THIRD WAY

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The Intersection of AI and Skills

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If you type "Will AI..." into Google, some of the most common queries you will find include "...replace jobs," "...take over jobs," "...take my job," and "replace humans."

It's clear that artificial intelligence will change the way people work and learn. But what's not yet clear is the impact AI will have on specific jobs—and the skills people will need to thrive. In a previous report, we laid out the three broad perspectives that experts have on AI: the optimists who predict AI will elevate the working class, the pessimists who think jobs will be automated out of existence, and the pragmatists who see jobs changing but not disappearing.

To better understand which perspective will win out in the years ahead, it's critical to break down what skills AI has—what it does well and where it struggles—compared to humans. In this report, we do just that. We assess AI's strengths and weaknesses and then analyze what specific occupations will be impacted by AI based on the skills needed to do those jobs. Finally, we look at how workers are being trained to take advantage of the coming economic changes in the AI world.

Where is AI Skilled?

AI is positioned to automate many tasks, but it remains inconsistent in how it performs compared to human workers. Some of those skills may get better over time, while others will never be able to compete with humans. For example:

Strengths

The following is a list of skills where AI is typically more effective than its human counterparts.

Repetitive Tasks—routine requirements that look for consistent results, things like quality control or checking patient vitals. Responsibilities like these are often time consuming and prone to human error. AI is able to recognize patterns, sort data, and notice abnormalities. One example is in the software quality assurance space, where companies previously had to review code line by line. AI can now test software quickly and efficiently.

Information Gathering—finding specific pieces of information from large knowledge sources. This process often requires large time investments to find relevant information. AI streamlines this by working back and forth with users to review research questions, reveal potential information gaps, and provide relevant sources. [1]

Software Support—a collection of skills that improve the usability of software programs. Workplaces may use a variety of different software programs to accomplish tasks. AI can seamlessly integrate software platforms and speed up their effectiveness because of its ability to pull, sort, and interpret data from multiple sources.

Editing & Translation—minor modifications to create a clear and coherent product. For example, AI assists in checking spelling or grammar as well as organizing sentences and concepts. It can also take on more complex editing tasks like fixing the tone or better reaching the audience of a product. AI's editing capabilities extend into other mediums, with the ability to edit visual designs and handle translations with richer nuance than legacy systems. [2]

Weaknesses

While AI has many skill sets, there are also places where it is often less effective.

Personable Tasks—require some level of human interaction, such as working at a cash register or providing care. Because it is an algorithm following rules, AI can overlook people's emotional needs. Additionally, humans may feel frustrated by dealing with AI platforms since they are not getting that same interpersonal connection. [3]

Innovation—developing new and creative ideas. While AI can brainstorm ideas for writers, businesses, and researchers, it cannot replace human testing or judgment. Since it is operating based on historical knowledge, its suggestions are also generally derivative of past information. [4]

Project Management—contextualizing and delegating tasks to ensure the successful completion of a project within a specified time frame. AI's inability to parse a problem fully prevents it from properly assigning the steps needed to tackle it. It also struggles to give attention to more than one request at a time, which can make the multi-tasking required of project management difficult. These skills are, however, key research areas in the ongoing development of agentic AI.

Adaptability—the ability to adjust to changing situations or information. AI's produced outcomes are limited to the data it has available, potentially perpetuating biases and missing important information. For example, an AI program that was trained to favor attributes more typically seen on male candidates' resumes ended up leading to a gender bias in the candidates the company selected. [5] While AI struggles in the moment to fix any inadequacies with past knowledge, new "reasoning" AI models are more capable of reflection and self-correction and can choose new problem-solving strategies as needed. [6]

The Impact on Jobs

As AI continues to enter the workplace, many workers are worried they might be replaced. More than 10% of workers in the manufacturing and finance industries claimed they know someone who lost their job due to AI. [7] Interestingly, while previous concerns over automation were typically associated with blue-collar workers without a college degree, the impacts of AI are seemingly more pronounced among workers with a college education. [8]

And yet, there is a prevalent school of thought that AI will not replace workers in their occupations but, instead, take over specific tasks that meet their strengths. McKinsey estimates that up to 30% of current working hours will be automated by 2030 in the United States and Europe. [9]

This AI shift will pressure the labor market in two clear ways. The first is a *downward pressure*, lowering demand for tasks that AI can substitute. The second is an *upward pressure*, raising the demand for tasks that either AI cannot do well or that complement AI. All in all, jobs will *change*—certain industries will require fewer workers, while AI will boost a demand for others. [10]

Occupational Exposure to AI

The growing integration of AI in our economy won't impact each occupation equally. Some jobs will see some of their work replaced by AI entirely. Others will shift towards utilizing AI as a means to be more productive, while certain roles will barely be affected at all.

These exact changes are hard to predict. While a report by the AI-Enabled ICT Workforce Consortium found that many tech roles will see moderate-to-high transformation as a result of AI adoption, AI's impact might not be felt as strongly by other industries. [11] Research from Pew actually found that most workers in the United States currently work at jobs with *limited exposure* to AI. [12] This means that while these workers may seem some changes to their jobs as a result of AI, most things are likely to stay the same.

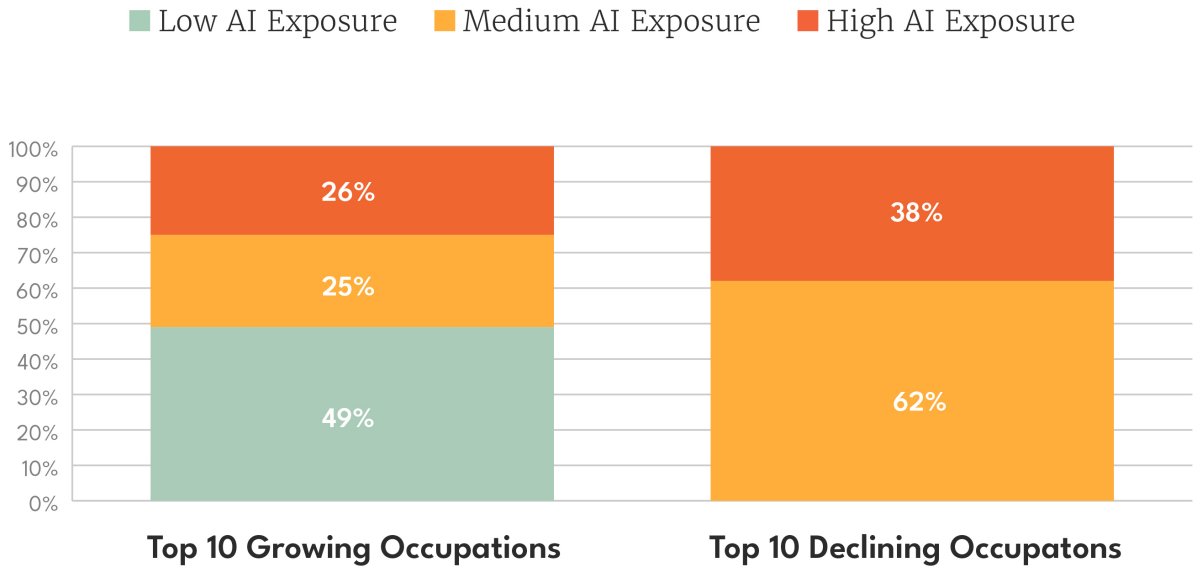
To try and better understand AI's impact on the jobs of the future, we analyzed how important AI-related skills were for occupations expected to see the biggest growth and largest decline over the next decade. [13] The US Bureau of Labor Statistics (BLS) projects which jobs will see the biggest changes over the next decade and calculates which skill categories are most important for each occupation. Using the BLS data, and a similar approach as Pew did in their work, we categorized occupations as either having high, medium, or low exposure to AI technology. Notably, high exposure doesn't necessarily mean AI will outright replace a worker. It just signifies that AI will play a big role, from helping with tasks to taking over duties.

In our analysis, we found that:

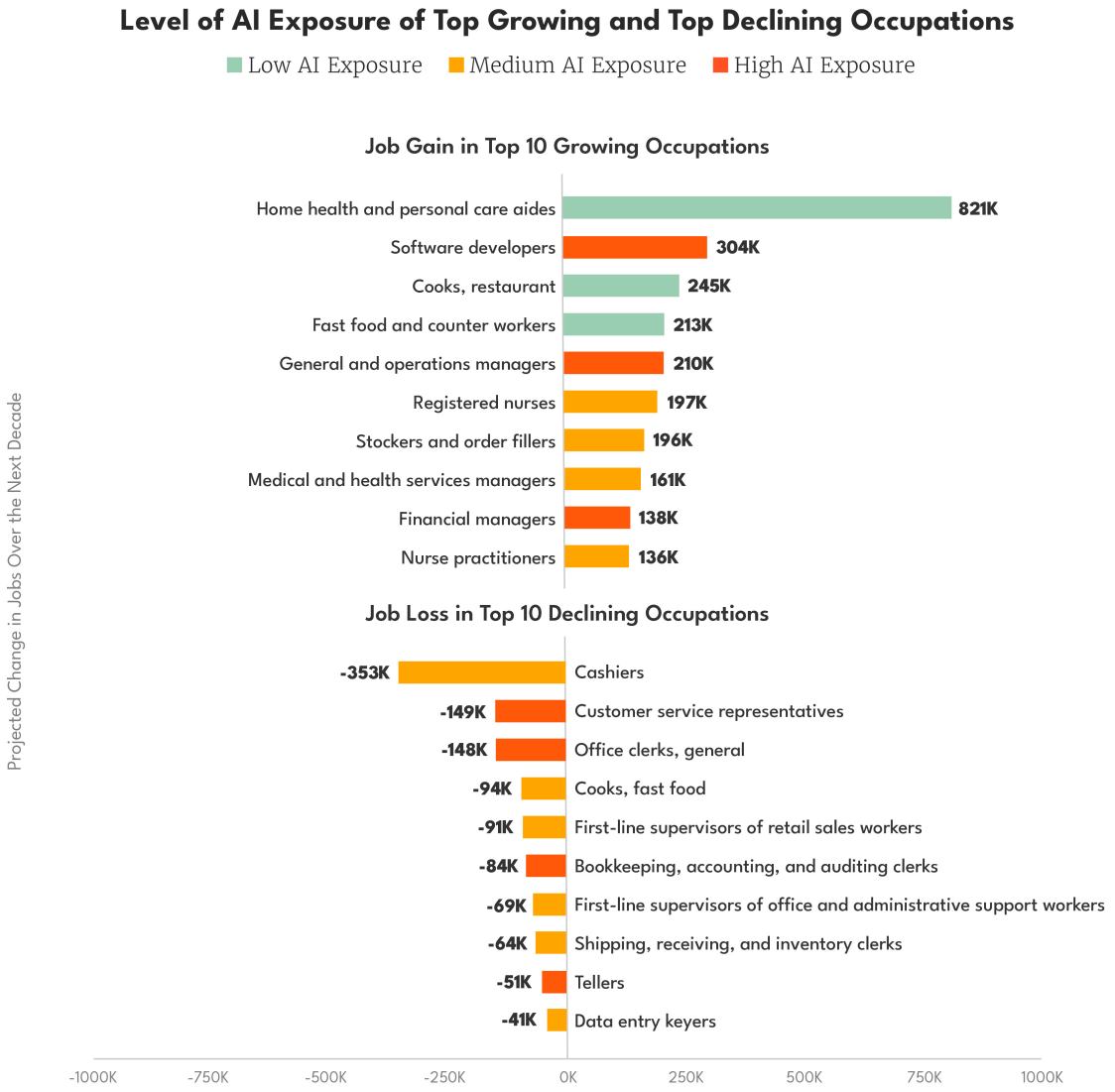
- In the top growing occupations, half of all new jobs will have low exposure to AI. One-quarter will have high exposure to AI.

- Among the top declining industries, 40% of jobs lost will have high exposure to AI, and 60% will have medium exposure. [14]

Share of Predicted Job Loss and Gain by Level of AI Exposure



Source: Authors' analysis of "Table 1.1 Employment by major occupational group, 2023 and projected 2033." Employment Projections, U.S. Bureau of Labor Statistics, 29 Aug. 2024, https://www.bls.gov/emp/tables/emp-by-major-occupational-group.htm. Accessed 8 Jan. 2025. And; "Table 6.2 Skills data by detailed occupation and 2023-33 employment projections." Skills Data, U.S. Bureau of Labor Statistics, 1 Oct. 2024, https://www.bls.gov/emp/data/skills-data.htm. Accessed 8 Jan. 2025. And; Kochhar, Rakesh. "Which U.S. Workers Are More Exposed to AI on Their Jobs." Pew Research Center, 26 Jul. 2023. https://www.pewresearch.org/social-trends/2023/07/26/which-u-s-workers-are-more-exposed-to-ai-on-their-jobs/. Accessed 8 Jan. 2025.



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While roles like office clerks and customer service representatives are likely to decline as their day-to-day tasks are taken over by AI programs, other jobs with high exposure to AI like software development and financial management will see significant growth, likely because AI technologies will enhance these worker capacities. While we might not know the exact effects, AI will significantly impact jobs of the future and the skills they will require.

Training for an AI Economy

Because of AI's reach across industries and occupations, there's a huge need to train workers on the technology and its uses. There's also an opportunity to use AI in actual training—from early-age classrooms and beyond.

Reskilling in the Workplace

Many workers don't have the skills needed to remain competitive in the workplace. That's why many industries are turning to one of three strategies: retraining existing workers, hiring new workers with specific skills, or contracting out work. [15] Of these approaches, executives reported planning on spending most of their energy on retraining their workforces. [16]

Some corporations are already investing significant resources towards retraining. A recent BCG study found that as much as 1.5% of corporate budgets are aimed specifically at upskilling current employees. [17] For example, Amazon has committed $700 million to upskill 100,000 employees for high-demand roles in areas like cloud computing and machine learning. [18] But for many other companies, in-house training efforts can be costly, both in terms of lost time and the program expenses themselves. That's why other training methods like shadowing assignments, apprenticeships, and trial periods are helpful reskilling tools. [19] For example, ICICI Bank uses a four-month vocational residency where workers go through simulation training and then participate in an eight-month internship working alongside current managers to more effectively train their workers.

Companies are also partnering with other organizations to find larger pools of workers and promote necessary skills across industries. BMW's collaboration with the German Federal Employment Agency and the Association of German Chambers of Industry and Commerce utilizes reskilling programs to help industrial electricians support the economy's electric vehicle transition. [20] Partnerships between employers can allow companies to connect employees with knowledgeable workers at other organizations, while non-profits help expand opportunities to new pools of workers. [21] Similarly, partnerships between businesses and local colleges provide students access to more practical experience while companies gain access to new technologies and a potential pool of workers. For instance, Cisco's Networking Academy partners with high schools, vocational colleges, universities, and non-profits to deliver skills-to-jobs curriculum across subject areas critical to AI such as data science, cybersecurity, and networking. [22]

AI in the Classroom

Today, learning tools utilizing AI are everywhere in the classroom—from programs like Khan Academy's Khanmigo that use AI to personalize learning, to platforms like Blackboard where AI assists in organizing and writing classroom lessons. [23] These AI-driven applications can be a valuable aid for many educators, equipping them with new methods of teaching and helping them more easily provide information to students. [24] Some programs, like Florida's AI Career Technical Education Pathway program, focus specifically on teaching students about underlying mechanisms and applications of AI. [25] Other programs try to help students utilize AI in additional subject areas like math or biology. [26]

These applications, however, are often focused on day-to-day aspects of education. Many educators and policymakers are still navigating questions on how to best implement AI tools into the classroom and how to teach the students the skills they will need for the AI age. In the future, AI could take a more central role in education by helping to inventory the best practices and regulations of an industry before assessing a worker's skill-level and determine what additional training that worker may need to remain competitive. Using these inputs, AI systems can then help create curriculums targeted toward improving a worker's skills, develop tailored training based on their individual learning needs, and provide near-instant feedback. [27] Using AI to help train workers could mean the skills workers have will better align with the skills employers need—bolstering job security for workers and shrinking job vacancies for employers.

Conclusion

As AI becomes a more central force in our economy, policymakers need to invest in equipping workers with the skills they need to thrive. To do so, legislators should concentrate their policy efforts in three main sectors: K-12 education, post-secondary education, and reskilling efforts.

To start, policymakers must support educators and institutions utilizing AI in K-12 education. A new report found that nearly 20% of K-12 teachers reported using AI for teaching—highlighting the growing integration of AI tools in the classroom. [28] But it is important that these educators and staff have the support and tools they need to bring AI into their classrooms responsibly and effectively. Other countries are spending a lot of time thinking about how AI can be leveraged to create more personalized learning experiences in a regulated manner. Japan recently selected a few schools to pilot guided AI use in the classroom. The effort looks to leverage AI's strengths as a way to improve educational outcomes while keeping guardrails on its use. [29]

At the post-secondary level, policymakers can strengthen financial resources that empower community and four-year colleges to train students in AI tools and leverage AI in various fields of study. For example, using a grant from the National Science Foundation, several community colleges have come together to launch a National Applied Artificial Intelligence Consortium aimed at scaling the access and quality of AI workforce training across the country. [30] Government can also provide resources for technical assistance in order for education institutions to implement thoughtful and ethical uses of AI across different fields. This could help educational institutions create programs that cover a wide swath of AI functions—from teaching students how to become AI prompt engineers to thinking about the use of AI in fashion design. [31]

Finally, there's an urgent need for policymakers to support worker training. Leaning on apprenticeships or other earn-as-you-learn type training models can help workers in a multitude of industries where there will be heightened demand for employees. [32] Legislators can also set up data collection systems analyzing workplace impacts of AI and the shifting demand of key skills. This could

better direct resources towards training with the highest potential impact. [33] Investing in programs that support in-demand skills, like interpersonal communication and management, will help workers navigate economic transitions and move to new industries when needed. [34]

TOPICS

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    We modeled our AI scoring system after Pew Research Center's report "Which U.S. Workers Are Most Exposed to AI on Their Jobs." We first gave a score of *weak, medium,* or, *strong* to each of the 17 skills listed in the Bureau of Labor Statistics' table on skills data by detailed occupation. We then used these scoring to re-weight the skills value assigned to each occupation to create an AI exposure score. Based on this AI exposure score we calculated the share of each occupation's skill share as being AI-related. Then we rated an occupation as having a high, medium, or low AI exposure. Occupations that are in the top third for AI exposure score values are rated as high. The middle third of occupations are rated as medium and bottom third as low.

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