Fostering AI-Ready Caring for Communities CTE Pipelines

Implications for Policy, Practice & Research

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Introduction

The transformation of the American workforce by artificial intelligence evokes parallels to historic innovations such as Madam Curie's pioneering mobile X-Ray technology during World War I, which subsequently evolved into standard equipment across hospital systems (Carswell, 2017; Cazzaniga et al., 2024; Ellingrud et al., 2023; Makridakis, 2017).

There is widespread speculation that AI will generate new fields of work, more jobs, and overall economic growth (Shine, 2023; Stewart et al., 2015), but this is far from certain (Frey & Osborne, 2017). Indeed, there is little consensus on the degree to which AI might change the number of available jobs (Hatzius et al., 2023; Kessler, 2023).

More consensus exists regarding the qualitative transformation of employment composition. Established research indicates that technological progress consistently elevates demand for workers proficient in non-routine, cognitive, and social capabilities (Acemoglu & Autor, 2011; Acemoglu & Restrepo, 2019). Whether current artificial intelligence adoption will intensify this trend remains undetermined (Bick et al., 2024). Furthermore, institutions providing career education confront considerable challenges in identifying effective methodologies to equip students with competencies required for future workplace environments.

The Education Research & Opportunity Center at the University of Tennessee Knoxville, Advance CTE, and ACTE are partnering on a series of briefs focused on the intersection of AI, workforce development, and community college career and technical education (CTE). This brief focuses on how current and projected developments in AI are revolutionizing occupations within the Caring for Communities CTE Career Cluster, the potential exposure of Caring for Communities occupations to AI-driven workforce automation, and how Caring for Communities CTE providers can prepare their learners for a workplace increasingly shaped by AI technologies.

What Occupations Are Within the Caring for Communities Cluster Grouping?

The National Career Clusters® Framework managed by Advance CTE provides a shared structure and language for CTE program design across the United States. In 2012, 94% of states had adopted the Career Cluster framework. Advance CTE released a modernized Career Clusters Framework designed to serve as a bridge between education and work and a central building block for consistently designed and high-quality CTE programs. This framework includes 6 Career Cluster Groupings that serve act as purpose-driven meta-sectors that help guide young people toward Clusters that are aligned with their interests, their sense of purpose, and the impact they want to make on their communities.

The Caring for Communities CTE Career Cluster Grouping consists of the Education, Healthcare and Human Services, and Public Service and Safety Career Clusters. Fields of study within the Education Career Cluster appeal to students who are dedicated to fostering learning through instruction for both young children and adults. Sub-Clusters within the broader Education Cluster include Early Childhood Development, Education Administration & Leadership, Teaching, Training & Facilitation, and Learning Support & Community Engagement. Occupations within the Education Cluster include, but are not limited to, Special Education Teacher, School Administrator, School Counselor, Academic Advisor, Instructional Coordinator, and Adult Educator.

The Caring for Communities CTE Career Cluster Grouping is also home to the Healthcare and Human Services Career Cluster, which appeals to learners interested in fostering and promoting whole health in individuals and communities through a diverse array of services. Sub-Clusters within Healthcare and Human Service include Behavioral & Mental Health, Biotechnology Research & Development, Community & Social Services, Health Data & Administration, Personal Care Services, and Physical Health. Occupations within the Healthcare & Human Services Career Cluster include, but are not limited to, Medical and Health Service Managers, Community Health Workers, Registered Nurses, and Nursing and Physician Assistants.

The Public Service and Safety Career Cluster is also within the Caring for Communities CTE Career Cluster Grouping. Public Service and Safety appeals to students wanting roles in local, state, and federal government including legal and justice systems, and public security and military operations. Sub-Clusters within Public Service and Safety include Emergency Response, Judicial Systems, Local, State, & Federal Service, Military and National Security, and Public Safety. Occupations within the Public Service and Safety Career Cluster include and are not limited to, Paralegal, Firefighter, Paramedic, Police Officer, Crime Scene Analyst, Transportation Security Officer, and Public Health Worker.

Caring for Communities Clusters and Sub-Clusters

Education

Early Childhood Development
Education Administration & Leadership
Teaching, Training & Facilitation
Learning Support & Community Engagement

Healthcare and Human Services

Behavioral & Mental Health
Biotechnology Research & Development
Community & Social Services
Health Data & Administration
Personal Care Services
Physical Health

Public Service and Safety

Emergency Response
Judicial Systems, Local, State, & Federal Service
Military and National Security
Public Safety

How is AI Revolutionizing Caring for Communities' Occupations?

Education

AI is likely to have massive impacts on occupations and industries aligned with Education programs. In Early Childhood Development, AI technologies are fundamentally reshaping personalized learning paths that adapt to each child's unique developmental pace, providing customized content that addresses specific learning needs while simultaneously collecting valuable developmental data. Meanwhile, AI-powered toys and interactive devices are creating novel forms of engagement that respond to children's behaviors and speech patterns, potentially altering traditional play-based learning and social interaction models (Su & Yang, 2022).

In Teaching, Training, and Facilitation, AI is rapidly transforming educational practices through sophisticated technological integration. Secondary and postsecondary institutions are deploying AI-powered learning management systems that analyze student performance data to identify knowledge gaps and automatically adjust curriculum delivery, enabling truly personalized instruction at scale. Several prominent AI educational platforms demonstrate this transformation (U.S. Department of Education, 2023). For example, Khan Academy's Khanmigo functions as an AI-powered tutor that creates personalized learning pathways while providing real-time feedback and valuable insights for educators (Khan Academy, 2025). Similarly, Duolingo employs adaptive learning algorithms for language instruction, automatically adjusting difficulty levels based on individual progress and delivering immediate feedback (Duolingo, 2025). Quizlet also utilizes artificial intelligence to facilitate custom flashcard and quiz creation, enhancing memorization through spaced repetition and other evidence-based techniques (Quizlet, 2025).

This all said, there are reasons to believe AI is unlikely to fundamentally alter teaching and learning. When she met with us earlier this year, Kristen DiCerbo, Chief Learning Officer for Khan Academy, argued that there is a long history of technology failing to disrupt higher education. She compared AI to a prior tech disrupter: Massive Open Online Courses (MOOCs) which many experts and education observers believed would entirely eliminate higher education. Of course, those dire projections failed to materialize, chiefly because education is fundamentally human and requires regular interpersonal connection and mentorship. DiCerbo argued that learners value this connection and mentorship over computer simulations.

According to DiCerbo, "a human high five beats computer confetti."

AI is also fundamentally transforming Educational Administration and Leadership by introducing unprecedented efficiency and data-driven decision-making capabilities.

INTERVIEW SPOTLIGHT

"We are trying to bring in reflective practices that center the 5 C's (communication, collaboration, critical thinking, creativity, and compassion) for our performance task assessments. Imagine kids reflecting, writing, putting that into the cadence. And then with AI summarize and/or synthesize where the kids are at on their emotional intelligence through the 5 C's. This creates feedback loops to the student, but also to the teacher. The teacher can then use that data to improve their instruction and pedagogy. We could not do that without AI, right. Because there is a lot of data, there's a lot of information about each student."

Michael Matsuda, Superintendent, 7-12 in Southern California

School leaders now leverage AI-powered analytics to identify learning trends, optimize resource allocation, and predict student outcomes with remarkable precision. Administrative tasks that once consumed hours—such as scheduling, attendance tracking, and budget management—are increasingly automated, allowing educational leaders to redirect their focus toward strategic initiatives and instructional leadership (Karakose & Tülübas, 2024). Carnegie Mellon University started using AI chatbots to assist students' queries, thus automating a managerial task. Personalized learning pathways, facilitated by AI algorithms that analyze individual student performance data, enable administrators to implement targeted interventions and support systems at scale (Abdallah & Abdallah, 2024).

Michael Matsuda discussed how his school has implemented eKanedce, a non-profit digital platform that supports educators, counselors, and administrators in sustaining "personalized learning paths, and seamless course management ...to improve engagement, track progress, and achieve academic success" (eKanendce, 2025). Furthermore, AI-enhanced communication platforms streamline parent-teacher interactions and community engagement, fostering stronger educational partnerships. For administrative efficiency, platforms such as Google Classroom and Microsoft Teams for Education incorporate AI to streamline assessment processes, organize educational resources, and monitor student performance metrics.

INTERVIEW SPOTLIGHT

"I'm leading something called the Institute on AI Pedagogy and the curriculum. It's interesting to see the variety of responses right now, there's not a standardized approach to how to incorporate AI, or what, or even around notions of policy, like some campuses are like. We want innovation on our campus, and if we put a policy in place, then there's guardrails, and then people are going to be afraid to move into the more innovative spaces because they're afraid they're leaving the policy that has been, you know, put forth. So some campuses are saying no policy. It's up to faculty to come up with their own policy on their syllabus, or maybe even down to the specific assignment level."

Dr. Edward Watson, Vice President for Digital Innovations of Colleges and Universities (AAC&U)

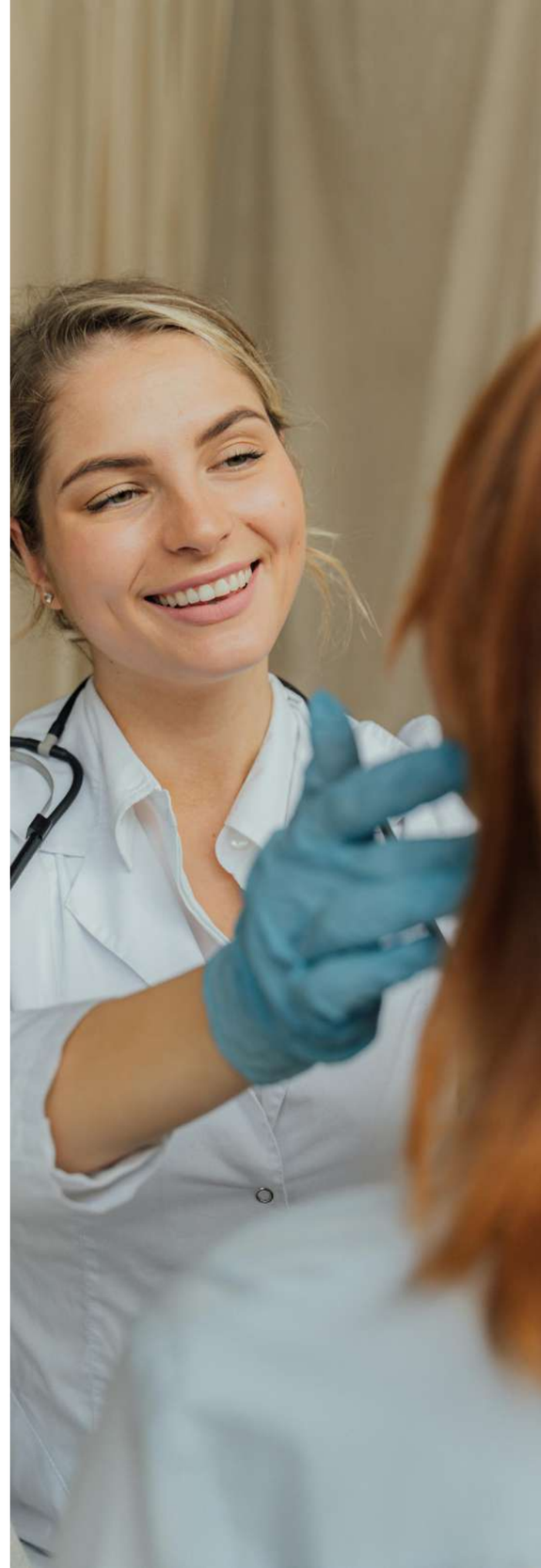
Healthcare and Human Services

Artificial intelligence is revolutionizing Healthcare and Human Services occupations through advanced technologies and innovative solutions. These developments enhance diagnostic precision, enable tailored care strategies, and streamline operational processes. In the healthcare sector specifically, AI systems evaluate complex medical data to detect diseases with greater accuracy and at earlier stages (Rajpal et al., 2023). Furthermore, virtual health assistants now complement healthcare professionals by providing ongoing support, addressing patient questions, and enabling remote monitoring of chronic conditions (Curtis et al., 2021).

Healthcare professionals such as nurses are increasingly adopting natural language processing technologies to automate clinical documentation and reduce administrative workload.

As automated notetaking becomes standard practice, educational programs must adapt their curriculum accordingly. While teaching accurate documentation remains essential, nursing students now require additional training to evaluate the quality and accuracy of AI-generated clinical notes (Sublett & Rimbach-Jones, 2024).

The importance of AI support for nursing documentation is underscored by Buchanan et al. (2020), who found that approximately one-third of nurses' workdays are consumed by paperwork. Machine learning algorithms can now utilize nurses' documentation to identify at-risk patients and inform care decisions. Yale



New Haven Hospital exemplifies this approach through its implementation of the Rothman Index, a machine learning algorithm that aggregates comprehensive patient documentation to assess risk levels and recommend appropriate care interventions (Robert, 2019).

AI's impact on nursing extends beyond documentation. Since 2014, the National Science Foundation has sponsored research initiatives exploring the integration of robotics with nursing activities (Robert, 2019). A notable example is the collaboration between Duke University's School of Nursing and Engineering departments, which resulted in the prototype Tele-Robotic Intelligent Nursing Assistant (TRINA). During testing, TRINA successfully completed 73% of assigned tasks, though its current design operates significantly slower than human nurses (Li et al., 2017). While TRINA remains in early developmental stages, its creation reinforces the projection that AI-powered robotic systems will increasingly feature in hospital and medical facility environments in the future.

Research indicates that the volume of radiological data continues to grow at a disproportionate rate, requiring radiologists to read and interpret images in merely 3-4 seconds each (Boland et al., 2009; Hosny et al., 2018; McDonald et al., 2015).

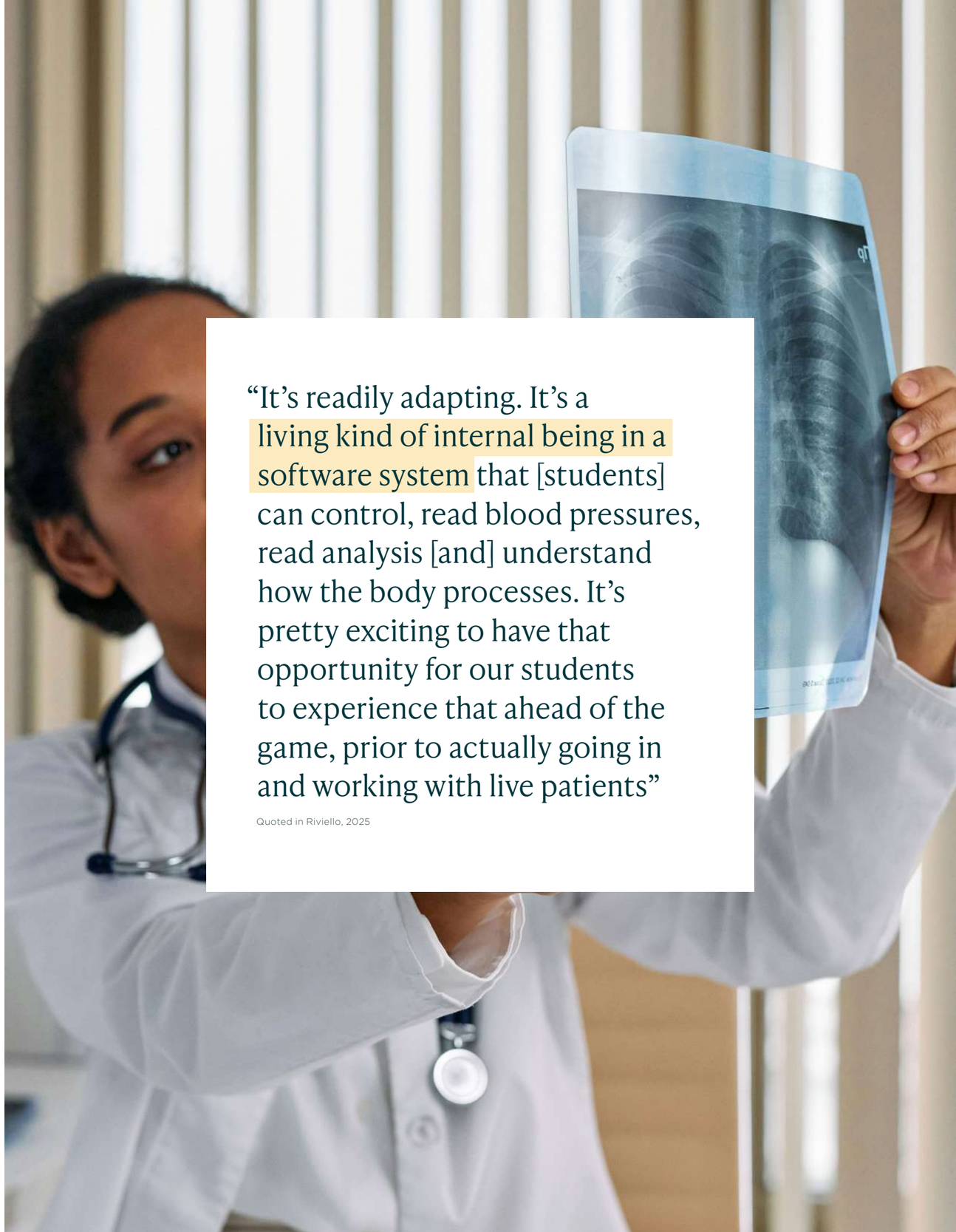
Given this substantial volume of imaging, AI demonstrates significant capacity to efficiently analyze images and identify potential concerns that might be overlooked during brief visual examinations (Thrall et al., 2018).

Current AI systems can effectively detect abnormalities in various diagnostic imaging modalities, including CT scans, MRIs, and X-rays, identifying critical conditions such as strokes or fractures in real-time (Bhandari, 2024). In oncology imaging specifically, AI learning algorithms have yielded positive results in identifying common cancer characteristics (Hosny et al., 2018). This technological advancement expedites patient treatment protocols and demonstrates potential to significantly reduce mortality rates across various conditions.

To prepare professionals for careers in the medical field, postsecondary education programs, particularly in nursing, have already begun adapting their curricula to incorporate emerging technologies.

These adaptations include implementing simulation-based learning environments for students to practice clinical skills under controlled conditions and deploying personalized AI learning systems that deliver individualized instruction tailored to student needs (Couper, 2024). Spartanburg Community College in South Carolina represents one of the few postsecondary institutions that has proactively integrated AI-powered software into nursing education programs. Michael Mikota, President of Spartanburg Community College, highlighted several significant benefits of incorporating AI technologies in classroom settings to enhance nursing preparation.

In the research and development sector of Healthcare and Human Services, AI is substantially accelerating pharmaceutical discovery and development. This acceleration leads to enhancements of drug productivity, clinical trials, and drug repurposing (Paul et al., 2021). In genome mapping research, AI technologies analyze extensive datasets to identify genetic markers, enabling healthcare practitioners to deliver diagnoses, treatments, and preventative interventions with unprecedented efficiency (Johnson et al., 2021).



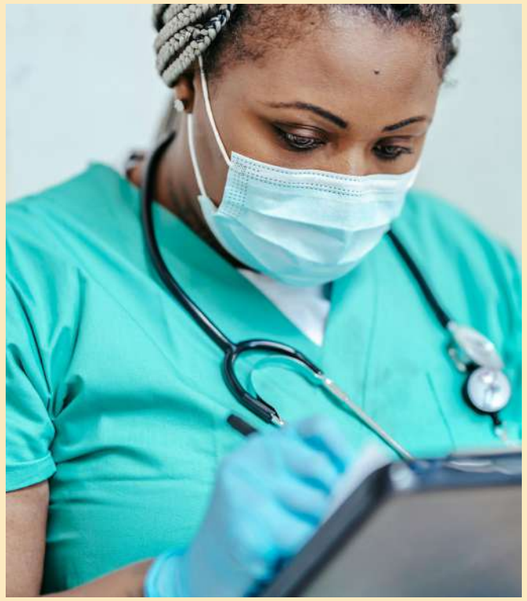
"It's readily adapting. It's a living kind of internal being in a software system that [students] can control, read blood pressures, read analysis [and] understand how the body processes. It's pretty exciting to have that opportunity for our students to experience that ahead of the game, prior to actually going in and working with live patients"

Quoted in Riviello, 2025

INTERVIEW SPOTLIGHT

“How do I teach you, for example, to write good nurses’ notes, or how do I teach you to recognize good nurses’ notes after a patient visit, when you don't have to write them yourself? In other words, how do I teach you to edit when you don't have to write them? AI will produce the draft. This is a real problem, right? Because nurses do spend a whole semester learning to write nurse's notes in a course called nurse's notes in college. However, nurses still have to recognize good and bad notes. Oh, no, AI forgot this. And so my suggestion is a pedagogical shift. Have the AI produce good, bad, and ugly nursing notes, and then have the students check them. If they can't recognize which ones are good, right? They can't pass because they do not have the skills.”

Dr. Jose Bowen, Senior Scholar, AAC&U



Artificial intelligence applications extend beyond disease diagnosis and medical research advancements to establish innovative approaches in counseling and mental health services. AI-powered mobile applications and wearable devices provide clinicians with enhanced capabilities for remote patient monitoring and support (Shajari et al., 2023). These monitoring technologies track critical indicators including vital signs, sleep patterns, activity levels, and speech patterns in real-world environments, resulting in more precise and personalized patient care interventions.

Once again, artificial intelligence is fundamentally transforming Healthcare and Human Services occupations by enhancing diagnostic capabilities, streamlining documentation processes, and expanding the scope of patient care delivery.

From machine learning algorithms that analyze vast amounts of radiological data in seconds to robotic nursing assistants and AI-powered mental health monitoring systems, these technological advances are addressing critical workforce challenges while improving patient outcomes. The integration of AI in healthcare education, exemplified by institutions like Spartanburg Community College, demonstrates the sector's commitment to preparing future professionals for an increasingly technology-driven environment.

The successful implementation of these AI technologies will ultimately depend on healthcare professionals' ability to adapt their skills and embrace these tools as valuable partners in delivering comprehensive patient care.

Public Service and Safety

Artificial intelligence is significantly transforming occupations and industries associated with Public Service and Safety programs. For example, law enforcement organizations are implementing AI-driven predictive analytics to strengthen crime prevention initiatives, demonstrating how machine learning algorithms can effectively identify potential high-risk areas and optimize resource allocation (Bryne & Marx, 2011). One example of this can be seen in Chicago, Baltimore and Miam-Dade where they have implemented AI predictive analytics, such as ShotSpotter; an AI-predictive analytic that sense gun shots and automatically make the 911 call resulting in faster dispatch and response times (Rogers, 2025). Meanwhile, emergency medical services are integrating AI technologies to enhance emergency response times and dispatch efficiency. For example, AI can analyze emergency calls in real time by examining speech patterns, background noises, and breathing irregularities. This capability is demonstrated by the Danish company Corti, whose AI assistant monitors emergency calls and detects cardiac arrests with 95% accuracy (Jezard, 2018).

Firefighters and fire departments are increasingly incorporating AI into their protocols.

Recent studies show that machine learning can identify the stages of fire development in residential rooms with 85% accuracy (Fang et al., 2021). Research by Su et al. (2021) notes that while performance-based design, an engineering approach that ensure building structures are to fire codes and safety, has been widely accepted for the last 30 years, new AI methods enable firefighters

to predict smoke motion, resulting in quicker and safer egress times. AI is similarly transforming police work and crime scene investigations. With a majority of police departments requiring officers to wear body cameras, the collected data can be used for facial recognition capabilities (Davies & Kramer, 2023). European law enforcement agencies use an augmented reality system called DARLENE to train officers in high-risk decision-making (Apostolakis et al., 2021). For crime scene investigations, AI-driven solutions are making exceptional headway in analytical efficiency, improving the processing of fingerprints, audio recordings, handwriting, and other evidence (Das et al., 2023; Yadav et al., 2022).

Within the field of legal studies, AI is being implemented in academic settings and training programs to simulate complex legal scenarios, enabling students to develop practical skills in document analysis, case research, and legal writing (Williams, 2024).

These AI simulation tools facilitate comprehensive training in legal ethics and professional conduct by presenting trainees with intricate ethical dilemmas that require sophisticated decision-making skills. These approaches help bridge the gap between theoretical knowledge and practical application. For instance, some law schools have implemented virtual courtroom simulations where AI assumes the roles of judges, opposing counsel, and witnesses, responding dynamically to students' arguments and questioning techniques (Choi, 2025). Many law programs have restructured their educational frameworks to make AI training mandatory. This structural shift is exemplified by Suffolk Law School, which has introduced three dedicated AI courses: "Generative AI and the Delivery of Legal Services," "Artificial Intelligence and the Law," and "Emerging AI Regulatory Frameworks." (Hill, 2025).

David Wilkins, the Vice Dean for Global Initiatives on the Legal Profession and Director of the Center on the Legal Profession at Harvard University, noted: "Most lawyers I've talked to say that if you ask ChatGPT, let alone a more sophisticated version, to write a memo about a legal question, you will get something approximately as good as what a first-year law firm associate would produce." (Neal, 2024). Wilkins further explains that AI is making legal information more accessible to the general public, comparing it to how people use WebMD as an alternative to consulting doctors for every symptom.

In Military and National Security occupations, AI is automating routine analysis tasks, enhancing decision-making capabilities, and creating entirely new job functions that require specialized expertise. Intelligence analysts now leverage AI systems to process and interpret unprecedented volumes of data from diverse sources, allowing them to identify patterns and threats that would be impossible to detect manually (Department of Homeland Security, 2024). Military strategists increasingly rely on AI-powered predictive models to assess adversarial capabilities and intentions with greater precision, while cybersecurity professionals employ machine learning algorithms to detect and respond to sophisticated network intrusions in real time (Rashid et al., 2023). The integration of AI into military operations has necessitated the development of new technical roles focused on algorithm development, systems integration, and ethical oversight, while simultaneously requiring traditional security professionals to develop new skills in data interpretation and human-machine teaming (MAJ Jackson, 2024). This technological shift is fundamentally altering the professional landscape across defense establishments, placing greater emphasis on technical literacy while maintaining the critical importance of human judgment in sensitive national security matters.

INTERVIEW SPOTLIGHT

"In a maritime domain, AI is playing a factor in understanding vessel activity, illicit activity, and then more so in like search and rescue. Like how do we use sensors to detect folks that are in distress, right? We're using computer vision to detect folks in the water. When our sensors are looking over a very large maritime area, it can help detect them in the water. Then it's not like that saying of you're lost at sea. It increases your coverage area vastly, right? Because you got two things, you can automate a sensor, so instead of a human driving the sensor, the sensor is automated to scan a larger area, and the computer can scan and detect, uh, with computer vision a lot quicker than a human could, um, you know, uh, understand that scene."

Commander Charlie Epperson with U.S. Coast Guard, Office on Artificial Intelligence

Will AI Automate Caring for Communities Occupations?

Tasks constitute jobs, jobs constitute occupations, and occupations constitute industries (U. S. Government Accountability Office, 2022).

Technology's dual impact on workplace skills operates through two distinct mechanisms: substitution and complementarity. When substitution occurs, technology directly replaces human skills in specific tasks. As more tasks within an occupation become substitutable, the risk of complete automation rises significantly (U.S. Government Accountability Office, 2022). However, technological advancement frequently leads to complementarity rather than replacement. In these instances, technology enhances human capabilities, improves task efficiency, and can actually increase demand for both the technology itself and the human skills that work alongside it. This relationship highlights the critical distinction that technology primarily affects individual tasks directly while influencing occupations only as a secondary consequence (Acemoglu & Autor, 2011; U.S. Government Accountability Office, 2022).

AI's impact on Caring for Communities occupations is undeniable, with technological advancements reshaping required tasks and skills.

The central question is not whether change will occur, but rather what form it will take—whether AI will primarily substitute human workers, complement their capabilities, or generate entirely new task requirements. Our analysis of O*NET occupational data reveals that Caring for Communities roles demand both technical and transferable skillsets. Technical skills are occupation-specific, including educational technology platforms, diagnostic imaging interpretation, and computer programming abilities specific to Education, Healthcare and Human Services, and Public Safety sectors. Transferable skills, by contrast, include broadly applicable capabilities such as negotiation, active listening, verbal communication, and critical thinking that function effectively across diverse contexts and responsibilities. This distinction is important because current research indicates that transferable skills are less prone to AI-driven automation. While specialized technical functions may be vulnerable to technological substitution, the interpersonal and cognitive abilities that transcend specific occupational boundaries appear more resistant to replacement by AI systems.

Appendix Tables 1-3 present data on the ten largest occupations within the Caring for Communities Clusters, ranked by 2023 employment figures from the Bureau of Labor Statistics, along with the five most critical tasks and skills required for each position. These tables also incorporate two measures designed to assess potential AI impact on these occupations based on their task and skill composition. The first measure is the Artificial Intelligence Occupational Exposure (AIOE) index developed by Felten et al. (2021), which quantifies the degree of overlap between AI capabilities and occupation-specific tasks and skills. The AIOE index is standardized with a mean of 0 and standard deviation of 1. Higher AIOE scores can be interpreted as greater occupational exposure to AI; lower scores are interpreted as less occupational exposure to AI. Our research shows that as technology advances, jobs requiring nonroutine tasks—those difficult to automate with current technology—are in greater demand. This trend highlights the shifting relationship between technological capabilities and job stability in today's workforce.

The Task Routinization Index (Acemoglu & Autor, 2011) provides our second analytical framework, offering more granular insight than the AIOE's singular occupational score. This index decomposes occupations into tasks that are either routine/non-routine and/or cognitive/manual and determines how relevant each category of task is within an occupation. Scores on the Task Routinization Index range from 1 (not important) to 5 (very important).

Appendix Tables 1-3 reveal substantial variation in both AIOE and Task Routinization Index scores across principal Caring for Communities occupations. Some occupations like teachers, medical and heath service managers, and lawyers exhibit markedly higher AIOE scores relative

to the average across all occupations, whereas some occupations like childcare workers, home health and personal care aides, and mail carriers exhibit comparatively lower AIOE scores.

In many cases, occupations with above average AIOE scores also have greater reliance on both routine and non-routine cognitive tasks.

Research shows AI has minimal impact on jobs requiring significant physical abilities but strongly affects roles involving information processing and cognitive functions (Felten et al., 2021, p. 2203).

The research clearly establishes that AI, including generative AI systems, demonstrates strongest correlation with cognitive abilities. This fundamental relationship explains why occupations like physicists face greater AI exposure than surgeons. Though both professions demand sophisticated cognitive capabilities, surgical practice depends substantially on an integrated complex of dynamic physical, psychomotor, and sensory abilities that remain largely beyond current AI capabilities (Felten et al., 2021).

Appendix Figure 1 provides visual evidence confirming that Caring for Communities occupations experience slightly higher than average occupational exposure compared to the national occupational landscape with the exception of Healthcare and Human Services.

Significantly, Appendix Figure 1 also highlights substantial variation in AI exposure across different educational requirement levels. Consistently across sectors, occupations requiring bachelor's degrees or higher education credentials demonstrate the greatest vulnerability to AI influence. Conversely, positions requiring only high school education or less show minimal AI exposure risk. This educational stratification of AI vulnerability likely stems from two key factors. First, occupations requiring advanced formal education predominantly involve cognitive tasks (Appendix Tables 1-3; Acemoglu & Autor, 2011). Second, contemporary artificial intelligence demonstrates particularly strong capabilities in areas aligned with human cognitive functions, especially information processing (Brynjolfsson & Mitchell, 2017; Felten et al., 2021).

AIOE scores alone cannot determine AI's ultimate impact on occupational demand. These scores merely indicate correlations between human and AI capabilities within specific occupational contexts. While higher AIOE scores might suggest greater automation vulnerability, this represents only one potential outcome. Although historical evidence demonstrates that technological advancement has eliminated positions heavily dependent on routine manual and cognitive tasks, an alternative scenario exists. Occupations with elevated AIOE scores could potentially require additional human workers to develop, implement, supervise, and enhance AI technologies within those professional domains. The relationship between technological capability and employment outcomes is multifaceted, with automation representing just one possible trajectory among several that include workforce expansion, skill complementarity, and occupational transformation.

Simply put, where there are higher AIOE scores, there is a higher likelihood that AI will be integrated into those fields of work.

Figure 1 in the Appendix therefore indicates that numerous Caring for Communities occupations—particularly those requiring bachelor's degrees—will increasingly incorporate AI, not as a replacement for human capabilities, but as an enhancement to professional effectiveness. This represents a complementary relationship rather than a substitutive one, where technological integration amplifies rather than diminishes the value of human expertise.

How Can Caring for Communities Students Thrive in an AI Driven Workforce?

It is unlikely that Caring for Communities occupations will be entirely automated by AI. That said, these occupations will increasingly incorporate various AI technologies into their standard operations and, consequently, will see their skill requirements change for future workforce participants. This report has shared specific ways in which AI applications are already permeating work-related tasks across Education, Healthcare and Human Services, and Public Service and Safety sectors. Career and technical education providers, industry stakeholders, and policymakers have an immediate opportunity to implement forward-thinking strategies ensuring students develop the necessary competencies and technological literacy to excel in these evolving environments. The development of next-generation Career and Technical Education programs must therefore prioritize these technological advancements, preparing students for a professional landscape where human expertise and artificial intelligence capabilities increasingly complement one another rather than compete.

Career and Technical Education Providers

SHIFT THE NARRATIVE

Career and technical education providers we spoke with repeatedly stressed the tensions on campuses that exist between essentially two "camps" of CTE educators: the early adopters and the cautiously suspicious. The early adopters have eagerly embraced AI for themselves and their students. These are faculty and administrators who actively follow AI developments, regularly use and experiment with AI tools, and encourage their students to do the same. The cautiously suspicious, by contrast, are far more reserved and reluctant to embrace AI for a host of reasons including, but not limited to, concerns around data privacy, student tracking, and ethics. This group of faculty and administrators is also concerned about plagiarism, instructional quality, and learning assessment.

The narrative needs to shift from "either/or" to "both/and." AI is fundamentally changing the world of work students are training for. Exposing students to AI tools and technologies cannot be optional, it must be mandatory. Every course and every program within the Caring for Communities Cluster grouping must train students on AI applications in the fields of work they are preparing for. At the same time, we must take student privacy seriously. And we must listen to and address the concerns expressed by faculty worried about the downstream impacts of AI on educational quality. We strongly recommend campus/school wide conversations and dialogue. An individuated, teacher by teacher, class by class AI policy approach is not only ineffective, it places students at risk and fosters inequities. Yet the individuated model prevails at the current moment.

There is evidence that colleges serving more affluent students are more likely to offer training, courses and programs in AI compared to open access institutions like community colleges (Palmer, 2025). Highly-selective, elite institutions cannot be the only ones aggressively engaging AI; open-access, community and technical colleges providing Caring for Communities courses and programs must do the same. Jensen Huang, CEO of NVIDIA, explains why: "If you are not engaging AI actively and aggressively, you are doing it wrong. You are not going to lose your job to AI, you're going to lose your job to someone who uses AI."

FOCUS ON SKILLS, NOT ONLY JOBS

It is exceedingly difficult to predict which individual occupations will be impacted - positively or negatively - by AI (Merisotis, 2020). Not only is it guesswork, but it is also flawed thinking, rooted in a misunderstanding of how technology impacts work (Acemoglu & Autor, 2011; Park & Kim, 2022).

Technology does not impact occupations directly, it acts on them through tasks and skills and the traditional approach to thinking of education in terms of majors, courses, and degrees does learners a disservice.

By contrast, our focus needs to be on the skills students enrolled in Caring for Communities programs of study/pathways acquire. Technical skills are crucial for Caring for Communities occupations, but the growing influence of AI in Caring for Communities sectors means learners must also acquire skills to generate (e.g., prompt engineering) and critically audit and assess AI output. These skills, along with fundamental skills in critical thinking, group communication, creativity, problem-solving, and research, will be essential for carrying out job-related tasks in all occupations, including those in the Caring for Communities Clusters. Appendix Tables 1-3 show that the most heavily employed Caring for Communities occupations already require these skills. But how will AI change what they look like in practice, on the job? For example, what does quality control analysis, writing, critical thinking, judgment and decision making, and reading comprehension look like for lawyers, teachers, and nurses in the AI age? These are critical questions for community college leaders, faculty, and industry representatives to ask and answer.

Industry Partners

BRIDGE THE GAP(S)

Rapid advances and deployment of AI across Caring for Communities occupations emphasizes the importance of industry partnerships. Education providers cannot prepare students for AI-driven Caring for Communities occupations without knowing the AI technologies and applications employers are focused on. This is the purpose of local workforce advisory boards as well as numerous federal and state policies designed to close the gap between educators and employers. At the same time, numerous CTE educators and industry representatives have shared that industry itself is unsure of the AI landscape and how to respond. One community college dean told us that he was often the voice of authority and information on AI during meetings within industry partners. The challenges of keeping ahead of AI developments and knowing precisely how to deploy AI are particularly acute for small and medium sized businesses and especially those in rural areas.

Industry partners can support the work of community and technical college Caring for Communities programs by identifying and sharing the AI applications and use cases in their industry. Industry partners can also aid providers by advocating for the AI skills they need and will be hiring for. Industry can further assist by equipping Caring for Communities classrooms with next generation AI-driven software, machines, technologies, and robotics so students access and train on them immediately.

Policymakers

BUILD ON WHAT WORKS

Recent changes to federal CTE and workforce education policies have given community and technical colleges, as well as employers, many helpful tools to work with. For example, the comprehensive local needs assessment within Perkins V is a fantastic framework on which to build and strengthen private/ public partnerships to address the AI exigency. This particular policy requires community and technical college CTE providers to assess local labor market conditions and consult with stakeholders, including local businesses, to help make funding decisions. This policy mandate should be leveraged and improved to address any emergent AI skills mismatches in local economies.

Similar to Perkins, additional policy efforts are needed to increase funding for apprenticeship and work-based learning programs, which would enable students to gain tangible, occupation-specific AI applications and skills.

Policymakers need to act to ensure community and technical college students have access to meaningful learning opportunities at places of work where AI innovations will first appear.

INVEST IN THE FUTURE

It is crucial that Caring for Communities classrooms give learners access to the most innovative, state-of-the-art AI tools and technologies. Industry partnerships are crucial for this reason: as close collaborators, industry partners and local employers can provide community and technical colleges with real-world equipment for students to train on. This may include advanced, AI-enabled diagnostic technologies, AR/VR wearables, or robotics.

These technologies are expensive, however, and not every community and technical college can count on local employers for learner access. Recruiting and retaining trained faculty is additional challenge and cost. Policymakers can help by continuing to funnel investments that foster private public partnerships and help CTE providers gain classroom access to the technologies students will later use in the workplace.

NOT A TIME FOR FEDERAL RETREAT

Though CTE is largely driven by policymakers and system leaders at the state level, the federal government plays an essential role. First, the federal government sets nationwide accountability targets for CTE providers. Second, the federal government provides billions of dollars in CTE funding in the form of state allocation grants through Perkins V legislation. These grants supplement state funding sources and balance out funding shortfalls and reduce inequities. Third, funding for CTE connects with other statutes like the Workforce Innovation and Opportunity Act (WIOA), The Higher Education Act, the Individuals with Disabilities Education Act, and Every Student Succeeds Act.

Collectively, these statutes help CTE providers to braid funding streams to build workforce development pipelines, and increase access and success for disadvantaged learners.

The Trump Administration is rapidly working to decrease the size and reach of crucial federal agencies. For example, President Trump and the Department of Government Efficiency are weighing drastic cuts to the Department of Labor, which is home to the WIOA. President Trump has also made eliminating the Department of Education a known objective. While we support efforts to improve efficiency, we also support policies that have been proven effective and the data are quite clear: contemporary CTE policy works. CTE students are more likely to graduate high school, enroll in college, enjoy employment and wage premiums relative to their counterparts in the general education curriculum (Bozick, et al, 2014; Carruthers & Stanford, 2018; Dougherty, 2018; Ecton & Dougherty, 2023; Stevens et al, 2019). States have played an important role in bringing about these positive outcomes, but bipartisan action at the federal level has been the key driver. This report makes clear that AI presents a number of exciting opportunities as well as formidable challenges for CTE providers. This is not a time for federal retreat. By contrast, we believe strong, bipartisan support

Conclusion

Research suggests that millennials and Gen Z learners are attracted to mission-oriented work (Lee-Bull, 2025). At the same time, the “college for all” mentality is waning and learners are increasingly skeptical of the value proposition of going to college. .

The unpredictable labor market and predicted upheaval of AI brings additional angst and uncertainly. Like other pipelines, AI will significantly reshape the Caring for Communities professions. Though AI-driven solutions are posed to automate routine tasks and eliminate some positions, our findings suggest that many Caring for Communities jobs will remain relevant. Furthermore, with their focus on service, mission-orientation and equal distribution of physical and cognitive tasks, Caring for Communities occupations have tremendous appeal to young and incumbent workers. An aging and transitional demographic means healthcare and education sectors are set to experience pronounced market demand in the years ahead. Workers combining technical skills, adaptable capabilities, and AI literacy will thrive amid these changes. Community and technical colleges must prepare students for this transformed workplace by evolving their educational strategies to ensure graduates can excel in an AI-enhanced professional environment.

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TABLE 1

Largest Occupations, top skills, and AI Occupational Exposure: *Education*

Occupation	Top Skills	Top Activities	AIOE	Routine Manual	Non-Routine Manual	Routine Cognitive	Non-Routine Cognitive
Elementary school teachers, except special education	• Instructing • Learning Strategies • Speaking • Critical Thinking • Social Perceptiveness	• Training and Teaching Others • Assisting and Caring for Others • Working with Computers • Coaching and Developing Others • Establishing and Maintaining Interpersonal Relationships	0.89	1.65	1.50	2.76	3.78
Teaching assistants, except postsecondary	• Social Perceptiveness • Active Listening • Reading Comprehension • Speaking • Service Orientation	• Assisting and Caring for Others • Thinking Creatively • Getting Information • Making Decisions and Solving Problems • Resolving Conflicts and Negotiating with Others	0.24	-	-	-	-
Secondary school teachers, except special and career/ technical education	• Speaking • Instructing • Learning Strategies • Active Listening • Reading Comprehension	• Organizing, Planning, and Prioritizing Work • Thinking Creatively • Training and Teaching Others • Establishing and Maintaining Interpersonal Relationships • Communicating with Supervisors, Peers, or Subordinates	1.19	1.68	1.53	2.57	3.80
Middle school teachers, except special and career/technical education	• Instructing • Learning Strategies • Speaking • Active Listening • Writing	• Training and Teaching Others • Establishing and Maintaining Interpersonal Relationships • Thinking Creatively • Developing Objectives and Strategies • Coaching and Developing Others	1.29	1.74	1.47	2.76	3.99
Childcare workers	• Social Perceptiveness • Monitoring • Active Listening • Service Orientation • Speaking	• Assisting and Caring for Others • Establishing and Maintaining Interpersonal Relationships • Assisting and Caring for Others • Performing General Physical Activities • Making Decisions and Solving Problems	-0.38	1.81	2.15	2.36	2.83
Preschool teachers, except special education	• Instructing • Speaking • Learning Strategies • Active Listening • Critical Thinking	• Assisting and Caring for Others • Getting Information • Establishing and Maintaining Interpersonal Relationships • Training and Teaching Others • Thinking Creatively	0.03	1.63	1.88	2.59	2.98
Child, family, and school social workers	• Active Listening • Speaking • Critical Thinking • Social Perceptiveness • Service Orientation	• Establishing and Maintaining Interpersonal Relationships • Communicating with Supervisors, Peers, or Subordinates • Documenting/Recording Information • Getting Information • Identifying Objects, Actions, and Events	0.78	1.87	1.82	3.01	3.64
Educational, guidance, and career counselors and advisors	• Active Listening • Social Perceptiveness • Speaking • Service Orientation • Reading Comprehension	• Getting Information • Communicating with Supervisors, Peers, or Subordinates • Establishing and Maintaining Interpersonal Relationships • Making Decisions and Solving Problems • Working with Computers	0.97	1.47	1.55	2.34	3.81
Education administrators, kindergarten through secondary	• Active Listening • Speaking • Social Perceptiveness • Critical Thinking • Reading Comprehension	• Establishing and Maintaining Interpersonal Relationships • Getting Information • Making Decisions and Solving Problems • Communicating with Supervisors, Peers, or Subordinates • Analyzing Data or Information	1.05	1.52	1.55	2.91	4.38
Self-enrichment teachers	• Speaking • Learning Strategies • Instructing • Active Listening • Social Perceptiveness	• Training and Teaching Others • Coaching and Developing Others • Interpreting the Meaning of Information for Others • Thinking Creatively • Establishing and Maintaining Interpersonal Relationships	0.53	1.59	1.93	2.70	3.83

TABLE 2

Largest Occupations, top skills, and AI Occupational Exposure: *Healthcare and Human Services*

Occupation	Top Skills	Top Activities	AIOE	Routine Manual	Non-Routine Manual	Routine Cognitive	Non-Routine Cognitive
Home health and personal care aides	• Service Orientation • Social Perceptiveness • Active Listening • Critical Thinking • Monitoring	• Assisting and Caring for Others • Getting Information • Establishing and Maintaining Interpersonal Relationships • Communicating with Supervisors, Peers, or Subordinates • Training and Teaching Others	-0.16	-	-	-	-
Registered nurses	• Active Listening • Social Perceptiveness • Monitoring • Reading Comprehension • Critical Thinking	• Assisting and Caring for Others • Documenting/Recording Information • Getting Information • Making Decisions and Solving Problems • Updating and Using Relevant Knowledge	0.23	2.14	2.02	3.17	3.84
Nursing assistants	• Service Orientation • Social Perceptiveness • Active Listening • Monitoring • Speaking	• Assisting and Caring for Others • Getting Information • Communicating with Supervisors, Peers, or Subordinates • Documenting/Recording Information • Establishing and Maintaining Interpersonal Relationships	-0.27	2.81	2.28	3.45	3.07
Medical assistants	• Social Perceptiveness • Active Listening • Speaking • Reading Comprehension • Critical Thinking	• Getting Information • Working with Computers • Documenting/Recording Information • Updating and Using Relevant Knowledge • Assisting and Caring for Others	0.15	2.58	2.09	3.75	3.40
Medical secretaries and administrative assistants	• Speaking • Active Listening • Service Orientation • Reading Comprehension • Critical Thinking	• Working with Computers • Processing Information • Performing for or Working Directly with the Public • Getting Information • Communicating with Supervisors, Peers, or Subordinates	1.22	2.46	1.77	3.49	2.82
Licensed practical and licensed vocational nurses	• Service Orientation • Social Perceptiveness • Coordination • Speaking • Active Listening	• Assisting and Caring for Others • Documenting/Recording Information • Getting Information • Organizing, Planning, and Prioritizing Work • Making Decisions and Solving Problems	-0.51	2.45	2.16	3.57	3.66
Medical and health services managers	• Critical Thinking • Speaking • Complex Problem Solving • Active Listening • Time Management	• Communicating with Supervisors, Peers, or Subordinates • Working with Computers • Evaluating Information to Determine Compliance with Standards • Coaching and Developing Others • Getting Information	1.26	2.37	1.65	3.49	4.11
Pharmacy technicians	• Active Listening • Speaking • Reading Comprehension • Critical Thinking • Service Orientation	• Getting Information • Working with Computers • Evaluating Information to Determine Compliance with Standards • Processing Information • Documenting/Recording Information	0.01	3.00	2.45	3.71	3.05
Cooks, institution and cafeteria	• Operations Monitoring • Service Orientation • Quality Control Analysis • Speaking • Judgment and Decision Making	• Getting Information • Inspecting Equipment, Structures, or Materials • Communicating with Supervisors, Peers, or Subordinates • Monitoring Processes, Materials, or Surroundings • Identifying Objects, Actions, and Events	-0.64	3.01	2.60	2.89	3.10
Social and human service assistants	• Social Perceptiveness • Speaking • Active Listening • Service Orientation • Coordination	• Communicating with Supervisors, Peers, or Subordinates • Documenting/Recording Information • Getting Information • Performing for or Working Directly with the Public • Establishing and Maintaining Interpersonal Relationships	0.47	2.01	1.79	3.14	3.31

TABLE 3

Largest Occupations, top skills, and AI Occupational Exposure: *Public Service and Safety*

Occupation	Top Skills	Top Activities	AIOE	Routine Manual	Non-Routine Manual	Routine Cognitive	Non-Routine Cognitive
Security guards	• Active Listening • Monitoring • Speaking • Coordination • Critical Thinking	• Identifying Objects, Actions, and Events • Getting Information • Communicating with Supervisors, Peers, or Subordinates • Documenting/Recording Information • Establishing and Maintaining Interpersonal Relationships	-0.39	1.81	2.23	3.53	3.37
Lawyers	• Speaking • Reading Comprehension • Critical Thinking • Active Listening • Writing	• Getting Information • Communicating with Supervisors, Peers, or Subordinates • Making Decisions and Solving Problems • Evaluating Information to Determine Compliance with Standards • Resolving Conflicts and Negotiating with Others	1.33	2.12	1.56	3.23	3.61
Police and sheriff's patrol officers	• Critical Thinking • Active Listening • Speaking • Social Perceptiveness • Reading Comprehension	• Performing for or Working Directly with the Public • Getting Information • Resolving Conflicts and Negotiating with Others • Working with Computers • Making Decisions and Solving Problems	-0.67	2.18	3.31	3.51	3.60
Paralegals and legal assistants	• Writing • Reading Comprehension • Active Listening • Speaking • Critical Thinking	• Documenting/Recording Information • Working with Computers • Communicating with People Outside the Organization • Communicating with Supervisors, Peers, or Subordinates • Getting Information	1.29	2.14	1.62	3.37	2.96
Correctional officers and jailers	• Monitoring • Social Perceptiveness • Active Listening • Speaking • Critical Thinking	• Making Decisions and Solving Problems • Resolving Conflicts and Negotiating with Others • Communicating with Supervisors, Peers, or Subordinates • Documenting/Recording Information • Getting Information	-0.89	2.25	2.86	3.66	3.19
Postal service mail carriers	• Social Perceptiveness • Active Listening • Speaking • Critical Thinking • Time Management	• Operating Vehicles, Mechanized Devices, or Equipment • Performing General Physical Activities • Handling and Moving Objects • Getting Information • Performing for or Working Directly with the Public	-1.06	2.42	3.38	4.03	1.95
Dispatchers, except police, fire, and ambulance	• Active Listening • Speaking • Coordination • Monitoring • Time Management	• Getting Information • Identifying Objects, Actions, and Events • Working with Computers • Making Decisions and Solving Problems • Communicating with Supervisors, Peers, or Subordinates	1.23	2.46	2.15	3.45	3.36
Court, municipal, and license clerks	• Active Listening • Speaking • Reading Comprehension • Writing • Critical Thinking	• Working with Computers • Getting Information • Performing for or Working Directly with the Public • Communicating with Supervisors, Peers, or Subordinates • Processing Information	1.17	2.34	1.83	3.57	2.80
Legal secretaries and administrative assistants	• Reading Comprehension • Active Listening • Writing • Speaking • Time Management	• Performing Administrative Activities • Communicating with Supervisors, Peers, or Subordinates • Working with Computers • Processing Information • Organizing, Planning, and Prioritizing Work	1.01	2.00	1.70	3.37	2.77
Eligibility interviewers, government programs	• Speaking • Active Listening • Reading Comprehension • Writing • Social Perceptiveness	• Working with Computers • Getting Information • Performing for or Working Directly with the Public • Processing Information • Evaluating Information to Determine Compliance with Standards	1.23	2.28	2.09	3.43	3.07

FIGURE 1

Average Artificial Intelligence Occupational Exposure Scores for Caring for Communities Career Clusters