

US Rates Strategy

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Is AI displacing jobs?

Like any general-purpose technology, AI can both augment and substitute labor. Most studies point to some degree of job displacement. These effects appear greatest for younger workers just entering the labor force. Evidence of complementary effects on worker earnings is weak.

- In theory, AI should displace jobs where tasks can be easily automated. More complex tasks can still benefit from the technology as experienced workers become more productive.
- **AI appears to be displacing some types of workers.** Brynjolfsson¹ and Hosseini² both find evidence of younger worker displacement. The gap between the employment of junior and senior workers at high AI exposure firms is between 9-10%. **And it emerges shortly after (about 3q) the firm adopts AI.**
- **This divergence appears to be driven by a lack of hiring rather than layoffs.**
- Occupations with higher AI exposures have wider gaps between new entrant and senior employee wages.³ But the correlation is somewhat loose.
- **It is a bit surprising that hiring of younger workers has reacted this quickly to AI particularly as relatively few firms are using the technology and most of this use is not part of employees' day-to-day tasks.** Moreover, there are few signs of widespread productivity gains.
- **Some of the hiring slowdown may be preemptive.** Firms may have pulled back from hiring because it is cheaper than having to lay off superfluous workers in the next year or so.

Worker tasks

Like any general-purpose technology, AI can both augment and substitute for labor. The former makes existing labor more productive and pushes wages higher. But AI can also replace some types of labor. Labor substitution – by increasing job loss - might have the opposite effect on wages. Whether job augmentation or automation dominates depends on the nature of worker tasks. **Tasks can be roughly divided into two types – easy or hard-to-learn.** AI learns and works best for the former types of tasks like those that can easily be codified and checked against a database of verifiable outcomes. Harder tasks

¹ See, “Canaries in the Coal Mine? Six Facts about the Recent Employment Effects of Artificial Intelligence”, E. Brynjolfsson, B. Chandar, and R. Chen, Stanford University, November 13, 2025

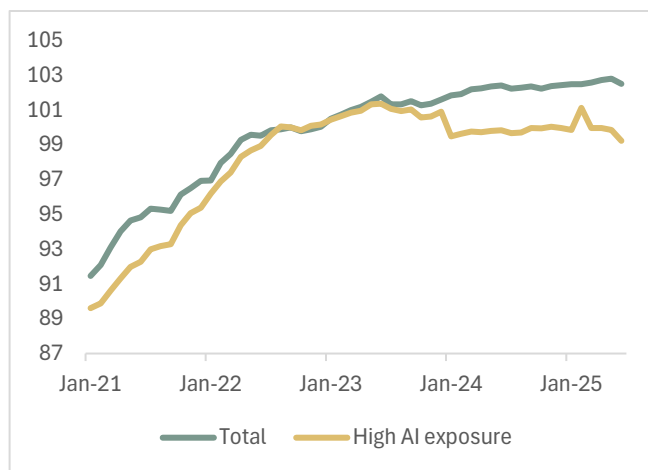
² See, “Generative AI as Seniority-Biased Technological Change: Evidence from US Resumé and Job Posting Data”, S. Hosseini and G. Lichtinger, Harvard University, October 27, 2025

³ See, “AI is Simultaneously Aiding and Replacing Workers, Wage Data Suggest”, J. S. Davis, Federal Reserve Bank of Dallas, February 24, 2026

are often more difficult to learn or have no objective outcome that can be used to benchmark results. They frequently do not have a readily available database of results, or these are context dependent.⁴ **This dichotomy can be thought of as the difference between book learning and experience.**

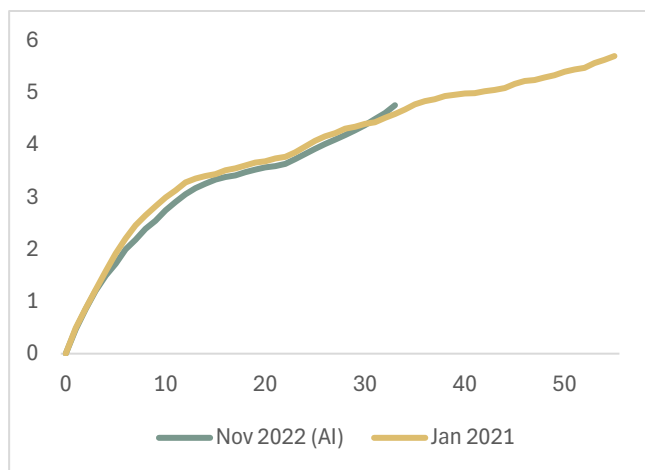
It also suggests how AI could influence the labor market. First, as AI can easily automate book learning tasks, it should displace jobs whose primary functions involve checking, reporting, or building databases. **Replacing book learning with AI likely means that junior level jobs or those requiring less work experience are more likely to be displaced than those requiring some level of experience.** Workers who are not replaced in these areas may earn less. Second the composition of “human-based” jobs will shift toward those requiring higher levels of analysis and decision making. And finally, since AI makes already productive workers more productive by freeing up their time from routine tasks, their wages should increase. **Lately, it is AI’s capacity to replace labor that has sparked the most market attention and debate.**⁵

Figure 1: Employment (Sep 2022 = 100)



Source: Davis (2026), SMBC Nikko

Figure 2: Dissimilarity index (%)



Note: x-axis is the months after the benchmark month (either November 2022 or January 2021). Source: Gimbel et al, (2025), SMBC Nikko

Job displacement

Most studies examining job displacement effects compare employment trends before and after the introduction of ChatGPT in November 2022. Davis, for example, indexes national and AI-exposed jobs to September 2022 and plots the recent trend (Figure 1). **But across overall employment, job postings and the job mix, AI effects appear to be small.** Job categories highly exposed to AI have grown more slowly than total employment – but the difference is only a couple of percentage points. Similarly, Hartley et al, find only small and not statistically significant effects on job openings and total jobs.⁶ Gimbel create a dissimilarity index to plot how the occupational mix of jobs has changed since November 2022 (Figure 2). Since November 2022, the change in the job mix has followed the same pattern as it did in the first 30 months after January 2021. Put differently, the introduction of ChatGPT does not seem to have had much

⁴ See, “The Simple Macroeconomics of AI”, D. Acemoglu, Harvard University, April 5, 2024.

⁵ See, “Jack Dorsey’s Block Slashes Nearly Half of its Staff in AI Bet”, E. Mason, Bloomberg News, February 27, 2026

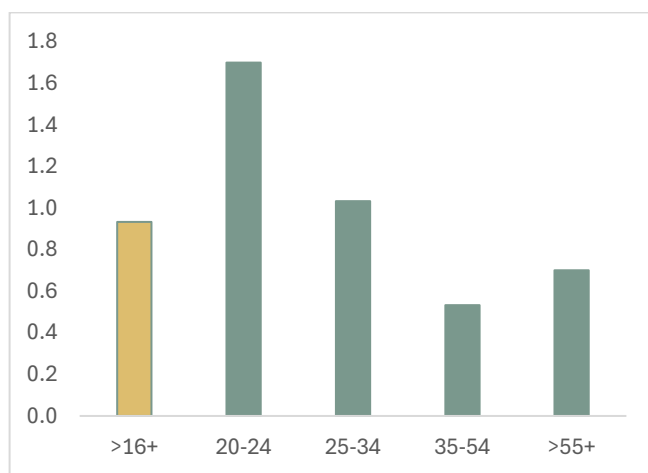
⁶ See, “The Labor Market Effects of Generative Artificial Intelligence”, J. Hartley, F. Jolevski, V. Melo, and B. Moore, October 2025

of an impact on the types of jobs in the economy. They also use data on AI job exposure from Open AI but fail to uncover a clear pattern of unemployment across high AI exposure jobs. Other studies focus on more narrow segments of the labor market or worker seniority. These results point to bigger AI substitution effects. Some of this is evident in the breakdown of unemployment rates by age. Since Q3' 22 the jobless rate has increased most for workers between 20 and 24y (Figure 3).

Brynjolfsson et al. examine ADP employment statistics in AI-exposed jobs by age. They compare trends in employment before and after the introduction of ChatGPT. **“Early career” workers aged 22-25 in these sectors experienced a relative decline in employment compared to their older counterparts.** The effect is large – through July 2025, while employment among older workers (35-49) in these sectors increased 8% it fell for the youngest cohort by 6%. The effect is significant – first because of the size and second, because before the introduction of ChatGPT, senior and junior level employment in these sectors moved in parallel. Moreover, employment for workers of all ages in jobs with low AI exposure do not show the same divergence.

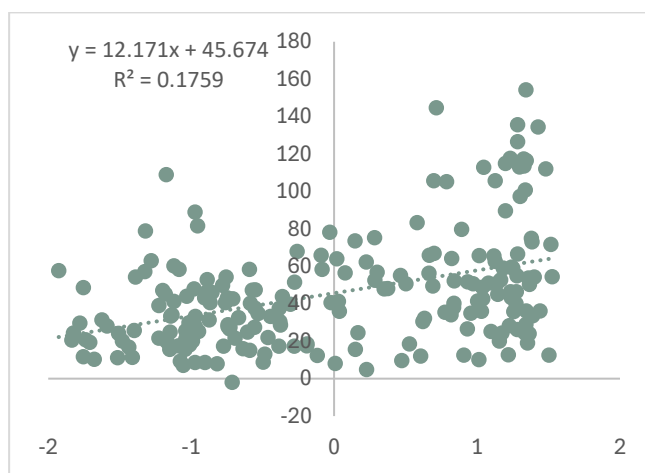
Hosseini et al. uses a similar differences-in-differences approach on data from Revelio Labs. Their data set includes nearly 285,000 US firms and roughly 62m workers between 2015-2025. Across firms that have adopted AI, they find a similarly large divergence (between 9 and 10%) in employment between early entry and senior workers. Like the Brynjolfsson results, employment growth by seniority only starts to diverge at AI-adopting firms after the introduction of ChatGPT. **At the firm level, the seniority divergence begins about 3-quarters after the firm begins using AI.** Based on job posting data, the authors conclude that the difference in employment trends is not caused by firings but instead by **a lack of hiring.**⁷ Using the same job posting data, Simon notes that a 10-percentage point increase in AI exposure is associated with a 7% *increase* in the demand for non-entry level jobs but an 11% *decline* in entry level roles.⁸ AI seniority effects are robust to economic conditions and monetary policy.

Figure 3: Unemployment rate change (%)



Note: Change since November 2022. Source: BLS, SMBC Nikko

Figure 4: Experience and AI exposure (indexes)



Note: x-axis is a relative measure of AI exposure (higher values are higher occupation exposure). The y-axis is the ratio of senior level wages to entry level wages. Source: Davis (2026), SMBC Nikko

⁷ They also reject the hypothesis that the reduction is caused by more junior workers being promoted faster.

⁸ See, “Is AI Responsible for the Rise in Entry-Level Unemployment?”, L. Simon, Revelio Labs, August 4, 2025

Are wages going up?

AI effects on wages are more ambiguous which may account for why it is harder to see significant changes in earnings since 2022. Hartley et al. find some evidence that AI has increased income and hourly wages for the most exposed workers. Davis compares trend growth in wages since 2022 across 205 occupations based on their relative AI exposure. The scatterplot is nearly horizontal suggesting there is little relationship between the two. Given the biggest hiring effects are between junior and senior workers, the size of their wage gap should be positively correlated with AI exposure. Davis recalculates the 205 occupations based on an index that compares the relative wage gap between senior and junior level wages – the “experience premium”. Higher experience premium values on the y-axis mean senior employees earn proportionally more than their juniors. When plotted against an index of AI exposure it seems that occupations with higher exposures have wider gaps between new entrant and senior employee wages (Figure 4). That said, there is a wide dispersion of experience premiums.

Why so soon?

AI’s effect on the pace of hiring has been rapid. Within three quarters of adopting the technology, firms begin reducing their hiring of juniors.⁹ It is a bit surprising to us that firms would make permanent hiring decisions so soon after adopting AI. It is possible that once employers recognize the potential productivity gains from adopting AI, they move quickly to slow their hiring of juniors as they suspect these workers may quickly become superfluous as the technology is rolled out firmwide. **Because it is cheaper to refrain from hiring workers than to lay them off, firms may be preemptively slowing hiring even if the productivity efficiencies have yet to appear.** As we observed a few weeks ago, it is difficult to see AI productivity effects in broader labor market measures despite very large task level efficiency gains.¹⁰

This is somewhat difficult to square with data on AI adoption and use. While survey data suggest that between 40-45% of workers are using AI at work, only a small portion (~15%) report using it daily. **AI may not be a regular part of their day-to-day tasks.** Moreover, the most common work task based on Chat GPT conversations involves writing.¹¹ But when used this way most of the activity uses pre-written text – either to edit, translate or summarize. It is unclear what portion of these tasks would normally be down by an early-entry employee.

Likewise, survey work from McKinsey suggests that most firms are currently only experimenting with AI. Instead, most of the deployment of AI is in pilot projects.¹² Moreover, at the individual firm level, adoption is low. Of the 285,000 unique firms in the Hosseini sample, just 3.7% reported adopting AI by March 2025. There is no indication of how they were using the technology. But the firms tended to be large - with a median number of employees of 82 compared to 33 at the non-adopters. Similarly, they also have lower shares of early entrant employees (42% compared to 55%). As a result, for all the attention focused on the hiring of early entrants we wonder if there is some other macroeconomic factor *in addition* to AI that may be suppressing their hiring.

⁹ See Hosseini et al (2025)

¹⁰ See Where is AI productivity, January 12, 2026

¹¹ See, “How People Use ChatGPT”, A. Chatterji, T. Cunningham, D. Deming, Z. Hitzig, C. Ong, C. Shan, and K. Wadman, OpenAI, Duke University, and Harvard University, September 15, 2025.

¹² See, “The State of AI in 2025: Agents, Innovation, and Transformation”, McKinsey, November 5, 2025.

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