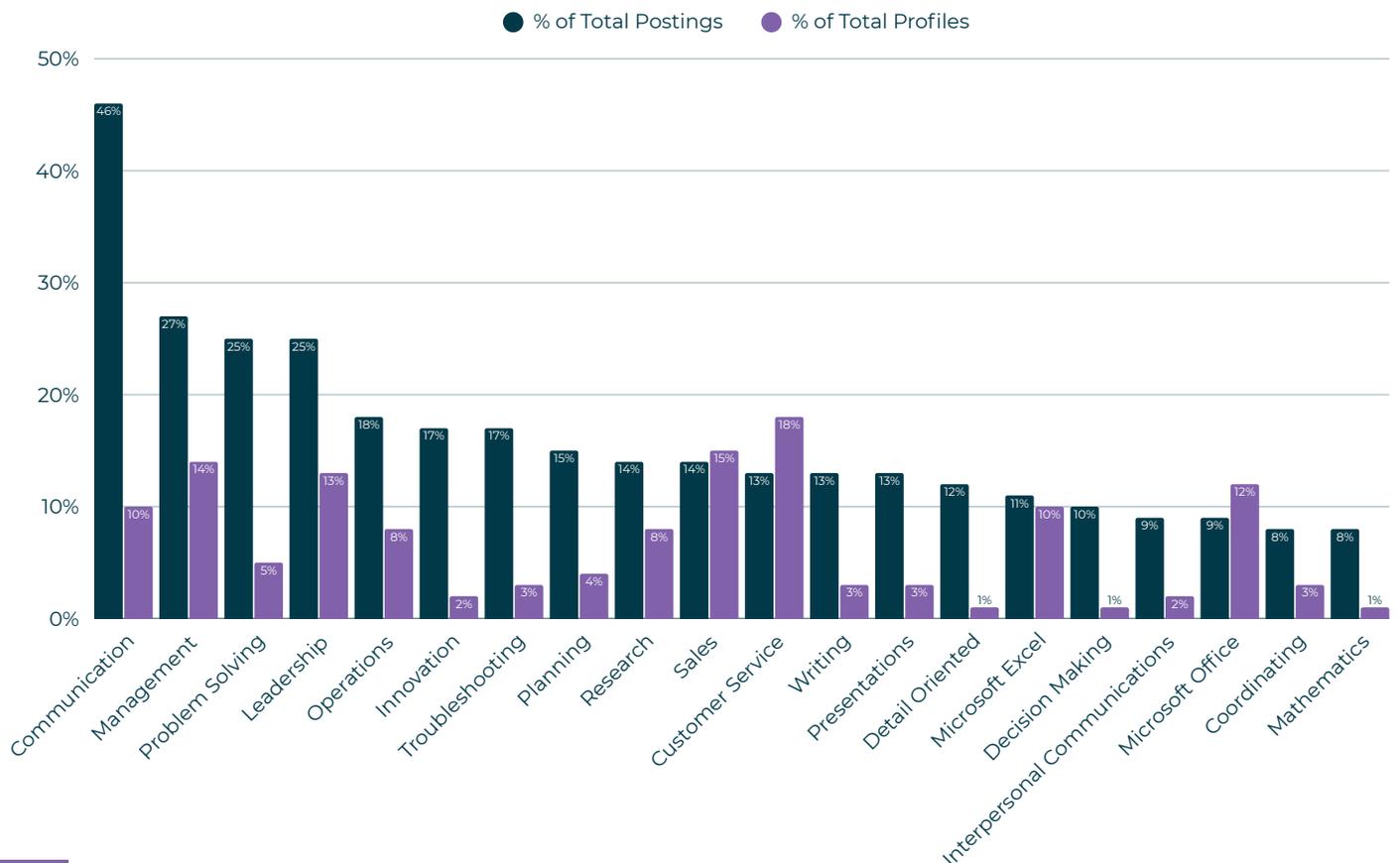
Artificial Intelligence (AI) Impact Assessment

PHASE 2: AI Use by Occupation
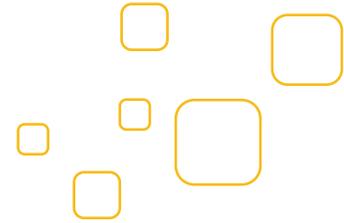
PHASE 2: AI USE BY OCCUPATION
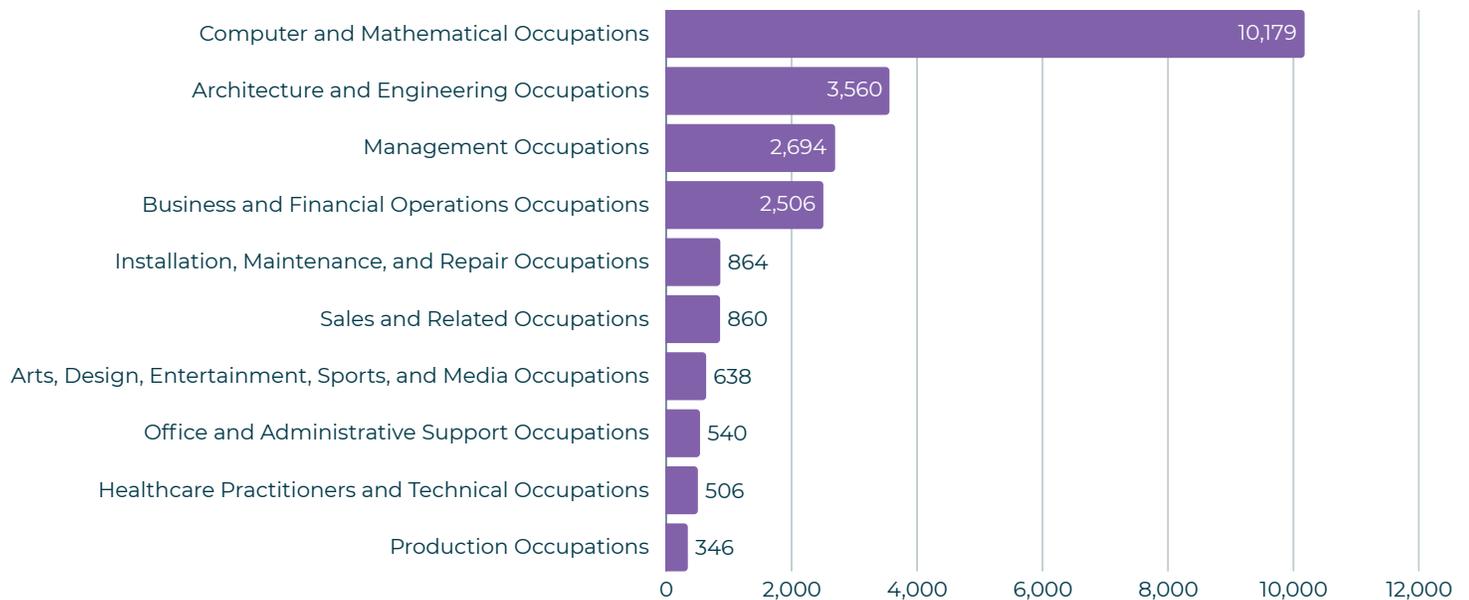
AI OCCUPATION OVERVIEW

Occupation Classification Using SOC

An occupation is defined as a group of jobs that involve similar tasks, skills, and work activities, even when they span multiple industries. For example, an accountant may work in healthcare, finance, or construction but still perform the same core occupational functions. Occupations in this study are classified using the Standard Occupational Classification (SOC) system, the federal framework for organizing and comparing jobs across the U.S. labor market.

The two-digit SOC level is used to examine AI-related skill demand across broad occupational groups, such as Computer and Mathematical Occupations or Healthcare Practitioners. This level provides a high-level view of where AI-related skills are most prevalent across major areas of work.

The six-digit SOC level allows for detailed analysis of specific occupations, identifying individual roles with strong or emerging demand for AI-related skills. Using both levels together provides insight into overall trends while supporting workforce planning, curriculum development, and alignment with community college training programs.

Figure 2.1. Top 10 Two-Digit Occupations Requiring AI by Postings

Occupation	Postings
Computer and Mathematical Occupations	10,179
Architecture and Engineering Occupations	3,560
Management Occupations	2,694
Business and Financial Operations Occupations	2,506
Installation, Maintenance, and Repair Occupations	864
Sales and Related Occupations	860
Arts, Design, Entertainment, Sports, and Media Occupations	638
Office and Administrative Support Occupations	540
Healthcare Practitioners and Technical Occupations	506
Production Occupations	346

The following pages analyze each of the top 10 two-digit occupations, focusing on job postings that include AI to better understand the role of AI within each occupation. Job postings from January 2023 through October 2025 in the MCC region are examined by leading occupations, average postings per quarter, and required education levels, specialized skills, and software skills. This analysis supports a clearer understanding of career pathways and credential requirements, informing upskilling, tuition considerations, and potential barriers to entry. In addition, the software and specialized skills highlight the tools used on the job, identify employable skills, and help make these occupations more tangible.

AI USE BY OCCUPATION GROUP
Computer and Mathematical Occupations

10,180
Job Postings
Requiring AI
Jan '23 - Oct '25

The Computer and Mathematical Occupations group includes roles in computing, information technology, data analysis, and quantitative problem-solving. These jobs involve applying technical, analytical, and mathematical skills to develop, manage, or analyze digital systems and data.

There were 3,608 Software Developer job postings in the area, making it the most frequently posted occupation within Computer and Mathematical Occupations.

6-Digit Occupation	# of Postings
Software Developers	3,608
Data Scientists	1,821
Computer Occupations, All Other	1,472
Computer and Information Research Scientists	731
Database Administrators	528

Job postings requiring AI skills have been gradually increasing since the decline in late 2023.

Most AI-related postings in this occupational group require a bachelor's degree, reinforcing the high technical skill expectations of these roles.

Average Job Postings Requiring AI by Quarter

Postings by Education Level
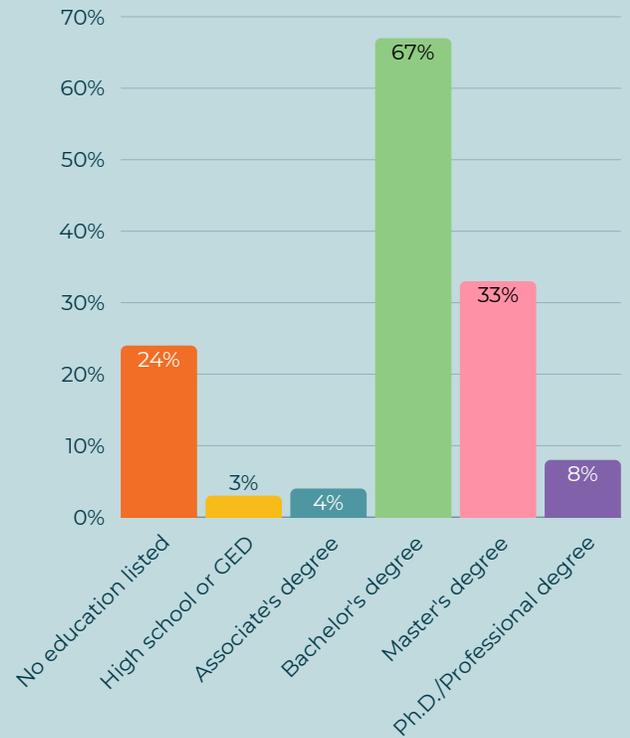
Top 10 Specialized Skills

1. Computer Science
2. Python (Programming Language)
3. Machine Learning
4. Artificial Intelligence
5. SQL (Programming Language)
6. Agile Methodology
7. Software Engineering
8. Automation
9. Data Analysis
10. Software Development

Top 10 Software Skills

1. Python (Programming Language)
2. SQL (Programming Language)
3. Microsoft Azure
4. Amazon Web Services
5. C++ (Programming Language)
6. Java (Programming Language)
7. Google Cloud Platform (GCP)
8. Application Programming Interface (API)
9. Apache Spark
10. Power BI

AI USE BY OCCUPATION GROUP

Architecture and Engineering Occupations

3,560
Job Postings
Requiring AI
Jan '23 - Oct '25

The Architecture and Engineering Occupations group is involved in designing, planning, and oversight of the construction and operation of buildings, infrastructure, and technological systems. These roles apply engineering, architectural, and scientific principles to develop efficient, safe, and innovative solutions.

There were 708 Electrical Engineer job postings in the area, ranking it as the most common occupation within Architecture and Engineering Occupations.

6-Digit Occupation	# of Postings
Electrical Engineers	708
Mechanical Engineers	643
Engineers, All Other	563
Industrial Engineers	552
Electro-Mechanical and Mechatronics Technologists and Technicians	157

Job postings requiring AI skills have slowly rebounded since the decline in Q4 2023, increasing from 191 postings in Q4 2023 to 210 in Q3 2024.

Across roles that require AI skills, a bachelor's degree is the most common education requirement, with electrical engineering cited as the top specialized skill and Python as the most frequently requested software skill.

Average Job Postings Requiring AI by Quarter

Postings by Education Level

Bar chart values: No education listed 19%, High school or GED 6%, Associate's degree 8%, Bachelor's degree 66%, Master's degree 32%, Ph.D./Professional degree 8%
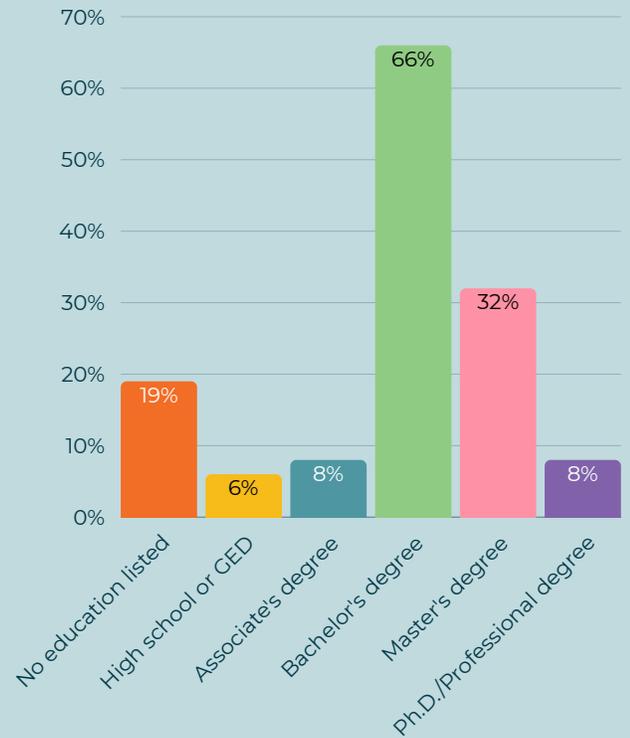
Top 10 Specialized Skills

1. Electrical Engineering
2. Advanced Driver Assistance Systems
3. Automation
4. Mechanical Engineering
5. Robotics
6. Computer Science
7. Project Management
8. Debugging
9. Python (Programming Language)
10. New Product Development

Top 10 Software Skills

1. Python (Programming Language)
2. MATLAB
3. C++ (Programming Language)
4. Simulink
5. AutoCAD
6. Microsoft Excel
7. Microsoft Office
8. CANalyzer
9. C (Programming Language)
10. Microsoft PowerPoint

AI USE BY OCCUPATION GROUP
Management Occupations

2,694
Job Postings
Requiring AI
Jan '23 - Oct '25

The Management Occupations Group includes roles responsible for planning, directing, and coordinating the operations of organizations or departments. These jobs involve strategic decision-making, resource management, and oversight of people, and projects.

There were 606 Marketing Manager job postings in the area, making it the most frequently posted occupation within Management Occupations.

6-Digit Occupation	# of Postings
Marketing Managers	606
Architectural and Engineering Managers	269
Managers, All Other	262
General and Operations Managers	257
Financial Managers	245

Job postings requiring AI skills have increased overall since Q1 2023, rising from 202 postings to 262 postings by Q3 2025.

Among positions that list AI requirements, a bachelor's degree is the most common education level, with artificial intelligence identified as the leading specialized skill and Microsoft Suite as the most frequently requested software skill.

Average Job Postings Requiring AI by Quarter

Postings by Education Level

- No education listed: 24%
- High school or GED: 5%
- Associate's degree: 4%
- Bachelor's degree: 69%
- Master's degree: 35%
- Ph.D./Professional degree: 3%
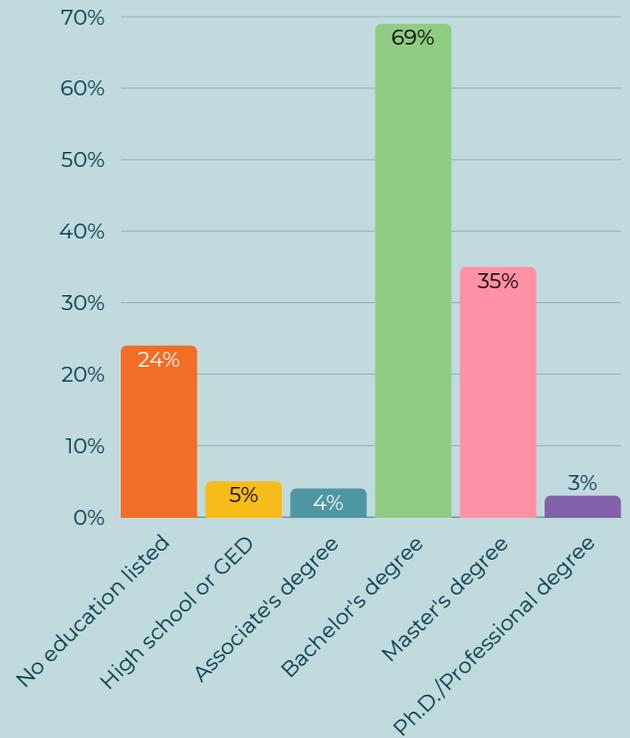
Top 10 Specialized Skills

1. Artificial Intelligence
2. Project Management
3. Marketing
4. Machine Learning
5. Finance
6. Computer Science
7. Product Management
8. Advanced Driver Assistance Systems
9. New Product Development
10. Automation

Top 10 Software Skills

1. Microsoft Excel
2. Microsoft PowerPoint
3. Microsoft Office
4. Salesforce
5. Dashboard
6. Generative Artificial Intelligence
7. JIRA
8. Python (Programming Language)
9. Amazon Web Services
10. SQL (Programming Language)

AI USE BY OCCUPATION GROUP

Business and Financial Operations Occupations

2,506
Job Postings
Requiring AI
Jan '23 - Oct '25

The Business and Financial Operations Group involves supporting organizational efficiency through activities like financial analysis, budgeting, project management, and compliance. These roles apply analytical and administrative skills to help organizations operate effectively and make informed decisions.

Market Research Analyst and Marketing Specialist job postings accounted for 423 job postings in the region, making this the most frequently posted occupation within Business and Financial Operations Occupations.

6-Digit Occupation	# of Postings
Market Research Analysts and Marketing Specialists	423
Project Management Specialists	383
Financial Risk Specialists	331
Management Analysts	300
Human Resource Specialists	181

Postings fluctuated by quarter but remained steady overall.

Across positions that list AI requirements, a bachelor's degree is most often required. Employers most frequently identify artificial intelligence as the leading specialized skill, while proficiency in Microsoft Suite appears as the most commonly requested software skill.

Average Job Postings Requiring AI by Quarter

Postings by Education Level
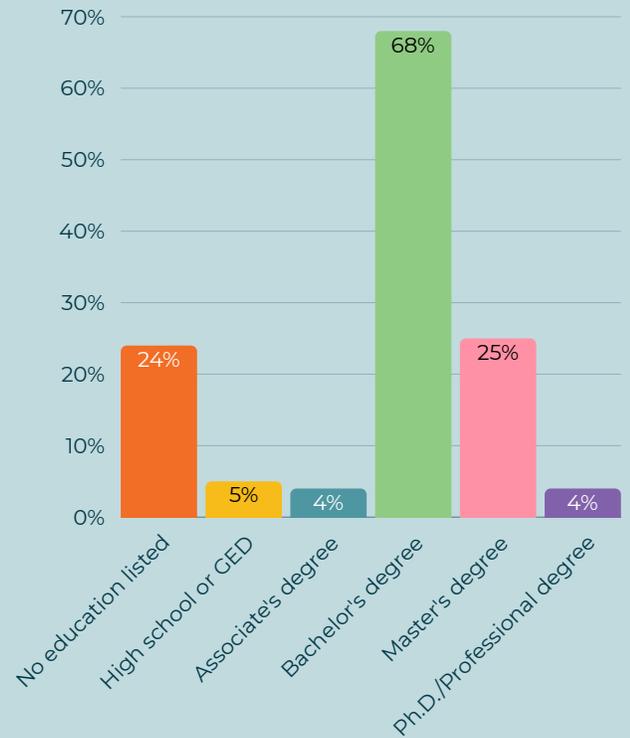
Top 10 Specialized Skills

1. Artificial Intelligence
2. Project Management
3. Machine Learning
4. Marketing
5. Data Analysis
6. Computer Science
7. Finance
8. Automation
9. Python (Programming Language)
10. SQL (Programming Language)

Top 10 Software Skills

1. Microsoft Excel
2. Microsoft Office
3. Microsoft PowerPoint
4. Python (Programming Language)
5. SQL (Programming Language)
6. Power BI
7. Dashboard
8. Generative Artificial Intelligence
9. Tableau (Business Intelligence Software)
10. R (Programming Language)

AI USE BY OCCUPATION GROUP

Installation, Maintenance, and Repair Occupations

864
Job Postings
Requiring AI
Jan '23 - Oct '25

The Installation, Maintenance and Repair Occupations Group involves keeping equipment, machinery, and systems functioning safely and efficiently. These roles include installing, troubleshooting, maintaining, and repairing a wide range of mechanical, electrical, and technical equipment.

Maintenance and Repair Workers, General positions accounted for 260 job postings in the region, making this role the most frequently posted occupation within this group.

6-Digit Occupation	# of Postings
Maintenance and Repair Workers, General	260
Automotive Service Technicians and Mechanics	221
First-Line Supervisors of Mechanics, Installers, and Repairers	89
Precision Instrument and Equipment Repairers, All Other	49
Electrical and Electronics Installers and Repairers, Transportation Equipment	40

Postings varied by quarter but were stable overall.

Most AI-related roles require a high school diploma, followed by an associate degree, with Advanced Driver Assistance Systems as the top specialized skill and Microsoft Suite as the most frequently requested software skill.

Average Job Postings Requiring AI by Quarter
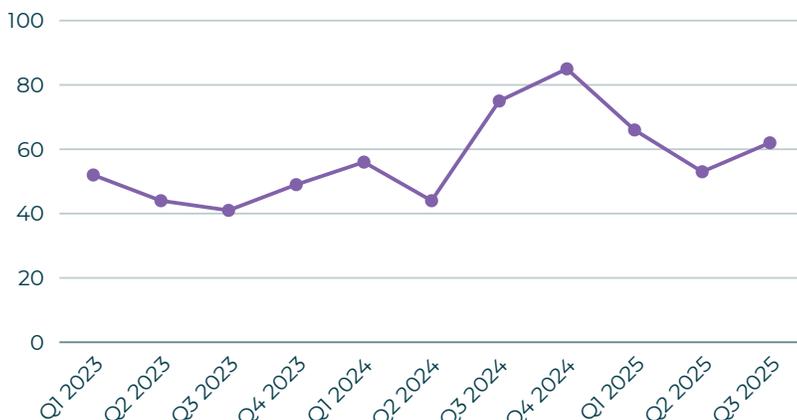
Postings by Education Level
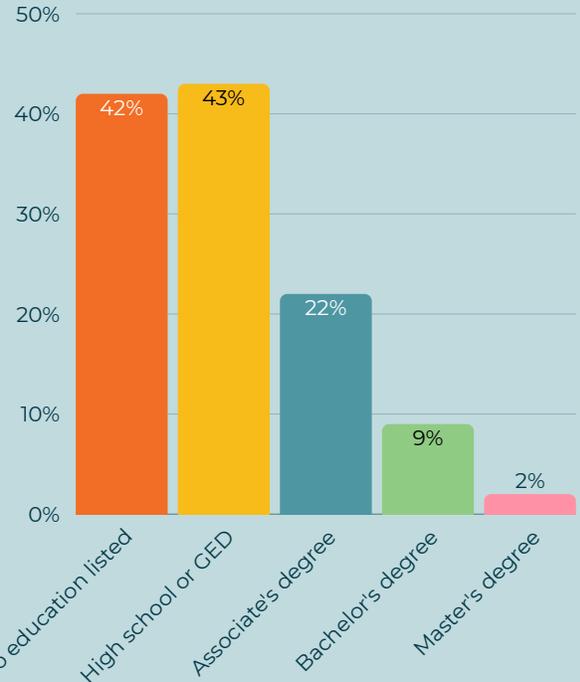
Top 10 Specialized Skills

1. Advanced Driver Assistance Systems
2. Robotic Systems
3. Electrical Wiring
4. Hand Tools
5. Preventive Maintenance
6. Autonomous Vehicles
7. Electronics
8. Programmable Logic Controllers
9. Electrical Systems
10. Sensors

Top 10 Software Skills

1. Microsoft Excel
2. Microsoft Outlook
3. Microsoft Office
4. Microsoft PowerPoint
5. Microsoft Word
6. Software Systems
7. Software Modules
8. AutoCAD
9. Robotic Automation Software
10. Spreadsheets

AI USE BY OCCUPATION GROUP
Sales and Related Occupations

860
Job Postings
Requiring AI
Jan '23 - Oct '25

The Sales and Related Occupations Group involves selling products and services, building customer relationships, and providing assistance throughout the sales process. These roles range from retail and wholesale sales to sales representatives, and other positions focused on meeting customer needs.

6-Digit Occupation	# of Postings
Sales Representatives, Wholesale and Manufacturing, Except Technical and Scientific Products	269
Sales Representatives of Services, Except Advertising, Insurance, Financial Services, and Travel	146
Sales Representatives, Wholesale and Manufacturing, Technical and Scientific Products	132
Sales Engineers	77
First-Line Supervisors of Retail Sales Workers	66

Overall, job postings have increased steadily from Q1 2023 to Q3 2025, rising from 54 postings to 97, indicating growing demand over time.

Most positions that list AI requirements require a bachelor's degree, with artificial intelligence identified as the leading specialized skill and Microsoft Office cited as the most frequently requested software skill.

Average Job Postings Requiring AI by Quarter
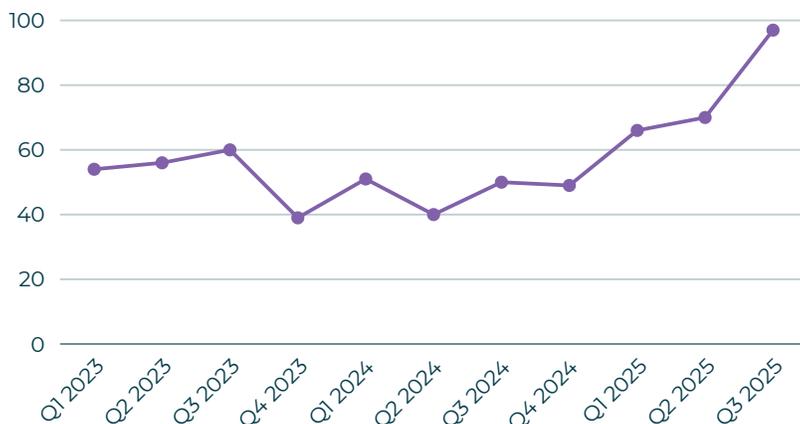
Postings by Education Level
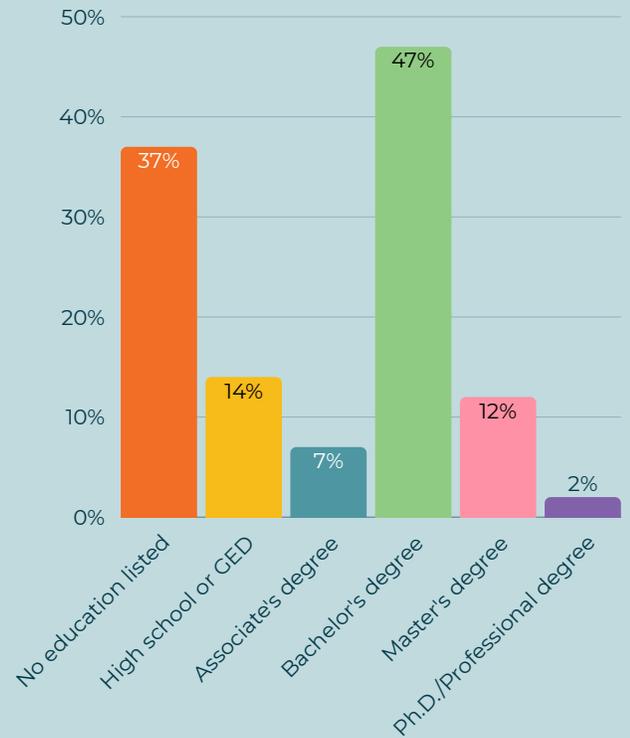
Top 10 Specialized Skills

1. Artificial Intelligence
2. Marketing
3. Selling Techniques
4. Customer Relationship Management
5. Sales Prospecting
6. Business Development
7. Advanced Driver Assistance Systems
8. Automation
9. Product Knowledge
10. Salesforce

Top 10 Software Skills

1. Microsoft Office
2. Salesforce
3. Microsoft Excel
4. Microsoft PowerPoint
5. Generative Artificial Intelligence
6. Microsoft Outlook
7. Apache Spark
8. Amazon Web Services
9. Applicant Tracking Systems
10. Microsoft Azure

AI USE BY OCCUPATION GROUP

Arts, Design, Entertainment, Sports, and Media Occupations

638
Job Postings
Requiring AI
Jan '23 - Oct '25

The Arts, Design, Entertainment, Sports, and Media Occupations Group involves creative expression, performance, communication, and the design or production of visual, written, or audio content. These roles support cultural, artistic, and informational activities across a wide range of industries.

Commercial and Industrial Designers accounted for 266 job postings in the area, representing the most in-demand occupation within this group.

6-Digit Occupation	# of Postings
Commercial and Industrial Designers	266
Writers and Authors	92
Interpreters and Translators	44
Art Directors	40
Producers and Directors	34

Quarterly job postings have fluctuated, with only a slight overall decline since Q1 2023.

Most roles that include AI requirements call for a bachelor's degree, with artificial intelligence noted as the top specialized skill and Microsoft PowerPoint listed as the most frequently requested software skill.

Average Job Postings Requiring AI by Quarter

Postings by Education Level
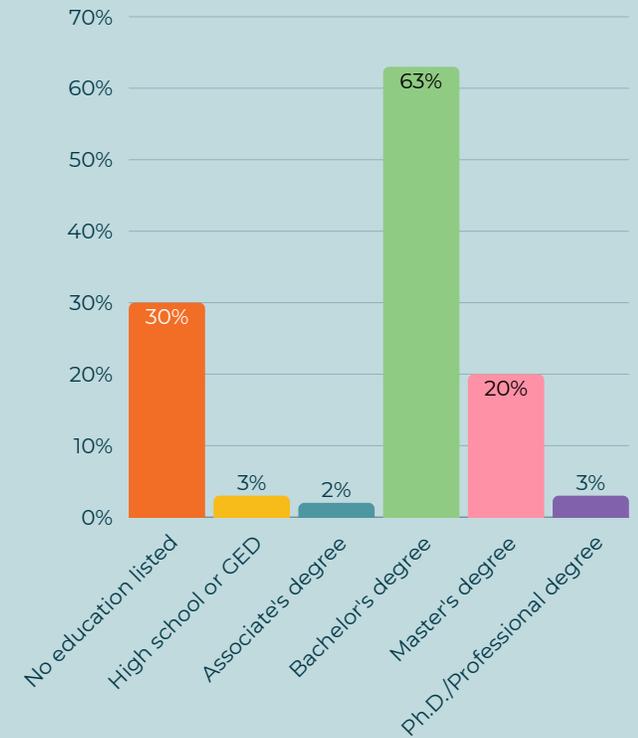
Top 10 Specialized Skills

1. Artificial Intelligence
2. Advanced Driver Assistance Systems
3. Marketing
4. New Product Development
5. Project Management
6. Mechanical Engineering
7. Electrical Engineering
8. Workflow Management
9. Journalism
10. Systems Engineering

Top 10 Software Skills

1. Microsoft PowerPoint
2. Microsoft Office
3. MATLAB
4. Adobe Photoshop
5. Adobe Creative Suite
6. Python (Programming Language)
7. Adobe Illustrator
8. Figma (Design Software)
9. Generative Artificial Intelligence
10. C++ (Programming Language)

AI USE BY OCCUPATION GROUP
Office and Administrative Support Occupations

540
Job Postings
Requiring AI
Jan '23 - Oct '25

The Office and Administrative Support Occupation Group involves clerical, organizational, and administrative tasks that help businesses operate efficiently. These roles include duties such as recordkeeping, scheduling, customer support, and information management.

First-Line Supervisors of Office and Administrative Support Workers accounted for 106 job postings in the area, making it the most frequently posted occupation within this group.

6-Digit Occupation	# of Postings
First-Line Supervisors of Office and Administrative Support Workers	106
Customer Service Representatives	81
Secretaries and Administrative Assistants, Except Legal, Medical, and Executive	68
Production, Planning, and Expediting Clerks	64
Executive Secretaries and Executive Administrative Assistants	27

Quarterly job postings have shown a modest overall increase since Q1 2023.

Positions that list AI requirements most often require a bachelor's degree, with artificial intelligence identified as the leading specialized skill and Microsoft Suite as the most commonly requested software skill.

Average Job Postings Requiring AI by Quarter

Postings by Education Level
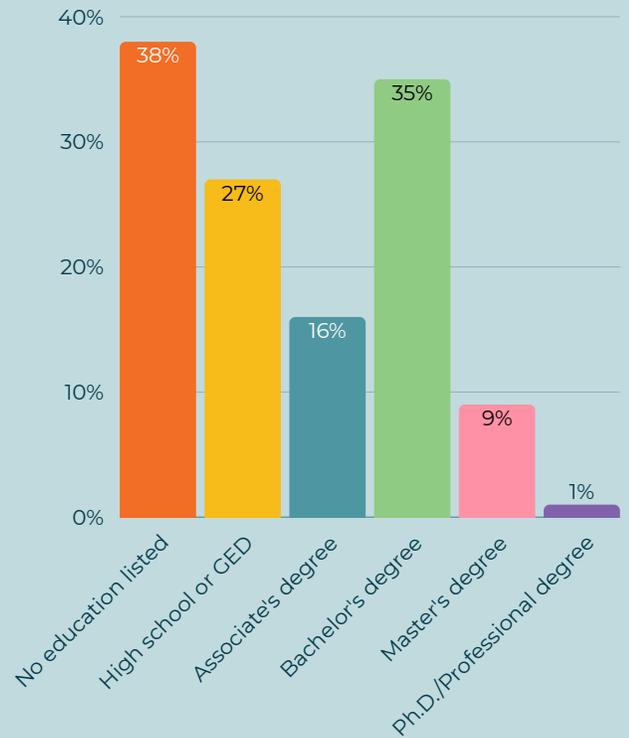
Top 10 Specialized Skills

1. Artificial Intelligence
2. Project Management
3. Data Version Control (DVC)
4. Workflow Management
5. Administrative Support
6. Data Entry
7. Finance
8. Customer Relationship Management
9. Auditing
10. Marketing

Top 10 Software Skills

1. Microsoft Excel
2. Microsoft Office
3. Microsoft Outlook
4. Microsoft PowerPoint
5. Chatbot
6. Microsoft Word
7. Spreadsheets
8. Generative Artificial Intelligence
9. Salesforce
10. Google Workspace

AI USE BY OCCUPATION GROUP
Healthcare Practitioners and Technical Occupations

506
Job Postings
Requiring AI
Jan '23 - Oct '25

The Healthcare Practitioners and Technical Occupations Group includes professionals who diagnose, treat, and support patient care through clinical and technical expertise. These roles range from physicians and nurses to technologists and therapists who deliver essential medical services.
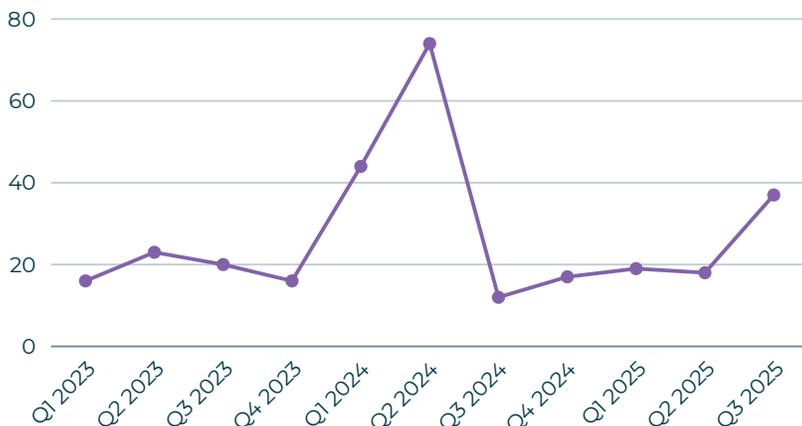
Registered Nurses accounted for 149 job postings in the area, making it the most frequently posted occupation within Healthcare Practitioners and Technical Occupations.

6-Digit Occupation	# of Postings
Registered Nurses	149
Health Technologists and Technicians, All Other	60
Clinical Laboratory Technologists and Technicians	43
Speech Language Pathologists	30
Veterinarians	30

Quarterly job postings experienced a sharp increase in Q1 and Q2 2024, likely reflecting a broader surge across Healthcare Practitioners and Technical Occupations.

Among roles that list AI requirements, most do not specify an education level, with chatbot identified as both the leading specialized skill and the most frequently requested software skill.

Average Job Postings Requiring AI by Quarter

Postings by Education Level

No education listed 62%, High school or GED 6%, Associate's degree 6%, Bachelor's degree 12%, Master's degree 12%, Ph.D./Professional degree 11%
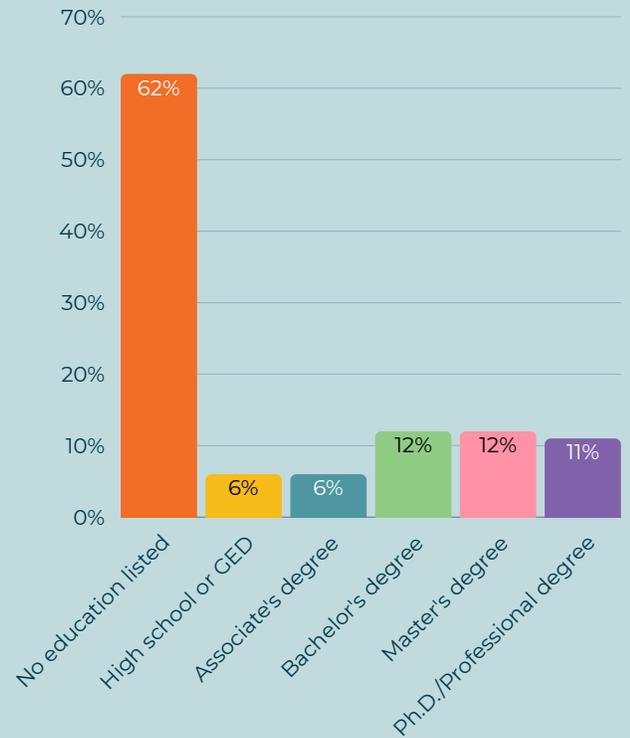
Top 10 Specialized Skills
1. Chatbot
2. Tagalog Language
3. Finance
4. Health Information Management
5. Risk Management
6. Revenue Management
7. Nursing
8. Artificial Intelligence
9. Treatment Planning
10. Pathology

Top 10 Software Skills
1. Chatbot
2. Microsoft Excel
3. Microsoft Outlook
4. Python (Programming Language)
5. Microsoft Office
6. Proprietary Software
7. Robotic Automation Software
8. R (Programming Language)
9. Microsoft Word
10. C++ (Programming Language)

Page 26

Data Source: Lightcast (2025) | Analysis: Workforce Intelligence Network

AI USE BY OCCUPATION GROUP
Production Occupations

346
Job Postings
Requiring AI
Jan '23 - Oct '25

The Production Occupations Group involves operating, maintaining, and overseeing the machinery and processes used to manufacture goods. These roles include assembling, fabricating, and inspecting products to ensure quality and efficiency in production environments.

Production Workers, All Other accounted for 105 job postings in the area, making them the most frequently posted occupation within Production Occupations.

6-Digit Occupation	# of Postings
Production Workers, All Other	105
Inspectors, Testers, Sorters, Samplers, and Weighers	51
First-Line Supervisors of Production and Operating Workers	45
Electrical, Electronic, and Electromechanical Assemblers, Except Coil Winders, Tapers, and Finishers	26
Molders, Shapers, and Casters, Except Metal and Plastic	26

Quarterly job postings declined noticeably in Q1 2024 but rebounded to nearly the same level by Q3 2025.

Positions that list AI requirements most frequently require a high school diploma, with continuous improvement processes identified as the leading specialized skill and Microsoft Suite as the most commonly requested software skill.

Average Job Postings Requiring AI by Quarter

Postings by Education Level
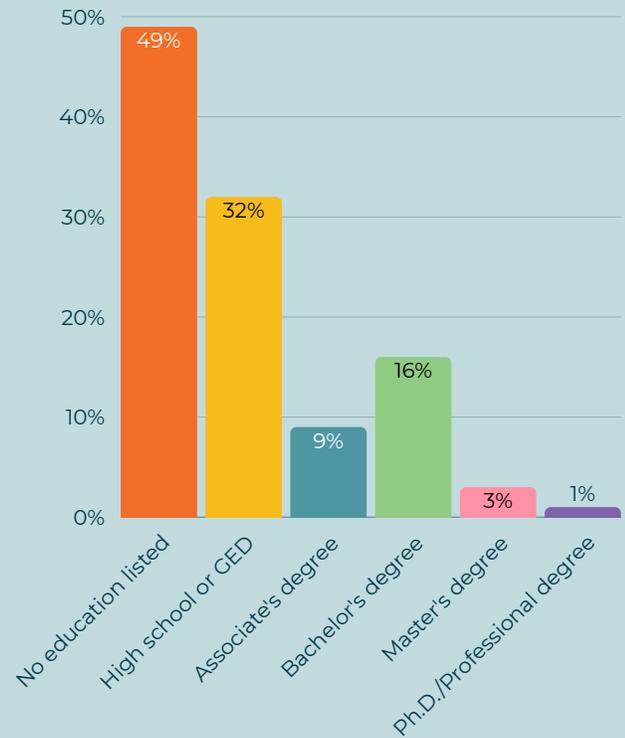
Top 10 Specialized Skills

1. Continuous Improvement Process
2. Robotic Systems
3. Automation
4. Autonomous Vehicles
5. Manufacturing Processes
6. Personal Protective Equipment
7. Machinery
8. Business Process
9. Supply Chain
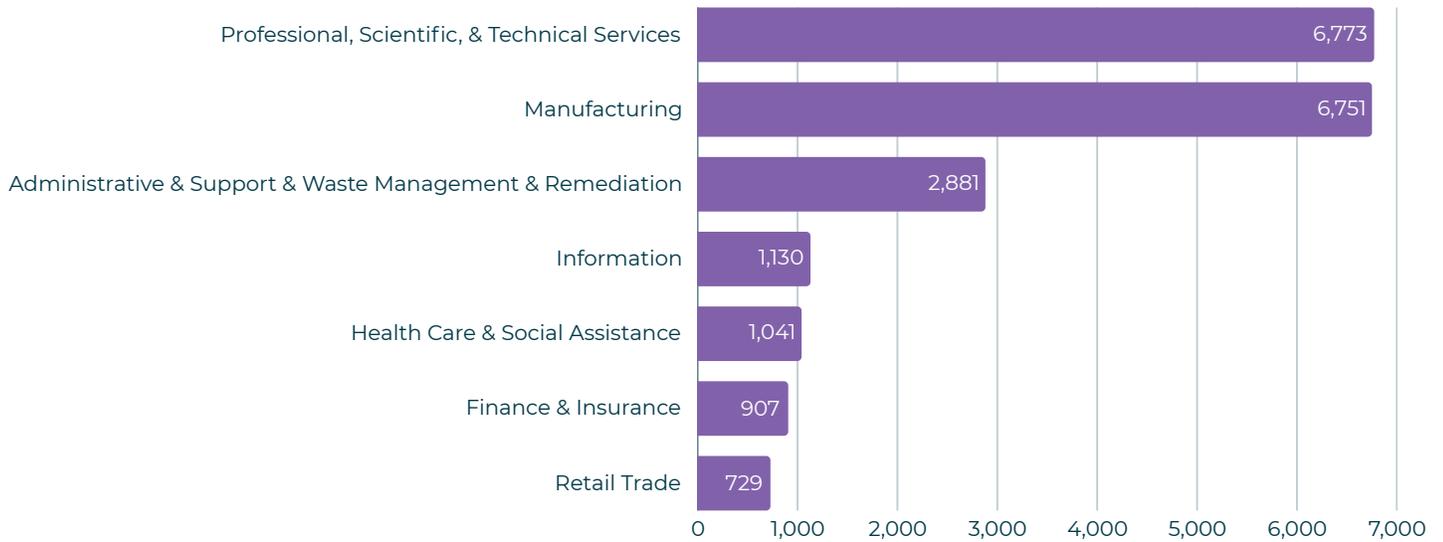10. Industrial Engineering

Top 10 Software Skills

1. Microsoft Word
2. Microsoft Excel
3. Microsoft Office
4. Microsoft Outlook
5. Microsoft PowerPoint
6. Robotic Automation Software
7. AutoCAD
8. SQL (Programming Language)
9. Microsoft 365
10. Python (Programming Language)

AI USE BY 2-DIGIT INDUSTRY NAICS CODE

2-Digit Industries

This section analyzes the top two-digit industries identified in Phase 1, focusing on the presence of AI-related skill requirements in job postings. The analysis compares postings that require AI skills with those that do not, highlighting differences in hiring patterns and illustrating how AI adoption varies across industries.
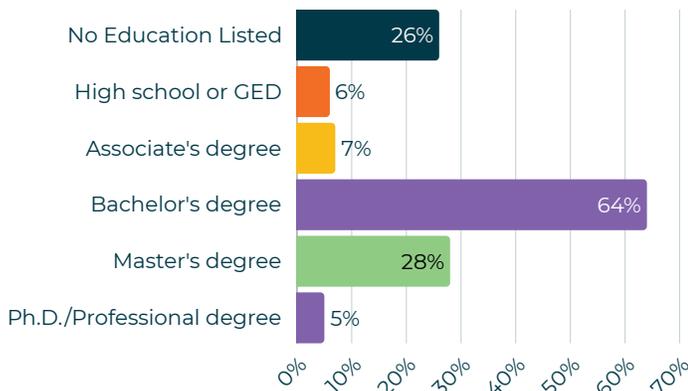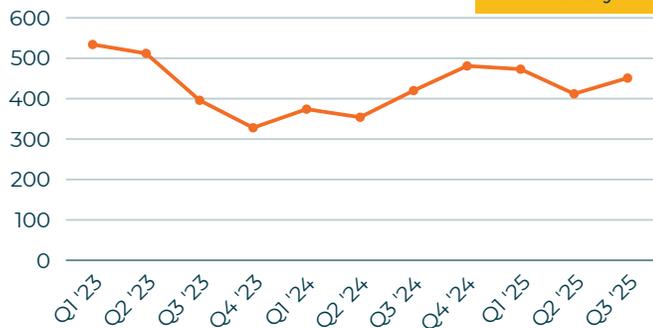
Top 2-Digit Industries with AI by Unique Postings

Industry	Postings
Professional, Scientific, & Technical Services	6,773
Manufacturing	6,751
Administrative & Support & Waste Management & Remediation	2,881
Information	1,130
Health Care & Social Assistance	1,041
Finance & Insurance	907
Retail Trade	729

Professional, Scientific, and Technical Services

Postings Requiring AI Skills

6,772 Postings

$138,112 Median Advertised Salary

Line chart (Q1 '23 – Q3 '25), values ranging approximately 330 to 540.

Education	%
No Education Listed	26%
High school or GED	6%
Associate's degree	7%
Bachelor's degree	64%
Master's degree	28%
Ph.D./Professional degree	5%

All Postings

129,312 Postings

$72,064 Median Advertised Salary

Line chart (Q1 '23 – Q3 '25), values ranging approximately 6,700 to 13,000.

Education	%
No Education Listed	40%
High school or GED	15%
Associate's degree	7%
Bachelor's degree	44%
Master's degree	12%
Ph.D./Professional degree	2%
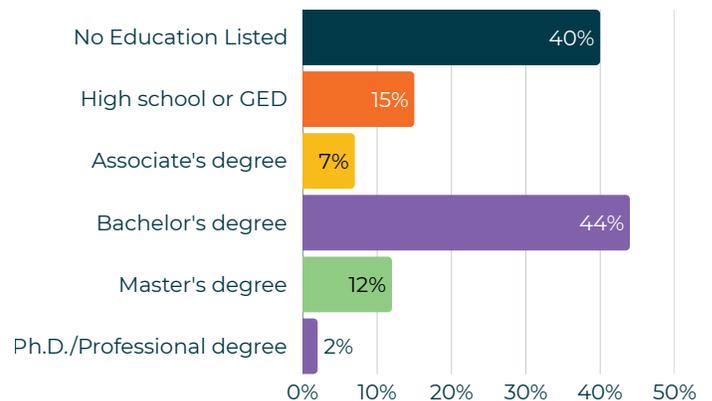
AI USE BY 2-DIGIT INDUSTRY NAICS CODE

Manufacturing

Postings Requiring AI Skills
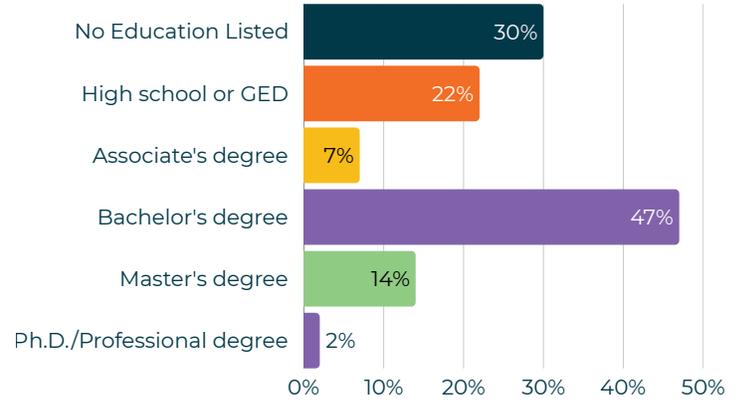
6,751 Postings

$128,256
Median Advertised Salary

Education	Percent
No Education Listed	16%
High school or GED	6%
Associate's degree	4%
Bachelor's degree	68%
Master's degree	39%
Ph.D./Professional degree	10%
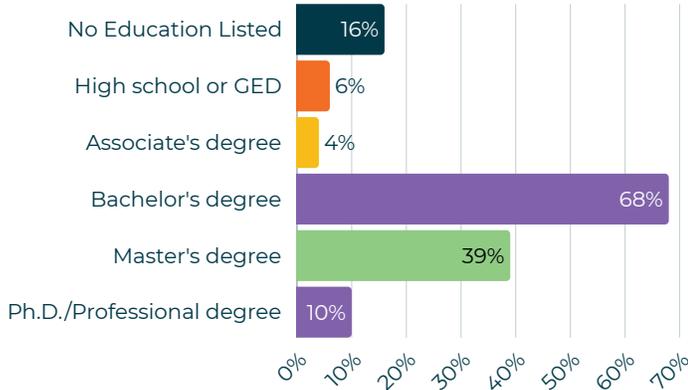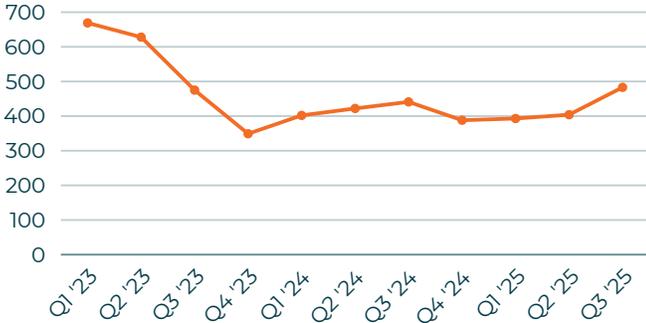
All Postings

128,729 Postings

$53,888
Median Advertised Salary

Education	Percent
No Education Listed	30%
High school or GED	22%
Associate's degree	7%
Bachelor's degree	47%
Master's degree	14%
Ph.D./Professional degree	2%

Administrative and Support and Waste Management and Remediation Services

Postings Requiring AI Skills

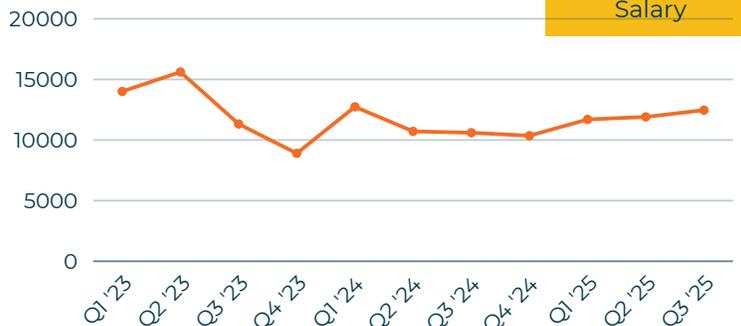**2,883 Postings**

$96,640
Median Advertised Salary

Education	Percent
No Education Listed	34%
High school or GED	9%
Associate's degree	6%
Bachelor's degree	51%
Master's degree	19%
Ph.D./Professional degree	5%
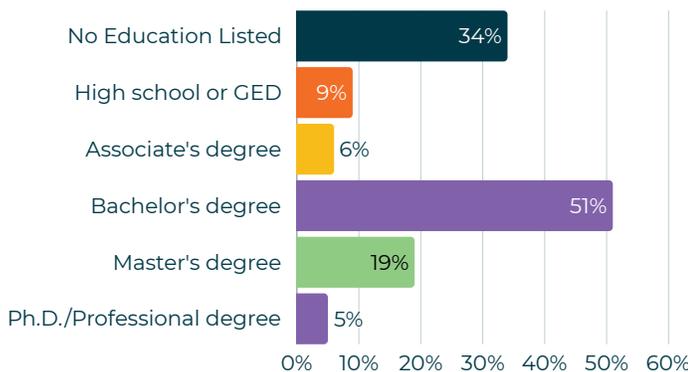
All Postings

185,896 Postings

$60,288
Median Advertised Salary

Education	Percent
No Education Listed	56%
High school or GED	18%
Associate's degree	6%
Bachelor's degree	21%
Master's degree	7%
Ph.D./Professional degree	2%
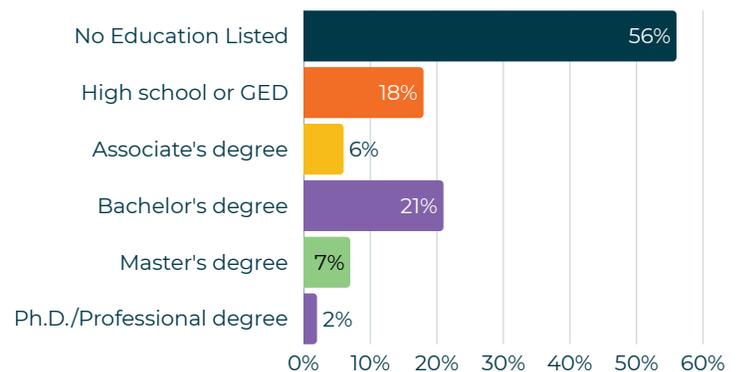
AI USE BY 2-DIGIT INDUSTRY NAICS CODE

Information

Postings Requiring AI Skills
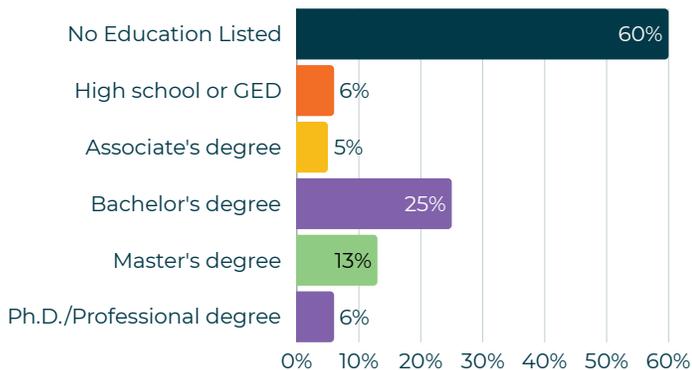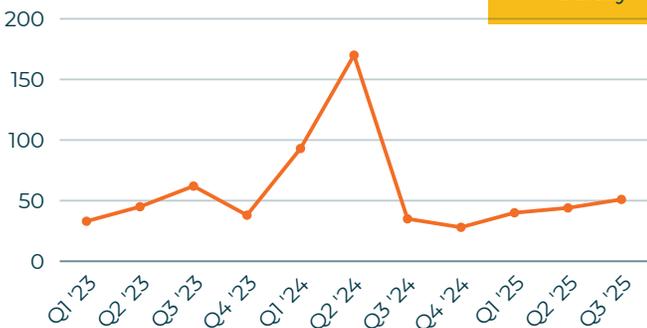
1,129 Postings

$120,192 Median Advertised Salary

Education	Percent
No Education Listed	22%
High school or GED	2%
Associate's degree	3%
Bachelor's degree	73%
Master's degree	32%
Ph.D./Professional degree	6%

All Postings

18,231 Postings

$61,056 Median Advertised Salary

Education	Percent
No Education Listed	36%
High school or GED	23%
Associate's degree	5%
Bachelor's degree	41%
Master's degree	9%
Ph.D./Professional degree	2%

Health Care and Social Assistance

Postings Requiring AI Skills

1,041 Postings

$82,816 Median Advertised Salary

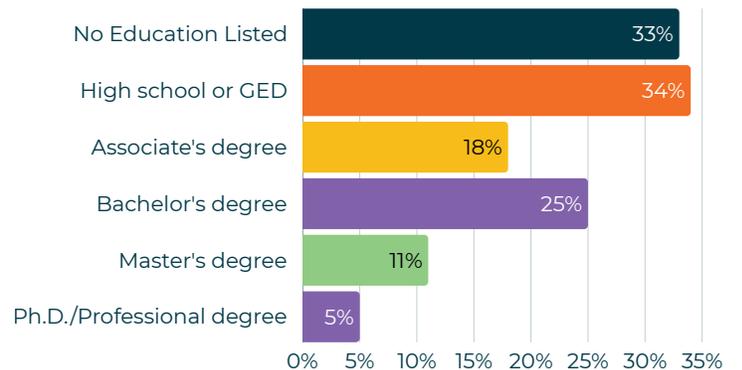| Education	Percent
No Education Listed	60%
High school or GED	6%
Associate's degree	5%
Bachelor's degree	25%
Master's degree	13%
Ph.D./Professional degree	6%

All Postings

214,540 Postings

$42,880 Median Advertised Salary

Education	Percent
No Education Listed	33%
High school or GED	34%
Associate's degree	18%
Bachelor's degree	25%
Master's degree	11%
Ph.D./Professional degree	5%
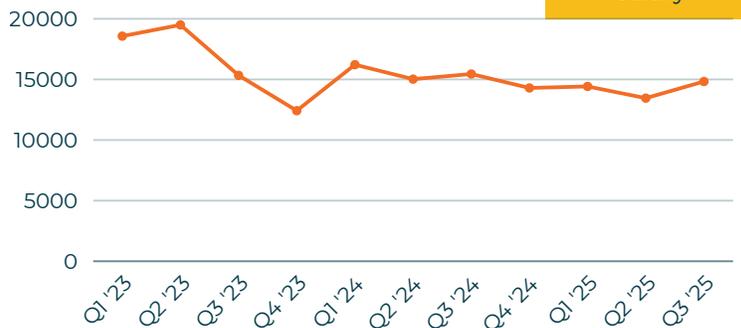
AI USE BY 2-DIGIT INDUSTRY NAICS CODE

Finance and Insurance

Postings Requiring AI Skills

905 Postings

| $105,728 |
| Median Advertised Salary |

No Education Listed	16%
High school or GED	13%
Associate's degree	3%
Bachelor's degree	70%
Master's degree	30%
Ph.D./Professional degree	7%
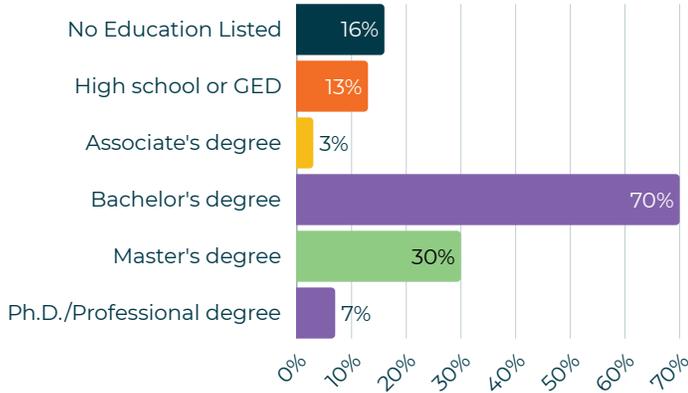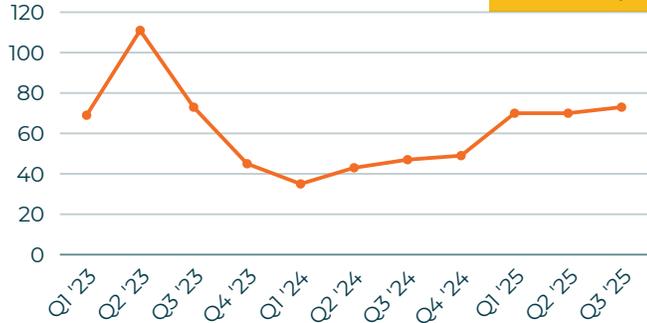
All Postings

45,842 Postings

| $74,624 |
| Median Advertised Salary |

No Education Listed	27%
High school or GED	31%
Associate's degree	8%
Bachelor's degree	47%
Master's degree	9%
Ph.D./Professional degree	2%
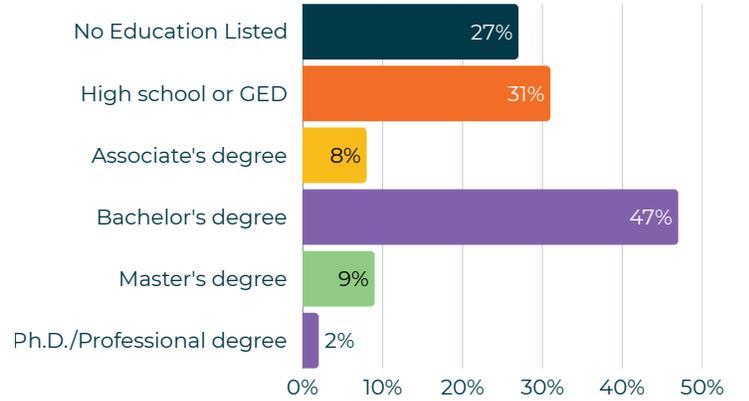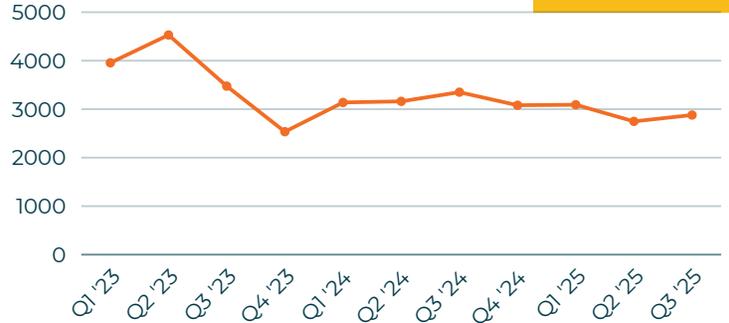
Retail Trade

Postings Requiring AI Skills

724 Postings

| $129,920 |
| Median Advertised Salary |

No Education Listed	31%
High school or GED	6%
Associate's degree	3%
Bachelor's degree	58%
Master's degree	31%
Ph.D./Professional degree	6%
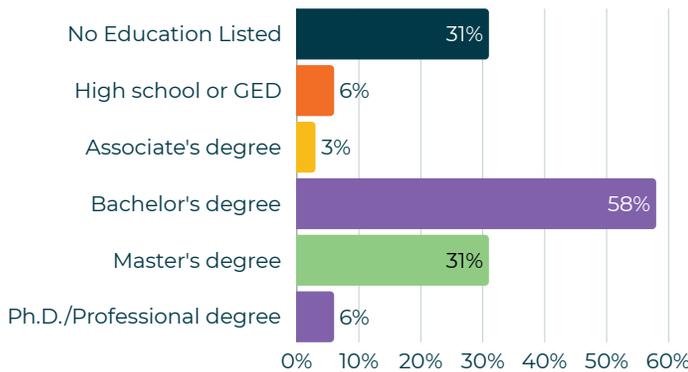
All Postings

128,478 Postings

| $38,016 |
| Median Advertised Salary |

No Education Listed	59%
High school or GED	32%
Associate's degree	3%
Bachelor's degree	9%
Master's degree	1%
Ph.D./Professional degree	1%
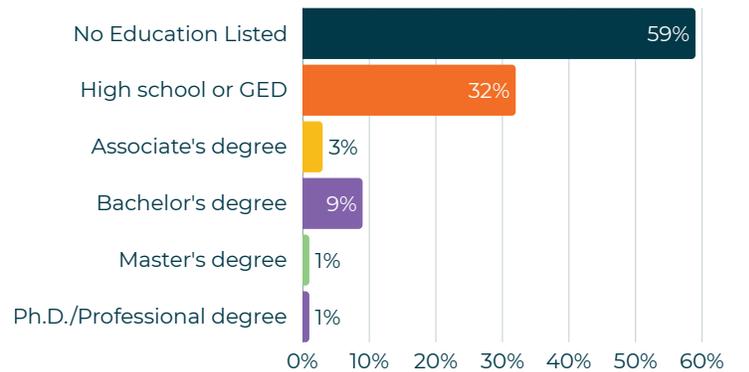
Artificial Intelligence (AI) Impact Assessment

PHASE 3: Interviews with Industry Representatives

PHASE 3: INTERVIEWS WITH INDUSTRY REPRESENTATIVES

LESSONS LEARNED

Introduction

WIN conducted four semi-structured interviews with professionals across diverse occupations who regularly use AI in their day-to-day responsibilities and broader organizational workflows. Participants were purposively selected based on their direct, sustained experience with AI-enabled tools and systems. Each interview followed a standardized interview protocol consisting of thirteen core questions, with follow-up probes employed as needed to clarify responses or explore emergent issues. The interview protocol was structured around four analytic domains: Context and Strategy; Impact on Jobs and Roles; Critical Skill Gaps; and Education and Workforce Preparedness. Interview data were analyzed using a thematic analysis approach, with recurring themes identified through iterative review. These themes were then examined alongside existing empirical and conceptual literature to assess areas of convergence and divergence between practitioner perspectives and established research on AI adoption, workforce impacts, and skill development.

Context and Strategy

Impact on Jobs and Roles

Critical Skill Gaps

Education and Workforce Preparedness

Theme 1: AI Diffusion Across Industries and Occupations or Accelerating and Widespread Adoption of Artificial Intelligence

AI adoption is described as accelerating and increasingly widespread across industries. Recent research indicates that firms' investments in AI are driven less by cost-cutting or workforce reduction and more by productivity and revenue growth, particularly through sales and operational improvements (Brookings, 2025). All four interviewees report meaningful AI use within their organizational settings, ranging from early-stage exploration to deeply embedded systems. The findings align with real-time evidence from the Business Trends and Outlook Survey (BTOS), which shows firm-level AI use rising from 3.7% to 5.4% between September 2023 and February 2024, with expected use reaching approximately 6.6% by early Fall 2024 (Bonney et al., 2024). Employment-weighted exposure is even higher, increasing from roughly 4.5% to nearly 9%, with projected growth to between 10% to 12% (Bonney et al., 2024).

LESSONS LEARNED

Employer demand for AI-related skills increased from approximately 0.5% of job postings in 2010 to 1.7% in 2024, representing a 240% increase (Galeano et al., 2025), with nearly 628,000 postings requiring at least one AI skill in 2024 alone (Galeano et al., 2025). This finding is further supported by data from the Macomb Community College service region, where job postings requiring AI-related skills increased from 0.5% in 2010 to 1.6% in 2024 and 2.0% in 2025. This data and associated chart are shown on page eleven. While this increase mirrors the findings by Galeano et al. (2025), the data suggests that this region has even greater demand than the baseline comparison. AI-driven transformation spans both white-collar and blue-collar occupations, as roles built around clearly defined and formulaic procedures are particularly susceptible to automation. Across contexts ranging from operating theatre or modern farming operations, work reliant on standardized protocols can be more readily replicated by AI systems (Wong, 2024).

AI in almost every aspect of our business... probably 25 to 30 different AI platforms... everything from generating emails and onboarding programs to predictive modeling and sales strategy." (Kirchner, 2025) and "We are sitting both sides of the house in terms of AI-the development of it in real time as well as how we are using it organizationally." (Bartos, 2025). Sectoral variation documented in the literature, with adoption highest in information intensive industries and lowest in construction and agriculture, supports these interview findings and indicates that although adoption levels differ across sectors, AI use has moved beyond experimentation and is becoming increasingly mainstream across industries (Bonney et al., 2024).

Theme 2: AI is Primarily Augmenting and Not Replacing the Workforce

All four interviewees and the literature emphasize that AI is primarily augmenting, rather than replacing, the workforce. While some routine and repetitive tasks are increasingly subject to automation, large-scale job elimination is not the dominant outcome. Interviewees consistently reinforced this perspective. As one interviewee stated, "We have no intention to eliminate roles. We're very focused on augmenting the existing workforce... we've almost doubled the size of our workforce since adopting AI" (Kirchner, 2025). Another interviewee similarly noted that "Most people are looking at ways to support or augment their work" emphasizing that augmentation rather than replacement is the prevailing approach (Roethele, 2025). Patrick further distinguished task automation from job loss, stating, "Anything repetitious will be automated... but that's different from eliminating all the jobs. It's about streamlining operations." (Dicks, 2025).

Empirical evidence supports this augmentation focused pattern. Data from the Business Trends and Outlook Survey show that 94.6% of AI-using firms reporting no change in employment levels, while only 2.6% reported employment declines (Bonney et al., 2024). In addition, firms that reported task replacement typically replaced only a small number of tasks rather than entire roles (Bonney et al., 2024). At the same time, the literature acknowledges uneven workforce impacts, particularly for younger workers and entry-level roles in highly exposed occupations. This is further supported by examining a breakdown of AI-related skills demand from employers by education level.

LESSONS LEARNED

As shown on page seven, job postings which require a bachelor's or master's degree have the highest occurrence rates of AI skills being mentioned. In these contexts, employment declines have occurred as AI automates specific tasks with an estimation of 40 percent of employers planning workforce reductions related to automation (Brynjolfsson et al., 2025; World Economic Forum, 2025).

> **"Most people are looking at ways to support or augment their work."**
>
> *-Jody Roethele*

Theme 3: Rising AI Skill Expectations for Entry-Level Workers

A strong and consistent theme across interviews is the growing expectation for AI skills among new graduates and entry-level workers. All four interviewees agree that AI literacy is no longer optional and should be considered a baseline requirement. Interviewees emphasized that new entrants are increasingly expected to arrive with practical AI competencies rather than develop those skills on the job. As one interviewee noted, "New graduates are expected to come in with a higher level of AI proficiency... understanding edge-to-cloud is critical." (Kirchner, 2025) and "AI proficiency is now the expectation, not the exception. Entry-level workers should already understand things like prompting and agent creation." (Bartos, 2025). AI skill demand has broadened across all education levels, including associate degree and certificate-based occupations, demonstrating that AI literacy is no longer confined to advanced-degree roles (Galeano et al., 2025).

At the same time, interviews and secondary sources highlight structural challenges for early career workers. As AI becomes more embedded in workplace processes, entry level job opportunities are declining and skill thresholds for entry are rising. Patrick highlighted this shift by stating, "Entry-level jobs are shrinking. Young adults have fewer opportunities, and that means the bar is higher coming in." (Dicks, 2025). Importantly, as AI becomes more embedded in the workplace, entry-level opportunities are declining, traditional career pathways, especially in white-collar fields, are being reshaped, and compensation expectations are adjusting downward (World Economic Forum, 2025).

> **"Entry-level jobs are shrinking. Young adults have fewer opportunities, and that means the bar is higher coming in."**
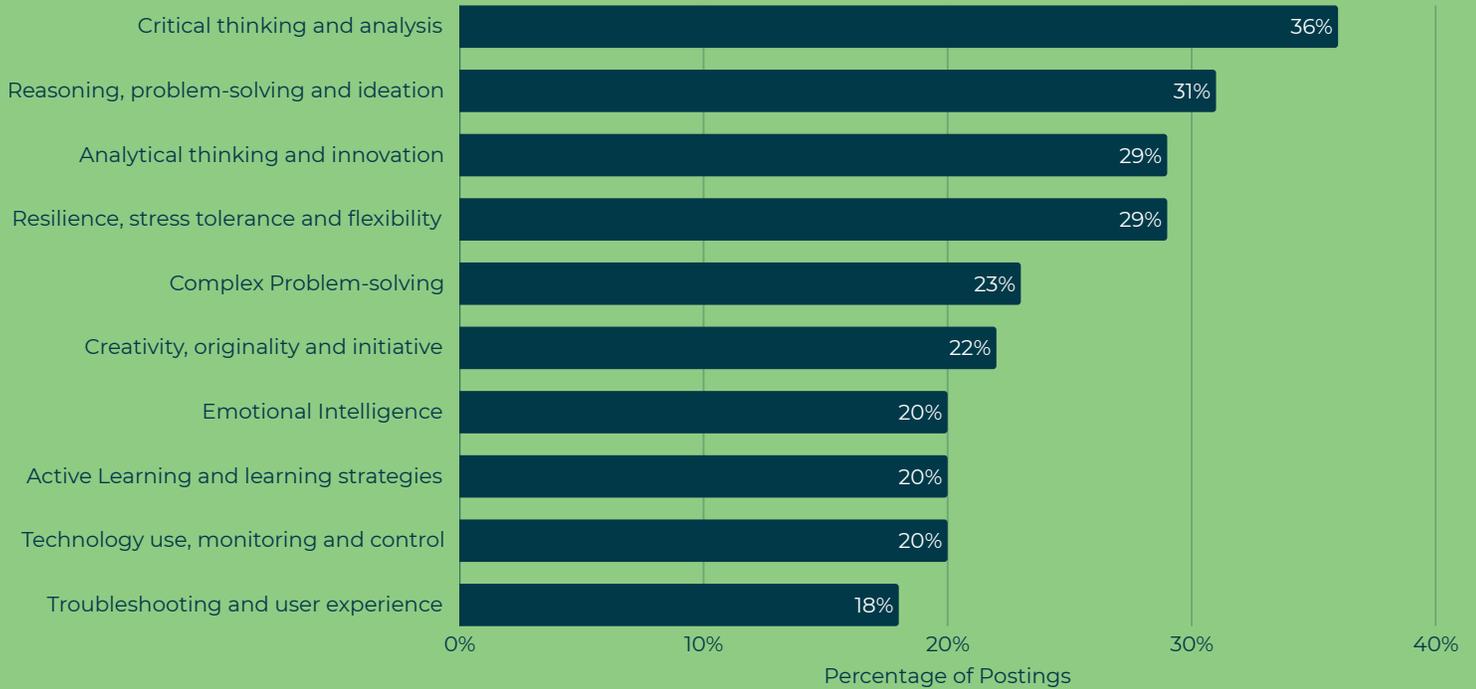>
> *-Dr. Dicks*

Theme 4: Critical Thinking as a Core Workforce Skill in an AI Driven Workplace

Beyond technical proficiency, interviewees unanimously emphasize critical thinking as a core, non-automatable skill in an AI-driven workplace. Critical thinking includes fact-checking, ethical reasoning, and the ability to evaluate AI outputs. Brooke underscores the importance of this capability by stating, "Critical thinking is absolutely necessary... knowing how to tease out whether outputs are true or hallucinations is huge." (Bartos, 2025), while Patrick adds, "Technology cannot reason ethically. Critical thinking is very hard to automate." (Dicks, 2025). These interview insights align with findings from the Macomb Community College Regional Industry IT Skill Needs Assessment which identified critical thinking and analysis as the most important emerging skill for the next five years (An et.al, 2024).
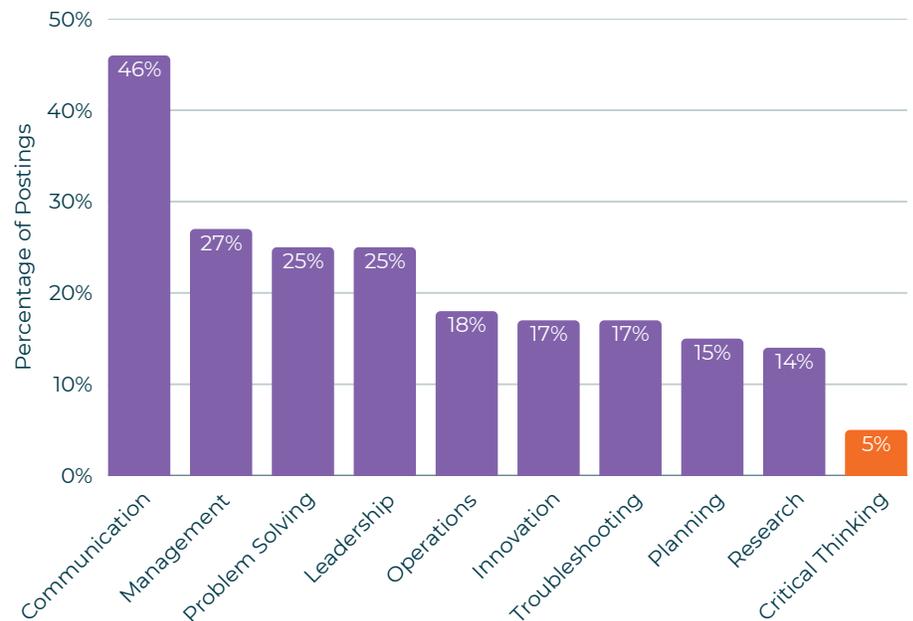
Analysis: Workforce Intelligence Network

LESSONS LEARNED

Figure 3.1. Which emerging skills do you consider as the most important for the next five years?

Skill	Percentage of Postings
Critical thinking and analysis	36%
Reasoning, problem-solving and ideation	31%
Analytical thinking and innovation	29%
Resilience, stress tolerance and flexibility	29%
Complex Problem-solving	23%
Creativity, originality and initiative	22%
Emotional Intelligence	20%
Active Learning and learning strategies	20%
Technology use, monitoring and control	20%
Troubleshooting and user experience	18%

Interestingly, these statements stand in contrast to the most recent job postings data for Artificial Intelligence-related jobs. Between January 2023 and October 2025, only 5% of these job postings mentioned Critical Thinking as a "Top Common Skill," placing it as the 35th most posted common skill and well below the tenth most posted common skill, Sales.
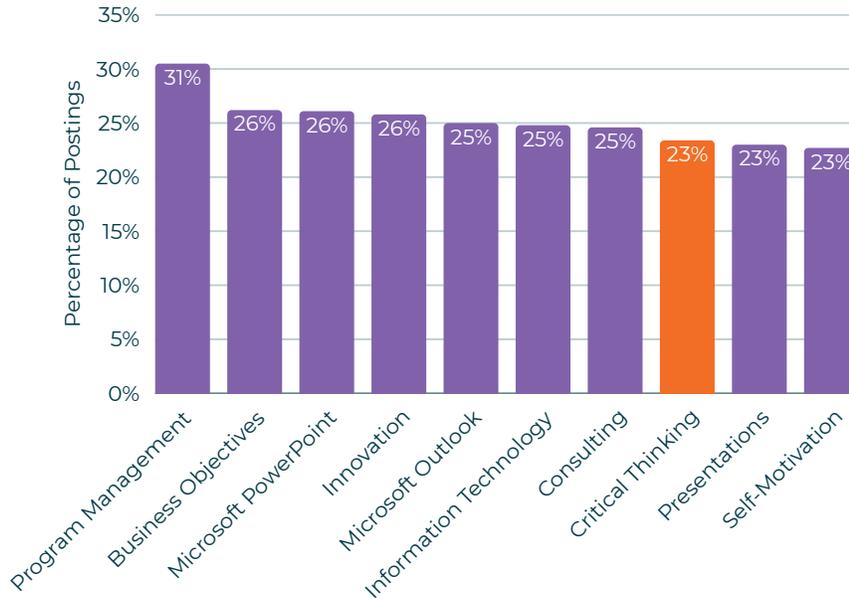
However, Critical Thinking is the eighth highest skill when sorted by "fastest growing" among the same data and is characterized as "Rapidly Growing" relative to the market.

Figure 3.2. Top Posted Common Skills in Artificial Intelligence Related Jobs

Skill	Percentage of Postings
Communication	46%
Management	27%
Problem Solving	25%
Leadership	25%
Operations	18%
Innovation	17%
Troubleshooting	17%
Planning	15%
Research	14%
Critical Thinking	5%

Data Source: Lightcast (2025) Analysis: Workforce Intelligence Network

LESSONS LEARNED

Figure 3.3. Top Posted Common Skills Ranked by Fastest Growing

The broader literature further cautions that increased reliance on AI driven decision making may constrain employee learning and skill development. When algorithmic systems automate decisions or obscure how outcomes are generated, opportunities for workers to learn from mistakes and refine judgment may be reduced. Limited transparency in algorithmic processes further constrains employee understanding and development, reinforcing the importance of critical thinking as a complementary human capability in AI enabled work environments (Hosseini et al., 2023).

Theme 5: Adaptability and Learning Agility

Adaptability, curiosity, and a willingness to experiment also emerge as essential workforce traits across interviews. Interviewees repeatedly highlight the value of workers who are willing to learn, test new tools, and evolve alongside rapidly changing technologies. As Matt explains, "We want people who are fearless to explore—people who are curious and take initiative" (Kirchner, 2025), while Brooke notes, "There will be somebody behind you that is curious, willing to learn, willing to experiment, and wanting to be on the forefront of what's next." (Bartos, 2025). Patrick reinforces the importance of adaptability by stating, "The biggest thing is adaptability—understanding how things work and being open to learning as technology changes." (Dicks, 2025). These perspectives align with evidence that many firms are still experimenting with AI, with over half reporting no organizational changes yet, indicating an ongoing learning and adjustment phase (Bonney et al., 2024). Demand for AI-related skills varies widely by occupation and education level, underscoring the importance of adaptability as AI expands beyond traditional technology roles (Galeano et al., 2025).

"We want people who are fearless to explore— people who are curious and take initiative."

-Matt Kirchner

LESSONS LEARNED

Theme 6: Security, Privacy, and Ethical Use of Artificial Intelligence

"Most models are built around a white, Western male lens… understanding where biases come into play and how to combat them is big."

-Brooke Bartos

Security, privacy, and ethical use of artificial intelligence emerged as a consistent theme across all interviews. Interviewees raised concerns about data security, ethical reasoning, and bias mitigation, particularly in the context of integrating AI tools into organizational workflows. These concerns align closely with the broader literature, which highlights risks such as hallucinations, embedded bias, and ethical challenges associated with large language models and generative AI systems (Wong, 2024). Issues related to bias, privacy, and data protection were echoed throughout both interview findings and existing research. As Brooke noted, "Most models are built around a white, Western male lens… understanding where biases come into play and how to combat them is big." (Bartos, 2025).

Interviewees also cautioned against uncritical reliance on AI generated outputs and emphasized the importance of human oversight. Jody emphasized the need for human oversight, stating, "It's like having an intern—you have to proof everything that comes out of AI. We never just run something through AI and send it out." (Roethele, 2025), while Matt reinforced the importance of safeguards by noting, "Understanding privacy and data protection is fundamental." (Kirchner, 2025). These interview insights are reflected in firm-reported barriers to AI adoption, with privacy, security, and bias cited as ongoing challenges (Bonney et al., 2024).

Theme 7: The Need for Upskilling and Reskilling in an AI-Driven Workforce

Both the interviews and the literature underscore the need for a combined approach to upskilling and reskilling as AI continues to spread across occupations. Interviewees recognize that while some workers will expand and deepen skills within their current roles, while others will need to transition into new positions as job requirements evolve. Brooke captures this dual challenge by stating, "Upskilling is going to be necessary for everyone just to keep their jobs… but there's also a big opportunity for reskilling into new roles" (Bartos, 2025). Jody and Patrick reinforce this perspective by pointing to organizational constraints and resistance to change that can complicate these efforts (Roethele, 2025; Dicks, 2025).

The literature similarly highlights the importance of both strategies. The growing demand for AI skills and in high school and associate degree occupations signals a need to upskill incumbent workers, particularly those trained through certificates and associate degree programs. At the same time, the concentration of high-growth AI demand within Computer and Mathematical occupations indicates that reskilling pathways into technical roles remain essential (Galeano et al., 2025). Despite the potential for AI to displace some roles, existing research also suggests that AI adoption may expand job access and reshape the labor market through greater emphasis on upskilling and alternative training models such as apprenticeships (World Economic Forum, 2025). These approaches are especially important as employers anticipate workforce reductions due to automation and as global competition intensifies, shaping both salary expectations and job market dynamics for younger workers (Briggs & Kodnani, 2023).
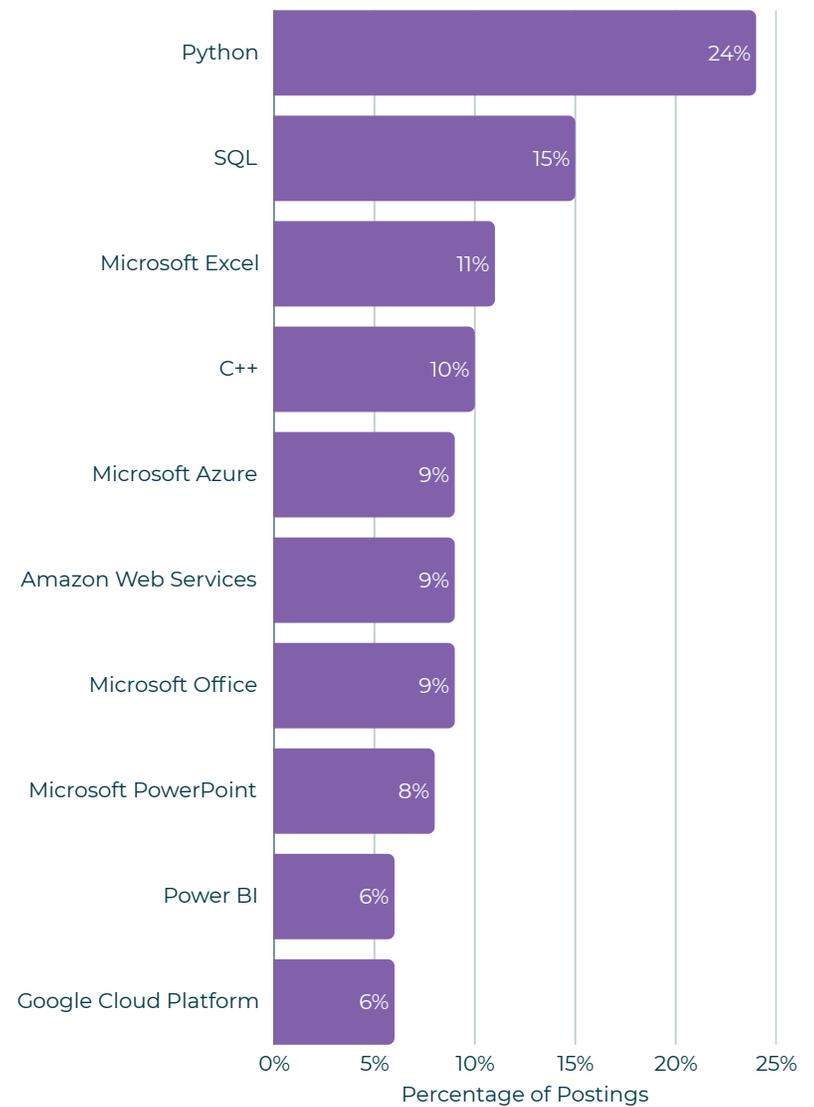
LESSONS LEARNED

Theme 8: Technical Foundations Supporting AI Adoption and Workforce Change

The final theme emerging from both the interviews and the literature is the importance of strong technical foundations. While specific technical needs vary by role, there is a shared emphasis on core digital skills such as Python, AI agent development, cloud fundamentals, and data security awareness. Research shows that AI adoption is shifting employment toward more educated and technically skilled workers, with AI-related skill often associated with higher wages (Babina et al., 2024). At the same time, AI skills often command higher wages, they are also associated with lower employment in occupations with high exposure and low complementarity to AI, creating challenges for youth and some IT specialists (Jaumotte et al., 2026).

The literature highlights that common AI business applications include marketing automation, virtual agents and chatbots, natural language processing, and data and text analytics, alongside complementary investments in cloud services, storage, and workflow development (Bonney et al., 2024). Organizational adjustments supporting AI adoption frequently involve workforce training, redesigned workflows, cloud infrastructure, and improved data management practices (Bonney et al., 2024). Demand for AI skills such as artificial intelligence, machine learning, predictive analytics, generative AI, natural language processing, and Apache Spark spans education levels (Galeano et al., 2025), reinforcing interview insights that highlight the growing importance of technical foundations. As one interviewee noted, "There's a massive opportunity for Python knowledge and being able to build and deploy AI agents." (Bartos, 2025), Another emphasizes that "Only about five percent of our team needs to understand the backend, but everyone needs to understand data security and how AI fits into the system." (Kirchner, 2025). A third interviewee uncensored the breadth of required technical knowledge, stating that "People need to understand how programming languages work across applications—Python, R, databases, cloud systems." (Dicks, 2025).

Figure 3.4. Top Posted Software Skills in Artificial Intelligence Related Jobs

Skill	Percentage of Postings
Python	24%
SQL	15%
Microsoft Excel	11%
C++	10%
Microsoft Azure	9%
Amazon Web Services	9%
Microsoft Office	9%
Microsoft PowerPoint	8%
Power BI	6%
Google Cloud Platform	6%

LESSONS LEARNED

Conclusion

This review highlights that while AI adoption is accelerating across industries, its impacts on jobs, skills, and career pathways remain complex and uneven. Interview findings and much of the current literature suggest that AI is primarily augmenting work rather than replacing it, with organizations using AI to enhance productivity, streamline tasks, and support growth. However, contrasting evidence points to emerging challenges, particularly for entry-level workers, younger cohorts, and occupations with high exposure to automation. Given the rapid pace of adoption and the limited availability of longitudinal research, substantial uncertainty remains regarding long-term labor market impacts, underscoring the need for continued research and data-driven monitoring.

Despite these uncertainties, clear and consistent themes emerge across interviews, labor market data, and the existing literature that point to actionable workforce implications. These themes include rising expectations for AI literacy across education levels, the central importance of human skills such as critical thinking, ethical reasoning, and adaptability, and the growing need for both upskilling and reskilling as occupational roles evolve. In response, the following Workforce Development Recommendations draw on practitioner insights, empirical evidence, and regional workforce data to support community colleges and education partners in preparing learners for an AI-enabled economy while remaining responsive to ongoing change and emerging research.

LESSONS LEARNED

Recommendations

1. Embed AI Literacy as a Core Workforce Competency
AI literacy should be treated as a foundational learning outcome across all programs, rather than a specialized or optional skill. Community colleges can integrate baseline AI instruction, similar to existing computer literacy requirements, into general education and workforce curricula. Instruction should introduce how AI systems function, responsible and ethical use, effective prompting, and techniques for verifying AI-generated outputs.

2. Prioritize Critical Thinking, Ethical Reasoning & Fact-Checking Skills
Critical thinking, ethical reasoning, and fact-checking are essential competencies in AI-enabled workplaces and should be central to instructional design. Institutions may emphasize these skills through curriculum that strengthens analytical reasoning and ethical decision-making in AI-supported environments. Scenario-based learning, where students evaluate and validate AI outputs, can help reinforce these competencies while ensuring employability skills remain a core component of workforce education.

3. Develop Training Pathways for Both Upskilling and Reskilling
Colleges should design flexible training pathways that support both upskilling and reskilling. Upskilling programs can help incumbent workers integrate AI into their existing roles, while reskilling pathways can support learners transitioning into new occupations as automation reshapes job demand.

4. Strengthen Technical Foundations and Cross Functional Digital Skills
Foundational digital skills should be scaffolded across programs to support a wide range of learners. Community colleges can offer tiered skill pathways, beginning with cloud fundamentals, privacy and security awareness, device literacy, and navigation across digital platforms. Intermediate and advanced coursework can build toward Python, SQL, AI workflows, cybersecurity, automation systems, and edge-to-cloud architectures.

5. Encourage a Culture of Curiosity and Experimentation
Educational environments should foster curiosity, experimentation, and confidence in using AI tools. Colleges can provide lab and simulation learning environments where students safely explore AI applications without fear of failure. Microlearning opportunities and low-stakes challenges can encourage experimentation, while instructional practices that reward creativity and initiative help students build adaptability and resilience.

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