

The Future of Work Depends on Which AI We Build

AI automation and AI augmentation have fundamentally different effects on workers: new evidence from U.S. local labor markets

AUTHORS Tomáš Oleš & Francesco Roncone[†]

AFFILIATION Dept. of Economic Policy, NHF, EUBA

BASED ON Oleš & Roncone (2026)

[†] Corresponding author

The Issue

Artificial intelligence is transforming labor markets faster than previous digital technologies. Public debate often focuses on the fear that AI will replace workers, while others argue that it will increase productivity and create new opportunities. Both views may be correct—but they capture different ways AI can affect work. Understanding these different channels is essential for designing effective innovation, education, and labor-market policies.

KEY FINDINGS

- **AI automation:** A one-standard-deviation increase in local AI automation lowers occupational employment by roughly 25 percent.
- **AI augmentation:** The same increase in AI augmentation raises wages by 7.5 percent and employment by roughly 10 percent.
- **AI is more disruptive:** Compared with non-AI technologies, AI both displaces workers more strongly through automation and enhances productivity more strongly through augmentation.
- **AI effects are skill-biased:** Both the gains from augmentation and the losses from automation are concentrated in highly educated occupations.

What We Did

We developed a new framework that distinguishes between AI technologies that automate workers' tasks and those that improve the tools workers use. Using more than four decades of U.S. patent data linked to detailed occupational task and tool information from O*NET, we measured how local AI innovation affected over 430 occupations across U.S. commuting zones. To separate the effects of AI from broader innovation trends, we used the historical spread of major AI breakthroughs across U.S. regions. We then estimated how AI automation (task-related innovations) and AI augmentation (tool-related innovations) affected employment, wages, and wage bills.

What We Found

AI does not affect every occupation in the same way. Occupations exposed to higher AI automation experienced employment losses of approximately **25 percent**, while wages changed little. By contrast, occupations exposed to higher AI augmentation experienced employment gains of roughly **10 percent** and wage increases of **7.5 percent**. These opposing effects are substantially stronger for AI than for comparable non-AI innovations. The future of work is therefore shaped not by how much AI labor markets adopt, but by the kinds of AI they choose to develop and deploy.

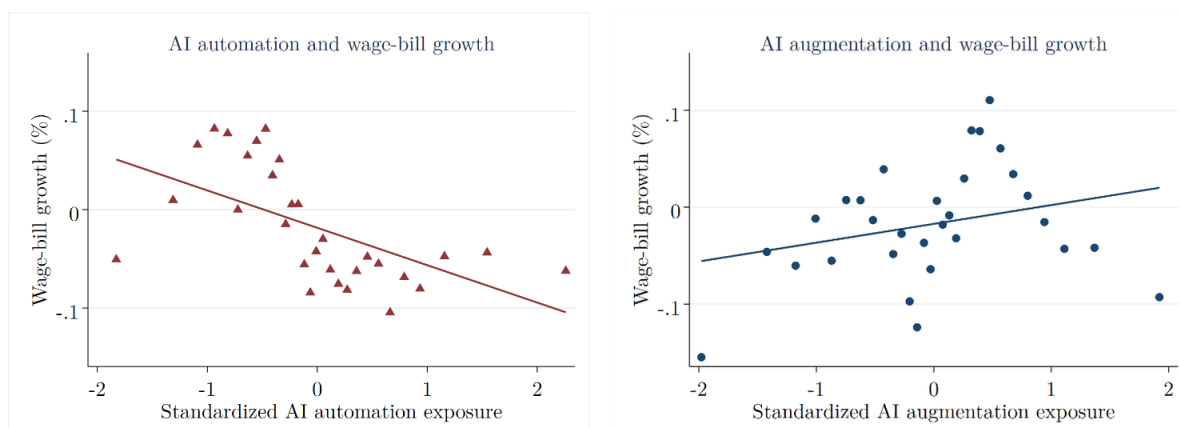


Figure 1: Local wage-bill growth against standardized exposure to AI automation (left) and AI augmentation (right) across U.S. commuting zones.

Who Is Most Affected?

AI does not affect all workers equally. **High-skill occupations** experience both the strongest productivity gains from augmentation and the strongest displacement pressures from automation. This suggests that the labor-market consequences of AI will be concentrated among highly skilled workers rather than among traditionally automation-exposed occupations.

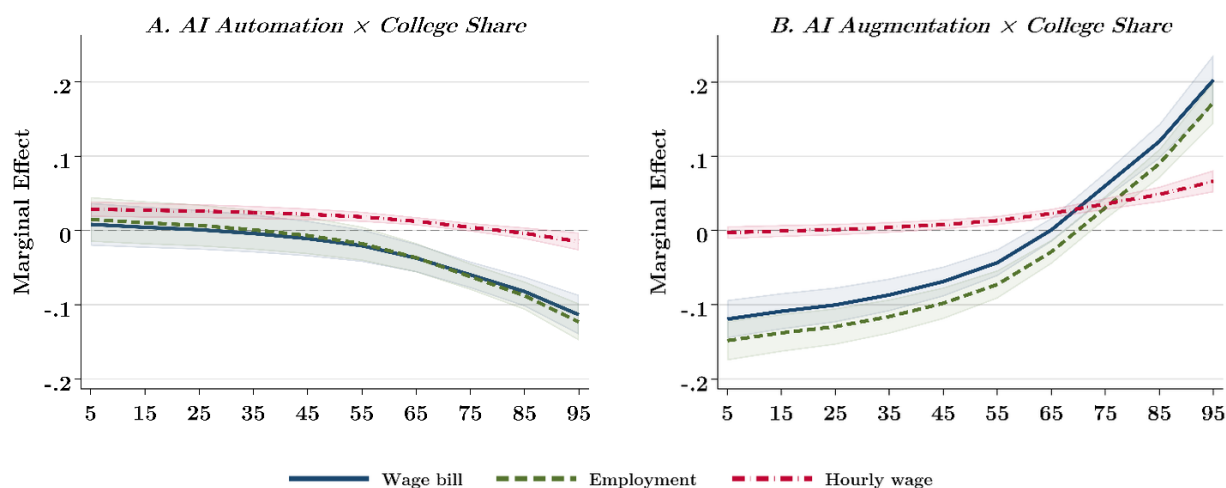


Figure 2: Marginal effects of AI automation (panel A) and AI augmentation (panel B) on the wage bill, employment and hourly wages, by the college share of the occupation (percent).

Policy Implications

1. Promote Worker-Augmenting AI

Governments should encourage the development of AI applications that increase worker productivity rather than substitute for workers. Procurement policies, innovation grants and tax incentives should prioritize these technologies.

2. Target Support Toward Automation-Exposed Occupations

Rather than broad AI compensation programs, labor-market support should focus explicitly on occupations with high automation exposure. Workers in such occupations are exposed to particular risk of job loss.

3. Monitor AI Composition, Not Just AI Investment

Innovation statistics should distinguish automation from augmentation. Two regions may invest equally in AI while experiencing very different labor-market outcomes depending on the composition of innovation.

4. Invest in AI-Complementary Skills

Workers should be supported in developing skills that complement rather than compete with AI. Training programs should emphasize capabilities such as complex problem-solving, interpersonal interaction, creativity and the effective use of AI-enabled tools, helping workers benefit from productivity-enhancing technologies.

References

- Acemoglu, D. & Restrepo, P. (2018). The Race Between Man and Machine. *AER*, 108(6), 1488–1542.
- Autor, D. H., Chin, C., Salomons, A. & Seegmiller, B. (2024). New Frontiers: The Origins and Content of New Work, 1940–2018. *QJE*, 139(3), 1399–1465.
- Brynjolfsson, E., Li, D. & Raymond, L. (2025). Generative AI at Work. *QJE*, 140(2), 889–942.
- Oleš, T. & Lábaj, M. (2025). Impact of Automation and Augmentation Technologies on Employment in Europe. *Working Paper*.
- Oleš, T. & Roncone, F. (2026). The Labor Market Effects of AI Automation and Augmentation. *Working Paper*.
- Pairolero, N. A., Giczy, A. V., Torres, G., Erana, T. I., Finlayson, M. A. & Toole, A. A. (2025). The Artificial Intelligence Patent Dataset (AIPD) 2023 Update. *J. Technol. Transf.*